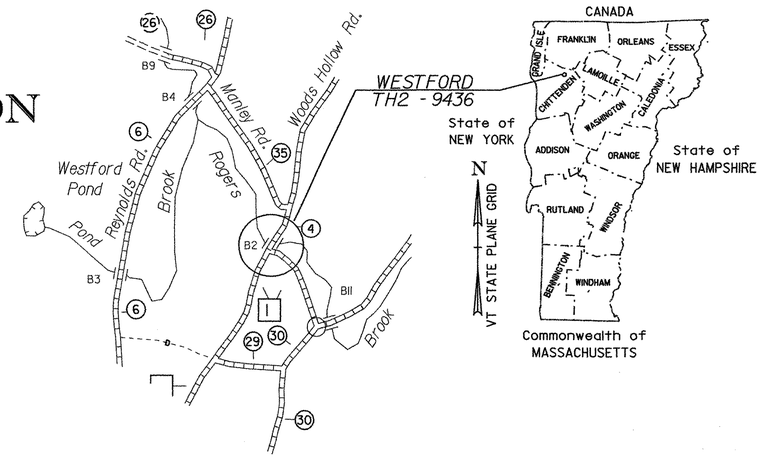
SEE SHEET 2 FOR LIST OF SHEETS
AND LIST OF STANDARDS

STATE OF VERMONT
AGENCY OF TRANSPORTATION



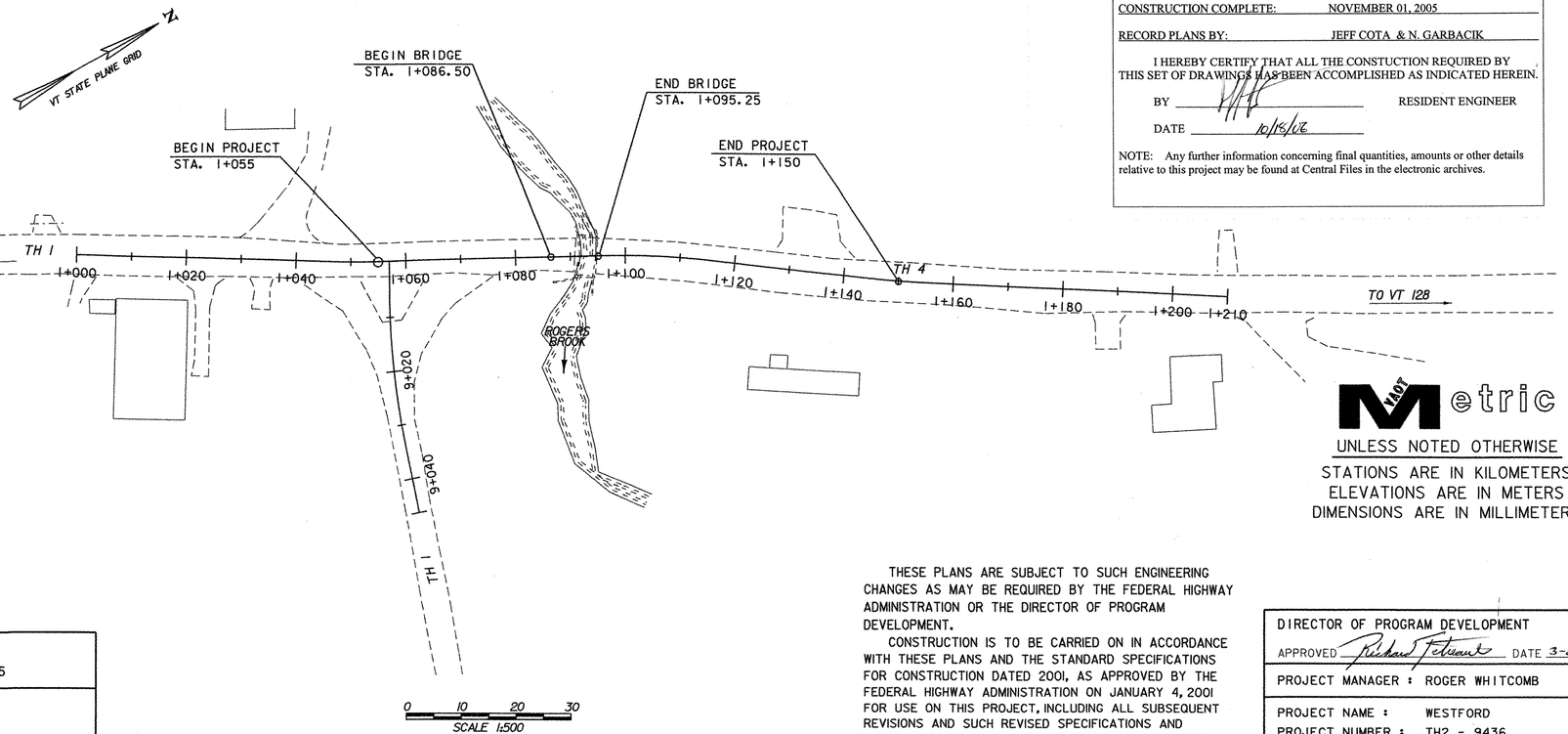
PROPOSED IMPROVEMENT
BRIDGE PROJECT

TOWN OF WESTFORD

COUNTY OF CHITTENDEN

ROUTE NO : TH 4 (LOCAL ROAD, CLASS 2) BRIDGE NO : 2

PROJECT LOCATION :	ON TH 4 APPROXIMATELY AT THE INTERSECTION OF TH 4 AND TH 1.	
PROJECT DESCRIPTION :	REPLACEMENT OF EXISTING BRIDGE WITH MINIMAL APPROACH ROADWAY AND CHANNEL WORK.	
LENGTH OF STRUCTURE :	8.750	METERS.
LENGTH OF ROADWAY :	86.25	METERS.
LENGTH OF PROJECT :	95.00	METERS.



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 (SR SR SR)
TOP OF CUT
TOE OF SLOPE

SURVEYED BY : R. MOREAU
SURVEYED DATE : SEPT 1995

DATUM
VERTICAL NAVD88
HORIZONTAL NAD83 (92)

RECORD PLANS

CONTRACTOR: TREMBAY CONSTRUCTION, L.L.C. – WASHINGTON, VT
RESIDENT ENGINEER: JEFF COTA
CONSTRUCTION BEGAN: JUNE 17, 2005
CONSTRUCTION COMPLETE: NOVEMBER 01, 2005
RECORD PLANS BY: JEFF COTA & N. GARBACIK

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

BY _____ RESIDENT ENGINEER
DATE 10/15/06

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

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

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

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

PLOTTED: 02-MAR-2005
/PW/94J122/sJ122bdr.dgn sJ122t1.1

DIRECTOR OF PROGRAM DEVELOPMENT
APPROVED Richard Peterson DATE 3-2-05

PROJECT MANAGER : ROGER WHITCOMB

PROJECT NAME : WESTFORD
PROJECT NUMBER : TH2 - 9436

SHEET 1 OF 56 SHEETS

STATE OF VERMONT
AGENCY OF TRANSPORTATION

PRELIMINARY INFORMATION SHEET

Metric

INDEX OF SHEETS

LIST OF STANDARDS

D-2M	06/13/97
E-100A	01/02/04
E-100	01/02/04
E-101	05/30/03
E-102A	05/01/04
E-102	06/30/03
E-106	03/01/04
E-107A	08/08/95
E-107	06/30/03
E-121	08/08/95
E-143	06/15/04
E-150	05/01/04
E-155	05/01/04
E-160	05/20/99
G-1dM	01/03/00
G-1M	01/03/00
J-3M	06/13/97
SB-R6-82M	07/10/97

FINAL HYDRAULIC REPORT

HYDROLOGIC DATA

Date: 7-26-02

DRAINAGE AREA : 9.8 sq. km
CHARACTER OF TERRAIN : Hilly, a mixture of forested and agricultural cover.
STREAM CHARACTERISTICS : Small, sinous, semi-alluvial, not braided or anabranched.
NATURE OF STREAMBED : Mostly ledge through the bridge, some cobbles & boulders.

PEAK FLOW DATA

Q 2.33 =	4.8 cms	Q 50 =	19.8 cms
Q 10 =	10.6 cms	Q 100 =	24.8 cms
Q 25 =	14.7 cms	Q 500 =	40.0 cms

DATE OF FLOOD OF RECORD : Unknown
ESTIMATED DISCHARGE: Unknown
WATER SURFACE ELEV.: Unknown
NATURAL STREAM VELOCITY : @ Q25 = 4.4 mps
ICE CONDITIONS : Moderate
DEBRIS: Moderate
DOES THE STREAM REACH MAXIMUM HIGHWATER ELEV. RAPIDLY? Yes
IS ORDINARY RISE RAPID? Yes
IS STAGE AFFECTED BY UPSTREAM OR DOWNSTREAM CONDITIONS? No
IF YES, DESCRIBE:

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

EXISTING STRUCTURE INFORMATION

STRUCTURE TYPE: Concrete slab bridge
YEAR BUILT: Unknown
CLEAR SPAN(NORMAL TO STREAM): 3.6 m
VERTICAL CLEARANCE ABOVE STREAMBED: 3.9 m (Bot. of slab elev. 172.6 m)
WATERWAY OF FULL OPENING: 14.0 sq. m
DISPOSITION OF STRUCTURE: Remove
TYPE OF MATERIAL UNDER SUBSTRUCTURE: Probably ledge.

WATER SURFACE ELEVATIONS AT:

Q2.33 =	169.6 m	VELOCITY=	3.7 mps
Q10 =	170.2 m	"	4.5 mps
Q25 =	170.6 m	"	4.9 mps
Q50 =	171.0 m	"	5.2 mps
Q100 =	171.4 m	"	5.5 mps

LONG TERM STREAMBED CHANGES: None noted or anticipated.

IS THE ROADWAY OVERTOPPED BELOW Q100: No
FREQUENCY: Above Q100
RELIEF ELEVATION: 171.8 m (Controlled by upstream channel banks)
DISCHARGE OVER ROAD @Q100: None

UPSTREAM STRUCTURE

TOWN: Westford — DISTANCE: 1460 m
HIGHWAY# : T.H. 6 — STRUCTURE #: 4
CLEAR SPAN: 1.8 m — CLEAR HEIGHT: 1.8 m
YEAR BUILT: Unknown — FULL WATERWAY: 5.3 sq. m
STRUCTURE TYPE: ACCGMP

DOWNSTREAM STRUCTURE

TOWN: Westford — DISTANCE: 980 m
HIGHWAY# : T.H. 1 — STRUCTURE #: 11
CLEAR SPAN: 3.6 m — CLEAR HEIGHT: 3.6 m
YEAR BUILT: Unknown — FULL WATERWAY: 13.4 sq. m
STRUCTURE TYPE: box

LOAD FACTOR - LOAD RATING (METRIC TONS)

LOADING LEVELS	TRUCK						
	M	MS	3S2	6 AXLE	3A. STR.	4A. STR.	SA. SEMI
INVENTORY	31	52			52	54	89
POSTED	44	73	89				
OPERATING		87	107	97	62	64	

COMMENTS: STRENGTH RF = $\frac{\phi M_N - 1.3\,M_{DL}}{A \times M_{(LL+I)}}$

TRAFFIC DATA

YEAR	ADT	DHV	% D	% T	ADTT
1999	370	50	66	3	<1
2019	500	70	66	4	<1

20 year ESAL for flexible pavement from to :
40 year ESAL for flexible pavement from to :
Design Speed : 60 km/h

PROPOSED STRUCTURE

STRUCTURE TYPE: Concrete slab bridge

CLEAR SPAN(NORMAL TO STREAM): 7.8 m
VERTICAL CLEARANCE ABOVE STREAMBED: 4.1 m
WATERWAY OF FULL OPENING: 32 sq. m

WATER SURFACE ELEVATIONS AT:

Q2.33 =	169.6 m	VELOCITY=	3.0 mps
Q10 =	169.9 m	"	3.9 mps
Q25 =	170.2 m	"	4.3 mps
Q50 =	170.4 m	"	4.7 mps
Q100 =	170.6 m	"	4.9 mps

IS THE ROADWAY OVERTOPPED BELOW Q100: No
FREQUENCY: Above Q100
RELIEF ELEVATION: 171.8 m (Controlled by upstream channel banks)
DISCHARGE OVER ROAD @Q100: None

AVERAGE LOW ELEVATION OF SUPERSTRUCTURE: 173.1 m
VERTICAL CLEARANCE: @ Q100 = 2.5 m

SCOUR: Minimal scour due to ledge in the channel. Abutments will be poured on ledge.

REQUIRED CHANNEL PROTECTION: Stone Fill, Type III

PERMIT INFORMATION

		DEPTH OR ELEVATION:
AVERAGE DAILY FLOW:	0.2 cms	
ORDINARY LOW WATER:	0.1 cms	0.1 m
ORDINARY HIGH WATER:	2.1 cms	0.3 m

TEMPORARY BRIDGE REQUIREMENTS

STRUCTURE TYPE: No temporary bridge. The road will be closed and traffic detoured.
CLEAR SPAN (NORMAL TO STREAM):
VERTICAL CLEARANCE ABOVE STREAMBED:
WATERWAY AREA OF FULL OPENING:

ADDITIONAL INFORMATION

DESIGN CRITERIA

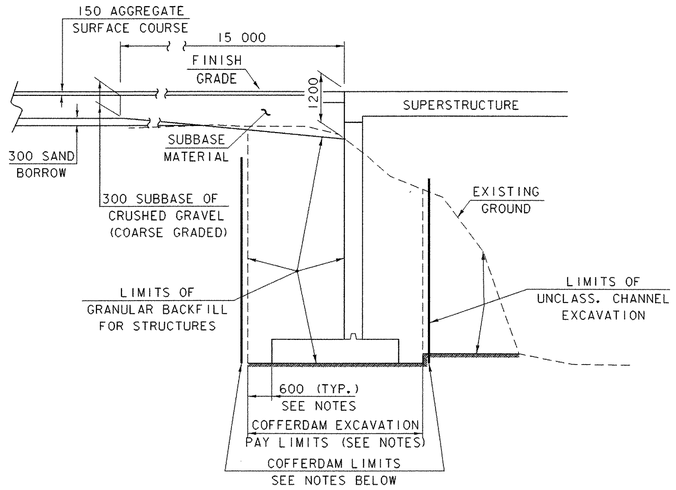
1. DESIGN LIVE LOAD AASHTO MS 22.5
2. DESIGN SPAN 8.75m BACK TO BACK
3. ALLOWABLE LOAD FOR SPREAD FOOTINGS ON SOIL 190 kPa
   ON LEDGE 480 kPa
4. ALLOWABLE LOAD FOR PILING N/A
   TYPE
   ESTIMATED LENGTH
5. STRUCTURAL STEEL AASHTO M270M/M270 GRADE N/A
6. REINFORCING STEEL GRADE 420
7. CONCRETE, HIGH PERFORMANCE CLASS A f'c: 30 Mpa
   CONCRETE, HIGH PERFORMANCE CLASS B f'c: 25 Mpa
8. DESIGN SOIL UNIT WEIGHT 22.00 kN/m³
9. DESIGN LOAD FOR SPREAD FOOTINGS ON LEDGE 276 kPa

TRAFFIC MAINTENANCE

1. IS TRAFFIC TO BE MAINTAINED? NO
   IF YES, ON EXISTING STRUCTURE?
   OR ON TEMPORARY BRIDGE?
   ONE OR TWO-WAY TRAVEL?
2. TRAFFIC CONTROL SIGNALS REQUIRED? NO
3. ARE SIDEWALKS REQUIRED? NO
   IF SO, ON WHAT SIDE?

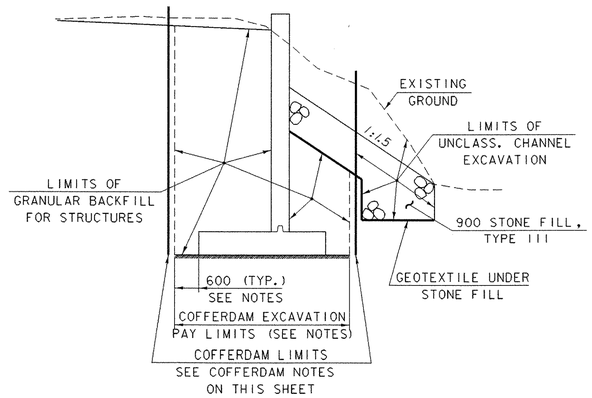
PROJECT NAME: **WESTFORD**
PROJECT NUMBER: **TH2 9436**

FILE NAME: **\94j122\Structures\sj122pi.xls** — PLOT DATE: **02/23/2005**
PROJECT MANAGER: **R. R. WHITCOMB** — DRAWN BY: **J. GILMORE**
DESIGNED BY: **C. CARLSON** — CHECKED BY: **C. CARLSON**
PRELIMINARY INFORMATION SHEET — SHEET **2** OF **56**



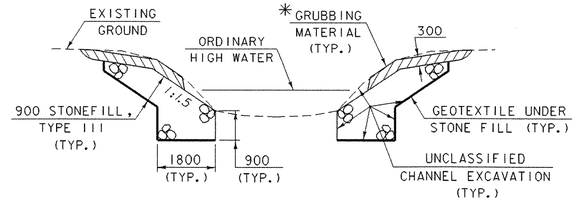
TYPICAL ABUTMENT SECTION

(NOT TO SCALE)



TYPICAL WINGWALL SECTION

(NOT TO SCALE)



TYPICAL CHANNEL SECTION

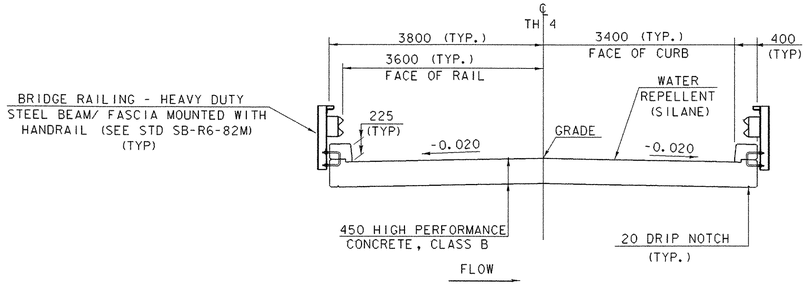
(NOT TO SCALE)

✳ WHENEVER CHANNEL SLOPE INTERSECTS ROADWAY SUBBASE, GRUBBING MATERIAL SHALL BEGIN AT THE BOTTOM OF SUBBASE.

NOTE: LEDGE EXISTS THROUGHOUT MUCH OF THE PROJECT LIMITS. STONE FILL NEED NOT REPLACE LEDGE ALONG CHANNEL.

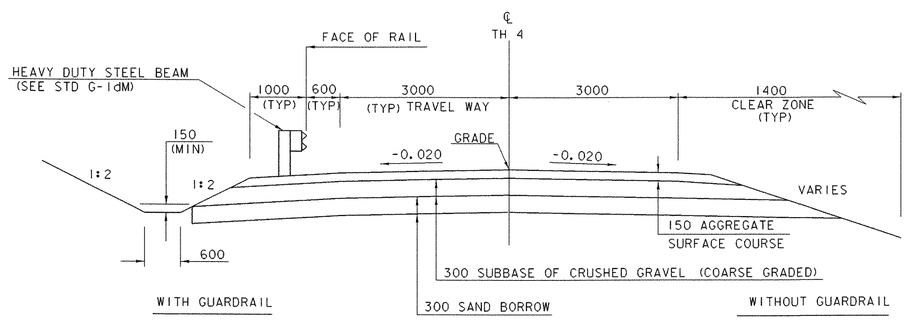
COFFERDAM NOTES:

1. COFFERDAM LIMITS TO BE DETERMINED BY THE CONTRACTOR.
2. THE PAY LIMITS OF "COFFERDAM EXCAVATION, EARTH" AND "COFFERDAM EXCAVATION, ROCK" SHALL BE 600 OUTSIDE THE PERIMETER OF THE FOOTING, UP TO EXISTING GROUND OR BOTTOM OF SUBBASE, WHICHEVER IS LOWER.
3. IF A COFFERDAM IS CONSTRUCTED WHICH IS LARGER THAN THE INDICATED COFFERDAM EXCAVATION PAY LIMITS, PAYMENT FOR ALL UNCLASSIFIED CHANNEL EXCAVATION, INCLUDING THAT PORTION WHICH IS INSIDE THE COFFERDAM BUT OUTSIDE THE COFFERDAM EXCAVATION PAY LIMITS, WILL BE MADE AT THE CONTRACT UNIT PRICE FOR UNCLASSIFIED CHANNEL EXCAVATION.
4. FOOTINGS SHALL BE PLACED ON SOUND, CLEAN LEDGE, ALL OVER BREAKAGE BELOW INDICATED BOTTOM OF FOOTING SHALL BE REPLACED WITH "HIGH PERFORMANCE CONCRETE, CLASS B. A MAXIMUM OF 150 mm AVERAGE DEPTH SHALL BE PAID FOR AS "HIGH PERFORMANCE CONCRETE, CLASS B". ANY ADDITIONAL CONCRETE REQUIRED SHALL BE PLACED AT THE CONTRACTOR'S EXPENSE. THE QUANTITIES SHOWN FOR "HIGH PERFORMANCE CONCRETE, CLASS B" AND "COFFERDAM EXCAVATION, ROCK" INCLUDE ADDITIONAL VOLUMES THAT MAY BE INCURRED DUE TO THE OVER BREAKAGE.
5. WHEN SOUND LEDGE IS ENCOUNTERED, PROFILES OF THE LEDGE SHALL BE SUBMITTED TO THE STRUCTURES SECTION TO DETERMINE WHETHER THE FOOTINGS FOR THE ABUTMENTS NEED TO BE ADJUSTED. NO FURTHER WORK SHALL BE DONE ON THE FOOTINGS UNTIL A REPLY IS RECEIVED FROM THE STRUCTURES SECTION.
6. IN LIEU OF THE USE OF COFFERDAMS, THE CONTRACTOR MAY ELECT TO USE A PIPE TO MAINTAIN THE FLOW OF WATER DURING CONSTRUCTION. THE RECOMMENDED HYDRAULIC OPENING MUST BE AT LEAST 2.5 SQ.METERS. THE LIMITS OF THE COFFERDAM REMAIN THE SAME AS SHOWN IN THE ABUTMENT/WINGWALL TYPICAL SECTIONS EVEN IF A PIPE IS UTILIZED. ALL THE WORK ASSOCIATED WITH THIS WORK WILL BE PAID FOR UNDER THE ITEMS, "COFFERDAM (STA. 1+086.50)", "COFFERDAM (STA. 1+095.25)", "COFFERDAM EXCAVATION, EARTH" AND "COFFERDAM EXCAVATION, ROCK."



TYPICAL BRIDGE SECTION

SCALE 1:50



TYPICAL ROADWAY SECTION (TH 4)

SCALE 1:50

****** ROADWAY TYPICAL FOR TOWN HIGHWAY #1 IS IN TRANSITION FOR THE LENGTH OF SIDELINE APPROACH. FOR INFORMATION REGARDING THE TYPICAL REFER TO THE SIDELINE CROSS SECTIONS.**

MATERIAL ITEM	TOLERANCE
SUBBASE	± 30 mm
SAND BORROW	± 30 mm
AGGREGATE SURFACE COURSE	± 15 mm

SHEET NAME: **TYPICAL DETAIL SHEET**

PROJECT NAME: WESTFORD
PROJECT NUMBER: TH2 9436

HIGHWAY NO.: TH 4
BRIDGE NO.: 2
OVER: ROGERS BROOK

FILE NAME: /PW/94J122/sJ122pl.dgn
PROJECT MANAGER: R. R. WHITCOMB
DESIGNED BY: C. CARLSON
BRIDGE SHEET NUMBER:

PLOT DATE: 25-MAR-2005
DRAWN BY: C.C.RICE
IPARM NAME: sJ122typ.1
SHEET 3 OF 56

STATE OF VERMONT
AGENCY OF TRANSPORTATION

QUANTITY SHEET

Metric

SUMMARY OF ESTIMATED QUANTITIES

ROADWAY	CHANNEL	SUPER STRUCTURE	ABUT. #1	ABUT. #2	EROSION CONTROL	FULL C&E
1						
780						
	250					
340						
30					10	
10						
30			300	180		
			130	60		
			380	180		
			1			
				1		
670					10	
310						
		30	136	87		
		2				
			8340	5350		
		3520	65	65		
		30	40	30		
		20				
		1				
14						
14						
14						
5						
					10	
420						
40	130				10	
	200					
1						
10						
160						
					150	
81						
1						
3						
50						
						1
						1
						1
1						
1						
	280					
					200	

BRIDGE QUANTITY	TOTALS ROUND	TOTALS GRAND TOTAL	TOTALS FINAL	UNIT	ITEMS	ITEM NUMBER
		1		LS	CLEARING AND GRUBBING (INCL. INDV. TREES & SHRUBS)	201.10
		780		CM	COMMON EXCAVATION	203.15
250		250		CM	UNCLASSIFIED CHANNEL EXCAVATION	203.27
		340		CM	SAND BORROW	203.31
		40		CM	TRENCH EXCAVATION OF EARTH	204.20
		10		CM	STRUCTURE EXCAVATION	204.25
480		510		CM	GRANULAR BACKFILL FOR STRUCTURES	204.30
190		190		CM	COFFERDAM EXCAVATION, EARTH	208.30
560		560		CM	COFFERDAM EXCAVATION, ROCK	208.35
1		1		LS	COFFERDAM (ABUT. #1 STA 1+086.500)	208.40
1		1		LS	COFFERDAM (ABUT. #2 STA 1+095.250)	208.40
		680		CM	SUBBASE OF CRUSHED GRAVEL (COARSE GRADED)	301.25
		310		CM	AGGREGATE SURFACE COURSE	401.10
253		253		CM	CONCRETE, HIGH PERFORMANCE CLASS B	501.34
2		2		CM	CONCRETE, HIGH PERFORMANCE CLASS B (MOD.)	501.34
13690		13690		KG	REINFORCING STEEL	507.15
3650		3650		KG	EPOXY COATED REINFORCING STEEL	507.17
100		100		L	WATER REPELLENT (MOD. - SILANE)	514.10
20		20		M	BRIDGE RAILING - HDSB/FASCIA MOUNTED/HANDRAIL	525.43
1		1		EACH	PARTIAL REMOVAL OF STRUCTURE	529.20
					BEGIN PIPE OPTIONS	
		14		M	450 mm CAAP 1.52 mm (68 mm X 12 mm)	601.0215
		14		M	450 mm PCCSP 1.63 mm (68 mm X 12 mm)	601.0415
		14		M	450 mm CPEP	601.0915
					END PIPE OPTIONS	
		5		CM	DRY RUBBLE MASONRY	602.20
		10		HR	ALL PURPOSE EXCAVATOR RENTAL, TYPE I	608.25
		420		CM	DUST CONTROL WITH WATER	609.10
130		180		CM	STONE FILL, TYPE I	613.10
200		200		CM	STONE FILL, TYPE III	613.12
		1		EACH	RELOCATE MAIL BOX, SINGLE SUPPORT	617.10
		10		SM	PORTLAND CEMENT CONCRETE SIDEWALK,125 MM (MOD.)	618.10
		160		M	SNOW FENCE (MOD. - ARCH.)	620.70
		150		M	SNOW FENCE (MOD. - PDF)	620.70
		81		M	HEAVY DUTY STEEL BEAM GUARD RAIL (GALVANIZED)	621.21
		1		EACH	MANUFACTURED TERMINAL SECTION (TANGENT)	621.505
		3		EACH	ANCHOR FOR STEEL BEAM RAIL	621.60
		50		HR	FLAGGERS	630.15
1		1		LS	FIELD OFFICE-ENGINEERS	631.10
1		1		LS	TESTING EQUIPMENT - CONCRETE	631.16
1		1		LU	FIELD OFFICE - TELEPHONE (NABI)	631.25
		1		LS	MOBILIZATION/DEMOBILIZATION	635.11
		1		LS	TRAFFIC CONTROL	641.10
280		280		SM	GEOTEXTILE UNDER STONE FILL	649.31
		200		SM	GEOTEXTILE FOR SILT FENCE	649.51

DETAILED SUMMARY OF QUANTITIES

QUANTITIES	UNIT	ITEMS
		TEMPORARY EROSION CONTROL ITEMS
		(Included Under Erosion Control Items)
10	CM	204.20 TRENCH EXCAVATION OF EARTH
60	CM	301.25 SUBBASE OF CRUSHED GRAVEL(COARSE GRADED)
2	HR	608.25 ALL PURPOSE EXCAVATOR RENTAL, TYPE I
10	CM	613.10 STONE FILL, TYPE I
200	SM	649.51 GEOTEXTILE FOR SILT FENCE
5	KG	651.17 SEED-WINTER RYE
30	SM	654.10 EROSION MATTING
		NABI = NOT A BID ITEM
		EARTHWORK SUMMARY
		MATERIAL AVAILABLE FOR FILL
780	CM	COMMON EXCAVATION (X 1.00)
150	CM	UNCLASSIFIED CHANNEL EXCAVATION (X 0.60)
50	CM	TRENCH EXCAVATION (X 1.00)
6	CM	STRUCTURE EXCAVATION (X 0.60)
114	CM	COFFERDAM EXCAVATION, EARTH (X 0.60)
336	CM	COFFERDAM EXCAVATION, ROCK (X 0.60)
1436	**CM**	**TOTAL MATERIAL AVAILABLE FOR FILL**
		FILL REQUIRED
120	CM	FILL
18	CM	FILL FACTOR (X 0.15)
138	**CM**	**TOTAL FILL x FACTOR**
1298	**CM**	**EXCESS MATERIAL**

PROJECT NAME: **WESTFORD**
PROJECT NUMBER: **TH2 9436**

FILE NAME: **\94j122\Structures\sj122qnt.xls**
PROJECT LEADER: **R. R. WHITCOMB**
DESIGNED BY: **C. CARLSON**
QUANTITY SHEET #1

PLOT DATE: **3/22/2005**
DRAWN BY: **J. GILMORE**
CHECKED BY: **C. CARLSON**
SHEET **4** OF **56**

STATE OF VERMONT
AGENCY OF TRANSPORTATION

QUANTITY SHEET

Metric

SUMMARY OF ESTIMATED QUANTITIES

ROADWAY	CHANNEL	SUPER STRUCTURE	ABUT. #1	ABUT. #2	EROSION CONTROL	FULL C&E
					15	
					5	
					70	
					0.5	
					0.5	
20					60	
	230					
					1	
					50	
					1	
110					30	
2						
2						
2.3						
25						
19						
156						
5						
2						

TOTALS

BRIDGE QUANTITY	ROUND	GRAND TOTAL	FINAL
		15	
		5	
		70	
		0.5	
		0.5	
		80	
230		230	
		1	
		50	
		1	
		140	
		2	
		2	
		2.3	
		25	
		19	
		156	
		5	
		2	

DESCRIPTIONS

UNIT	ITEMS	ITEM NUMBER
KG	SEED	651.15
KG	SEED-WINTER RYE	651.17
KG	FERTILIZER	651.18
T	AGRICULTURAL LIMESTONE	651.20
T	HAY MULCH	651.25
CM	TOPSOIL	651.35
SM	GRUBBING MATERIAL	651.40
LS	EROSION PREVENTION AND SEDIMENT CONTROL PLAN	652.10
HR	MONITORING EROSION PREVENTION AND SEDIMENT CONTROL PLAN	652.20
LU	MAINTENANCE OF EROSION PREVENTION & SEDIMENT CONTROL PLAN (N.A.B.I)	652.30
SM	EROSION MATTING	654.10
EACH	EVERGREEN TREES (WHITE SPRUCE, PICEA GLAUCA, B & B, 1.5-2.0 M)	656.20
EACH	DECIDUOUS TREES (SUGAR MAPLE, ACER SACCHARUM, B & B, 50-75 mm CAL.)	656.30
SM	TRAFFIC SIGNS, TYPE A	675.20
SM	TRAFFIC SIGNS, TYPE A (MOD)	675.20
M	FLANGED CHANNEL SIGN POSTS	675.301
M	FLANGED CHANNEL SIGN POST (MOD)	675.301
EACH	REMOVING SIGNS	675.50
EACH	ERECTING SALVAGED SIGNS	675.60

DETAILED SUMMARY OF QUANTITIES

QUANTITIES	UNIT	ITEMS

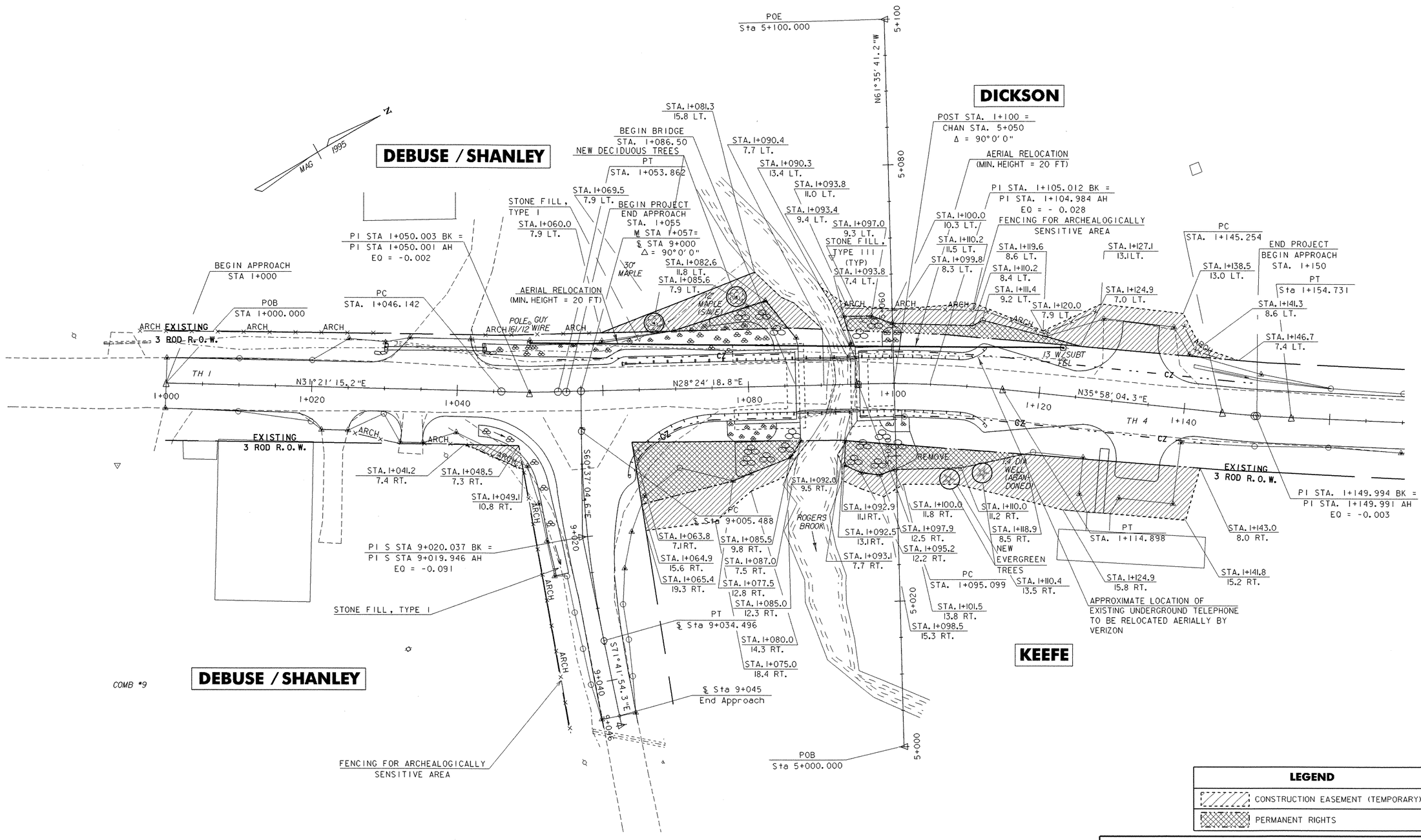
PROJECT NAME: WESTFORD
PROJECT NUMBER: TH2 9436

FILE NAME: \94j122\Structures\sj122qnt.xls
PROJECT LEADER: R. R. WHITCOMB
DESIGNED BY: C. CARLSON
QUANTITY SHEET #2

PLOT DATE: 3/22/2005
DRAWN BY: J. GILMORE
CHECKED BY: C. CARLSON
SHEET 5 OF 56

NOTE: THIS SHEET FOR RIGHT-OF-WAY INFORMATION ONLY

MnDOT Metric



LEGEND

- CONSTRUCTION EASEMENT (TEMPORARY)
- PERMANENT RIGHTS

TOTAL AREAS

PROPERTY OWNER	TEMPORARY EASEMENT	PERMANENT RIGHTS
DEBUSE/SHANLEY	98.2 Square Meters (0.024 Acres)	30.8 Square Meters (0.008 Acres)
KEEFE	320.2 Square Meters (0.079 Acres)	191.7 Square Meters (0.047 Acres)
DICKSON	165.7 Square Meters (0.041 Acres)	45.5 Square Meters (0.011 Acres)

SHEET NAME: RIGHT OF WAY

PROJECT NAME: WESTFORD
PROJECT NUMBER: TH2 9436

HIGHWAY NO.: TH 4
BRIDGE NO.: 2
OVER: ROGERS BROOK

FILE NAME: /PW/94J122/sJ122rw.dgn
PROJECT MANAGER: R. R. WHITCOMB
DESIGNED BY: C. CARLSON
BRIDGE SHEET NUMBER:

PLOT DATE: 25-MAR-2005
DRAWN BY: T. HUSK
IPARM NAME: sJ122rw.i
SHEET 6 OF 56

GPS CONTROL POINT INFORMATION

#1: BARKYOUMB AZ MK - SSN 0085 - METAL PIPE IN CONCRETE

NORTHING - 231789.6440
EASTING - 457093.0670
ELEVATION - 185.830 m

LOCATION - WESTFORD, VT., APPROXIMATELY 20.1km (12.5 MILES) NORTHEAST OF BURLINGTON, APPROXIMATELY 22.5 km (14.0 MILES) SOUTH OF ST. ALBANS AND ABOUT 41.0 km (25.5 MILES) WEST OF MORRISVILLE.

TO REACH FROM THE MOST WESTERLY INTERSECTION OF VT. ROUTES 104 AND 128 IN FAIRFAX, GO SOUTH ALONG VT. ROUTE 128 FOR 5.1km (3.2 MILES) TO THE INTERSECTION OF BROOKSIDE ROAD RIGHT, AT THE NORTHWEST CORNER OF THE COMMON IN WESTFORD VILLAGE, OPPOSITE THE WESTFORD LIBRARY AND TOWN OFFICES. TURN RIGHT AND GO SOUTHWEST ALONG BROOKSIDE ROAD FOR 1.1km (0.7 MILES) TO THE WESTFORD SCHOOL ON THE LEFT. CONTINUE STRAIGHT AHEAD ALONG BROOKSIDE ROAD FOR 2.3 km (1.4 MILES) TO THE INTERSECTION OF PETTINGILL ROAD STRAIGHT AHEAD AND BROOKSIDE ROAD RIGHT. CONTINUE STRAIGHT AHEAD ON PETTINGILL ROAD FOR 0.5 km (0.3 MILES) TO THE INTERSECTION OF PHELPS ROAD RIGHT. TURN RIGHT AND GO WEST ALONG PHELPS ROAD FOR 0.08 km (0.05 MILES) TO THE MARK ON THE LEFT IN THE TOP OF THE ROUNDED 10 m (32.8 FEET) X 2 m (6.6 FEET) LEDGE OUTCROP WHICH PROJECTS APPROXIMATELY 1m (3.3 FEET) ABOVE GROUND SURFACE.

THE MARK IS 7.9 m (25.9 FEET) SOUTH OF AND APPROXIMATELY 1m (3.3 FEET) HIGHER THAN THE CENTERLINE OF PHELPS ROAD, 9.3 m (30.5 FEET) EAST OF POLE NO. 16/29, 10.2 m (33.5 FEET) NORTH OF A TWIN 15 cm CHERRY, 4.7 m (15.4 FEET) SOUTH OF THE NORTH END OF THE LEDGE OUTCROP AND 1.1m (3.6 FEET) EAST OF A FIBERGLASS WITNESS POST.

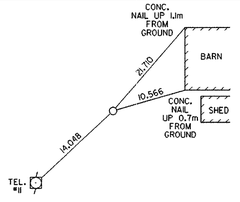
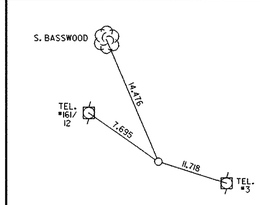
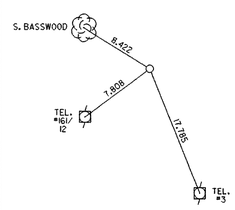
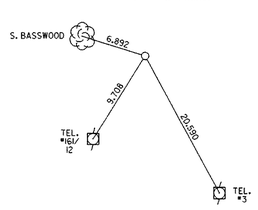
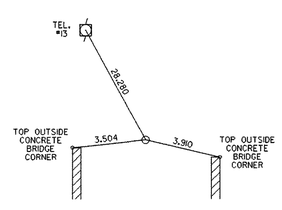
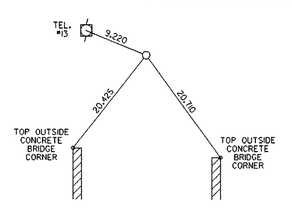
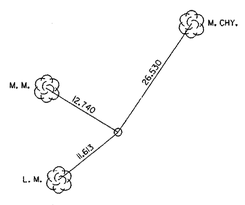
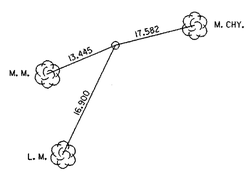
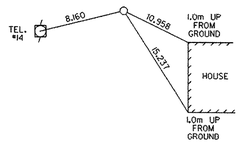
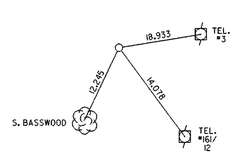
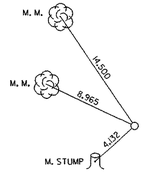
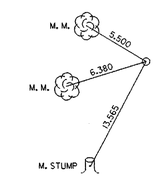
#2: BARKYOUMB - SSN 0085 - METAL PIPE IN CONCRETE

NORTHING - 232735.3160
EASTING - 457085.4250
ELEVATION - 171.770 m

LOCATION - WESTFORD, VT., APPROXIMATELY 19.3 km (12 MILES) NORTHEAST OF BURLINGTON, APPROXIMATELY 23.3 km (14.5 MILES) SOUTH OF ST. ALBANS AND APPROXIMATELY 41.0 km (25.5 MILES) WEST OF MORRISVILLE.

TO REACH FROM THE MOST WESTERLY INTERSECTION OF VT. ROUTES 104 AND 128 IN FAIRFAX, GO SOUTH ALONG VT. ROUTE 128 FOR 5.1km (3.2 MILES) TO THE INTERSECTION OF BROOKSIDE ROAD RIGHT, AT THE NORTHWEST CORNER OF THE COMMON IN WESTFORD VILLAGE, OPPOSITE THE WESTFORD LIBRARY AND TOWN OFFICES. TURN RIGHT AND GO SOUTHWEST ALONG BROOKSIDE ROAD FOR 1.1km (0.7 MILES) TO THE WESTFORD SCHOOL ON THE LEFT. CONTINUE STRAIGHT AHEAD ALONG BROOKSIDE ROAD FOR 2.3 km (1.4 MILES) TO THE INTERSECTION OF PETTINGILL ROAD STRAIGHT AHEAD AND BROOKSIDE ROAD RIGHT. TURN RIGHT AND GO NORTHWEST ALONG BROOKSIDE ROAD FOR 0.6 km (0.4 MILES) TO THE TWO STORY HOUSE OF JOHN BARKYOUMB ON THE RIGHT AND THE MARK ON THE RIGHT IN THE LAWN SOUTH OF THE HOUSE. IT IS APPROXIMATELY 0.2 km (0.1MILE) EAST OF THE INTERSECTION OF BROOKSIDE ROAD AND WOODS HOLLOW ROAD.

THE MARK IS 20.0 m (65.6 FEET) NORTH OF AND ABOUT LEVEL WITH THE CENTERLINE OF BROOKSIDE ROAD, 5.4 m (17.7 FEET) SOUTH OF THE SOUTHWEST CORNER OF BARKYOUMB'S HOUSE, 11.1m (36.4 FEET) SOUTHWEST OF THE SOUTHEAST CORNER OF THE HOUSE, 14.4 m (47.2 FEET) WEST OF THE CENTERLINE OF THE GRAVEL DRIVE TO THE HOUSE AND 27.6 m (90.6 FEET) NORTHEAST OF A FIBERGLASS WITNESS POST. IT IS IN THE TOP OF A CAST ALUMINUM MONUMENT.

MAINLINE POT	MAINLINE PC	MAINLINE PT	MAINLINE POT=SIDELINE POB	MAINLINE PC	MAINLINE PT
STA. 1+000.000	STA. 1+046.142	STA. 1+053.862	STA. 1+057.000 = STA. 9+000.000	STA. 1+095.099	STA. 1+114.898
N = 232695.0390	N = 232734.4430	N = 232741.1360	N = 232743.8950	N = 232777.4080	N = 232794.1520
E = 456979.7560	E = 457003.7650	E = 457007.6110	E = 457009.0990	E = 457027.2270	E = 457037.7660
					
MAINLINE PC	**MAINLINE PT**	**MAINLINE POT**	**SIDELINE PC**	**SIDELINE PT**	**SIDELINE POT**
STA. 1+145.254	STA. 1+154.731	STA. 1+210.000	STA. 9+005.488	STA. 9+034.496	STA. 9+046.305
N = 232818.7210	N = 232826.5610	N = 232873.2540	N = 232741.2030	N = 232729.4950	N = 232725.7870
E = 457055.5950	E = 457060.9150	E = 457090.4880	E = 457013.8810	E = 457040.3730	E = 457051.5840
					

DATUM

VERTICAL NAVD 88
HORIZONTAL NAD 83/92 GPS

NOTE: TIE DISTANCES ARE IN METERS.

SHEET NAME: TIE SHEET

PROJECT NAME: WESTFORD
PROJECT NUMBER: TH2 9436

HIGHWAY NO.: TH 4
BRIDGE NO.: 2
OVER: ROGERS BROOK

FILE NAME: /PW/94J122/sJ122tie.dgn
PROJECT MANAGER: R. R. WHITCOMB
DESIGNED BY: C. CARLSON
BRIDGE SHEET NUMBER:

PLOT DATE: 25-MAR-2005
DRAWN BY: STRI
IPARM NAME: sJ122tie.I
SHEET 7 OF 56

Metric

CONSTRUCT DRIVES
STA 1+023 RT
STA 1+034 RT
STA 1+037 LT
STA 1+133 LT
STA 1+134 RT

HEAVY DUTY STEEL BEAM GUARD RAIL
STA 1+078.6 LT - STA 1+086 LT
STA 1+095.6 LT - STA 1+112.1 LT
S STA 9+012.2 LT - STA 1+086 RT
STA 1+095.6 RT - STA 1+113.3 RT

BRIDGE RAIL
HEAVY DUTY STEEL BEAM RAIL
WITH HAND RAIL
STA 1+086 RT - STA 1+095.6 RT
STA 1+086 LT - STA 1+095.6 LT

DECIDUOUS TREES
STA 1+067.3 LT (+/-) O/S 9.1 m (+/-)
STA 1+079.5 LT (+/-) O/S 12.5 m (+/-)

RELOCATE MAILBOX
STA 1+139 RT

MANUFACTURED TERMINAL SECTION (TANGENT)
STA 1+060.8 - 1+078.6 LT

EVERGREEN TREES
STA 1 + 113.0 (+/-) O/S 11.7 RT (+/-)
STA 1 + 107.3 (+/-) O/S 12.9 RT (+/-)

CONSTRUCT DITCHES
STA 1+025 LT - STA 1+030 LT
STA 1+044 LT - STA 1+075 LT
STA 1+043 RT - S STA 9+025 RT

ANCHOR FOR STEEL BEAM RAIL
STA 1+110.5 LT
STA 1+111.4 RT
S STA 9+010.0 LT

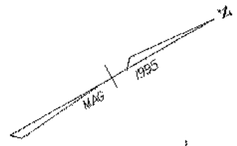
~~CONSTRUCT WALKWAY~~
~~STA 1+129.6 RT~~

PIPE OPTIONS - STA 1+037 LT
450 PCCSP x 14 000
450 CAAP x 14 000
450 CPEP x 14 000

CONSTRUCT LAID UP STONE HEADWALL
(ITEM #602.20, DRY RUBBLE MASONRY)
STA 1+030 LT
STA 1+043.5 LT

CURVE #1
RADIUS: 150
DELTA: 2°56'57" L
LENGTH: 7.72
TANGENT: 3.861
CHORD: 7.72
ORDINATE: 0.05
EXTERNAL: 0.050
BANK = NORMAL

CURVE #2
RADIUS: 150
DELTA: 7°33'45" R
LENGTH: 19.799
TANGENT: 9.914
CHORD: 19.785
ORDINATE: 0.327
EXTERNAL: 0.327
BANK = NORMAL



EXISTING BRIDGE DATA

BRIDGE WIDTH: 6615
BRIDGE LENGTH: 3658
ROADWAY APPROACH WIDTH: 6706
THE EXISTING BRIDGE IS A BURIED CONCRETE SLAB WITH FILL OVER THE SLAB.
THE EXISTING ABUTMENTS ARE CONCRETE AND LAID UP STONE.

CURVE #3
RADIUS: 150
DELTA: 3°37'11" L
LENGTH: 9.476
TANGENT: 4.74
CHORD: 9.475
ORDINATE: 0.075
EXTERNAL: 0.075
BANK = NORMAL

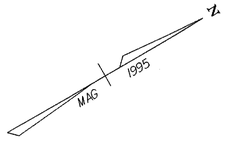
SEE SHEET 40-41 FOR SIGN LAYOUT AND SUMMARY

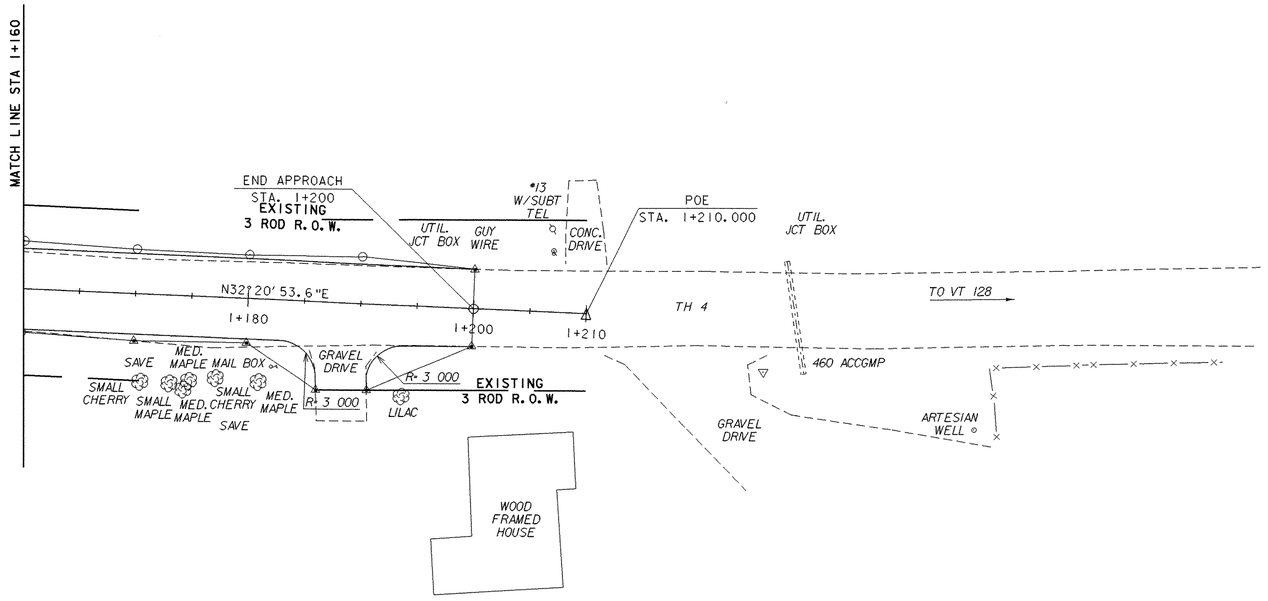
0 10 20
SCALE 1:250

SHEET NAME: LAYOUT SHEET #1
PROJECT NAME: WESTFORD
PROJECT NUMBER: TH2 9436
HIGHWAY NO.: TH 4
BRIDGE NO.: 2
OVER: ROGERS BROOK
FILE NAME: /PW/94J122/sJ122bdr.dgn
PROJECT MANAGER: R. R. WHITCOMB
DESIGNED BY: C. CARLSON
BRIDGE SHEET NUMBER:
PLOT DATE: 25-MAR-2005
DRAWN BY: STRI
IPARM NAME: sJ122al.1
SHEET 8 OF 56

VAOT Metric

CONSTRUCT DRIVES
STA 1+88 RT

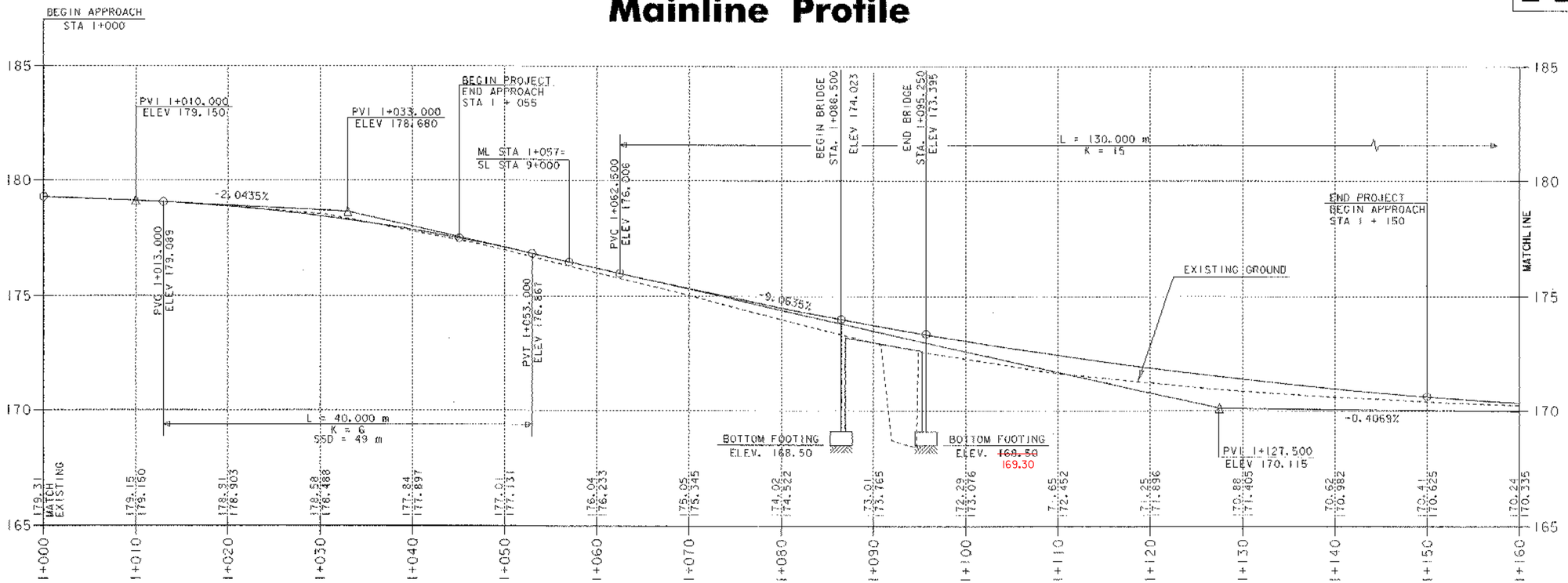


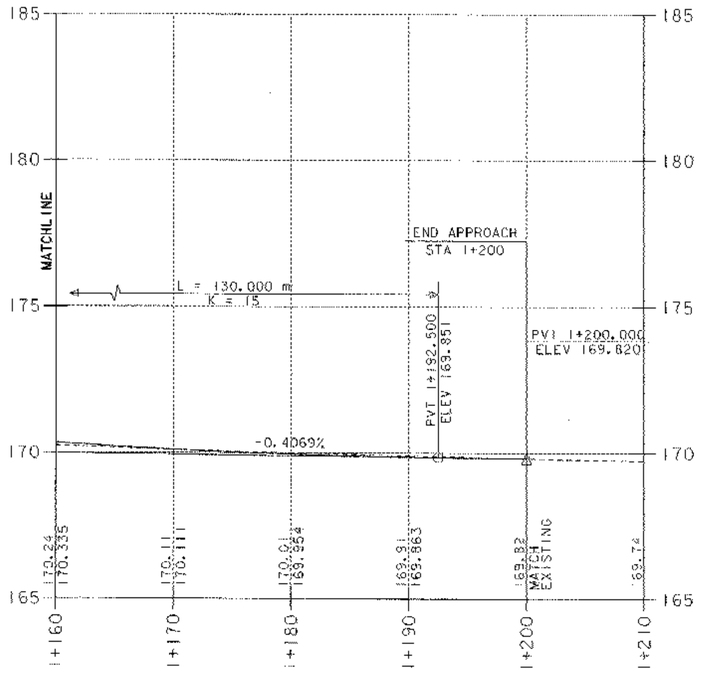


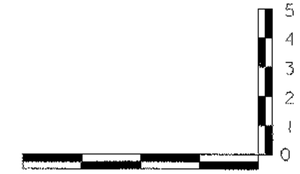
0 10 20
SCALE 1:250

SHEET NAME: LAYOUT SHEET #2		
PROJECT NAME: WESTFORD		HIGHWAY NO.: TH 4
PROJECT NUMBER: TH2 9436		BRIDGE NO.: 2
		OVER: ROGERS BROOK
FILE NAME: /PW/94J122/sJ122bdr.dgn		PLOT DATE: 25-MAR-2005
PROJECT MANAGER: R. R. WHITCOMB		DRAWN BY: STRI
DESIGNED BY: C. CARLSON		IPARM NAME: sJ122a2.i
BRIDGE SHEET NUMBER:		SHEET 9 OF 56

Mainline Profile







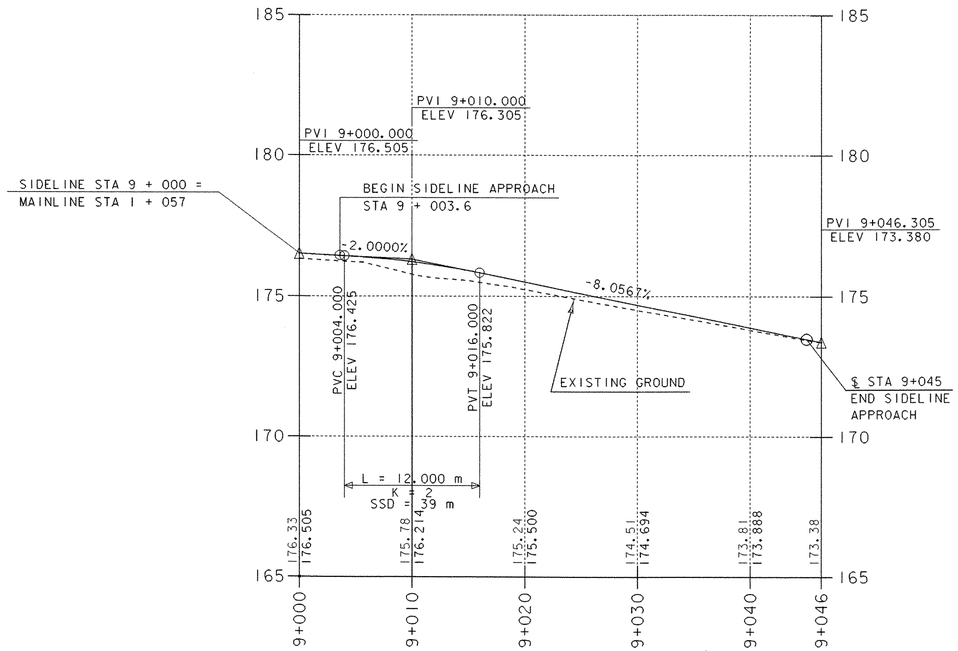
HORIZONTAL SCALE = 1:250
VERTICAL SCALE = 1:100

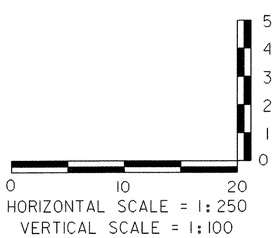
NOTE:

GRADES SHOWN TO THE NEAREST HUNDREDTH ARE THE OLD GROUND ALONG THE CENTERLINE. GRADES SHOWN TO THE NEAREST THOUSANDTH ARE THE PROPOSED FINISHED GRADE ALONG THE CENTERLINE.

SHEET NAME: MAINLINE PROFILE	
PROJECT NAME: WESTFORD	HIGHWAY NO.: TH 4
PROJECT NUMBER: TH2 9436	BRIDGE NO.: 2
	OVER: ROGERS BROOK
FILE NAME: /PW/94J122/sJ122xs2.dgn	PLOT DATE: 25-MAR-2005
PROJECT MANAGER: R. R. WHITCOMB	DRAWN BY: STR
DESIGNED BY: C. CARLSON	IPARM NAME: sJ122p-fl.J
BRIDGE SHEET NUMBER:	SHEET 10 OF 56

Sideline
Profile
(TH 1 Intersection with TH 4)



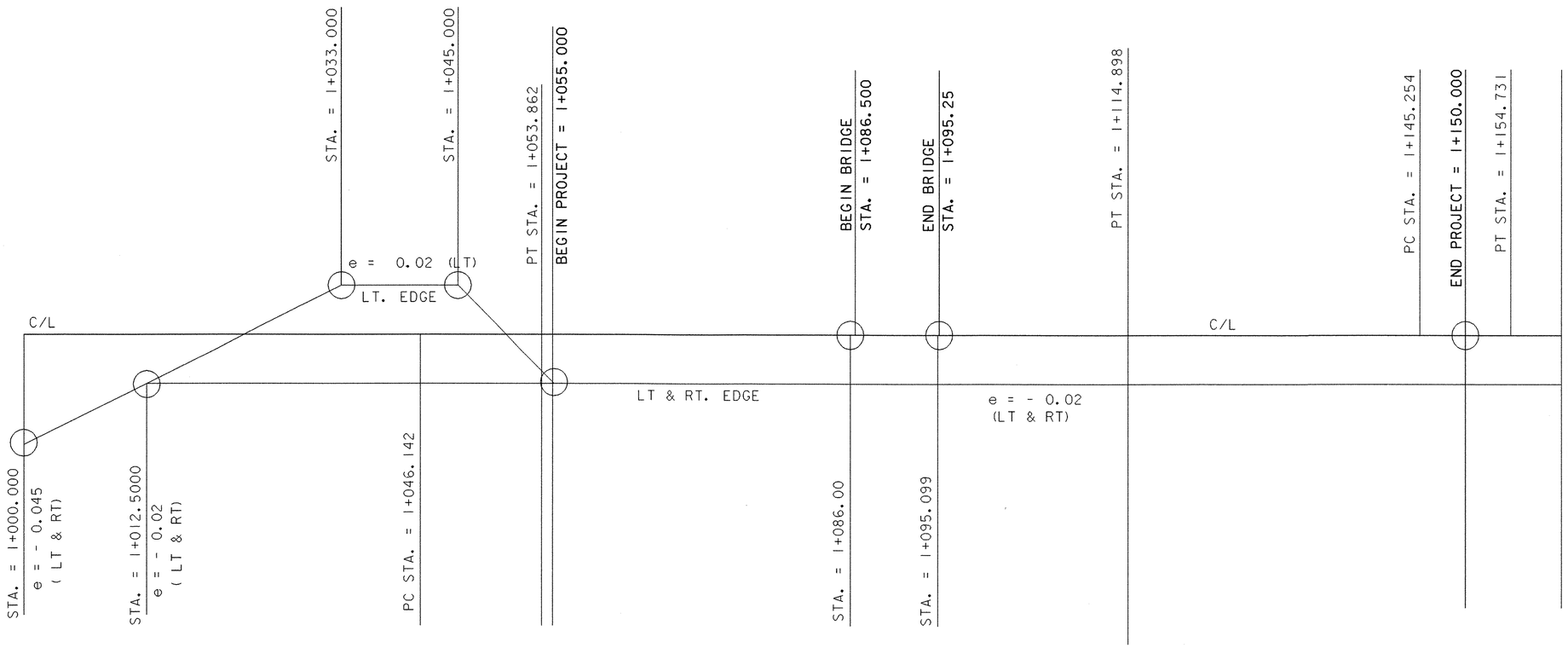


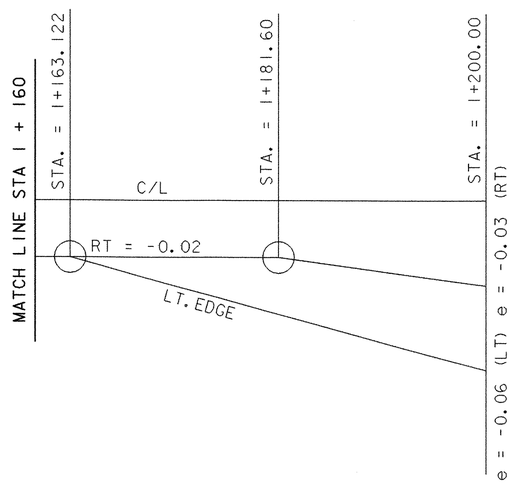
HORIZONTAL SCALE = 1:250
VERTICAL SCALE = 1:100

NOTE:

GRADES SHOWN TO THE NEAREST HUNDREDTH ARE THE OLD GROUND ALONG THE CENTERLINE. GRADES SHOWN TO THE NEAREST THOUSANDTH ARE THE PROPOSED FINISHED GRADE ALONG THE CENTERLINE.

SHEET NAME: SIDELINE PROFILE		
PROJECT NAME: WESTFORD		HIGHWAY NO.: TH 4
PROJECT NUMBER: TH2 9436		BRIDGE NO.: 2
		OVER: ROGERS BROOK
FILE NAME: /PW/94J122/sJ122xs2.dgn		PLOT DATE: 25-MAR-2005
PROJECT MANAGER: R. R. WHITCOMB		DRAWN BY: STRI
DESIGNED BY: C. CARLSON		IPARM NAME: sJ122pf2.I
BRIDGE SHEET NUMBER:		SHEET 11 OF 56

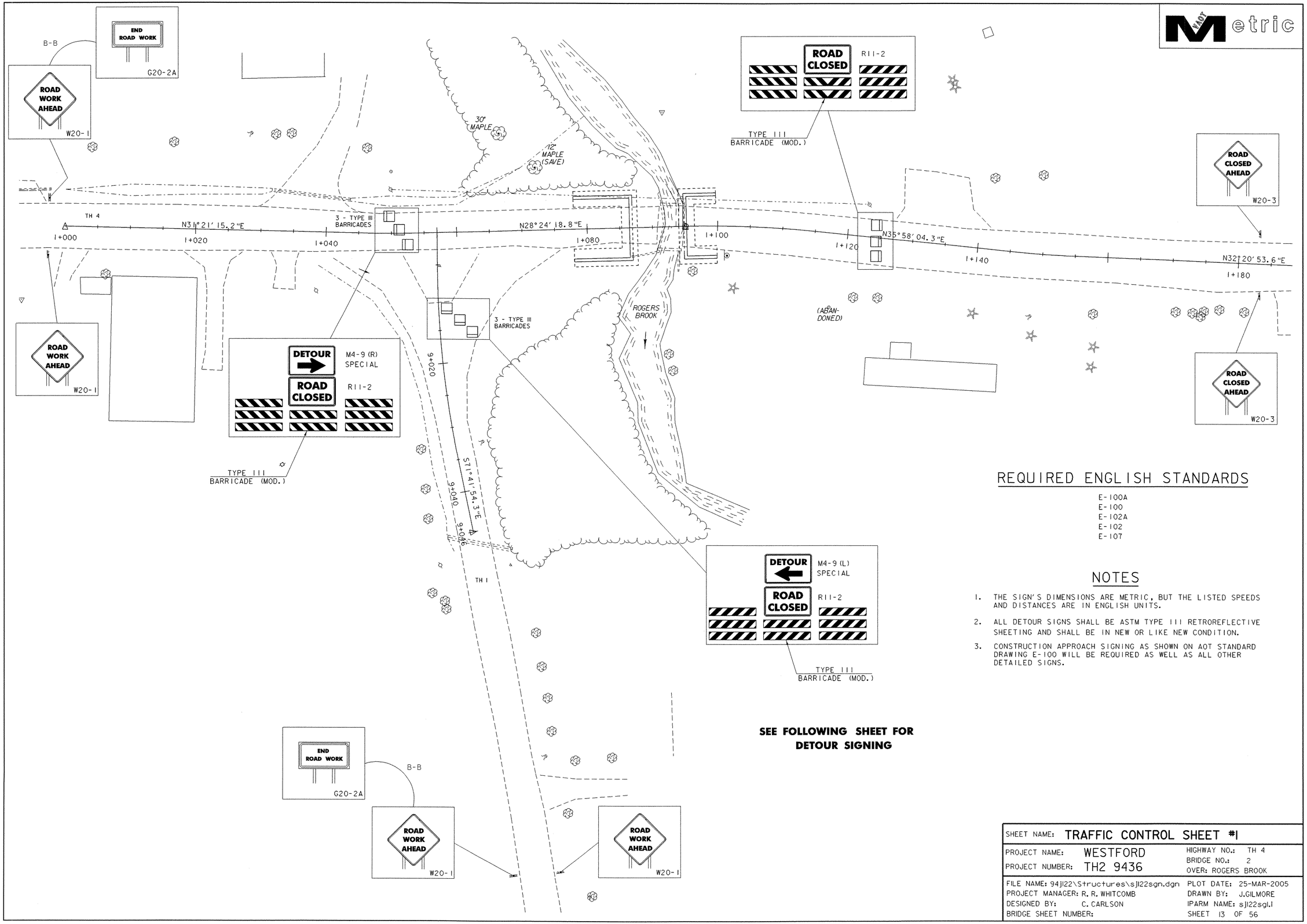




BANKING DIAGRAM

SCALE:
1:250 HORIZONTALLY
1:100 VERTICALLY

SHEET NAME: **BANKING DIAGRAM**	
PROJECT NAME: WESTFORD PROJECT NUMBER: TH2 9436	HIGHWAY NO.: TH 4 BRIDGE NO.: 2 OVER: ROGERS BROOK
FILE NAME: /PW/94J122/sJ122xs2.dgn PROJECT MANAGER: R. R. WHITCOMB DESIGNED BY: C. CARLSON BRIDGE SHEET NUMBER:	PLOT DATE: 25-MAR-2005 DRAWN BY: STR3 IPARM NAME: sJ122bk.i SHEET 12 OF 56



SEE FOLLOWING SHEET FOR DETOUR SIGNING

REQUIRED ENGLISH STANDARDS

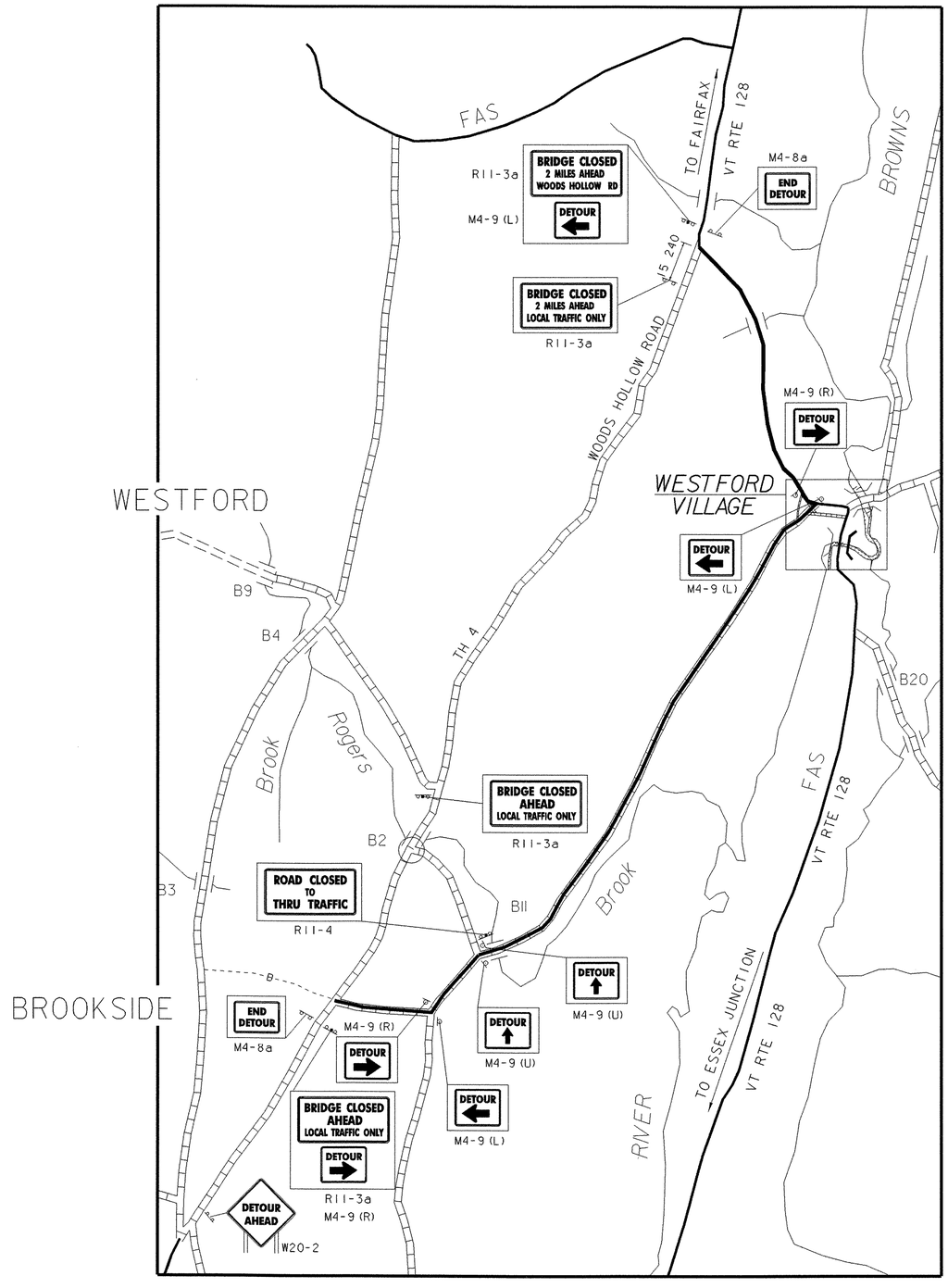
E-100A
E-100
E-102A
E-102
E-107

NOTES

1. THE SIGN'S DIMENSIONS ARE METRIC, BUT THE LISTED SPEEDS AND DISTANCES ARE IN ENGLISH UNITS.
2. ALL DETOUR SIGNS SHALL BE ASTM TYPE III RETROREFLECTIVE SHEETING AND SHALL BE IN NEW OR LIKE NEW CONDITION.
3. CONSTRUCTION APPROACH SIGNING AS SHOWN ON AOT STANDARD DRAWING E-100 WILL BE REQUIRED AS WELL AS ALL OTHER DETAILED SIGNS.

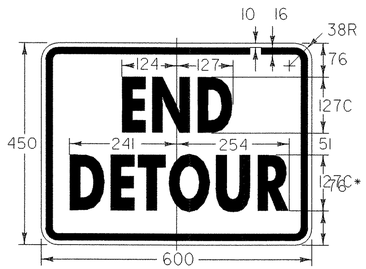
SHEET NAME:	TRAFFIC CONTROL SHEET #1		
PROJECT NAME:	WESTFORD	HIGHWAY NO.:	TH 4
PROJECT NUMBER:	TH2 9436	BRIDGE NO.:	2
		OVER:	ROGERS BROOK
FILE NAME:	94J122\Structures\sJ122sgn.dgn	PLOT DATE:	25-MAR-2005
PROJECT MANAGER:	R. R. WHITCOMB	DRAWN BY:	J.GILMORE
DESIGNED BY:	C. CARLSON	IPARM NAME:	sJ122sg1.I
BRIDGE SHEET NUMBER:		SHEET	13 OF 56

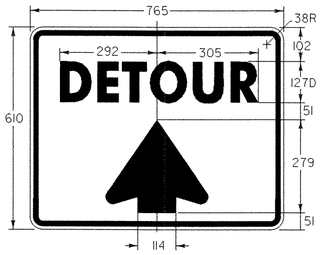
VAOT Metric

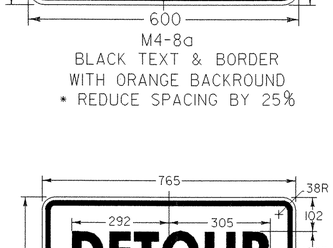


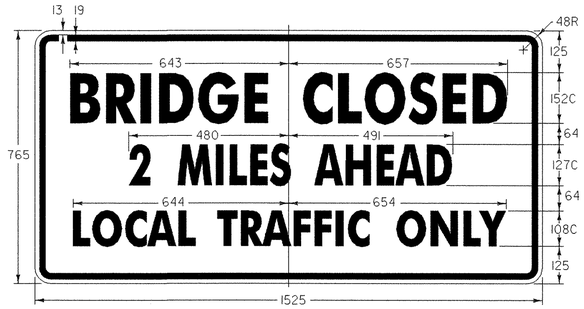
SHEET NAME:	TRAFFIC CONTROL SHEET #2		
PROJECT NAME:	WESTFORD	HIGHWAY NO.:	TH 4
PROJECT NUMBER:	TH2 9436	BRIDGE NO.:	2
		OVER:	ROGERS BROOK
FILE NAME:	94J122\Structures\sJ122sgn.dgn	PLOT DATE:	25-MAR-2005
PROJECT MANAGER:	R. R. WHITCOMB	DRAWN BY:	J.GILMORE
DESIGNED BY:	C. CARLSON	IPARM NAME:	sJ122sg2.I
BRIDGE SHEET NUMBER:		SHEET	14 OF 56

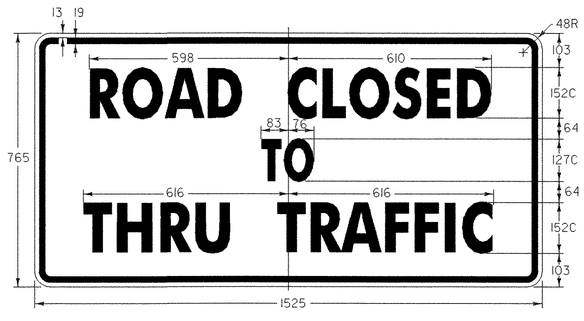
QUANTITY	SIGN LEGEND	SIGN DIMENSIONS WIDTH (mm)	SIGN DIMENSIONS HEIGHT (mm)	FLANGED CHANNEL kg/m	TOTAL AREA SIGNS (m^2)
				3.0	
4	DETOUR (M4-9L)	765	610	3	1.867
4	DETOUR (M4-9R)	765	610	3	1.867
3	ROAD CLOSED (R11-2)	1200	750		2.7
4	ROAD WORK AHEAD (W20-1)	1200	1200	8	5.76
2	END ROAD WORK (G20-2A)	600	450		0.54
2	ROAD CLOSED AHEAD (W20-3)	1200	1200	4	2.88
1	BRIDGE CLOSED 2 MILES AHEAD WOODS HOLLOW RD	1525	765	2	1.167
2	END DETOUR	600	450	4	0.54
1	BRIDGE CLOSED 2 MILES AHEAD LOCAL TRAFFIC ONLY	1525	765	2	1.167
2	BRIDGE CLOSED AHEAD LOCAL TRAFFIC ONLY	1525	765	4	2.33
1	ROAD CLOSED TO THRU TRAFFIC	1525	765	2	1.167
2	DETOUR (M4-9U)	765	610	2	0.933
1	DETOUR AHEAD (W20-2)	1200	1200	2	1.44
				156	24.358 SUBTOTAL
					0.642 ROUNDING
				156 M	25 SM TOTAL











SIGN	DIMENSIONS (MM) A	B	C	D	E	F	G	H	J	K	L	M	N
STD.	765	610	10	15	100	130D	175	205	295	305	230	115	40
SPECIAL	1220	915	15	25	155	205D	255	305	495	515	345	180	60
SPECIAL	1525	1220	20	35	202	255D	355	410	585	610	460	230	80

* REDUCE SPACING 40%

NOTE: ALL SIGNS ARE TO HAVE BLACK TEXT AND BORDER WITH ORANGE BACKGROUND

SHEET NAME: TRAFFIC CONTROL SIGN SUMMARY SHEET

PROJECT NAME: WESTFORD
PROJECT NUMBER: TH2 9436
HIGHWAY NO.: TH 4
BRIDGE NO.: 2
OVER: ROGERS BROOK

FILE NAME: 94J122\Structures\sJ122sgn.dgn
PROJECT MANAGER: R. R. WHITCOMB
DESIGNED BY: C. CARLSON
BRIDGE SHEET NUMBER:
PLOT DATE: 25-MAR-2005
DRAWN BY: STR 1
IPARM NAME: sJ122tc3.i
SHEET 15 OF 56

SOIL CLASSIFICATION

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

ROCK QUALITY DESIGNATION

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

SHEAR STRENGTH

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

CORRELATION GUIDE OF "N" TO DENSITY/CONSISTENCY

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

COMMONLY USED SYMBOLS

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

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

DEFINITIONS (AASHTO)

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

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

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

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

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

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

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

VARVED - Alternate layers of silt and clay.

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

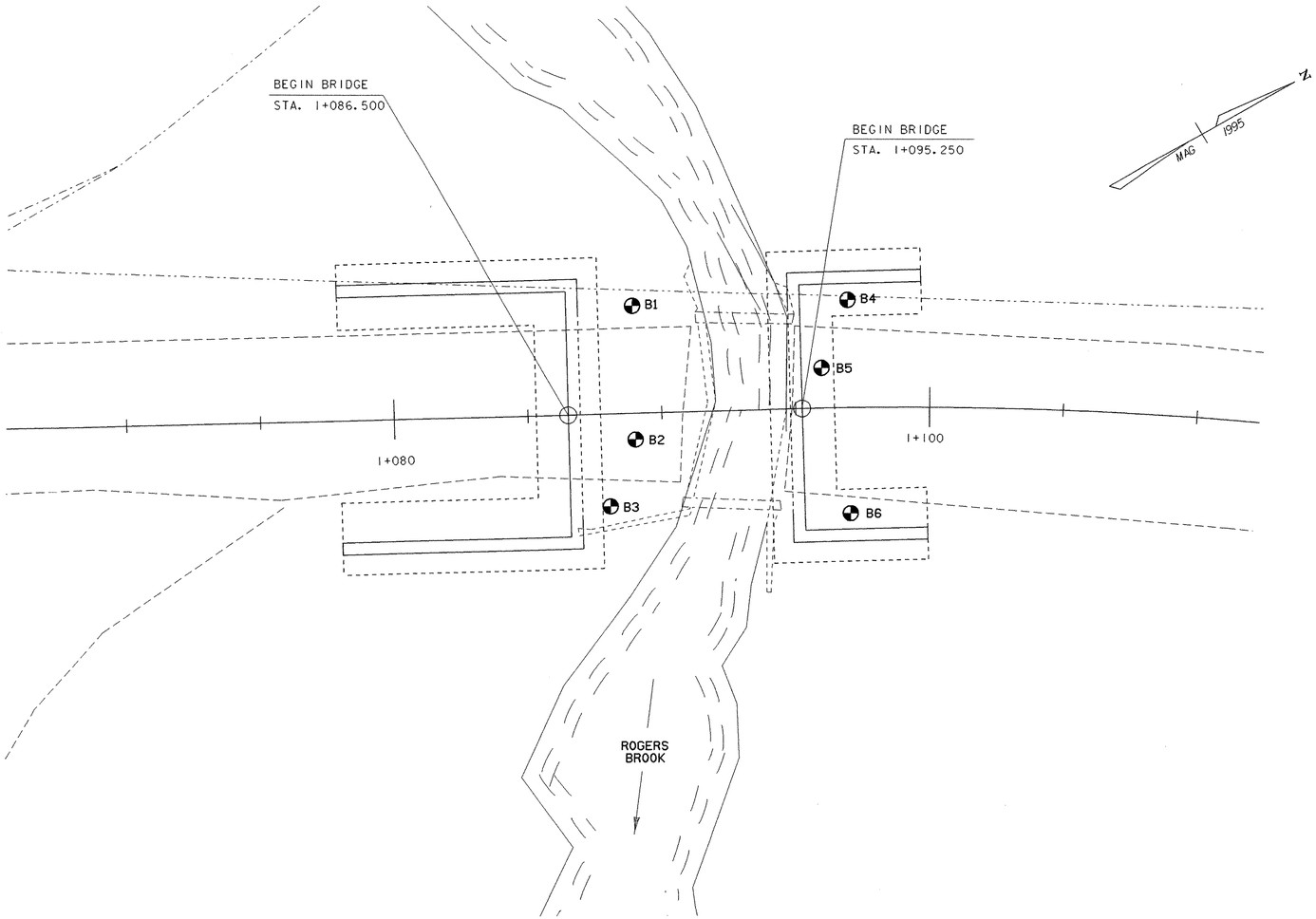
MUCK - Soft organic soil (containing > 10% organic material.

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

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

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

DIP - Inclination of bed with a horizontal plane.



BORING LAYOUT

0 2 4 6 8 10
SCALE 1:100

BORING CHART

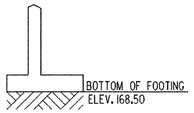
HOLE NO.	STATION	OFFSET (m)	GROUND ELEV.	TLOB
B1	1+089 LT	4.0	173.098	169.37
B2	1+089 RT	1.0	172.964	169.04
B3	1+088 RT	3.5	172.948	167.76
B4	1+097 LT	4.0	171.635	169.27
B5	1+096 LT	1.5	172.561	169.05
B6	1+097 RT	4.0	172.062	169.06

GENERAL NOTES

1. The subsurface explorations shown herein were made between 04/21/99 and 04/28/99 by the Agency.
2. Soil and rock classifications, properties and descriptions are based on engineering interpretation from available subsurface information by the Agency and may not necessarily reflect actual variations in subsurface conditions that may be encountered between individual boring or sample locations.
3. Observed water levels and/or conditions indicated are as recorded at the time of exploration and may vary according to the prevailing rainfall, methods of exploration and other factors.
4. Engineering judgement was exercised in preparing the subsurface information presented herein. Analysis and interpretation of subsurface data was performed and interpreted for Agency design and estimating purposes. Presentation of the information in the Contract is intended to provide the Contractor access to the same data available to the Agency. The subsurface information is presented in good faith and is not intended as a substitute for personal investigation, independent interpretation, independent analysis or judgement by the Contractor.
5. Pictorial structure details shown on the boring plan layout or soils profile are for illustrative purposes only and may not accurately portray final contract details.
6. Terminology used on boring logs to describe the hardness, degree of weathering, and spacing of fractures, joints and other discontinuities in the bedrock is defined in the AASHTO Manual on Subsurface Investigations, 1988.

SHEET NAME: **BORING LAYOUT SHEET**

PROJECT NAME:	WESTFORD	HIGHWAY NO.:	TH 4
PROJECT NUMBER:	TH2 9436	BRIDGE NO.:	2
		OVER:	ROGERS BROOK
FILE NAME:	94J22\Structures\sJ22bor.dgn	PLOT DATE:	25-MAR-2005
PROJECT MANAGER:	R. R. WHITCOMB	DRAWN BY:	STRI
DESIGNED BY:	C. CARLSON	IPARM NAME:	sJ22bor.i
BRIDGE SHEET NUMBER:		SHEET	16 OF 56



STATE OF VERMONT
AGENCY OF TRANSPORTATION
MATERIALS & RESEARCH DIVISION
SUBSURFACE INFORMATION

HOLE NO.: B1
SHEET 1 OF 1
DATE STARTED: 4/27/99
DATE COMPLETED: 4/27/99

PROJECT NAME: WESTFORD
SITE NAME: BR #2
STATION: 1+089.00
GROUND EL.: 173.098

PROJECT NUMBER: TH3-9436
SITE NO.: TH #7 (NOW TH #4)
OFFSET: -3.00
G.W. DEPTH:

BORING CREW
CREW CHIEF: MCGLYNN
DRILLER: MCGLYNN
LOGGER: CHABOT
ADDITIONAL CREW: YOUNG

BORING RIG: SKID RIG
BORING TYPE: WASH BORE
SAMPLE TYPE: SPLIT BARREL

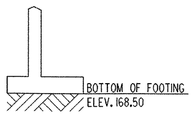
DEPTH	SYMBOL	CLASSIFICATION OF MATERIALS (Description)	BLOWS PER 0.3 m	M.C. %	GRAVEL %	SAND %	FINES %	LL	PI
		A-2-4,SiGrSa,W,brn,rec.=0.18m	5	14.2	35.1	41.8	23.1		
		A-2-4,SiSa,W,brn,rec.=0.20m Trace of Organics (wood)	6	25.5	16.4	56.3	27.3		
				Top of Bedrock @ 3.73m					
		RUN#1: BXMDC 3.73m-4.80m rec.=0.46m See Geologist's Report		RUN 1	REC% 43	ROD% 0	DIP° 75		
5		RUN#2: BXMDC 4.80m-6.02m rec.=1.09m See Geologist's Report		2	89	50	75		
		RUN#3: BXMDC 6.02m-6.66m rec.=0.29m See Geologist's Report		3	45	23	75		
		Hole Stopped @ 6.66m							
10									

GEOLOGISTS REPORT:

Run #1: Gray, metagraywacke. Moderately hard. Moderately weathered. Poor competency.

Run #2: Gray, metagraywacke. Moderately hard. Unweathered. Fair competency.

Run #3: Gray phyllite with quartz veins. Unweathered. Fair competency.



STATE OF VERMONT
AGENCY OF TRANSPORTATION
MATERIALS & RESEARCH DIVISION
SUBSURFACE INFORMATION

HOLE NO.: B2
SHEET 1 OF 1
DATE STARTED: 4/23/99
DATE COMPLETED: 4/23/99

PROJECT NAME: WESTFORD
SITE NAME: BR #2
STATION: 1+089.00
GROUND EL.: 172.964

PROJECT NUMBER: TH3-9436
SITE NO.: TH #7 (NOW TH #4)
OFFSET: 1.00
G.W. DEPTH:

BORING CREW
CREW CHIEF: MCGLYNN
DRILLER: MCGLYNN
LOGGER: CHABOT
ADDITIONAL CREW: YOUNG

BORING RIG: SKID RIG
BORING TYPE: WASH BORE
SAMPLE TYPE: SPLIT BARREL

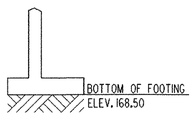
DEPTH	SYMBOL	CLASSIFICATION OF MATERIALS (Description)	BLOWS PER 0.3 m	M.C. %	GRAVEL %	SAND %	FINES %	LL	PI
		A-2-4,GrSiSa,MTW,brn rec.=0.45m	9	17.8	20.3	53.1	26.6		
		A-1-b,SaGr,W,brn,rec.=0.27m.	12	16.5	41	33.8	25.2		
		BXMDC 3.72m-3.92m, Boulders		Top of Bedrock @ 3.92					
		RUN#1: BXMDC 4.17m-5.69m rec.=0.54m. See Geologist's Report		RUN 1	REC% 36	ROD% 36	DIP° 45		
5		RUN#2: BXMDC 5.69m-6.63m rec.=0.73m. See Geologist's Report		2	78	70	65		
		RUN#3: BXMDC 6.63m-7.23m rec.=0.60m. See Geologist's Report		3	100	95	65		
		Hole Stopped @ 7.23m							
10									

GEOLOGISTS REPORT:

Run #1: Gray, metagraywacke with quartz veins. Moderately hard. unweathered. Poor recovery. Drillers reported that drilling breaks were encountered. Poor competency.

Run #2: Gray, metagraywacke with quartz veins. Moderately hard. unweathered. Competent.

Run #3: Same as Run #2.



STATE OF VERMONT
AGENCY OF TRANSPORTATION
MATERIALS & RESEARCH DIVISION
SUBSURFACE INFORMATION

HOLE NO.: B3
SHEET 1 OF 1
DATE STARTED: 4/28/99
DATE COMPLETED: 4/28/99

PROJECT NAME: WESTFORD
SITE NAME: BR #2
STATION: 1+089.00
GROUND EL.: 172.948

PROJECT NUMBER: TH3-9436
SITE NO.: TH #7 (NOW TH #4)
OFFSET: 3.00
G.W. DEPTH:

BORING CREW
CREW CHIEF: MCGLYNN
DRILLER: MCGLYNN
LOGGER: CHABOT
ADDITIONAL CREW: YOUNG

BORING RIG: SKID RIG
BORING TYPE: WASH BORE
SAMPLE TYPE: SPLIT BARREL

DEPTH	SYMBOL	CLASSIFICATION OF MATERIALS (Description)	BLOWS PER 0.3 m	M.C. %	GRAVEL %	SAND %	FINES %	LL	PI
		A-1-a,SaGr,W,brn,rec.=0.15m.	9	17.8	20.3	53.1	26.6		
		No Sample, Boulders	12	16.5	41	33.8	25.2		
				Top of Bedrock @ 5.18					
5		RUN#1: BXMDC 5.18m-5.63m,rec.=0.39m.		RUN 1	REC% 36	ROD% 36	DIP° 45		
		RUN#2: BXMDC 5.63m-6.83m rec.=0.50m. See Geologist's Report		2	78	70	65		
		RUN#3: BXMDC 6.83m-8.03m rec.=0.70m. See Geologist's Report		3	58	42	50		
		Hole Stopped @ 8.03m							
10									

GEOLOGISTS REPORT:

Run #1: Gray, metagraywacke. Moderately hard. Unweathered. Competent.

Run #2: Gray, metagraywacke. Moderately hard. Unweathered. Fair to poor recovery. Fair to poor competency.

Run #3: Gray, metagraywacke. Moderately hard. Unweathered. Fair competency.

SHEET NAME: **BORING LOG SHEET #1**

PROJECT NAME: WESTFORD
PROJECT NUMBER: TH2 9436

HIGHWAY NO.: TH 4
BRIDGE NO.: 2
OVER: ROGERS BROOK

FILE NAME: 94JI22\Structures\sJI22bor.dgn
PROJECT MANAGER: R. R. WHITCOMB
DESIGNED BY: C. CARLSON
BRIDGE SHEET NUMBER:

PLOT DATE: 25-MAR-2005
DRAWN BY: C.ALLEN
IPARM NAME: sJI22brl.i
SHEET 17 OF 56

STATE OF VERMONT
AGENCY OF TRANSPORTATION
MATERIALS & RESEARCH DIVISION
SUBSURFACE INFORMATION

HOLE NO.: B4
SHEET 1 OF 1
DATE STARTED: 4/26/99
DATE COMPLETED: 4/26/99

PROJECT NAME: WESTFORD
SITE NAME: BR #2
STATION: 1+097.00
GROUND EL.: 171.635

PROJECT NUMBER: TH3-9436
SITE NO.: TH #7 (NOW TH #4)
OFFSET: -5.00
G.W. DEPTH:

BORING CREW
CREW CHIEF: MCGLYNN
DRILLER: MCGLYNN
LOGGER: CHABOT
ADDITIONAL CREW: YOUNG

BORING RIG: SKID RIG
BORING TYPE: WASH BORE
SAMPLE TYPE: SPLIT BARREL

DEPTH	SYMBOL	CLASSIFICATION OF MATERIALS (Description)	BLOWS PER 0.3 m	M.C. %	GRAVEL %	SAND %	FINES %	LL	PI
		1.50m-1.58m: A-8, Organic (28.6%) Silt, W, brn, rec.=0.08m.		127.8					
		A-1-a, SaGr, W, brn, rec.=0.32m.	R	10.6	60.9	29.4	9.7		
				Top of Bedrock @ 2.36m					
				RUN	REC%	ROD%	DIP°		
		RUN#1: BXMDC 2.36m-3.12m rec.=0.70m See Geologist's Report.	1	92	74	65			
		RUN#2: BXMDC 3.12m-4.03m rec.=0.85m See Geologist's Report.	2	93	90	70			
		RUN#3: BXMDC 4.03m-4.23m, rec.=0.15m	3	75	75	70			
		RUN#4: BXMDC 4.23m-4.38m, rec.=0.13m	4	87	87	70			
5		RUN#5: BXMDC 4.38m-5.59m rec.=1.14m See Geologist's Report.	5	94	78	75			
		Hole Stopped @ 5.59m							

BOTTOM OF FOOTING
ELEV. 168.50

GEOLOGISTS REPORT:

Run #1: Gray, metagraywacke. Moderately hard. Unweathered. Competent.

Run #2: Same as Run #1.

Run #3: Same as Run #1.

Run #4: Same as Run #1.

Run #5: 4.38m-5.02m, Gray phyllite. Medium hard. Unweathered. Competent.
5.02m-5.59m, Gray, metagraywacke. Moderately hard. Unweathered. Competent.

STATE OF VERMONT
AGENCY OF TRANSPORTATION
MATERIALS & RESEARCH DIVISION
SUBSURFACE INFORMATION

HOLE NO.: B5
SHEET 1 OF 1
DATE STARTED: 4/21/99
DATE COMPLETED: 4/21/99

PROJECT NAME: WESTFORD
SITE NAME: BR #2
STATION: 1+096.00
GROUND EL.: 172.561

PROJECT NUMBER: TH3-9436
SITE NO.: TH #7 (NOW TH #4)
OFFSET: -L50
G.W. DEPTH:

BORING CREW
CREW CHIEF: MCGLYNN
DRILLER: MCGLYNN
LOGGER: CHABOT
ADDITIONAL CREW: YOUNG

BORING RIG: SKID RIG
BORING TYPE: WASH BORE
SAMPLE TYPE: SPLIT BARREL

DEPTH	SYMBOL	CLASSIFICATION OF MATERIALS (Description)	BLOWS PER 0.3 m	M.C. %	GRAVEL %	SAND %	FINES %	LL	PI
		* - Visual Classification							
		*Broken Rock, rec.=0.10m.	70	2					
		*Broken Rock, rec.=0.20m.	26	2.9					
		*Broken Rock, rec.=0.15m.	R						
				Top of Bedrock @ 3.51m					
				RUN	REC%	ROD%	DIP°		
		RUN#1: BXMDC 3.51m-4.72m rec.=0.80m. See Geologist's Report	1	66	40	65			
5		RUN#2: BXMDC 4.72m-5.79m rec.=0.97m. See Geologist's Report	2	91	85	70			
		RUN#3: BXMDC 5.79m-6.86m rec.=0.72m. See Geologist's Report	3	67	60	70			
		Hole Stopped @ 6.86m							

BOTTOM OF FOOTING
ELEV. 168.50

GEOLOGISTS REPORT:

Run #1: Gray, metagraywacke. Moderately hard. Unweathered .
Top 0.7m broken up along quartz lenses.
Top 0.7m uncompetent. Remainder of Run is competent.

Run #2: Gray, metagraywacke. Moderately hard. Unweathered. Competent.

Run #3: Same as Run #2, but with quartz veins. Competent.

STATE OF VERMONT
AGENCY OF TRANSPORTATION
MATERIALS & RESEARCH DIVISION
SUBSURFACE INFORMATION

HOLE NO.: B6
SHEET 1 OF 1
DATE STARTED: 4/22/99
DATE COMPLETED: 4/22/99

PROJECT NAME: WESTFORD
SITE NAME: BR #2
STATION: 1+096.00
GROUND EL.: 172.062

PROJECT NUMBER: TH3-9436
SITE NO.: TH #7 (NOW TH #4)
OFFSET: 4.00
G.W. DEPTH:

BORING CREW
CREW CHIEF: MCGLYNN
DRILLER: MCGLYNN
LOGGER: CHABOT
ADDITIONAL CREW: YOUNG

BORING RIG: SKID RIG
BORING TYPE: WASH BORE
SAMPLE TYPE: SPLIT BARREL

DEPTH	SYMBOL	CLASSIFICATION OF MATERIALS (Description)	BLOWS PER 0.3 m	M.C. %	GRAVEL %	SAND %	FINES %	LL	PI
		* - Visual Classification							
		*Broken rock, rec.=0.03m	8	7.2					
				Top of Bedrock @ 3.00m					
				RUN	REC%	ROD%	DIP°		
		RUN#1: BXMDC 3.00m-4.37m rec.=0.87m. See Geologist's Report	1	64	50	70			
5		RUN#2: BXMDC 4.37m-5.89m rec.=1.52m. See Geologist's Report	2	100	95	70			
		RUN#3: BXMDC 5.89m-6.49m rec.=0.60m. See Geologist's Report	3	100	100	70			
		Hole Stopped @ 6.49m							
10									

BOTTOM OF FOOTING
ELEV. 168.50

GEOLOGISTS REPORT:

Run #1: 3.0m-3.5m, Gray, phyllite with quartz veins. Medium hard. Unweathered. Fair competency.
3.5m-4.37m, Gray, metagraywacke. Moderately hard. Unweathered. Competent.

Run #2: 4.37m-5.15m, Gray, metagraywacke. Moderately hard. Unweathered. Competent.
5.15m-5.50m, Gray, phyllite. Medium hard. Unweathered.
5.50m-5.89m, Same as top of run.

Run #3: Same as top of Run #2. Competent.

SHEET NAME: **BORING LOG SHEET #2**

PROJECT NAME: WESTFORD
PROJECT NUMBER: TH2 9436

HIGHWAY NO.: TH 4
BRIDGE NO.: 2
OVER: ROGERS BROOK

FILE NAME: 94J122\Structures\sJ122bor.dgn
PROJECT MANAGER: R. R. WHITCOMB
DESIGNED BY: C. CARLSON
BRIDGE SHEET NUMBER:

PLOT DATE: 25-MAR-2005
DRAWN BY: C.ALLEN
IPARM NAME: sJ122br2.i
SHEET 18 OF 56

VAOT Metric

STONE FILL
TYPE III (TYP)

END BRIDGE
STA 1+095.250
F. G. = 173.395

STONE LINED DITCH
STONE FILL TYPE I

STONE FILL, TYPE I
(TYP) BEHIND WINGWALLS

MAG 1995

MAINLINE STA. 1+057=
SIDELINE STA. 9+000
△ = 90°

BEGIN BRIDGE
STA 1+086.500
F. G. = 174.023

PC
STA 1+095.099

PI STA 1+105.012 BK =
PI STA 1+104.984 AH

PT
STA 1+114.898

TO VT 128

POST STA 1+100=
CHAN STA 5+050
△ = 90° LT.

WW1 350
WW2 350
WW3 425
WW4 425

1+060
1+080
1+100
1+120

5+060
5+040
9+010

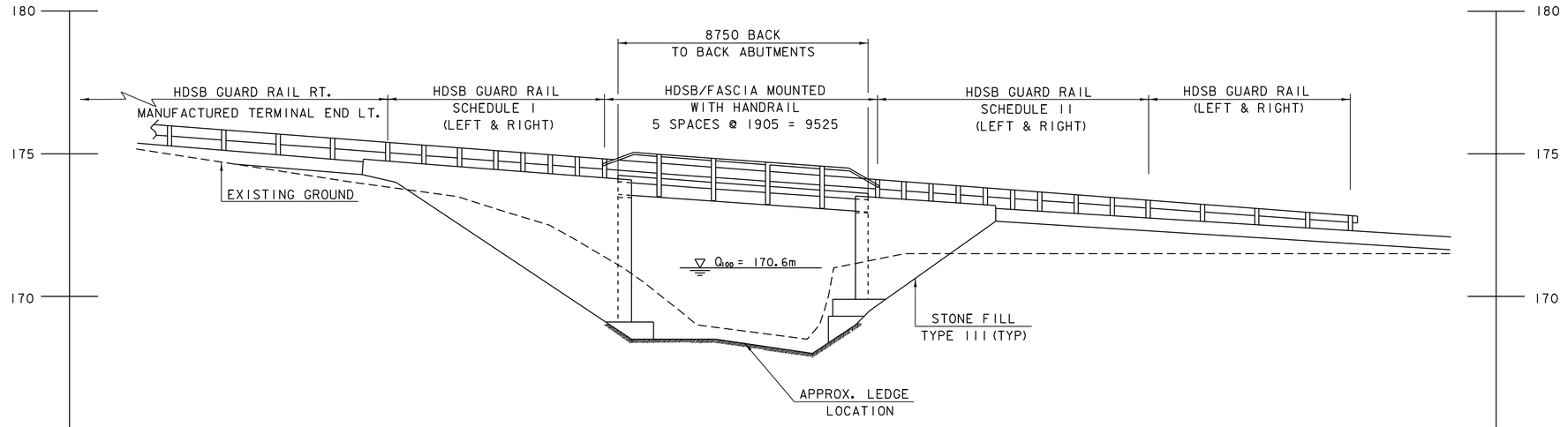
R 9000
R 5000

ROGERS BROOK

TH #1

PLAN ⚠

0 2 4 6 8 10
SCALE 1:100



ELEVATION ⚠

0 2 4 6 8 10
SCALE 1:100

REVISION	DATE	BY	CHK'D	DESCRIPTION
⚠	06/27/2005	GFR	CWC	ABUTMENTS MODIFIED DUE TO UPDATED LEDGE INFORMATION.

SHEET NAME: **PLAN AND ELEVATION**

PROJECT NAME: WESTFORD
PROJECT NUMBER: TH2 9436

HIGHWAY NO.: TH 4
BRIDGE NO.: 2
OVER: ROGERS BROOK

FILE NAME: 94J22\Structures\sj22pe.dgn
PROJECT MANAGER: R. R. WHITCOMB
DESIGNED BY: C. CARLSON
BRIDGE SHEET NUMBER:

PLOT DATE: 22-DEC-2006
DRAWN BY: J.GILMORE
IPARM NAME: sj22pe.i
SHEET 19 OF 56

STATE OF VERMONT
AGENCY OF TRANSPORTATION

EROSION CONTROL NARRATIVE

Metric

PROJECT DESCRIPTION

This project is located on Town Highway 4 near the intersection of Town Highway 1 and Town Highway 4. The purpose of this project is the replacement of the existing concrete slab bridge with a new 8.75 meter concrete slab bridge. The bridge replacement will occur on alignment with minimal roadwork. The road will be closed during construction and traffic will be detoured. No temporary bridge will be utilized.
This project includes the relocation of a mailbox, replacement of the steel beam guardrail, and the construction of six drive approaches and a walkway. Ditch work and several pipes will be installed on the project. Two deciduous trees and two evergreen trees will be planted and the existing underground telephone utility will be relocated aerially by Verizon.
The total disturbed area, excluding waste, borrow and staging areas, is 0.31 hectares.

SITE INVENTORY AND ANALYSIS

OFF SITE DRAINAGE CHARACTERISTICS
Currently, off-site water draining towards the project is limited to the Debuse/Shanley property in the southwest quadrant of the project. Runoff from the other three quadrants of the project either drains away from the project limits or is intercepted by the Rogers Brook prior to entering the project site.

DRAINAGE, WATERWAYS, BODIES OF WATER
The project site includes Rogers Brook, which is characterized as a small, sinuous, semi-alluvial stream. The streambed consists mostly of ledge through the site with some cobbles and boulders. The drainage area is 9.8 square kilometers. There are no state significant wetlands in the project site. There is one small Class III wetland (less than ¼ acre) in the NW quadrant. This wetland is currently part of an active pasture and has a very low functional value.

TOPOGRAPHY, EXISTING ROADS, BUILDINGS, UTILITIES
The terrain is generally hilly and sloping and slopes steeply along the bank of Rogers Brook within the project site. Town Highway 1 and Town Highway 4 are Class II dirt roads. There are three houses and a barn within the project site. The overhead electrical lines and underground telephone utilities are located a long the left side of Town Highway 4.

VEGETATION
The project site contains a mix of agricultural and forested lands. There are several grass lawns and a grass field. There is a scattering of small to medium size hard and softwood trees along the roadways. And there is a denser arrangement of small to medium trees and a tangle of underbrush along the banks of Rogers Brook.

No trees are specifically marked for removal and every reasonable effort should be taken to retain the existing trees. Several deciduous trees are included in the project plans to restore the project site. The impacts to all other vegetation will be limited to that which is necessary for the construction of the new bridge.

SOILS
The soil in the project area is labeled StB, Stetson gravelly fine sandy loam, 5 to 12 percent slopes.

The Stetson series consists of very deep, well drained and somewhat excessively drained soils on outwash plains, terraces, kames, and eskers. These soils formed in glaciofluvial deposits derived mainly from slate, shale and phyllite, with lesser amounts of gneiss, granite and limestone. Slope ranges from 0 to 60 percent. Permeability is moderate or moderately rapid in the solum and rapid or very rapid in the substratum. Well drained and somewhat excessively drained. Many areas are used for hay, pasture, and cultivated crops. Common crops are potatoes, oats, and silage corn. Remaining areas are wooded. Common tree species are eastern white pine, white spruce, red spruce, and sugar maple. The shrink-swell potential of the soil is low. Soil erodibility is low. (USDA Soil Conservation Service, 1967)

SENSITIVE RESOURCE AREAS
On the southern approach to the bridge, a historic barn is only three meters from the eastern edge of the roadway, and there are large maple trees in the front yard of a historic house which is within nine meters of the western edge of the roadway.

On the northern approach, along the west side of TH 4, three resource areas have been identified. A historic stone wall, an area that is archaeologically sensitive and a class III wetland have each been indentified and labeled on the project plans.

Rogers Brook is also considered a sensitive resource being a cold water fishery.

Temporary protective fencing will be placed as shown on the Erosion Control Sheets between stations 1+000 and 1+060 LT, stations 1+095 and 1+150 LT, and between station 1+025 RT and sideline station 9-045 RT in order to protect sensitive resource areas from accidental impacts.
No 'Threatened & Endangered Species' or deer wintering areas have been identified within the project limits.

PROXIMITY TO NATURAL OR MAN-MADE WATER FEATURES
The removal of the existing structure and the construction of the proposed structure will take place on the banks and over Rogers Brook.

TEMPORARY EROSION PREVENTION AND SEDIMENT CONTROL

SEEDING AND MULCHING
Mulch should be applied when phasing of earth grading activities dictates that the slopes will be exposed for several days or when a rainfall event is forcast. Seed and mulch should be applied as soon as possible upon reaching final grade. Stockpiles of topsoil and fine grained materials shall be protected from eroding.

PROJECT DEMARCATION FENCE
Project demarcation fencing will be utilized as shown on the plans to limit the area that construction equipment may disturb during construction. Archaeological fencing is also used extensively on this project and acts to serve the same purpose as Project Demarcation Fencing yet at a higher level of visibility.

SURFACE ROUGHENING
The slopes being built up near the bridge approaches between stations 1+075 - 1+130 should be roughened by tracking up and down the slope with a bulldozer or by scarifying with the teeth of the excavator such that small grooves perpendicular to the flow of runoff. This technique should be used daily as the slopes are built until the stone fill is placed.

COFFERDAMS
The contractor has the option of providing a cofferdam at each abutment or piping the water through the abutment areas.

CHECK DAM
Temporary stone check dams shall be used in the ditch along the mainline from stations 1+045 LT. - 1+080 LT. as well as along the sideline from stations 9+005 RT. - 9+025 RT. while the roadwork is in progress. The check dams may be removed once the stone lining of the ditches is accomplished.

SILT FENCE
Silt fencing shall be installed near the downhill limits of construction activity and shall be installed in lines parallel with the contours. Particular areas requiring silt fence on this project are indicated on the plan set. No particular stations are listed as silt fencing may need to be moved or installed in phases to maximize its effectiveness. Additional areas may require protection with the use of silt fencing as the project progresses.
STABILIZED CONSTRUCTION ENTRANCE
Stabilized construction entrances to the project site, staging areas, as well as to waste and borrow areas shall be established. The purpose of a stabilized entrance is to reduce or eliminate the tracking of sediment onto public rights-of-way. See the typical detail on the 'Erosion Prevention & Sediment Control Plan #2' sheet for materials to be used and standard construction techniques.

PERMANENT EROSION CONTROL MEASURES

STONE FILL
Stone fill, Type III, will be placed around Abutments #1 and #2 at STA 1+075 – STA 1+087 LT & RT and STA 1+093 – STA 1+103 LT & RT. This will prevent runoff from eroding the steep banks and will also act as a buffer to prevent Rogers Brook from scouring the soil around the abutments.

STONE LINED DITCHES
Stone lined ditches will be constructed along the sides of the roads to convey concentrated runoff in areas that are too steep for grass lining. They will be constructed from STA 1+044 LT – STA 1+075 LT and STA 1+043 RT – SL STA 9+025 RT.

SEED AND MULCH
Seeding and mulching is one of the most effective means of controlling erosion. Therefore, all exposed surfaces outside of the roadway limits, which are not specified to be covered by stone, will be seeded and mulched.

GENERAL EROSION & SEDIMENT CONTROL GUIDELINES

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

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

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

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

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

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

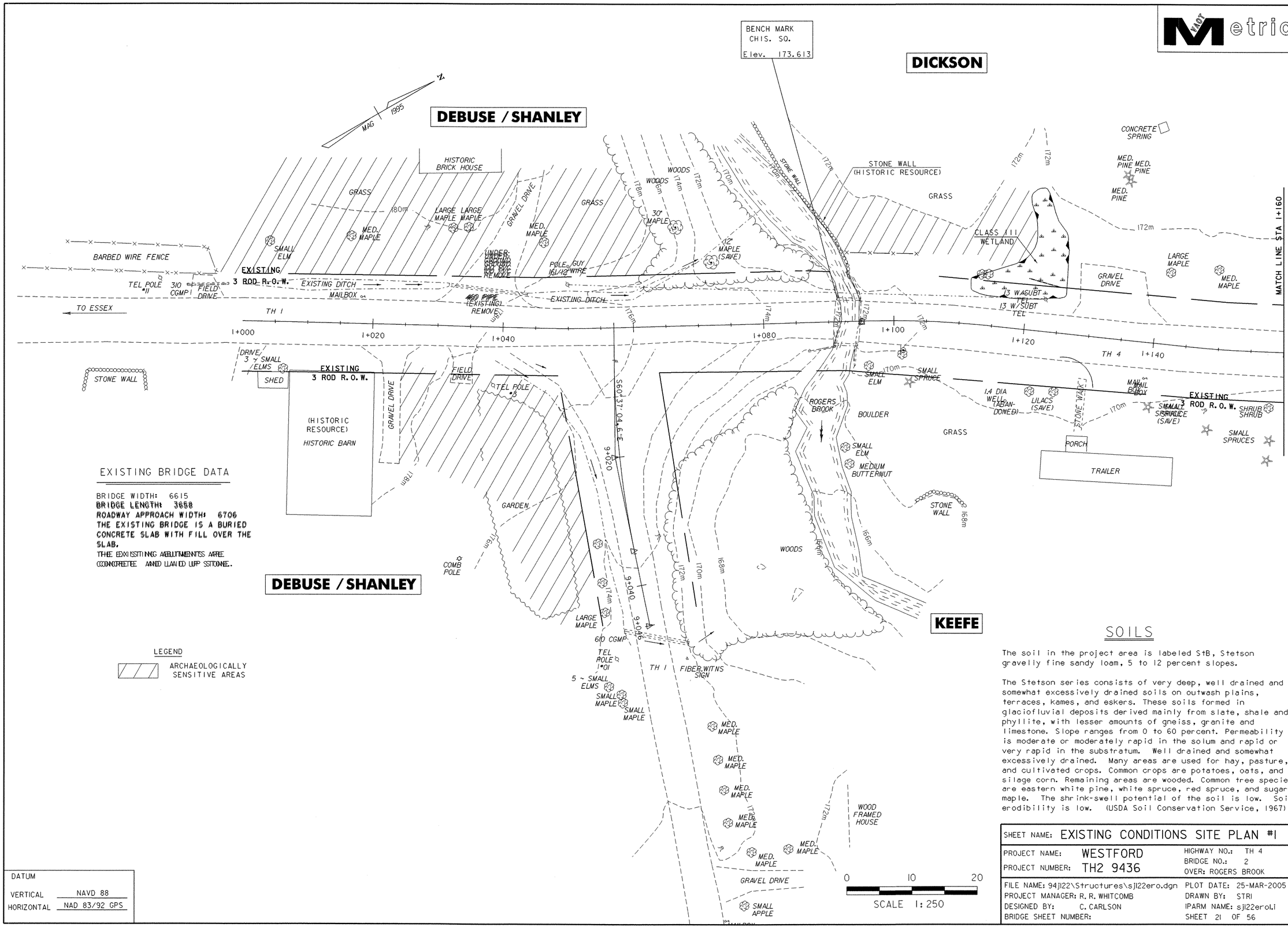
Do not allow construction equipment to operate on the down slope side of perimeter control measures.

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

SHEET NAME: EROSION CONTROL NARRATIVE
PROJECT NAME: WESTFORD
PROJECT NUMBER: TH2 9436
HIGHWAY NO.: TH 4
BRIDGE NO.: 2
OVER: ROGERS BROOK
FILE NAME: 94J22\Structures\sJ22ero.dgn
PROJECT MANAGER: R. R. WHITCOMB
DESIGNED BY: C. CARLSON
BRIDGE SHEET NUMBER:
PLOT DATE: 25-MAR-2005
DRAWN BY: STRI
IPARM NAME: sJ22ero.i
SHEET 20 OF 56

MAOT Metric



EXISTING BRIDGE DATA

BRIDGE WIDTH: 6615
BRIDGE LENGTH: 3658
ROADWAY APPROACH WIDTH: 6706
THE EXISTING BRIDGE IS A BURIED CONCRETE SLAB WITH FILL OVER THE SLAB.
THE EXISSTITNG AEBUTMENTSS ARE CCONCRETEE AAND LLAIDD UPP SSTONE.

LEGEND

ARCHAEOLOGICALLY SENSITIVE AREAS

DATUM

VERTICAL NAVD 88
HORIZONTAL NAD 83/92 GPS

SOILS

The soil in the project area is labeled StB, Stetson gravelly fine sandy loam, 5 to 12 percent slopes.

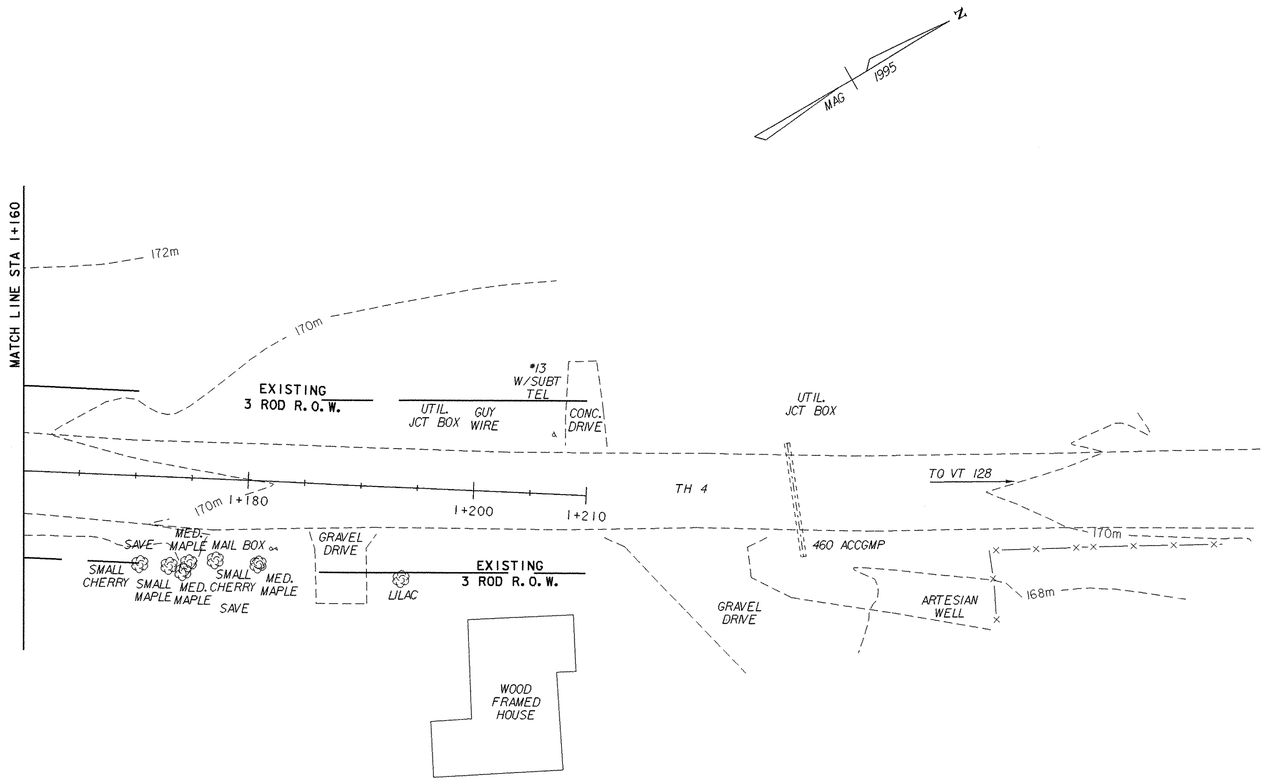
The Stetson series consists of very deep, well drained and somewhat excessively drained soils on outwash plains, terraces, kames, and eskers. These soils formed in glaciofluvial deposits derived mainly from slate, shale and phyllite, with lesser amounts of gneiss, granite and limestone. Slope ranges from 0 to 60 percent. Permeability is moderate or moderately rapid in the solum and rapid or very rapid in the substratum. Well drained and somewhat excessively drained. Many areas are used for hay, pasture, and cultivated crops. Common crops are potatoes, oats, and silage corn. Remaining areas are wooded. Common tree species are eastern white pine, white spruce, red spruce, and sugar maple. The shrink-swell potential of the soil is low. Soil erodibility is low. (USDA Soil Conservation Service, 1967)

SHEET NAME: EXISTING CONDITIONS SITE PLAN #1

PROJECT NAME: WESTFORD
PROJECT NUMBER: TH2 9436
HIGHWAY NO.: TH 4
BRIDGE NO.: 2
OVER: ROGERS BROOK

FILE NAME: 94J22\Structures\sJI22ero.dgn
PROJECT MANAGER: R. R. WHITCOMB
DESIGNED BY: C. CARLSON
BRIDGE SHEET NUMBER:
PLOT DATE: 25-MAR-2005
DRAWN BY: STRI
IPARM NAME: sJI22ero1.I
SHEET 21 OF 56

VAOT Metric



0 10 20

SCALE 1:250

NOTES

SEE SHEET 21 FOR SOILS INFORMATION

DATUM

VERTICAL NAVD 88

HORIZONTAL NAD 83/92 GPS

SHEET NAME: EXISTING CONDITIONS SITE PLAN #2

PROJECT NAME: WESTFORD

PROJECT NUMBER: TH2 9436

HIGHWAY NO.: TH 4

BRIDGE NO.: 2

OVER: ROGERS BROOK

FILE NAME: 94j122\Structures\sj122ero.dgn

PROJECT MANAGER: R. R. WHITCOMB

DESIGNED BY: C. CARLSON

BRIDGE SHEET NUMBER:

PLOT DATE: 25-MAR-2005

DRAWN BY: STRI

IPARM NAME: sj122ero2.i

SHEET 22 OF 56

EROSION AND SEDIMENT CONTROL INDEX	
NO.	DESCRIPTION
1	INSTALL ARCH. FENCE ALONG ARCHEOLOGICALLY SENSITIVE AREA
2	INSTALL SILT FENCE AT DOWNSLOPE SIDE OF DISTURBANCE LIMITS
3	ENDS OF FENCE TURNED UPHILL TO CREATE PONDING
4	INSTALL ROCK CHECK DAMS IN DITCHES
5	PROJECT LIMIT DEMARCATION FENCE (SNOW FENCE (MOD-PDF))
6	EROSION CONTROL MATTING

NOTE: ALL DISTURBED AREAS WITH SLOPES GREATER THAN 1:3 WILL REQUIRE TEMPORARY EROSION MATTING (SEE EROSION CONTROL DETAILS SHEET)

MAG 1995

MAJOR Metric

BENCH MARK
CHIS. SO.
Elev. 173.613

N61°35'41.2"W

SEDIMENT SETTLING BASIN (USE TYPE I STONE FILL)

BEGIN BRIDGE
STA. 1+086.50
NEW DECIDUOUS TREES

POST STA. 1+100 =
CHAN STA. 5+050
Δ = 90°0'0"

PI STA. 1+105.012 BK =
PI STA. 1+104.984 AH
EQ = -0.028

FENCING FOR ARCHEALOGICALLY SENSITIVE AREA

CONCRETE SPRING

PT
Sta 1+154.731

END PROJECT
BEGIN APPROACH
STA. 1+150

HISTORIC BRICK HOUSE

STONE FILL, TYPE I

PT
STA. 1+053.862
WOODS
BEGIN PROJECT
END APPROACH
STA. 1+055

PC
STA. 1+046.142

STA 1+057=
STA 9+000
Δ=90°0'0"

END BRIDGE
STA. 1+095.25
STONE FILL, TYPE III (TYP)

GRASS

CLASS III WETLAND

PC
STA. 1+145.254

BEGIN APPROACH
STA 1+000

POB
STA 1+000.000

BARBED WIRE FENCE

TEL POLE #11

310 CGMP

FIELD DRIVE

EXISTING 3 ROD R.O.W.

EXISTING DITCH

MAILBOX

UNDER-GROUND 100 PVC

POLE & GUY WIRE 61/12

12" MAPLE (SAVE)

460 PIPE (EXISTING) REMOVE

TO ESSEX

TH 1

N31°21'15.2"E

N28°24'18.8"E

N35°58'04.3"E

TH 4

1+000 1+020 1+040 1+060 1+080 1+100 1+120 1+140

5+060 5+080

MATCH LINE STA 1+160

GRAVEL DRIVE

LARGE MAPLE

MED. MAPLE

SMALL ELM

STONE WALL

DRIVE 3 ~ SMALL ELMS

SHED

EXISTING 3 ROD R.O.W.

HISTORIC BARN

TEL POLE #3

PI STA 1+050.003 BK =
PI STA 1+050.001 AH
EQ = -0.002

PI S STA 9+020.037 BK =
PI S STA 9+019.946 AH
EQ = -0.091

S60°37'04.6"E

9+020

GARDEN

STONE FILL, TYPE I

COMB POLE

S71°41'54.3"E

9+040 9+046

PT
S Sta 9+034.496

S Sta 9+045
End Approach

LARGE MAPLE

6/0 CGMP

TEL POLE #101

5 ~ SMALL ELMS

SMALL MAPLE

SMALL MAPLE

FENCING FOR ARCHEALOGICALLY SENSITIVE AREA

TH 1

FIBER WITNS SIGN

WOODS

RIPARIAN BUFFER

POB
Sta 5+000.000

5+000 5+020

ROGERS BROOK

PC
S Sta 9+005.488

SMALL ELM

MEDIUM BUTTERNUT

BOULDER

SMALL SPRUCE REMOVE

1.4 DIA WELL (ABAN-DONED)

LILACS (SAVE)

PT
STA. 1+114.898

PC
STA. 1+095.099

NEW EVERGREEN TREES

STONE WALL

MAIL BOX

SMALL SPRUCE (SAVE)

EXISTING 3 ROD R.O.W.

SHRUB

SMALL SPRUCES

PORCH

TRAILER

PI STA. 1+149.994 BK =
PI STA. 1+149.991 AH
EQ = -0.003

MED. PINE

MED. PINE

GRAVEL DRIVE

13 WASUBT TEL

MED. MAPLE

PDF

WOOD FRAMED HOUSE

MED. MAPLE

GRAVEL DRIVE

SMALL APPLE

EROSION CONTROL LEGEND

EXISTING BRIDGE DATA

BRIDGE WIDTH: 6615
BRIDGE LENGTH: 3658
ROADWAY APPROACH WIDTH: 6706

THE EXISTING BRIDGE IS A BURIED CONCRETE SLAB WITH FILL OVER THE SLAB. STONE FILL, TYPE I ABUTMENTS ARE CONCRETE AND LAID UP STONE.

ROCK CHECK DAMS

STONE FILL, TYPE III

PDF — PROJECT DEMARCATION FENCE (SNOW FENCE (MOD-PDF))

WET AREA

HAY BALE

EROSION MATTING

NOTES:

1. SILT FENCE INSTALLATION MAY REQUIRE PHASING TO MAXIMIZE EFFECTIVENESS. INSTALL AND/OR MOVE SILT FENCE AS CONSTRUCTION PROGRESSES TO OBTAIN THE GREATEST PREVENTION OF SEDIMENT TRANSPORT. ALL SILT FENCE INSTALLATION SHALL BE PROPERLY KEYED INTO THE GROUND AND SUPPORTED AS DETAILED ON THE 'EROSION CONTROL DETAILS' SHEET. SILT FENCE SHOULD BE INSTALLED ALONG THE CONTOURS TO PREVENT CONCENTRATION OF RUNOFF. THE ENDS OF EACH RUN OF SILT FENCE SHOULD BE TURNED UPHILL TO PROVIDE A SMALL POOL FOR SILT SHOULD WATER TRY TO RUN AROUND THE END OF THE SILT FENCE.

2. TEMPORARY STONE CHECK DAMS SHALL BE KEYED INTO THE GROUND AND CONSTRUCTED AS PER THE 'EROSION CONTROL DETAILS' SHEET. THE PURPOSE OF TEMPORARY CHECK DAMS IS TO REDUCE RUNOFF VELOCITIES THUS PREVENTING EROSION.

3. SURFACE ROUGHENING HELPS REDUCE RUNOFF VELOCITIES AND INCREASES INFILTRATION RATES. ROUGHENING MAY BE ACCOMPLISHED BY A NUMBER OF METHODS SUCH AS TRACKING UP AND DOWN THE SLOPE WITH A BULLDOZER, TRACKING ACROSS THE SLOPE WITH A WHEELED VEHICLE OR ANY METHOD OF SCARIFYING THE SLOPE SUCH THAT THE GROOVES CREATED RUN PERPENDICULAR TO THE DIRECTION OF WATER RUNOFF.

4. SEE SHEET 27 FOR SEEDING FORMULA.

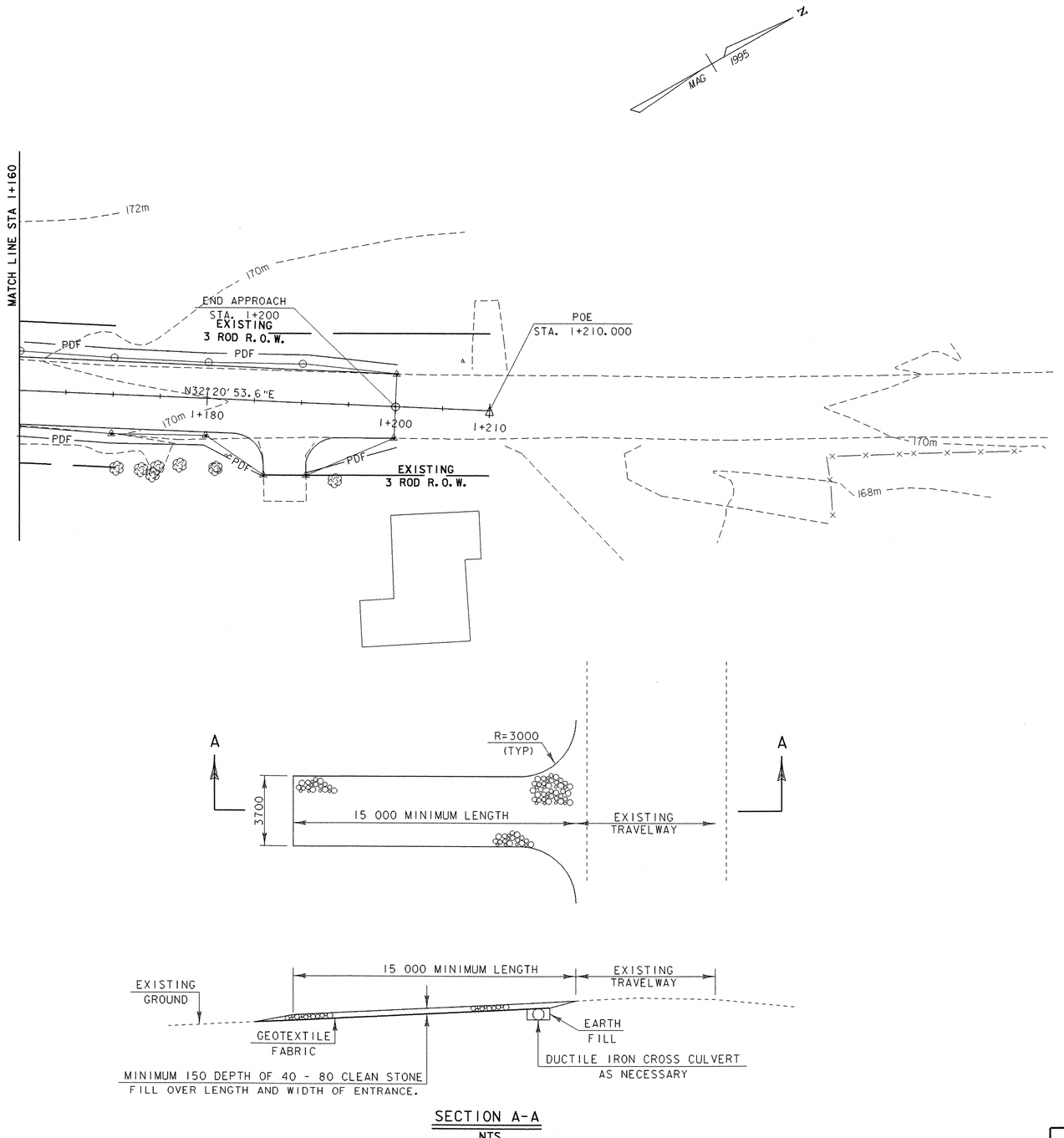
DATUM
VERTICAL NAVD 88
HORIZONTAL NAD 83/92 GPS

0 10 20
SCALE 1:250

SHEET NAME: EROSION PREVENTION & SEDIMENT CONTROL PLAN #1

PROJECT NAME: WESTFORD
PROJECT NUMBER: TH2 9436
HIGHWAY NO.: TH 4
BRIDGE NO.: 2
OVER: ROGERS BROOK

FILE NAME: 94J22\Structures\sj22ero.dgn
PROJECT MANAGER: R. R. WHITCOMB
DESIGNED BY: C. CARLSON
BRIDGE SHEET NUMBER:
PLOT DATE: 25-MAR-2005
DRAWN BY: STRI
IPARM NAME: sj22ero3.i
SHEET 23 OF 56



SECTION A-A
NTS

STABILIZED CONSTRUCTION ENTRANCE

NTS

0 10 20
SCALE 1:250

NOTE:
SEE SHEETS 21 AND 23 FOR NOTES.

DATUM
VERTICAL NAVD 88
HORIZONTAL NAD 83/92 GPS

SHEET NAME: EROSION PREVENTION & SEDIMENT CONTROL PLAN #2

PROJECT NAME: WESTFORD
PROJECT NUMBER: TH2 9436
HIGHWAY NO.: TH 4
BRIDGE NO.: 2
OVER: ROGERS BROOK

FILE NAME: 94j122\Structures\sj122ero.dgn
PROJECT MANAGER: G.S. ROGERS
DESIGNED BY: C. CARLSON
BRIDGE SHEET NUMBER:
PLOT DATE: 25-MAR-2005
DRAWN BY: STRI
IPARM NAME: sj122ero4.i
SHEET 24 OF 56

MTO Metric

DEBUSE / SHANLEY

DICKSON

KEEFE

MAG 1995

BENCH MARK
CHIS. SQ.
Elev. 173.613

N61°35'41.2"W

POST STA. 1+100 =
CHAN STA. 5+050
Δ = 90°0'0"

MATCH LINE STA 1+160

NEW DECIDUOUS TREES

HISTORIC BRICK HOUSE

STONE FILL, TYPE I

STONE FILL, TYPE III (TYP)

STONE WALL

WOODS

CONCRETE SPRING

MED. PINE

CLASS III WETLAND

BARBED WIRE FENCE

SMALL ELM

MED. MAPLE

LARGE LARGE MAPLE MAPLE

GRAVEL DRIVE

30" MAPLE

12" MAPLE (SAVE)

UNDER-GROUND 100 PVC

POLE & GUY WIRE 161/12

EXISTING 3 ROD R.O.W.

EXISTING DITCH

MAILBOX

TEL POLE #11

310 CGMP

FIELD DRIVE

TO ESSEX

TH 1

460 PIPE (EXISTING) REMOVE

3 WASUBT TEL

LARGE MAPLE

MED. MAPLE

1+000 1+020 1+040 1+060 1+080 1+100 1+120 1+140

DRIVE 3 ~ SMALL ELMS

SHED

STONE WALL

EXISTING 3 ROD R.O.W.

FIELD DRIVE

TEL POLE #3

SMALL ELM

SMALL SPRUCE REMOVE

ROGERS BROOK

BOULDER

1.4 DIA WELL (ABAN-DONED)

LILACS (SAVE)

STONE WALK

MAIL BOX

EXISTING 3 ROD R.O.W.

SHRUB

SMALL SPRUCE (SAVE)

SMALL SPRUCES

PORCH

TRAILER

NEW EVERGREEN TREES

HISTORIC BARN

GRAVEL DRIVE

S60°37'04.6"E

PC
℄ Sta 9+005.488

PI S STA 9+020.037 BK =
PI S STA 9+019.946 AH
EQ = -0.091

GARDEN

STONE FILL, TYPE I

PT
℄ Sta 9+034.496

WOODS

COMB POLE

S71°41'54.3"E

℄ Sta 9+045
End Approach

RIPARIAN BUFFER

LARGE MAPLE

6/0 CGMP

TEL POLE #101

5 ~ SMALL ELMS

SMALL MAPLE

SMALL MAPLE

POB
Sta 5+000.000

TH 1

FIBER WITNS SIGN

MED. MAPLE

MED. MAPLE

MED. MAPLE

MED. MAPLE

MED. MAPLE

MED. MAPLE

WOOD FRAMED HOUSE

GRAVEL DRIVE

SMALL APPLE

STONE WALL

RIPARIAN BUFFER

5+080 5+060 5+040 5+020 5+000 9+020 9+040 9+060

EXISTING BRIDGE DATA

BRIDGE WIDTH: 6615
BRIDGE LENGTH: 3658
ROADWAY APPROACH WIDTH: 6706
THE EXISTING BRIDGE IS A BURIED CONCRETE SLAB WITH FILL OVER THE SLAB.
THE EXISTING ABUTMENTS ARE CONCRETE AND LAID UP STONE.

NOTE:
CONTOURS SHOWN INDICATE THE EXISTING SITE.
SEE CROSS SECTION AND CHANNEL SECTION SHEETS FOR GRADE CHANGES.

0 10 20
SCALE 1:250

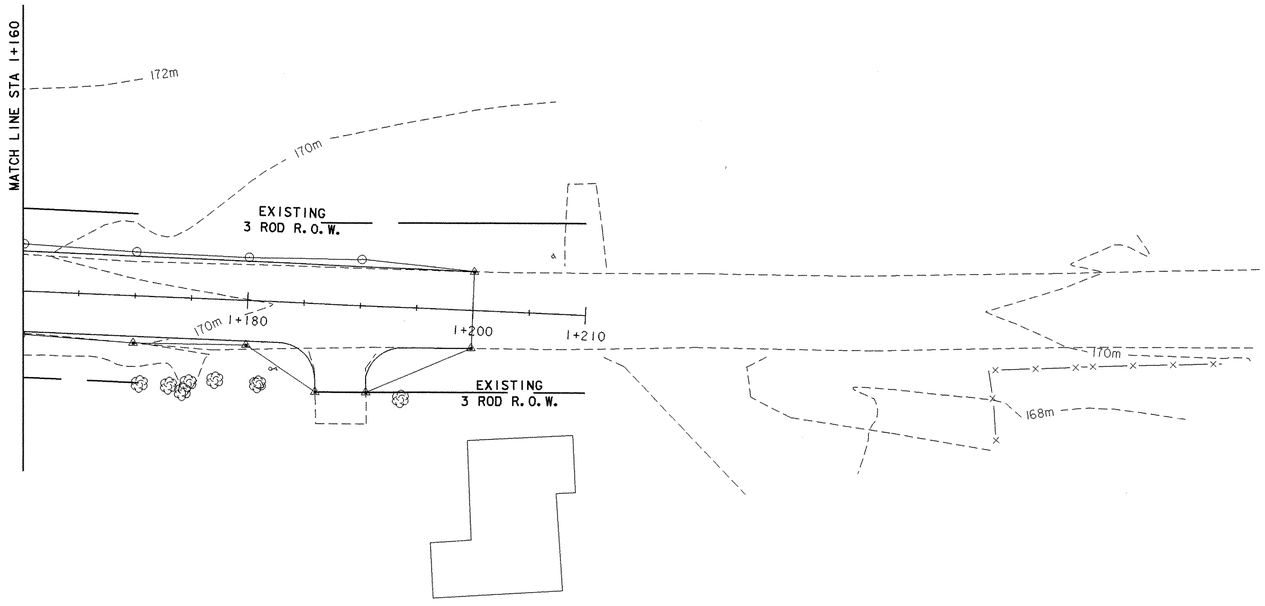
DATUM
VERTICAL NAVD 88
HORIZONTAL NAD 83/92 GPS

SHEET NAME: FINAL CONDITIONS SITE PLAN #1

PROJECT NAME: WESTFORD
PROJECT NUMBER: TH2 9436
HIGHWAY NO.: TH 4
BRIDGE NO.: 2
OVER: ROGERS BROOK

FILE NAME: 94J122\Structures\sJI22ero.dgn
PROJECT MANAGER: R. R. WHITCOMB
DESIGNED BY: C. CARLSON
BRIDGE SHEET NUMBER:
PLOT DATE: 25-MAR-2005
DRAWN BY: STRI
IPARM NAME: sJI22ero5.i
SHEET 25 OF 56

MAG 1995



0 10 20

SCALE 1:250

NOTE:
CONTOURS SHOWN INDICATE THE EXISTING SITE.
SEE CROSS SECTION AND CHANNEL SECTION SHEETS
FOR GRADE CHANGES.

DATUM

VERTICAL NAVD 88

HORIZONTAL NAD 83/92 GPS

SHEET NAME: **FINAL CONDITIONS SITE PLAN #2**

PROJECT NAME: WESTFORD
PROJECT NUMBER: TH2 9436

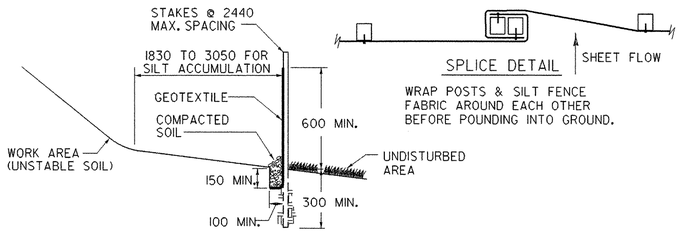
HIGHWAY NO.: TH 4
BRIDGE NO.: 2
OVER: ROGERS BROOK

FILE NAME: 94J122\Structures\sJ122ero.dgn
PROJECT MANAGER: R. R. WHITCOMB
DESIGNED BY: C. CARLSON
BRIDGE SHEET NUMBER:

PLOT DATE: 25-MAR-2005
DRAWN BY: STRI
IPARM NAME: sJ122ero6.i
SHEET 26 OF 56

NOTE: REFER TO LATEST REVISIONS OF THE 'VERMONT HANDBOOK FOR SOIL EROSION AND SEDIMENT CONTROL FOR CONSTRUCTION SITES' FOR ADDITIONAL EROSION CONTROL MEASURES.

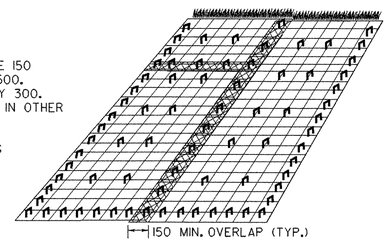
HAY BALES AND SILT FENCE ARE NOT TO BE USED ACROSS AREAS OF CONCENTRATED FLOW.



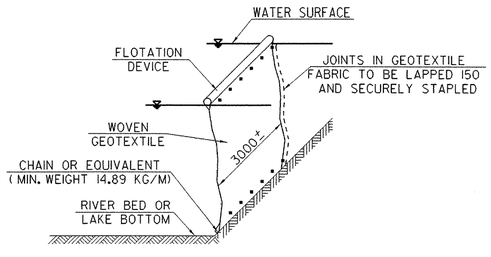
DETAIL "A"
SILT FENCE

NOTES :
1. DO NOT USE SILT FENCE IN STREAMS, DRAINAGE DITCHES, OR AREAS OF CONCENTRATED FLOW.
2. BACK WITH STAKED-IN-PLACE HAY BALES OR WIRE FENCE IF ADDITIONAL SUPPORT IS NEEDED.
3. MUST BE REMOVED WHEN SOIL IS STABILIZED.

NOTES:
1. ALL FABRIC OVERLAPS SHALL BE 150 MINIMUM WITH STAPLES EVERY 500.
2. STAPLE EDGES OF FABRIC EVERY 300.
3. USE 1000 MAX. STAPLE SPACING IN OTHER AREAS.
4. SEE "EROSION MATTING FOR DITCHES" DETAIL FOR ANCHORING AT TOPS OF SLOPES.

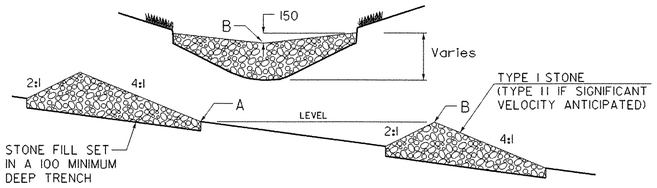


DETAIL "C"
EROSION MATTING FOR SLOPES STEEPER THAN 1:3



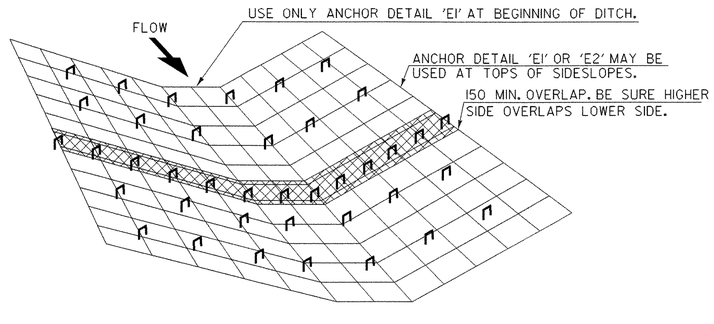
DETAIL "F"
FILTER CURTAIN

1. NOT TO BE USED ACROSS THE FLOW OF WATER
2. HEIGHT SHOULD BE SUFFICIENT TO ALLOW FOR VARIATIONS IN THE BOTTOM AND RISING WATER
3. ANCHOR FIRMLY IN PLACE AS NEEDED
4. INSTALL PRIOR TO EARTH DISTURBING ACTIVITIES AND/ OR INSTALLATION OF COFFERDAM WHERE APPLICABLE
5. LEAVE IN PLACE UNTIL UP-SLOPE AREAS ARE STABLE AND COFFERDAM IS REMOVED
6. USE CARE DURING REMOVAL TO PREVENT THE RELEASE OF CAPTURED SEDIMENT AS MUCH AS POSSIBLE



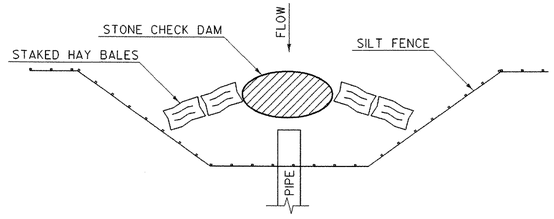
DETAIL "B"
TEMPORARY STONE CHECK DAM

NOTES :
1. CHECK DAMS TO BE USED DURING ESTABLISHMENT OF GRASS LINED DRAINAGE DITCHES
2. LOCATE DOWNSTREAM STRUCTURE SUCH THAT POINT "B" IS APPROXIMATELY LEVEL WITH THE LOWEST GROUND ELEVATION "A" OF THE UPSTREAM STRUCTURE.

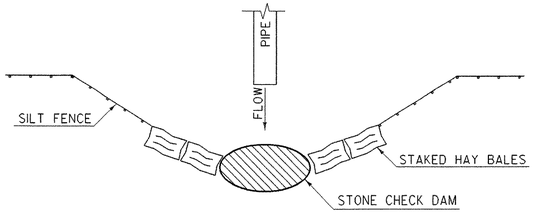


DETAIL "D"
EROSION MATTING FOR DITCHES

1. TO BE USED WHERE SLOPE OF DITCHLINE RANGES FROM 1% - 2.5%, SLOPES EXCEEDING 2.5% SHALL BE LINED WITH STONE FILL, TYPE I.
2. OVERLAPS SHALL BE 150 MINIMUM IN THE DIRECTION OF FLOW AND STAPLED EVERY 500 MIN. THROUGH BOTH FABRICS.
3. USE 1000 MAX STAPLE SPACING IN OTHER AREAS.



DETAIL "G"
EXISTING PIPE INLET CONTROL



DETAIL "H"
EXISTING PIPE OUTLET CONTROL

SEEDING FORMULA
RURAL AREAS

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

GENERAL NOTES

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

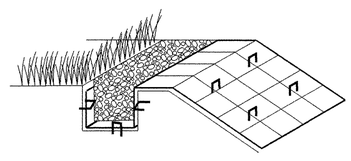
SEED: TO BE APPLIED PER SEEDING FORMULAS OR AS DIRECTED BY THE ENGINEER.

FERTILIZER: FORMULA 10-20-10, TO BE USED WITH SEED, APPLIED AT THE RATE OF 560 kg/ha. (HYDRO SEEDERS MAY USE 19-19-19 FORMULA).

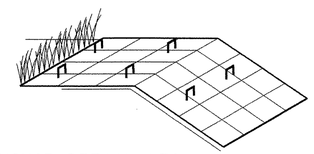
AGRICULTURAL LIMESTONE: TO BE APPLIED AT THE RATE OF 4500 kg/ha, OR AS DIRECTED BY THE ENGINEER.

HAY MULCH: TO BE PLACED ON EARTH SLOPES AT THE RATE OF 4500 kg/ha, OR AS DIRECTED BY THE ENGINEER.

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

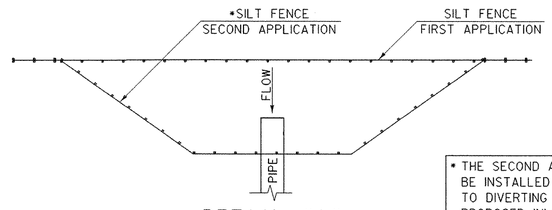


ANCHOR DETAIL 'E1'
INSERT & STAPLE FABRIC INTO 150 X 150 TRENCH PRIOR TO BACKFILLING & COMPACTING SOIL. USE 3 STAPLE PATTERN EVERY 500.



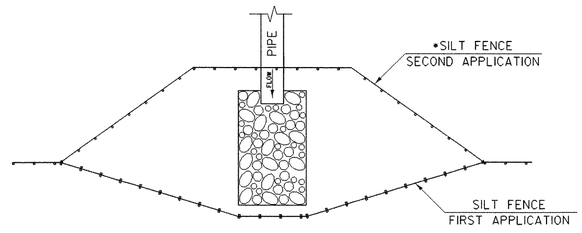
ANCHOR DETAIL 'E2'
IF THE TOP OF SLOPE IS RELATIVELY FLAT EXTEND MATERIAL APPROXIMATELY 600 AND STAPLE EVERY 500 MINIMUM.

DETAIL "E"
ANCHOR DETAILS FOR EROSION MATTING



DETAIL "I"
PROPOSED PIPE INLET CONTROL

* THE SECOND APPLICATION OF SILT FENCE IS TO BE INSTALLED (REMOVE FIRST APPLICATION) PRIOR TO DIVERTING FLOW INTO NEW PIPE FOR BOTH PROPOSED INLET AND OUTLET CONTROLS



DETAIL "J"
PROPOSED PIPE OUTLET CONTROL

NOTE:
DETAILS NOT TO SCALE
METRIC UNITS USED

SHEET NAME:	EROSION CONTROL DETAILS		
PROJECT NAME:	WESTFORD	HIGHWAY NO.:	TH 4
PROJECT NUMBER:	TH2 9436	BRIDGE NO.:	2
		OVER:	ROGERS BROOK
FILE NAME: 94J122\Structures\sj122ero.dgn		PLOT DATE:	25-MAR-2005
PROJECT MANAGER: R. R. WHITCOMB		DRAWN BY:	STRI
DESIGNED BY:	C. CARLSON	IPARM NAME:	sj122ero7.1
BRIDGE SHEET NUMBER:		SHEET	27 OF 56

STATE OF VERMONT
AGENCY OF TRANSPORTATION

DRAINAGE DETAIL SHEET

Metric

STATION km + m	STATION km + m	POS.	ASKEW no. deg.	INLET/OUTLET TYPE INLET	INLET/OUTLET TYPE OUTLET	DITCH IN	DITCH OUT	PIPE ARCH SPAN mm	PIPE ARCH RISE mm	PIPE ARCH L m	PIPE D mm	PIPE L m	ALLOWABLE OPTIONS PCCSP mm	ALLOWABLE OPTIONS CAAP mm	ALLOWABLE OPTIONS CPEP mm	PIPE ELBOW no. deg.	ES ea	CB ea	PROJECT	DEPTH DI mm	CONC CLASS B m^3	REINF STEEL kg	DI GRATE type	CHAN ELEV ea	DRY RUBBLE MASONRY m^3	TRENCH EXCAVATION EARTH m^3	TRENCH EXCAVATION ROCK m^3	COMM EXC m^3	UNC CHAN EXC m^2	STRUCT EXCAV m^3	GRAN BKFILL STRUCT m^3	GRAN BORR m^3	EROS MATT m^2	STONE FILL m^3	STONE FILL type	MARKER POSTS LT ea	MARKER POSTS RT ea	REMARKS
1+030.000	1+043.865	LT/LT		Headwall	Headwall						450	14	X	X	X									5	23.780				10	21.235							DRY RUBBLE MASONRY HEADWALL AT INLET AND OUTLET
1+031.630	1+043.605	LT/LT																							4.22											REMOVE EXISTING 460 PIPE
SUB-TOTAL												14	14	14	14									5	28.00				10	21.235						
ROUNDING												0	0	0	0									0	2				0	8.765						
TOTAL												14 m	14 m	14 m	14 m									5 m^3	30 m^3				10 m^3	30 m^3						

PROJECT NAME:	WESTFORD
PROJECT NUMBER:	TH2 9436
FILE NAME:	\94j122\Structures\sj122dm.xls
PROJECT LEADER:	R. R. WHITCOMB
DESIGNED BY:	C. CARLSON
DRAINAGE DETAIL SHEET	
PLOT DATE:	02/24/2005
DRAWN BY:	J. GILMORE
CHECKED BY:	C. CARLSON
SHEET	28 OF 56

STATE OF VERMONT
AGENCY OF TRANSPORTATION

GENERAL NOTES

1. ALL MATERIALS AND CONSTRUCTION SHALL CONFORM TO THE AGENCY OF TRANSPORTATION'S STANDARD SPECIFICATIONS FOR CONSTRUCTION, DATED 2001, AND ITS LATEST REVISIONS, AND THE AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES, SEVENTEENTH EDITION, AND ITS LATEST REVISIONS.

2. BRIDGE IS DESIGHED FOR MS 22.5 LIVE LOAD WITH FUTURE ALLOWANCE OF 150 mm GRAVEL.

3. IN-STREAM CONSTRUCTION SHALL BE RESTRICTED TO JUNE 1 TO OCTOBER 1, UNLESS THE CONTRACTOR OBTAINS WRITTEN PERMISSION FROM THE AGENCY OF NATURAL RESOURCES TO DO WORK OUTSIDE OF THAT TIME FACTOR.

4. THE CONTRACTOR SHALL TAKE ALL PRECAUTIONS NECESSARY TO PREVENT SILTATION OR POLLUTION, ESPECIALLY THE DISCHARGE OF RAW CONCRETE, INTO ANY BROOK, STREAM OR RIVER.

5. THE CONTRACTOR SHALL NOT REMOVE ANY MORE TREES OR BRUSH THAN IS ABSOLUTELY NECESSARY FOR SATISFACTORY CONSTRUCTION OF THE PROJECT. THE NECESSITY FOR REMOVAL SHALL BE DETERMINED BY THE RESIDENT ENGINEER. ANY TREES REMOVED ON THE KEEFE PROPERTY SHALL REMAIN THE PROPERTY OF THE KEEFE'S. THE TREES SHALL BE CUT AND THE WOOD STACKED AT A LOCATION ON THE KEEFE'S PROPERTY TO BE DETERMINED BY THE RESIDENT ENGINEER AND THE KEEFE'S. THIS WORK SHALL BE INCIDENTAL TO THE ITEM "CLEARING AND GRUBBING (INCL. IND. TREES & STUMPS).

6. A) THE EXISTING WINGWALLS AND ABUTMENTS AT ABUTMENT NO. 1 & 2 SHALL BE REMOVED UNDER THE ITEMS, "COFFERDAM EXCAVATION, EARTH" AND "COFFERDAM EXCAVATION, ROCK". ANY PORTIONS OF THE EXISTING WINGWALLS/ABUTMENT THAT FALLS OUTSIDE OF THOSE LIMITS SHALL BE REMOVED TO 300 mm BELOW THE FINISHED CHANNEL GRADE OR TO LEDGE AND PAID FOR UNDER THE ITEM "UNCLASSIFIED CHANNEL EXCAVATION".

   B) THE CONTRACTOR SHALL USE EXTREME CARE WHEN WORKING NEAR THE LAID UP STONE WALL NEAR WINGWALL NO. 3 THAT FALL OUTSIDE THE CONSTRUCTION LIMITS. ANY DAMAGE TO THE WALL WILL BE REPAIRED AT THE CONTRACTOR'S EXPENSE.

7. ITEM, 529.20, "PARTIAL REMOVAL OF STRUCTURE" WILL INCLUDE THE REMOVAL OF THE EXISTING SUPERSTRUCTURE AND CURB/RAIL DOWN TO THE EXISTING BRIDGE SEAT ELEVATIONS.

8. ALL DIMENSIONS ARE HORIZONTAL OR VERTICAL AND ARE GIVEN AT 20 DEGREES C UNLESS OTHERWISE NOTED.

9. SPLICE DETAILS FOR THE HANDRAIL ARE ON SHEET 31 OF THE PLANS.

10. TEMPORARY FENCING SHALL BE PLACED BETWEEN STATIONS 1+000 LT - 1+060 RT, STATIONS 1+093 LT - 1+126LT AND STATIONS 1+025 RT - SIDELINE STA 9+045 RT TO RESTRICT ACCESS TO TWO AREAS THAT ARE ARCHAEOLOGICALLY SENSITIVE. THIS WORK WILL BE PAID FOR AS ITEM 620.70, "SNOW FENCE" (MOD. - ARCH).

11. THE EXISTING STONE WALKWAY LOCATED AT STA. 1 + 129.6 RT SHALL BE REMOVED. A NEW WALKWAY WILL BE INSTALLED AT THE SAME LOCATION AND AS DIRECTED BY THE ENGINEER. THIS WORK WILL BE PAID FOR UNDER ITEM 618.10, "PORTLAND CEMENT CONCRETE SIDEWALK 125 mm (MOD.). SEE SHEET 48 FOR ADDITIONAL DETAILS.

12. A) THERE WILL BE 2 - (50 - 75 mm CALIPER) SUGAR MAPLE TREES PLANTED AT APPROXIMATELY STATIONS 1+067.3 LT AND 1+079.5 LT. THE EXACT LOCATIONS SHALL BE DETERMINED BY THE RESIDENT ENGINEER AND THE PROPERTY OWNER. THE APPROXIMATE LOCATIONS OF THESE TREES ARE SHOWN ON SHEET 8. THE TREES WILL BE PAID FOR UNDER THE ITEM 656.30, "DECIDUOUS TREES (SUGAR MAPLE ACER SACCHARUM, B&B, 50 - 75 mm CAL.)".

    B) THERE WILL BE 2 - (1.5 - 2.0 M) WHITE SPRUCE TREES PLANTED AT APPROXIMATELY STATIONS 1+113 RT AND 1+107 RT. THE EXACT LOCATIONS SHALL BE DETERMINED BY THE RESIDENT ENGINEER AND THE PROPERTY OWNER. THE APPROXIMATE LOCATIONS OF THESE TREES ARE SHOWN ON SHEET 8. THE TREES WILL BE PAID FOR UNDER THE ITEM THE ITEM 656.20, "EVERGREEN TREES (WHITE SPRUCE, PICEA GLAUCA, B&B, 1.5 - 2.0 M)".

CONCRETE

13. THE HEIGHT OF FILL BEHIND ABUTMENTS WILL BE LIMITED TO THE BRIDGE SEAT ELEVATION UNTIL THE DECK HAS BEEN POURED AND THE CURING PERIOD IS UP.

14. THE KEY IN CONCRETE CONSTRUCTION JOINTS SHALL BE MONOLITHIC AND CONTINUOUS FOR THE FULL LENGTH OF THE JOINT, ANY UPWARD KEY SHALL BE PLACED INTEGRALLY WITH THE CONCRETE BELOW THE JOINT.

15. ALL EXPOSED EDGES OF CONCRETE SHALL BE CHAMFERED 25 mm BY 25 mm.

16. JOINTS AND SCORE MARKS IN CONCRETE SHALL BE CONSTRUCTED AS INDICATED ON THE PLANS OR AS DIRECTED BY THE ENGINEER.

17. ALL REINFORCING STEEL SHALL BE DETAILED AND FABRICATED USING PROCEDURES AND TOLERANCES IN ACCORDANCE WITH APPLICABLE PUBLICATIONS OF THE CONCRETE REINFORCING STEEL INSTITUTE (CRSI).

18. REINFORCING PLACEMENT TOLERANCES SHALL BE:
    SPACING +/- 25 mm
    CLEARANCE +/- 5 mm

19. MINIMUM COVER FOR REINFORCING STEEL SHALL BE 50 mm ALONG THE BACK FACES OF WALLS AGAINST EARTH AND ALONG THE BOTTOM SURFACE OF THE DECK AND 80 mm ELSEWHERE, UNLESS OTHERWISE NOTED.

20. WATER REPELLENT (MOD-SILANE) SHALL BE APPLIED TO ALL EXPOSED CONCRETE SURFACES EXCEPT THE UNDERSIDE OF THE DECK BETWEEN THE DRIP BEADS.

21. THE CONCRETE SLAB AND SUBSTRUCTURE CONCRETE SHALL BE HIGH PERFORMANCE CONCRETE, CLASS B. THE CONCRETE CURBS SHALL BE HIGH PERFORMANCE CONCRETE, CLASS B (MOD.).

LEDGE

22. FOOTINGS SHALL BE PLACED ON SOUND, CLEAN LEDGE, ALL OVER BREAKAGE BELOW INDICATED BOTTOM OF FOOTING SHALL BE REPLACED WITH "HIGH PERFORMANCE CONCRETE, CLASS B." A MAXIMUM OF 150 mm AVERAGE DEPTH SHALL BE PAID FOR AS "HIGH PERFORMANCE CONCRETE, CLASS B,". ANY ADDITIONAL CONCRETE REQUIRED SHALL BE PLACED AT THE CONTRACTOR'S EXPENSE. THE QUANTITIES SHOWN FOR "HIGH PERFORMANCE CONCRETE, CLASS B" AND "COFFERDAM EXCAVATION, ROCK" INCLUDES THE ADDITIONAL VOLUMES THAT MAY BE INCURRED DUE TO THE OVER BREAKAGE.

23. WHEN SOUND LEDGE IS ENCOUNTERED, PROFILES OF THE LEDGE SHALL BE SUBMITTED TO THE STRUCTURES SECTION TO DETERMINE WHETHER THE FOOTINGS FOR THE ABUTMENTS NEED TO BE ADJUSTED. NO FURTHER WORK SHALL BE DONE ON THE FOOTINGS UNTIL A REPLY IS RECEIVED FROM THE STRUCTURES SECTION.

TEMPORARY DETOUR

24. THE WOODS HOLLOW BRIDGE ROAD (TH 4) SHALL BE CLOSED TO THROUGH TRAFFIC DURING CONSTRUCTION.

25. THE CONTRACTOR SHALL NOTIFY, THE TOWN CLERK OF WESTFORD AT (802) 878-4587 A MINIMUM OF TWO(2) WEEKS PRIOR TO CLOSING THE ROADS.

26. A) THE CONTRACTOR WILL BE RESPONSIBLE FOR INSTALLING AND MAINTAINING THE DETOUR SIGNS FOR THE CLOSURE OF THE BRIDGE. THE DETOUR SIGN PACKAGE IS SHOWN ON SHEETS 14-15. ALL SIGNS MUST BE INSTALLED PRIOR TO CLOSURE OF THE BRIDGE. THIS WORK WILL BE PAID FOR UNDER THE ITEMS 675.20, "TRAFFIC SIGNS, TYPE A (MOD) AND 675.301, "FLANGED CHANNEL SIGN POST (MOD)".

    B) THE INSTALLATION OF THE DETOUR SIGNS AND ANY ADDITIONAL SIGNS NOT INCLUDED IN THE DETOUR PLAN BUT DEEMED NECESSARY BY THE RESIDENT ENGINEER SHALL BE PAID FOR AS ITEMS, 675.20, "TRAFFIC SIGNS, TYPE A (MOD)" AND 675.301, "FLANGED CHANNEL SIGN POST (MOD)."

    C) ALL DETOUR SIGNS AND POSTS SHALL BE REMOVED BY THE CONTRACTOR AT THE END OF THE PROJECT OR AS DIRECTED BY THE ENGINEER. THE SIGNS AND POSTS WILL BECOME THE PROPERTY OF THE CONTRACTOR. THIS WORK WILL BE INCIDENTAL TO ITEMS 675.20, "TRAFFIC SIGNS, TYPE A (MOD)" AND 675.301, "FLANGED CHANNEL SIGN POST (MOD)".

27. IF THE CONTRACTOR HAS TO REMOVE AND RESET DETOUR SIGNS DUE TO INCORRECT PLACEMENT OR SIGHT DISTANCE PROBLEMS AS DEEMED BY THE ENGINEER, THE WORK NECESSARY TO COMPLETE THIS TASK WILL BE INCIDENTAL TO THE ITEM 641.10, "TRAFFIC CONTROL".

28. THE REMOVAL, COVERING AND/OR RESETTING OF EXISTING TRAFFIC SIGNS, AS DEEMED NECESSARY BY THE RESIDENT ENGINEER, WILL BE CONSIDERED INCIDENTAL TO ITEM 641.10, "TRAFFIC CONTROL".

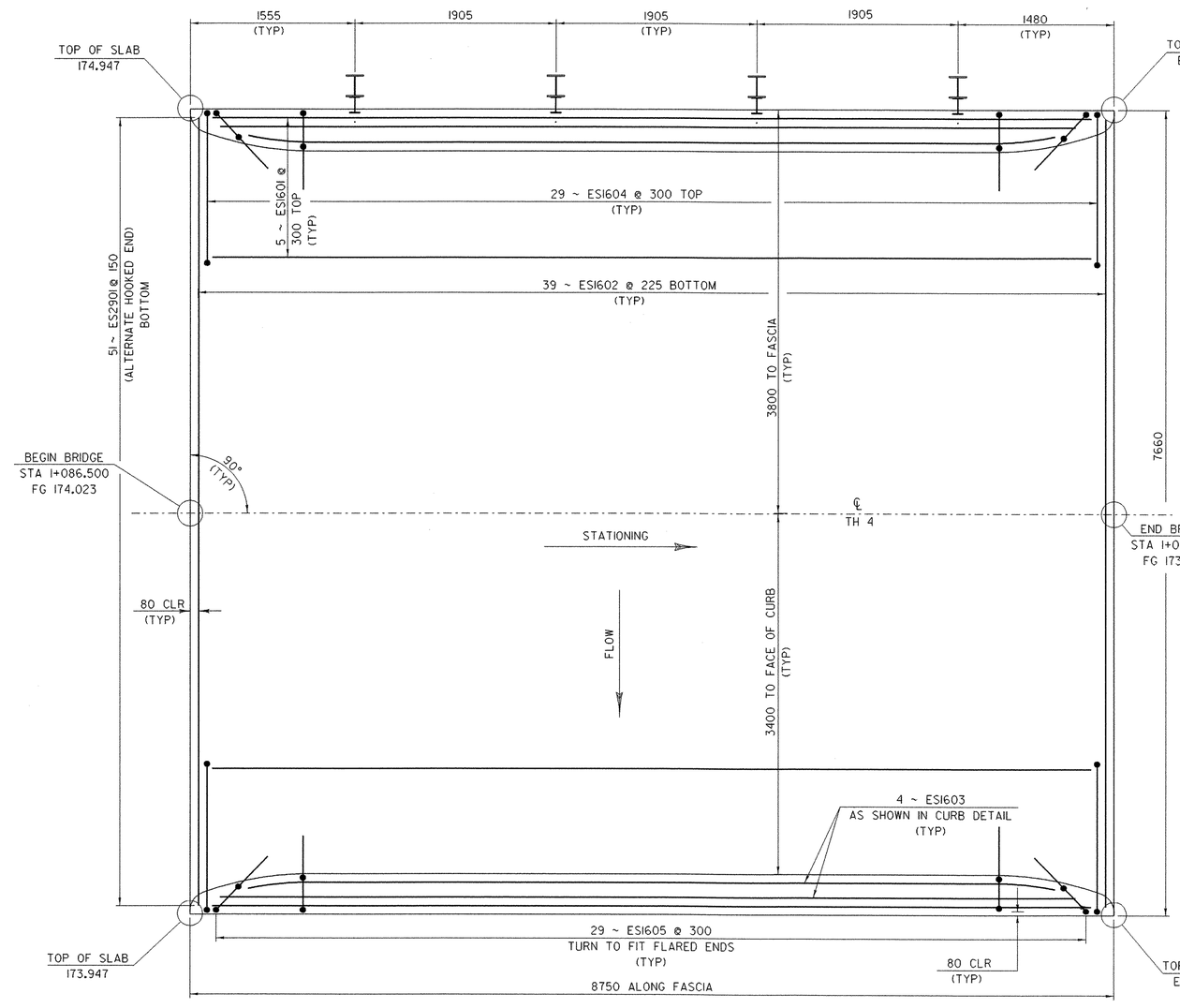
29. THE COST OF ALL ON-PROJECT CONSTRUCTION SIGNING AND BARRICADES SHALL BE INCIDENTAL TO ITEM 641.10, "TRAFFIC CONTROL".

30. ACCESS TO DRIVES SHALL BE MAINTAINED. WHEN THE CONTRACTOR MUST TEMPORARILY RESTRICT ACCESS TO THE DRIVES, THE CONTRACTOR SHALL NOTIFY THE PROPERTY OWNERS IN ADVANCE. THIS WORK WILL BE PAID FOR UNDER THE ITEM 641.10, "TRAFFIC CONTROL".

MISCELLANEOUS

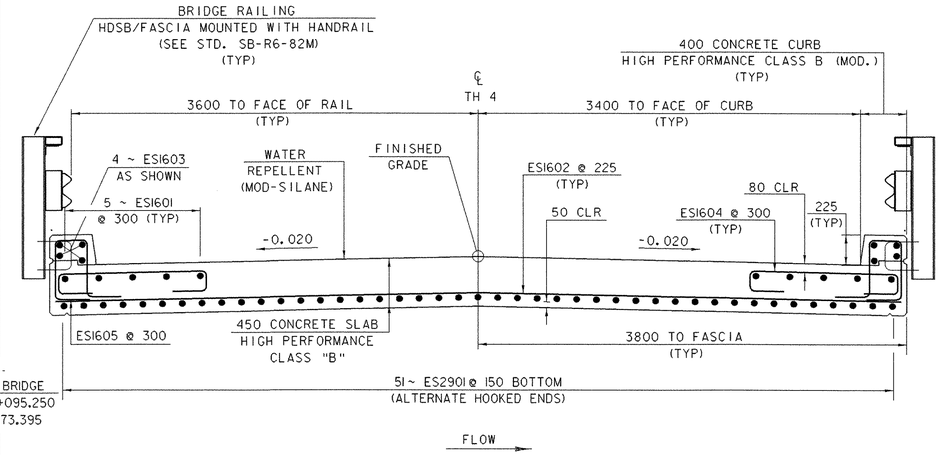
31. EXISTING TRAFFIC SIGNS (MARKED FOR REMOVAL) AND SIGN POSTS (AS SHOWN ON SHEETS 40 AND 41) SHALL BE REMOVED AND STOCKPILED ON THE PROJECT. THEY WILL REMAIN THE PROPERTY OF THE TOWN. THE CONTRACTOR SHALL BE PREPARED TO LOAD THE SIGNS ON TRUCKS FURNISHED AT THE SITE BY THE TOWN FOR REMOVAL FROM THE SITE BY THE TOWN. NOTIFICATION MUST BE GIVEN ONE WEEK IN ADVANCE TO THE TOWN INDICATING WHEN THE MATERIAL WILL BE AVAILABLE. CONTACT GARY ESTUS, ROAD FOREMAN AT (802) 879-4306. THIS WORK WILL BE PAID FOR UNDER THE ITEM 675.50, "REMOVING SIGNS".

PROJECT NAME:	**WESTFORD**		
PROJECT NUMBER:	**TH2 9436**		
FILE NAME:	\94j122Structures\sj122gen.xls	PLOT DATE:	3/23/2005
PROJECT MANAGER:	R. R. WHITCOMB	DRAWN BY:	J. GILMORE
DESIGNED BY:	C. CARLSON	CHECKED BY:	C. CARLSON
GENERAL NOTES SHEET		SHEET	29 OF 56



BRIDGE DECK PLAN

SCALE: 1:25

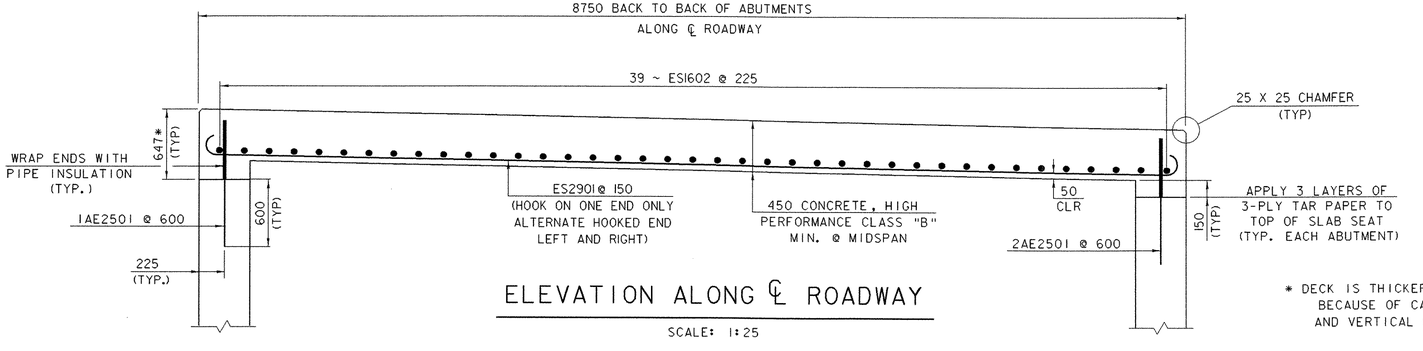


BRIDGE SECTION @ MIDSPAN

SCALE: 1:25

NOTES:

1. THE SLAB SHALL BE CAMBERED A TOTAL OF 41mm AT MIDSPAN. THIS CAMBER SHALL APPROXIMATE A CIRCULAR CURVE.
2. THE CONCRETE DECK SHALL BE BROOM FINISHED NORMAL TO CENTERLINE.
3. THE COST OF THE TAR PAPER AND PIPE INSULATION AND THEIR APPLICATIONS SHALL BE INCIDENTAL TO THE ITEM 501.34 "CONCRETE, HIGH PERFORMANCE CLASS B."
4. ▲ DENOTES CUT TO FIT IN FIELD.
5. THE "E" AND "AE" PREFIX DENOTES EPOXY COATED REINFORCING STEEL.



ELEVATION ALONG ℄ ROADWAY

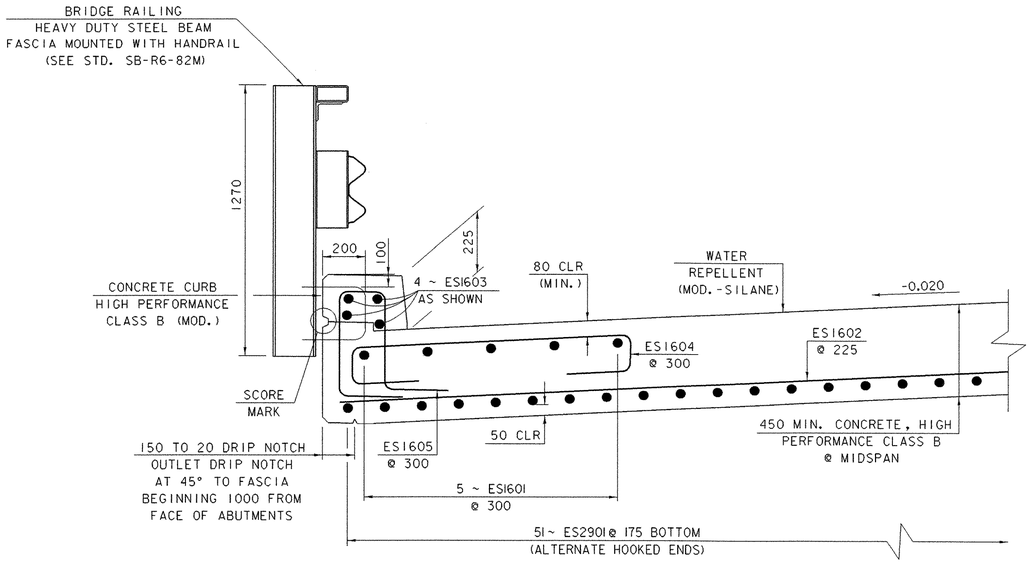
SCALE: 1:25

* DECK IS THICKER AT ENDS BECAUSE OF CAMBER AND VERTICAL CURVE

0 1 2

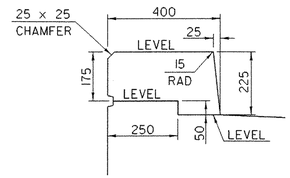
SCALE = 1:25

SHEET NAME:	SLAB DETAILS		
PROJECT NAME:	WESTFORD	HIGHWAY NO.:	TH 4
PROJECT NUMBER:	TH2 9436	BRIDGE NO.:	2
		OVER:	ROGERS BROOK
FILE NAME:	94J122\Structures\sJ122sup.dgn	PLOT DATE:	25-MAR-2005
PROJECT MANAGER:	R. R. WHITCOMB	DRAWN BY:	T. FILLBACH
DESIGNED BY:	T. FILLBACH	IPARM NAME:	sJ122slb.i
BRIDGE SHEET NUMBER:		SHEET	30 OF 56



CURB AND RAIL DETAIL

NOT TO SCALE

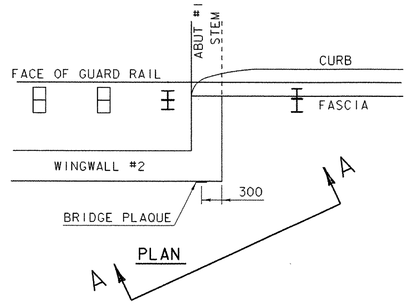


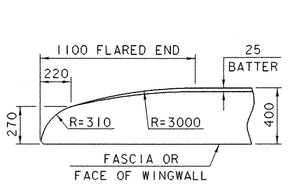
CURB DETAIL

SCALE: 1:20

NOTES

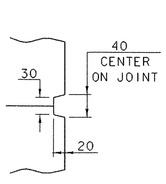
1. THERE WILL NOT BE ANY CONSTRUCTION JOINTS IN THE CURBS.
2. CURB REINFORCING STIRRUP BARS SHALL BE TURNED AS REQUIRED TO FIT TAPERED ENDS.



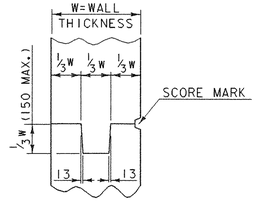


FLARED END FOR 400 CURB

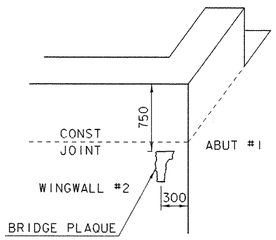
BARS SHALL BE TURNED AS
REQUIRED TO FIT FLARED ENDS



SCORE MARK DETAIL



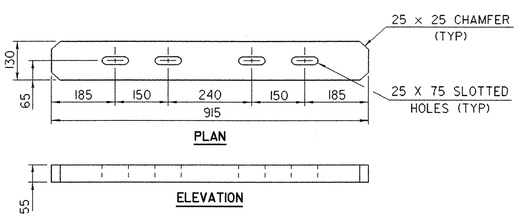
TYPICAL CONCRETE CONSTRUCTION JOINT



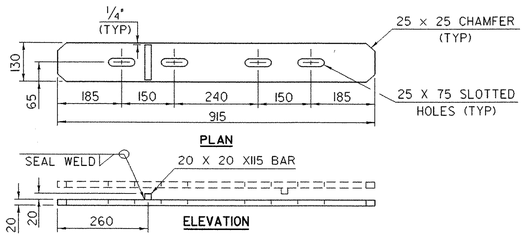
VIEW "A - A"

LOCATE BRIDGE PLAQUE

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



HANDRAIL SPLICE BAR (OPTION "A")



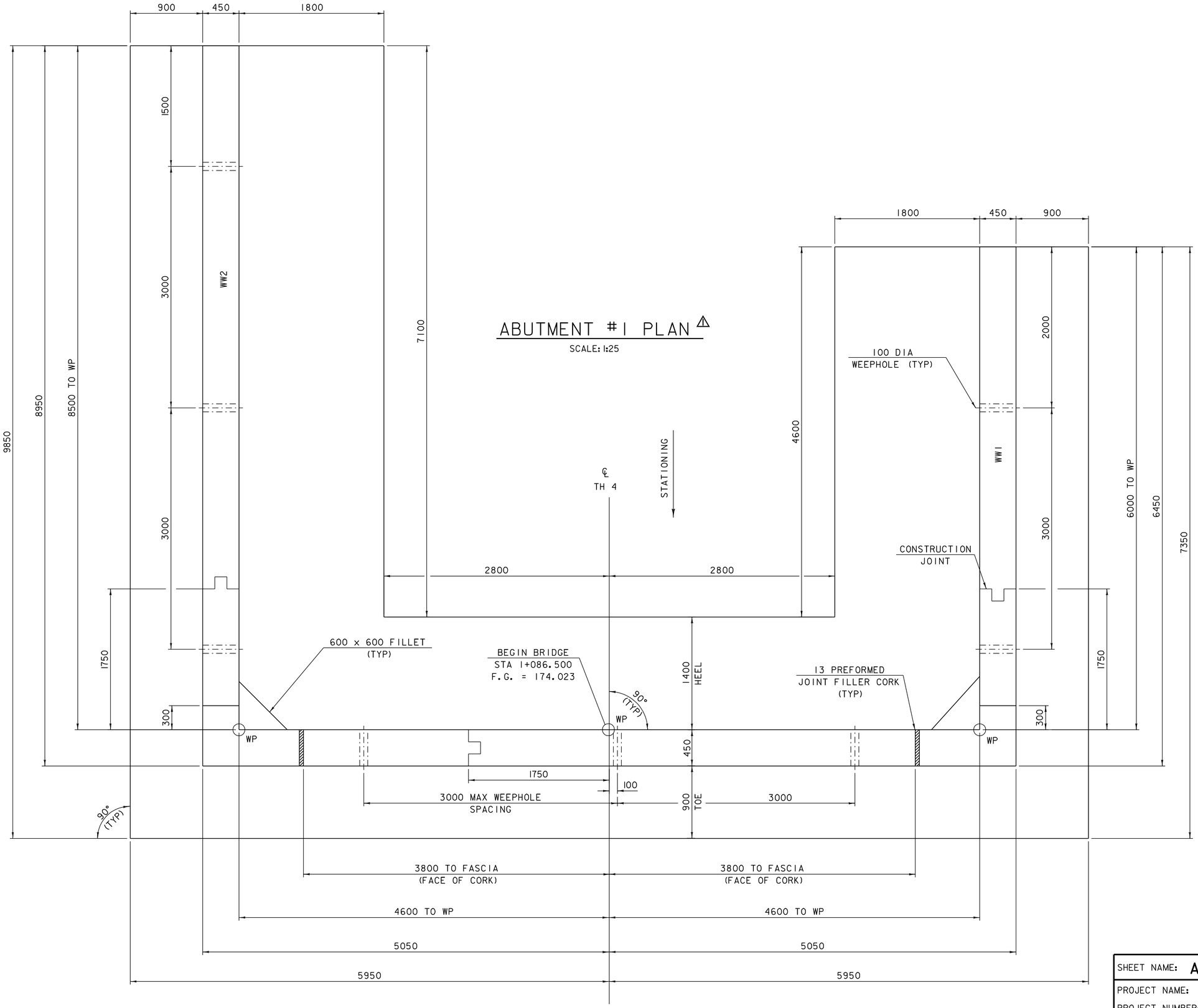
HANDRAIL SPLICE BAR (OPTION "B")

NOT TO SCALE

SHEET NAME: **CURB DETAILS**			
PROJECT NAME:	WESTFORD	HIGHWAY NO.:	TH 4
PROJECT NUMBER:	TH2 9436	BRIDGE NO.:	2
		OVER:	ROGERS BROOK
FILE NAME: 94J122\Structures\sj122sup.dgn		PLOT DATE:	25-MAR-2005
PROJECT MANAGER:	R. R. WHITCOMB	DRAWN BY:	T. FILLBACH
DESIGNED BY:	T. FILLBACH	IPARM NAME:	sJ122sb2.i
BRIDGE SHEET NUMBER:		SHEET	31 OF 56

ABUTMENT #1 PLAN ⚠

SCALE: 1:25



0 1 2

SCALE = 1:25

FLOW

REVISION	DATE	BY	CHK'D	DESCRIPTION
⚠	06/27/2005	GFR	CWC	ABUTMENTS MODIFIED DUE TO UPDATED LEDGE INFORMATION.

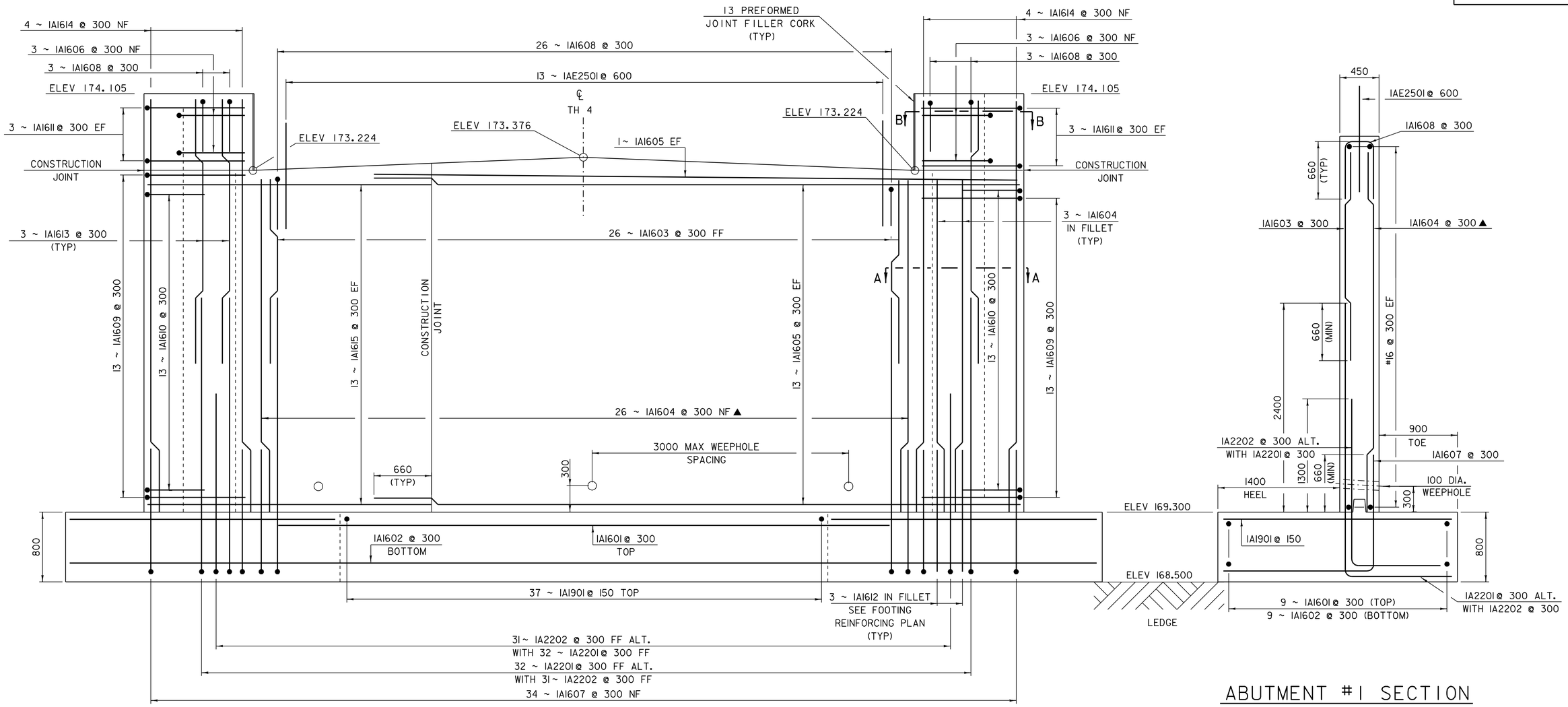
SHEET NAME: ABUTMENT #1 PLAN

PROJECT NAME: WESTFORD
PROJECT NUMBER: TH2 9436

HIGHWAY NO.: TH 4
BRIDGE NO.: 2
OVER: ROGERS BROOK

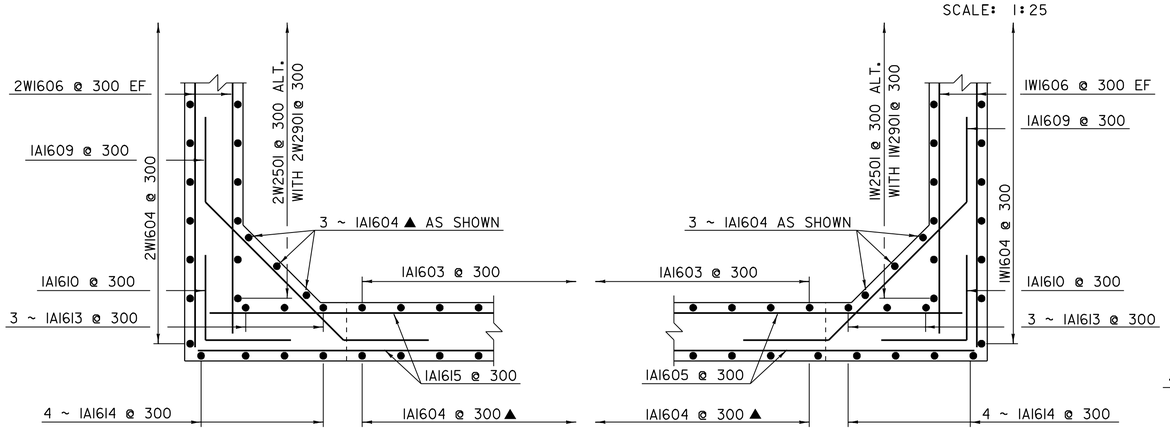
FILE NAME: 94J122\Structures\sJ122sup.dgn
PROJECT MANAGER: R. R. WHITCOMB
DESIGNED BY: T. FILLBACH
BRIDGE SHEET NUMBER:

PLOT DATE: 22-DEC-2006
DRAWN BY: T. FILLBACH
IPARM NAME: sJ122abl.I
SHEET 32 OF 56



ABUTMENT #1 ELEVATION

SCALE: 1:25



CORNER DETAILS BELOW BRIDGE SEAT

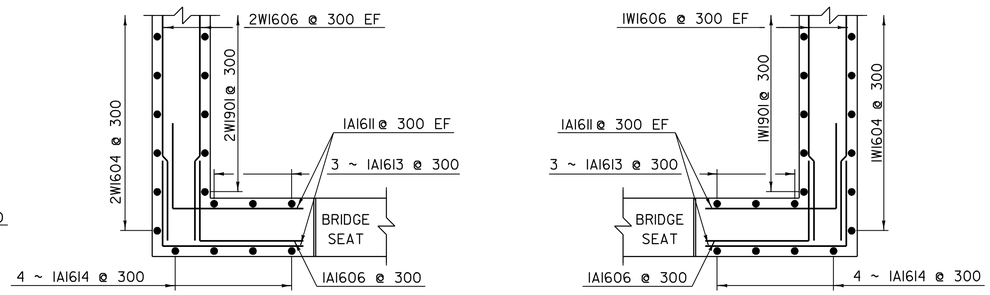
SCALE: 1:25

SECTION A-A

ABUTMENT #1 SECTION

SCALE: 1:25

STIRRUP BARS HAVE BEEN OMITTED FOR CLARITY.



CORNER DETAILS ABOVE BRIDGE SEAT

SCALE: 1:25

SECTION B-B

0 1 2

SCALE = 1:25

NOTES

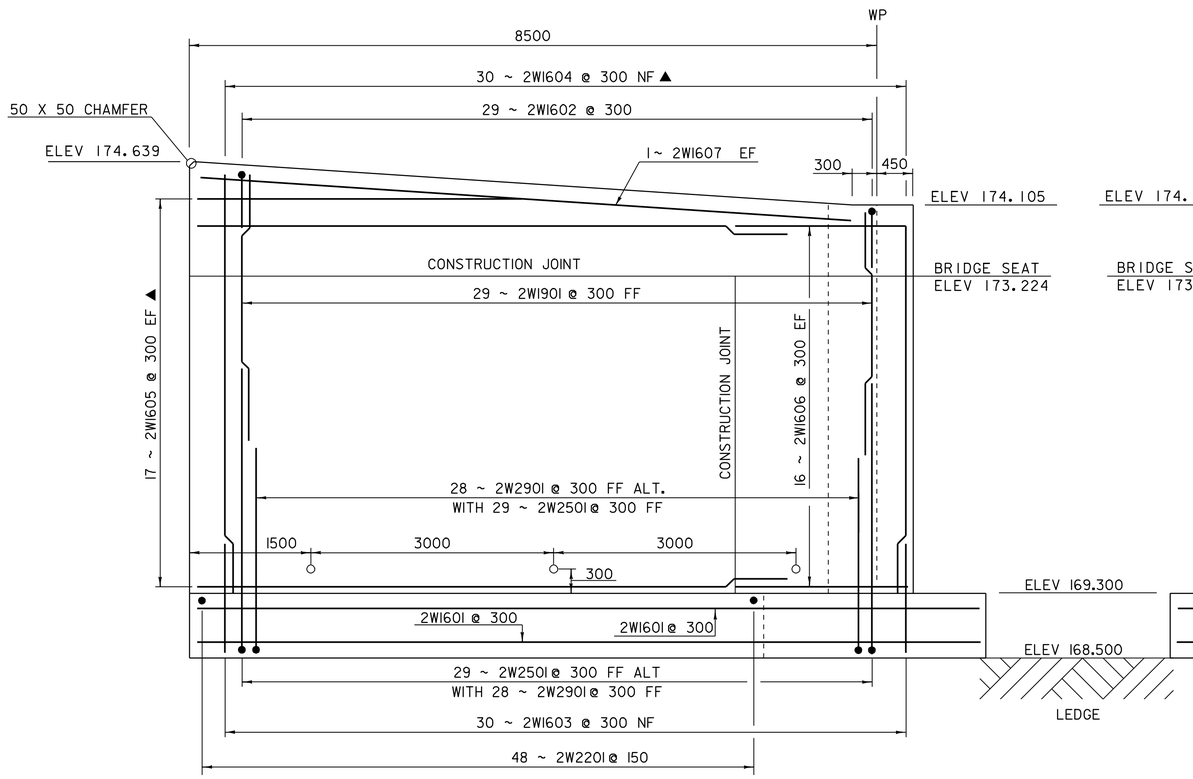
1. NF = NEAR FACE
2. FF = FAR FACE
3. EF = EACH FACE
4. ▲ = CUT TO FIT IN FIELD
5. 80 CLEAR UNLESS OTHERWISE SPECIFIED ON THE PLANS
6. ALL LAPS NOT DETAILED SHALL BE 660 (MIN)
7. 3000 MAX. WEEPHOLE SPACING
8. SEE SHEET 35 FOR FOOTING REINFORCING PLAN.

REVISION	DATE	BY	CHK'D	DESCRIPTION
1	06/27/2005	GFR	CWC	ABUTMENTS MODIFIED DUE TO UPDATED LEDGE INFORMATION.

SHEET NAME: **ABUTMENT #1 ELEVATION**

PROJECT NAME: WESTFORD
PROJECT NUMBER: TH2 9436
HIGHWAY NO.: TH 4
BRIDGE NO.: 2
OVER: ROGERS BROOK

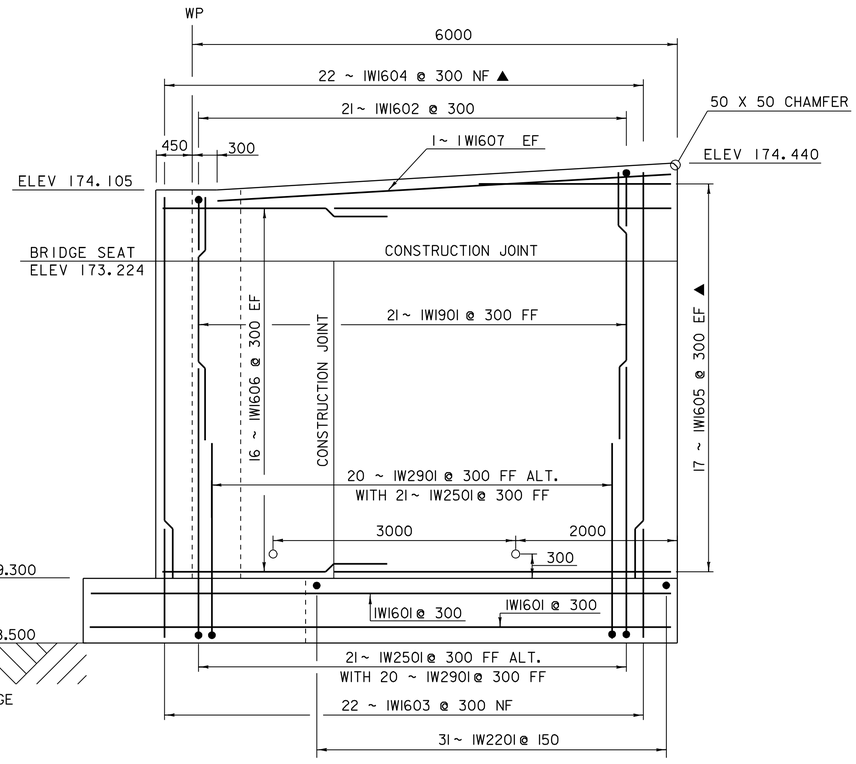
FILE NAME: 94J22\Structures\sJ22sup.dgn
PROJECT MANAGER: R. R. WHITCOMB
DESIGNED BY: T. FILLBACH
BRIDGE SHEET NUMBER:
PLOT DATE: 22-DEC-2006
DRAWN BY: T. FILLBACH
IPARM NAME: sJ22evl.I
SHEET 33 OF 56



WINGWALL #2 ELEVATION

0 1 2 3 4

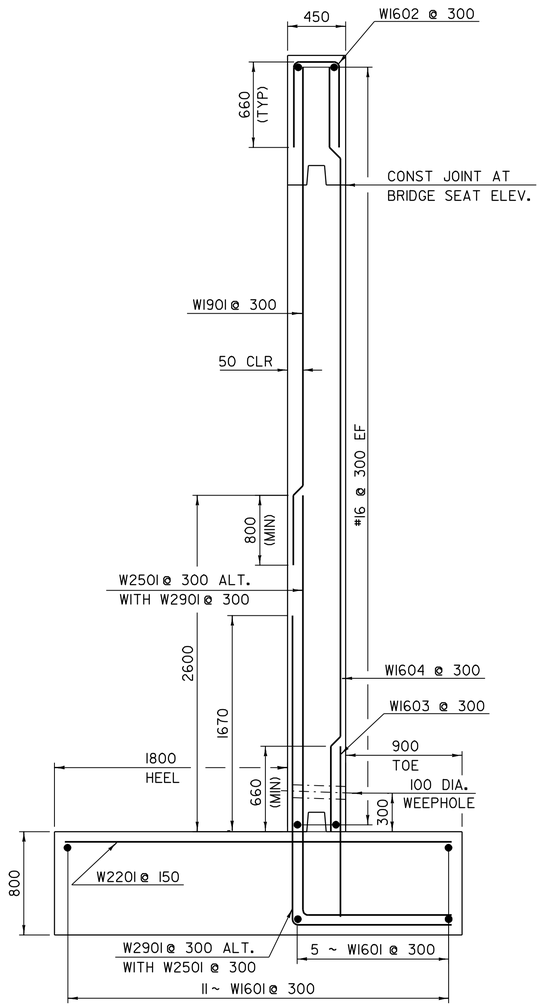
SCALE = 1:40



WINGWALL #1 ELEVATION ⚠

0 1 2 3 4

SCALE = 1:40



WINGWALL TYPICAL SECTION

(WINGWALL #1 AND #2 ARE SIMILAR)

0 1 2

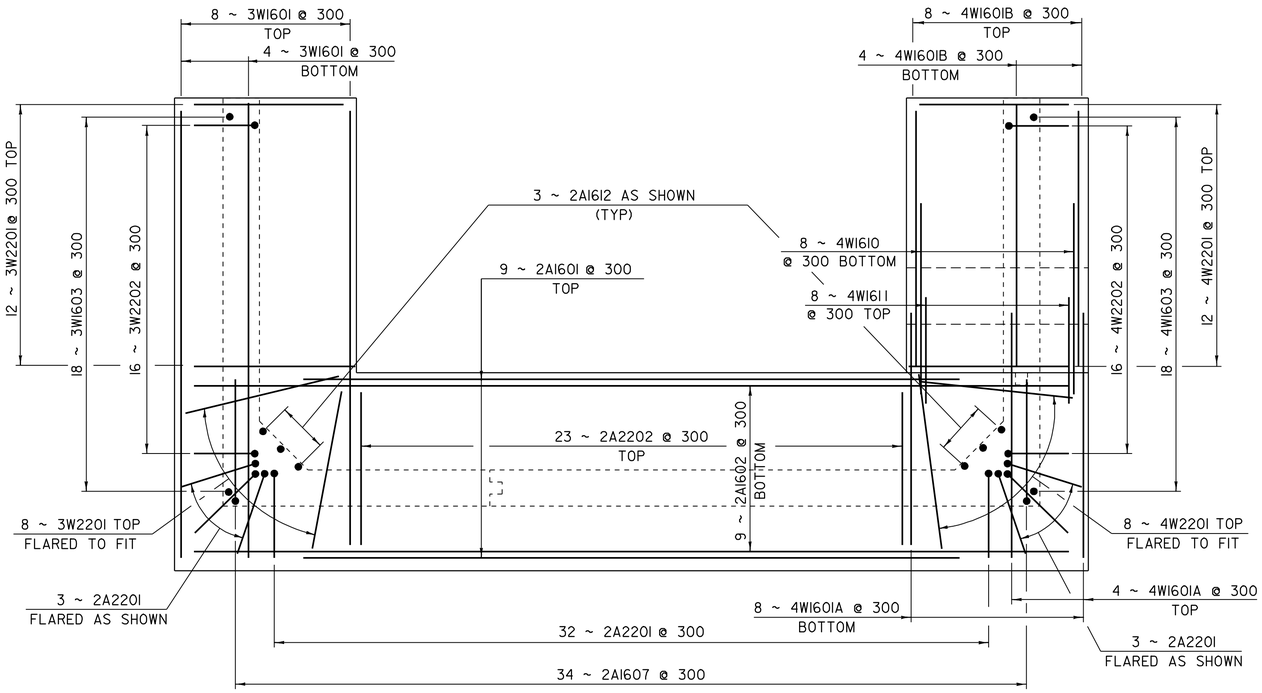
SCALE = 1:25

NOTES

1. NF = NEAR FACE
2. FF = FAR FACE
3. EF = EACH FACE
4. ▲ = CUT TO FIT IN FIELD
5. 80 CLEAR UNLESS OTHERWISE SPECIFIED ON THE PLANS
6. 3000 MAX. WEEPHOLE SPACING
7. ALL LAPS NOT DETAILED SHALL BE 660 (MIN)
8. SEE SHEET 33 FOR CORNER DETAILS.

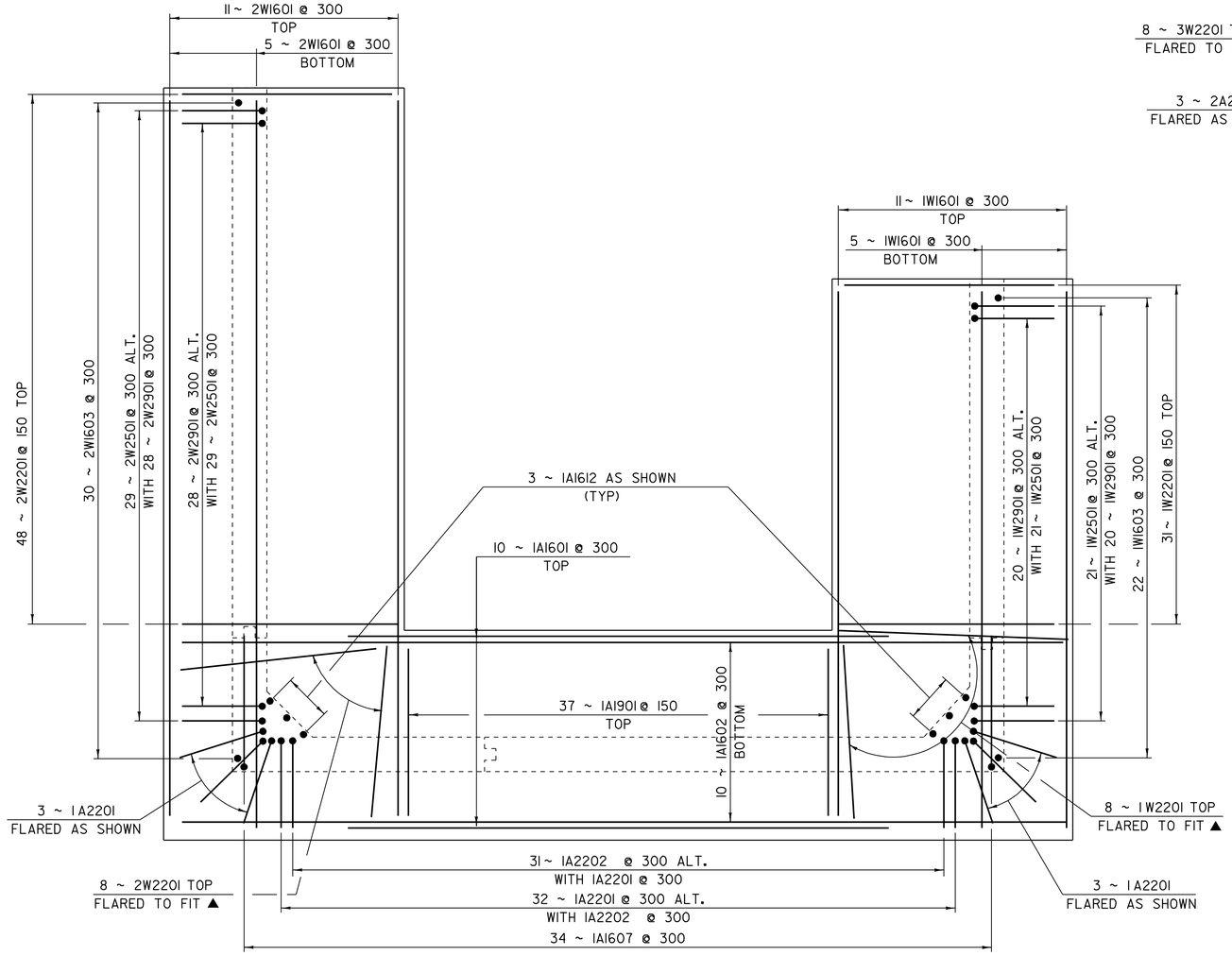
REVISION	DATE	BY	CHK'D	DESCRIPTION
⚠	06/27/2005	GFR	CWC	ABUTMENTS MODIFIED DUE TO UPDATED LEDGE INFORMATION.

SHEET NAME:	**WW 1 & WW 2 ELEVATIONS**		
PROJECT NAME:	WESTFORD	HIGHWAY NO.:	TH 4
PROJECT NUMBER:	TH2 9436	BRIDGE NO.:	2
		OVER:	ROGERS BROOK
FILE NAME:	94J22\Structures\sJ22sup.dgn	PLOT DATE:	22-DEC-2006
PROJECT MANAGER:	R. R. WHITCOMB	DRAWN BY:	T. FILLBACH
DESIGNED BY:	T. FILLBACH	IPARM NAME:	sJ22ww1.I
BRIDGE SHEET NUMBER:		SHEET	34 OF 56



ABUTMENT #2 REINFORCING PLAN ⚠

SCALE: 1:40



ABUTMENT #1 REINFORCING PLAN ⚠

SCALE: 1:40

NOTES

1. NF = NEAR FACE
2. FF = FAR FACE
3. EF = EACH FACE
4. ▲ = CUT TO FIT IN FIELD
5. 80 CLEAR UNLESS OTHERWISE SPECIFIED ON THE PLANS
6. ALL LAPS NOT DETAILED SHALL BE 660

0 1 2 3 4

SCALE = 1:40

REVISION	DATE	BY	CHK'D	DESCRIPTION
⚠	06/27/2005	GFR	CWC	ABUTMENTS MODIFIED DUE TO UPDATED LEDGE INFORMATION.

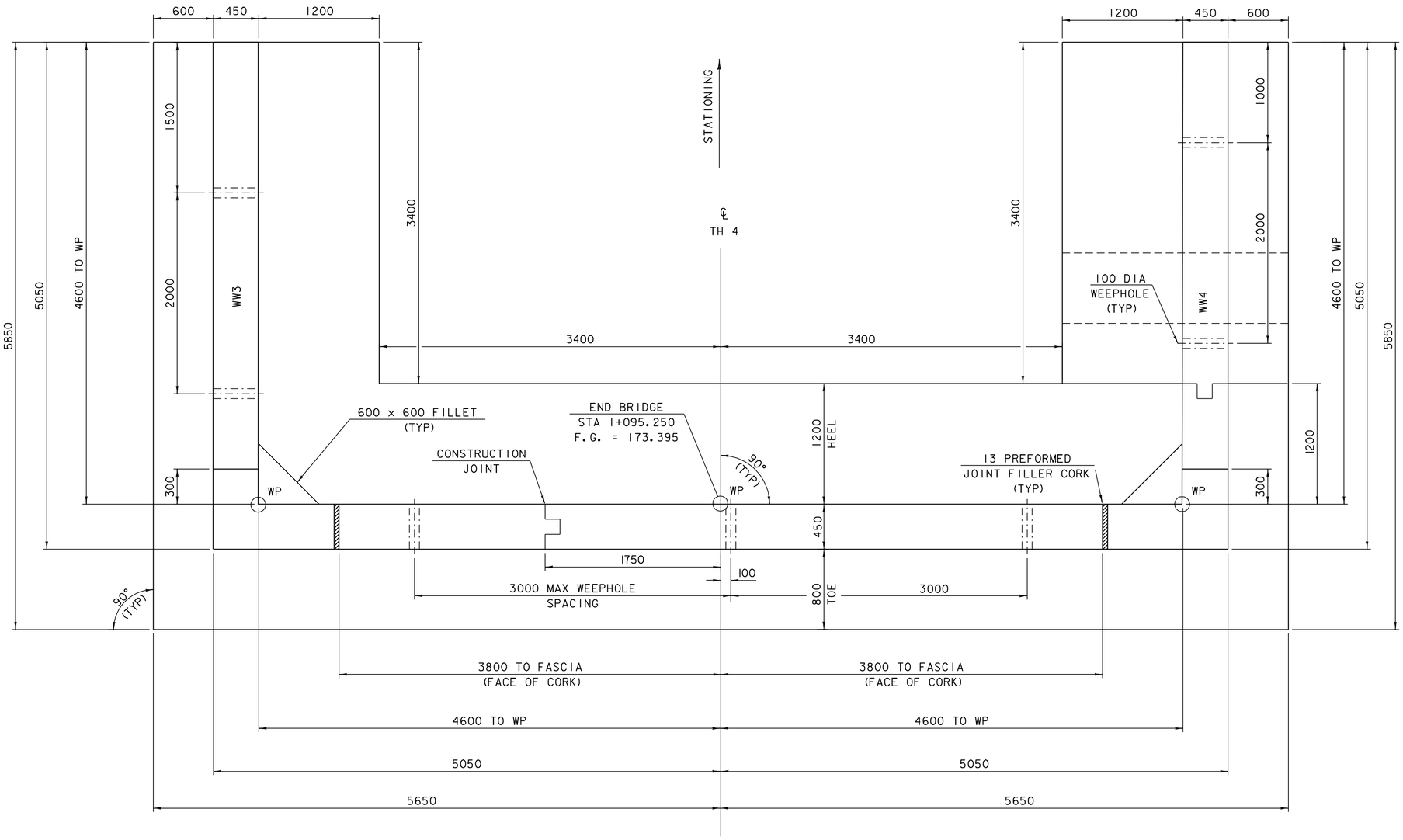
SHEET NAME: FOOTING REINFORCING

PROJECT NAME: WESTFORD
PROJECT NUMBER: TH2 9436

HIGHWAY NO.: TH 4
BRIDGE NO.: 2
OVER: ROGERS BROOK

FILE NAME: 94J22\Structures\sJ22sup.dgn
PROJECT MANAGER: R. R. WHITCOMB
DESIGNED BY: T. FILLBACH
BRIDGE SHEET NUMBER:

PLOT DATE: 22-DEC-2006
DRAWN BY: T. FILLBACH
IPARM NAME: sJ22ftg.I
SHEET 35 OF 56



ABUTMENT #2 PLAN ⚠

0 1 2

SCALE = 1:25

FLOW →

REVISION	DATE	BY	CHK'D	DESCRIPTION
⚠	06/27/2005	GFR	CWC	ABUTMENTS MODIFIED DUE TO UPDATED LEDGE INFORMATION.

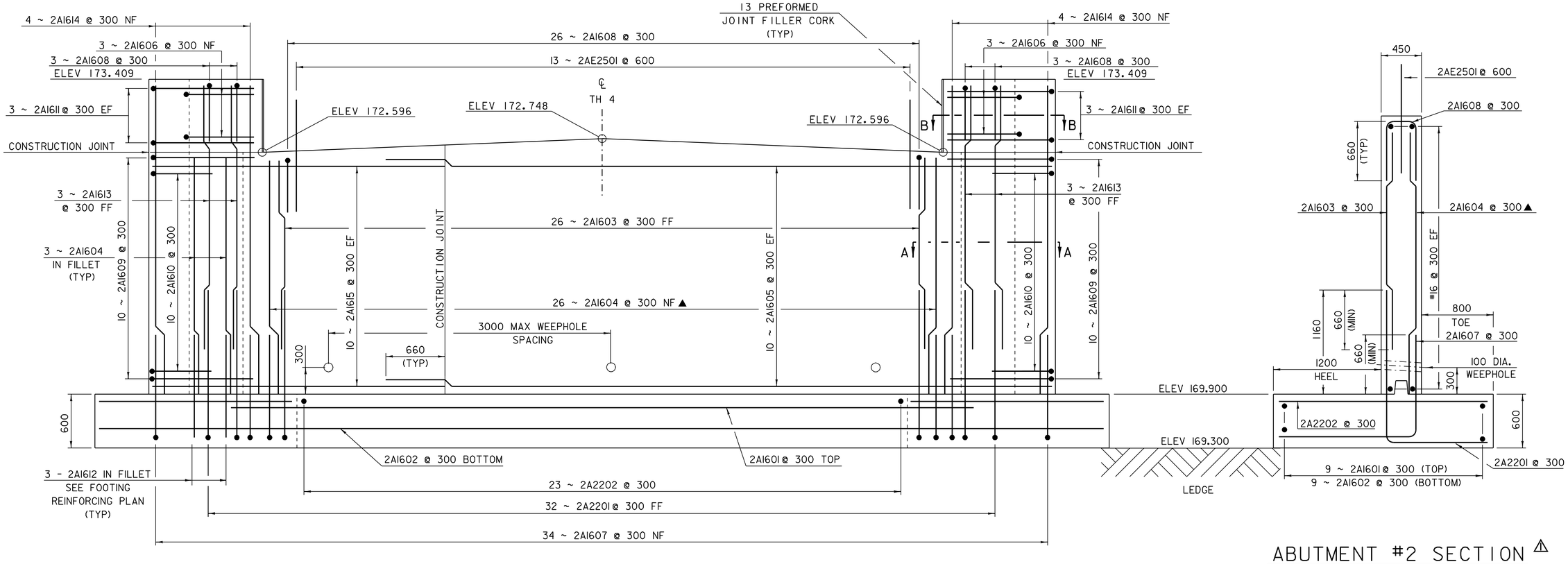
SHEET NAME: **ABUTMENT #2 PLAN**

PROJECT NAME: WESTFORD
PROJECT NUMBER: TH2 9436

HIGHWAY NO.: TH 4
BRIDGE NO.: 2
OVER: ROGERS BROOK

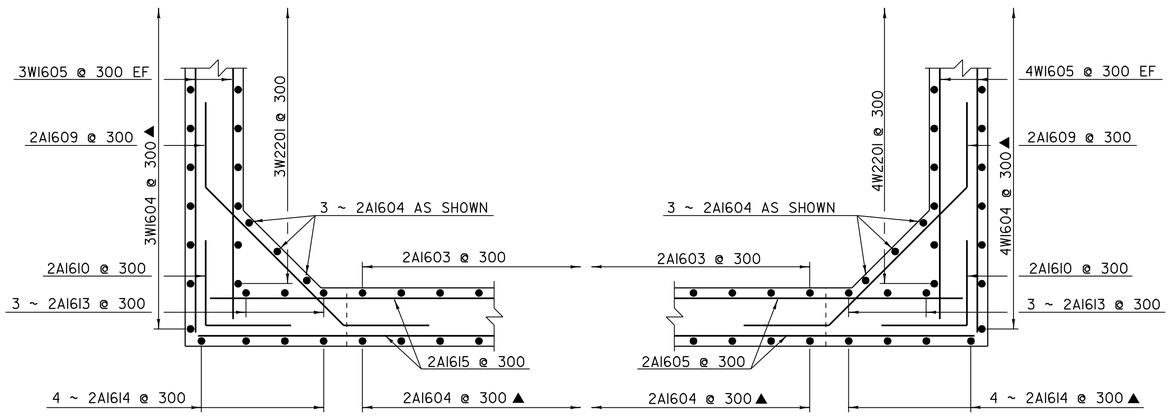
FILE NAME: 94J122\Structures\sj122sup.dgn
PROJECT MANAGER: R. R. WHITCOMB
DESIGNED BY: T. FILLBACH
BRIDGE SHEET NUMBER:

PLOT DATE: 22-DEC-2006
DRAWN BY: T. FILLBACH
IPARM NAME: sj122ab2.I
SHEET 36 OF 56



ABUTMENT #2 SECTION ⚠

SCALE: 1:25



ABUTMENT #2 ELEVATION ⚠

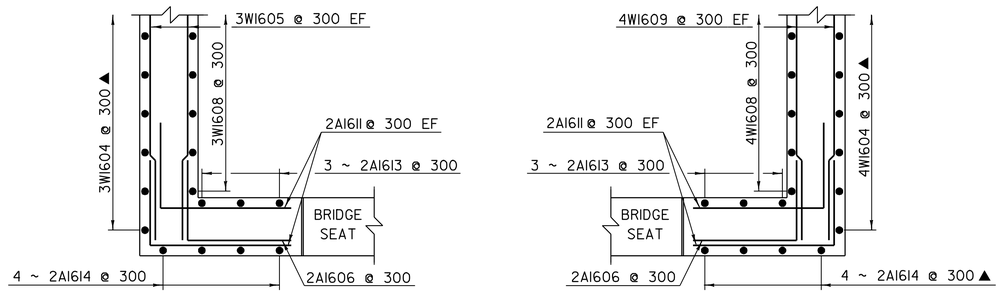
SCALE: 1:25

CORNER DETAILS BELOW BRIDGE SEAT

SCALE: 1:25

SECTION A- A

STIRRUP BARS HAVE BEEN OMITTED FOR CLARITY.



CORNER DETAILS ABOVE BRIDGE SEAT

SCALE: 1:25

SECTION B-B

0 1 2

SCALE = 1:25

NOTES

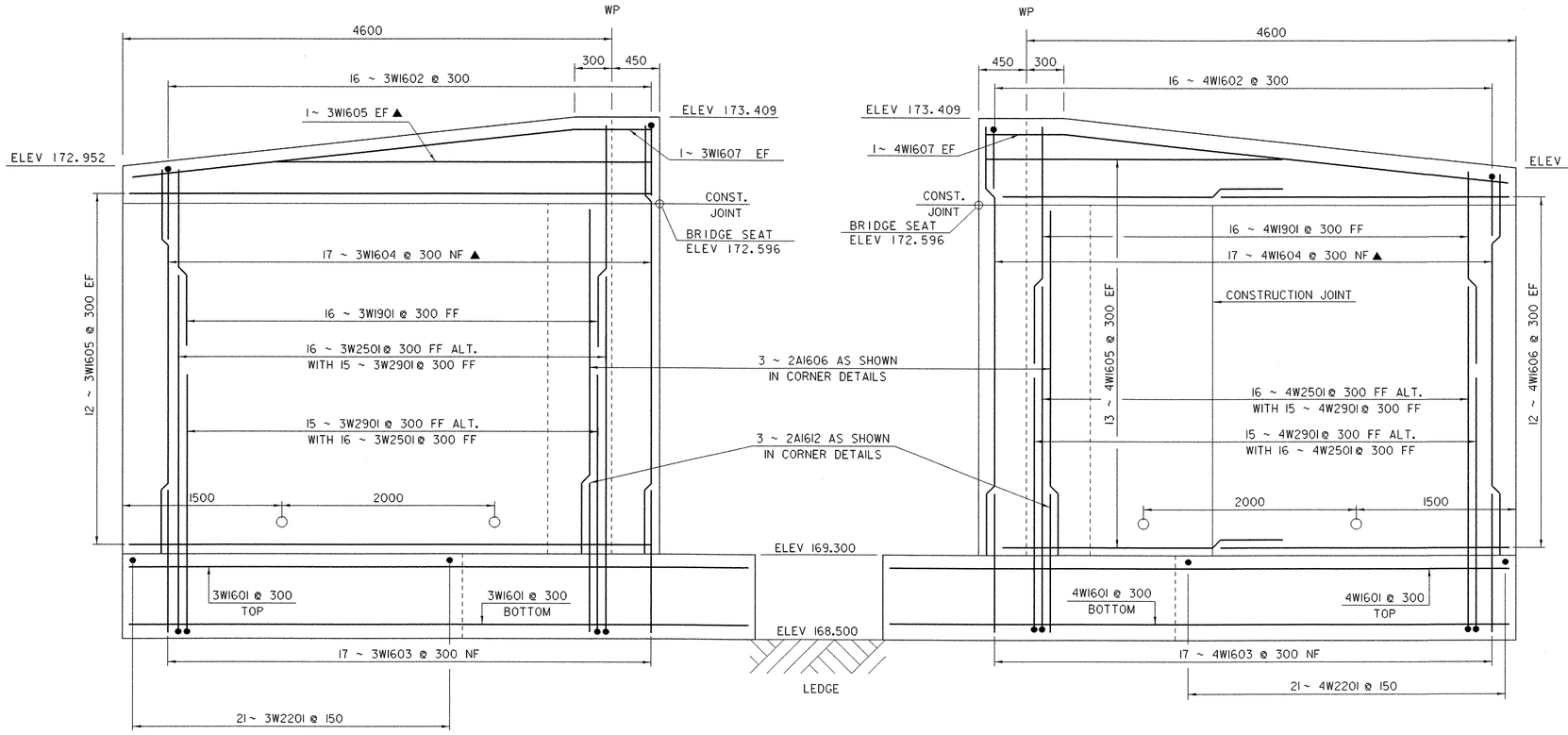
1. NF = NEAR FACE
2. FF = FAR FACE
3. EF = EACH FACE
4. ▲ = CUT TO FIT IN FIELD
5. 80 CLEAR UNLESS OTHERWISE SPECIFIED ON THE PLANS
6. ALL LAPS NOT DETAILED SHALL BE 660 (MIN)
7. 3000 MAX. WEEPHOLE SPACING
8. SEE SHEET 35 FOR FOOTING REINFORCING PLAN.

REVISION	DATE	BY	CHK'D	DESCRIPTION
⚠	06/27/2005	GFR	CWC	ABUTMENTS MODIFIED DUE TO UPDATED LEDGE INFORMATION.

SHEET NAME: **ABUTMENT #2 ELEVATION**

PROJECT NAME: WESTFORD
PROJECT NUMBER: TH2 9436
HIGHWAY NO.: TH 4
BRIDGE NO.: 2
OVER: ROGERS BROOK

FILE NAME: 94J122\Structures\sJ122sup.dgn
PROJECT MANAGER: G.S. ROGERS
DESIGNED BY: T. FILLBACH
BRIDGE SHEET NUMBER:
PLOT DATE: 22-DEC-2006
DRAWN BY: T. FILLBACH
IPARM NAME: sJ122ev2.I
SHEET 37 OF 56

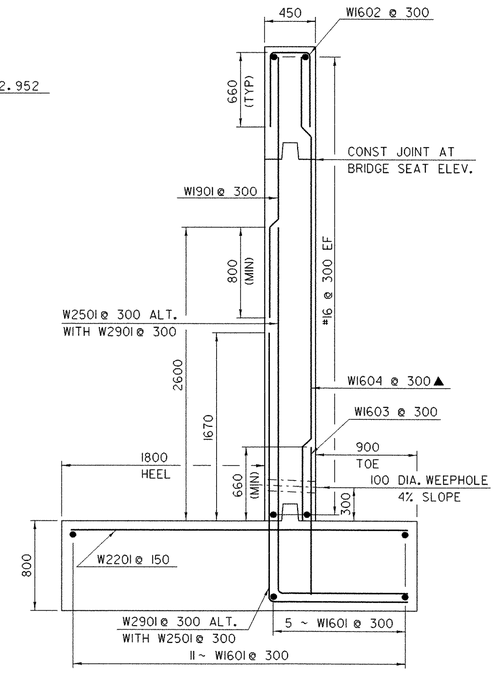


WINGWALL #3 ELEVATION

SCALE: 1:25

WINGWALL #4 ELEVATION

SCALE: 1:25



WINGWALL TYPICAL SECTION

(WINGWALL #3 AND #4 ARE SIMILAR)

SCALE: 1:25

NOTES

1. NF = NEAR FACE
2. FF = FAR FACE
3. EF = EACH FACE
4. ▲ = CUT TO FIT IN FIELD
5. 80 CLEAR UNLESS OTHERWISE SPECIFIED ON THE PLANS
6. 3000 MAX. WEEPHOLE SPACING
7. ALL LAPS NOT DETAILED SHALL BE 660 (MIN)
8. SEE SHEET 37 FOR CORNER DETAILS.

0 1 2

SCALE = 1:25

SHEET NAME: **WW #3 & WW #4 ELEVATIONS**

PROJECT NAME: WESTFORD
PROJECT NUMBER: TH2 9436

HIGHWAY NO.: TH 4
BRIDGE NO.: 2
OVER: ROGERS BROOK

FILE NAME: 94j122\Structures\sj122sup.dgn
PROJECT MANAGER: R. R. WHITCOMB
DESIGNED BY: T. FILLBACH
BRIDGE SHEET NUMBER:

PLOT DATE: 25-MAR-2005
DRAWN BY: T. FILLBACH
IPARM NAME: sj122ww2.i
SHEET 38 OF 56

STATE OF VERMONT
AGENCY OF TRANSPORTATION

REINFORCING STEEL SCHEDULE

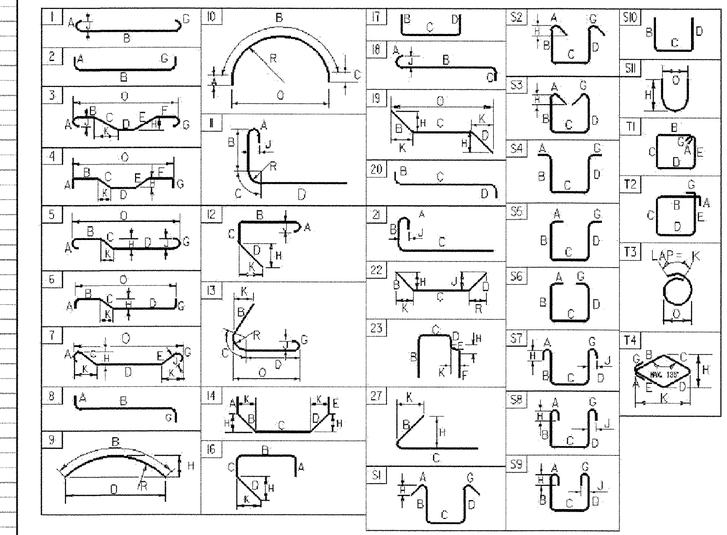
Metric

	EACH	SIZE	LENGTH	MARK	TYPE	A	B	C	D	E	F	G	H	J	K	R	O
SLAB																	
	10	16	8590	ES1601	STR												
✳	41	16	7440	ES1602	STR												
▲	8	16	8590	ES1603	STR												
	58	16	2720	ES1604	S6	450	300	1220	300			450					
	58	16	2200	ES1605	S5	450	530	240	530			450					
✳	52	29	8965	ES2901	1	375	8590					---		300			
ABUTMENT #1																	
	9	16	7440	1A1601	STR												
	9	16	11740	1A1602	STR												
	26	16	2260	1A1603	STR												
▲	32	16	4000	1A1604	STR												
	28	16	7380	1A1605	STR												
	6	16	1380	1A1612	STR												
	6	16	2980	1A1613	STR												
	8	16	4720	1A1614	STR												
	26	16	3220	1A1615	STR												
✳	38	19	2590	1A1901	STR												
	13	25	1180	1AE2501	STR												
	6	16	1440	1A1606	17		780	660	---								
	34	16	3070	1A1607	17		1380	1690	---								
	32	16	1610	1A1608	S10		660	290	660								
	26	16	3055	1A1609	22	---	660	1735	660	---							
	26	16	1320	1A1610	17		660	660	---								
	12	16	1690	1A1611	17		1030	660	---								
	32	22	4310	1A2201	17		3120	1190	---								
✳	32	22	3210	1A2202	17		2020	1190	---								
WINGWALL #1																	
	16	16	9690	1W1601	STR												
	30	16	1380	1W1603	STR												
▲	30	16	5260	1W1604	STR												
▲	34	16	6670	1W1605	STR												
	32	16	2780	1W1606	STR												
	2	16	8130	1W1607	STR												
	29	19	3460	1W1901	STR												
	56	22	2990	1W2201	STR												
	29	16	1610	1W1602	S10		660	290	660								
✳	30	25	4510	1W2501	17		3320	1190	---								
	28	29	3580	1W2901	17		2390	1190	---								
WINGWALL #2																	
	16	16	9690	2W1601	STR												
✳	31	16	1380	2W1603	STR												
▲	30	16	5260	2W1604	STR												
▲	34	16	7330	2W1605	STR												
	32	16	2120	2W1606	STR												
	2	16	8130	2W1607	19												
	29	19	3460	2W1901	STR												
	56	22	2990	2W2201	STR												
	29	16	1610	2W1602	S10		660	290	660								
	29	25	4510	2W2501	17		3320	1190	---								
✳	29	29	3580	2W2901	17		2390	1190	---								

ITEM	EACH	SIZE	LENGTH	MARK	TYPE	A	B	C	D	E	F	G	H	J	K	R	O
ABUTMENT #2																	
	9	16	7440	2A1601	STR												
	9	16	11740	2A1602	STR												
✳	27	16	1630	2A1603	STR												
▲	32	16	3370	2A1604	STR												
	22	16	7380	2A1605	STR												
	6	16	1380	2A1612	STR												
	6	16	2290	2A1613	STR												
	8	16	4030	2A1614	STR												
	22	16	3220	2A1615	STR												
	37	19	2590	2A1901	STR												
	13	25	1180	2AE2501	STR												
	6	16	1440	2A1606	17		780	660	---								
	34	16	3070	2A1607	17		1380	1690	---								
	32	16	1610	2A1608	S10		660	290	660								
	22	16	3055	2A1609	22		660	1735	660								
	22	16	1320	2A1610	17		660	660	---								
	12	16	1690	2A1611	17		1030	660	---								
✳	33	22	4310	2A2201	17		3120	1190	---								
	31	22	3210	2A2202	17		2020	1190	---								
WINGWALL #3																	
	16	16	5790	3W1601	STR												
	17	16	1380	3W1603	STR												
▲	17	16	4030	3W1604	STR												
	26	16	4890	3W1605	STR												
				3W1606	(NOT USED)												
✳	17	19	2230	3W1901	STR												
	30	22	2990	3W2201	STR												
	16	16	1610	3W1602	S10		660	290	660								
	2	16	4890	3W1607	19		670	4220	---				40		660		
	16	25	4510	3W2501	17		3320	1190	---								
✳	16	29	3580	3W2901	17		2390	1190	---								
WINGWALL #4																	
	16	16	5790	4W1601	STR												
	17	16	1380	4W1603	STR												
▲	17	16	4030	4W1604	STR												
	26	16	2780	4W1605	STR												
	24	16	2770	4W1606	STR												
	16	19	2230	4W1901	STR												
	30	22	2990	4W2201	STR												
	16	16	1610	4W1602	S10		660	290	660								
	2	16	4900	4W1607	19		670	4230	---				60	---	660		
✳	17	25	4510	4W2501	17		3320	1190	---								
	15	29	3580	4W2901	17		2390	1190	---								

~ NOTES ~

1. UNLESS OTHERWISE DESIGNATED, ALL BAR REINFORCEMENT FOR CONCRETE IN SIZES UP TO AND INCLUDING 55M SHALL CONFORM TO THE REQUIREMENTS OF THE "SPECIFICATIONS FOR DEFORMED BILLET-STEEL BARS FOR CONCRETE REINFORCEMENT", AASHTO M 31M (ASTM A 615M-SI). ALL BARS SHALL BE GRADE 420, UNLESS OTHERWISE DESIGNATED.
2. FOR TYPICAL BENDING DETAILS, RECOMMENDED PIN DIAMETER "D" OF BENDS AND HOOKS, AND OTHER STANDARD PRACTICE, SEE CURRENT CONCRETE REINFORCING STEEL INSTITUTE "MANUAL OF STANDARD PRACTICE".
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 MAINTAIN 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" IN PREFIX DENOTES EPOXY COATED REINFORCING STEEL.



ASTM STANDARD REINFORCING BARS

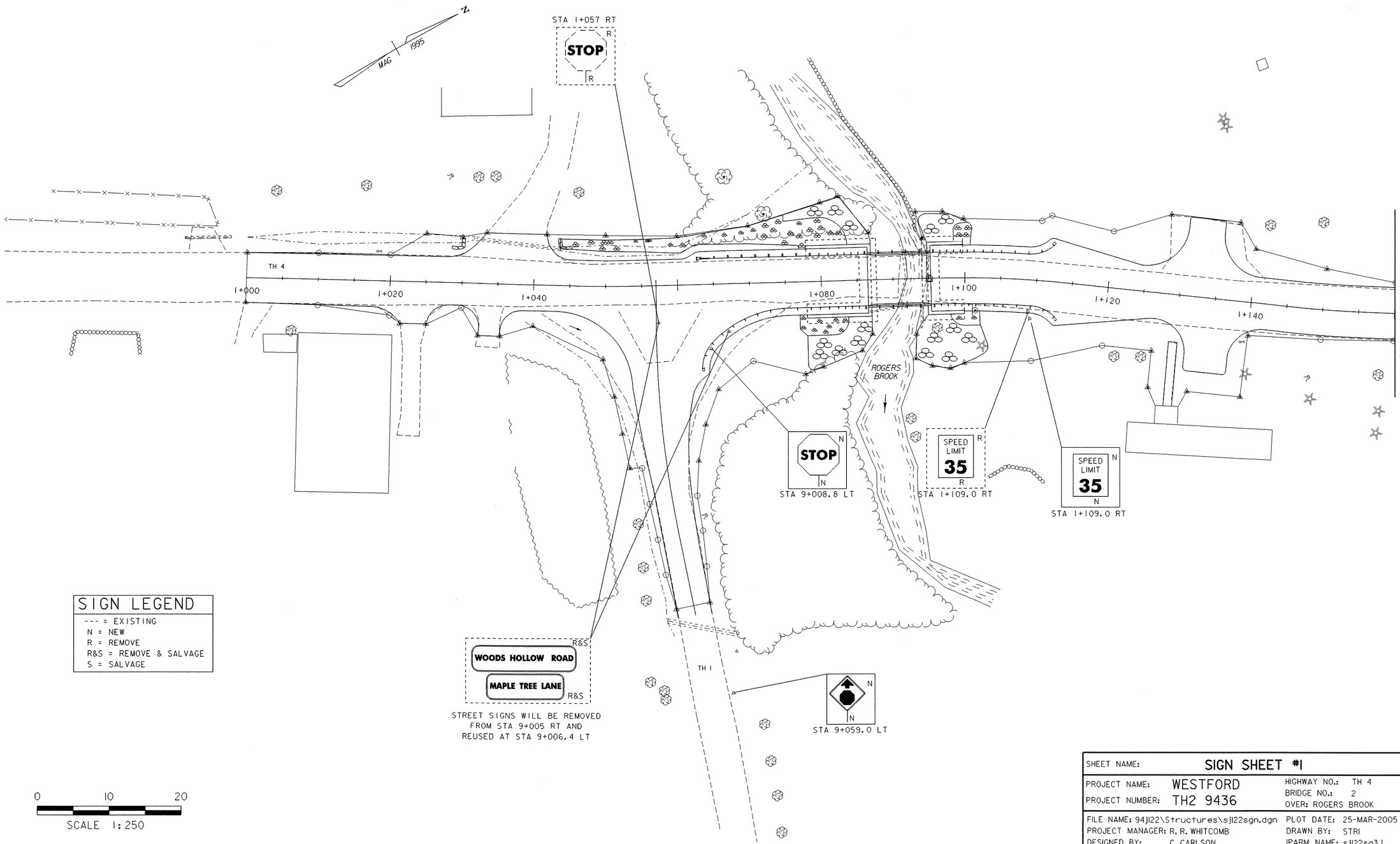
BAR SIZE	NOMINAL MASS (Kg/m)	NOMINAL DIMENSIONS ROUND SECTION		
		DIAMETER (mm)	CROSS SECTIONAL AREA (mm²)	PERIMETER (mm)
#10	0.560	9.5	71	29.84
#13	0.994	12.7	129	39.90
#16	1.552	15.9	199	49.95
#19	2.235	19.1	284	60.00
#22	3.042	22.2	387	69.74
#25	3.973	25.4	510	79.80
#29	5.060	28.7	645	90.16
#32	6.404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

PROJECT NAME: **WESTFORD**
PROJECT NUMBER: **TH2 9436**

FILE NAME: \94j122\Structures\sj122rss.xls
PROJECT LEADER: R. R. WHITCOMB
DESIGNED BY: C. CARLSON
REINFORCING STEEL SCHEDULE SHEET

PLOT DATE: 03/02/2005
DRAWN BY: T. HUSK
CHECKED BY: C. CARLSON
SHEET 39 OF 56

VAOT Metric

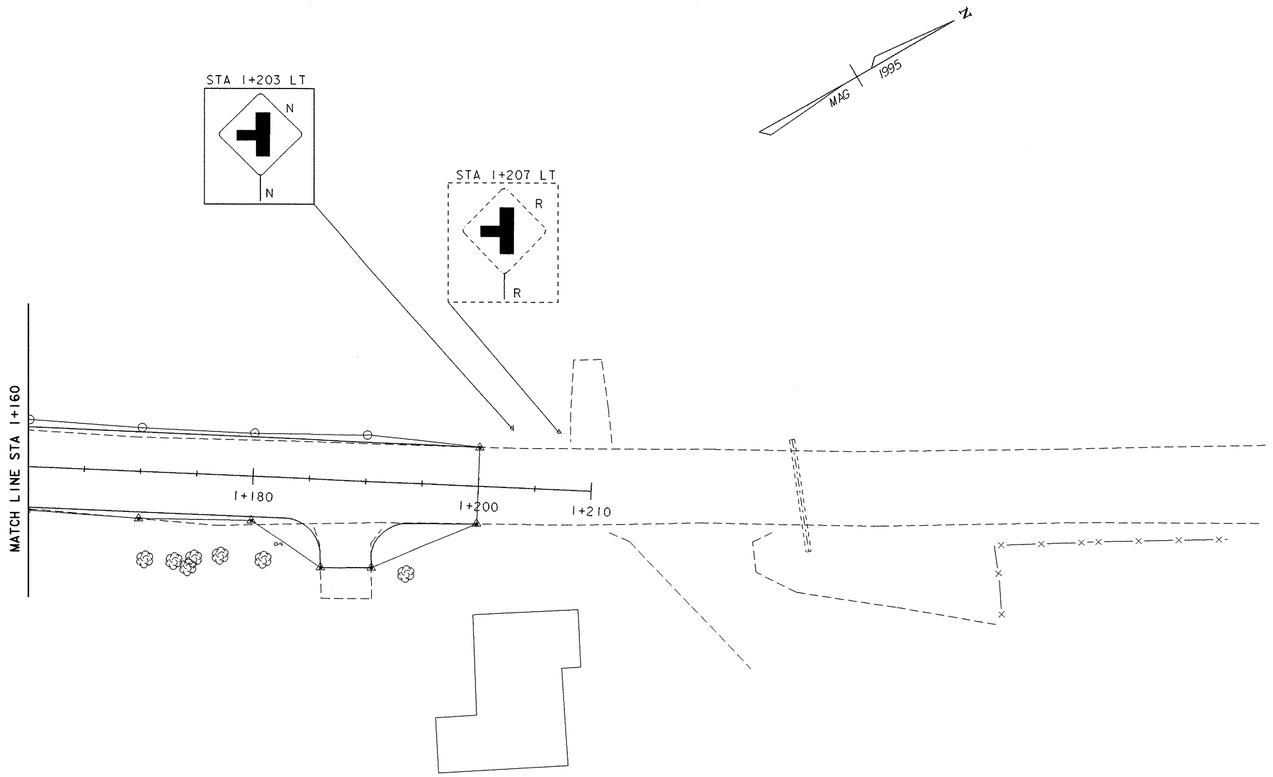


SIGN LEGEND

--- = EXISTING
N = NEW
R = REMOVE
R&S = REMOVE & SALVAGE
S = SALVAGE

0 10 20
SCALE 1:250

SHEET NAME:	SIGN SHEET #1		
PROJECT NAME:	WESTFORD	HIGHWAY NO.:	TH 4
PROJECT NUMBER:	TH2 9436	BRIDGE NO.:	2
		OVER:	ROGERS BROOK
FILE NAME:	94J122\Structures\sJ122sgn.dgn	PLOT DATE:	25-MAR-2005
PROJECT MANAGER:	R. R. WHITCOMB	DRAWN BY:	STRI
DESIGNED BY:	C. CARLSON	IPARM NAME:	sJ122sg3.i
BRIDGE SHEET NUMBER:		SHEET	40 OF 56



SIGN LEGEND
--- = EXISTING
N = NEW
R = REMOVE
R&S = REMOVE & SALVAGE
S = SALVAGE

0 10 20

SCALE 1:250

SHEET NAME: **SIGN SHEET #2**

PROJECT NAME: WESTFORD
PROJECT NUMBER: TH2 9436

HIGHWAY NO.: TH 4
BRIDGE NO.: 2
OVER: ROGERS BROOK

FILE NAME: 94j122\Structures\sj122sgn.dgn
PROJECT MANAGER: R. R. WHITCOMB
DESIGNED BY: C. CARLSON
BRIDGE SHEET NUMBER:

PLOT DATE: 25-MAR-2005
DRAWN BY: STRI
IPARM NAME: sj122sg4.I
SHEET 41 OF 56

STATE OF VERMONT
AGENCY OF TRANSPORTATION

TRAFFIC SIGN SUMMARY SHEET

MET Metric

KILOMETER MARKER, STATION, OR SIGN NUMBER	SIGN LEGEND	SIGN DIMENSIONS			NEW & SALVAGED SIGNS				EXIST POST		NEW SIGN POSTS																			REMARKS	SIGN DETAIL	
		EA	WIDTH (mm)	HEIGHT (mm)	"A"	"B"	SALV SIGN	SALV TIS	RETAIN	SALVAGE	NO. OF POSTS	FLANGED CHANNEL kg/m			SQUARE STEEL (mm) kg/m			ANCHOR	SLEEVE	TUBULAR ALUMINUM Ø (mm) kg/m			FOUNDATION	TUBULAR STEEL Ø (mm) kg/m				W-SHAPE STEEL FTG. SIZE		WEIGHT	POST SIZE	SIGN FRAME REQUIRED		DETAIL ON SHEET NUMBER	STD. SHEET NUMBER
												1.7	3.0	4.5	44 3.4	50 3.9	63 5.0			75 1.9	100 2.5	100 MOD 2.5		75 11.3	89 13.4	100 16.1	125 21.7	600 mm	750 mm						
											OPTION ITEMS																							
M STA 1+203 LT		1	750	750	0.563						1		X																			W2-2		E-155
℄ STA 9+008.8 LT	STOP	1	750	750	0.466						1		X																			R1-1		E-143
℄ STA 9+059.0 LT		1	900	900	0.810						1		X																			W3-1A		E-150
M STA 1+116 RT	SPEED LIMIT 35	1	600	750	0.450						1		X																			R2-1		E-142
℄ STA 9+006.4 RT	WOODS HOLLOW ROAD						X				1		X																					
℄ STA 9+006.4 RT	MAPLE TREE LANE						X																											

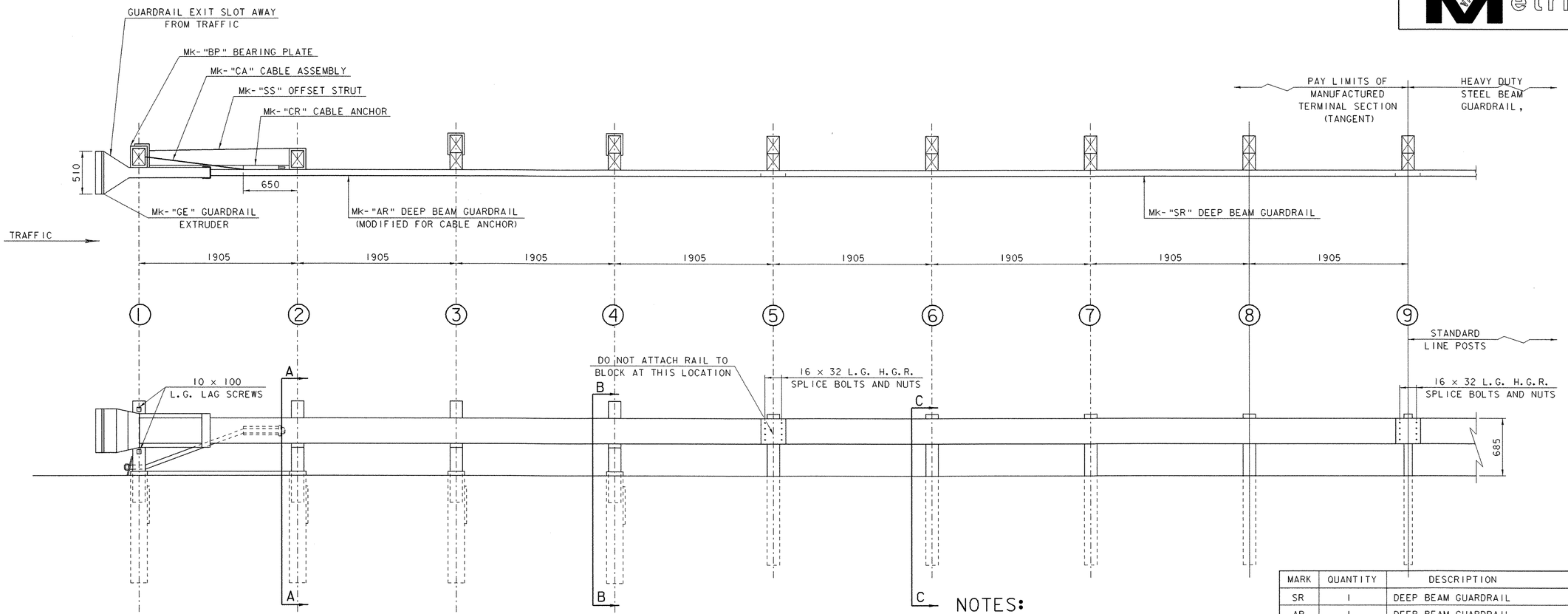
FINAL POST LENGTHS ARE TO BE DETERMINED IN THE FIELD. POST SIZES ARE COMPUTED BASED ON INFORMATION FURNISHED ON THE STANDARD SHEETS AND THE TRAFFIC & SAFETY DIVISION'S "SIGN POST DESIGN GUIDELINE."

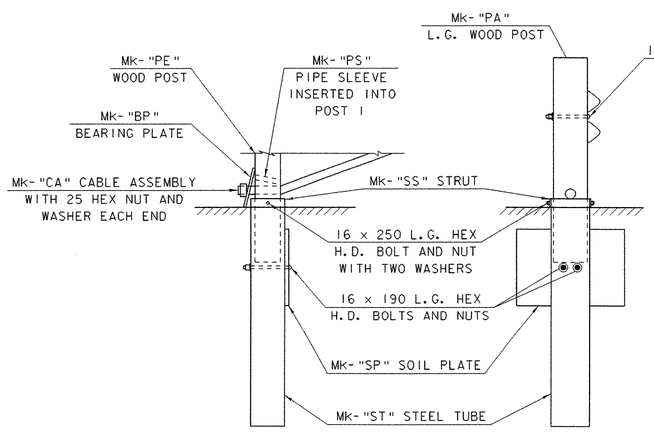
	m	m	m	m	m	m		EA	kg	kg	kg		kg	kg	kg	kg																		
TOTALS	m^2 2.289	m^2	EA.	m^2		m 19			m			kg		EA.	kg				EA.	EA.	kg													

SHEET NAME: SIGN SUMMARY SHEET

PROJECT NAME: WESTFORD
PROJECT NUMBER: TH2 9436
HIGHWAY NO.: TH 4
BRIDGE NO.: 2
OVER: ROGERS BROOK

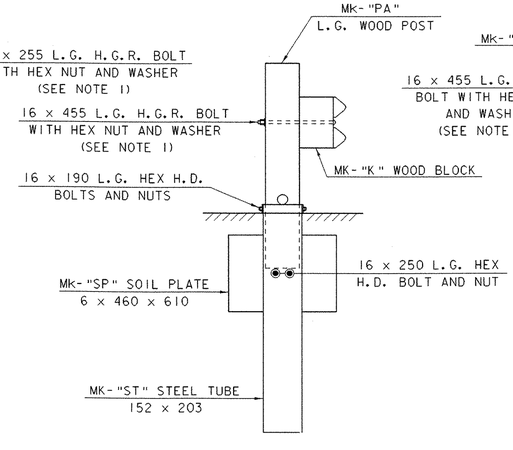
FILE NAME: 94J122\Structures\sJ122sgn.dgn
PROJECT MANAGER: R. R. WHITCOMB
DESIGNED BY: C. CARLSON
BRIDGE SHEET NUMBER:
PLOT DATE: 25-MAR-2005
DRAWN BY: J.GILMORE
IPARM NAME: sJ122sgn.i
SHEET 42 OF 56



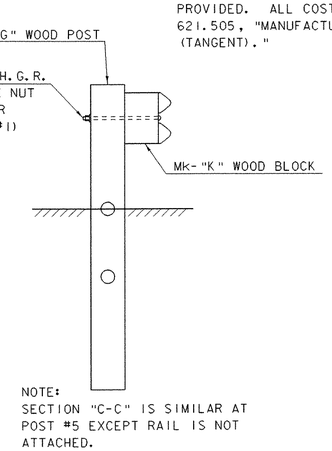


PARTIAL VIEW AT POST #1

SECTION "A-A"
(POST #2)



SECTION "B-B"
(POST #3 AND #4)



NOTE:
SECTION "C-C" IS SIMILAR AT POST #5 EXCEPT RAIL IS NOT ATTACHED.

SECTION "C-C"
(POST #6, #7 AND #8)

NOTES:

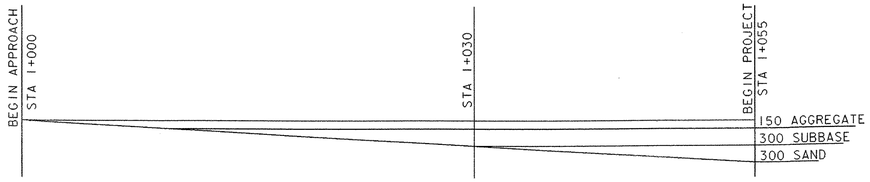
1. THE 16 DIA FLAT WASHER IS USED WITH THE NUT, BEHIND THE POST ONLY. NO WASHER IS USED AT THE RAIL.
2. THE BREAKAWAY POSTS AT LOCATIONS #5, 6, 7 AND 8 MAY BE AS SHOWN, OR FOUNDATION TUBES MAY BE USED AS SHOWN AT POST LOCATIONS #1, 2, 3, AND 4.
3. REFLECTORIZATION OF THE TERMINAL SHALL BE PROVIDED. ALL COSTS SHALL BE INCLUDED IN ITEM 621.505, "MANUFACTURED TERMINAL SECTION, (TANGENT)."

MARK	QUANTITY	DESCRIPTION
SR	1	DEEP BEAM GUARDRAIL
AR	1	DEEP BEAM GUARDRAIL
PS	1	PIPE SLEEVE
SP	4	SOIL PLATE
K	6	L.G. WOOD BLOCK
PG	4	WOOD POST
PA	4	WOOD POST
ST	4	L.G. STEEL TUBE
BP	1	BEARING PLATE
CR	1	CABLE ANCHOR BRACKET
CA	1	CABLE ASSEMBLY
SS	1	STRUT
GE	1	GUARDRAIL EXTRUDER
PE	1	WOOD POST
		HARDWARE
	4	16 x 250 HEX H.D. BOLT
	35	16 HEX NUT
	11	16 DIA. WASHER
	6	16 x 455 H.G.R. POST BOLT
	1	16 x 255 H.G.R. POST BOLT
	16	16 x 32 H.G.R. SPLICE BOLT
	8	16 x 190 HEX H.D. BOLT
	2	10 x 100 LAG SCREW
	2	25 HEX NUT
	2	25 WASHER

SHEET NAME: **MANUFACTURED END TERMINAL**

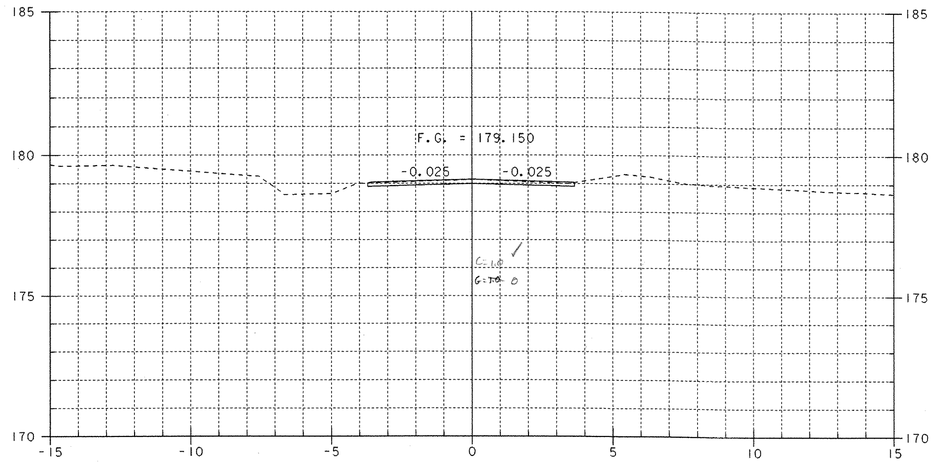
PROJECT NAME: WESTFORD
PROJECT NUMBER: TH2 9436
HIGHWAY NO.: TH 4
BRIDGE NO.: 2
OVER: ROGERS BROOK

FILE NAME: 94j122\Structures\sj122sup.dgn
PROJECT MANAGER: R. R. WHITCOMB
DESIGNED BY: C. CARLSON
BRIDGE SHEET NUMBER:
PLOT DATE: 25-MAR-2005
DRAWN BY: J. GILMORE
IPARM NAME: sj122met1
SHEET 43 OF 56

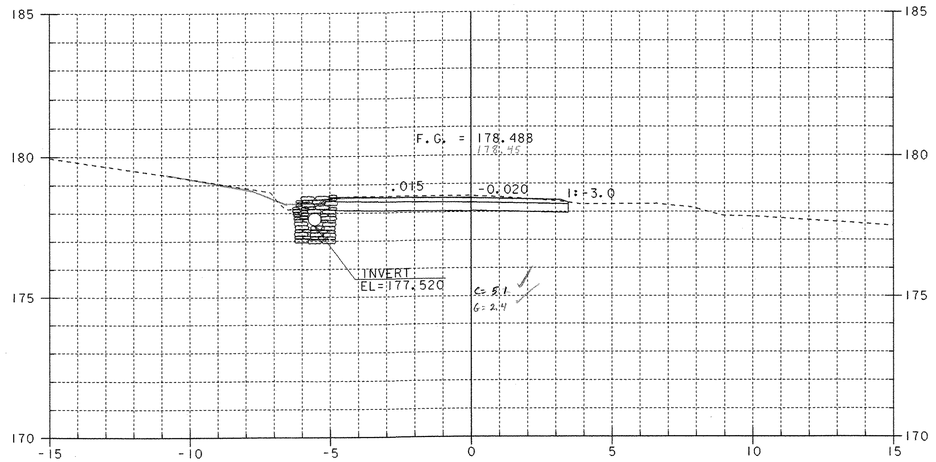


MATERIAL TRANSITION DETAIL

NTS

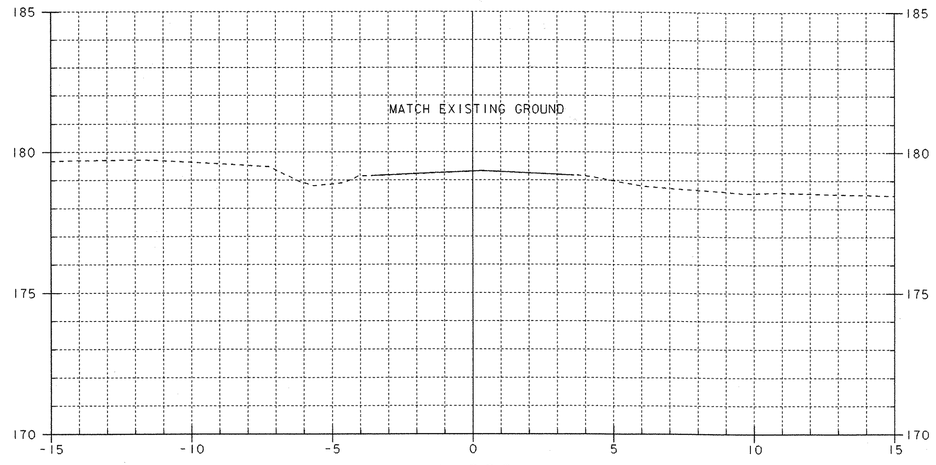


1+010



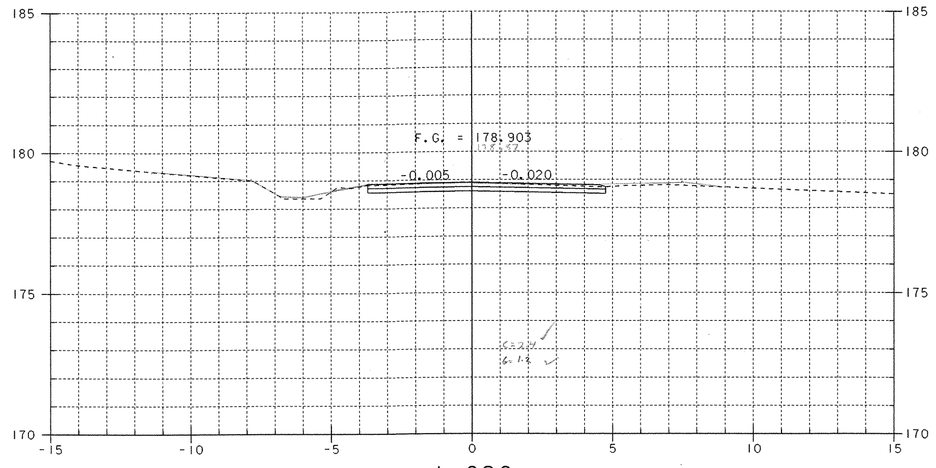
1+030

SEE SHEET 51 FOR PIPE SECTION
AND STD D-2M FOR HEADWALL DETAILS
AT STA 1+037.000 LEFT



1+000

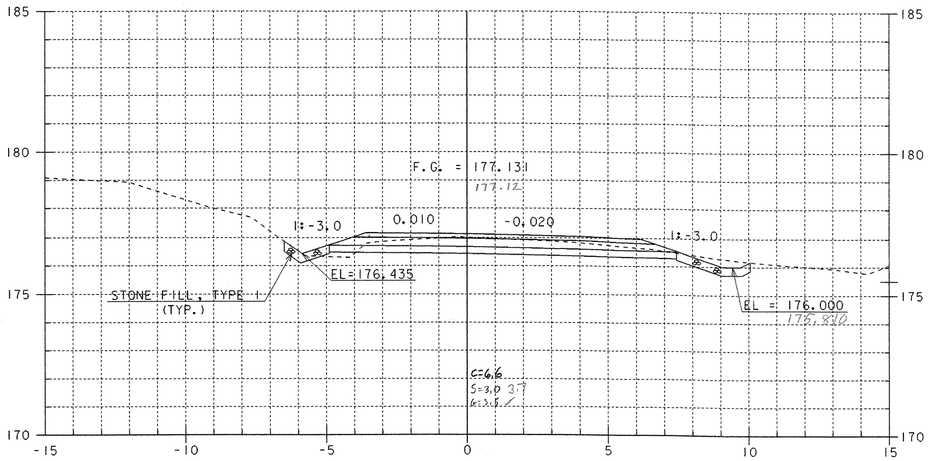
BEGIN APPROACH



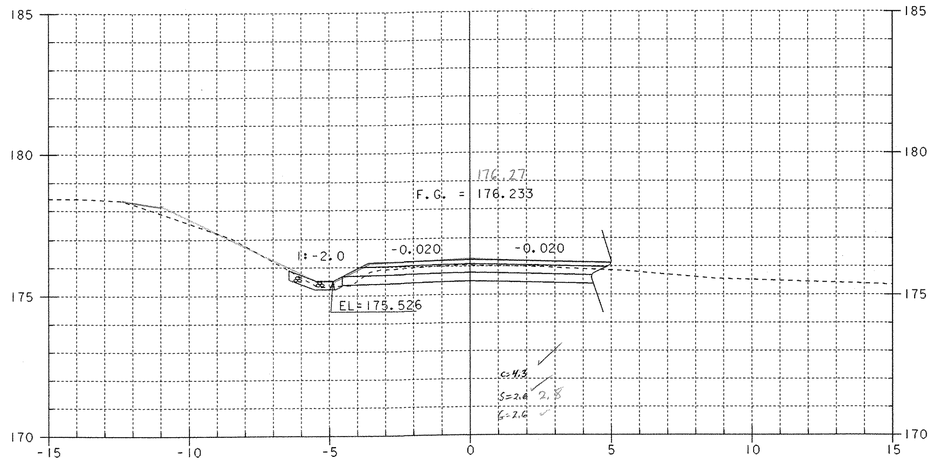
1+020

* SEE SHEET 12 FOR
BANKING DIAGRAM

SHEET NAME:	**MAINLINE CROSS SECTIONS**		
PROJECT NAME:	WESTFORD	HIGHWAY NO.:	TH 4
PROJECT NUMBER:	TH2 9436	BRIDGE NO.:	2
		OVER:	ROGERS BROOK
FILE NAME:	/PW/94jl22/sjl22xs2.dgn	PLOT DATE:	25-MAR-2005
PROJECT MANAGER:	R. R. WHITCOMB	DRAWN BY:	STRI
DESIGNED BY:	C. CARLSON	IPARM NAME:	sjl22mxl.i
BRIDGE SHEET NUMBER:		SHEET	44 OF 56

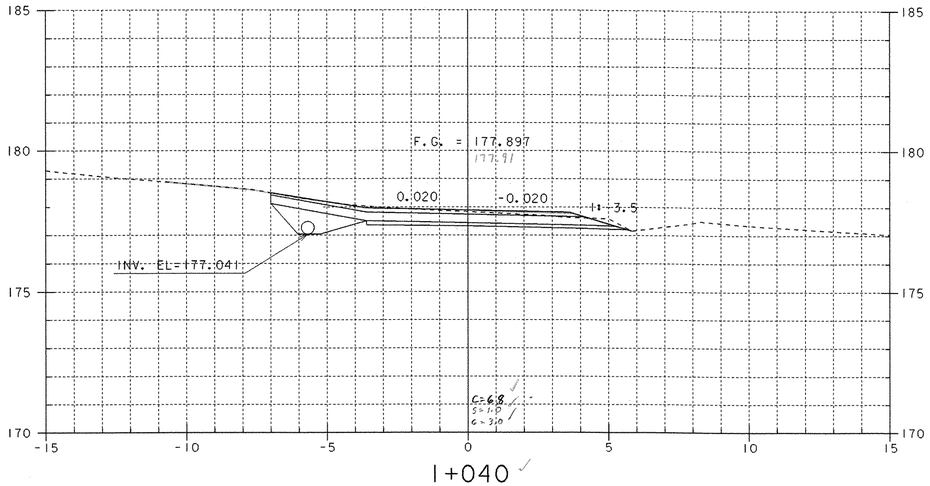


1+050



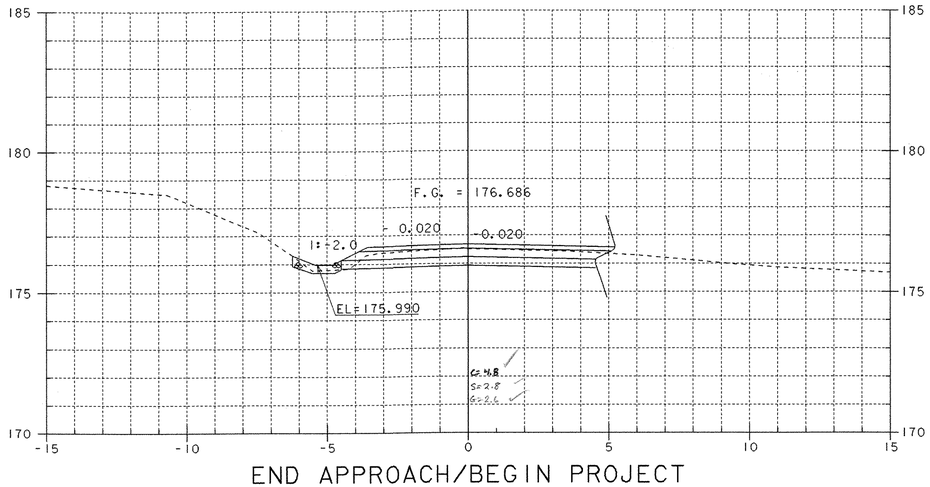
1+060

STA 1+044 RIGHT
BEGIN STONE FILL, TYPE I
STONE LINED DITCH ALONG SIDELINE



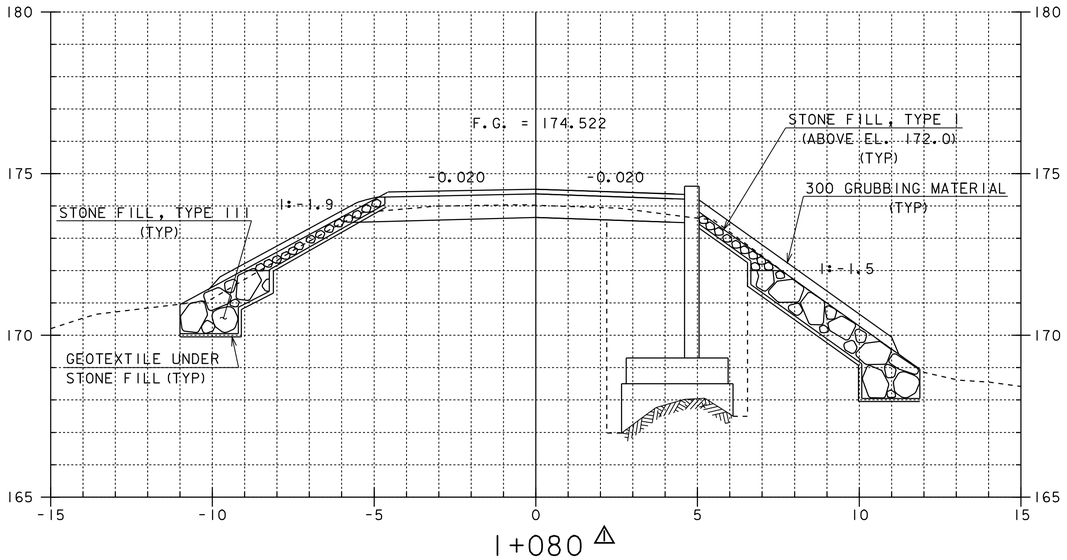
1+040

STA 1+037 LT
CONSTRUCT DRIVE
(SEE SHT. 50 FOR DETAILS)



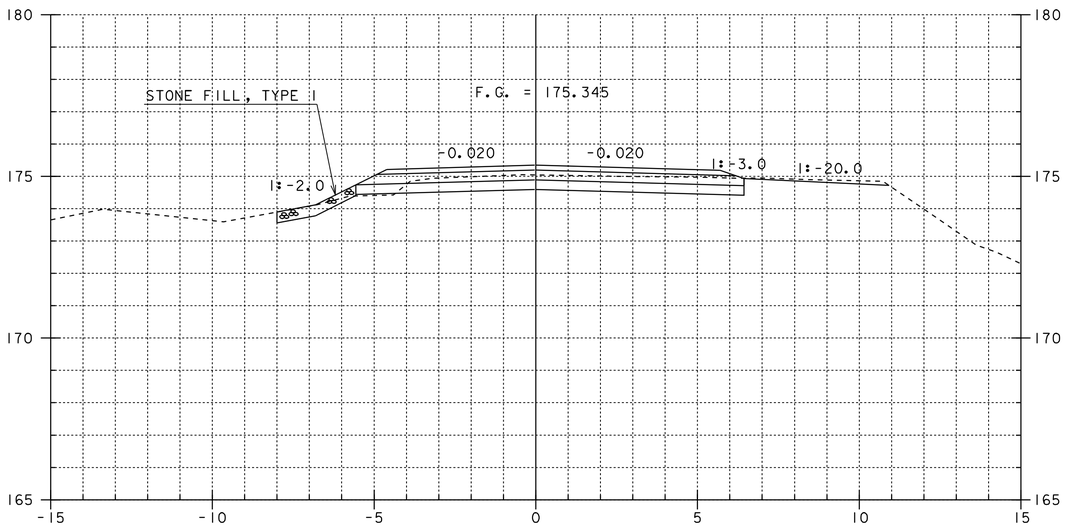
END APPROACH/BEGIN PROJECT
1+055

SHEET NAME:	**MAINLINE CROSS SECTIONS**		
PROJECT NAME:	WESTFORD	HIGHWAY NO.:	TH 4
PROJECT NUMBER:	TH2 9436	BRIDGE NO.:	2
		OVER:	ROGERS BROOK
FILE NAME: /PW/94J122/sJ122xs2.dgn		PLOT DATE:	25-MAR-2005
PROJECT MANAGER:	R. R. WHITCOMB	DRAWN BY:	STRI
DESIGNED BY:	C. CARLSON	IPARM NAME:	sJ122mx2.I
BRIDGE SHEET NUMBER:		SHEET	45 OF 56

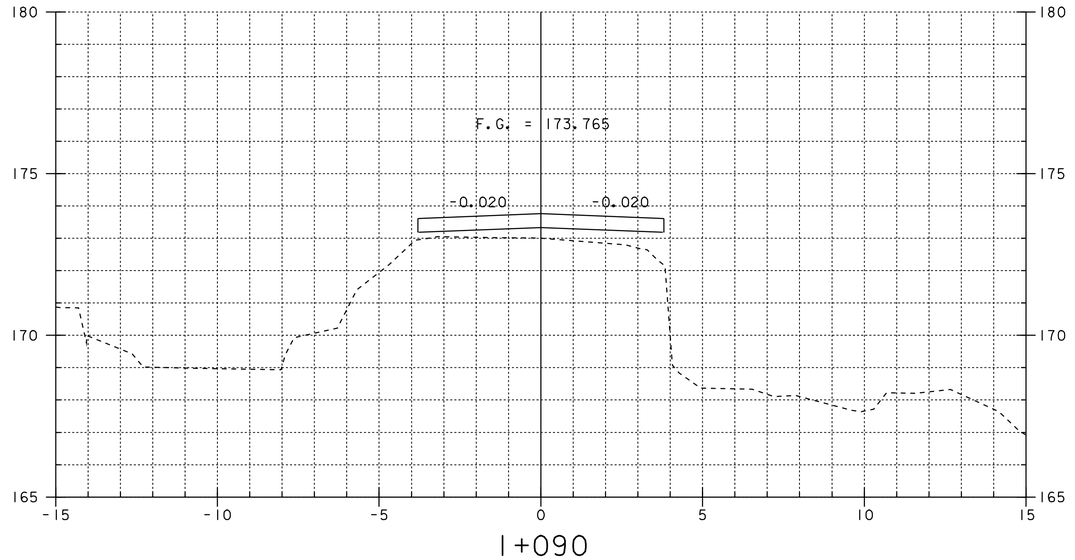


1+080 ⚠

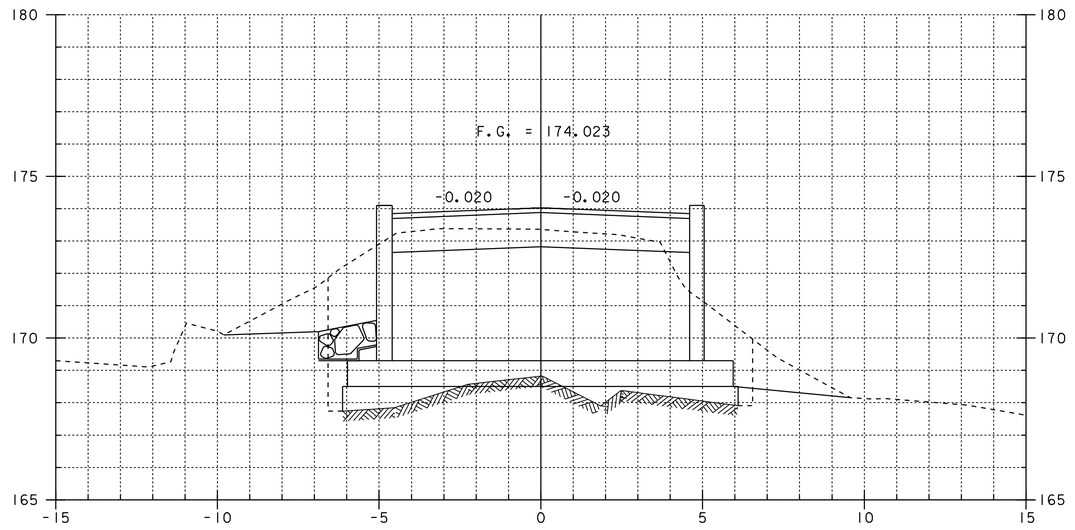
STA 1+070 LEFT
END STONE FILL, TYPE I



1+070



1+090



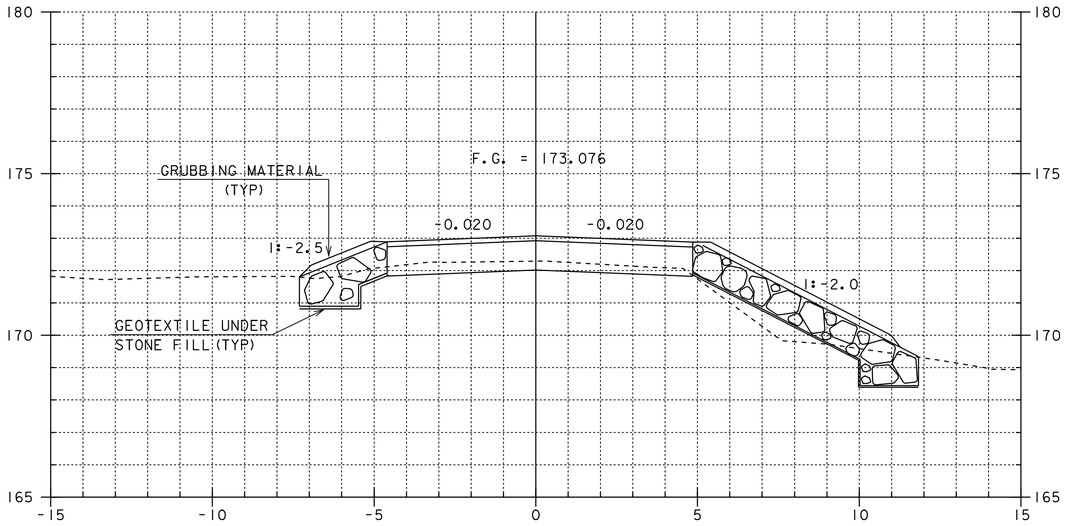
1+086.500
BEGIN BRIDGE

REVISION	DATE	BY	CHK'D	DESCRIPTION
⚠	06/27/2005	GFR	CWC	ABUTMENTS MODIFIED DUE TO UPDATED LEDGE INFORMATION.

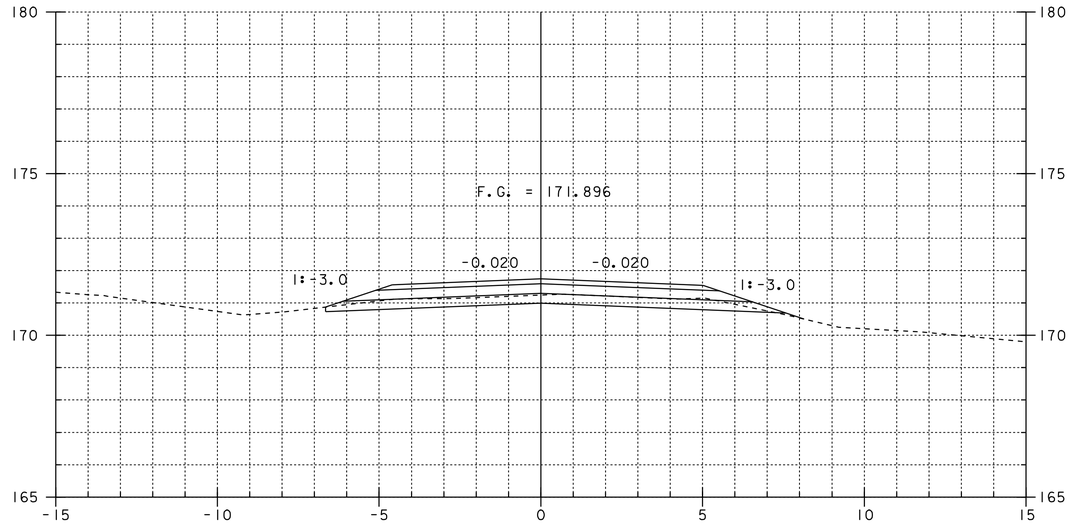
SHEET NAME: MAINLINE CROSS SECTIONS

PROJECT NAME: WESTFORD
PROJECT NUMBER: IH2 9436
HIGHWAY NO.: IH 4
BRIDGE NO.: 2
OVER: ROGERS BROOK

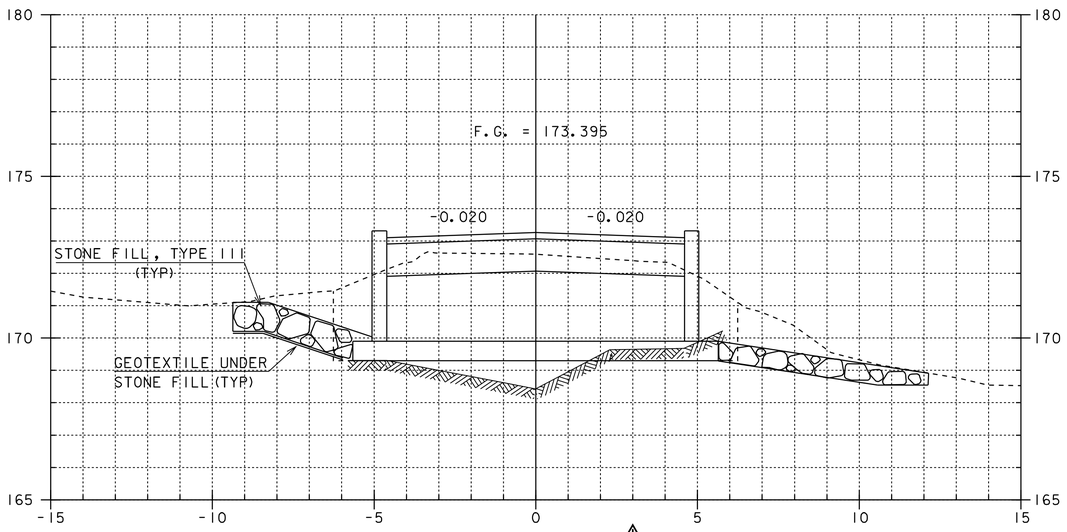
FILE NAME: /PW/94J122/sJ122xs2.dgn
PROJECT MANAGER: R.R. WHITCOMB
DESIGNED BY: C. CARLSON
BRIDGE SHEET NUMBER:
PLOT DATE: 22-DEC-2006
DRAWN BY: STRI
IPARM NAME: sJ122mx3.I
SHEET 46 OF 56



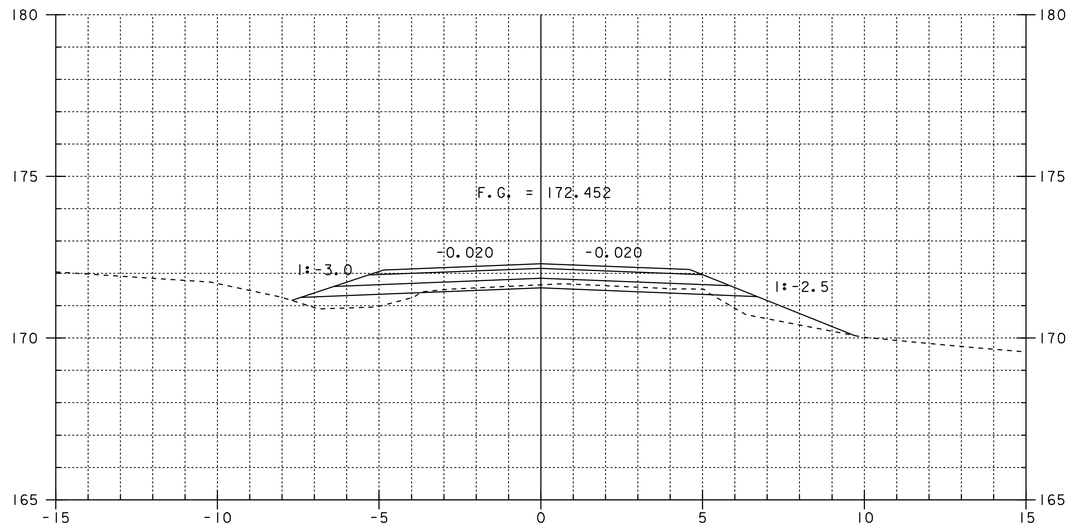
1+100



1+120



1+095.25 ⚠
END BRIDGE



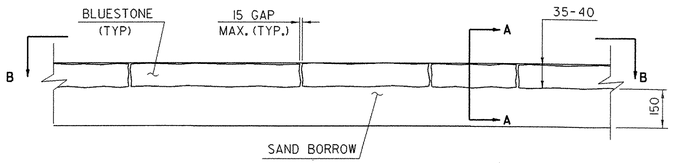
1+110

REVISION	DATE	BY	CHK'D	DESCRIPTION
⚠	06/27/2005	GFR	CWC	ABUTMENTS MODIFIED DUE TO UPDATED LEDGE INFORMATION.

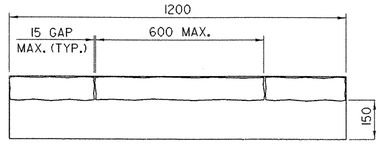
SHEET NAME: MAINLINE CROSS SECTIONS

PROJECT NAME: WESTFORD
PROJECT NUMBER: IH2 9436
HIGHWAY NO.: IH 4
BRIDGE NO.: 2
OVER: ROGERS BROOK

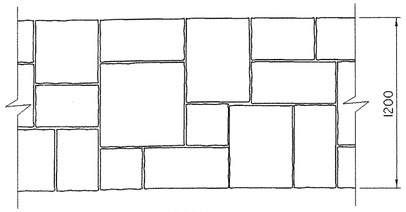
FILE NAME: /PW/94J22/sJJ22xs2.dgn
PROJECT MANAGER: R.R. WHITCOMB
DESIGNED BY: C. CARLSON
BRIDGE SHEET NUMBER:
PLOT DATE: 22-DEC-2006
DRAWN BY: STRI
IPARM NAME: sJJ22mx4.I
SHEET 47 OF 56



SPECIAL WALKWAY @ STA. 1+129.6 RT. DETAIL
NTS



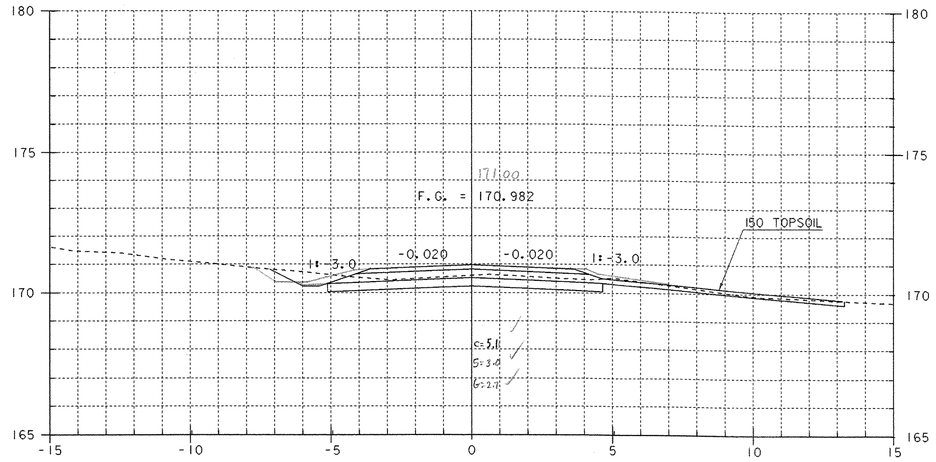
SECTION A-A
NTS



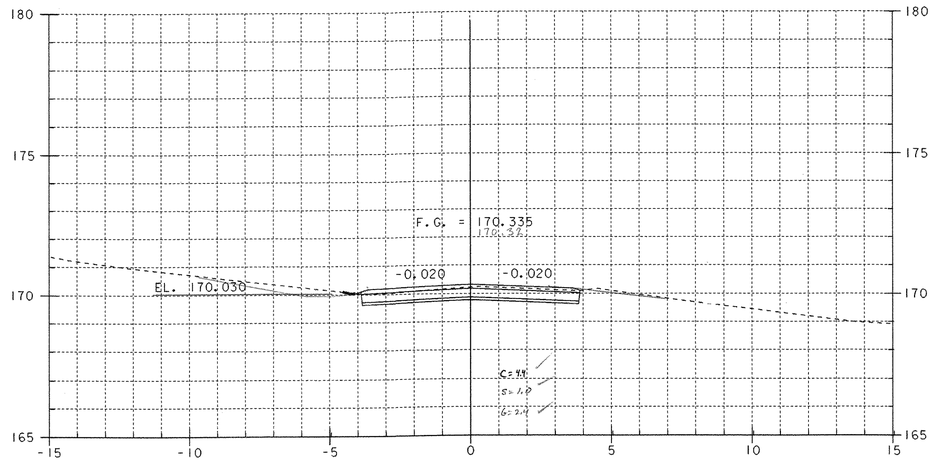
SECTION B-B
NTS

GAPS BETWEEN BLUESTONES TO
BE FILLED IN WITH STONE DUST FILLER.

LABOR AND MATERIALS FOR SPECIAL WALKWAY SHALL BE PAID
FOR UNDER ITEM 618.10, "PORTLAND CEMENT CONCRETE SIDEWALK, 125 mm (MOD.)"



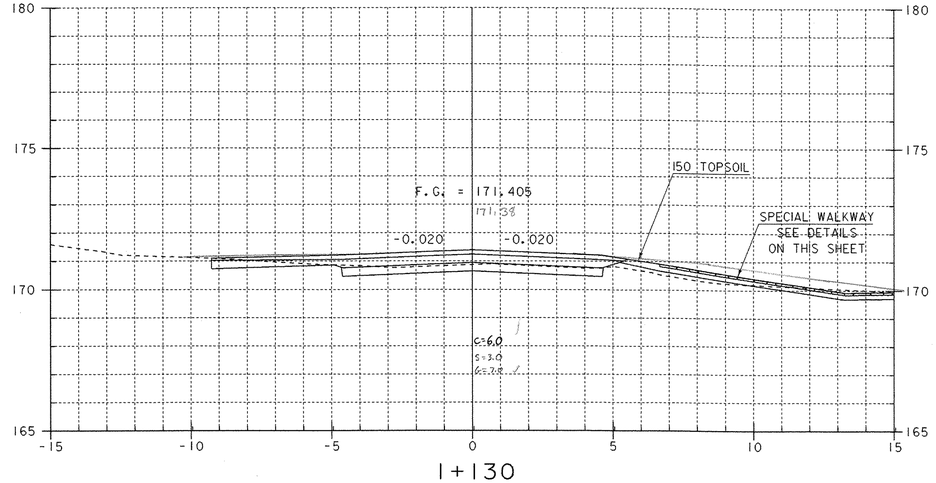
1+140



1+160

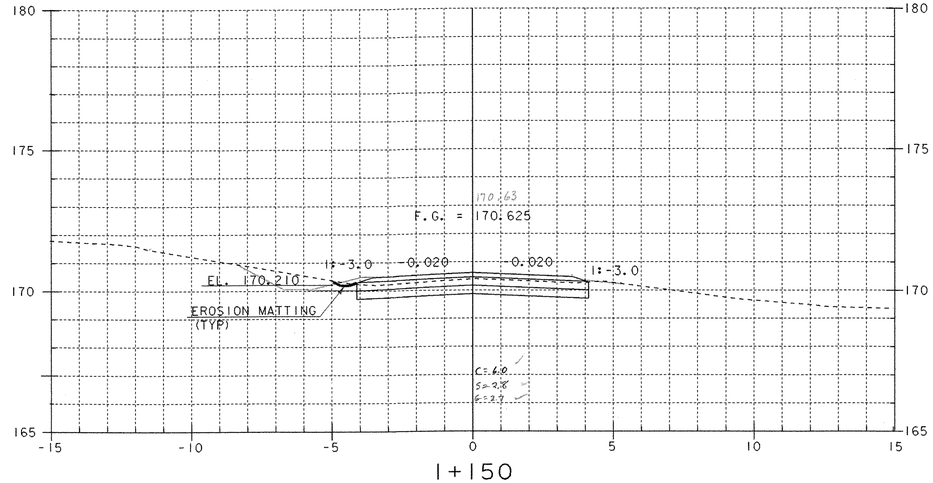
STA 1 + 160
END EROSION MATTING

STA 1 + 133.0 LT & STA 1 + 134.0 RT
CONSTRUCT DRIVES
SEE SHEET 32 & 33 FOR MORE INFORMATION



1+130

STA 1 + 129.600 RT
CONSTRUCT SPECIAL WALKWAY



1+150

END PROJECT/BEGIN APPROACH

STA 1 + 140.75
BEGIN EROSION MATTING

SHEET NAME: **MAINLINE CROSS SECTIONS**

PROJECT NAME: WESTFORD — TH 4

PROJECT NUMBER: TH2 9436 — 2

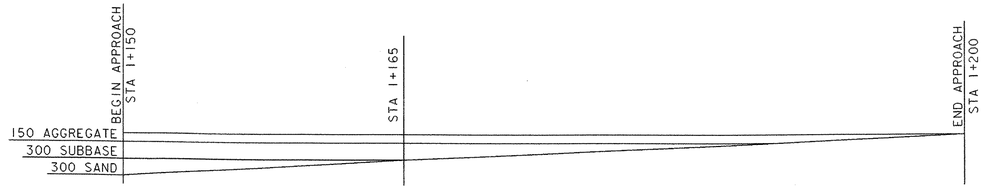
OVER: ROGERS BROOK

FILE NAME: /PW/94J122/sJ122xs2.dgn — PLOT DATE: 25-MAR-2005

PROJECT MANAGER: R. R. WHITCOMB — DRAWN BY: STRI

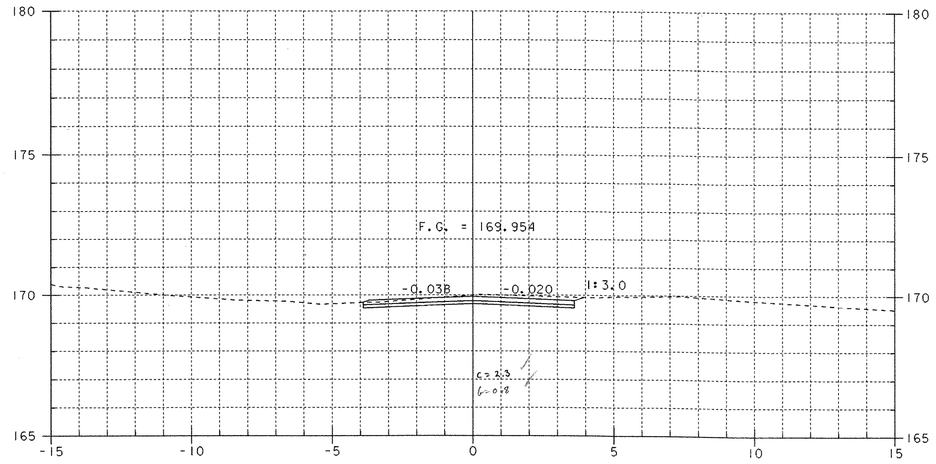
DESIGNED BY: C. CARLSON — IPARM NAME: sJ122mx5.I

BRIDGE SHEET NUMBER: — SHEET 48 OF 56

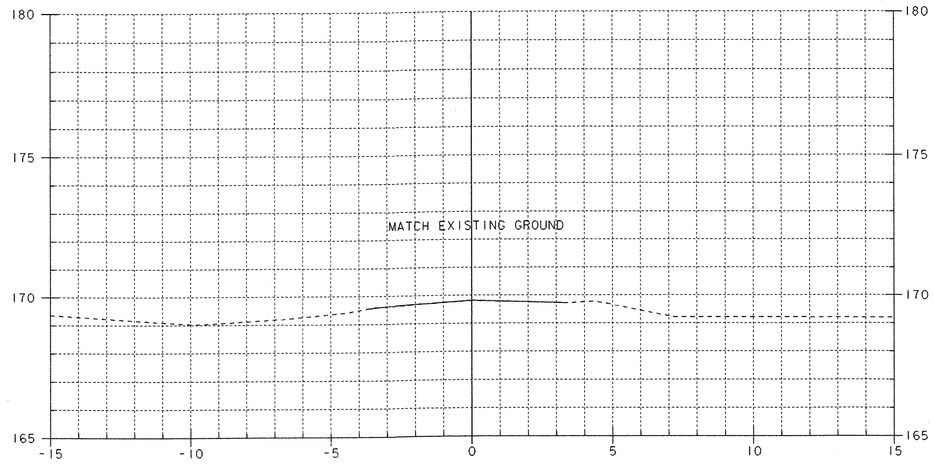


MATERIAL TRANSITION DETAIL

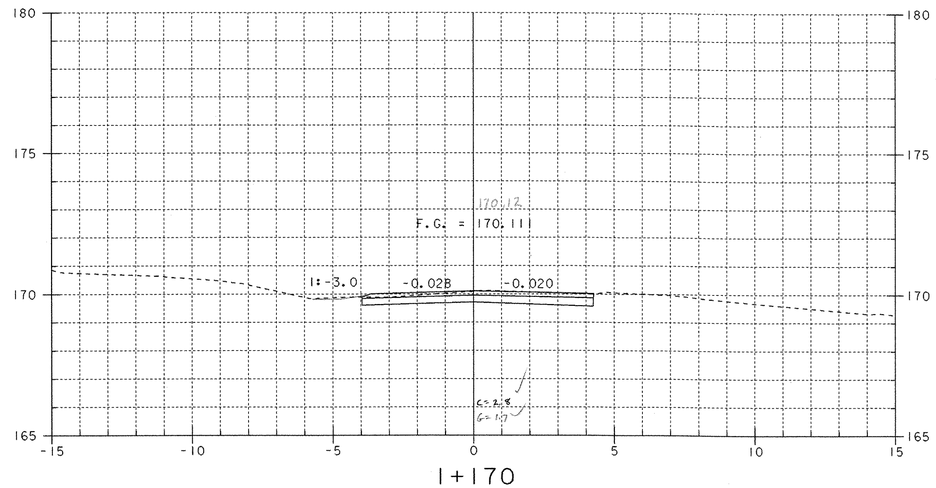
NTS



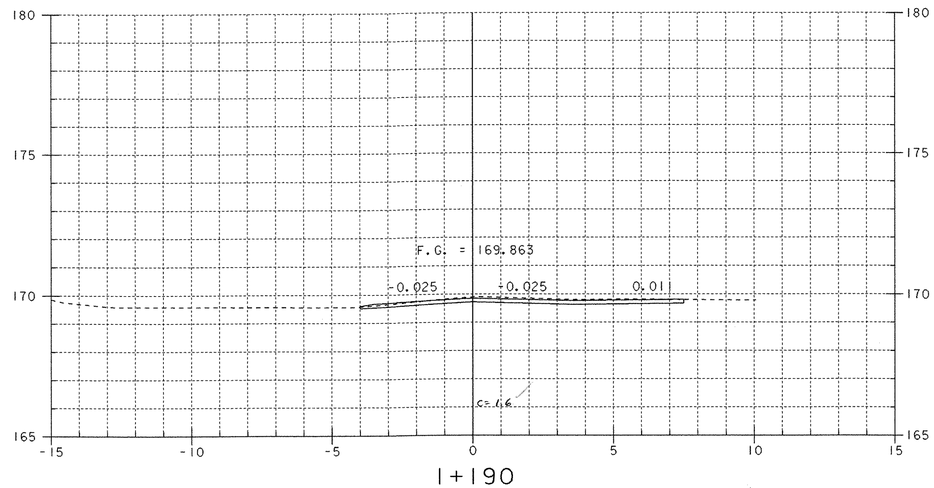
1+180



1+200
END APPROACH

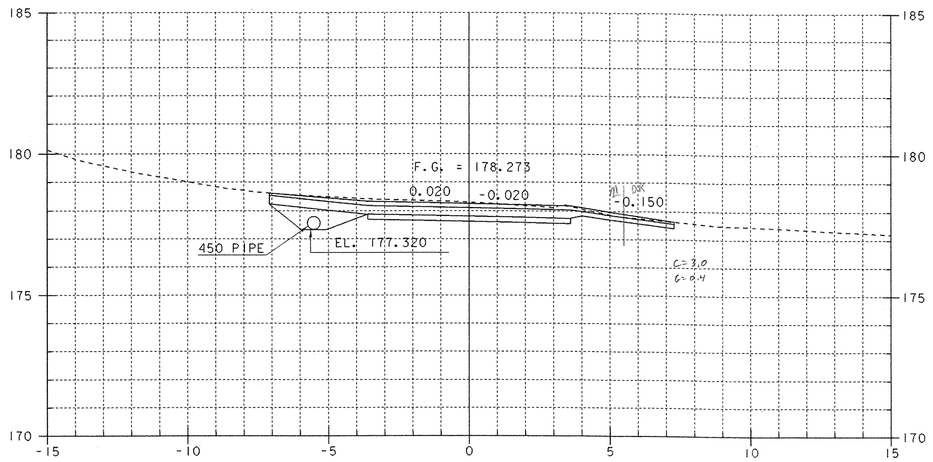


1+170

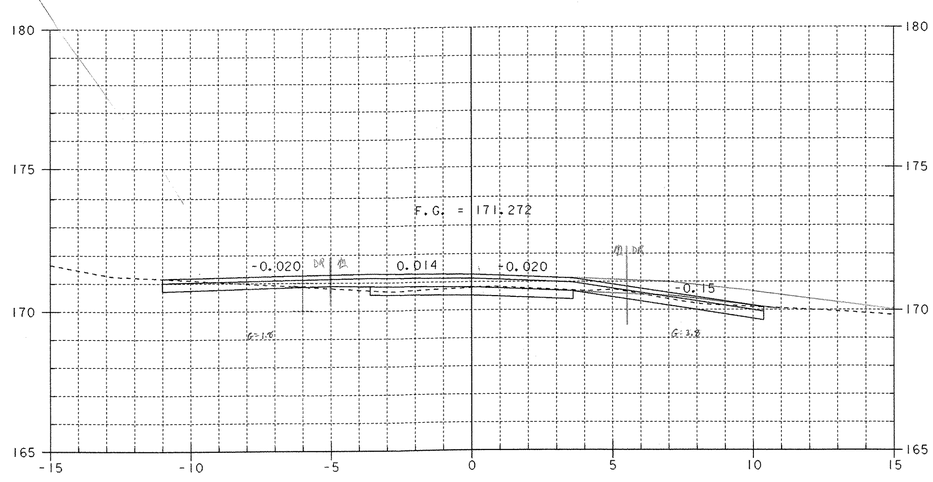


1+190

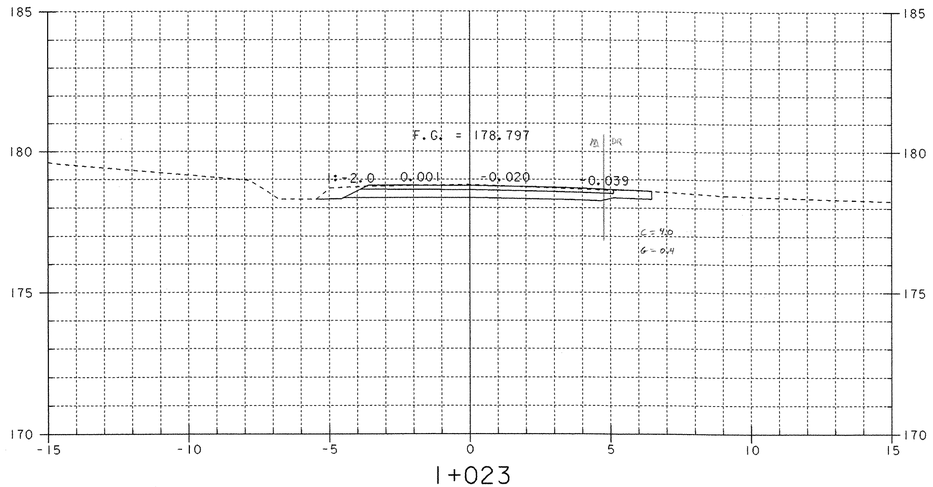
SHEET NAME:	**MAINLINE CROSS SECTIONS**		
PROJECT NAME:	WESTFORD	HIGHWAY NO.:	TH 4
PROJECT NUMBER:	TH2 9436	BRIDGE NO.:	2
		OVER:	ROGERS BROOK
FILE NAME:	/PW/94J122/sJ122xs2.dgn	PLOT DATE:	25-MAR-2005
PROJECT MANAGER:	R. R. WHITCOMB	DRAWN BY:	STRI
DESIGNED BY:	C. CARLSON	IPARM NAME:	sJ122mx6.I
BRIDGE SHEET NUMBER:		SHEET	49 OF 56



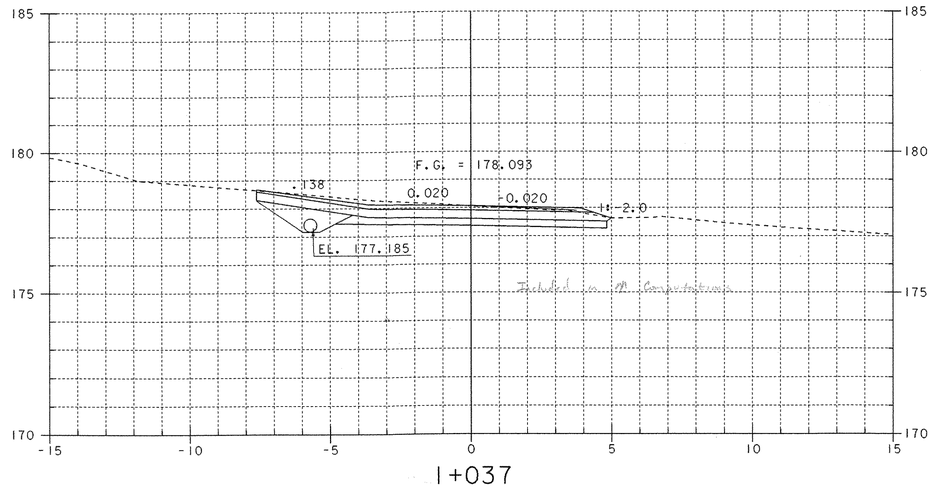
I+034
DRIVE RIGHT



I+133
DRIVE LEFT & Rt

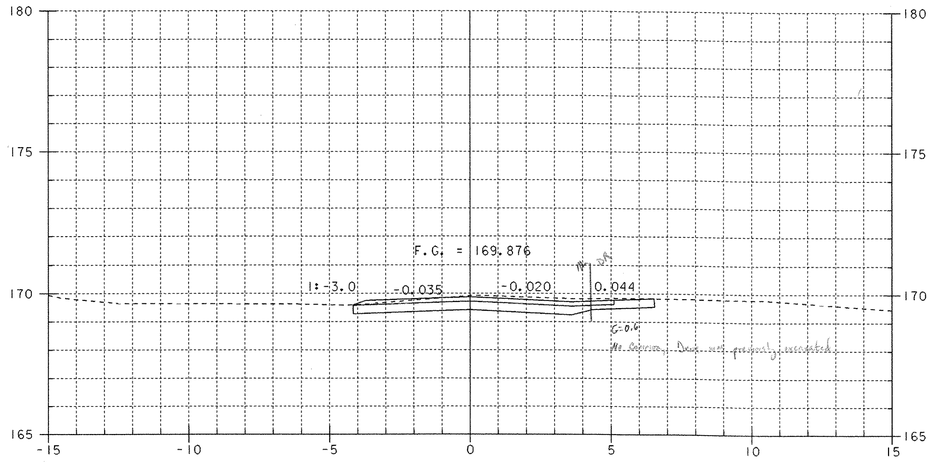


I+023
DRIVE RIGHT

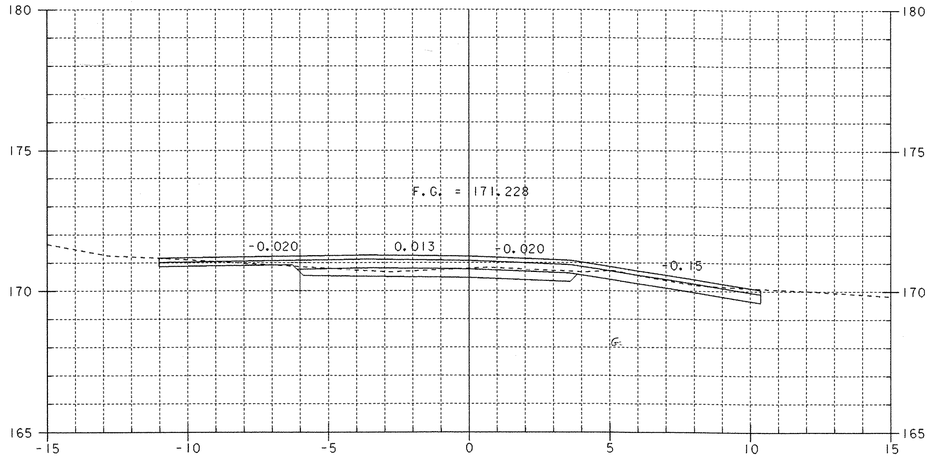


I+037
DRIVE LEFT

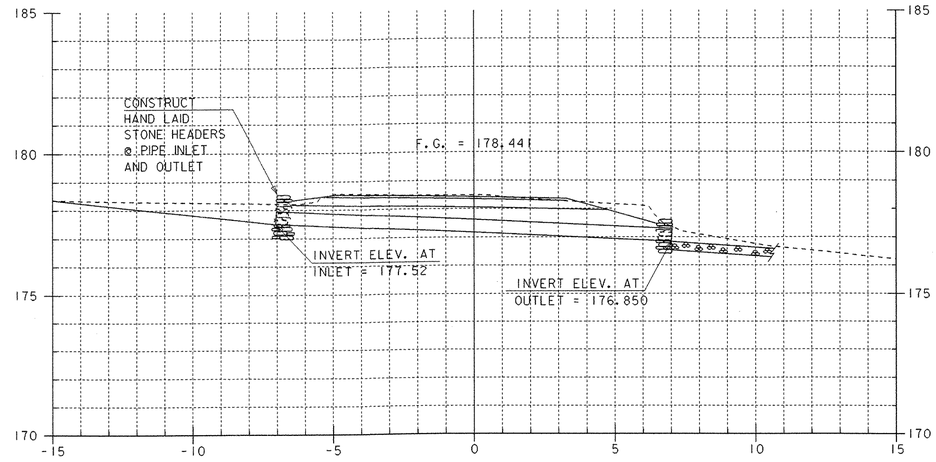
SHEET NAME:	**DRIVE CROSS SECTIONS**		
PROJECT NAME:	WESTFORD	HIGHWAY NO.:	TH 4
PROJECT NUMBER:	TH2 9436	BRIDGE NO.:	2
		OVER:	ROGERS BROOK
FILE NAME:	/PW/94J122/sJ122xs2.dgn	PLOT DATE:	25-MAR-2005
PROJECT MANAGER:	R. R. WHITCOMB	DRAWN BY:	STRI
DESIGNED BY:	C. CARLSON	IPARM NAME:	sJ122dx1.i
BRIDGE SHEET NUMBER:		SHEET	50 OF 56



1+188
DRIVE RIGHT

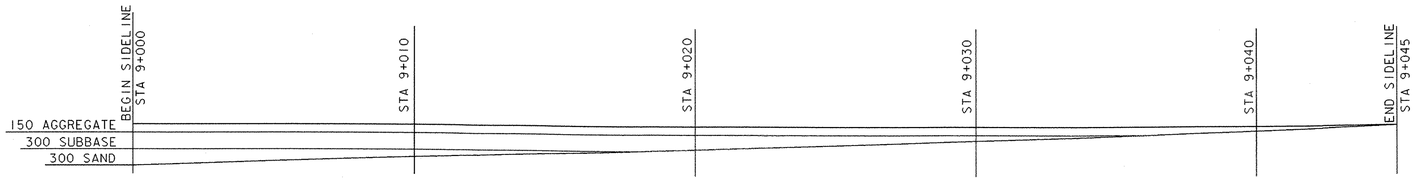


1+134
DRIVE RIGHT

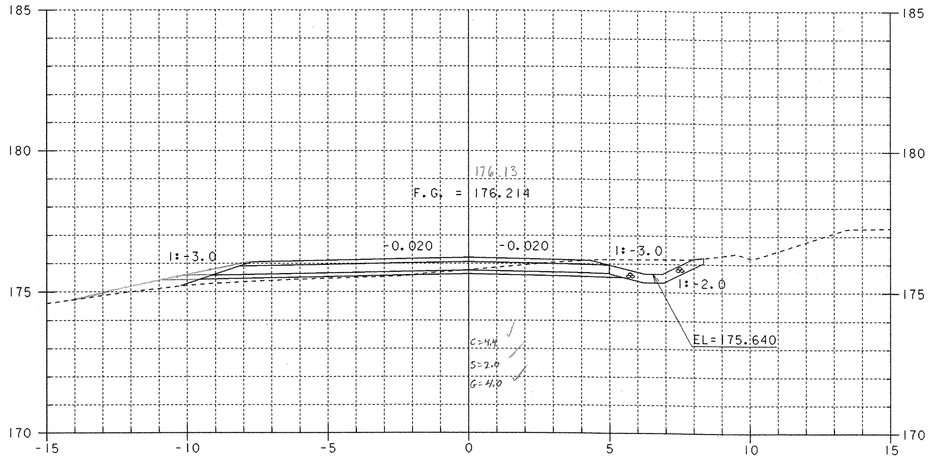


OPTION PIPE UNDER DRIVE
STA 1+037 LEFT

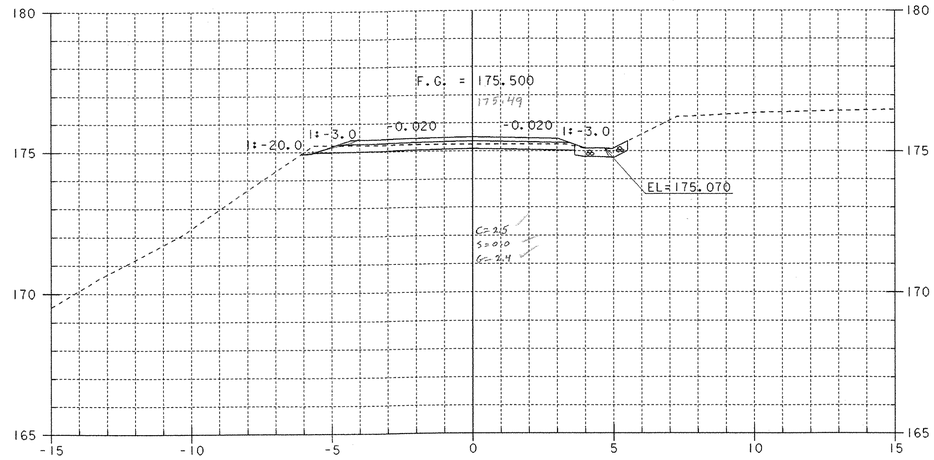
SHEET NAME: **DRIVE CROSS SECTIONS**	
PROJECT NAME: WESTFORD PROJECT NUMBER: TH2 9436	HIGHWAY NO.: TH 4 BRIDGE NO.: 2 OVER: ROGERS BROOK
FILE NAME: /PW/94j122/sj122xs2.dgn PROJECT MANAGER: R. R. WHITCOMB DESIGNED BY: C. CARLSON BRIDGE SHEET NUMBER:	PLOT DATE: 25-MAR-2005 DRAWN BY: STRI IPARM NAME: sj122dx2.1 SHEET 51 OF 56



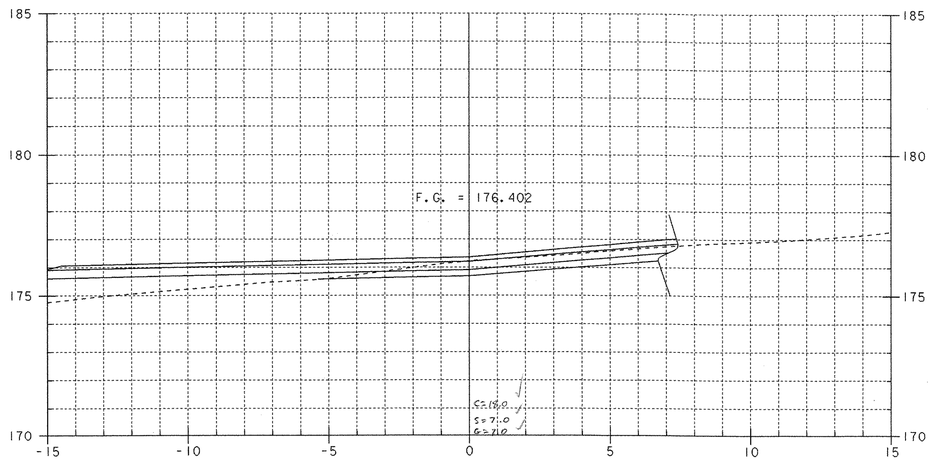
MATERIAL TRANSITION DETAIL



9+010

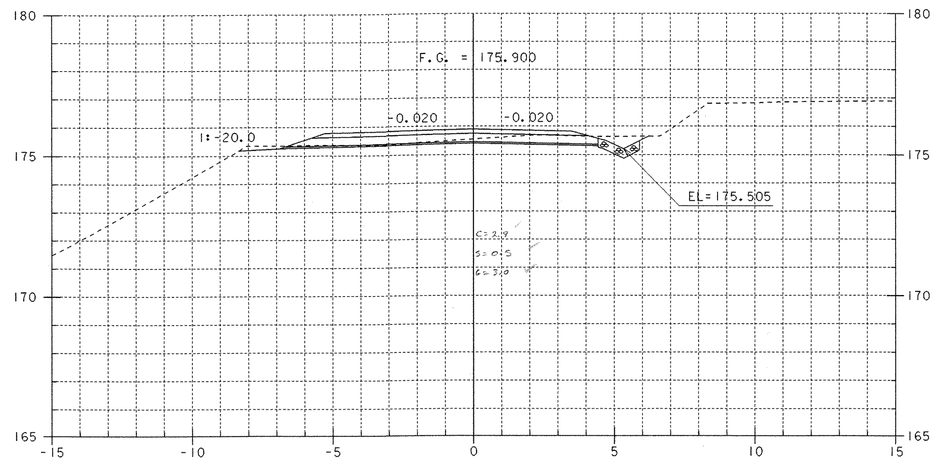


9+020



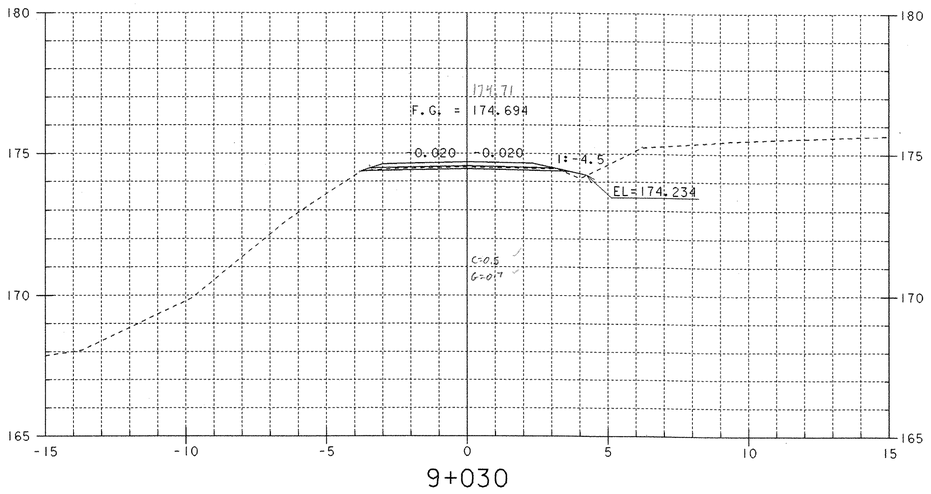
9+005

℄ STA 9+003.6
BEGIN SIDELINE APPROACH
℄ STA 9+004.6
BEGIN DITCH

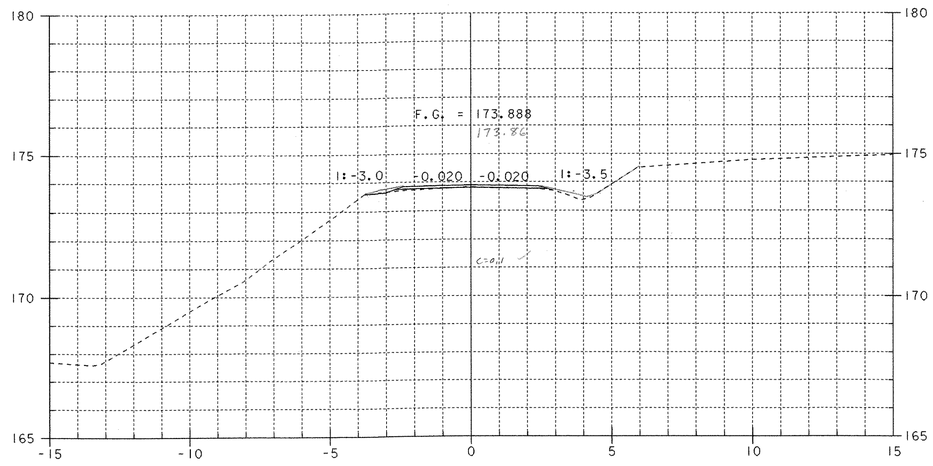


9+015

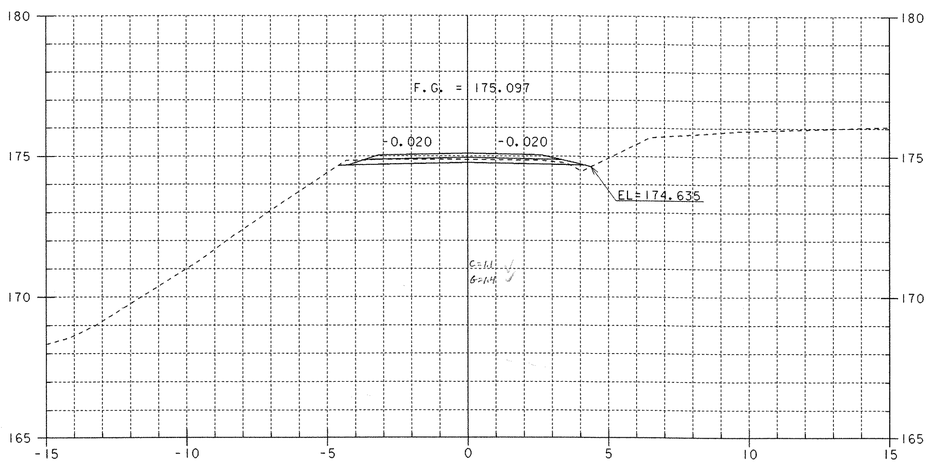
SHEET NAME:	SIDELINE CROSS SECTIONS		
PROJECT NAME:	WESTFORD	HIGHWAY NO.:	TH 4
PROJECT NUMBER:	TH2 9436	BRIDGE NO.:	2
		OVER:	ROGERS BROOK
FILE NAME:	/PW/94J122/sJ122xs2.dgn	PLOT DATE:	25-MAR-2005
PROJECT MANAGER:	R. R. WHITCOMB	DRAWN BY:	STRI
DESIGNED BY:	C. CARLSON	IPARM NAME:	sJ122sxl.i
BRIDGE SHEET NUMBER:		SHEET	52 OF 56



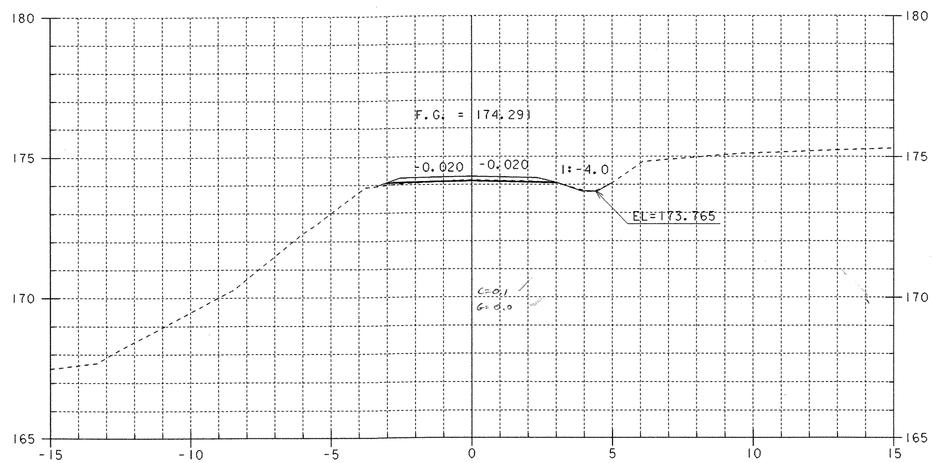
9+030



9+040

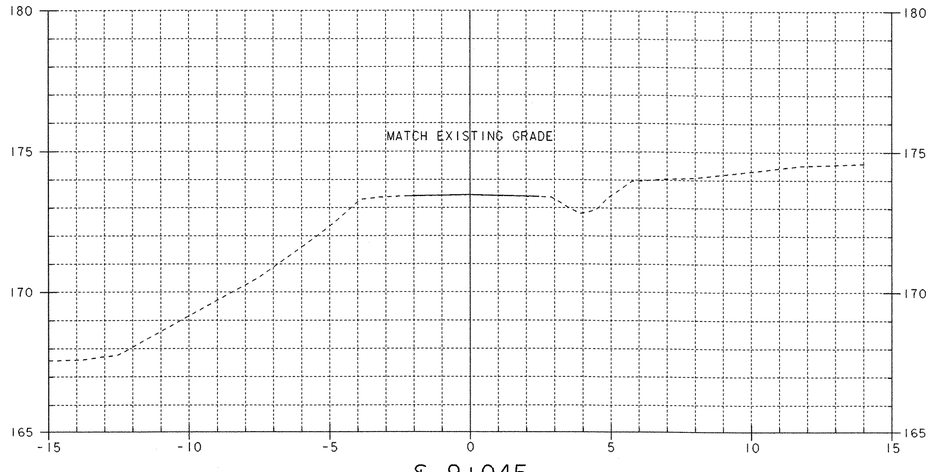


9+025



9+035

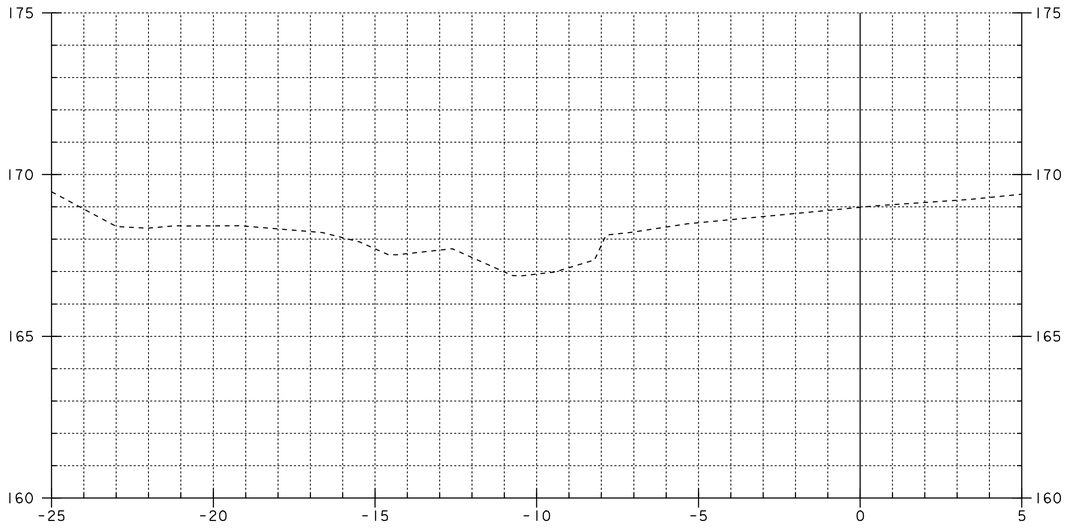
SHEET NAME:	SIDELINE CROSS SECTIONS		
PROJECT NAME:	WESTFORD	HIGHWAY NO.:	TH 4
PROJECT NUMBER:	TH2 9436	BRIDGE NO.:	2
		OVER:	ROGERS BROOK
FILE NAME:	/PW/94J122/sJ122xs2.dgn	PLOT DATE:	25-MAR-2005
PROJECT MANAGER:	R. R. WHITCOMB	DRAWN BY:	STRI
DESIGNED BY:	C. CARLSON	IPARM NAME:	sJ122sx2.i
BRIDGE SHEET NUMBER:		SHEET	53 OF 56



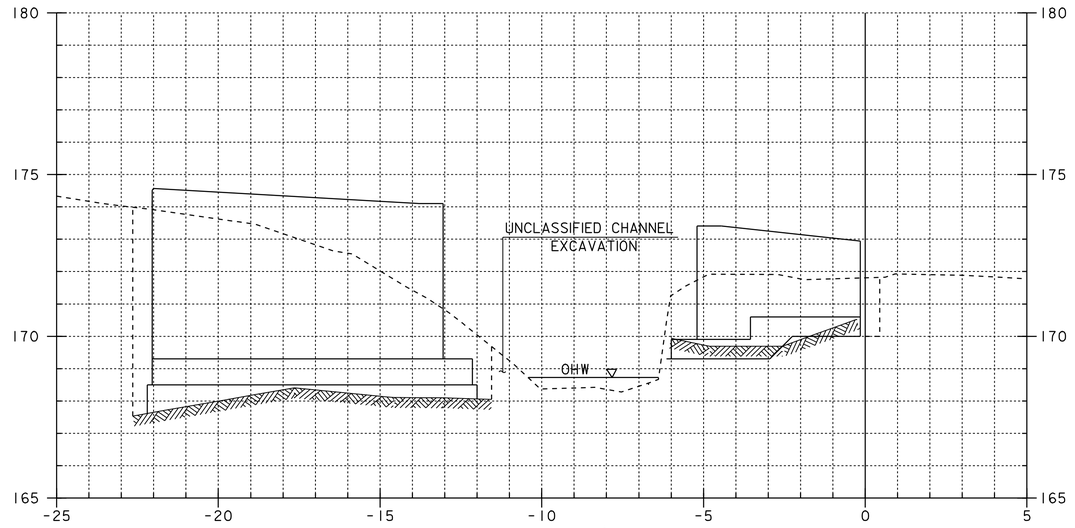
℄ 9+045

END SIDELINE APPROACH

SHEET NAME: SIDELINE CROSS SECTIONS	
PROJECT NAME: WESTFORD PROJECT NUMBER: TH2 9436	HIGHWAY NO.: TH 4 BRIDGE NO.: 2 OVER: ROGERS BROOK
FILE NAME: /PW/94jl22/sjl22xs2.dgn PROJECT MANAGER: R. R. WHITCOMB DESIGNED BY: C. CARLSON BRIDGE SHEET NUMBER:	PLOT DATE: 25-MAR-2005 DRAWN BY: STRI IPARM NAME: sjl22sx3.i SHEET 54 OF 56



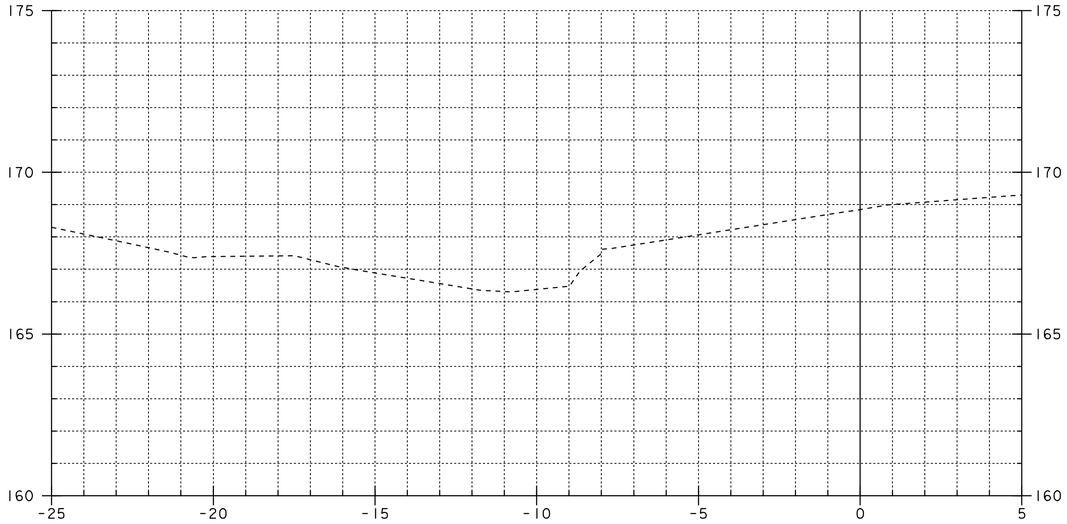
5+035



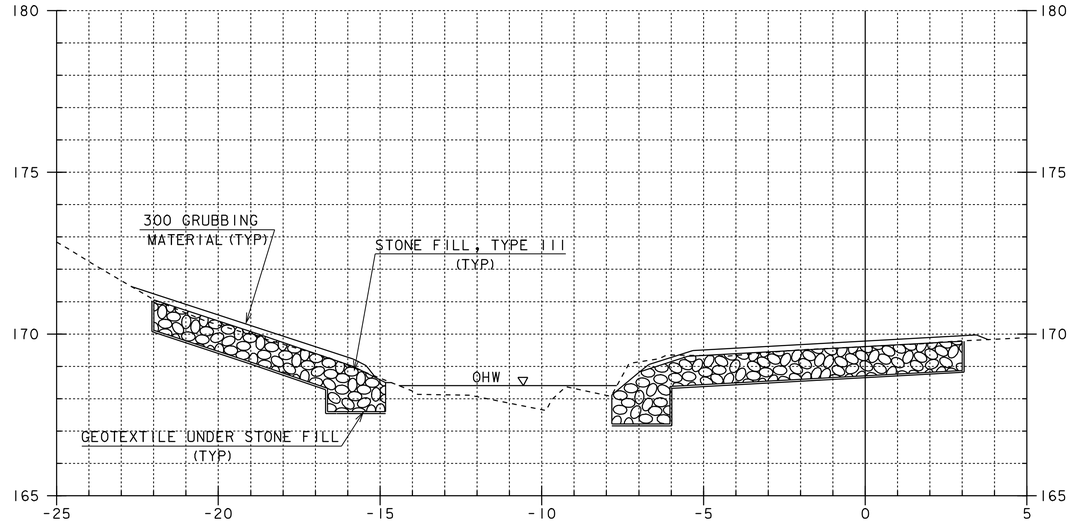
STA 5+045 FAR LEFT
END STONE FILL, TYPE III
END GRUBBING MATERIAL
END GEOTEXTILE FOR STONE

5+045 ⚠

STA 5+045 LEFT
END STONE FILL, TYPE III
END GRUBBING MATERIAL
END GEOTEXTILE FOR STONE



5+030



STA 5+038 FAR LEFT
BEGIN STONE FILL, TYPE III
BEGIN GRUBBING MATERIAL
BEGIN GEOTEXTILE FOR STONE
BEGIN UNCLASSIFIED
CHANNEL EXCAVATION

5+040

STA 5+037 LEFT
BEGIN STONE FILL, TYPE III
BEGIN GRUBBING MATERIAL
BEGIN GEOTEXTILE FOR STONE
BEGIN UNLASSIFIED CHANNEL EXCAVATION

0 2 4 6 8 10
SCALE 1:100

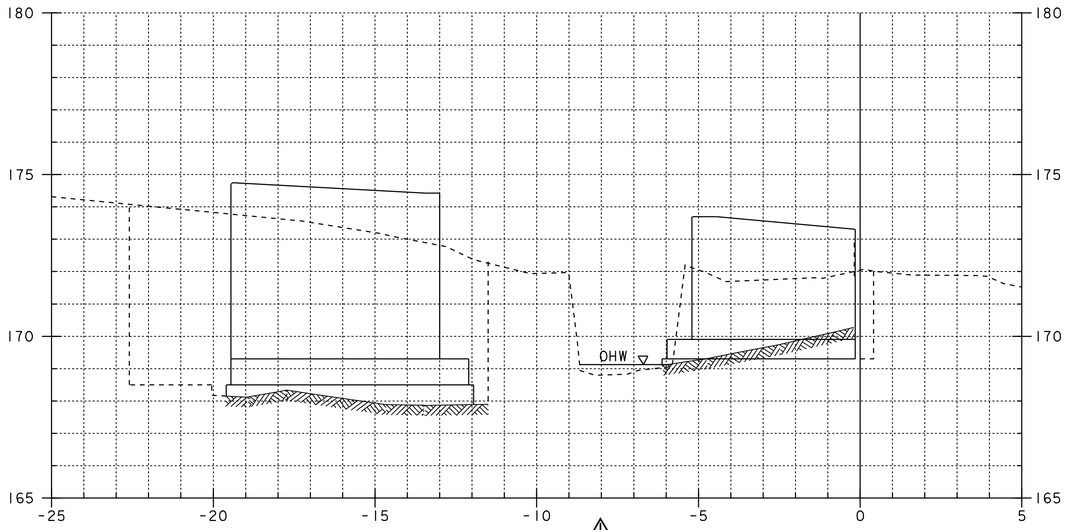
REVISION	DATE	BY	CHK'D	DESCRIPTION
⚠	06/27/2005	GFR	CWC	ABUTMENTS MODIFIED DUE TO UPDATED LEDGE INFORMATION.

SHEET NAME: CHANNEL CROSS SECTIONS

PROJECT NAME: WESTFORD
PROJECT NUMBER: TH2 9436
HIGHWAY NO.: TH 4
BRIDGE NO.: 2
OVER: ROGERS BROOK

FILE NAME: /PW/94J122/sJ122xs2.dgn
PROJECT MANAGER: R. R. WHITCOMB
DESIGNED BY: C. CARLSON
BRIDGE SHEET NUMBER:
PLOT DATE: 22-DEC-2006
DRAWN BY: STRI
IPARM NAME: sJ122cxl.i
SHEET 55 OF 56

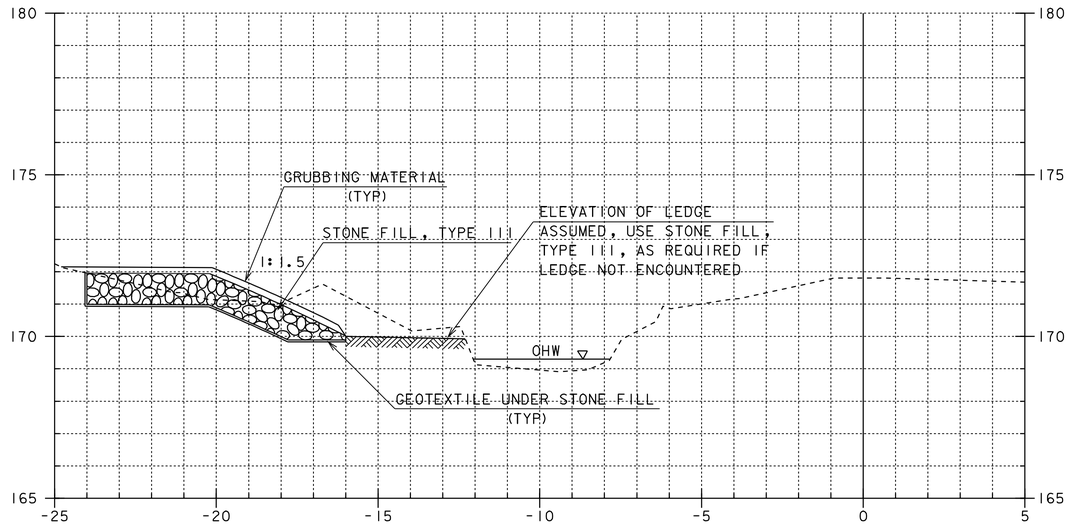
STA 5+062 FAR LEFT
END STONE FILL, TYPE III
END GRUBBING MATERIAL
END GEOTEXTILE FOR STONE
END UNCLASSIFIED CHANNEL EXCAVATION



STA 5+055 FAR LEFT
BEGIN STONE FILL, TYPE III
BEGIN GRUBBING MATERIAL
BEGIN GEOTEXTILE FOR STONE

5+055 ⚠

STA 5+055 LEFT
BEGIN STONE FILL, TYPE III
BEGIN GRUBBING MATERIAL
BEGIN GEOTEXTILE FOR STONE



5+060

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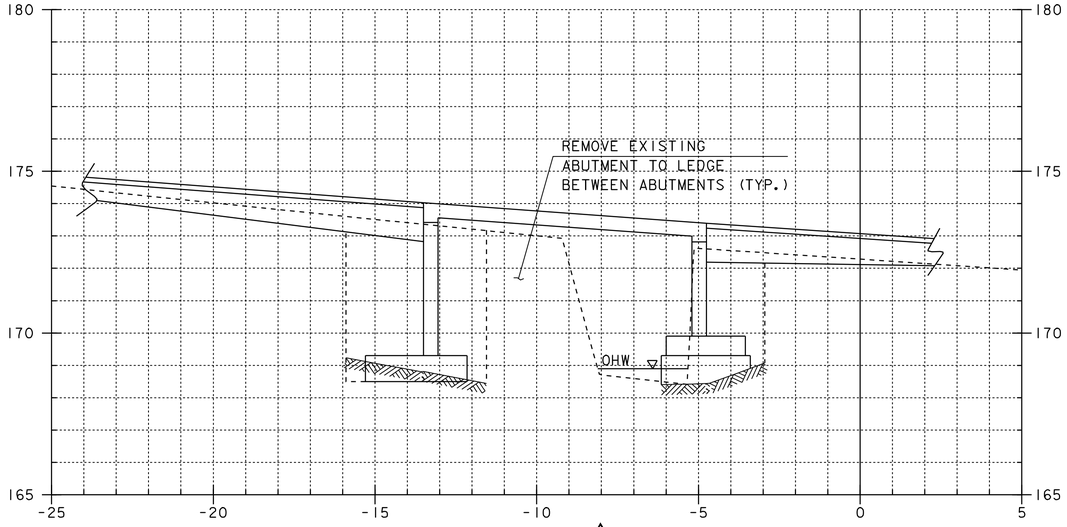
END STONE FILL, TYPE III
END GRUBBING MATERIAL
END GEOTEXTILE FOR STONE



STA 5+053 FAR LEFT
BEGIN STONE FILL, TYPE III
BEGIN GRUBBING MATERIAL
BEGIN GEOTEXTILE FOR STONE

5+050 ⚠

STA 5+053 LEFT
BEGIN STONE FILL, TYPE III
BEGIN GRUBBING MATERIAL
BEGIN GEOTEXTILE FOR STONE

0 2 4 6 8 10
SCALE 1:100

REVISION	DATE	BY	CHK'D	DESCRIPTION
⚠	06/27/2005	GFR	CWC	ABUTMENTS MODIFIED DUE TO UPDATED LEDGE INFORMATION.

SHEET NAME: CHANNEL CROSS SECTIONS

PROJECT NAME: WESTFORD
PROJECT NUMBER: TH2 9436
HIGHWAY NO.: TH 4
BRIDGE NO.: 2
OVER: ROGERS BROOK

FILE NAME: /PW/94J22/sJ22xs2.dgn
PROJECT MANAGER: R. R. WHITCOMB
DESIGNED BY: C. CARLSON
BRIDGE SHEET NUMBER:
PLOT DATE: 22-DEC-2006
DRAWN BY: SIRI
IPARM NAME: sJ22cx2.I
SHEET 56 OF 56