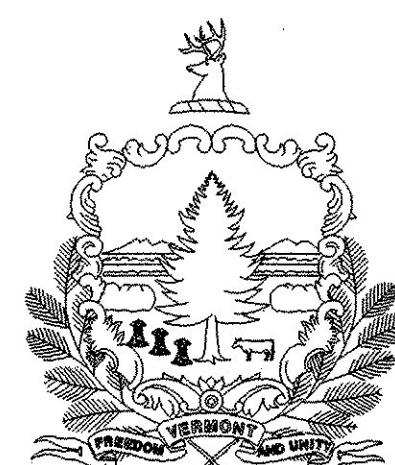


INDEX OF SHEETS
&
LIST OF STANDARDS
SEE SHEET 2

STATE OF VERMONT AGENCY OF TRANSPORTATION



PROPOSED IMPROVEMENT BRIDGE PROJECT

TOWN OF CASTLETON
COUNTY OF RUTLAND

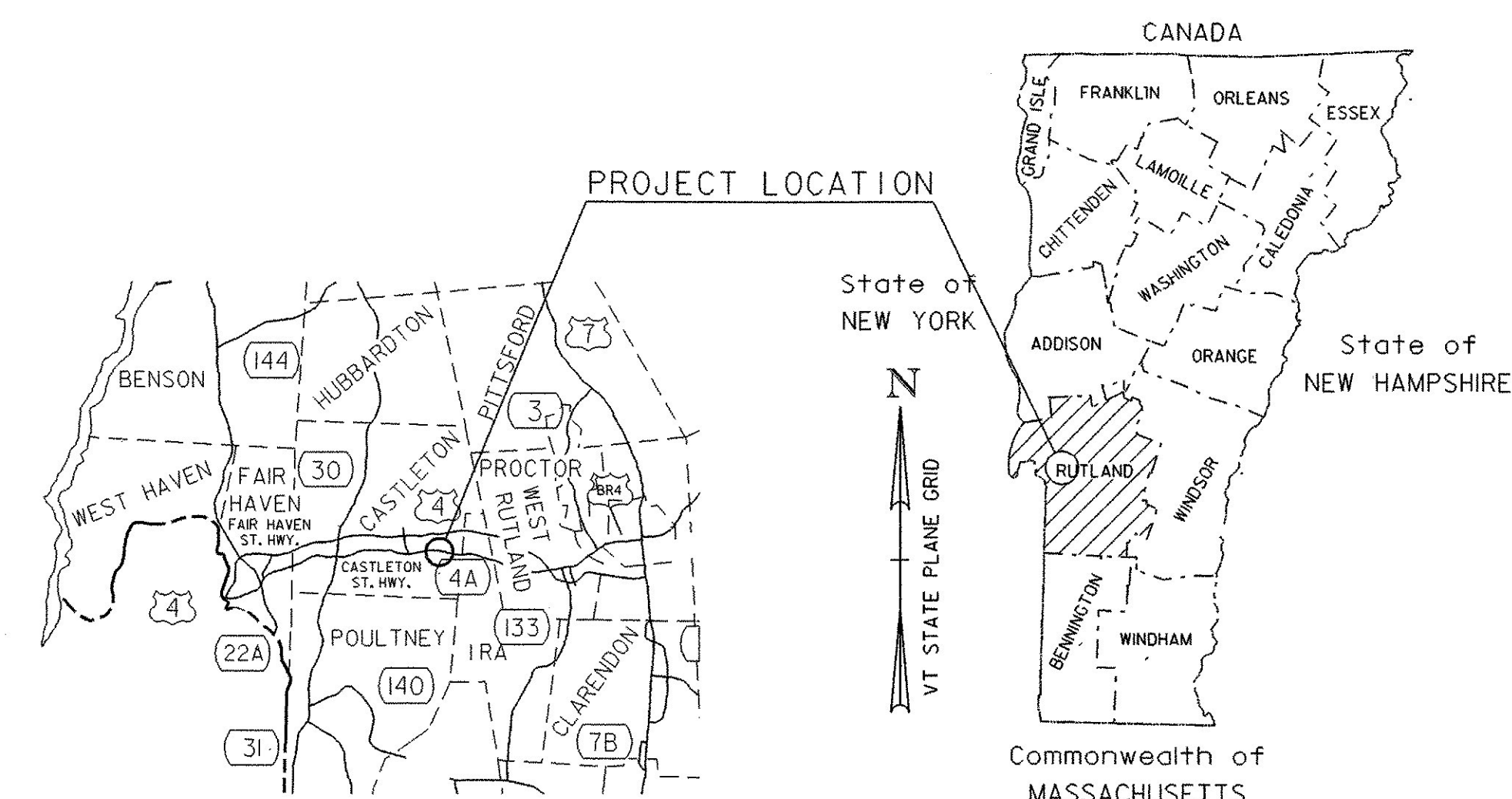
ROUTE NO : VT 4A

BRIDGE NO : 8

PROJECT LOCATION : The Bridge is at MM 4.20 east from Fair Haven.
The Project Limits are MM 4.17 and MM 4.23.

PROJECT DESCRIPTION : Replace bridge and approaches.

LENGTH OF STRUCTURE : 60.20 FEET.
LENGTH OF ROADWAY : 264.80 FEET.
LENGTH OF PROJECT : 325.00 FEET.

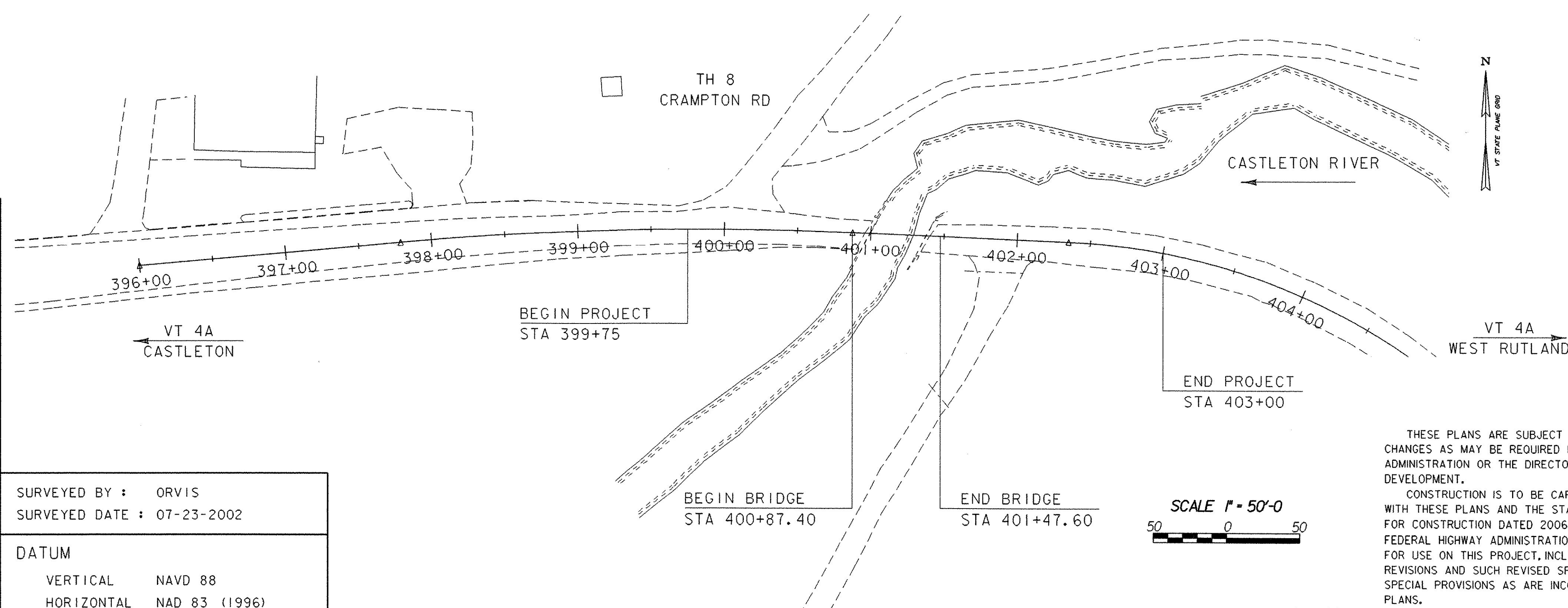


CONVENTIONAL SYMBOLS

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

SURVEYED BY : ORVIS
SURVEYED DATE : 07-23-2002

DATUM
VERTICAL NAVD 88
HORIZONTAL NAD 83 (1996)



THESE PLANS ARE SUBJECT TO SUCH ENGINEERING CHANGES AS MAY BE REQUIRED BY THE FEDERAL HIGHWAY ADMINISTRATION OR THE DIRECTOR OF PROGRAM DEVELOPMENT.
CONSTRUCTION IS TO BE CARRIED ON IN ACCORDANCE WITH THESE PLANS AND THE STANDARD SPECIFICATIONS FOR CONSTRUCTION DATED 2006, AS APPROVED BY THE FEDERAL HIGHWAY ADMINISTRATION ON JUNE 15, 2006 FOR USE ON THIS PROJECT, INCLUDING ALL SUBSEQUENT REVISIONS AND SUCH REVISED SPECIFICATIONS AND SPECIAL PROVISIONS AS ARE INCORPORATED IN THESE PLANS.

78f193/str/sf193bdr.dgn sf193ts.i 25-JAN-2007

DIRECTOR OF PROGRAM DEVELOPMENT

APPROVED DATE 1-25-07

PROJECT MANAGER : R. WHITCOMB

PROJECT NAME : CASTLETON

PROJECT NUMBER : RS 0142 (10)

SHEET 1 OF 68 SHEETS

STATE OF VERMONT
AGENCY OF TRANSPORTATION

PRELIMINARY INFORMATION SHEET

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ANCHOR FOR STEEL BEAM RAIL1/3/2000

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SB-R6-82BRIDGE RAILING - HEAVY DUTY STEEL BEAM1/6/1995

FINAL HYDRAULIC REPORT

HYDROLOGIC DATA

Date:9/14/04

DRAINAGE AREA :32.9 square miles

CHARACTER OF TERRAIN :Rolling to mountainous

STREAM CHARACTERISTICS :Sinuous

NATURE OF STREAMBED :Cobbles, gravel, sand and silt

PEAK FLOW DATA

Q 2.33 =900 cfs

Q 50 =2700 cfs

Q 10 =1800 cfs

Q 100 =3100 cfs

Q 25 =2300 cfs

Q 500 =4400 cfs

DATE OF FLOOD OF RECORD:Unknown

ESTIMATED DISCHARGE:Unknown

WATER SURFACE ELEV.:Unknown

NATURAL STREAM VELOCITY:@ Q50 =4.5 fps

ICE CONDITIONS:Moderate

DEBRIS:Moderate

DOES THE STREAM REACH MAXIMUM HIGHWATER ELEV. RAPIDLY?No

IS ORDINARY RISE RAPID?No

IS STAGE AFFECTED BY UPSTREAM OR DOWNSTREAM CONDITIONS?No

IF YES, DESCRIBE:

WATERSHED STORAGE:3.0%

HEADWATERS:UNIFORM: x

IMMEDIATELY ABOVE SITE:

EXISTING STRUCTURE INFORMATION

STRUCTURE TYPE:Single span concrete thru girder bridge

YEAR BUILT:1924

CLEAR SPAN(NORMAL TO STREAM):34'

VERTICAL CLEARANCE ABOVE STREAMBED:12'

WATERWAY OF FULL OPENING:348 sq. ft.

DISPOSITION OF STRUCTURE:Remove

TYPE OF MATERIAL UNDER SUBSTRUCTURE:Refer to borings

WATER SURFACE ELEVATIONS AT:

Q2.33 =428.4 ft

VELOCITY=5.5 fps

Q10 =431.0 ft

"7.6 fps

Q25 =432.1 ft

"8.9 fps

Q50 =433.1 ft

"9.8 fps

Q100 =433.7 ft

"10.8 fps

LONG TERM STREAMBED CHANGES:Unknown

IS THE ROADWAY OVERTOPPED BELOW Q100:Yes

FREQUENCY:Just above Q50

RELIEF ELEVATION:433.2 ft

DISCHARGE OVER ROAD @Q100:131 cfs

UPSTREAM STRUCTURE

TOWN:Castleton

DISTANCE:1.53 mi.

HIGHWAY #:Vt. 4A

STRUCTURE #:B11

CLEAR SPAN:47'

CLEAR HEIGHT:7'

YEAR BUILT:1988

FULL WATERWAY:403 sq. ft.

STRUCTURE TYPE:Steel beam bridge

DOWNSTREAM STRUCTURE

TOWN:Castleton

DISTANCE:0.40 mi.

HIGHWAY #:Vt. 4A

STRUCTURE #:B7

CLEAR SPAN:65'

CLEAR HEIGHT:7'

YEAR BUILT:1964

FULL WATERWAY:340 sq. ft.

STRUCTURE TYPE:Steel beam bridge

LOAD FACTOR - LOAD RATING (TONS)

LOADING LEVELS

TRUCK

HHS3S26 AXLE3A STR.4A STR.SA SEMI

415269464760

INVENTORY

425469

POSTED

425469

OPERATING

5773824850

COMMENTS:0

TRAFFIC DATA

YEARADTDHVP% D% TADTT

20062100210633100

20262800290635200

20 year ESAL for flexible pavement from 2006 to 2026 : 497000

40 year ESAL for flexible pavement from 2006 to 2046 : 1301000

Design Speed : 35 mph

PROPOSED STRUCTURE

STRUCTURE TYPE:Single Span Prestressed Concrete Voided Slab Bridge

CLEAR SPAN(NORMAL TO STREAM):50.5'

VERTICAL CLEARANCE ABOVE STREAMBED:12.5

WATERWAY OF FULL OPENING:495 sq. ft.

WATER SURFACE ELEVATIONS AT:

Q2.33 =428.4 ft

VELOCITY=5.0 fps

Q10 =430.9 ft

"6.4 fps

Q25 =431.9 ft

"7.4 fps

Q50 =432.9 ft

"8.1 fps

Q100 =433.5 ft

"8.8 fps

IS THE ROADWAY OVERTOPPED BELOW Q100:Yes

FREQUENCY:Q75

RELIEF ELEVATION:433.3'

DISCHARGE OVER ROAD @Q100:70 cfs

AVERAGE LOW ELEVATION OF SUPERSTRUCTURE:435.6'

VERTICAL CLEARANCE:@ Q50 = 2.7'

SCOUR:4 ft maximum contraction scour at Q500

REQUIRED CHANNEL PROTECTION:Stone Fill, Type III

PERMIT INFORMATION

AVERAGE DAILY FLOW:65 cfs

DEPTH OR ELEVATION:ORDINARY LOW WATER:20 cfsElevation = 424.0

ORDINARY HIGH WATER:400 cfsElevation = 426.0

TEMPORARY BRIDGE REQUIREMENTS

STRUCTURE TYPE:Single span bridge

CLEAR SPAN(NORMAL TO STREAM):35 ft (minimum)

VERTICAL CLEARANCE ABOVE STREAMBED:Bottom of beam elev. 432.0' (min.)

WATERWAY AREA OF FULL OPENING:315 sq. ft. (minimum)

ADDITIONAL INFORMATION

DESIGN CRITERIA

1. DESIGN LIVE LOAD AASHTOHS-25-44

2. DESIGN SPAN57'

3. ALLOWABLE LOAD FOR SPREAD FOOTINGS ON SOIL ON LEDGE NA

4. ALLOWABLE LOAD FOR PILING184 kip

TYPEHP 12x84 GR 50

ESTIMATED LENGTHAbut 1 is approx 35'. Abut 2 is approx 40'.

5. STRUCTURAL STEEL AASHTO M270MM270 GRADE 50W

6. REINFORCING STEEL GRADE60

7. CONCRETE, HIGH PERFORMANCE CLASS AA fc: 4000 psi

CONCRETE, HIGH PERFORMANCE CLASS B fc: 3500 psi

8. DESIGN SOIL UNIT WEIGHT140 pcf

9. DESIGN LOAD FOR SPREAD FOOTINGS ON SOILNA

TRAFFIC MAINTENANCE

1. IS TRAFFIC TO BE MAINTAINED?Yes

IF YES, ON EXISTING STRUCTURE?OR ON TEMPORARY BRIDGE?Temporary Bridge

ONE OR TWO-WAY TRAVEL?Two-way

2. TRAFFIC CONTROL SIGNALS REQUIRED?No

3. ARE SIDEWALKS REQUIRED?No

IF SO, ON WHAT SIDE?

PROJECT NAME:Castleton

PROJECT NUMBER:RS 0142(10)

FILE NAME:sf193pi.xls

PLOT DATE:1/24/2007

PROJECT MANAGER: R. Whitcomb

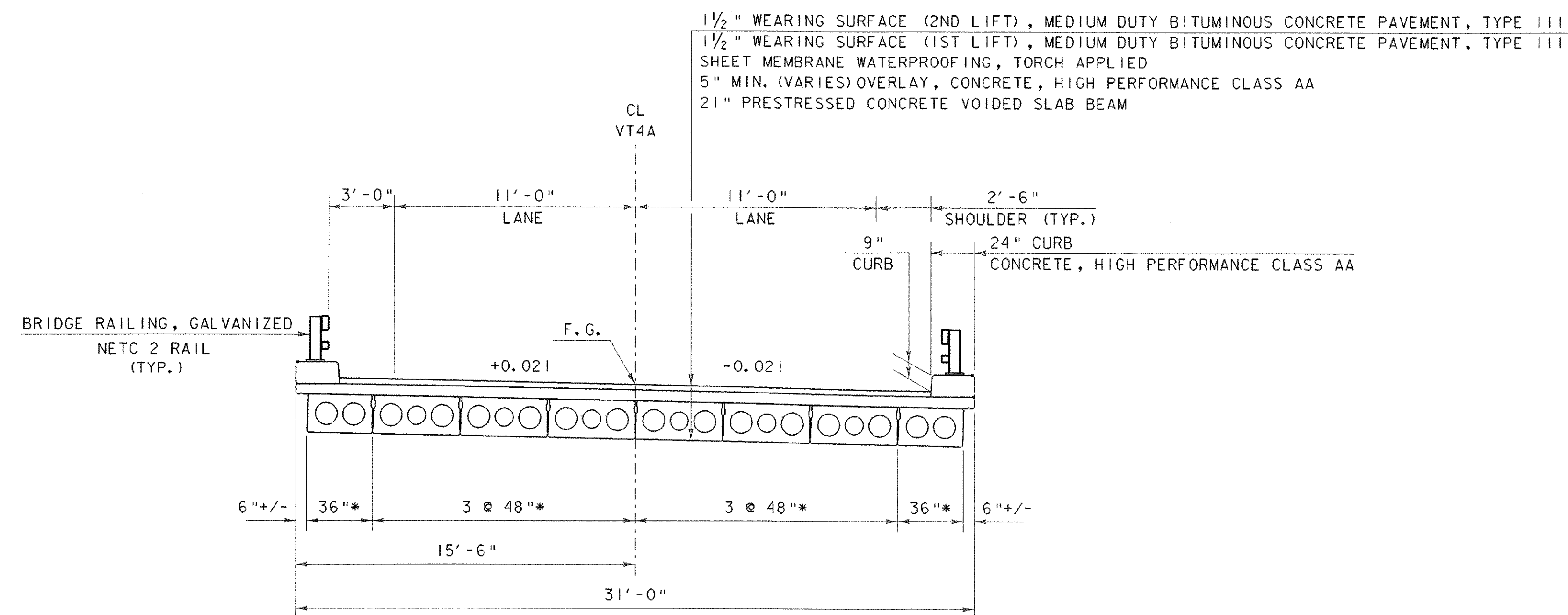
DRAWN BY: str3

DESIGNED BY: T. Lackey

CHECKED BY: C. Carlson

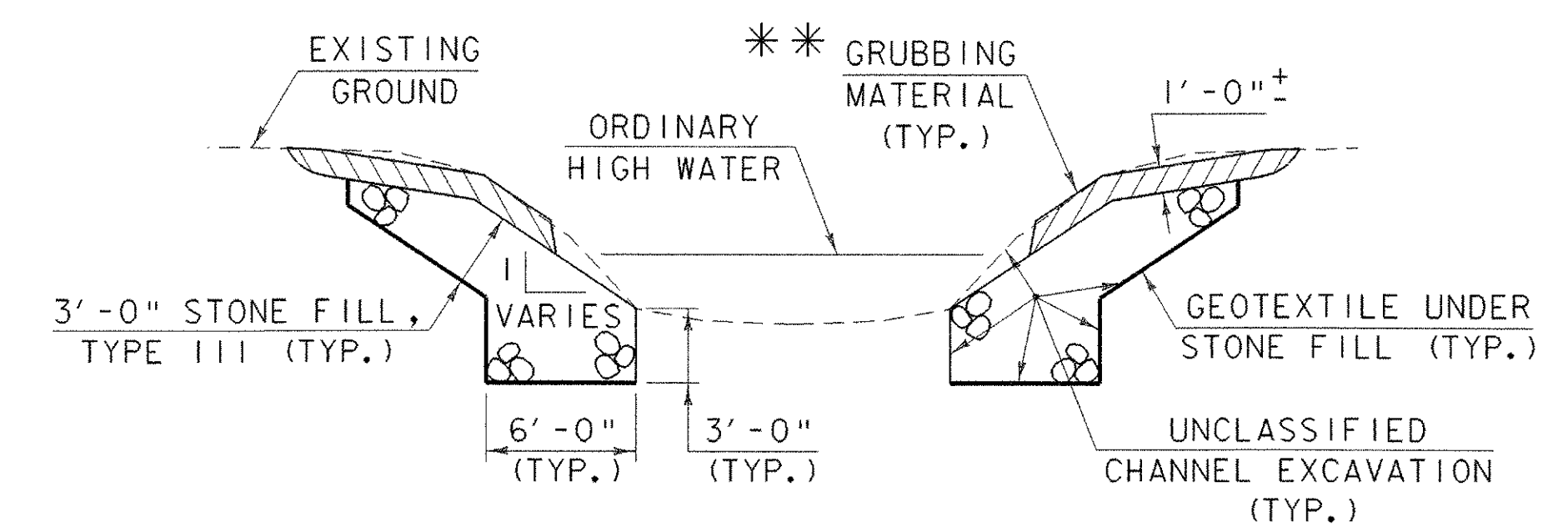
PRELIMINARY INFORMATION SHEET #1

SHEET 2 OF 68



TYPICAL BRIDGE SECTION

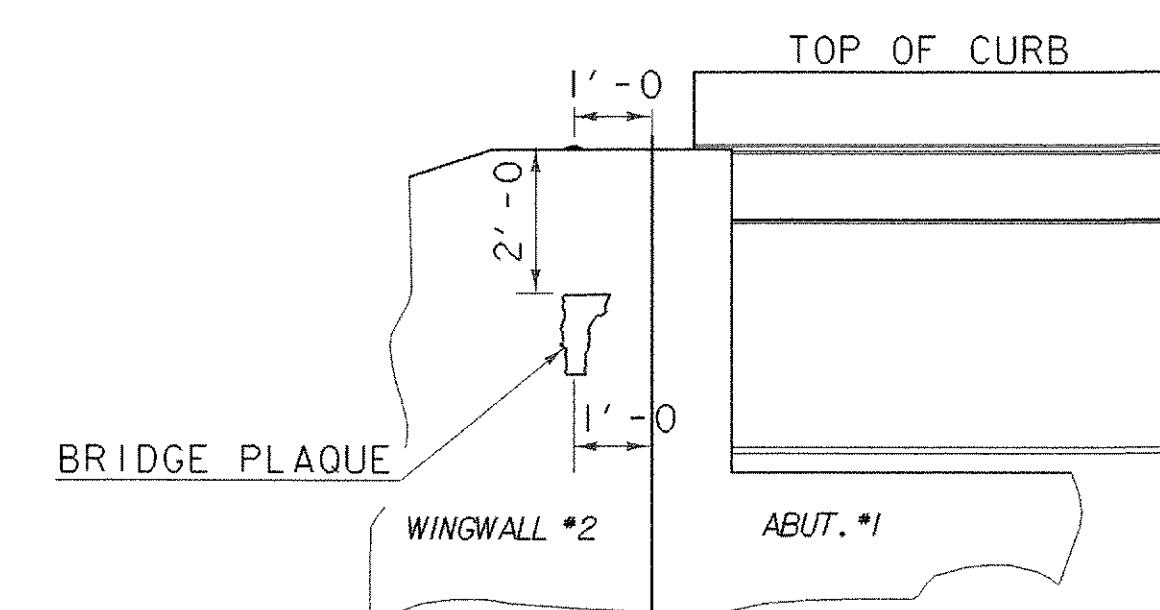
SCALE 1/4" = 1'-0"
 1 0 2 4 6



CHANNEL TYPICAL SECTION

NOT TO SCALE

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

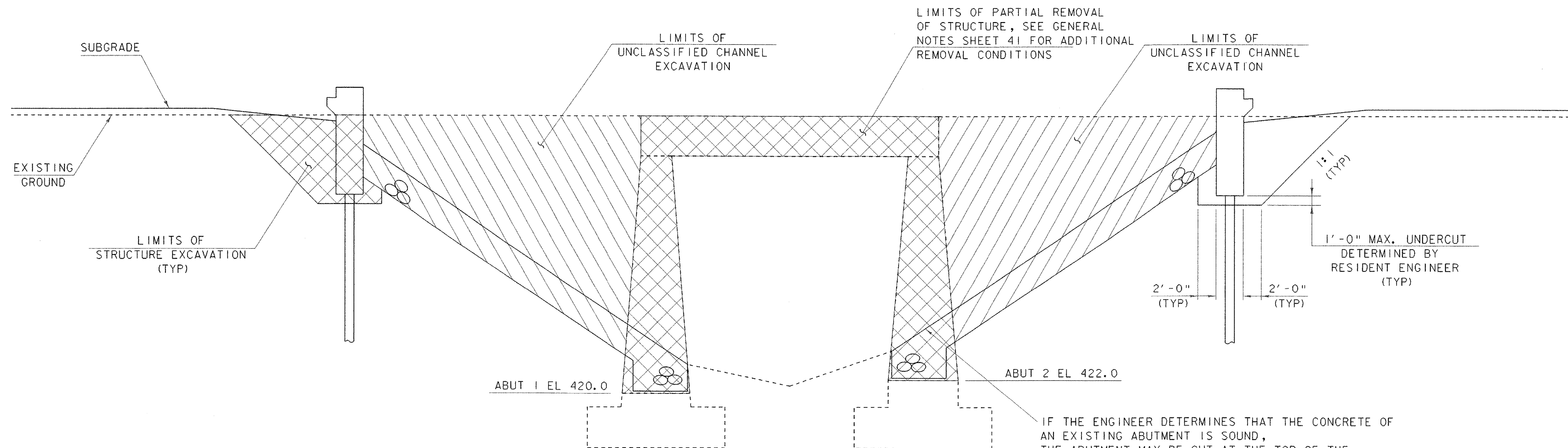


BRIDGE PLAQUE

THE BENCH MARK AND BRIDGE PLAQUE WILL BE SUPPLIED BY THE AGENCY OF TRANSPORTATION AND SHALL BE INSTALLED BY THE CONTRACTOR AT ABUTMENT #1 ON THE RIGHT SIDE AS SHOWN OR AS DIRECTED BY THE ENGINEER.

TYPICAL SECTIONS
 BRIDGE

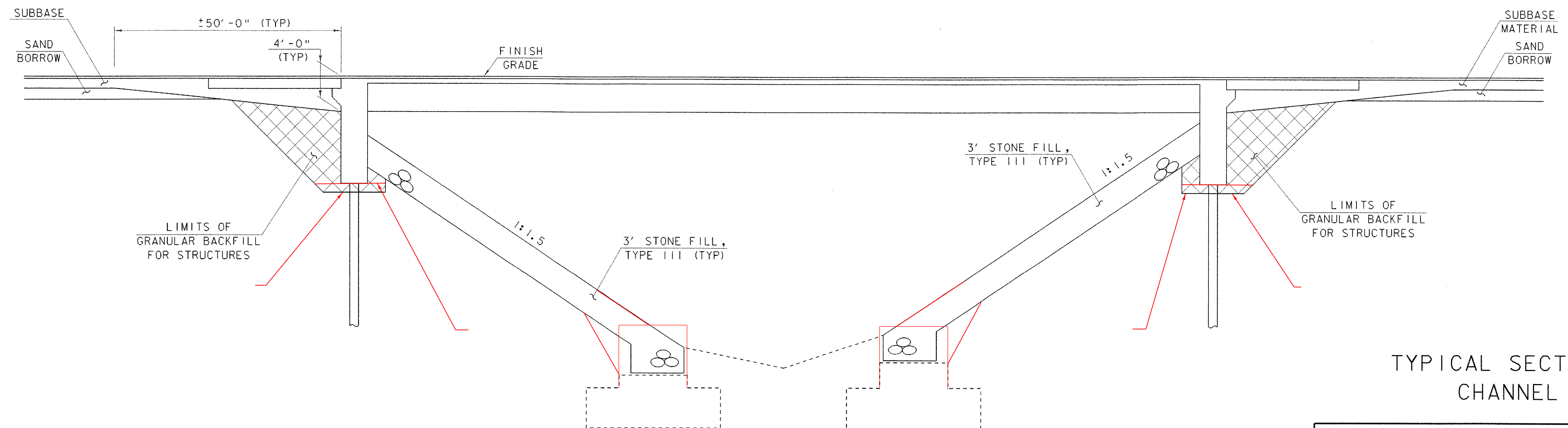
PROJECT NAME:	CASTLETON
PROJECT NUMBER:	RS 0142(10)
FILE NAME:	sf193+xl1
PROJECT LEADER:	R. WHITCOMB
DESIGNED BY:	T. LACKEY
78F193/str/sf193xsl.dgn	
PLOT DATE:	09-FEB-2007
DRAWN BY:	T. LACKEY
CHECKED BY:	R. WHITCOMB
SHEET 3	OF 68



EXCAVATIONS & REMOVALS

(NOT TO SCALE)

IF THE ENGINEER DETERMINES THAT THE CONCRETE OF AN EXISTING ABUTMENT IS SOUND, THE ABUTMENT MAY BE CUT AT THE TOP OF THE STONE FILL LINE AND LEFT IN PLACE INSTEAD OF STONE FILL. OTHERWISE CUT THE ABUTMENT TO THE INDICATED ELEVATIONS.



FILLS

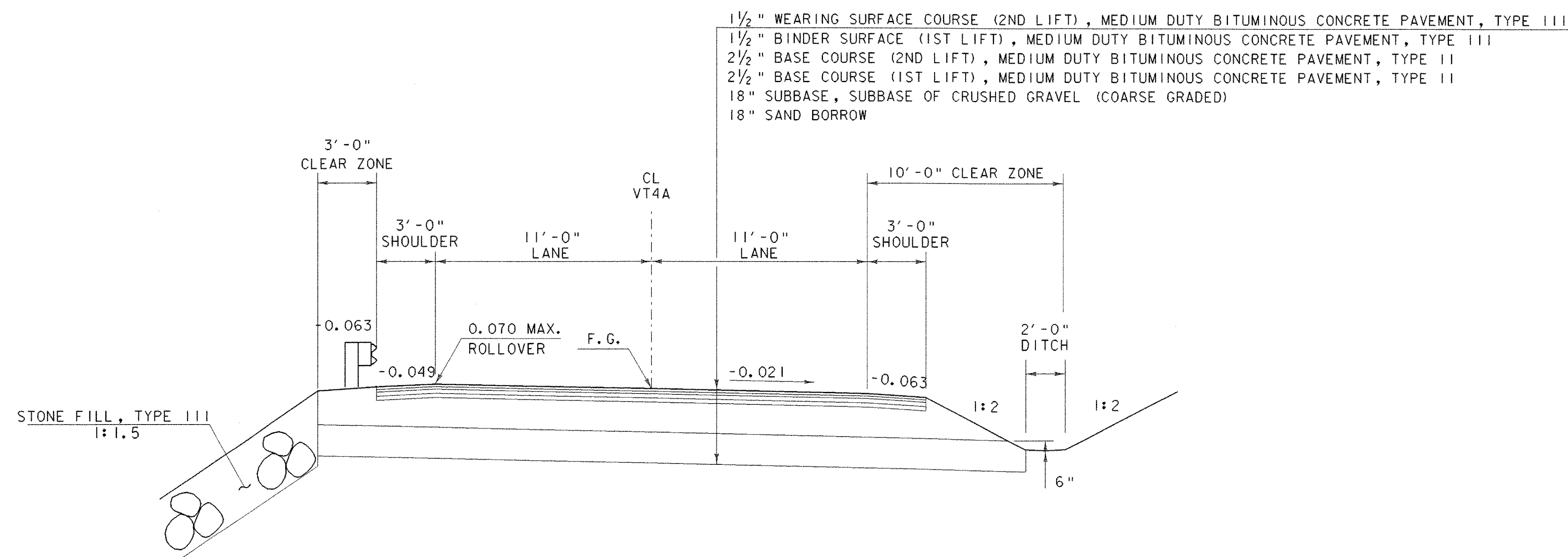
(NOT TO SCALE)

TYPICAL SECTIONS CHANNEL

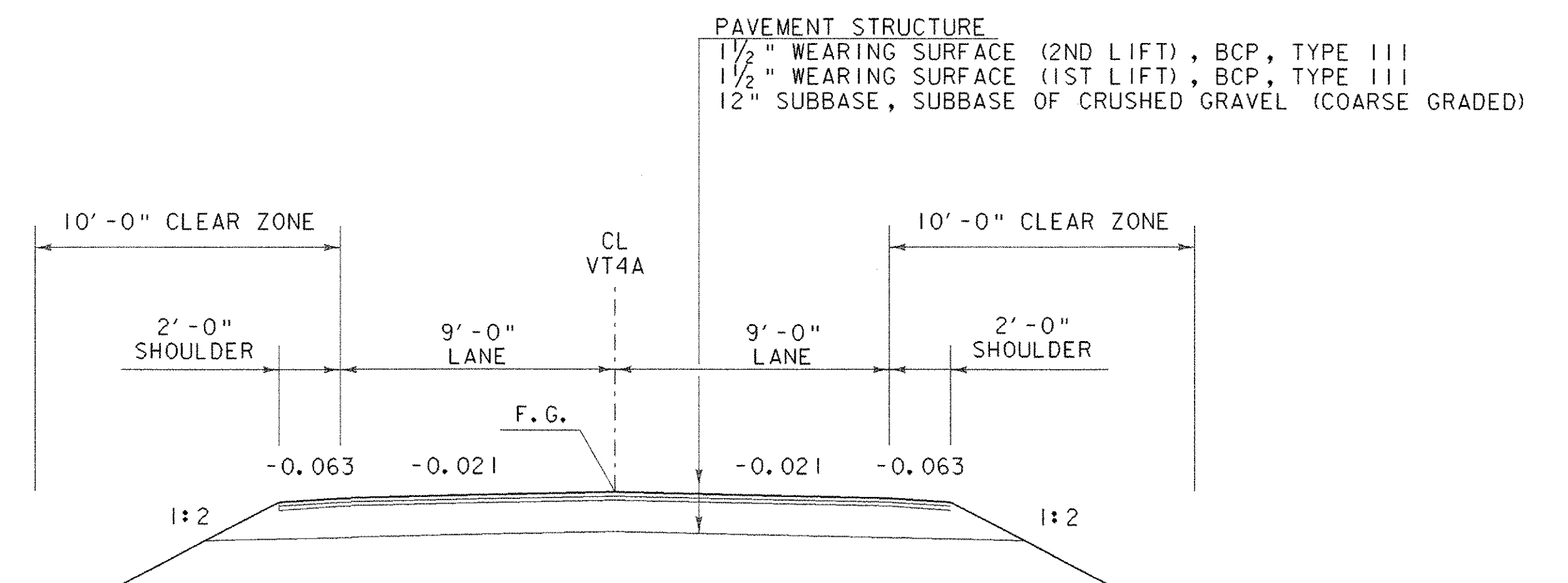
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PROJECT NUMBER: RS 0142(10)

FILE NAME: sf193+x2.i
PROJECT LEADER: R. WHITCOMB
DESIGNED BY: T. LACKEY
78F193/str/sf193xsl.dgn

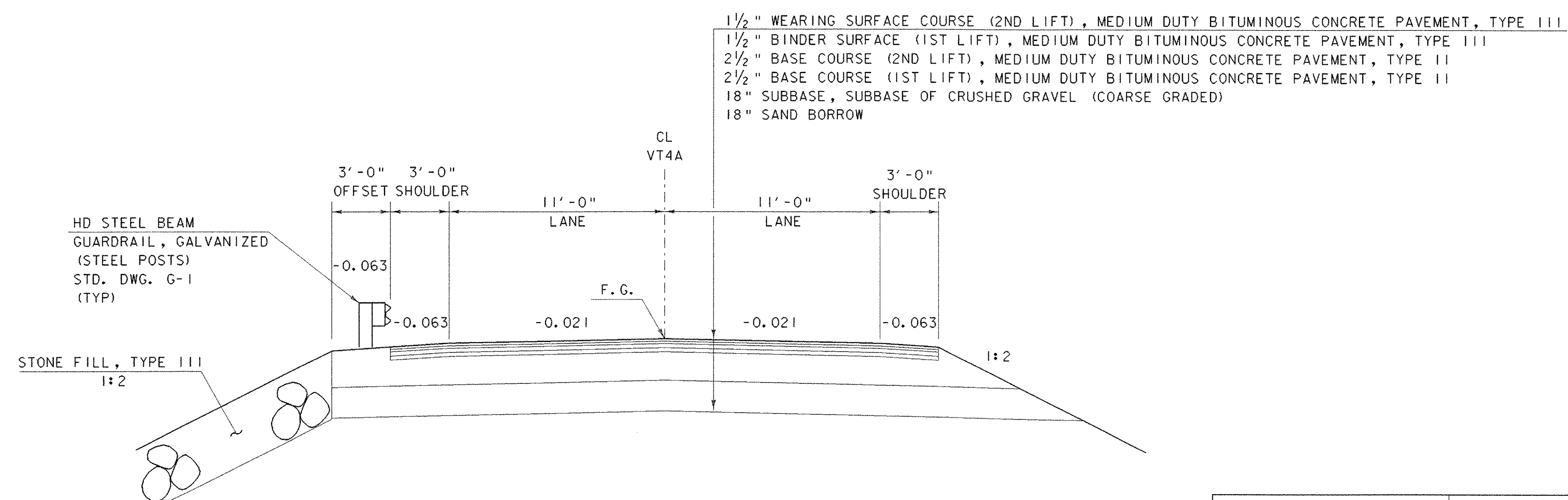
PLOT DATE: 09-FEB-2007
DRAWN BY: T. LACKEY
CHECKED BY: R. WHITCOMB
SHEET 4 OF 68



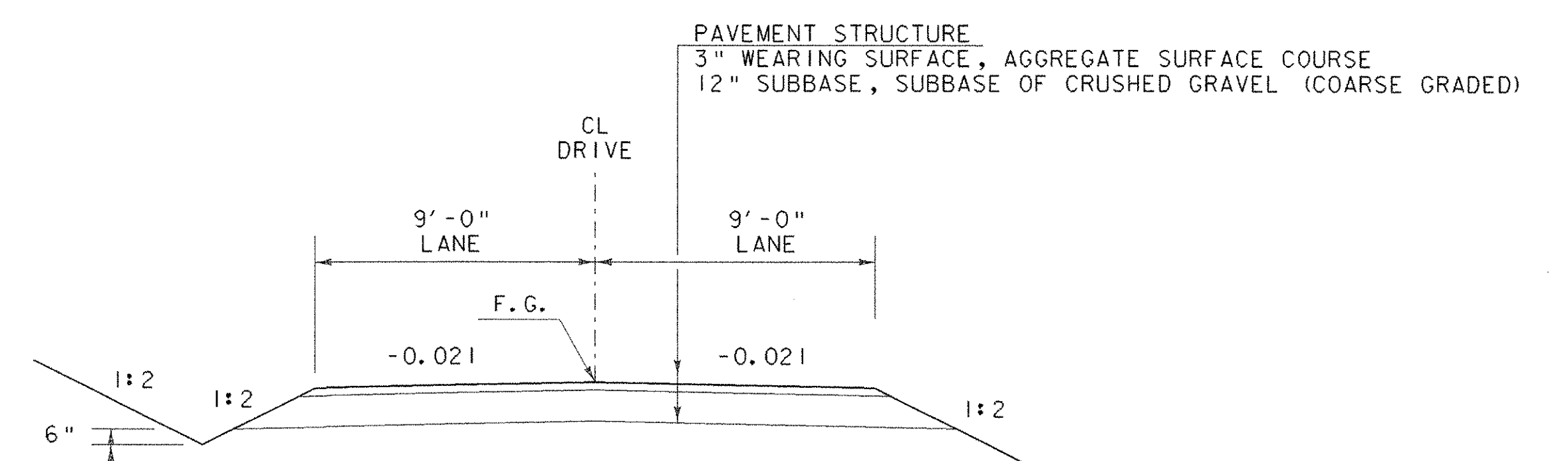
MAINLINE
TYPICAL ROADWAY SECTION
BANKED



TH 8
TYPICAL ROADWAY SECTION
NORMAL CROWN



MAINLINE
TYPICAL ROADWAY SECTION
NORMAL CROWN



DRIVE I
TYPICAL ROADWAY SECTION
NORMAL CROWN

TYPICAL SECTIONS
ROADWAY

MATERIAL ITEM	TOLERANCE
PAVEMENT SURFACE COURSE	$\pm \frac{1}{4}$ " TOTAL THICKNESS
PAVEMENT BASE COURSE	$\pm \frac{1}{2}$ "
AGGREGATE SURFACE COURSE	$\pm \frac{1}{2}$ "
SUBBASE	± 1 "
SAND BORROW	± 1 "
GRANULAR BORROW	± 1 "

SCALE $\frac{1}{4}$ " = 1'-0"
1 0 2 4 6

PROJECT NAME: CASTLETON	PLOT DATE: 09-FEB-2007
PROJECT NUMBER: RS 0142(10)	DRAWN BY: T. LACKEY
FILE NAME: sf193tx3.1	CHECKED BY: R. WHITCOMB
PROJECT MANAGER: R. WHITCOMB	SHEET 5 OF 68
DESIGNED BY: T. LACKEY	
78F193/str/sf193xsl.dgn	

QUANTITY SHEET

REVISIONS 8-Mar-07 THL ITEM 519.20 SHEET MEMBRANE WATERPROOFING, TORCH APPLIED. REMOVED 49 SY FROM APP SLAB 1. REMOVED 49 SY FROM APP SLAB 2.	PROJECT NAME: CASTLETON							
	PROJECT NUMBER: RS 0142(10)							
	<table border="0"> <tr> <td>FILE NAME: 78F193frm.dgn VAOT_quant.xls</td> <td>PLOT DATE: 03/09/2007</td> </tr> <tr> <td>PROJECT MANAGER: R. WHITCOMB</td> <td>DRAWN BY: W. LAMMER</td> </tr> <tr> <td>DESIGNED BY: W. LAMMER</td> <td>CHECKED BY: T. LACKEY</td> </tr> <tr> <td>QUANTITY SHEET #1</td> <td>SHEET 6 OF 68</td> </tr> </table>	FILE NAME: 78F193frm.dgn VAOT_quant.xls	PLOT DATE: 03/09/2007	PROJECT MANAGER: R. WHITCOMB	DRAWN BY: W. LAMMER	DESIGNED BY: W. LAMMER	CHECKED BY: T. LACKEY	QUANTITY SHEET #1
FILE NAME: 78F193frm.dgn VAOT_quant.xls	PLOT DATE: 03/09/2007							
PROJECT MANAGER: R. WHITCOMB	DRAWN BY: W. LAMMER							
DESIGNED BY: W. LAMMER	CHECKED BY: T. LACKEY							
QUANTITY SHEET #1	SHEET 6 OF 68							

STATE OF VERMONT AGENCY OF TRANSPORTATION										QUANTITY SHEET									
SUMMARY OF ESTIMATED QUANTITIES										TOTALS		DESCRIPTIONS				DETAILED SUMMARY OF QUANTITIES			
DECK	ABUT 1	ABUT 2	APP SLAB 1	APP SLAB 2	CHANNEL	ROADWAY	EROSION CONTROL	BRIDGE	FULL E&C	GRAND TOTAL	FINAL	UNIT	ITEMS	ITEM NUMBER	ROUND	QUANTITIES	UNIT	ITEMS	
	150	380					10	20		30		CY	STONE FILL, TYPE I	613.10					
								530		530		CY	STONE FILL, TYPE III	613.12					
						3				3		EACH	RELOCATE MAILBOX, SINGLE SUPPORT	617.10					
						288				288		LF	HD STEEL BEAM GUARDRAIL, GALVANIZED	621.21					
						1				1		EACH	MANUFACTURED TERMINAL SECTION, FLARED	621.50					
						2				2		EACH	ANCHOR FOR STEEL BEAM RAIL	621.60					
						4				4		EACH	GUARDRAIL APPROACH SECTION, GALVANIZED NETC 2 RAIL	621.72					
						365				365		LF	REMOVAL AND DISPOSAL OF GUARDRAIL	621.80					
						230				230		LF	TEMPORARY TRAFFIC BARRIER	621.90					
						100				100		HR	UNIFORMED TRAFFIC OFFICERS	630.10					
						300				300		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					
						1				1		LS	TRAFFIC CONTROL	641.10					
						1330				1330		LF	DURABLE 4 INCH WHITE LINE, THERMOPLASTIC	646.402					
						1330				1330		LF	DURABLE 4 INCH YELLOW LNE, THERMOPLASTIC	646.412					
						100				100		EACH	LINE STRIPING TARGETS	646.76					
	220	560						780		780		SY	GEOTEXTILE UNDER STONE FILL	649.31					
							180			180		SY	GEOTEXTILE FOR SILT FENCE	649.51					
							170			170		SY	GEOTEXTILE FOR FILTER CURTAIN	649.61					
							20			20		LB	SEED	651.15					
							10			10		LB	SEED, WINTER RYE	651.17					
							200			200		LB	FERTILIZER	651.18					
							1			1		TON	AGRICULTURAL LIMESTONE	651.20					
							1			1		TON	HAYMULCH	651.25					
							80			80		CY	TOPSOIL	651.35					
							420			420		SY	GRUBBING MATERIAL	651.40					
							1			1		LS	EPSC PLAN	652.10					
							30			30		HR	MONITORING EPSC PLAN	652.20					
							1			1		LU	MAINTENANCE OF EPSC PLAN (N.A.B.I.)	652.30					
							310			310		SY	TEMPORARY EROSION MATTING	653.20					
							810			810		SY	PERMANENT EROSION MATTING	653.21					
							30			30		CY	TEMPORARY STONE CHECK DAM, TYPE I	653.25					
							60			60		CY	VEHICLE TRACKING PAD	653.35					
							1030			1030		LF	PROJECT DEMARCATION FENCE	653.55					
							13			13		SF	TRAFFIC SIGNS, TYPE A	675.20					
							14			14		LF	FLANGED CHANNEL SIGN POST	675.301					
																PROJECT NAME: CASTLETON			
																PROJECT NUMBER: RS 0142(10)			
																FILE NAME: 78F193frm.dgn VAOT_quant.xls			
																PROJECT MANAGER: R. WHITCOMB			
																DESIGNED BY: W. LAMMER			
																CHECKED BY: T. LACKEY			
																QUANTITY SHEET #2			
																PLOT DATE: 02/01/2007			
																DRAWN BY: W. LAMMER			
																SHEET 7 OF 68			

QUANTITY SHEET

[illegible]

PROJECT NAME: CASTLETON	
PROJECT NUMBER: RS 0142(10)	
FILE NAME: 78F193frm.dgn VAOT_quant.xls	PLOT DATE: 02/01/2007
PROJECT MANAGER: R. WHITCOMB	DRAWN BY: W. LAMMER
DESIGNED BY: W. LAMMER	CHECKED BY: T. LACKEY
QUANTITY SHEET #3	SHEET 8 OF 68

RIGHT - OF - WAY DETAIL SHEET

TABLE OF REVISIONS

[illegible]

APPROVED: ROGER P. DUMAS DATE: 09-27-05
CHIEF PLANS & TTLS

PLOT DATE: **Date**
DRAWN BY: **M.R.**
CHECKED BY: **E.P.**
SHEET **9** OF **68**

RIGHT - OF - WAY DETAIL SHEET

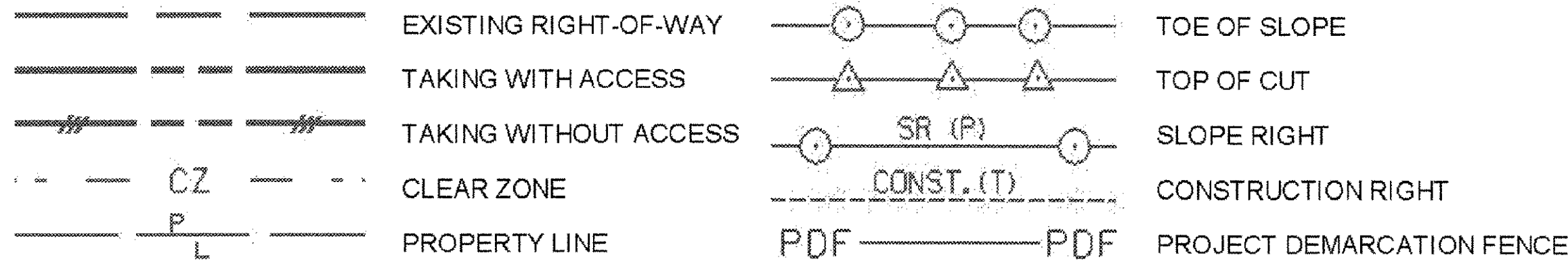
TABLE OF PROPERTY ACQUISITION

[illegible]

TABLE OF REVISIONS

[illegible]

PLAN LEGEND



EC	-EROSION CONTROL
(P)	-PERMANENT
(T)	-TEMPORARY
DR.	-DRAINAGE RIGHT
DIT.	-DITCHING RIGHT
CH.	-CHANNEL RIGHT
DRIVE	-DRIVE RIGHT
CUL.	-CULVERT RIGHT
S&T	-CLEARING & TRIMMING RIGHT
SR	-SLOPE RIGHT
UE	-UTILITY EASEMENT

APPROVED: ROGER P. DUMAS DATE: 09-27-05
CHIEF, PLANS & TITLES

PLOT DATE 12/26/06

PROJECT NAME: CASTLETON
PROJECT NUMBER: RS 0142(10)

FILE NAME:	RF193DET.XLS	PLOT DATE:	12/9/98
PROJECT LEADER:	R.WHITCOMB	DRAWN BY:	M.R.
DESIGNED BY:	T. LACKEY	CHECKED BY:	E.P.
R.O.W. SHEET 13 OF 14		SHEET 10	OF 63

BRIDGE RAILING, GALVANIZED NETC 2 RAIL

ML 400+87 TO 401+63 LT

ML 400+76 TO 401+52 RT

GUARDRAIL APPROACH SECTIONS, GALVANIZED NETC 2 RAIL

ML 400+62 TO 400+87 LT

ML 401+63 TO 401+88 LT

ML 400+51 TO 400+76 RT

ML 401+52 TO 401+73 RT

HD STEEL BEAM GUARDRAIL, GALVANIZED

ML 400+39 TO 400+62 LT

ML 401+88 TO 403+59 LT

ML 399+63 TO 400+51 RT

MANUFACTURED TERMINAL SECTION, FLARED

ML 399+26 TO 399+63 RT

ANCHOR FOR STEEL BEAM RAIL

ML 400+39 LT

ML 401+73 RT

BEGIN R.O.W. PROJECT
STA. 398+96.8 33.5' LT.

BAILEY, CLAYTON A. JR.

END MAINT. AGREE. ZONE
TH#8 STA. 500+26.39 CL

BEGIN MAINT. AGREE. ZONE
TH#8 STA. 500+11.00 CL
LENGTH: 16.39'

STATE OF
VERMONT

REMOVAL & DISPOSAL OF GUARDRAIL

ML 400+54 TO 401+00 LT

ML 401+46 TO 403+59 LT

ML 400+16 TO 400+89 RT

ML 401+35 TO 401+61 RT

COLD PLANING, BITUMINOUS PAVEMENT

ML 398+50 TO 399+00

ML 403+75 TO 404+25

TH 500+75 TO 501+00

MORTON
BUILDINGS, INC.

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
STATE OF VERMONT'S ACQUISITION OF LAND
AND RIGHTS FOR THIS PROJECT.

INSTALL
& MAINTAIN
(P)
152
NEW 65' POLE
502+02 LT 24'
30' GUY

CLARENDON & PITTSFIELD RR

DUMAS, ARLYN

CV 153
EXISTING POLE
200+37 RT 72'
RETIRE GUY
10' GUY

SATTON,
THOMAS J. & CYNTHIA

HVCTRL #6
S. ASH
S. POPLAR
S. ELM

WELCH, SCOTT T.

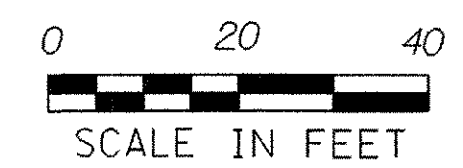
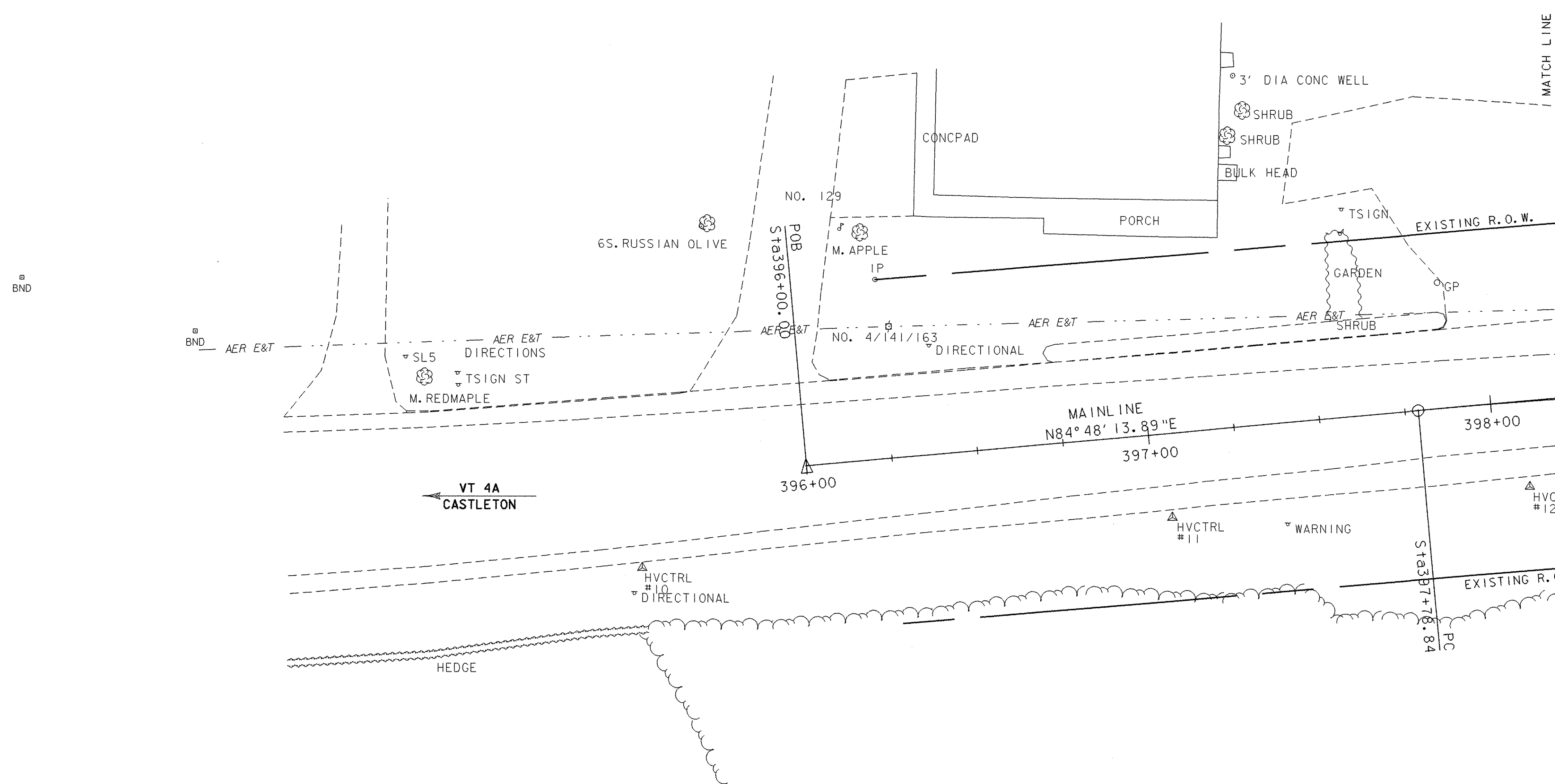
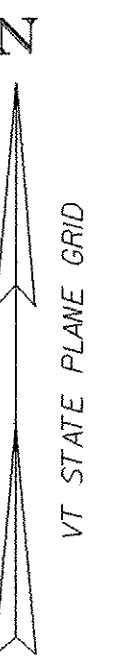
ROW LAYOUT PLAN

PROJECT NAME: CASTLETON
PROJECT NUMBER: RS 0142(10)

FILE NAME: sf193bdr.dgn
PROJECT LEADER: R. WHITCOMB
DESIGNED BY: T. LACKEY
R.O.W. SHEET 14 OF 14

PLOT DATE: 09-FEB-2007
DRAWN BY: T. LACKEY
CHECKED BY: C. CARLSON
SHEET 11 OF 68

0 20 40
SCALE IN FEET

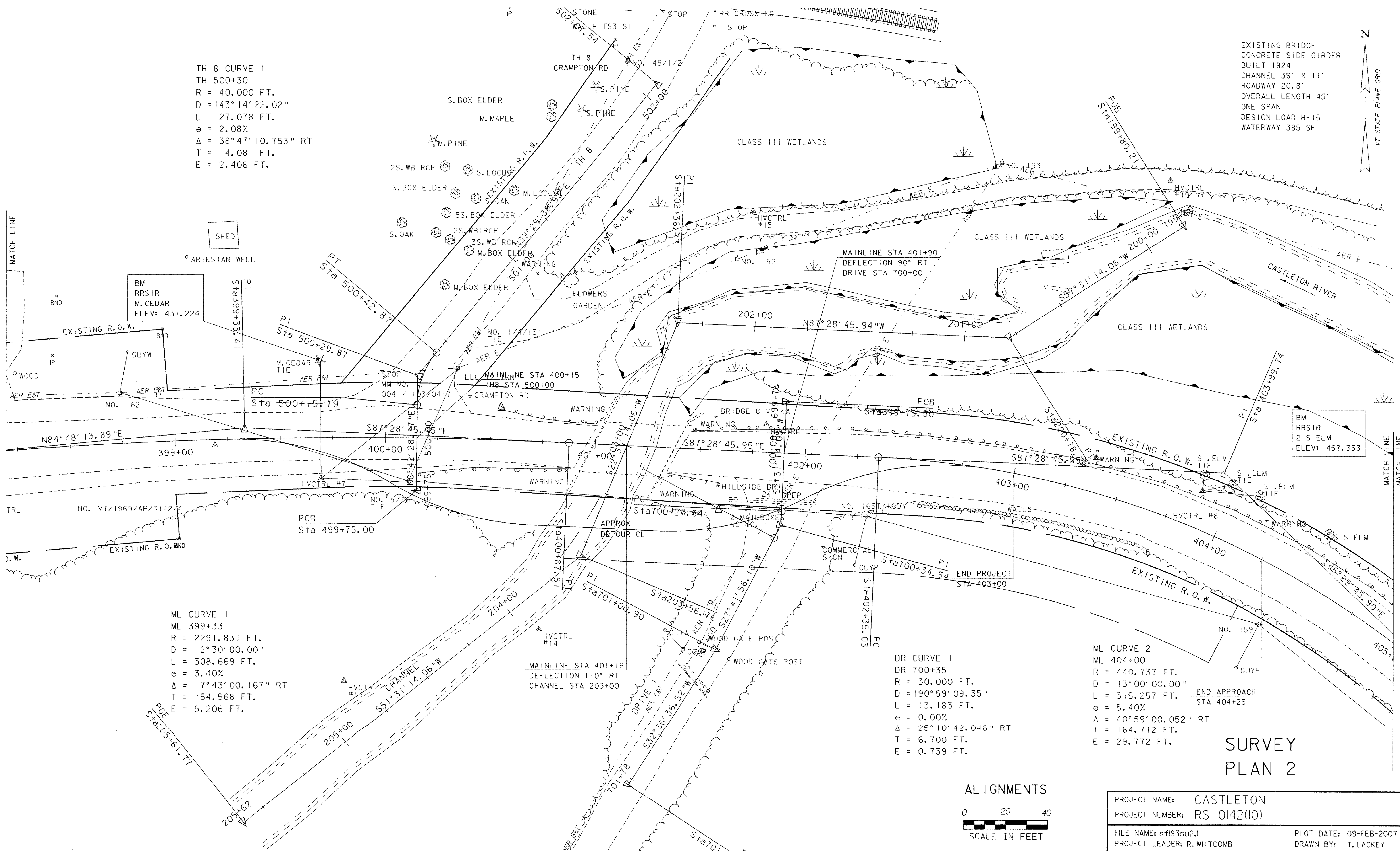
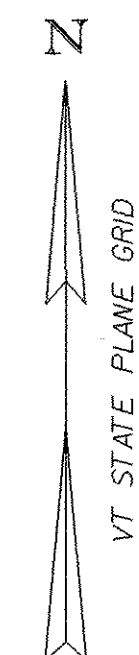


SURVEY PLAN 1

PROJECT NAME: CASTLETON	
PROJECT NUMBER: RS 0142(10)	
FILE NAME: sf193sul1	PLOT DATE: 09-FEB-2007
PROJECT LEADER: R. WHITCOMB	DRAWN BY: T. LACKEY
DESIGNED BY: T. LACKEY	CHECKED BY: W. LAMMER
78f193/str/sf193sur.dgn	SHEET 12 OF 68

TH 8 CURVE 1
 TH 500+30
 R = 40.000 FT.
 D = 143° 14' 22.02"
 L = 27.078 FT.
 e = 2.08%
 Δ = 38° 47' 10.753" RT
 T = 14.081 FT.
 E = 2.406 FT.

EXISTING BRIDGE
 CONCRETE SIDE GIRDER
 BUILT 1924
 CHANNEL 39' X 11'
 ROADWAY 20.8'
 OVERALL LENGTH 45'
 ONE SPAN
 DESIGN LOAD H-15
 WATERWAY 385 SF



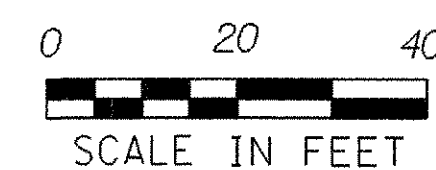
ML CURVE 1
 ML 399+33
 R = 2291.831 FT.
 D = 2° 30' 00.00"
 L = 308.669 FT.
 e = 3.40%
 Δ = 7° 43' 00.167" RT
 T = 154.568 FT.
 E = 5.206 FT.

DR CURVE 1
 DR 700+35
 R = 30.000 FT.
 D = 190° 59' 09.35"
 L = 13.183 FT.
 e = 0.00%
 Δ = 25° 10' 42.046" RT
 T = 6.700 FT.
 E = 0.739 FT.

ML CURVE 2
 ML 404+00
 R = 440.737 FT.
 D = 13° 00' 00.00"
 L = 315.257 FT.
 e = 5.40%
 Δ = 40° 59' 00.052" RT
 T = 164.712 FT.
 E = 29.772 FT.

SURVEY PLAN 2

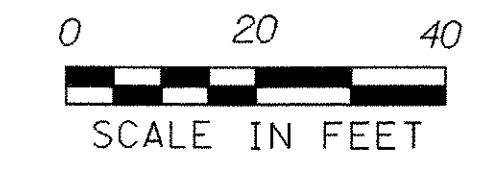
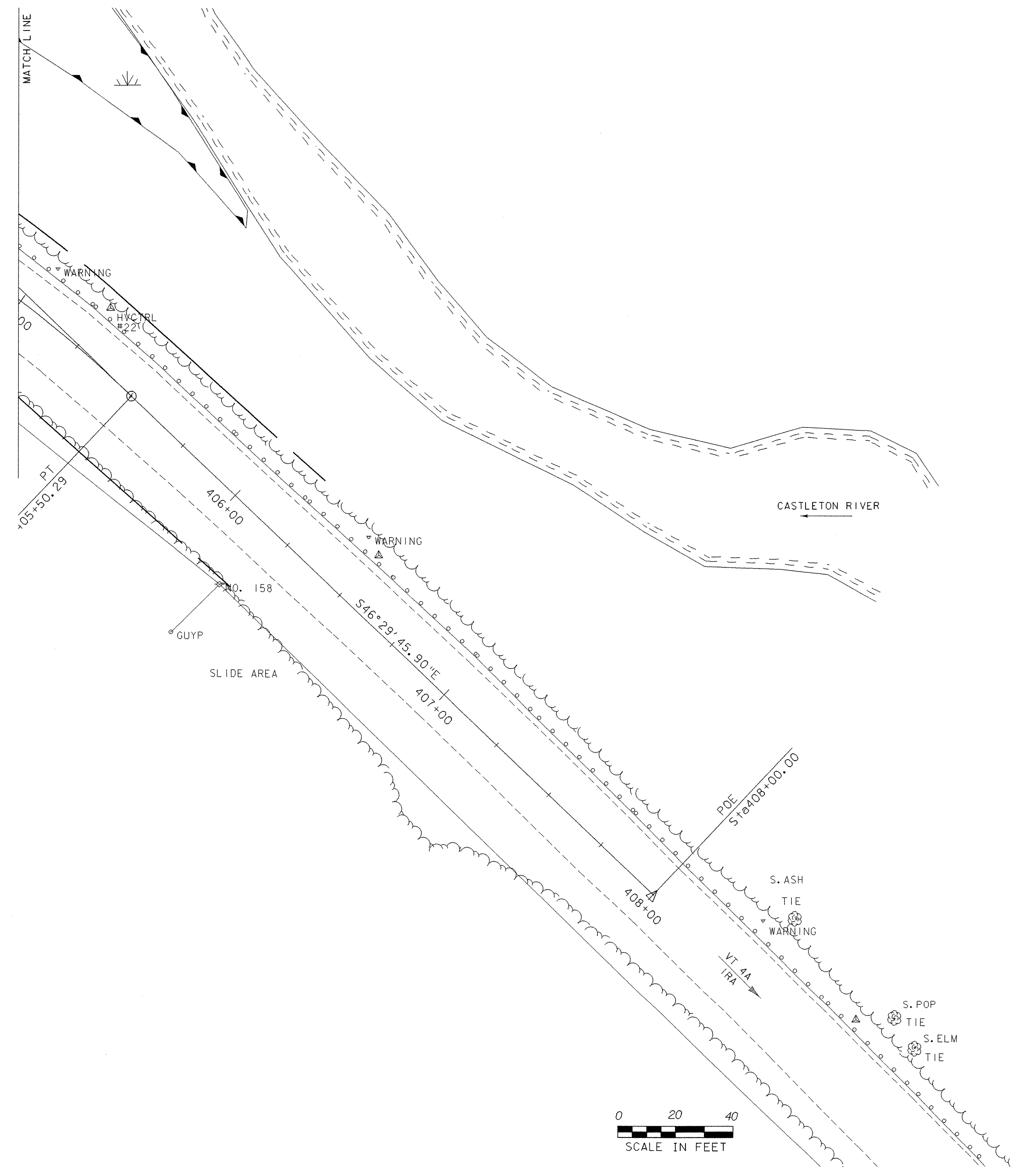
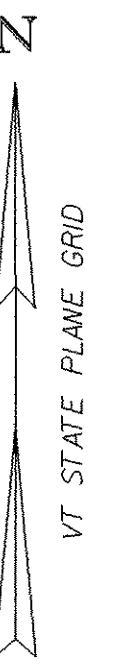
ALIGNMENTS



PROJECT NAME: CASTLETON
 PROJECT NUMBER: RS 0142(10)

FILE NAME: sf193su2.i
 PROJECT LEADER: R. WHITCOMB
 DESIGNED BY: T. LACKEY
 78f193/str/sf193sur.dgn

PLOT DATE: 09-FEB-2007
 DRAWN BY: T. LACKEY
 CHECKED BY: W. LAMMER
 SHEET 13 OF 68



SURVEY PLAN 3

PROJECT NAME: CASTLETON	
PROJECT NUMBER: RS 0142(10)	
FILE NAME: sfi93su4.i	PLOT DATE: 09-FEB-2007
PROJECT LEADER: R. WHITCOMB	DRAWN BY: T. LACKEY
DESIGNED BY: T. LACKEY	CHECKED BY: W. LAMMER
78f193/str/sfi93sur.dgn	SHEET 14 OF 68

GPS CONTROL POINTS

HVCTRL # 1

STANDARD DISK STAMPED
V 5

N = 406566.552
E = 1466919.769
ELEV. = 447.62

General Location, Castleton, VT access ownership, Greg Pratt, 358 Crampton Road, Castleton, VT 05735
To reach from the intersection of VT route 4A and VT route 30 at Castleton Corners go east along route 4A for 2.2 mi to the intersection of East Hubbardton Road left. Continue straight ahead and go east along route 4A for 0.15 mi to the intersection of Crampton Road left. Turn left and go northeast and east along Crampton road for 0.4 mi to the end of the road at the intersection of a paved drive left leading to house no. 358. Park vehicle and walk south for about 50 m to the Delaware and Hudson Railway at pole no. 452/8/9. Turn left and walk east along the railway for about 80 m to the intersection of an old road grade crossing and the site of the mark on the right. The mark is set in the top of a 20 cm square concrete monument which projects 8 cm above the ground surface. It is 5.7 m south of and about level with the south rail of the tracks, 5.9 m east of the centerline of the road, 11.9 m northeast of pole no. 160, 3.5 m north of the right-of-way fence, and 0.3 m south of a steel witness post.

HVCTRL # 2

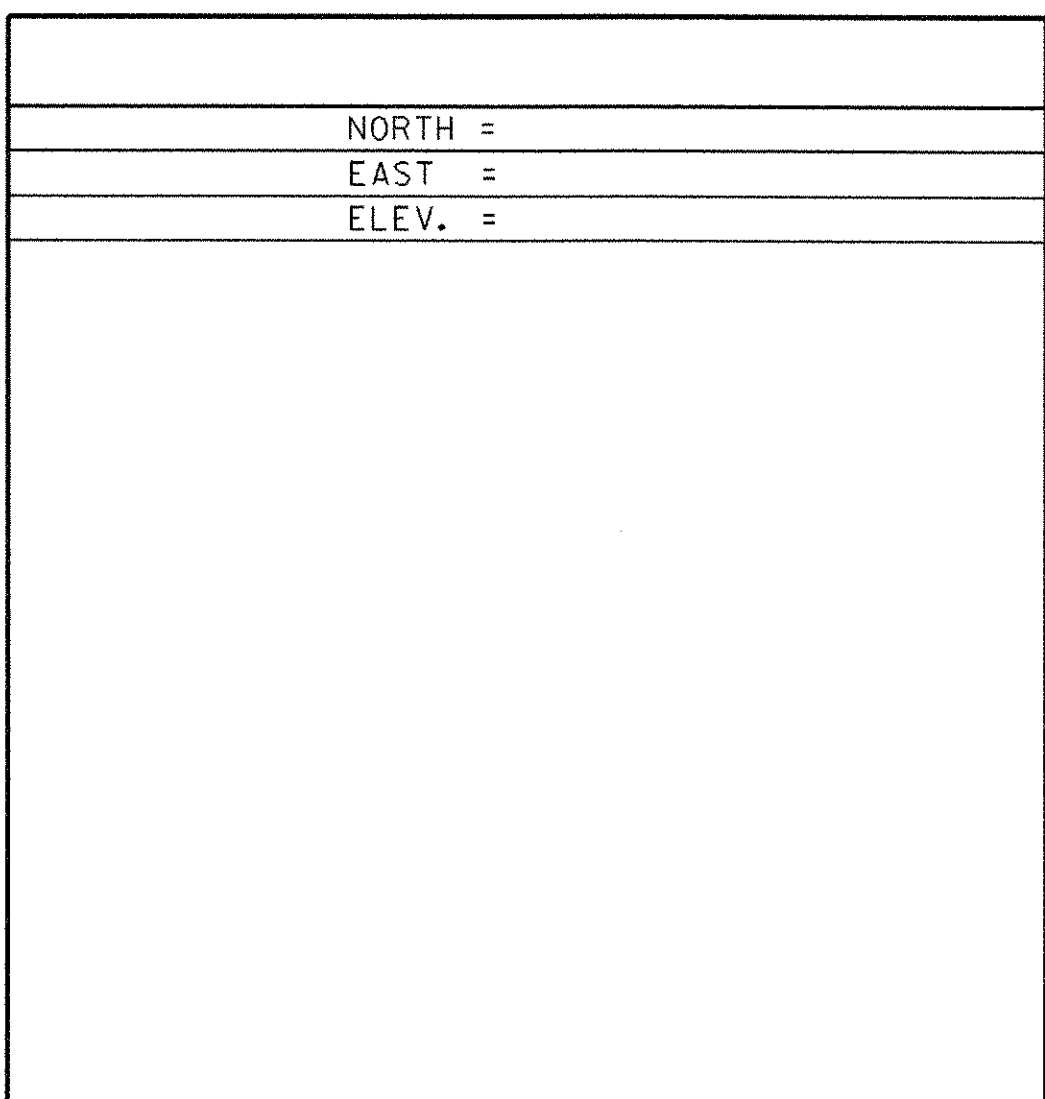
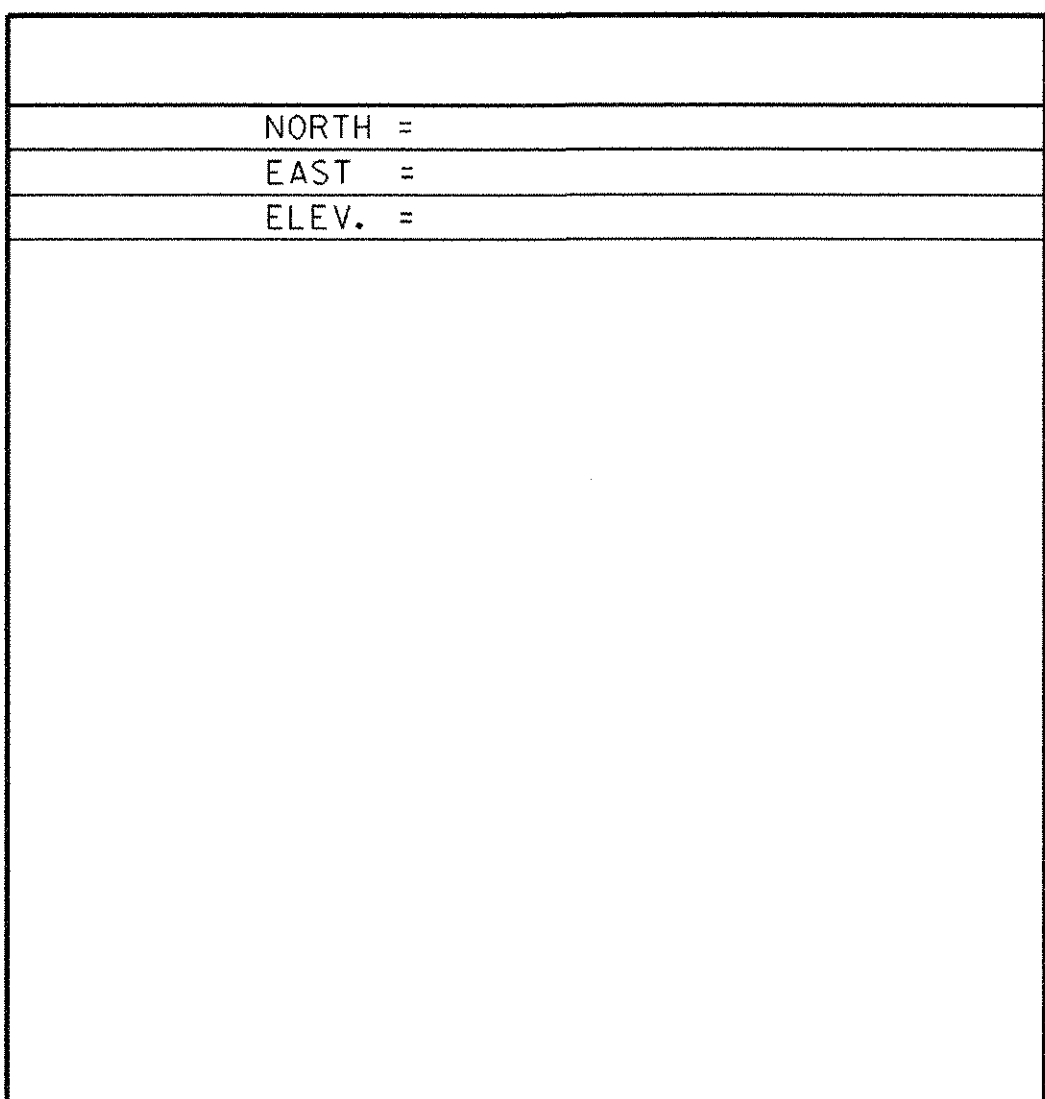
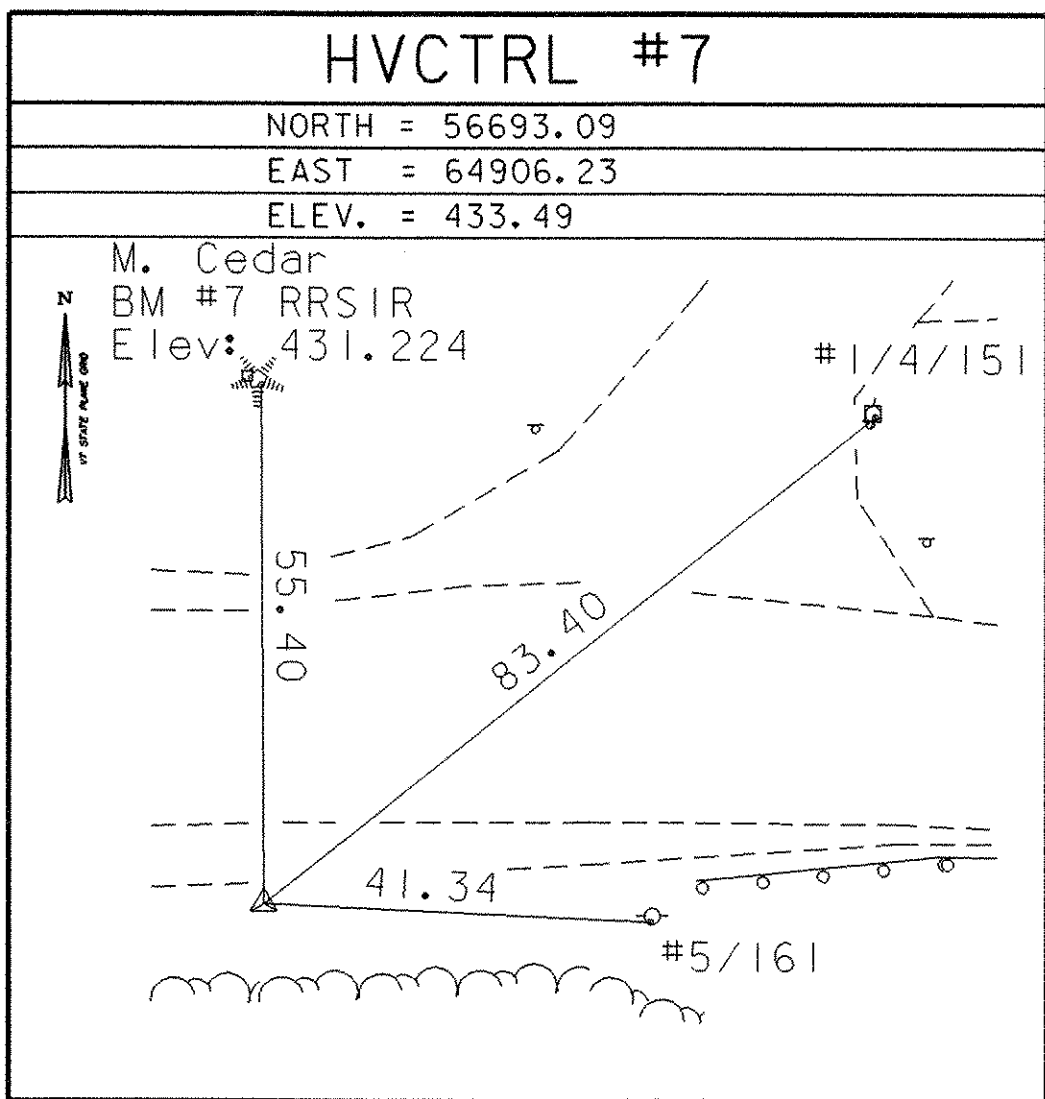
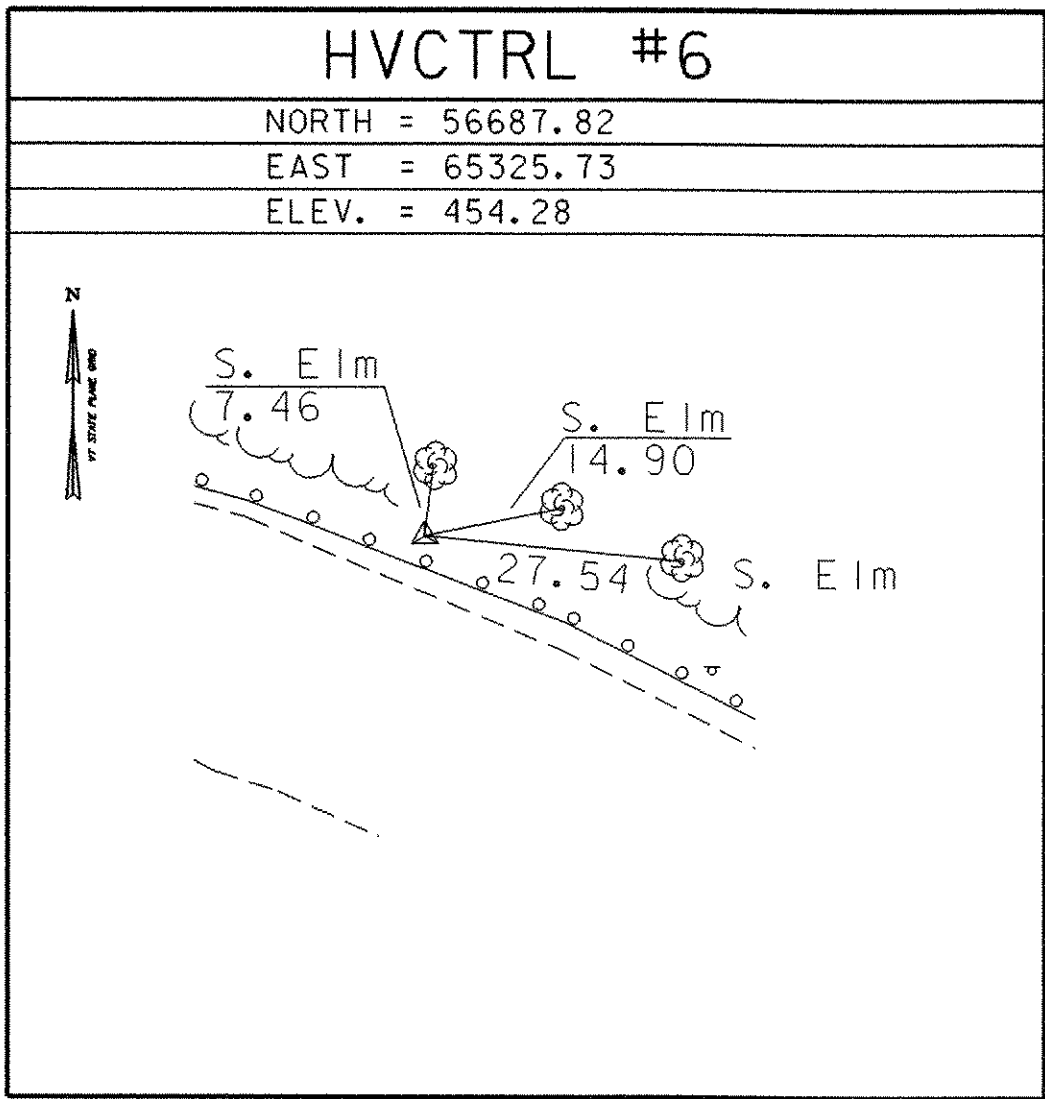
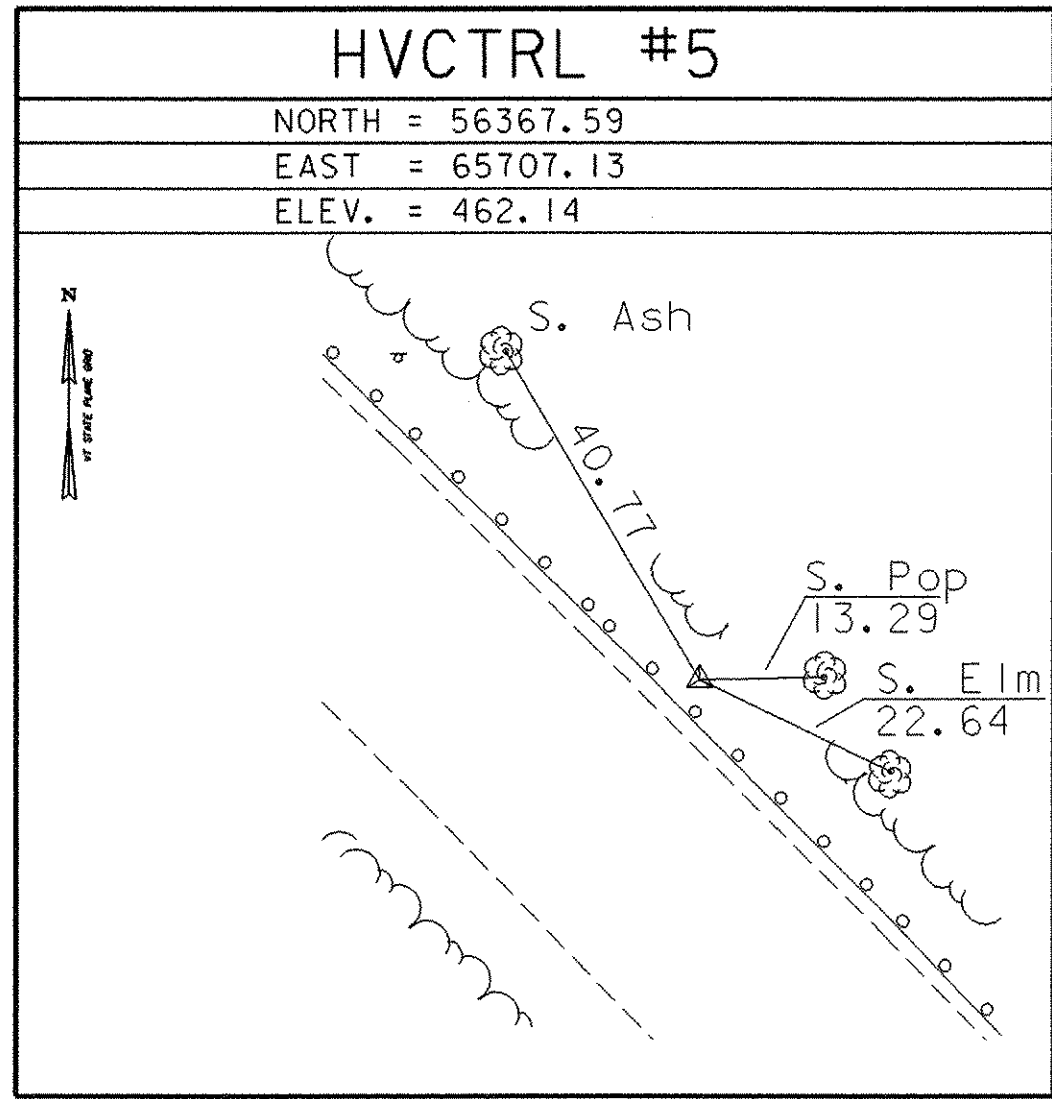
STANDARD DISK STAMPED
Crampton

N = 406950.324
E = 1465113.224
ELEV. = 435.637

General location, Castleton, VT.
To reach from the intersection of VT route 4A and VT route 30 at Castleton Corners go east along route 4A for 2.2 mi to the intersection of east Hubbardton Road left. Continue straight ahead and go east along route 4A for 0.15 mi to the intersection of Crampton Road left. Turn and go northeast along Crampton Road for 0.05 mi to the intersection of the Delaware and Hudson Railway and the site of the mark on the right. The mark is set 2 cm below ground surface in the top of a feno style monument. It is 3.9 m southeast of and about 0.1 m lower than the centerline of Crampton Road, 7.1 m northeast of the northeast rail of the tracks, 25.9 m east northeast of pole no. 45/1/2, 1.7 m north of a stop sign, 0.5 m northwest of a fiberglass witness post.
NOTE: Mark is intervisable with mark V5.

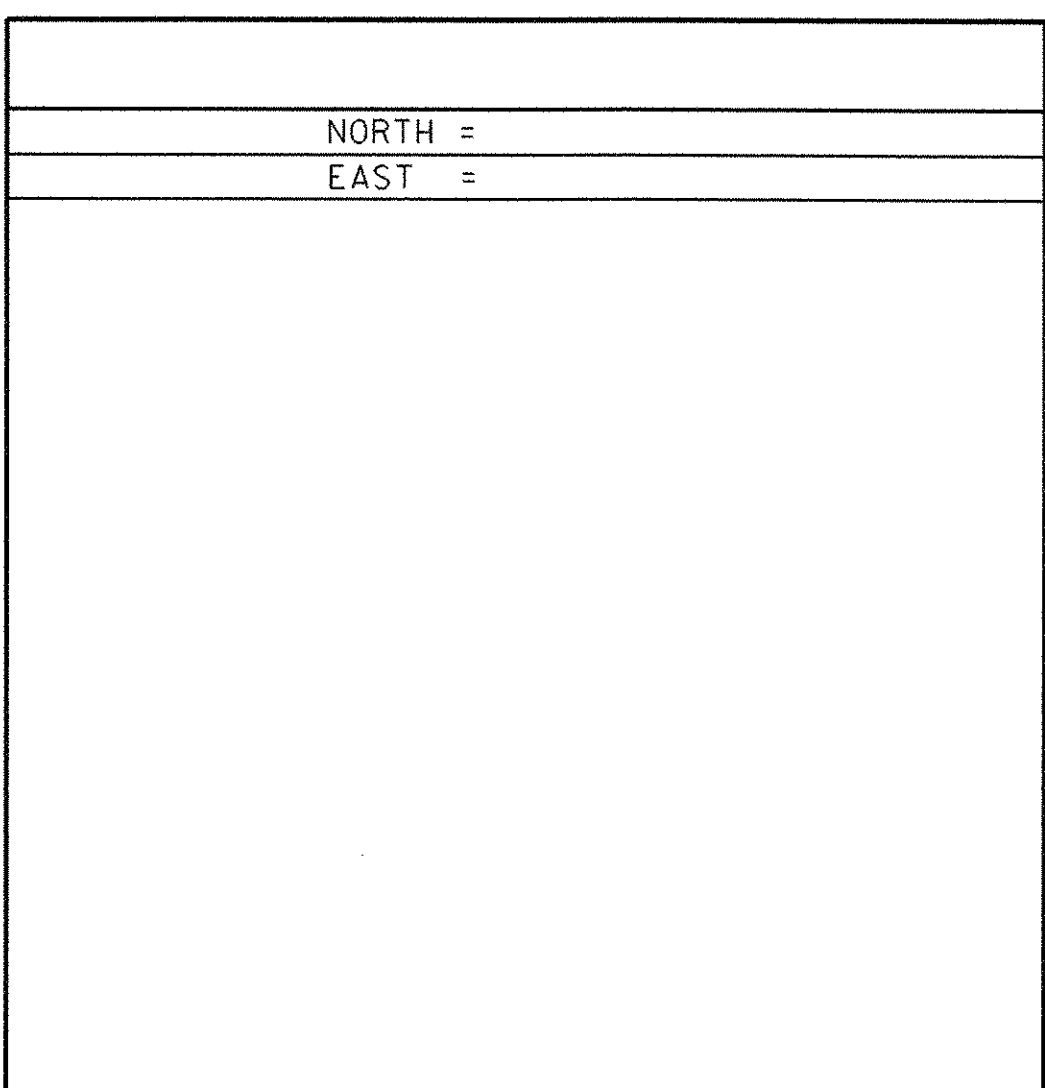
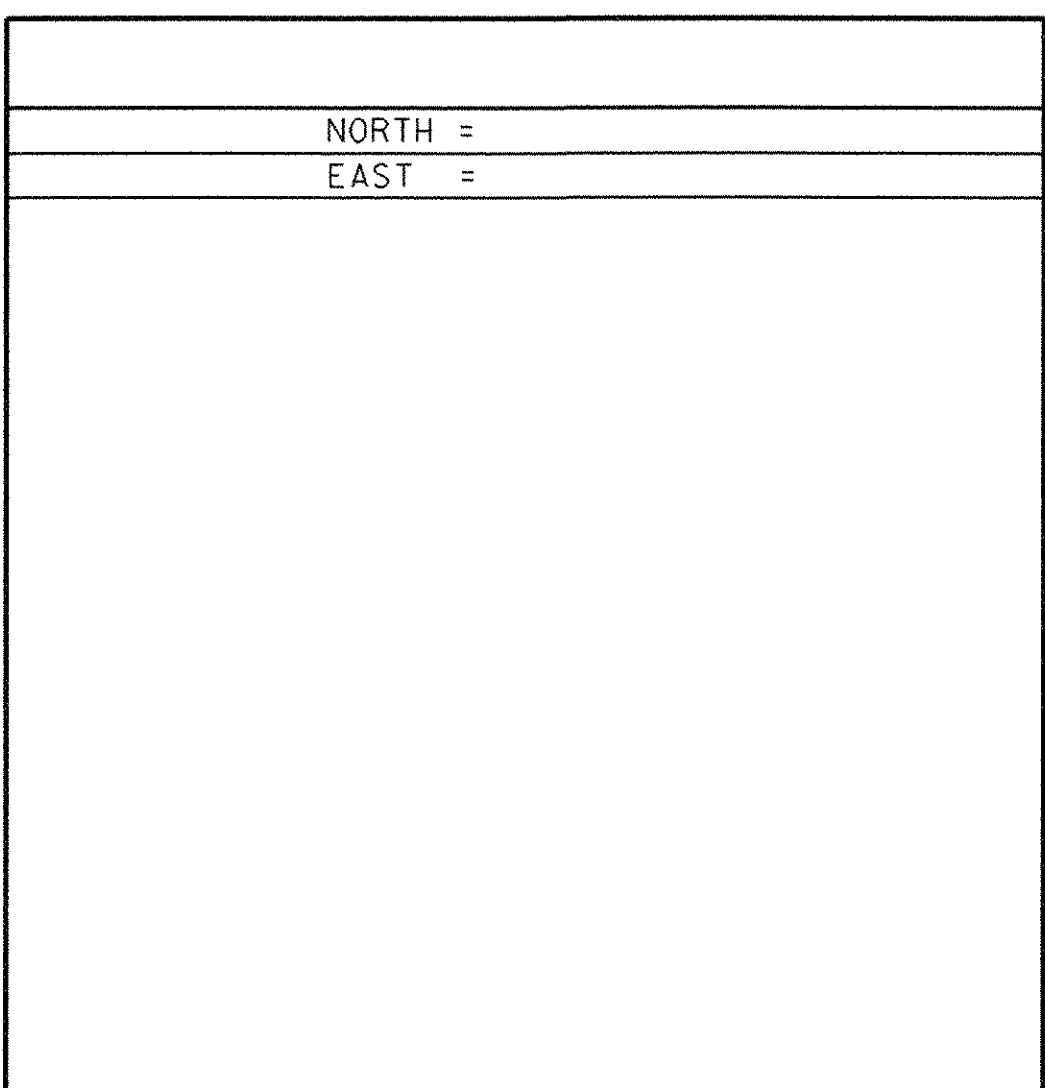
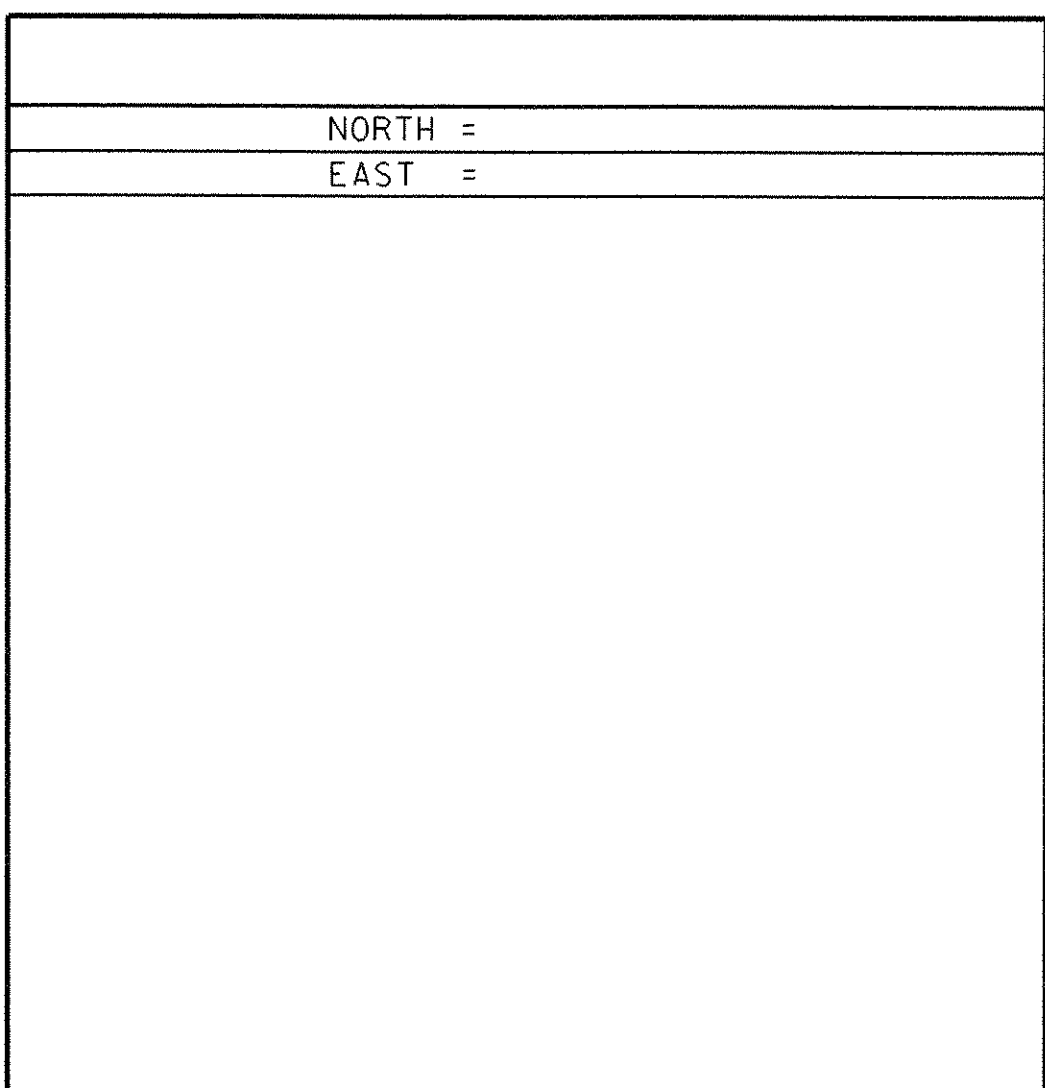
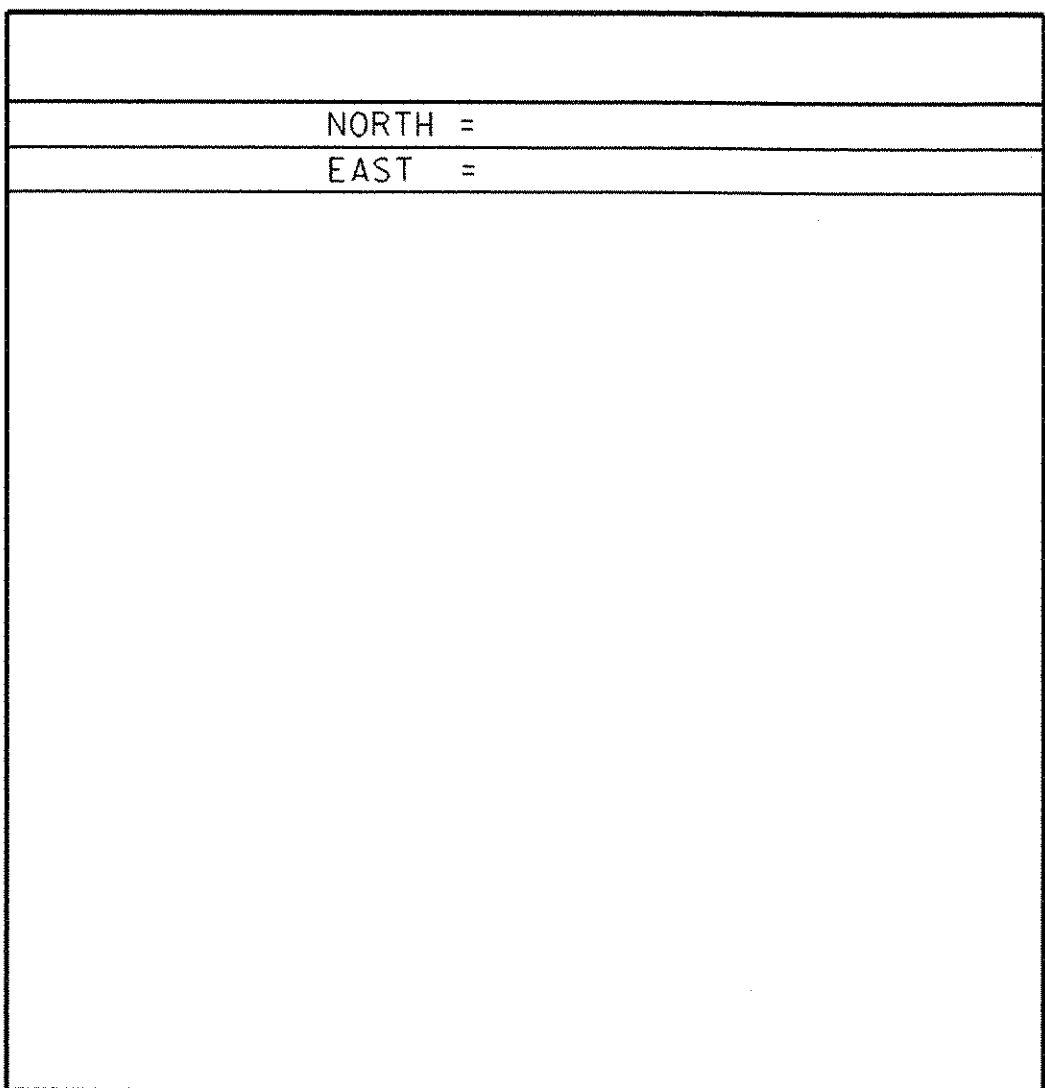
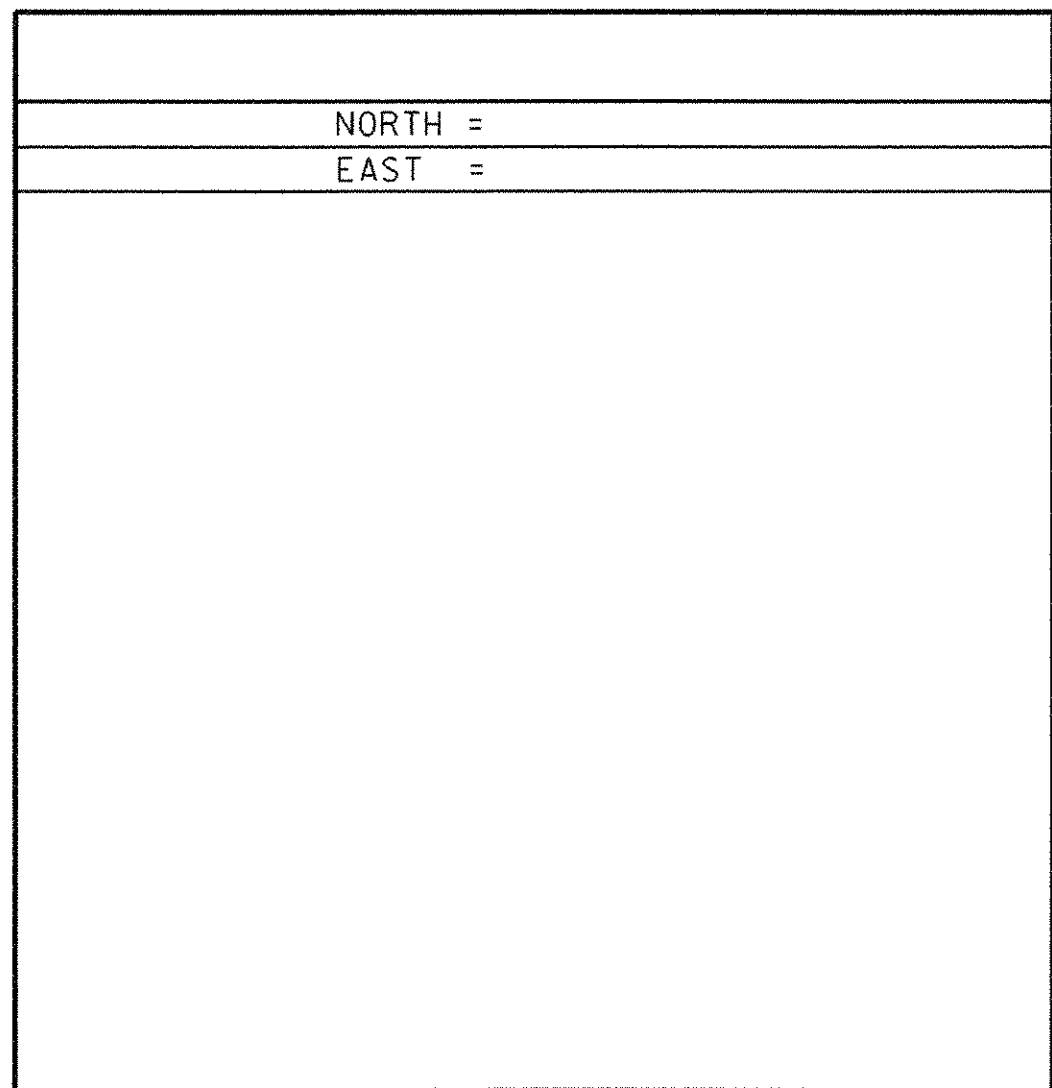
- DESCRIPTION PROVIDED BY VERMONT AGENCY OF TRANSPORTATION GEODETIC SURVEY UNIT
- TO ALLOW THE STATE PLANE COORDINATES TO FIT THE AGENCY DESIGN PLANE, SUBTRACT 350,000 FROM THE NORTHING AND SUBTRACT 1,400,000 FROM THE EASTING

TRAVERSE TIES



• MAIN TRAVERSE COMPLETED 07/23/02 by L. Orvis P.C. J. Hulett T. Wilson

ALIGNMENT TIES



• ALIGNMENT STAKED

DATUM	
VERTICAL	NAVD 88
HORIZONTAL	NAD 83 (96)
ADJUSTMENT	NONE

SURVEY
TIES

PROJECT NAME:	Castleton
PROJECT NUMBER:	RS0142 (10)
FILE NAME:	78f193/survey/xf193t1.dgn
PROJECT LEADER:	R. WHITCOMB
DESIGNED BY:	78f193/str/sf193su5.1
PLOT DATE:	09-FEB-2007
DRAWN BY:	R. Bullock
CHECKED BY:	
SHEET	15 OF 68

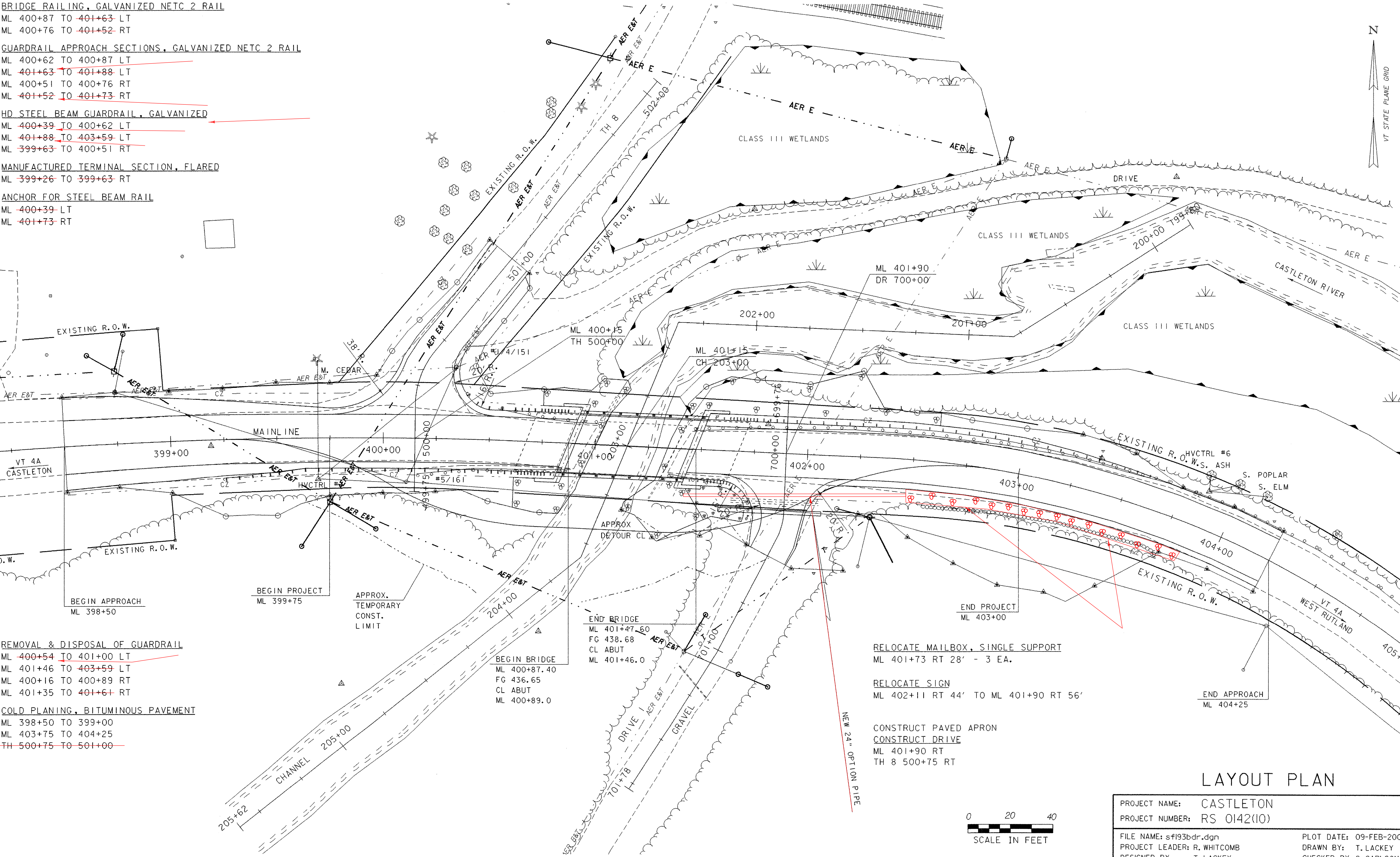
BRIDGE RAILING, GALVANIZED NETC 2 RAIL
ML 400+87 TO ~~401+63~~ LT
ML 400+76 TO ~~401+52~~ RT

GUARDRAIL APPROACH SECTIONS, GALVANIZED NETC 2 RAIL
ML 400+62 TO 400+87 LT
ML ~~401+63~~ TO 401+88 LT
ML 400+51 TO 400+76 RT
ML ~~401+52~~ TO 401+73 RT

HD STEEL BEAM GUARDRAIL, GALVANIZED
ML ~~400+39~~ TO 400+62 LT
ML 401+88 TO 403+59 LT
ML ~~399+63~~ TO 400+51 RT

MANUFACTURED TERMINAL SECTION, FLARED
ML ~~399+26~~ TO ~~399+63~~ RT

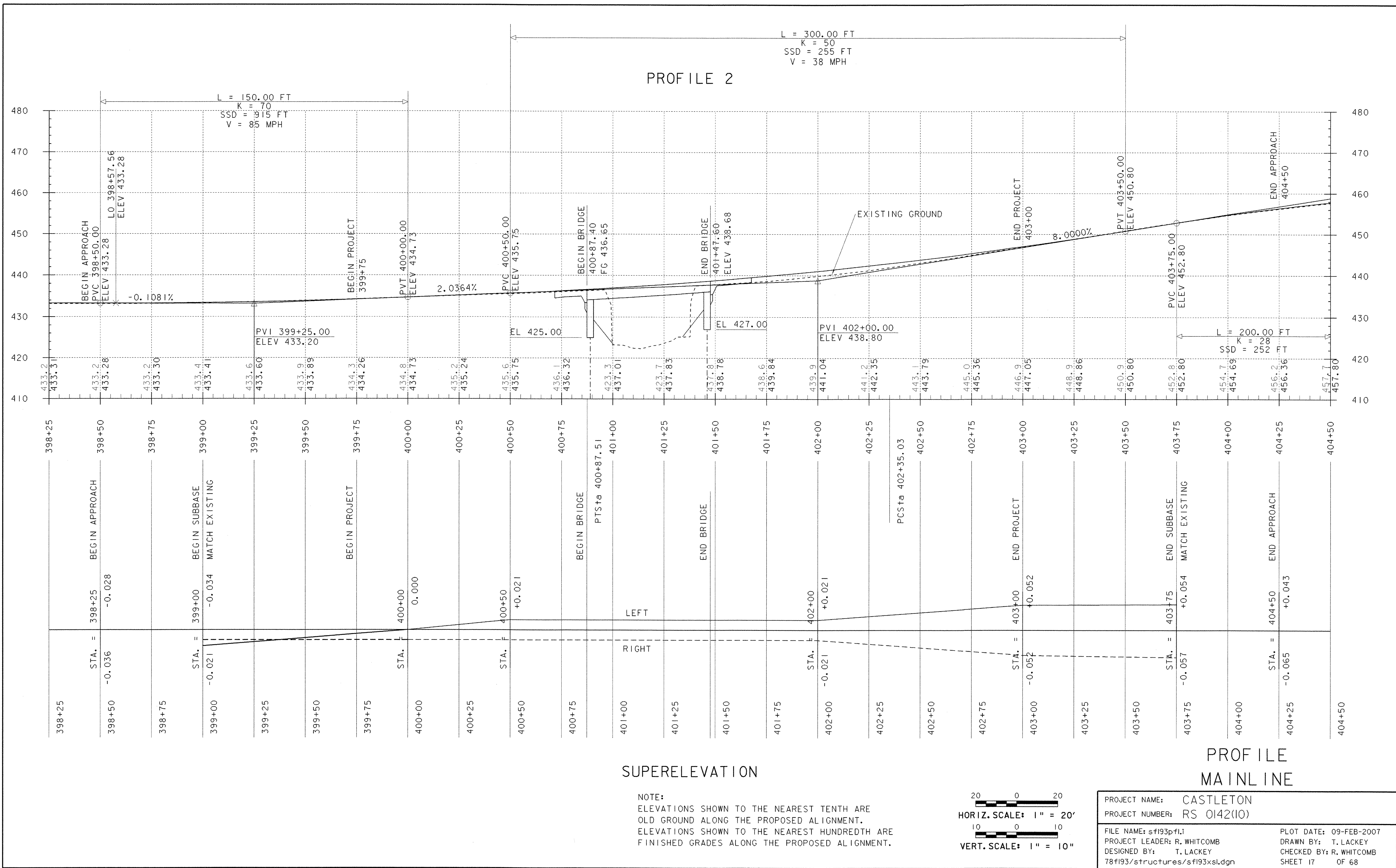
ANCHOR FOR STEEL BEAM RAIL
ML ~~400+39~~ LT
ML ~~401+73~~ RT



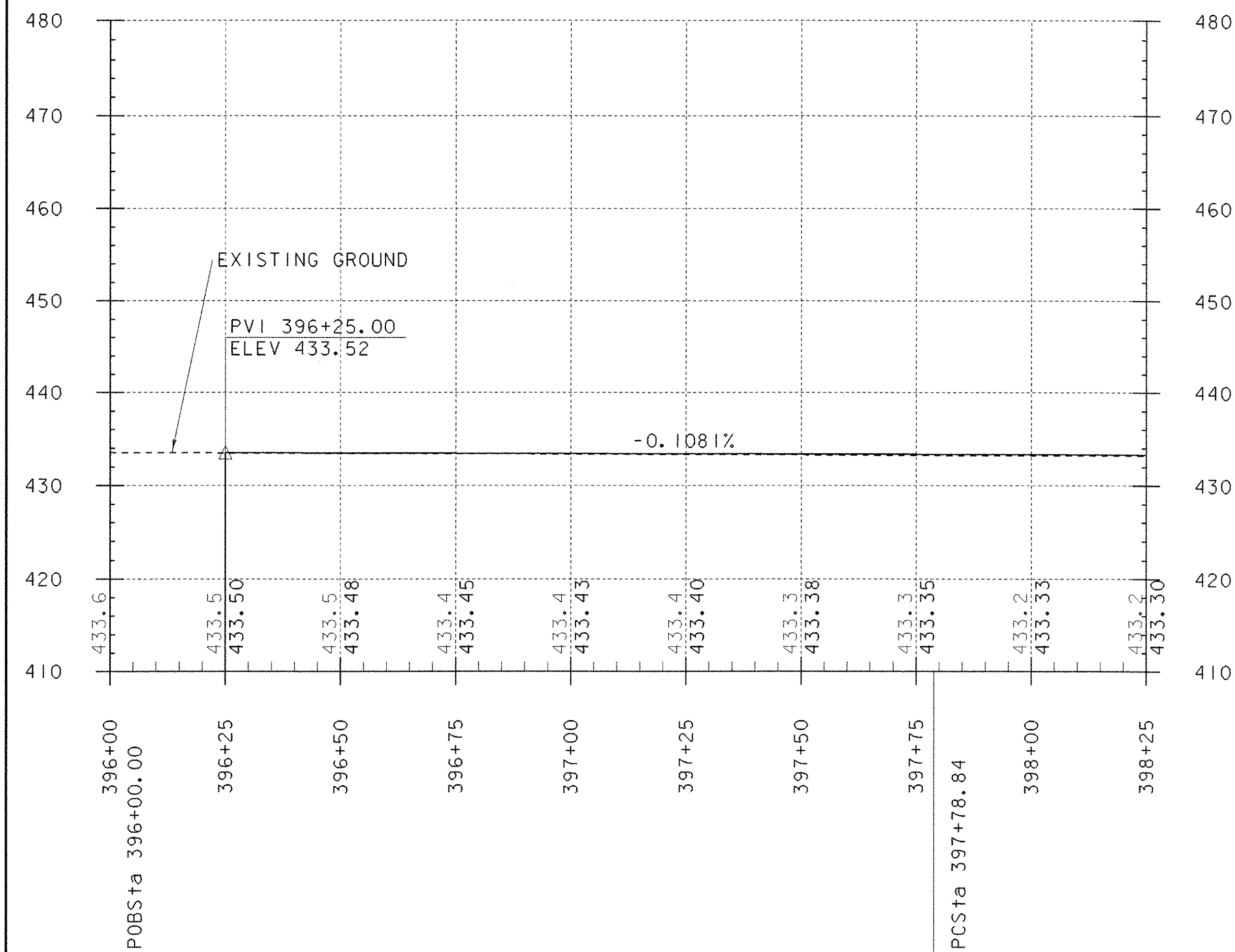
REMOVAL & DISPOSAL OF GUARDRAIL
ML ~~400+54~~ TO 401+00 LT
ML 401+46 TO 403+59 LT
ML 400+16 TO 400+89 RT
ML 401+35 TO ~~401+63~~ RT

COLD PLANING, BITUMINOUS PAVEMENT
ML 398+50 TO 399+00
ML 403+75 TO 404+25
TH 500+75 TO 501+00

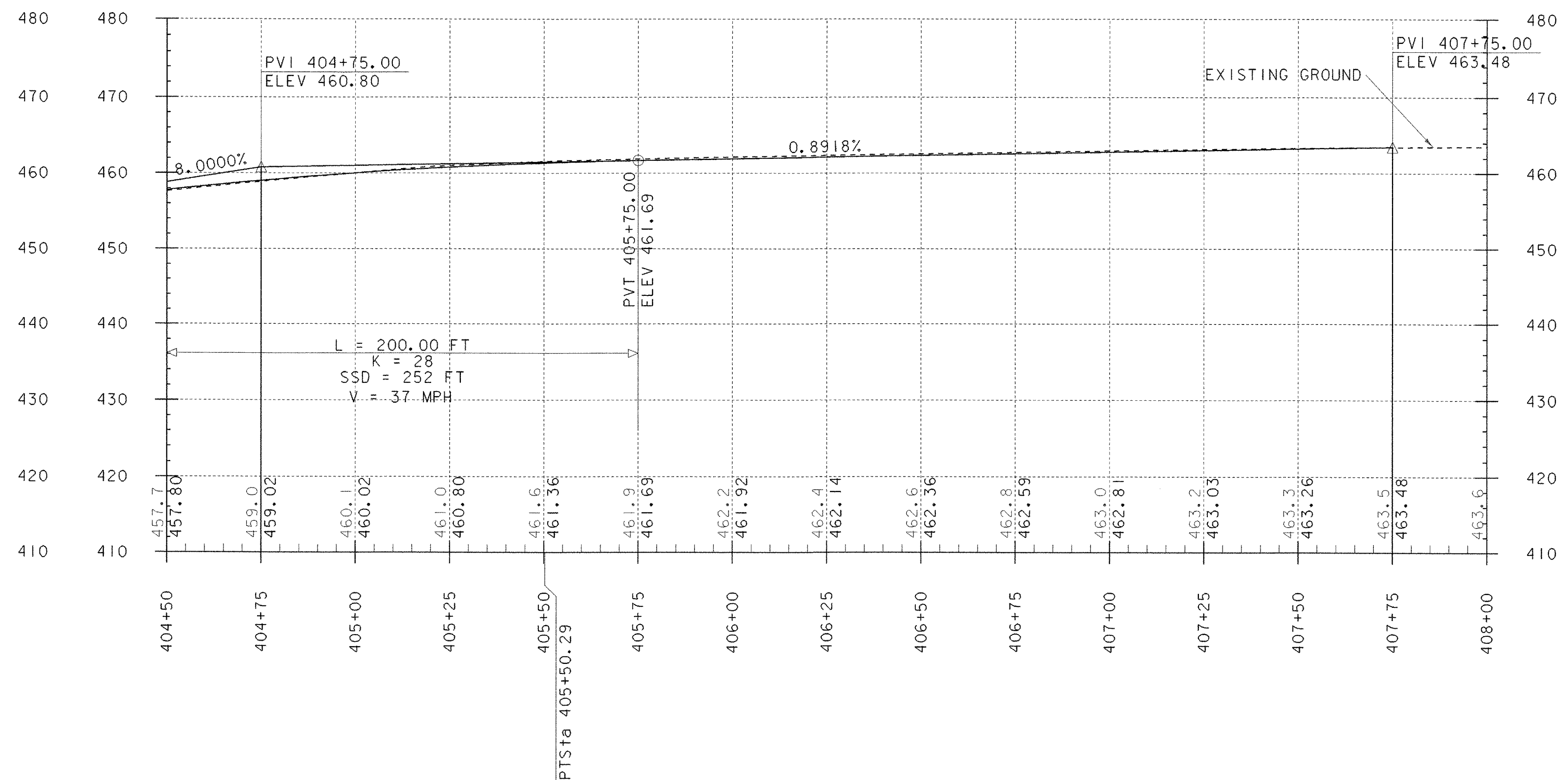
PROJECT NAME:	CASTLETON	PLOT DATE:	09-FEB-2007
PROJECT NUMBER:	RS 0142(10)	DRAWN BY:	T. LACKEY
FILE NAME:	sfi93bdr.dgn	CHECKED BY:	C. CARLSON
PROJECT LEADER:	R. WHITCOMB	SHEET 16	OF 68
DESIGNED BY:	T. LACKEY		
78f193/structures/sfi93p11			



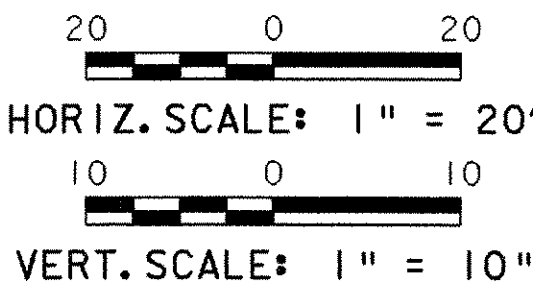
PROFILE 1



PROFILE 3

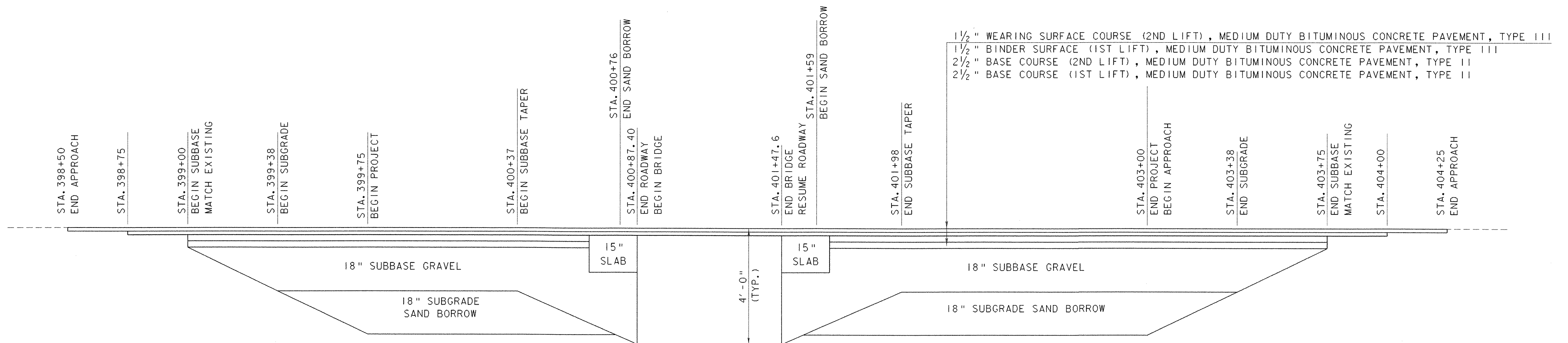


NOTE:
ELEVATIONS SHOWN TO THE NEAREST TENTH ARE
OLD GROUND ALONG THE PROPOSED ALIGNMENT.
ELEVATIONS SHOWN TO THE NEAREST HUNDREDTH ARE
FINISHED GRADES ALONG THE PROPOSED ALIGNMENT.



PROFILE
MAINLINE APPROACHES

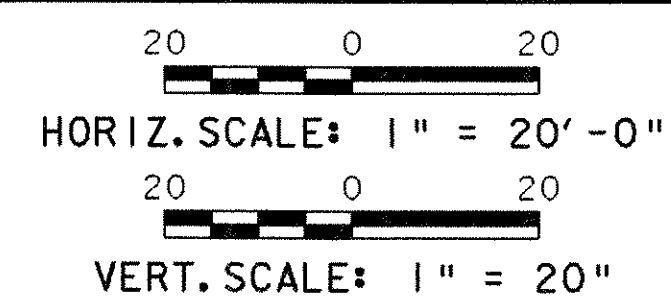
PROJECT NAME: CASTLETON	FILE NAME: sf193pf2.1	PLOT DATE: 09-FEB-2007
PROJECT NUMBER: RS 0142(10)	PROJECT LEADER: R. WHITCOMB	DRAWN BY: T. LACKEY
	DESIGNED BY: T. LACKEY	CHECKED BY: R. WHITCOMB
	78f193/structures/sf193xsl.dgn	SHEET 18 OF 68



NOTES:

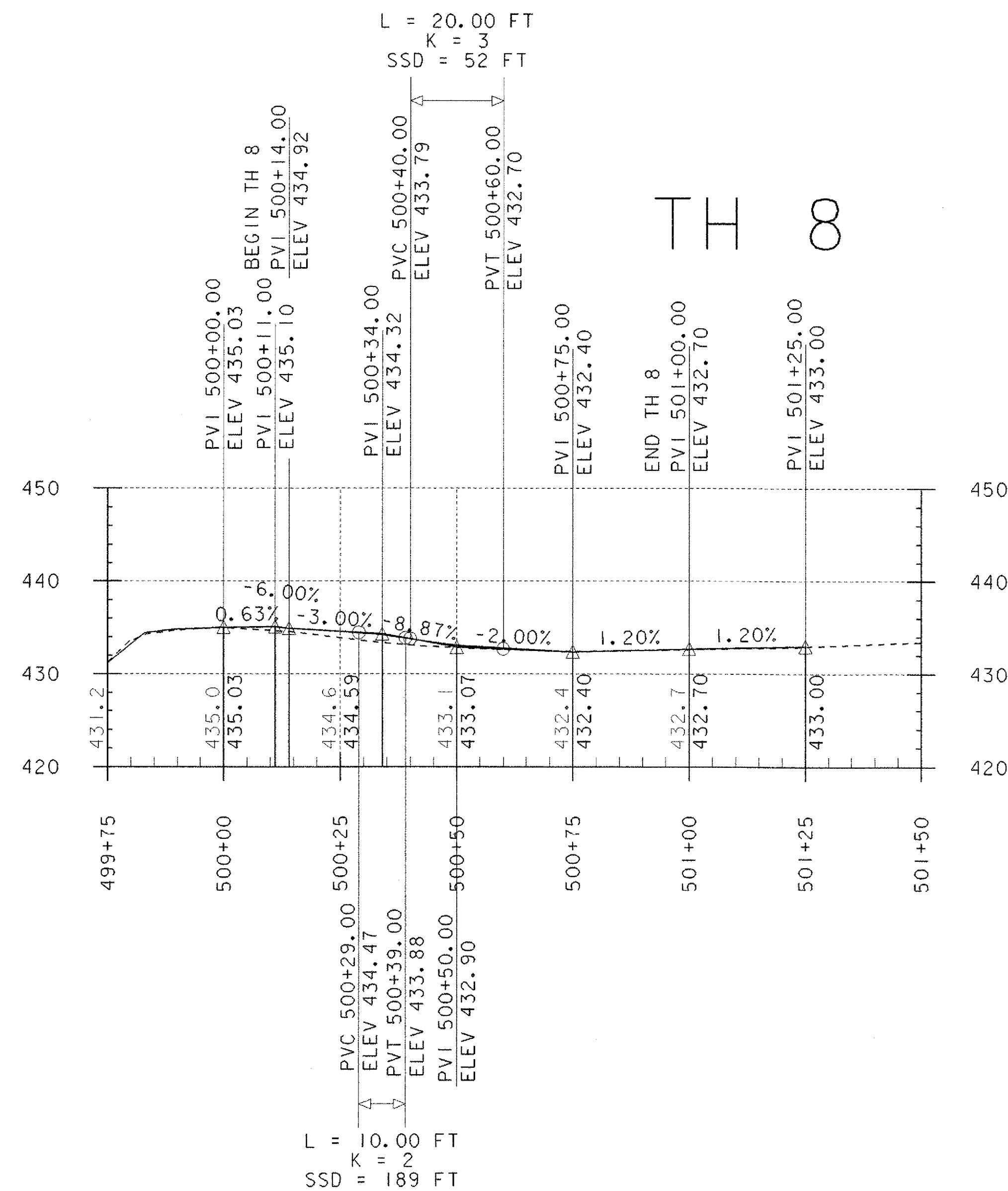
1. SEE SECTIONS TO DETERMINE CUT OR FILL.
2. SEE TYPICAL SECTIONS CHANNEL SHEET FOR ABUTMENT EARTHWORK DETAILS.

MATERIAL TRANSITION DETAIL

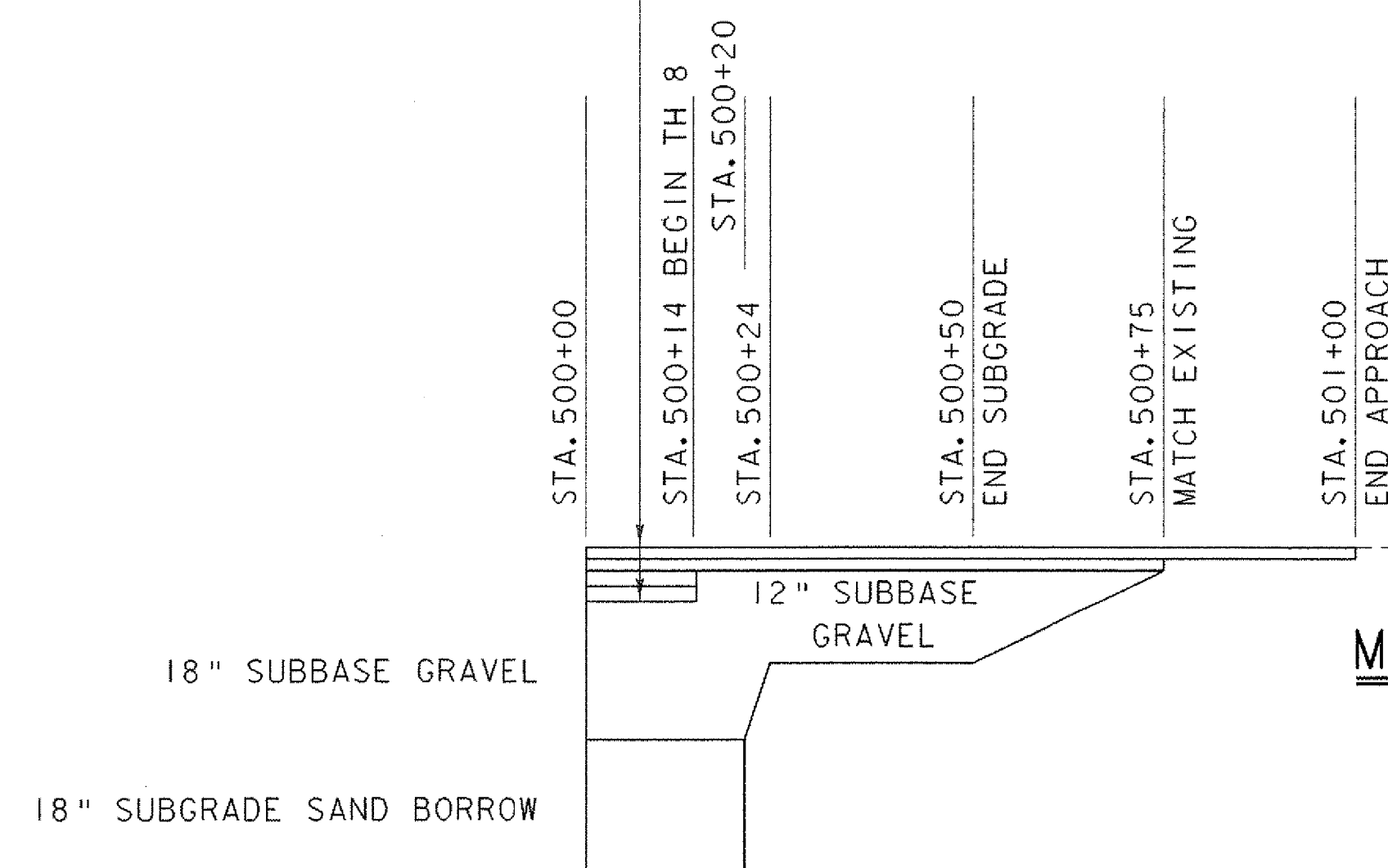


**PROFILE
MAINLINE
MATERIAL TRANSITION DETAIL**

PROJECT NAME: CASTLETON	
PROJECT NUMBER: RS 0142(10)	
FILE NAME: sf193pf3.1	PLOT DATE: 09-FEB-2007
PROJECT LEADER: R. WHITCOMB	DRAWN BY: T. LACKEY
DESIGNED BY: T. LACKEY	CHECKED BY: R. WHITCOMB
78f193/structures/sf193xsl.dgn	SHEET 19 OF 68

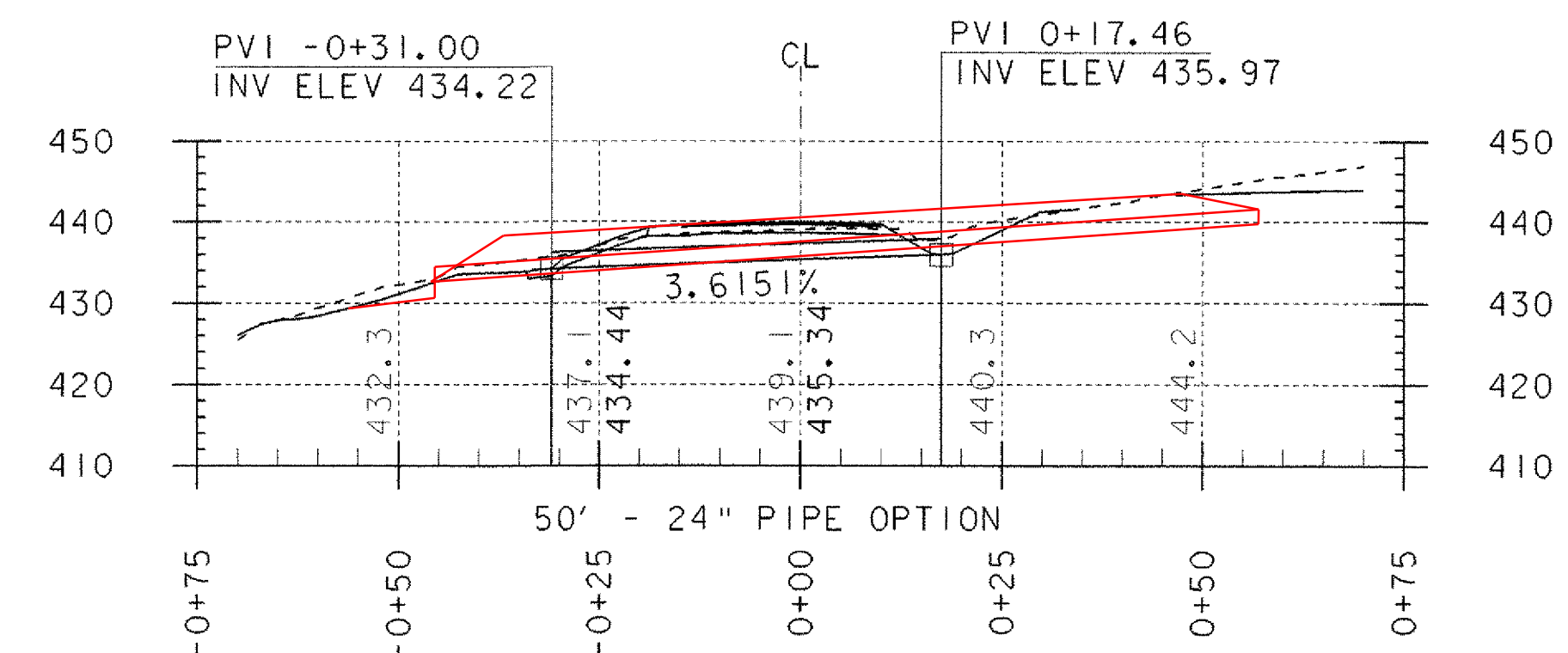
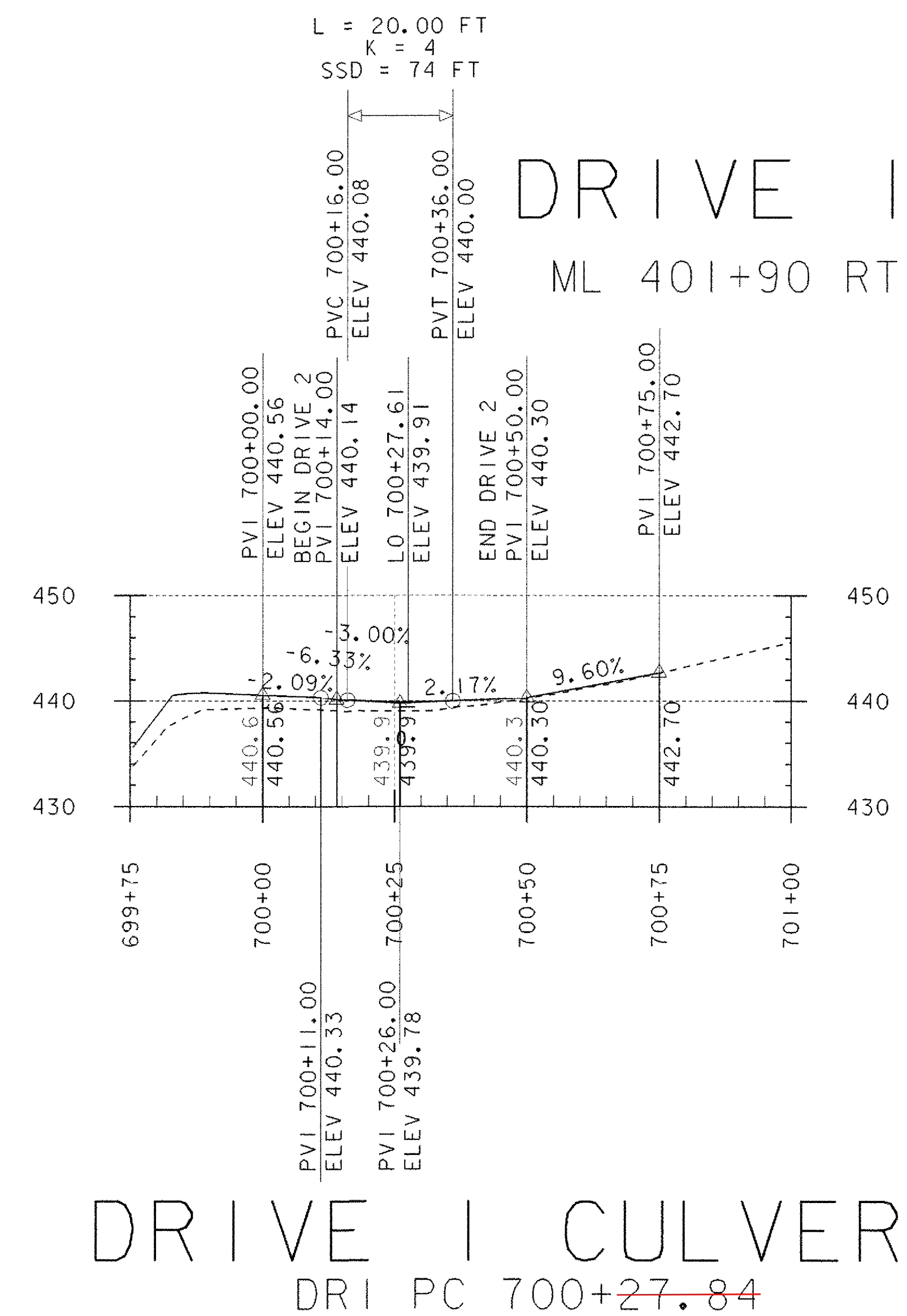


1 1/2" WEARING SURFACE COURSE (2ND LIFT) BCP TYPE III (TYP.)
 1 1/2" WEARING SURFACE COURSE (1ST LIFT) BCP TYPE III (TYP.)
 2" BASE COURSE (2ND LIFT) BCP TYPE I OR II (TYP.)
 2" BASE COURSE (1ST LIFT) BCP TYPE I OR II (TYP.)



MATERIAL TRANSITION DETAIL

20 0 20
 HORIZ. SCALE: 1" = 20'-0"
 20 0 20
 VERT. SCALE: 1" = 20"



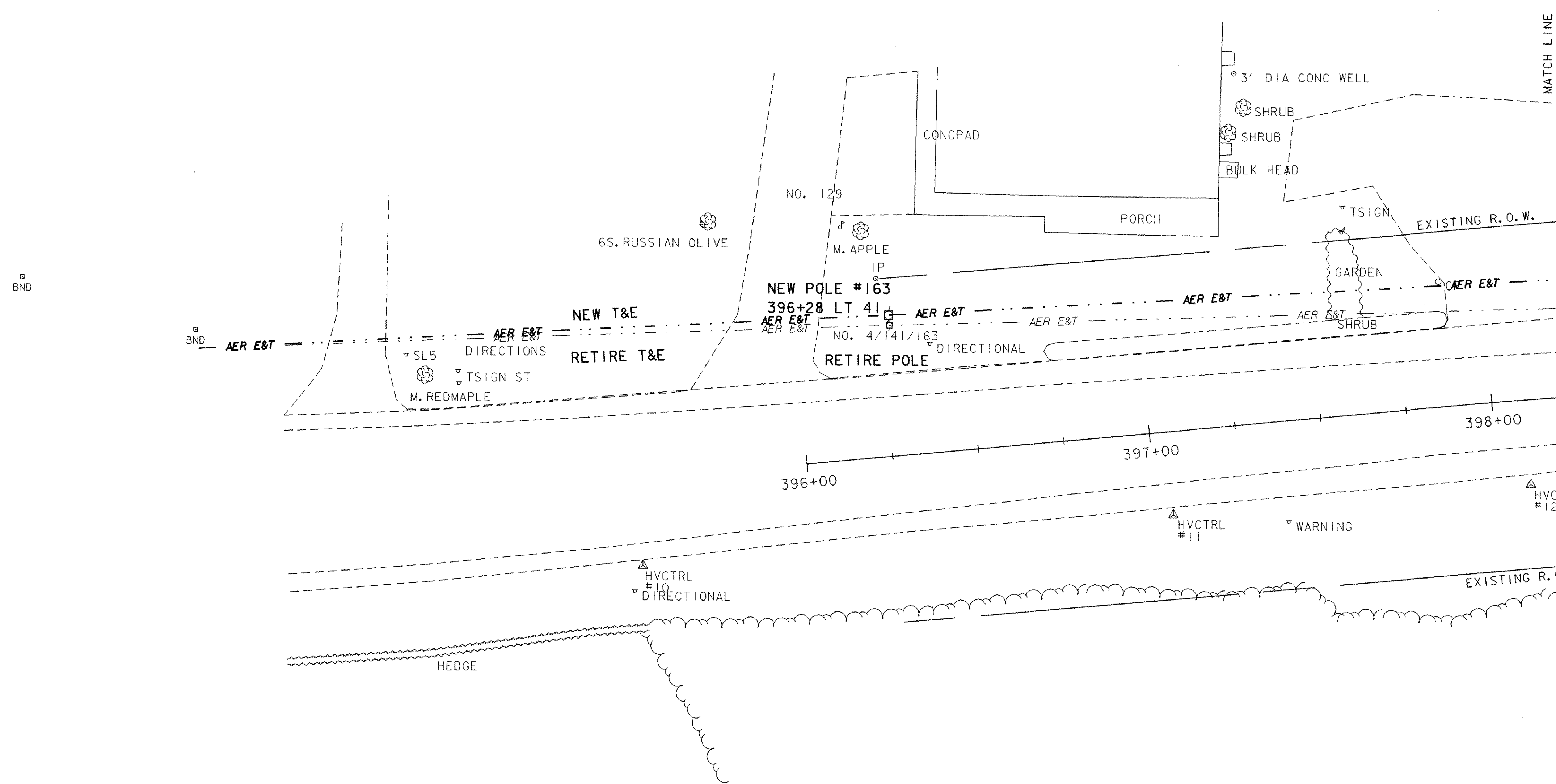
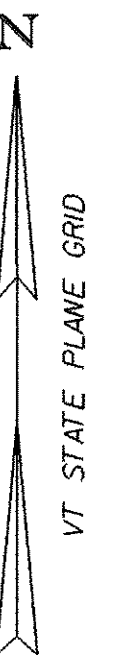
PROFILE TH 8 & DRIVE

NOTE:
 ELEVATIONS SHOWN TO THE NEAREST TENTH ARE
 OLD GROUND ALONG THE PROPOSED ALIGNMENT.
 ELEVATIONS SHOWN TO THE NEAREST HUNDREDTH ARE
 FINISHED GRADES ALONG THE PROPOSED ALIGNMENT.

PROJECT NAME: CASTLETON
 PROJECT NUMBER: RS 0142(10)

FILE NAME: sf193pf4.1
 PROJECT LEADER: R. WHITCOMB
 DESIGNED BY: T. LACKEY
 78f193/structures/sf193xsl.dgn

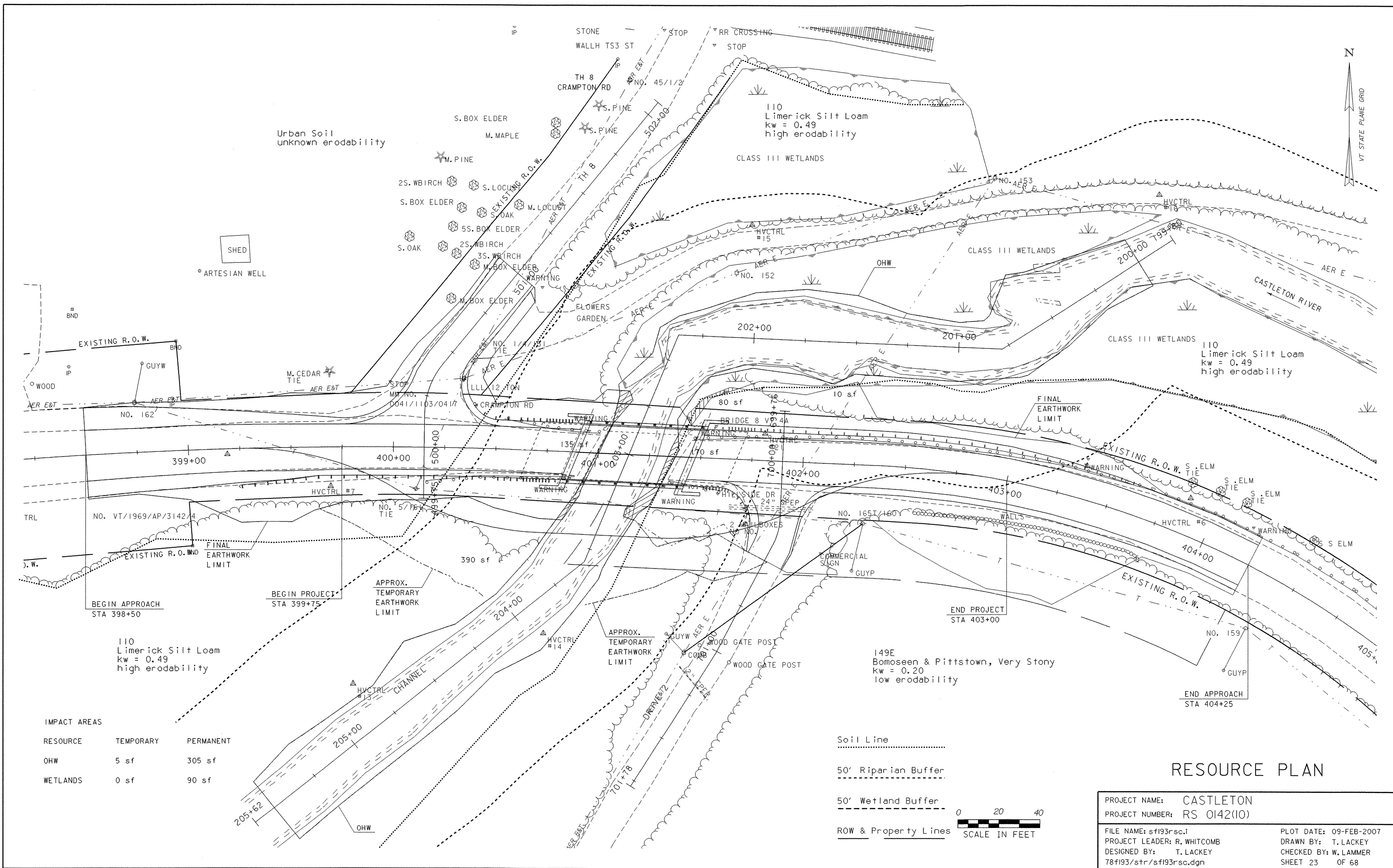
PLOT DATE: 09-FEB-2007
 DRAWN BY: T. LACKEY
 CHECKED BY: R. WHITCOMB
 SHEET 20 OF 68



UTILITIES PLAN I

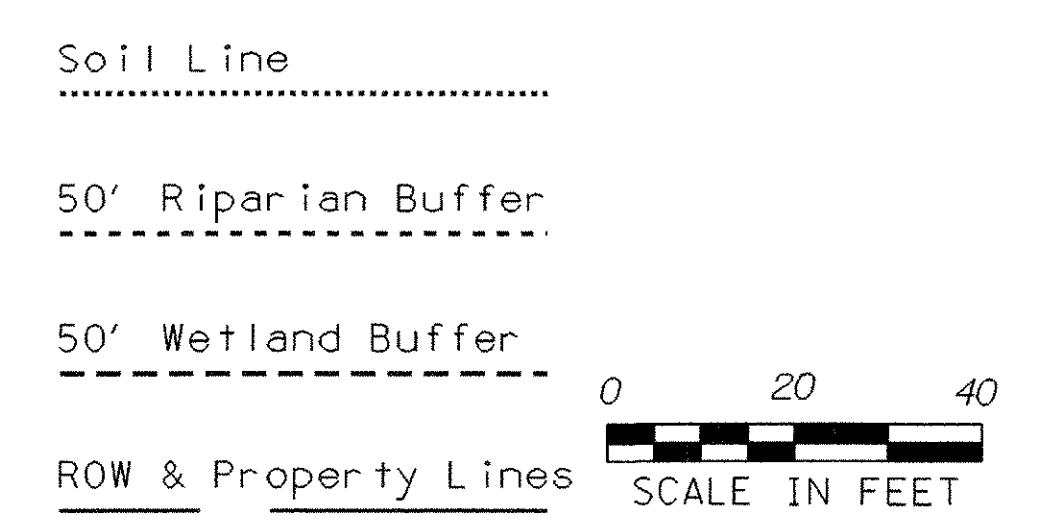
0 20 40
SCALE IN FEET

PROJECT NAME: CASTLETON	
PROJECT NUMBER: RS 0142(10)	
FILE NAME: sfi93uti.i	PLOT DATE: 09-FEB-2007
PROJECT LEADER: R. WHITCOMB	DRAWN BY: T. LACKY
DESIGNED BY: T. LACKY	CHECKED BY: T. GILMAN
78f193/str/sfi93uti.dgn	SHEET 21 OF 68



IMPACT AREAS

RESOURCE	TEMPORARY	PERMANENT
OHW	5 sf	305 sf
WETLANDS	0 sf	90 sf



RESOURCE PLAN

PROJECT NAME: CASTLETON	PLOT DATE: 09-FEB-2007
PROJECT NUMBER: RS 0142(10)	DRAWN BY: T. LACKEY
FILE NAME: sf193rsc.d	CHECKED BY: W. LAMMER
PROJECT LEADER: R. WHITCOMB	SHEET 23 OF 68
DESIGNED BY: T. LACKEY	
78f193/str/sf193rsc.dgn	

EROSION CONTROL NARRATIVE

EROSION PREVENTION & SEDIMENT CONTROL NARRATIVE

1. PROJECT DESCRIPTION

1.1. This project "Castleton RS 0142(10)" will replace Bridge 8 on VT 4A over the Castleton River in the Town of Castleton on existing alignment. It will reconstruct the nearby intersection with TH 8 (Crampton Road) east of the bridge. The new bridge will be a two lane, single span, voided concrete slab bridge. The project will maintain traffic on a temporary bridge downstream and south of the existing bridge during construction.

1.2. The total length of roadway work, including both approaches, drives and existing roadway is approximately 575 ft.

1.3. The total disturbed area (excluding waste, borrow and staging areas) is approx 0.9 ac. The temporary bridge will disturb approx 0.1 ac., work on the bridge and approaches will disturb approx. 0.8 ac. Should the area of disturbance changed from that proposed above and result in one or more acres of earth disturbance, or should the project become part of a common plan of development, then the contractor will be responsible for additional permitting with the Agency of Natural Resources.

1.4. This project should last one construction season. This Erosion Prevention and Sediment Control Plan is intended for use during the construction season. A separate winter plan shall be submitted for approval if work is to occur from Oct 15th to April 15th, or if vegetation has not been sufficiently established after the completion of construction and by Oct 15th.

2. SITE INVENTORY & ANALYSIS

2.1. Off Site Drainage Characteristics (Up And Down Gradient). The land in the project area is rolling former farmland. It consists of old fields and pasture growing in with brush, softwood and hardwood trees. The soil is "very deep, gently to very steep and excessively drained. The soils formed in gravelly, sandy, and loamy glacial deposits on stream terraces."

2.2. Drainage, Waterways, Bodies of Water. The bridges cross the Castleton River. The river is mostly flat and meandering in a river valley. The brook is typically 25 ft wide at the bottom and 35 ft wide at the top and 4 ft deep from top to bottom. The watershed area is 1200 ha.

2.3. Topography, Existing Roads, Buildings, Utilities.

2.3.1. Topography. The project site is a transition from a strip business area to an old winding road on a steep hillside.

2.3.2. Existing Roads. VT 4A is a Rural Collector State Highway. It parallels US 4, a principle arterial. TH 8 is a Class III paved town highway.

2.3.3. Buildings. A store is west of the bridge and outside the project area. TH 8 leads to a trailer park outside the project area. A driveway comes on to TH 8. Its home is out of sight of the project area. A second driveway intersects VT 4A on the SE side of the bridge. The home is out of sight of the project area too.

2.3.4. Utilities. Power and Utility poles run along the north side of VT 4A and TH 8 on the west side of the bridge. They run along the south side of VT 4A on the east side of the bridge.

2.4. Vegetation. The vegetation is lawns on the NW side, and riparian brush on the SW side of the bridge. The vegetation is large soft and hardwood on slopes of the NE side, and young softwood on the SE side of the bridge. Construction will replace some brush and trees. Stone Fill capped with grubbing material will stabilize slopes steeper than 66%. Seed & Mulch will stabilize slopes flatter than 66%.

2.5. Soils. The Soil Conservation Service "Soil Survey of Rutland County" identifies three soil types in the project site.

2.5.1. 110 Limerick Silt Loam. This soil is in the floodplain. It is very deep, poorly drained, and nearly level. It is frequently flooded for brief periods in late fall, winter and spring. The soil profile is typically: 0 to 7" brown silt loam; 7 to 60"+ gray silt loam. Its erodibility rating is High (kw = 0.49). The slope suggests low erodibility.

2.5.2. 149E Bomoseen & Pittstown Soils, 25 to 40% slopes. This soil is 40% Bomoseen, 40% Pittstown, and 20% other. Both soils are similar in use and management. This soil is on the steep hill on the east approach. It is moderately well drained and steep. It is shallow to moderately deep to dense basal till and very deep to bedrock. Flagstones are typically 5 to 25 ft apart. The soil profile is typically: 0 to 8" brown channery loam loam; 8 to 21" brown channery fine sandy loam; 21 to 60"+ olive channery silt loam. Its erodibility rating is low (kw = 0.20). The slope suggests high erodibility.

2.5.3. Urban Soils. This soil is in the northwest approach. The soil profile is probably similar to surrounding soils. Its erodibility rating is unknown. The slope is level and suggests low erodibility.

2.6. Sensitive Resource Areas.

2.6.1. The Castleton River runs through the project area. The project impacts it at the existing bridge and southern detour.

2.6.2. Class III Wetlands are in the riparian corridor upstream of the project impacts.

2.6.3. Trout are in the Castleton River. This part of the river is important trout habitat and has a high population of trout.

2.6.4. Non-Sensitive Resources
2.6.4.1. No Threatened & Endangered Species are present within the project area.
2.6.4.2. No Historic Features are located within the project area.
2.6.4.3. No Archaeologically Sensitive Areas are present within the project area.

2.7. Proximity to Natural or Man-Made Water Features.
2.7.1. Castleton River at the bridge.
2.7.2. Ditch on the SE side of the bridge.
2.7.3. Culvert at Drive 2 700+26.

3. GENERAL EROSION & SEDIMENT CONTROL GUIDELINES

3.1. The Erosion Prevention and Sediment Control Plans are guidelines for preventing erosion and controlling sediment transport throughout the life of the project. The purpose of the plan is to minimize soil loss and the pollution and sedimentation of receiving waters.

3.2. Coordinate the installation, use, and removal of erosion and sediment control measures with construction activities to ensure economical, effective and continuous erosion and sediment control. Employ temporary stabilization practices in incremental stages as construction proceeds. Plan construction sequence to minimize the area of erodible soil exposed at any one time. Within 48 hours of final grading, seed and mulch or use erosion control matting to stabilize the area. Use additional erosion control measures as necessary during the sequence of construction and as directed by the Engineer. See section 105.23 of the Vermont AOT Standard Specifications for Construction, dated 2006.

3.3. Maintain existing and planted vegetated buffers along stream banks, wetlands or other sensitive areas wherever possible.

3.4. Collect and route clean offsite runoff around or through the project site using diversion berms, diversion channels, culverts and/or temporary pipes. Control only sediment-laden runoff from the project site.

3.5. Install erosion and sediment control measures as shown in the Erosion Prevention and Sediment Control Plan or as directed by the Engineer. Do not modify the type, size or location of any control or practice without approval of the Engineer. Note any changes on the plans, in the weekly inspection report, and report them to the appropriate authority in a timely manner. Inspect all control measures weekly and after each rainfall event. Repair measures promptly once damage is discovered.

3.6. 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. Establish temporary vegetation if the disturbed area is to be without construction activity for a period of 14 days. Install perimeter control measures following clearing and before the start of any grubbing or grading activity. Install other temporary controls in incremental stages as construction proceeds.

3.7. Operate construction equipment only within perimeter control measures.

3.8. The contractor shall be responsible for ensuring that proposed waste and borrow areas meet the requirements of the General Permit, either separately under an existing plan, or as an addendum to this plan.

4. Sequence of Construction

4.1. Phase I (Establish Perimeter Controls)

4.1.1. Prior to any construction or staging, construct vehicle tracking pads for entrances to staging areas and the project site to prevent tracking of sediment offsite. Coarse stone over filter fabric should be used where an existing stable entrance does not exist. The stone used for pads shall be monitored for sediment accumulation and replaced as necessary. Vehicle tracking pads shall also be established and maintained at offsite waste or borrow areas. The minimum size of a pad shall be 12 x 50 ft.

4.1.2. Prior to any clearing, grubbing, and excavation, construct perimeter controls to ensure that disturbed sediment does not leave the site. Use diversion swales to divert offsite drainage through the project site, as necessary. Those portions of the diversion channels that run along natural streambeds shall not be lined with plastic.

4.2. Phase II (Intermediate Controls/Stabilization)

4.2.1. Apply intermediate controls (inlet protection and check dams) before rough grading and temporary pipe installation operations. Obtain the Engineer's approval before installing any controls not specified in the Erosion Prevention and Sediment Control Plan (this provision does not apply to emergency situations where the Engineer may not be immediately available). The Engineer may direct the installation of certain controls in order to forestall or mitigate potential or existing erosion problems or to respond to storm events or damage by construction operations. Clean erosion control measures (sediment traps, silt fences etc.) when 1/2 full of sediment.

4.2.2. Provide double silt fence around stockpiled excavated roadway material. Apply temporary mulch or temporary turf establishment to stockpiles remaining in place longer than 14 days or when directed by the Engineer.

4.2.3. Upon completion of temporary detour fill slopes, seed and mulch slopes to establish vegetation. Maintain silt fence at toe of slopes for added protection from sediment being transported to the Castleton River. See 'Seeding Formula for Rural Areas' on sheet 19.

4.3. Phase III (Final Controls/Stabilization)

After completion of bridge and/or roadway construction, do the following as directed by the Engineer:

4.3.1. Finish grading, riprap and apply permanent turf establishment to channels if required.

4.3.2. Where necessary, replace damaged matting and reapply permanent turf establishment to disturbed areas where vegetation has not taken.

4.3.3. Remove silt fence only after all upslope areas are stabilized and vegetation is well established.

4.3.4. Remove all perimeter silt fence and sediment traps only after toe-of-fill ditches have stabilized and vegetation is well established.

4.3.5. Remove all other perimeter controls when directed by the Engineer. Backfill, regrade and apply permanent turf establishment.

5. TEMPORARY EROSION PREVENTION & SEDIMENT CONTROL

5.1. Temporary Measures To Prevent Erosion include:

5.1.1. "Project Demarcation Fencing" will delineate the construction area for construction equipment. This measure limits the area that can be disturbed and exposed to erosion.

5.1.2. "Tracking & Mulching" will temporarily stabilize slopes. Use tracking for short term (two weeks) exposed slopes. Drive heavy equipment on the slopes to leave level tracks (small check dams) that will catch water flow. Stabilize slopes within 48 hours or sooner considering rain.

5.1.3. "Seeding & Mulching" will stabilize slopes ranging from 0% to 66%. Add biodegradable "Erosion Control Matting" (or equivalent) to slopes ranging from 33% to 66%. Use seeding for long term exposed slopes. Grass takes 2 weeks to establish itself. Stabilize slopes within 48 hours or sooner considering rain.

5.1.3.1. ML 398+50 to 404+25 left and right
5.1.3.2. TH8 500+25 to 501+00 left and right

5.1.4. "Stone Check Dams" placed in ditches will reduce flow velocities and prevent erosion. Place dams in ditches so that the elevation of the top of a check dam is level with the toe of the next upslope check dam. The check dams may be removed once the stone lining of the ditches is complete and the surrounding area stabilized.

5.1.4.1. ML 401+50 to 404+25 right

5.2. Temporary Measures To Control Sediment Transport include:

5.2.1. "Silt Fence" placed level on slopes will control sheet flow sediment transport. Place level silt fence 6 to 10 ft from the toe of slopes. Turn the ends of silt fence slightly uphill to stop concentrated water from flowing around the ends. The maximum slope length between separate runs of silt fence is 100 ft. Place silt fence before beginning upslope earthwork.

5.2.2. "Sand Bags" placed around culvert inlets will control concentrated flow sediment transport. The bags create a temporary puddle for particles to settle out as water drains through the barrier. Install inlet protection before water flows through the structure. Fill the bags with clean, small diameter stone. Limit the height of the barrier so it is not an accident hazard. Get the Engineer's approval before using alternative inlet control measures.

5.2.3. "Vehicle Tracking Pads" will control tracking of sediment transport on to public roads. The pad is made of stabilized crushed stone located wherever construction vehicles leave construction areas. The sites include: the project site; staging areas; and waste and borrow areas. The minimum area is 12 x 50 ft. Pipe all surface water flowing to or diverted towards a construction entrance under the stone. Size pipes for their watersheds. The minimum pipe diameter is 6 inches.

5.3. Check measures (e.g. stone check dams, silt fence, and sand bags) regularly for accumulation of sediment. Remove sediment build-up when the level of sediment reaches one-half the height of the control measure. Dispose of sediments in an approved area where they will not be subject to erosion.

5.4. Hay Bales are unacceptable alternatives to silt fences, sand bags, or check dams.

6. FINAL EROSION CONTROL MEASURES

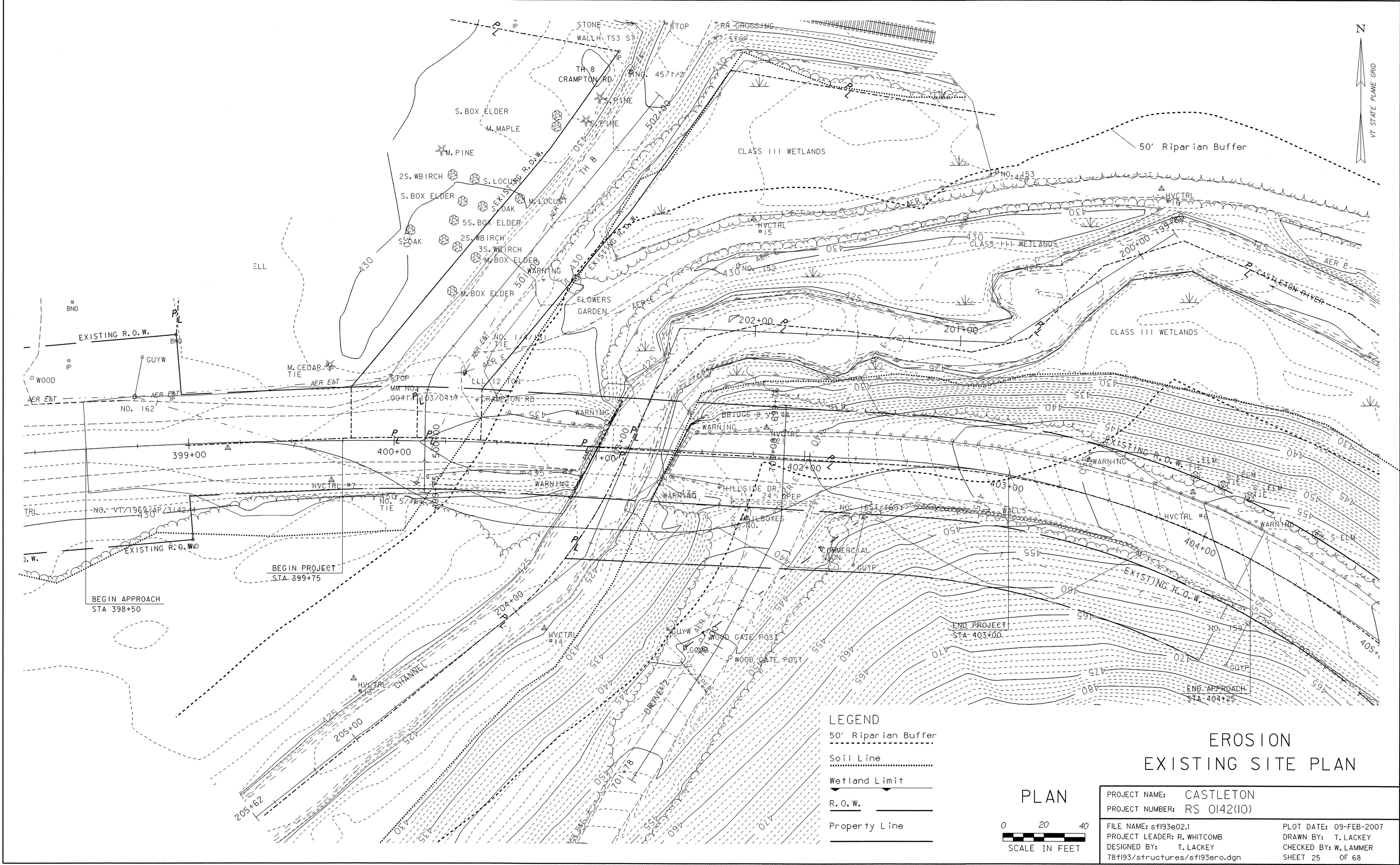
6.1. Roadway Typical Section

6.1.1. "Bituminous Concrete Pavement" on the road surface will prevent erosion.
6.1.2. "Gravel or Crushed Stone Subbase" beneath the surface will prevent erosion.
6.1.3. "Sand" beneath the subbase will prevent erosion.
6.1.4. "Seeding & Mulching" will establish vegetation on side slopes less than 66% that will prevent erosion and control sediment transport. Add biodegradable "Erosion Control Matting" (or equivalent) to slopes ranging from 33% to 66%.
6.1.5. Roadway Ditches beside the road will control concentrated flows and prevent erosion.
6.1.5.1. "Stone Fill, Type I" in roadway ditches will prevent erosion and control sediment transport.
6.1.5.2. "Culverts" will convey concentrated flow under roads and prevent erosion.
6.1.6. "Stone Fill, Type I" at culvert outlets will dissipate water velocities and prevent erosion and control sediment transport.

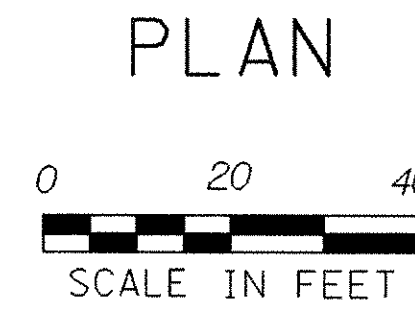
6.2. Channel Typical Section

6.2.1. "Stone Fill, Type I" at the ends of the wing walls will prevent erosion and control sediment transport.
6.2.2. "Stone Fill, Type III" around the abutments on slopes greater than 66% will prevent erosion and control sediment transport.
6.2.3. "Geotextile under Stone Fill" will prevent erosion and control sediment transport.

PROJECT NAME:	Castleton		
PROJECT NUMBER:	RS 0142(10)		
FILE NAME:	sff193ero.dgn	sff193ecn.xls	PLOT DATE: 2/1/2007
PROJECT LEADER:	R. WHITCOMB		DRAWN BY: T. LACKEY
DESIGNED BY:	T. LACKEY		CHECKED BY: W. LAMMER
EROSION CONTROL NARRATIVE			SHEET 24 OF 68



- LEGEND**
- 50' Riparian Buffer
 - Soil Line
 - Wetland Limit
 - R.O.W.
 - Property Line



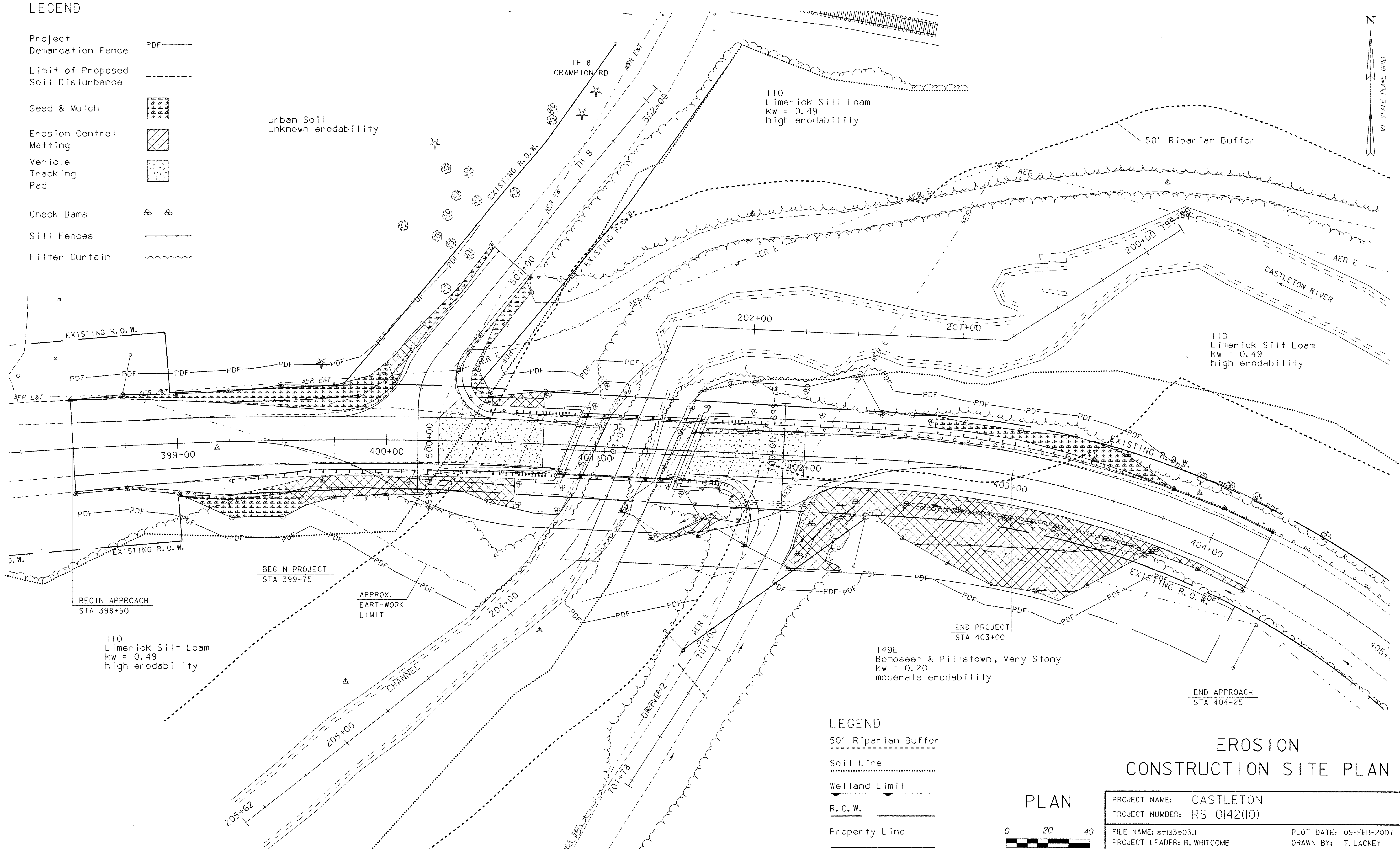
EROSION EXISTING SITE PLAN

PROJECT NAME: CASTLETON	
PROJECT NUMBER: RS 0142(10)	
FILE NAME: sf193e02.i	PLOT DATE: 09-FEB-2007
PROJECT LEADER: R. WHITCOMB	DRAWN BY: T. LACKEY
DESIGNED BY: T. LACKEY	CHECKED BY: W. LAMMER
78f193/structures/sf193ero.dgn	SHEET 25 OF 68

LEGEND

- Project Demarcation Fence PDF
- Limit of Proposed Soil Disturbance
- Seed & Mulch
- Erosion Control Matting
- Vehicle Tracking Pad
- Check Dams
- Silt Fences
- Filter Curtain

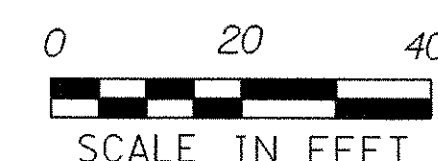
Urban Soil
unknown erodability



LEGEND

- 50' Riparian Buffer
- Soil Line
- Wetland Limit
- R.O.W.
- Property Line

PLAN



EROSION CONSTRUCTION SITE PLAN

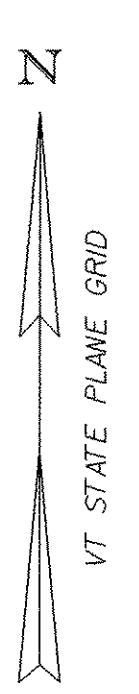
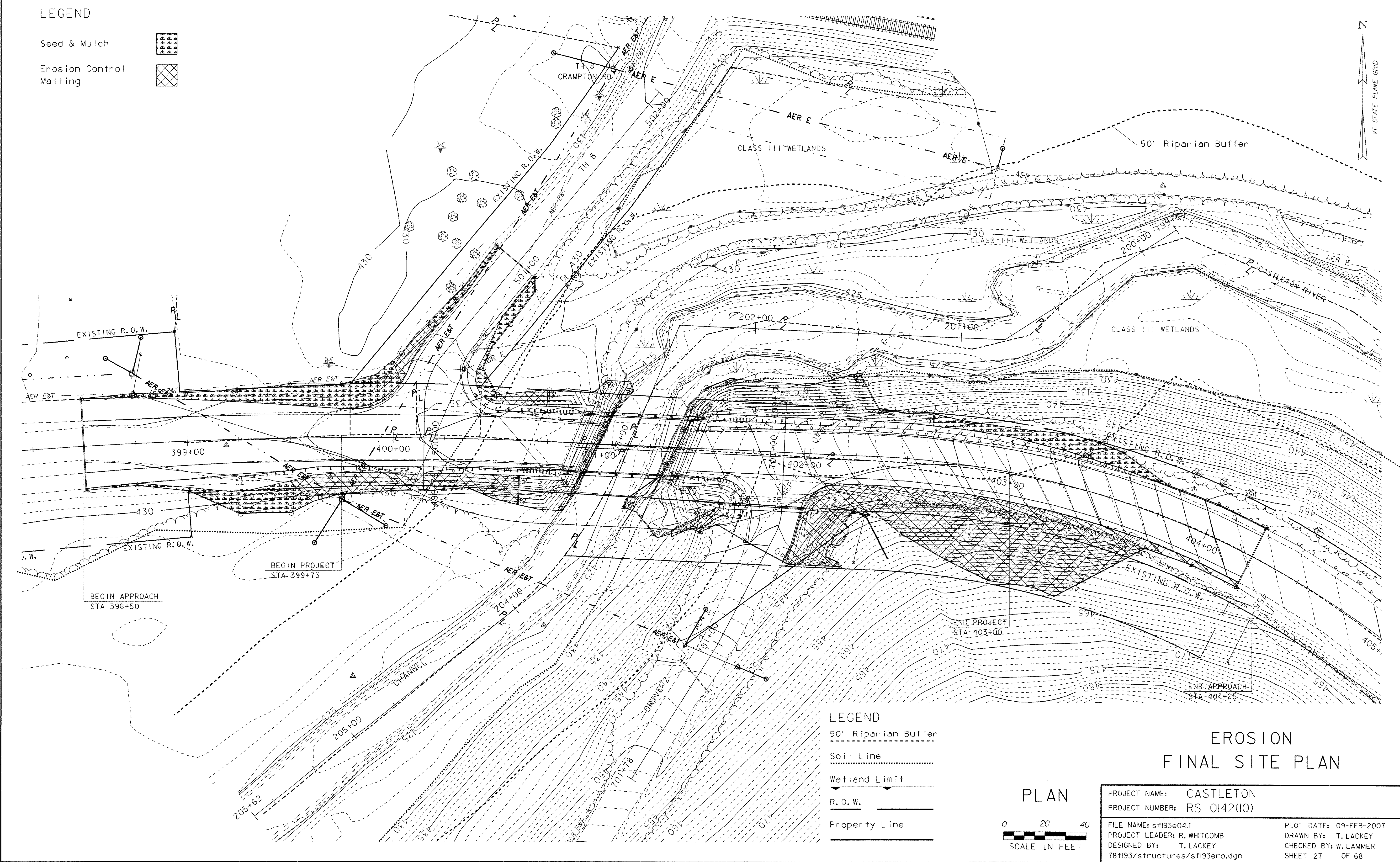
PROJECT NAME: CASTLETON
PROJECT NUMBER: RS 0142(10)

FILE NAME: sf193e03.i
PROJECT LEADER: R. WHITCOMB
DESIGNED BY: T. LACKEY
78f193/structures/sf193ero.dgn

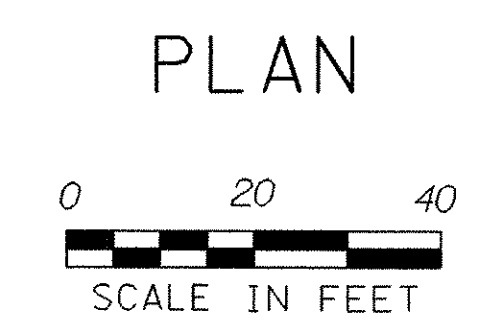
PLOT DATE: 09-FEB-2007
DRAWN BY: T. LACKEY
CHECKED BY: W. LAMMER
SHEET 26 OF 68

LEGEND

- Seed & Mulch
- Erosion Control Matting



- LEGEND
- 50' Riparian Buffer
- Soil Line
- Wetland Limit
- R.O.W.
- Property Line



EROSION
FINAL SITE PLAN

PROJECT NAME:	CASTLETON	PLOT DATE:	09-FEB-2007
PROJECT NUMBER:	RS 0142(10)	DRAWN BY:	T. LACKEY
FILE NAME:	sf193e04.1	CHECKED BY:	W. LAMMER
PROJECT LEADER:	R. WHITCOMB	SHEET 27	OF 68
DESIGNED BY:	T. LACKEY		
78f193/structures/sf193ero.dgn			

SILT FENCE

APPLICATION NOTES:

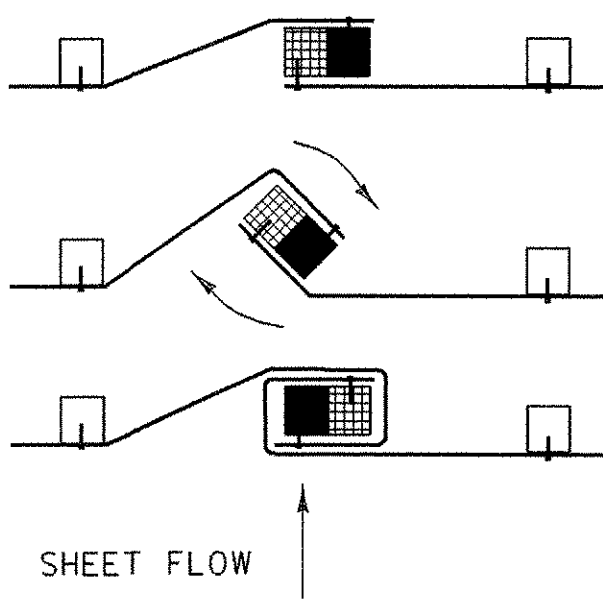
- A. THE PRIMARY PURPOSE OF SILT FENCE IS TO REDUCE RUNOFF VELOCITY AND TRAP SEDIMENT. VELOCITY IS REDUCED, WATER IS IMPOUNDED BEHIND THE MEASURE, AND SEDIMENT FALLS OUT OF SUSPENSION.
- B. SILT FENCE SHALL NOT BE USED ACROSS CONCENTRATED FLOW.

GENERAL NOTES:

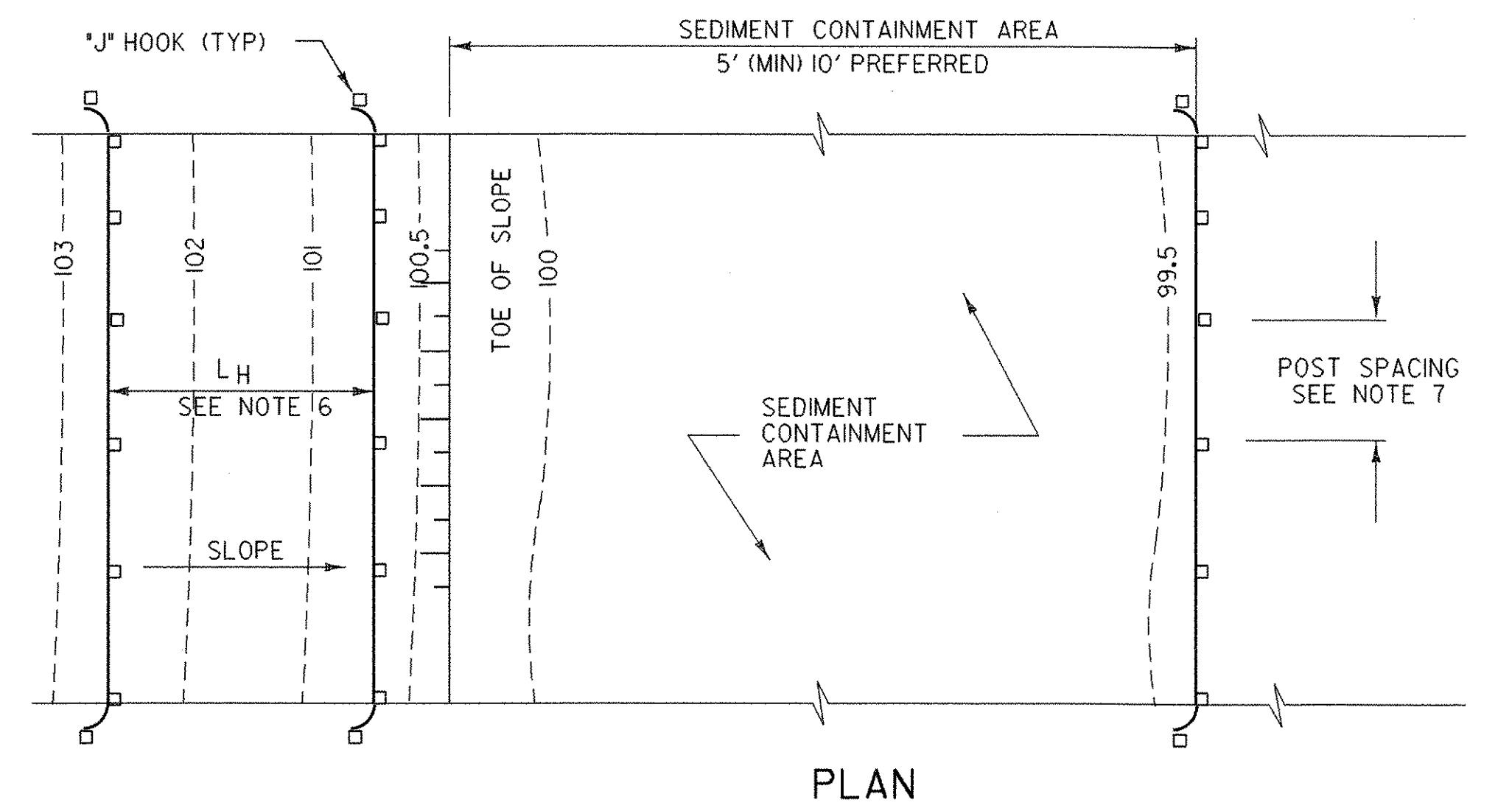
- 1. SILT FENCE SHALL GENERALLY BE PLACED A MINIMUM OF 5 FEET BEYOND TOE OF SLOPE, 10 FEET PREFERRED, TO PROVIDE ADEQUATE AREA FOR SEDIMENT STORAGE AND FACILITATE MAINTENANCE OF SEDIMENT CONTAINMENT AREA.
- 2. SILT FENCE SHALL BE INSTALLED ON A LINE OF EQUAL ELEVATION (CONTOUR). IT MAY BE INSTALLED AT INTERMEDIATE POINTS UP SLOPES AS WELL AS AT THE BOTTOM, AS SHOWN IN THE DETAIL.
- 3. ALL ENDS SHALL BE 'J' HOOKED TO TRAP SEDIMENT.
- 4. IN AREAS WITH TWO SLOPES, SILT FENCE SHALL BE USED TO ERECT A DAM AND TRAP SEDIMENT AT THE BASE OF THE STEEPER SLOPE.
- 5. THE BOTTOM EDGE OF SILT FENCE SHALL BE BURIED A MINIMUM OF 6 INCHES BELOW GROUND, AND KEYED IN 4 INCHES. THE FENCE SHALL BE INSTALLED WITH THE POSTS ON THE DOWNSTREAM SIDE OF THE FABRIC.
- 6. MAXIMUM DRAINAGE AREA TRIBUTARY TO 100 FEET OF SILT FENCE SHALL BE 0.25 ACRES.
- 7. THE FOLLOWING ARE MAXIMUM LENGTHS FOR SILT FENCE INSTALATIONS:

CONSTRUCTED SLOPE	SLOPE LENGTH (LS) FT	HORIZONTAL LENGTH (LH) FT
3H : 4V	80	75
4H : 4V	130	125
5H : 4V	200	200
> 5H : 4V	250	250

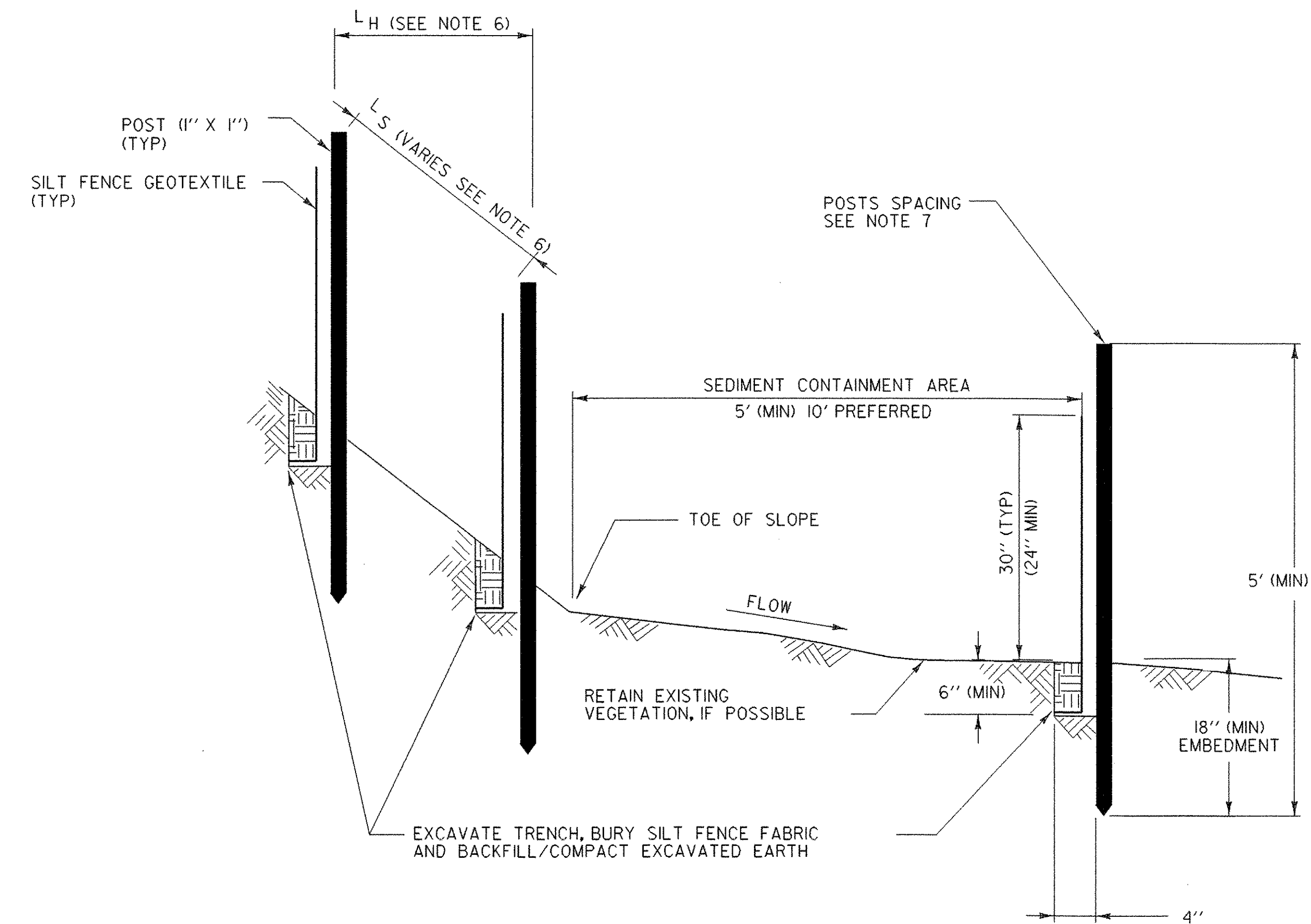
- 8. WHERE ELONGATION IS >50%, POST SPACING SHALL NOT EXCEED 4 FEET. WHERE ELONGATION IS <50%, POST SPACING SHALL NOT EXCEED 6 FEET.
- 9. SILT FENCE SHALL BE INSPECTED EVERY SEVEN (7) CALENDAR DAYS AND WITHIN 24 HOURS OF A STORM EVENT GREAT ENOUGH TO CAUSE WATER TO LEAVE THE CONSTRUCTION SITE.
- 10. SILT FENCE 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 AT AN APPROVED WASTE SITE.
- 11. 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.



SPLICING DETAIL
NOT TO SCALE



PLAN



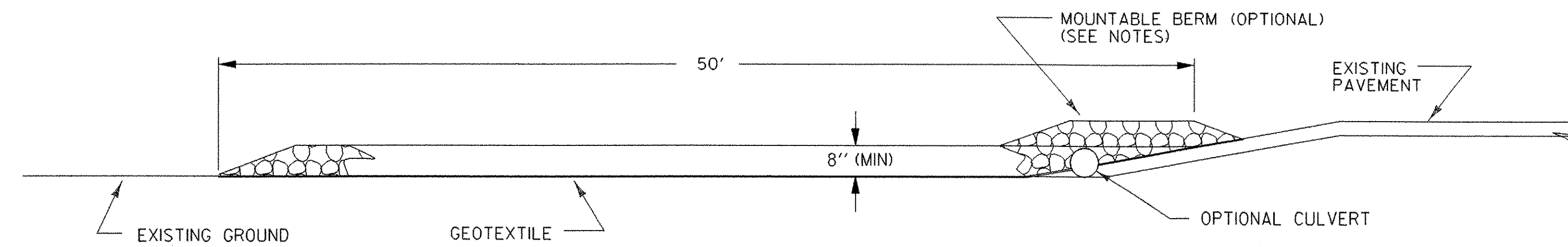
SECTION
SILT FENCE - TEMPORARY
NOT TO SCALE

EROSION PREVENTION &
SEDIMENT CONTROL DETAILS
SILT FENCE

EROSION DETAILS I

PROJECT NAME: CASTLETON	PLOT DATE: 09-FEB-2007
PROJECT NUMBER: RS 0142(10)	DRAWN BY: W. LAMMER
FILE NAME: /78f193/str/sf193ero.dgn	CHECKED BY: T. LACKEY
PROJECT LEADER: R. WHITCOMB	SHEET 28 OF 68
DESIGNED BY: W. LAMMER	
sf193e05.1	

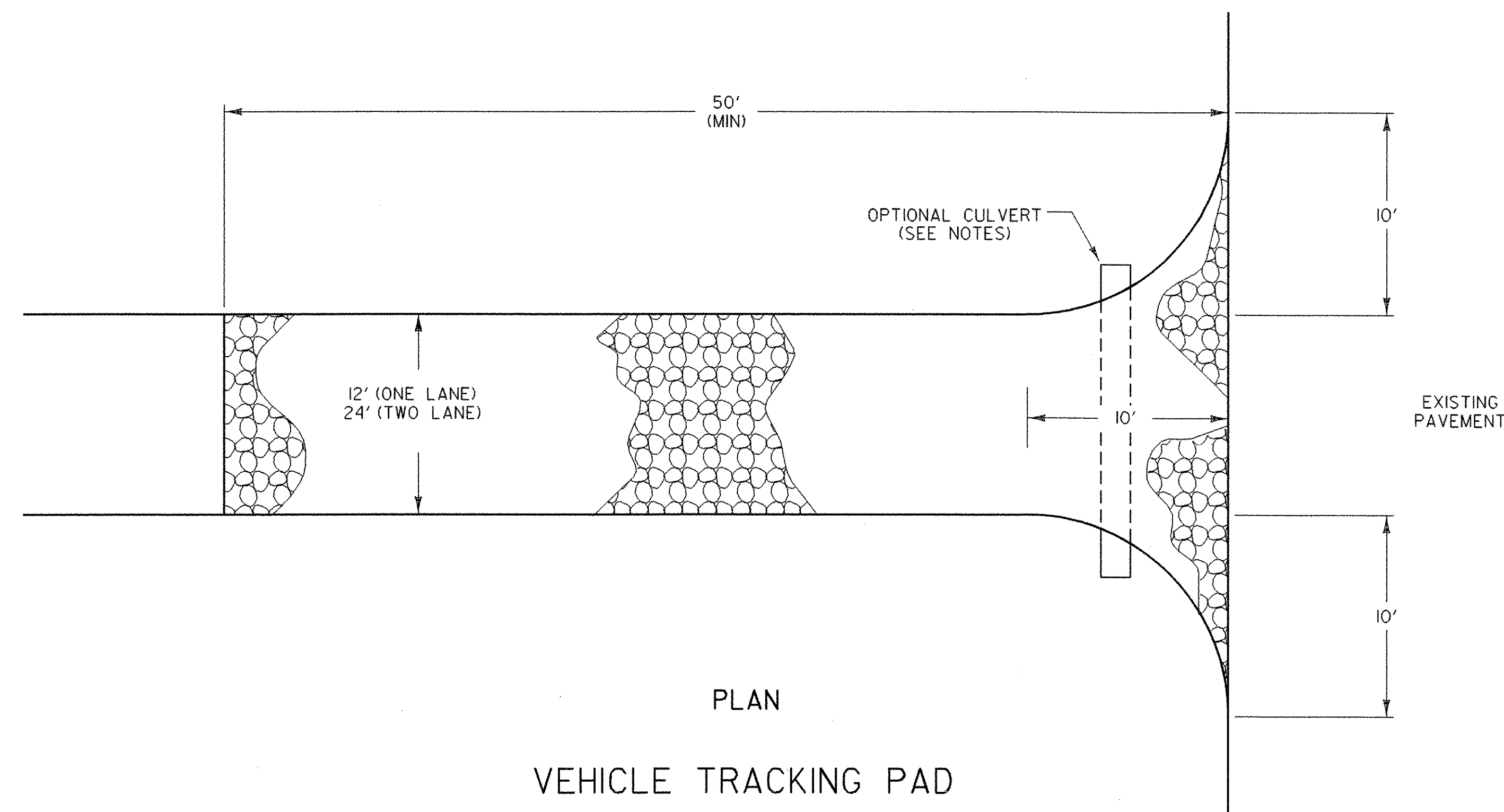
VEHICLE TRACKING PAD



PROFILE

VEHICLE TRACKING PAD

NOT TO SCALE



PLAN

VEHICLE TRACKING PAD

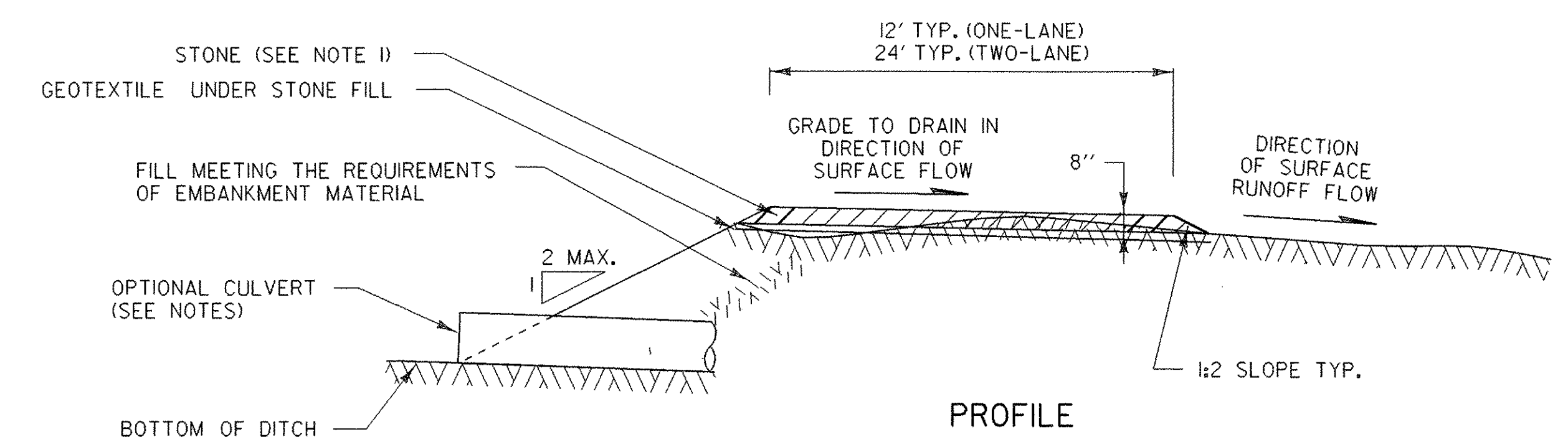
NOT TO SCALE

APPLICATION NOTES:

- A. THE PURPOSE OF A VEHICLE TRACKING PAD IS TO REDUCE OR ELIMINATE THE TRACKING OF SEDIMENT ONTO PUBLIC RIGHTS OF WAY OR STREETS.

GENERAL NOTES:

1. STONE SIZE - USE CLEAN STONE THAT MEETS THE GRADATION REQUIREMENTS SPECIFIED IN THE CONTRACT DOCUMENTS.
2. LENGTH - 50 FEET (MIN.)
3. THICKNESS - 8 INCHES (MIN.)
4. WIDTH - 12 FEET (MIN.)
5. GEOTEXTILE UNDER STONE SHALL BE PLACED OVER THE ENTIRE AREA PRIOR TO PLACING OF STONE.
6. SURFACE WATER - ALL SURFACE WATER FLOWING OR DIVERTED TOWARD CONSTRUCTION ENTRANCES SHALL BE PIPED ACROSS THE ENTRANCE AS DIRECTED BY THE ENGINEER. IF PIPING IS IMPRACTICAL, A MOUNTABLE BERM WITH 5:1 SLOPES WILL BE PERMITTED.
7. PROPOSED DRAINAGE PIPES SHALL BE SIZED WITH SUFFICIENT CAPACITY TO CARRY DITCH FLOWS. ALTERNATIVE WAYS OF TRANSPORTING DITCH DRAINAGE ACROSS CONSTRUCTION ENTRANCES MAY BE PROPOSED BY THE CONTRACTOR FOR APPROVAL BY THE ENGINEER.
8. WHEN A VEHICLE TRACKING PAD ALONE IS NOT CAPABLE OF PREVENTING TRACKING OF SEDIMENT ONTO THE ROAD SURFACE THE CONTRACTOR SHALL TAKE ADDITIONAL STEPS BEFORE VEHICLES LEAVE THE CONSTRUCTION AREA.
9. VEHICLE TRACKING PAD SHALL BE INSPECTED EVERY SEVEN (7) CALENDAR DAYS AND WITHIN 24 HOURS OF A STORM EVENT GREAT ENOUGH TO CAUSE WATER TO LEAVE THE CONSTRUCTION SITE.
10. VEHICLE TRACKING PAD SHALL BE MAINTAINED WHEN THE AGGREGATE BECOMES CLOGGED AND NO LONGER PREVENTS TRACKING OF SEDIMENT ONTO THE PUBLIC RIGHT-OF-WAY. ADDITIONAL AGGREGATE MAY BE ADDED ON TOP OF EXISTING AGGREGATE ONLY TO A POINT WHICH ALLOWS A SMOOTH TRANSITION BETWEEN THE ROAD SURFACE AND CONSTRUCTION AREA.
11. AT THE TIME OF REMOVAL OF THE VEHICLE TRACKING PAD, THE DISTURBED AREA SHALL BE REPAIRED AND STABILIZED.



PROFILE

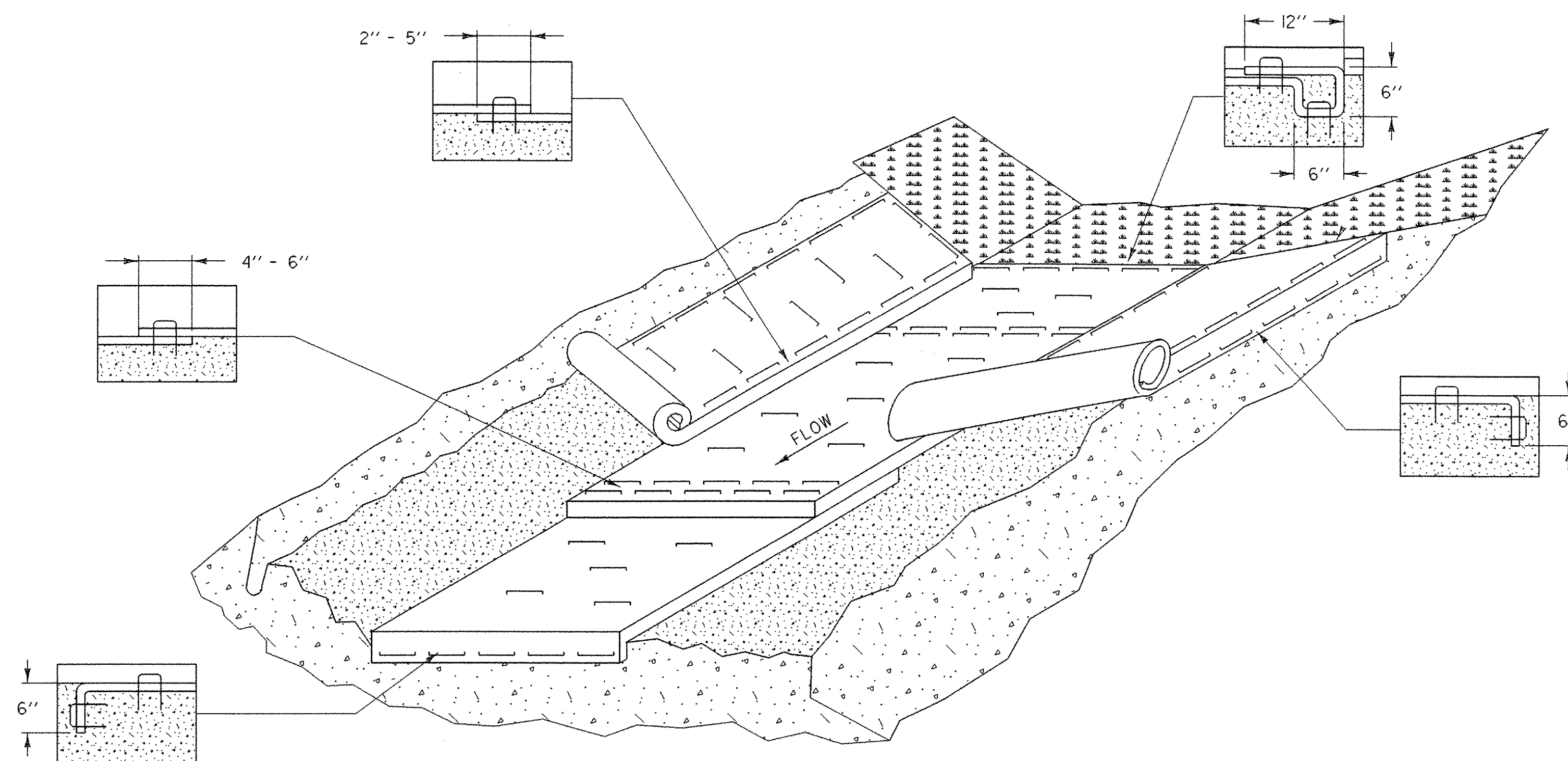
VEHICLE TRACKING PAD

NOT TO SCALE

EROSION PREVENTION & SEDIMENT CONTROL DETAILS VEHICLE TRACKING PAD

EROSION DETAILS 3

PROJECT NAME:	CASTLETON	PLOT DATE:	09-FEB-2007
PROJECT NUMBER:	RS 0142(10)	DRAWN BY:	W. LAMMER
FILE NAME:	/78f193/str/sf193ero.dgn	CHECKED BY:	T. LACKEY
PROJECT LEADER:	R. WHITCOMB	SHEET	30 OF 68
DESIGNED BY:	W. LAMMER		
	sf193e07.1		



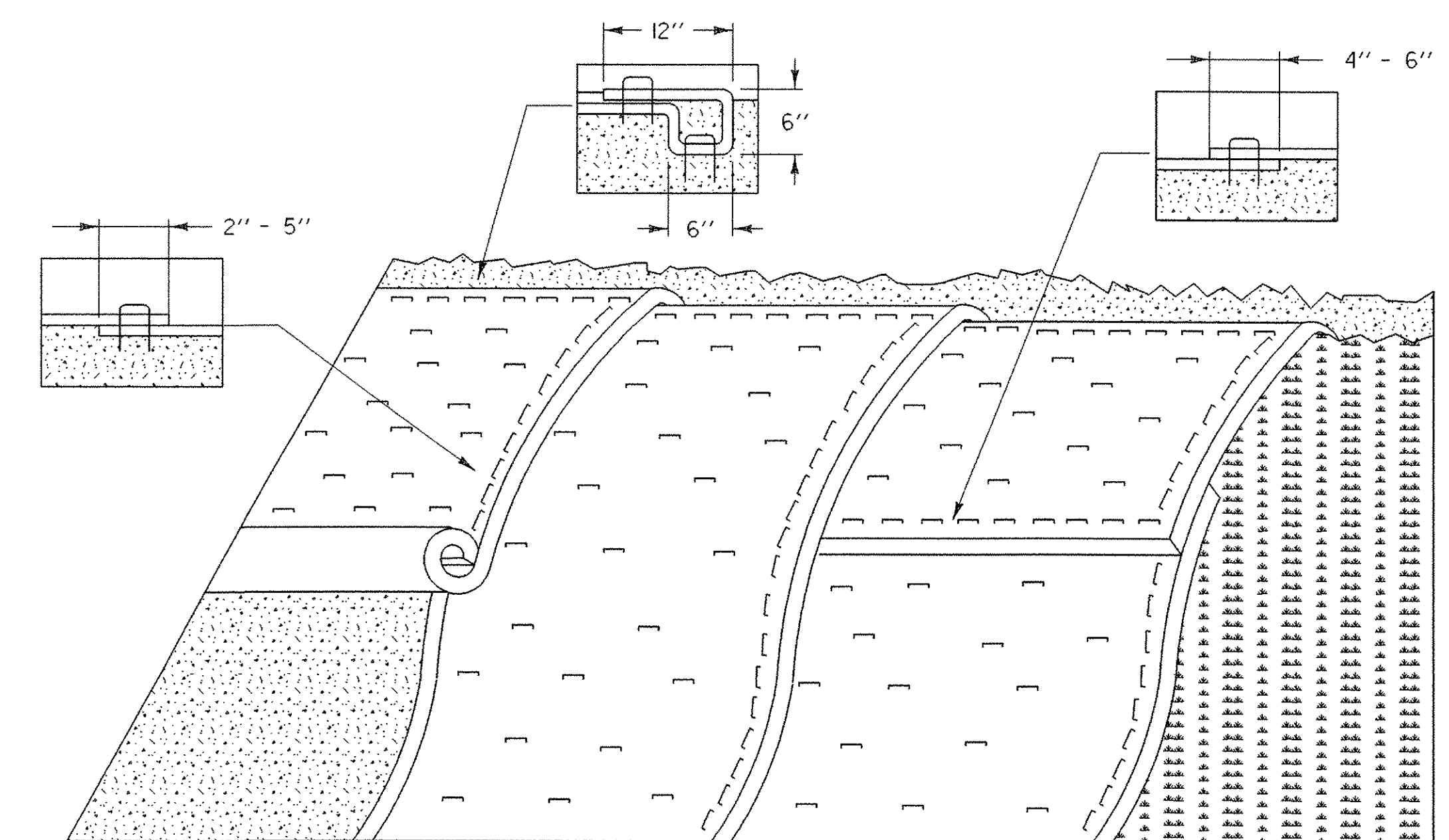
EROSION MATTING FOR DITCHES

APPLICATION NOTES:

- THE PURPOSE OF LINING THE DITCH WITH EROSION MATTING IS TO REDUCE EROSION AND AID THE ESTABLISHMENT OF VEGETATION AT LOW VELOCITIES.
- TYPE OF EROSION MATTING TO BE USED SHOULD BE BASED ON FACTORS SPECIFIC TO EACH APPLICATION. SEE SPECIFICATIONS AND PRODUCT RECOMMENDATIONS FOR SUITABILITY.

GENERAL NOTES:

- WATER MAY NEED TO BE DIVERTED TO ALLOW PROPER MATTING INSTALLATION.
- GRADE AND SMOOTH CHANNEL TO PROVIDE GOOD MATTING TO SOIL SURFACE CONTACT.
- APPLY FERTILIZER, LIME, AND SEED PRIOR TO PLACING MATTING.
- INSTALL MATTING IN THE CENTER OF THE CHANNEL, IN THE DIRECTION OF THE WATER FLOW.
- INSTALL MATTING ON THE SIDE SLOPES OF THE CHANNEL, OVERLAPPING THE CENTER MAT.
- ANCHOR MATTING AS SHOWN, UTILIZING ANCHOR STAPLES. STAPLE PLACEMENT SHALL BE DETERMINED BY THE MANUFACTURER'S INSTALLATION INSTRUCTIONS.
- EROSION MATTING 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.
- EROSION MATTING SHALL BE REPAIRED AND RESTAPLED AS NECESSARY TO ENSURE PROPER FUNCTION.



EROSION MATTING FOR SLOPES

APPLICATION NOTES:

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

GENERAL NOTES:

- GRADE AND SMOOTH THE SLOPE TO PROVIDE GOOD MATTING TO SOIL SURFACE CONTACT.
- APPLY FERTILIZER, LIME, AND SEED PRIOR TO PLACING MATTING.
- ANCHOR MATTING AS SHOWN, UTILIZING ANCHOR STAPLES. STAPLE PLACEMENT SHALL BE DETERMINED BY THE MANUFACTURER'S INSTALLATION INSTRUCTIONS.
- UNROLL EROSION MATTING VERTICALLY DOWN SLOPE IN THE DIRECTION OF WATER FLOW.
- OVERLAP UPPER MATTING OVER LOWER MATTING AS SHOWN.
- OVERLAP ADJACENT MATTING AS SHOWN.
- CUT EXCESS MATTING AT END OF SLOPE AND ANCHOR THE END.
- EROSION MATTING 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.
- EROSION MATTING SHALL BE REPAIRED AND RESTAPLED AS NECESSARY TO ENSURE PROPER FUNCTION.

EROSION PREVENTION & SEDIMENT CONTROL DETAILS EROSION MATTING FOR DITCHES & SLOPES

EROSION DETAILS 4

PROJECT NAME: CASTLETON	PLOT DATE: 09-FEB-2007
PROJECT NUMBER: RS 0142(10)	DRAWN BY: W. LAMMER
FILE NAME: /78f193/str/sf193ero.dgn	CHECKED BY: T. LACKEY
PROJECT LEADER: R. WHITCOMB	SHEET 31 OF 68
DESIGNED BY: W. LAMMER	
sf193e08.i	

SEEDING FORMULA
RURAL AREAS

% WT.	LBS./A.	NAME	PUR %	GERM %
37.5	22.5	CREEPING RED FESCUE	98	85
37.5	22.5	TALL FESCUE	95	90
5.0	3.0	RED TOP	95	90
15.0	9.0	BIRDSFOOT TREFOIL	98	85
5.0	3.0	ANNUAL RYEGRASS	95	85
100.0	60.0			

GENERAL NOTES

SEED MIXTURE: SHALL NOT HAVE A WEED CONTENT EXCEEDING 0.40% BY WEIGHT AND SHALL BE FREE OF ALL NOXIOUS SEED.

SEED: TO BE APPLIED PER SEEDING FORMULAS OR AS DIRECTED BY THE ENGINEER.

FERTILIZER: FORMULA 10-20-10, TO BE USED WITH SEED, APPLIED AT THE RATE OF 500 LBS./ACRE. (HYDRO SEEDERS MAY USE 19-19-19 FORMULA).

AGRICULTURAL LIMESTONE: TO BE APPLIED AT THE RATE OF 2 TONS/ACRE, OR AS DIRECTED BY THE ENGINEER.

HAY MULCH: TO BE PLACED ON EARTH SLOPES AT THE RATE OF 2 TONS/ACRE, OR AS DIRECTED BY THE ENGINEER.

TOPSOIL: TO BE USED WITH SEED AS INDICATED ON THE PLANS, OR AS DIRECTED BY THE ENGINEER.

MARKER POSTS: TO BE PLACED AS INDICATED OR AS DIRECTED BY THE ENGINEER.

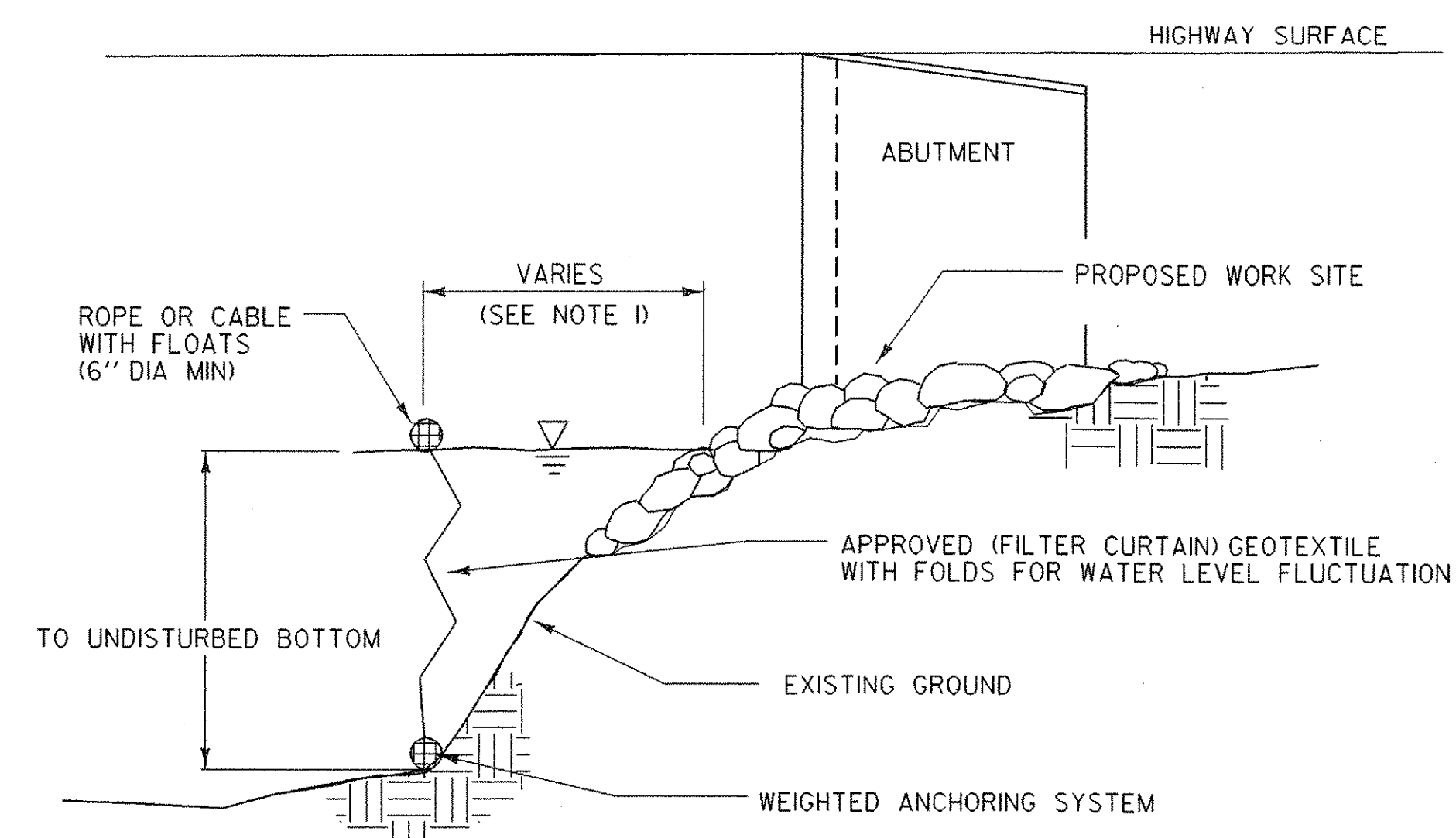
SLOPE ROUNDING: ALL CUT SLOPES TO BE ROUNDED IN ACCORDANCE WITH STANDARD SHEET B - 5.

TACK COAT: EMULSIFIED ASPHALT IS TO BE APPLIED AT THE RATE OF 0.015 GAL/SY BETWEEN SUCCESSIVE COURSES OF PAVEMENT AS DIRECTED BY THE ENGINEER.

EROSION PREVENTION &
SEDIMENT CONTROL DETAILS
SEEDING FORMULA

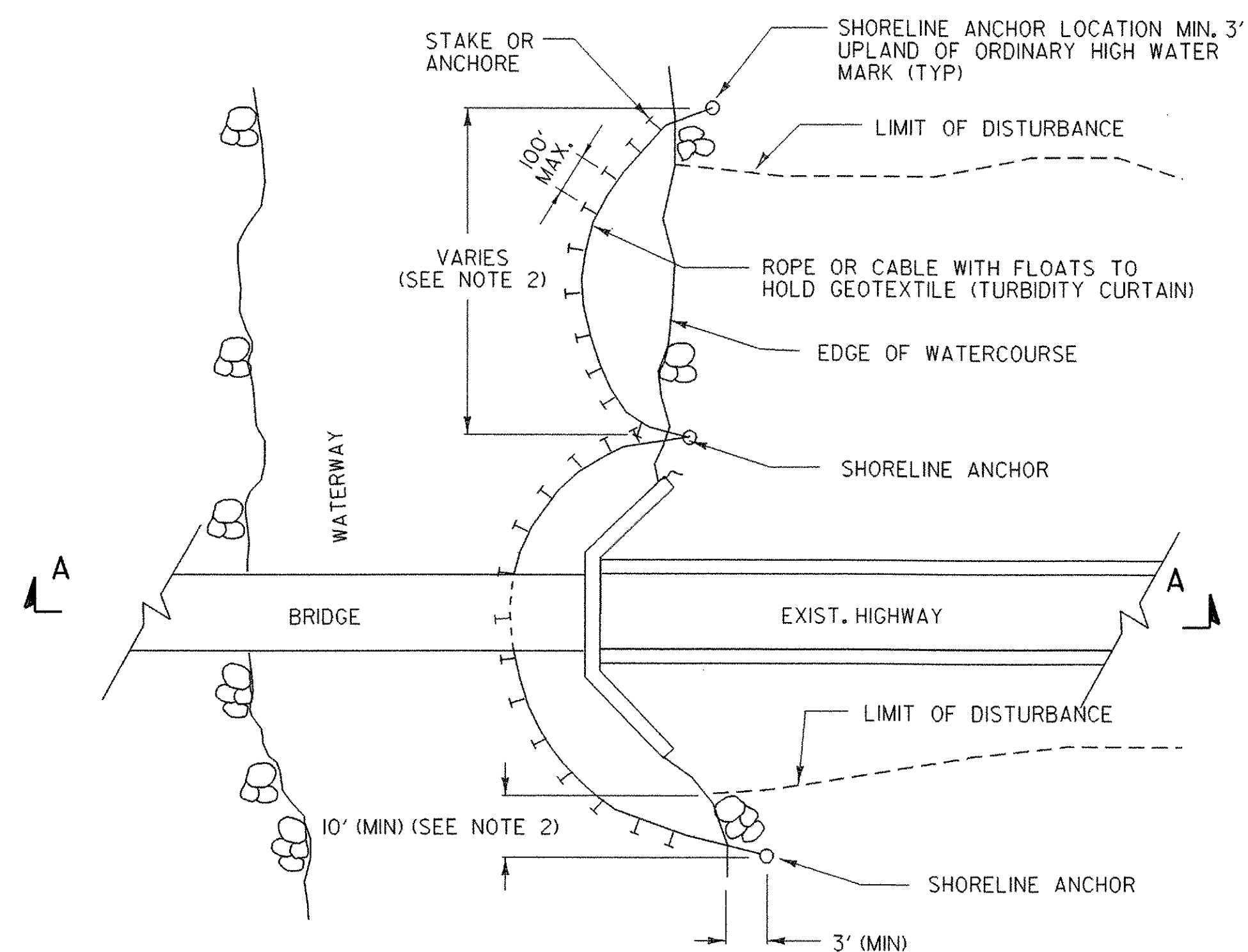
EROSION DETAILS 5

PROJECT NAME: CASTLETON	
PROJECT NUMBER: RS 0142(10)	
FILE NAME: /78f193/str/sf193ero.dgn	PLOT DATE: 09-FEB-2007
PROJECT LEADER: R. WHITCOMB	DRAWN BY: W. LAMMER
DESIGNED BY: W. LAMMER	CHECKED BY: T. LACKEY
sf193e09.1	SHEET 32 OF 68



SECTION A-A

NOT TO SCALE



PLAN

FILTER CURTAIN

NOT TO SCALE

FILTER CURTAIN

APPLICATION NOTES:

- THE PRIMARY PURPOSE OF A FILTER CURTAIN IS TO PROVIDE SEDIMENTATION PROTECTION FOR A WATERCOURSE FROM UP-SLOPE LAND DISTURBANCE OR FROM DREDGING OR FILLING WITHIN WATERCOURSE.
- FILTER CURTAINS SHALL NOT BE PLACED ACROSS A FLOWING WATERWAY, OR IN A WATERWAY WITH VELOCITIES GREATER THAN MANUFACTURER'S RECOMMENDATIONS.
- FILTER CURTAINS SHOULD NOT BE PLACED AT THE OUTLET OF A CULVERT OR DITCH UNLESS THE VELOCITY DOES NOT EXCEED 1.5 FT/SEC.
- DETAILS DEPICT WORK AT A BRIDGE LOCATION, BUT FILTER CURTAINS MAY BE APPLIED AT OTHER LOCATIONS.

GENERAL NOTES:

- FILTER CURTAINS SHALL BE PLACED AS CLOSE TO THE WORK AS POSSIBLE WITHOUT INTERFERING WITH CONSTRUCTION OPERATIONS.
- FILTER CURTAINS SHALL BE A MAXIMUM OF 100 FEET LONG BETWEEN SHORELINE ANCHORS. LAST SECTION SHALL TERMINATE A MINIMUM OF 10 FEET BEYOND THE LIMIT OF DISTURBANCE.
- THE CONTRACTOR SHALL MONITOR THE FILTER CURTAIN, TAKING INTO ACCOUNT WEATHER PATTERNS AND PREVAILING WIND DIRECTIONS THAT MAY AFFECT WATER LEVELS, VELOCITY AND MOVEMENT OF THE TURBIDITY CURTAIN.
- SEAMS IN THE FILTER CURTAIN FABRIC SHALL BE EITHER VULCANIZED WELDED OR SEWN, AND SHALL DEVELOP THE FULL STRENGTH OF THE FABRIC.
- SOIL PARTICLES TRAPPED BY THE FILTER CURTAIN SHOULD ONLY BE REMOVED IF THERE HAS BEEN A SIGNIFICANT CHANGE IN THE ORIGINAL CONTOURS OF THE AFFECTED AREA IN THE WATERCOURSE.
- SOIL PARTICLES SHALL BE ALLOWED 6-12 HOURS TO SETTLE PRIOR TO THEIR REMOVAL OR THE REMOVAL OF THE FILTER CURTAIN.
- FILTER CURTAINS SHALL BE REMOVED BY SLOWLY PULLING TOWARDS THE SHORE TO MINIMIZE ESCAPE OF SEDIMENTS INTO THE WATERWAY.

SEDIMENT SETTLING BASIN SIZING CRITERIA

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

Target Particle Size is 0.01 mm

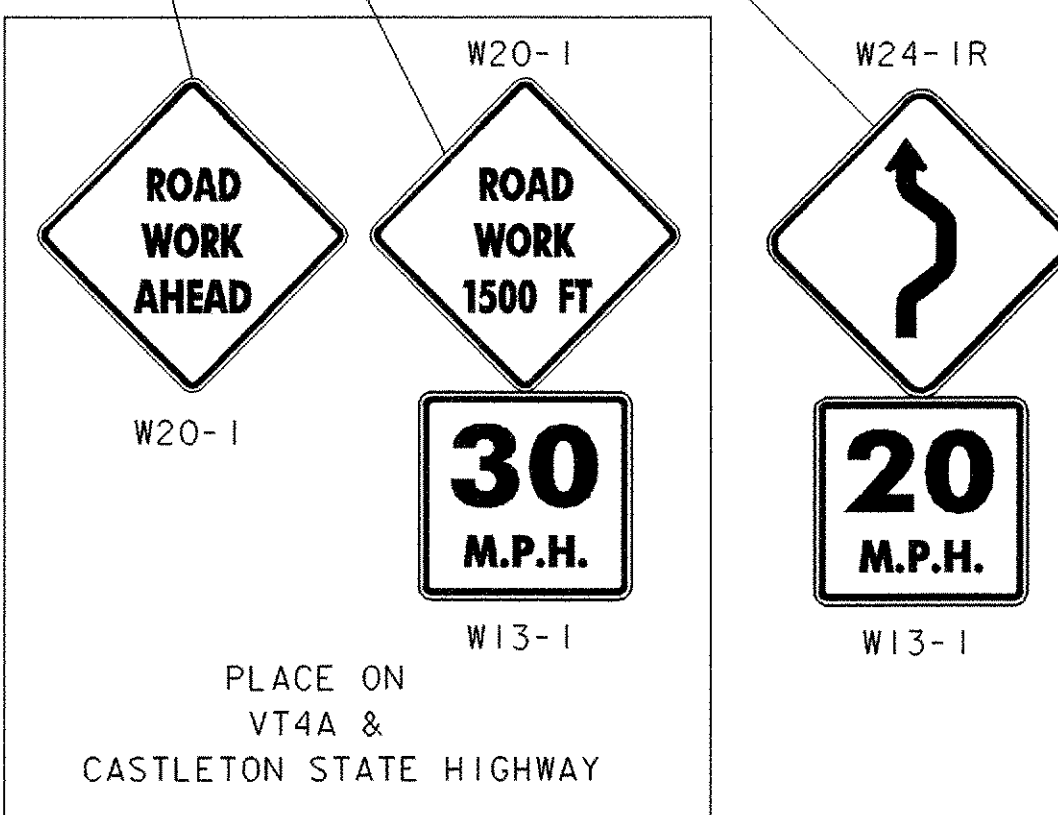
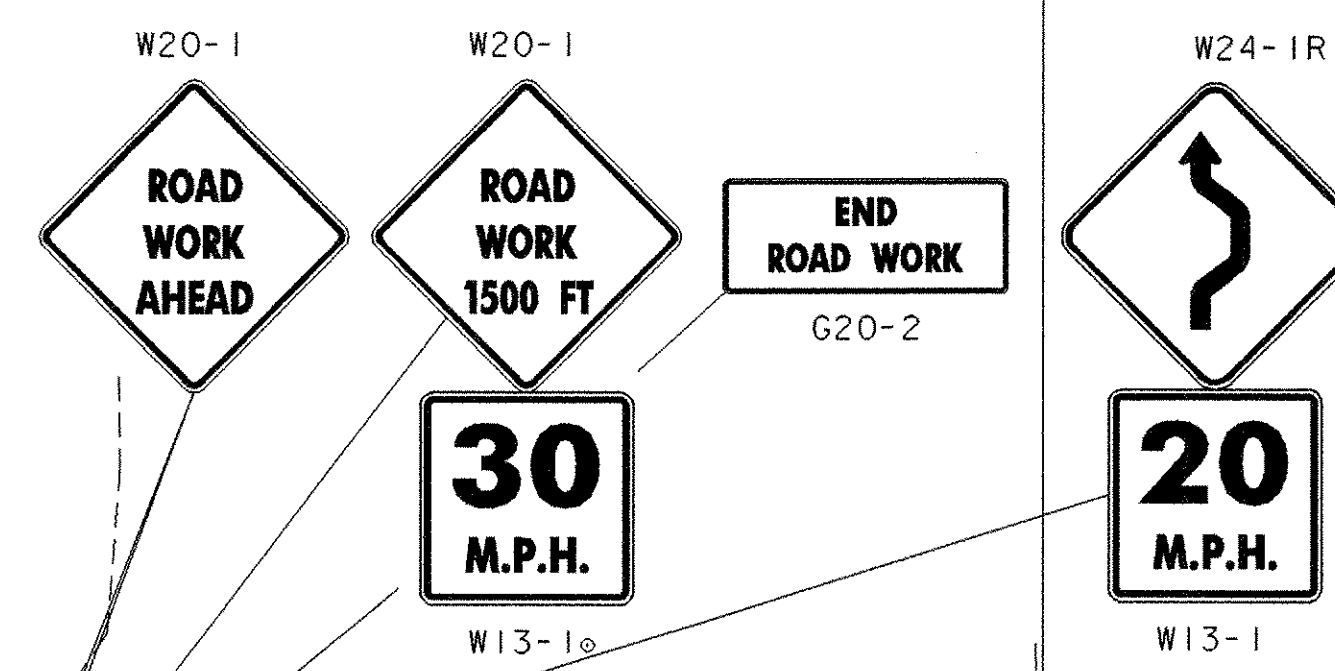
EROSION PREVENTION & SEDIMENT CONTROL DETAILS FILTER CURTAIN

EROSION DETAILS 6

PROJECT NAME: CASTLETON	
PROJECT NUMBER: RS 0142(10)	
FILE NAME: /78f193/str/sf193ero.dgn	PLOT DATE: 09-FEB-2007
PROJECT LEADER: R. WHITCOMB	DRAWN BY: W. LAMMER
DESIGNED BY: W. LAMMER	CHECKED BY: T. LACKEY
sf193e10.1	SHEET 33 OF 68

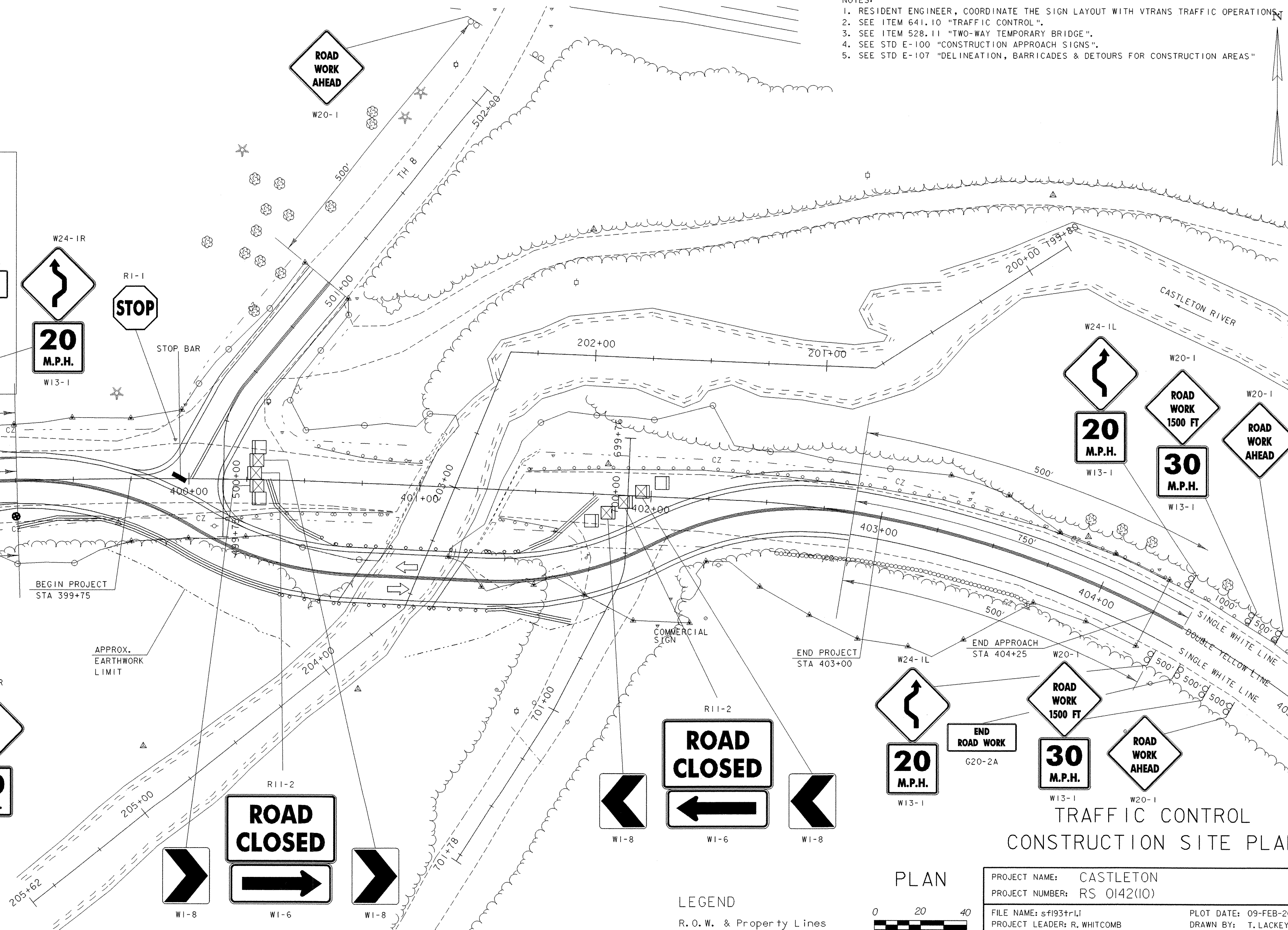
	SIGN AND POSTS
	TYPE III BARRICADES
	TYPE III BARRICADES (MOD.)
	REFLECTORIZED DRUM
	TEMP. TRAFFIC BARRIER
	INDICATES TRAFFIC DIRECTION

PLACE ON
VT4A &
CASTLETON STATE HIGHWAY
(INTERSECTION AT
APPROX. ML 391+60)



NOTES:

1. RESIDENT ENGINEER, COORDINATE THE SIGN LAYOUT WITH VTRANS TRAFFIC OPERATIONS
2. SEE ITEM 641.10 "TRAFFIC CONTROL".
3. SEE ITEM 528.11 "TWO-WAY TEMPORARY BRIDGE".
4. SEE STD E-100 "CONSTRUCTION APPROACH SIGNS".
5. SEE STD E-107 "DELINEATION, BARRICADES & DETOURS FOR CONSTRUCTION AREAS"



TRAFFIC CONTROL
CONSTRUCTION SITE PLAN

PROJECT NAME:	CASTLETON
PROJECT NUMBER:	RS 0142(10)

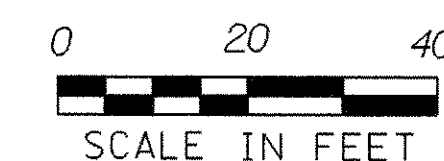
FILE NAME: sf193trl.i
PROJECT LEADER: R. WHITCOMB
DESIGNED BY: T. LACKEY
78f193/structures/sf193trf.dgn

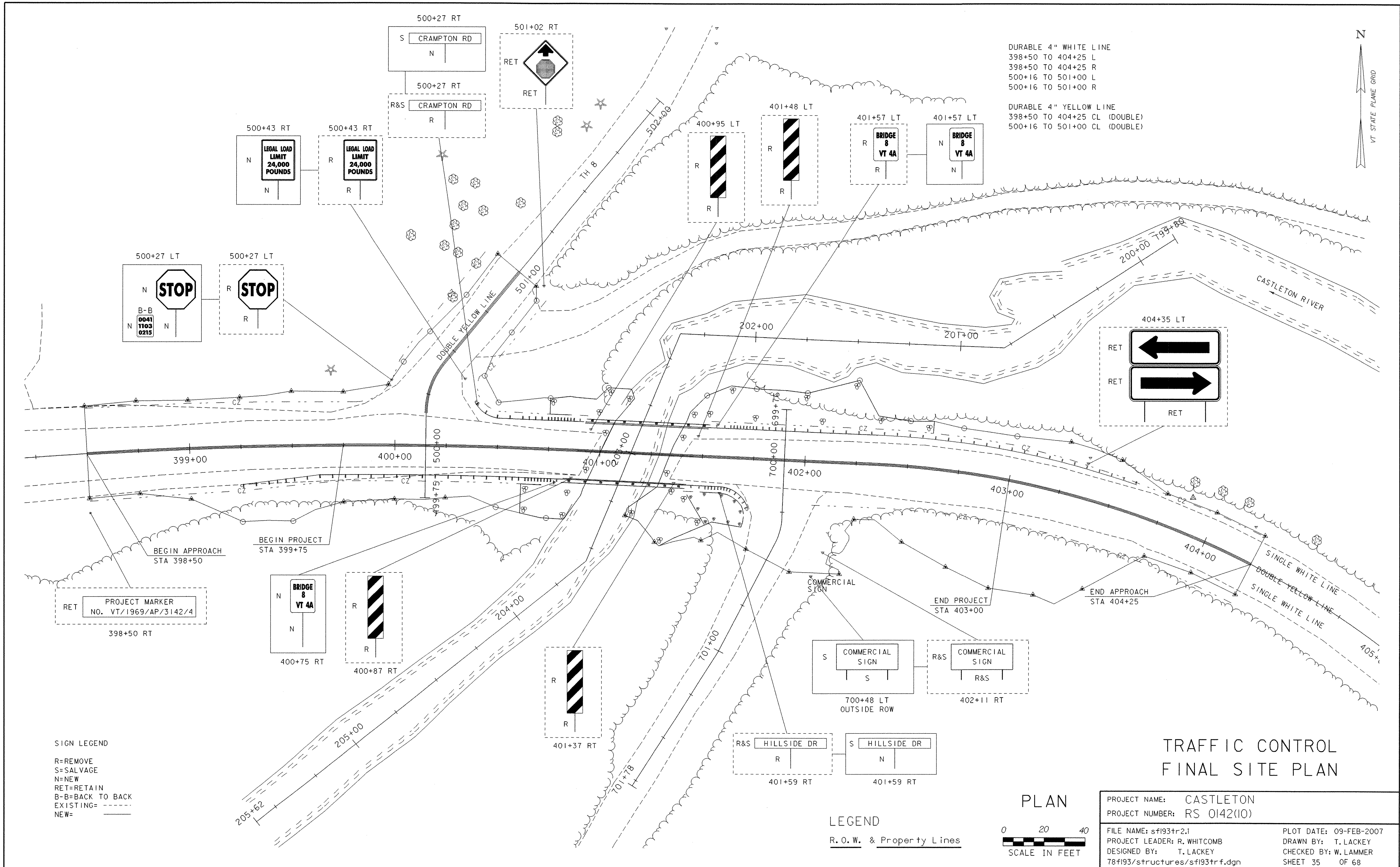
PLOT DATE: 09-FEB-2007
DRAWN BY: T. LACKEY
CHECKED BY: W. LAMMER
SHEET 34 OF 68

LEGEND

R.O.W. & Property Lines

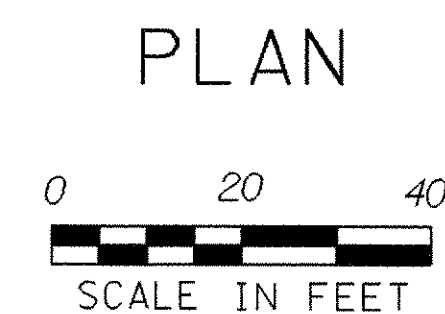
PLAN





SIGN LEGEND
R=REMOVE
S=SALVAGE
N=NEW
RET=RETAIN
B-B=BACK TO BACK
EXISTING= - - - - -
NEW= _____

LEGEND
R.O.W. & Property Lines

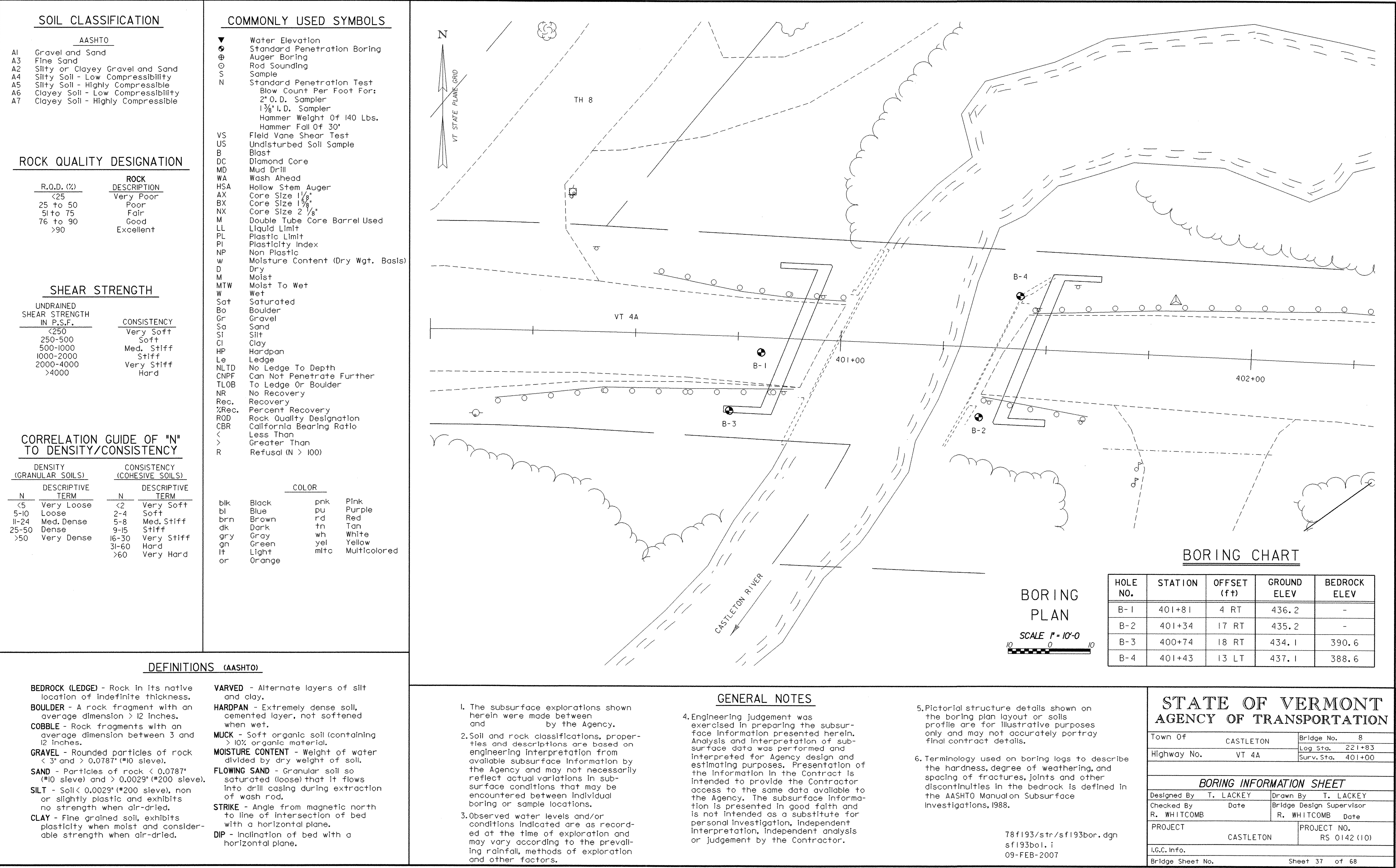


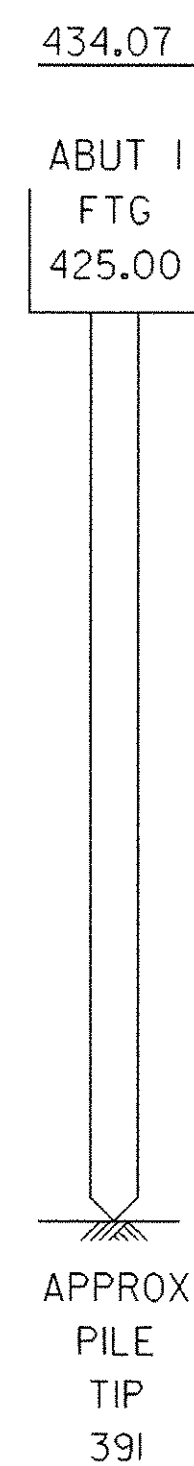
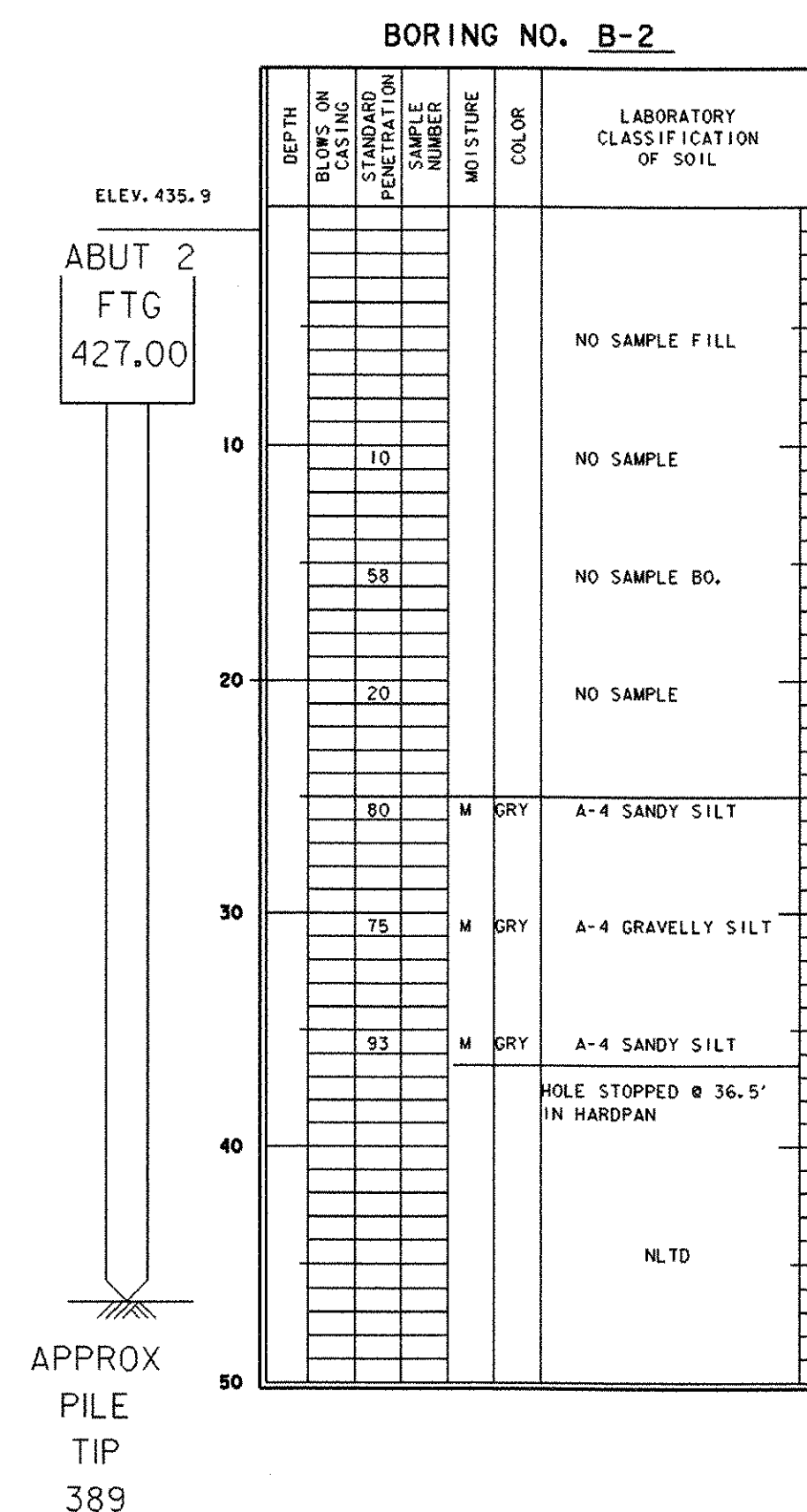
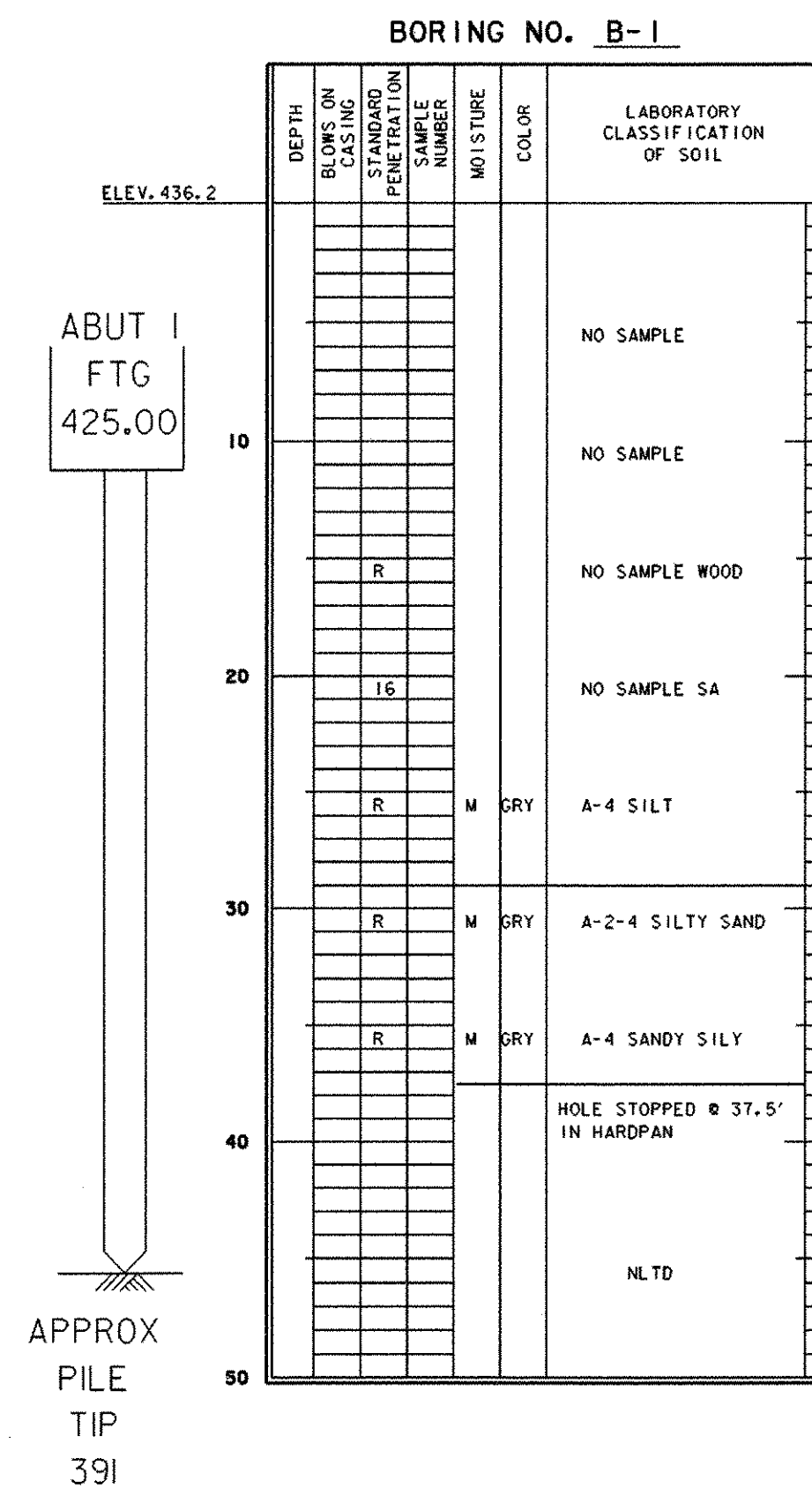
TRAFFIC CONTROL FINAL SITE PLAN

PROJECT NAME: CASTLETON	PLOT DATE: 09-FEB-2007
PROJECT NUMBER: RS 0142(10)	DRAWN BY: T. LACKEY
FILE NAME: sf193tr2.1	CHECKED BY: W. LAMMER
PROJECT LEADER: R. WHITCOMB	SHEET 35 OF 68
DESIGNED BY: T. LACKEY	
78f193/structures/sf193trf.dgn	

TRAFFIC SIGN SUMMARY SHEET

PROJECT NAME: CASTLETON	
PROJECT NUMBER: RS 0142(10)	
FILE NAME: 78f193/str/sf193tr.f.dgn sf193tr3.i PLOT DATE: 09-FEB-2007	
PROJECT LEADER: R. WHITCOMB	DRAWN BY: T. LACKEY
DESIGNED BY: T. LACKEY	CHECKED BY: C. CARLSON
TRAFFIC SIGN SUMMARY SHEET 1	SHEET 36 OF 68

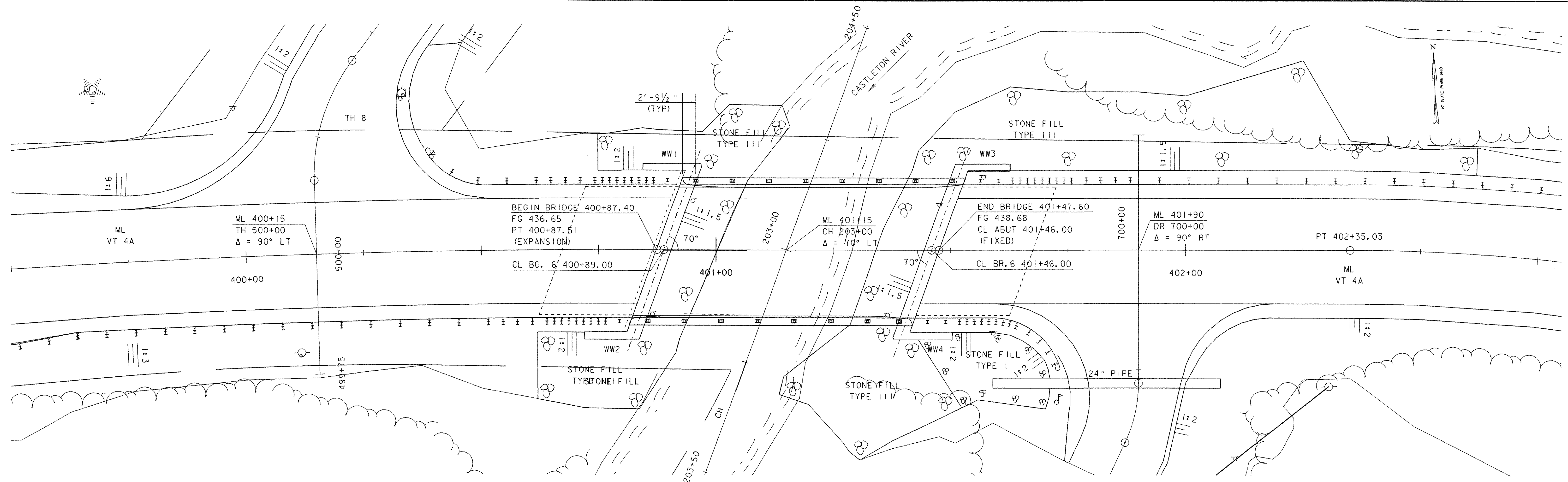




STATE OF VERMONT AGENCY OF TRANSPORTATION MATERIALS & RESEARCH DIVISION SUBSURFACE INFORMATION					HOLE NO.: B-3 SHEET 1 OF 1 DATE STARTED: 4/26/01 DATE COMPLETED: 5/2/01				
PROJECT NAME: CASTLETON SITE NAME: BR 8 STATION: 219+80.00 GROUND EL.: 434.07					PROJECT NUMBER: RS 0142 (10) SITE NO.: VT 4A OFFSET: 15.00 G.W. DEPTH: See DRILLER'S NOTES				
BORING CREW CREW CHIEF: TALLMAN DRILLER: TALLMAN LOGGER: RUSSELL					BORING RIG: SKID RIG BORING TYPE: WASH BORE SAMPLE TYPE: SPLIT BARREL				
DEPTH	SYMBOL	CLASSIFICATION OF MATERIALS (Description)	BLOWS PER FOOT	M.C. %	GRAVEL %	SAND %	FINES %	LL	PI
5		BXDC, 2.0'-4.5', Fill material.	R						
10		No Rec. Stone in Sample barrel. Poss. Fill BXDC, 7.5'-10.0', Boulders	R						
15		A-1-a, SaGr, brn, Moist, Rec. = 0.50'	6	13.2	58.7	29.8	11.5		
20		A-1-a, SaGr, brn, Moist, Rec. = 0.60'	13	12.2	61.4	32.2	6.4		
25		No Rec., Stone in end of sample barrel.	32						
30		BXDC, 29.0'-30.0', A-4, SaGrSi, gry, Dry, Rec. = 0.80'	R	8.3	31.1	28.1	40.8		
35		A-4, GrSaSi, gry, Dry, Rec. = 0.75'	R	9.8	26.3	28.3	45.4		
40		A-4, SaGrSi, gry, Moist, Rec. = 1.05'	R	10.6	31.1	21.6	47.3		
45		Run#1: BXMDC, 43.5'-48.5', Rec. = 1.35', See Geologist's Report.	1	27	27	85			
50		Run#2: BXMDC, 48.5'-53.5', Rec. = 1.50', See Geologist's Report.	2	30	30	85			
55		Run#3: BXMDC, 53.5'-58.5', Rec. = 3.00', See Geologist's Report.	3	60	60	85			
60		Hole stopped @ 58.5'							
65		DRILLER'S NOTES:							
70		1. 05/03/01 - No water table determined, Hole caved in at 10.0'.							
75		2. No seams encountered during coring.							
80		3. Coring time averaged 2hrs for every 5ft.							
85		GEOLOGIST'S REPORT:							
90		Run#1: Light gray slate, Medium hard, Unweathered, Poor recovery and bad ROD due to difficulty drilling steeply dipping beds.							
95		Run#2: Same as Run#1, but quartz vein at top of Run, Poor recovery and ROD due to difficulty drilling steeply dipping beds.							
		Run#3: Same as Run#1, Poor recovery and ROD due to difficulty drilling steeply dipping beds.							

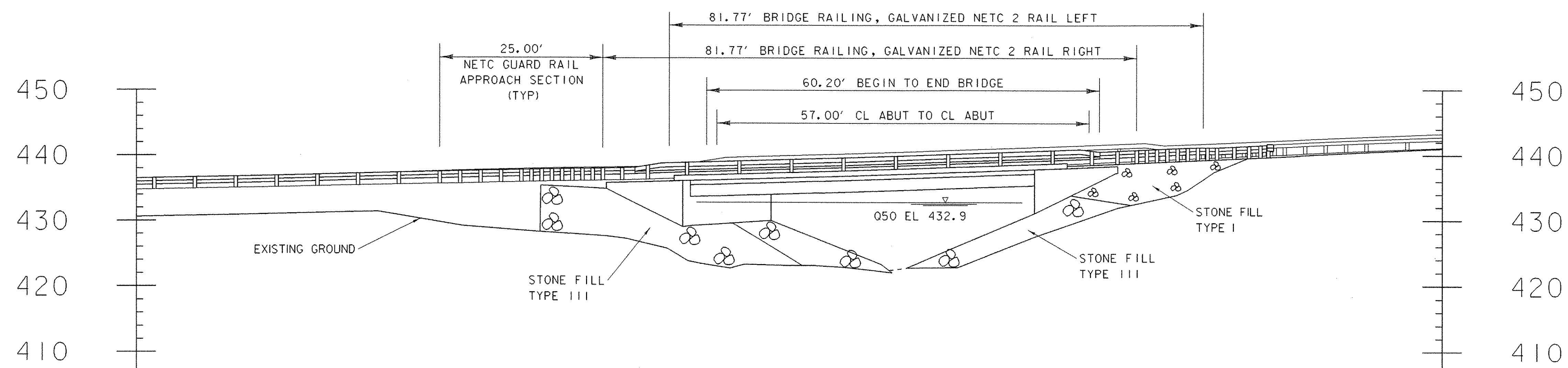
STATE OF VERMONT AGENCY OF TRANSPORTATION MATERIALS & RESEARCH DIVISION SUBSURFACE INFORMATION					HOLE NO.: B-4 SHEET 1 OF 1 DATE STARTED: 5/8/01 DATE COMPLETED: 5/16/01				
PROJECT NAME: CASTLETON SITE NAME: BR 8 STATION: 220+50.00 GROUND EL.: 437.07					PROJECT NUMBER: RS 0142 (10) SITE NO.: VT 4A OFFSET: -15.00 G.W. DEPTH: 12.40				
BORING CREW CREW CHIEF: TALLMAN DRILLER: TALLMAN LOGGER: RUSSELL					BORING RIG: SKID RIG BORING TYPE: WASH BORE SAMPLE TYPE: SPLIT BARREL				
DEPTH	SYMBOL	CLASSIFICATION OF MATERIALS (Description)	BLOWS PER FOOT	M.C. %	GRAVEL %	SAND %	FINES %	LL	PI
5		A-1-a, Gr, gry-brn, Dry, Rec. = 0.80', Possible Fill Material	7	4.8	74.9	18.6	6.5		
10		A-1-a, SaGr, brn, Moist, Rec. = 0.30'	8	12	60.7	27.7	11.6		
15		CONCRETE 13.0'-16.0', Visual Classification: Concrete Poss. Abutment Footing.							
20		BXDC, 18.5'-20.0', Cleanout casing A-4, GrSaSi HP, gry, Moist, Rec. = 1.0'	33	10.7	24.4	33.3	42.3		
25		A-4, SaGrSi HP, gry, Dry, Rec. = 0.65'	36	9.4	36.1	23	40.9		
30		A-4, GrSaSi HP, gry, Moist, Rec. = 1.25'	39	10.3	22	24.2	53.8	19	4
35		A-4, SaGrSi HP, gry, Moist, Rec. = 0.75'	84	10.5	29.9	23	47.1	20	5
40		A-4, GrSi HP, gry, Moist, Rec. = 0.65'	50	12.3	28.3	19.1	52.6	20	5
45		No Rec.	80						
50		Run#1: BXMDC, 48.5'-53.5', Rec. = 1.60', See Geologist's Report.	1	32	32	50			
55		Run#2: BXMDC, 53.5'-58.5', Rec. = 1.90', See Geologist's Report.	2	38	38	50			
60		Run#3: BXMDC, 58.5'-63.5', Rec. = 2.05', See Geologist's Report.	3	41	41	50			
65		Hole stopped @ 63.5'							
70		DRILLER'S NOTES:							
75		1. No seams encountered during coring.							
80		2. Coring time averaged 2hrs for every 5ft.							
85		GEOLOGIST'S REPORT:							
90		Run#1: Purple slate, Medium hard, Unweathered, Poor recovery and ROD due to difficulty drilling steeply dipping beds.							
95		Run#2: Same as Run#1, Poor recovery and ROD due to difficulty drilling steeply dipping beds.							
		Run#3: Same as Run#1, Poor recovery and ROD due to difficulty drilling steeply dipping beds.							

SURVEYED BY	DATE
DRAWN BY J. TOUCHETTE	DATE 05/01
SQUAD LEADER C. C. BENDA	
DESIGN FILE NO. /matres/78f193/mf193bor.dgn	
IPARM FILE	DATE PLOTTED 09-FEB-2007
PROJ. NAME CASTLETON	
PROJ. NO. RS 0142 (10)	
SHEET 38 OF 68	SHEETS



PLAN

SCALE 1" = 10'-0"



ELEVATION

SCALE 1" = 10'-0"

PLAN & ELEVATION

PROJECT NAME: CASTLETON	
PROJECT NUMBER: RS 0142(10)	
FILE NAME: sf193pe.d	PLOT DATE: 09-FEB-2007
PROJECT LEADER: R.WHITCOMB	DRAWN BY: T.LACKEY
DESIGNED BY: T.LACKEY	CHECKED BY: R.WHITCOMB
78f193/str/sf193pe.dgn	SHEET 39 OF 68

GENERAL NOTES

GENERAL NOTES:

1. ALL MATERIALS AND CONSTRUCTION SHALL CONFORM TO: THE STATE OF VERMONT AGENCY OF TRANSPORTATION 2006 STANDARD SPECIFICATIONS FOR CONSTRUCTION, THE 2006 AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, AND THEIR LATEST REVISIONS.

2. DIMENSIONS ARE HORIZONTAL OR VERTICAL IN FEET & INCHES AT 68 DEG F, UNLESS NOTED OTHERWISE.

DESIGN

1. THE BRIDGE IS DESIGNED FOR HS 25-44 LIVE LOAD WITH NO ALLOWANCE FOR FUTURE PAVEMENT.

CONSTRUCTION

1. WATER QUALITY. PREVENT POLLUTION, AND DISCHARGE OF SILT OR RAW CONCRETE IN TO THE WATERWAY AS DIRECTED BY THE RESIDENT ENGINEER.

2. IN-STREAM CONSTRUCTION. PERMITS DESIGNATE AND LIMIT THE PERIOD FOR IN-STREAM CONSTRUCTION. THE AGENCY OF NATURAL RESOURCES MUST APPROVE ANY DEVIATION FROM THIS PERIOD IN WRITING.

3. SLOPE STABILITY. THE HILLSIDE STARTING AT STA 402+25 LEFT HAD SLIDES IN THE 1980'S. IT IS POTENTIALLY UNSTABLE.

EARTHWORK

1. ITEM 529.20 "PARTIAL REMOVAL OF STRUCTURE". REMOVE THE ENTIRE SUPERSTRUCTURE. REMOVE ABUTMENTS TO THE LOWER LIMITS OF CHANNEL STONE FILL. REMOVE PARTS OF ABUTMENTS THAT WILL INTERFER WITH DRIVING PILES.

2. ABUTMENT STONE FILL. PLACE STONE FILL UNDER THE BRIDGE BEFORE PLACING THE PRESTRESS UNITS.

STEEL

1. STEEL PILING. NO SUBSTITUTIONS FOR THE NUMBER, SIZE AND GRADE OF THE PILES WILL BE ALLOWED.

2. PILE HEAD TOLERANCE: DRIVE OR CUT OFF THE PILE HEAD TO WITHIN 1 INCH VERTICALLY AND 3 INCHES HORIZONTALLY OF THE POSITION SHOWN IN THE PLANS. IF A PILE IS DAMAGED DURING INSTALLATION OR DRIVEN OUT OF ITS PROPER LOCATION, WITHDRAW AND REPLACE IT WITH A NEW AND IF NECESSARY LONGER PILE, AS DESCRIBED IN VTRANS 505.04(A)(1).

STRUCTURAL CONCRETE

1. ITEM 501.32 "CONCRETE, HIGH PERFORMANCE CLASS AA". USE HPC AA FOR THE DECK OVERLAY AND CURBS.

2. ITEM 501.34 "CONCRETE, HIGH PERFORMANCE CLASS B". USE HPC B FOR THE APPROACH SLABS, ABUTMENTS, AND ALL OTHER COMPONENTS. INCLUDE INSTALLATION OF THE BRIDGE PLAQUE PROVIDED BY THE AGENCY.

3. ITEM 507.17 "EPOXY COATED REINFORCING STEEL". USE COATED REINFORCEMENT FOR THE DECK OVERLAY, CURBS, AND APPROACH SLABS.

4. ITEM 507.15 "REINFORCING STEEL". USE UNCOATED REINFORCEMENT FOR THE ABUTMENTS.

5. DETAIL AND FABRICATION. DETAIL AND FABRICATE ALL REINFORCING STEEL USING PROCEDURES AND TOLERANCES IN ACCORDANCE WITH APPLICABLE PUBLICATIONS OF THE CONCRETE REINFORCING STEEL INSTITUTE (CRSI).

6. REINFORCEMENT PLACEMENT TOLERANCE. PLACE REINFORCEMENT TO WITHIN 1 INCH OF THE SPACING AND 1/4 INCH OF THE CONCRETE COVER SHOWN IN THE PLANS.

7. MINIMUM CONCRETE COVER. THE MINIMUM CONCRETE COVER FOR REINFORCING STEEL IS: 2 INCHES ON THE FACES OF WALLS AGAINST EARTH; AND 3 INCHES ELSEWHERE UNLESS OTHERWISE NOTED.

8. CONCRETE JOINTS. CONSTRUCT CONCRETE JOINTS AS INDICATED ON THE PLANS OR DIRECTED BY THE RESIDENT ENGINEER. CONSTRUCT SHEAR KEYS MONOLITHICALLY AND CONTINUOUSLY UNLESS OTHERWISE INDICATED. TERMINATE SHEAR KEYS 6 INCHES FROM ENDS OF JOINTS. PLACE SHEAR KEYS UPWARD IN HORIZONTAL JOINTS.

9. CHAMFERS. CHAMFER ALL EXPOSED EDGES OF CONCRETE WITH 1 BY 1 INCH CHAMFERS, UNLESS OTHERWISE NOTED. ROUND THE TOP INSIDE CORNER OF CURBS WITH A 5/8 INCH RADIUS.

10. SCORE MARKS. CONSTRUCT SCORE MARKS AS INDICATED ON THE PLANS OR AS DIRECTED BY THE RESIDENT ENGINEER.

11. ITEM 900.625 "SPECIAL PROVISION (WATER REPELLENT, SILANE)". APPLY REPELLENT TO ALL EXPOSED SURFACES OF CONCRETE ON THE BRIDGE, EXCEPT THE BOTTOM OF THE SUPERSTRUCTURE BETWEEN THE DRIP NOTCHES.

PRESTRESSED CONCRETE

1. ITEM 510.22 "PRESTRESSED CONCRETE VOIDED SLABS". PRESTRESSED PRECAST MEMBERS SHALL:
A. CONFORM TO SECTION 510 "PRESTRESSED CONCRETE".
B. BE 21 X 36 AND 21 X 48 INCH VOIDED SLABS.
C. USE CONCRETE WITH f'c = 6,000 PSI AND fc = 4,000 PSI.
D. BE DESIGNED FOR AN AASHTO HS 25-44 LIVE LOAD.
E. CONTAIN CONTINUOUS VOIDS EXCEPT AS SHOWN IN THE PLAN DETAIL.
F. HAVE VOID DRAINS AT THE ENDS OF EACH VOID. THE VOID DRAINS SHALL BE 3/4 INCH DIAMETER, NON-FERROUS, AND CLEANED AFTER ERECTION.
G. CONTAIN PRESTRESSING STRANDS WHICH ARE 0.6 INCH DIAMETER, 270 KSI, LOW RELAXATION STRANDS PULLED TO 75% OF THEIR YIELD.
H. HAVE THE ENDS OF THE STRANDS RECESSED AND GROUTED ACCORDING TO STANDARD PRACTICE.
I. HAVE THE TOP SURFACE RAKED TO UNIFORM ROUGHNESS WITH AVERAGE AMPLITUDE OF 1/4 INCH.
J. INCLUDE COLD POURED JOINT FILLER, AND TRANSVERSE TENDONS AS DESCRIBED IN VTRANS 510.16.

2. THE FABRICATOR MAY, WITH THE APPROVAL OF THE STRUCTURES ENGINEER, ALTER THE DESIGN, AS DETAILED, TO MEET THE PLANT'S PRESTRESSING OPERATION AND MATERIAL REQUIREMENTS. AN ALTERNATE STRAND CONFIGURATION MAY BE SUBMITTED FOR APPROVAL PROVIDED THAT THE DESIGN IS STAMPED AND SIGNED BY A PROFESSIONAL ENGINEER LICENSED IN THE STATE OF VERMONT AND THAT THE DESIGN MEETS ALL OF THE APPLICABLE DESIGN CRITERIA, LOADINGS AND CODES.

3. THE CONTRACTOR SHALL NOTIFY THE VTRANS MATERIALS & RESEARCH STRUCTURAL CONCRETE ENGINEER TWO WEEKS BEFORE THE PRESTRESS FABRICATOR CONSTRUCTS THE UNITS.

4. ITEM 510.22 "PRESTRESSED CONCRETE VOIDED SLABS". TRANSVERSE TENDONS.
A. THE 1/2 INCH DIAMETER TRANSVERSE TENDONS SHALL BE POLYSTRAND OR EQUIVALENT.
B. COVER TENDONS WITH A SEAMLESS POLYPROPYLENE SHEATH WITH CORROSION INHIBITOR GREASE BETWEEN SHEATH AND TENDON).
C. THE 3/4 INCH TENDON PLATES SHALL CONFORM TO AASHTO M270/M270M GR 50.
D. GALVANIZE PLATES AND CHUCKS AFTER FABRICATION ACCORDING TO AASHTOM232/M232M.
E. INSTALL TRANSVERSE TENDONS BEFORE PLACING MORTAR AND CASTING THE CONCRETE DECK OVERLAY.

5. ITEM 510.24, "GROUTING SHEAR KEYS". FILL THE JOINTS BETWEEN THE VOIDED SLABS WITH MORTAR, TYPE IV, AS DESCRIBED IN VTRANS 510.13. INCLUDE MATERIALS, WORK, ETC. AS DESCRIBED IN VTRANS 510.16.

ASPHALTIC PLUG BRIDGE JOINT

1. INSTALLATION
A. THE JOINT SHALL BE LOCATED CENTRALLY OVER THE DECK OVERLAY EXPANSION GAP OR FIXED JOINT MARKED OUT TO THE MANUFACTURER'S RECOMMENDED WIDTH.
B. THE JOINT SHALL BE EXCAVATED AS SHOWN ON THE PLANS BY USE OF SAWS AND PNEUMATIC HAMMER OR A HAMMER AND CHISEL.
C. THE JOINT AREA SHALL BE BLAST CLEANED OF DEBRIS AND ASPHALT. THE JOINT AREA SHALL BE THOROUGHLY DRIED USING HOT COMPRESSED AIR PRIOR TO APPLYING BINDER MATERIAL.
D. SPALLED AND DEFECTIVE CONCRETE SHALL BE REPAIRED WITH AN APPROVED MATERIAL AS AGREED UPON BY THE ENGINEER.
E. PROPERLY SIZED HEAT RESISTANT BACKER ROD SHALL BE PLACE IN THE MOVEMENT GAP ALLOWING FOR 1 INCH +/- OF BINDER ABOVE THE ROD.
F. THE BINDER MATERIAL SHALL BE HEATED AND PLACED AS RECOMMENDED BY THE MANUFACTURER.
G. PLACE 1/4 INCH THICK BY 8 INCH WIDE SECTIONS OF STEEL PLATE OVER THE CENTER OF THE MOVEMENT GAP. SECURE PLATES FROM MOVING BY INSERTING LOCATING PINS THROUGH THE PRESTAMPED HOLES INTO BACKER ROD AND COVER WITH HOT BINDER. THE STEEL PLATES MAY BE OMITTED WHERE THE APPROACH SLAB IS COVERED WITH A STONE BASE OR BITUMINOUS PAVEMENT AND VERTICAL MOVEMENT OF THE PLATES MIGHT OCCUR.
H. THE BINDER MATERIAL AND AGGREGATE SHALL BE HEATED AND MIXED AS RECOMMENDED BY THE MANUFACTURER.
I. THE INSTALLATION OF MATERIAL, COMPACTION, AND TOP COATING SHALL BE AS RECOMMENDED BY THE MANUFACTURER.
J. IMMEDIATELY AFTER TOP COATING, AN ANTI-SKID MATERIAL SHALL BE CAST OVER THE JOINT TO REDUCE THE RISK OF TRACKING.
K. JOINT SHALL BE PROTECTED FROM TRAFFIC UNTIL THE MATERIAL HAS COOLED TO 125 DEG F +/-.

2. WEATHER LIMITATIONS. BINDER MATERIAL SHALL BE APPLIED ONLY WHEN THE FOLLOWING CONDITIONS PREVAIL:
A. THE AMBIENT AIR TEMPERATURE IS AT LEAST 50 DEG F AND RISING.
B. THE ROAD SURFACE IS SUFFICIENTLY DRY.
C. WEATHER CONDITIONS OR OTHER CONDITIONS ARE FAVORABLE AND ARE EXPECTED TO REMAIN SO FOR THE PERFORMANCE OF SATISFACTORY WORK.

CONSTRUCTION SEQUENCE FOR PRESTRESSED VOIDED SLABS

1. LAYOUT WORKING LINES.
A. LAY OUT WORKING LINES FOR THE ENTIRE BRIDGE WIDTH ON THE BEAM SEAT.
B. MEASURE ALL WORKING LINES FROM A COMMON WORKING POINT.
C. BASE THE WORKING LINES ON THE NOMINAL BEAM WIDTHS.

2. VERIFY BEAM SEAT ELEVATIONS
A. MEASURE ELEVATIONS AT BEAM SEATS.
B. IF SEATS ARE HIGH, GRIND TO CORRECT ELEVATIONS.
C. IF SEATS ARE LOW, SHIM TO CORRECT ELEVATIONS.
D. INSTALL BEARINGS.

3. ERECT BEAMS
A. PLACE BEAMS TO FIT WITHIN THE WORKING LINES.
B. AS WORK PROGRESSES, INSTALL HARDWOOD WEDGES BETWEEN ADJACENT BEAMS TO MAINTAIN PROPER JOINT OPENING (A MINIMUM OF ONE WEDGE AT EACH TRANSVERSE TENDON).
C. DRILL ANCHOR BOLT HOLES.
D. PLACE ANCHOR BOLTS.
E. GROUT ANCHOR BOLTS IN ABUTMENT.

4. INSTALL BACKER ROD
A. PLACE FILLER BELOW THE KEY'S BOTTOM AS SHOWN ON THE PLANS.

5. INSTALL TRANSVERSE TENDONS
A. FEED TENDONS THROUGH DUCTS.
B. VERIFY THAT HARDWOOD WEDGES ARE IN PLACE AS REQUIRED TO PREVENT SLIPPAGE OF BEAMS.
C. POST-TENSION TENDONS USING A CALIBRATED JACK TO APPROXIMATELY 5,000 KIP TO REMOVE SAG IN THE TENDON AND TO SEAT THE CHUCK.

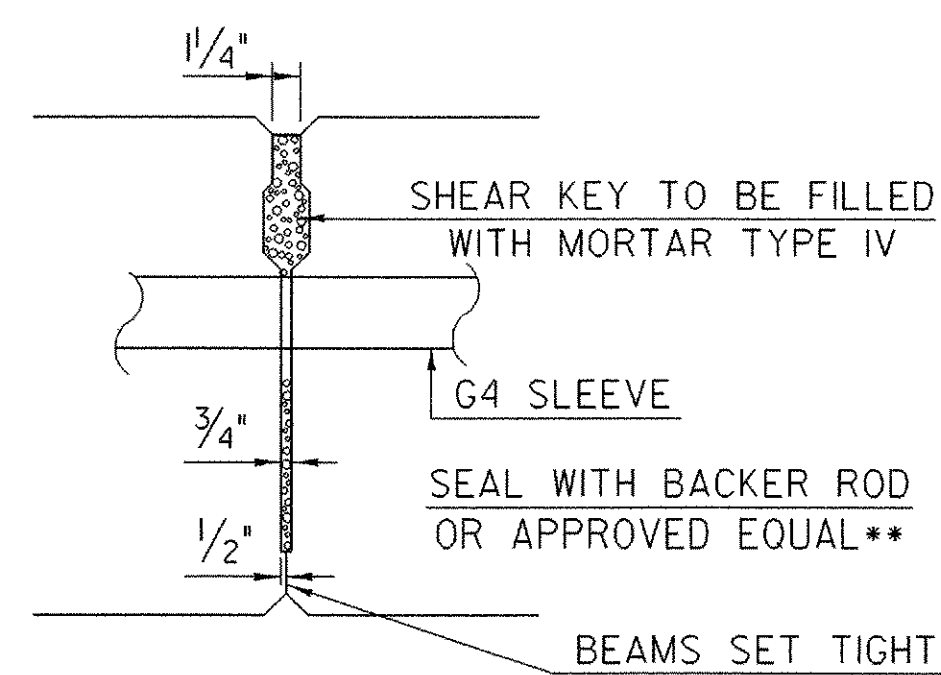
6. GROUT SHEAR KEYS
A. CLEAN JOINTS WITH AN OIL FREE AIR-BLAST IMMEDIATELY BEFORE GROUT PLACEMENT. VERIFY THAT THE BACKER ROD IS STILL IN PLACE.
B. FOLLOW MANUFACTURER'S RECOMMENDATIONS FOR ADDITIONAL JOINT PREPARATION AND GROUT PLACEMENT.
C. CAREFULLY ROD JOINTS TO ELIMINATE ANY POSSIBILITY OF VOIDS.

7. POST-TENSION TRANSVERSE TENDONS
A. GROUT SHALL ATTAIN A MINIMUM COMPRESSIVE STRENGTH OF 1,500 PSI, BASED ON THE MANUFACTURER'S RECOMMENDATIONS, PRIOR TO STRESSING.
B. PROVIDE APPROPRIATE CUBE MOLDS AS DESCRIBED IN AASHTO T106 FOR 3 SETS OF 3 DAY CUBES, 3 SETS OF 28 DAY CUBES AND AT A MINIMUM OF 3 MORE CUBES TO TEST FOR THE 1,500 PSI MINIMUM COMPRESSIVE STRENGTH.
C. POST- TENSION TENDONS TO 30 KIP USING A CALIBRATED JACK OPERATED BY QUALIFIED PERSONNEL.

8. END DETAILS
A. GROUT ANCHOR BOLT ENDS AT THE FIXED ENDS AT BRIDGE SEATS.
B. BEFORE GROUT CURES, PLACE WASHER PLATE AND INSTALL HOLD DOWN NUTS.
C. ON THE FIXED END, TIGHTEN NUT.
D. ON THE EXPANSION END, HAND TIGHTEN NUT AND LOOSEN BY 1/2 TURN.
E. GROUT OVER NUT AND BOLT ON FIXED END, PLACE COLD POURED JOINT SEALER OVER NUT AND BOLT ON EXPANSION END.
F. PLACE COLD POURED JOINT SEALER AT EXPANSION END

9. FINISH WORK
A. REMOVE WEDGES, AND PATCH DECK OVERLAY AND FASCIA BEAMS AT TRANSVERSE TENDONS.
B. SATURATE THE PRESTRESSED UNITS WITH WATER FOR TWELVE HOURS PRIOR TO PLACING OF THE CONCRETE DECK OVERLAY.
C. REMOVE ANY FREESTANDING WATER IMMEDIATELY BEFORE PLACING THE DECK OVERLAY.

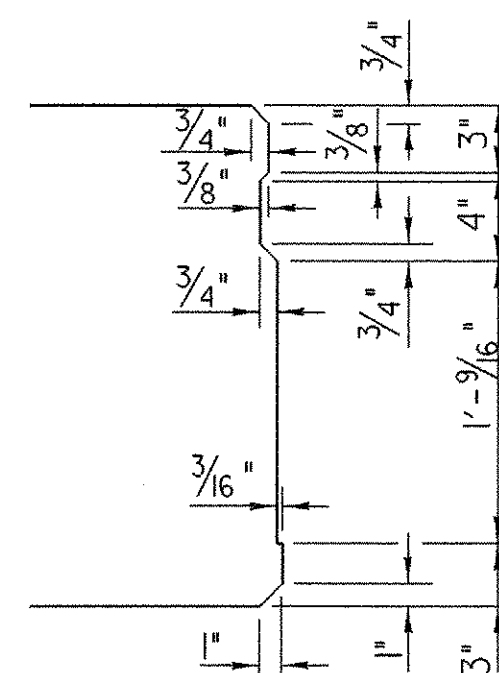
PROJECT NAME:	CASTLETON	
PROJECT NUMBER:	RS 0142(10)	
FILE NAME:	sf193sup.dgn sf193gen.i	PLOT DATE: 1/29/2007
PROJECT LEADER:	R. Whitcomb	DRAWN BY: T. Lackey
DESIGNED BY:	T. Lackey	CHECKED BY: C. Carlson
GENERAL NOTES SHEET #1		SHEET 40 OF 68



SHEAR KEY SECTION
FOR VOIDED SLAB

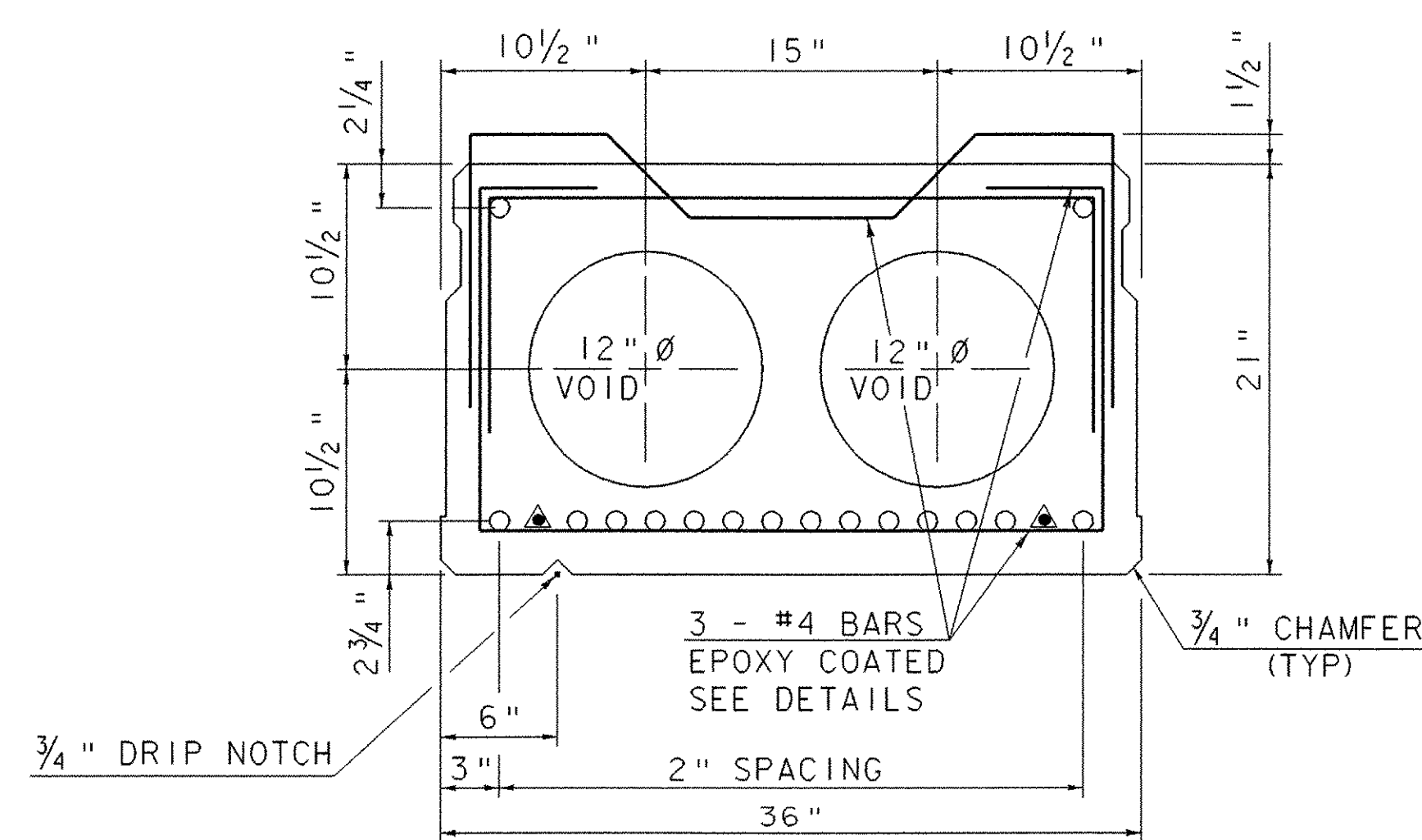
NTS

**NOTE: INSTALL OAKUM AFTER UNITS HAVE BEEN PLACED



SHEAR KEY DETAIL
FOR VOIDED SLAB

NTS



21" X 36" VOIDED SLAB

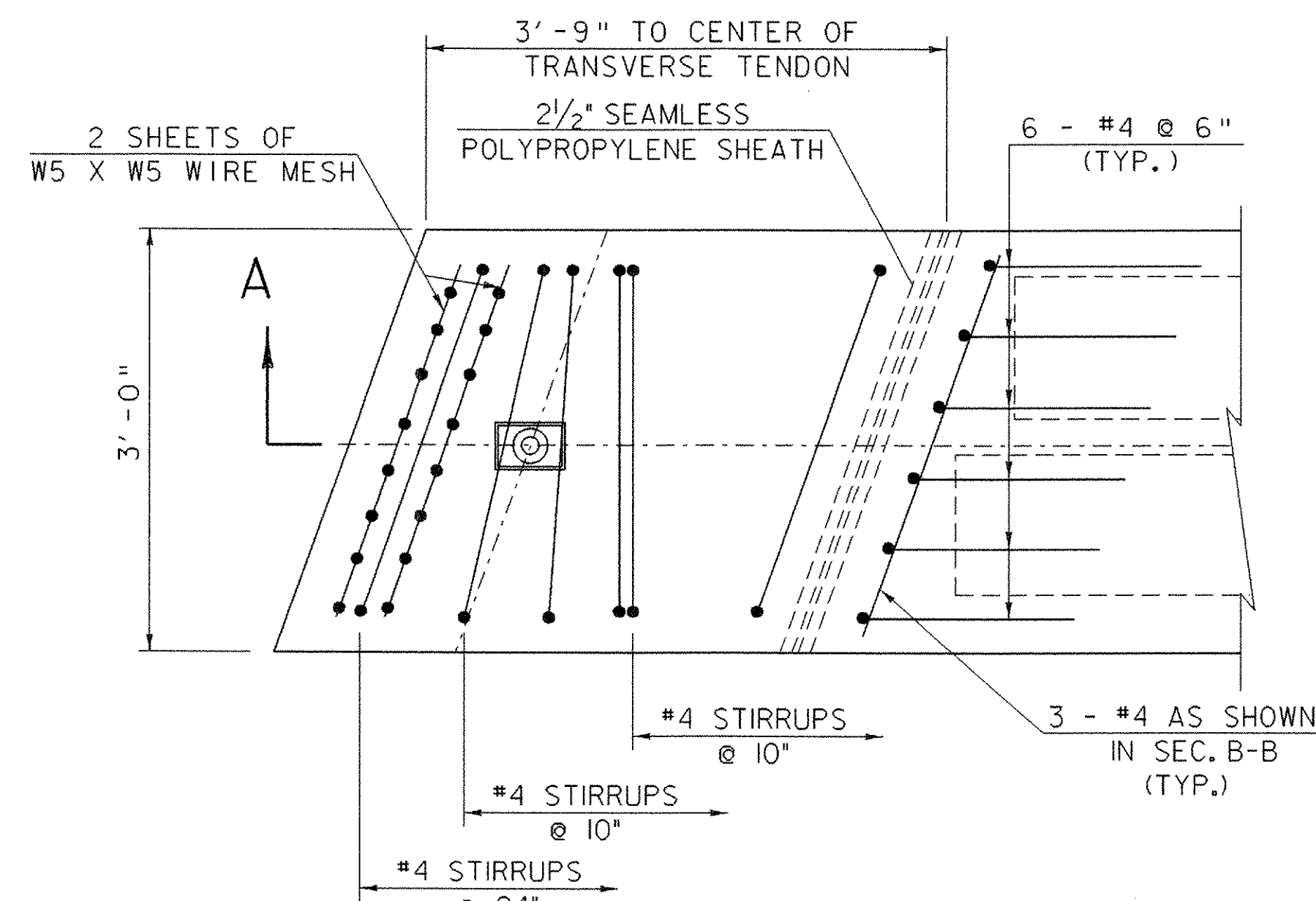
SCALE 1 1/2" = 1'-0"

▲ = STRAND DEBONDED 4'-0" EACH END
** = STOP DRIP NOTCH 5'-0" FROM ENDS OF UNIT AND OUTLET AT 45° TO FASCIA.

MAX NUMBER
OF STRANDS FOR
21" SLAB

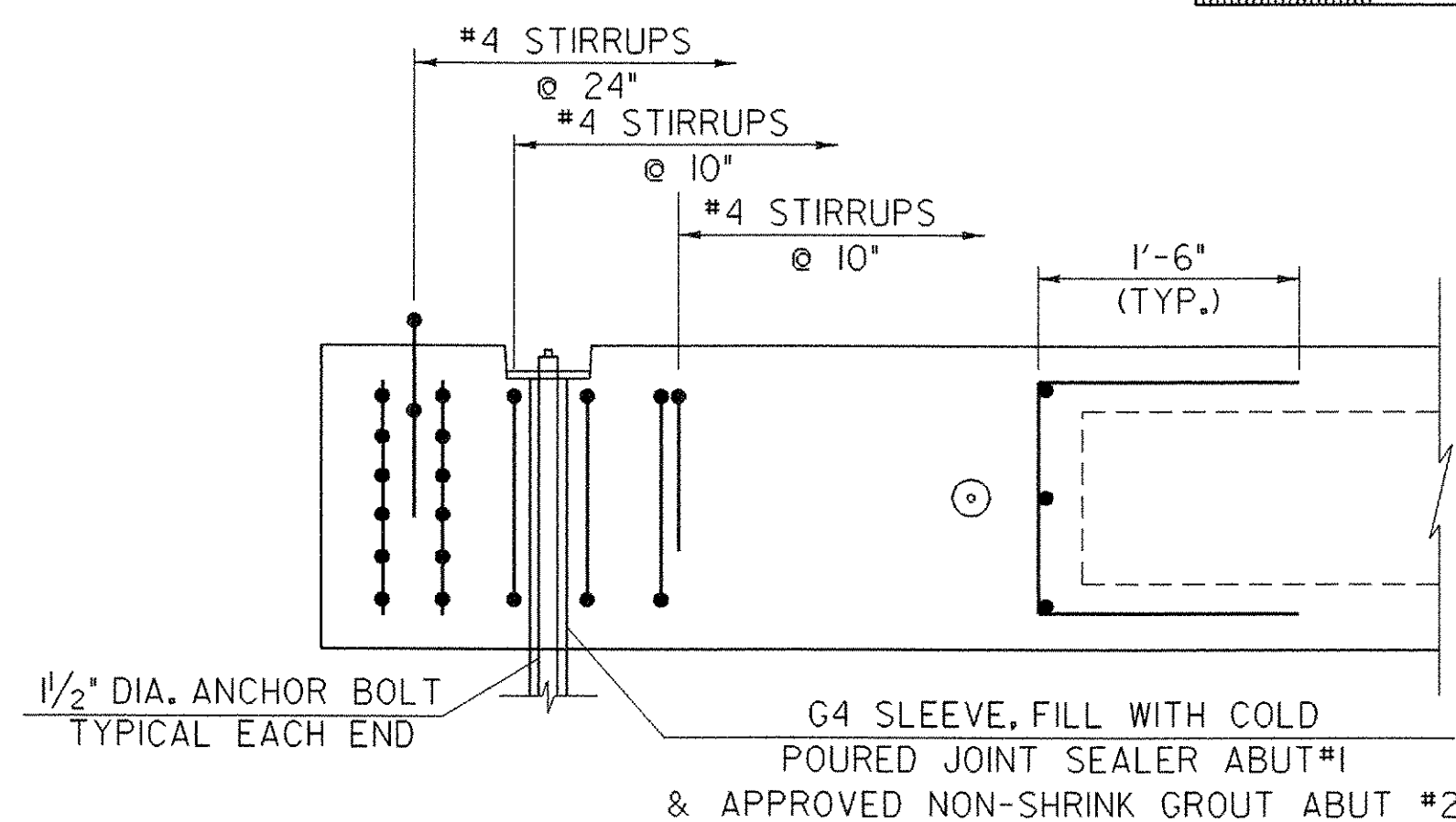
ROW*	NO. OF STRANDS
1 @ 2 3/4"	16 STRANDS
2 @ 18 3/4"	2 STRANDS

*ROWS ARE ALWAYS AT SPECIFIED
DISTANCES FROM BOTTOM OF UNIT



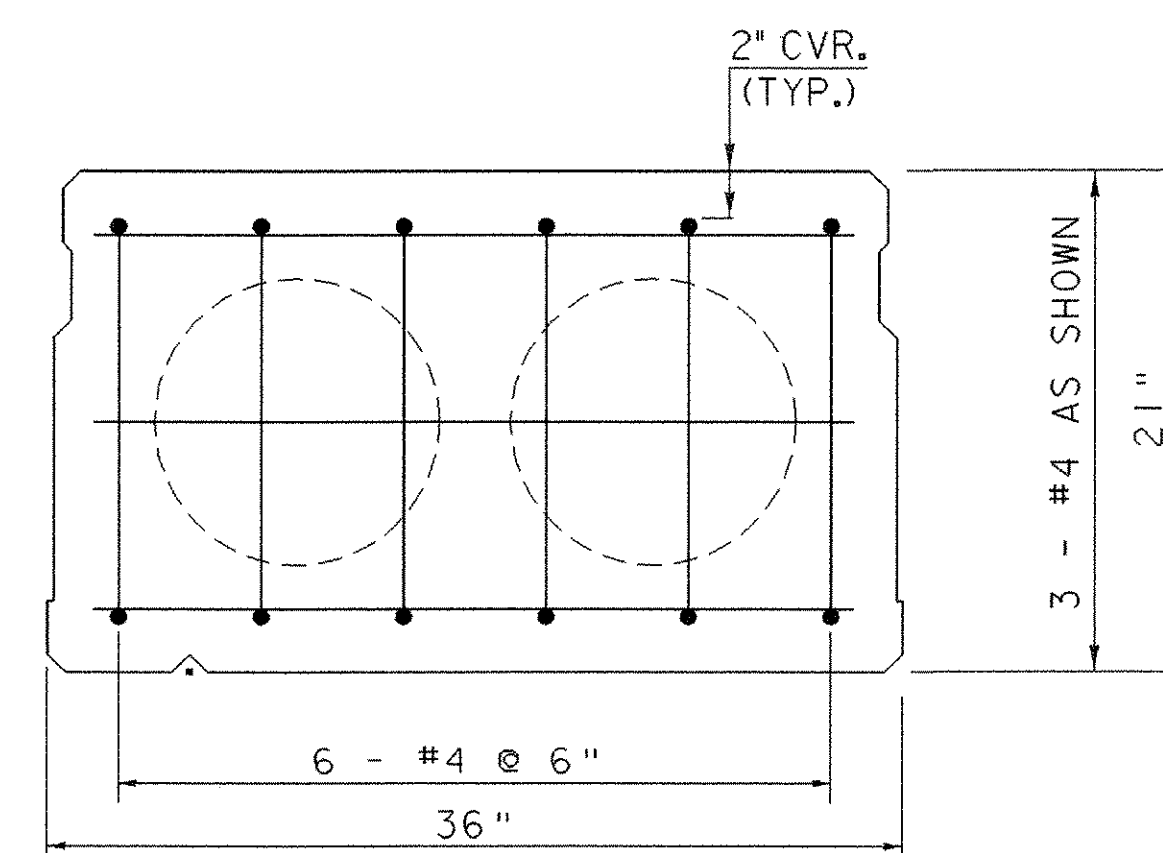
PLAN OF END BLOCK DETAIL

SCALE 1" = 1'-0"



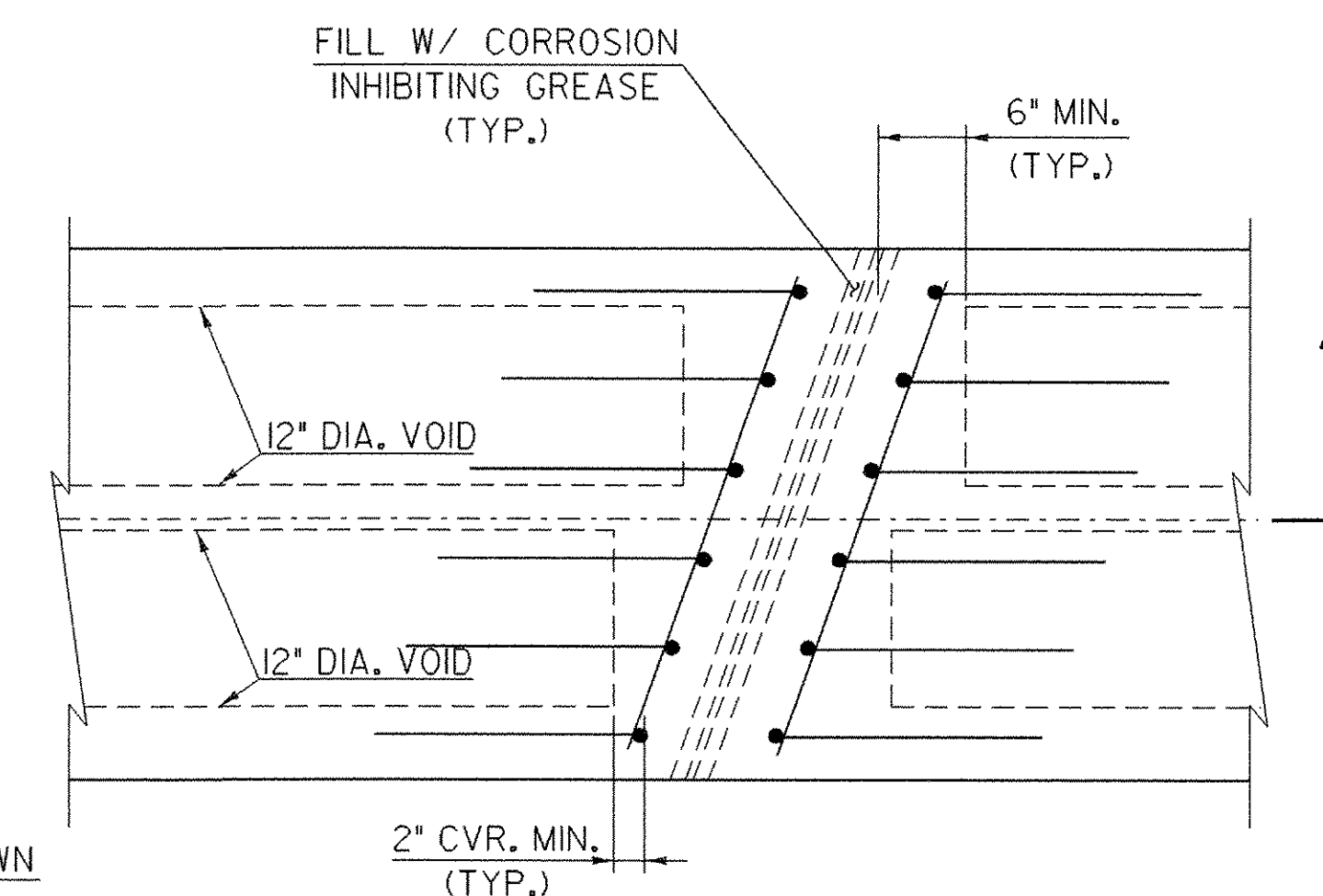
VOIDED SLAB SECTION A-A

SCALE 1" = 1'-0"



SECTION B-B

SCALE 1 1/2" = 1'-0"



SERVICE LOADS

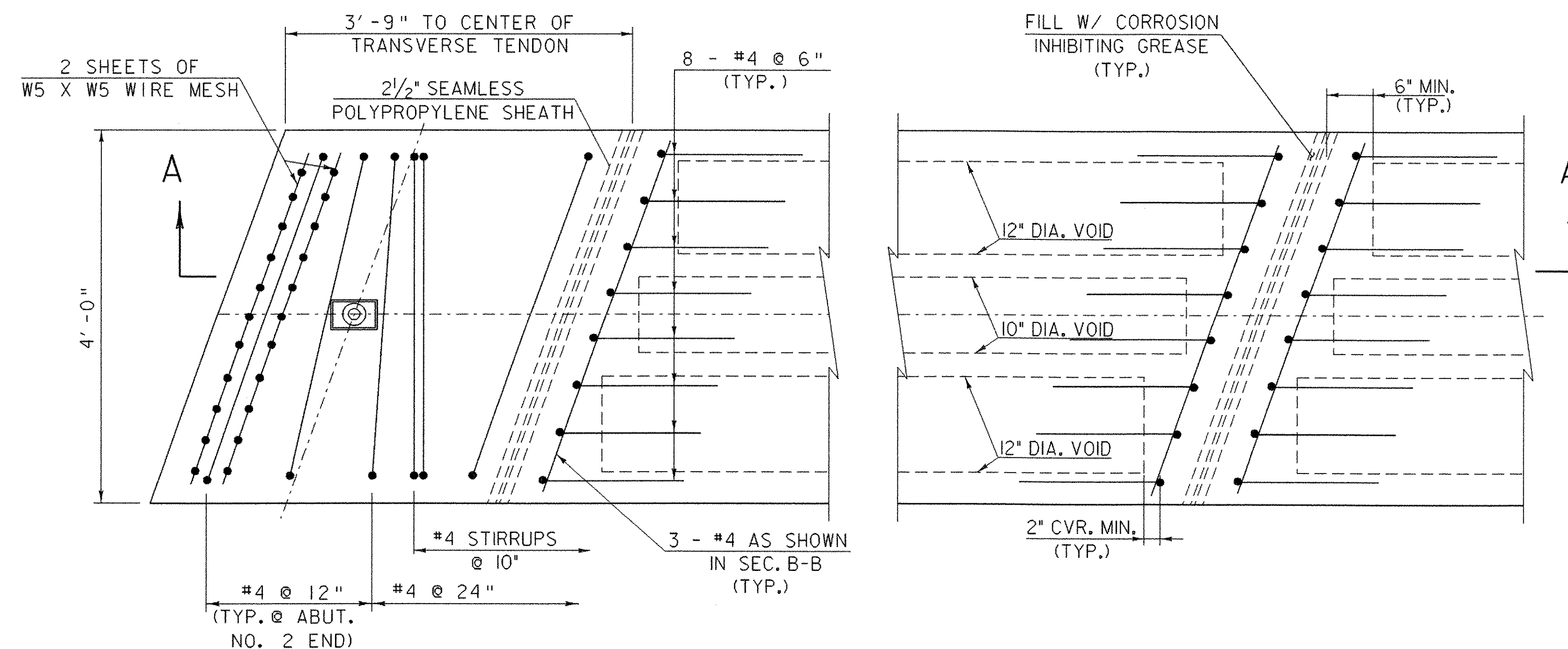
GIRDER	21" X 36"
MEMBER MOMENT	228.5 FT KIP
DECK MOMENT	115.5 FT KIP
SUPERIMPOSED DEAD LOAD MOMENT	59.4 FT KIP
LIVE LOAD & IMPACT MOMENT	301.3 FT KIP
DEAD LOAD REACTION	28 KIP
LIVE LOAD & IMPACT REACTION	52 KIP
TOTAL REACTION	80 KIP
CAMBER UNDER DEAD LOADS AT ERECTION	1.51 IN
CAMBER UNDER DEAD LOADS AT LONG TERM	0.00 IN

SUPERSTRUCTURE DETAILS
21" X 36" VOIDED SLAB

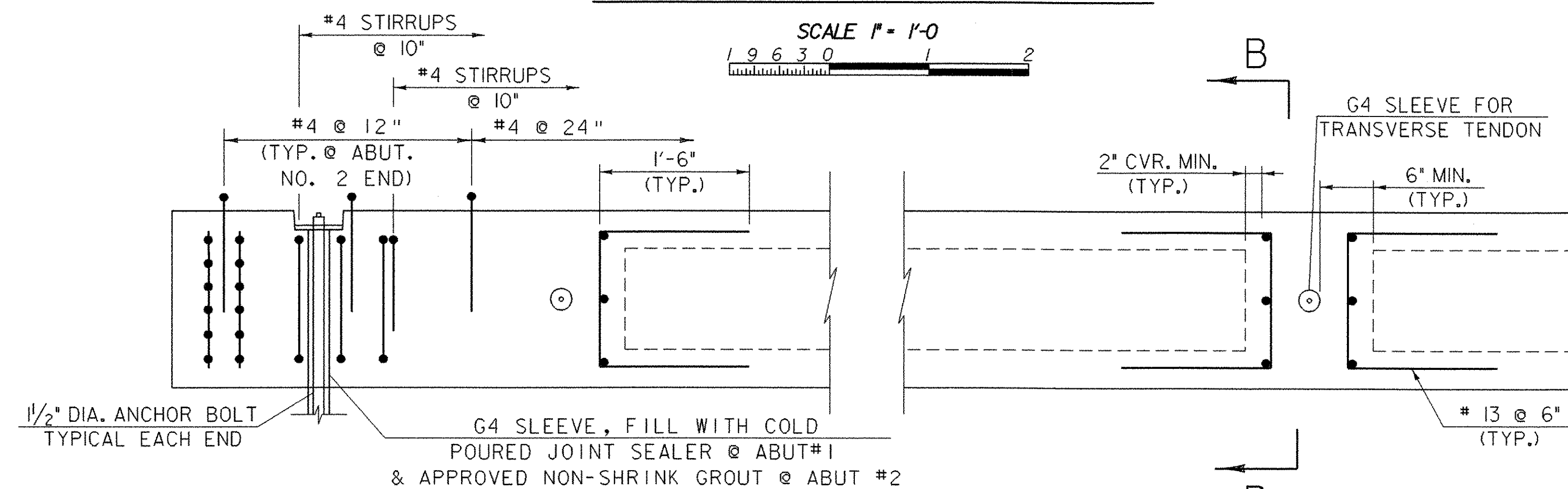
PROJECT NAME: CASTLETON
PROJECT NUMBER: RS 0142(10)

FILE NAME: PW/78f193/sf193sup.dgn
PROJECT LEADER: R. WHITCOMB
DESIGNED BY: M. HALE
78f193/str/sf193vsl

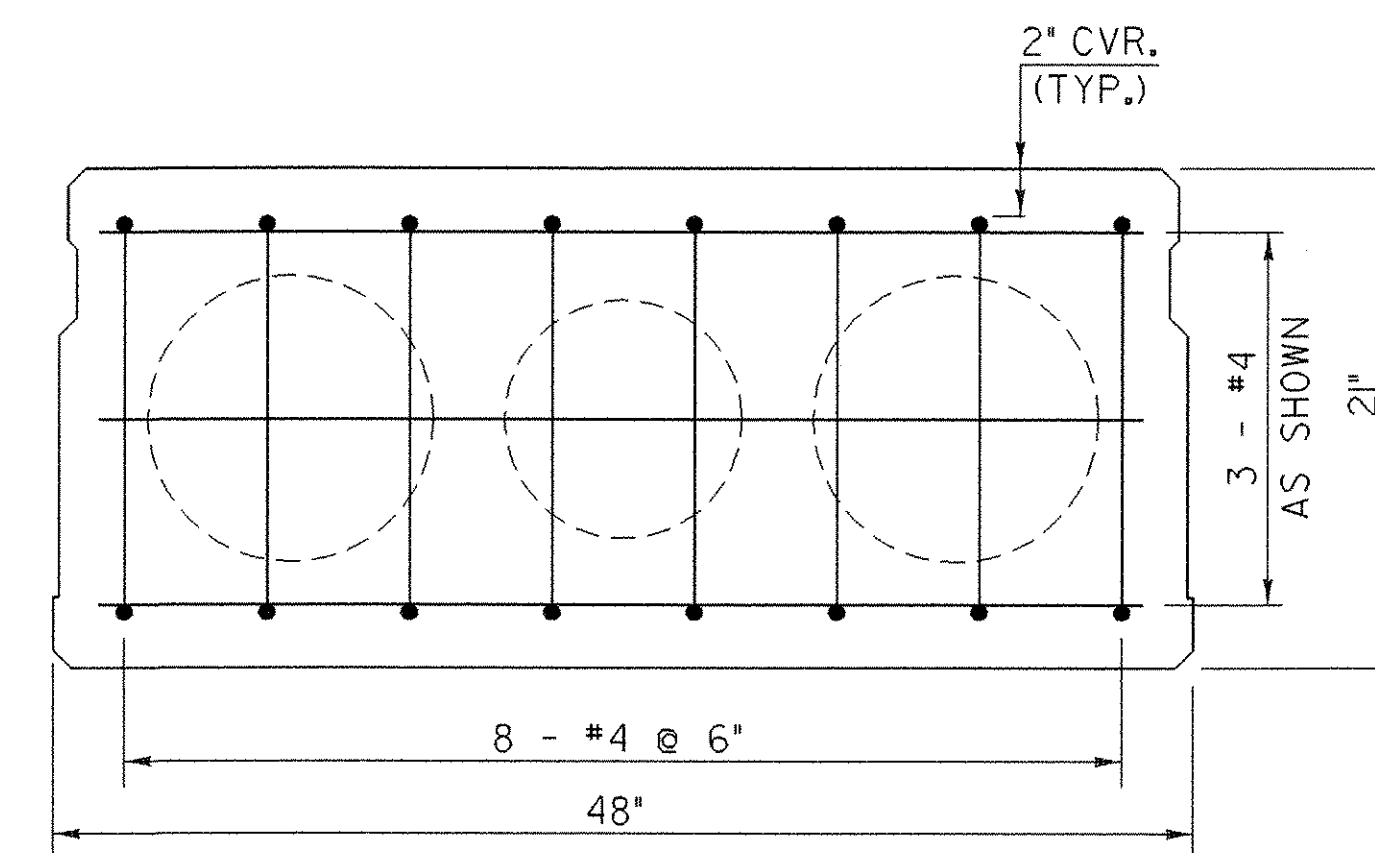
PLOT DATE: 16-FEB-2007
DRAWN BY: L. BULLOCK
CHECKED BY: C. CARLSON
SHEET 41 OF 68



PLAN OF END BLOCK DETAIL

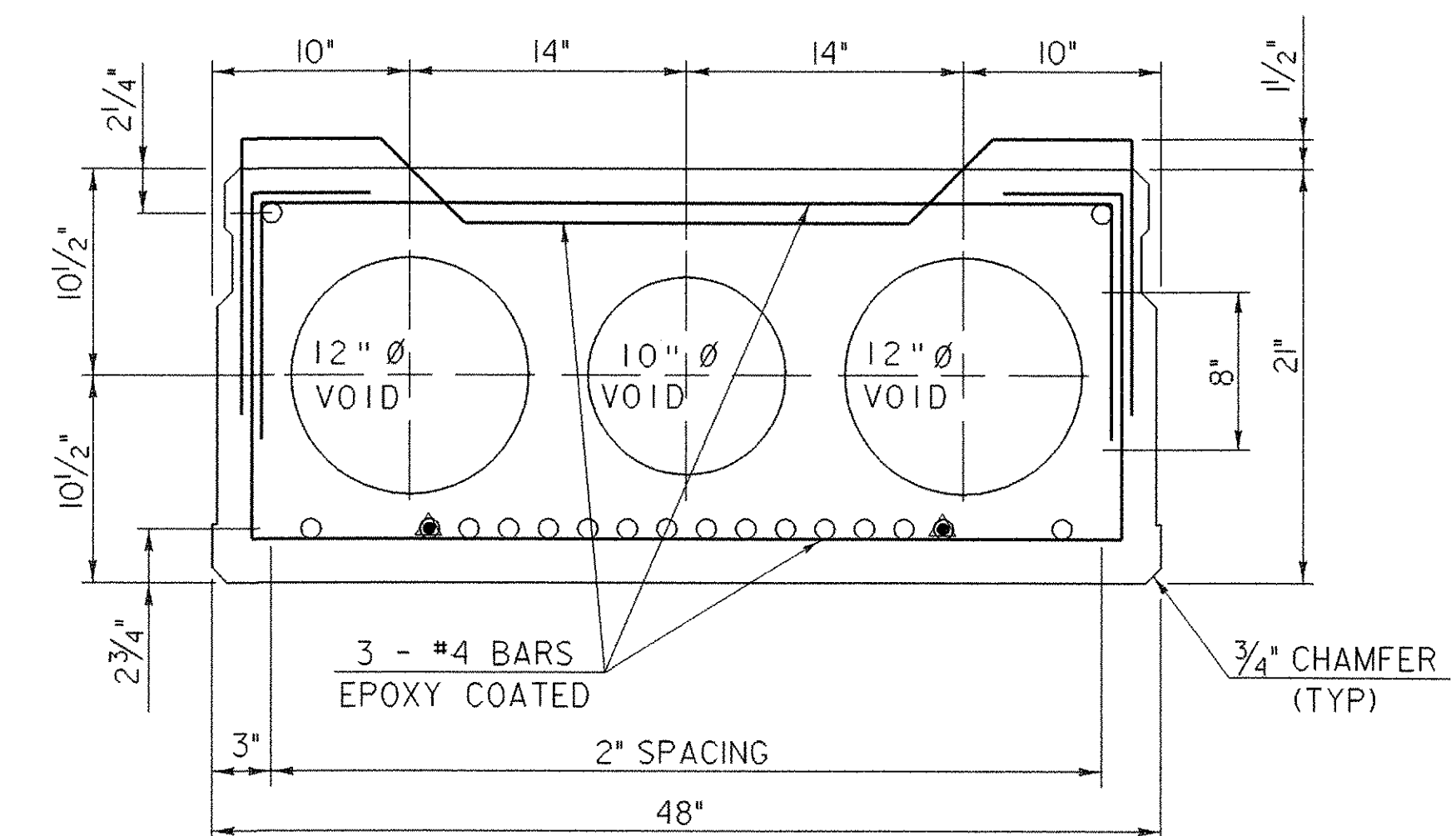


VOIDED SLAB SECTION A-A



SECTION B-B

SCALE 1 1/2" = 1'-0"



21" X 48" VOIDED SLAB

SCALE 1 1/2" = 1'-0"

▲ = STRAND DEBONDED 4'-0" EACH END
 ** = STOP DRIP NOTCH 5'-0" FROM ENDS OF UNIT AND OUTLET AT 45° TO FASCIA.

SERVICE LOADS

GIRDER	
MEMBER MOMENT	21" X 48"
DECK MOMENT	388.6 FT KIP
SUPERIMPOSED DEAD LOAD MOMENT	171.6 FT KIP
LIVE LOAD & IMPACT MOMENT	77.2 FT KIP
DEAD LOAD REACTION	872.3 FT KIP
LIVE LOAD & IMPACT REACTION	35 KIP
TOTAL REACTION	33 KIP
CAMBER UNDER DEAD LOADS AT ERECTION	68 KIP
CAMBER UNDER DEAD LOADS AT LONG TERM	0.23 IN

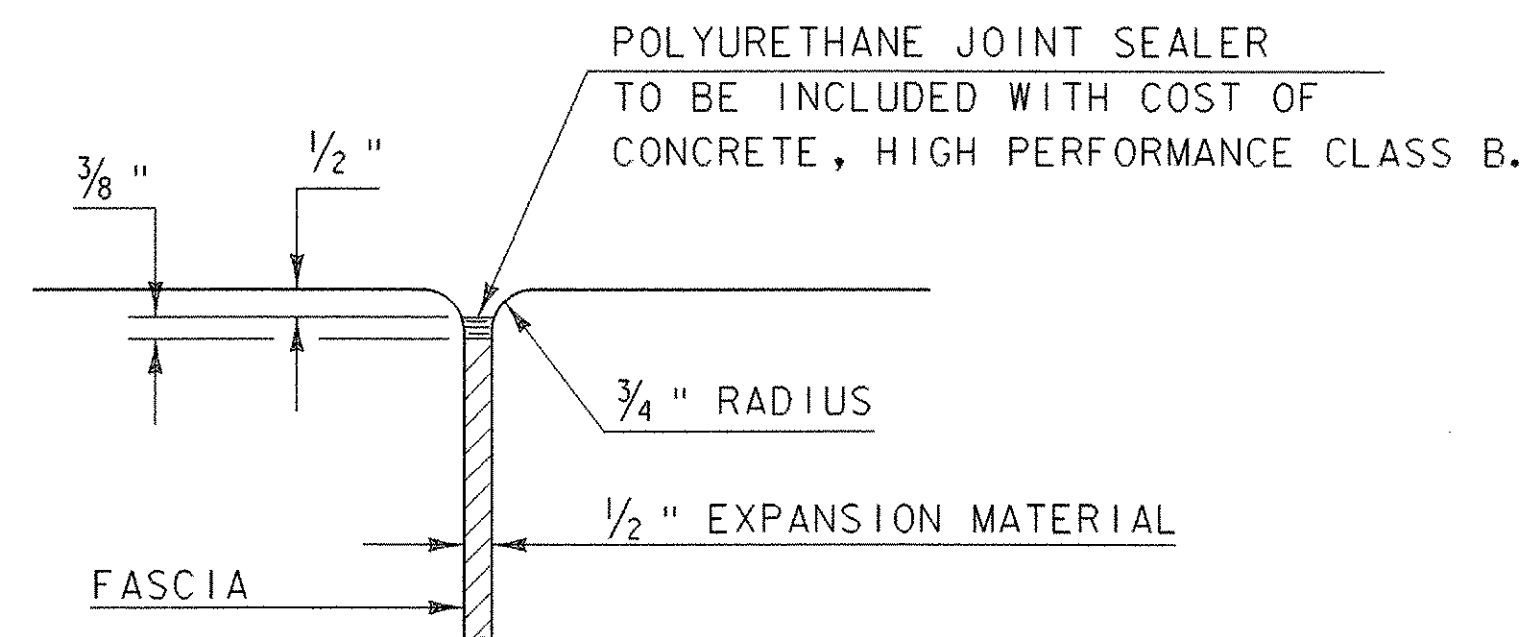
MAX NUMBER OF STRANDS FOR 21" SLAB

ROW*	NO. OF STRANDS
1 @ 2 3/4"	16 STRANDS
2 @ 18 3/4"	2 STRANDS

* ROWS ARE ALWAYS AT SPECIFIED DISTANCES FROM BOTTOM OF UNIT

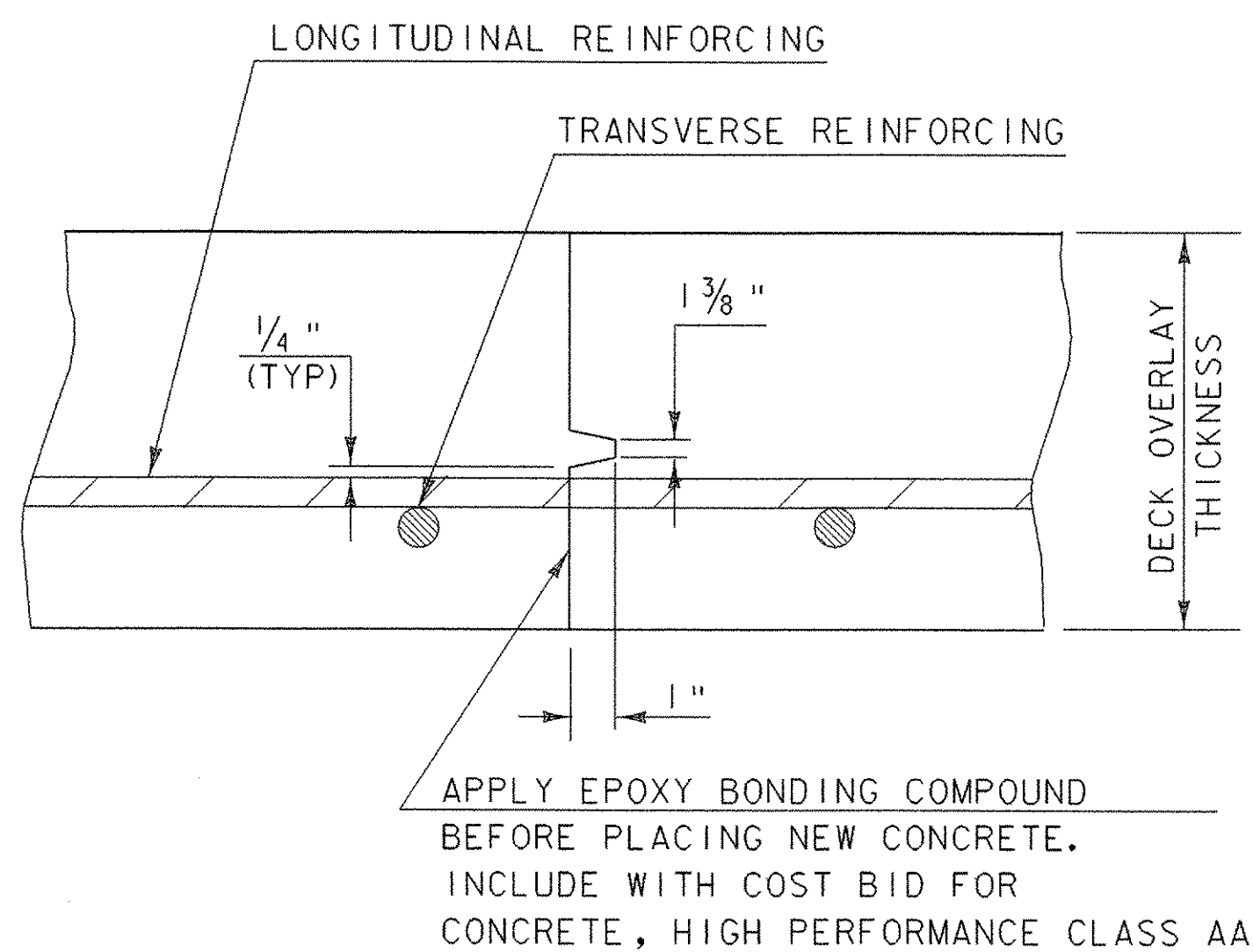
SUPERSTRUCTURE DETAILS
 21" X 48" VOIDED SLAB

PROJECT NAME: CASTLETON	PLOT DATE: 16-FEB-2007
PROJECT NUMBER: RS 0142(10)	DRAWN BY: L. BULLOCK
FILE NAME: PW/78f193/sf193sup.dgn	CHECKED BY: C. CARLSON
PROJECT LEADER: R. WHITCOMB	SHEET 42 OF 68
DESIGNED BY: M. HALE	
78f193/sf193vs2.i	



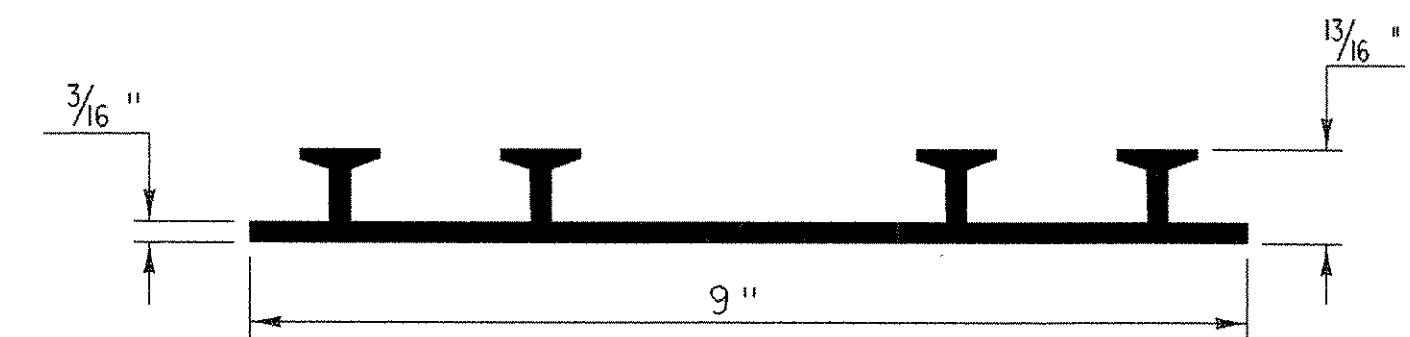
JOINT BETWEEN FASCIA AND WINGWALL

NTS



TRANSVERSE BRIDGE SLAB CONSTRUCTION JOINT DETAILS

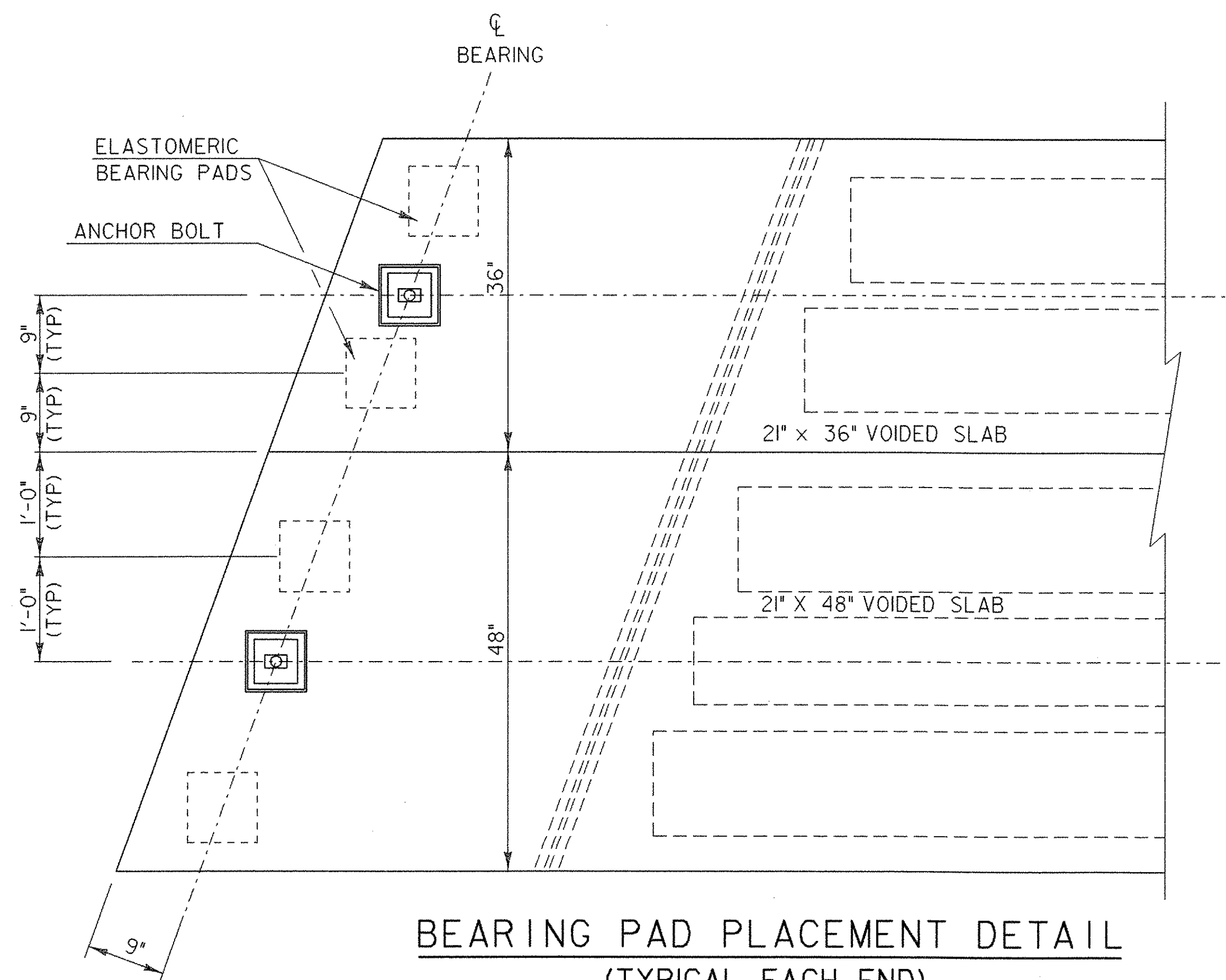
NTS



P.V.C. WATERSTOP FOR CONSTRUCTION JOINTS

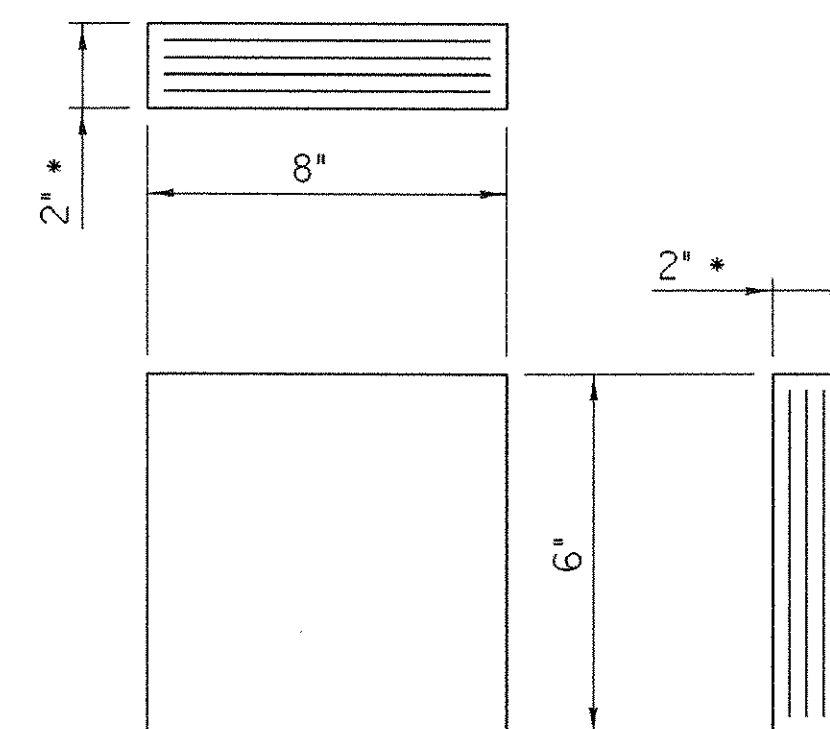
NTS

INCLUDE THE COSTS FOR P.V.C. WATERSTOP IN THE
UNIT PRICE BID FOR CONCRETE, HIGH PERFORMANCE CLASS B.
OTHER CONFIGURATIONS MAY BE USED UPON APPROVAL
OF THE STRUCTURES ENGINEER.



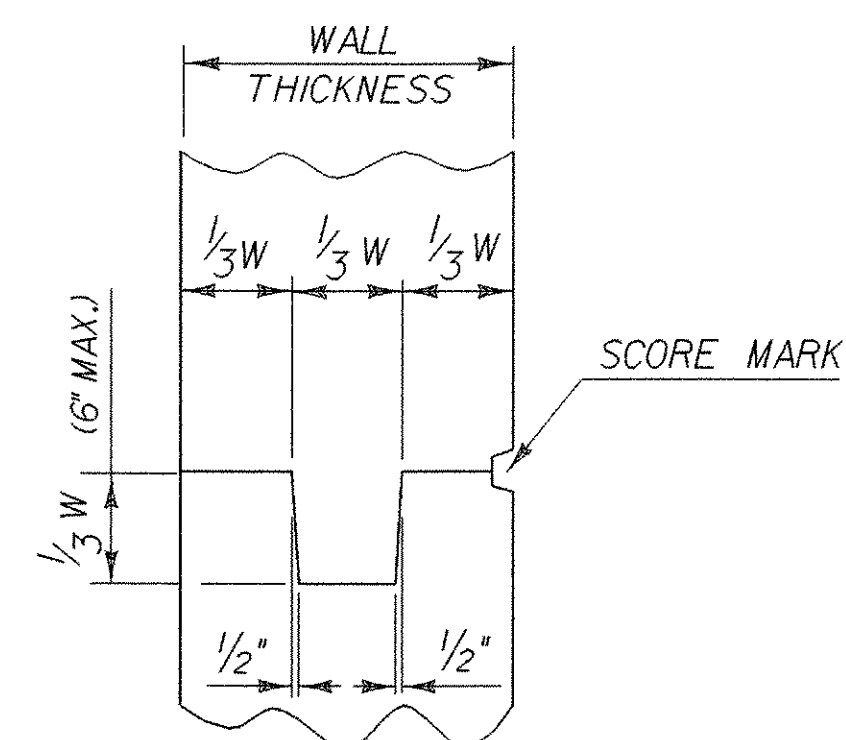
BEARING PAD PLACEMENT DETAIL

(TYPICAL EACH END)
SCALE 1" = 1'-0"
1 9 6 3 0 1 2



ELASTOMERIC BEARING DETAIL

* 3 - 3/8" LAYERS OF ELASTOMERIC ALTERNATING WITH
4 - 14 GAGE STEEL REINFORCING PLATES



TYPICAL CONCRETE CONSTRUCTION JOINT

NTS

NOTES

- ITEM 531.11, "BEARING DEVICE ASSEMBLY, ELASTOMERIC PAD" IS THE PAY ITEM FOR THE BEARINGS.
- ALTERNATE CONFIGURATIONS FOR ELASTOMERIC BEARINGS MAY BE SUBMITTED FOR APPROVAL. ANY ALTERNATE BEARING SUBMITTED SHALL BE DESIGNED AND CERTIFIED TO MEET THE LOADS AND CRITERIA SHOWN ON THIS SHEET AND MAINTAIN THE ANCHORAGE SYSTEM SHOWN. THE BEARINGS SHALL BE DESIGNED ACCORDING TO AASHTO "STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES" 2002 EDITION AND ITS LATEST REVISIONS.
- THE BEARING SHAPE FACTOR SHALL BE BETWEEN 5.0 AND 12.0.
- ALL REINFORCEMENT BETWEEN LAYERS OF ELASTOMERIC SHALL BE STEEL GRADE 60. NO FABRIC REINFORCEMENT WILL BE PERMITTED.
- ELASTOMERIC BEARINGS REINFORCED WITH STEEL SHALL HAVE A 1/8" EDGE SEAL OF ELASTOMERIC INTEGRAL WITH THE BEARING OVER ALL PLATES.
- ALL MATERIALS AND FABRICATION SHALL BE PER AASHTO DIVISION II SECTION 18.2 AND AASHTO MATERIAL SPECIFICATION M251.
- DESIGN CRITERIA:
 - TEMPERATURE RANGE: 80 F
 - 60 DUROMETER ELASTOMERIC
 - MAXIMUM BEARING STRESS: 1000 psi
 - DESIGN ROTATION: 0.016 rad
 - REACTION/BEAM:

	36"	48"
RDL:	28 kips	35 kips
RLL+1:	25 kips	33 kips

8. COMPRESSIBLE SEALER. THE FABRICATOR SHALL SUPPLY A SELF ADHESIVE COMPRESSIBLE SEALER BETWEEN THE BOTTOM OF THE UNITS AND THE BRIDGE SEAT. THIS COMPRESSIBLE SEALER SHALL SURROUND THE 2 1/2" DIA SLEEVE IN THE UNIT. THE PURPOSE OF THE SEALER IS TO FACILITATE PLACEMENT OF THE "MORTAR OR JOINT SEALER" AROUND THE ANCHOR BOLTS.

SUPERSTRUCTURE DETAILS BRIDGE END & BEARINGS

PROJECT NAME: CASTLETON	
PROJECT NUMBER: RS 0142(10)	
FILE NAME: PW/78f193/sf193sup.dgn	PLOT DATE: 09-FEB-2007
PROJECT LEADER: R. WHITCOMB	DRAWN BY: STR 3
DESIGNED BY: M. HALE	CHECKED BY: C. CARLSON
78f193/str/sf193brg.l	SHEET 43 OF 68



1 9 6 3 0 1

Diagram showing a cross-section of a concrete curb and deck overlay. The curb is labeled "CONCRETE CURB" and the overlay is labeled "DECK OVERLAY". A "CONSTRUCTION JOINT" is indicated on the left. A circular detail callout points to the top of the curb, labeled "SEE DETAIL 'B'".

SECTION B-B
NTS



CURTAIN WALL DETAIL

1 9 6 3 0 1



DETAIL "B"
NTS

3. LONGITUDINAL REINFORCING SHALL PASS THROUGH CONCRETE CURB CONSTRUCTION JOINTS.



SCALE 1/2" = 1' 0"

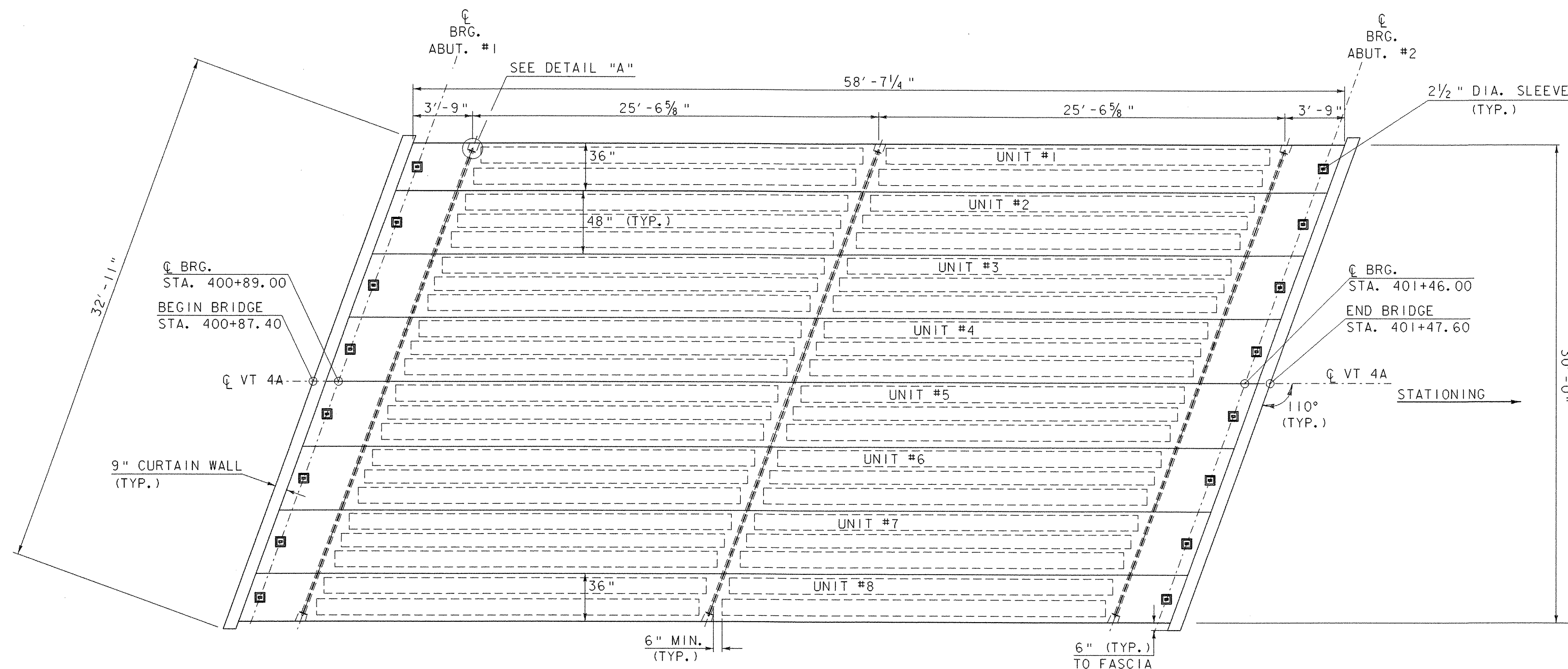
1 0 1 2



SUPERSTRUCTURE DETAILS
CURB AND RAIL

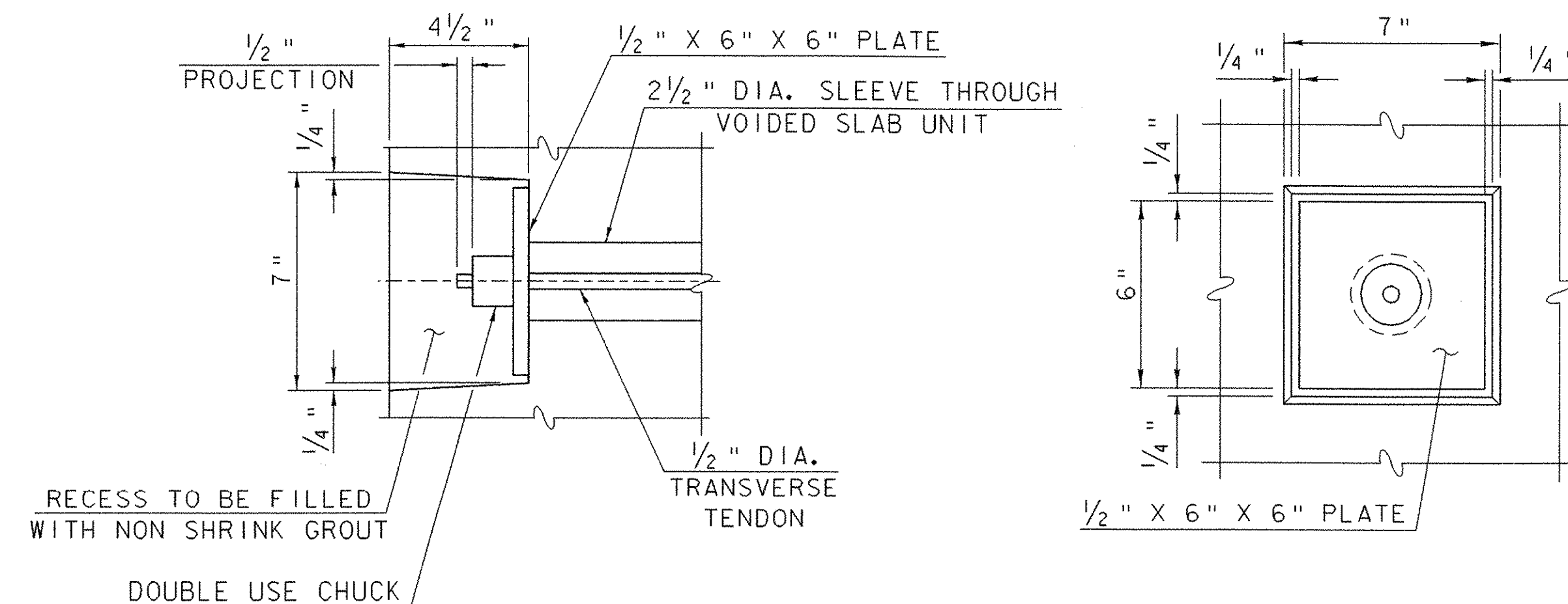
FILE NAME: PW/78f193/sf193sup.dgn
PROJECT LEADER: R. WHITCOMB
DESIGNED BY: M. HALE
78f193/str/sf193crb.i

PLOT DATE: 09-FEB-2007
DRAWN BY: L. BULLOCK
CHECKED BY: C. CARLSON
SHEET 44 OF 68



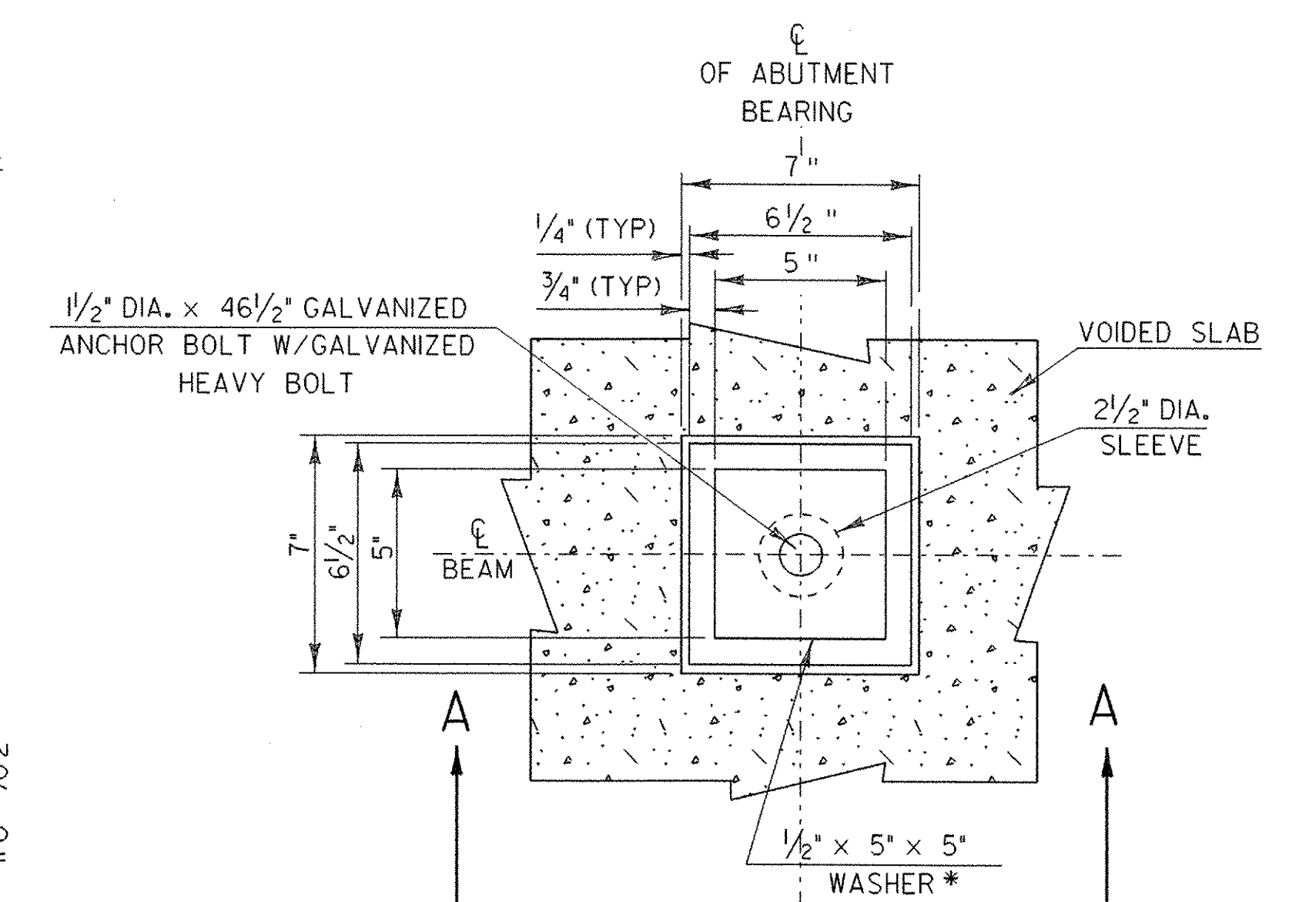
PLAN PRESTRESSED VOIDED SLAB UNITS

SCALE 1/4" = 1'-0"



DETAIL "A"

SCALE 1/4" = 1'-0"

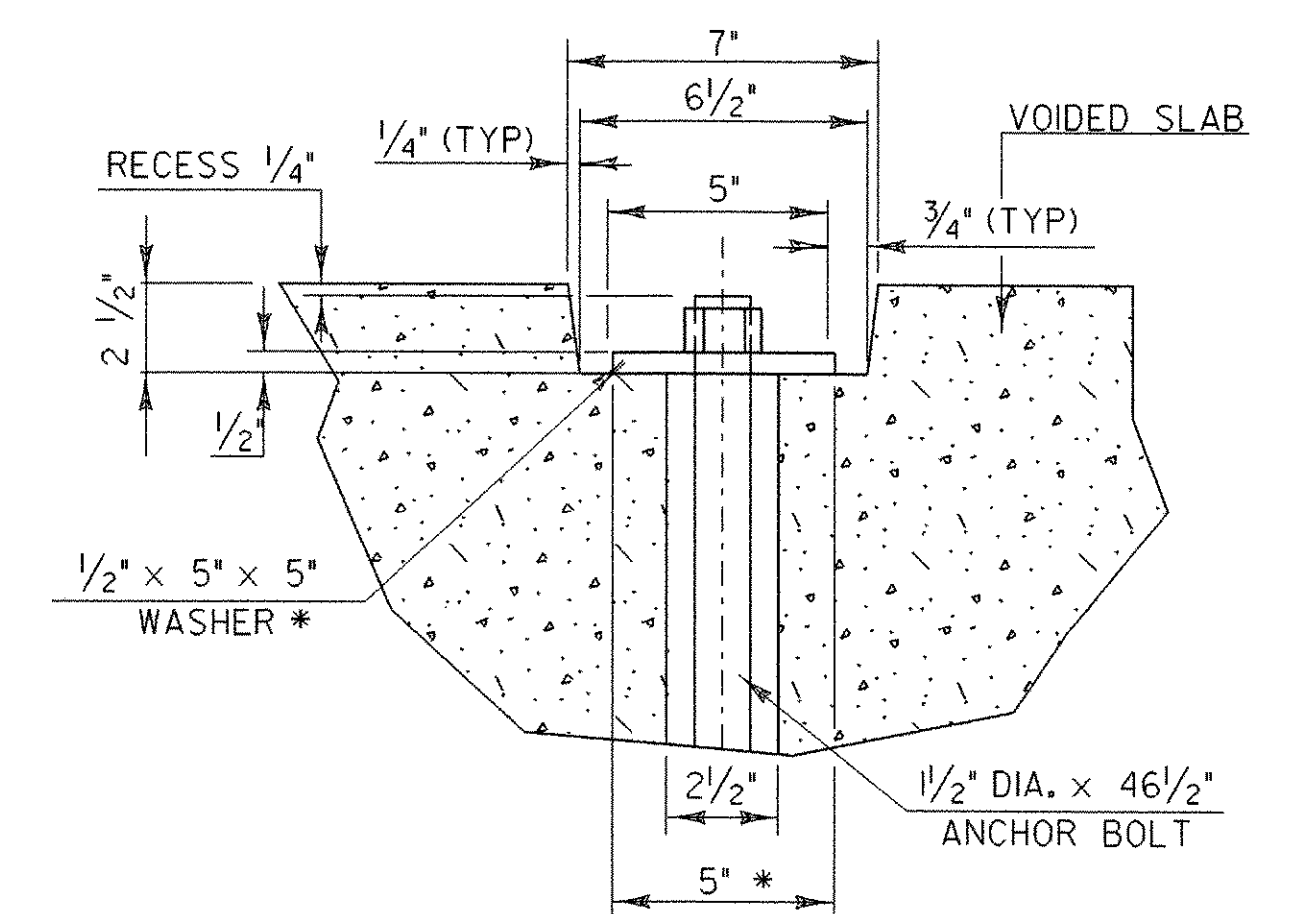


END BRIDGE ANCHOR BOLT DETAIL

NTS

NOTE:
SEE VAOT SPECIFICATION 714.08
FOR ANCHOR BOLTS & NUTS

* 1/2" x 5" x 5" WASHER
WITH 1/2" DIA.
HOLE (GALVANIZED)



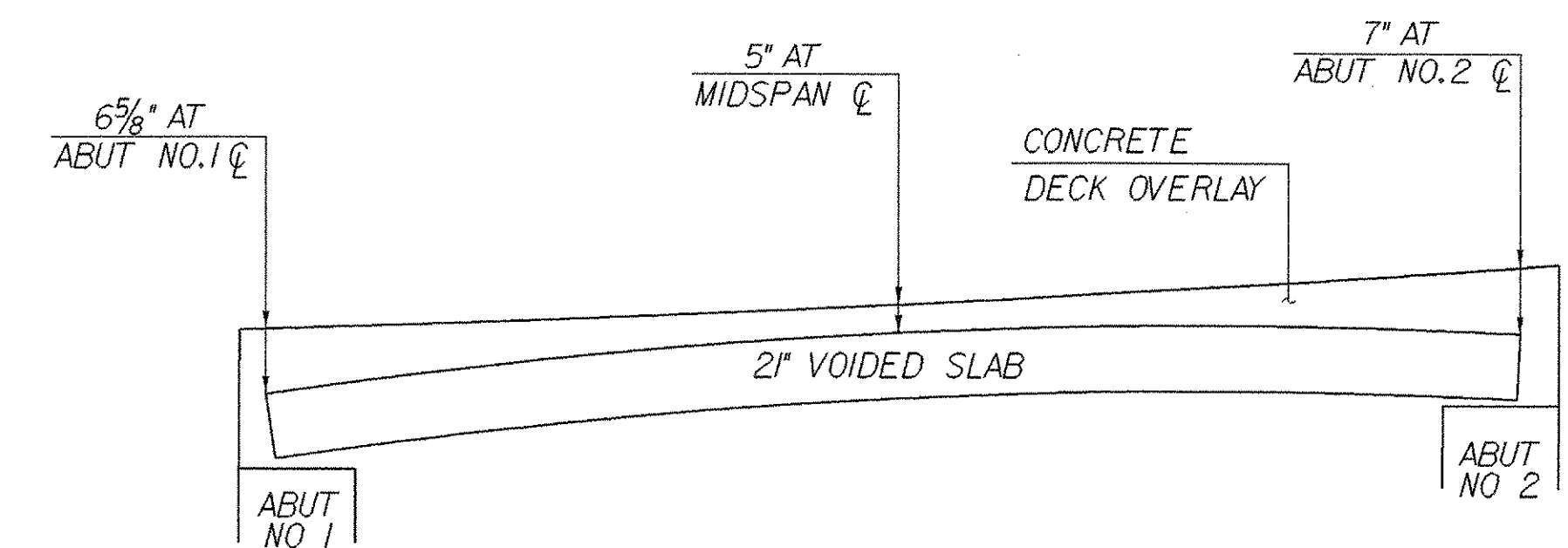
SECTION A-A

NOTES

1. TRANSVERSE TENDONS SHALL BE COVERED BY SEAMLESS POLYPROPYLENE SHEATH (WITH CORROSION INHIBITOR GREASE BETWEEN SHEATH AND TENDON) FOR THE LENGTH OF TENDON, EXCEPT AT ANCHORAGE LOCATIONS. TENDONS SHALL BE TENSIONED TO 30000#.
2. THE 1/2" PLATE SHALL CONFORM TO AASHTO M270 GRADE 50. THE PLATE AND CHUCK SHALL BE GALVANIZED ACCORDING TO AASHTO M111.

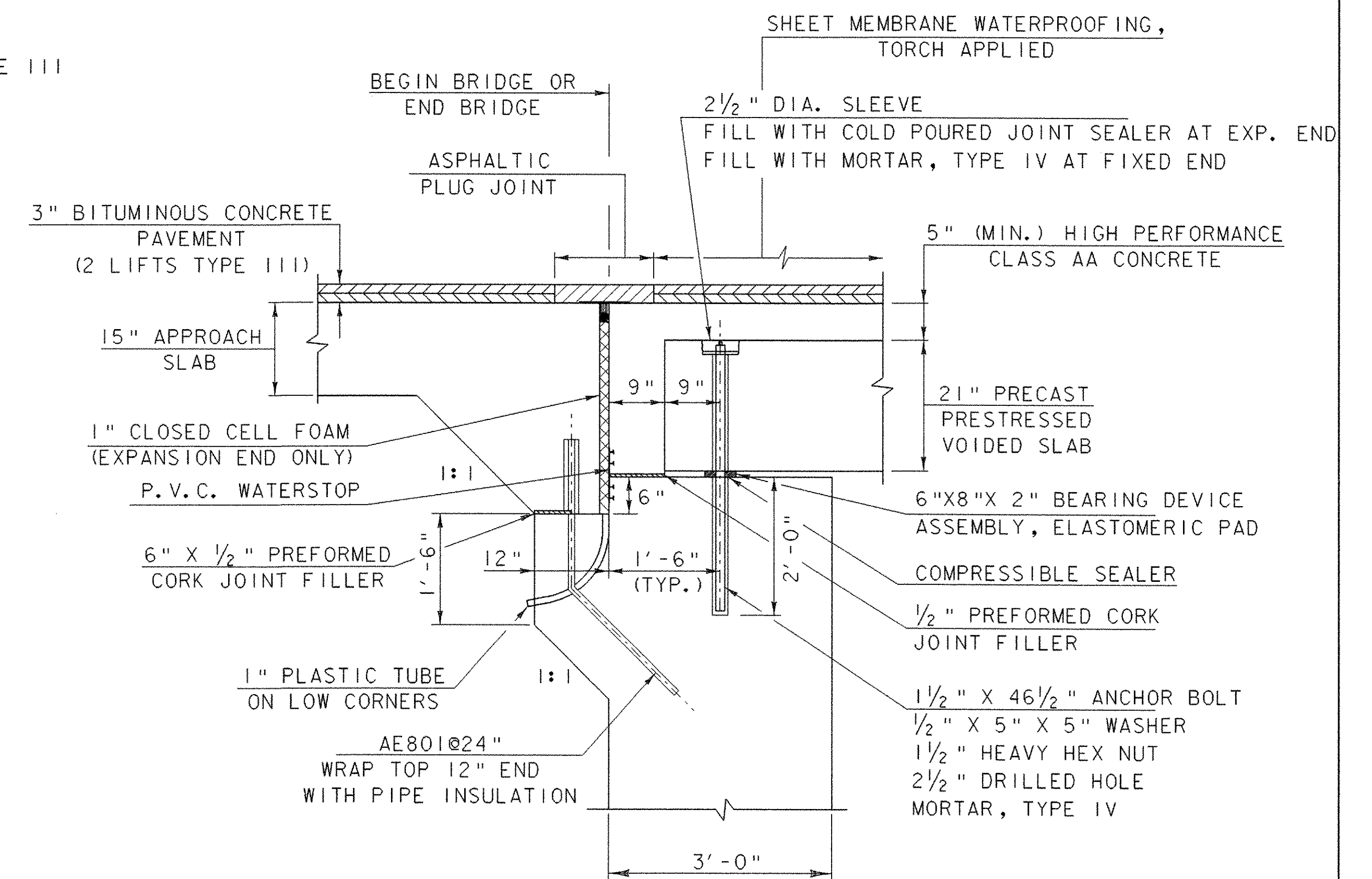
SUPERSTRUCTURE DETAILS DECK OVERLAY

PROJECT NAME: CASTLETON	PLOT DATE: 16-FEB-2007
PROJECT NUMBER: RS 0142(10)	DRAWN BY: L. BULLOCK
FILE NAME: PW/78f193/sf193sup.dgn	CHECKED BY: C. CARLSON
PROJECT LEADER: R. WHITCOMB	SHEET 45 OF 68
DESIGNED BY: M. HALE	
78f193/str/sf193dck.l	



NTS

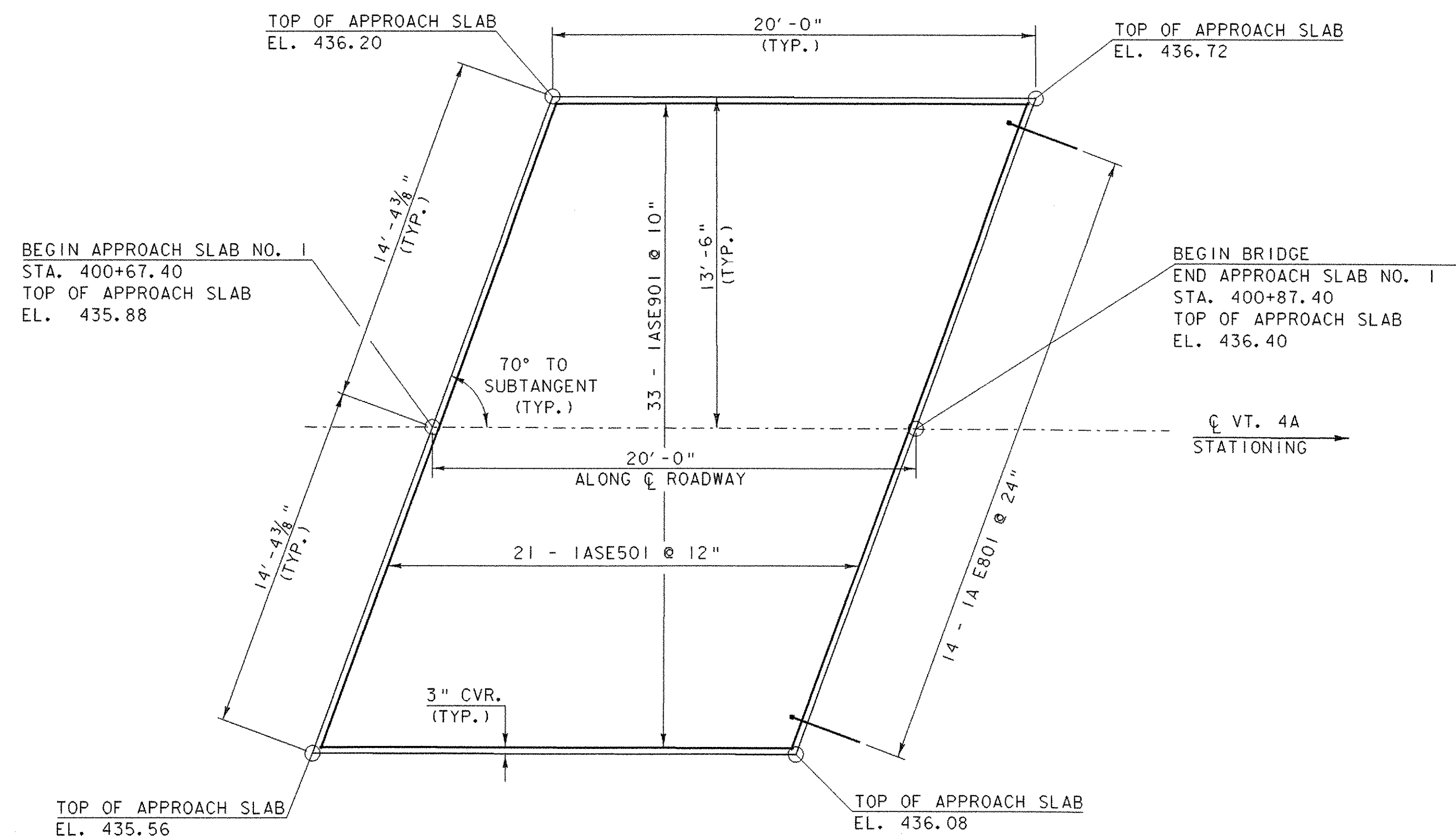
SCALE $\frac{1}{2}" = 1'-0"$



SCALE $\frac{3}{4}" = 1'-0"$

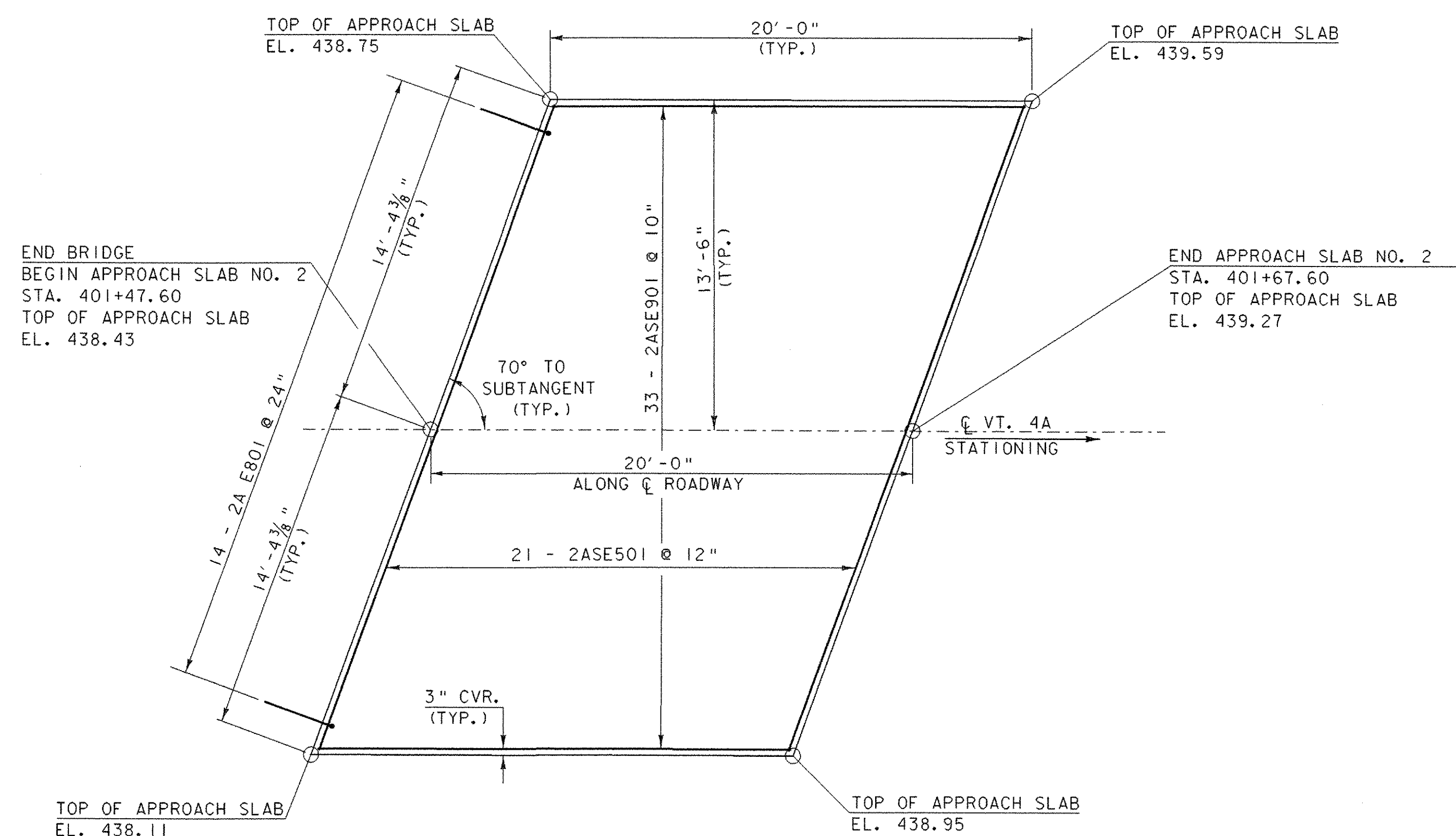
SCALE $\frac{1}{4}" = 1'-0"$

FILE NAME: PW/78f193/sf193sup.dgn	PLOT DATE: 16-FEB-2007
PROJECT LEADER: R. WHITCOMB	DRAWN BY: L. BULLOCK
DESIGNED BY: M. HALE	CHECKED BY: C. CARLSON
78f193/sfr/sf193typ.l	SHEET 46 OF 68



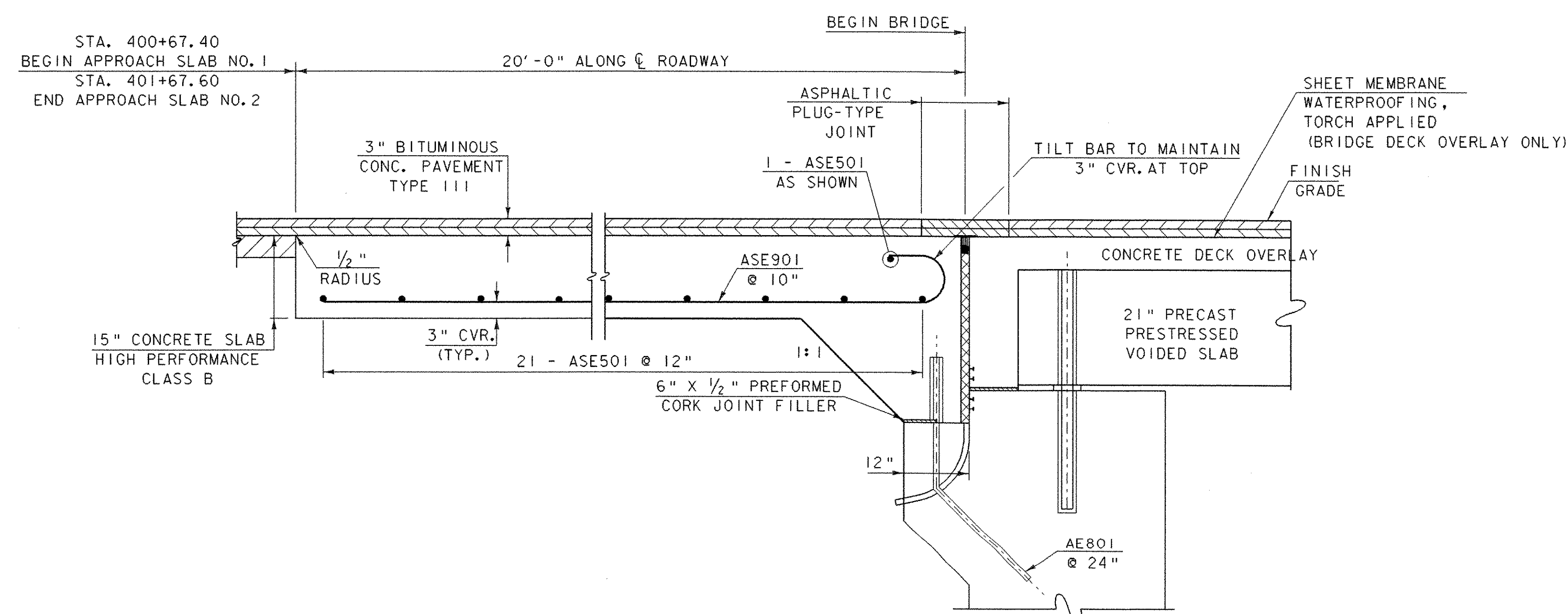
APPROACH SLAB NO. 1 PLAN

SCALE 1/4" = 1'-0"
1 0 2 4 6



APPROACH SLAB NO. 2 PLAN

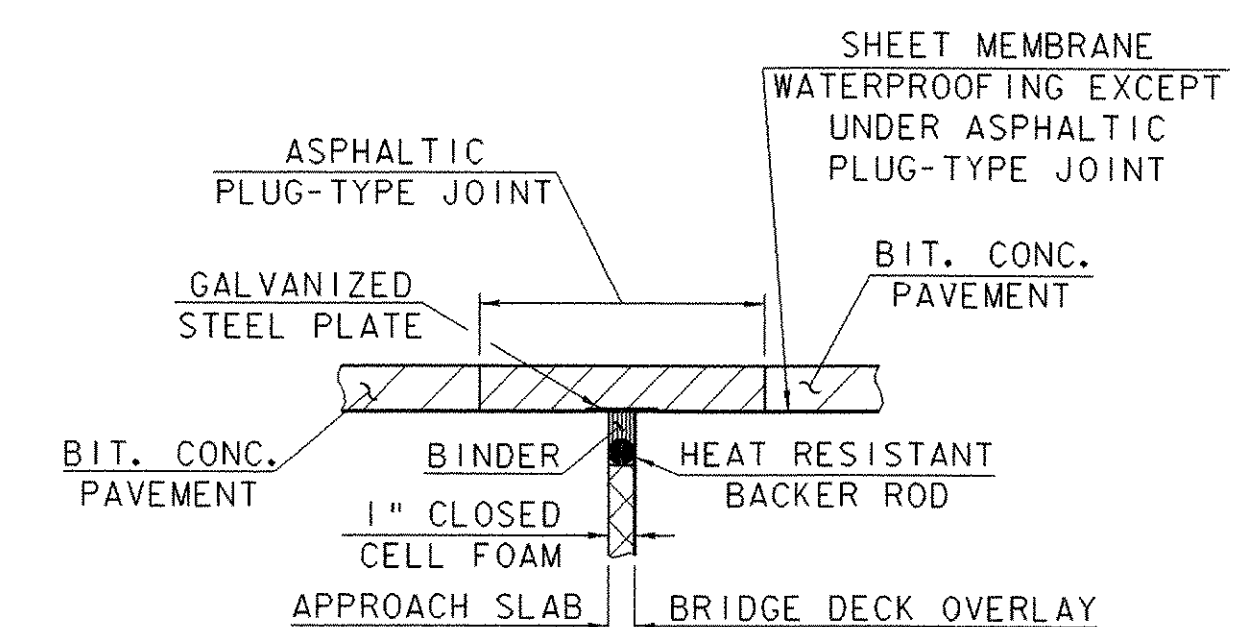
SCALE 1/4" = 1'-0"
1 0 2 4 6



APPROACH SLAB NO. 1 DETAIL
(NORMAL TO CL)

(APPROACH SLAB NO. 2 SIMILAR)

SCALE 1" = 1'-0"
1 9 6 3 0 1 2



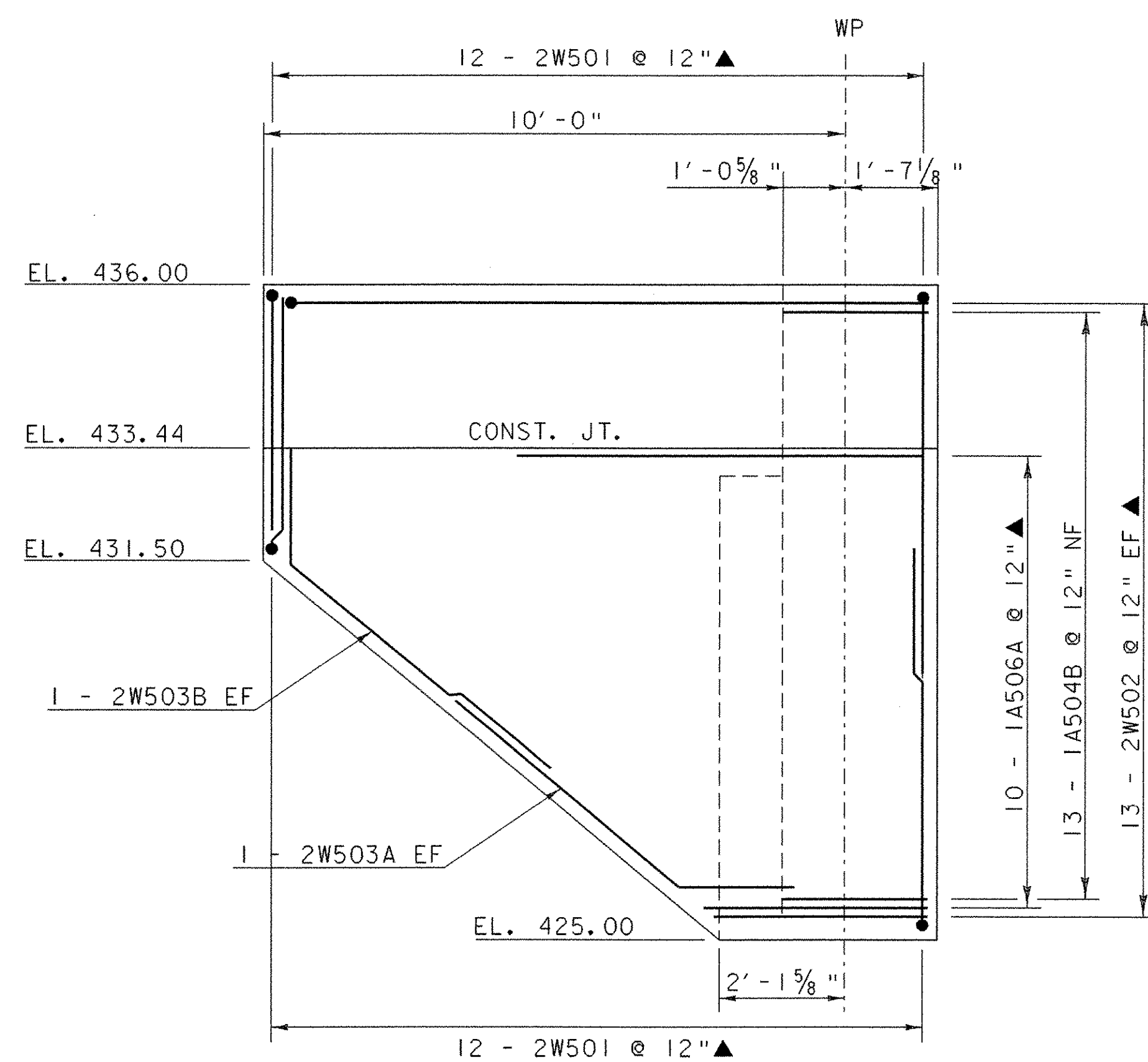
ASPHALTIC PLUG-TYPE
JOINT DETAIL

NTS

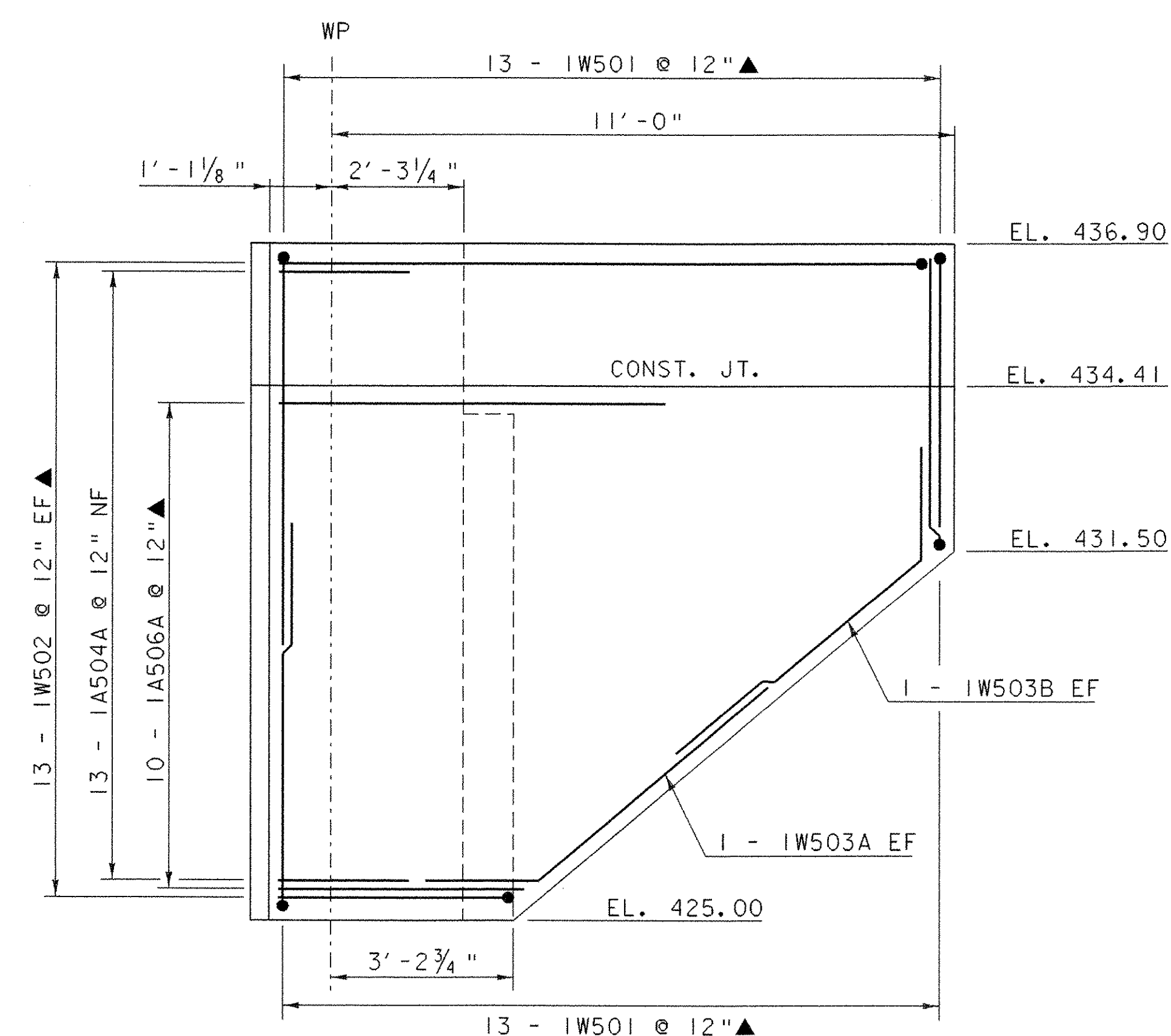
SUPERSTRUCTURE DETAILS APPROACH SLAB DETAILS

PROJECT NAME: CASTLETON	PLOT DATE: 09-FEB-2007
PROJECT NUMBER: RS 0142(10)	DRAWN BY: STR 3
FILE NAME: T8f193/str/sf293sup.dgn	CHECKED BY: C. CARLSON
PROJECT LEADER: R. WHITCOMB	SHEET 47 OF 68
DESIGNED BY: M. HALE	
/T8f193/str/sf193as.i	

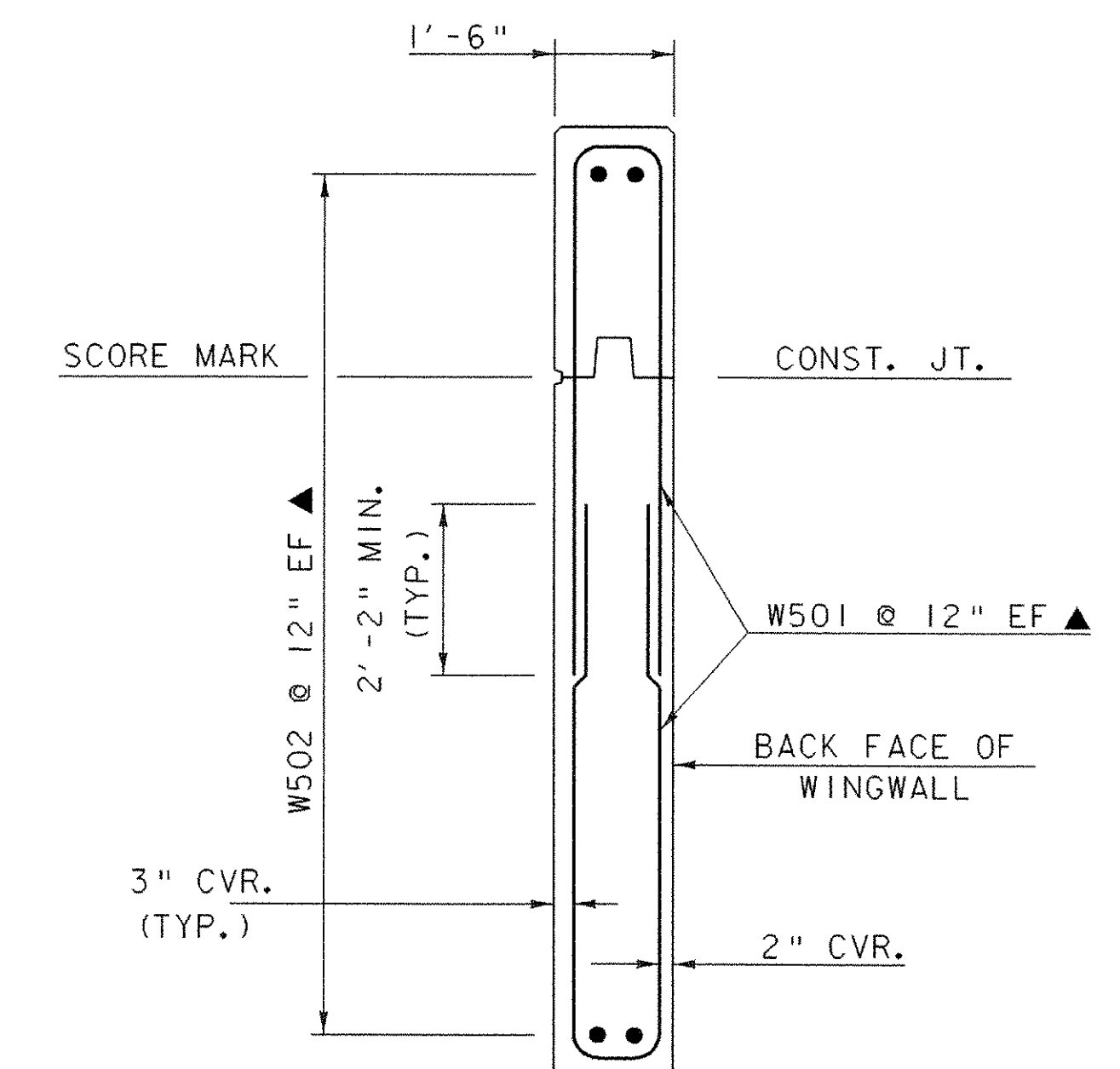
PLOT DATE: 09-FEB-2007
DRAWN BY: STR 3
CHECKED BY: C. CARLSON
SHEET 49 OF 68



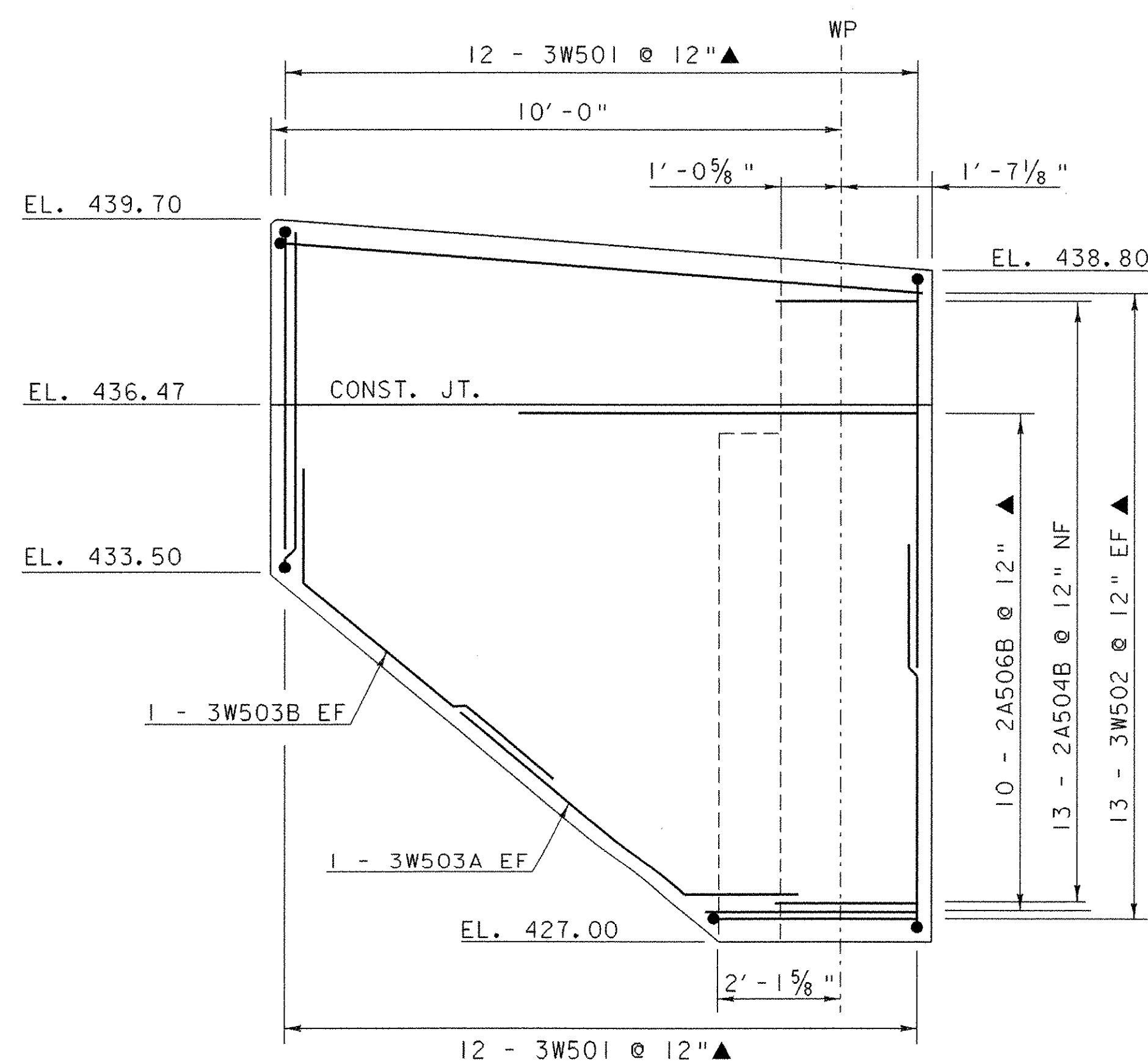
WINGWALL NO. 2 ELEVATION



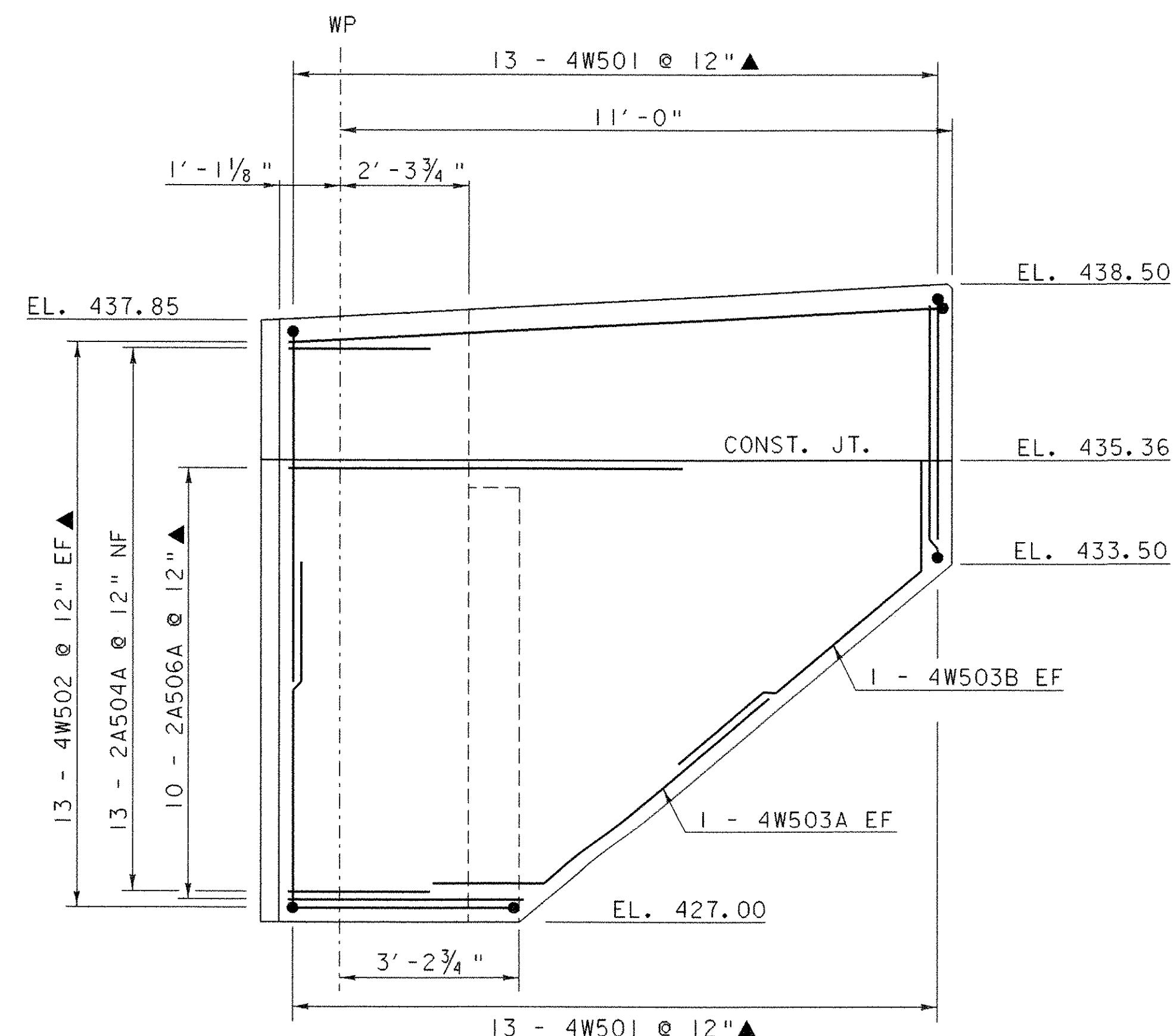
WINGWALL NO. 1 ELEVATION



WINGWALL TYPICAL



WINGWALL NO. 3 ELEVATION



WINGWALL NO. 4 ELEVATION

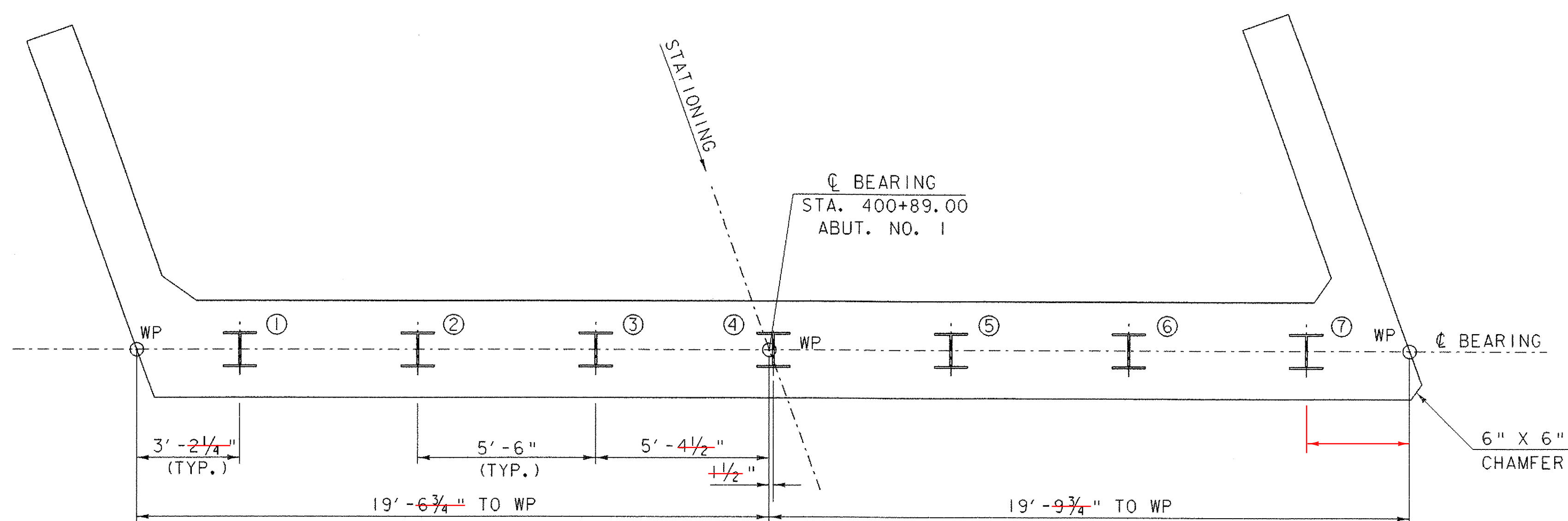
NOTE:

NF - NEAR FACE
FF - FAR FACE
EF - EACH FACE
▲ - CUT TO FIT IN FIELD
3" CVR. UNLESS OTHERWISE
SPECIFIED ON THE PLANS.

SUBSTRUCTURE DETAILS
WINGWALLS

PROJECT NAME: CASTLETON	PLOT DATE: 09-FEB-2007
PROJECT NUMBER: RS 0142(10)	DRAWN BY: STR 3
FILE NAME: 78f193/sf193sub.dgn	CHECKED BY: C. CARLSON
PROJECT LEADER: R. WHITCOMB	SHEET 50 OF 68
DESIGNED BY: J. PERRIGO	
78f193/str/sf193ww.i	

SCALE 1/2" = 1'-0"
1 0 1 2

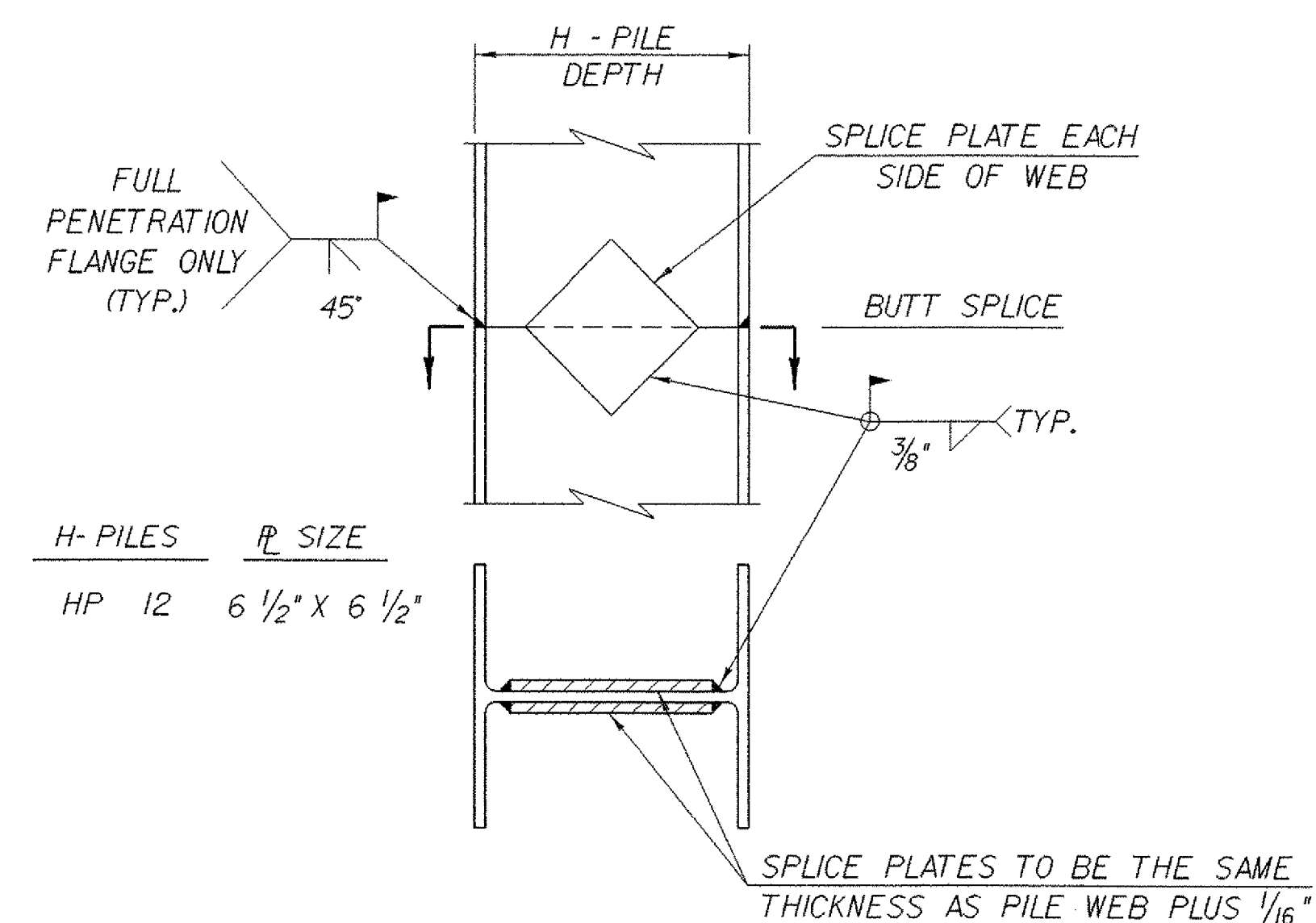


ABUTMENT NO. 1 PILE LAYOUT
(ABUTMENT NO. 2 SIMILAR)

SCALE $\frac{3}{8}" = 1'-0"$
1 0 1 2 3 4

PILE NOTES

1. H - INDICATES LOCATION OF A VERTICAL H-PILE.
2. PILE SIZE: HP 12 X 84
3. PILE STEEL: AASHTO M270 GRADE 50
4. WELDING PROCEDURES TO BE APPROVED BY THE STRUCTURES ENGINEER PRIOR TO WELDING.



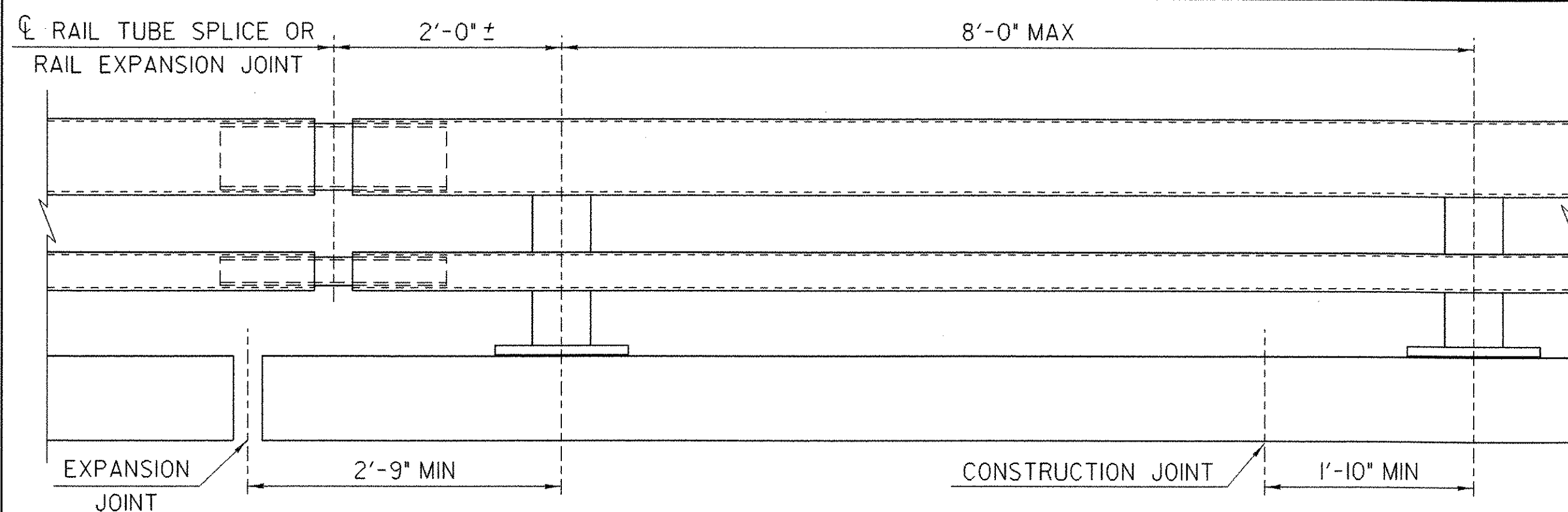
DETAIL OF PILE SPLICE
NTS

SUBSTRUCTURE DETAILS PILES

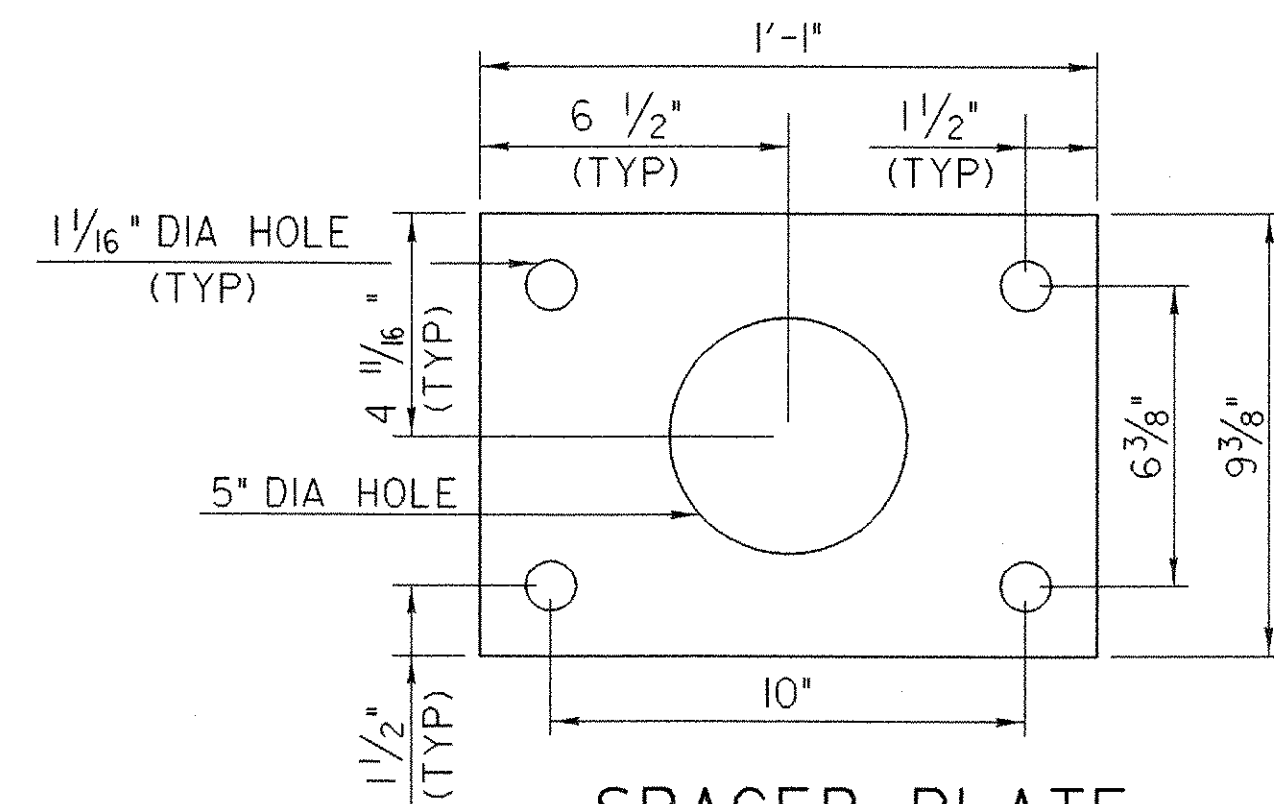
PROJECT NAME: CASTLETON
PROJECT NUMBER: RS 0142(10)

FILE NAME: 78f193/sf193sub.dgn
PROJECT LEADER: R. WHITCOMB
DESIGNED BY: J. PERRIGO
78f193/str/sf193pile.i

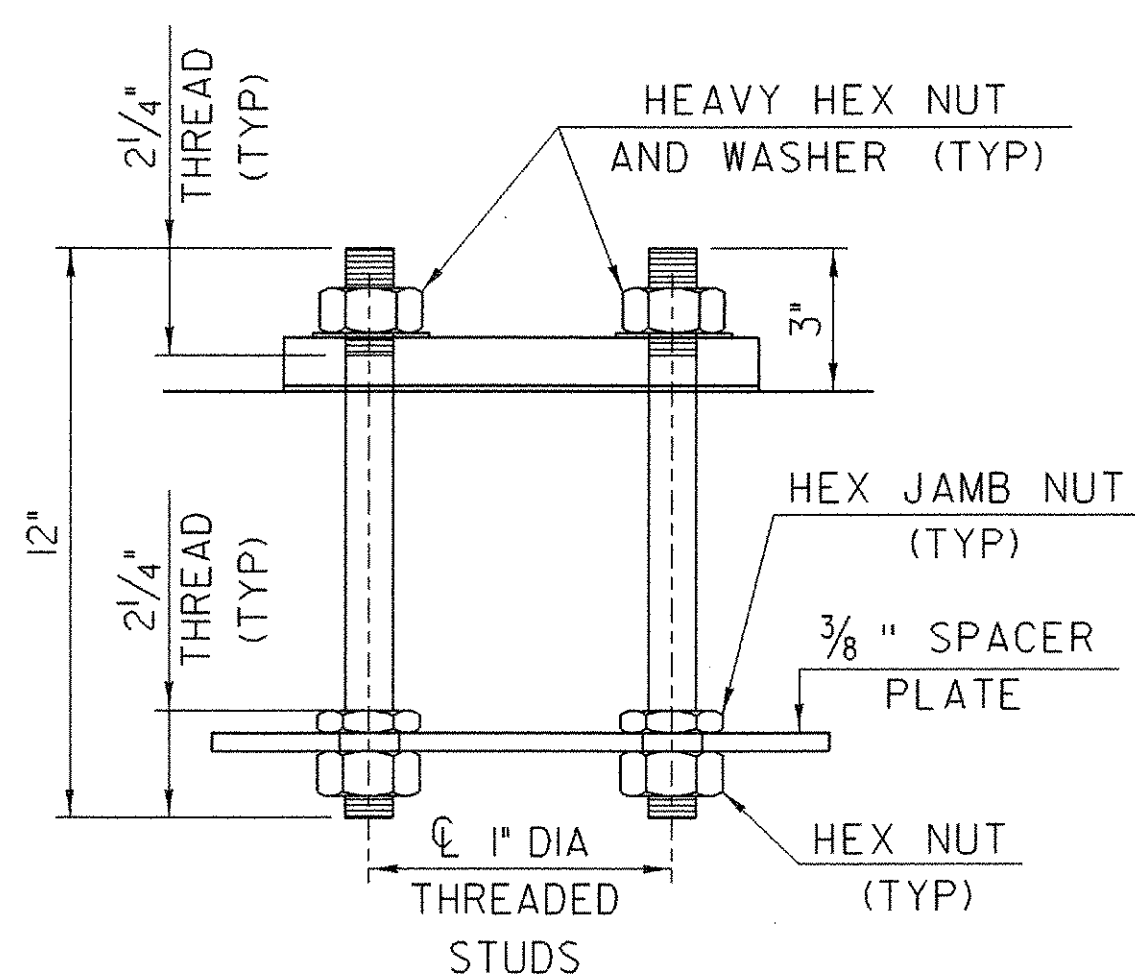
PLOT DATE: 09-FEB-2007
DRAWN BY: L. BULLOCK
CHECKED BY: C. CARLSON
SHEET 51 OF 68



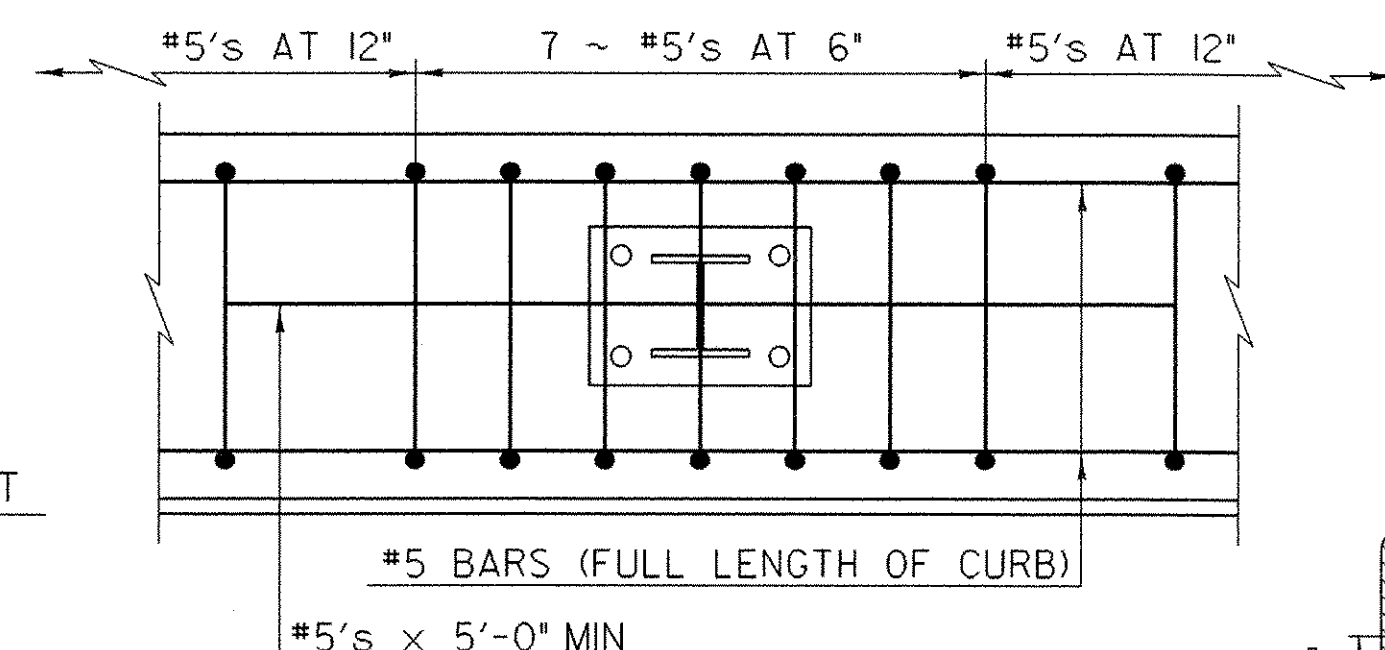
BRIDGE RAILING ELEVATION



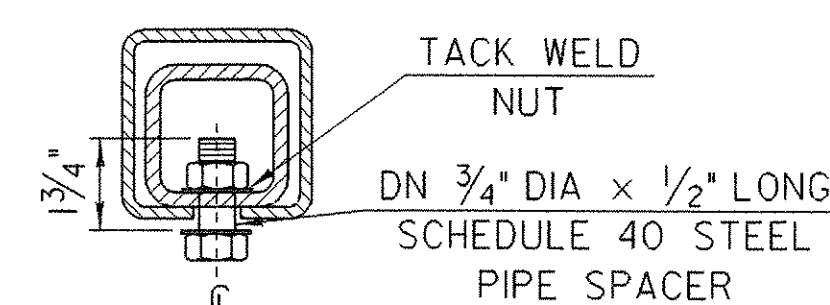
SPACER PLATE



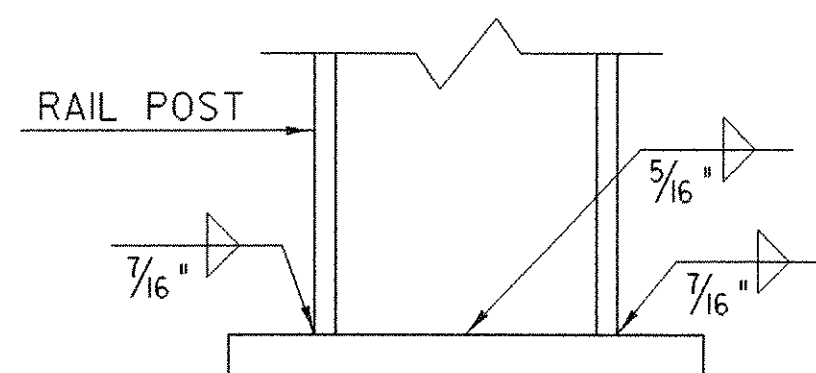
RAIL POST ANCHORAGE



CURB REINFORCING PLAN



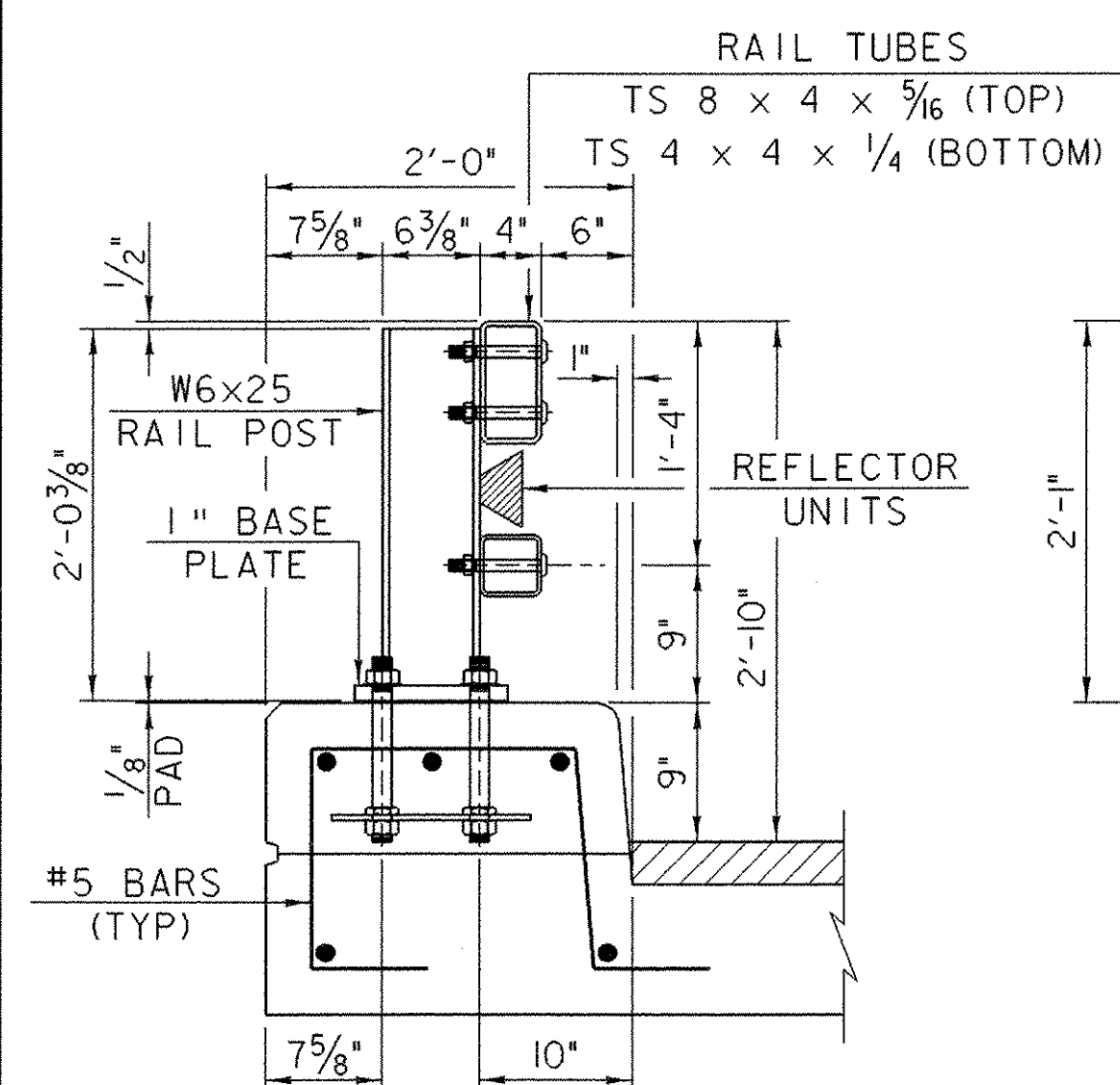
EXPANSION JOINT SECTION



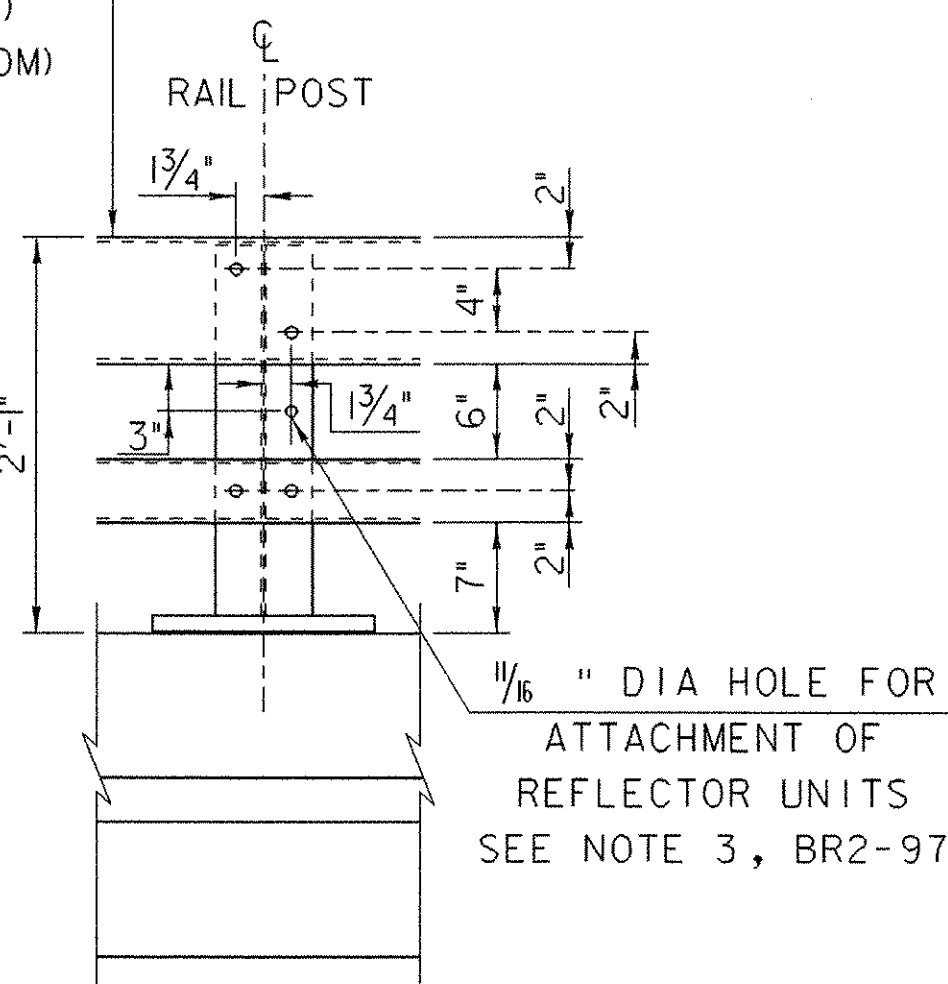
BASE WELD DETAIL

SPLICE TABLE					
T	A	B	C	L	X
N/A	4"	2"	--	20"	3/4"
EXPANSION JOINT TABLE					
<4"	4"	2"	2 1/2"	20"	2 1/2"
>4" <6 1/2"	5 1/2"	2 3/8"	3 1/2"	23 3/4"	4"
>6 1/2" <9"	6 1/2"	3 3/8"	9"*	27 3/4"	5"
>9" <13"	8 1/2"	4 3/8"	11"*	33 3/4"	7"

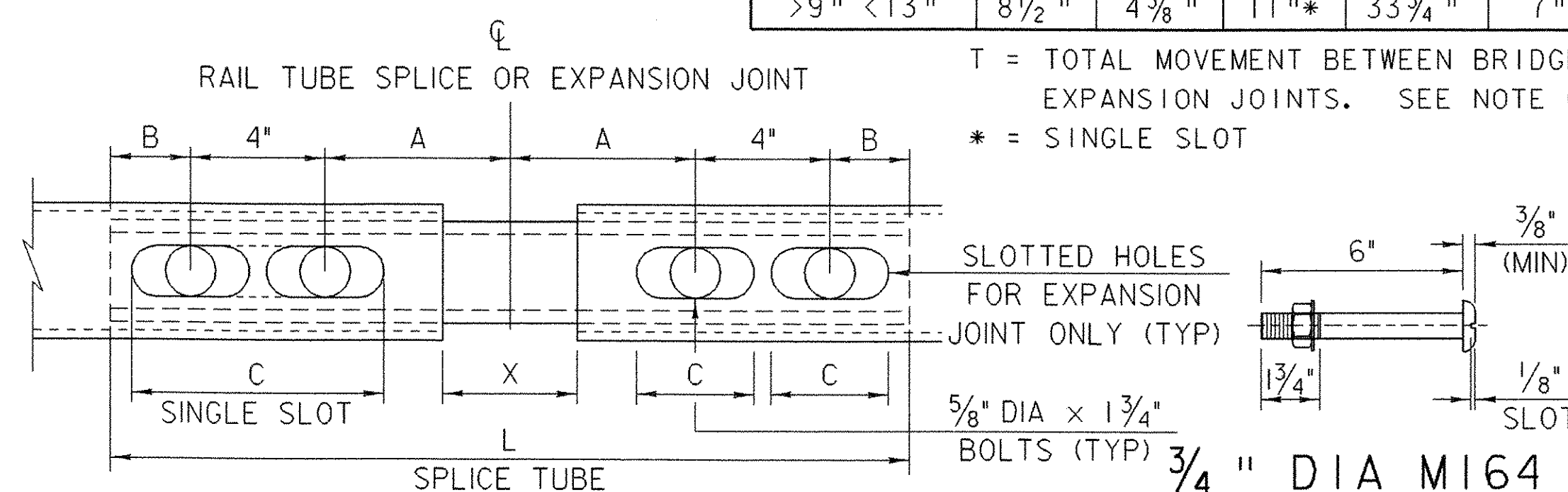
T = TOTAL MOVEMENT BETWEEN BRIDGE EXPANSION JOINTS. SEE NOTE 6.
* = SINGLE SLOT



TYPICAL SECTION

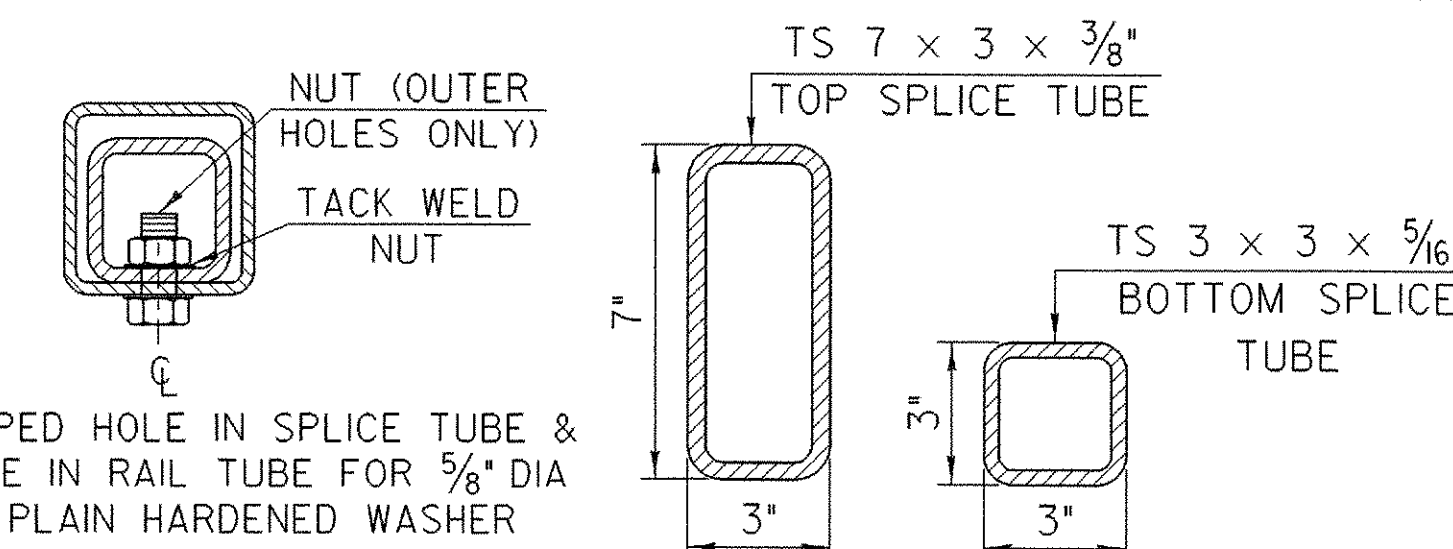


ELEVATION



RAIL TUBE SPLICE AND RAIL EXPANSION JOINT DETAIL (BOTTOM VIEW)

3/4" DIA M164 (TYPE 1) ROUND HEAD BOLT
(WITH WASHER AND PREVAILING TORQUE TYPE LOCK NUT)
(SEE NOTE #9)
ONLY FULL DIAMETER BODY BOLTS WILL BE ALLOWED.



RAIL TUBE SPLICE SECTION

BRIDGE RAILING N.E.T.C. 2 RAIL

PROJECT NAME: CASTLETON
PROJECT NUMBER: RS 0142(10)

FILE NAME: /78f193/str/sf193netc.dgn
PROJECT LEADER: R. WHITCOMB
DESIGNED BY: STR
78f193/str/sf193netcl.i

PLOT DATE: 09-FEB-2007
DRAWN BY: STR
CHECKED BY: C. CARLSON
SHEET 52 OF 68

NOTES

- ALL WORK AND MATERIALS SHALL CONFORM TO THE PROVISIONS OF SECTION 525, "METAL RAILINGS" OF THE 2006 STANDARD SPECIFICATIONS FOR CONSTRUCTION.
- TUBING AND POSTS SHALL MEET THE REQUIREMENTS OF SECTION 732, "RAILING MATERIALS" OF THE 2006 STANDARD SPECIFICATIONS FOR CONSTRUCTION EXCEPT THE DROP-WEIGHT TEAR TEST IN SECTION 732 SHALL NOT APPLY TO THE STRUCTURAL TUBING IN THIS STANDARD.
- ALL EXPOSED CUT OR SHEARED EDGES SHALL BE ROUNDED TO A 1/16" RADIUS AND BE FREE OF BURRS.
- RAIL POSTS SHALL BE SET NORMAL TO GRADE.
- SECTIONS OF RAIL TUBE SHALL BE ATTACHED TO A MINIMUM OF TWO (2) RAIL POSTS AND PREFERABLY TO AT LEAST FOUR (4) POSTS.
- RAIL TUBE EXPANSION JOINTS SHALL BE PROVIDED IN ANY RAIL BAY SPANNING A SUPERSTRUCTURE EXPANSION JOINT. EXPANSION JOINT WIDTH SHALL BE "X" AT 45°F AND WILL BE ADJUSTED IN THE FIELD BY THE ENGINEER FOR OTHER TEMPERATURES.
- ALL PARTS SHALL BE GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH AASHTO M111, EXCEPT THAT HARDWARE SHALL MEET THE REQUIREMENTS OF AASHTO M232.
- RAIL POSTS ANCHORING NUTS SHALL BE TIGHTENED TO A SNUG FIT AND GIVEN AN ADDITIONAL ONE-EIGHTH TURN.
- RAIL TUBES SHALL BE ATTACHED USING 3/4" FULL DIAMETER BODY AASHTO M164 (TYPE 1) ROUND HEAD BOLTS INSERTED THROUGH THE FACE OF THE TUBE. HOLES IN POSTS SHALL BE 1/16" LARGER THAN THE BOLT SIZE.
- HOLES IN RAILS FOR RAIL TUBE ATTACHMENT MAY BE FIELD-DRILLED. HOLES SHALL BE COATED WITH AN APPROVED ZINC-RICH PAINT PRIOR TO ERECTION.
- IF THERE IS A CONFLICT BETWEEN THESE STANDARD DETAILS AND THE DESIGN, THE REQUIREMENTS OF THE DESIGN DRAWINGS SHALL BE FOLLOWED.
- ANY BENDING OF RAIL SHALL BE BY SHOP PROCEDURE ONLY.
- THE FABRICATOR SHALL SUBMIT SHOP DRAWINGS INCLUDING WELDING PROCEDURES TO THE STRUCTURES SECTION FOR APPROVAL IN ACCORDANCE WITH THE PROVISIONS OF 506.04, SHOP DRAWINGS. ALL WELDING SHALL CONFORM WITH SECTION 506.10.
- RAIL POSTS AND BASE PLATES SHALL BE TESTED FOR IMPACT PROPERTIES IN ACCORDANCE WITH ASTM A-370 CHARPY IMPACT TESTING USING TYPE A SPECIMEN.

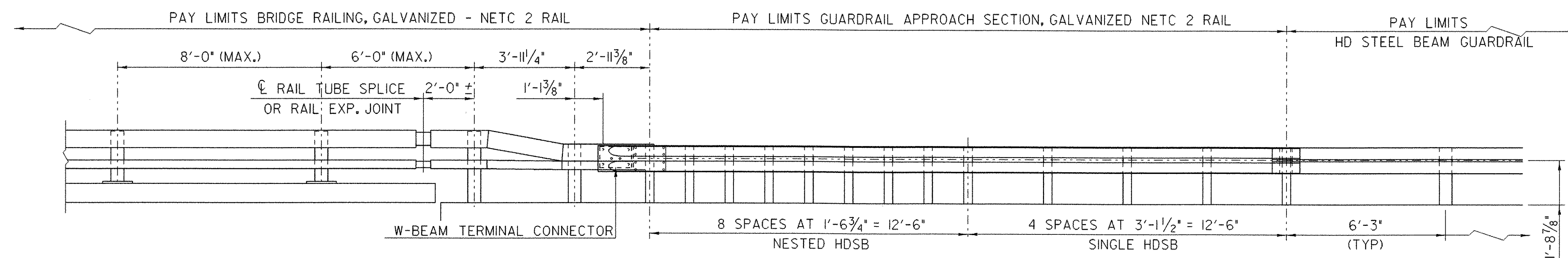
MATERIALS

RAIL TUBES.....ASTM A500, GRADE B OR ASTM A501
RAIL POSTS AND BASE PLATES.....ASTM A709A709M, GRADE 50
ALL OTHER SHAPES AND PLATES.....ASTM A709/A709M, GRADE 36
ANCHOR STUDS.....ASTM A449
ALL OTHER BOLTS (UNLESS NOTED).....AASHTO M164, TYPE 1

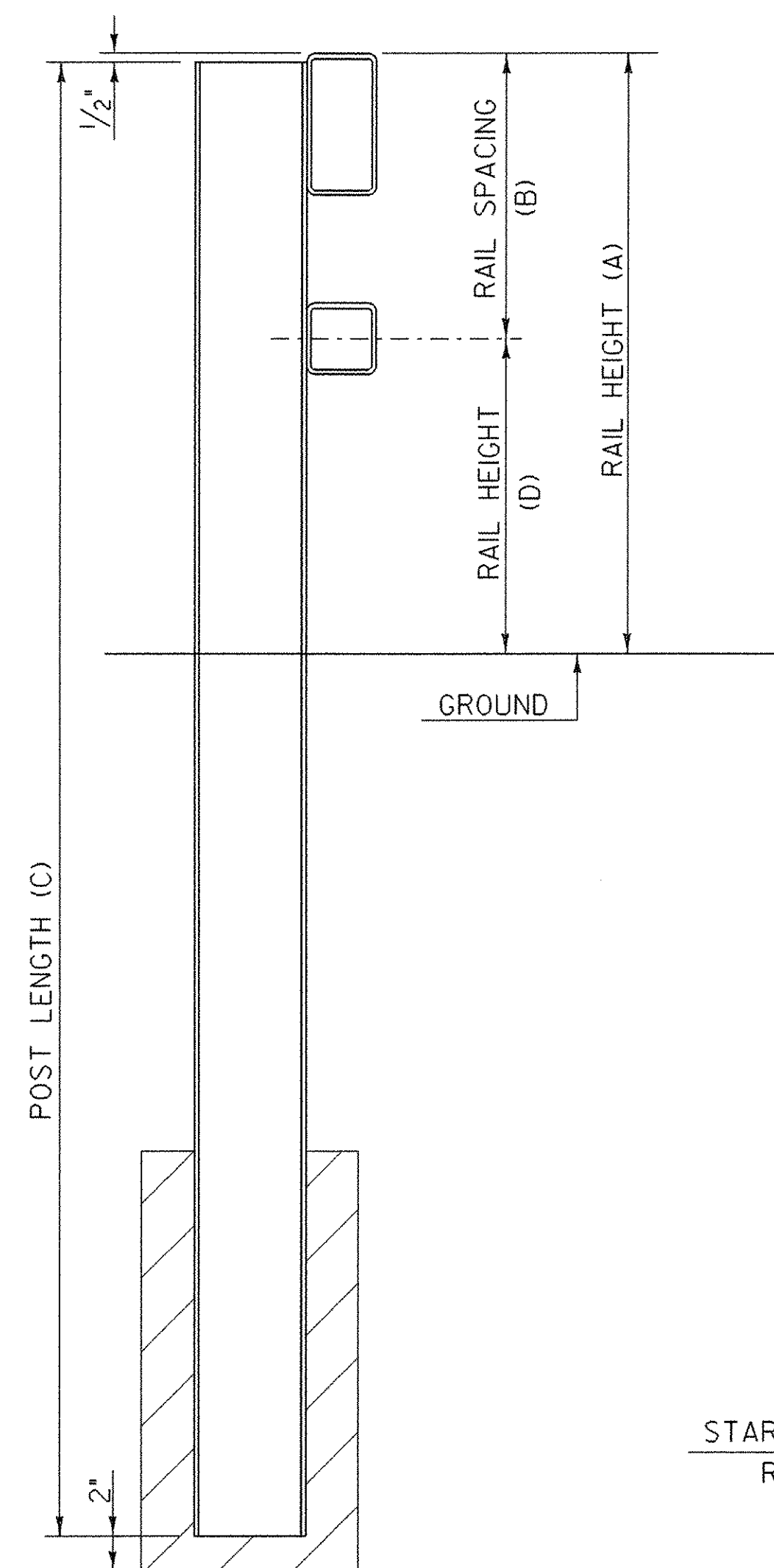
NUTS FOR AASHTO M164 (ASTM A325) BOLTS AND FOR ANCHOR STUDS SHALL COMPLY WITH AASHTO M291 (ASTM A563).

WASHERS SHALL COMPLY WITH AASHTO M293 (ASTM F436) SPECIFICATIONS.

1/8" PAD SHALL COMPLY WITH STANDARD SPECIFICATION SUBSECTION 731.01 OR 731.02.

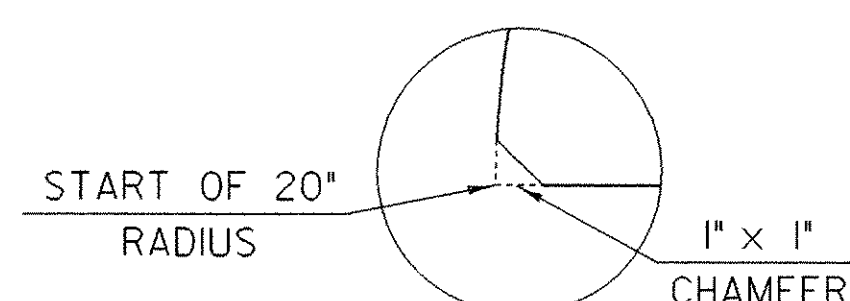


RAILING TRANSITION ELEVATION

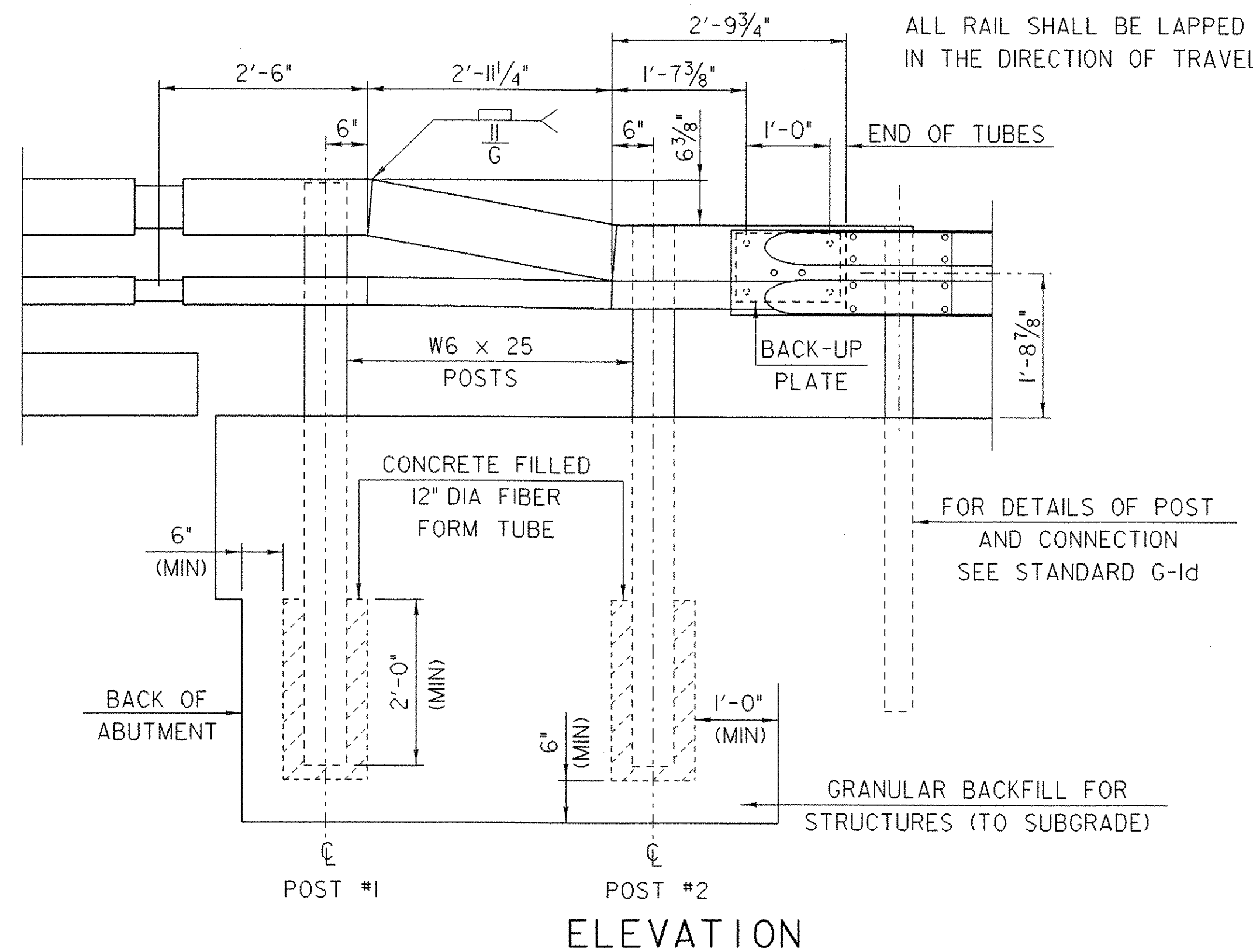


TYPICAL SECTION

POST NUMBER	RAIL HEIGHT (A)	RAIL SPACING (B)	POST LENGTH (C)	RAIL HEIGHT (D)
1	2'-10"	1'-4"	7'-0"	1'-6"
2	2'-3 5/8"	10"	6'-5"	1'-5 5/8"

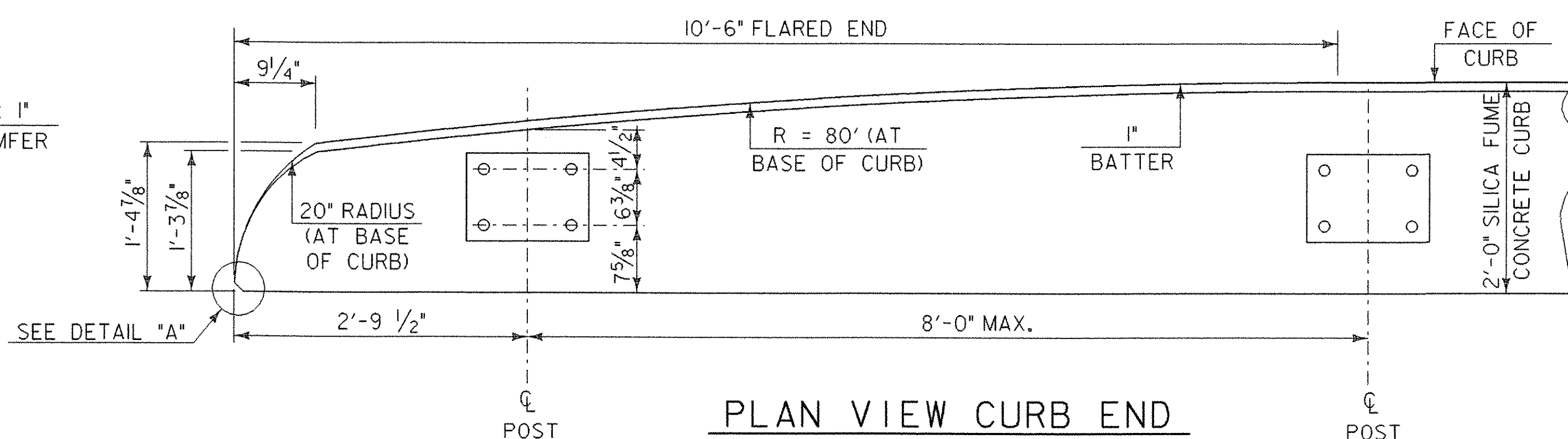
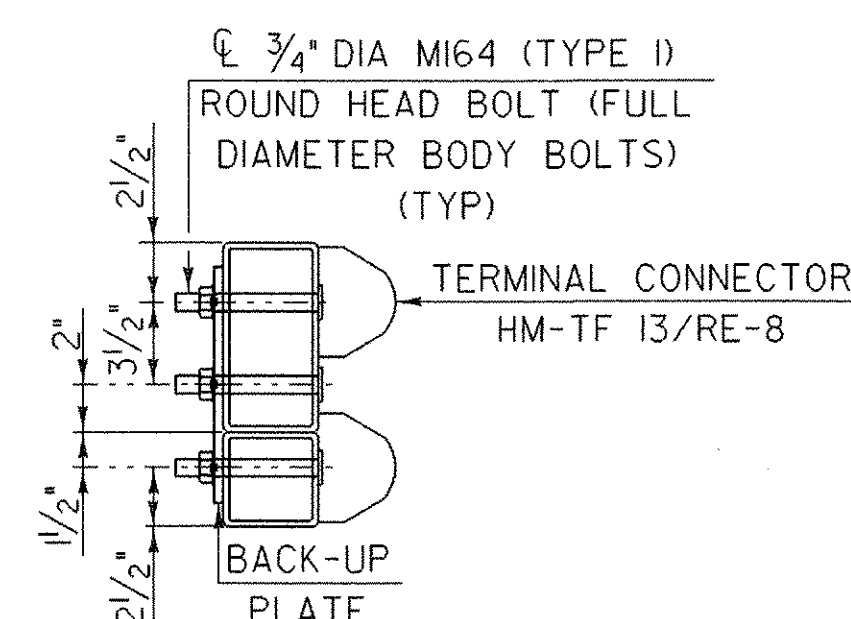


DETAIL "A"



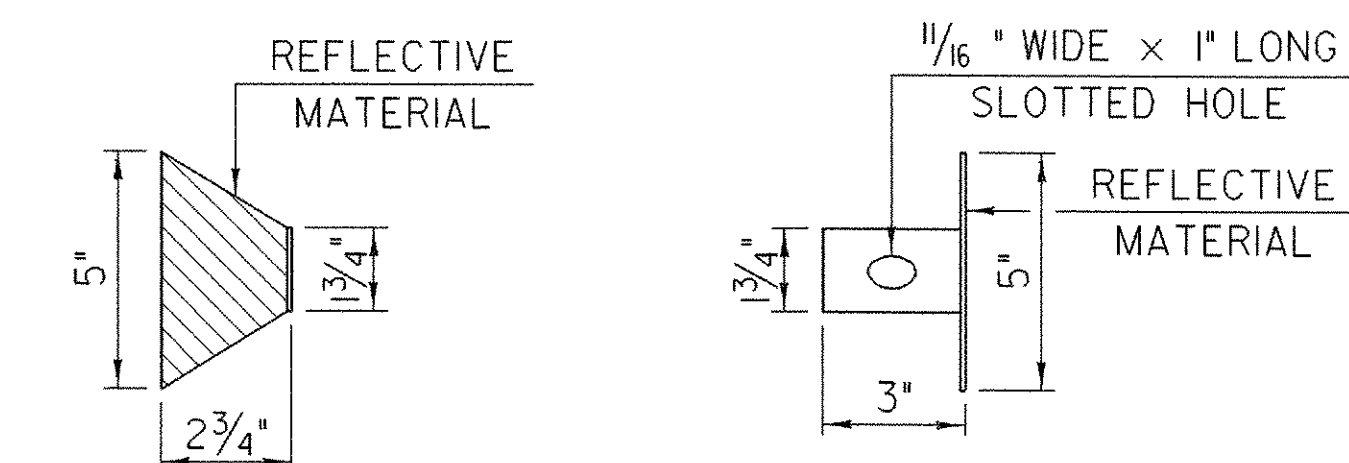
ELEVATION

SECTION THROUGH GUARD RAIL CONNECTION AT TERMINAL CONNECTOR

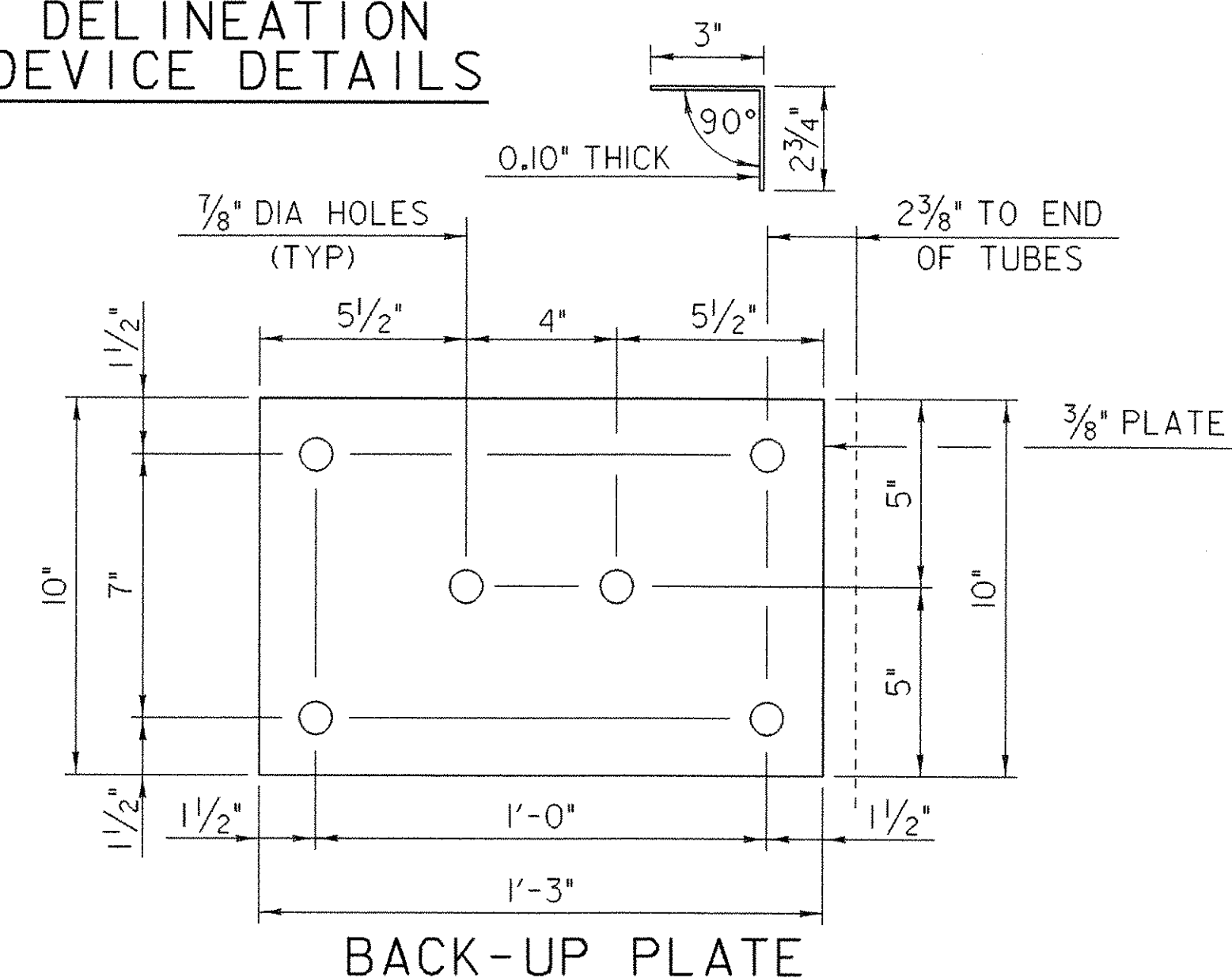


PLAN VIEW CURB END

- Notes:**
1. SEE "BRIDGE RAILING - N.E.T.C. 2 RAIL" SHEET FOR ADDITIONAL DETAILS, NOTES AND MATERIAL SPECIFICATIONS.
 2. SET POSTS LOOSELY INTO FIBER FORM TUBES WHILE ASSEMBLING TRANSITION PARTS. BACKFILL POST HOLES WITH A CONCRETE MIX APPROVED BY THE ENGINEER. PAYMENT FOR COMPONENTS (INCLUDING BACKUP PLATE AND END TERMINAL CONNECTOR FOR GUARD RAIL, AUGERING, FIBER FORM TUBES AND CONCRETE, AND INSTALLATION) SHALL BE INCIDENTAL TO "BRIDGE RAILING, GALVANIZED NETC 2 RAIL".
 3. ERECT REFLECTORIZED ALUMINUM DELINEATORS EVERY 30' (OR CLOSEST POST) WITH A 5/8" DIAMETER BOLT. DELINEATORS SHALL MEET SPECIFICATION REQUIREMENTS FOR ASTM B209 ALLOY 5052-H32.
 4. REFLECTIVE MATERIAL SHALL MEET REQUIREMENTS OF SUBSECTION 750.08 AND SHALL BE OF ENCAPSULATED LENS SILVER OR AMBER. INSTALL AMBER ON THE DRIVER'S LEFT AND SILVER ON THE RIGHT.
 5. ON BRIDGES WITH A SIDEWALK, DELINEATORS ARE NOT TO BE INSTALLED ON THE SIDEWALK SIDE OF THE BRIDGE (I.E. DELINEATORS INSTALLED ONLY ON THE CURB SIDE AND ON THE APPROACH ON THE CURB SIDE). PAYMENT SHALL BE SUBSIDIARY TO ALL OTHER ITEMS.
 6. LAP APPROACH RAIL SPLICES IN THE DIRECTION OF TRAFFIC FLOW.
 7. SEE STANDARD G-1 AND G-1d FOR ADDITIONAL INFORMATION.



DELINEATION DEVICE DETAILS



BACK-UP PLATE

BRIDGE RAILING
N.E.T.C. 2 RAIL
STEEL BEAM APPROACH RAIL

PROJECT NAME: CASTLETON	PLOT DATE: 09-FEB-2007
PROJECT NUMBER: RS 0142(10)	DRAWN BY: STR
FILE NAME: /78f193/str/sf193netc.dgn	CHECKED BY: C. CARLSON
PROJECT LEADER: R. WHITCOMB	SHEET 53 OF 68
DESIGNED BY: STR	
78f193/str/sf193netc2.1	

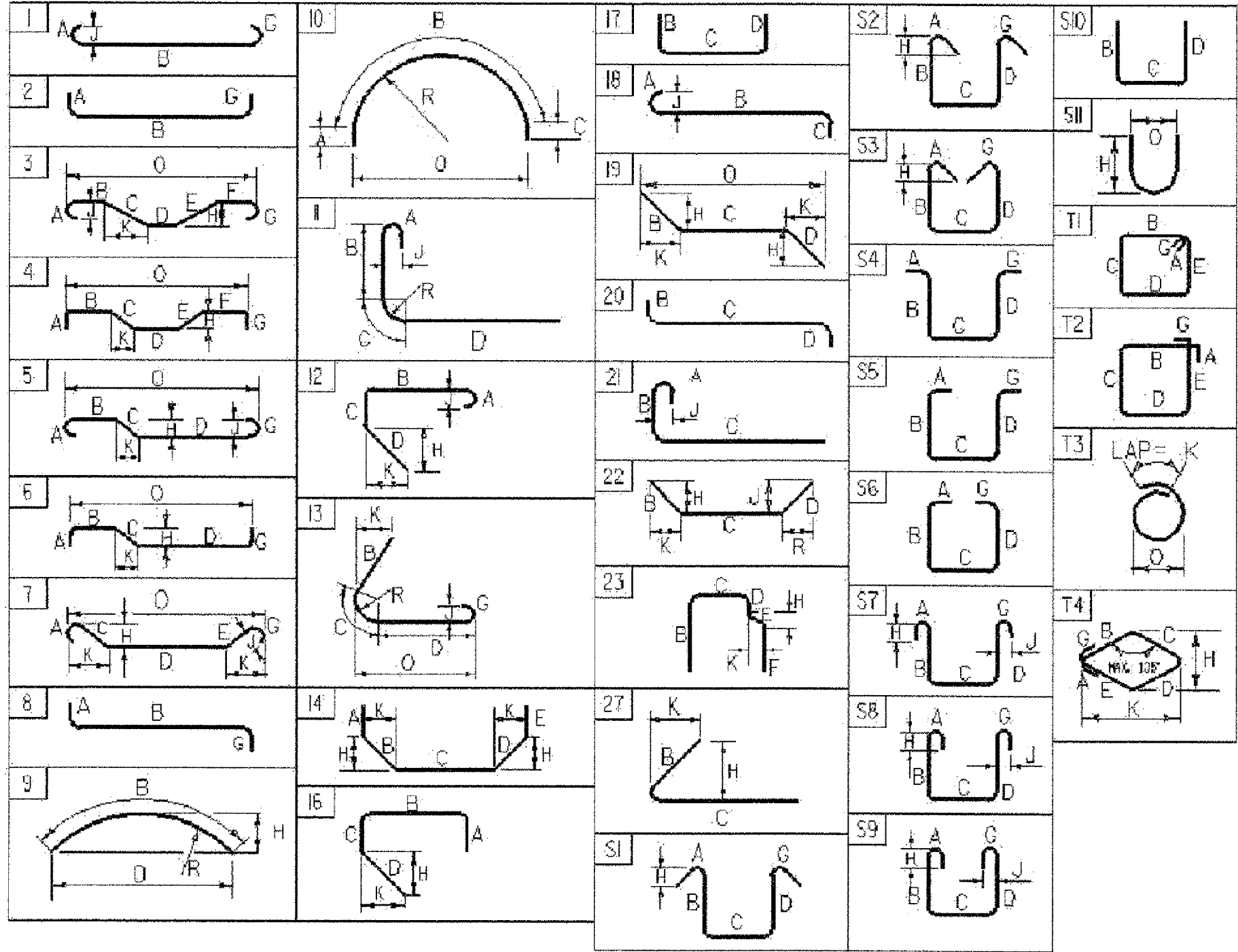
STATE OF VERMONT
AGENCY OF TRANSPORTATION

REINFORCING STEEL SCHEDULE

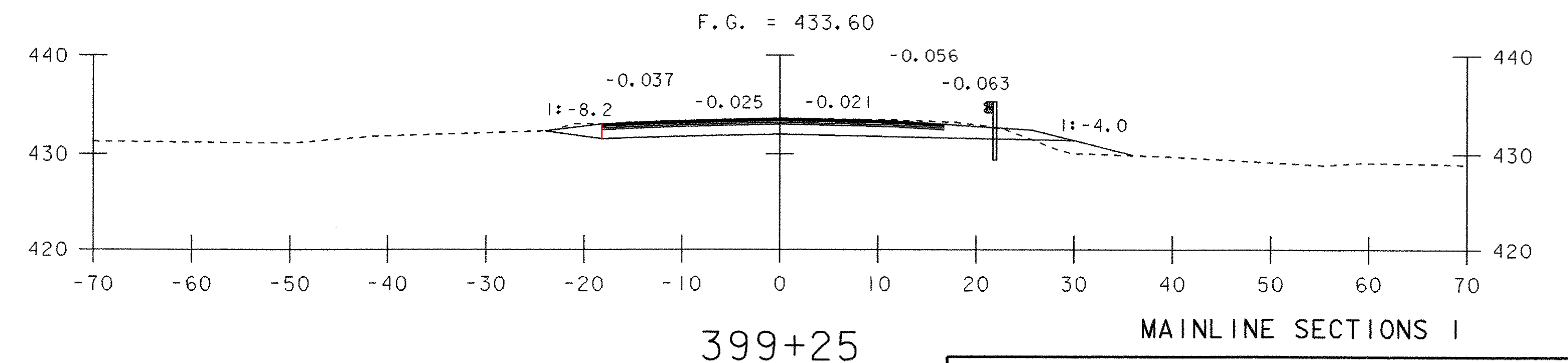
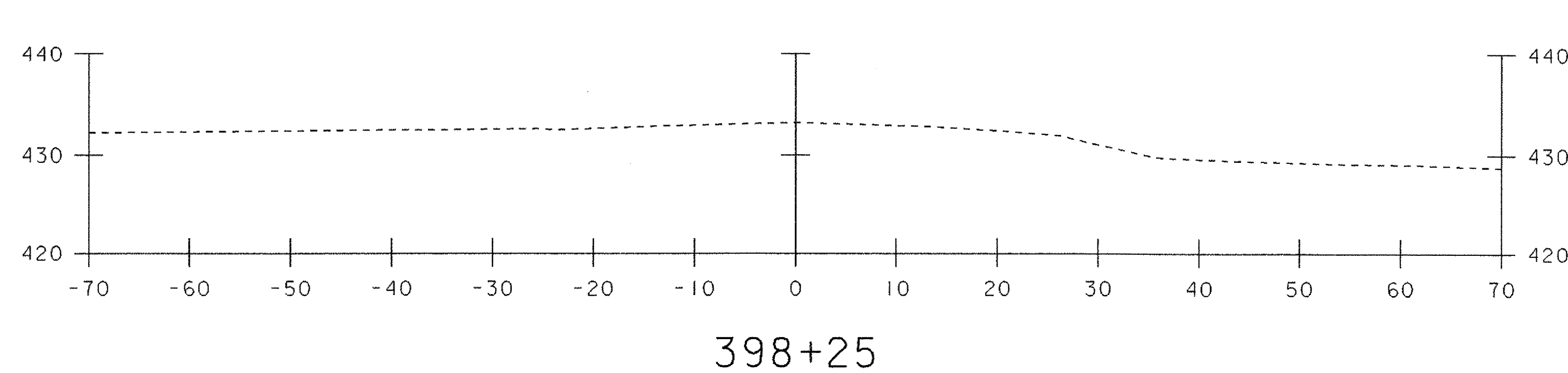
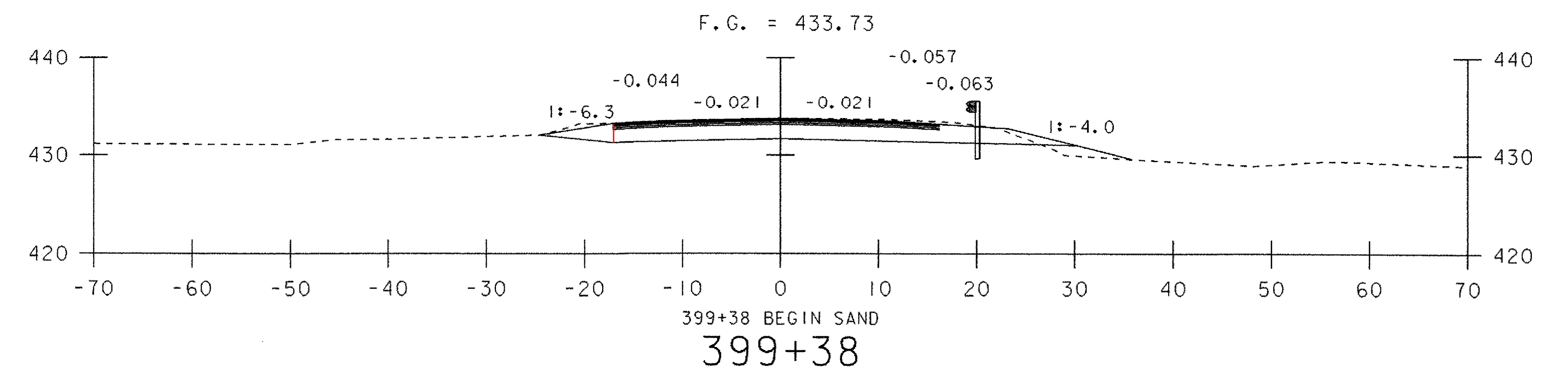
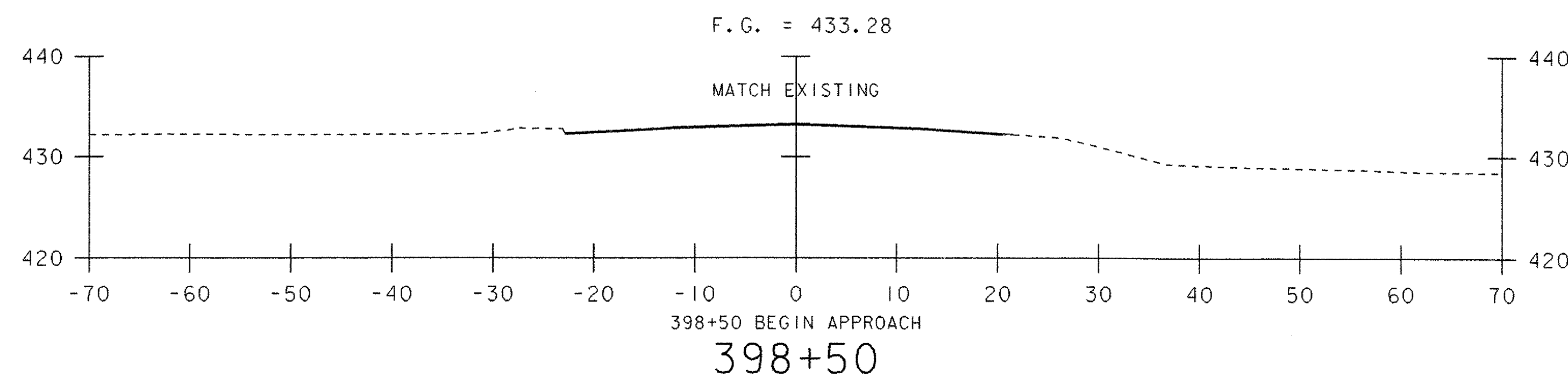
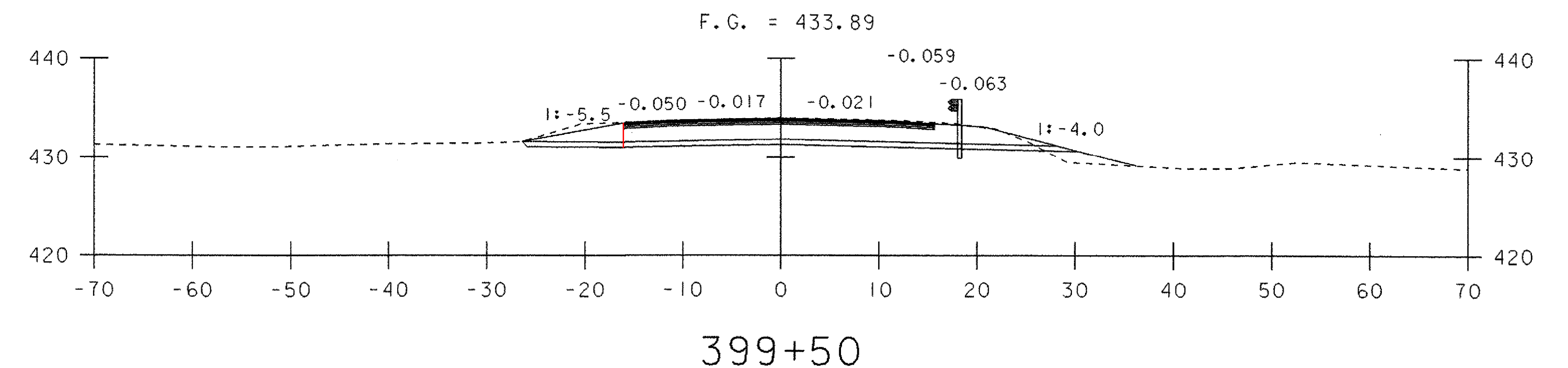
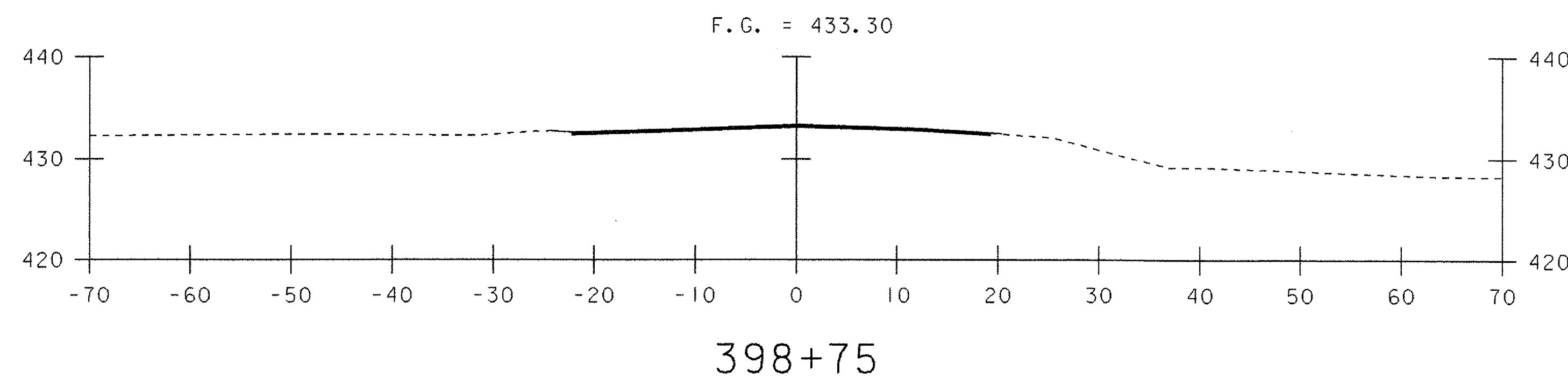
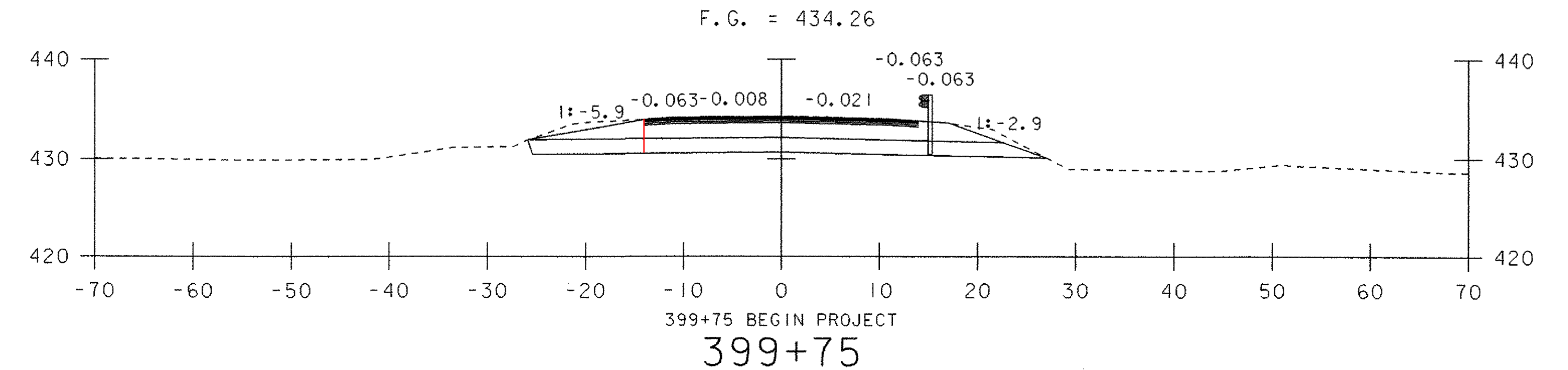
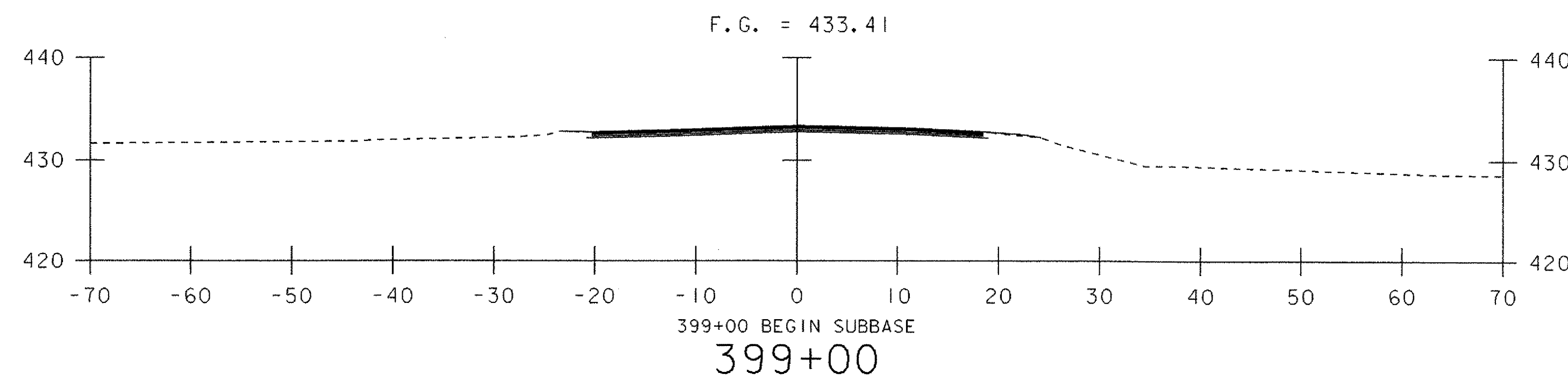
ITEM	EACH	SIZE	LENGTH	MARK	TYPE	A	B	C	D	E	F	G	H	J	K	R	O	ITEM	EACH	SIZE	LENGTH	MARK	TYPE	A	B	C	D	E	F	G	H	J	K	R	O
DECK																																			
*	85	5	30'- 10"	SE501	STR	30'- 10"																													
	61	5	32'- 5"	SE502	STR	32'- 5"																													
	170	5	5'- 10"	SE503	S5	1'- 0"	1'- 2"	1'- 6"	1'- 2"			1'- 0"																							
APPROACH SLAB #1																			APPROACH SLAB #2																
*	22	5	28'- 2"	1ASE501	STR	28'- 2"												*	22	5	28'- 2"	2ASE501	STR	28'- 2"											
*	34	9	20'- 9"	1ASE901	1	1'- 3"	19'- 6"					0'- 0"						*	34	9	20'- 9"	2ASE901	1	1'- 3"	19'- 6"				0'- 0"						
ABUTMENT #1																			ABUTMENT #2																
*	41	5	20'- 6"	1A501	STR	20'- 6"												*	41	5	20'- 6"	2A501	STR	20'- 6"											
	80	5	3'- 7"	1A502	17		0'- 6"	2'- 7"	0'- 6"										80	5	3'- 7"	2A502	17		0'- 6"	2'- 7"	0'- 6"								
	37	5	7'- 5"	1A503	16	0'- 6"	3'- 7"	1'- 2"	2'- 2"			1'- 6"		1'- 6"					37	5	7'- 5"	2A503	16	0'- 6"	3'- 7"	1'- 2"	2'- 2"			1'- 6"		1'- 6"			
	16	5	4'- 6"	1A504A	22		2'- 1"	0'- 4"	2'- 1"			1'- 9"	1'- 9"	1'- 2"	1'- 2"				16	5	4'- 6"	2A504A	22		2'- 1"	0'- 4"	2'- 1"			1'- 9"	1'- 9"	1'- 2"	1'- 2"		
	16	5	4'- 4"	1A504B	22		2'- 2"	2'- 2"	0'- 0"			2'- 0"	0'- 0"	2'- 0"	0'- 0"				16	5	4'- 4"	2A504B	22		2'- 2"	2'- 2"	0'- 0"			2'- 0"	0'- 0"	2'- 0"	0'- 0"		
	3	5	6'- 9"	1A505A	T4		2'- 0"	2'- 9"	2'- 0"			2'- 7"	2'- 7"	2'- 11"	2'- 11"				3	5	6'- 9"	2A505A	T4		2'- 0"	2'- 9"	2'- 0"			2'- 7"	2'- 7"	2'- 11"	2'- 11"		
	3	5	6'- 9"	1A505B	T4		2'- 0"	2'- 9"	2'- 0"			2'- 7"	2'- 7"	2'- 11"	2'- 11"				3	5	6'- 9"	2A505B	T4		2'- 0"	2'- 9"	2'- 0"			2'- 7"	2'- 7"	2'- 11"	2'- 11"		
	10	5	10'- 1"	1A506A	22		2'- 2"	5'- 9"	2'- 2"			1'- 9"	1'- 9"	1'- 3"	1'- 3"				10	5	10'- 1"	2A506A	22		2'- 2"	5'- 9"	2'- 2"			1'- 9"	1'- 9"	1'- 3"	1'- 3"		
	10	5	12'- 4"	1A506B	22		2'- 2"	8'- 0"	2'- 2"			1'- 3"	1'- 3"	1'- 9"	1'- 9"				10	5	12'- 4"	2A506B	22		2'- 2"	8'- 0"	2'- 2"			1'- 3"	1'- 3"	1'- 9"	1'- 9"		
*	75	6	14'- 7"	1A601	17		6'- 0"	2'- 7"	6'- 0"									*	75	6	14'- 7"	2A601	17		6'- 0"	2'- 7"	6'- 0"								
	12	6	7'- 1"	1A602	17		4'- 6"	2'- 7"	0'- 0"										12	6	7'- 1"	2A602	17		4'- 6"	2'- 7"	0'- 0"								
*	15	8	4'- 0"	1AE801	22		2'- 0"	2'- 0"	0'- 0"			1'- 5"	0'- 0"	1'- 5"	0'- 0"			*	15	8	4'- 0"	2AE801	22		2'- 0"	2'- 0"	0'- 0"			1'- 5"	0'- 0"	1'- 5"	0'- 0"		
WINGWALL #1																			WINGWALL #3																
▲	26	5	14'- 7"	1W501	17		6'- 9"	1'- 1"	6'- 9"									▲	24	5	14'- 7"	3W501	17		6'- 9"	1'- 1"	6'- 9"								
▲	13	5	24'- 0"	1W502	17		11'- 6"	1'- 0"	11'- 6"									▲	13	5	24'- 0"	3W502	17		11'- 6"	1'- 0"	11'- 6"								
	2	5	10'- 0"	1W503A	22		2'- 0"	6'- 0"	2'- 0"			1'- 6"	1'- 3"	1'- 3"	1'- 6"				2	5	10'- 0"	3W503A	22		2'- 0"	6'- 0"	2'- 0"			1'- 6"	1'- 3"	1'- 3"	1'- 6"		
	2	5	10'- 0"	1W503B	22		2'- 0"	6'- 0"	2'- 0"			1'- 3"	1'- 6"	1'- 6"	1'- 3"				2	5	10'- 0"	3W503B	22		2'- 0"	6'- 0"	2'- 0"			1'- 3"	1'- 6"	1'- 6"	1'- 3"		
WINGWALL #2																			WINGWALL #4																
▲	24	5	13'- 9"	2W501	17		6'- 4"	1'- 1"	6'- 4"									▲	26	5	14'- 7"	4W501	17		6'- 9"	1'- 1"	6'- 9"								
▲	13	5	23'- 0"	2W502	17		11'- 0"	1'- 0"	11'- 0"									▲	13	5	24'- 0"	4W502	17		11'- 6"	1'- 0"	11'- 6"								
	2	5	10'- 0"	2W503A	22		2'- 0"	6'- 0"	2'- 0"			1'- 6"	1'- 3"	1'- 3"	1'- 6"				2	5	10'- 0"	4W503A	22		2'- 0"	6'- 0"	2'- 0"			1'- 6"	1'- 3"	1'- 3"	1'- 6"		
	2	5	10'- 0"	2W503B	22		2'- 0"	6'- 0"	2'- 0"			1'- 3"	1'- 6"	1'- 6"	1'- 3"				2	5	10'- 0"	4W503B	22		2'- 0"	6'- 0"	2'- 0"			1'- 3"	1'- 6"	1'- 6"	1'- 3"		

~ NOTES ~

1. UNLESS OTHERWISE DESIGNATED, ALL BAR REINFORCEMENT FOR CONCRETE IN SIZES UP TO AND INCLUDING NO. 18 SHALL CONFORM TO THE REQUIREMENTS OF THE "SPECIFICATIONS FOR DEFORMED BILLET-STEEL BARS FOR CONCRETE REINFORCEMENT", AASHTO M31 (ASTM A615-S). ALL BARS SHALL BE GRADE 60, UNLESS OTHERWISE DESIGNATED.
2. FOR TYPICAL BENDING DETAILS, RECOMMENDED PN DIAMETER "D" OF BENDS AND HOOKS, AND OTHER STANDARD PRACTICE, SEE CURRENT CONCRETE REINFORCING STEEL INSTITUTE "MANUAL OF STANDARD PRACTICE".
3. BARS WHICH REQUIRE MORE ACCURATE BENDING THAN STANDARD PRACTICES SHOULD HAVE LIMITS INDICATED.
4. ALL DIMENSIONS ARE OUT TO OUT OF BAR EXCEPT "A" AND "G" ON STANDARD 180 DEGREE AND 135 DEGREE HOOKS.
5. "J" DIMENSION ON 180 DEGREE HOOKS TO BE SHOWN ONLY WHERE NECESSARY TO RESTRICT HOOK SIZE. OTHERWISE, STANDARD HOOKS ARE TO BE USED.
6. "H" DIMENSION ON STIRRUPS TO BE SHOWN ONLY WHEN NECESSARY TO MANTAN CLEARANCES.
7. WHERE SLOPE DIFFERS FROM 45 DEGREES, DIMENSIONS "H" AND "K" MUST BE SHOWN.
8. ▲ DENOTES BARS TO BE CUT IN FIELD.
9. * DENOTES ONE EXTRA BAR ADDED FOR TESTING PURPOSES.
10. △ DENOTES TWO EXTRA BARS ADDED FOR TESTING PURPOSES.
11. E N BAR MARK PREFIX DENOTES EPOXY COATED REINFORCING STEEL.



ASTM STANDARD REINFORCING BARS				
BAR SIZE DESIGNA- TION	WEIGHT POUNDS PER FOOT	NOMINAL DIMENSIONS ROUND SECTION		
		DIAMETER INCHES	AREA INCHES ²	PERIMETER INCHES
#3	0.376	0.375	0.11	1.178
#4	0.668	0.500	0.20	1.571
#5	1.043	0.625	0.31	1.963
#6	1.502	0.750	0.44	2.356
#7	2.044	0.875	0.60	2.749
#8	2.670	1.000	0.79	3.142
#9	3.400	1.128	1.00	3.544
#10	4.303	1.270	1.27	3.990
#11	5.313	1.410	1.56	4.430
#14	7.65	1.693	2.25	5.32
#18	13.60	2.257	4.00	7.09

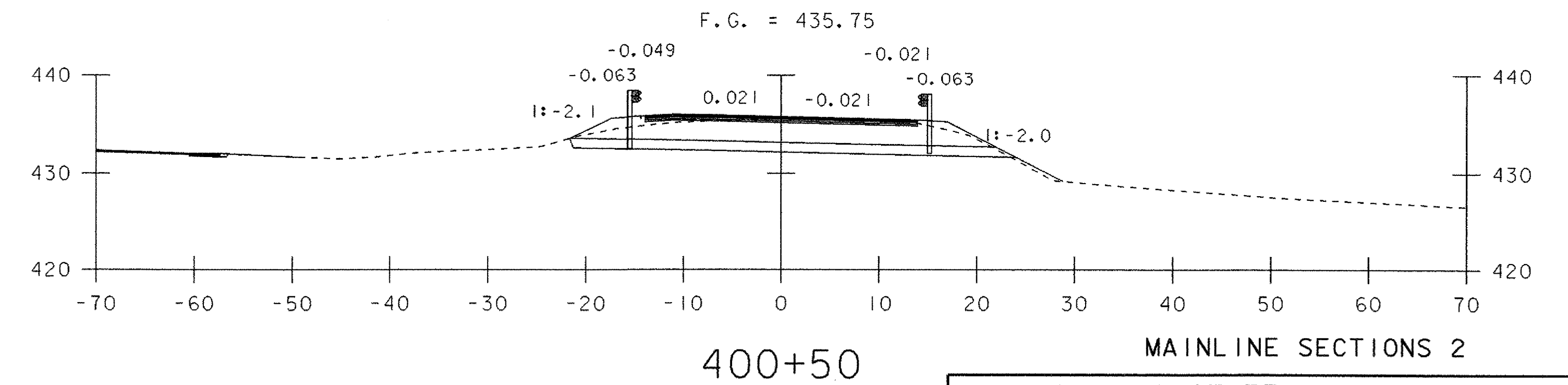
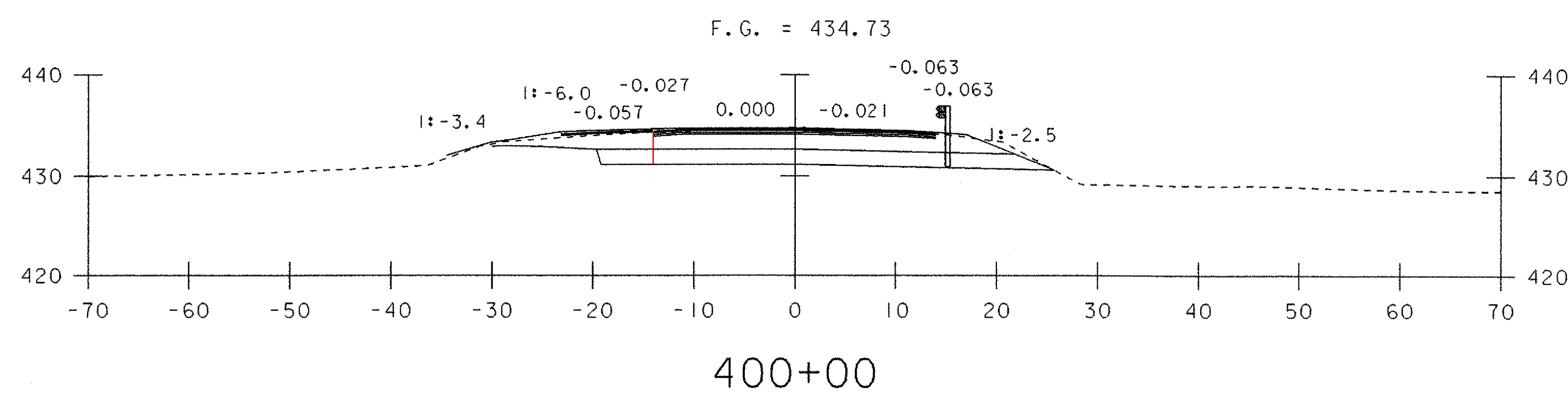
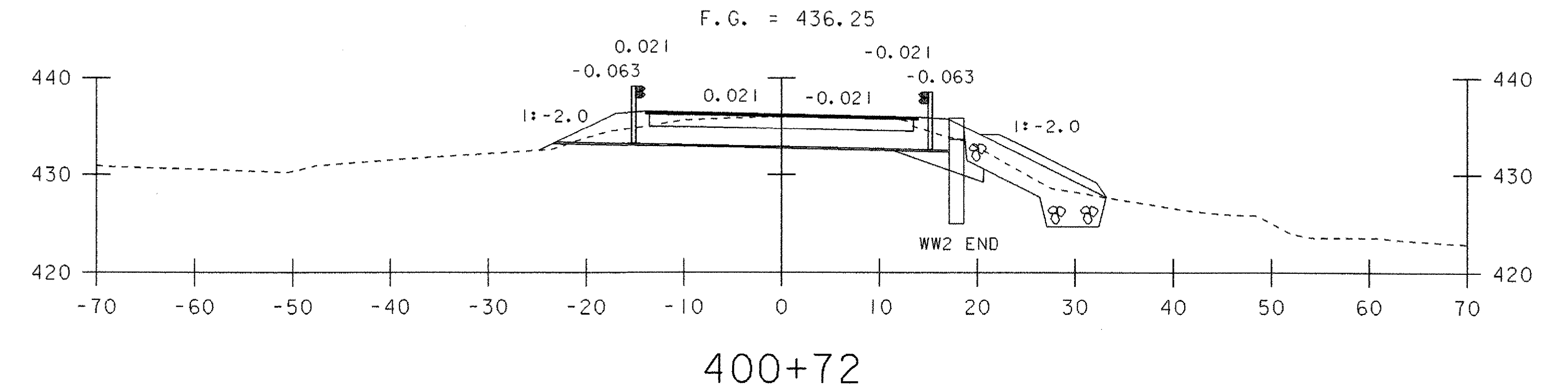
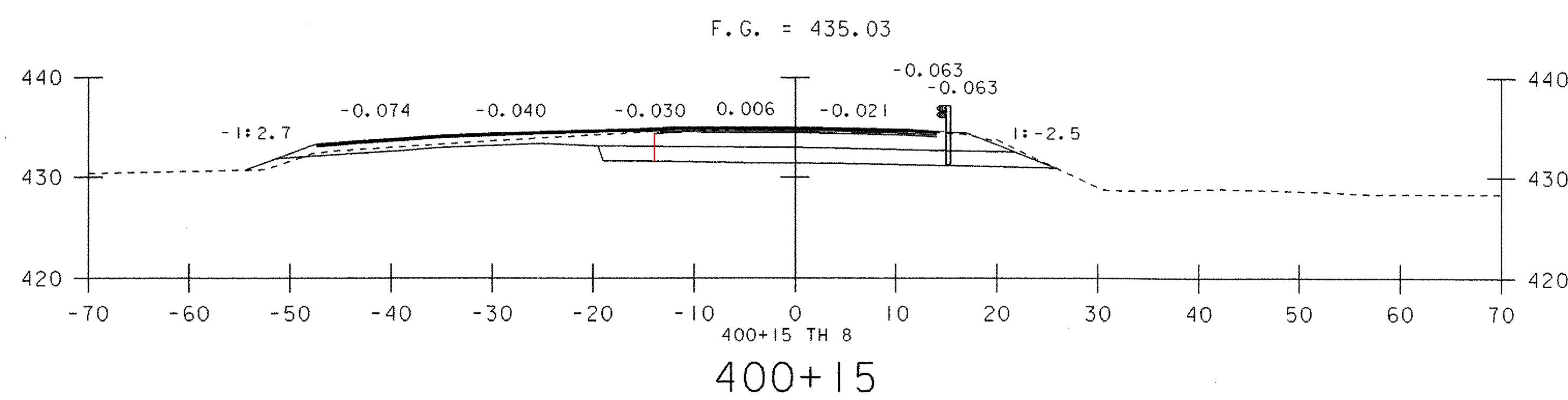
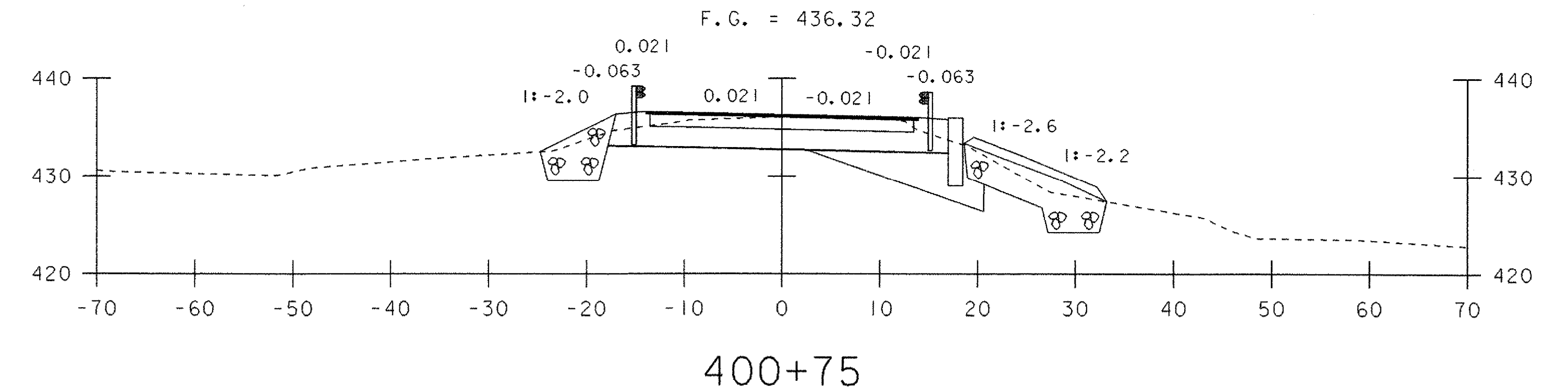
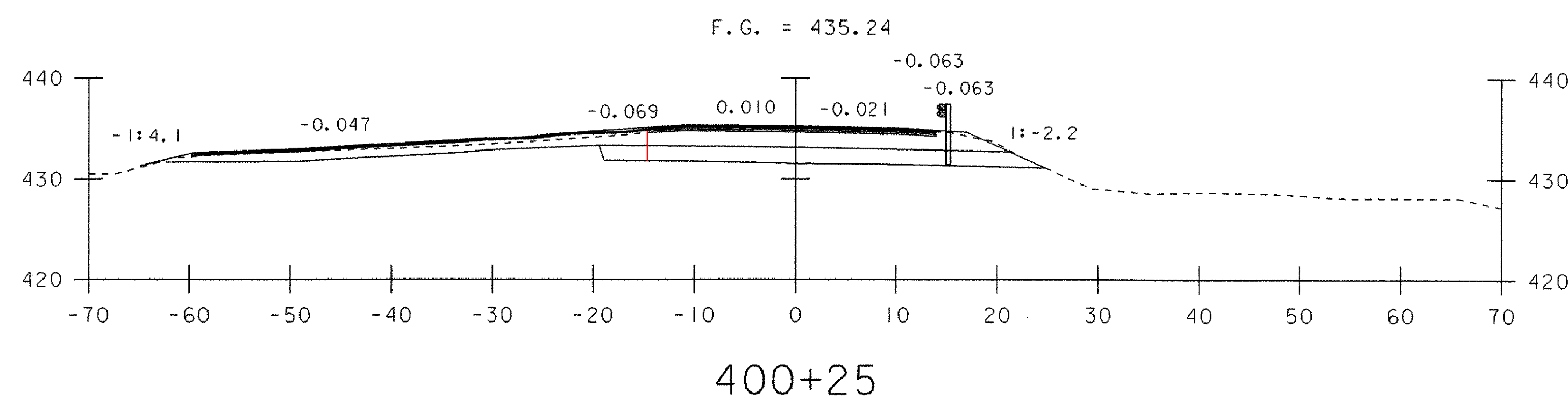
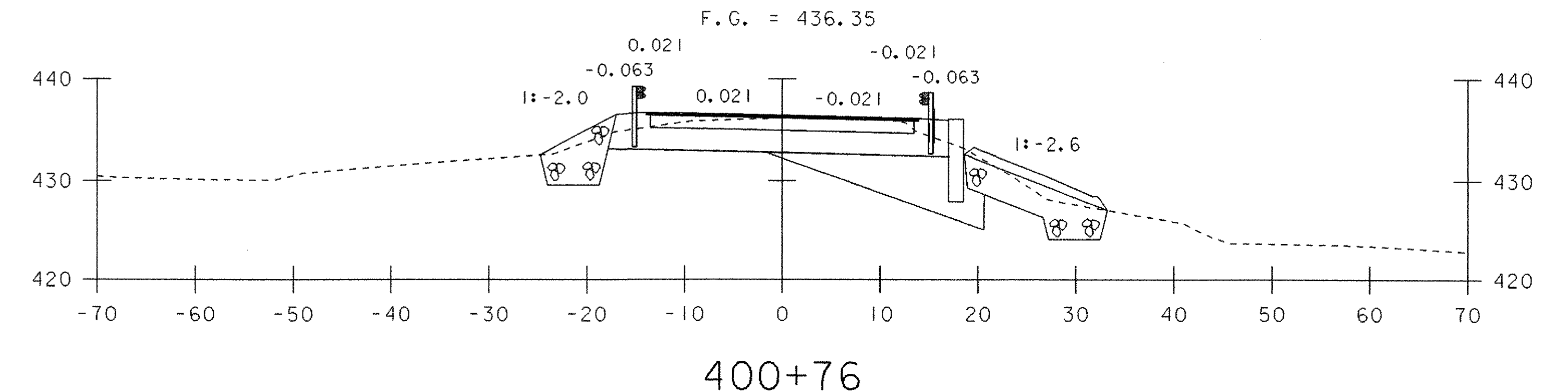
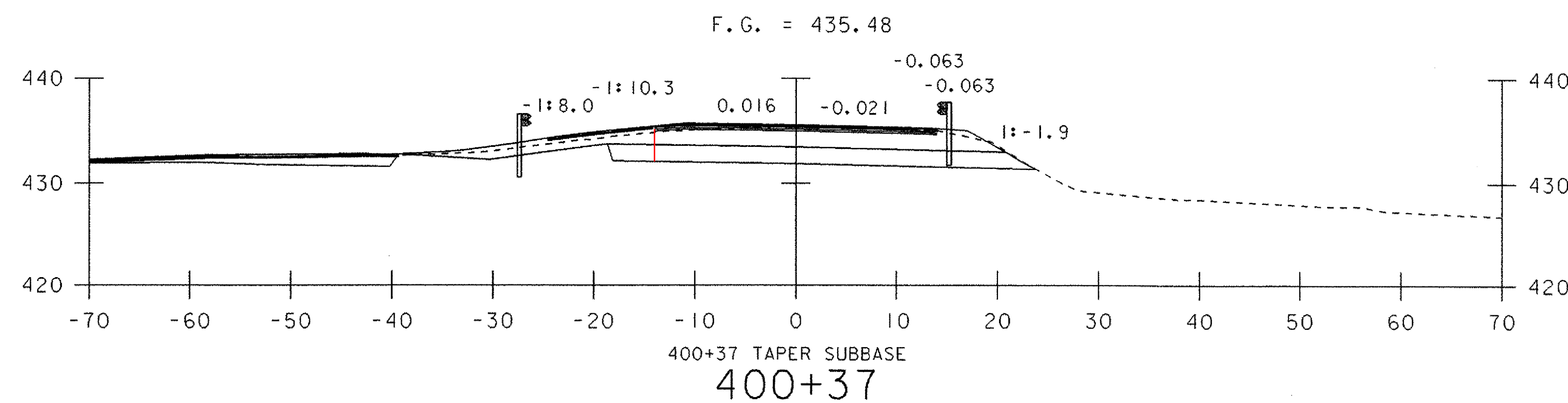


SCALE 1" = 10'-0"

MAINLINE SECTIONS 1

PROJECT NAME: CASTLETON
PROJECT NUMBER: RS 0142(10)

FILE NAME: sfi93m01.i	PLOT DATE: 09-FEB-2007
PROJECT LEADER: R. WHITCOMB	DRAWN BY: T. LACKEY
DESIGNED BY: T. LACKEY	CHECKED BY: W. LAMMER
78f193/structures/sfi93xsl.dgn	SHEET 55 OF 68



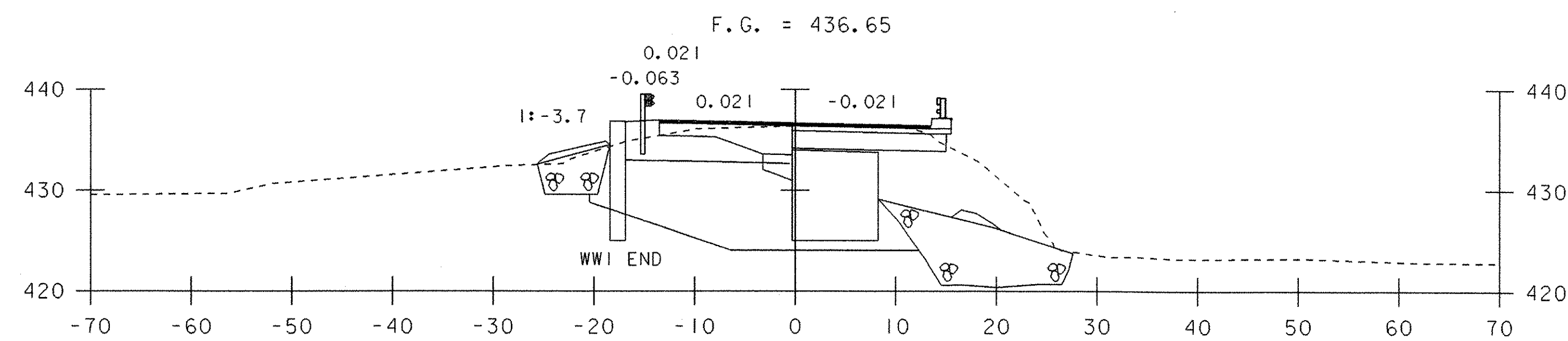
SCALE 1" = 10'-0"

MAINLINE SECTIONS 2

PROJECT NAME: CASTLETON
PROJECT NUMBER: RS 0142(10)

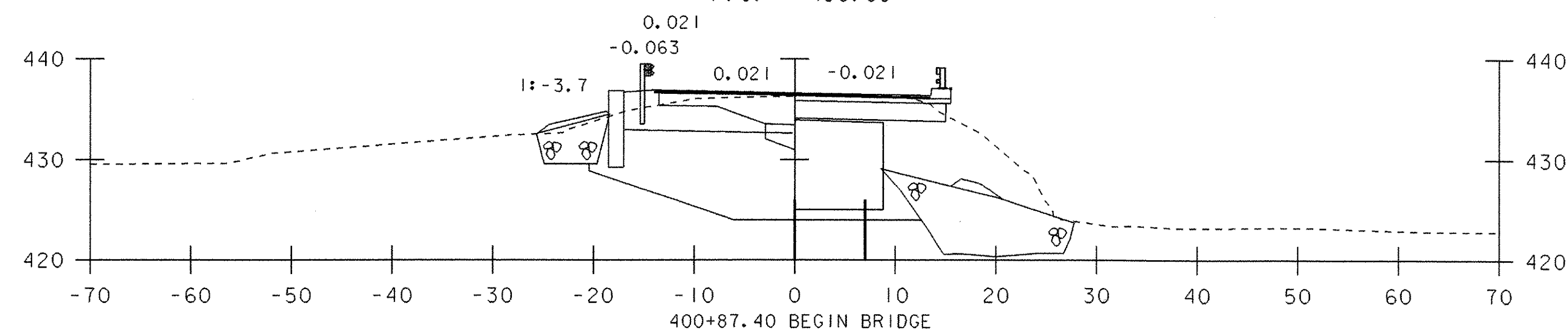
FILE NAME: sf193m02.1
PROJECT LEADER: R. WHITCOMB
DESIGNED BY: T. LACKEY
78f193/structures/sf193xsl.dgn

PLOT DATE: 09-FEB-2007
DRAWN BY: T. LACKEY
CHECKED BY: W. LAMMER
SHEET 56 OF 68



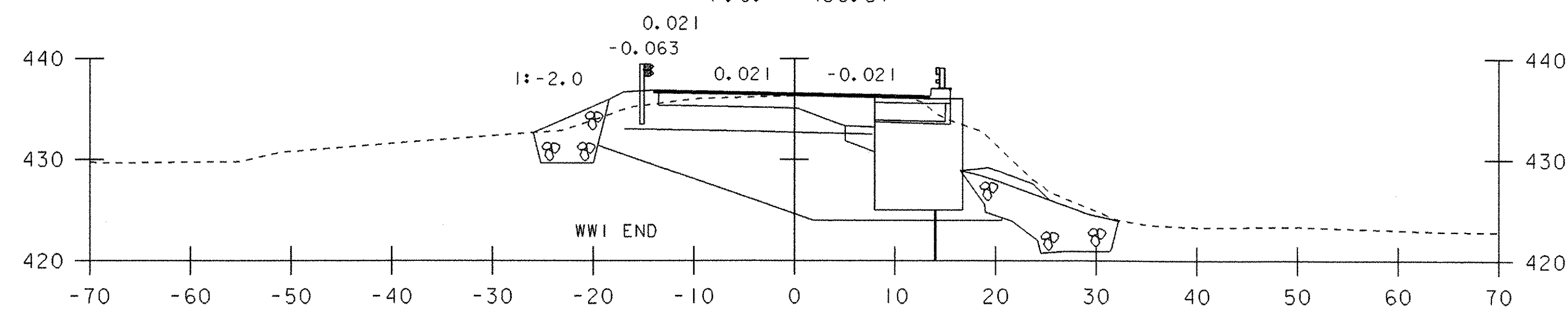
400+88

F.G. = 436.65



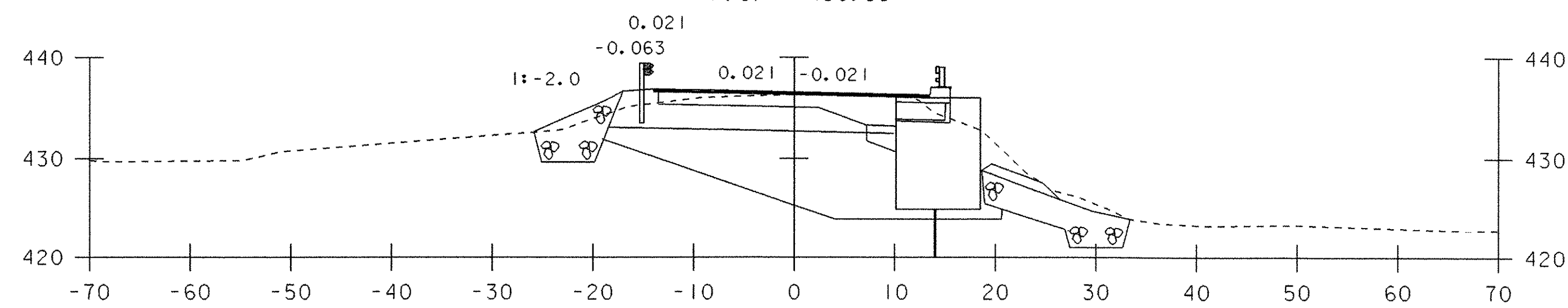
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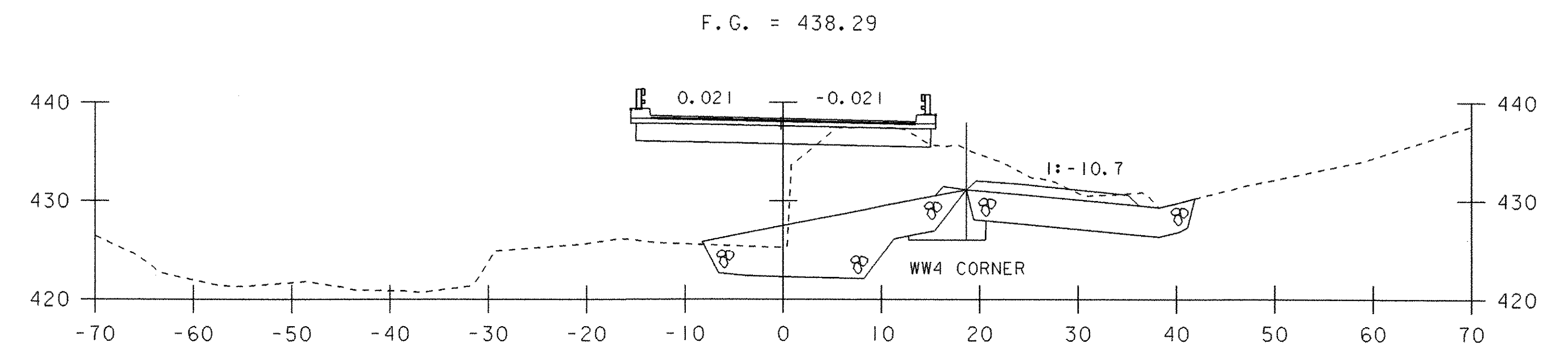


400+84

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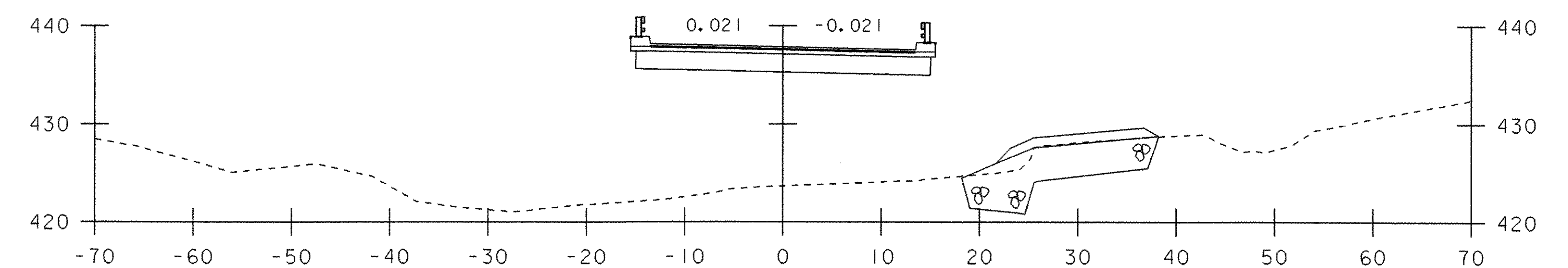


400+83



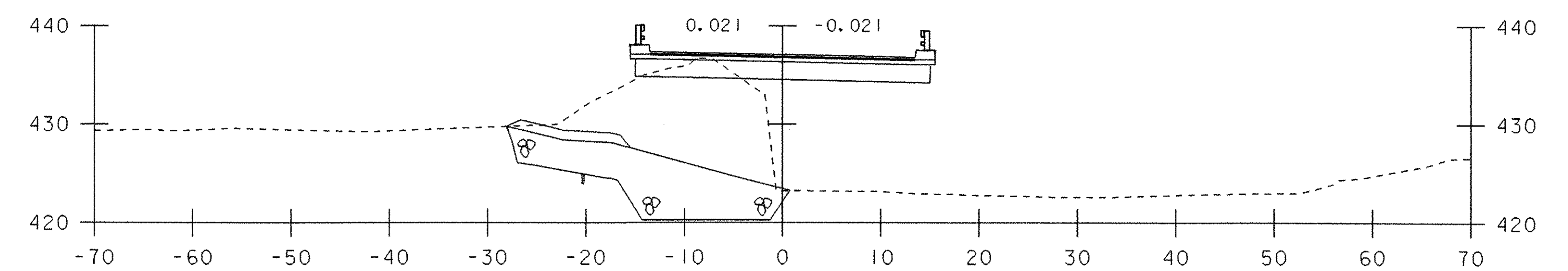
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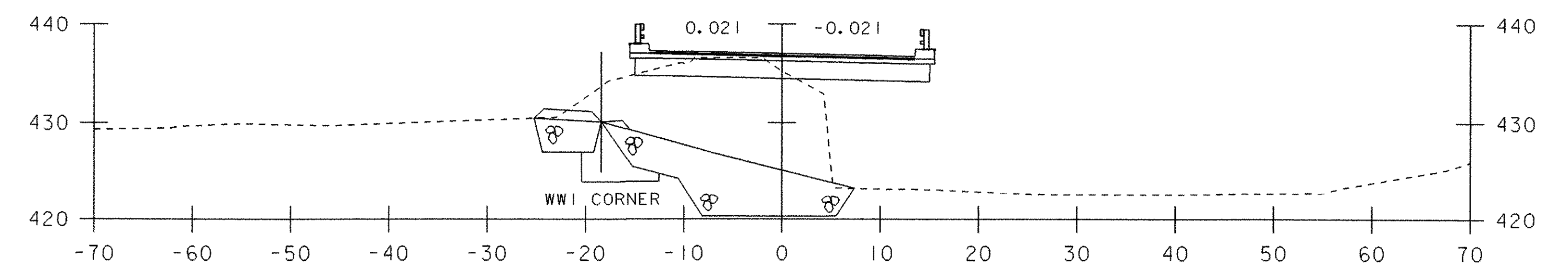
401+25

F.G. = 437.01



401+00

F.G. = 436.93



400+97

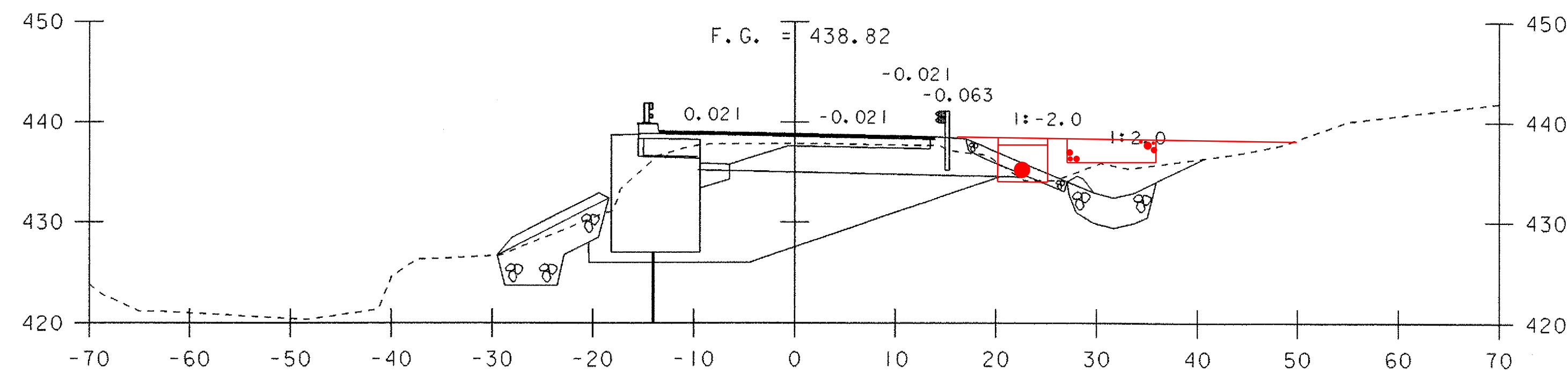
MAINLINE SECTIONS 3

SCALE 1" = 10'-0"

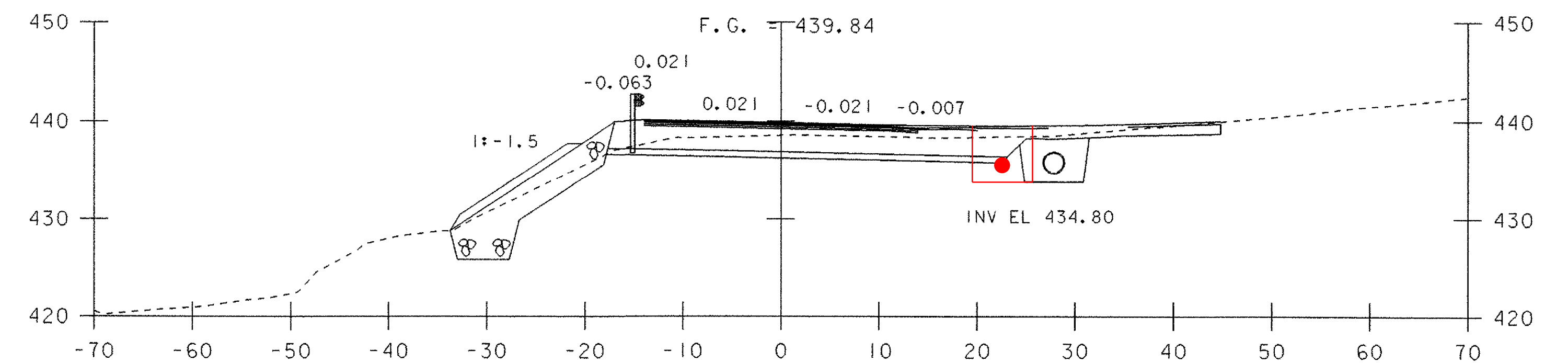
PROJECT NAME: CASTLETON
PROJECT NUMBER: RS 0142(10)

FILE NAME: sf193m03.l
PROJECT LEADER: R. WHITCOMB
DESIGNED BY: T. LACKEY
78f193/structures/sf193xsl.dgn

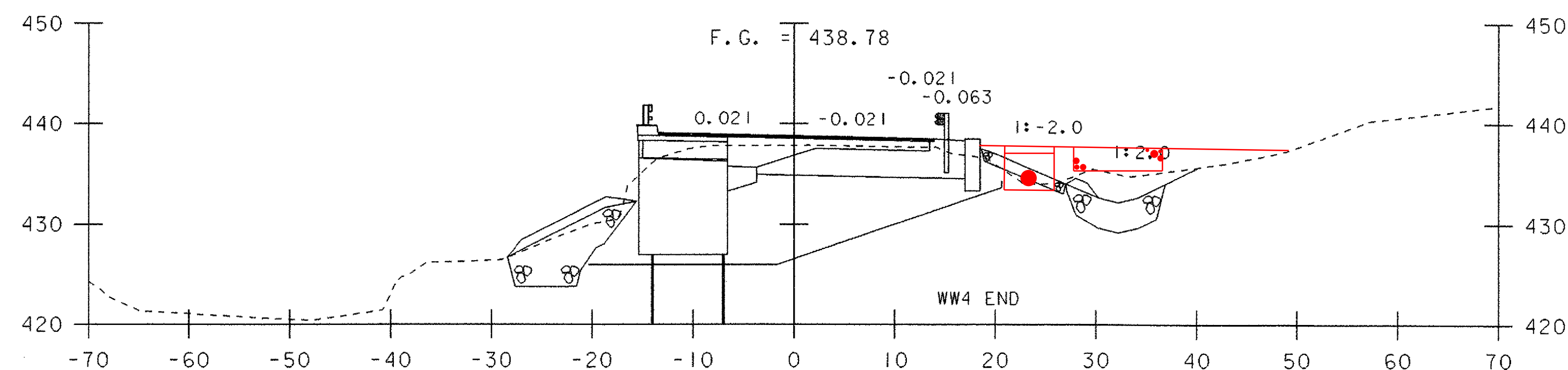
PLOT DATE: 09-FEB-2007
DRAWN BY: T. LACKEY
CHECKED BY: W. LAMMER
SHEET 57 OF 68



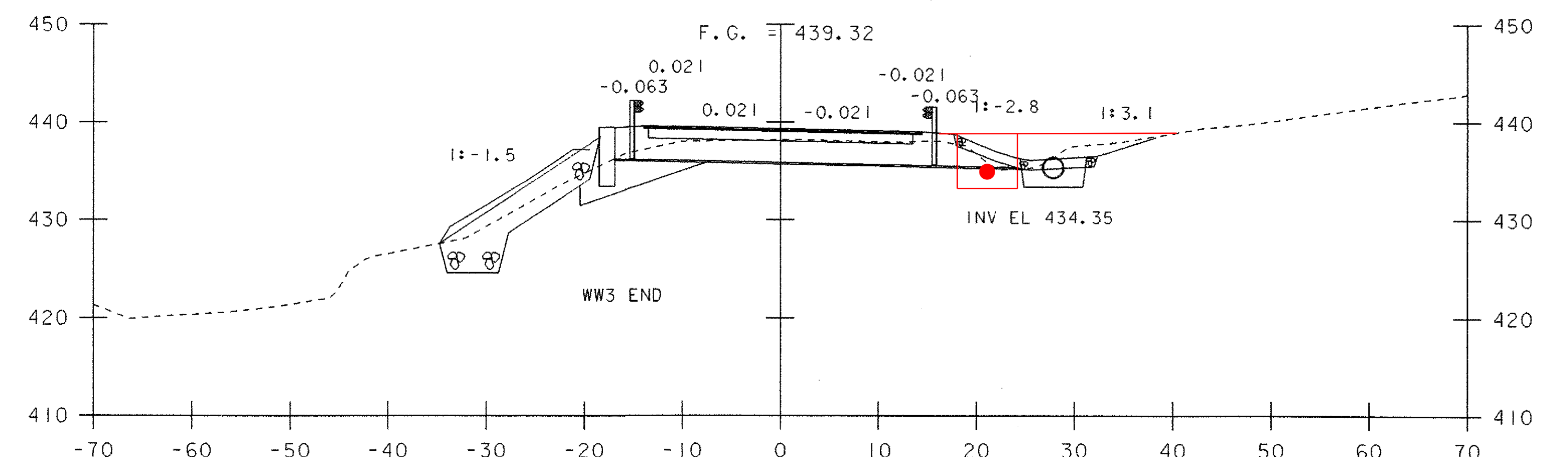
401+51



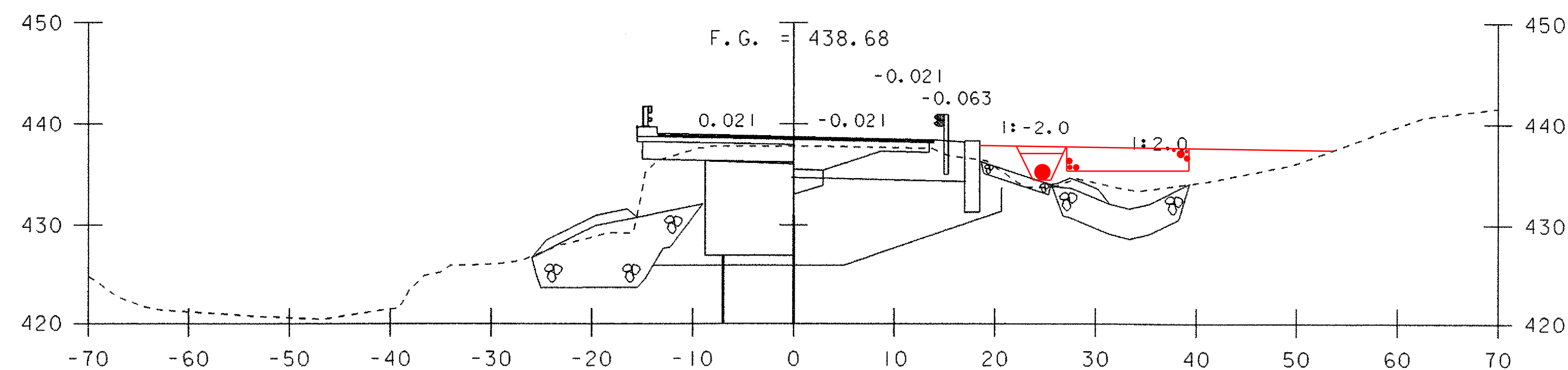
401+75



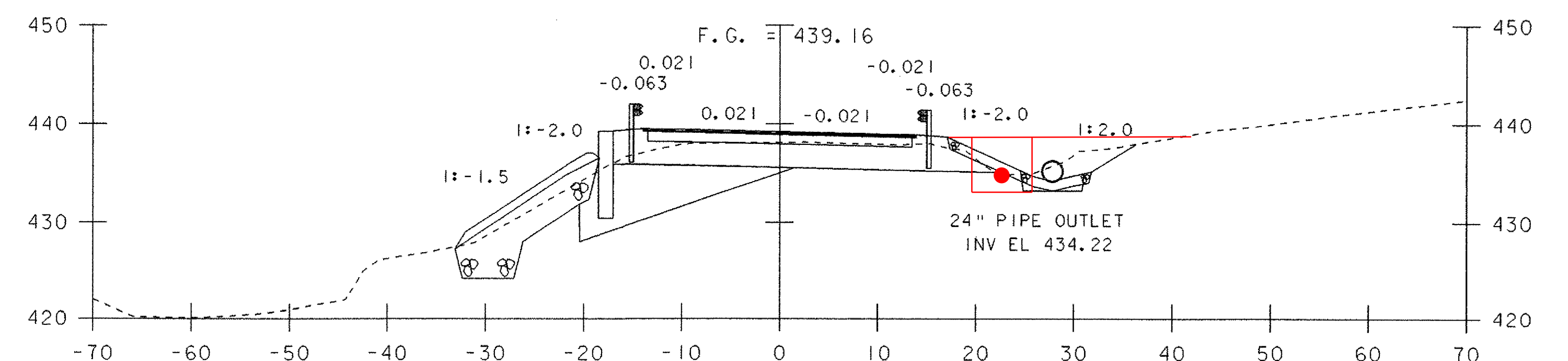
401+50



401+63



401+48

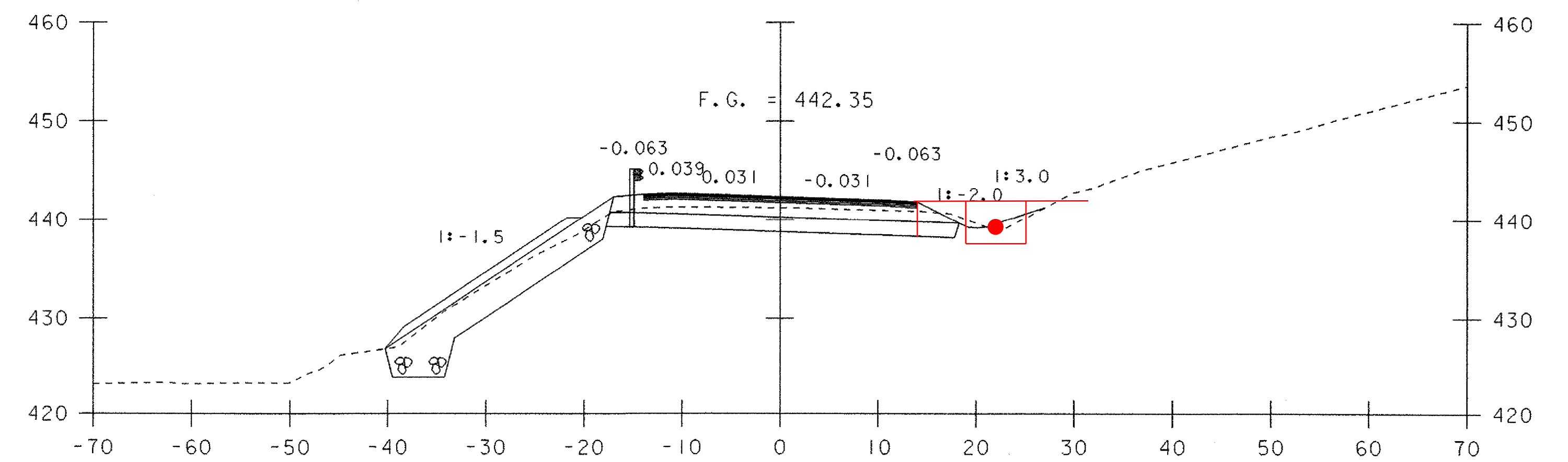
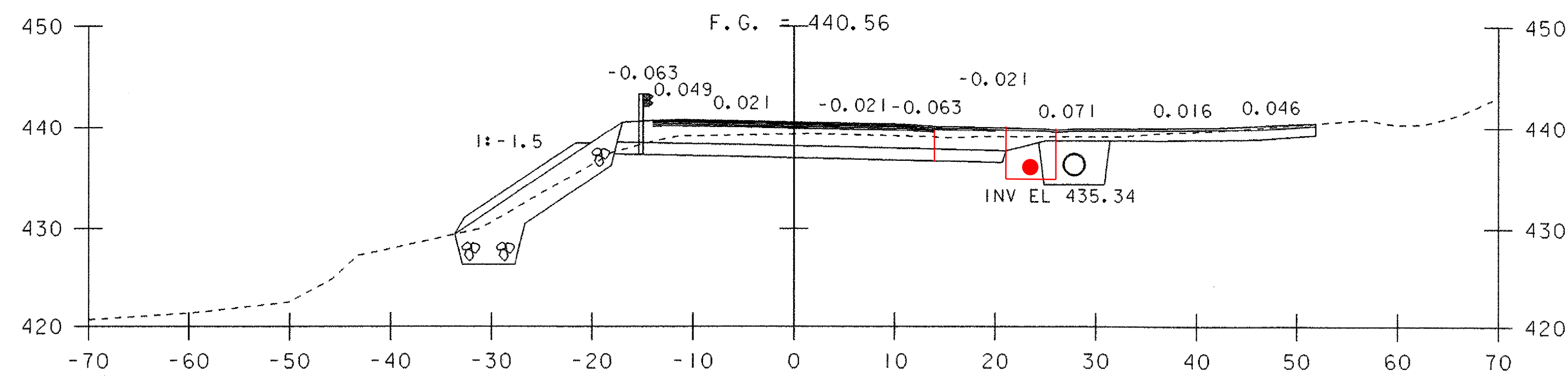
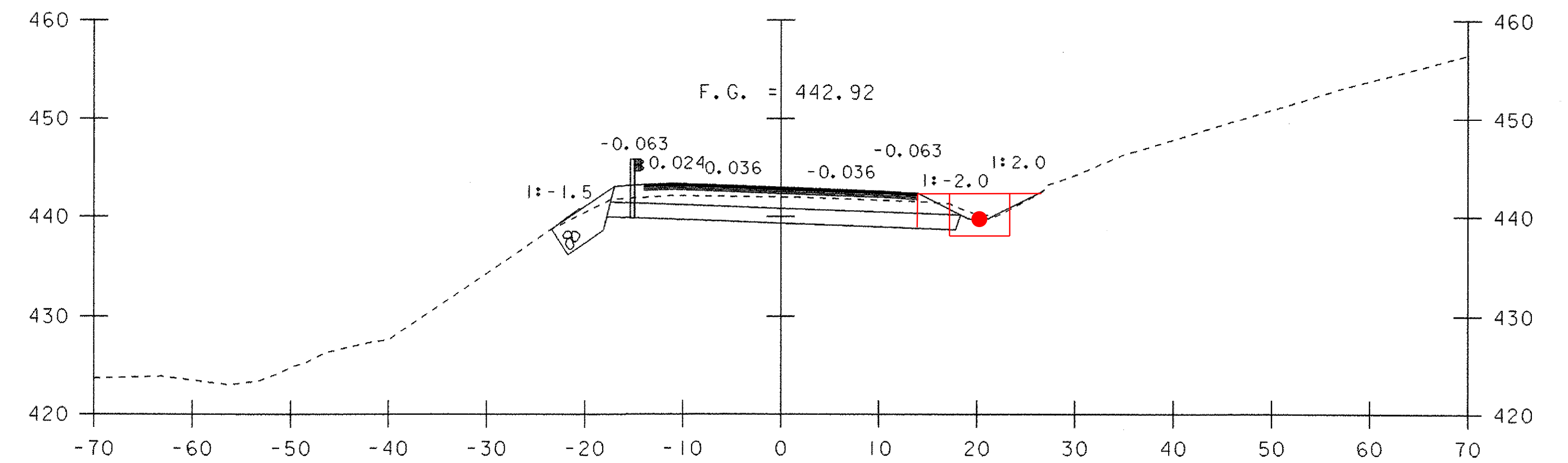
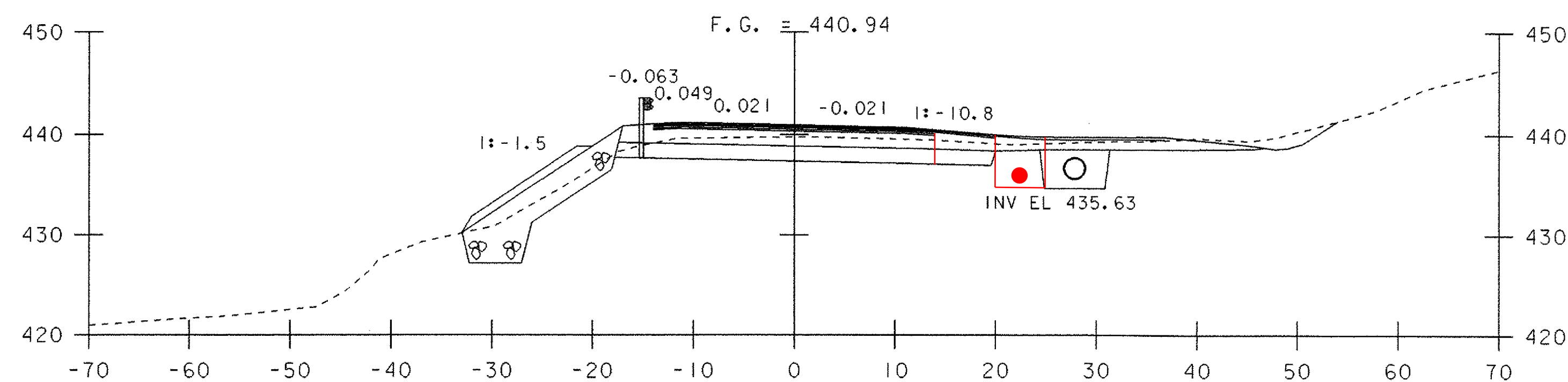
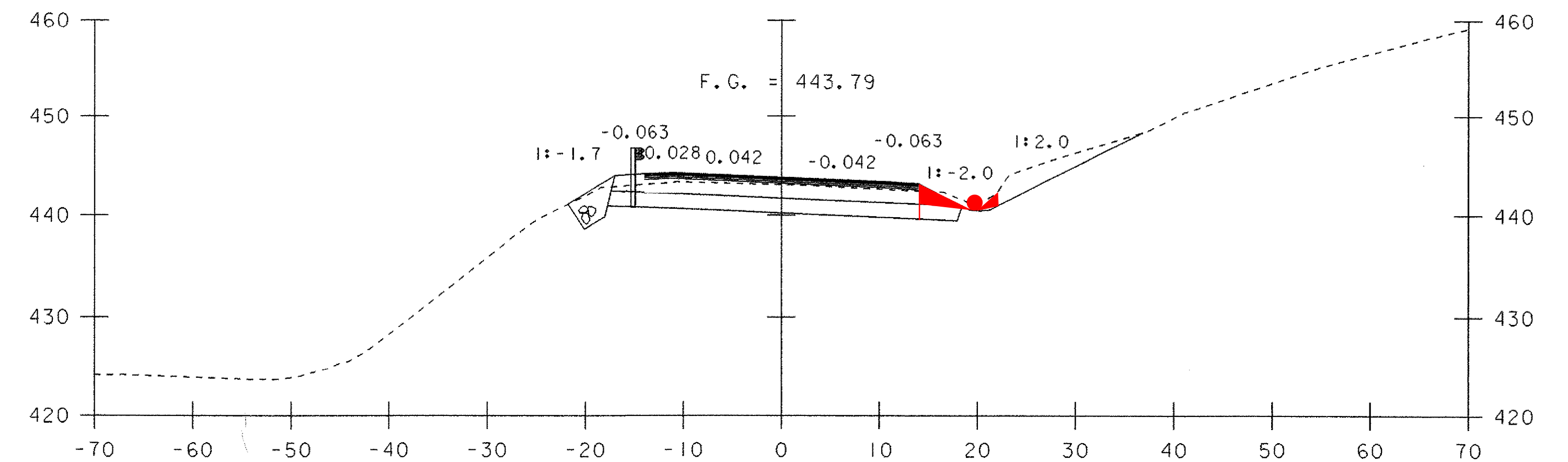
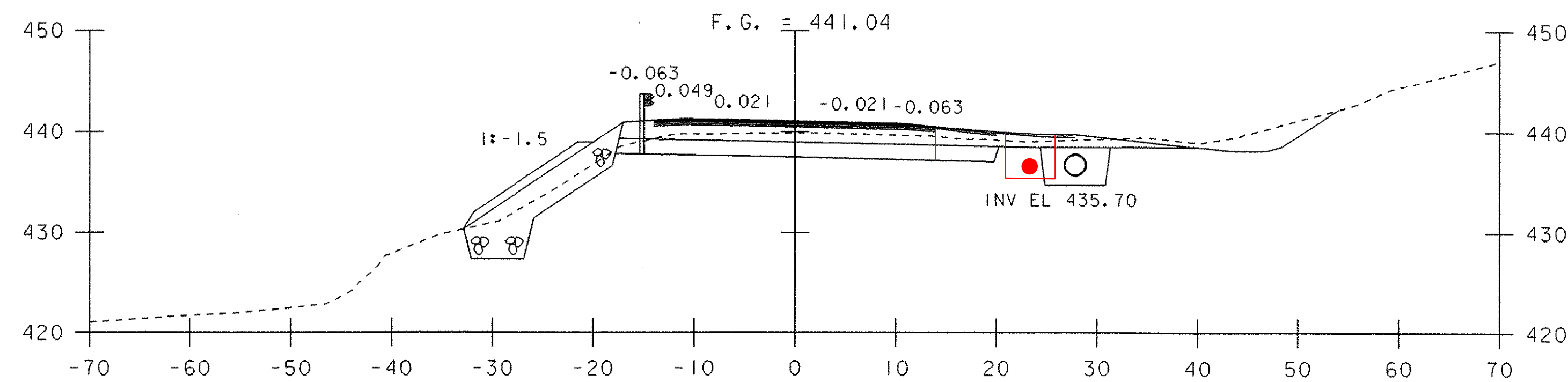


401+59

MAINLINE SECTIONS 4

SCALE 1" = 10'-0"

PROJECT NAME: CASTLETON	
PROJECT NUMBER: RS 0142(10)	
FILE NAME: sf193m04.1	PLOT DATE: 09-FEB-2007
PROJECT LEADER: R. WHITCOMB	DRAWN BY: T. LACKEY
DESIGNED BY: T. LACKEY	CHECKED BY: W. LAMMER
78f193/structures/sf193xsl.dgn	SHEET 58 OF 68



401+90 DRIVE 2
401+90 TAPER SUBBASE

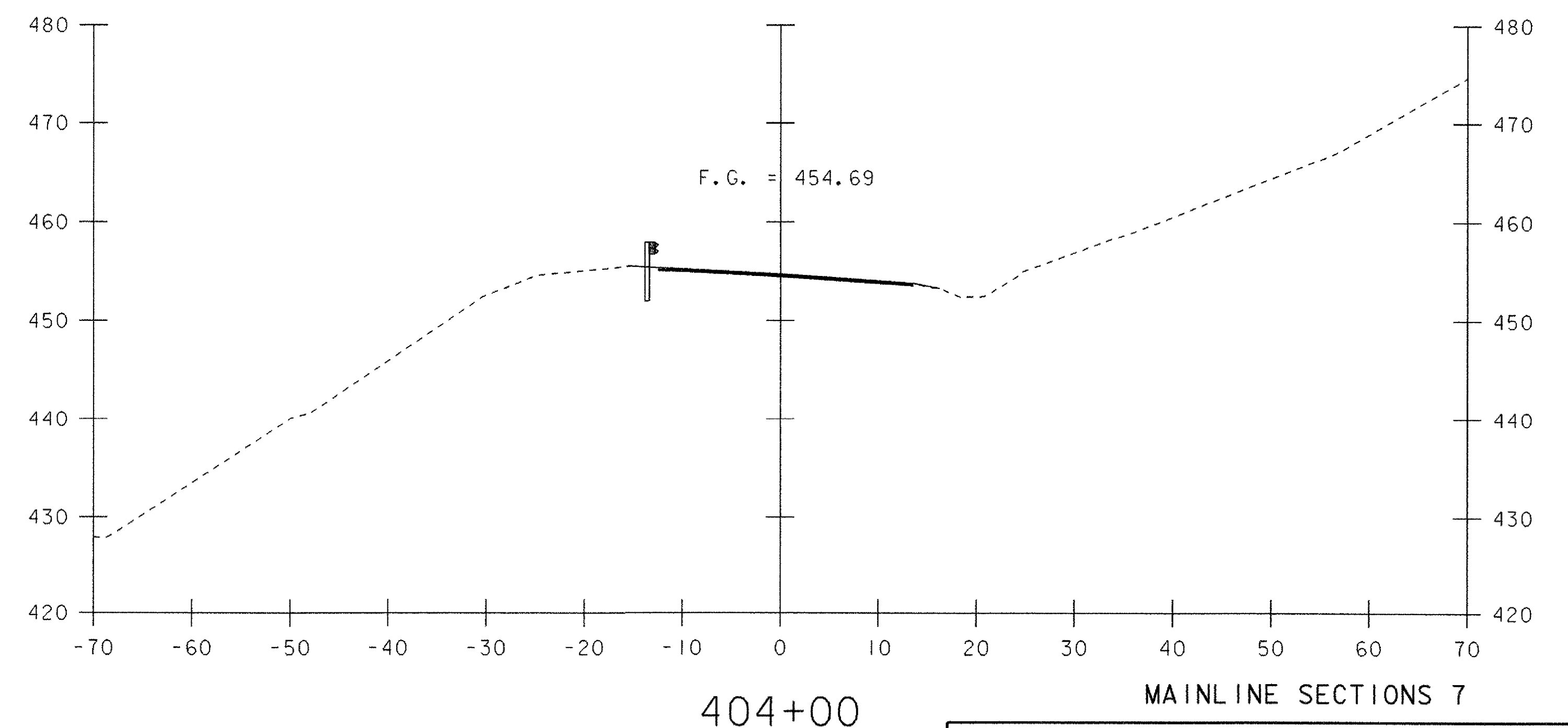
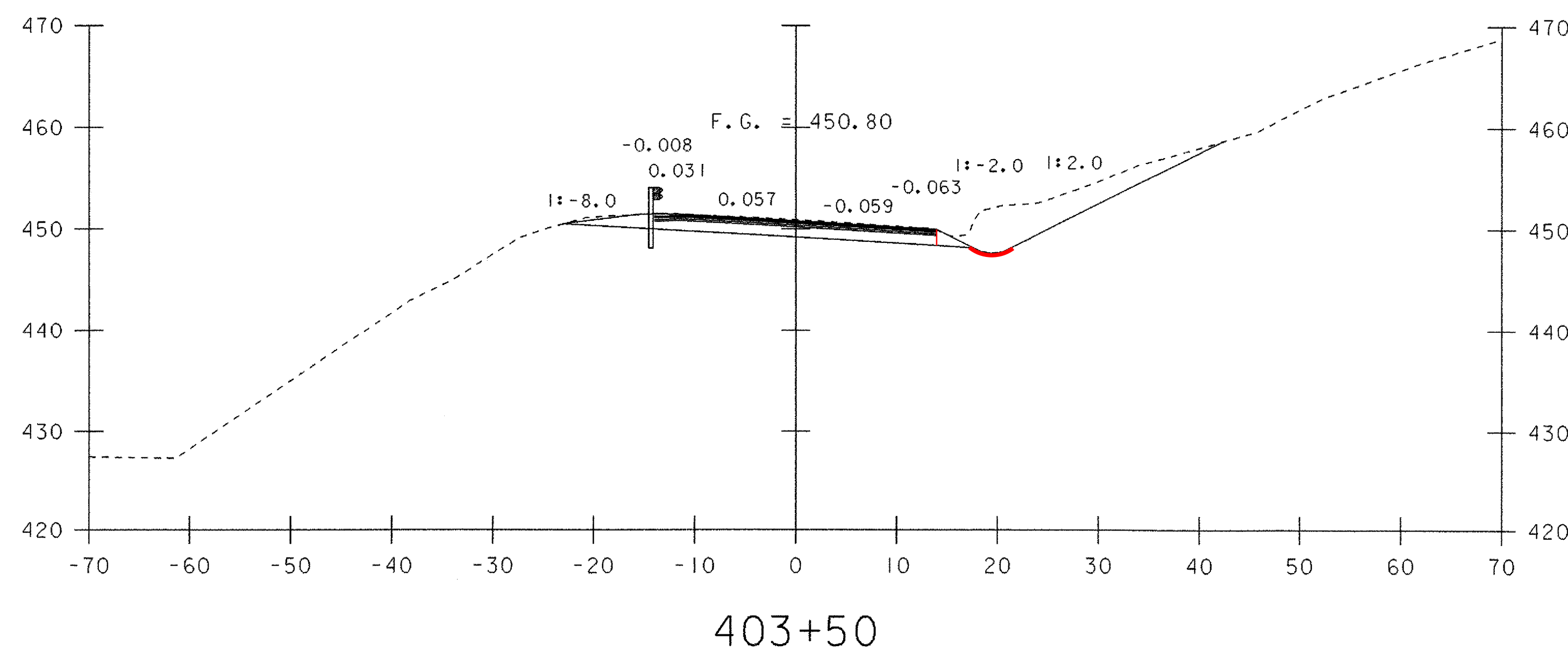
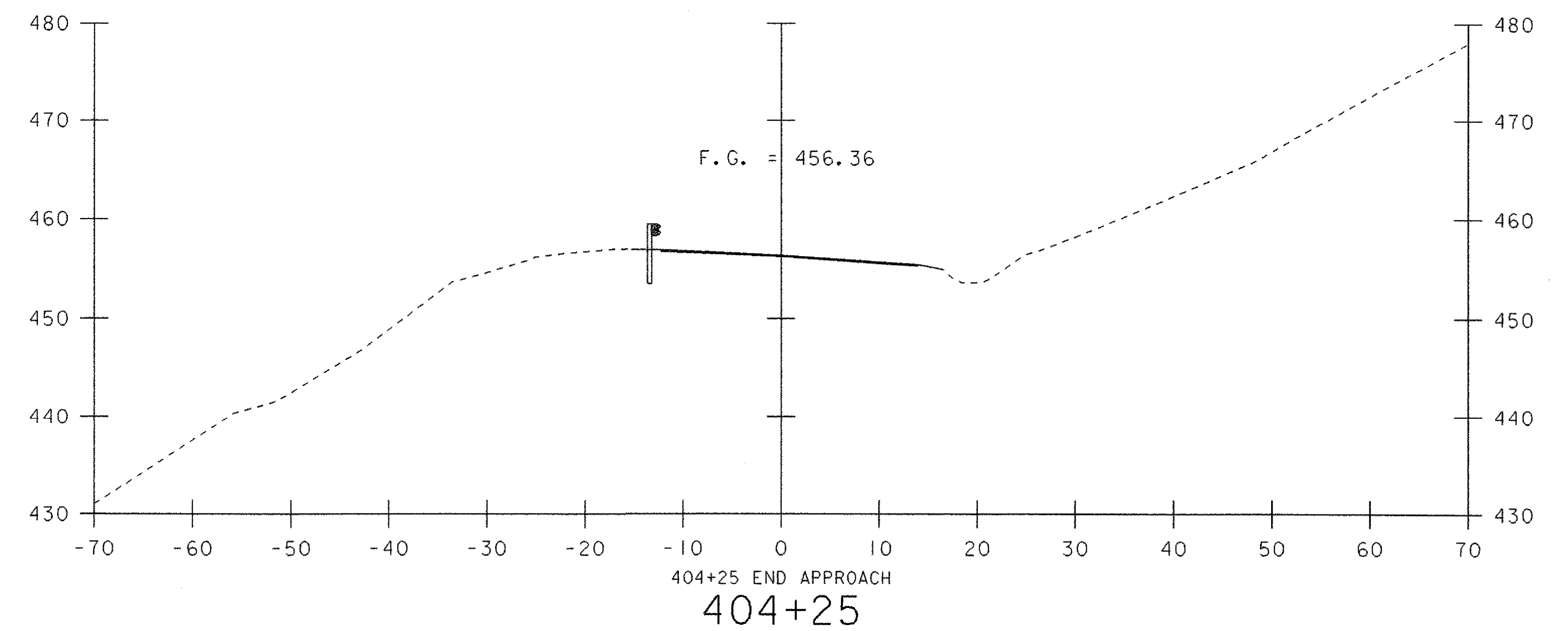
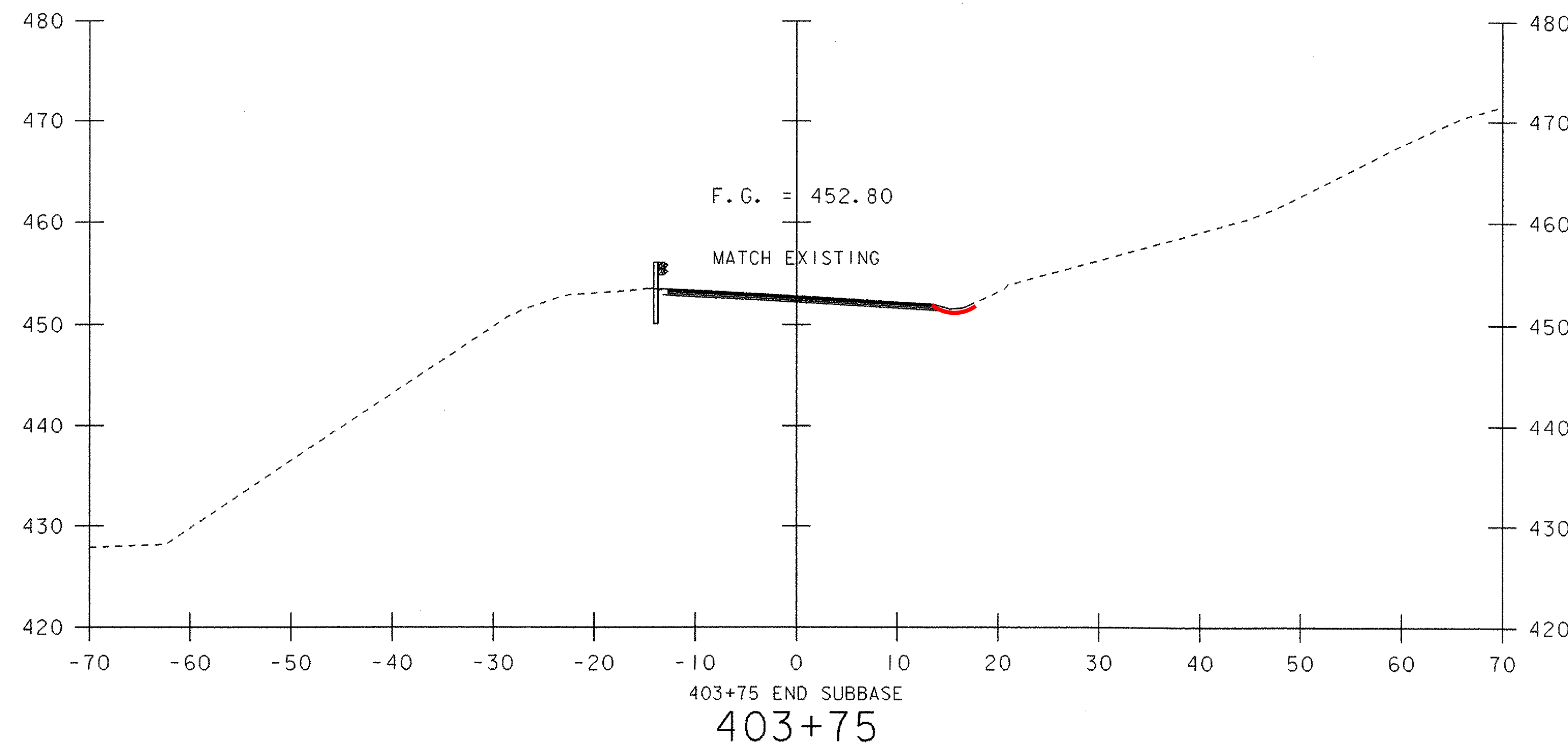
SCALE 1" = 10'-0"

MAINLINE SECTIONS 5

PROJECT NAME: CASTLETON
PROJECT NUMBER: RS 0142(10)

FILE NAME: sf193m05.1
PROJECT LEADER: R. WHITCOMB
DESIGNED BY: T. LACKEY
78f193/structures/sf193xsl.dgn

PLOT DATE: 09-FEB-2007
DRAWN BY: T. LACKEY
CHECKED BY: W. LAMMER
SHEET 59 OF 68



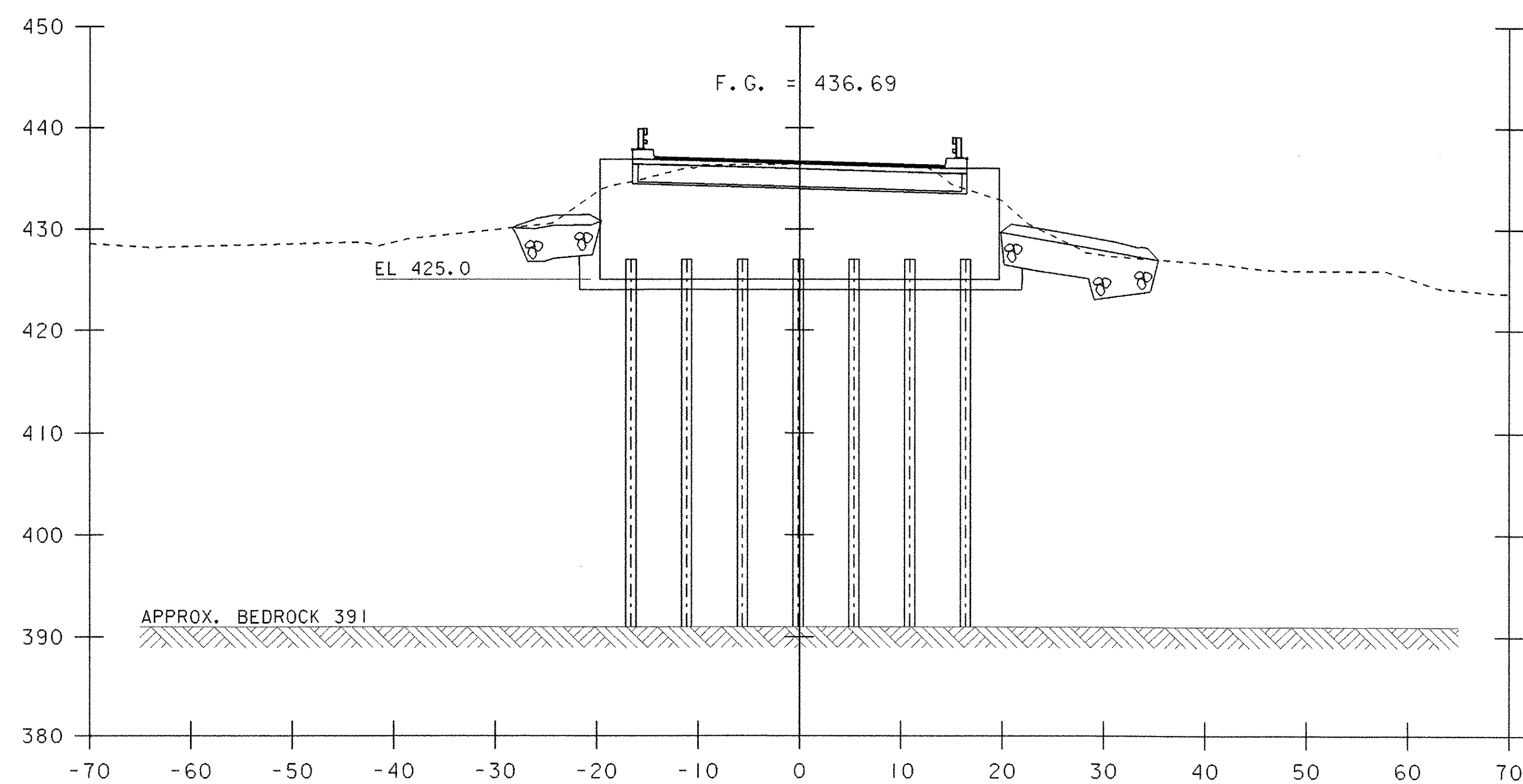
SCALE 1" = 10'-0"
10 0 10

MAINLINE SECTIONS 7

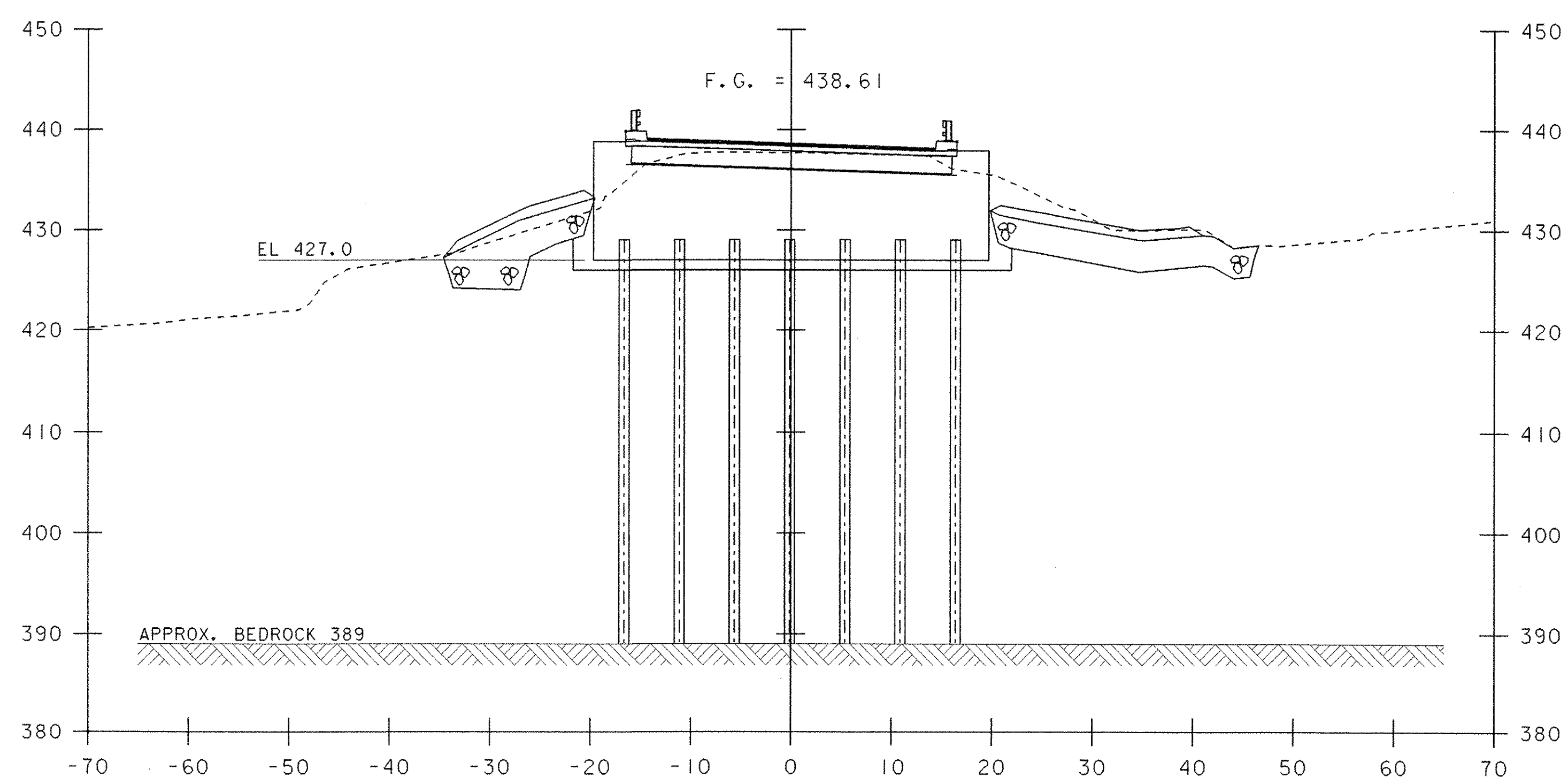
PROJECT NAME: CASTLETON
PROJECT NUMBER: RS 0142(10)

FILE NAME: sf193m07.i
PROJECT LEADER: R. WHITCOMB
DESIGNED BY: T. LACKEY
78f193/structures/sf193xsl.dgn

PLOT DATE: 09-FEB-2007
DRAWN BY: T. LACKEY
CHECKED BY: W. LAMMER
SHEET 61 OF 68



SCALE 1" = 10'-0"

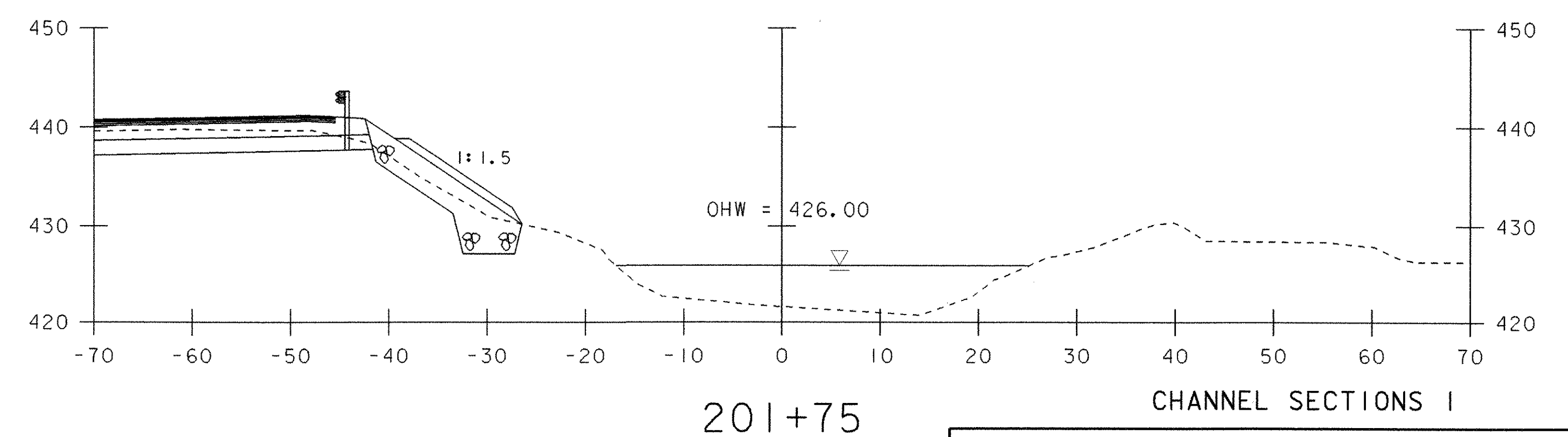
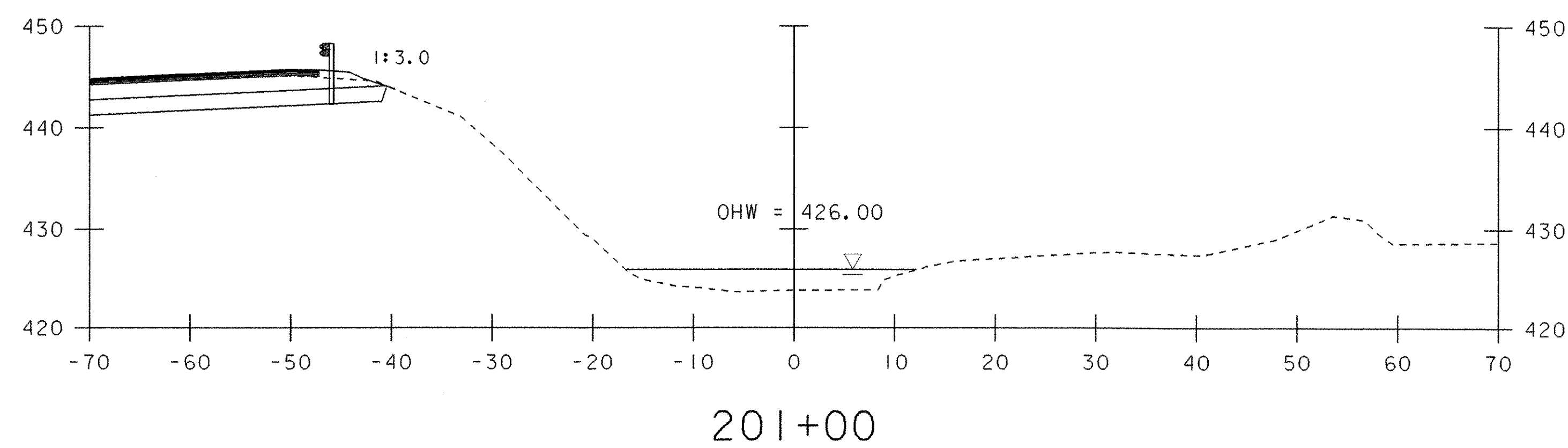
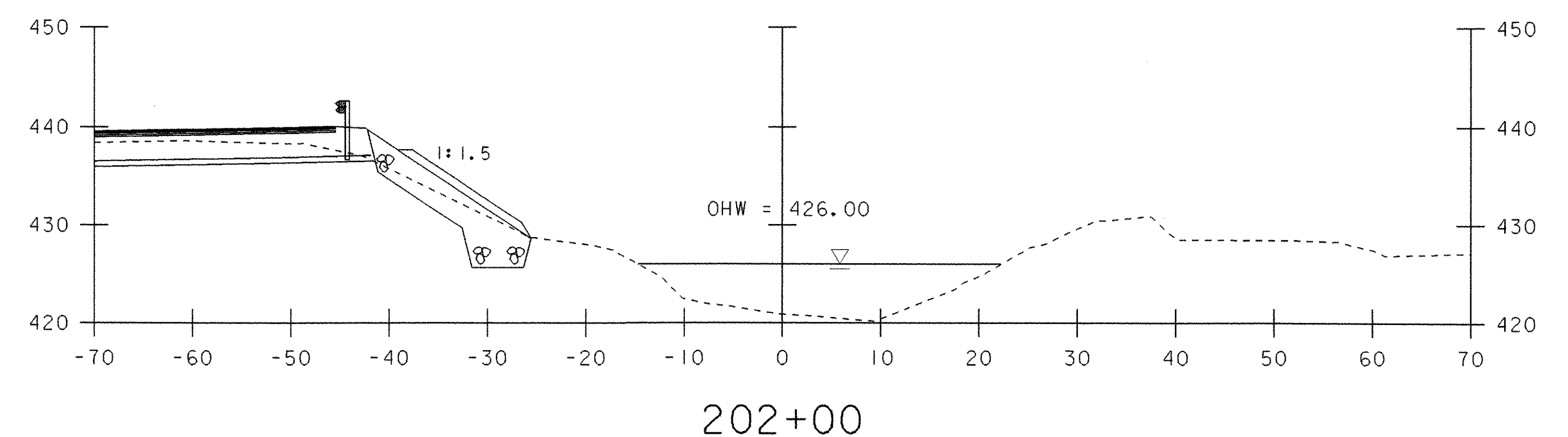
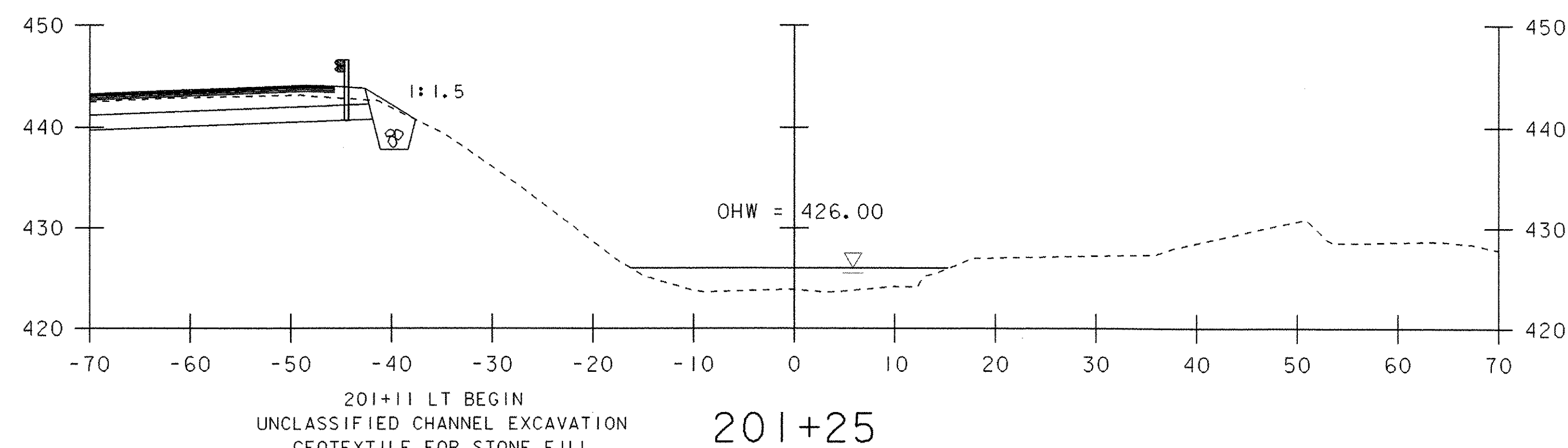
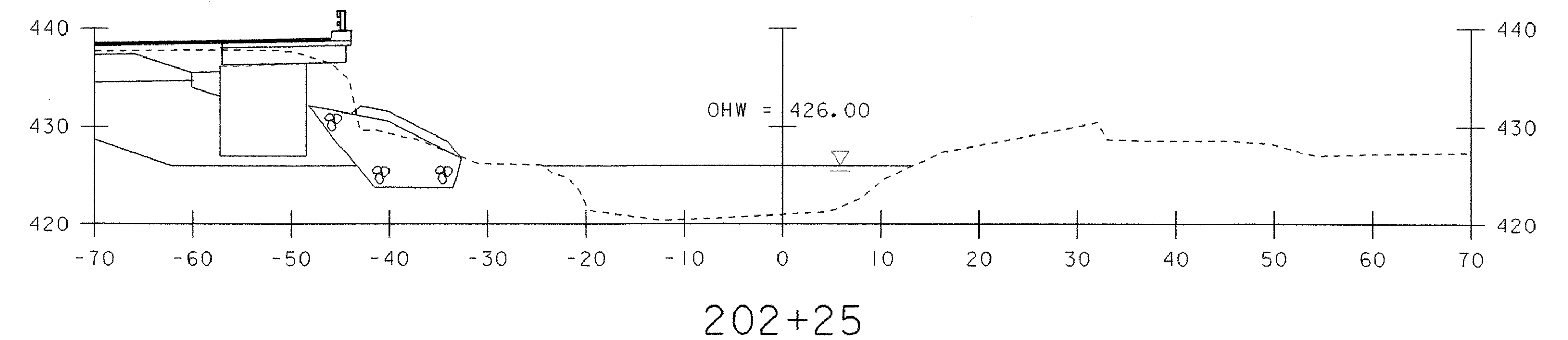
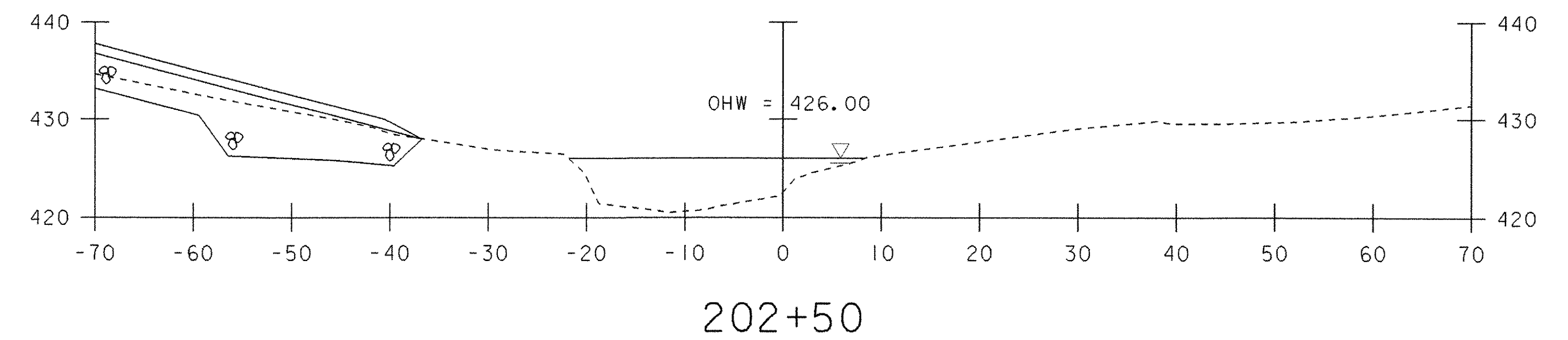
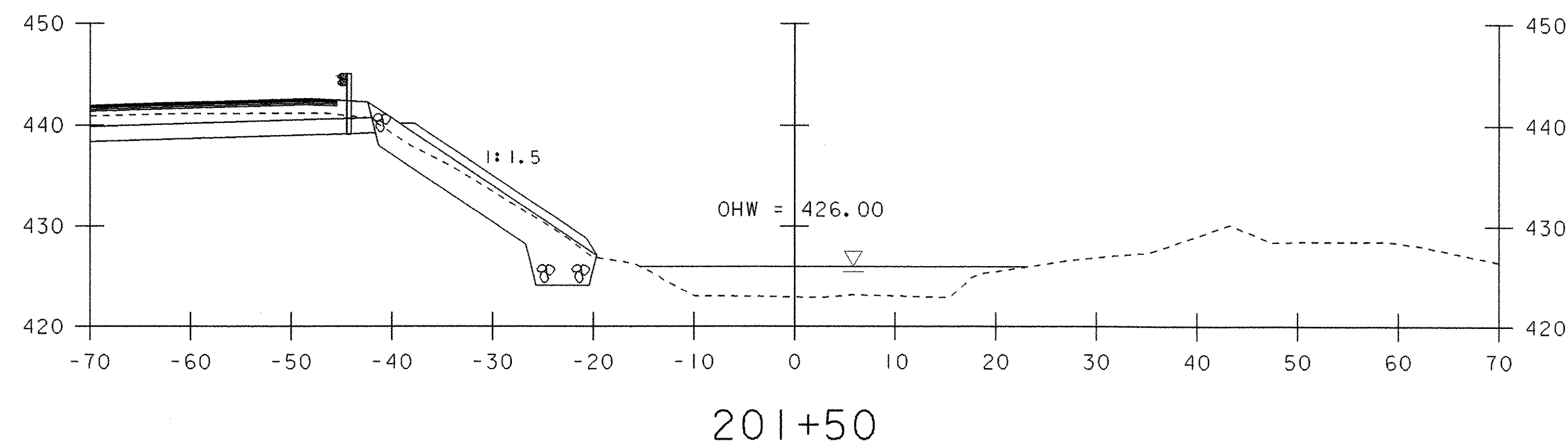


MAINLINE SECTIONS ABUTMENTS

PROJECT NAME: CASTLETON
PROJECT NUMBER: RS 0142(10)

FILE NAME: sf193m1.i
PROJECT LEADER: R. WHITCOMB
DESIGNED BY: T. LACKEY
78f193/structures/sf193xsl.dgn

PLOT DATE: 09-FEB-2007
DRAWN BY: T. LACKEY
CHECKED BY: W. LAMMER
SHEET 62 OF 68

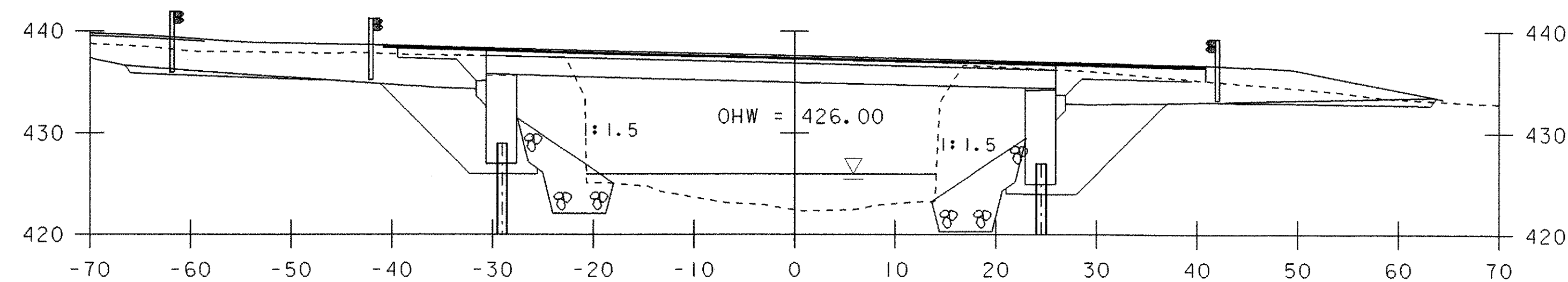


SCALE 1" = 10'-0"

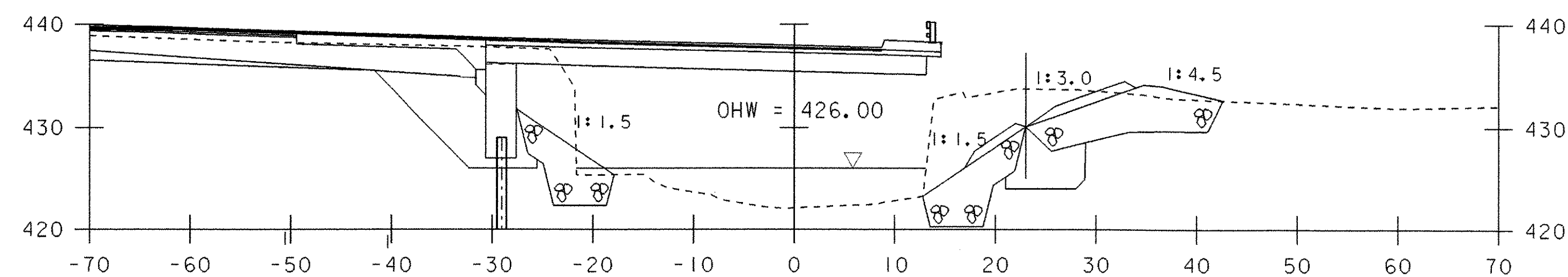
CHANNEL SECTIONS I

PROJECT NAME: CASTLETON
PROJECT NUMBER: RS 0142(10)

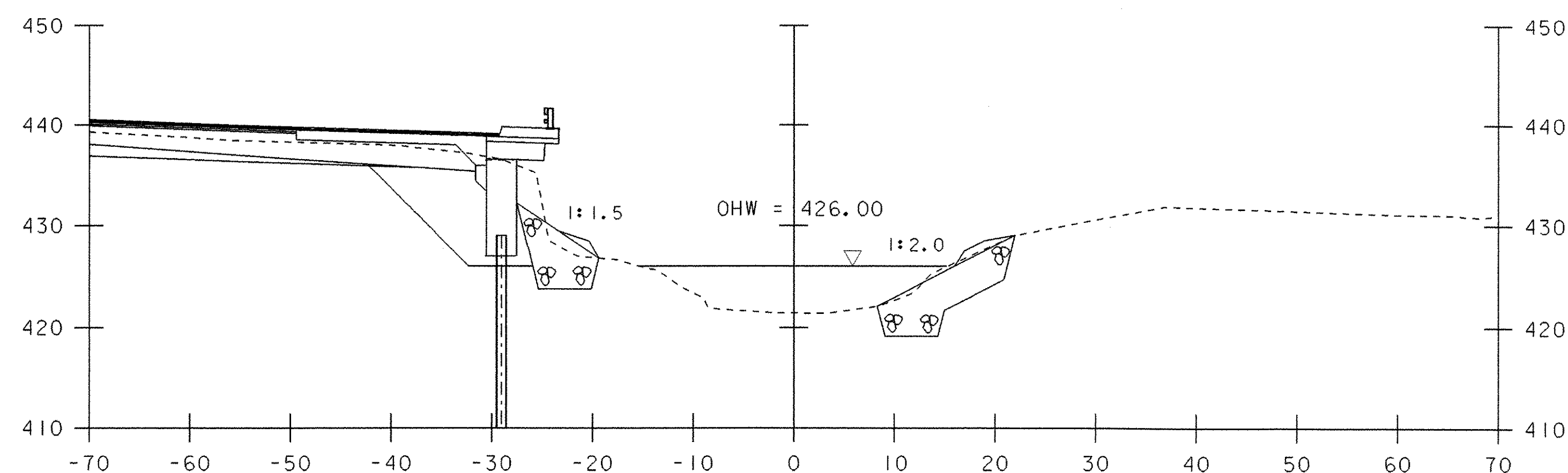
FILE NAME: sf193c01.i	PLOT DATE: 09-FEB-2007
PROJECT LEADER: R. WHITCOMB	DRAWN BY: T. LACKEY
DESIGNED BY: T. LACKEY	CHECKED BY: W. LAMMER
78f193/structures/sf193xsl.dgn	SHEET 63 OF 68



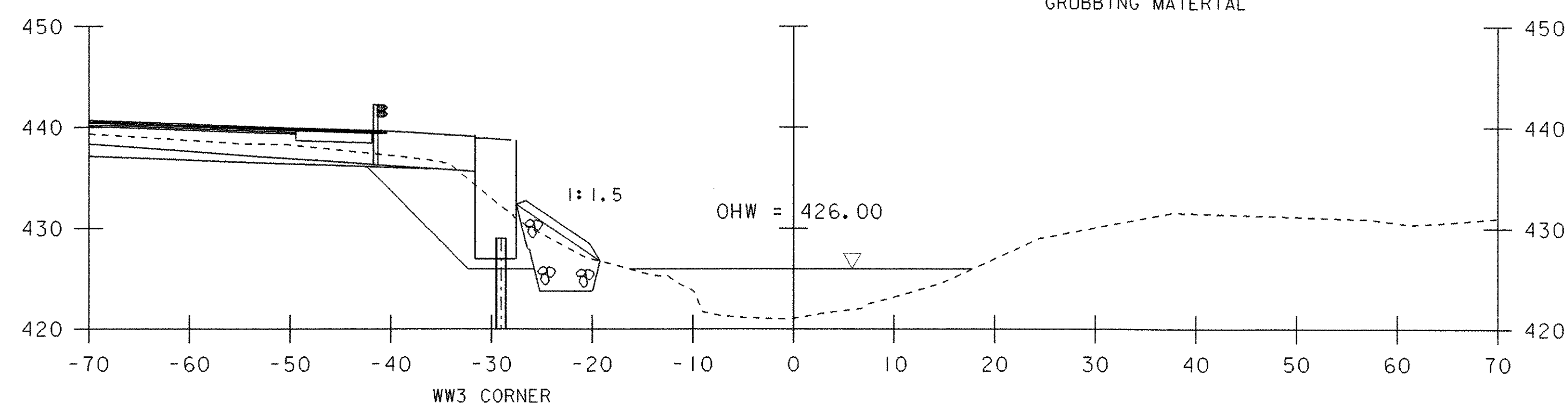
203+00



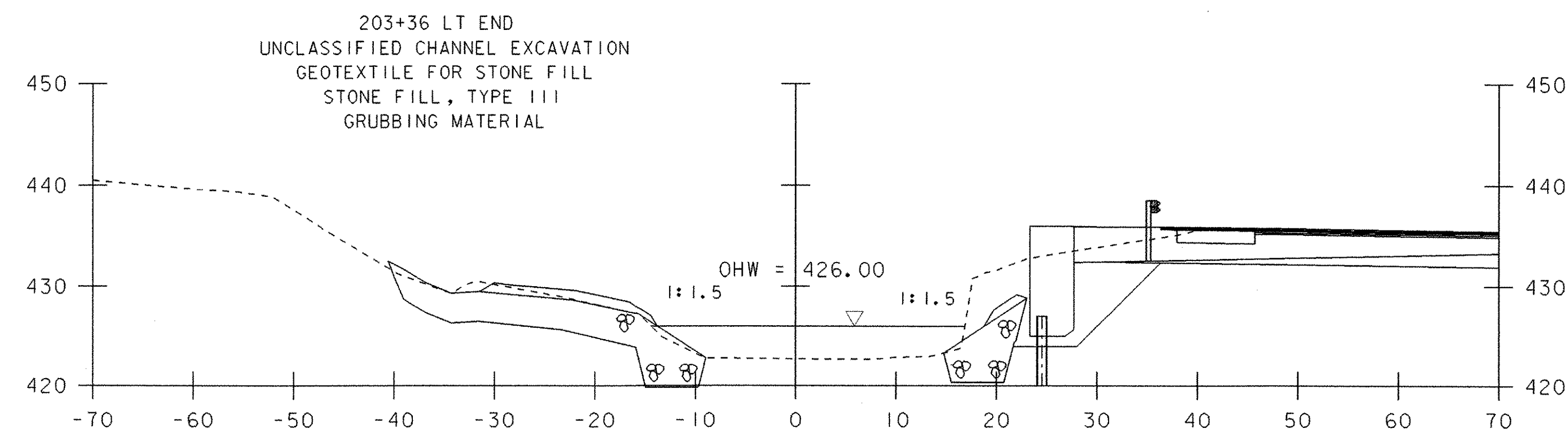
202+89



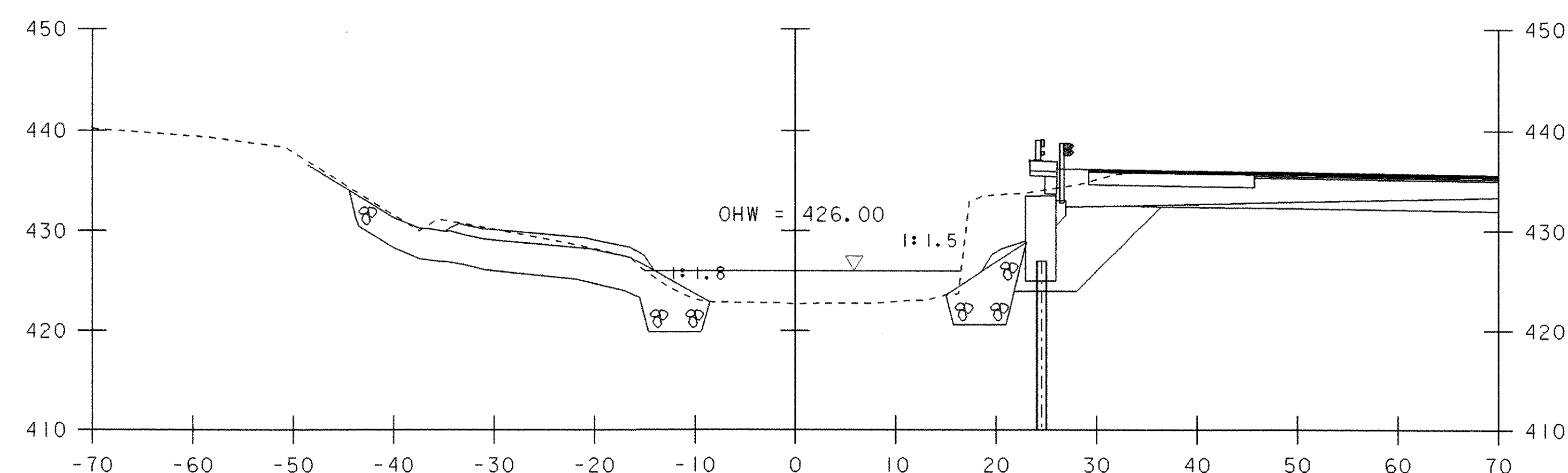
202+75



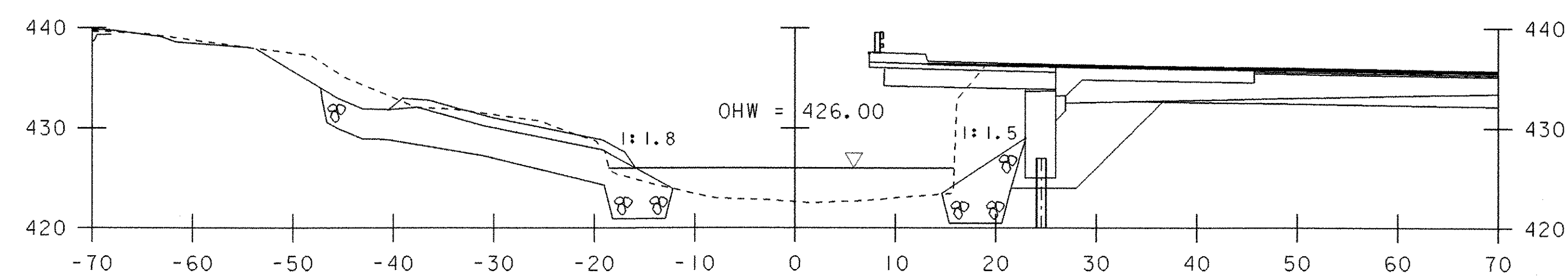
202+70



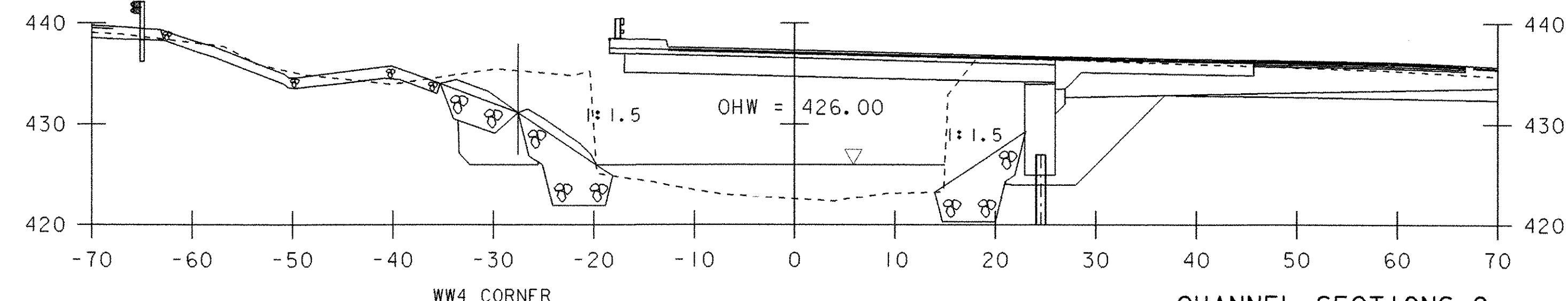
203+28



203+25



203+19



203+10

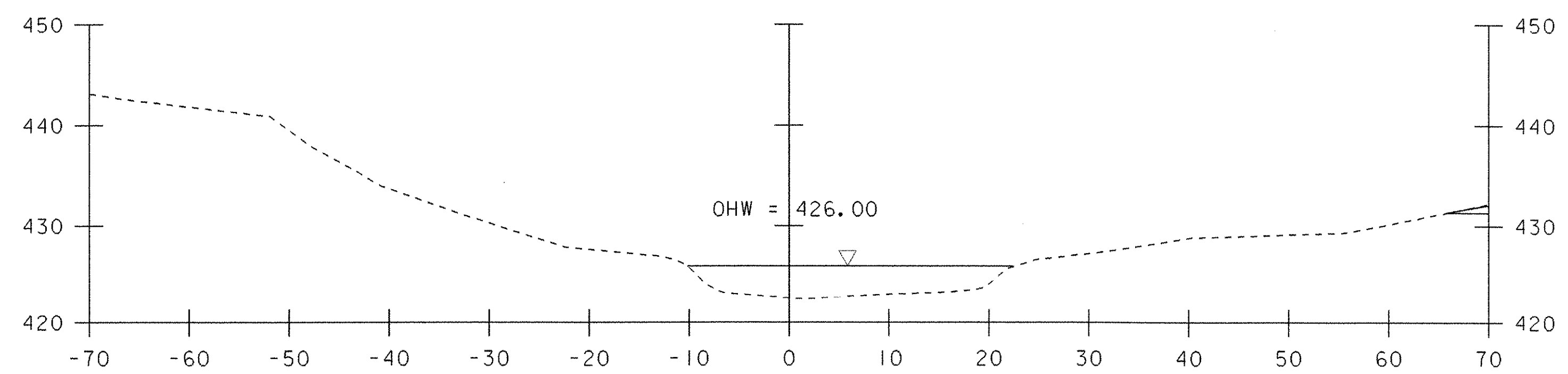
CHANNEL SECTIONS 2

SCALE 1" = 10'-0"

PROJECT NAME: CASTLETON
PROJECT NUMBER: RS 0142(10)

FILE NAME: sf193c02.i
PROJECT LEADER: R. WHITCOMB
DESIGNED BY: T. LACKEY
78f193/structures/sf193xsl.dgn

PLOT DATE: 09-FEB-2007
DRAWN BY: T. LACKEY
CHECKED BY: W. LAMMER
SHEET 64 OF 68



203+50

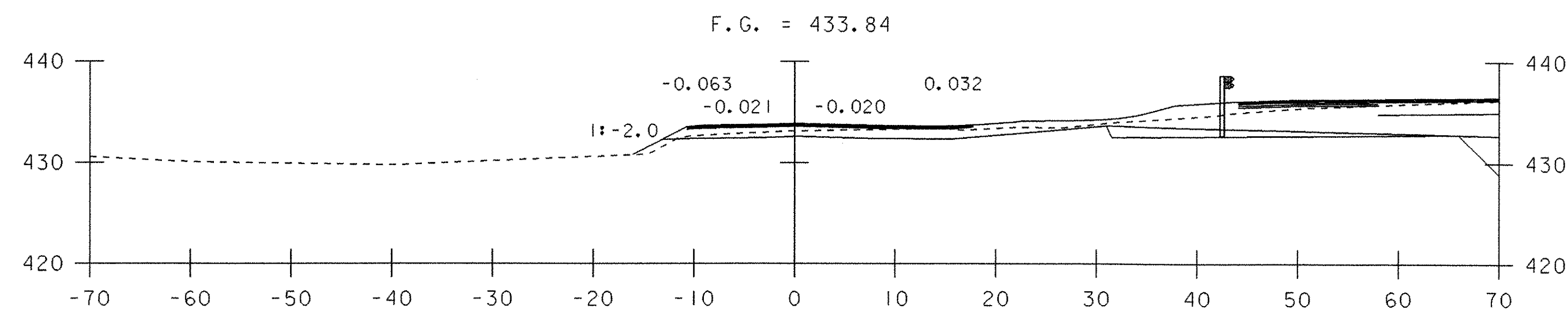
203+48 RT END
UNCLASSIFIED CHANNEL EXCAVATION
GEOTEXTILE FOR STONE FILL
STONE FILL, TYPE III
GRUBBING MATERIAL

SCALE 1" = 10'-0"

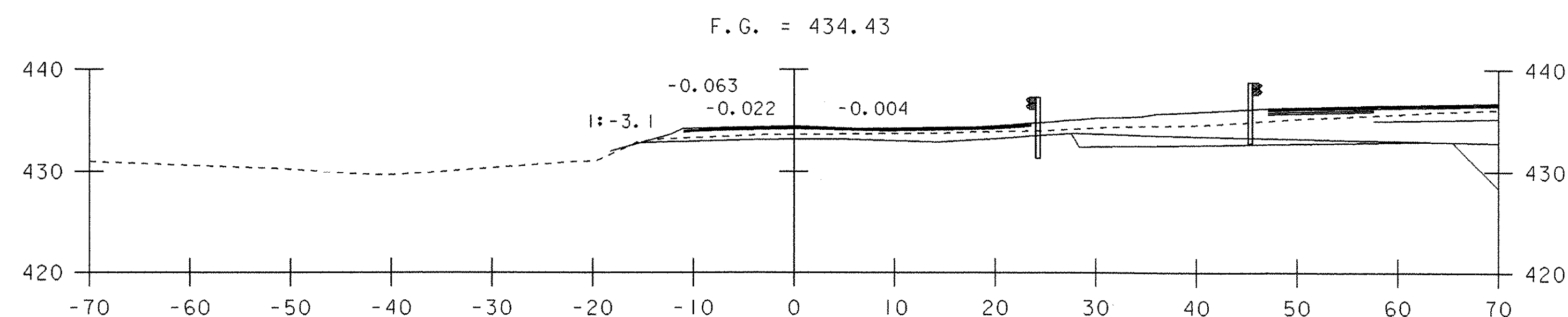
CHANNEL SECTIONS 3

PROJECT NAME: CASTLETON
PROJECT NUMBER: RS 0142(10)

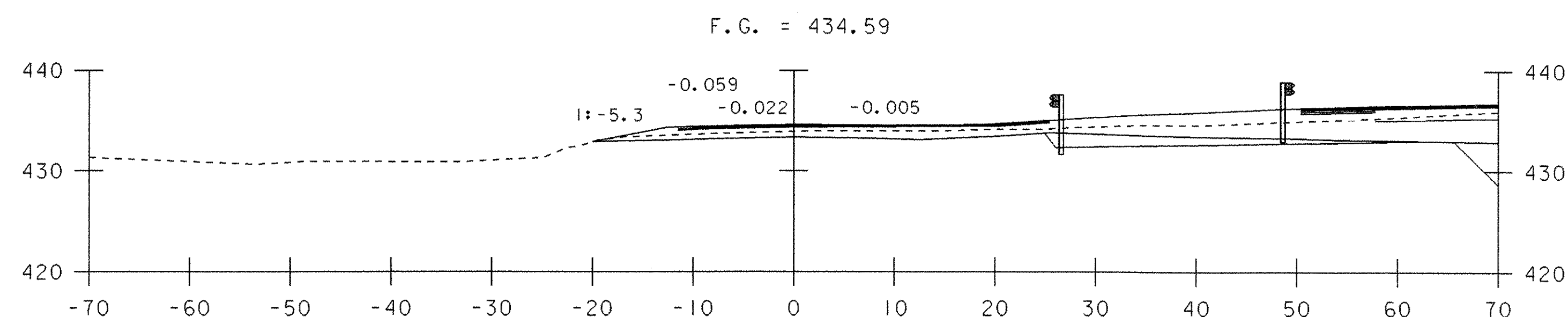
FILE NAME: sf193c03.i	PLOT DATE: 09-FEB-2007
PROJECT LEADER: R. WHITCOMB	DRAWN BY: T. LACKEY
DESIGNED BY: T. LACKEY	CHECKED BY: W. LAMMER
78f193/structures/sf193xsl.dgn	SHEET 65 OF 68



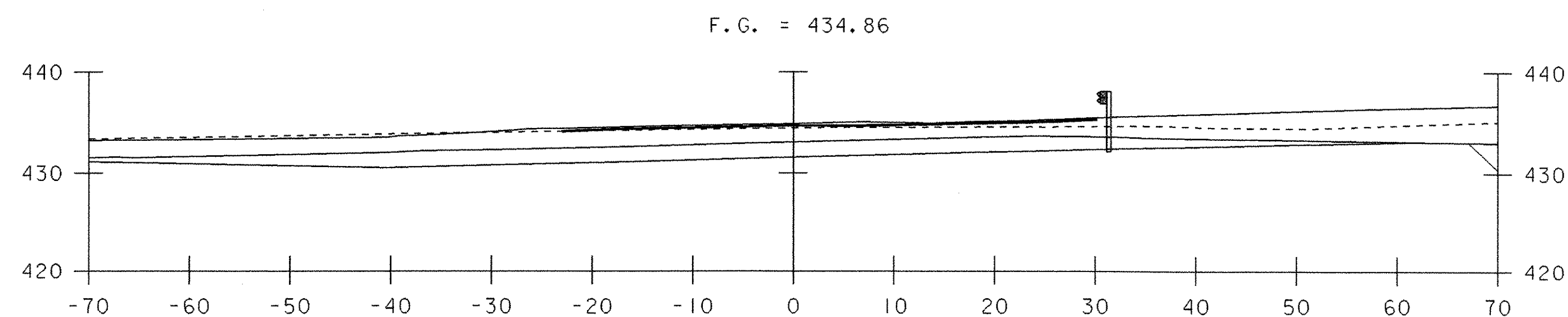
500+39



500+29



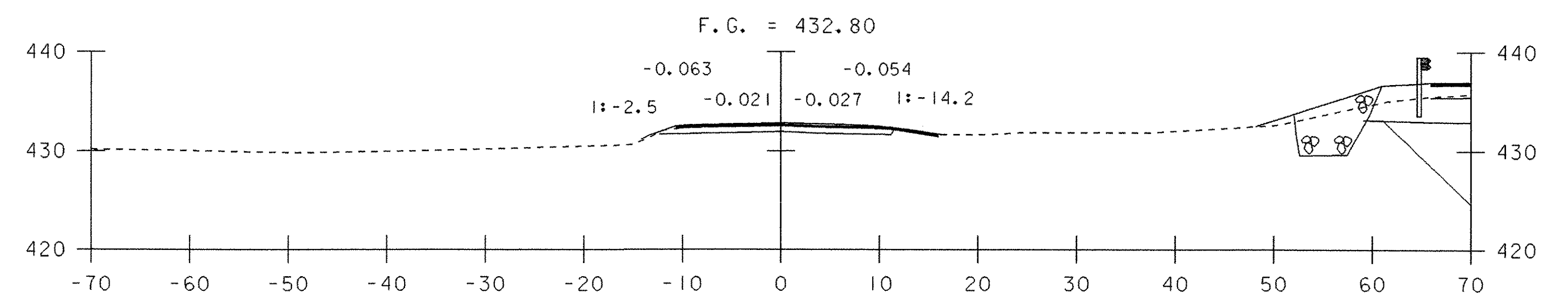
500+25



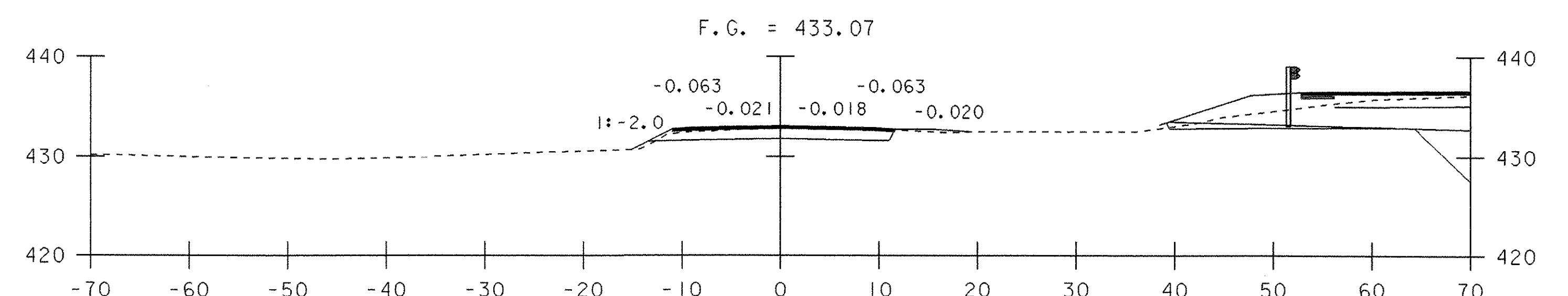
500+16

500+14 BEGIN TH 8

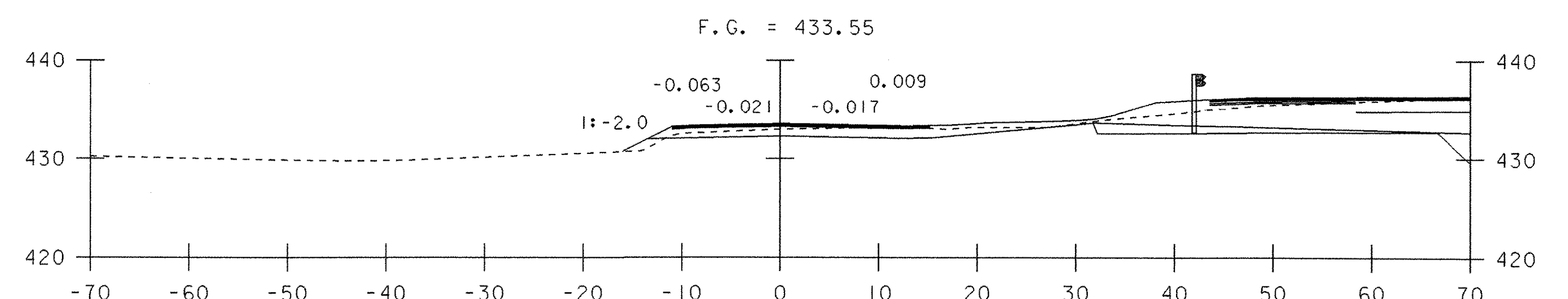
SCALE 1" = 10'-0"



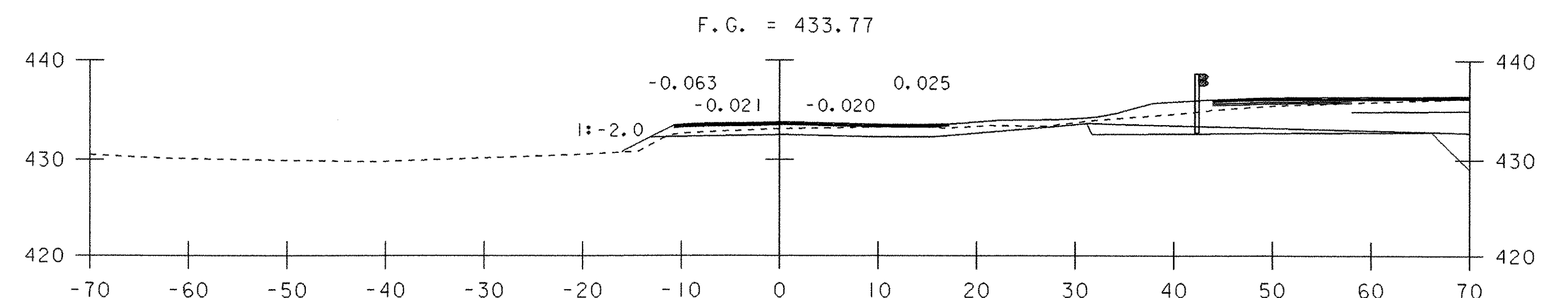
500+60



500+50



500+43



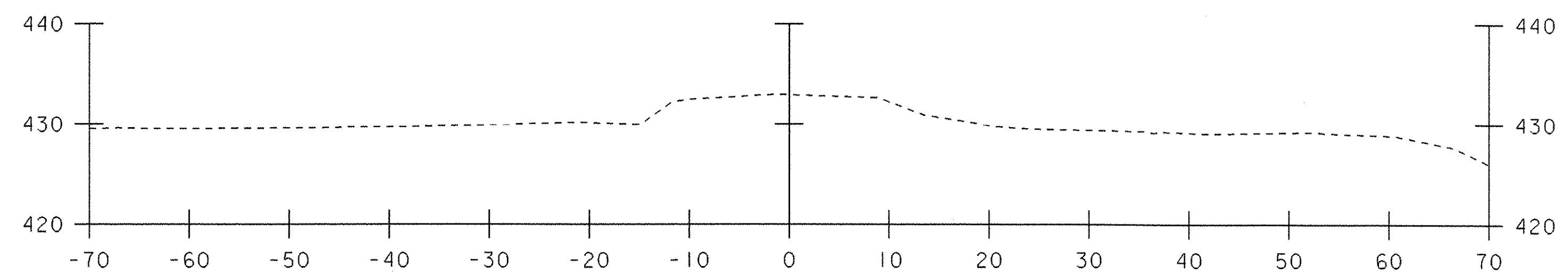
500+40

TH 8 SECTIONS 1

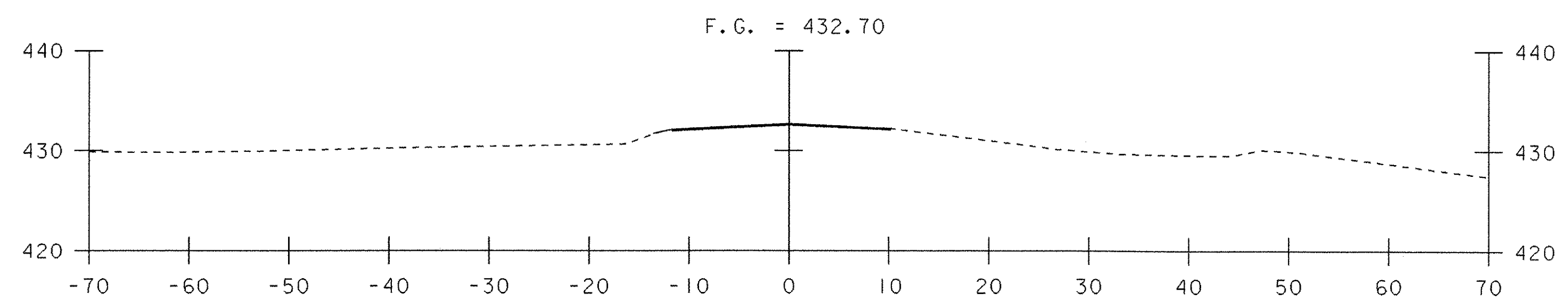
PROJECT NAME: CASTLETON
PROJECT NUMBER: RS 0142(10)

FILE NAME: sf193+01.1
PROJECT LEADER: R. WHITCOMB
DESIGNED BY: T. LACKEY
78f193/structures/sf193xsl.dgn

PLOT DATE: 09-FEB-2007
DRAWN BY: T. LACKEY
CHECKED BY: W. LAMMER
SHEET 66 OF 68



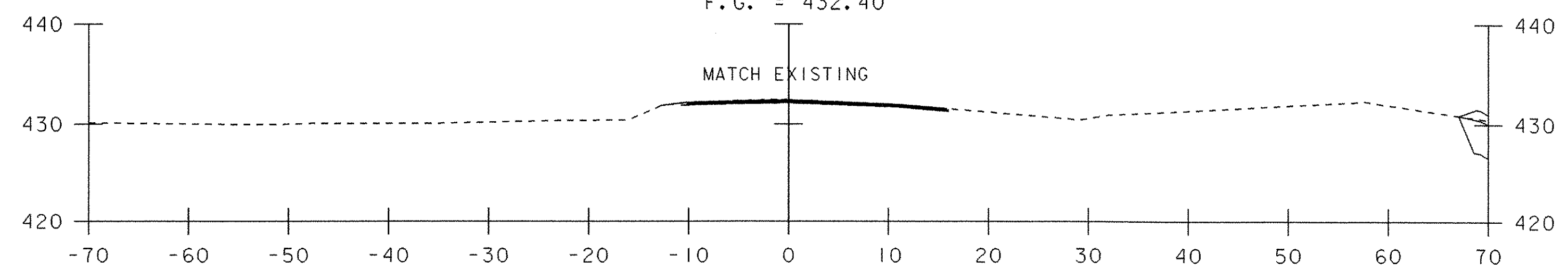
501+25



501+00

501+00 END TH 8

F. G. = 432.40



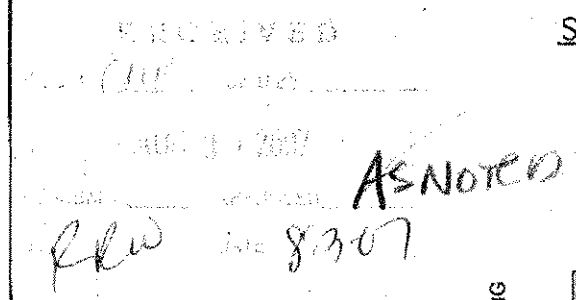
500+75

SCALE 1" = 10'-0"

TH 8 SECTIONS 2

PROJECT NAME: CASTLETON
PROJECT NUMBER: RS 0142(10)

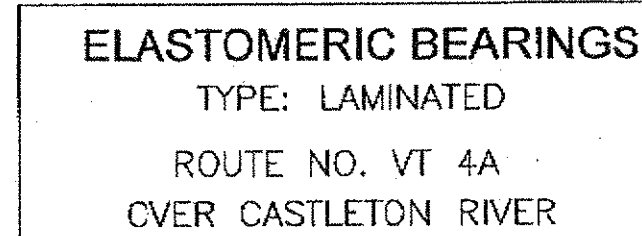
FILE NAME: sf193+02.d	PLOT DATE: 09-FEB-2007
PROJECT LEADER: R. WHITCOMB	DRAWN BY: T. LACKEY
DESIGNED BY: T. LACKEY	CHECKED BY: W. LAMMER
78f193/structures/sf193xsl.dgn	SHEET 67 OF 68



MINIMUM ELASTOMERIC BEARING THICKNESS, IN.
LAMINATED ELASTOMERIC BEARING 2" x 6" x 8"
IN ACCORDANCE WITH THE STATE OF VERMONT AGENCY OF
TRANSPORTATION THE BEARINGS SHALL MEET AASHTO M251
STANDARD SPECIFICATION FOR HIGHWAY BRIDGES
ELASTOMER - 60 DUROMETER NEOPRENE GR. 3
SHIMS - AASHTO M254 GR 50 M270
BEARINGS THICKNESS TOLERANCE OF +1/4" -0"

TEMPERATURE RANGE: 80F
MAXIMUM BEARING STRESS: 1000 psi
DESIGN ROTATION: 0.016 rad

	<u>36"</u>	<u>48"</u>
RDL:	28kips	35kips
RLL+1:	25kips	33kips



PROJECT NO.: RS 0142 (10)

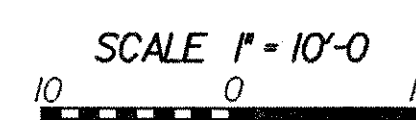
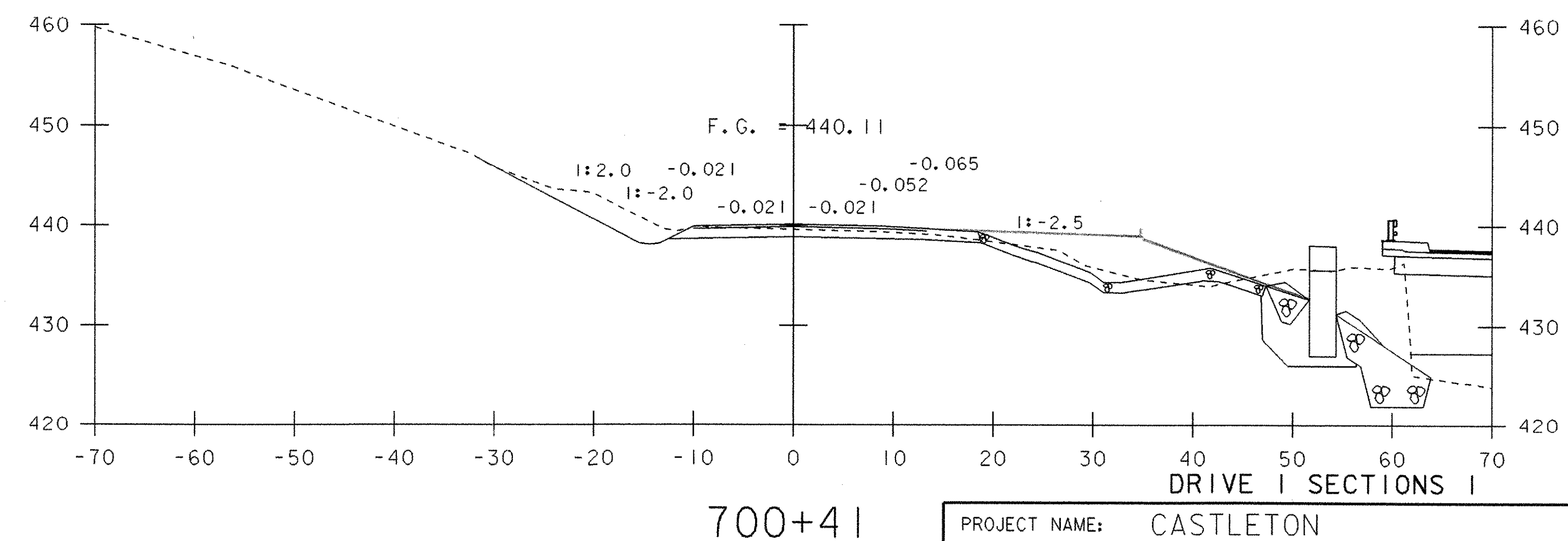
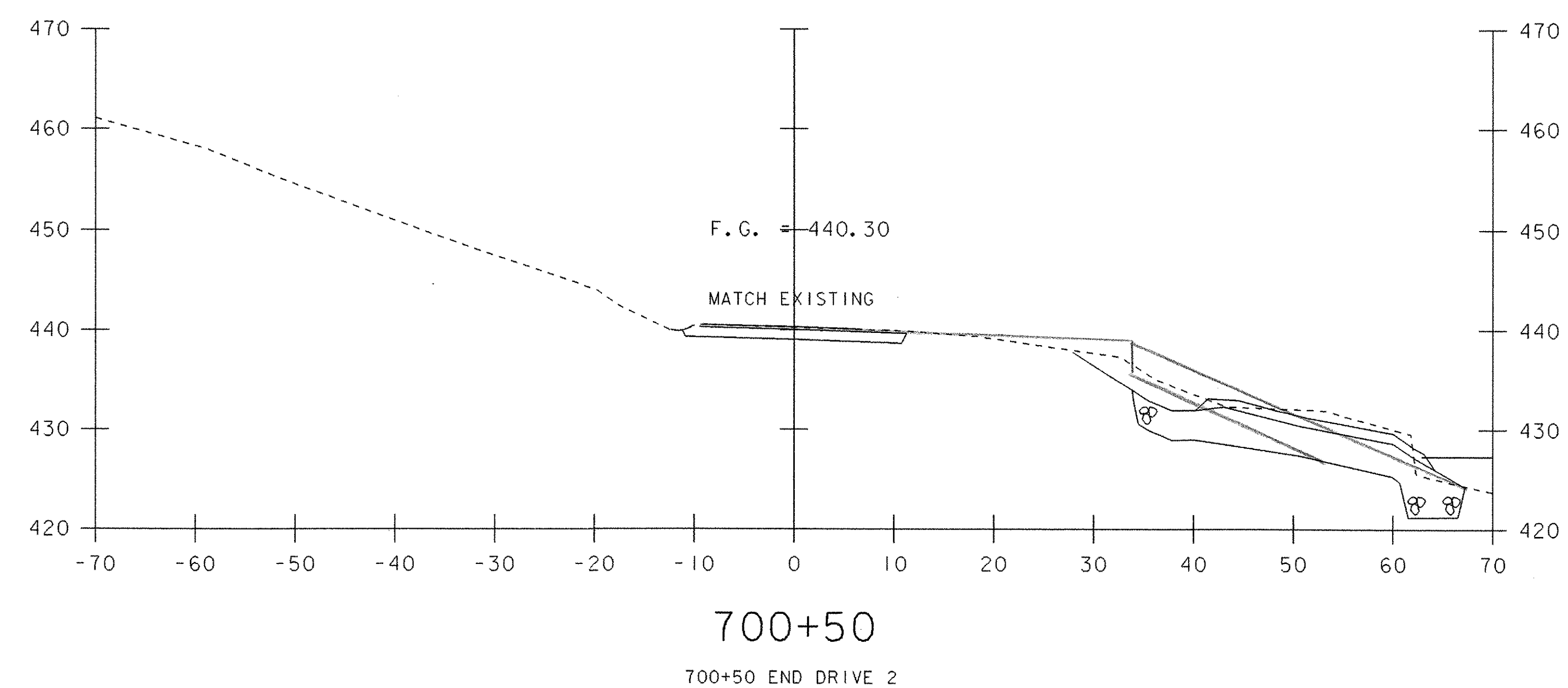
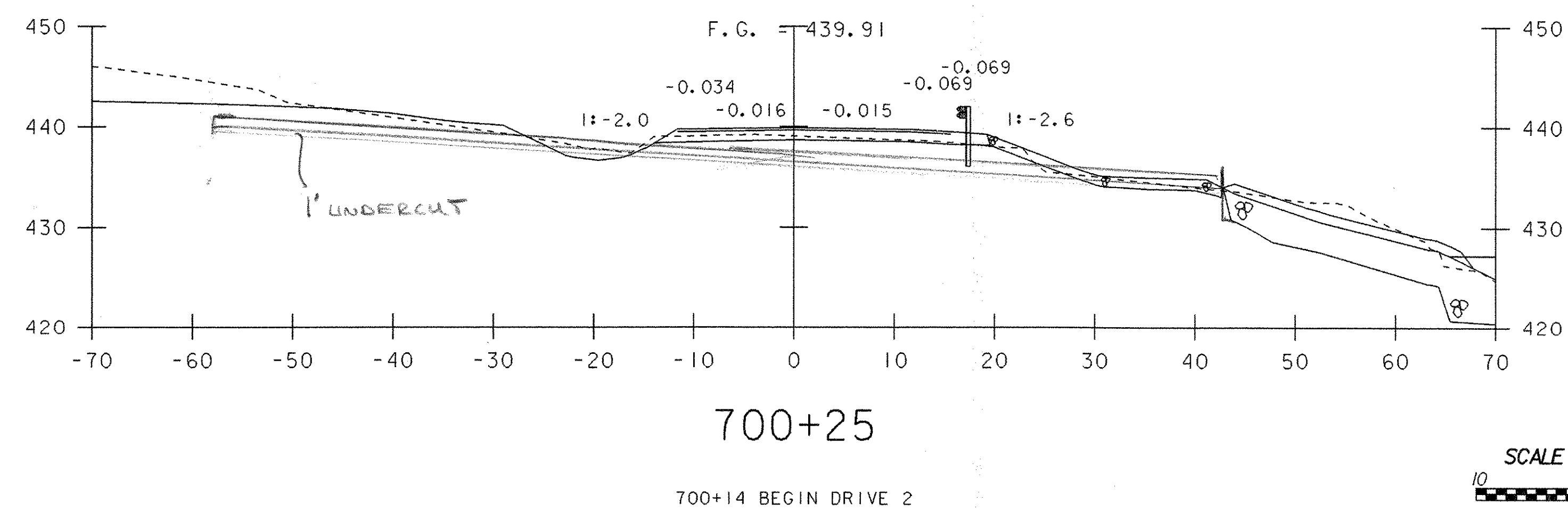
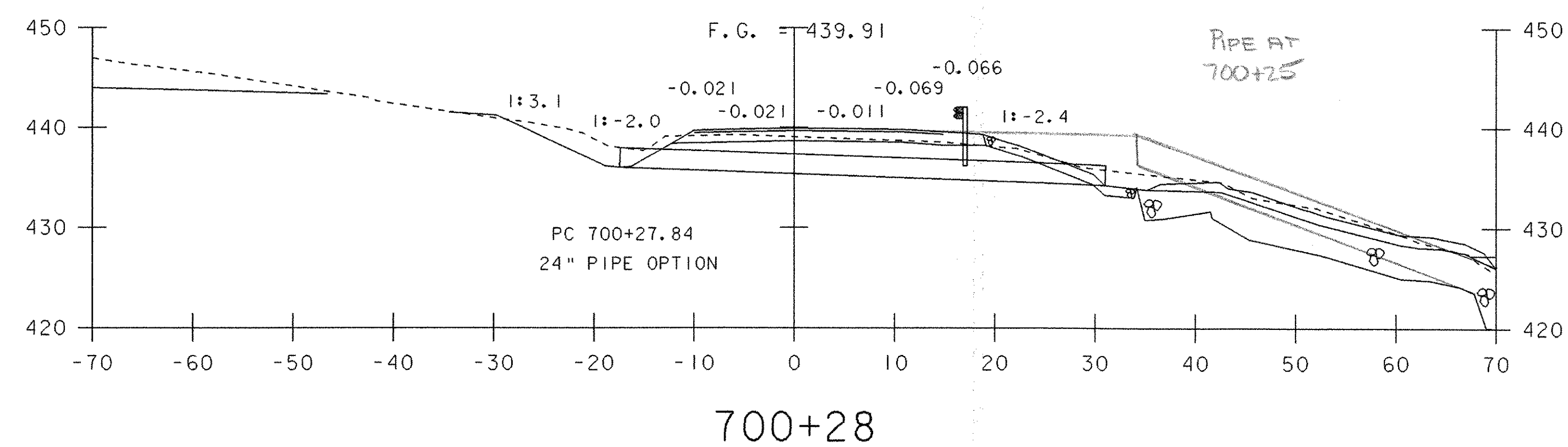
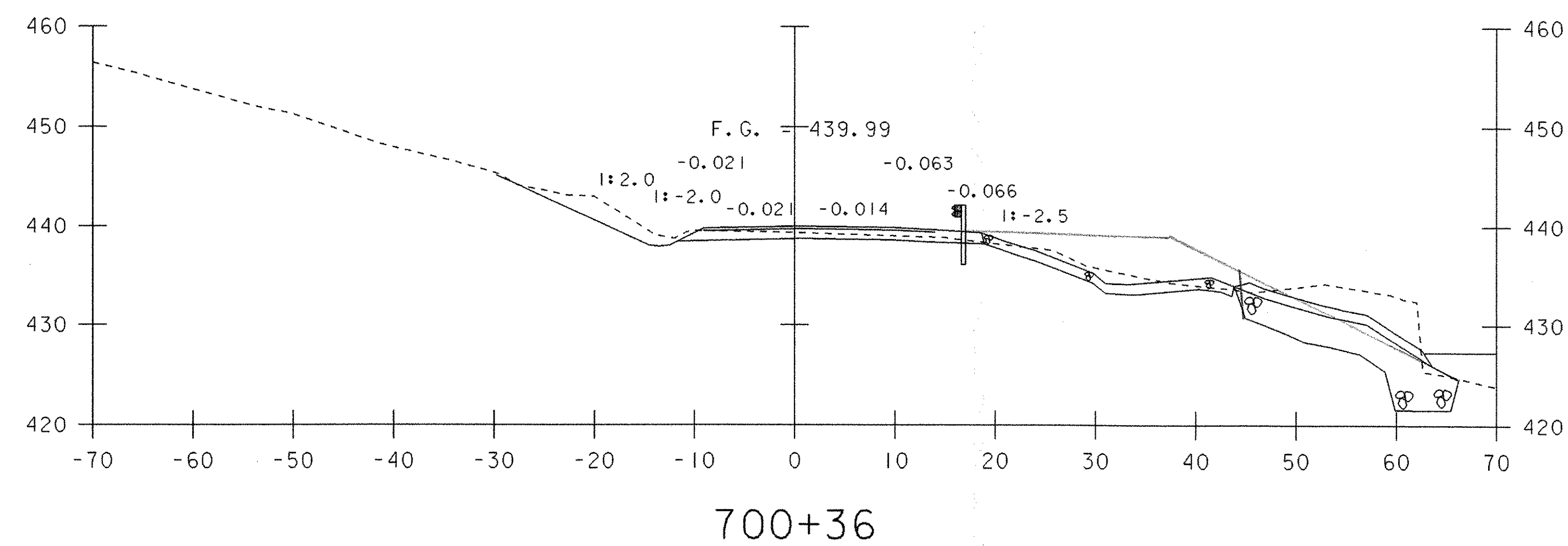
DYNAMIC RUBBER
A DIVISION OF COSMEC, INC.

SCALE: NONE	DRAWN BY: KYW	CHECKED BY: SWT
	DATE: 7/2/2007	DATE: 7/2/2007

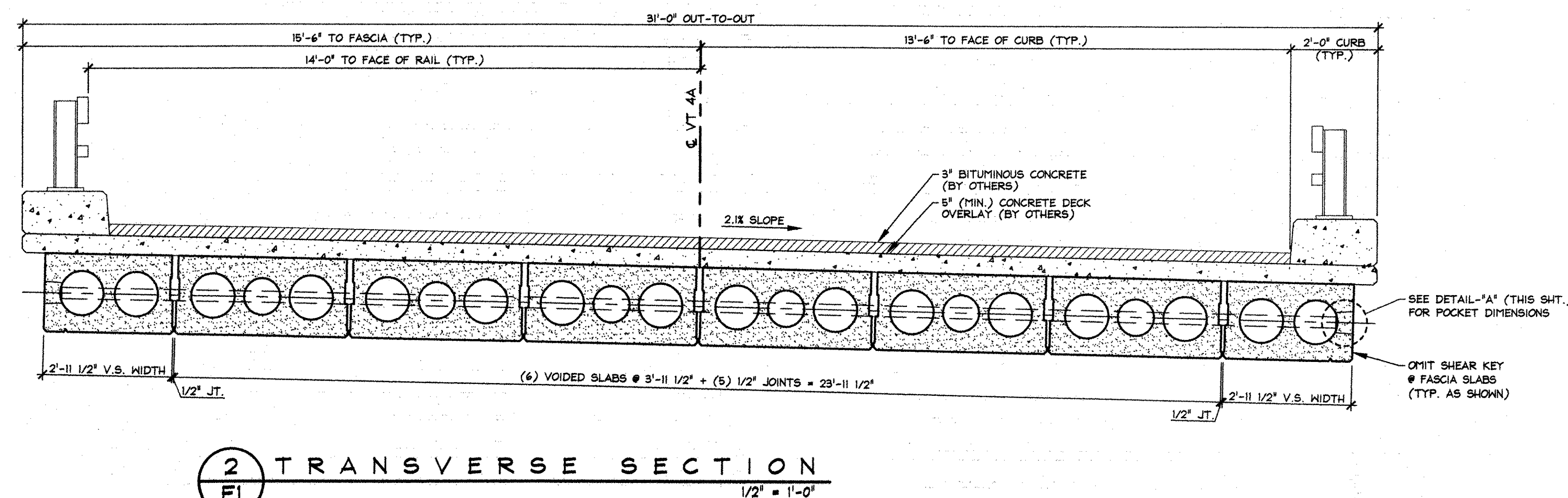
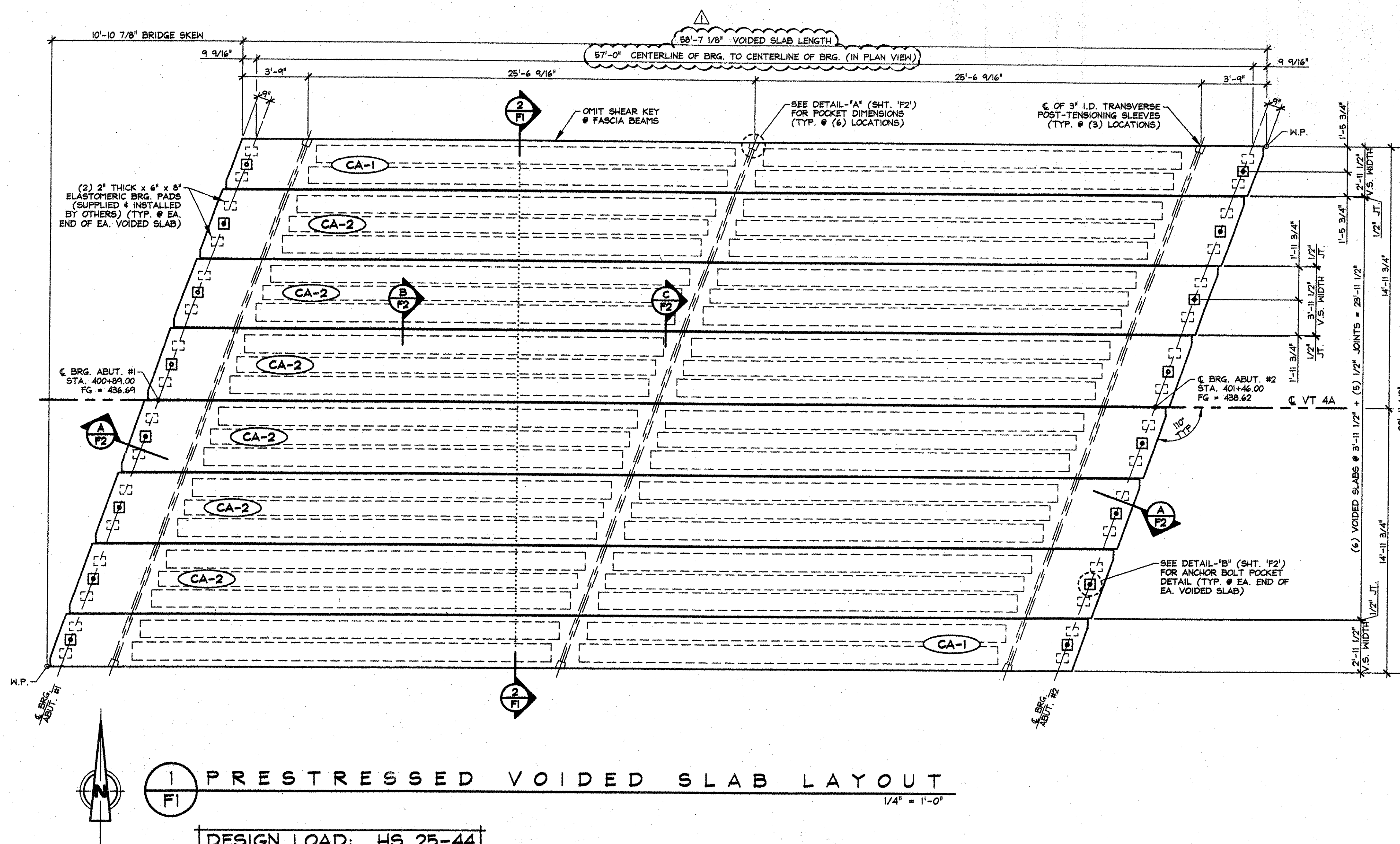
SHEET 1 OF 1	DRP NO. 9512
CUSTOMER F.W. WHITCOMB CONSTRUCTION	DRAWING NUMBER 9512-D1

REV.	DESCRIPTION	BY	DATE	CHK'D	DATE
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06766



PROJECT NAME:	CASTLETON		
PROJECT NUMBER:	RS 0142(10)		
FILE NAME:	s:\93\d01\	PLOT DATE:	16-FEB-2007
PROJECT LEADER:	R. WHITCOMB	DRAWN BY:	T. LACKEY
DESIGNED BY:	T. LACKEY	CHECKED BY:	W. LAMMER
78f193/structures/sf193xsl.dgn		SHEET	68 OF 68



- ### GENERAL NOTES
- MIN. CONCRETE STRENGTH AT 28 DAYS SHALL BE 6,000 PSI.
 - MIN. CONCRETE STRENGTH AT STRESS TRANSFER SHALL BE 4,000 PSI.
 - REINFORCING STEEL SHALL BE GR-60, ASTM A-615 (AASHTO M61) AND SHALL BE EPOXY COATED.
 - PRESTRESSING STRANDS SHALL CONFORM TO ASTM A-416 (AASHTO M208) AND SHALL CONSIST OF 0.60\"/>

EXAMPLE PRESTRESSING STRAND ELONGATION CALC. AND TENSIONING

(NOT TO BE USED FOR CONSTRUCTION)

SIZE & GRADE: 0.60\"/>

- ### STRAND TENSIONING PROCEDURE:
- PULL EACH STRAND INITIALLY TO 3,000+ LBS. AND MARK STRAND.
 - THEN PULL EACH STRAND TO A TOTAL TENSION OF 45,341+ LBS. AND MEASURE ELONGATION AFTER SEATING. IT MUST BE BETWEEN 14 1/2\"/>
- * NOTE: FORCES READ ON STRESSING JACK GAUGES MUST BE MADE TO CORRESPOND TO ABOVE VALUES BASED ON CALIBRATION DATA FOR SPECIFIC JACK USED.

6-11-07 REVISED AS NOTED

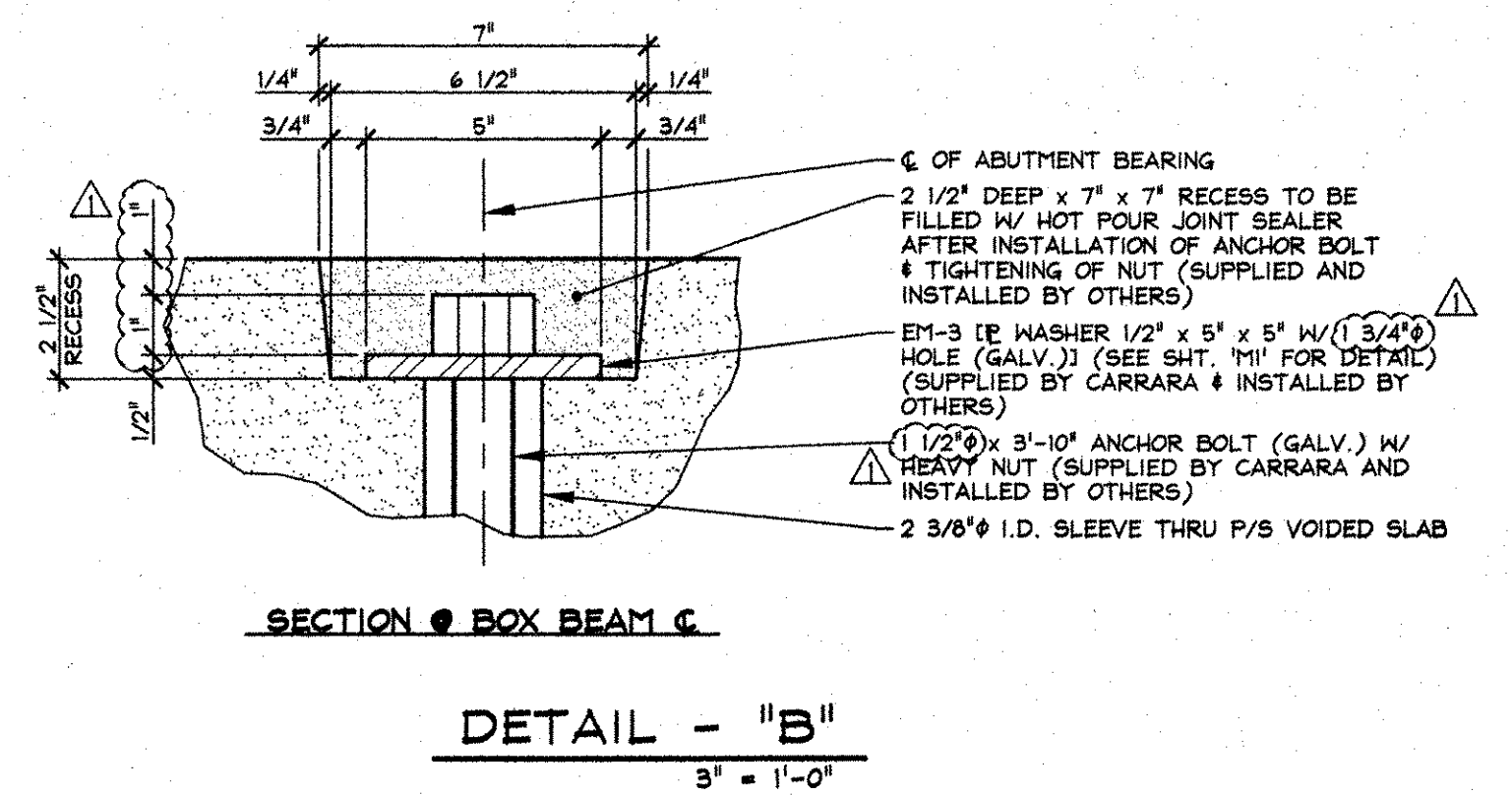
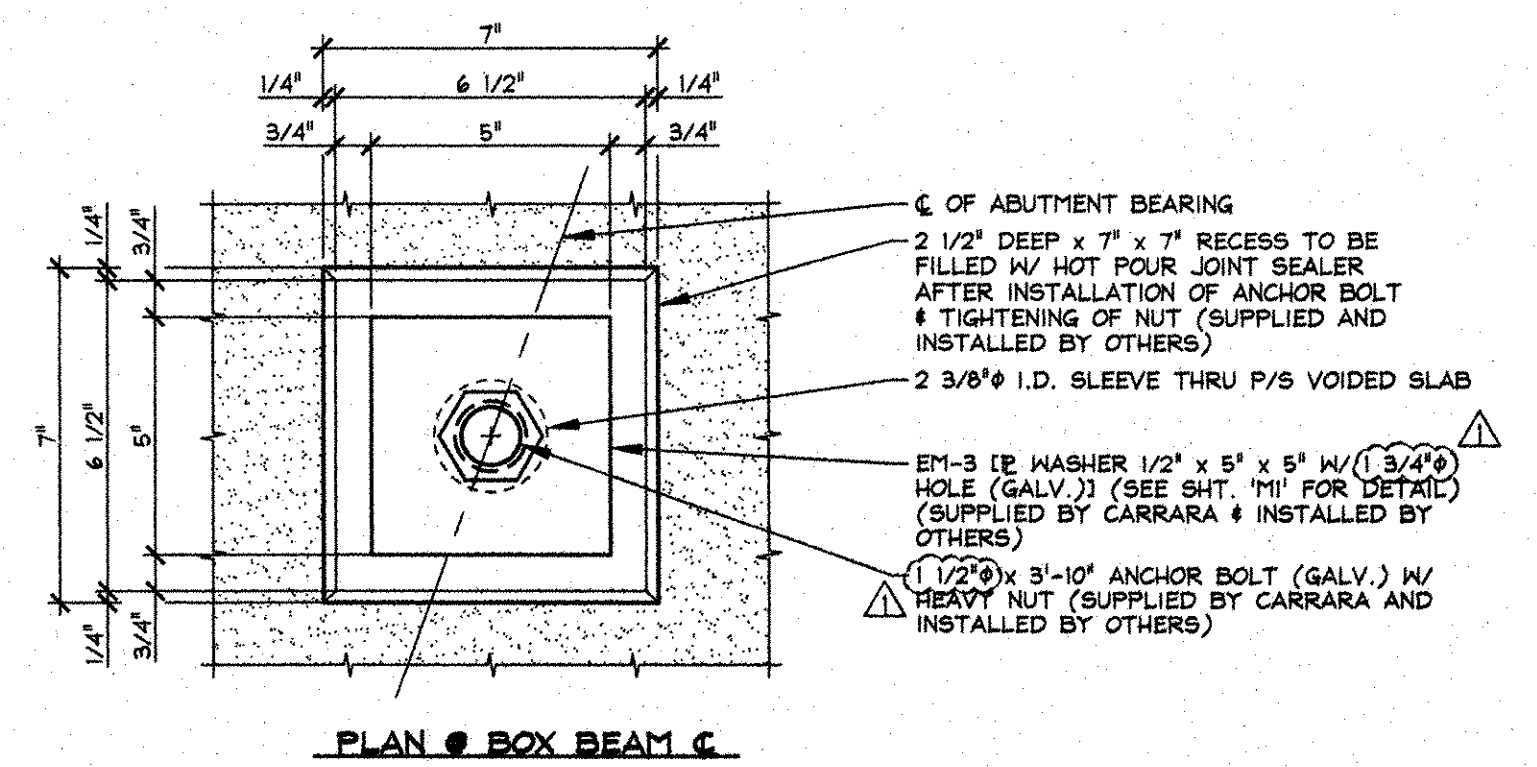
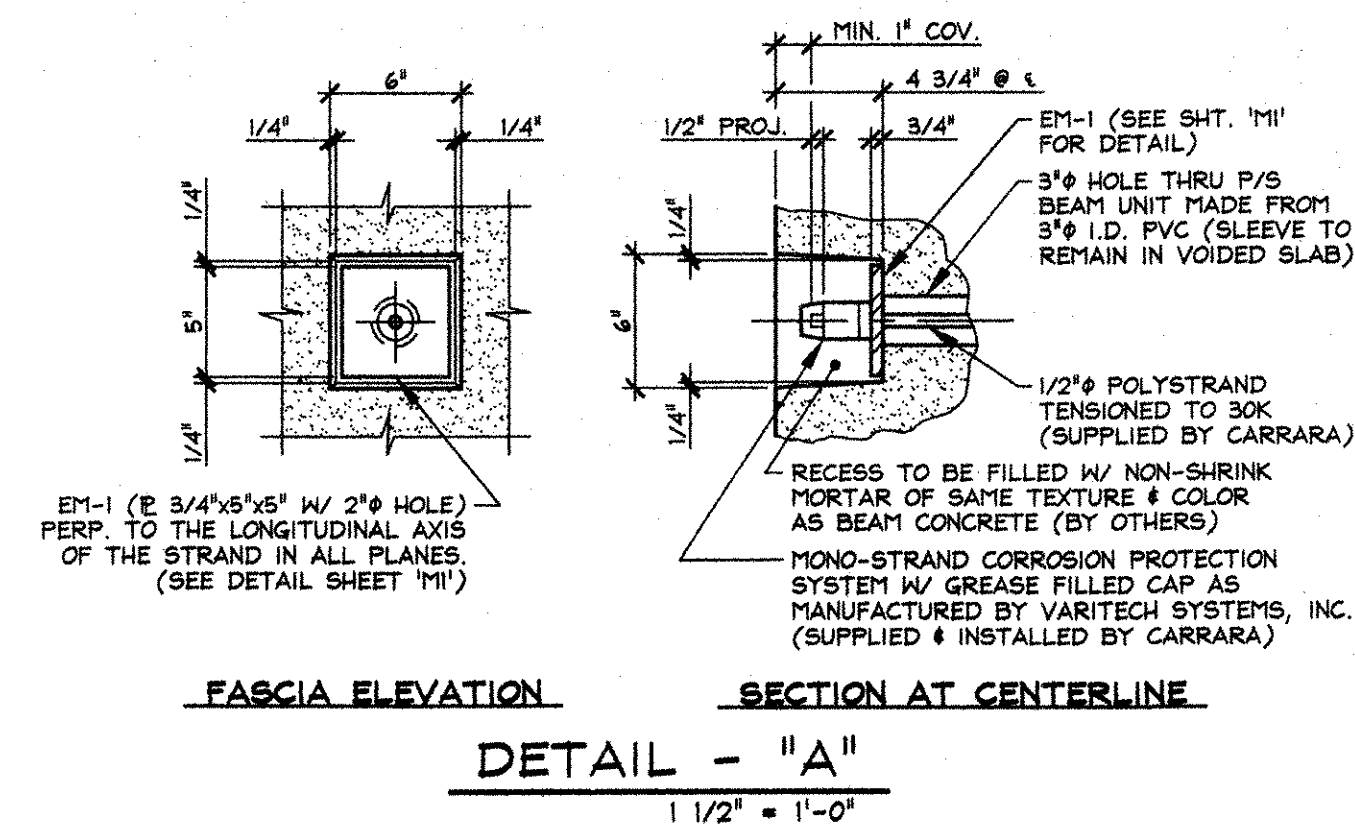
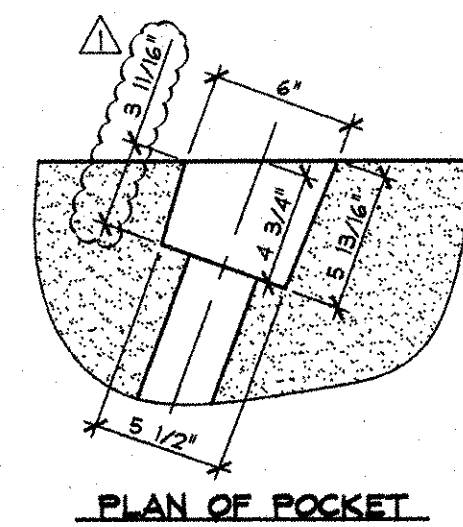
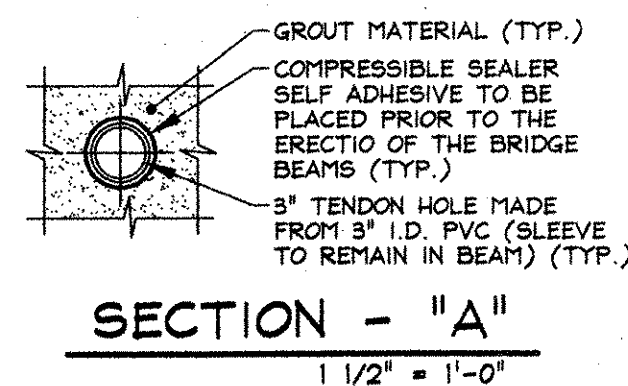
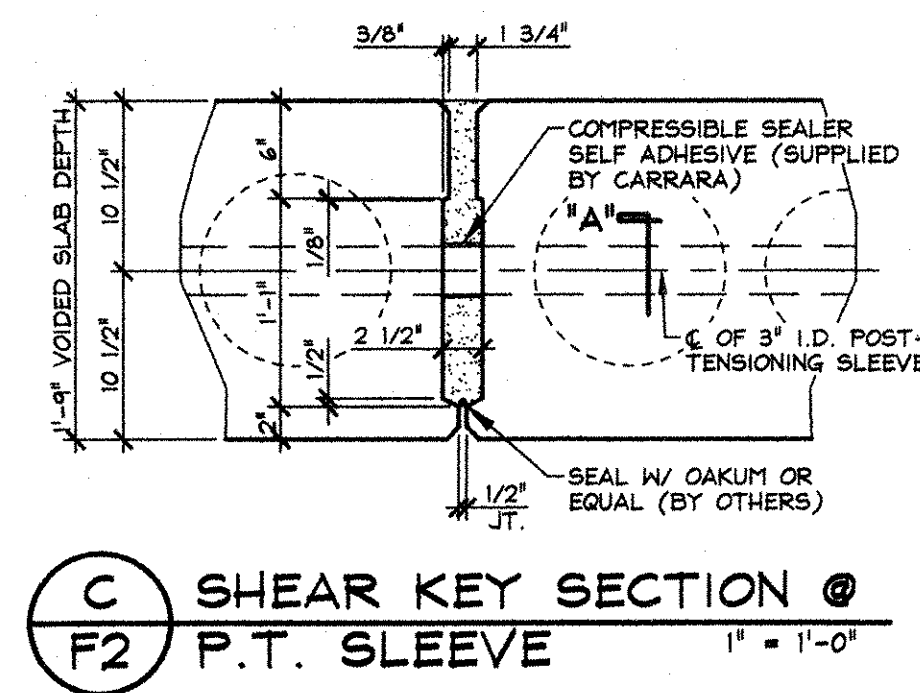
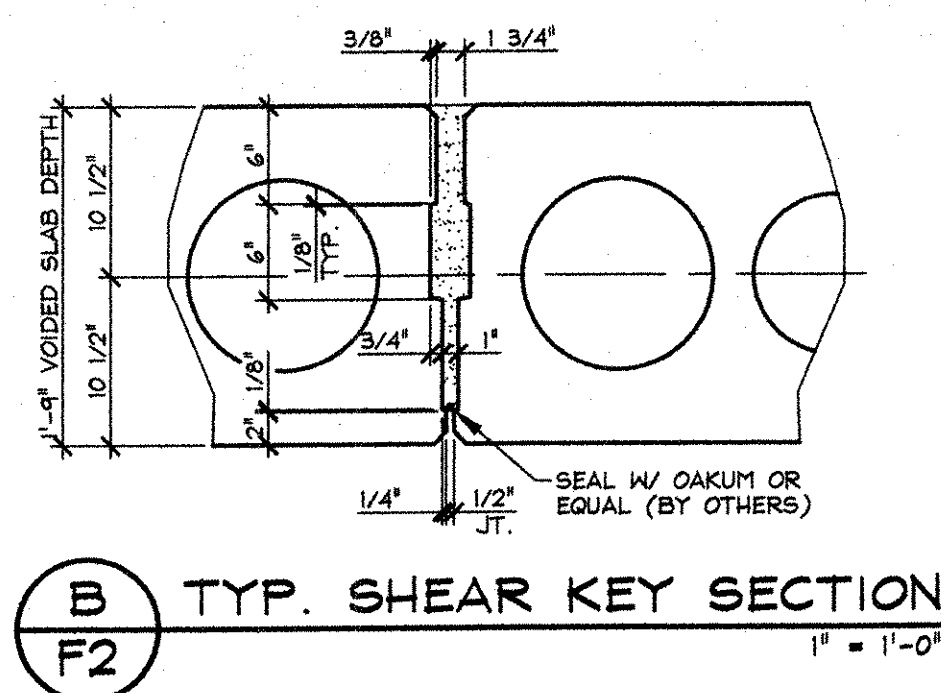
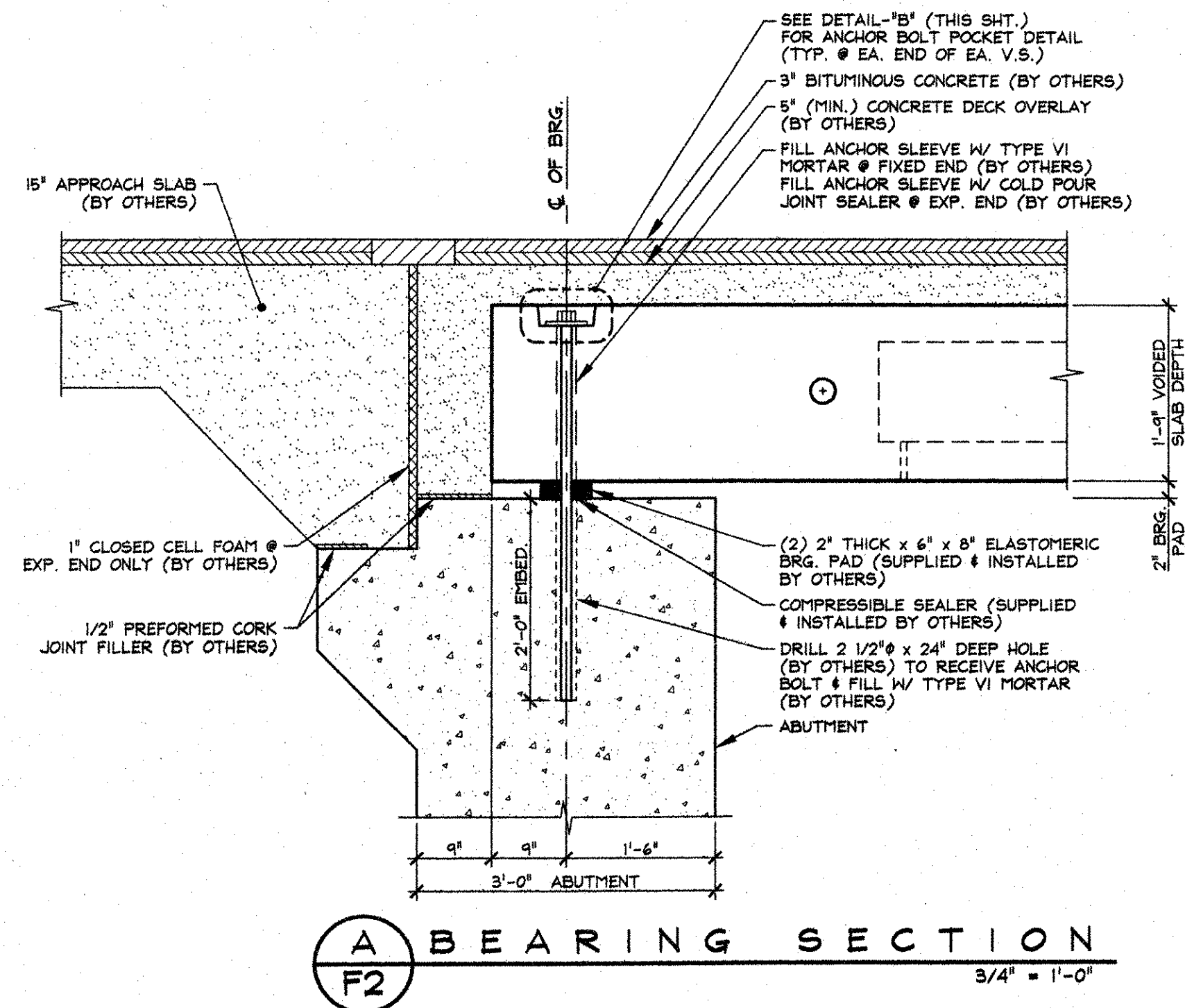
APPROVAL STAMP:

RECEIVED
 JUN 11 2007
 BY: [Signature] DATE: 6/14/07

J.P. CARRARA & SONS INC. Precast & Prestress Manufacturer 2464 CASE ST., MIDDLEBURY, VERMONT 05753 Phone: (802) 388-6361 Fax: (802) 388-9010		FRANK WHITCOMB CONSTRUCTION CONTRACTOR WALPOLE, NEW HAMPSHIRE	
STATE OF VERMONT A.O.T. COUNTY OF RUTLAND		DATE: MAY 15, 2007 SCALE: NOTED	
TOWN OF CASTLETON VERMONT ROUTE 4A BRIDGE NO.: 8 PROJECT NO.: RS 0142(10)		CHKD: - DFTM: B.L. JOB NO: 23256-07	
SUPERSTRUCTURE PLAN & SECTION		DWG. NO: F1	

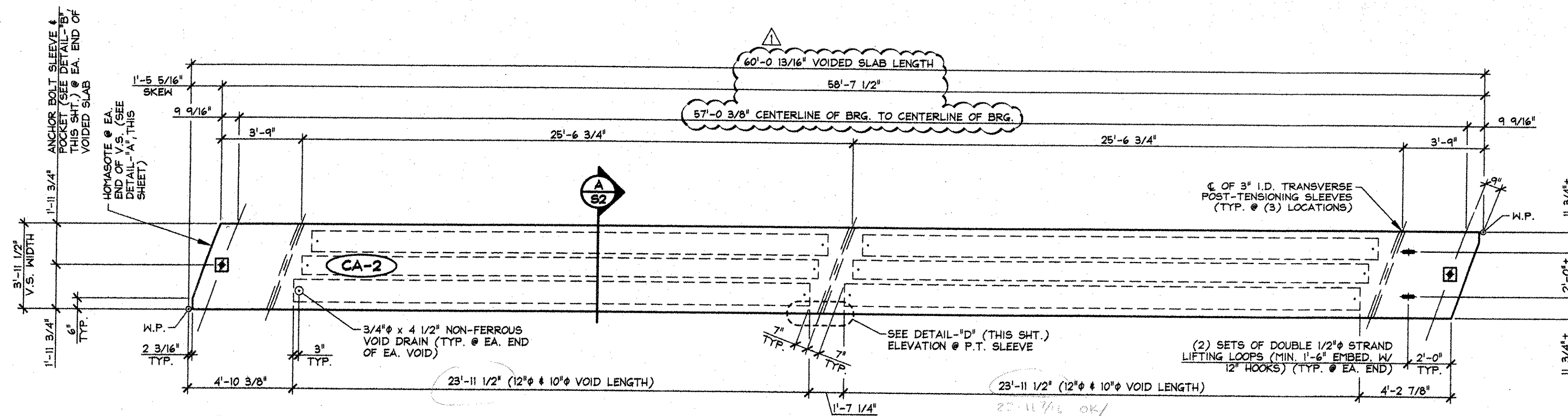
THL Copy

069 pce

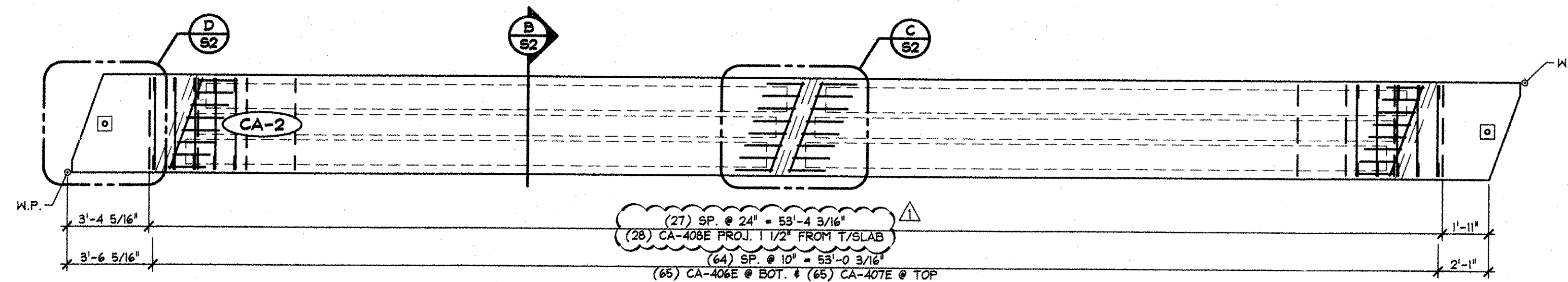


6-11-07 REVISED AS NOTED

APPROVAL STAMP: RECEIVED CK'D BY: <i>me</i> JUN 11 2007 RESUBMIT: <i>me</i> APPROVED: <i>me</i> BY: <i>me</i> DATE: 6/14/07	J.P. CARRARA & SONS INC. Precast & Prestress Manufacturer 2444 CASE ST., MIDDLEBURY, VERMONT 05753 Phone: (802) 388-6361 Fax: (802) 388-9010		FRANK WHITCOMB CONSTRUCTION CONTRACTOR WALPOLE, NEW HAMPSHIRE	
	STATE OF VERMONT A.O.T. COUNTY OF RUTLAND		DATE: MAY 15, 2007 SCALE: NOTED	
	TOWN OF CASTLETON VERMONT ROUTE 4A BRIDGE NO.: 8 PROJECT NO.: RS 0142(10)		CHKD: - DFTM: B.L. JOB NO: 23256-07	
	SUPERSTRUCTURE DETAILS		DWG. NO: F2	

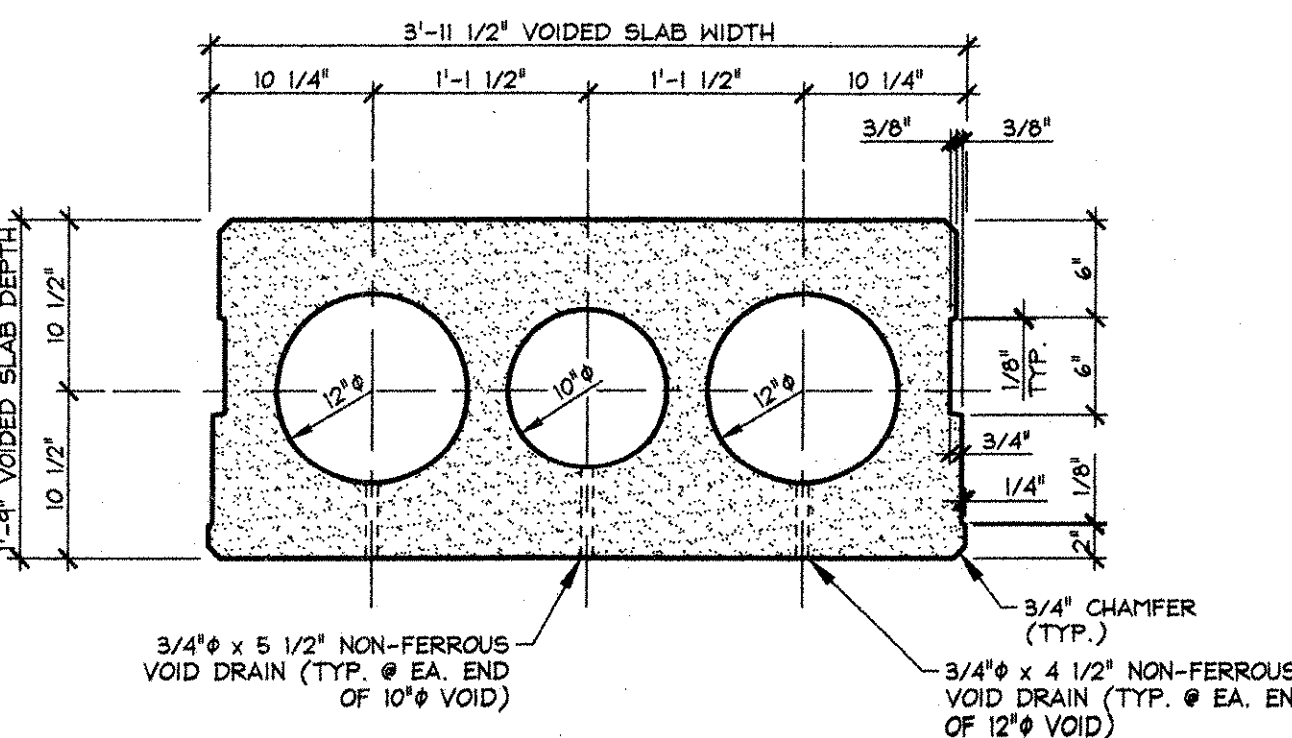
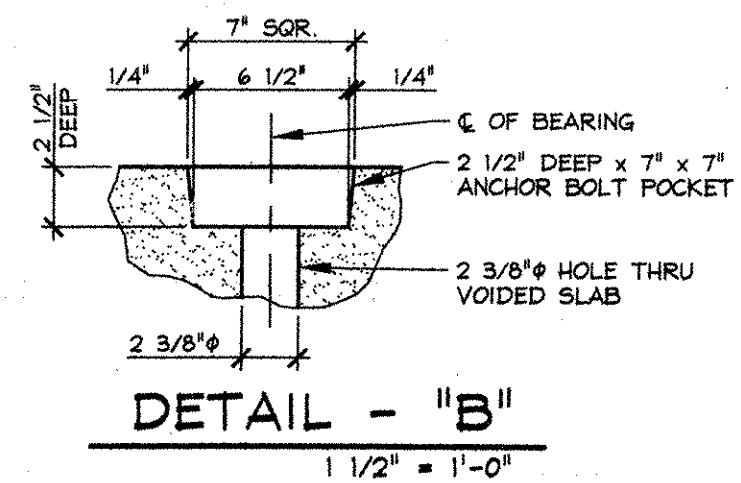
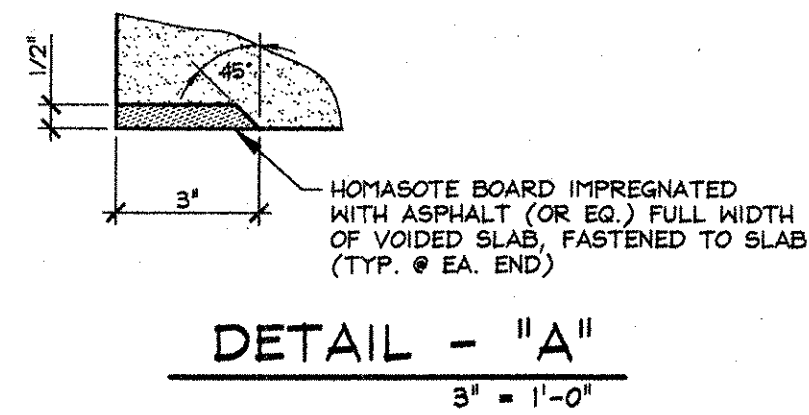


1 DIMENSIONAL PLAN VIEW IN FORM
S2 1/4\"/>

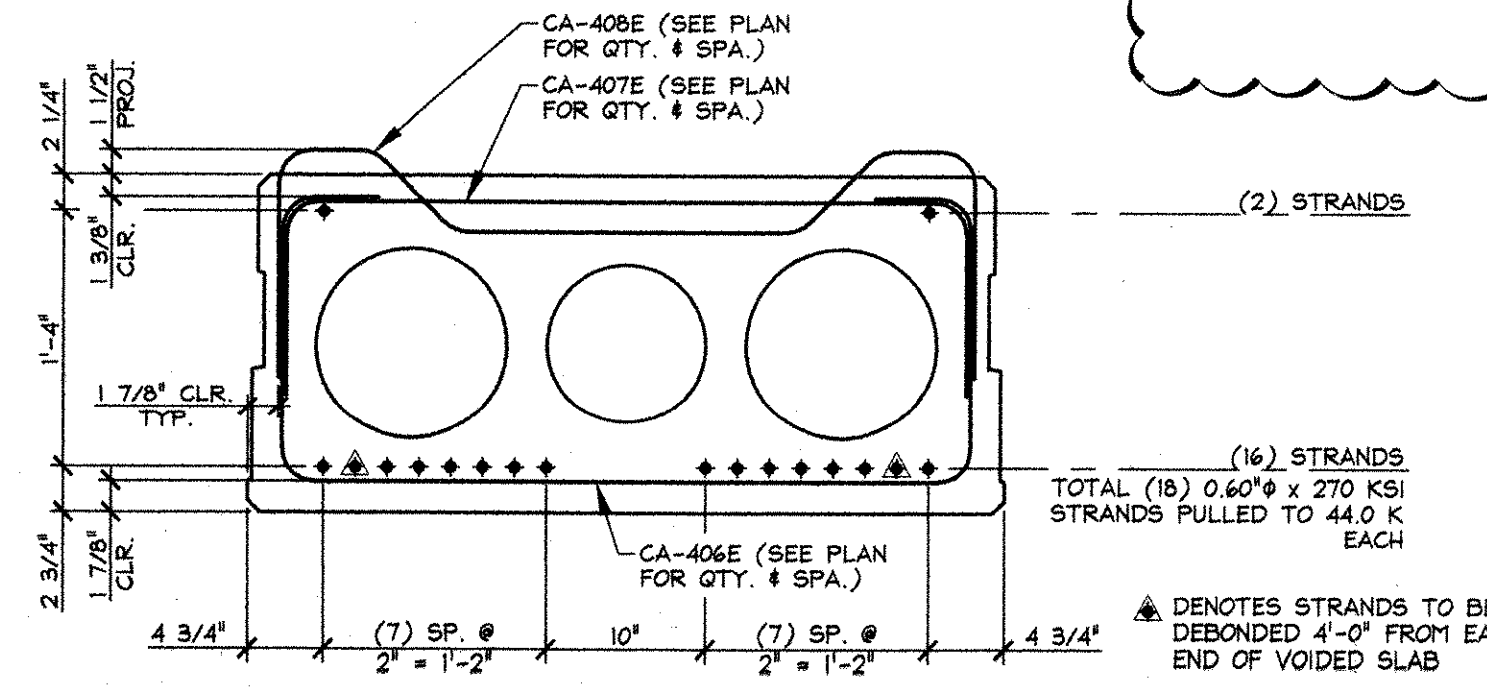


2 REINFORCING PLAN VIEW IN FORM
S2 1/4\"/>

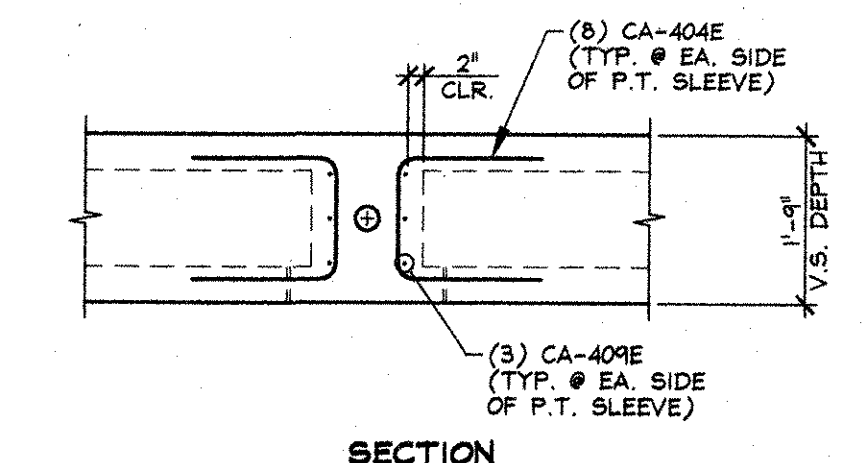
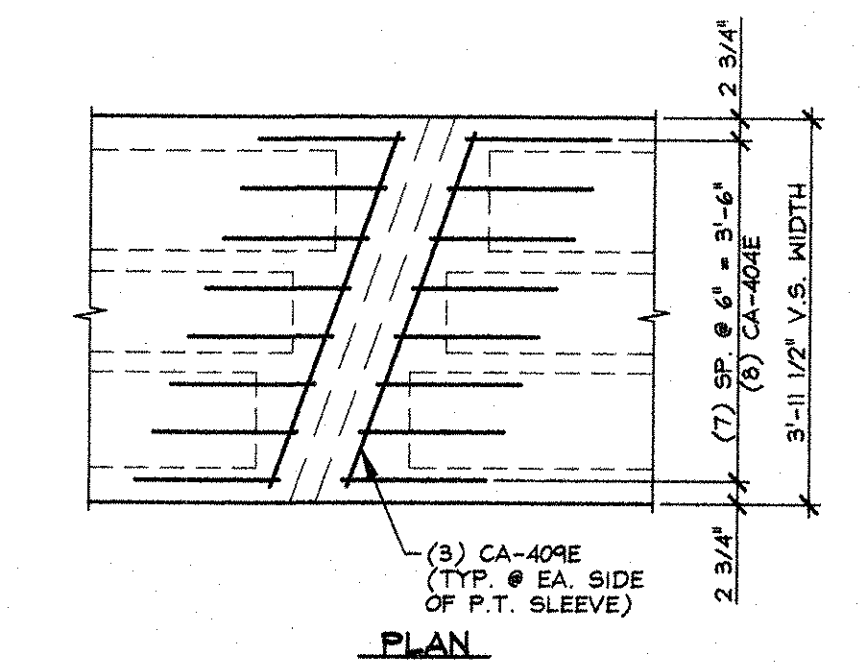
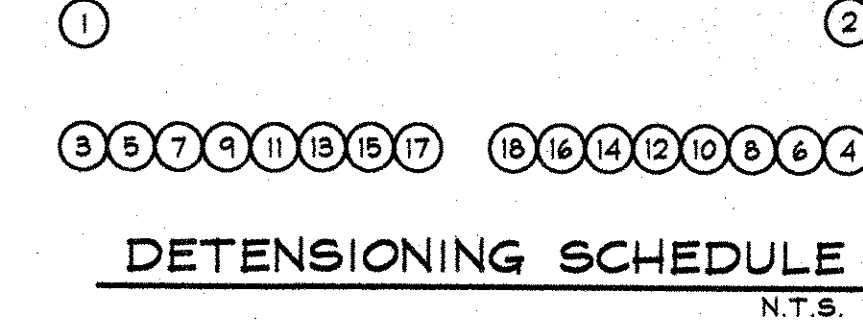
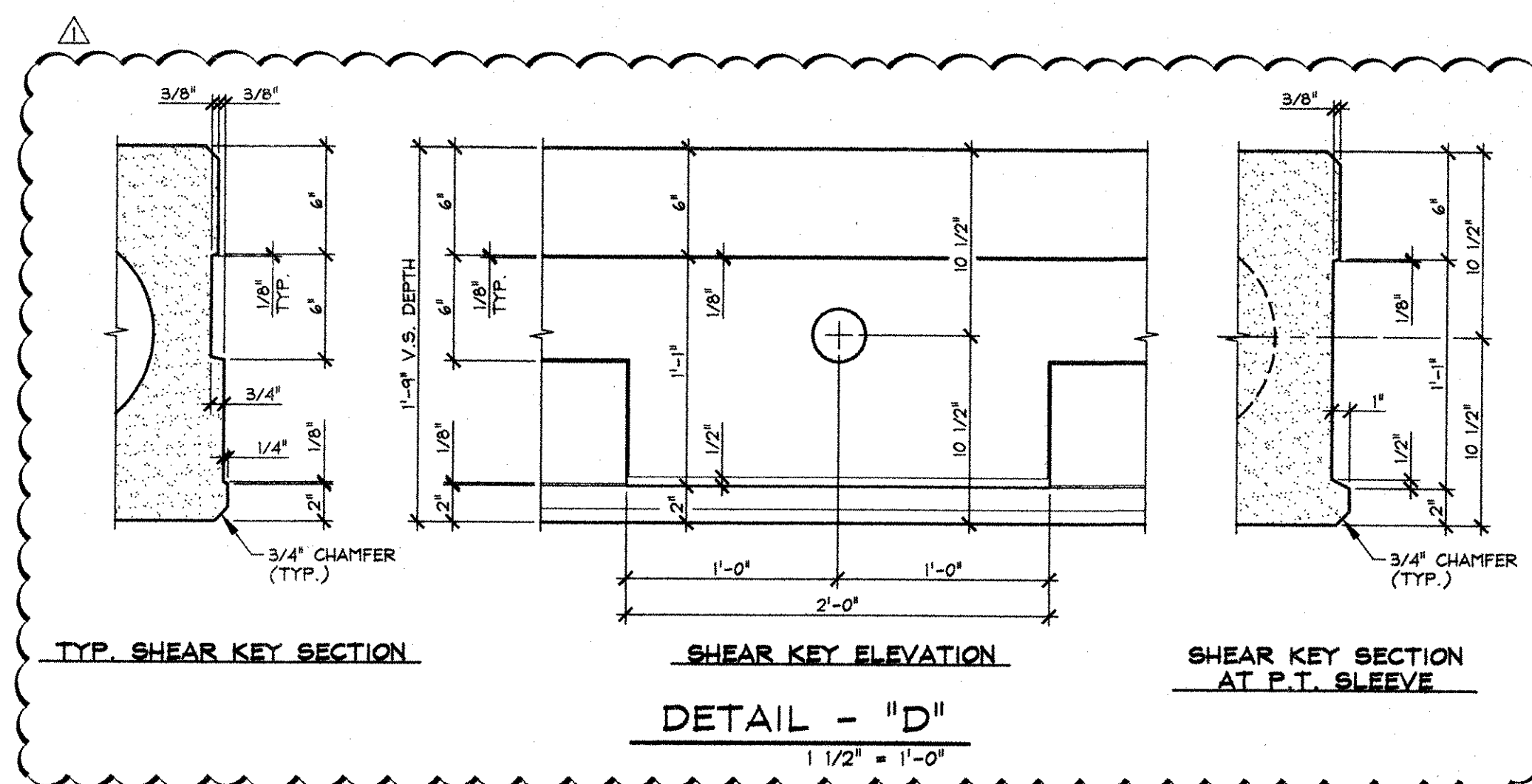
SHOP NOTE:
ADJUST REINFORCING SPACING
AS REQUIRED TO CLEAR P.T.
SLEEVES, INSERTS, ETC.



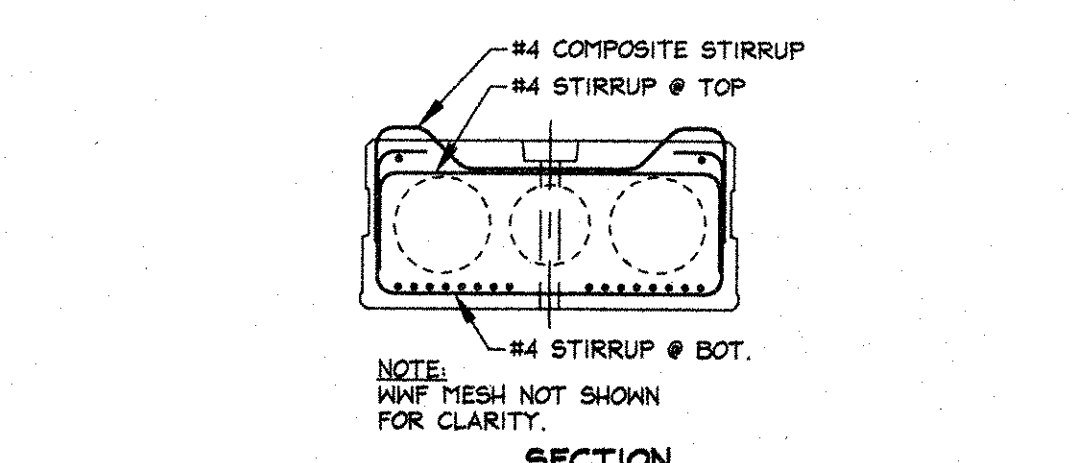
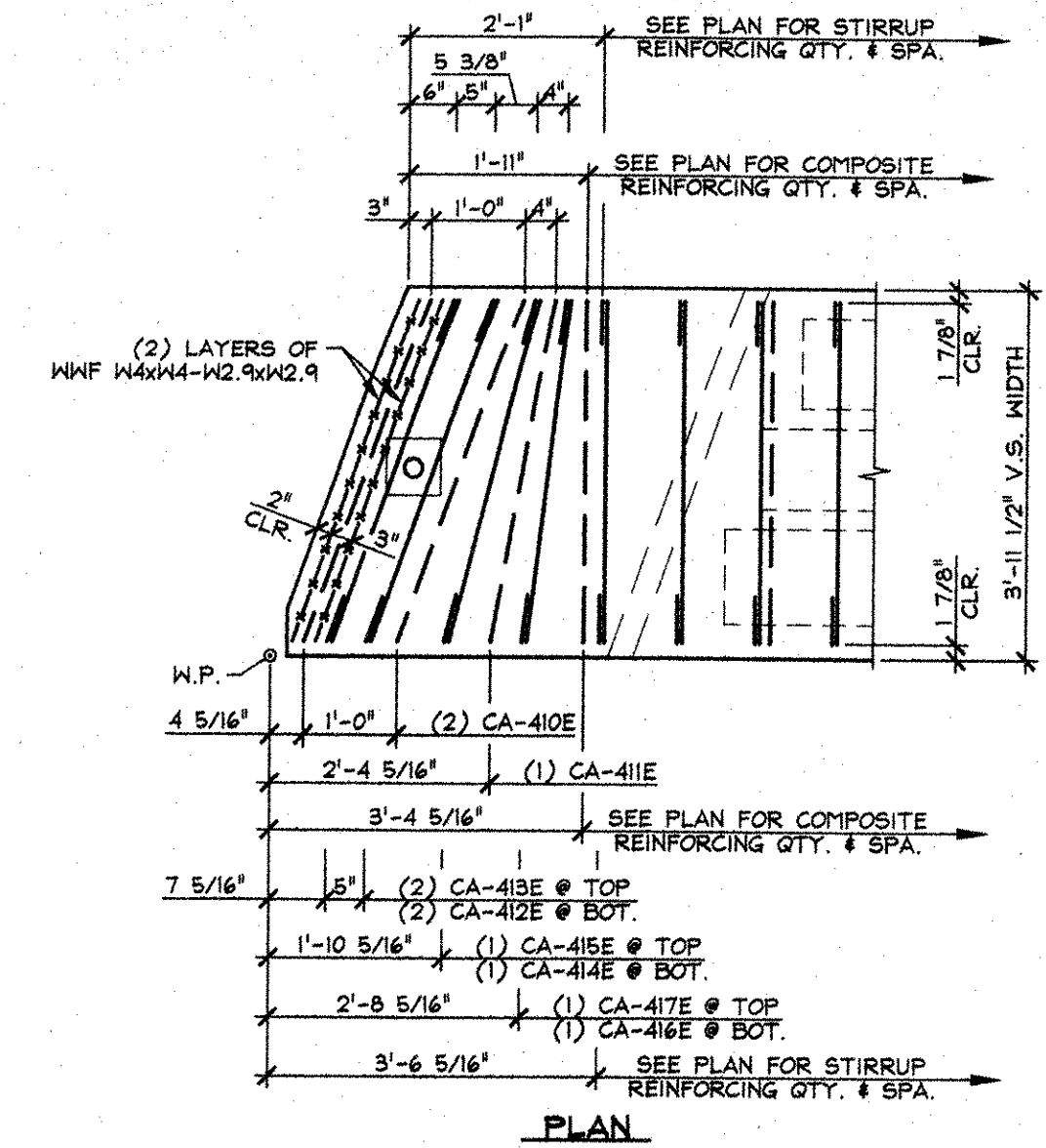
A DIMENSIONAL SECTION
S2 1\"/>



B REINFORCING SECTION
S2 1\"/>



C TENDON REINF. DETAIL
S2 1/2\"/>



D END BLOCK REINF. DETAIL
S2 1/2\"/>

MARK:	CA-2	QTY.: 6	WT.: 22.11 T	VOL.: 10.92 cy
MATERIAL LIST / VOIDED SLAB				
ITEM	MARK	DESCRIPTION		QTY.
1	404E	#4 BENT BAR	(EPOXY COATED)	32
2	406E	#4 BENT BAR	(EPOXY COATED)	65
3	407E	#4 BENT BAR	(EPOXY COATED)	65
4	408E	#4 BENT BAR	(EPOXY COATED)	2
5	409E	#4 x 3'-10 1/4"	(EPOXY COATED)	12
6	410E	#4 BENT BAR	(EPOXY COATED)	4
7	411E	#4 BENT BAR	(EPOXY COATED)	2
8	412E	#4 BENT BAR	(EPOXY COATED)	4
9	413E	#4 BENT BAR	(EPOXY COATED)	4
10	414E	#4 BENT BAR	(EPOXY COATED)	2
11	415E	#4 BENT BAR	(EPOXY COATED)	2
12	416E	#4 BENT BAR	(EPOXY COATED)	2
13	417E	#4 BENT BAR	(EPOXY COATED)	2
14		W4F W4xM4-W2.9xW2.9 (1'-5" x 3'-10") (E.C.)		
15		12"φ x 23'-11 1/2" VOID		4
16		10"φ x 23'-11 1/2" VOID		2
17		3/4"φ x 4 1/2" NON-FERROUS VOID DRAINS		8
18		3/4"φ x 5 1/2" NON-FERROUS VOID DRAINS		4
19		DOUBLE 1/2"φ STRANDS LIFTING LOOPS		4
20				

6-11-07 REVISED AS NOTED

APPROVAL STAMP:

RECEIVED
CK'D BY: [Signature] OK'D BY: [Signature]
JUN 11 2007
RESUBMIT: [Signature] APPROVED: [Signature]
BY: [Signature] DATE: 6/14/07

J.P. CARRARA & SONS INC.
Precast & Prestress Manufacturer
2464 CARR ST., WOODBURY, VERMONT 05733 Phone: (802) 388-6361 Fax: (802) 388-9010

FRANK WHITCOMB CONSTRUCTION
CONTRACTOR
WALPOLE, NEW HAMPSHIRE

STATE OF VERMONT A.O.T.
COUNTY OF RUTLAND

TOWN OF CASTLETON
VERMONT ROUTE 4A
BRIDGE NO.: 5 PROJECT NO.: RS 0142(10)

P/S VOIDED SLAB DETAILS

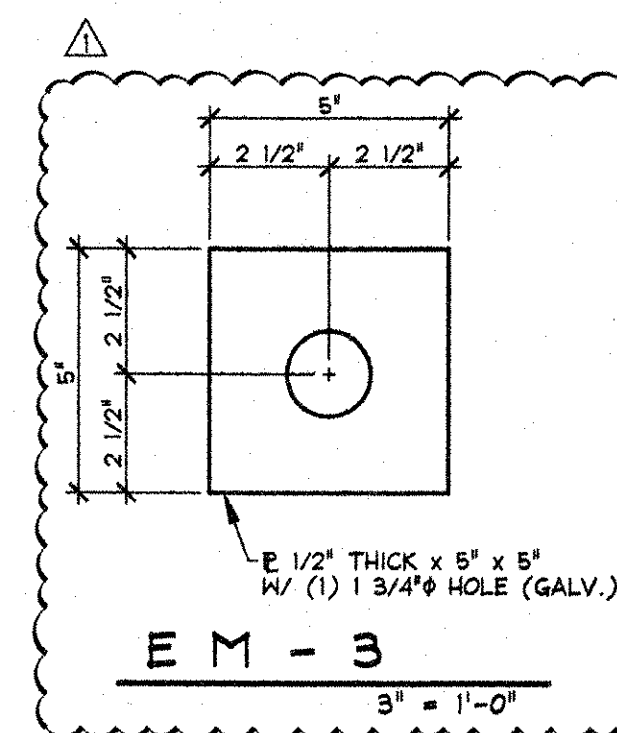
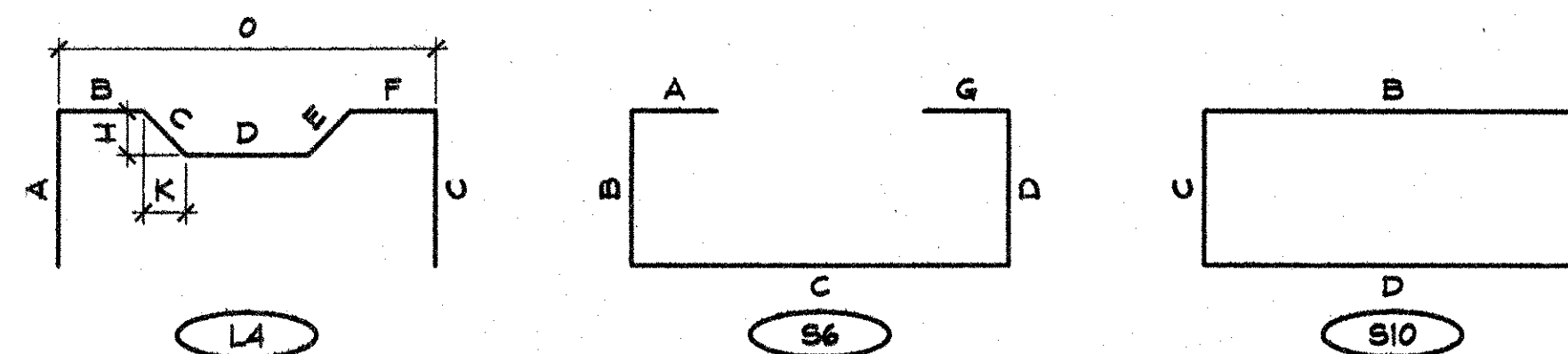
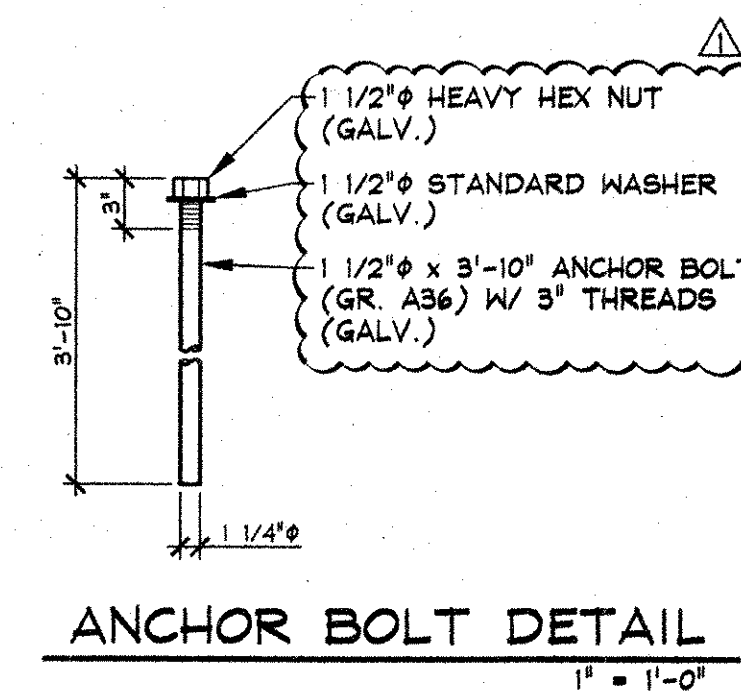
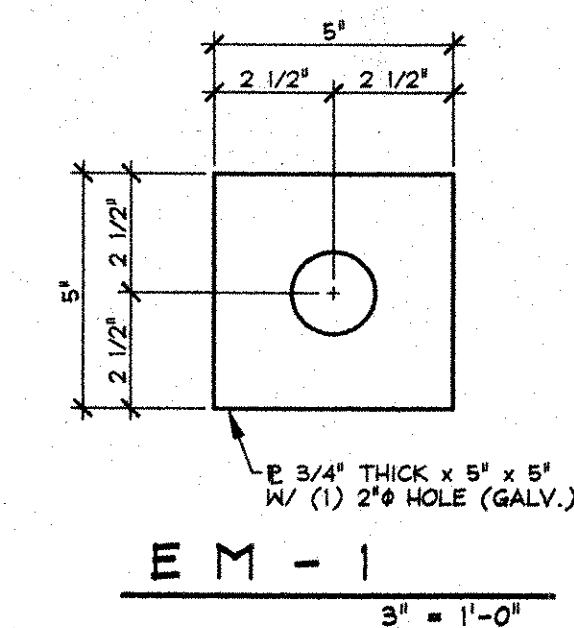
DATE: MAY 15, 2007
SCALE: NOTED
CHKD: - DFTM: B.L.
JOB NO: 23256-07
DWG. NO: S2

BENT BARS, TIES, & STIRRUPS

ITEM	MARK	QTY.	SIZE	LENGTH	TYPE	A	B	C	D	E	F/R	G	H	J	K	O	GRADE	REMARKS
1	401E	130	#4	6'-4"	S6	6"	1'-5 3/4"	2'-8 1/2"	1'-5 3/4"			6"					60	EPOXY COATED
2	402E	130	#4	4'-5 3/4"	S10		1'-0"	2'-7 3/4"	1'-0"								60	EPOXY COATED
3	403E	56	#4	5'-3 3/4"	L4	1'-4"	6"	7"	9 3/4"	7"	6"	1'-4"	5"		5"	2'-7 3/4"	60	EPOXY COATED
4	404E	240	#4	4'-1 1/4"	S10		1'-6"	1'-3 1/4"	1'-6"								60	EPOXY COATED
5	405E	24	#4	2'-9 1/2"	STR.												60	EPOXY COATED
6	406E	390	#4	7'-3 1/4"	S6	6"	1'-5 3/4"	3'-7 3/4"	1'-5 3/4"			6"					60	EPOXY COATED
7	407E	390	#4	5'-5 3/4"	S10		1'-0"	3'-7 3/4"	1'-0"								60	EPOXY COATED
8	408E	168	#4	6'-3 3/4"	L4	1'-4"	6"	7"	1'-9 3/4"	7"	6"	1'-4"	5"		5"	3'-7 3/4"	60	EPOXY COATED
9	409E	72	#4	3'-10 1/4"	STR.												60	EPOXY COATED
10	410E	24	#4	6'-6 1/2"	L4	1'-4"	6"	7"	2'-0 1/2"	7"	6"	1'-4"	5"		5"	3'-10 1/2"	60	EPOXY COATED
11	411E	12	#4	6'-4 1/2"	L4	1'-4"	6"	7"	1'-10 1/2"	7"	6"	1'-4"	5"		5"	3'-8 1/2"	60	EPOXY COATED
12	412E	24	#4	7'-6"	S6	6"	1'-5 3/4"	3'-10 1/2"	1'-5 3/4"			6"					60	EPOXY COATED
13	413E	24	#4	5'-8 1/2"	S10		1'-0"	3'-10 1/2"	1'-0"								60	EPOXY COATED
14	414E	12	#4	7'-4 3/4"	S6	6"	1'-5 3/4"	3'-9 1/4"	1'-5 3/4"			6"					60	EPOXY COATED
15	415E	12	#4	5'-7 1/4"	S10		1'-0"	3'-9 1/4"	1'-0"								60	EPOXY COATED
16	416E	12	#4	7'-3 1/2"	S6	6"	1'-5 3/4"	3'-8"	1'-5 3/4"			6"					60	EPOXY COATED
17	417E	12	#4	5'-6"	S10		1'-0"	3'-8"	1'-0"								60	EPOXY COATED
18	418E	8	#4	5'-5 3/4"	L4	1'-4"	6"	7"	1'-11 3/4"	7"	6"	1'-4"	5"		5"	2'-9 3/4"	60	EPOXY COATED
19	419E	4	#4	5'-4 1/2"	L4	1'-4"	6"	7"	1'-10 1/4"	7"	6"	1'-4"	5"		5"	2'-8 1/4"	60	EPOXY COATED
20	420E	8	#4	6'-6 1/8"	S6	6"	1'-5 3/4"	2'-10 5/8"	1'-5 3/4"			6"					60	EPOXY COATED
21	421E	8	#4	4'-7 3/4"	S10		1'-0"	2'-9 3/4"	1'-0"								60	EPOXY COATED
22	422E	4	#4	6'-5 1/4"	S6	6"	1'-5 3/4"	2'-9 3/4"	1'-5 3/4"			6"					60	EPOXY COATED
23	423E	4	#4	4'-6 7/8"	S10		1'-0"	2'-8 7/8"	1'-0"								60	EPOXY COATED
24	424E	4	#4	6'-4 3/8"	S6	6"	1'-5 3/4"	2'-8 7/8"	1'-5 3/4"			6"					60	EPOXY COATED
25	425E	4	#4	4'-6 1/8"	S10		1'-0"	2'-8 1/8"	1'-0"								60	EPOXY COATED
26																		
27																		
28																		
29																		
30																		

MISCELLANEOUS MATERIALS

ITEM	MARK	QTY.	DESCRIPTION	REMARKS
1	EM-1	6	E 3/4" x 5" x 5" W/ (1) 2" HOLE (GALV.)	FOR ERECTION, SEE DETAIL THIS SHEET
2		6	SINGLE USE STRESSING CHUCK	FOR ERECTION
3		3	1/2" POLYSTYRENE x 3/4"-8"	FOR ERECTION
4		16	1 1/2" x 3'-10" GALV. ANCHOR BOLT	FOR ERECTION, SEE DETAIL THIS SHEET
5	EM-3	16	E 1/2" x 5" x 5" W/ (1) 3/4" HOLE (GALV.)	FOR ERECTION, SEE DETAIL THIS SHEET
6				
7				
8				
9	MK-P3	30	DAYTON C-24 TYPE 4-APR PRESS-STEEL PRECAST HALF HANGER	GALVANIZE
10		32	{12" x 23"-11 1/2" VOID}	
11		12	{10" x 23"-11 1/2" VOID}	
12		64	3/4" x 4 1/2" NON-FERROUS VOID DRAIN	
13		24	3/4" x 5 1/2" NON-FERROUS VOID DRAIN	
14		32	DOUBLE 1/2" STRAND LIFTING LOOPS	
15		8	WNF W4xW4-W2.9xW2.9 [1'-5" x 2'-9 1/2"]	EPOXY COATED
16		24	WNF W4xW4-W2.9xW2.9 [1'-5" x 3'-10"]	EPOXY COATED
17				
18				
19				
20				
21				
22				
23				
24				
25				
26				
27				
28				
29				
30				



6-11-07 REVISED AS NOTED

APPROVAL STAMP:

RECEIVED
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 JUN 11 2007
 RESUBMIT: [Signature] APPROVED: [Signature]
 BY: [Signature] DATE: 6/14/07

J.P. CARRARA & SONS INC.
 Precast & Prestress Manufacturer
 2404 OGE ST., WOODBURY, VERMONT 05753 Phone: (802)388-6361 Fax: (802)388-9010

FRANK WHITCOMB CONSTRUCTION
 CONTRACTOR
 WALPOLE, NEW HAMPSHIRE

STATE OF VERMONT A.O.T.
 COUNTY OF RUTLAND

DATE: MAY 15, 2007

SCALE: NOTED

TOWN OF CASTLETON
 VERMONT ROUTE 4A
 BRIDGE NO.: 8 PROJECT NO.: RS 0142(10)

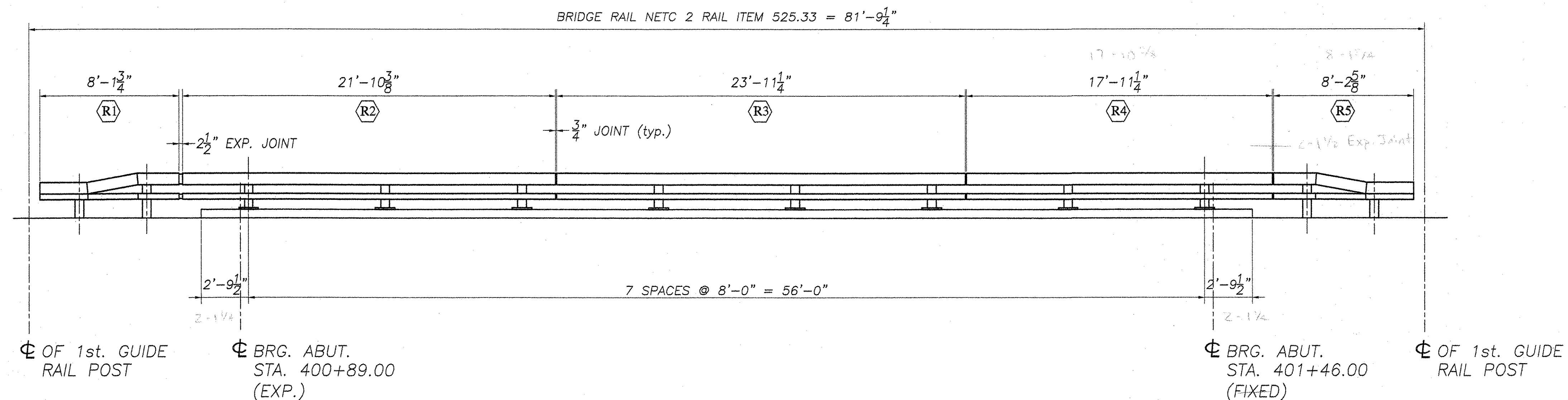
CHKD: - DFTM: B.L.

JOB NO: 23256-07

MATERIALS LIST

DWG. NO: M1

073 PCC



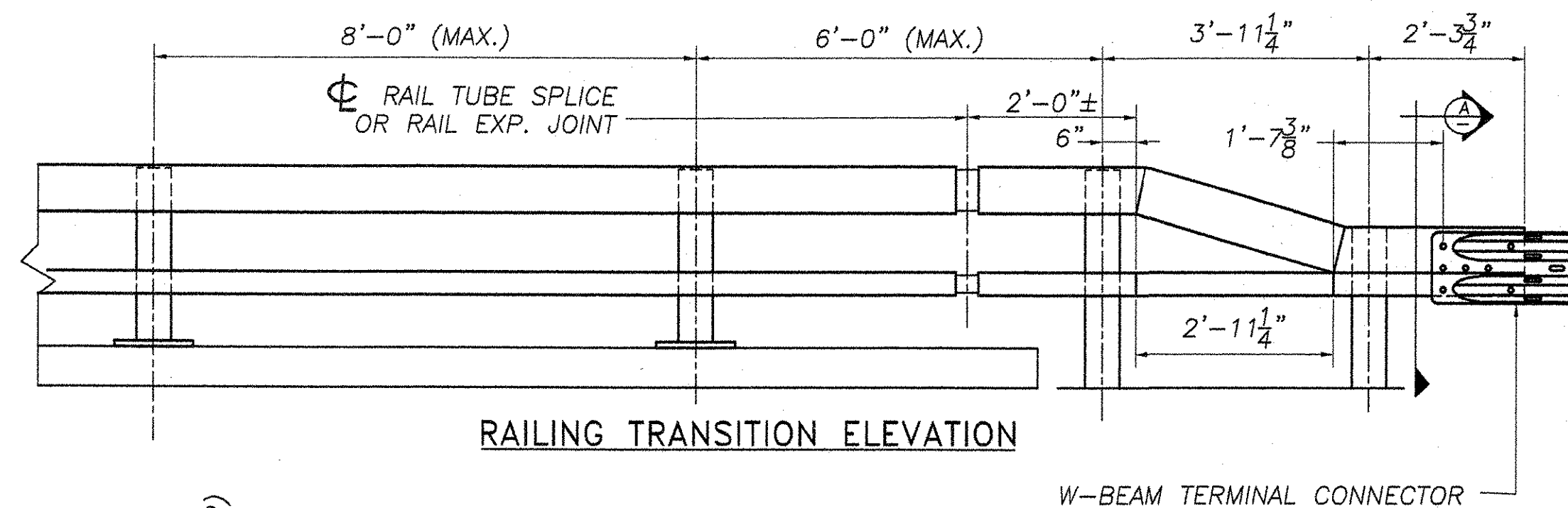
NORTH RAIL ELEVATION
(SOUTH ELEVATION SIMIRAL)

BILL OF MATERIAL (BOTH SIDES OF BRIDGE)			
Mark #	Qty.	Description	Material
	16	W6x25 POST W/BASEPLATE (2'-0.375") OAL	A709 Gr. 36
	4	W6x25 DRIVEN POST (7'-0") OAL	A709 Gr. 36
	4	W6x25 DRIVEN POST (6'-5") OAL	A709 Gr. 36
(R1)	2	DROP END TOP RAIL TS 8 x 4 x 0.313" (8'-1.75") OAL	A500 Gr. B
	2	BOTTOM RAIL TS 4 x 4 x 0.25" (8'-1.75") OAL	A500 Gr. B
(R2)	2	TOP RAIL TS 8 x 4 x 0.313" (21'-10.375") OAL	A500 Gr. B
	2	BOTTOM RAIL TS 4 x 4 x 0.25" (21'-10.375") OAL	A500 Gr. B
(R3)	2	TOP RAIL TS 8 x 4 x 0.313" (23'-11.25") OAL	A500 Gr. B
	2	BOTTOM RAIL TS 4 x 4 x 0.25" (23'-11.25") OAL	A500 Gr. B
(R4)	2	TOP RAIL TS 8 x 4 x 0.313" (17'-11.25") OAL	A500 Gr. B
	2	BOTTOM RAIL TS 4 x 4 x 0.25" (17'-11.25") OAL	A500 Gr. B
(R5)	2	DROP END TOP RAIL TS 8 x 4 x 0.313" (8'-2.625") OAL	A500 Gr. B
	2	BOTTOM RAIL TS 4 x 4 x 0.25" (8'-2.625") OAL	A500 Gr. B
	8	TS 7 x 3 x .375" SPLICE TUBE 20" LONG	A500 Gr. B
	8	TS 3 x 3 x .25" SPLICE TUBE 20" LONG	A500 Gr. B
	16	.125" BEARING PAD	NEOPRENE
	4	BACK UP PLATE	A709 Gr. 36
	4	TERMINAL CONNECTOR	M180 R2
	120	.75" ROUND HEAD BOLT, 6" LONG	M164
	120	.75" HEX NUT	A563 DH
	120	.75" WASHER	F436
	64	.625" SPLICE BOLT, 1.75" LONG	M164
	64	.625" PLAIN HARDENED WASHER	F436
	32	.625" NUT WELDED TO SPLICE TUBE	A563A
	32	.75" x .5" SCH. 40 PIPE SPACER	A53 Gr. B
	64	1" ANCHOR STUD, 12" LONG	A449
	64	1" WASHER	F436
	64	1" JAMB NUT	A563 DH
	128	1" HEX NUT	A563 DH
	16	SPACER PLATE	A36

NOTES:
1. ITEMS MARKED "*" ARE NOT SUPPLIED BY HIGHWAY SAFETY CORPORATION, AND THEY ARE SHOWN ONLY FOR REFERENCE.

REVISIONS		
No.	Remarks	Date
0	Initial submittal	

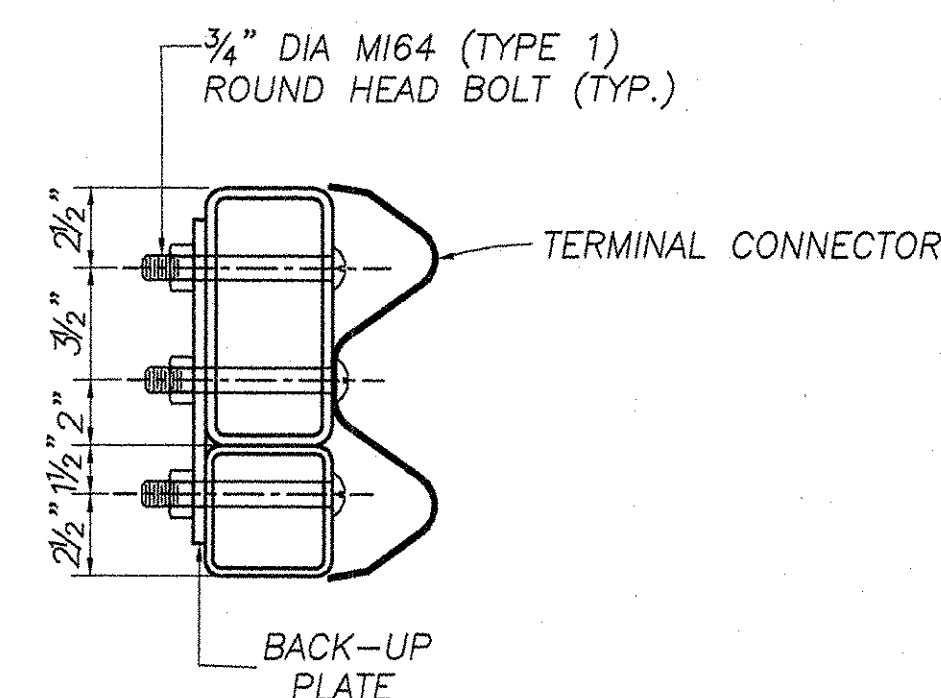
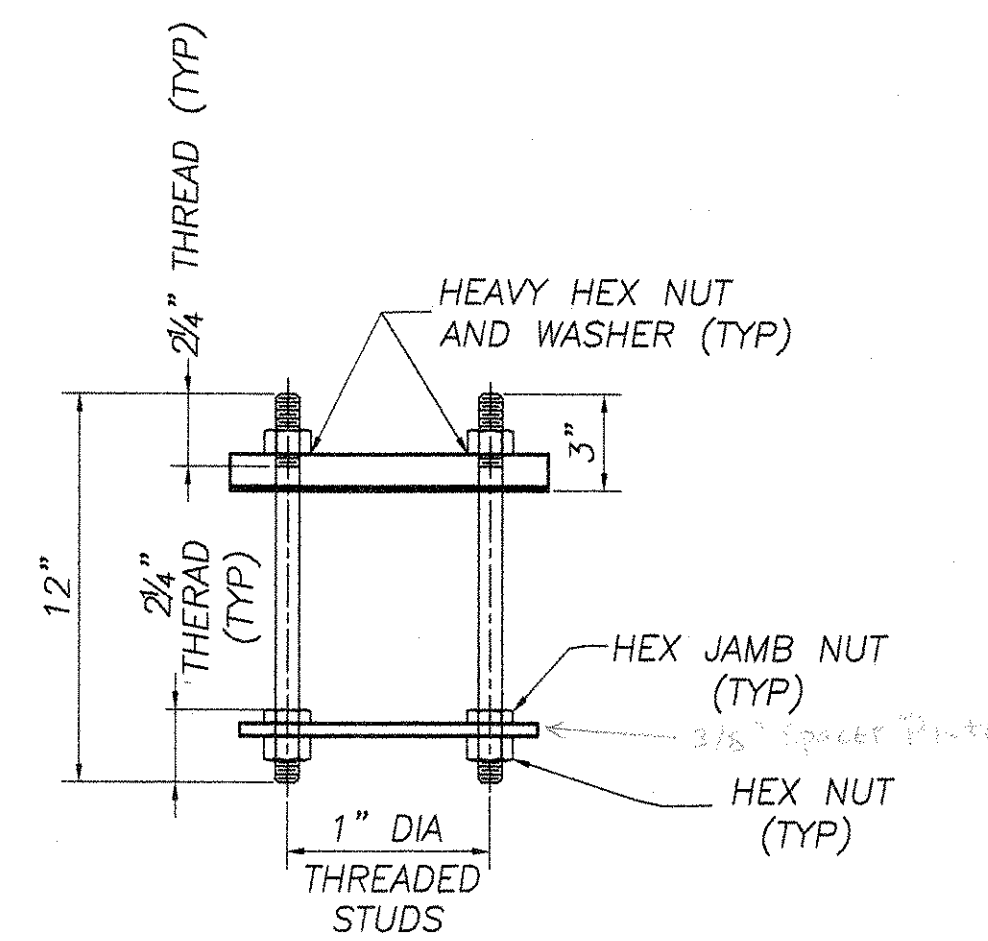
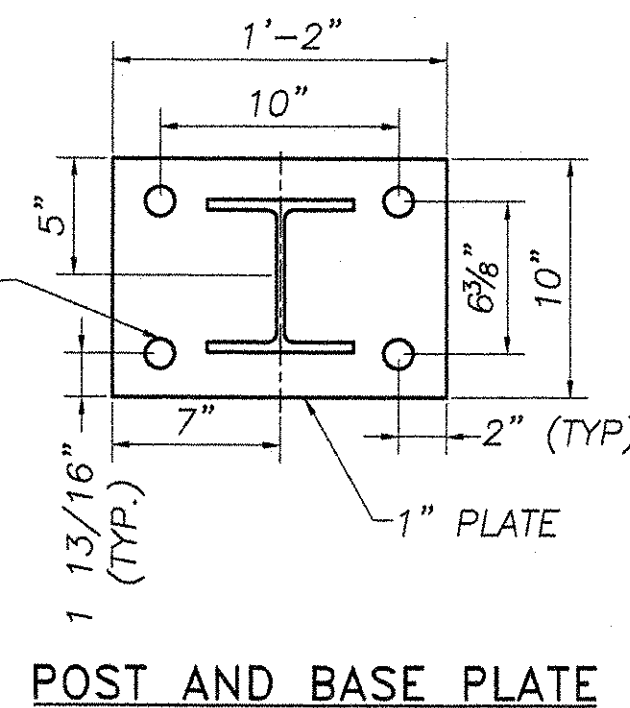
		HIGHWAY SAFETY CORP. GLASTONBURY, CT	
RECEIVED JUL 12 2007 BY: <i>[Signature]</i>		ITEM 525.33 - BRIDGE RAILING-NETC 2 RAIL PROJECT No. RS 0142(10) TOWN OF CASTLETON COUNTY OF RUTLAND ROUTE No. VT 4A BRIDGE NO. : 8	
RESUBMIT: _____ APPROVED: <i>[Signature]</i> BY: _____ DATE: _____		CHECKED: <i>[Signature]</i> MHM DATE: 6/28/07 SCALE: NONE HSC REFERENCE NO.: 1598	
GENERAL CONTRACTOR SUB CONTRACTOR: F.R. LAFAYETTE, INC.		SIZE: D REVISION: 0 SHEET NO.: 1 of 2	



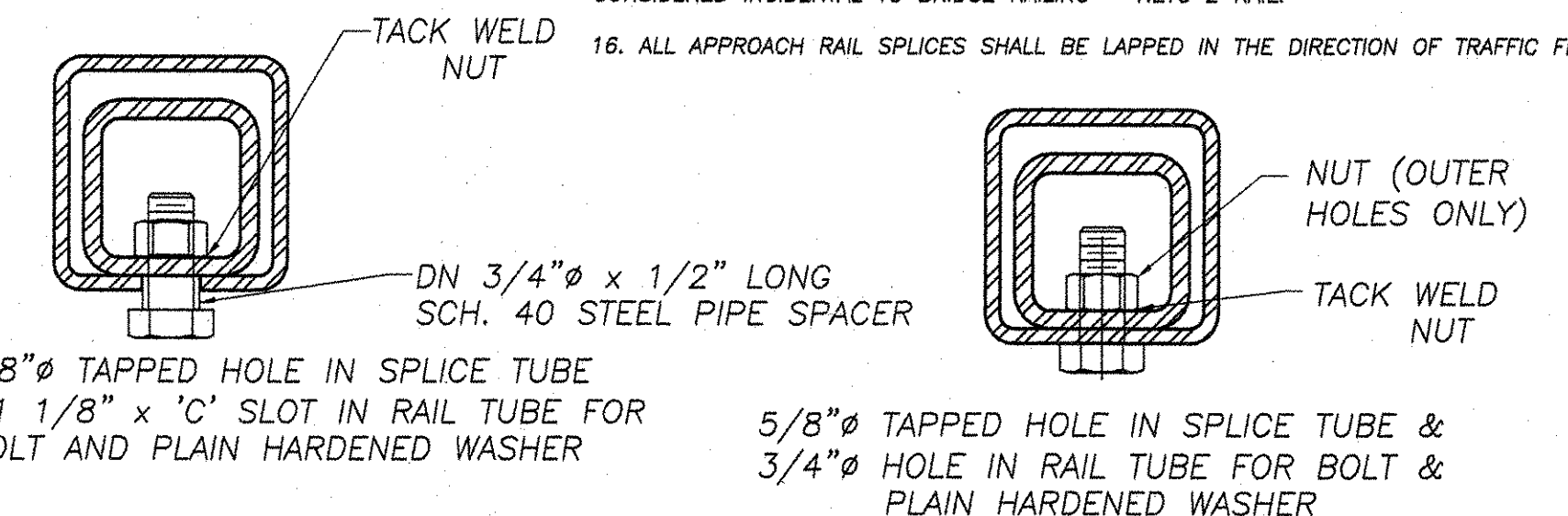
The drawing consists of two views: a 'TYPICAL SECTION' on the left and an 'ELEVATION' on the right.

TYPICAL SECTION: This view shows a side profile of the rail post assembly. It features a vertical 'W6x25 RAIL POST' mounted on a '1" BASE PLATE'. The post is secured with 'RAIL TUBES' (TS 8 x 4 x 5/16 on top, TS 4 x 4 x 1/4 on bottom) which are attached to the post via '1 3/16" Ø HOLE IN POST FOR RAIL BAR ATTACHMENT (4) TYP.'. The base plate is mounted on a '1/8" PAD'. Dimensions include a total height of 2'-0" for the post section, a 1/2" dimension for the top rail, and a 10" dimension for the base plate. Other vertical dimensions include 1'-4", 9", and 9". Horizontal dimensions include 7 5/8", 6 3/8", 4", and 6".

ELEVATION: This view shows the front of the rail post assembly. It highlights the '1 1/4" Ø HOLES (4) TYP.' for rail bar attachment. The post is shown with a '1 1/6" HOLE FOR REFLECTOR ATTACHMENT'. Dimensions include a total height of 2'-1" for the post section, a 3" dimension for the top rail, and a 7" dimension for the base plate. Other vertical dimensions include 2", 4", 2", and 2". Horizontal dimensions include 13/4", 13/4", 6", and 2".



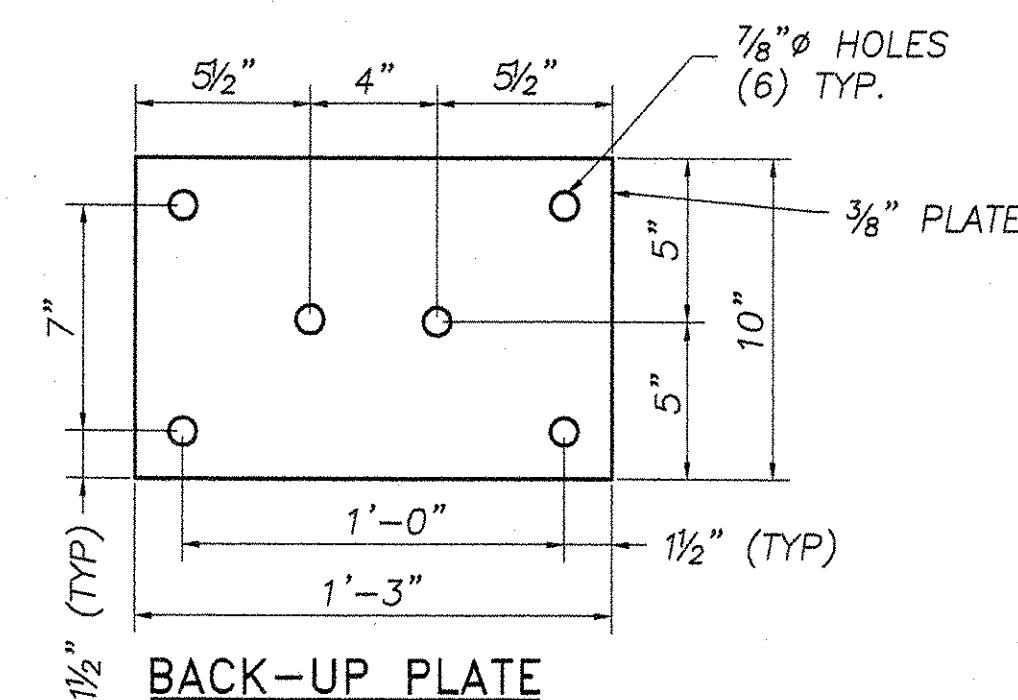
A SECTION



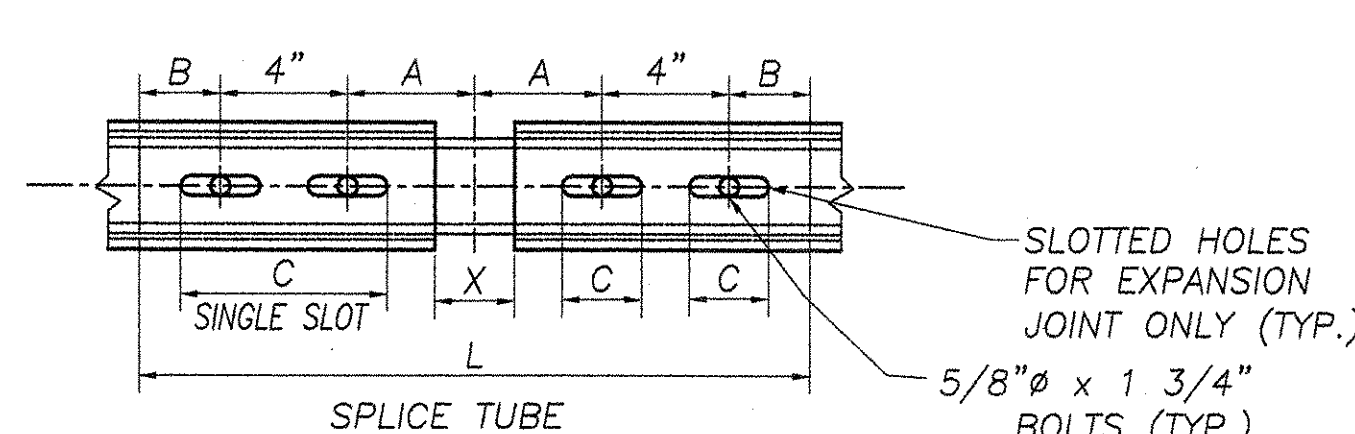
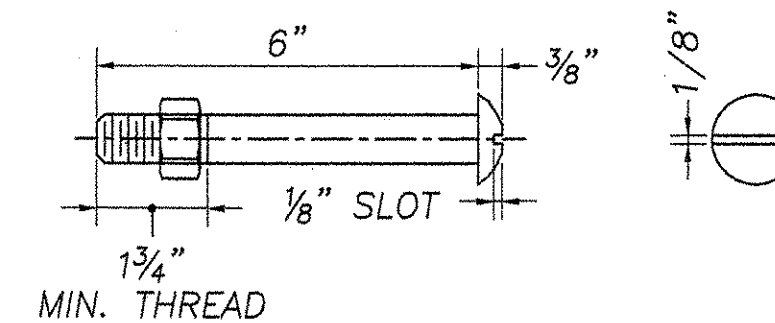
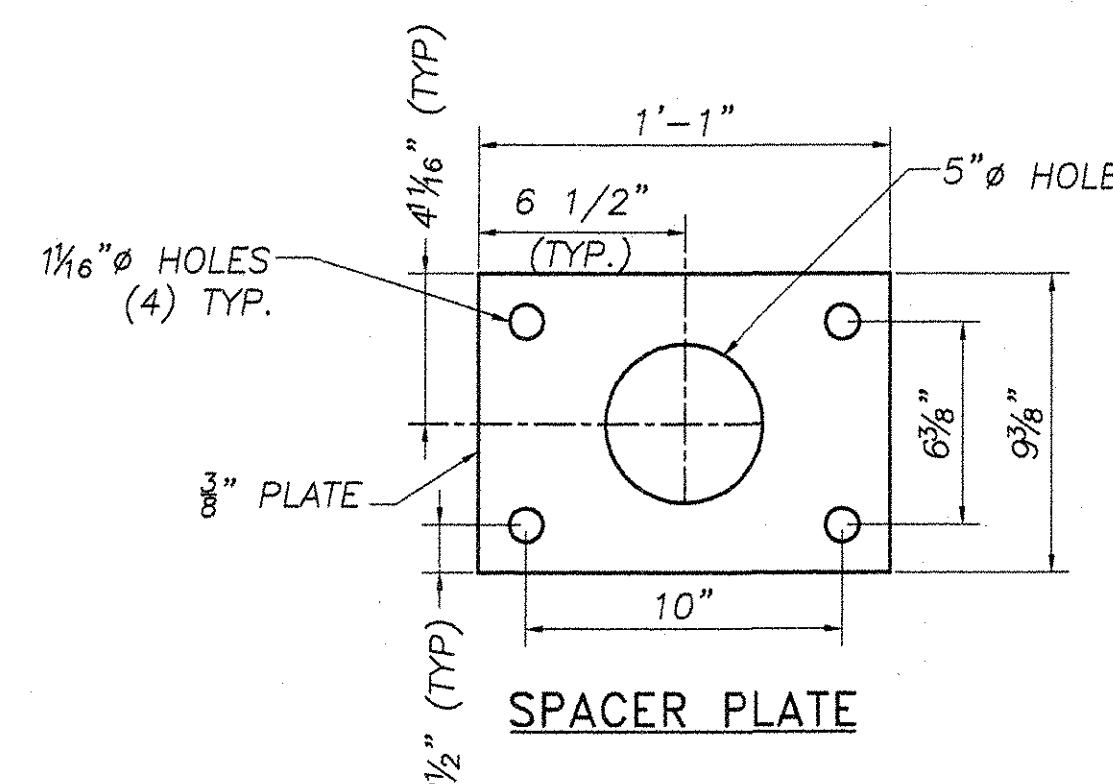
5/8" Ø TAPPED HOLE IN SPLICE TUBE
AND 1 1/8" x 'C' SLOT IN RAIL TUBE FOR
BOLT AND PLAIN HARDENED WASHER

EXPANSION JOINT SECTION
FOR DETAILS NOT SHOWN,
SEE "RAIL TUBE SPLICE SECTION."

5/8"Ø TAPPED HOLE IN SPLICE TUBE &
3/4"Ø HOLE IN RAIL TUBE FOR BOLT &
PLAIN HARDENED WASHER



3/4" DIA. M164 (TYPE 1)
ROUND HEAD BOLT
 (WITH WASHER AND PREVAILING TORQUE TYPE LOCK NUT)
 (SEE NOTE #9)
 ONLY FULL DIAMETER BODY BOLTS WILL BE ALLOWED.

RAIL TUBE SPLICE AND RAIL
EXPANSION JOINT DETAIL

TS 7" x 3" x 3/8"
TOP SPLICE TUBE

TS 3 x 3 x 5/16"
BOTTOM SPLICE TUBE

3"

3"

RAIL TUBE SPLICE SECTION

MATERIALS

RAIL TUBES.....ASTM A500, GRADE B OR ASTM A501

RAIL ROSTS AND BASE PLATES.....ASTM A709A709M, GRADE 50

ALL OTHER SHAPE AND PLATES.....ASTM A709A709M, GRADE 38

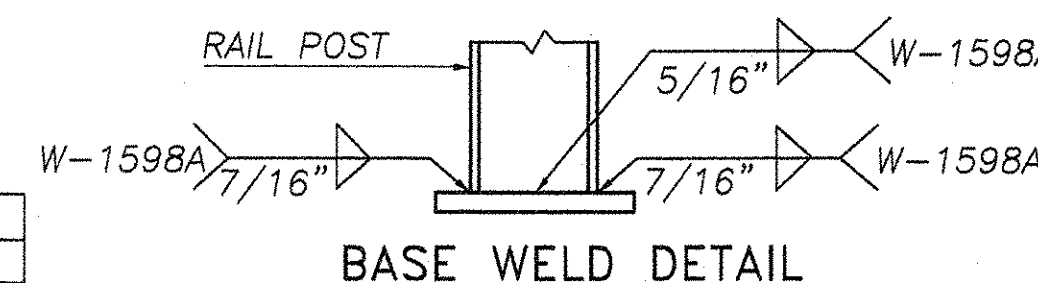
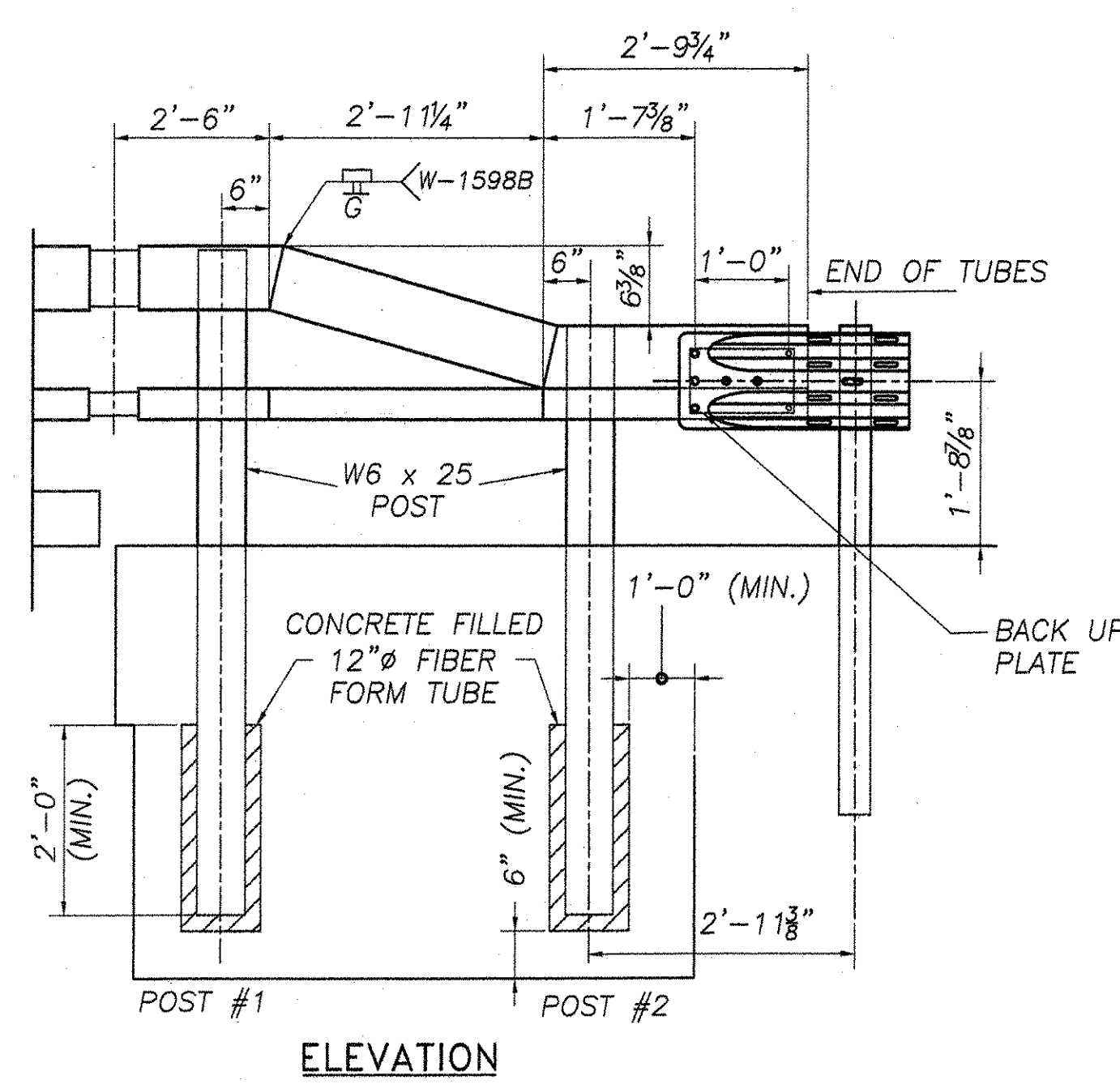
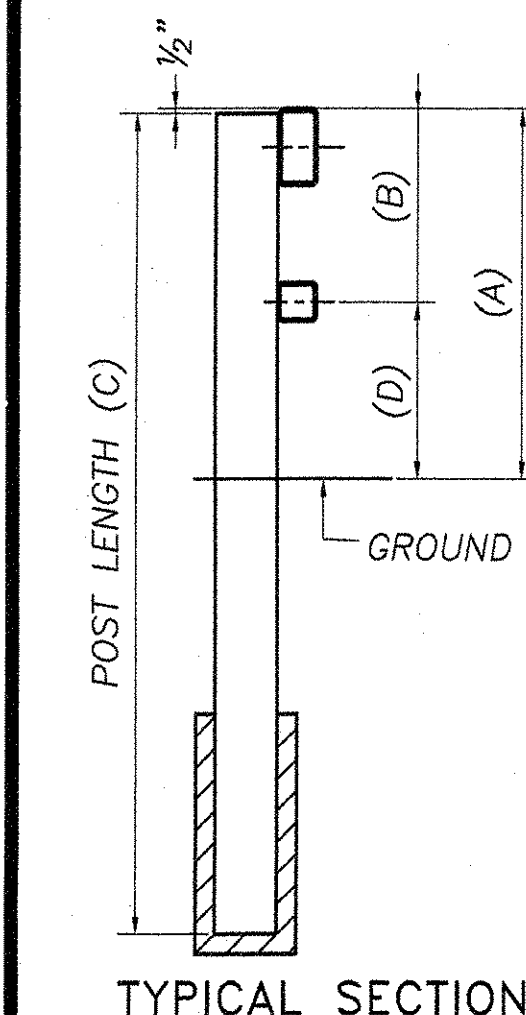
ANCHOR STUDS.....ASTM A449

ALL OTHER BOLTS (UNLESS NOTED).....AASHTO M164, TYPE1

NUTS FOR ASTHMO M164 BOLTS AND FOR ANCHOR STUDS SHALL COMPLY WITH ASTHMO M291 (ASTM A563).

WASHERS SHALL COMPLY WITH AASHTO M293 (ASTM F436) SPECIFICATIONS.

1/8" PAD SHALL COMPLY WITH STANDARD SPECIFICATION SUBSECTION 731.01 OR 731.02.



	RAIL HEIGHT	RAIL SPACING	POST LENGTH	RAIL HEIGHT
POST NUMBER	(A)	(B)	(C)	(D)
1	2'-10"	1'-4"	7'-0"	1'-6"
2	2'-3 5/8"	10"	6'-5"	1'-5 5/8"

SPlice TABLE					
T	A	B	C	L	X
N/A	4"	2"	--	20"	3/4"
EXPANsION JOINT TABLE					
< 4"	4"	2"	2 1/2"	20"	2 1/2"

T = TOTAL MOVEMENT BETWEEN BRIDGE
EXPANSION JOINTS. SEE NOTE 6

* = SINGLE SLOT

REVISIONS		
No.	Remarks	Date
0	Initial submittal	

RECEIVED
CK'D BY TAL OK'D BY AL
JUL 12 2007
RESUBMIT _____ APPROVED _____
BY _____ DATE _____



HIGHWAY SAFETY CORP.
GLASTONBURY, CT

ITEM 525.33 - BRIDGE RAILING-NETC 2 RAIL PROJECT No. RS 0142(10) TOWN OF CASTLETON COUNTY OF RUTLAND ROUTE No. VT 4A BRIDGE NO. : 8	DRAWN	MHM	
	CHECKED	<i>P. Radice</i>	
	DATE	6/28/07	
	SCALE	NONE	
	HSC REFERENCE NO.	1598	
GENERAL CONTRACTOR	SIZE	D	0
SUB CONTRACTOR	SHEET NO.	2	of 2
F.R. LAFAYETTE, INC.			

075BR