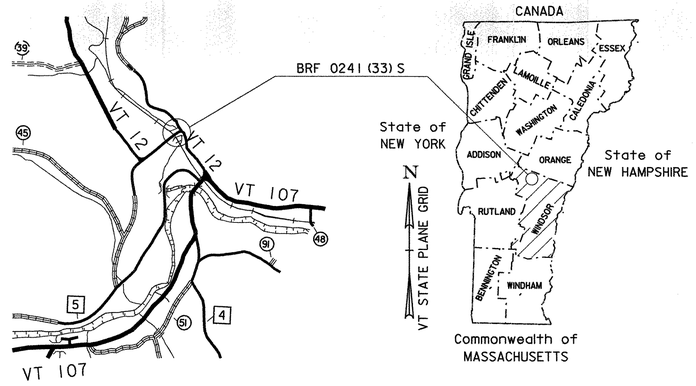
STATE OF VERMONT
AGENCY OF TRANSPORTATION



PROPOSED IMPROVEMENT
BRIDGE PROJECT

TOWN OF BETHEL

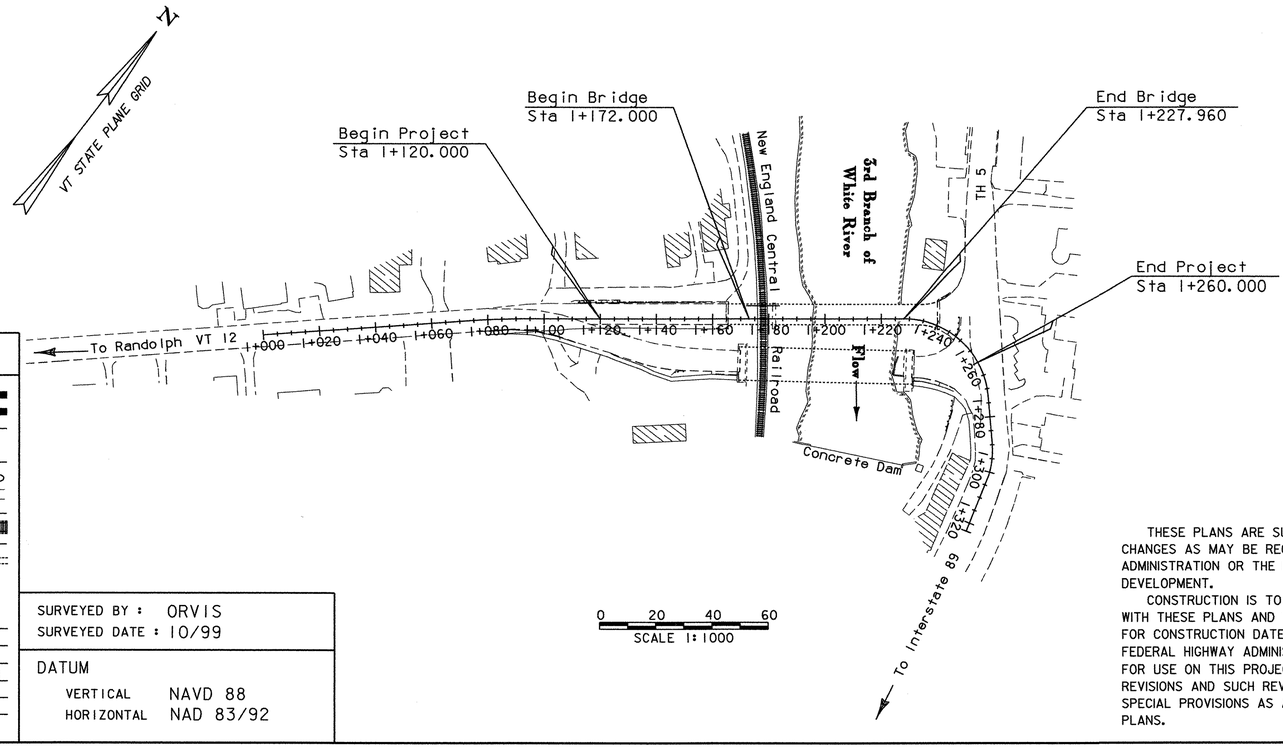
COUNTY OF WINDSOR

ROUTE NO : VT 12 BRIDGE NO : 31

PROJECT LOCATION : BEGINNING AT A POINT ON VT 12 IN BETHEL APPROXIMATELY 0.75 KM FROM THE VT 107 JUNCTION AND EXTENDING SOUTHERLY ALONG VT 12 FOR A DISTANCE OF 140 METERS.

PROJECT DESCRIPTION : REPLACE BRIDGE 31 WITH RELATED ROADWAY APPROACH AND CHANNEL WORK

LENGTH OF STRUCTURE :	55.960 METERS.
LENGTH OF ROADWAY :	84.040 METERS.
LENGTH OF PROJECT :	140.000 METERS.



CONVENTIONAL SYMBOLS

COUNTY LINE	COUNTY LINE
TOWN LINE	TOWN LINE
LIMITS OF ACCESS	
POINT OF ACCESS	X
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 : ORVIS
SURVEYED DATE : 10/99

DATUM
VERTICAL NAVD 88
HORIZONTAL NAD 83/92

RECORD PLANS

CONTRACTOR: KUBRICKY CONSTRUCTION CORP. - GLENS FALLS, NY
RESIDENT ENGINEER: PAUL PERRY (WILL STODDARD)
CONSTRUCTION BEGAN: AUGUST 15, 2005
CONSTRUCTION COMPLETE: SEPTEMBER 9, 2008
RECORD PLANS BY: PAUL PERRY& NICK GARBACIK

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

BY Paul K Perry RESIDENT ENGINEER
DATE 1-23-09

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 PROJECT 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.

DIRECTOR OF PROJECT DEVELOPMENT
APPROVED Richard Peterson DATE 3-15-05

PROJECT MANAGER : C. P. Williams

PROJECT NAME : Bethel
PROJECT NUMBER : BRF 0241(33)C/2

SHEET 1 OF 130 SHEETS

STATE OF VERMONT
AGENCY OF TRANSPORTATION

PRELIMINARY INFORMATION SHEET

Metric

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D-9M	06/13/97
D-11M	06/13/97
D-15M	06/13/97
D-20M	06/13/97
E-100M	03/01/04
E-100AM	03/01/04
E-101M	06/13/97
E-102M	05/30/03
E-102AM	06/13/97
E-106M	03/01/04
E-107M	06/30/03
E-107AM	06/13/97
E-121M	06/13/97
E-123M	06/13/97
E-136BM	06/13/97
E-142M	06/13/97
E-143M	06/13/97
E-150M	06/13/97
E-152M	06/13/97
E-160M	06/13/97
E-180AM	06/13/97
E-180BM	06/13/97
E-181M	06/13/97
E-191M	02/01/99
E-193M	06/13/97
G-1M	01/03/00
G-1DM	01/03/00
G-16M	06/13/97
G-19M	11/15/02

* THESE STANDARDS EXIST AS ENGLISH STANDARDS ONLY

FINAL HYDRAULIC REPORT

TOWN: Bethel
PROJECT # : BRF 0241 (33) C/2
HIGHWAY # : VT 12
COUNTY: Windsor
STREAM: 3rd Br. White Rive
STRUCTURE # : 31

HYDROLOGIC DATA

DRAINAGE AREA : 352 sq km
CHARACTER OF TERRAIN : Mountainous, rolling hills and agricultural lands
STREAM CHARACTERISTICS : Perennial, sinuous, not braided, equiwidth
NATURE OF STREAMBED : Gravel to cobble, boulders and ledge

PEAK FLOW DATA

Q 2.33 =	169.9 cms	Q 50 =	396.4 cms
Q 10 =	283.2 cms	Q 100 =	509.7 cms
Q 25 =	348.3 cms	Q 500 =	736.2 cms

DATE OF FLOOD RECORD : November 1927
ESTIMATED DISCHARGE: Unknown
WATER SURFACE ELEV.: Unknown
NATURAL STREAM VELOCITY : @ Q50 = 2.7 mps
ICE CONDITIONS : moderate
DEBRIS: moderate
DOES THE STREAM REACH MAXIMUM HIGHWATER ELEV. RAPIDLY? No
IS ORDINARY RISE RAPID? No
IS STAGE AFFECTED BY UPSTREAM OR DOWNSTREAM CONDITIONS? Yes
IF YES, DESCRIBE: Bethel Mills dam is just below this site and effects low flow conditions.

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

EXISTING STRUCTURE INFORMATION

STRUCTURE TYPE: 4-span, plate girder (main span) w/ 3-rolled beam approach spans
YEAR BUILT: 1928
CLEAR SPAN(NORMAL TO STREAM): Total = 72.6 m
VERTICAL CLEARANCE ABOVE STREAMBED: 8.7 m (over main channel)
WATERWAY OF FULL OPENING: Total = 450 square meters
DISPOSITION OF STRUCTURE: Remove
TYPE OF MATERIAL UNDER SUBSTRUCTURE: Refer to boring logs

WATER SURFACE ELEVATIONS AT:

Q2.33 =	170.9 m	VELOCITY =	1.7 mps
Q10 =	171.9 m	"	2.2 mps
Q25 =	172.1 m	"	2.6 mps
Q50 =	172.4 m	"	2.7 mps
Q100 =	173.1 m	"	3.1 mps

LONG TERM STREAMBED CHANGES: None noted

IS THE ROADWAY OVERTOPPED BELOW Q100: No
FREQUENCY: Above Q100
RELIEF ELEVATION: 176.5 m
DISCHARGE OVER ROAD @Q100: None

UPSTREAM STRUCTURE

TOWN: Bethel
HIGHWAY # : NECR - RR mm 39.56
CLEAR SPAN: unk.
YEAR BUILT: unk.
STRUCTURE TYPE: Through truss
DISTANCE: 125 m
STRUCTURE #: unk.
CLEAR HEIGHT: unk.
FULL WATERWAY: unk.

DOWNSTREAM STRUCTURE

TOWN: Bethel
HIGHWAY # : NECR - RR mm 39.40
DISTANCE: 100 m
STRUCTURE #: unk.

LOAD FACTOR - LOAD RATING (METRIC TONS)

LOADING LEVELS	TRUCK						
	M	MS	3S2	6 AXLE	3A. STR.	4A. STR.	5A. SEMI
INVENTORY	28	50			66	67	73
POSTED	39	70	76				
OPERATING		83	91	99	79	80	

COMMENTS: SERVICIBLITY CONTROLS LOAD RATING

TRAFFIC DATA

YEAR	ADT	DHV	% D	% T	ADTT
2004	6300	820	52	3	200
2024	8400	1000	52	1	130

20 year ESAL for flexible pavement from 2004 to 2024 : 1,350,000
40 year ESAL for flexible pavement from 2004 to 2044 : 3,148,000
Design Speed : 40 km/h

CLEAR SPAN: unk.
CLEAR HEIGHT: unk.
YEAR BUILT: unk.
FULL WATERWAY: unk.
STRUCTURE TYPE: 2-span deck girder

PROPOSED STRUCTURE

STRUCTURE TYPE: 2-span, plate girder (main span), voided slab (approach span)

CLEAR SPAN(NORMAL TO STREAM): Total = 51.8 m (42.4 m main span)
VERTICAL CLEARANCE ABOVE STREAMBED: 10.8 m (over main channel)
WATERWAY OF FULL OPENING: Total = 440 square meters

WATER SURFACE ELEVATIONS AT:

Q2.33 =	170.9 m	VELOCITY=	1.6 mps
Q10 =	171.8 m	"	2.1 mps
Q25 =	172.1 m	"	2.5 mps
Q50 =	172.4 m	"	2.7 mps
Q100 =	173.0 m	"	3.0 mps

IS THE ROADWAY OVERTOPPED BELOW Q100: No
FREQUENCY: Above Q100
RELIEF ELEVATION: 176.5 m
DISCHARGE OVER ROAD @Q100: None

AVERAGE LOW ELEVATION OF SUPERSTRUCTURE: 177.8 m
VERTICAL CLEARANCE: @ Q50 = 5.4 m

SCOUR: Maximum contraction scour @ Q500 = 0.5 m
Maximum pier scour @ Q500 = 2.2 m
REQUIRED CHANNEL PROTECTION: Type III Stone Fill

PERMIT INFORMATION

AVERAGE DAILY FLOW:	8 cms	DEPTH OR ELEVATION:
ORDINARY LOW WATER:	4 cms	168.3 m
ORDINARY HIGH WATER:	73 cms	169.8 m

TEMPORARY BRIDGE REQUIREMENTS

STRUCTURE TYPE: Mabey Truss (Currently in Use)
CLEAR SPAN (NORMAL TO STREAM): 59 m
VERTICAL CLEARANCE ABOVE STREAMBED: 12.3 m
WATERWAY AREA OF FULL OPENING: 522 square meters

ADDITIONAL INFORMATION

DESIGN CRITERIA

1. DESIGN LIVE LOAD AASHTO MS-22.5
2. DESIGN SPAN 55.960m
3. ALLOWABLE LOAD FOR SPREAD FOOTINGS ON SOIL N/A
   ON LEDGE 480 KPA
4. ALLOWABLE LOAD FOR PILING N/A
   TYPE N/A
   ESTIMATED LENGTH
5. STRUCTURAL STEEL AASHTO GRADE M270 M - GR GR345W
6. REINFORCING STEEL GRADE 420
7. CONCRETE CLASS A (HPC-A) f'_c : 30 Mpa
   CONCRETE CLASS B (HPC-B) f'_c : 25 Mpa
8. SOIL UNIT WEIGHT 22.00 Kn/m3
9. DESIGN LOAD FOR SPREAD FOOTINGS ON SOIL N/A

TRAFFIC MAINTENANCE

1. IS TRAFFIC TO BE MAINTAINED? YES
   IF YES, ON EXISTING STRUCTURE OR ON TEMPORARY BRIDGE: EXISTING TEMPORARY BRIDGE
2. TEMPORARY BRIDGE REQUIREMENTS: ONE OF TWO WAY N/A
   TRAFFIC CONTROL SIGNALS REQUIRED N/A
   MINIMUM CLEAR SPAN (NORMAL TO STREAM): N/A
   WATERWAY OF FULL OPENING: N/A
   VERTICAL CLEARANCE ABOVE STREAMBED: N/A
   ARE SIDEWALKS REQUIRED? N/A
   IF SO, ON WHAT SIDE?
   STRUCTURE TYPE:

PROJECT NAME: BETHEL
PROJECT NUMBER: BRF 0241 (33)

FILE NAME: s02c180pi.xls
PROJECT LEADER: C. P. WILLIAMS
DESIGNED BY: K. M. HIGGINS
PRELIMINARY INFORMATION SHEET #1
PLOT DATE: 2/17/2005
DRAWN BY: M. LONGSTREET
CHECKED BY: K. M. HIGGINS
SHEET 2 OF 130

STATE OF VERMONT
AGENCY OF TRANSPORTATION

QUANTITY SHEET

Metric

SUMMARY OF ESTIMATED QUANTITIES

Roadway	App.Slab #1	App. Slab #2	Span #1	Span #2	Abut #1	Pier	Abut #2	Retaining Wall #1	Retaining Wall #2	Retaining Wall #3	Retaining Wall #4	Retaining Wall #5	Retaining Wall #6	Erosion Control	E & C Items	Employee Traineeship
1																
3020																
					10	400	300									
60																
250																
340																
310														10		
10					70			160	75	110	45	5	660			
140						175	510	125	65	100	80	5				
						325	455									
						15	135									
						1										
							1									
													1			
1285																
790														10		
5																
565			35	125												
1030	10	10	20	75												
			26													
			10	155												
82	18	24			19	219	415	47	18	31	22	2	17			
				97700												
				20												
2740					995	17010	25266	2995	895	2281	846	244	650			
					28	24							15			
582	1503	1533	2320	20530				245	80							
				1												
			108													
			95													
				1												
0.13					0.13	0.13	0.13	0.13	0.13	0.13	0.13					
				1												
			16	57	44	20	47	9	3	9	2	2	34			
			9	9												
			12													
			105	385												
										8			21			
			24	88												
					218											
													105			
1																
50																

TOTALS

ROUND	GRAND TOTAL	FINAL
	1	
	3020	
	710	
	60	
	250	
	340	
	320	
	1135	
	1200	
	780	
	150	
	1	
	1	
	1	
	1285	
	800	
	5	
	725	
	1145	
	26	
	165	
	914	
	97700	
	20	
	53922	
	67	
	26793	
	1	
	108	
	95	
	1	
	1	
	1	
	243	
	18	
	12	
	490	
	29	
	112	
	218	
	105	
	1	
	50	

DESCRIPTIONS

UNIT	ITEMS	ITEM NUMBER
LS	CLEARING AND GRUBBING (INCL. INDV. TREES & STUMPS)	201.10
CM	COMMON EXCAVATION	203.15
CM	UNCLASSIFIED CHANNEL EXCAVATION	203.27
CM	EXCAVATION OF SURFACES AND PAVEMENTS	203.28
CM	SAND BORROW	203.31
CM	GRANULAR BORROW	203.32
CM	TRENCH EXCAVATION OF EARTH	204.20
CM	STRUCTURE EXCAVATION	204.25
CM	GRANULAR BACKFILL FOR STRUCTURES	204.30
CM	COFFERDAM EXCAVATION,EARTH	208.30
CM	COFFERDAM EXCAVATION,ROCK	208.35
LS	COFFERDAM (PIER-STA 1+184.000)	208.40
LS	COFFERDAM (ABUTMENT #2 STA 1+227.960)	208.40
LS	COFFERDAM (RETAINING WALL #6)	208.40
SM	COLD PLANING-BIT.PAVEMENT	210.10
CM	SUBBASE OF CRUSHED GRAVEL (COARSE GRADED)	301.25
CM	AGGREGATE SURFACE COURSE	401.10
KG	EMULSIFIED ASPHALT	404.65
T	BITUMINOUS CONCRETE PAVEMENT (PG 58-34)	406.25
CM	CONCRETE, HIGH PERFORMANCE CLASS AA	501.32
CM	CONCRETE, HIGH PERFORMANCE CLASS A	501.33
CM	CONCRETE, HIGH PERFORMANCE CLASS B	501.34
KG	STRUCTURAL STEEL(PLATE GIRDER)	506.55
M	DRAIN TROUGH (MOD.)	506.80
KG	REINFORCING STEEL	507.15
M	DRILLING AND GROUTING DOWELS	507.16
KG	EPOXY COATED REINFORCING STEEL	507.17
LS	SHEAR CONNECTORS (1010 - 22 X 178)	508.15
M	PRESTRESSED CONCRETE VOIDED SLABS (S-1220 X 380 X 11 900)	510.22
M	GROUTING SHEAR KEYS	510.24
LS	STRUCTURAL PAINTING,SHOP APPLIED (8.50 METRIC TONS)	513.25
LS	STRUCTURAL PAINTING,FIELD APPLIED (MOD.)	513.30
LS	SURFACE PREPARATION,SHOP (8.50 METRIC TONS)	513.40
L	WATER REPELLENT (MOD. - SILANE)	514.10
M	BRIDGE EXPANSION JOINT (ASPHALTIC PLUG)	516.10
M	BRIDGE EXPANSION JOINT (VERMONT)	516.10
SM	SHEET MEMBRANE WATERPROOFING (MOD. - SPRAY APPLIED)	519.20
M	METAL HAND RAILING	525.15
M	CAST-IN-PLACE CONCRETE BRIDGE RAIL(MOD)	525.50
SM	MECHANICALLY STABILIZED EARTH (MSE) WALL	526.30
SM	CONCRETE BIN-TYPE RETAINING WALL (MOD. - "REDI-ROCK MSE")	526.20
LS	MAINTENANCE OF TRAFFIC FOR BRIDGE PROJECTS	527.10
SM	REMOVAL OF BRIDGE PAVEMENT	529.10

DETAILED SUMMARY OF QUANTITIES

QUANTITIES	UNIT	ITEMS

PROJECT NAME: **BETHEL**
PROJECT NUMBER: **BRF O241(33) C/2**

FILE NAME: **s02c180qs.xls**
PROJECT MANAGER: **C.P. WILLIAMS**
DESIGNED BY: **E.L. RUSTAY**
QUANTITY SHEET #1

PLOT DATE: **date**
DRAWN BY: **E.L. RUSTAY**
CHECKED BY: **K.M. HIGGINS**
SHEET **3** OF **130**

STATE OF VERMONT
AGENCY OF TRANSPORTATION

QUANTITY SHEET

Metric

SUMMARY OF ESTIMATED QUANTITIES

Roadway	App.Slab #1	App. Slab #2	Span #1	Span #2	Abut #1	Pier	Abut #2	Retaining Wall #1	Retaining Wall #2	Retaining Wall #3	Retaining Wall #4	Retaining Wall #5	Retaining Wall #6	Erosion Control	E & C Items	Employee Traineeship
1																
												1				
1																
				5												
				5												
			36													
265																
2																
124																
124																
124																
19																
2																
185						125	115	35	10	30	10					
4																
5																
1																
7																
2																
10														10		
2																
2																
							5							10		
														10		
														10		
					2											
					170											
						286	124									
195																
			24	88												
146																
18																
12																
														60		
150																
1																
5																
5																
244																
													12			
300																
600																
															1	
															1	

TOTALS

ROUND	GRAND TOTAL	FINAL
	1	
	1	
	1	
	5	
	5	
	36	
	265	
	2	
	124	
	124	
	124	
	19	
	2	
	510	
	4	
	5	
	1	
	6	
	2	
	20	
	2	
	2	
	15	
	10	
	10	
	2	
	170	
	410	
	195	
	112	
	146	
	18	
	12	
	60	
	150	
	1	
	5	
	5	
	244	
	12	
	300	
	600	
	1	
	1	

DESCRIPTIONS

UNIT	ITEMS	ITEM NUMBER
EACH	REMOVAL OF STRUCTURE (530 SM-EST.)	529.15
EACH	REMOVAL OF STRUCTURE (STA 2+040.00 - 2+050.00 LT)	529.15
EACH	REMOVAL OF STRUCTURE (MOD.)	529.15
EACH	BEARING DEVICE ASSEMBLY (STEEL PEDESTAL)	531.10
EACH	BEARING DEVICE ASSEMBLY (ELASTOMERIC)	531.10
EACH	BEARING DEVICE ASSEMBLY (ELASTOMERIC FOR PRESTRESSED MEMBERS)	531.10
M	PERMANENT SOIL NAILS (GALVANIZED)	535.16
EACH	VERIFICATION TEST NAILS	535.20
	** BEGIN PIPE OPTIONS **	
M	450 mm CAAP 1.91 mm (68 mm X 12 mm)	601.0216
M	450 mm PCCSP 1.63 mm (68 mm X 12 mm)	601.0415
M	450 mm CPEP	601.0915
	** END PIPE OPTIONS**	
M	450 mm PCCSP 2.01 mm (68 mm X 12 mm)	601.0416
EACH	450 mm PCCSP ELBOW 1.63 mm (68 mm X 12 mm)	601.5415
SM	STONE MASONRY FACING (MOD - FORM LINERS)	602.25
EACH	CHANGING ELEV. OF DROP INLETS, CATCH BASINS OR MANHOLES	604.40
EACH	CHANGING ELEVATION OF SEWER MANHOLE	604.42
EACH	CAST IRON GRATE WITH FRAME, TYPE A	604.45
EACH	CAST IRON GRATE WITH FRAME, TYPE E	604.48
EACH	CAPPING EXISTING DROP INLETS	604.60
HR	ALL PURPOSE EXCAVATOR RENTAL, TYPE I	608.25
CM	DUST CONTROL WITH WATER	609.10
T	DUST AND ICE CONTROL WITH CALCIUM CHLORIDE	609.15
CM	STONE FILL, TYPE I	613.10
CM	STONE FILL, TYPE I (MOD. 1 - CONSTRUCTION ENTRANCE)	613.10
CM	STONE FILL, TYPE I (MOD. 2 - CHECK DAMS)	613.10
CM	STONE FILL, TYPE I (MOD. 3)	613.10
CM	STONE FILL, TYPE II	613.11
CM	STONE FILL, TYPE III	613.12
M	VERTICAL GRANITE CURB	616.21
M	GRANITE BRIDGE CURB	616.22
SM	PORTLAND CEMENT CONCRETE SIDEWALK,125 MM	618.10
SM	PORTLAND CEMENT CONCRETE SIDEWALK, 200 MM	618.11
SM	DETECTABLE WARNING SURFACE	618.30
M	SNOW FENCE (MOD. - PDF)	620.70
M	HEAVY DUTY STEEL BEAM GUARD RAIL	621.21
EACH	MANUFACTURED TERMINAL SECTION (TANGENT)	621.505
EACH	TERMINAL CONNECTOR FOR STEEL BEAM GUARD RAIL	621.53
EACH	ANCHOR FOR STEEL BEAM RAIL	621.60
M	REMOVL AND DISP OF GUARD RAIL	621.80
M	INCLINOMETER	623.30
HR	FLAGGERS	630.15
HR	FLAGGERS (MOD. - RAILROAD) (N.A.B.I.)	630.15
LS	FIELD OFFICE-ENGINEERS	631.10
LS	TESTING EQUIPMENT - CONCRETE	631.16

DETAILED SUMMARY OF QUANTITIES

QUANTITIES	UNIT	ITEMS

PROJECT NAME: **BETHEL**
PROJECT NUMBER: **BRF O241(33) C/2**

FILE NAME: **s02c180qs.xls**
PROJECT MANAGER: **C.P. WILLIAMS**
DESIGNED BY: **E.L. RUSTAY**
QUANTITY SHEET #2

PLOT DATE: **date**
DRAWN BY: **E.L. RUSTAY**
CHECKED BY: **K.M. HIGGINS**
SHEET **4** OF **130**

STATE OF VERMONT
AGENCY OF TRANSPORTATION

QUANTITY SHEET

Metric

SUMMARY OF ESTIMATED QUANTITIES

Roadway	App.Slab #1	App. Slab #2	Span #1	Span #2	Abut #1	Pier	Abut #2	Retaining Wall #1	Retaining Wall #2	Retaining Wall #3	Retaining Wall #4	Retaining Wall #5	Retaining Wall #6	Erosion Control	E & C Items	Employee Traineeship
															1	
															1	
																1560
1																
1																
520																
420																
10																
4																
8																
18																
520																
420																
10																
4																
26																
					277	315	48									
														150		
														100		
														30		
														5		
														200		
														2		
														2		
														20		
430														20		
														180		
														1		
														500		
														1		
														40		
3.5																
29.5																
6																
4																
			74	266												
1																
1																

TOTALS

ROUND	GRAND TOTAL	FINAL
	1	
	1	
	1	
	1	
	520	
	420	
	10	
	4	
	8	
	18	
	520	
	420	
	10	
	4	
	26	
	640	
	150	
	100	
	30	
	5	
	200	
	2	
	2	
	20	
	450	
	180	
	1	
	500	
	1	
	40	
	4	
	30	
	6	
	4	
	340	
	1	
	1	

DESCRIPTIONS

UNIT	ITEMS	ITEM NUMBER
LS	TESTING EQUIPMENT - BITUMINOUS	631.17
LU	FIELD OFFICE - TELEPHONE (N.A.B.I.)	631.25
HR	EMPLOYEE TRAINEESHIP	634.10
LS	MOBILIZATION/DEMOBILIZATION	635.11
LS	TRAFFIC CONTROL	641.10
M	DURABLE 100 mm WHITE LINE (Thermoplastic)	646.40
M	DURABLE 100 mm YELLOW LINE (Thermoplastic)	646.41
M	DURABLE 600 mm STOP BAR (Thermoplastic)	646.46
EACH	DURABLE LETTER OR SYMBOL (Thermoplastic)	646.50
M	DURABLE CROSSWALK MARKING W/DIAGONAL LINES (Thermoplastic)	646.51
M	DURABLE CROSSWALK MARKING W/DIAGONAL LINES (MOD. - BRICK PAVING)	646.51
M	TEMPORARY 100 mm WHITE LINE	646.60
M	TEMPORARY 100 mm YELLOW LINE	646.61
M	TEMPORARY 600 mm STOP BAR	646.66
EACH	TEMPORARY LETTERS OR SYMBOLS	646.70
M	TEMPORARY CROSSWALK MARKING W/DIAGONAL LINES	646.71
SM	GEOTEXTILE UNDER STONE FILL	649.31
SM	GEOTEXTILE FOR SILT FENCE	649.51
SM	GEOTEXTILE FOR FILTER CURTAIN	649.61
KG	SEED	651.15
KG	SEED-WINTER RYE	651.17
KG	FERTILIZER	651.18
T	AGRICULTURAL LIMESTONE	651.20
T	HAY MULCH	651.25
EACH	HAY BALES FOR EROSION CONTROL	651.26
CM	TOPSOIL	651.35
SM	GRUBBING MATERIAL	651.40
LS	EROSION & SEDIMENT CONTROL PLAN	652.10
HR	MONITORING EROSION & SEDIMENT CONTROL PLAN	652.20
LU	FIELD MAINTENANCE OF EROSION & SEDIMENT CONTROL PLAN (N.A.B.I.)	652.30
SM	EROSION MATTING	654.10
SM	TRAFFIC SIGNS, TYPE A	675.20
M	FLANGED CHANNEL SIGN POST	675.301
EACH	REMOVING SIGNS	675.50
EACH	ERECTING SALVAGED SIGNS	675.60
M	ELECTRICAL CONDUIT (100mm DIAMETER)	678.21
LS	STREET LIGHTING	679.15
EACH	REMOVE & RESETTING LIGHT POLE	679.25

DETAILED SUMMARY OF QUANTITIES

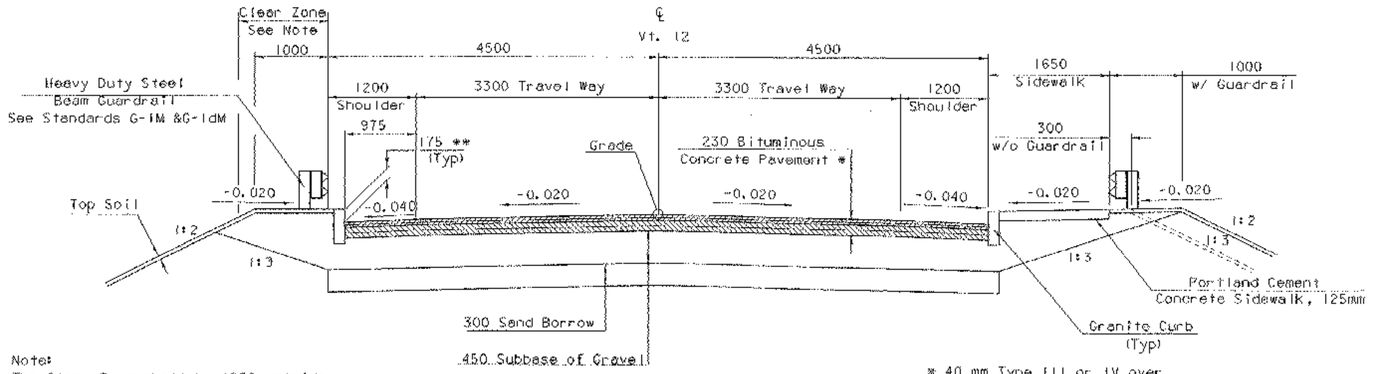
QUANTITIES	UNIT	ITEMS

PROJECT NAME: **BETHEL**
PROJECT NUMBER: **BRF O241(33) C/2**

FILE NAME: **s02c180qs.xls**
PROJECT MANAGER: **C.P. WILLIAMS**
DESIGNED BY: **E.L. RUSTAY**
QUANTITY SHEET #3

PLOT DATE: **date**
DRAWN BY: **E.L. RUSTAY**
CHECKED BY: **K.M. HIGGINS**
SHEET **5** OF **130**

Metric



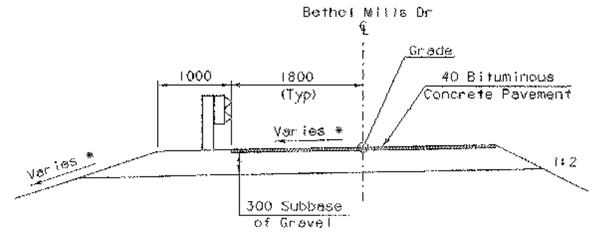
Note:
The Clear Zone shall be 1220 outside the Face of Rail. When no rail is present The Clear Zone shall be 1370 outside the Face of Curb

VT ROUTE 12 TYPICAL SECTION

Scale 1:40

* 40 mm Type III or IV over
40 mm Type III or IV over
75 mm Type I or II over
75 mm Type I or II

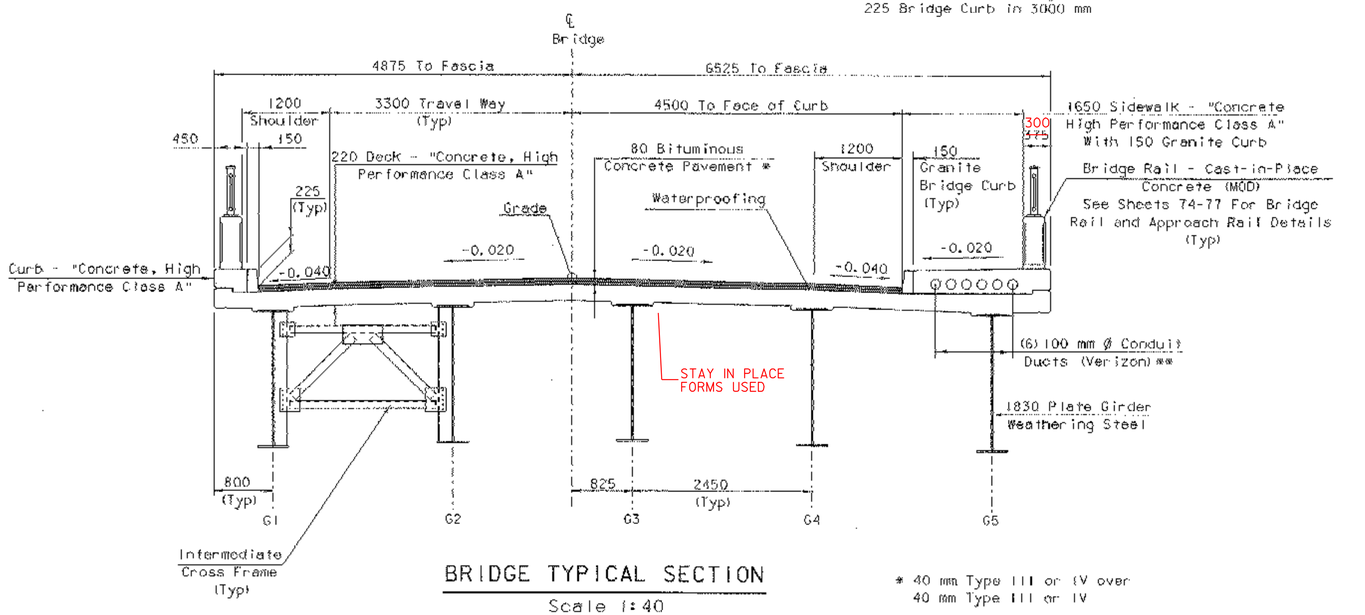
** Transition 175 Roadway Curb To 225 Bridge Curb in 3000 mm



* Match Existing Banking and Drain Towards River

BETHEL MILLS DRIVE TYPICAL SECTION

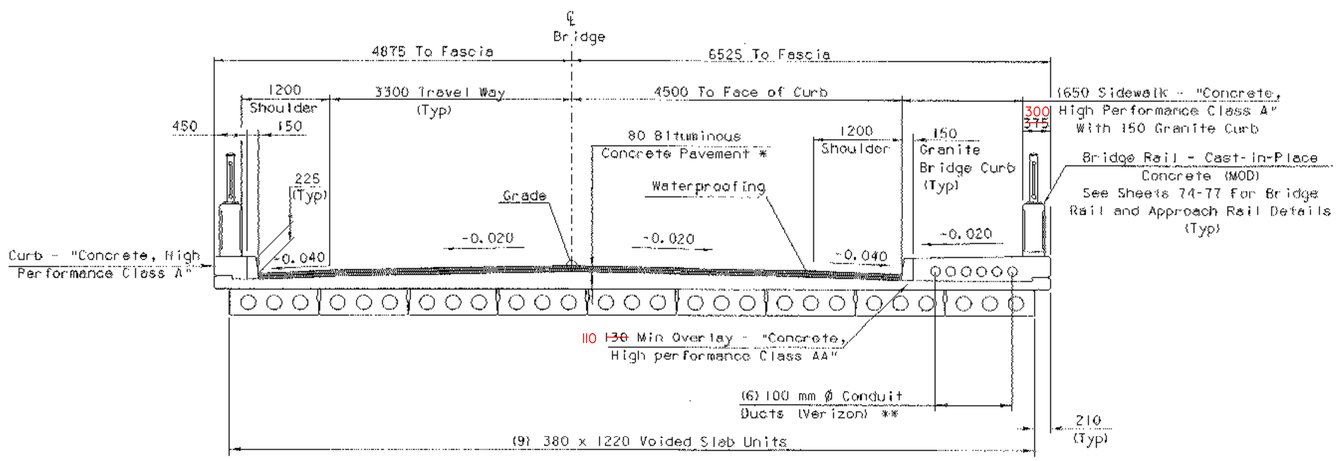
SCALE = 1 : 40



BRIDGE TYPICAL SECTION

Scale 1:40

* 40 mm Type III or IV over
40 mm Type III or IV



BRIDGE TYPICAL SECTION

Scale 1:40

* 40 mm Type III or IV over
40 mm Type III or IV

** Extend ducts 300 mm beyond beginning and end of bridge.

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

0 1 2 3 4

SCALE = 1:40

PROJECT: BETHEL	PROJECT NO.: BRF0241(33)C/2
DESIGN FILE NAME: 02c180/structures/s02c180typ.dgn	
IPARM FILE NAME: sc180typ.i	PLOT DATE: 14-APR-2005
DESIGNED BY: K.HIGGINS	DRAWN BY: K.HIGGINS
SQUAD LEADER: C. P. WILLIAMS	CHECKED BY: M. GAGULIC
TYPICAL SECTIONS	SHEET: 6 OF 130

VAOT Metric

GPS CONTROL POINTS

HVCTRL #1

STANDARD DISC STAMPED

CLEVELAND

N = 145575.6400

E = 488269.5070

ELEV. = 176.700

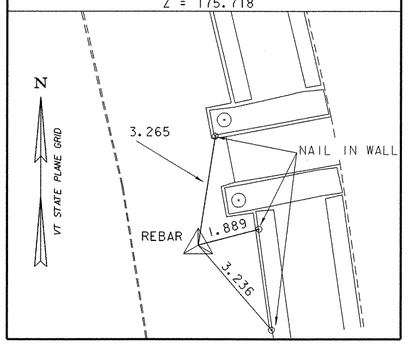
DESCRIBED BY VERMONT AGENCY OF TRANSPORTATION 1996 (DJM)
GENERAL LOCATION BETHEL, 1.4 MILES (2.3 KM) SW OF BETHEL VILLAGE. TO REACH FROM THE JUNCTION OF VT 107 AND VT 12 SOUTH OF BETHEL, PROCEED EASTERLY ALONG VT 107 AND VT 12 FOR APPROX 0.3 M (1.0 FT) TO THE MARK ON THE LEFT. THE MARK IS DIRECTLY OPPOSITE CLEVELAND BROOK ROAD, 25.5 FT (7.8 M) NORTH FROM THE CENTERLINE OF VT 107 AND VT 12. OWNERSHIP STATE OF VERMONT STATION MARK IS A STATE OF VERMONT SURVEY MARK SET IN THE TOP OF A 12 INCH DIAMETER CONCRETE POST SET FLUSH WITH GROUND. IT IS 25.5 FT (7.8 M) NORTH OF CENTERLINE VT 107 AND VT 12, 4.5 FT (1.4 M) NORTH OF 3 CABLE GUARD RAIL, 45 FT (13.7 M) SOUTHEAST FROM COMBINATION POLE 4/49/57, 15 FT (4.6 M) SOUTH OF THE NORTH END OF A 4 FT (1.2 M) X 5 FT (1.5 M) CONCRETE BOX, 72 FT (21.9 M) NORTH OF THE SOUTH END OF A 4 FT (1.2 M) X 5 FT (1.5 M) CONCRETE BOX.

* HORIZONTAL CONTROL IS FROM: BETHEL BRF 022-1(14) BY. R.GILMAN FROM THAT FILE POINTS 8 AND 9 WERE USED TO CREATE POINT 18.
* DESCRIPTION PROVIDED BY VERMONT AGENCY OF TRANSPORTATION GEODETIC SURVEY UNIT

TRAVERSE TIES

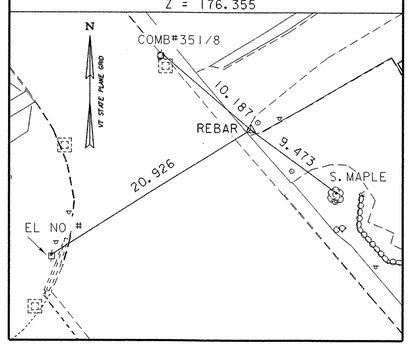
HVCTRL #18

N = 148000.0693
E = 489255.6489
Z = 175.718



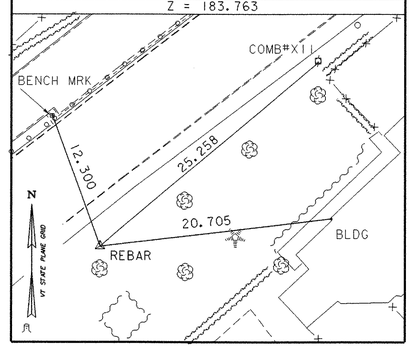
HVCTRL #19

N = 148082.4001
E = 489205.3391
Z = 176.355



HVCTRL #20

N = 147986.6011
E = 489101.5168
Z = 183.763



* MAIN TRAVERSE COMPLETED: OCTOBER 04, 1999 BY L.ORVIS & J.HULETT

ALIGNMENT TIES

DATUM

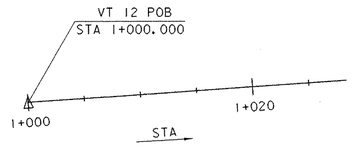
VERTICAL NAVD 88
HORIZONTAL NAD 83/92

PROJECT: BETHEL	PROJECT NO. : BRF0241(33)C/2
DESIGN FILE NAME: 02c180/Structures/s02c180tie.dgn	
IPARM FILE NAME: s02c180travtie.i	PLOT DATE: 14-APR-2005
SURVEYED BY: ORVIS	SURVEY DATE: 10/99
SQUAD LEADER: C. P. WILLIAMS	DRAWN BY: J. HULET
TRAVERSE TIE INFORMATION	SHEET: 7 OF 130

MAINLINE & TH 5 ALIGNMENT INFORMATION

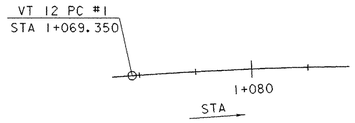
Metric

MAINLINE POB STA 1+000.000



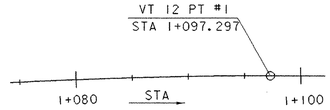
N = 147911.3190
E = 489004.7600

MAINLINE PC#1 STA 1+069.350



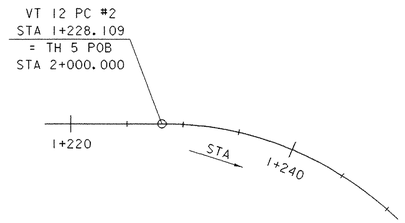
N = 147957.4393
E = 489056.5512

MAINLINE PT#1 STA 1+097.297



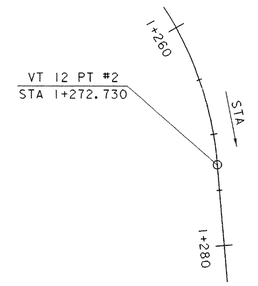
N = 147975.2812
E = 489078.0544

MAINLINE PC#2 STA 1+228.109



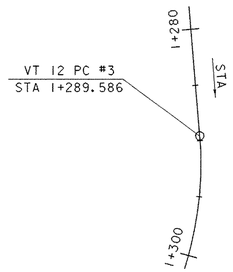
N = 148055.2442
E = 489181.5812

MAINLINE PT#2 STA 1+272.730



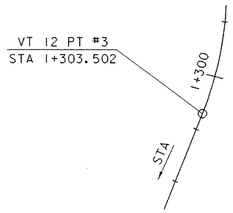
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E = 489222.0512

MAINLINE PC#3 STA 1+289.586



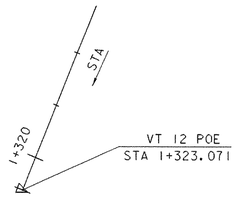
N = 148039.3199
E = 489233.4307

MAINLINE PT#3 STA 1+303.502



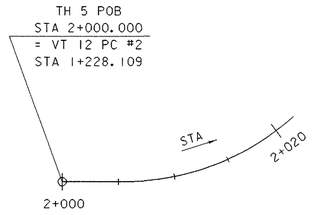
N = 148027.2784
E = 489240.1534

MAINLINE POE STA 1+323.071



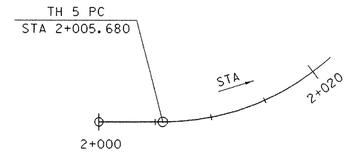
N = 148008.4560
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TH 5 POB STA 2+000.000



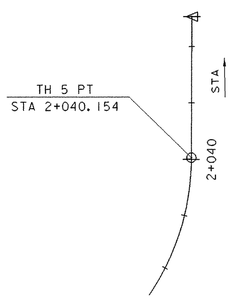
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TH 5 PC STA 2+005.680



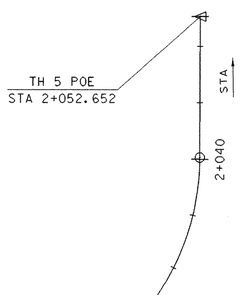
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E = 489186.0765

TH 5 PT STA 2+040.154

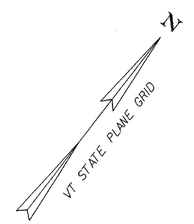


N = 148089.5087
E = 489190.0908

TH 5 POE STA 2+052.652



N = 148099.4290
E = 489182.4890



SCALE: 1 : 250

DATUM

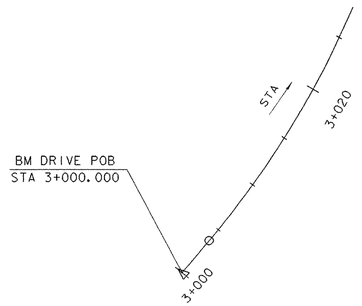
VERTICAL NAVD 88
HORIZONTAL NAD 83/92

PROJECT: BETHEL	PROJECT NO. : BRF0241(33)C/2
DESIGN FILE NAME: 02c180/Structures/s02c180tie.dgn	
IPARM FILE NAME: s02c180alcor1.i	PLOT DATE: 14-APR-2005
SURVEYED BY: ORVIS	SURVEY DATE: 10/99
SQUAD LEADER: C. P. WILLIAMS	DRAWN BY: T. ANDERSON
ALIGNMENT COORDINATES (SHEET 1)	SHEET: 8 OF 130

BETHEL MILLS DRIVE ALIGNMENT INFORMATION

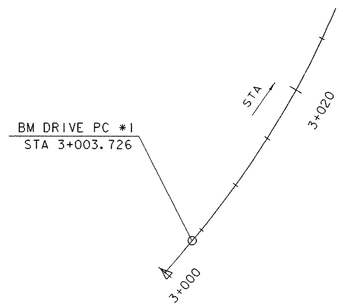
Metric

BM DRIVE POB STA 3+000.000



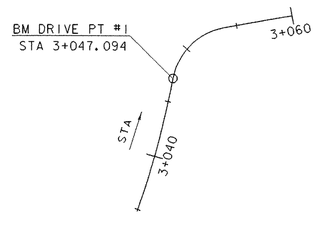
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E = 489224.0230

BM DRIVE PC#1 STA 3+003.726



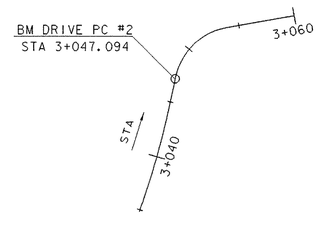
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BM DRIVE PT#1 STA 3+047.094



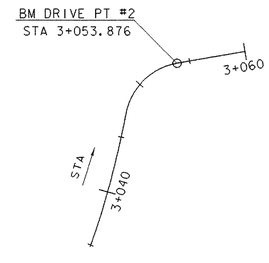
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E = 489215.1344

BM DRIVE PC#2 STA 3+047.094



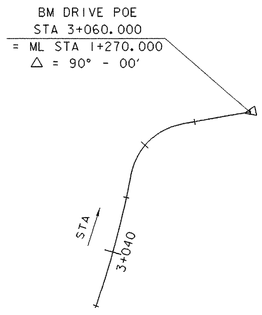
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BM DRIVE PT#2 STA 3+053.876

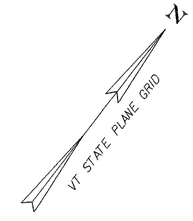


N = 148049.1539
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BM DRIVE POE STA 3+060.000



N = 148053.6820
E = 489220.1190



SCALE: 1 : 250

DATUM

VERTICAL NAVD 88
HORIZONTAL NAD 83/92

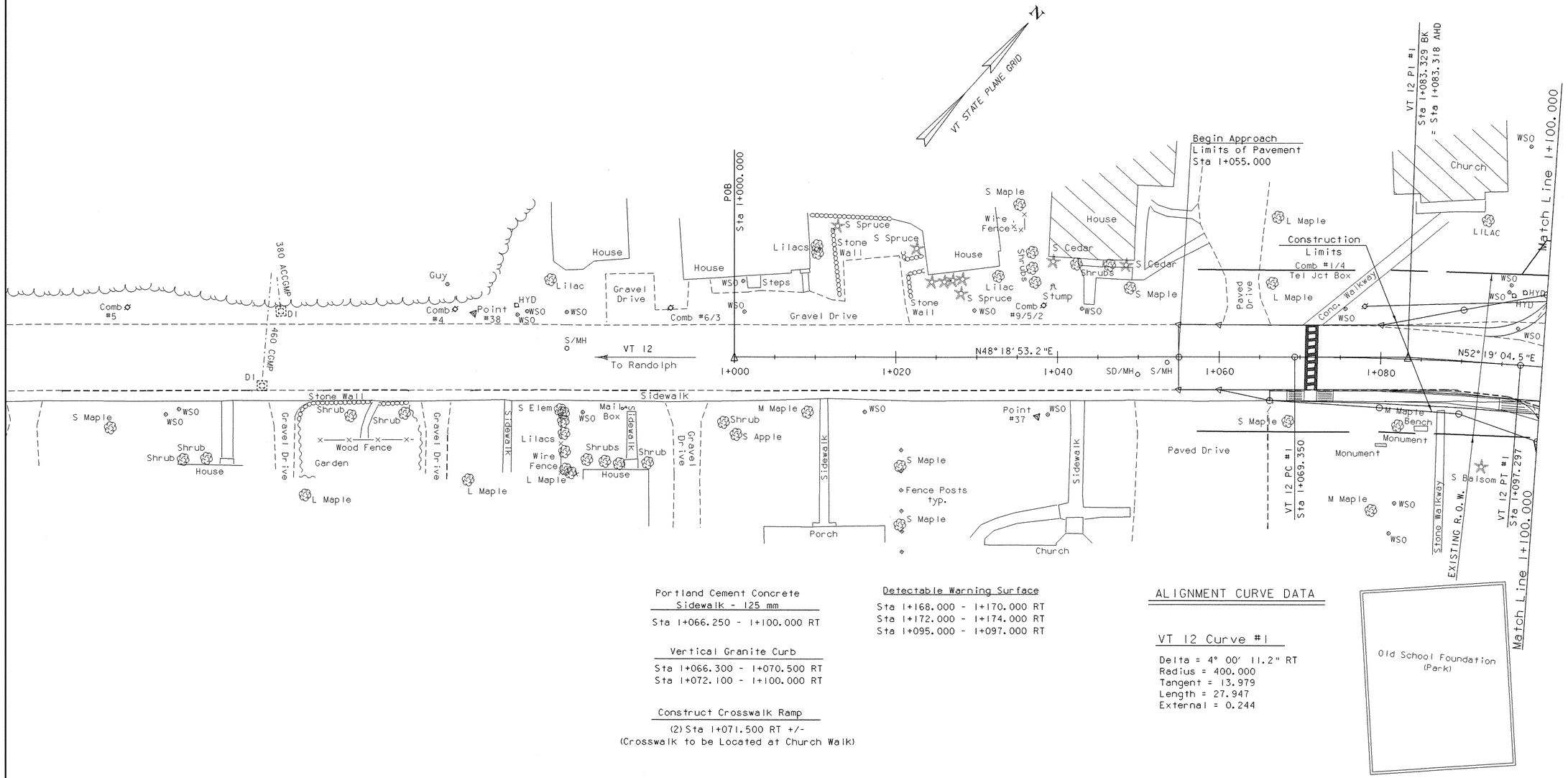
PROJECT: BETHEL

PROJECT NO. : BRF0241(33)C/2

DESIGN FILE NAME: 02c180/Structures/s02c180tie.dgn
IPARM FILE NAME: s02c180alcor2.i
SURVEYED BY: ORVIS
SQUAD LEADER: C. P. WILLIAMS
ALIGNMENT COORDINATES (SHEET 2)

PLOT DATE: 14-APR-2005
SURVEY DATE: 10/99
DRAWN BY: T. ANDERSON
SHEET: 9 OF 130

VAOT Metric



Portland Cement Concrete
Sidewalk - 125 mm

Sta 1+066.250 - 1+100.000 RT

Vertical Granite Curb

Sta 1+066.300 - 1+070.500 RT
Sta 1+072.100 - 1+100.000 RT

Construct Crosswalk Ramp

(2) Sta 1+071.500 RT +/-
(Crosswalk to be Located at Church Walk)

Detectable Warning Surface

Sta 1+168.000 - 1+170.000 RT
Sta 1+172.000 - 1+174.000 RT
Sta 1+095.000 - 1+097.000 RT

ALIGNMENT CURVE DATA

VT 12 Curve #1

Delta = 4° 00' 11.2" RT
Radius = 400.000
Tangent = 13.979
Length = 27.947
External = 0.244

LAYOUT NO. 1

0 10 20

SCALE 1 : 250

DATUM	
VERTICAL	NAVD 88
HORIZONTAL	NAD 83/92

PROJECT:	PROJECT NO. :
BETHEL	BRF0241 (33) C/2
DESIGN FILE NAME: 02c180/structures/s02c180bdr.dgn	
IPARM FILE NAME: sc180ia1.i	PLOT DATE: 14-APR-2005
SURVEYED BY: ORVIS	SURVEY DATE: 10/99
SQUAD LEADER: C. P. WILLIAMS	DRAWN BY: K. HIGGINS
LAYOUT NO. 1	SHEET: 10 OF 130

See sheets 19-20 for Existing Signs, New Signs and Pavement Marking Notes

See sheet 15 for Drainage Notes

See sheets 19-20 for Drive and Railing Radii Information

Cold Plane and Repave Th 66 to the Limits shown or as Deemed Necessary by the Resident Engineer

VT STATE PLANE GRID

SPRINT UNDERGROUND (APPROXIMATE LOCATION)

AT&T UNDERGROUND (APPROXIMATE LOCATION)

3rd Branch of the White River — FLOW

New England Central Railroad

Match Line 1+100.000

Begin Project
Sta 1+120.000

BM #2
Elev 183.972

Chan. POB
Sta. 4+015.000

Aerial Telephone

Replace Wall as Required. (See Detail on Sheet 31)

End Approach Slab
Begin Bridge
Sta. 1+172.000

End Approach Slab
Sta. 1+233.997

End Bridge
Begin Approach Slab
Sta. 1+227.960

Sta. 1+205.000 =
Chan 4+040.000
Delta = 90°00'

℄ Pier
Sta. 1+183.980

EXTRA BLOCKS FROM RETAINING WALL #6

Limits of Pavement
Begin Approach Slab
Sta. 1+166.000

TH 66

To Randolph VT 12

N52° 19' 04.5" E

Point #35

Point #36

Point #20

Point #33

Point #34

TH 5 POE
Sta 2+052.652

TH 5 PC
Sta 2+005.680

TH 5 PT
Sta 2+040.154

Existing R.O.W.

End Approach
Limits of Pavement
TH5 Sta 2+050.000

End Project
Begin Approach
TH5 Sta 2+025.000

TH 5 PI #1
2+027.596 BK
= 2+018.237 AHD

VT 12 PI #2
1+255.705 BK
= 1+245.134 AHD

VT 12 PC #2
Sta 1+228.109
=TH 5 POB
Sta 2+000.000

Temporary Construction Limits

380 ACCGMP

BM Drive PI #2
Sta 3+050.966 BK
= Sta 3+050.004 AHD

BM PT #1/PC #2
Sta 3+047.094

N42° 19' 11.8" E

S42° 27' 44.5" E

N37° 27' 45.4" W

BM Drive POE
Sta 3+060.000 =
ML Sta 1+270.000

VT 12 PT #2
Sta 1+272.730

End Project
Sta 1+260.000

Chan. POE
Sta 4+080.000

N26° 47' 29.0" W

PT #2
Sta 3+053.816

VT 12 PC #3
Sta 1+289.586

VT 12 PI #3
Sta 1+296.671 BK
=Sta 1+296.416 AHD

End Approach
Limits of Pavement
Sta 1+310.000

VT 12 PT #3
Sta 1+303.502

BM Drive PI #1
=Sta 3+025.893 BK
=Sta 3+024.927 AHD

VT 12 POE
Sta 1+323.071

BM #1
Elev 178.407

BM Drive PC #1
Sta 3+003.726

BM Drive POB
Sta 3+000.000

N2° 26' 28.4" E

Bethel Mills Drive (Paved)

Concrete Dam

Temporary Aerial (In Place)

Final Aerial

Construction Limits

Construct Drive
Sta 1+104.000 RT
Sta 1+105.000 LT (TH 66)
Sta 1+270.000 RT (BM Drive)

Anchors For Heavy Duty Steel Beam Guard Rail
Sta 1+144.000 RT
TH5 Sta 2+019.500 LT
Sta 1+254.000 RT
Sta 3+040.000 LT
Sta 3+045.000 LT

Manufactured End Terminal
Sta 1+110.500 LT

Heavy Duty Steel Beam Guard Rail
Sta 1+110.500 - 1+172.000 LT
Sta 1+141.600 - 1+172.000 RT
Sta 1+227.960 - TH5 Sta 2+023.000 LT
Sta 1+227.960 - 1+257.000 RT
Sta 3+038.600 - 3+047.300 LT

Bridge Rail - Cast in Place Concrete (Mod)
Sta 1+172.000 - 1+227.960 LT & RT

Removal & Disposal of Guard Rail
Sta 1+112.000 - 1+165.000 LT
Sta 1+156.000 - 1+165.000 RT
Sta 1+237.000 - 1+241.000 LT
Sta 1+242.000 - 1+246.000 RT

Portland Cement Concrete Sidewalk - 200 mm
Sta 1+260.000 - 1+278.000 RT

Portland Cement Concrete Sidewalk - 125 mm
Sta 1+100.000 - 1+172.000 RT
Sta 1+227.960 - 1+260.000 RT
Sta 1+278.000 - 1+285.500 RT

Vertical Granite Curb
Sta 1+110.000 - 1+172.000 LT
Sta 1+113.000 - 1+172.000 RT
Sta 1+227.960 - 1+258.000 RT
Sta 1+280.000 - 1+285.000 RT
Sta 1+227.960 - TH5 Sta 2+038.500 LT

Granite Bridge Curb
Sta 1+172.000 - Sta 1+227.960 LT & RT

Soil Nail Wall
Sta 1+127.000 - 1+166.000 LT

Mechanically Stabilized Earth Wall
Sta 1+166.000 - 1+173.690 LT & RT

Remove & Reset Lightpole
Sta 1+186.000 RT to Sta 1+170.000 RT
Sta 1+239 LT (Same Location)

Street Lighting
Sta 1+262.000 RT

ALIGNMENT CURVE DATA

VT 12 Curve #2
Delta = 85° 13' 11" RT
Radius = 30.000
Tangent = 27.596
Length = 44.621
External = 10.762

VT 12 Curve #3
Delta = 26° 34' 35.8" RT
Radius = 30.000
Tangent = 7.085
Length = 13.915
External = 0.825

Bethel Mills Drive Curve #1
Delta = 29° 13' 57.3" LT
Radius = 85.000
Tangent = 22.167
Length = 43.367
External = 2.843

Bethel Mills Drive Curve #2
Delta = 69° 06' 40.8" RT
Radius = 5.622
Tangent = 3.872
Length = 6.781
External = 1.204

TH 5 Curve #1
Delta = 89° 46' 49.9" LT
Radius = 22.000
Tangent = 21.916
Length = 34.473
External = 9.053

Retaining Wall
1. Sta 1+109.435 - 1+127.000 LT
2. Sta 1+160.500 - 1+166.000 RT
3. Ch Sta 4+022.000 - 4+030.000 LT
4. Sta 1+239.000 - 1+247.600 RT
5. Sta 2+040.000 - 2+050.000 LT
6. Ch Sta 4+048.000 - 4+068.000 LT +/-
(Mod- "Redi-Rock MSE")

Detectable Warning Surface
Sta 1+111.000 - 1+118.000 RT
Sta 1+258.000 - 1+260.000 RT
Sta 1+278.000 - 1+280.000 RT

Inclinometer
Cha Sta 4+054.000 23.500 m LT
Cha Sta 4+061.000 24.300 m LT

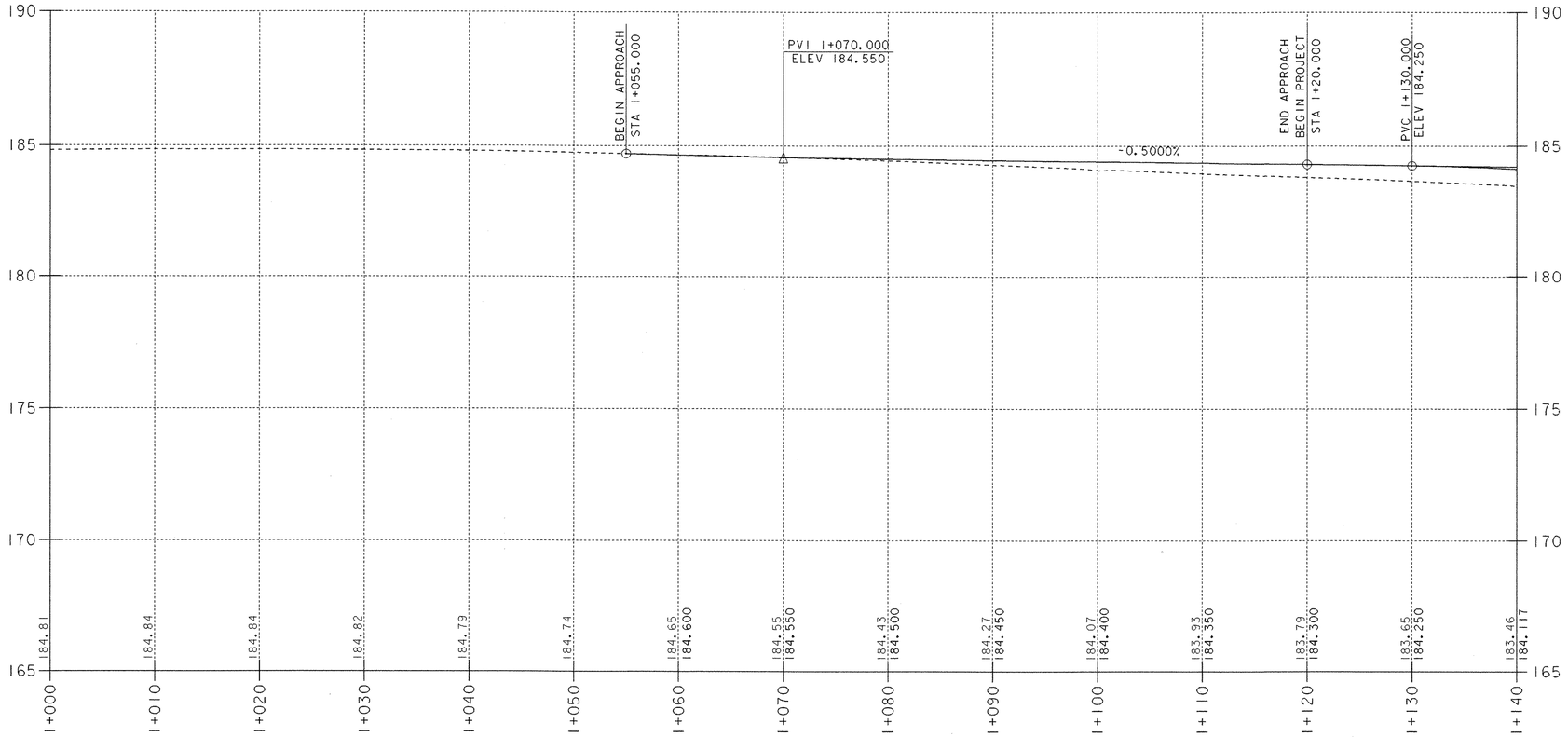
LAYOUT NO. 2

0 10 20

SCALE 1 : 250

DATUM
VERTICAL NAVD 88
HORIZONTAL NAD 83/92

PROJECT: BETHEL	PROJECT NO. : BRF0241 (33) C/2
DESIGN FILE NAME: 02c180/structures/s02c180bdr.dgn	
IPARM FILE NAME: sc1801a2.i	PLOT DATE: 14-APR-2005
SURVEYED BY: ORVIS	SURVEY DATE: 10/99
SQUAD LEADER: C. P. WILLIAMS	DRAWN BY: K.HIGGINS
LAYOUT NO. 2	SHEET: 11 OF 130

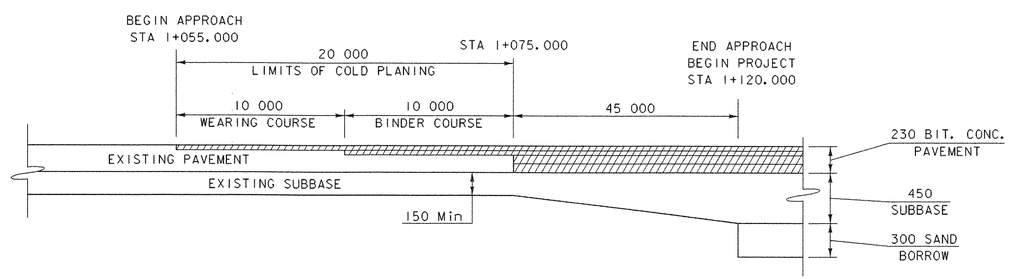


Profile Along VT. Route 12

NOTES:

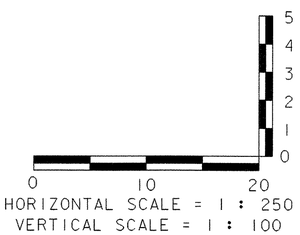
GRADES SHOWN TO THE NEAREST HUNDREDTH ARE EXISTING GROUND ALONG ℄.

GRADES SHOWN TO THE NEAREST THOUSANDTH ARE FINISH GRADE ALONG ℄.



SUBBASE TAPER AT BEGIN PROJECT

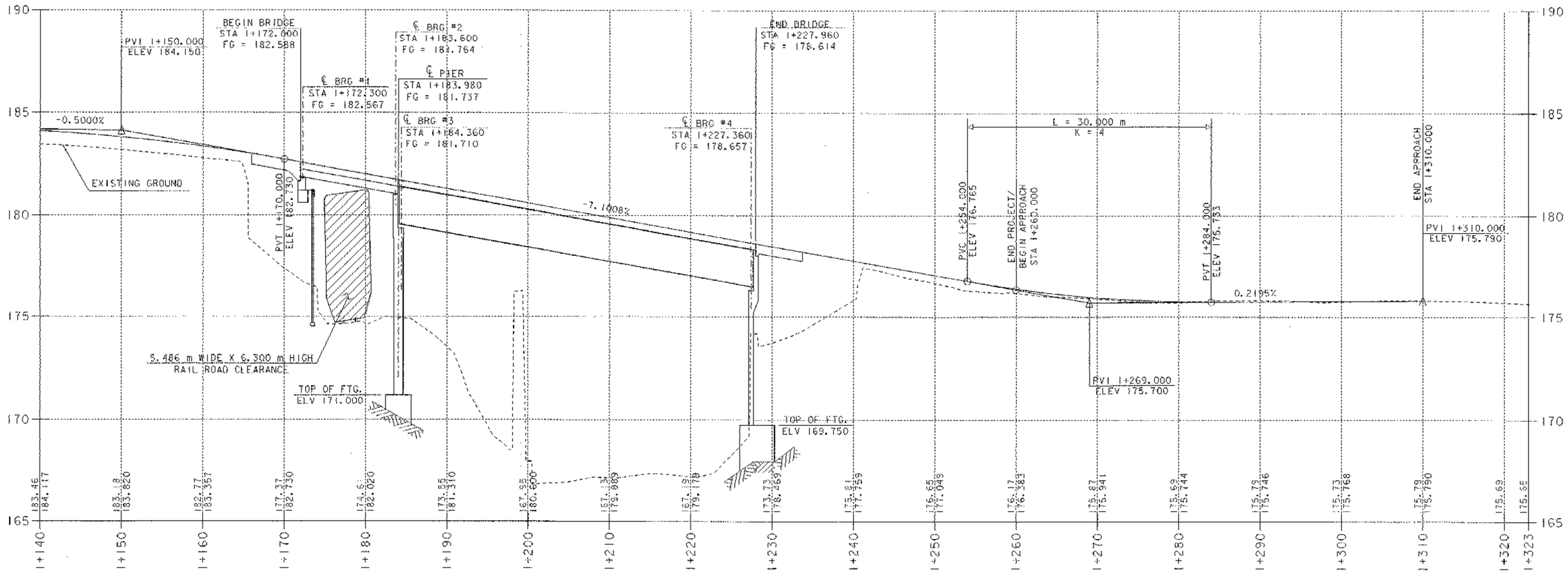
NTS



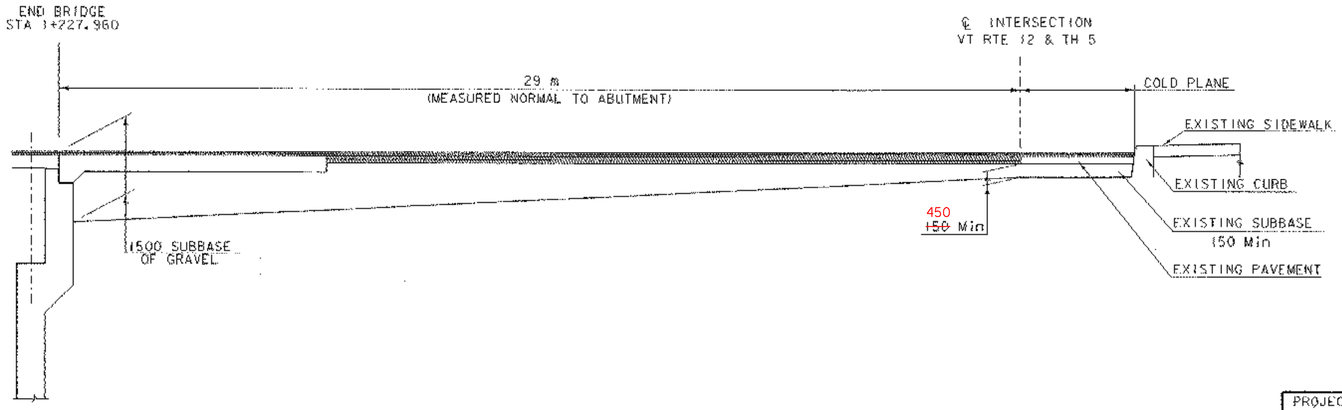
HORIZONTAL SCALE = 1 : 250
VERTICAL SCALE = 1 : 100

DATUM	
VERTICAL	NAVD 88
HORIZONTAL	NAD 83/92

PROJECT:	PROJECT NO. :
BETHEL	BRF 0241 (33) C/2
DESIGN FILE NAME: 02c180/structures/s02c180pro.dgn	
IPARM FILE NAME: sc180pro1.i	PLOT DATE: 14-APR-2005
SURVEYED BY: ORVIS	SURVEY DATE: 10/99
SQUAD LEADER: C. P. WILLIAMS	DRAWN BY: K. HIGGINS
PROFILE VT ROUTE 12	SHEET: 12 OF 130



Profile Along VT. Route 12



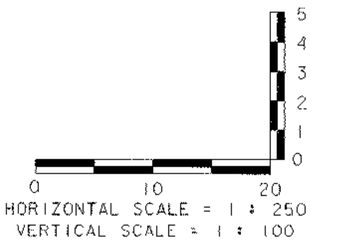
SUBBASE TAPER AT END BRIDGE

NTS

NOTES:

GRADES SHOWN TO THE NEAREST HUNDREDTH ARE EXISTING GROUND ALONG ℄.

GRADES SHOWN TO THE NEAREST THOUSANDTH ARE FINISH GRADE ALONG ℄.



DATUM

VERTICAL NAVD 88

HORIZONTAL NAD 83/92

PROJECT: BETHEL

PROJECT NO. : BRF0241 (33) C/2

DESIGN FILE NAME: 02c180/structures/s02c180pro.dgn

PARM FILE NAME: sc180pro2.i

PLOT DATE: 14-APR-2005

SURVEYED BY: ORVIS

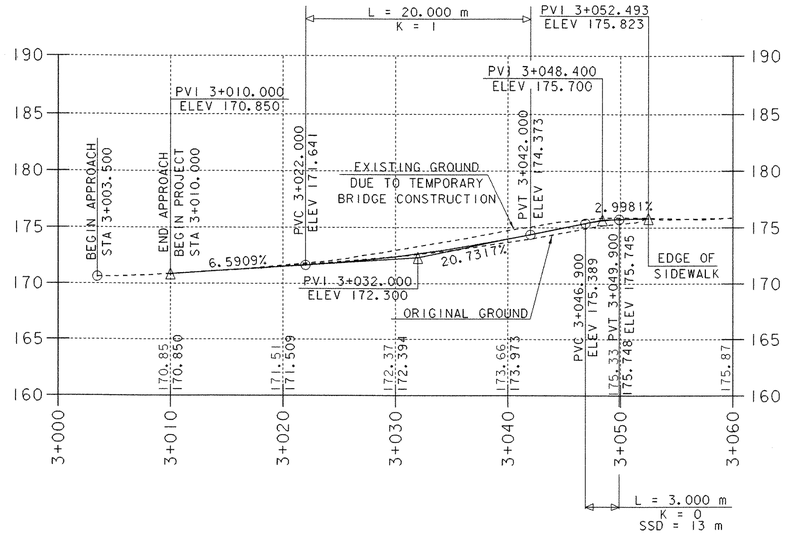
SURVEY DATE: 10/99

SQUAD LEADER: C. P. WILLIAMS

DRAWN BY: K. HIGGINS

PROFILE VT ROUTE 12 (SHEET 2)

SHEET: 13 OF 130



Bethel Mills Drive Profile

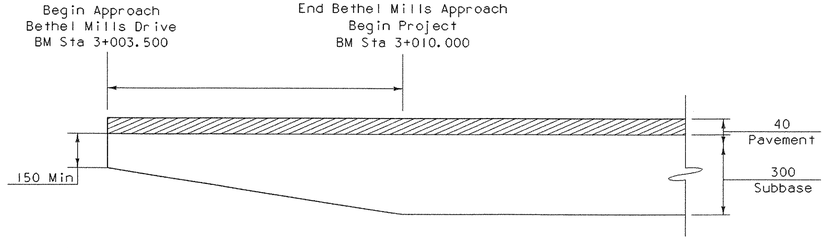
0 10 20

SCALE 1 : 250

NOTES:

GRADES SHOWN TO THE NEAREST HUNDREDTH ARE EXISTING GROUND ALONG ℄.

GRADES SHOWN TO THE NEAREST THOUSANDTH ARE FINISH GRADE ALONG ℄.



BETHEL MILLS DRIVE SUBBASE TAPER

NTS

DATUM	
VERTICAL	NAVD 88
HORIZONTAL	NAD 83/92

PROJECT:	PROJECT NO. :
BETHEL	BRF0241(33)C/2
DESIGN FILE NAME: 02c180/structures/s02c180pro.dgn	
IPARM FILE NAME: sc180probm.i	PLOT DATE: 14-APR-2005
SURVEYED BY: ORVIS	SURVEY DATE: 10/99
SQUAD LEADER: C. P. WILLIAMS	DRAWN BY: K. HIGGINS
PROFILE BETHEL MILLS DRIVE	SHEET: 14 OF 130

VAOT Metric

Match Line 1+100.000

Match Line 1+100.000

SPRINT UNDERGROUND (APPROXIMATE LOCATION)

AT&T UNDERGROUND (APPROXIMATE LOCATION)

3rd Branch of the White River — FLOW

Underground Power

Aerial Telephone

Existing R.O.W.

End Approach Limits of Pavement TH5 Sta 2+050.000

End Project Begin Approach TH5 Sta 2+025.000

End Project Sta 1+260.000

End Approach Limits of Pavement Sta 1+310.000

VT STATE PLANE GRID

Begin Project Sta 1+120.000

Begin Approach Slab Sta. 1+166.000

End Approach Slab Begin Bridge Sta. 1+172.000

℄ Pier Sta. 1+183.980

End Approach Slab Sta. 1+233.997

End Bridge Begin Approach Slab Sta. 1+227.960

Temporary Construction Limits

Construction Limits

R.O.W. TO PRATT

Temporary Aerial (In Place)

Final Aerial

S/MH

T/MH

Flow

DRAIN

UT

P L

1+120 1+140 1+160 1+180 1+200 1+220 1+240 1+260 1+280 1+300 1+320

2+020 2+040 3+000 3+020 3+040

Changing Elevation of Sewer Manhole

Sta 1+100.300 LT
Sta 1+101.400 LT
Sta 1+287.750 RT
Sta 1+290.900 RT
Sta 1+295.400 RT

Changing Elevation of Drop Inlets, Catch Basins or Manholes

Sta 1+152.900 RT (T/MH)
(11) Sta 1+245.800 RT
(15) Sta 1+288.750 RT
(16) Sta 1+288.750 LT

New 450 Diameter - Option Pipes PCCSP, CAAP OR CPEP

(1) Sta 1+102.500 LT - 1+113.300 RT
(2) Sta 1+113.300 - 1+157.400 RT-RT
(3) Sta 1+160.500 LT-RT
(4) Sta 1+157.400 - 1+160.000 RT-RT
(10) Sta 1+241.200 - 1+252.000 LT-RT
(13) Sta 1+228.000 - 1+252.000 RT-RT

New 450 Diameter - PCCSP Pipe W/ (2) 20° Elbows

(5) Sta 1+157.400 - 1+174.500 RT-RT

Remove Existing DI

(1) Sta 1+102.500 LT
(3) Sta 1+160.000 LT & RT
(7) Sta 1+167.800 - (2) RT
(6) Sta 1+175.000 RT
(12) Sta 1+255.000 RT
(14) Sta 1+261.000 RT

New Reinforced Concrete DI

(1) Sta 1+102.500 LT
(2) Sta 1+113.300 RT
(3) Sta 1+160.000 LT
(4) Sta 1+160.000 RT
(5) Sta 1+157.400 RT
(8) Sta 1+174.500 RT (Installed By Others)
(10) Sta 1+241.200 LT
(13) Sta 1+252.000 RT

CAP EXISTING DI

(18) Sta 1+105.300 RT
(9) Sta 1+236.600 LT

New 600 Diameter - PCCSP (Installed by others)

(8) Sta 1+175.600-1+191.000 RT

NOTE:

1. THE REMOVAL OF THE EXISTING DI (FLAG 6), THE CONSTRUCTION OF THE NEW DI AND NEW 600 mm PIPE (FLAG 8) WILL REQUIRE CLOSE COORDINATION WITH THE CONSTRUCTION OF THE MSE WALL AND THE PIER. EXCAVATING FOR AND INSTALLING PIPES AND DI'S IN THIS AREA MAY REQUIRE STAGING AND/OR TEMPORARY PIPING IN ORDER TO CONSTRUCT BOTH THE MSE WALL AND THE PIER WHILE MAINTAINING ADEQUATE DRAINAGE FOR STORMWATER RUNOFF.
2. GRADE TO DRAIN DITCH AT WEST SIDE OF RAILROAD TRACK TO DI (FLAG 8).
3. FINAL LOCATION AND ELEVATION OF DRAINAGE ITEMS MAY BE ADJUSTED IN THE FIELD AS DEEMED NECESSARY BY THE RESIDENT ENGINEER.
4. SEE SHEETS 16-17 FOR PIPE PROFILES.

DRAINAGE PLAN

0 10 20

SCALE 1 : 250

DATUM

VERTICAL NAVD 88
HORIZONTAL NAD 83/92

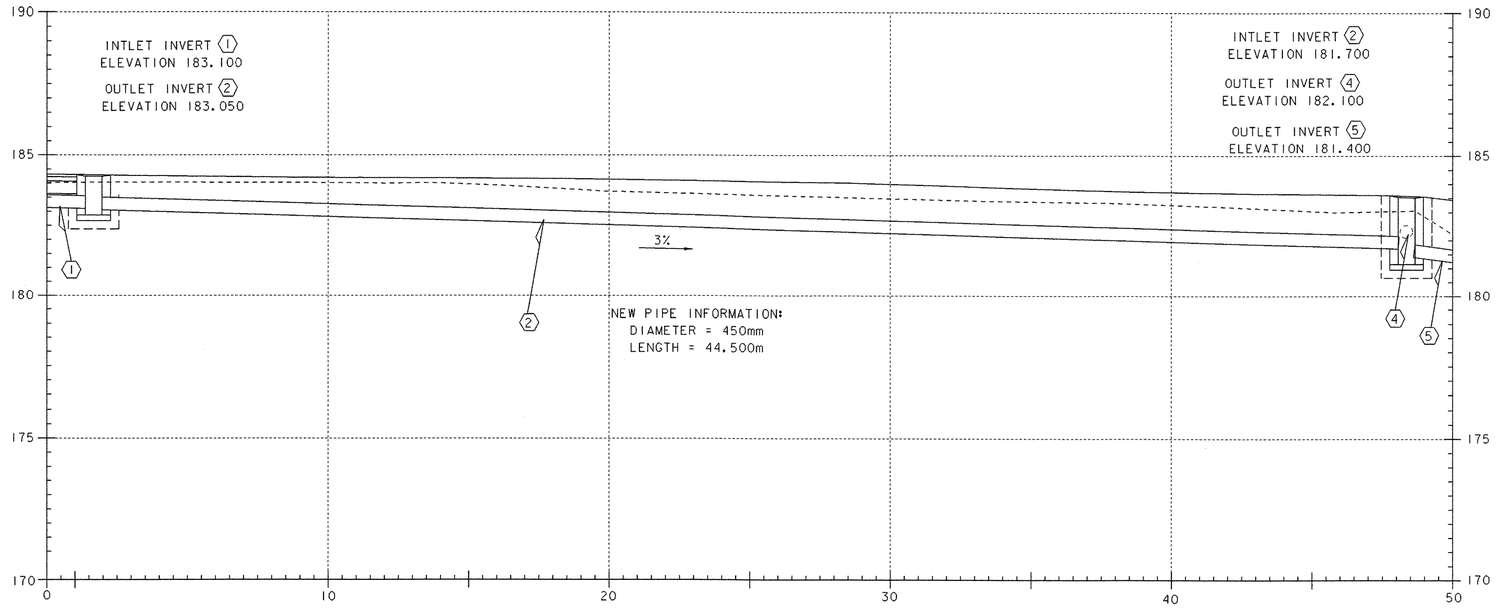
PROJECT: BETHEL

PROJECT NO. : BRF0241 (33) C/2

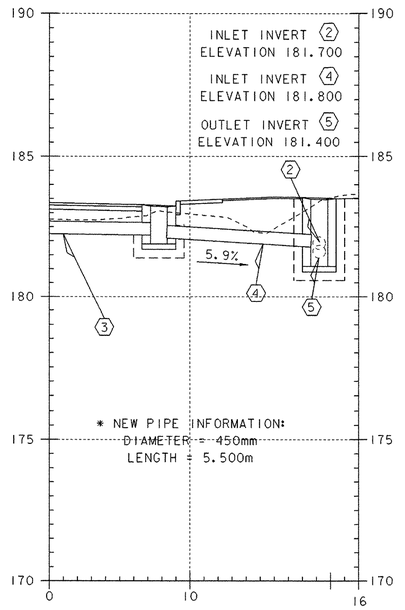
DESIGN FILE NAME: 02c180/structures/s02c180bdr.dgn
IPARM FILE NAME: sc180drainplan.i
SURVEYED BY: ORVIS
SQUAD LEADER: C. P. WILLIAMS
DRAINAGE PLAN

PLOT DATE: 14-APR-2005
SURVEY DATE: 10/99
DRAWN BY: K. M. HIGGINS
SHEET: 15 OF 130

Metric

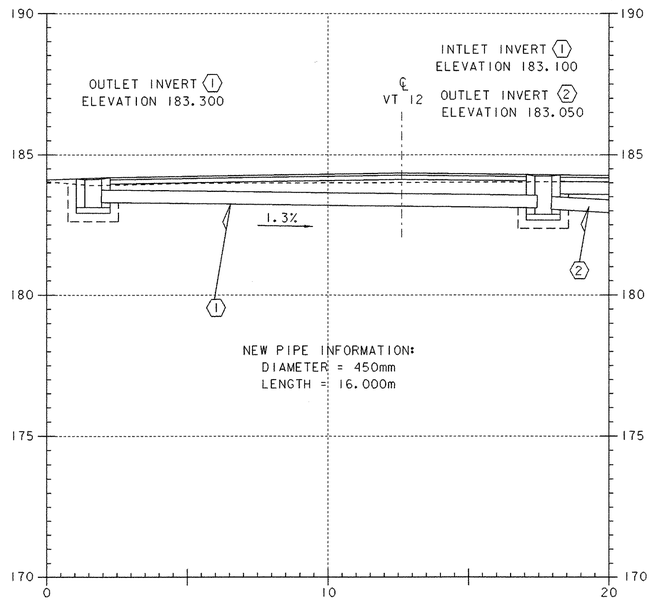


PROFILE PIPE 2

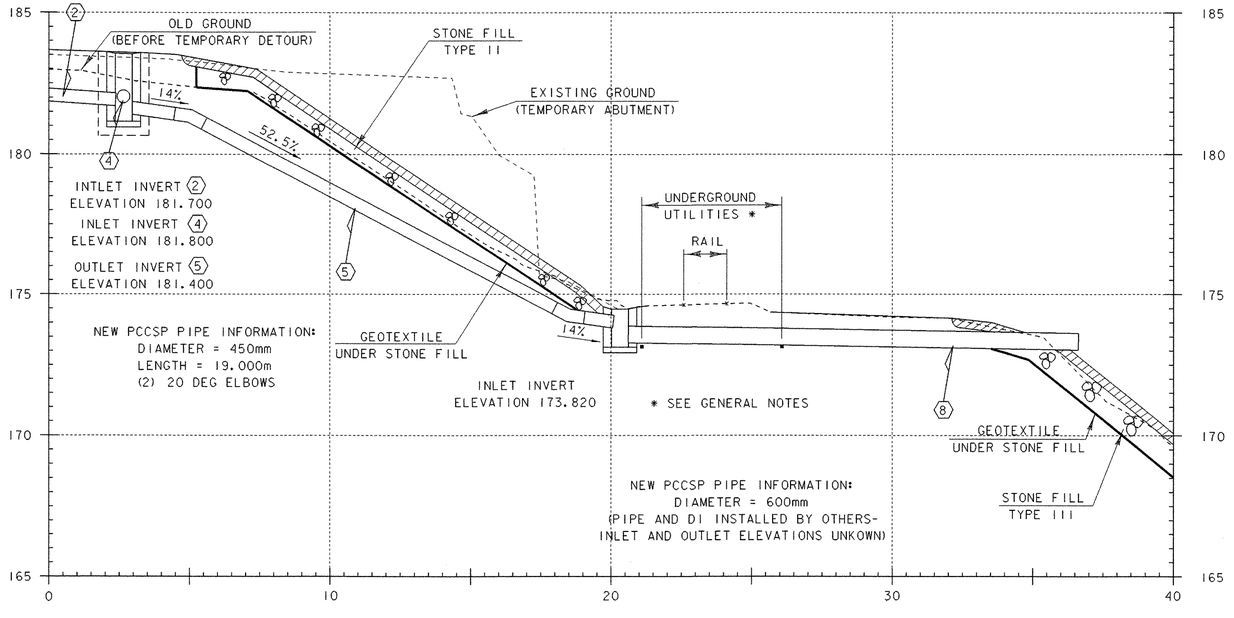


* SEE MAINLINE SECTION 1 + 160 FOR PIPE PROFILE

PROFILE PIPE 4



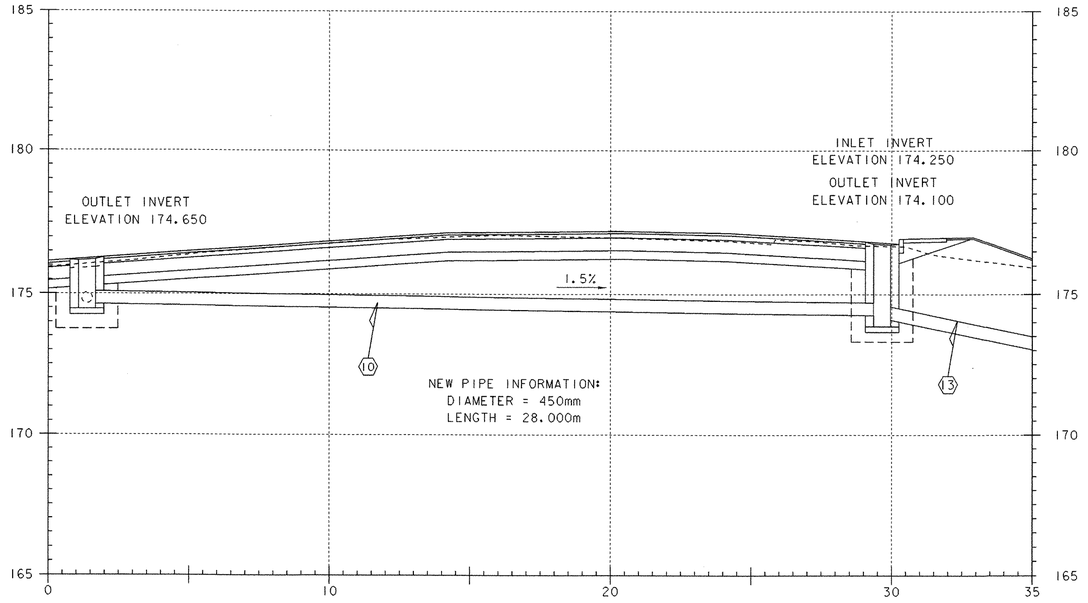
PROFILE PIPE 1



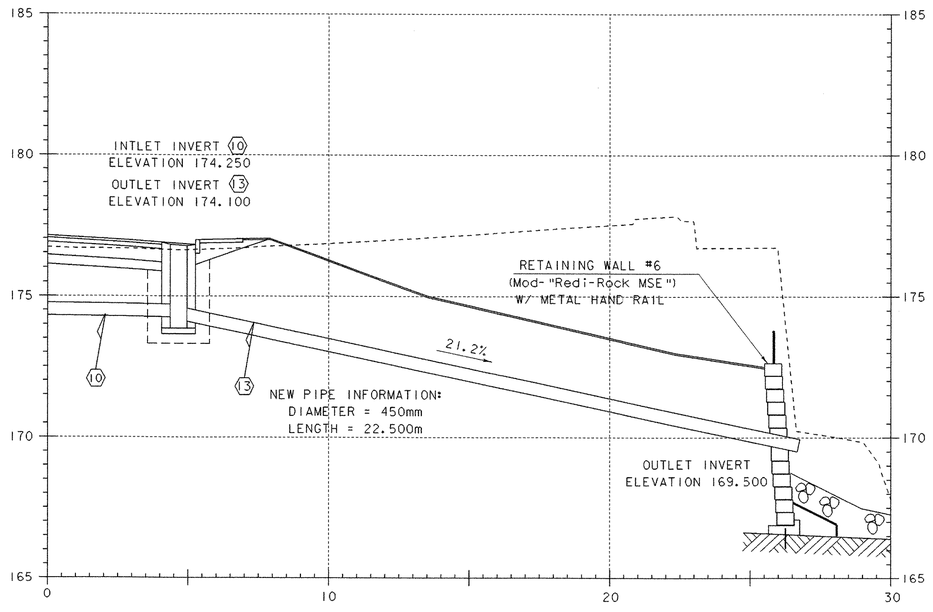
PROFILE PIPES 5 & 8

0 2 4 6 8 10
SCALE 1 : 100

PROJECT: BETHEL	PROJECT NO. : BRF0241 (33) C/2
DESIGN FILE NAME: 02a180/Structures/s02a180xseo.dgn IPARM FILE NAME: sa180pipesec.i	PLOT DATE: 14-APR-2005
PIPE PROFILES SHEET 1	
PIPES 1, 2, 4, 5 & 8	SHEET: 16 OF 130



PROFILE PIPE 10



PROFILE PIPE 13

0 2 4 6 8 10
SCALE 1 : 100

PROJECT: BETHEL	PROJECT NO. : BRF0241 (33) C/2
DESIGN FILE NAME: 02c180/Structures/s02c180xsec.dgn IPARM FILE NAME: sc180pipesec2.i	PLOT DATE: 14-APR-2005
PIPE PROFILES SHEET 2	
PIPE 10 & 13	SHEET: 17 OF 130

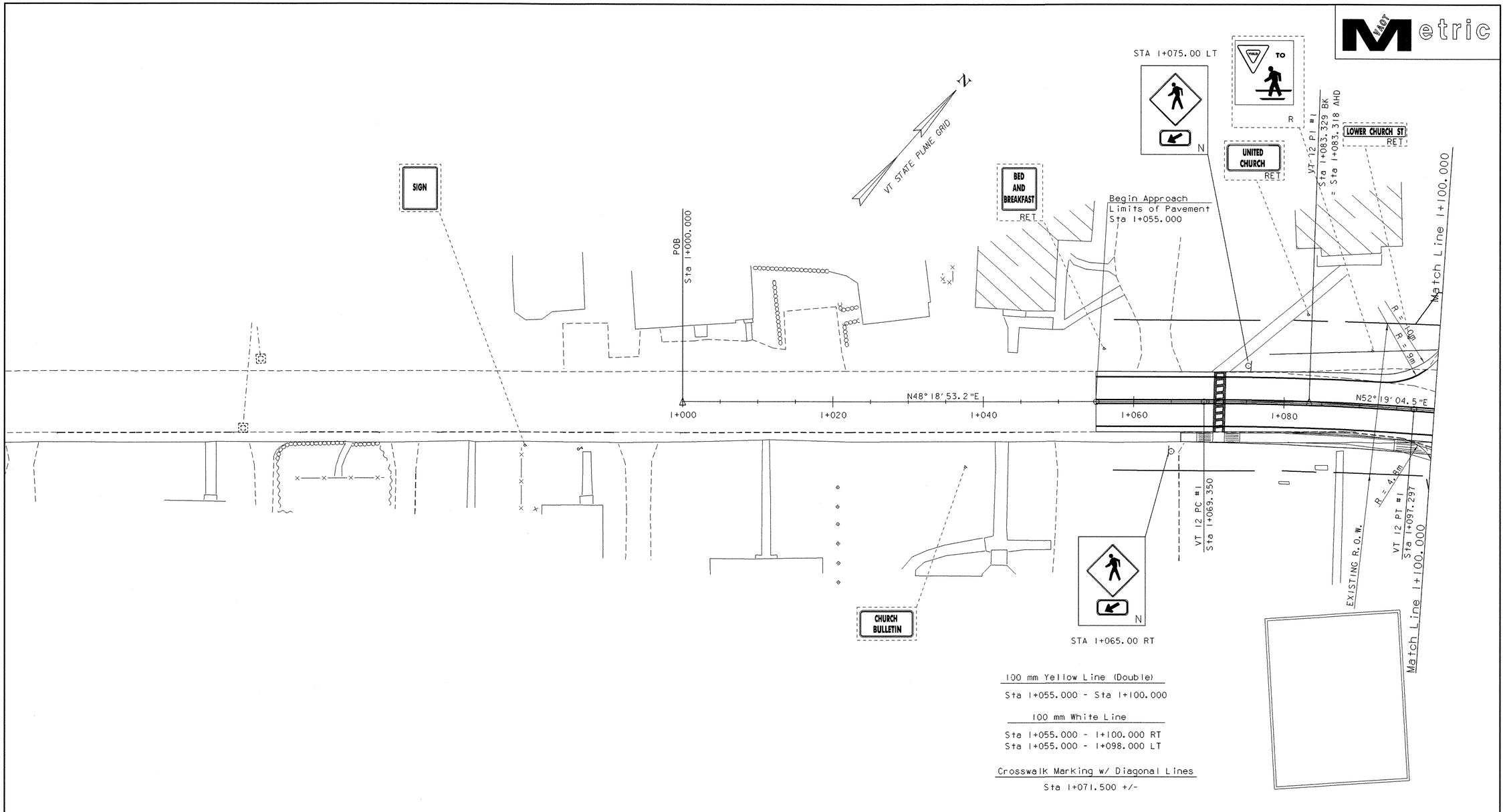
STATE OF VERMONT
AGENCY OF TRANSPORTATION

DRAINAGE DETAIL SHEET

MADE Metric

STATION	STATION	POS.	ASKEW	INLET/OUTLET TYPE		DITCH		PIPE ARCH			PIPE		ALLOWABLE OPTIONS						PIPE ELBOW	ES	CB	PROJ	DEPTH DI	CONC CLASS B	REINF STEEL	DI GRATE	CHAN ELEV	CRM	TRENCH EXCAVATION		COMM EXC	UNC CHAN EXC	STRUCT EXCAV	GRAN BKFILL STRUCT	GRAN BORR	EROS MATT	STONE FILL		MARKER POSTS				REMARKS
km + m	km + m		no. deg.	INLET	OUTLET	IN	OUT	SPAN mm	RISE mm	L m	D mm	L m	PCCSP mm	CAAP mm	RCP CL	CSP mm	CPEP mm	PCCSP PI mm	no. deg.	ea	ea		DI mm	B m^3	kg	type	ea	m^3	EARTH m^3	ROCK m^3	m^2	m^2	m^2	m^2	m^2	m^2	m^2	m^2	m^2	type	LT ea	RT ea			
1+102.500	1+113.300	LT-RT		DI	DI						450	16.00	X	X			X						1050	1.65	80	E			5.00					4.00								1	NEW 450mm X 16.00m OPTION PIPE NEW 1200 X 1200 RCDI @ INLET REMOVE EXISTING PIPE AND RCDI
1+113.300	1+157.400	RT-RT		DI	DI						450	44.50	X	X			X						1350	1.95	95	E			5.00					6.00								2	NEW 450mm X 44.50m OPTION PIPE NEW 1200 X 1200 RCDI @ INLET
1+160.000		LT-RT		DI	DI						450	7.50	X	X			X						1200	1.80	90	E			22.00					4.00								3	NEW 450mm X 7.50m OPTION PIPE NEW 1200 X 1200 RCDI @ INLET REMOVE EXISTING 310mm RCP REMOVE EXISTING DI'S LT & RT (2)
1+157.400	1+160.00	RT-RT		DI	DI						450	5.50	X	X			X						1350	1.95	95	E			27.00					6.00								4	NEW 450mm X 5.50m OPTION PIPE NEW 1200 X 1200 RCDI @ INLET REMOVE EXISTING 380mm RCP
1+157.400	1+174.500	RT-RT		DI	DI						450	18.50	X						20				2400	3.50	170	A			31.00				5.00	8.00								5	NEW 450mm X 18.50m PCCSP W/ (2) 20 DEG ELBOWS NEW 1200 X 1200 RCDI @ INLET (SOLID COVER) REMOVE EXISTING DI (1)
1+174.000		RT																														10.00									6	REMOVE EXISTING DI AND PIPES. EXISTING OUTLET PIPE UNDER RAIL ROAD TRACKS MAY BE USED TO CONTROL DRAINAGE UNTIL PERMANENT SYSTEM IS IN PLACE. THE OLD PIPE SHALL BE FILLED AND CAPPED AFTER IT IS OUT OF SERVICE. SEE SPECIAL PROVISIONS FOR FILL REQUIREMENTS.
1+168.000		RT																																							7	REMOVE 2 EXISTING DI'S AND ALL CPEP CONSTRUCTED IN CONTRACT NO. 1
1+175.100	1+191.100	RT-RT		DI	STONE						600	18.00	X																													8	NEW 600mm PCCSP (INSTALLED BY OTHERS) PIPE OUTLET ON STONE NEW 1200 X 1200 RCDI @ INLET (BY OTHERS)
1+236.600		LT																										1														9	CAP EXISTING DI
1+241.200	1+252.000	LT-RT		DI	DI						450	28.00	X	X			X						1800	2.50	120	E			30.00					6.00								10	NEW 450mm X 28.00m OPTION PIPE NEW 1200 X 1200 RCDI @ INLET
1+245.800		LT			PIPE																						1														11	CHANGE ELEVATION OF EXISTING DI
1+245.000	1+255.000	RT-RT		DI																																					12	REMOVE EXISTING DI AND 380mm CGMP
1+245.000	1+252.000	RT-RT		DI							450	22.50	X	X			X						3000	3.80	200	E			49.00					8.00								13	NEW 450mm X 22.50m OPTION PIPE NEW 1200 X 1200 RCDI @ INLET OUTLET ON STONE FILL
1+261.000	1+271.000	RT-RT		DI																																					14	REMOVE EXISTING DI AND 450mm CPEP
1+288.750		RT																									1														15	CHANGE ELEVATION OF EXISTING DI
1+288.750		LT																									1														16	CHANGE ELEVATION OF EXISTING DI
3+018.000	3+037.000	LT-LT				X	X																																		17	GRASS SWALE @ BETHEL MILLS DRIVE LEFT GRADE AS REQUIRED AROUND SHED
1+050.300		RT																																							18	CAP EXISTING RCDI

PROJECT NAME:	**BETHEL**
PROJECT NUMBER:	**BRF 0241 (33) C/2**
FILE NAME: **sc180dds.xls**	PLOT DATE: **2/1/2005**
PROJECT MANAGER: **C. P. WILLIAMS**	DRAWN BY: **J. L. SCHULTZ**
DESIGNED BY: **J. L. SCHULTZ**	CHECKED BY: **K. M. HIGGINS**
DRAINAGE DETAIL SHEET #1	SHEET **18** OF **130**



100 mm Yellow Line (Double)

Sta 1+055.000 - Sta 1+100.000

100 mm White Line

Sta 1+055.000 - 1+100.000 RT
Sta 1+055.000 - 1+098.000 LT

Crosswalk Marking w/ Diagonal Lines

Sta 1+071.500 +/-

LAYOUT NO. 1

0 10 20

SCALE 1 : 250

SIGN LEGEND

ALL SIGNS AND POSTS WILL BE NEW UNLESS OTHERWISE NOTED:

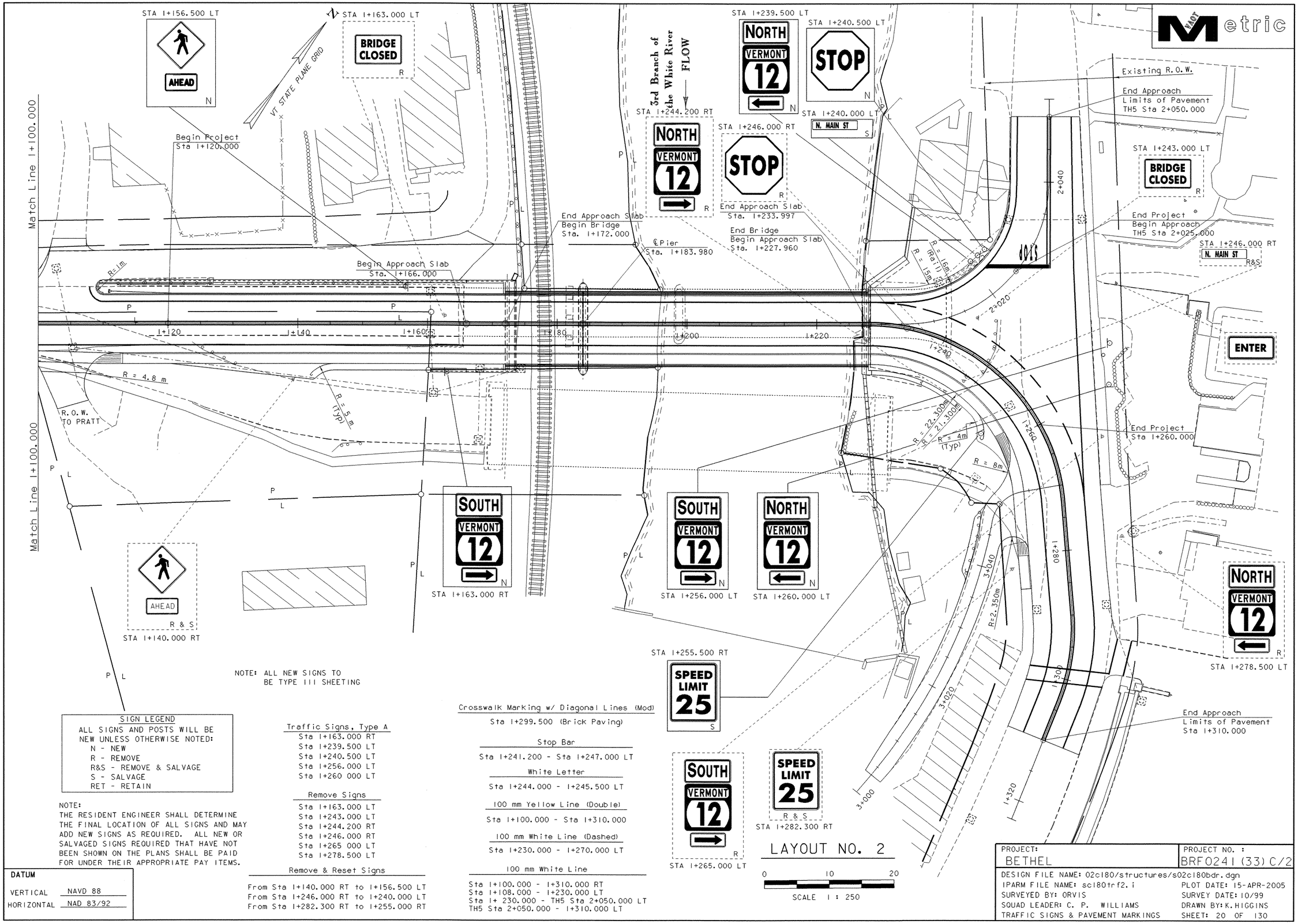
- N - NEW
- R - REMOVE
- R&S - REMOVE & SALVAGE
- S - SALVAGE
- RET - RETAIN

NOTE: ALL NEW SIGNS TO BE TYPE III SHEETING

DATUM

VERTICAL NAVD 88
HORIZONTAL NAD 83/92

PROJECT:	PROJECT NO. :
BETHEL	BRF 0241 (33) C/2
DESIGN FILE NAME: 02c180/structures/s02c180bdr.dgn	
IPARM FILE NAME: sc180trfl.i	PLOT DATE: 15-APR-2005
SURVEYED BY: ORVIS	SURVEY DATE: 10/99
SQUAD LEADER: C.P. WILLIAMS	DRAWN BY: K. HIGGINS
TRAFFIC SIGNS & PAVEMENT MARKINGS	SHEET: 19 OF 130



NOTE: ALL NEW SIGNS TO BE TYPE III SHEETING

SIGN LEGEND

ALL SIGNS AND POSTS WILL BE NEW UNLESS OTHERWISE NOTED:
- N - NEW
- R - REMOVE
- R&S - REMOVE & SALVAGE
- S - SALVAGE
- RET - RETAIN

NOTE:
THE RESIDENT ENGINEER SHALL DETERMINE THE FINAL LOCATION OF ALL SIGNS AND MAY ADD NEW SIGNS AS REQUIRED. ALL NEW OR SALVAGED SIGNS REQUIRED THAT HAVE NOT BEEN SHOWN ON THE PLANS SHALL BE PAID FOR UNDER THEIR APPROPRIATE PAY ITEMS.

DATUM

VERTICAL	NAVD 88
HORIZONTAL	NAD 83/92

Traffic Signs, Type A
- Sta 1+163.000 RT
- Sta 1+239.500 LT
- Sta 1+240.500 LT
- Sta 1+256.000 LT
- Sta 1+260 000 LT

Remove Signs
- Sta 1+163.000 LT
- Sta 1+243.000 LT
- Sta 1+244.200 RT
- Sta 1+246.000 RT
- Sta 1+265 000 LT
- Sta 1+278.500 LT

Remove & Reset Signs
- From Sta 1+140.000 RT to 1+156.500 LT
- From Sta 1+246.000 RT to 1+240.000 LT
- From Sta 1+282.300 RT to 1+255.000 RT

Crosswalk Marking w/ Diagonal Lines (Mod)
- Sta 1+299.500 (Brick Paving)

Stop Bar
- Sta 1+241.200 - Sta 1+247.000 LT

White Letter
- Sta 1+244.000 - 1+245.500 LT

100 mm Yellow Line (Double)
- Sta 1+100.000 - Sta 1+310.000

100 mm White Line (Dashed)
- Sta 1+230.000 - 1+270.000 LT

100 mm White Line
- Sta 1+100.000 - 1+310.000 RT
- Sta 1+108.000 - 1+230.000 LT
- Sta 1+ 230.000 - TH5 Sta 2+050.000 LT
- TH5 Sta 2+050.000 - 1+310.000 LT

LAYOUT NO. 2

0 10 20

SCALE 1 : 250

PROJECT: BETHEL	PROJECT NO. : BRF0241 (33) C/2
DESIGN FILE NAME: 02c180/structures/s02c180bdr.dgn	
IPARM FILE NAME: sc180trf2.i	PLOT DATE: 15-APR-2005
SURVEYED BY: ORVIS	SURVEY DATE: 10/99
SQUAD LEADER: C. P. WILLIAMS	DRAWN BY: K.HIGGINS
TRAFFIC SIGNS & PAVEMENT MARKINGS	SHEET: 20 OF 130

STATE OF VERMONT
AGENCY OF TRANSPORTATION

TRAFFIC SIGN SUMMARY SHEET

Metric

KILOMETER MARKER, STATION, OR SIGN NUMBER	SIGN LEGEND	SIGN DIMENSIONS EA	WIDTH (mm)	HEIGHT (mm)	NEW & SALVAGED SIGNS "A"	"B"	SALV SIGN	SALV TIS	EXIST POST: RETAIN	SALVAGE	NO. OF POSTS	NEW SIGN POSTS: FLANGED CHANNEL kg/m 1.7	3.0	4.5	SQUARE STEEL (mm) 44	50	63	kg/m 3.4	3.9	5.0	ANCHOR	SLEEVE	TUBULAR ALUMINUM Ø (mm) 75	100	100 MOD	kg/m 1.9	2.5	2.5	FOUNDATION	TUBULAR STEEL Ø (mm) 75	89	100	125	kg/m 11.3	13.4	16.1	21.7	W-SHAPE STEEL FTG. SIZE 600 mm	750 mm	WEIGHT	POST SIZE	SIGN REMOVED	REMARKS	SIGN DETAIL: DETAIL ON SHEET NUMBER	STD. SHEET NUMBER
												OPTION ITEMS																																	
1+156.500 LT		1	750	750	0.563		X				1		X 4.27 M																													EXISTING SIGNS DAMAGED		
1+156.500 LT	AHEAD	1	300	600	0.180		X																																				
1+163.000 RT	SOUTH	1	600	300	0.180						1		X 4.27 M																													M 3 - 3		E-136BM
1+163.000 RT	VERMONT 12	1	600	600	0.360																																			M 1 - 5		E-136BM
1+163.000 RT		1	525	375	0.197																																			M 6 - 1		E-136BM
1+255.500 RT	SPEED LIMIT 25	1					1				1		X 3.96 M																															
1+239.500 LT	NORTH	1	600	300	0.180						1		X 4.27 M																													M 3 - 1		E-136BM
1+239.500 LT	VERMONT 12	1	600	600	0.360																																			M 1 - 5		E-136BM
1+239.500 LT		1	525	375	0.197																																			M 6 - 1		E-136BM
1+240.000 LT	N MAIN ST	1					1				1		X 3.35 M																															
1+240.500 LT	STOP	1	750	750	0.563						1		X 3.96 M																													R 1 - 1		E-143M
1+256.000 LT	SOUTH	1	600	300	0.180						1		X 4.27 M																													M 3 - 3		E-136BM
1+256.000 LT	VERMONT 12	1	600	600	0.360																																			M 1 - 5		E-136BM
1+256.000 LT		1	525	375	0.197																																			M 6 - 1		E-136BM
1+260.000 LT	NORTH	1	600	300	0.180						1		X 4.27 M																													M 3 - 1		E-136BM
1+260.000 LT	VERMONT 12	1	600	600	0.360																																			M 1 - 5		E-136BM
1+260.000 LT		1	525	375	0.197																																			M 6 - 1		E-136BM
												m	m ~~29.50~~ 32.62	m	m	m	m		EA	kg	kg	kg		kg	kg	kg	kg														
TOTALS			m² ~~3.50~~ 4.254	m²	EA. ~~4~~ 2	m²						m ~~29.50~~ 32.62			m						kg		EA.	kg					EA.	EA.	kg											

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."

PROJECT NAME: BETHEL
PROJECT NUMBER: BRF 024I(33) C/2

FILE NAME: sc180tsst1
PROJECT LEADER: C.P.WILLIAMS
DESIGNED BY: K.M. HIGGINS
TRAFFIC SIGN SUMMARY SHEET 1

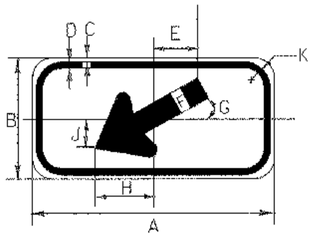
PLOT DATE: 15-APR-2005
DRAWN BY: T. ANDERSON
CHECKED BY: K.M. HIGGINS
SHEET 21 OF 130

STATE OF VERMONT
AGENCY OF TRANSPORTATION

TRAFFIC SIGN SUMMARY SHEET

FIRST Metric

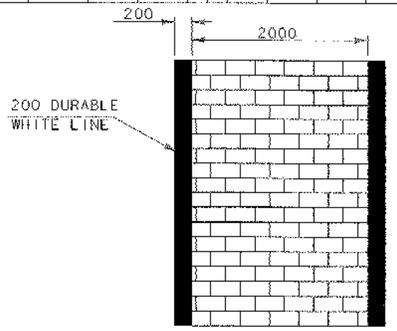
KILOMETER MARKER, STATION, OR SIGN NUMBER	SIGN LEGEND	SIGN DIMENSIONS EA	WIDTH (mm)	HEIGHT (mm)	NEW & SALVAGED SIGNS "A"	"B"	SALV SIGN	SALV TIS	EXIST POST RETAIN	EXIST POST SALVAGE	NEW SIGN POSTS NO. OF POSTS	FLANGED CHANNEL kg/m 1.7	3.0	4.5	SQUARE STEEL (mm) 44 kg/m 3.4	50 kg/m 3.9	63 kg/m 5.0	ANCHOR	SLEEVE	TUBULAR ALUMINUM Ø (mm) 75 kg/m 1.9	100 kg/m 2.5	100 MOD kg/m 2.5	TUBULAR STEEL Ø (mm) FOUNDATION	75 kg/m 11.3	89 kg/m 13.4	100 kg/m 16.1	125 kg/m 21.7	W-SHAPE STEEL FTG. SIZE 600 mm	750 mm	WEIGHT	POST SIZE	SIGN FRAME REQUIRED	REMARKS	SIGN DETAIL DETAIL ON SHEET NUMBER	STD. SHEET NUMBER
												OPTION ITEMS																									
1+075.00 LT		1	750	750	0.563						1			X 4.27 M																				WI- 2		E-152M
1+075.00 LT		1	300	600	0.180																													WI6 - 7	THIS SHEET	
1+065.00 RT		1	750	750	0.563						1			X 4.27 M																				WI- 2		E-152M
1+065.00 RT		1	300	600	0.180																													WI6 - 7	THIS SHEET	
1+140.00 RT		1	750	750	0.563						1			X 4.27 M																						
1+140.00 RT	AHEAD	1	300	600	0.180																															



W16-7

SIGN	DIMENSIONS A	B	C	D	E	F	G	H	J	K
MIN. OR STD.	600	300	10	15	108	75	30°	146	86	50
EXPWY. OR SPECIAL	750	450	12	19	163	114	30°	218	122	50

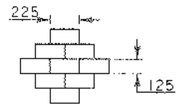
NOTE: ALL NEW SIGNS TO BE TYPE III SHEETING



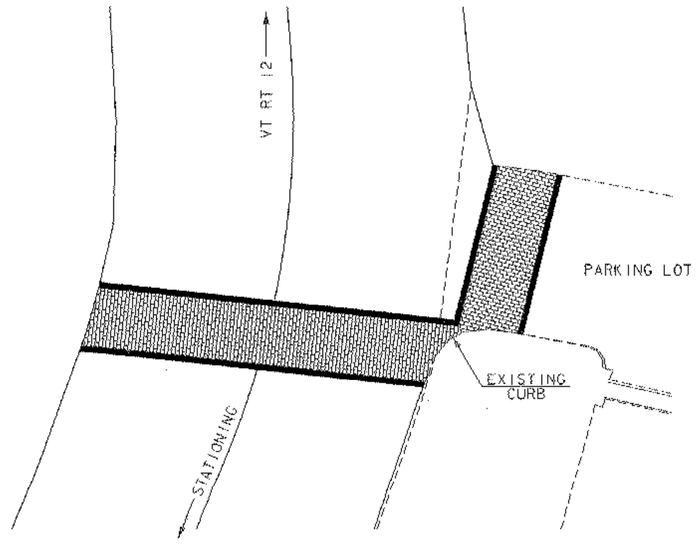
DETAIL OF DURABLE CROSSWALK MARKINGS WITH BRICK TEXTURING

NOTES: NTS

1. THE "STREET PRINT" PATTERN SHALL BE IMPRINTED AS SHOWN ON THE PLANS (BRICK PATTERN) AND COLORED "TERRA-COTTA" AS PER MANUFACTURERS SPECIFICATIONS.
2. THE PER METER COST OF INSTALLED CROSSWALK, INCLUDING THE 200 mm DURABLE WHITE LINES, SHALL BE PAID AS ITEM 646.51 DURABLE CROSSWALK MARKINGS WITH DIAGONAL LINES (MOD).



OFFSET BRICK STREET PRINT



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."

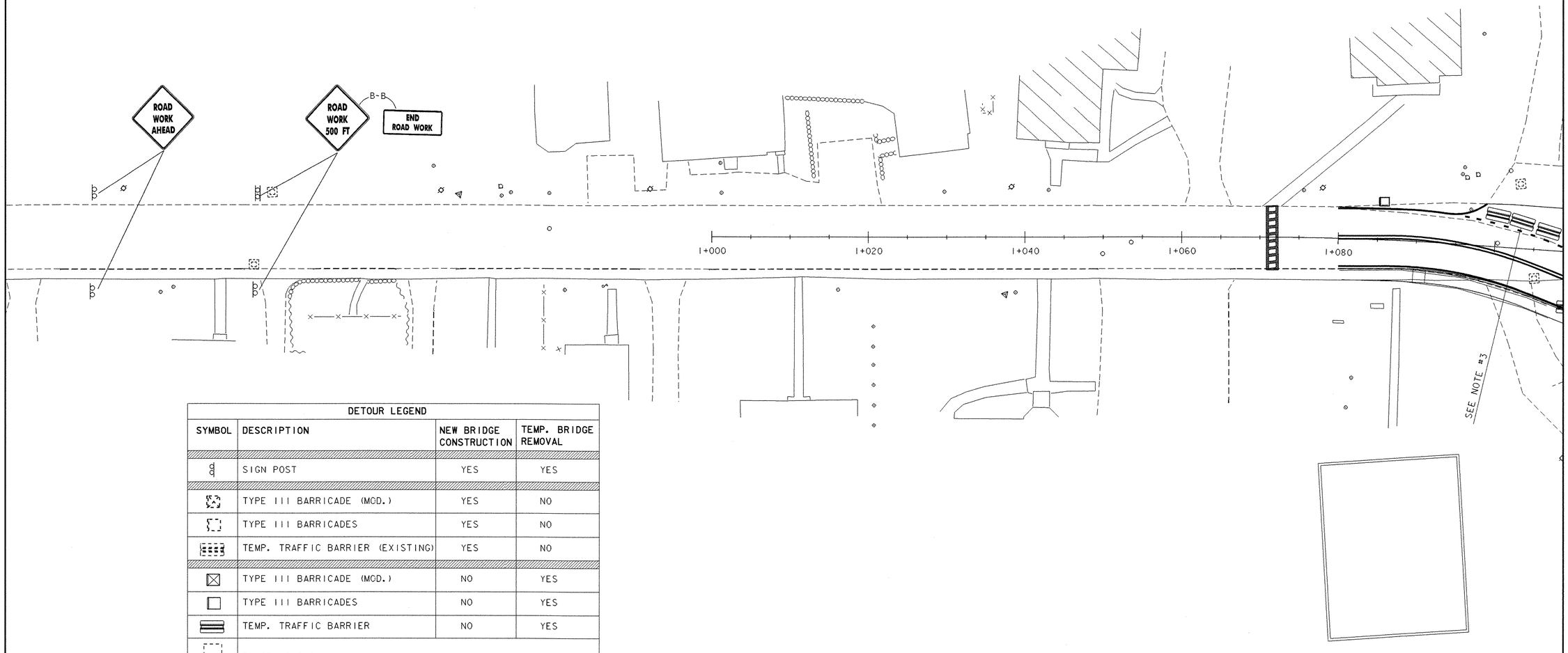
	m	m	m	m	m	m		EA	kg	kg	kg		kg	kg	kg	kg																				
			9.0 12.81																																
TOTALS	m^2 2.29	m^2	EA.	m^2		m 12.81 9.0		m		kg		EA.		kg			EA.	EA.	kg																	

PROJECT NAME: BETHEL
PROJECT NUMBER: BRF 024I(33) C/2

FILE NAME: sc180tss2.I
PROJECT LEADER: C.P.WILLIAMS
DESIGNED BY: K.M.HIGGINS
TRAFFIC SIGN SUMMARY SHEET 2

PLOT DATE: 15-APR-2005
DRAWN BY: T.ANDERSON
CHECKED BY: K.M.HIGGINS
SHEET 22 OF 130

VAOT Metric



DETOUR LEGEND			
SYMBOL	DESCRIPTION	NEW BRIDGE CONSTRUCTION	TEMP. BRIDGE REMOVAL
	SIGN POST	YES	YES
	TYPE III BARRICADE (MOD.)	YES	NO
	TYPE III BARRICADES	YES	NO
	TEMP. TRAFFIC BARRIER (EXISTING)	YES	NO
	TYPE III BARRICADE (MOD.)	NO	YES
	TYPE III BARRICADES	NO	YES
	TEMP. TRAFFIC BARRIER	NO	YES
	EXISTING SIGN		

MAINTENANCE OF TRAFFIC NOTES:

1. TEMPORARY APPROACH TRAFFIC SIGNS SHALL BE ACCORDING TO VERMONT STANDARDS E-107M AND E-100AM UNLESS DETAILED OTHERWISE ON THIS SHEET.
2. FOR ADDITIONAL SIGNING INSTRUCTION SEE VERMONT STANDARDS E-100M, E-100AM, E-101M, E-102M, E-102AM, AND E-106M.
3. BARRICADES AT THE INTERSECTION OF TH66 TO BE USED FOR TEMPORARY ROAD CLOSURES FOR WALL CONSTRUCTION SEE GENERAL NOTES.
4. SIGNS AND BARRICADES USED TO PROTECT TRAFFIC FROM THE CONSTRUCTION OF THE NEW BRIDGE SHALL BE RELOCATED AND USED TO PROTECT TRAFFIC DURING THE REMOVAL OF THE TEMPORARY BRIDGE. THE RESIDENT ENGINEER MAY ORDER NEW SIGNS AND BARRICADES AS REQUIRED. ALL THE DASHED SIGNS AND BARRICADES ARE ALREADY IN PLACE AS PER CONTRACT 1.

LAYOUT NO. 1

0 10 20

SCALE 1 : 250

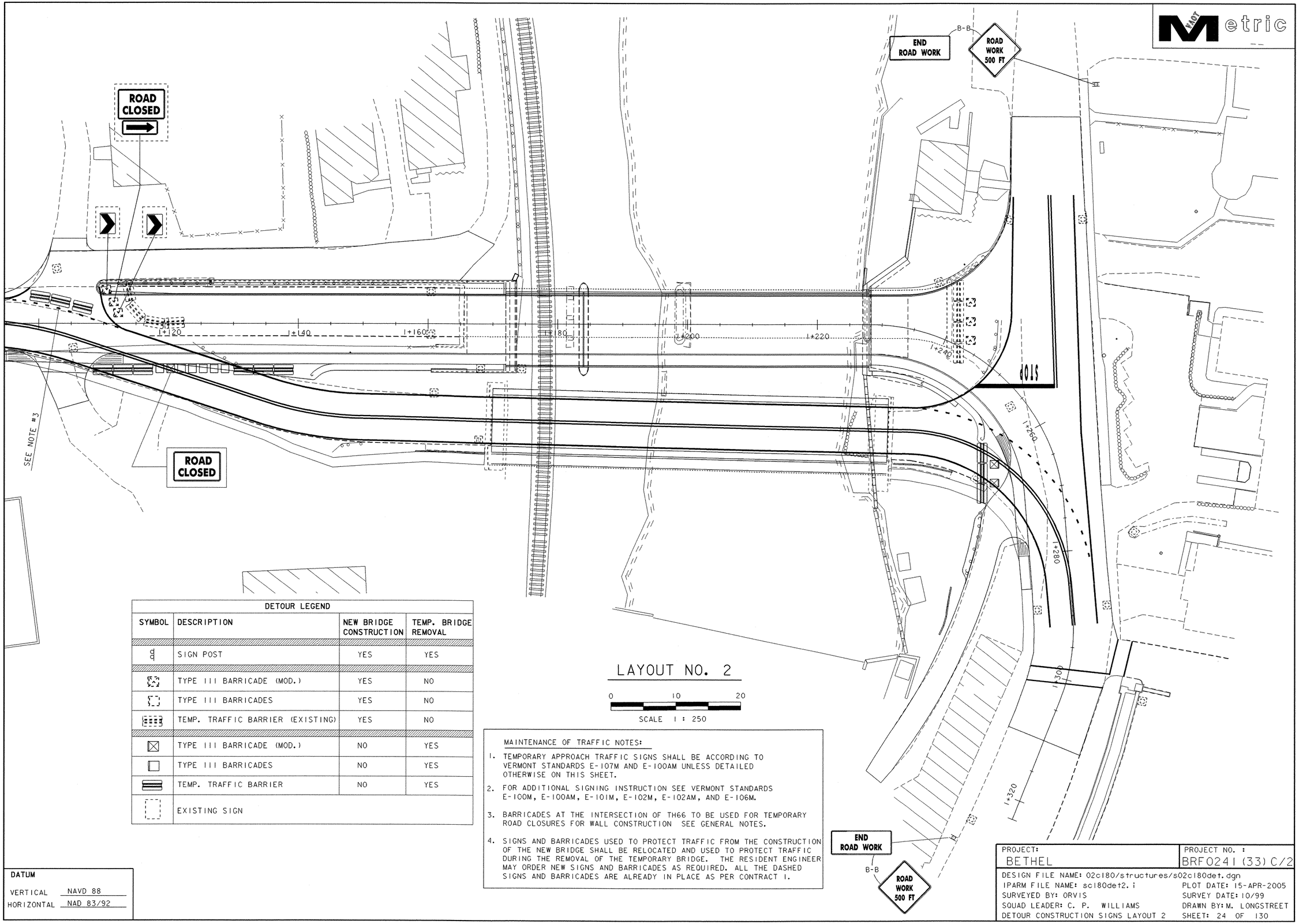
DATUM

VERTICAL NAVD 88

HORIZONTAL NAD 83/92

PROJECT:	PROJECT NO. :
BETHEL	BRF0241 (33) C/2
DESIGN FILE NAME: 02c180/structures/s02c180det.dgn	
IPARM FILE NAME: sc180det1.i	PLOT DATE: 15-APR-2005
SURVEYED BY: ORVIS	SURVEY DATE: 10/99
SQUAD LEADER: C.P. WILLIAMS	DRAWN BY: M. LONGSTREET
DETOUR CONSTRUCTION SIGNS LAYOUT 1	SHEET: 23 OF 130

VAOT Metric



DETOUR LEGEND			
SYMBOL	DESCRIPTION	NEW BRIDGE CONSTRUCTION	TEMP. BRIDGE REMOVAL
	SIGN POST	YES	YES
	TYPE III BARRICADE (MOD.)	YES	NO
	TYPE III BARRICADES	YES	NO
	TEMP. TRAFFIC BARRIER (EXISTING)	YES	NO
	TYPE III BARRICADE (MOD.)	NO	YES
	TYPE III BARRICADES	NO	YES
	TEMP. TRAFFIC BARRIER	NO	YES
	EXISTING SIGN		

LAYOUT NO. 2

0 10 20

SCALE 1 : 250

MAINTENANCE OF TRAFFIC NOTES:

1. TEMPORARY APPROACH TRAFFIC SIGNS SHALL BE ACCORDING TO VERMONT STANDARDS E-107M AND E-100AM UNLESS DETAILED OTHERWISE ON THIS SHEET.
2. FOR ADDITIONAL SIGNING INSTRUCTION SEE VERMONT STANDARDS E-100M, E-100AM, E-101M, E-102M, E-102AM, AND E-106M.
3. BARRICADES AT THE INTERSECTION OF TH66 TO BE USED FOR TEMPORARY ROAD CLOSURES FOR WALL CONSTRUCTION SEE GENERAL NOTES.
4. SIGNS AND BARRICADES USED TO PROTECT TRAFFIC FROM THE CONSTRUCTION OF THE NEW BRIDGE SHALL BE RELOCATED AND USED TO PROTECT TRAFFIC DURING THE REMOVAL OF THE TEMPORARY BRIDGE. THE RESIDENT ENGINEER MAY ORDER NEW SIGNS AND BARRICADES AS REQUIRED. ALL THE DASHED SIGNS AND BARRICADES ARE ALREADY IN PLACE AS PER CONTRACT 1.

DATUM

VERTICAL NAVD 88
HORIZONTAL NAD 83/92

PROJECT:	PROJECT NO. :
BETHEL	BRF0241(33)C/2

DESIGN FILE NAME: 02c180/structures/s02c180det.dgn
IPARM FILE NAME: sc180det2.i — PLOT DATE: 15-APR-2005
SURVEYED BY: ORVIS — SURVEY DATE: 10/99
SQUAD LEADER: C. P. WILLIAMS — DRAWN BY: M. LONGSTREET
DETOUR CONSTRUCTION SIGNS LAYOUT 2 — SHEET: 24 OF 130

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.

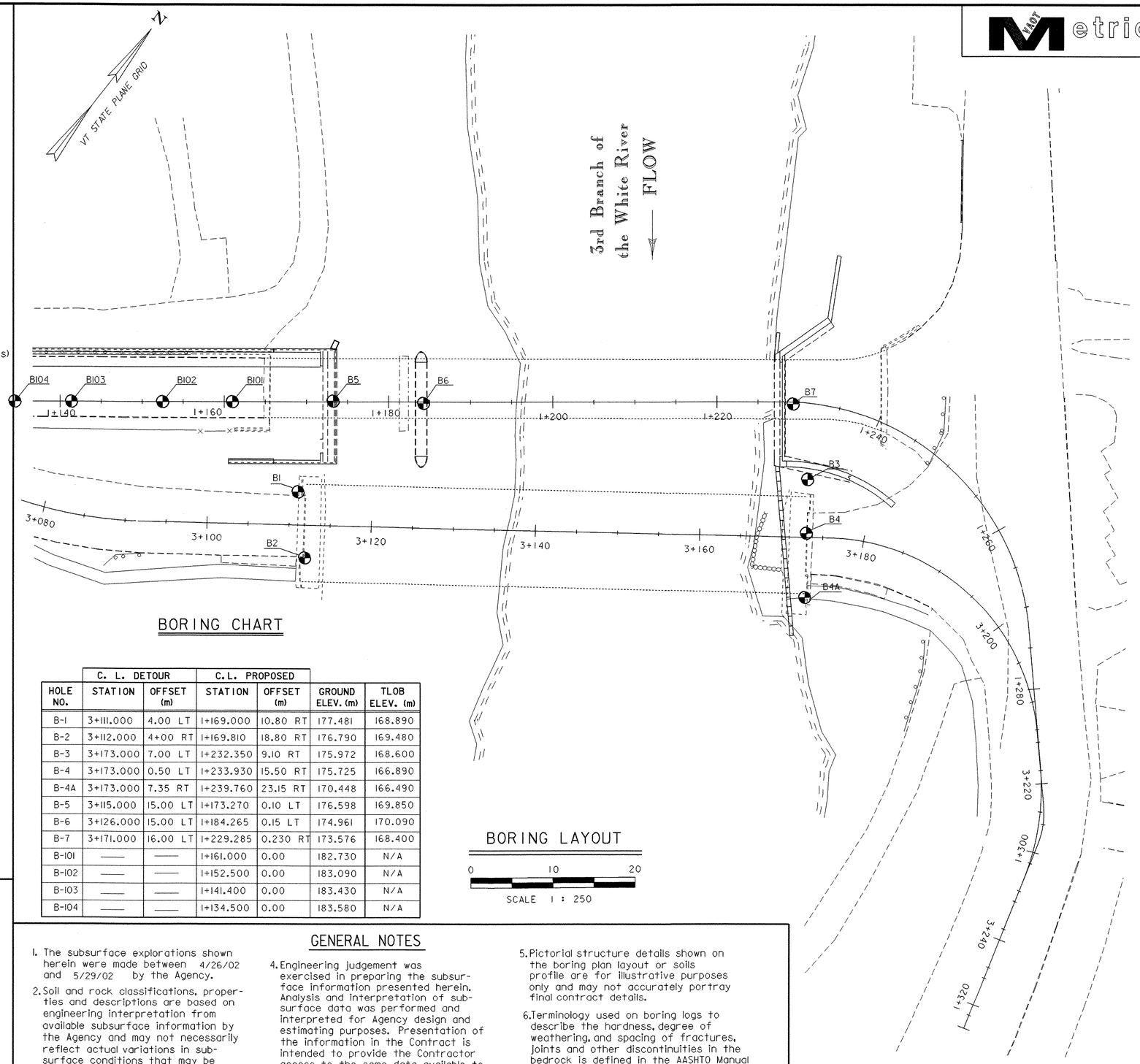
MUCK - Soft organic soil (containing > 10% organic material.

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 CHART

HOLE NO.	C. L. DETOUR STATION	C. L. DETOUR OFFSET (m)	C.L. PROPOSED STATION	C.L. PROPOSED OFFSET (m)	GROUND ELEV. (m)	TLOB ELEV. (m)
B-1	3+111.000	4.00 LT	1+169.000	10.80 RT	177.481	168.890
B-2	3+112.000	4+00 RT	1+169.810	18.80 RT	176.790	169.480
B-3	3+173.000	7.00 LT	1+232.350	9.10 RT	175.972	168.600
B-4	3+173.000	0.50 LT	1+233.930	15.50 RT	175.725	166.890
B-4A	3+173.000	7.35 RT	1+239.760	23.15 RT	170.448	166.490
B-5	3+115.000	15.00 LT	1+173.270	0.10 LT	176.598	169.850
B-6	3+126.000	15.00 LT	1+184.265	0.15 LT	174.961	170.090
B-7	3+171.000	16.00 LT	1+229.285	0.230 RT	173.576	168.400
B-101	——	——	1+161.000	0.00	182.730	N/A
B-102	——	——	1+152.500	0.00	183.090	N/A
B-103	——	——	1+141.400	0.00	183.430	N/A
B-104	——	——	1+134.500	0.00	183.580	N/A

BORING LAYOUT

0 10 20

SCALE 1 : 250

GENERAL NOTES

1. The subsurface explorations shown herein were made between 4/26/02 and 5/29/02 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.

PROJECT: BETHEL	PROJECT NO.: BRF 0241(33)C/2
DESIGN FILE NAME: 02c180/structures/s02c180bor.dgn	
IPARM FILE NAME: sc180borlayout.i	PLOT DATE: 15-APR-2005
US Rt12 Over The Third Branch Of The White River	
BORING LAYOUT SHEET	SHEET: 25 OF 130

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

HOLE NO.: B-1
SHEET 1 OF 1
DATE STARTED: 5/23/02
DATE COMPLETED: 5/28/02

PROJECT NAME: BETHEL
SITE NAME: BR 31
STATION: 3+111.00
GROUND EL.: 177.418

PROJECT NUMBER: BRF 0241(33) C/1
SITE NO.: VT 12
OFFSET: -4.00
G.W. DEPTH: Hole caved in

BORING CREW
CREW CHIEF: TALLMAN
DRILLER: YOUNG
LOGGER: SOMERS
ADDITIONAL CREW:

BORING RIG: SMALL 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, SiSa, brn-gry, Moist, Rec. = 0.33m	4	16.9	10	66.4	23.6		
		A-4, SaSi, gry, Moist, Rec. = 0.50m	18	22	1.4	30.5	68.1		
5		A-4, SaSi, gry, Moist, Rec. = 0.56m	51	12.8	16	35.5	48.5		
		BXMDC, 5.48m-6.04m, Broke through Boulder							
		BXMDC, 6.24m-6.84m, Broke through Boulder							
		A-2-4, SiSaGr, gry, Moist, Rec. = 0.10m	R	11.5	37.4	35.4	27.2		
		BXMDC, 7.80m-8.10m, Broke through Boulder							
		Top of bedrock @ 8.53 m							
		Run#1: BXMDC, 8.53m-10.05m, Rec. = 1.52m, See Geologist's Report.	RUN 1	REC% 100	RQD% 80	Dip° 50			
10		Run#2: BXMDC, 10.05m-11.57m, Rec. = 1.52m, See Geologist's Report.	2	100	95	50			
		Hole stopped @ 11.57m							

Driller's Notes:
1. No ground water elevavation. Hole caved in. 05/28/02
2. Moved hole 1.00m to the west.

GEOLOGISTS REPORT:

Run#1: Light gray hornblende gneiss, Hard to very hard, Unweathered, Competent.

Run#2: Light gray hornblende gneiss, Hard to very hard, Unweathered, Competent.

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

HOLE NO.: B-2
SHEET 1 OF 1
DATE STARTED: 5/21/02
DATE COMPLETED: 5/21/02

PROJECT NAME: BETHEL
SITE NAME: BR 31
STATION: 3+112.00
GROUND EL.: 176.790

PROJECT NUMBER: BRF 0241(33) C/1
SITE NO.: VT 12
OFFSET: 4.00
G.W. DEPTH:

BORING CREW
CREW CHIEF: TALLMAN
DRILLER: TALLMAN
LOGGER: SOMERS
ADDITIONAL CREW:

BORING RIG: SMALL 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-4, SiSa, Lt/gry, Moist, Rec. = 0.40m	16	13.3	2.2	51.6	46.2		
		A-4, SiSa, brn-gry, Moist, Rec. = 0.28m	47	24.8	0.2	61.8	38		
5		A-4, SiSa, brn-gry, Moist, Rec. = 0.30m	42	21.5		56.1	43.9		
		A-2-4, SiGrSa, gry, Moist, Rec. = 0.25m	R	12.7	35.1	39.2	25.7		
		Broken Rock or Possible Ledge at 6.40m							
		Top of bedrock @ 7.31 m							
		Run#1: BXMDC, 7.31m-8.83m, Rec. = 1.23m, See Geologist's Report.	RUN 1	REC% 81	RQD% 70	Dip° 50			
10		Run#2: BXMDC, 8.83m-10.35m, Rec. = 1.52m, See Geologist's Report.	2	100	95	50			
		Hole stopped @ 10.35m							

GEOLOGISTS REPORT:

Run#1: Gray hornblende gneiss, Hard to very hard, Unweathered, Competent.

Run#2: Gray hornblende gneiss, Hard to very hard, Unweathered, Competent.

TOP OF ABUT. #2 FTG. ELV. = 169.750

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

HOLE NO.: B-3
SHEET 1 OF 1
DATE STARTED: 4/26/02
DATE COMPLETED: 4/26/02

PROJECT NAME: BETHEL
SITE NAME: BR 31
STATION: 3+173.00
GROUND EL.: 175.972

PROJECT NUMBER: BRF 0241(33) C/1
SITE NO.: VT 12
OFFSET: -7.00
G.W. DEPTH:

BORING CREW
CREW CHIEF: TALLMAN
DRILLER: TALLMAN
LOGGER: SOMERS
ADDITIONAL CREW:

BORING RIG: LARGE 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, SiSa, brn, Moist, Rec. = 0.29m	2	17.9	14	62.4	23.6		
		A-2-4, Sa, brn, Moist, Rec. = 0.18m	4	16.5	7.6	72.6	19.8		
		A-2-4, SiSa, brn, Moist, Rec. = 0.28m	2	17.2	8.4	67.6	24		
		Visual Class: Broken Brick, red, Dry, Rec. = 0.31m	8	24.8					
5		Visual Class: Various Fill Material, red-brn, Moist, Rec. = 0.22m	10	13.9					
		A-4, SaSi, brn, Moist, Rec. = 0.53m	2	29.3	12.3	41.1	46.6		
		A-4,SaSi,brn,Moist,Rec.0.11m	R	32.7	0.1	46	53.9		
		VC: Weathered Rock, gry, Dry, Rec. = 0.11m		13.7					
		Top of bedrock @ 7.37 m							
		Run#1: BXGDC, 7.37m-8.87m, Rec. = 1.47m, See Geologist's Report.	RUN 1	REC% 98	RQD% 56	Dip° 40			
10		Run#2: BXGDC, 8.87m-10.37m, Rec. = 1.42m, See Geologist's Report.	2	95	52	40			
		Hole stopped @ 10.37m							

GEOLOGISTS REPORT:

Run#1: Light gray hornblende gneiss, Hard to very hard, Unweathered, Competent.

Run#2: Same as Run#1, but with quartz veins, Competent.

TOP OF ABUT. #2 FTG. ELV. = 169.750

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

HOLE NO.: B-4
SHEET 1 OF 1
DATE STARTED: 4/29/02
DATE COMPLETED: 4/29/02

PROJECT NAME: BETHEL
SITE NAME: BR 31
STATION: 3+173.00
GROUND EL.: 175.725

PROJECT NUMBER: BRF 0241(33) C/1
SITE NO.: VT 12
OFFSET: -0.50
G.W. DEPTH: No water found (04/29/02)

BORING CREW
CREW CHIEF: TALLMAN
DRILLER: TALLMAN
LOGGER: RUSSELL
ADDITIONAL CREW:

BORING RIG: LARGE 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
		No Rec.	8						
		A-3, Sa, brn, Moist, Rec. = 0.23m	5	28.1	0.2	89.9	9.9		
5		A-1-b, SiSaGr, brn, Moist, Rec. = 0.07m, Particles of Brick were within sample.	3	12	48.8	29.7	21.5		
		A-4, SaSi, brn, Moist, Rec. = 0.25m	4	30	16.4	38.4	45.2		
		A-4, SaSi, gry, Moist, Rec. = 0.10m, Wood particles were within sample.	4	41.7	4	41	55		
		Top of bedrock @ 8.83 m							
		Run#1: BXMDC, 8.83m-10.35m, Rec. = 1.50m, See Geologist's Report.	RUN 1	REC% 99	RQD% 88	Dip° 40			
10		Run#2: BXMDC, 10.35m-11.87m, Rec. = 1.48m, See Geologist's Report.	2	97	92	40			
		Hole stopped @ 11.87m							

Driller's Notes:
1. No ground water elevation found. 04/29/02

GEOLOGISTS REPORT:

Run#1: Light gray hornblende gneiss with quartz veins, Hard to very hard, Unweathered, Competent.

Run#2: Light gray hornblende gneiss with quartz veins, Hard to very hard, Unweathered, Competent.

PROJECT: BETHEL	PROJECT NO.: BRF 0241(33) C/2
DESIGN FILE NAME: 02c180/Structures/s02c180bor.dgn	
IPARM FILE NAME: sc180bor2.i	PLOT DATE: 15-APR-2005
SURVEYED BY: ORVIS	SURVEY DATE: 10/99
SQUAD LEADER: C.C. BENDA	DRAWN BY: J. TOUCHETTE
DATE: 06/02 BORING LOGS	SHEET: 26 OF 130

VAOT Metric

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

HOLE NO.: B-4A
SHEET 1 OF 1
DATE STARTED: 5/7/02
DATE COMPLETED: 5/10/02

PROJECT NAME: BETHEL
SITE NAME: BR 31
STATION: 3+173.00
GROUND EL.: 170.448

PROJECT NUMBER: BRF 0241(33) C/1
SITE NO.: VT 12
OFFSET: 7.35
G.W. DEPTH: 1.80 05/10/02

BORING CREW
CREW CHIEF: TALLMAN
DRILLER: TALLMAN
LOGGER: RUSSELL
ADDITIONAL CREW:

BORING RIG: SMALL 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-4, GrSiSa & Wood, brn, Moist Rec. = 0.05m	3	42.5	20.9	40.5	38.6		
		Into Wood at 2.10m							
		No sample, Wood sections							
					Top of bedrock @ 3.96 m				
		Run#1: BXMDC, 3.96m-5.48m, Rec. = 1.52m, See Geologist's Report.	RUN 1	REC% 100	RQD% 75	Dip° 40			
5		Run#2: BXMDC, 5.48m-7.00m, Rec. = 1.52m, See Geologist's Report.	2	100	90	40			
					Hole stopped @ 7.0m				

Driller's Notes:

1. Drillers had a difficult time drilling through three sections of wood timber. Each timber was about six inches thick.
2. Ground water elevation was 1.80m on 05/10/02.

GEOLOGISTS REPORT:

Run#1: 3.96m-5.00m, Gray garnetiferous hornblende gneiss with greenstone, Highly deformed foliation, Moderately hard, Unweathered, Competent.
5.00m-5.45m, Light gray hornblende gneiss, Hard to very hard, Unweathered, Competent.
5.45m-5.48m, Same as beginning of Run#1.

Run#2: 5.48m-6.03m, Gray garnetiferous hornblende gneiss with greenstone and quartz veins, Highly deformed foliation, Moderately hard, Unweathered, Competent.
6.03m-7.00m, Light gray harnblende gneiss, Hard to very hard, Unweathered, Competent.

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

HOLE NO.: B-5
SHEET 1 OF 1
DATE STARTED: 5/29/02
DATE COMPLETED: 5/29/02

PROJECT NAME: BETHEL
SITE NAME: BR 31
STATION: 3+115.00
GROUND EL.: 176.598

PROJECT NUMBER: BRF 0241(33) C/1
SITE NO.: VT 12
OFFSET: -15.00
G.W. DEPTH: Hole caved in

BORING CREW
CREW CHIEF: TALLMAN
DRILLER: TALLMAN
LOGGER: RUSSELL
ADDITIONAL CREW:

BORING RIG: LARGE 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-b, Sa, gry, Moist, Rec. = 0.15m	4	16.8	15.2	73.5	11.3		
		A-4, SaSi, brn, Moist, Rec. = 0.40m	6	22.5	0.5	37.7	61.8		
5		A-4, SaSi, gry, Moist, Rec. = 0.32m	43	15.4	9.3	44.6	46.1		
		5.48m-5.79, Boulder							
		A-4, SiSa with rock fragments, gry, Moist, Rec. = 0.35m	61	14.6	10.1	51	38.9		
					Top of bedrock @ 6.75 m				
		Run#1: BXMDC, 6.75m-8.27m, Rec. = 1.50m, See Geologist's Report.	RUN 1	REC% 99	RQD% 50	Dip° 50			
		Run#2: BXMDC, 8.27m-9.79m, Rec. = 1.52m, See Geologist's Report.	2	100	94	50			
10					Hole stopped @ 9.79m				

Driller's Notes:

1. No ground water elevation found. Hole caved in.

GEOLOGISTS REPORT:

Run#1: Gray hornblende gneiss with quartz veins, Hard to very hard, Unweathered, Competent.

Run#2: Gray hornblende gneiss with quartz veins, Bottom 0.4m of Run is quartz, Hard to very hard, Unweathered, Competent.

TOP OF PIER FTG. ELV. = 171.000

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

HOLE NO.: B-6
SHEET 1 OF 1
DATE STARTED: 5/16/02
DATE COMPLETED: 5/16/02

PROJECT NAME: BETHEL
SITE NAME: BR 31
STATION: 3+126.00
GROUND EL.: 174.961

PROJECT NUMBER: BRF 0241(33) C/1
SITE NO.: VT 12
OFFSET: -15.00
G.W. DEPTH: No water found (05/16/02)

BORING CREW
CREW CHIEF: TALLMAN
DRILLER: TALLMAN
LOGGER: RUSSELL
ADDITIONAL CREW:

BORING RIG: LARGE 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
		No sample. Possible GrSa.	2						
		A-2-4, GrSiSa, gry, Moist, Rec. = 0.15m	3	17	21.6	52	26.4		
		BXMDC, 4.06m-4.60m, Broke through Boulder.							
					Top of bedrock @ 4.87 m				
5		Run#1: BXMDC, 4.87m-6.39m, Rec. = 1.46m, See Geologist's Report.	RUN 1	REC% 96	RQD% 80	Dip° 50			
		Run#2: BXMDC, 6.39m-7.91m, Rec. = 1.06m, Lost part of core and could not retrieve it. See Geologist's Report.	2	70	54	50			
10					Hole stopped @ 7.91m				

Driller's Notes:

1. No ground water elevation found 05/16/02.
2. Could not retrieve part of Run#2's rock core.

GEOLOGISTS REPORT:

Run#1: Gray hornblende gneiss, Hard to very hard, Unweathered, Competent.

Run#2: Gray hornblende gneiss, Hard to very hard, Unweathered, Competent.

TOP OF ABUT. #2 FTG. ELV. = 169.750

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

HOLE NO.: B-7
SHEET 1 OF 1
DATE STARTED: 5/1/02
DATE COMPLETED: 5/1/02

PROJECT NAME: BETHEL
SITE NAME: BR 31
STATION: 3+171.00
GROUND EL.: 173.576

PROJECT NUMBER: BRF 0241(33) C/1
SITE NO.: VT 12
OFFSET: -16.00
G.W. DEPTH:

BORING CREW
CREW CHIEF: TALLMAN
DRILLER: TALLMAN
LOGGER: RUSSELL
ADDITIONAL CREW:

BORING RIG: LARGE 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
		No Rec., Piece of granite in the end of the barrel.	R						
		A-1-b, GrSa, brn, Moist, Rec. = 0.03m	5	15.8	45.7	48.7	5.6		
		A-2-4, SiSaGr, gry, Moist, Rec. = 0.32m,	21 Broken	14.7 rock was within sample.	39.2	33.7	27.1		
					Top of bedrock @ 5.18 m				
5		Run#1: BXMDC, 5.18m-6.70m, Rec. = 1.23m, See Geologist's Report.	RUN 1	REC% 81	RQD% 70	Dip° 40			
		Run#2: BXMDC, 6.70m-8.22m, Rec. = 1.52m, See Geologist's Report.	2	100	50	40			
10					Hole stopped @ 8.22m				

Driller's Notes:

1. Moved station three feet toward town.

GEOLOGISTS REPORT:

Run#1: Light gray biotite gneiss, Hard to very hard, Unweatherd, Competent.

Run#2: Light gray biotite gneiss, Hard to very hard, Unweatherd, Competent.

VAOT Metric

PROJECT:	PROJECT NO.:
BETHEL	BRF 0241(33) C/2

DESIGN FILE NAME: 02c180/Structures/s02c180bor.dgn
IPARM FILE NAME: sc180bor3.i
SURVEYED BY: ORVIS
SQUAD LEADER: C.C. BENDA
DATE: 06/02 BORING LOGS
PLOT DATE: 15-APR-2005
SURVEY DATE: 10/99
DRAWN BY: J. TOUCHETTE
SHEET: 27 OF 130

Metric

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

BORING NUMBER: B-103
SHEET 1 of 1
DATE STARTED: 3/29/04
DATE COMPLETED: 3/30/04

PROJECT NAME: BETHEL
SITE NAME: VT. 12
STATION: 141+40
OFFSET: 0.00

PROJECT NUMBER: BRF 0241(33)C/2
SITE NUMBER: BR 31
GROUND ELEVATION: 183.43 m
GROUNDWATER DEPTH:

BORING CREW
CREW CHIEF: TALLMAN
DRILLER: TALLMAN
LOGGER: RUSSELL

BORING RIG: TRUCK
BORING TYPE: WASH BORE
SAMPLE TYPE: SPLIT BARREL
CHECKED BY: DLG

DEPTH (m)	SYMBOL	CLASSIFICATION OF MATERIALS (Description)	BLOWS PER 300mm	M.C. (%)	GRAVEL (%)	SAND (%)	FINES (%)
0.0		Asphalt, 0.00 m - 0.09 m					
1.5		A-2-4, SiSa, gry, Moist, Rec. = 0.30 m	55	12.9	10.3	68.3	21.4
3.0		Visual Classification: Broken Concrete with Sand, gry, Moist, Rec. = 0.40 m, 3.00 m - 3.60 m	23	10.5			
4.5		Hole stopped @ 4.66 m					
		DRILLER'S NOTES: No water found 03/30/04.					

LOG OF BORING BETHEL BRF0241(33)C/2 VT ACCUST 3/30/04

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

BORING NUMBER: B-104
SHEET 1 of 1
DATE STARTED: 3/29/04
DATE COMPLETED: 3/29/04

PROJECT NAME: BETHEL
SITE NAME: VT. 12
STATION: 134+60
OFFSET: 0.00

PROJECT NUMBER: BRF 0241(33)C/2
SITE NUMBER: BR 31
GROUND ELEVATION: 183.88 m
GROUNDWATER DEPTH:

BORING CREW
CREW CHIEF: TALLMAN
DRILLER: TALLMAN
LOGGER: RUSSELL

BORING RIG: TRUCK
BORING TYPE: WASH BORE
SAMPLE TYPE: SPLIT BARREL
CHECKED BY: DLG

DEPTH (m)	SYMBOL	CLASSIFICATION OF MATERIALS (Description)	BLOWS PER 300mm	M.C. (%)	GRAVEL (%)	SAND (%)	FINES (%)
0.0		Asphalt, 0.00 m - 0.10 m					
1.5		A-2-4, Ba, gry, Moist, Rec. = 0.30 m	48	10.4	17.9	62.6	19.5
3.0		Visual Classification: Broken Concrete with Sand, gry, Moist, Rec. = 0.25 m, 3.00 m - 3.60 m	14	11.9			
4.5		A-4, SiBa, gry, Moist, Rec. = 0.27 m	58	18.0	1.4	53.0	45.6
5.0		Hole stopped @ 5.10 m					
		DRILLER'S NOTES: No water found 03/29/04.					

LOG OF BORING BETHEL BRF0241(33)C/2 VT ACCUST 3/30/04

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

BORING NUMBER: B-101
SHEET 1 of 1
DATE STARTED: 4/01/04
DATE COMPLETED: 4/01/04

PROJECT NAME: BETHEL
SITE NAME: VT. 12
STATION: 161+00
OFFSET: 0.00

PROJECT NUMBER: BRF 0241(33)C/2
SITE NUMBER: BR 31
GROUND ELEVATION: 182.73 m
GROUNDWATER DEPTH:

BORING CREW
CREW CHIEF: TALLMAN
DRILLER: TALLMAN
LOGGER: RUSSELL

BORING RIG: TRUCK
BORING TYPE: WASH BORE
SAMPLE TYPE: SPLIT BARREL
CHECKED BY: DLG

DEPTH (m)	SYMBOL	CLASSIFICATION OF MATERIALS (Description)	BLOWS PER 300mm	M.C. (%)	GRAVEL (%)	SAND (%)	FINES (%)
0.0		Asphalt, 0.00 m - 0.08 m					
1.5		A-2-4, SiSa, gry, Moist, Rec. = 0.30 m	41	11.0	5.8	71.2	23.0
3.0		A-2-4, SiSa, gry, Moist, Rec. = 0.38 m	36	12.9	16.9	60.6	22.5
4.5		Visual Classification: Broken Concrete with Stones, gry, Moist, Rec. = 0.15 m, 4.50 m - 5.10 m	42	12.8			
6.0		A-2-4, SiSa, gry, Moist, Rec. = 0.28 m	44	16.3	2.1	68.1	31.8
6.5		Hole stopped @ 6.80 m					
		DRILLER'S NOTES: No water found 04/01/04.					

LOG OF BORING BETHEL BRF0241(33)C/2 VT ACCUST 3/30/04

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

BORING NUMBER: B-102
SHEET 1 of 1
DATE STARTED: 3/31/04
DATE COMPLETED: 3/31/04

PROJECT NAME: BETHEL
SITE NAME: VT. 12
STATION: 152+50
OFFSET: 0.00

PROJECT NUMBER: BRF 0241(33)C/2
SITE NUMBER: BR 31
GROUND ELEVATION: 183.09 m
GROUNDWATER DEPTH:

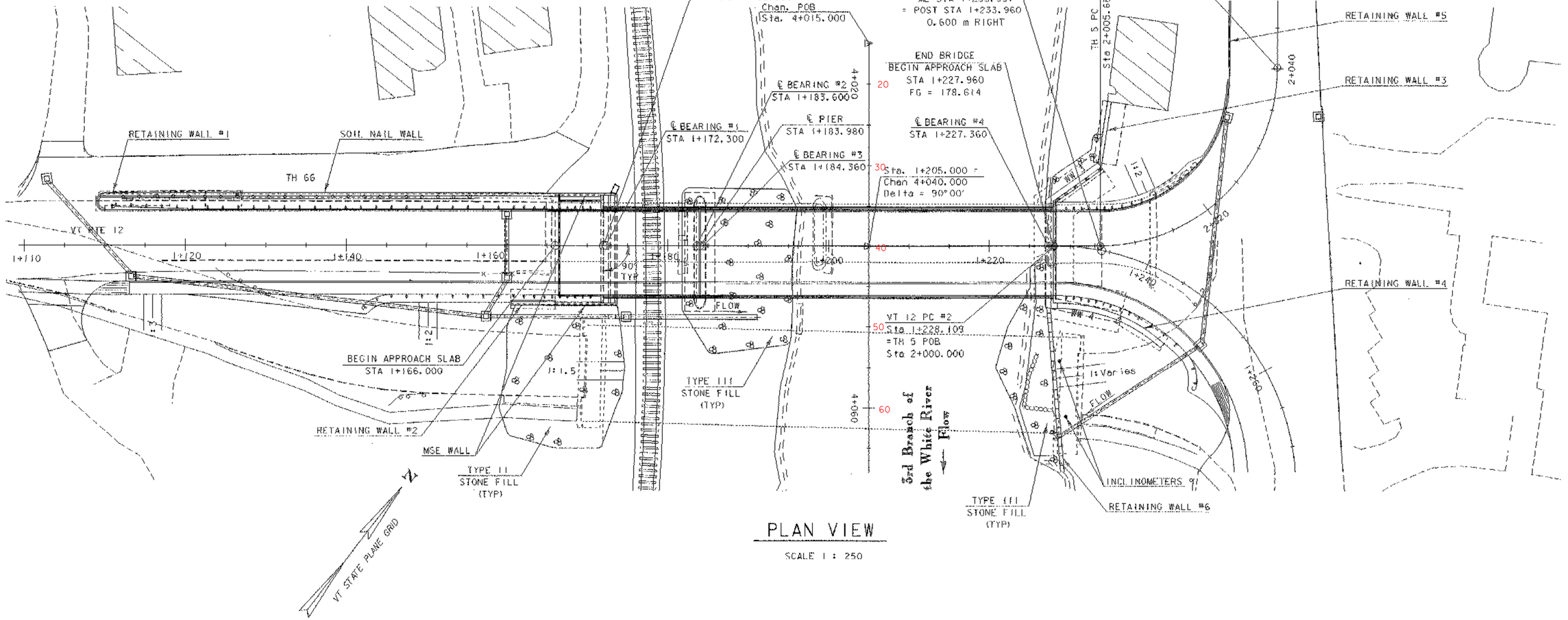
BORING CREW
CREW CHIEF: TALLMAN
DRILLER: TALLMAN
LOGGER: RUSSELL

BORING RIG: TRUCK
BORING TYPE: WASH BORE
SAMPLE TYPE: SPLIT BARREL
CHECKED BY: DLG

DEPTH (m)	SYMBOL	CLASSIFICATION OF MATERIALS (Description)	BLOWS PER 300mm	M.C. (%)	GRAVEL (%)	SAND (%)	FINES (%)
0.0		Asphalt, 0.00 m - 0.13 m					
1.5		A-2-4, SiSa, gry, Moist, Rec. = 0.38 m	68	13.7	19.8	58.4	21.8
3.0		A-2-4, SiSa, gry, Moist, Rec. = 0.30 m	6	15.1	18.4	56.8	22.8
4.5		Visual Classification: Broken Concrete with Sand, gry, Moist, Rec. = 0.30 m, 4.80 m - 5.10 m	44	8.6			
5.5		A-1-b, GrSa, gry, Moist, Rec. = 0.12 m	3	18.9	33.4	56.7	9.9
6.0		Hole stopped @ 6.10 m					
		DRILLER'S NOTES: No water found 04/01/04.					

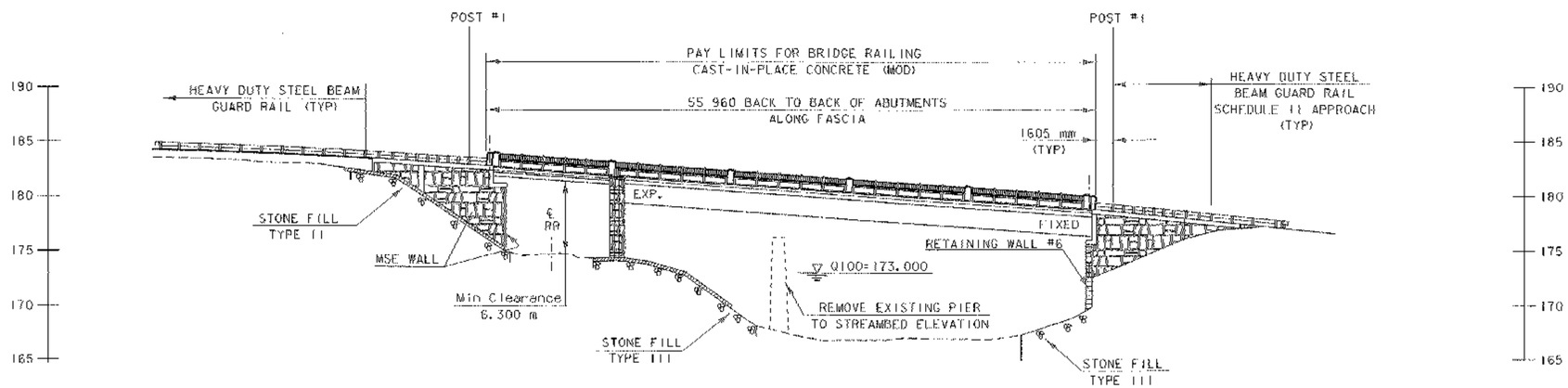
LOG OF BORING BETHEL BRF0241(33)C/2 VT ACCUST 3/30/04

PROJECT:	PROJECT NO.:
BETHEL	BRF 0241 (33) C/2
DESIGN FILE NAME: 02c180/structures/s02c180bor.dgn	
IPARM FILE NAME: sc180bor4.i	PLOT DATE: 15-APR-2005
DESIGNED BY: M. GAGULIC	DRAWN BY: M. GAGULIC
SQUAD LEADER: C. P. WILLIAMS	CHECKED BY: K. M. HIGGINS
BORING LOGS	SHEET: 28 OF 130



PLAN VIEW

SCALE 1 : 250



ELEVATION AT FASCIA

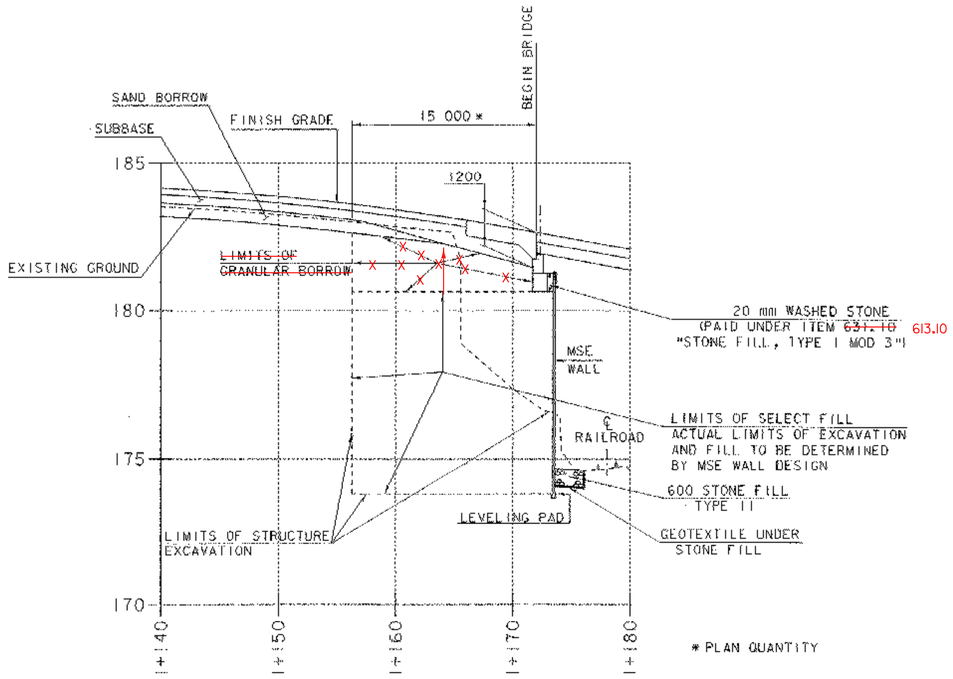
SCALE 1 : 250

0 10 20

SCALE 1 : 250

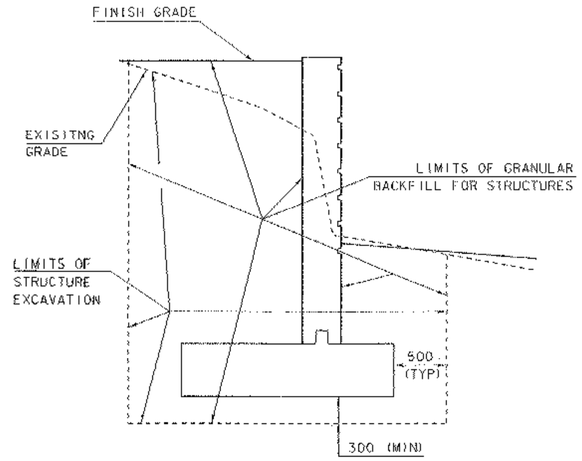
DATUM	
VERTICAL	NAVD88
HORIZONTAL	NAD83 (92)

PROJECT:	PROJECT NO. :
BETHEL	BRF0241(33)C/2
DESIGN FILE NAME: 02c180/Structures/s02c180pe.dgn	
IPARM FILE NAME: sc180pe.i	PLOT DATE: 15-APR-2005
SURVEYED BY: ORVIS	SURVEY DATE: 10/99
SQUAD LEADER: C.P. WILLIAMS	DRAWN BY: T. ANDERSON
PLAN & ELEVATION	SHEET: 29 OF 130



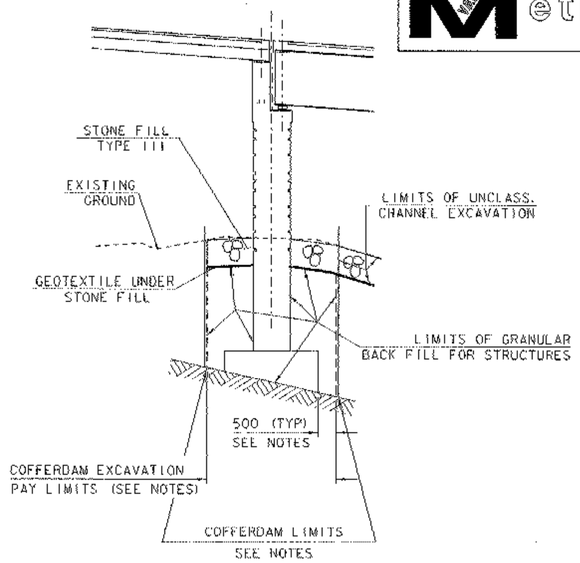
ABUTMENT No 1 EARTH WORK TYPICAL SECTION

NOT TO SCALE



RETAINING WALL TYPICAL EARTH WORK

NOT TO SCALE

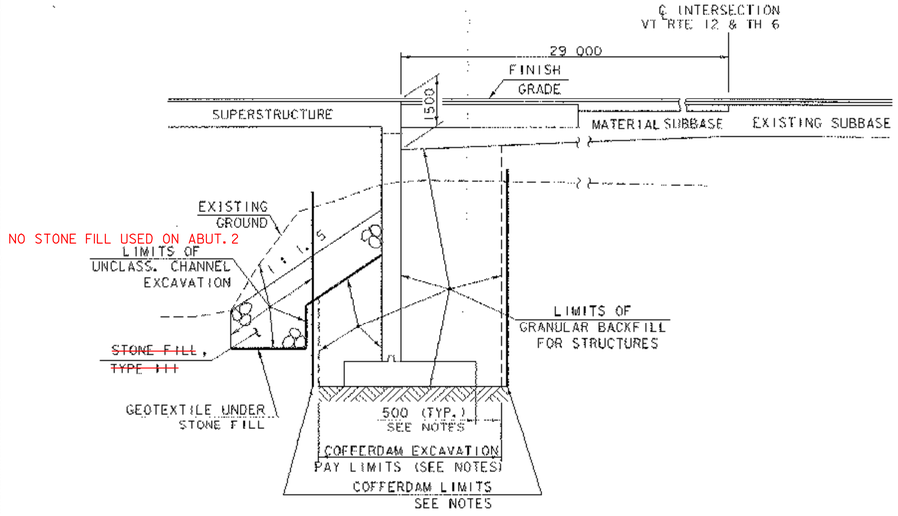


PIER No 1 TYPICAL EARTH WORK

NOT TO SCALE

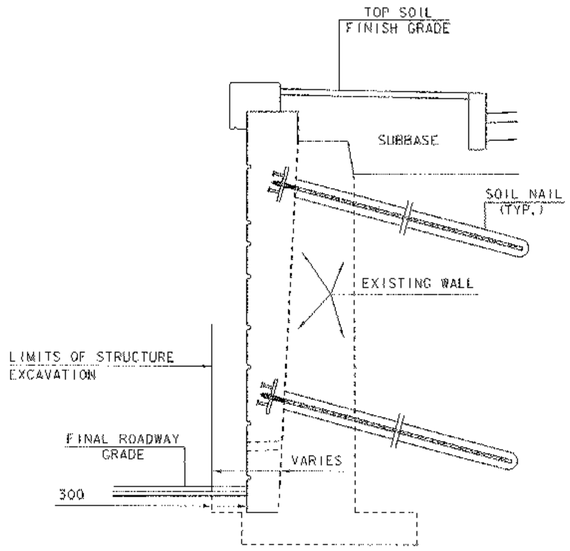
COFFERDAM NOTES:

1. COFFERDAM LIMITS TO BE DETERMINED BY THE CONTRACTOR.
2. THE PAY LIMITS OF COFFERDAM EXCAVATION, "EARTH" AND "COFFERDAM EXCAVATION, ROCK" SHALL BE 500 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.



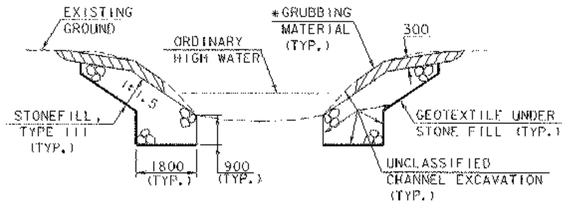
ABUTMENT No 2 EARTH WORK TYPICAL SECTION

NOT TO SCALE



SOIL NAIL WALL TYPICAL EARTH WORK

NOT TO SCALE



TYPICAL CHANNEL SECTION

NOT TO SCALE

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

PROJECT:	PROJECT NO.:
BETHEL	BRF0241(33)C/2
DESIGN FILE NAME: 02c180/structure/s02c180msedet.dgn	
IPARM FILE NAME: s02c180strexcdet.i	PLOT DATE: 15-APR-2005
DESIGNED BY: M. GAGULIC	DRAWN BY: M. GAGULIC
SQUAD LEADER: C.P. WILLIAMS	CHECKED BY: K.M. HIGGINS
STRUCTURAL EXCAVATION DETAILS	SHEET: 30 OF 130

GENERAL NOTES:

1. ALL MATERIALS AND CONSTRUCTION SHALL CONFORM TO STATE OF VERMONT, AGENCY OF TRANSPORTATION STANDARD SPECIFICATIONS FOR CONSTRUCTION, DATED 2001, AND ITS LATEST REVSIONS, AND THE AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES, DATED 2002, AND ITS LATEST REVISIONS.

2. DESIGN IS FOR MS-22.5 LIVE LOADING.

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

4. EXISTING SIGNS NOT REUSED SHALL REMAIN THE PROPERTY OF THE TOWN OF BETHEL. THESE SIGNS SHALL BE STOCKPILED ON THE PROJECT AND THEN LOADED ON A TRUCK SUPPLIED BY THE TOWN. CONTACT THE TOWN ROAD FOREMAN (234-9722) TO ARRANGE FOR REMOVAL FROM THE PROJECT.

5. ACCESS TO ALL DRIVES WITHIN THE PROJECT APPROACH LIMITS SHALL BE MAINTAINED AT ALL TIMES EXCEPT AS NOTED BELOW.

6. TH 66 MAY REQUIRE TEMPORARY DAILY CLOSURE TO VEHICLES DURING CONSTRUCTION OF THE RETAINING WALLS ALONG IT. COORDINATION FOR AND THE CONDITIONS OF ANY TEMPORARY CLOSURES OF TH 66 SHALL BE MADE BETWEEN THE CONTRACTOR AND THE TOWN OF BETHEL. RESIDENTS WILL BE NOTIFIED PRIOR TO ALL CLOSURES. TH 66 MAY BE CLOSED NO EARLIER THAN 9:00 AM AND SHALL BE REOPENED BY 5:00 PM DAILY TO ALLOW RESIDENTS ACCESS TO THEIR HOMES. THE TOWN OF BETHEL WILL WORK OUT PARKING ARRANGEMENTS WITH EFFECTED RESIDENTS.

7. TACK COAT: EMULSIFIED ASPHALT IS TO BE APPLIED AT A RATE OF 0.068 KG/SM BETWEEN SUCCESSIVE COURSES OF PAVEMENT OR AS DIRECTED BY THE ENGINEER.

8. THE STONEFILL TYPE III UNDER THE BRIDGE SHALL BE PLACED BEFORE THE GIRDERS ARE SET.

9. FLEMMING BRACKETS SHALL BE DESIGNED BY THE CONTRACTOR, BUT SHALL BE LIMITED TO A MAXIMUM SPACING OF 1200mm.

10. THE DECK POUR FOR SPAN NO. 2 IS TO BE PLACED IN ONE CONTINUOUS PLACEMENT WITH A MAXIMUM DURATION OF EIGHT HOURS. IF CIRCUMSTANCES BEYOND THE CONTRACTORS CONTROL PREVENT THIS FROM BEING ACCOMPLISHED, AN ADDITIONAL CONSTRUCTION JOINT SHALL BE USED. A 96 HOUR DELAY BETWEEN THE COMPLETION OF ONE DAYS PLACEMENT AND THE BEGINNING OF ANOTHER PLACEMENT SHALL BE OBSERVED.

11. ALL REINFORCING STEEL IN THE VOIDED SLABS, OVERLAY, CONCRETE DECK, APPROACH SLABS, CURB AND SIDEWALK SHALL BE EPOXY COATED. WHEN EPOXY COATED REINFORCING STEEL IS CUT, THE UNCOATED ENDS SHALL BE REPAIRED WITH MATERIALS AND PROCEDURES APPROVED BY THE COATING MANUFACTURER. FLAME CUTTING OF EPOXY COATED REINFORCING STEEL WILL NOT BE PERMITTED.

12. REMOVAL OF THE PAVEMENT ON THE TEMPORARY DETOUR SHALL BE PAID FOR UNDER THE ITEM 203.28 "EXCAVATION OF SURFACES AND PAVEMENTS".

13. THE LOWER RETAINING WALL FROM APPROXIMATE CHANNEL STA 4+031 TO 4+035 LEFT ALONG THE RIVER SHALL BE REPLACED AS REQUIRED TO CONSTRUCT ABUTMENT NO. 2. THE COST OF REPLACING THE WALL SHALL BE PAID FOR UNDER ITEM 501.34 "CONCRETE, HIGH PERFORMANCE CLASS B" AND ITEM 507.15 "REINFORCING STEEL". SEE DETAIL THIS SHEET. THE PAY LIMITS FOR REPLACEMENT SHALL BE WITHIN THE NEAT LINE LIMITS OF THE COFFERDAM AS SHOWN ON SHEET 30.

14. ITEM 529.15 "REMOVAL OF STRUCTURE" SHALL BE USED FOR REMOVAL OF THE OLD SUPERSTRUCTURE AND ANY PORTIONS OF THE SUBSTRUCTURE, NOT REMOVED UNDER THE ITEMS 208.35 "COFFERDAM EXCAVATION ROCK" OR 203.27 "UNCLASSIFIED CHANNEL EXCAVATION". THE EXISTING TEMPORARY BRIDGE SHALL BE REMOVED UNDER ITEM 529.15 "REMOVAL OF STRUCTURE (MOD)" SEE SPECIAL PROVISIONS

15. THE EXISTING PIER IS TO BE REMOVED TO STREAMBED ELEVATION AND SHALL BE INCLUDED UNDER THE ITEM 529.15 "REMOVAL OF STRUCTURE"

16. THE FILL WITHIN THE LIMITS OF THE TEMPORARY ABUTMENTS SHALL BE REMOVED UNDER THE ITEM 203.15 "COMMON EXCAVATION". THE FILL MAY BE USED TO SHAPE AND MODIFY SLOPES THROUGH OUT THE PROJECT. THE RESIDENT ENGINEER MAY DETERMINE USE FOR THE FILL AS IT IS EXCAVATED. ALL UNUSED FILL WILL WILL BE DISPOSED OF BY THE CONTRACTOR.

17. PLANS FROM THE ORIGINAL BRIDGE CONSTRUCTION AND A MODIFICATION HAVE BEEN INCLUDED AS AN AID IN LOCATING BURIED STRUCTURES THAT MAY BE ENCOUNTERED WHILE INSTALLING SOIL NAILS.

18. THE CONTRACTOR SHALL MONITOR THE VERTICAL AND HORIZONTAL ALIGNMENT OF THE RAILROAD TRACKS DURING OPERATIONS THAT COULD AFFECT THE TRACK STABILITY, AND PROVIDE DAILY REPORTS TO NEW ENGLAND CENTRAL RAILROAD AND THE RESIDENT ENGINEER. IF MOVEMENT IS DETECTED GREATER THAN 6mm, THE WORK SHALL BE HALTED IMMEDIATELY AND THE ROAD MASTER OF THE NEW ENGLAND CENTRAL RAILROAD @ (802)527-3585 AND THE PROJECT MANAGER SHALL BE NOTIFIED. TRACK MONITORING WILL NOT BE PAID FOR DIRECTLY BUT SHALL BE CONSIDERED INCIDENTAL TO OTHER CONTRACT ITEMS. SEE SPECIAL PROVISIONS FOR MONITORING PLAN DETAILS.

19. ALL DRAINAGE MATERIALS REQUIRED FOR THE MSE WALL AND THEIR INSTALLATION SHALL BE INCIDENTAL TO ITEM 526.30 "MECHANICALLY STABILIZED EARTH (MSE) WALL". SEE SHEET 52 FOR DETAILS.

20. TO AVOID DAMAGING THE NAILS, THE SOIL NAIL WALL IS TO BE CONSTRUCTED AFTER ALL WORK IS COMPLETE FOR ABUTMENT NO. 1 AND THE APPROACH IS GRADED TO THE BOTTOM OF THE PAVEMENT.

21. RETAINING WALL #6 BETWEEN CHANNEL STA 4+048.000 AND STA 4+068.000 LEFT SHALL BE CONSTRUCTED USING "REDI-ROCK" BLOCKS OR EQUIVALENT AND SHALL MATCH THE EXISTING WALL CONSTRUCTED DURING THE INSTALLATION OF THE TEMPORARY BRIDGE. ALL MATERIALS AND DRAINAGE REQUIRED PER MANUFACTURERS SPECIFICATIONS SHALL BE PAID FOR UNDER THE ITEM 526.20 CONCRETE BIN-TYPE RETAINING WALL (MOD-"REDI-ROCK MSE").

22. THE SPACE BETWEEN THE CAST IN PLACE COPING ON THE TOP OF THE MSE WALL AND THE TOE OF THE ABUTMENT SHALL BE FILLED WITH 20 mm WASHED STONE. PAYMENT FOR THE 20 mm WASHED STONE SHALL BE MADE UNDER THE ITEM 613.10 "STONE FILL TYPE I (MOD. 3).

CONCRETE:

23. THE MINIMUM COVER FOR REINFORCING STEEL IN THE SUBSTRUCTURES SHALL BE 50 mm ALONG WALL FACES AGAINST EARTH, AND 80 mm ELSEWHERE UNLESS DETAILED OTHERWISE.

24. REINFORCING STEEL TOLERANCES SHALL BE AS FOLLOWS:
SPACING +/- 25 mm
CLEARANCE +/- 6 mm

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

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

27. ALL EXPOSED EDGES OF CONCRETE SHALL BE CHAMFERED 25mm X 25mm.

28. WATER REPELLENT (MOD-SILANE) SHALL BE APPLIED TO ALL EXPOSED CONCRETE SURFACES, EXCEPT THE UNDER SIDE OF THE BRIDGE DECKS BETWEEN DRIP NOTCH.

29. ALL VERTICAL CONCRETE SURFACES NOT USING FORM LINERS OR EXPOSED AGGREGATE TEXTURING SHALL BE GIVEN A RUBBED FINISH PER VAOT STANDARD SPECIFICATIONS SUB-SECTION 501.16 (a)2. PAYMENT FOR THE RUBBED FINISH SHALL BE INCIDENTAL TO THE APPLICABLE CONCRETE ITEM.

30. THE CONCRETE IN THE SUPERSTRUCTURE INCLUDING THE CURB AND SIDEWALK SHALL BE "CONCRETE, HIGH PERFORMANCE CLASS A" EXCEPT THE OVERLAY ON SPAN #1 AND RAIL IN BOTH SPANS SHALL BE "CONCRETE, HIGH PERFORMANCE CLASS AA". ALL OTHER CONCRETE SHALL BE "CONCRETE, HIGH PERFORMANCE CLASS B" UNLESS OTHERWISE NOTED.

31. PRIOR TO PLACING THE OVERLAY ON SPAN ONE, BEAM PROFILES ON SPAN TWO MUST BE COMPLETE SO ADJUSTMENTS MAY BE MADE FOR FINAL GRADE.

32. ALL CONCRETE FORMED WITH LINERS SHALL BE STAINED ACCORDING TO MANUFACTURER SPECIFICATIONS. THE PAYMENT FOR ALL STAIN WORK SHALL BE UNDER ITEM 513.30 STRUCTURAL PAINTING (MODIFIED). SEE SPECIAL PROVISIONS FOR MORE DETAIL CONCERNING THIS ITEM. NO STAINS WERE USED

33. PRIOR TO PLACING ANY FORM LINERS FOR PERMANENT WALLS, THE CONTRACTOR SHALL CONSTRUCT A TEST PANEL UTILIZING THE FORM LINER SYSTEM. THE SIZE OF THE TEST PANEL SHALL BE AS ORDERED BY THE RESIDENT ENGINEER BUT SHALL BE A MINIMUM FACE OF 1200 mm BY 2400 mm. THE CONTRACTOR SHALL DEMONSTRATE FORM LINER APPLICATION PATTERN AND COLORING OF CONCRETE FOR THE APPROVAL OF THE RESIDENT ENGINEER PRIOR TO PERFORMING ANY PERMANENT WORK ON THE WALL. ALL COSTS INVOLVED IN THE TEST PANEL SHALL BE INCIDENTAL TO ITEM 602.25, STONE MASONRY FACING (MODIFIED FORM LINER).

GRANITE CURBING ON BRIDGE:

34. BEFORE INSTALLATION OF THE GRANITE BRIDGE CURB THE CONTRACTOR SHALL PROVIDE THE RESIDENT ENGINEER WITH A TECHNICAL DATA SHEET FOR THE PROPOSED EPOXY FOR SECURING ANCHORS TO THE GRANITE CURBING. THE TECHNICAL DATA SHEET SHALL INCLUDE SPECIFICATIONS, AND MANUFACTURERS APPLICATION INSTRUCTIONS. THE RESIDENT ENGINEER SHALL APPROVE THE PRODUCT PRIOR TO ANY INSTALLATION.

35. THE EPOXY COATED ANCHORS SHALL BE SHIPPED FROM THE SUPPLIER CUT TO LENGTH WITH A TOTAL SHOP APPLIED EPOXY COATING MEETING THE REQUIREMENTS FOR EPOXY COATED REINFORCING STEEL.

36. THE BLOCKS FOR THE GRANITE BRIDGE CURB MAY BE SHOP ASSEMBLED WITH THE ANCHORS WITH PERMISSION FROM THE RESIDENT ENGINEER.

SUBSTRUCTURES:

37. PHASE CONSTRUCTION OF ABUTMENT NO. 2 MAY BE NECESSARY IF THE CONSTRUCTION OF COFFERDAMS INTERFERES WITH THE EXISTING TEMPORARY STRUCTURE. IF PHASE CONSTRUCTION IS REQUIRED THE CONTRACTOR SHALL NOT BE ENTITLED TO ADDITIONAL COMPENSATION FOR LOST TIME OR EXTRA COSTS ABOVE THE UNIT BID PRICE.

38. THE BRIDGE SEAT UNDER THE BEARING DEVICES SHALL BE LEVEL. THE TOPS OF THE ABUTMENTS AND PIER AROUND THE BEARINGS SHALL BE SLOPED 0.020 AWAY FROM THE BEARINGS.

39. CONCRETE PORTIONS OF THE ABUTMENT AND WINGWALLS ABOVE THE ADJACENT BRIDGE SEAT ELEVATIONS SHALL NOT BE PLACED UNTIL THE GIRDERS HAVE BEEN PLACED AND THE BEAM PROFILES HAVE BEEN TAKEN AND THE FINISH GRADE HAS BEEN DETERMINED BY THE RESIDENT ENGINEER.

40. PATTERNED CONCRETE SHALL BE STAINED USING CUSTOM ROCK INTERNATIONAL (CRI) PIGMENTED STAIN OR EQUIVALENT. STAIN SHALL BE APPLIED PER MANUFACTURES RECOMENDATIONS PRIOR TO APPLYING WATER REPELLENT. ALL STAINING SHALL BE PAID FOR UNDER THE ITEM 513.30 "STRUCTURAL PAINTING FIELD APPLIED (MOD)" SEE SPECIAL PROVISIONS.

Metric

SUBSTRUCTURES ON LEDGE:

41. THE FOOTINGS FOR ABUTMENT 2 AND THE PIER SHALL BE FOUNDED ON LEDGE, WHICH HAS BEEN CLEANED OF ALL LOOSE ROCK AND OTHER DEBRIS. THE LEDGE SHALL BE REMOVED AS REQUIRED TO ENSURE THE FOOTINGS ARE PLACED ON COMPETENT ROCK.

42. LEDGE THAT IS EXCAVATED FOR THE PLACEMENT OF FOOTINGS SHALL BE EXCAVATED TO PROVIDE A LEVEL SURFACE OR AS DIRECTED BY THE RESIDENT ENGINEER.

43. A MAXIMUM OF 150mm OVERBREAKAGE WILL BE REPLACED WITH "CONCRETE, HIGH PERFORMANCE CLASS B". OVERBREAKAGE BEYOND 150mm WILL BE REPLACED WITH "CONCRETE, HIGH PERFORMANCE CLASS B" AT THE EXPENSE OF THE CONTRACTOR.

44. FOR ALL SUBSTRUCTURE UNITS WHERE LEDGE IS WITHIN 300mm OF THE BOTTOM OF THE FOOTING AS DESIGNED, THE FOOTING MAY BE POURED TO THE TOP OF THE LEDGE USING "CONCRETE, HIGH PERFORMANCE CLASS B".

45. FOR ALL SUBSTRUCTURE UNITS WHERE LEDGE IS BELOW THE BOTTOM OF FOOTING BY MORE THAN 300mm, A LEDGE PROFILE SHALL BE PROVIDED TO THE PROJECT MANAGER TO DETERMINE IF THE FOOTING MAY BE LOWERED OR IF A SUBFOOTING IS REQUIRED.

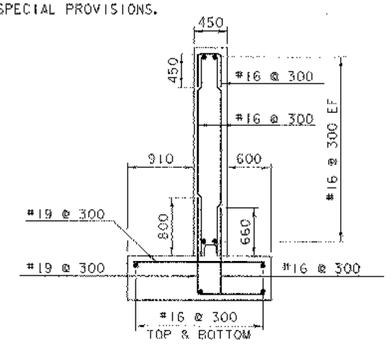
46. IF LEDGE IS ABOVE THE DESIGN BOTTOM OF FOOTING, THE FOOTING ELEVATION MAY BE RAISED. BEFORE ANY ADJUSTMENT IS MADE IN FOOTING ELEVATIONS THE PROJECT MANAGER SHALL BE CONTACTED FOR APPROVAL.

47. #25 DOWELS SHALL BE DRILLED AND GROUTED INTO LEDGE AS SHOWN ON THE PLANS. THE DOWELS SHALL HAVE A 600mm EMBEDMENT IN THE LEDGE AND SHALL EXTEND IN THE FOOTING A MINIMUM OF 450mm UNLESS NOTED OTHERWISE. THE DRILLING AND GROUTING SHALL BE PAID FOR UNDER THE ITEM 507.16 "DRILLING AND GROUTING DOWELS", HOWEVER, THE DOWELS SHALL BE PAID FOR UNDER THE ITEM 507.15 "REINFORCING STEEL".

UTILITIES:

48. UNDERGROUND UTILITIES LOCATED ALONG THE RAILROAD SHALL BE AVOIDED DURING THE CONSTRUCTION OF THE DROP INLET AND THE JACKING AND BORING OF THE 600 mm PIPE (DRAINAGE FLAG #8)

49. 150 mm UTILITY DUCTS SHALL BE INSTALLED IN THE SIDEWALK OF THE BRIDGE AS SHOWN ON THE PLANS. ANY UTILITY WORK NECESSARY BEYOND THE LIMITS OF THE BRIDGE WILL BE THE RESPONSIBILITY OF THE UTILITY COMPANY. SEE THE UTILITY SPECIAL PROVISIONS.



RETAINING WALL TYPICAL SECTION

(WALL ALONG RIVER @ WW #31
NOT TO SCALE

1. THE DIMENSIONS FOR THE WALL SHOWN ABOVE ARE ASSUMED AND SHALL BE VERIFIED PRIOR TO REPLACING THE LOWER RETAINING WALL EFFECTED BY THE CONSTRUCTION OF ABUTMENT #2. THE CONTRACTOR SHALL MATCH THE GEOMETRY INCLUDING FOOTING DEPTH OF THE EXISTING WALL.

2. 13 m^3 OF CONCRETE CLASS B AND 2160 KG OF REINFORCING STEEL FOR THE REPLACEMENT OF THE WALL WHICH MUST BE REMOVED FOR THE PURPOSE OF CONSTRUCTING ABUTMENT #2 HAVE BEEN INCLUDED IN THE QUANTITIES REQUIRED FOR ABUTMENT #2. BECAUSE THE SIZE OF THE WALL AND REINFORCING STEEL REQUIRED MAY CHANGE BASED ON ACTUAL WALL GEOMETRY, NO REINFORCING STEEL HAS BEEN SCHEDULED. THE CONTRACTOR SHALL DETERMINE THE ACTUAL AMOUNT OF CONCRETE AND REINFORCING STEEL REQUIRED.

PROJECT:	PROJECT NO.:
BETHEL	BRF 0241(33)C/2
DESIGN FILE NAME: s02c180/structures/s02c180notes.dgn	
IPARM FILE NAME: s02c180notes.i	PLOT DATE: 15-APR-2005
DESIGNED BY: K. M. HIGGINS	DRAWN BY: K. M. HIGGINS
SQUAD LEADER: C.P. WILLIAMS	CHECKED BY: M. GAGULIC
GENERAL NOTES	SHEET: 31 OF 130

VOIDED SLAB NOTES:

1. PRESTRESSED, PRECAST MEMBERS SHALL:

   A: CONFORM TO SECTION 510 "PRESTRESSED CONCRETE".

   B: BE DESIGNED FOR AASHTO MS-22.5 LIVE LOAD.

   C: MEET THE FOLLOWING DESIGN CRITERIA:
   PRESTRESSED CONCRETE STRENGTH
   RELEASE f'c = 30 MPa
   SERVICE f'c = 45 MPa
   CONTAIN CORROSION INHIBITOR @ 10.00 L/CM

   MAXIMUM SERVICE LOADS

MEMBER MOMENT	138.3 KN-M
DEAD LOAD ON MEMBER MOMENT	88.1 KN-M
SUPER DEAD LOAD ON MEMBER MOMENT	84.7 KN-M
LIVE LOAD + IMPACT MOMENT	297.4 KN-M
DEAD LOAD REACTION/MEMBER	59.55 KN
LIVE LOAD REACTION/MEMBER	61.74 KN
TOTAL REACTION/MEMBER	121.29 KN

   D: CONTAINS A TOTAL OF (12) 15.25mm DIAMETER, 1860 MPA, LOW RELAXATION STRANDS, AND CONFORM TO AASHTO M203.

   E: SHALL HAVE CENTROID OF ALL STRANDS 190.5mm FROM THE BOTTOM OF THE MEMBER AT MIDSPAN.

   F: HAVE ENDS OF STRANDS RECESSED AND GROUTED AS PER STANDARD PRACTICE.

   G: VOIDS SHALL TERMINATE AS SHOWN ON THE PLANS AND SHALL BE CONTINUOUS EXCEPT AT LOCATIONS OF THE TRANSVERSE TIE TENDONS.

   H: ENDS OF VOIDED SLABS TO BE VERTICAL IN FINAL POSITION.

2. THE PRICE PER VOIDED SLAB UNIT SHALL INCLUDE ALL OF THE MATERIALS, LABOR, AND ANY OTHER COSTS ASSOCIATED WITH THE INSTALLATION OF THE TRANSVERSE TENDONS.

3. THE PRICE PER VOIDED SLAB UNIT SHALL INCLUDE ALL OF THE MATERIALS, LABOR AND ANY OTHER COSTS ASSOCIATED WITH THE ANCHOR BOLTS, AND THEIR INSTALLATION.

4. ADVANCE NOTIFICATION OF AT LEAST TWO WEEKS MUST BE PROVIDED BY THE FABRICATOR TO THE PROJECT MANAGER AND THE STRUCTURAL CONCRETE ENGINEER CONCERNING THE PROPOSED INTENTION TO COMMENCE WORK. A MINIMUM OF FIVE WORKING DAYS NOTIFICATION MUST BE PROVIDED TO THE STRUCTURAL CONCRETE ENGINEER BY THE FABRICATOR TO CONFIRM THE FABRICATION START DATE.

5. THE TOP SURFACE OF THE VOIDED SLAB UNITS SHALL BE ROUGHENED TO AN AMPLITUDE OF 6mm.

6. VOID DRAINS WILL BE REQUIRED IN EACH END OF ALL VOIDS. THE VOID DRAIN SHALL BE 20mm DIAMETER AND NON-FERROUS. THE DRAINS SHALL BE CLEANED UPON REMOVAL FROM FORMS.
   NO VOID DRAINS PROVIDED

7. AN ALTERNATIVE STRAND CONFIGURATION FOR THE VOIDED SLAB UNITS MAY BE SUBMITTED FOR APPROVAL TO THE PROJECT MANAGER, PROVIDED THE DESIGN IS SIGNED AND STAMPED BY A PROFESSIONAL ENGINEER LICENSED IN THE STATE OF VERMONT AND THE DESIGN MEETS ALL THE APPLICABLE DESIGN CRITERIA, LOADINGS AND CODES.

8. AFTER THE PRESTRESSED UNITS HAVE BEEN SET ON THE BEARINGS, ELEVATIONS SHALL BE TAKEN ALONG THE TOP OF EACH BEAM UNDER THE DIRECTION OF THE RESIDENT ENGINEER. THESE ELEVATIONS SHALL BE USED IN DETERMINING THE FINAL GRADE.

9. CONCRETE SHALL NOT BE PLACED ABOVE THE BRIDGE SEAT UNTIL THE VOIDED SLAB UNITS HAVE BEEN SET AND BEAM PROFILES FOR SPAN #2 HAVE BEEN COMPLETED.

10. CONSTRUCTION AND PLACEMENT SEQUENCE:

   A) WORKING LINES MEASURED FROM THE WORKING POINTS SHALL BE LAID OUT THE ENTIRE WIDTH OF THE BRIDGE ALONG CENTERLINE OF BEARING. THE WORKING LINES SHALL BE BASED ON THE NOMINAL BEAM WIDTHS.

   B) THE BEAM SEAT ELEVATIONS AT BOTH ABUTMENTS SHALL BE VERIFIED TO BE CORRECT PRIOR TO ERECTING THE PRESTRESSED UNITS. IF NECESSARY THE SEATS SHALL BE GROUND TO THE PROPER ELEVATION. IF NECESSARY THE ELASTOMERIC BEARINGS SHALL BE SHIMMED TO PROVIDE EVEN LOAD DISTRIBUTION TO ALL BEARINGS AND PREVENT THE PRESTRESSED UNITS FROM "ROCKING". PRIOR TO ERECTING THE PRESTRESSED UNITS THE CONTRACTOR SHALL HAVE AN ADEQUATE SUPPLY OF APPROVED SHIMS FOR USE UNDER THE BEARINGS. ALL COSTS ASSOCIATED WITH SUPPLY AND INSTALLATION OF THE SHIMS IS INCIDETAL TO THE PRESTRESSED CONCRETE ITEMS.

   C) ERECT THE PRESTRESSED UNITS TO FIT WITHIN THE WORKING LINES. AS THE WORK PROGRESSES INSTALL HARDWOOD WEDGES TO ENSURE PROPER JOINT OPENING. ONE WEDGE AT EACH TRANSVERSE TIE LOCATION SHALL BE THE MINIMUM.

   D) THE BACKER ROD SHALL BE INSTALLED AFTER THE PRESTRESSED UNITS HAVE BEEN ERECTED BUT PRIOR TO INSTALLING THE HARDWOOD WEDGES. THE BACKER ROD SHALL BE INSTALLED UNIFORMLY IN THE BOTTOM OF THE SHEAR KEY.

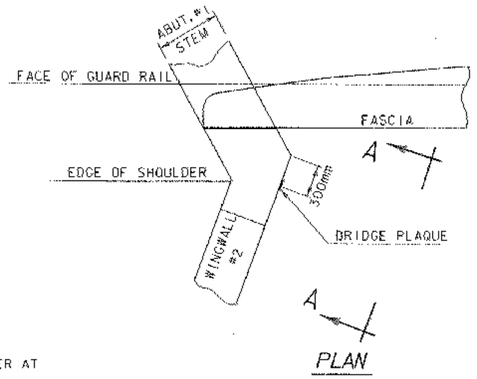
   E) DRILL INTO ABUTMENTS AND INSTALL ANCHOR BOLTS AT THE ENDS OF THE PRESTRESSED UNITS AFTER BEAMS HAVE BEEN SET.

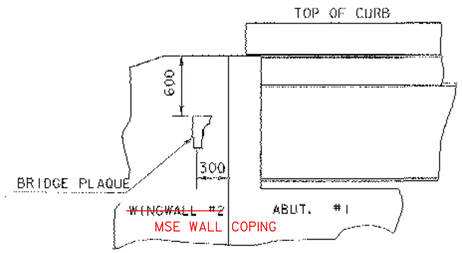
   F) INSTALL TRANSVERSE TIES AND POST TENSION TO 22.24 KN TO REMOVE SAGS AND TO SEAT THE CHUCK.

   G) THE SHEAR KEYS SHALL BE CLEANED WITH OIL FREE COMPRESSED AIR TO REMOVE ANY DEBRIS. THE SHEAR KEYS SHALL BE PRE-WETTED TO A SATURATED SURFACE DRY CONDITION IMMEDIATELY PRIOR TO PLACING THE MORTAR. PREPARATION AND GROUTING OF SHEAR KEYS TO BE PAID FOR UNDER ITEM 510.24 "GROUTING SHEAR KEYS".

   H) THE FINAL POST TENSIONING OF THE TRANSVERSE TIES TO 133.44 KN SHALL BE DONE ONCE THE MORTAR HAS ATTAINED 10 MPa COMPRESSIVE STRENGTH.

   I) THE WEDGES SHALL BE REMOVED AND THE AFFECTED AREAS PATCHED PRIOR TO THE PLACING OF THE COMPOSITE DECK.

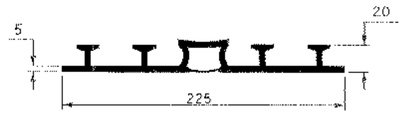




VIEW "A - A"

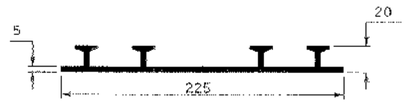
LOCATE BRIDGE PLAQUE

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



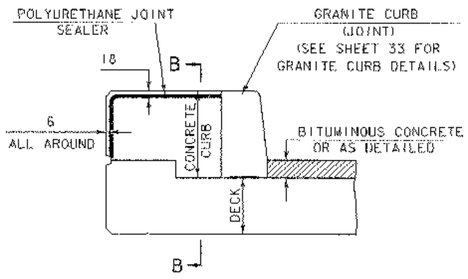
P. V. C. WATERSTOP FOR EXPANSION JOINTS

THE COSTS FOR P. V. C. WATERSTOP SHALL BE INCLUDED IN THE UNIT PRICE BID FOR CONCRETE. OTHER CONFIGURATIONS MAY BE USED UPON APPROVAL OF THE STRUCTURES ENGINEER.



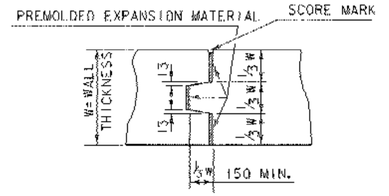
P. V. C. WATERSTOP FOR CONSTRUCTION JOINTS

THE COSTS FOR P. V. C. WATERSTOP SHALL BE INCLUDED IN THE UNIT PRICE BID FOR CONCRETE. OTHER CONFIGURATIONS MAY BE USED UPON APPROVAL OF THE STRUCTURES ENGINEER.

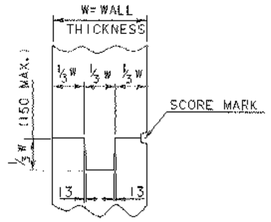


TYPICAL SECTION THROUGH CONCRETE CURB CONSTRUCTION JOINT

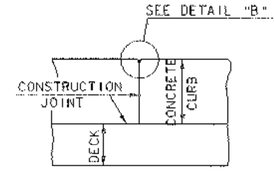
MATERIAL ITEM	TOLERANCE
PAVEMENT	±5 mm TOTAL THICKNESS
AGGREGATE SURFACE COURSE	±10 mm
BASE COURSE	±10 mm
SUBBASE	±30 mm
SAND BORROW	±30 mm
GRANULAR BORROW	±30 mm



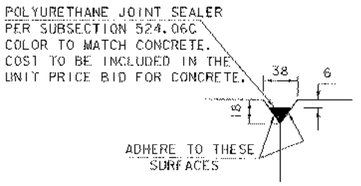
TYPICAL CONCRETE EXPANSION JOINT



TYPICAL CONCRETE CONSTRUCTION JOINT



SECTION B - B

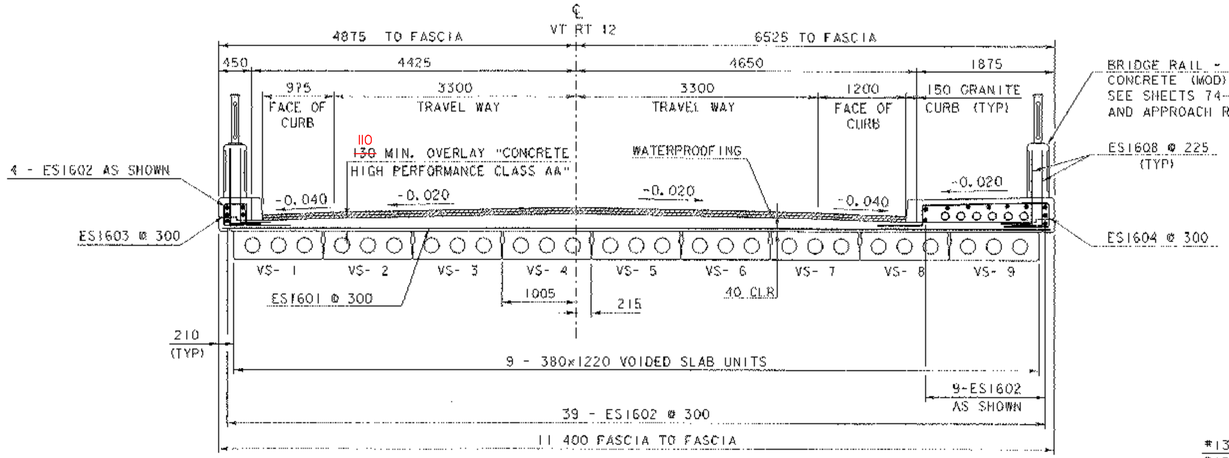


DETAIL "B"

NOTES:
1. CONSTRUCTION JOINTS THROUGH CONCRETE CURBS SHALL BE SPACED MAXIMUM 4500 CENTER TO CENTER AND SHALL BE 450 MINIMUM FROM THE CENTER OF THE NEAREST BRIDGE RAIL POST. CONCRETE SHALL BE PLACED IN ALTERNATING SECTIONS WITH A MINIMUM OF 48 HOURS DELAY BETWEEN ADJACENT POURS.
2. LONGITUDINAL REINFORCING SHALL PASS THROUGH CONCRETE CURB CONSTRUCTION JOINTS.
3. CONSTRUCTION JOINTS THROUGH SIDEWALKS SHALL BE SIMILAR TO CONCRETE CURB CONSTRUCTION JOINTS.

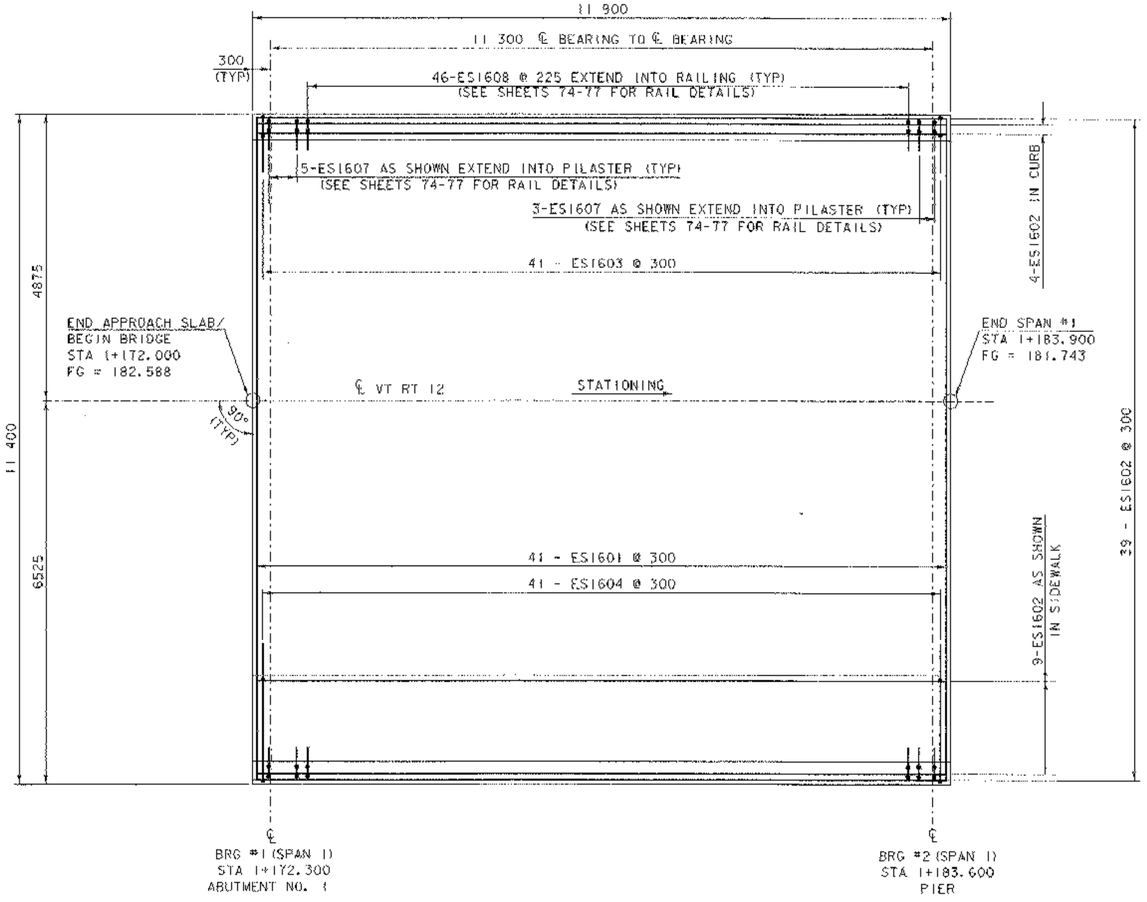
PROJECT:	PROJECT NO.:
BETHEL	BRF0231(33)C/2

DESIGN FILE NAME: 02c180/structures/s02c180sup.dgn
IPARM FILE NAME: s02c180vsnotes.i — PLOT DATE: 15-APR-2005
DESIGNED BY: K. M. HIGGINS — DRAWN BY: E.L. RUSTAY
SQUAD LEADER: C. P. WILLIAMS — CHECKED BY: K. M. HIGGINS
SPAN #1 NOTES & MISC. DETAIL — SHEET: 32 OF 130



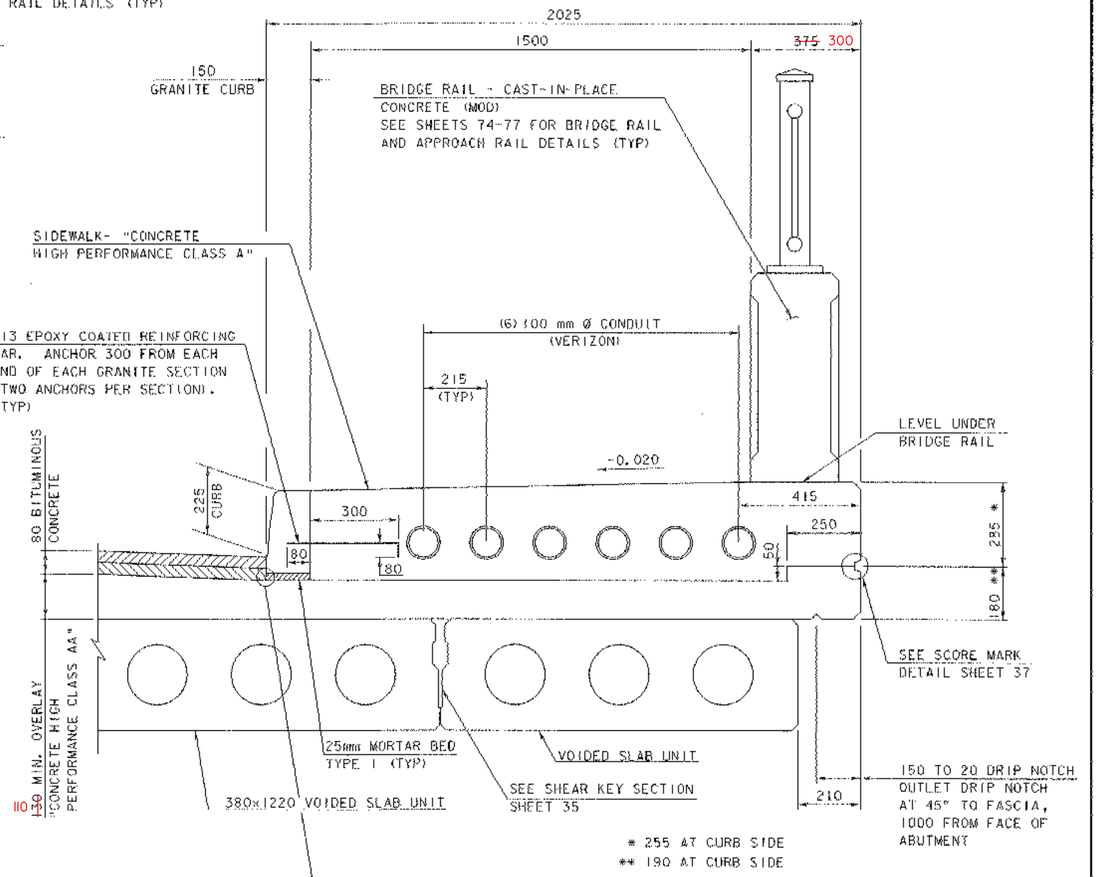
TYPICAL SECTION - SPAN #1

SCALE = 1:40



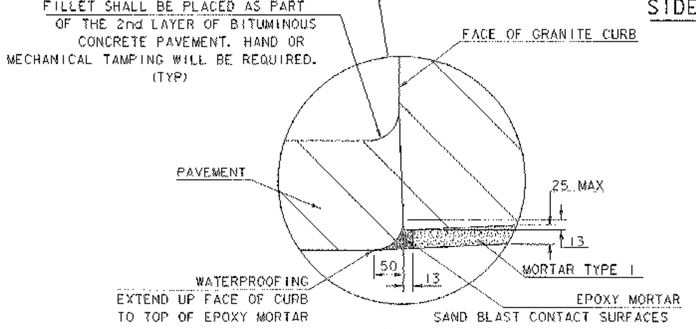
OVERLAY REINFORCING - SPAN #1

SCALE = 1:50



SIDE WALK / CURB DETAIL SPAN #1

SCALE = 1:10



NOTE: THE BACK FACE OF GRANITE CURB SHALL BE SATURATED SURFACE DRY IMMEDIATELY PRIOR TO PLACEMENT OF ADJACENT SIDEWALK OR CURB CONCRETE.

NOTES:

NF = NEAR FACE
FF = FAR FACE
EF = EACH FACE
▲ = CUT TO FIT IN FIELD

ALL REINFORCING STEEL SHALL BE EPOXY COATED.

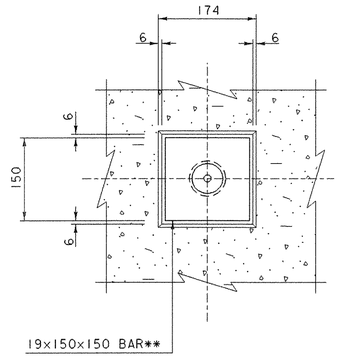
60 CLR. UNLESS OTHERWISE SPECIFIED ON THE PLANS.

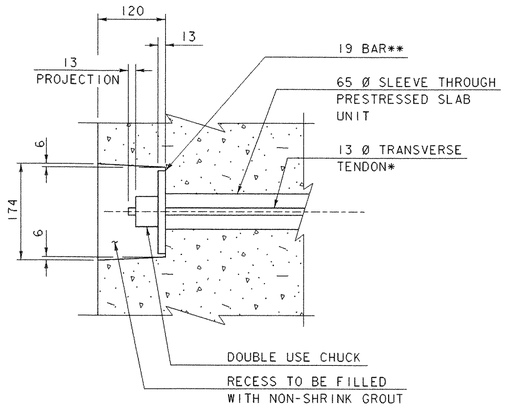
ALL LAPS SHALL BE 660 UNLESS NOTED OTHERWISE.

SCALE = 1:40

SCALE = 1:50

PROJECT: BETHEL	PROJECT NO.: BRF0241(33)C/2
DESIGN FILE NAME: 02c180\Structures\s02c180sup.dgn	
IPARM FILE NAME: s02c180sp1plan.i	PLOT DATE: 15-APR-2005
DESIGNED BY: K.HIGGINS	DRAWN BY: M.LONGSTREET
SQUAD LEADER: C.P.WILLIAMS	CHECKED BY: K.HIGGINS
SPAN #1 PLAN & TYPICAL SECTION	SHEET: 33 OF 130



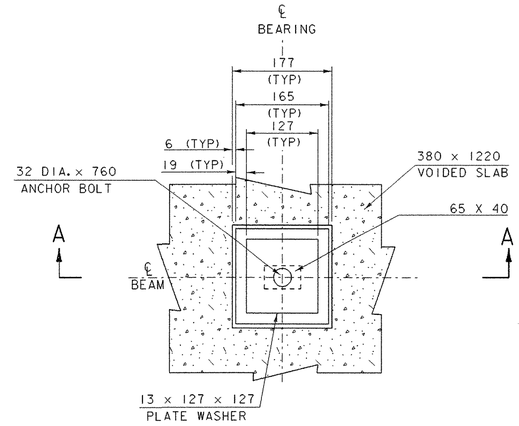


13mm Ø TRANSVERSE TENDON DETAIL

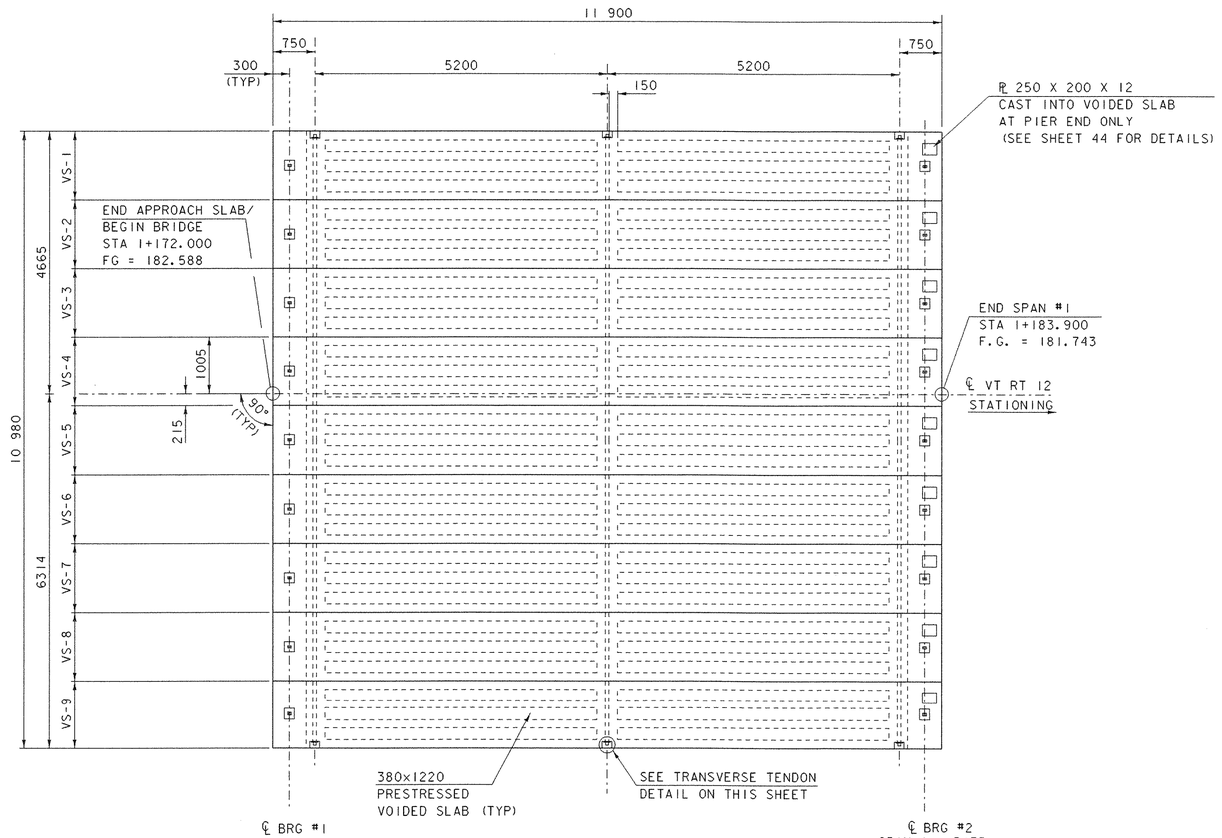
SCALE = 1:5

* TRANSVERSE TIES SHALL BE COVERED BY SEAMLESS POLYPROPYLENE SHEATH (WITH CORROSION INHIBITER GREASE BETWEEN SHEATH AND STRAND) FOR THE LENGTH OF STRAND, EXCEPT AT ANCHORAGE LOCATIONS, TIES SHALL BE TENSIONED TO 133.5 kN

** AASHTO M270/M270M GRADE 345 STEEL



END BRIDGE ANCHOR BOLT DETAIL

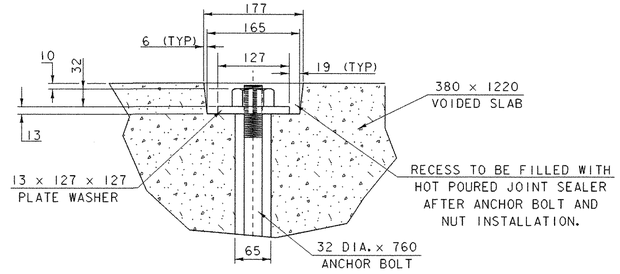


℄ BRG #1
SPAN 1 - ABUTMENT NO. 1
STA 1+172.300
FG = 182.567

VOIDED SLAB FRAMING PLAN

SCALE = 1:50

℄ BRG #2
SPAN 1 - PIER
STA 1+183.600
FG = 181.764



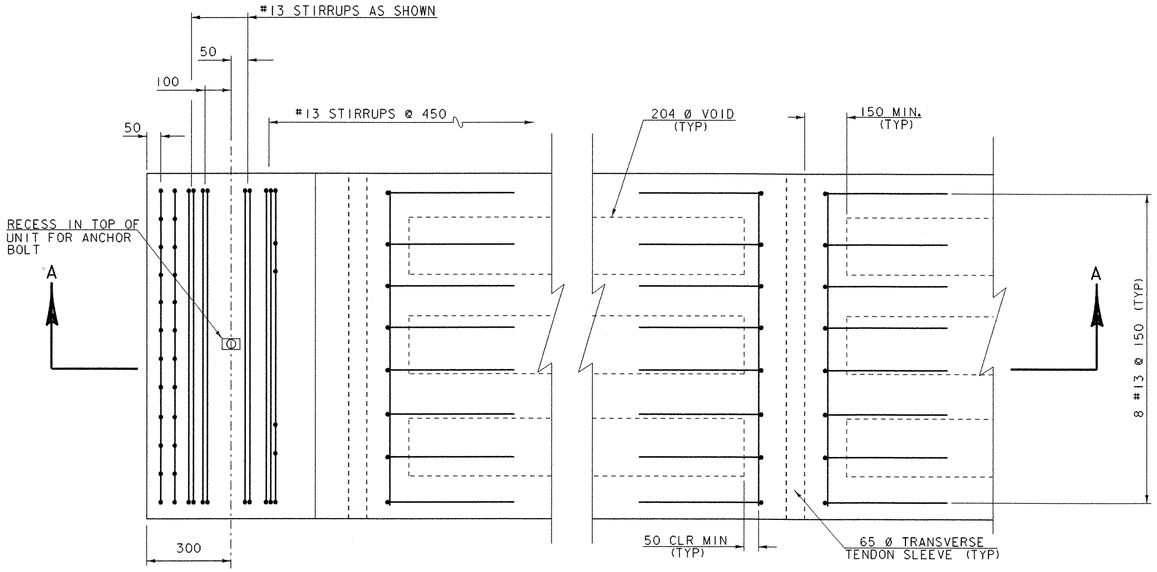
SECTION A-A

SCALE = 1:5

0 1 2 3 4 5
SCALE = 1:50

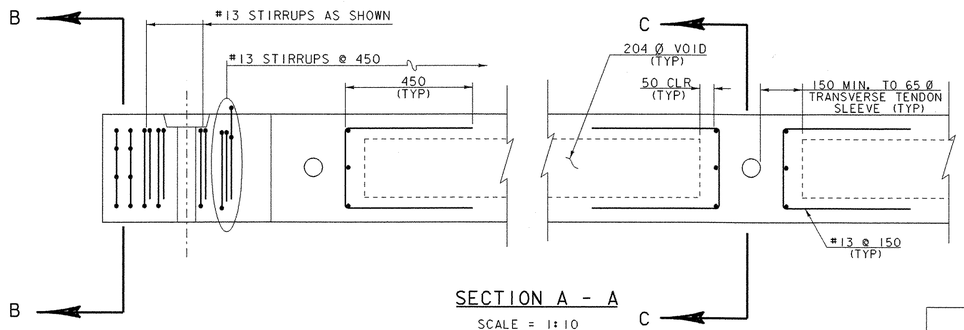
0 0.25 0.5
SCALE = 1:5

PROJECT: BETHEL	PROJECT NO.: BRF0241(33)C/2
DESIGN FILE NAME: 02c180\Structures\s02c180sup.dgn	
IPARM FILE NAME: s02c180splfp.i	PLOT DATE: 15-APR-2005
DESIGNED BY: K.HIGGINS	DRAWN BY: M.LONGSTREET
SQUAD LEADER: C.P.WILLIAMS	CHECKED BY: K.HIGGINS
SPAN #1 FRAMING PLAN	SHEET: 34 OF 130



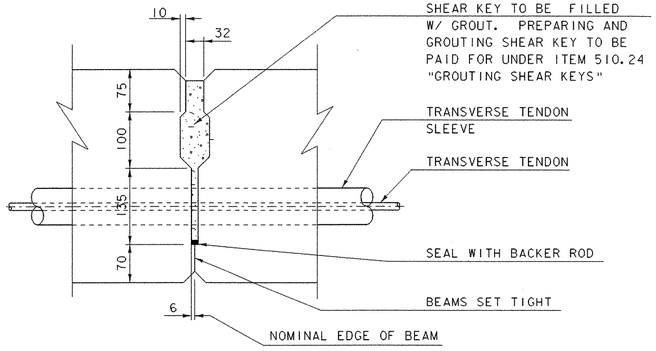
PLAN OF END BLOCK

SCALE = 1:10



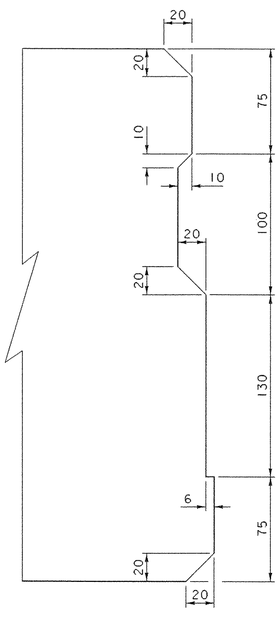
SECTION A - A

SCALE = 1:10



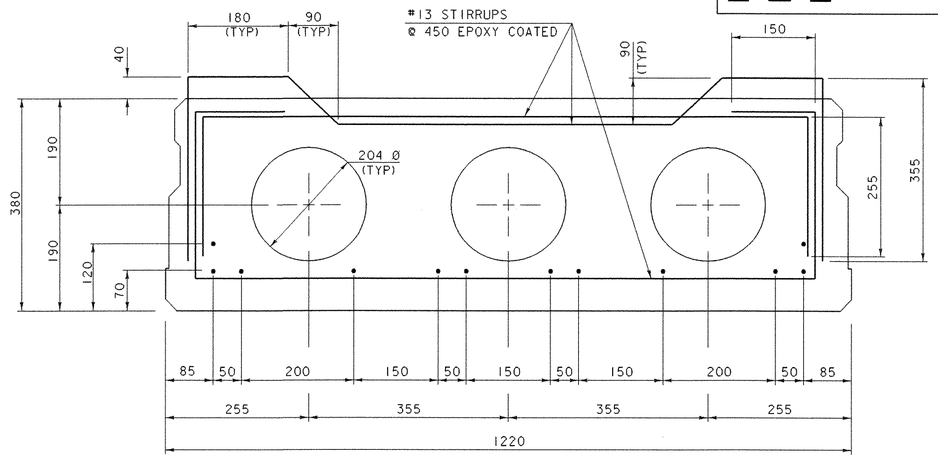
SHEAR KEY SECTION

SCALE = 1:5



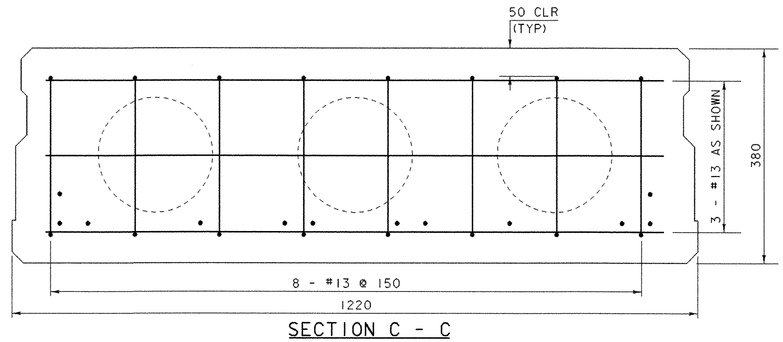
SHEAR KEY DETAIL

SCALE 1 : 2



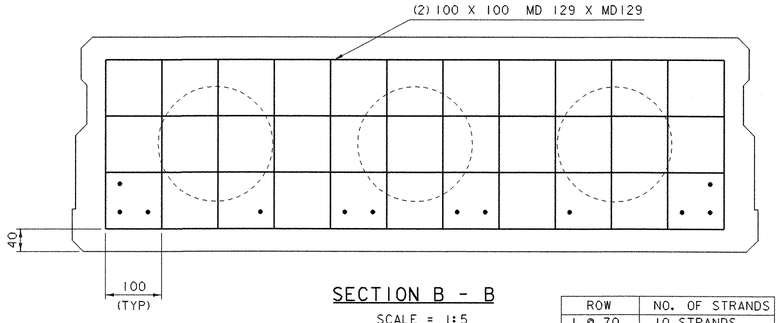
TYPICAL VOIDED SLAB SECTION

SCALE = 1:5



SECTION C - C

SCALE = 1:5



SECTION B - B

SCALE = 1:5

ROW	NO. OF STRANDS
1 @ 70	10 STRANDS
2 @ 120	2 STRANDS

1. ROWS ARE ALWAYS AT SPECIFIED DISTANCE FROM BOTTOM OF UNIT.

2. STRANDS SHALL BE 15.25mm Ø, 1860 MPa LOW RELAXATION TYPE CONFORMING TO AASHTO M203M/M203.

0 0.1 0.2

SCALE = 1:2

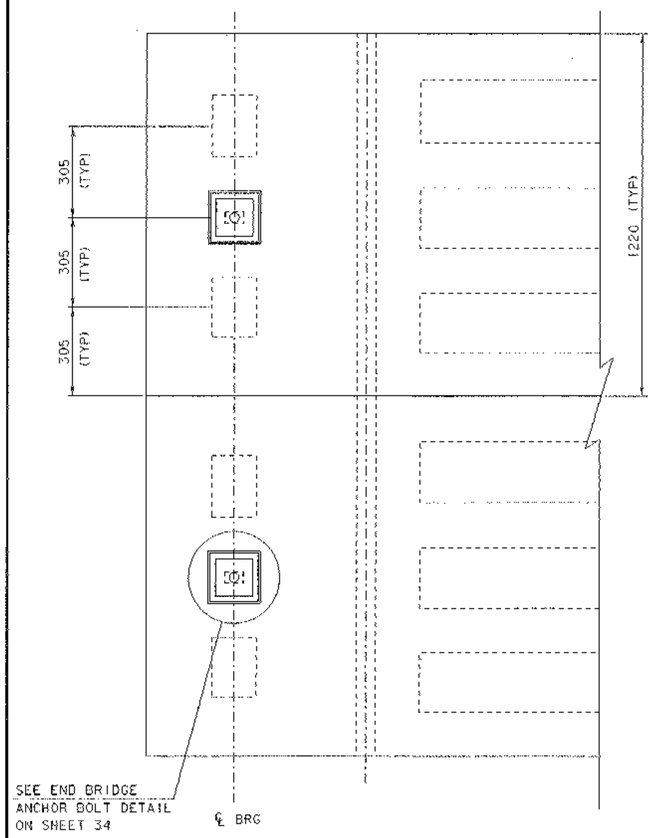
0 0.25 0.5

SCALE = 1:5

0 0.5 1

SCALE = 1:10

PROJECT: BETHEL	PROJECT NO.: BRF0241(33)C/2
DESIGN FILE NAME: 02c180\Structures\s02c180sup.dgn	
IPARM FILE NAME: s02c180endblock.i	PLOT DATE: 15-APR-2005
DESIGNED BY: K.HIGGINS	DRAWN BY: M.LONGSTREET
SQUAD LEADER: C.P.WILLIAMS	CHECKED BY: K.HIGGINS
SPAN #1 VOIDED SLAB DETAILS	SHEET: 35 OF 130

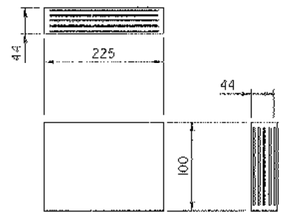


BEARING PLACEMENT PLAN

(SIMILAR AT PIER)
SCALE = 1:10

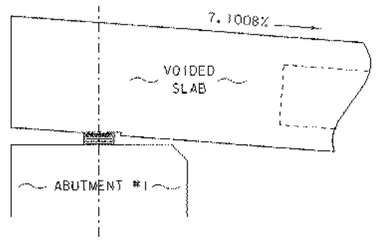
** NOTE:

FABRICATOR SHALL SUPPLY A SELF ADHESIVE COMPRESSIBLE SEALER BETWEEN THE BOTTOM OF THE UNITS AND THE BRIDGE SEAT. THIS COMPRESSIBLE SEALER SHALL SURROUND THE 65 DIA SLEEVE IN THE UNIT. THE PURPOSE OF THE SEALER IS TO FACILITATE PLACEMENT OF THE "MORTAR OR JOINT SEALER" AROUND THE ANCHOR BOLTS.



ELASTOMERIC BEARING DETAIL

* 4 - 7mm LAYERS OF ELASTOMERIC ALTERNATING WITH 5 - 14 GAGE STEEL REINFORCING PLATES



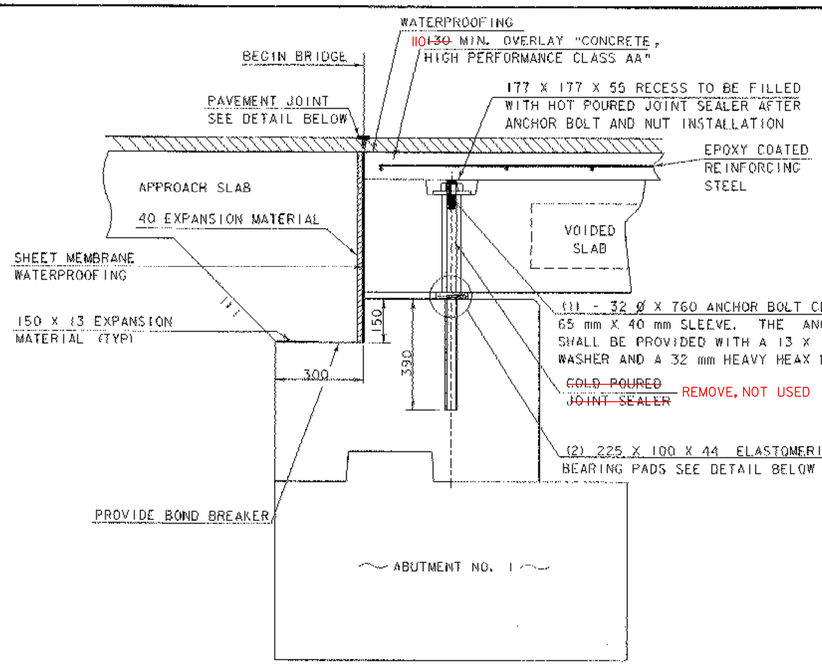
BEARING CROP OUT DETAIL

SCALE = 1:10

NOTE: FABRICATOR TO DETERMINE DIMENSIONS FOR BEARING CROP OUT TO ACCOMMODATE GRADE

BRIDGE SEAT ELEVATIONS

ABUTMENT NO. 1	PIER #1
181.826	181.020

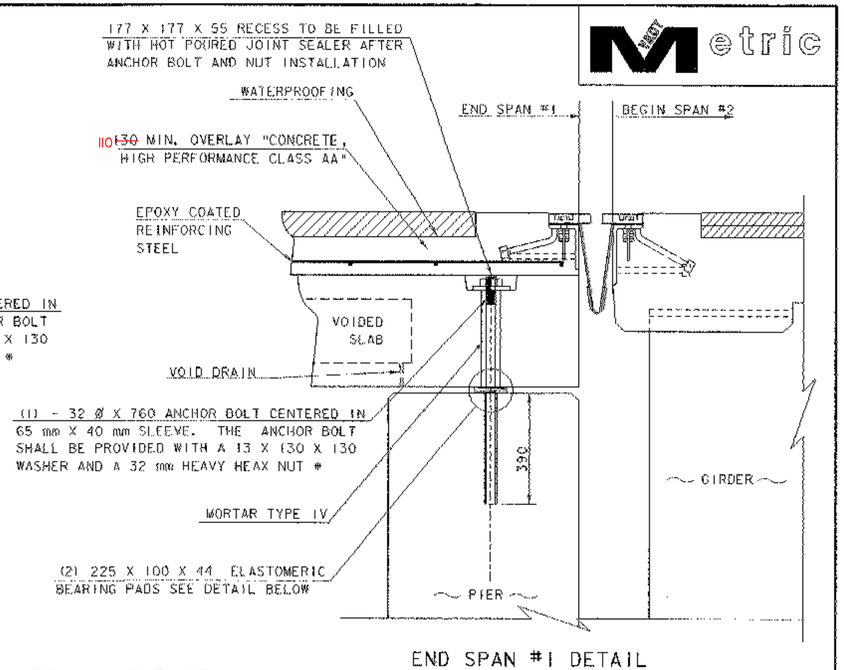


BEGIN BRIDGE (SPAN #1) DETAIL

SCALE = 1:10

NOTE:

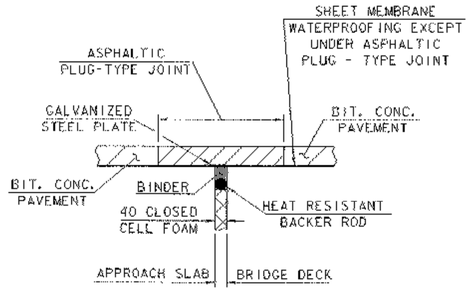
PLACE SHEET MEMBRANE WATERPROOFING ALONG BACK OF OVERLAY AND VOIDED SLAB. THE ALL COST SHALL BE INCIDENTAL TO CONCRETE, HIGH PERFORMANCE CLASS AA.



* CORE 40 mm X 390 ANCHOR BOLT HOLE AFTER PLACING VOIDED SLABS. INJECT WITH APPROVED EPOXY TO SECURE BOLTS

END SPAN #1 DETAIL

SCALE = 1:10



ASPHALTIC PLUG-TYPE JOINT DETAIL

NTS

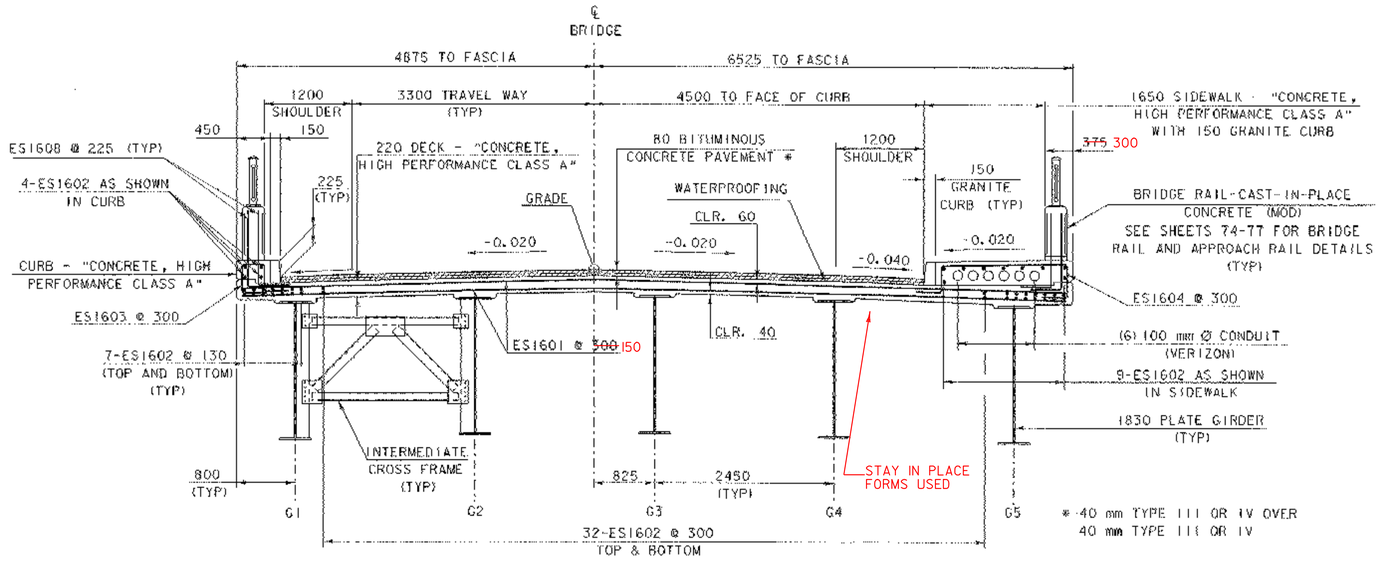
BEARING NOTES

1. ALTERNATE CONFIGURATIONS FOR ELASTOMERIC BEARINGS MAY BE SUBMITTED FOR APPROVAL. ANY ALTERNATE BEARING SUBMITTED SHALL BE DESIGNED AND CERTIFIED TO MEET THE LOADS AND CRITERIA SHOWN ON THIS SHEET AND MAINTAIN THE ANCHORAGE SYSTEM SHOWN. THE BEARINGS SHALL BE DESIGNED ACCORDING TO AASHTO "STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES" 2002 EDITION AND ITS LATEST REVISIONS.
2. THE BEARING SHAPE FACTOR SHALL BE BETWEEN 5.0 AND 12.0.
3. ALL REINFORCMENT BETWEEN LAYERS OF ELASTOMERIC SHALL BE STEEL GRADE 250. NO FABRIC REINFORCEMENT WILL BE PERMITTED.
4. ELASTOMERIC BEARINGS REINFORCED WITH STEEL SHALL HAVE A 3mm EDGE SEAL OF ELASTOMERIC INTEGRAL WITH THE BEARING OVER ALL PLATES.
5. ALL MATERIALS AND FABRICATION SHALL BE PER AASHTO DIVISION II SECTION 18.2 AND AASHTO MATERIAL SPECIFICATION M251.
6. DESIGN CRITERIA:
   A. TEMPERATURE RANGE: -34° C TO 49° C
   B. NORMAL HARDNESS OF 60 ON SHORE "A" SCALE
   C. SHEAR MODULUS BETWEEN 0.896 MPa AND 1.207 MPa
   D. DESIGN ROTATION: 0.01730 RAD
   E. REACTION/BEAM:
      RDL: 59.55 kN
      RLL: 61.74 kN
   F. HORIZONTAL CAPACITY SHALL BE MINIMUM OF 20% VERTICAL LOAD IN ANY RESTRAINED DIRECTIONS
   G. ELASTOMERIC BEARING PAD TO CONCRETE PRESSURE 5.39 MPa

0 0.25 0.5
SCALE = 1:5

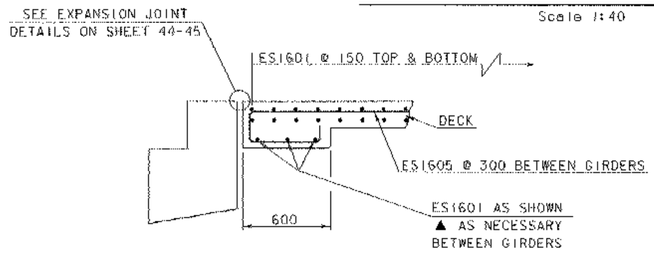
0 0.5 1
SCALE = 1:10

PROJECT: BETHEL	PROJECT NO.: BRF0241(33)C/2
DESIGN FILE NAME: 02c180\Structures\s02c180sup.dgn	
IPARM FILE NAME: s02c180vsend.i	PLOT DATE: 15-APR-2005
DESIGNED BY: K. HIGGINS	DRAWN BY: M. LONGSTREET
SQUAD LEADER: C. P. WILLIAMS	CHECKED BY: K. HIGGINS
BEGIN/END SPAN #1 DETAILS	SHEET: 36 OF 130



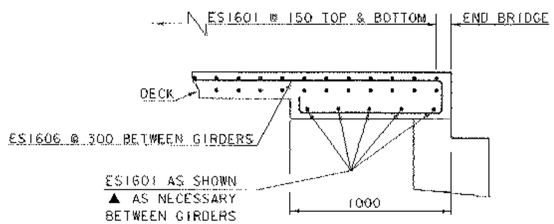
TYPICAL SECTION - SPAN #2

Scale 1:40



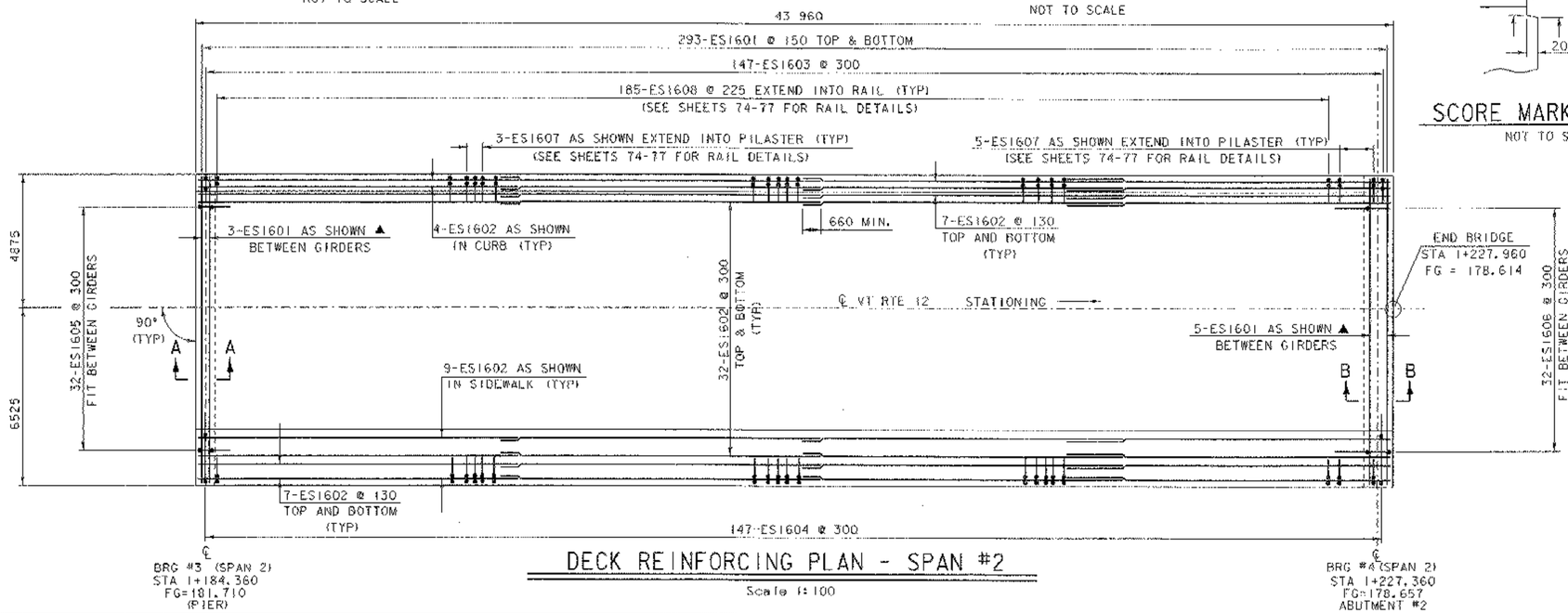
SECTION A-A

NOT TO SCALE



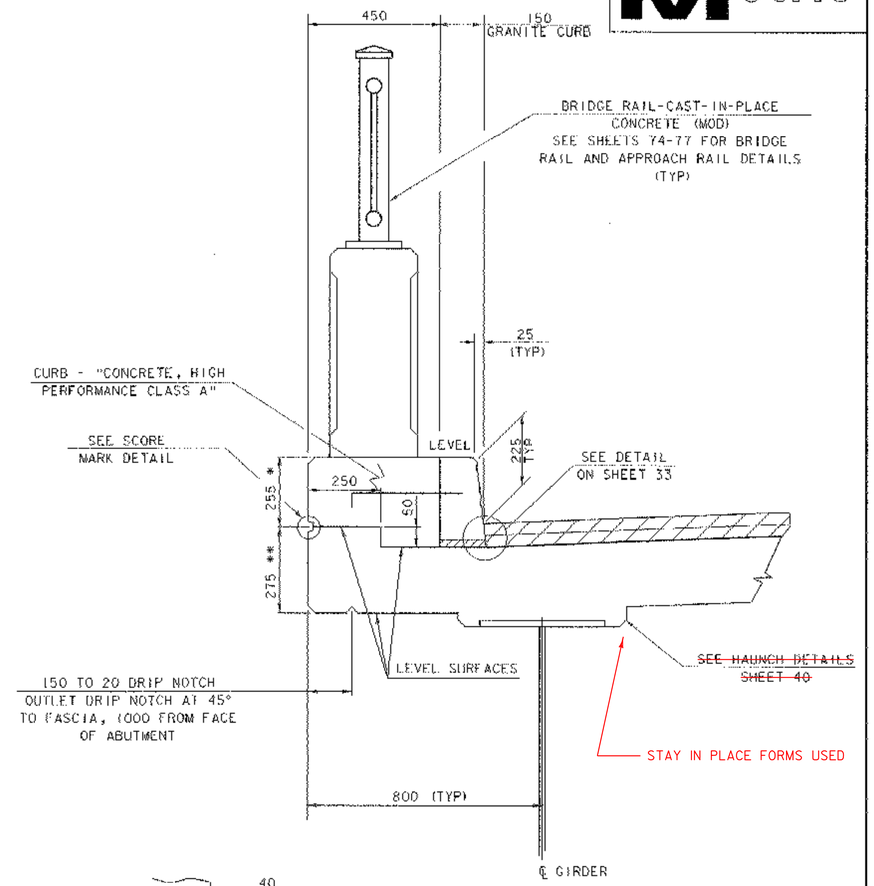
SECTION B-B

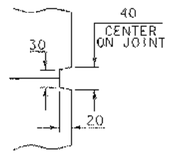
NOT TO SCALE



DECK REINFORCING PLAN - SPAN #2

Scale 1:100





SCORE MARK DETAIL

NOT TO SCALE

* 285 ON SIDEWALK SIDE
** 330 ON SIDEWALK SIDE

CURB DETAIL - SPAN #2

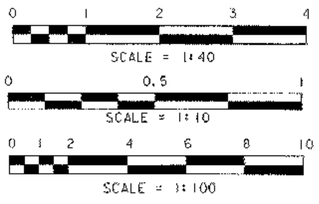
SCALE 1 : 10

NOTES:

NF = NEAR FACE
FF = FAR FACE
EF = EACH FACE
▲ = CUT TO FIT IN FIELD

80 CLR. UNLESS OTHERWISE SPECIFIED ON THE PLANS.

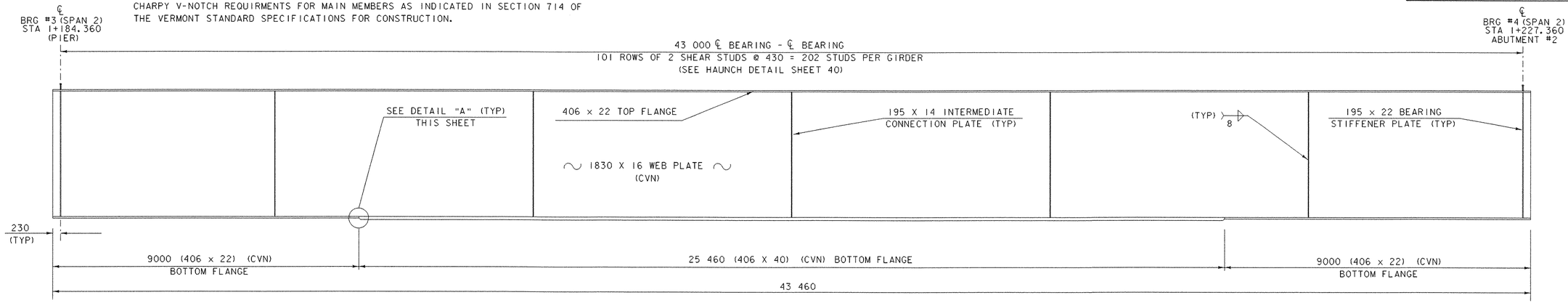
ALL LAPS SHALL BE 660 UNLESS NOTED OTHERWISE



PROJECT:	PROJECT NO.:
BETHEL	BRF0241(33)C/2

DESIGN FILE NAME: 02c180\Structures\s02c180sup.dgn
IPARM FILE NAME: s02c180sp2plan.i — PLOT DATE: 15-APR-2005
DESIGNED BY: K. HIGGINS — DRAWN BY: T. ANDERSON
SQUAD LEADER: C.P. WILLIAMS — CHECKED BY: K. HIGGINS
SPAN #2 REINFORCING PLAN — SHEET: 37 OF 130

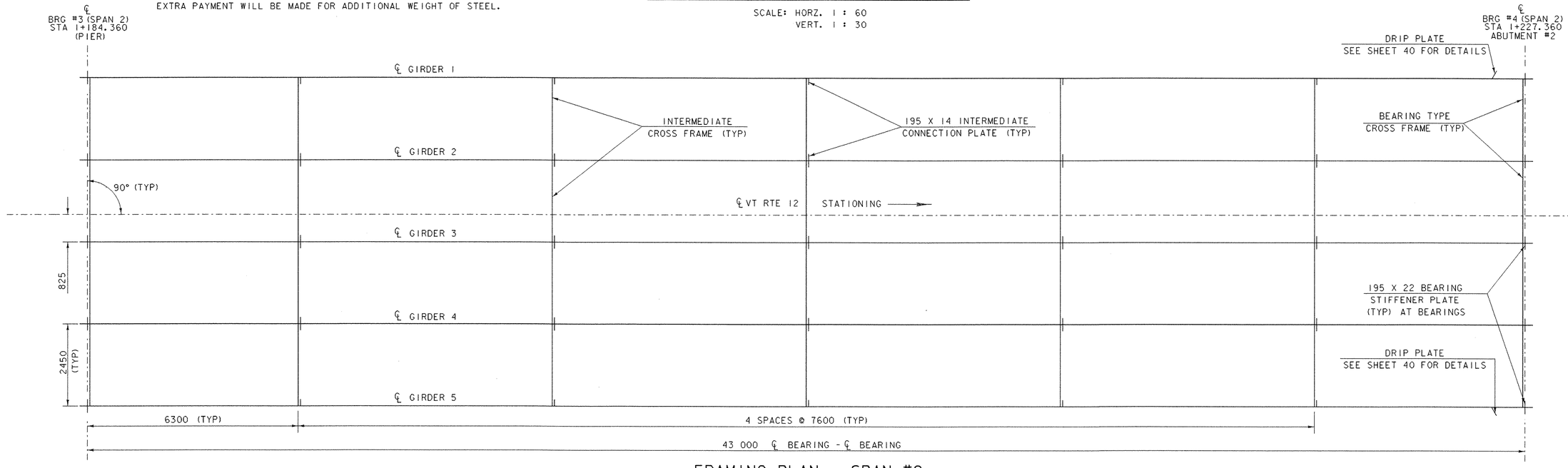
NOTE: ALL MEMBERS OR PLATES MARKED "CVN" AND ONLY THOESE MEMBERS MUST MEET THE CHARPY V-NOTCH REQUIRMENTS FOR MAIN MEMBERS AS INDICATED IN SECTION 714 OF THE VERMONT STANDARD SPECIFICATIONS FOR CONSTRUCTION.



GIRDER ELEVATION - SPAN #2

SCALE: HORZ. 1 : 60
VERT. 1 : 30

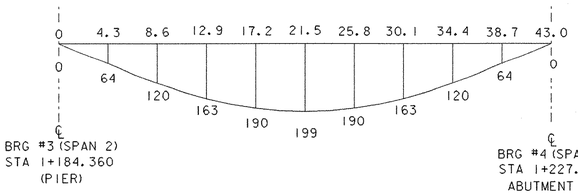
NOTE: THE CONTRACTOR/FABRICATOR MAY SUBSTITUTE 45 PLATE FOR THE ENTIRE BOTTOM FLANGE TO ELIMINATE THE TRANSITION, HOWEVER, NO EXTRA PAYMENT WILL BE MADE FOR ADDITIONAL WEIGHT OF STEEL.



FRAMING PLAN - SPAN #2

SCALE: 1 : 60

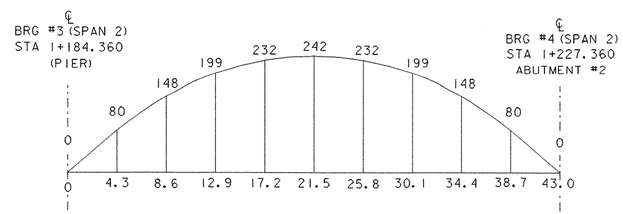
NOTE: ALL NEW STEEL PAID FOR UNDER THE ITEM 506.55 "STRUCTURL STEEL (PLATE GIRDER)" SHALL CONFORM TO M270/M270M GRADE 345W.



DEAD LOAD DEFLECTION DIAGRAM

NOT TO SCALE

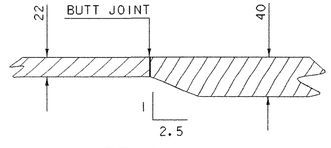
NOTE: DEAD LOAD DEFLECTION DIAGRAM INCLUDES 36 mm DEAD LOAD DEFLECTION @ MIDSPAN DUE TO BEAM SELFWEIGHT.



CAMBER DIAGRAM

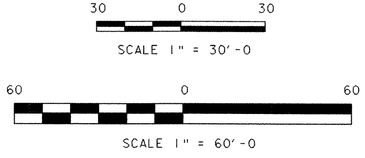
NOT TO SCALE

NOTE: CAMBER DIAGRAM INCLUDES 36 mm DEAD LOAD DEFLECTION @ MIDSPAN DUE TO BEAM SELFWEIGHT. TOTAL CAMBER @ MIDSPAN MEASURED WHEN BEAM IS SUPPORTED ONLY AT ℄ BEARING POINTS SHALL BE 193.



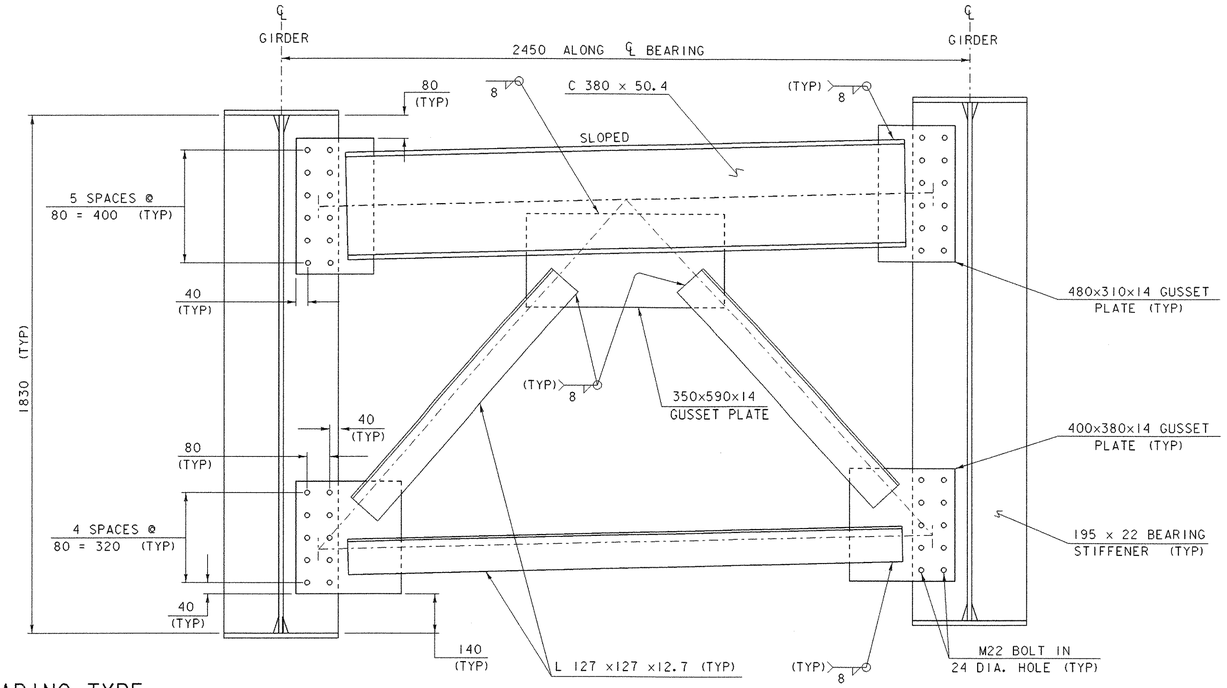
DETAIL "A"

NOT TO SCALE



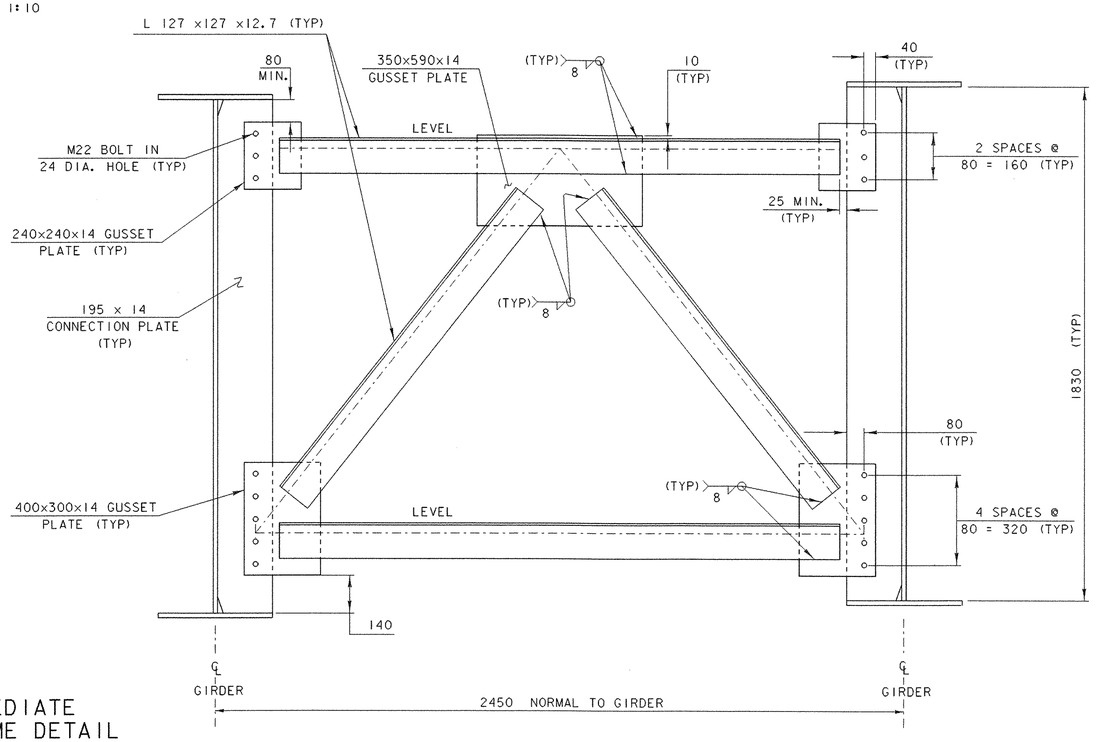
PROJECT:	PROJECT NO.:
BETHEL	BRF 0241 (33) C/2

DESIGN FILE NAME: 02c180\Structures\s02c180sup.dgn
IPARM FILE NAME: s02c180sp2fp.i
PLOT DATE: 15-APR-2005
DESIGNED BY: K. HIGGINS
DRAWN BY: T. ANDERSON
SQUAD LEADER: C. P. WILLIAMS
CHECKED BY: K. HIGGINS
SPAN #2 FRAMING PLAN
SHEET: 38 OF 130



BEARING TYPE CROSS FRAME DETAIL

SCALE 1:10



INTERMEDIATE CROSS FRAME DETAIL

SCALE 1:10

STRUCTURAL STEEL NOTES :

1.) ALL STRUCTURAL STEEL INCLUDING BUT NOT LIMITED TO GIRDERS, CROSS FRAMES AND CONNECTION PLATES SHALL CONFORM TO AASHTO M 270 M/M 270 GRADE 345W. ALL STRUCTURAL STEEL SHALL BE PAID UNDER THE ITEM 506.55 "STRUCTURAL STEEL (PLATE GIRDER)".

2.) ALL FIELD CONNECTIONS IN UNPAINTED AREAS SHALL BE MADE USING M22 DIAMETER TYPE 3 BOLTS MEETING THE AASHTO M 164M/M 164, TYPE 3 SPECIFICATION. IN PAINTED AREAS ALL FIELD CONNECTIONS SHALL BE MADE USING M22 DIAMETER TYPE 1 BOLTS MEETING AASHTO M 164M/M 164 SPECIFICATION. ANY CONNECTIONS NOT DESIGNATED SHALL BE DETAILED BY THE FABRICATOR AND SUBMITED TO THE PROJECT MANAGER FOR APPROVAL. ALL TYPE 1 BOLTS SHALL BE GALVANIZED PER AASHTO M232 M/M 232.

3.) ANY HOLES IN THE FASCIA BEAMS NOT OTHERWISE FILLED SHALL BE FITTED WITH BOLTS CONFORMING TO AASHTO M 164M/M 164, TYPE 3.

4.) THE EXPANSION END OF THE GIRDERS SHALL BE GIVEN A SHOP APPLIED PAINT SYSTEM AND GREASED AFTER INSTALLATION FOR A DISTANCE EQUAL TO THE DEPTH OF THE GIRDER PER SUPPLEMENTAL SPECIFICATION 513. THE ABUTMENT CROSSFRAMES IN THIS AREA SHALL ALSO BE PAINTED AND GREASED. THE PAINT SHALL BE BROWN COLOR CHIP #20059.

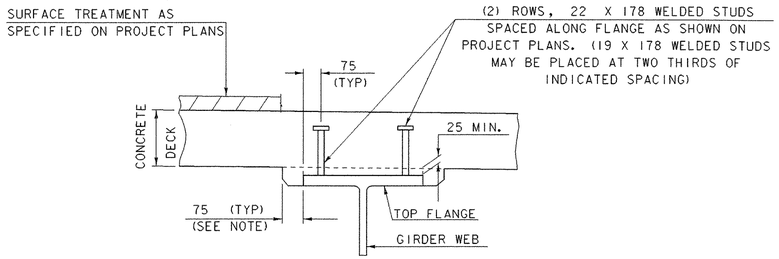
5.) THE FABRICATOR MAY ELECT TO DESIGN AND FABRICATE A FIELD SPLICE WITHIN THE SIMPLE SPAN. ANY FIELD SPLICE MUST BE DESIGNED BY A PROFESSIONAL ENGINEER. THE LOCATION OF AND THE DESIGN OF THE FIELD SPLICE SHALL BE SUBMITTED TO THE PROJECT MANAGER FOR APPROVAL. THE CONTRACTOR SHALL BE DUE NO ADDITIONAL COMPENSATION FOR PROVIDING THE OPTIONAL FIELD SPLICE.

6.) SEE SHEET 40 FOR ADDITIONAL DETAILS

0 0.5 1

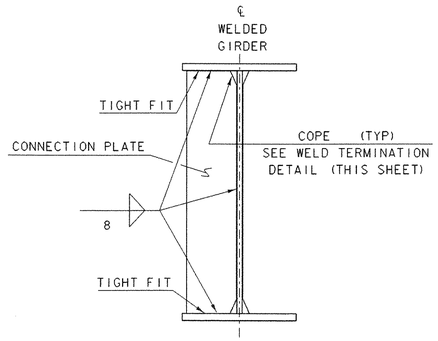
SCALE = 1:10

PROJECT: BETHEL	PROJECT NO.: BRF 0241 (33) C/2
DESIGN FILE NAME: 02c180\Structures\s02c180sup.dgn	
IPARM FILE NAME: s02c180xframe.i	PLOT DATE: 15-APR-2005
DESIGNED BY: K. HIGGINS	DRAWN BY: T. ANDERSON
SQUAD LEADER: C. P. WILLIAMS	CHECKED BY: K. HIGGINS
CROSS FRAME DETAILS	SHEET: 39 OF 130

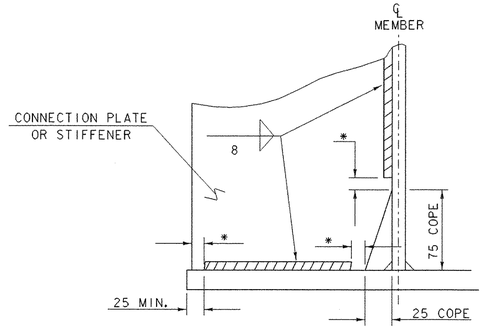


NOTE: THE 75 HORIZONTAL SECTION MAY BE ELIMINATED FOR FORMING SYSTEMS DESIGNED FOR THE CONSTRUCTION OF VERTICAL HAUNCHES. SYSTEMS SHALL BE SUBMITTED FOR APPROVAL TO THE STRUCTURES ENGINEER. ALL VOIDS SHALL BE FILLED WITH MORTAR, TYPE IV OR AN EQUIVALENT PRODUCT FROM THE APPROVED PRODUCTS LIST.

HAUNCH AND SHEAR CONNECTOR DETAILS

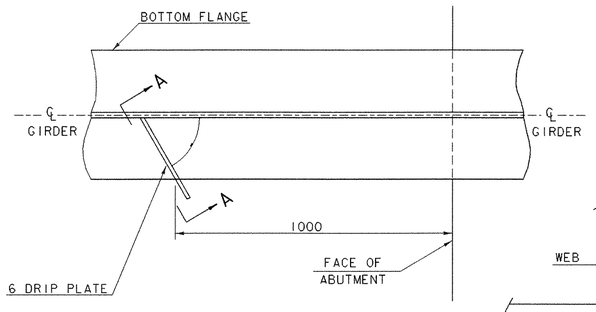


INTERMEDIATE CONNECTION PLATES AND/OR STIFFENERS FOR WELDED PLATE GIRDERS



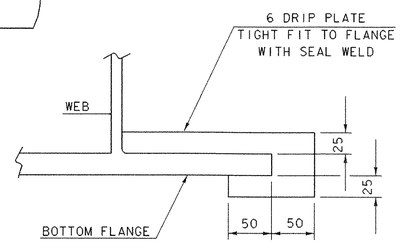
* = NO WELD FOR 6 MIN., 12 MAX. (EXCEPT MUST MAINTAIN 25 MINIMUM FROM EDGE OF FLANGE)

WELD TERMINATION AND COPING DETAILS FOR STEEL MEMBERS

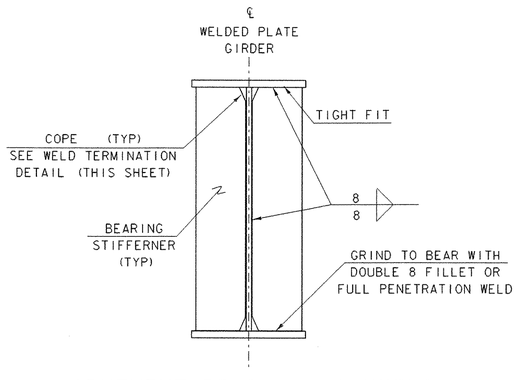


NOTE: DRIP PLATES SHALL BE PLACED ON OUTSIDE EDGE OF FASCIA GIRDERS ON THE HIGH SIDE OF ALL PIERS AND ABUTMENTS OR AS INDICATED ON PROJECT PLANS.

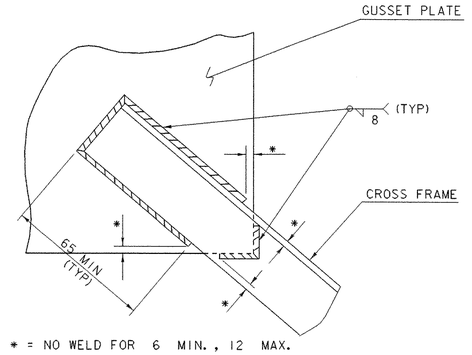
DRIP PLATE PLAN VIEW



SECTION A - A



ABUTMENT BEARING STIFFENERS FOR WELDED PLATE GIRDERS

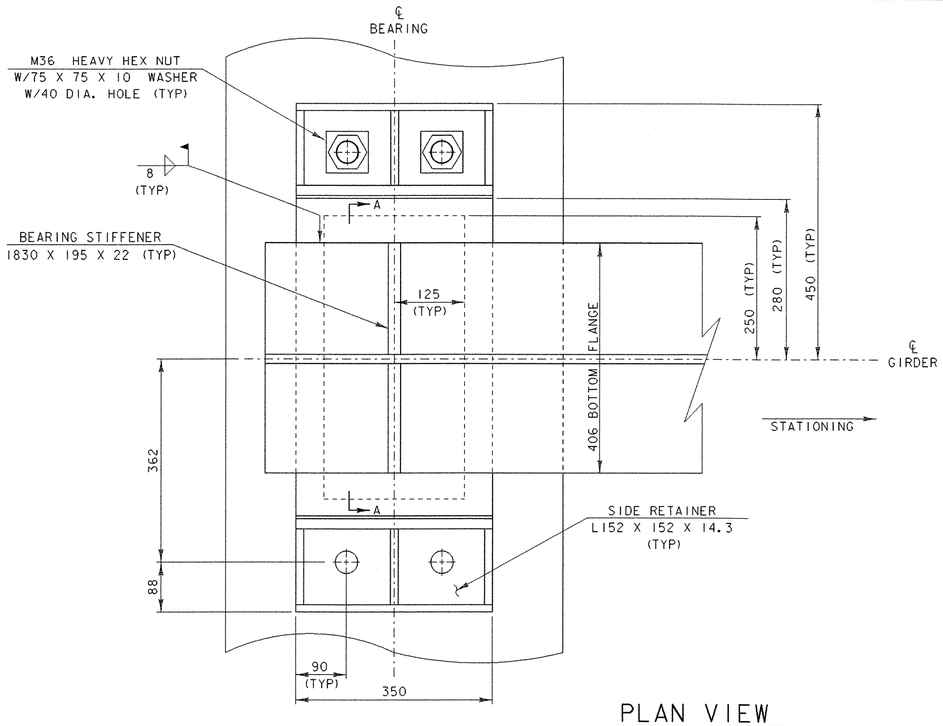


* = NO WELD FOR 6 MIN., 12 MAX.

WELD LOCATION DETAIL AT CROSS FRAMES AND LATERAL BRACING

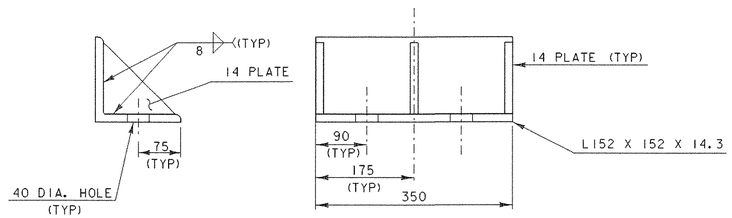
NOTE:
DETAILS ON THIS SHEET ARE
--- NOT TO SCALE ---

PROJECT: BETHEL	PROJECT NO.: BRF0241 (33) C/2
DESIGN FILE NAME: 02c180\Structures\s02c180sup.dgn	
IPARM FILE NAME: s02c180ssmisc.i	PLOT DATE: 15-APR-2005
DESIGNED BY: K.HIGGINS	DRAWN BY: T.ANDERSON
SQUAD LEADER: C.P.WILLIAMS	CHECKED BY: K.HIGGINS
MISC. STRUCTURAL STEEL DETAILS	SHEET: 40 OF 130



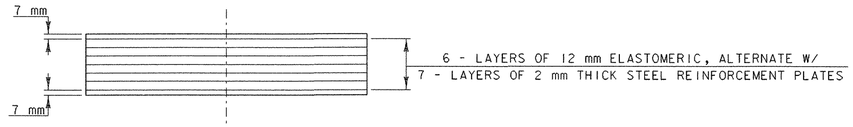
PLAN VIEW

SCALE 1 : 5



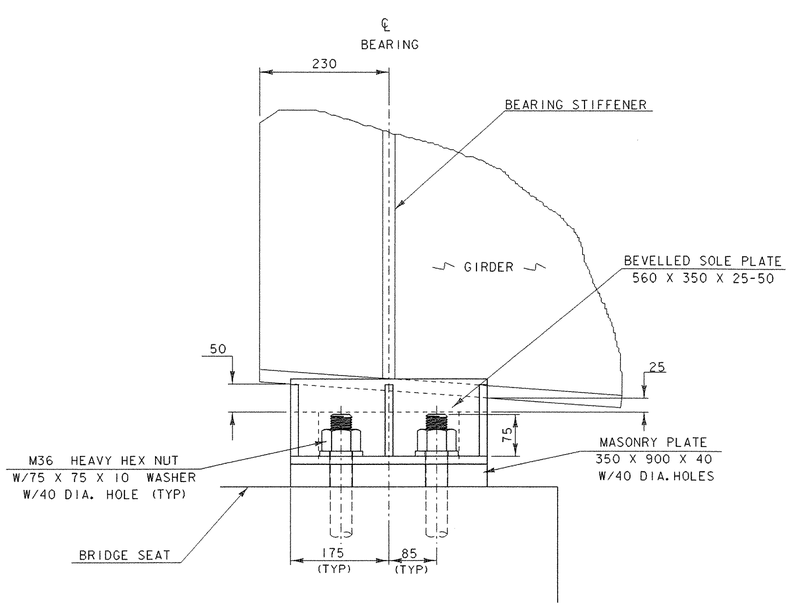
SIDE RETAINER

SCALE 1 : 5



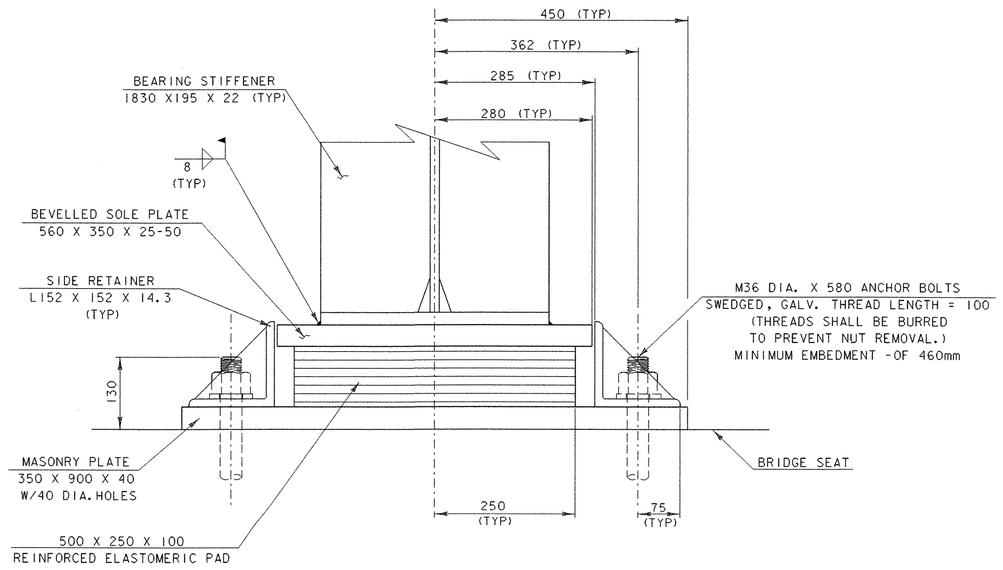
SECTION A-A

SCALE 1 : 5



SIDE ELEVATION

SCALE 1 : 5



END ELEVATION

SCALE 1 : 5

PIER EXPANSION BEARING DETAILS

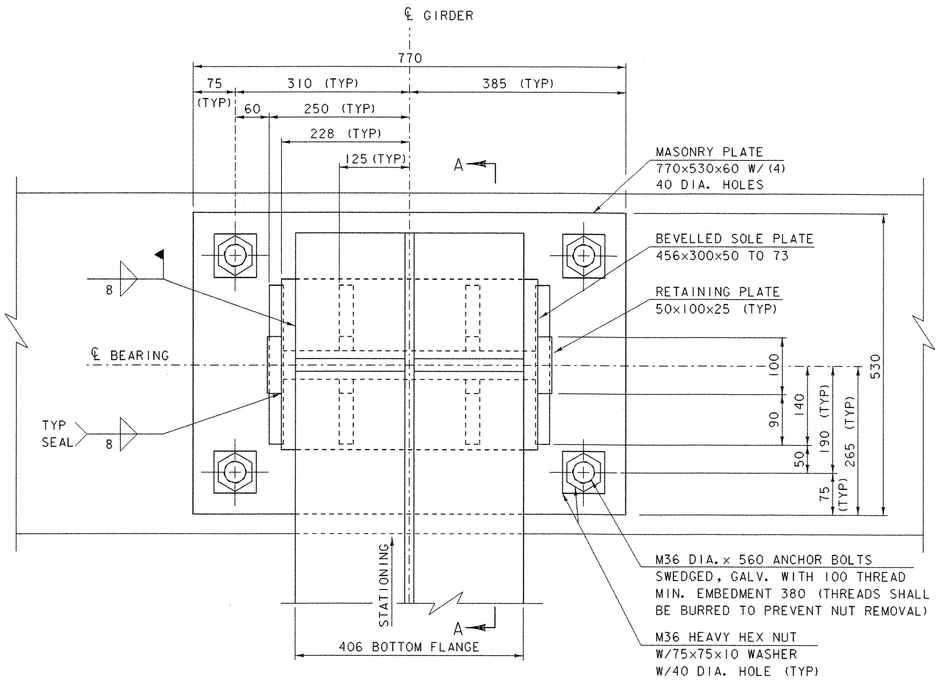
0 0.25 0.5

SCALE = 1:5

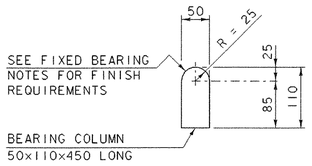
SEE SHEET 43 FOR BEARING NOTES

PROJECT:	PROJECT NO.:
BETHEL	BRF0241(33)C/2

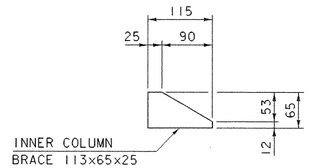
DESIGN FILE NAME: 02c180/structures/s02c180brg.dgn
IPARM FILE NAME: 02c180expbrg.i — PLOT DATE: 15-APR-2005
DESIGNED BY: K. M. HIGGINS — DRAWN BY: K. M. HIGGINS
SQUAD LEADER: C. P. WILLIAMS — CHECKED BY: M. LONGSTREET
EXPANSION BEARING DETAILS (PIER) — SHEET: 41 OF 130



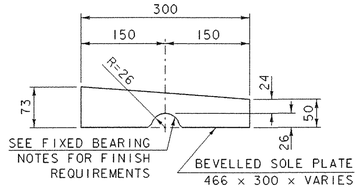
PLAN VIEW
SCALE= 1:5



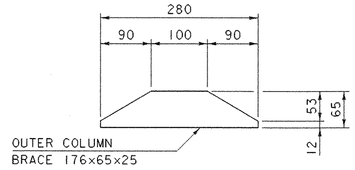
BEARING COLUMN DETAIL
SCALE= 1:5



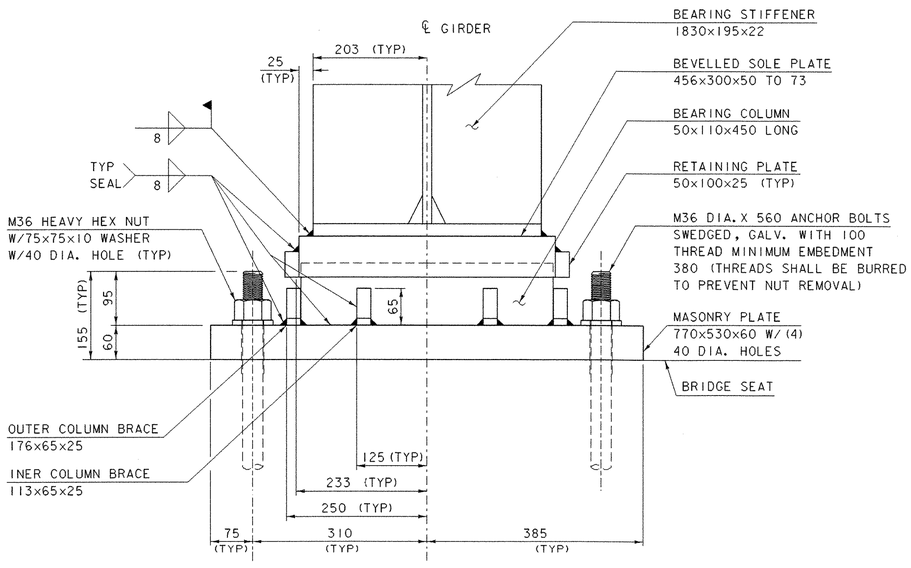
INNER COLUMN BRACE DETAIL
(4 BRACES REQUIRED)
SCALE= 1:5



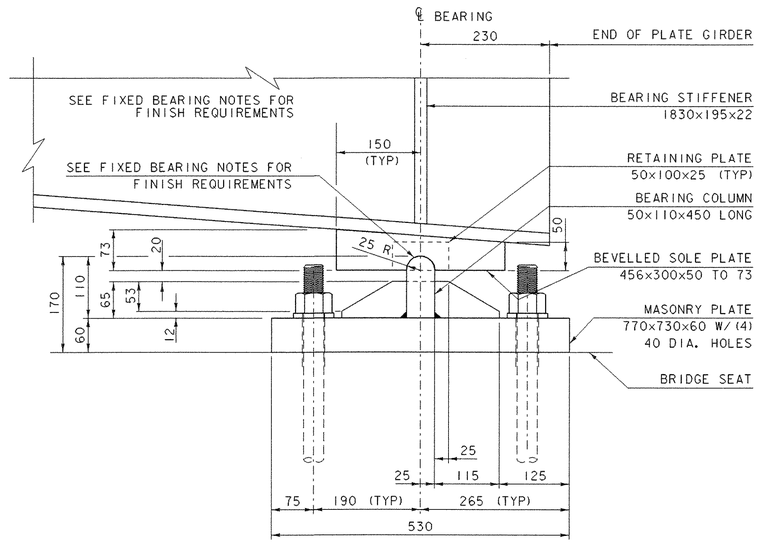
SOLE PLATE DETAIL
SCALE= 1:5



OUTER COLUMN BRACE DETAIL
(2 BRACES REQUIRED)
SCALE= 1:5



FRONT ELEVATION
SCALE= 1:5



SECTION A-A
SCALE= 1:5

ABUTMENT #2 FIXED BEARING DETAILS

0 0.25 0.5
SCALE = 1:5

SEE SHEET 43 FOR BEARING NOTES

PROJECT:	PROJECT NO.:
BETHEL	BRF0241(33)C/2

DESIGN FILE NAME: 02c180/structures/s02c180brg.dgn
IPARM FILE NAME: c180fixbrg.i — PLOT DATE: 15-APR-2005
DESIGNED BY: K. M. HIGGINS — DRAWN BY: M. LONGSTREET
SQUAD LEADER: C. P. WILLIAMS — CHECKED BY: K. M. HIGGINS
FIXED BEARING DETAILS (ABUT #2) — SHEET: 42 OF 130

Metric

EXPANSION BEARING NOTES

1. EXPANSION BEARINGS SHALL BE PAID FOR UNDER THE ITEM 531.10 "BEARING DEVICE ASSEMBLY (EXPANSION)" AND SHALL CONFORM TO APPLICABLE SUBSECTIONS OF SECTION 531 AND 731.

2. THE FIELD WELD CONNECTING THE BOTTOM FLANGE WITH THE BEARING DEVICE SHALL BE MADE WITH E7018 RODS. AREAS OF METALIZING DAMAGED BY WELDING AND/OR HANDLING SHALL BE REPAIRED BY METALIZING IN ACCORDANCE WITH ASTM A 760/A 760M.

3. SHOP DRAWINGS CONFORMING TO SUBSECTION 531.03 SHALL BE SUBMITTED AND INCLUDE ANY NECESSARY WELDING OR BONDING PROCEDURES. THE EXPANSION BEARINGS REQUIRE A TYPE D CERTIFICATION PER SECTION 700.02 (C).

4. ALL STEEL COMPONENTS SHALL BE METALIZED AS PER SECTION 531.04(b) AND 506.15. AFTER THE BEARINGS ARE METALIZED, THEY SHALL BE SEALED WITH AN APPROVED PRIMER AS SPECIFIED IN SUBSECTION 506.15(c). ALL WASHERS SHALL BE 10 PLATE MINIMUM. PAYMENT FOR ANCHOR BOLTS, NUTS, AND WASHERS SHALL BE INCLUDED IN THE UNIT BID PRICE FOR "BEARING DEVICE ASSEMBLY (EXPANSION)". ANCHOR BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED PER AASHTO M 232/M 232M.

5. ALL STEEL IN BEARING DEVICES SHALL BE AASHTO M 270M/M 270 GRADE 345 UNLESS NOTED OTHERWISE.

6. ALL REINFORCEMENT BETWEEN LAYERS OF ELASTOMERIC SHALL BE STEEL ASTM A36. ALL INTERNAL STEEL PLATES SHALL BE SAND BLASTED AND FREE OF COATINGS, RUST, AND MILL SCALE. THE PLATES SHALL BE FREE OF SHARP EDGES AND BURRS.

7. STEEL REINFORCED ELASTOMERIC BEARINGS SHALL HAVE A MINIMUM OF 3mm EDGE SEAL OF ELASTOMER INTEGRAL WITH THE BEARING OVER ALL INTERNAL PLATES.

8. FOR ELASTOMERIC BEARINGS, ALL MATERIALS AND FABRICATION SHALL BE PER AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES, EDITION 1996 AND ITS LATEST REVISIONS AND AASHTO M 251/M 251M.

9. ALTERNATE CONFIGURATIONS FOR BEARINGS MAY BE SUBMITTED FOR APPROVAL. ANY ALTERNATE SUBMITTED SHALL BE DESIGNED AND CERTIFIED TO MEET THE DESIGN LOADS AND CRITERIA SHOWN ON THIS SHEET. THE ALTERNATE SHALL MAINTAIN THE ANCHORAGE SYSTEM SHOWN AND SHALL BE DESIGNED PER AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES 1996 EDITION AND ITS LATEST REVISIONS.

10. BRIDGE SEAT ELEVATIONS MAY BE REVISED TO ACCOMMODATE AN ALTERNATIVE CONFIGURATION.

11. DESIGN CRITERIA:

    A. MASONRY PLATE TO CONCRETE DESIGN PRESSURE = 3.3 MPa
    B. DESIGN ROTATION = 0.017 RAD
    C. HORIZONTAL CAPACITY SHALL BE MINIMUM OF 20% VERTICAL LOAD IN ANY RESTRAINED DIRECTION.
    D. DESIGN LOAD PER BEARING
        RDL = 668.78 KN
        RLL = 358.03 KN
    E. TEMPERATURE RANGE = -34° TO 49° C
    F. ELASTOMER SHALL HAVE NOMINAL HARDNESS OF 60 ON SHORE 'A' SCALE. ELASTOMER SHALL HAVE A SHEAR MODULUS BETWEEN 0.896 MPA AND 1.207 MPA THE RAW ELASTOMER SHALL BE VIRGIN NEOPRENE CLASSIFIED AS LOW TEMPERATURE GRADE 4 AS DEFINED IN TABLE 18.4.5.1 - 1A OF AASHTO, DIVISION II, SECTION 18.
    G. NO FABRIC REINFORCEMENT WILL BE ALLOWED IN ELASTOMERIC PADS

12. THE STEEL SOLE PLATES AND MASONRY PLATES SHALL BE HOT BONDED TO THE REINFORCED ELASTOMERIC PAD DURING THE VULCANIZATION PROCESS. THE STEEL SURFACES TO BE BONDED TO THE PAD SHALL NOT BE METALIZED.

13. THE BEARING TOLERANCES SHALL MEET THOSE GIVEN IN AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION DATED 1996 AND ITS LATESTS REVISIONS, DIVISION II SECTION 18.

14. THE ANCHOR BOLTS SHALL MEET THE REQUIREMENTS OF A 307 GR. C. THEY SHALL BE GALVANIZED PER AASHTO M 232M/M 232.

FIXED BEARING NOTES

1. FIXED BEARINGS SHALL BE PAID FOR UNDER THE ITEM 531.10 "BEARING DEVICE ASSEMBLY (FIXED)", AND SHALL CONFORM TO APPLICABLE SUBSECTIONS OF 531 AND 731.

2. THE FIELD WELD CONNECTING THE BOTTOM FLANGE WITH THE BEARING DEVICE SHALL BE MADE WITH E7018 RODS. AREAS OF METALIZING DAMAGED BY WELDING AND/OR HANDLING SHALL BE REPAIRED BY METALIZING IN ACCORDANCE WITH ASTM A 760/A 760M.

3. SHOP DRAWINGS CONFORMING TO SUBSECTION 531.03 SHALL BE SUBMITTED AND INCLUDE ANY NECESSARY WELDING PROCEDURES.

4. ALL STEEL COMPONENTS SHALL BE METALIZED AS PER SECTION 531.04(b) AND 506.15(c). AFTER THE BEARINGS ARE METALIZED, THEY SHALL BE SEALED WITH AN APPROVED PRIMER AS SPECIFIED IN SUBSECTION 506.15(c). ALL WASHERS SHALL BE 10 PLATE MINIMUM. PAYMENT FOR ANCHOR BOLTS, NUTS, AND WASHERS SHALL BE INCLUDED IN THE UNIT BID PRICE FOR "BEARING DEVICE ASSEMBLY (FIXED)". ANCHOR BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED PER AASHTO M 232/M 232M.

5. ALL STEEL IN FIXED BEARING DEVICES SHALL BE AASHTO M 270M/M 270 GRADE 345.

6. DESIGN CRITERIA:

    A. DESIGN ROTATION = 0.017 RAD
    B. MASONRY PLATE TO CONCRETE DESIGN PRESSURE IS 1.500 MPA
    C. HORIZONTAL CAPACITY SHALL BE A MINIMUM OF 20% DEAD LOAD IN ANY RESTRAINED DIRECTION.
    D. DESIGN LOAD PER BEARING
        RDL = 668.78 KN
        RLL = 358.03 KN

7. ALTERNATE CONFIGURATIONS FOR BEARINGS MAY BE SUBMITTED FOR APPROVAL. ANY ALTERNATE SUBMITTED SHALL BE DESIGNED AND CERTIFIED TO MEET THE DESIGN LOADS AND CRITERIA SHOWN ON THIS SHEET. THE ALTERNATE SHALL MAINTAIN THE ANCHORAGE SYSTEM SHOWN AND SHALL BE DESIGNED PER AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES 1996 EDITION AND ITS LATEST REVISIONS.

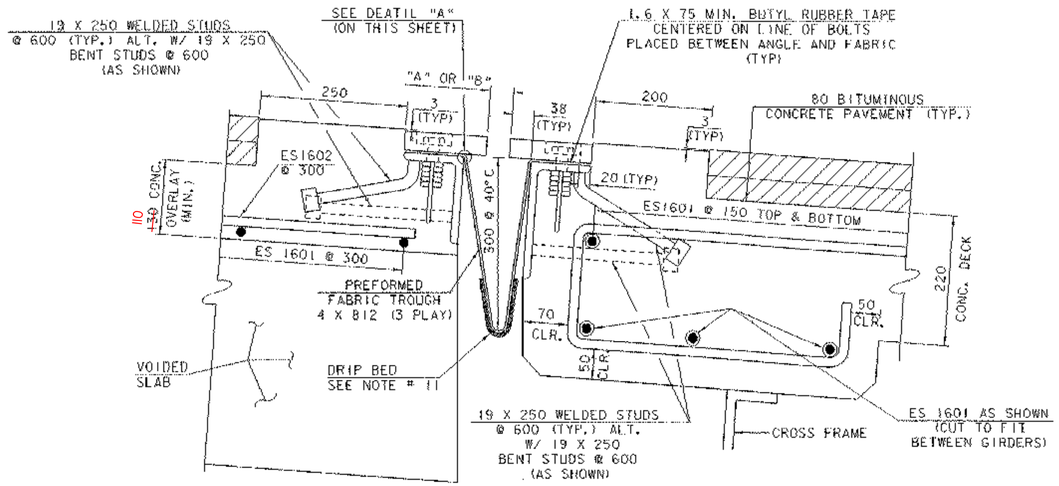
8. BRIDGE SEAT ELEVATIONS MAY BE REVISED TO ACCOMMODATE AN ALTERNATE CONFIGURATION.

9. THE BEARING TOLERANCES SHALL MEET THOSE GIVEN IN AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION DATED 1996 AND ITS LATEST REVISIONS, DIVISION II SECTION 18. THE CONTACT SURFACES OF THE CURVED BEARING SURFACES OF THE BEARING COLUMN AND SOLE PLATES SHALL MEET THE TOLERANCES AND FINISH REQUIREMENTS OF BEARING PINS AND BUSHINGS.

10. THE CURVED CONTACT SURFACES SHALL NOT BE METALIZED.

11. THE ANCHOR BOLTS SHALL MEET THE REQUIREMENTS OF A 307 GR. C. THEY SHALL BE GALVANIZED PER AASHTO M 232M/M 232.

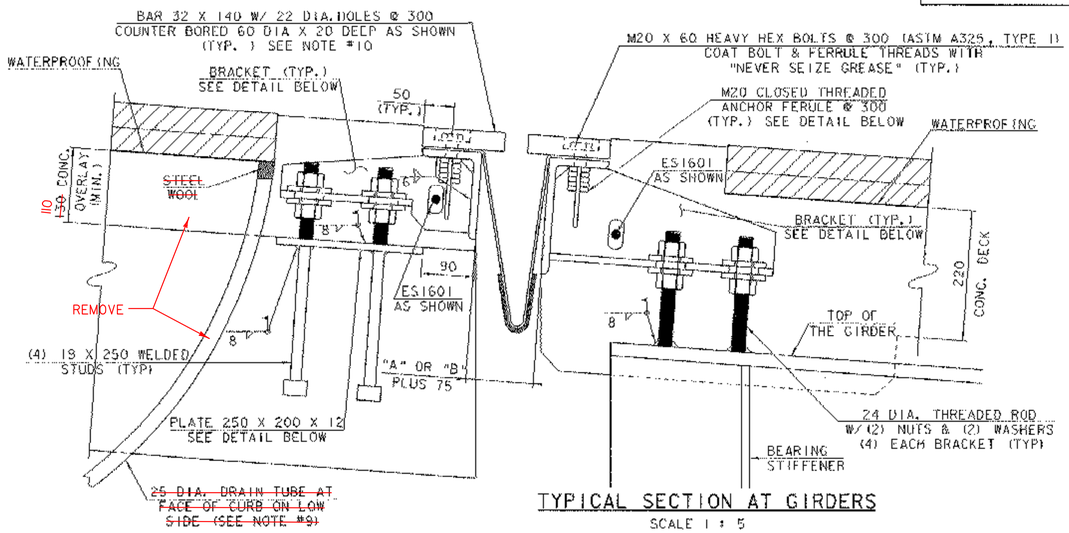
PROJECT: BETHEL	PROJECT NO.: BRF0241(33)C/2
DESIGN FILE NAME: 02c180/structures/s02c180brg.dgn	
IPARM FILE NAME: 02c180brgnotes.i	PLOT DATE: 15-APR-2005
DESIGNED BY: K. M. HIGGINS	DRAWN BY: K. M. HIGGINS
SQUAD LEADER: C. P. WILLIAMS	CHECKED BY: M. LONGSTREET
BEARING NOTES	SHEET: 43 OF 130



TYPICAL SECTION BETWEEN GIRDERS

SCALE 1 : 5

* THESE DIMENSION ARE THEORETICAL AND MAY CHANGE DEPENDING UPON THE OUTCOME OF BEAM PROFILE.



TYPICAL SECTION AT GIRDERS

SCALE 1 : 5

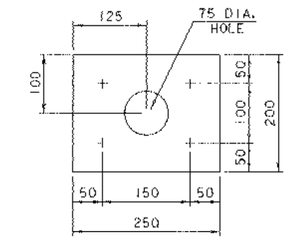
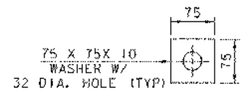


PLATE PLAN

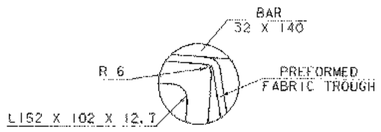
SCALE 1 : 5
(NO GALVANIZING REQUIRED)

ALL PLATES 12 mm THICK



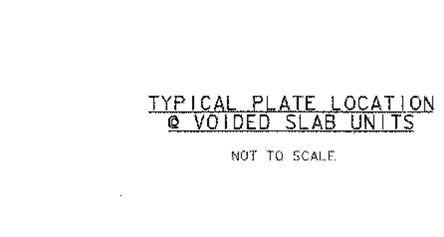
WASHER FOR BRACKET

SCALE 1 : 5



DETAIL "A"

NOT TO SCALE



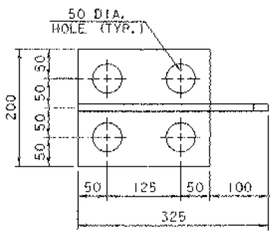
TYPICAL PLATE LOCATION @ VOIDED SLAB UNITS

NOT TO SCALE



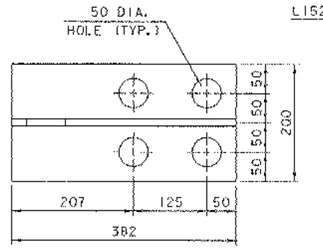
ANCHOR FERRULE

SCALE 1 : 5



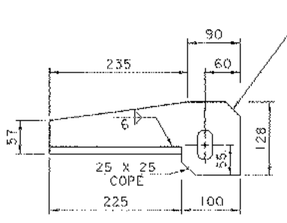
VOIDED SLAB BRACKET PLAN

SCALE 1 : 5



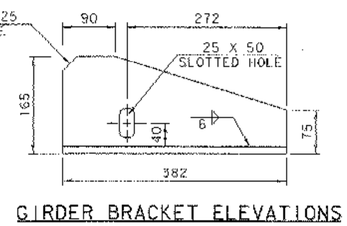
GIRDER BRAKET PLAN

SCALE 1 : 5



VOIDED SLAB BRACKET ELEVATION

SCALE 1 : 5



GIRDER BRACKET ELEVATIONS

SCALE 1 : 5

TEMP	"A" DIST.	"B" DIST.
-15° C	82	55
- 5° C	77	50
5° C	72	45
15° C	67	40
25° C	62	35
35° C	57	30
45° C	52	25

"A" IS THE SETTING BEFORE ANY DEAD LOADS ARE IN PLACE

"B" IS THE FINAL SETTING AFTER ALL DEAD LOADS ARE IN PLACE

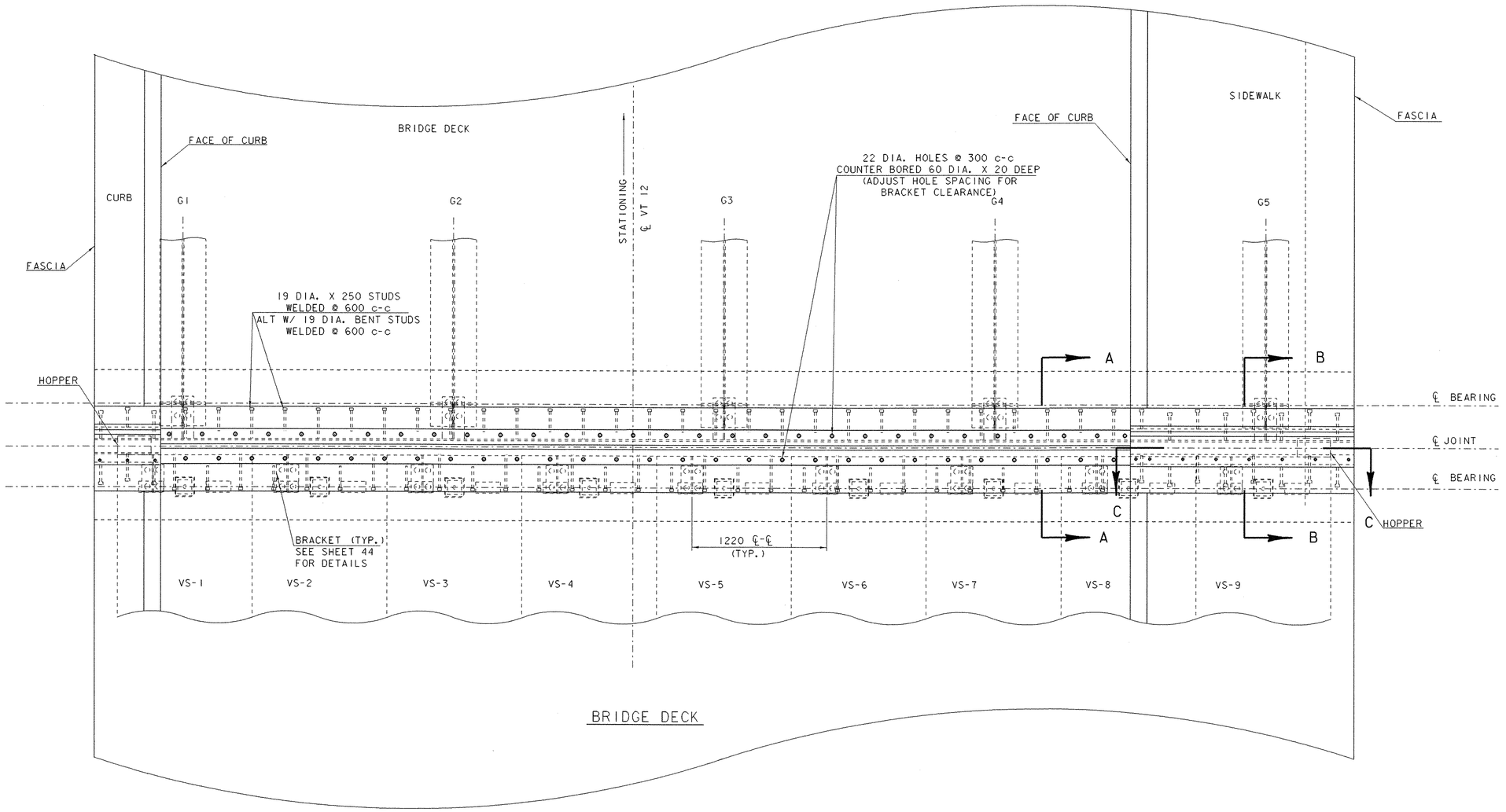
0 0.25 0.5

SCALE = 1:5

EXPANSION JOINT NOTES

1. DETAILS ON THIS SHEET ARE FOR ITEM 516.10 "BRIDGE EXPANSION JOINT".
2. PREFORMED FABRIC MATERIAL SHALL BE CONTINUOS AND SHALL CONFORM TO SUBSECTION 707.07.
3. BUTYL RUBBER TAPE SHALL CONFORM TO AASHTO SPECIFICATION M-198, TYPE 11.
4. THE FINAL FINISH OF THE EXPANSION DEVICE SHALL BE COVERED DURING THE PLACING OF THE BRIDGE DECK CONCRETE.
5. ALL STEEL COMPONENTS SHALL BE AASHTO M270/270M GRADE 250 GALVANIZED OR METALIZED AS PER SUBSECTION 506.15 (a) OR (b) UNLESS OTHERWISED SPECIFIED.
6. THE ITEM "BRIDGE EXPANSION JOINT" SHALL INCLUDE THE FABRICATION AND ERECTION OF THE COMPLETE JOINT ASSEMBLY INCLUDING ALL STEEL PLATES, BRACKETS ANGELS, WELDED STUDS OR RODS, PREFORMED FABRIC DRAIN TROUGH MATERIAL AND PLASTIC DRAIN TUBES, BUTYL RUBBER TAPE AND ANY OTHER MISCELLANEOUS MATERIAL NECESSARY TO INSTALL THE JOINT.
7. THE 102 X 203 X 12.7 AND 102 X 152 X 12.7 ANGLES SHALL BE FURNISHED AS ONE CONTINUOUS PIECE. THE 32 X 140 BARS EACH SIDE OF THE JOINT SHALL BE PROVIDED IN TWO EQUAL LENGTHS.
8. COAT CONCRETE CONTACT SURFACES WITH EPOXY BONDING COMPOUND MEETING THE REQUIREMENTS OF SUBSECTION 719.02. PAYMENT SHALL BE INCLUDED IN THE UNIT PRICE BID FOR ITEM 516.10 "BRIDGE EXPANSION JOINT".
9. A 25 DIAMETER PLASTIC DRAIN TUBE SHALL BE INSTALLED AS SHOWN AT THE FACE OF THE CURB. THE UPPER END IS TO BE PLUGGED WITH STEEL WOOL AND THE LOWER END IS TO BE EXTENDED BELOW THE BOTTOM OF THE VOIDED SLAB AND 900 mm AWAY FROM THE FACE OF THE PIER. THE DRAIN TUBES SHALL BE FASTENED TO THE VOIDED SLAB USING A METHOD APPROVED BY THE ENGINEER. THE PLASTIC DRAIN SHALL MEET REQUIREMENTS OF THE SECTION 740.01.
10. FILL COUNTERBORED HOLES WITH HOT POURED JOINT SEALER AFTER BOLT INSTALLATION. PAYMENT FOR THE WORK SHALL BE INCIDENTAL TO ITEM 516.10.
11. A DRIP BEAD OF 6 X 180 STRIP OF PREFORMED MATERIAL SHALL BE CEMENTED TO THE BOTTOM OF THE FABRIC TROUGH USING AN ADHESIVE APPROVED BY THE MANUFACTURER. THE DRIP BEAD SHALL BE APPLIED 25 mm FROM THE DOWN SPOUT ENDS OF THE TROUGH.
12. FABRIC TROUGH SHALL BE THOROUGHLY CLEANED AND FLUSHED AFTER PAVING OPERATIONS.
13. THE EXPANSION JOINT SHALL BE SHOP ASSEMBLED AND SHIPPED AS ONE UNIT.
14. THE THREADED RODS SHALL MEET THE REQUIREMENTS OF A 307, GR.C.

PROJECT: BETHEL	PROJECT NO.: BRF0241 (33) C/2
DESIGN FILE NAME: 02c180/structure/s02c180expjoint.dgn	
JPARM FILE NAME: expjoint1.j	PLOT DATE: 15-APR-2005
DESIGNED BY: M. GAGULIC	DRAWN BY: M. GAGULIC
SQUAD LEADER: C. P. WILLIAMS	CHECKED BY: K. M. HIGGINS
EXPANSION JOINT TYPICAL SECTION	SHEET: 44 OF 130



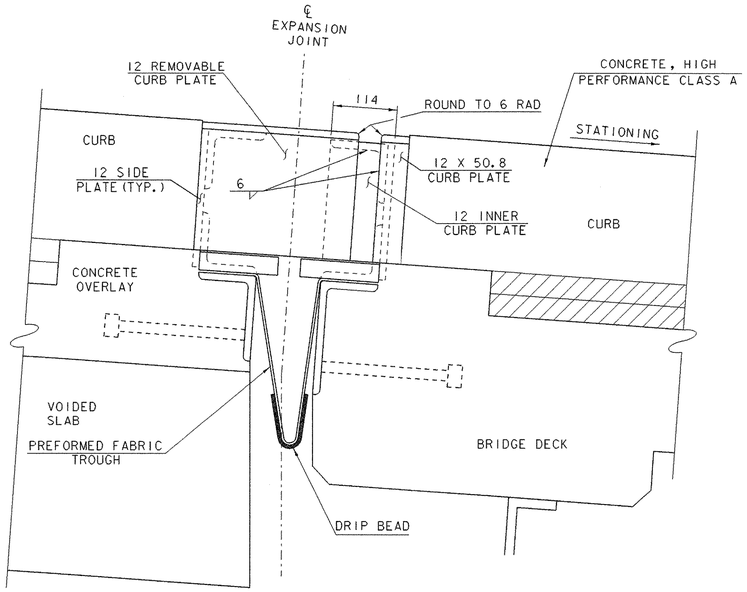
EXPANSION JOINT @ PIER

0 1 2

SCALE = 1:20

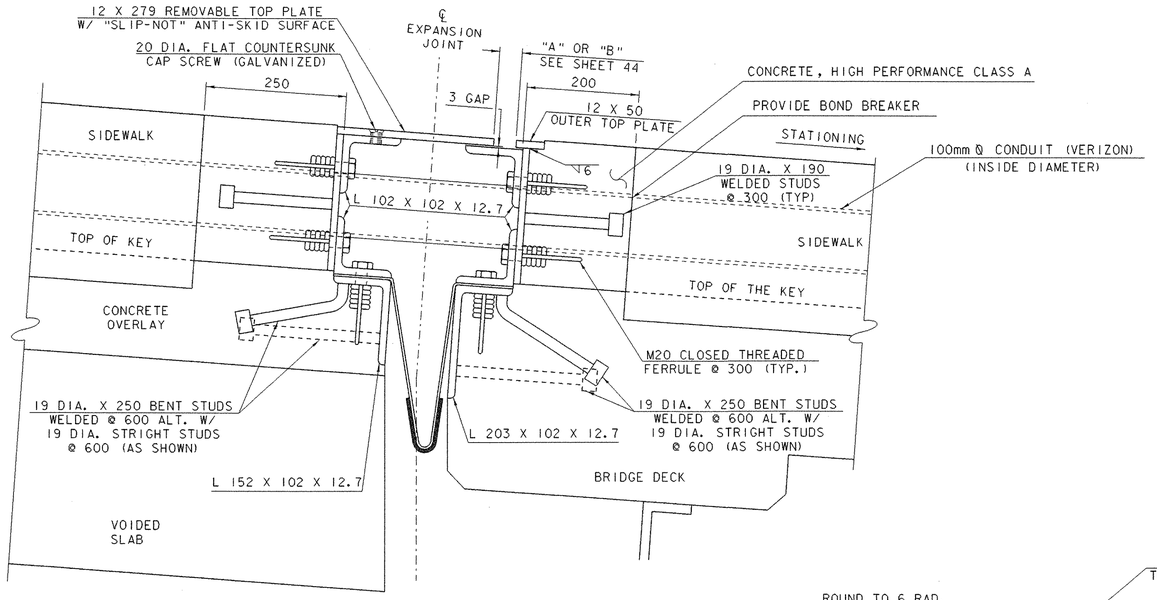
NOTE: SEE SHEET 46 FOR SECTIONS A-A, B-B & C-C

PROJECT: BETHEL	PROJECT NO.: BRF0241(33)C/2
DESIGN FILE NAME: 02c180/structure/s02c180expjoint.dgn	
IPARM FILE NAME: expjoint2.i	PLOT DATE: 15-APR-2005
DESIGNED BY: M. GAGULIC	DRAWN BY: M. GAGULIC
SQUAD LEADER: C. P. WILLIAMS	CHECKED BY: K. M. HIGGINS
EXPANSION JOINT PLAN	SHEET: 45 OF 130



SECTION A - A

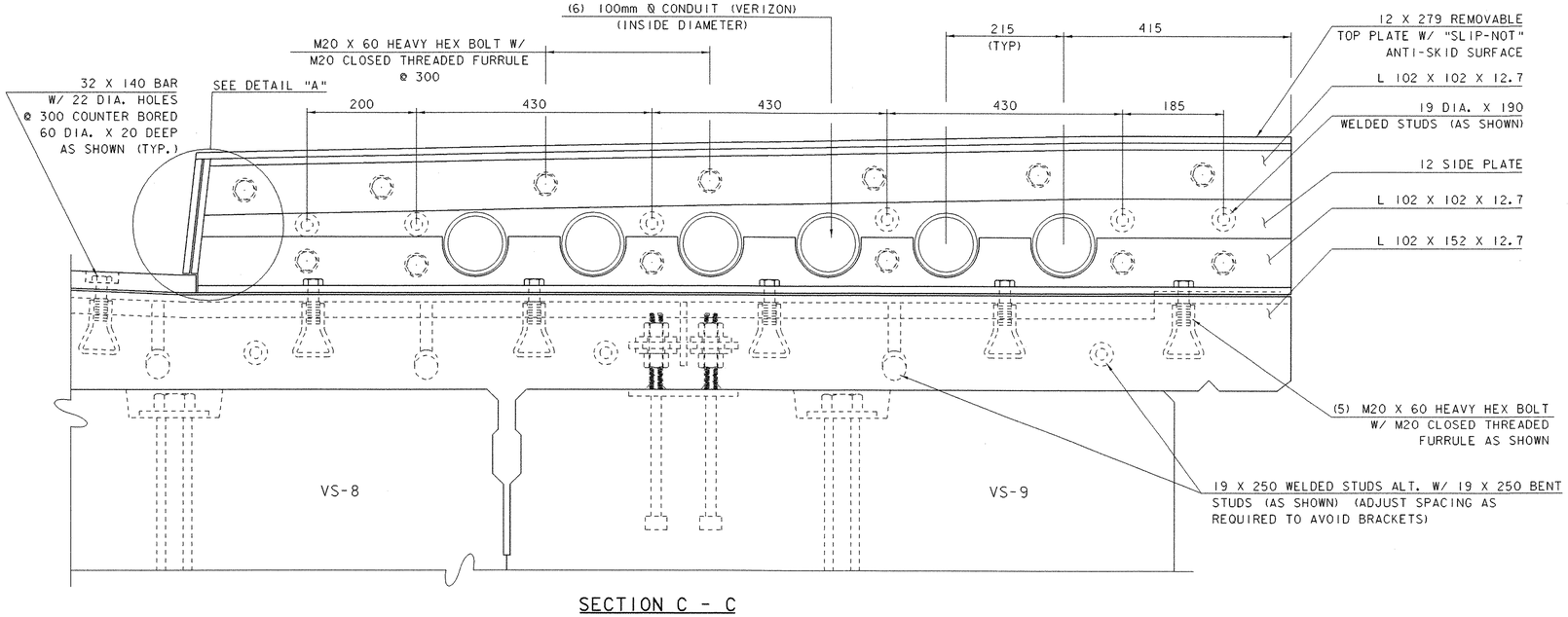
SCALE 1 : 5



SECTION B - B

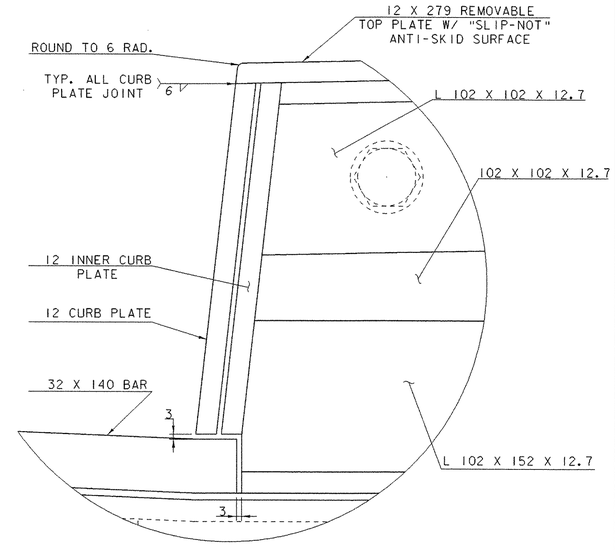
SCALE 1 : 5

NOTE: * PIER #1 SIDEWALK ARE DETAILED ON THIS SHEET. PIER #1 CURB PLATES ARE SIMILAR.



SECTION C - C

SCALE 1 : 5



DETAIL "A"

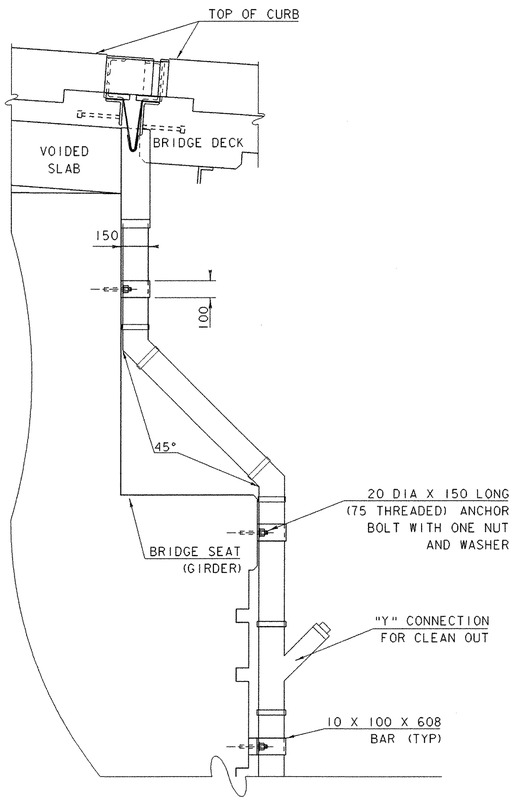
NOT TO SCALE

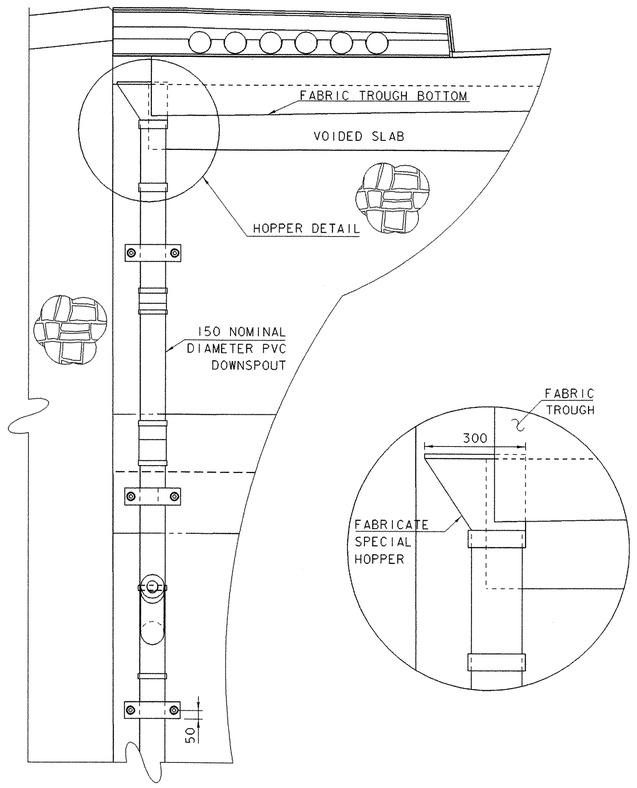
0 0.25 0.5

SCALE = 1:5

PROJECT: BETHEL	PROJECT NO.: BRF0241 (33) C/2
DESIGN FILE NAME: 02c180/structure/s02c180expjoint.dgn	
IPARM FILE NAME: expjoint3.i	PLOT DATE: 15-APR-2005
DESIGNED BY: M. GAGULIC	DRAWN BY: M. GAGULIC
SQUAD LEADER: C. P. WILLIAMS	CHECKED BY: K. M. HIGGINS
CURB PLATE DETAILS	SHEET: 46 OF 130

Metric



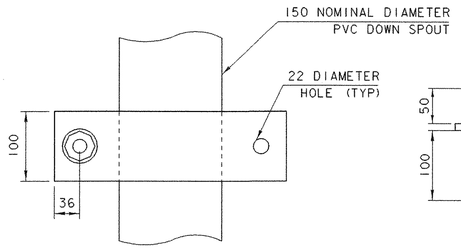


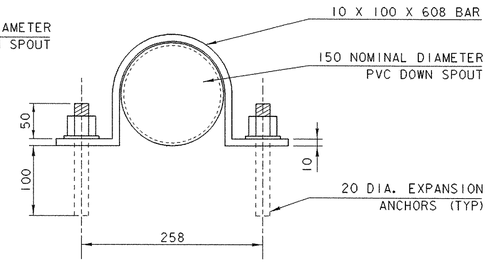
NOTE: DOWNSPOUT LOCATION PLAN ON THE CURB SIDE IS SIMILAR TO THE SIDEWALK DETAIL.

HOPPER DETAIL

DOWNSPOUT NOTES

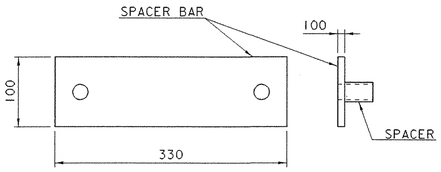
1. ALL PLATES, BARS, AND ANGLES SHALL CONFORM TO AASHTO M 270M/M 270 GRADE 250 AND SHALL BE GALVANIZED PER AASHTO M 111M/M 111.
2. ALL BOLTS AND RELATED HARDWARE SHALL BE ASTM A-307 AND SHALL BE GALVANIZED IN ACCORDANCE WITH AASHTO M 232M/M 232.
3. HOPPER, DOWNSPOUT, BAR, AND DOWNSPOUT JOINTS SHALL BE PAID FOR UNDER THE ITEM 506.80 "DRAIN TROUGH (MOD)".
4. REINFORCING STEEL IN PIER SHALL BE LOCATED BEFORE INSTALLING EXPANSION ANCHORS FOR DOWNSPOUT. ANCHORS SHALL BE LOCATED 25 FROM PIER REINFORCING.
5. SEE SPECIAL PROVISIONS FOR MORE INFORMATION.





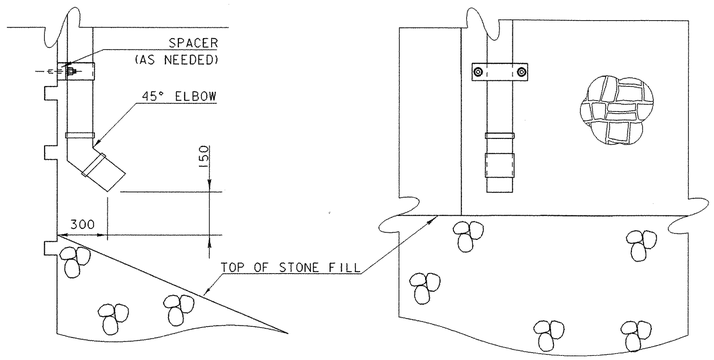
DETAIL FOR ATTACHING DOWNSPOUT TO PIER (TYP)

NTS



SPACER DETAIL

NOTE: SPACER BAR WILL BE A 10 X 100 X 330 BAR AND MADE OF THE SAME MATERIAL AS THE DOWNSPOUT BRACKETS. THE SPACERS BEHIND THE SPACER BAR SHALL BE MADE OF GALVANIZED PIPE WITH AN INSIDE DIAMETER OF 22mm AND A MINIMUM WALL THICKNESS OF 3mm. USE SPACER BAR AND SPACERS AS NEEDED. SPACERS ARE TO BE CUT TO LENGTH IN FIELD.

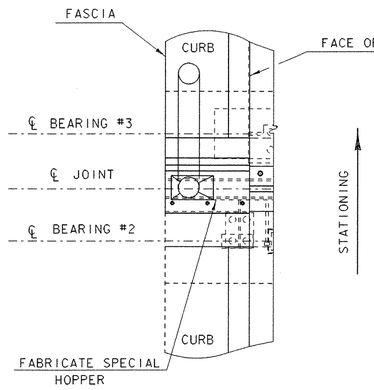


SECTION A - A

NTS

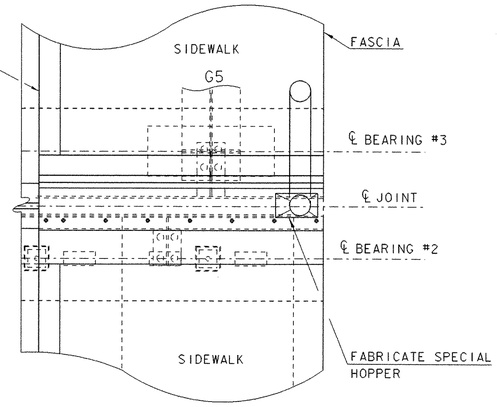
SECTION B - B

NTS



PLAN VIEW OF DOWNSPOUT LEFT

NTS



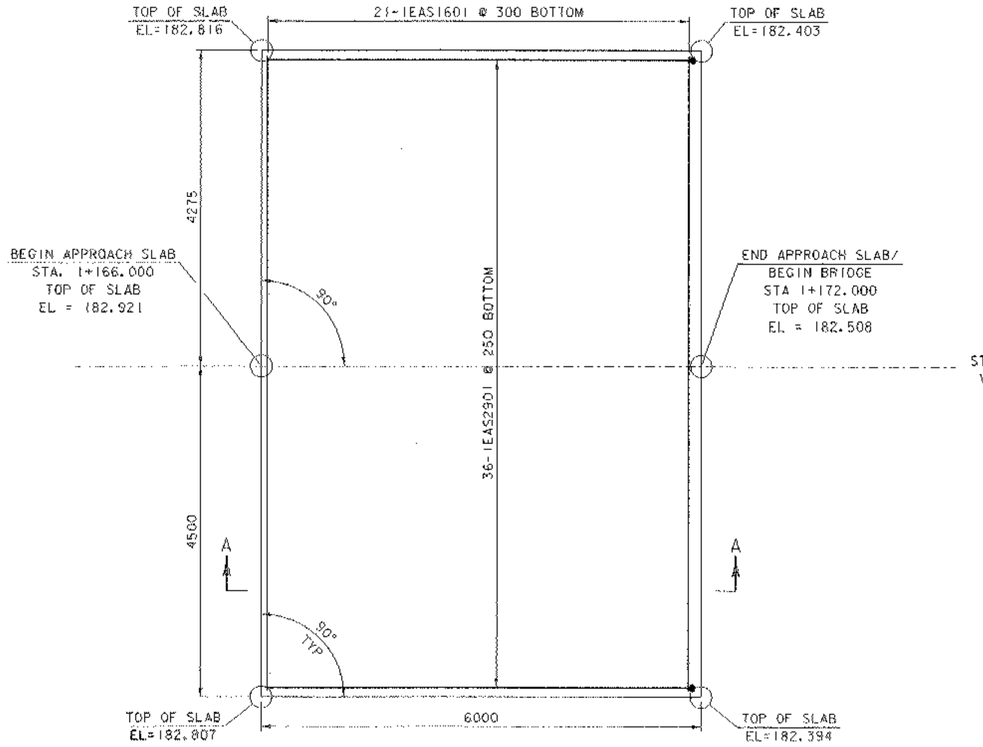
PLAN VIEW OF DOWNSPOUT RIGHT

NTS

DOWNSPOUT LOCATION PLAN

NOT TO SCALE

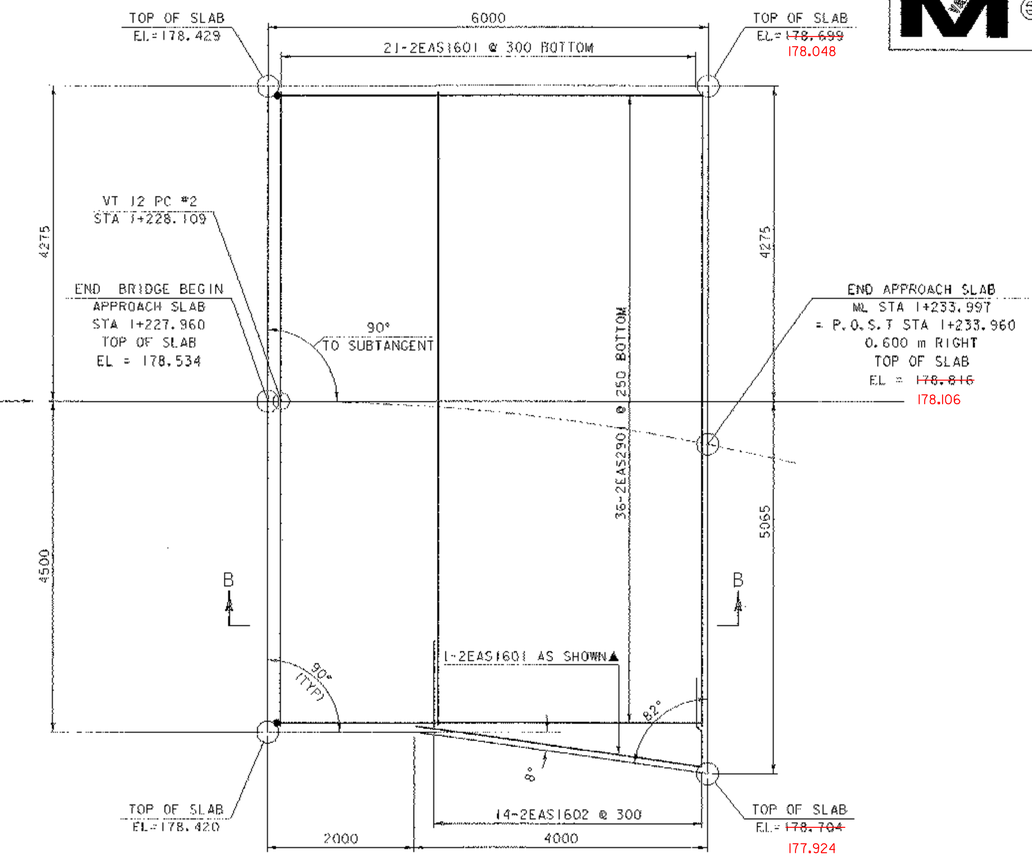
PROJECT: BETHEL	PROJECT NO.: BRF 0241 (33) C/2
DESIGN FILE NAME: 02c180/structure/s02c180expjoint.dgn	
IPARM FILE NAME: downspout.i	PLOT DATE: 15-APR-2005
DESIGNED BY: H. SALLS	DRAWN BY: H. SALLS
SQUAD LEADER: C. P. WILLIAMS	CHECKED BY: M. GAGULIC
DOWNSPOUT DETAIL	SHEET: 47 OF 130



APPROACH SLAB No. 1 PLAN

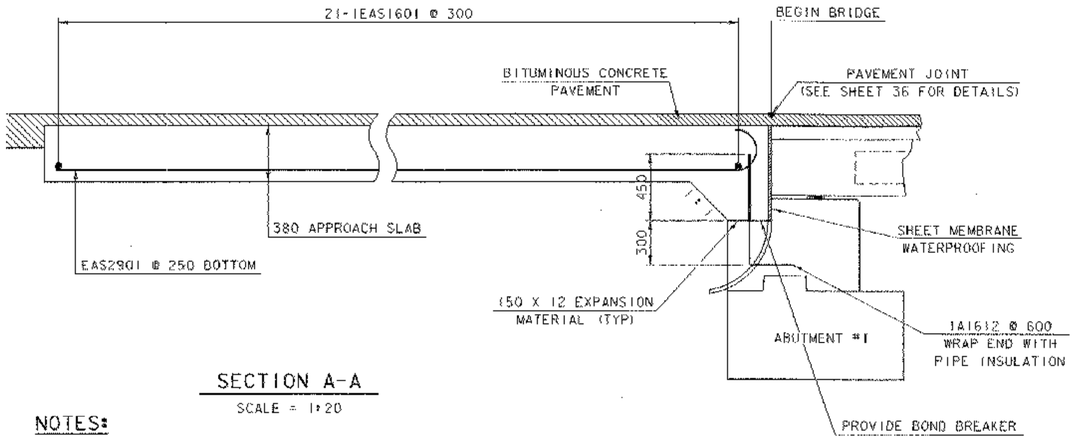
SCALE = 1:40

STATIONING
VT RT 12



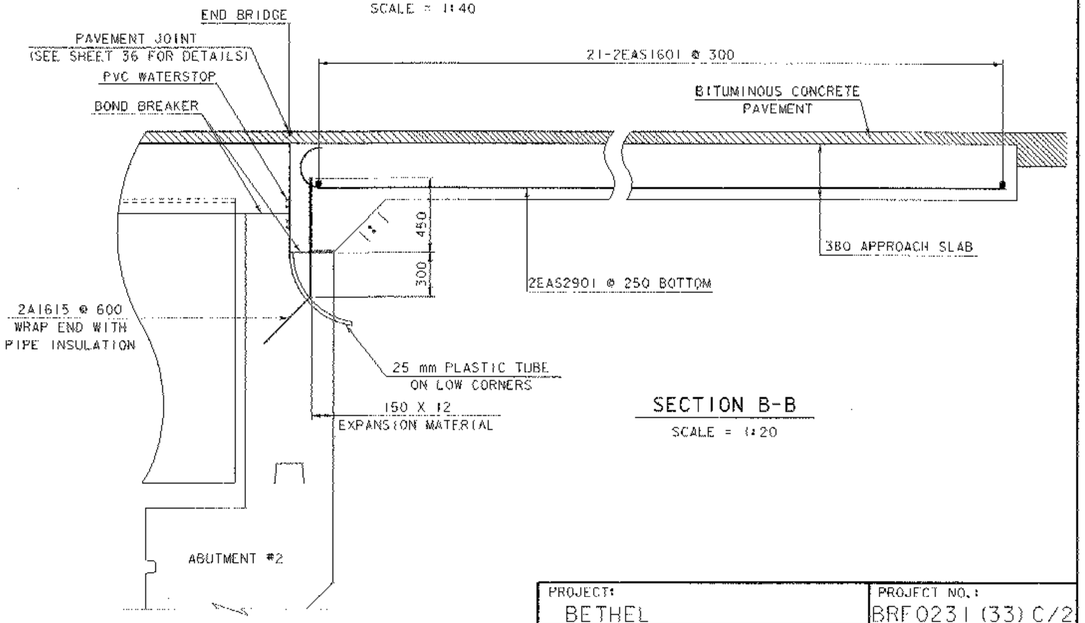
APPROACH SLAB No. 2 PLAN

SCALE = 1:40



SECTION A-A

SCALE = 1:20



SECTION B-B

SCALE = 1:20

NOTES:

80 CLR. UNLESS OTHERWISE SPECIFIED ON THE PLANS.

ALL LAPS SHALL BE 660 UNLESS NOTED OTHERWISE

▲ = CUT TO FIT IN FIELD

ALL REINFORCING STEEL SHALL BE EPOXY COATED.

WATERPROOFING SHALL NOT BE APPLIED TO APPROACH SLABS

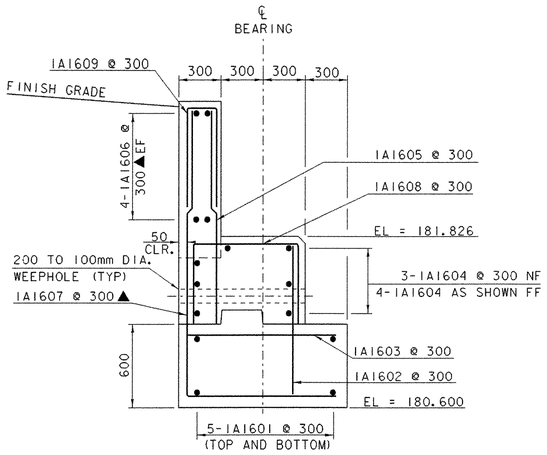
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SCALE = 1:40

0 1 2

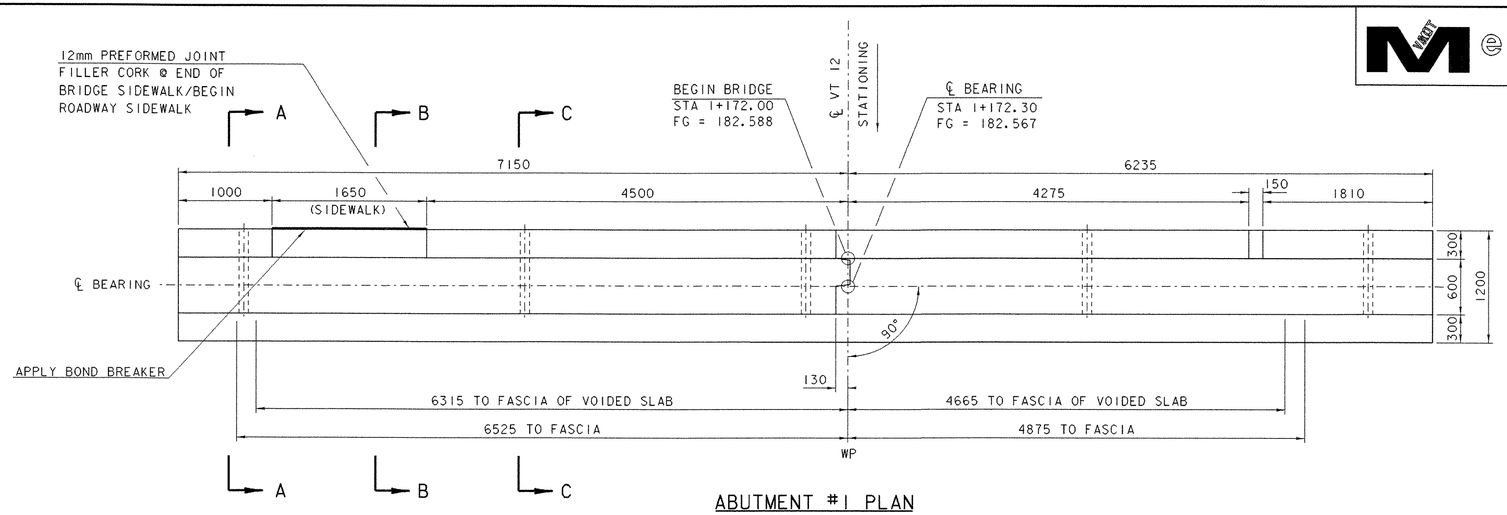
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PROJECT: BETHEL	PROJECT NO.: BRF0231(33)C/2
DESIGN FILE NAME: 02c180/structures/s02c180sup.dgn	
IPARM FILE NAME: s02c180apps1ab.i	PLOT DATE: 15-APR-2005
DESIGNED BY: K. M. HIGGINS	DRAWN BY: K. M. HIGGINS
SQUAD LEADER: C. P. WILLIAMS	CHECKED BY: E. L. RUSTAY
APPROACH SLAB DETAILS	SHEET: 48 OF 130



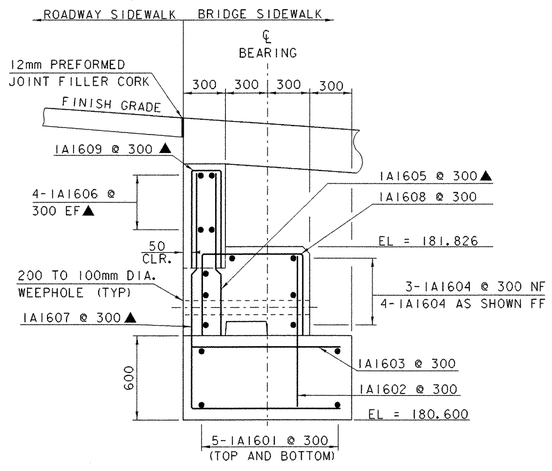
ABUTMENT #1 SECTION A-A

SCALE 1 : 20



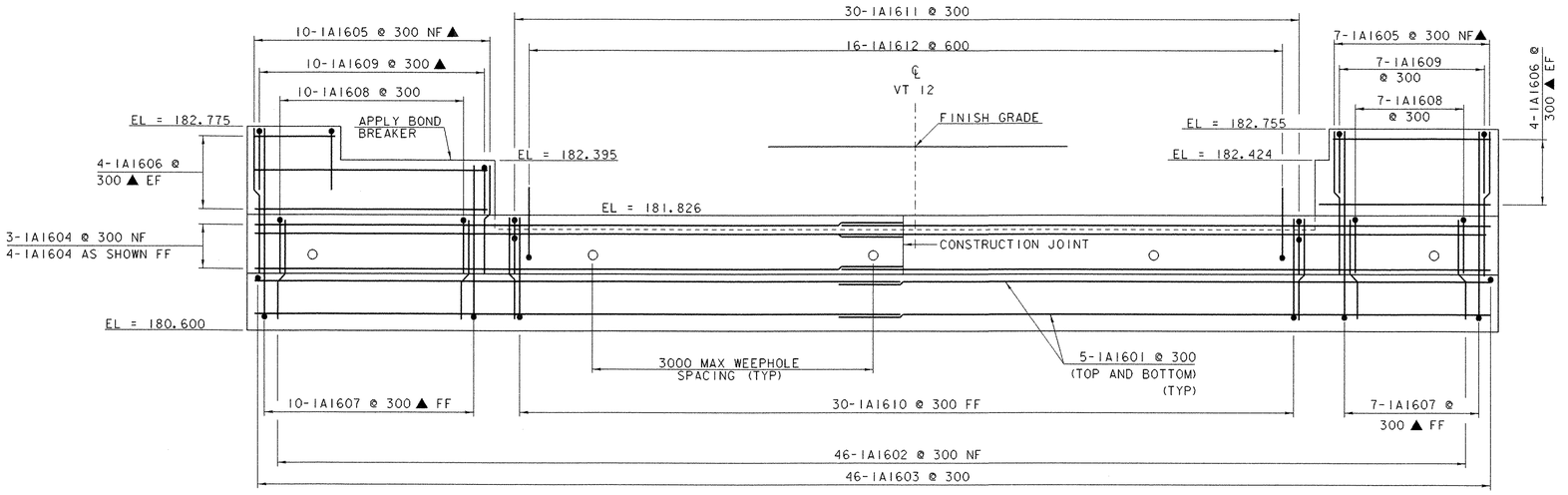
ABUTMENT #1 PLAN

SCALE 1 : 30



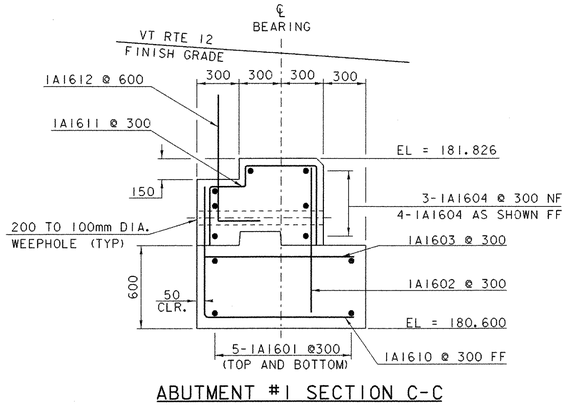
ABUTMENT #1 SECTION B-B

SCALE 1 : 20



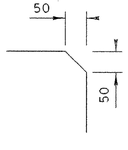
ABUTMENT #1 ELEVATION

SCALE 1 : 30



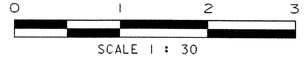
ABUTMENT #1 SECTION C-C

SCALE 1 : 20

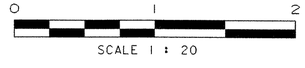


DETAIL "E"

NTS



SCALE 1 : 30



SCALE 1 : 20

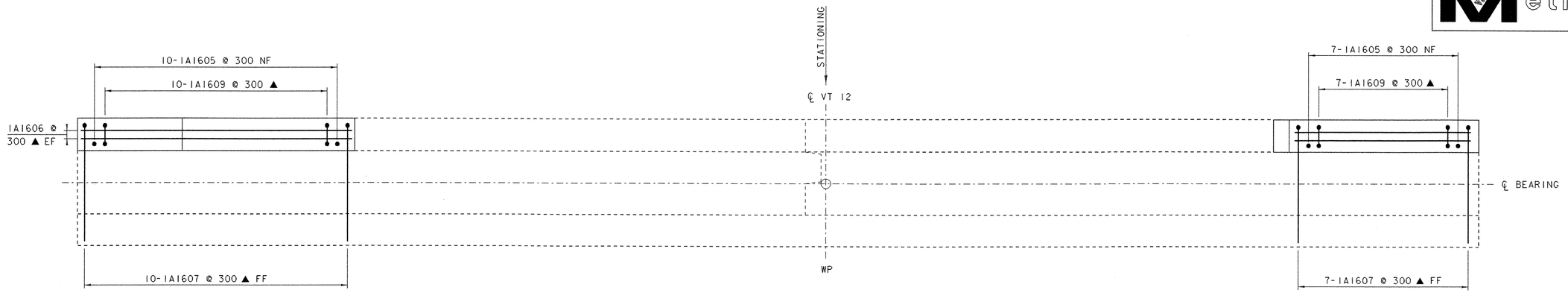
NOTE:

NF = NEAR FACE
FF = FAR FACE
EF = EACH FACE
▲ = CUT TO FIT IN FIELD

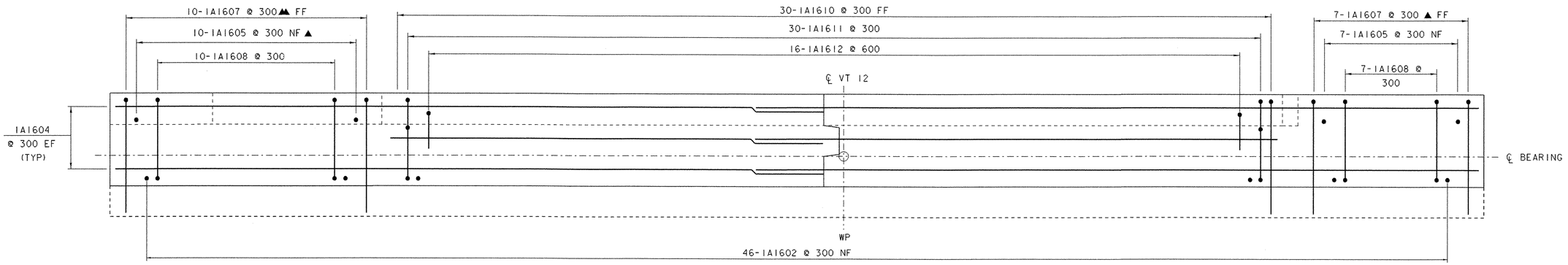
80 CLR. UNLESS OTHERWISE SPECIFIED ON THE PLANS.

ALL LAPS 660 UNLESS OTHERWISE SPECIFIED ON PLANS.

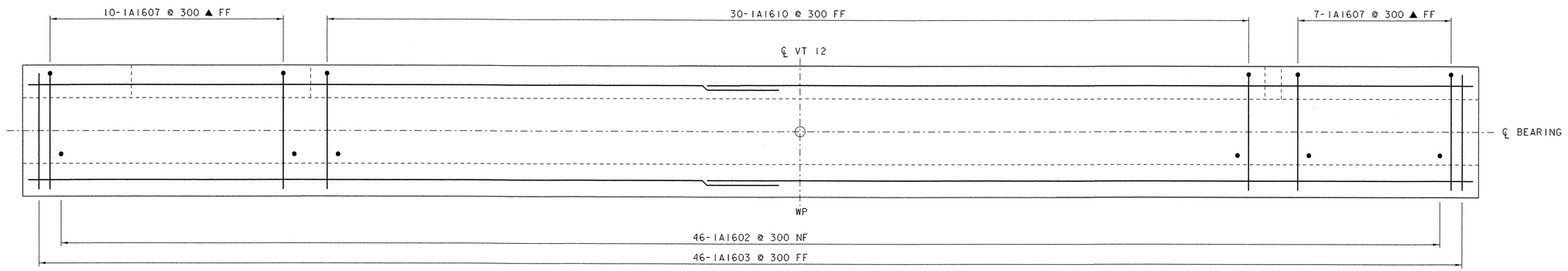
PROJECT: BETHEL	PROJECT NO.: BRF0241 (33) C/2
DESIGN FILE NAME: 02c180/structure/s02c180abut1.dgn	
IPARM FILE NAME: s02c180abut1.i	PLOT DATE: 15-APR-2005
DESIGNED BY: M. GAGULIC	DRAWN BY: M. GAGULIC
SQUAD LEADER: C.P. WILLIAMS	CHECKED BY: K.M. HIGGINS
ABUTMENT#1 PLAN + TYPICAL SECTION SHEET: 49 OF 130	



PLAN VIEW
ABUTMENT #1 BACKWALL



PLAN VIEW
ABUTMENT #1 STEM



PLAN VIEW
ABUTMENT #1 FOOTING

NOTE:

NF = NEAR FACE
FF = FAR FACE
EF = EACH FACE
▲ = CUT TO FIT IN FIELD

80 CLR. UNLESS OTHERWISE SPECIFIED ON THE PLANS.

ALL LAPS 660 UNLESS OTHERWISE SPECIFIED ON PLANS.

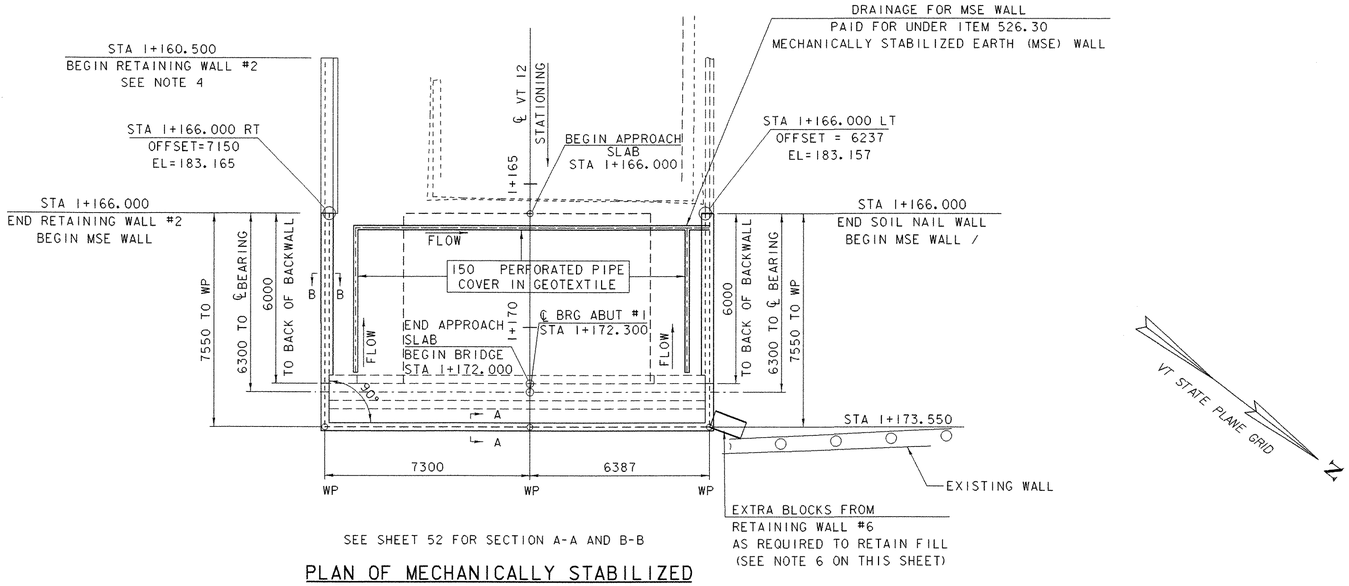
0 1 2
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PROJECT:	PROJECT NO.:
BETHEL	BRF0241(33)C/2
DESIGN FILE NAME: 02c180/structure/s02c180abut1.dgn	
IPARM FILE NAME: s02c180ab1det.i	PLOT DATE: 15-APR-2005
DESIGNED BY: M. GAGULIC	DRAWN BY: M. GAGULIC
SQUAD LEADER: C.P. WILLIAMS	CHECKED BY: K.M. HIGGINS
ABUTMENT #1 REINFORCING DETAILS	SHEET: 50 OF 130

NOTE: WP = MSE WALL WORKING POINTS ALONG FRONT FACE OF WALL.
ABUTMENT WORKING POINTS ARE NOT SHOWN ON THIS SHEET.

NOTES:

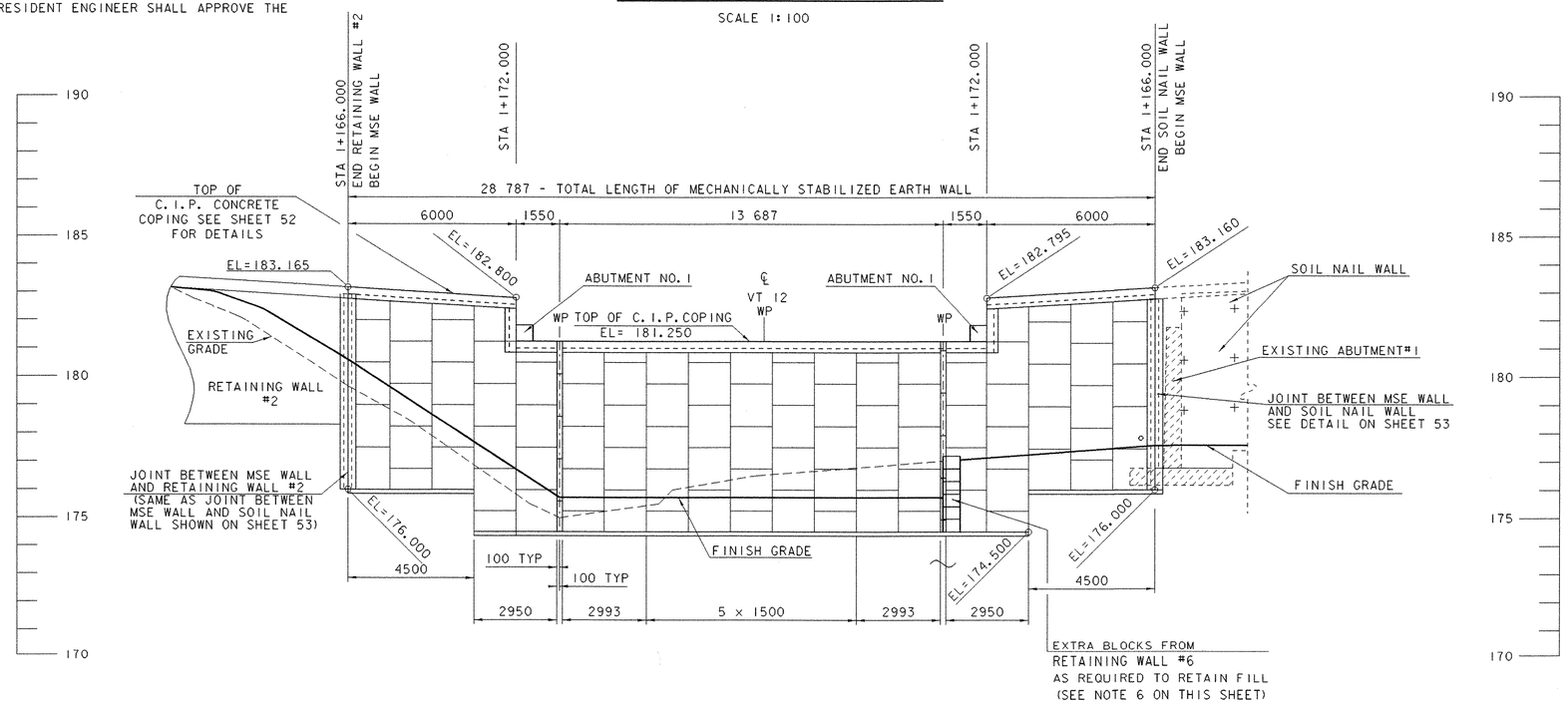
1. THE ELEVATIONS SHOWN ARE TO THE TOP OF LEVELING PAD AND THE BOTTOM OF THE MSE WALL. THE LEVELING PAD SHALL BE INSTALLED LEVEL.
2. MSE WALL PANELS ARE SHOWN NOMINALLY AT 1500 x 1500.
3. SLIP JOINTS ARE NOT SHOWN ON THE ELEVATION, BUT ARE REQUIRED AT ALL WALL INTERSECTIONS THAT FORM ANGLES. ADDITIONAL SLIP JOINTS SHALL BE PLACED AS REQUIRED BY THE MSE WALL SUPPLIER.
4. CONTRACTOR MAY CHOOSE TO EXTEND THE MSE WALL INSTEAD OF CONSTRUCTING RETAINING WALL #2. IF THIS ACTION IS TAKEN, PART OF THE OLD ABUTMENT #1 MAY HAVE TO BE REMOVED. REVISED MSE WALL DETAILS SHALL BE SUBMITTED TO THE PROJECT MANAGER FOR APPROVAL.
5. IF THE CONTRACTOR CHOOSES TO EXTEND THE MSE WALL, THE STRUCTURE SHALL BE PAID FOR AS MSE WALL. THE LEVELING PAD ELEVATION SHALL BE AT LEAST 1200 mm BELOW FINISH GRADE.
6. THE CONTRACTOR MAY CHOOSE AN ALTERNATIVE METHOD FOR RETAINING THE FILL BETWEEN THE CORNER OF THE MSE WALL AND THE EXISTING WALL ALONG THE RAILROAD TRACKS. THE RESIDENT ENGINEER SHALL APPROVE THE METHOD CHOSEN.



SEE SHEET 52 FOR SECTION A-A AND B-B

PLAN OF MECHANICALLY STABILIZED EARTH WALL @ ABUTMENT NO. 1

SCALE 1:100

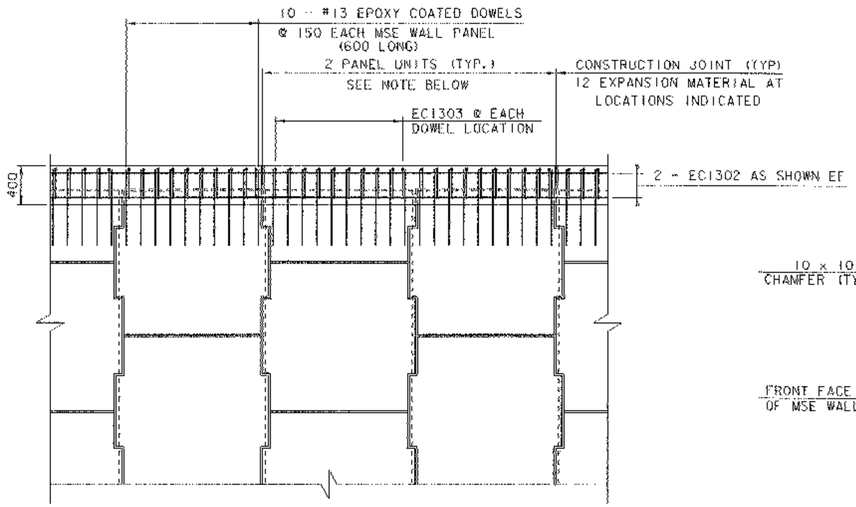


EXPANDED ELEVATION ALONG FACE OF MECHANICALLY STABILIZED EARTH WALL @ ABUTMENT NO. 1

SCALE 1:100

0 1 2 4 6 8 10
SCALE = 1:100

PROJECT: BETHEL	PROJECT NO.: BRF0241(33)C/2
DESIGN FILE NAME: 02c180/structure/s02c180msedet.dgn	
IPARM FILE NAME: s02c180msedet1.i	PLOT DATE: 15-APR-2005
DESIGNED BY: M. GAGULIC	DRAWN BY: M. GAGULIC
SQUAD LEADER: C.P. WILLIAMS	CHECKED BY: K.M. HIGGINS
MSE WALL PLAN & ELEVATION	SHEET: 51 OF 130

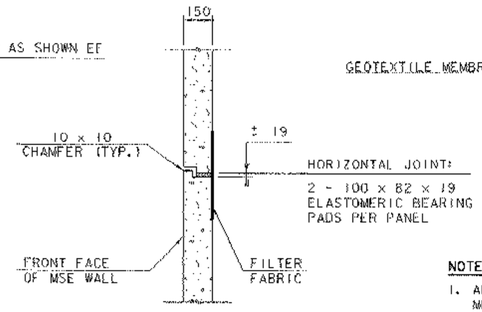


C.I.P. CONCRETE COPING
PARTIAL ELEVATION - FRONT FACE

NTS

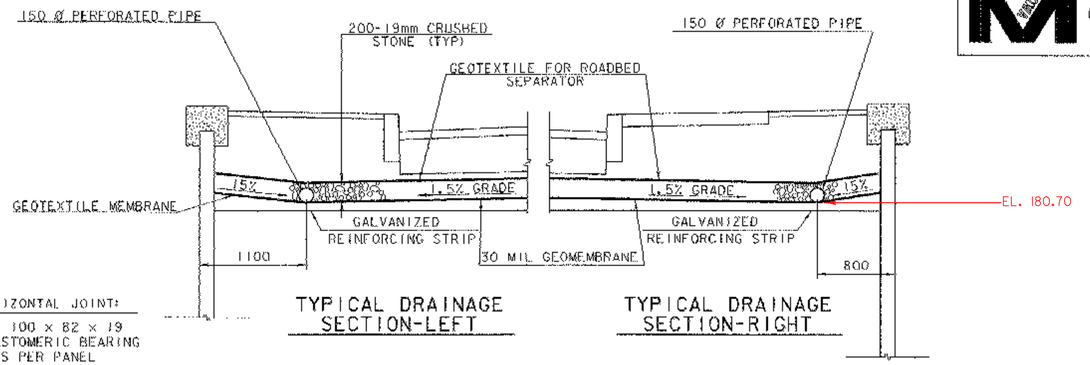
NOTE:

JOINTS IN C.I.P CONCRETE COPING SHALL BE AT 2 PANEL INTERVALS AND COINCIBE APPROXIMATELY WITH PANEL JOINTS. REINFORCING STEEL SHALL BE STOPPED 80mm SHORT OF EITHER SIDE OF CONSTRUCTION AND EXPANSION JOINTS. COMPRESSIBLE CORK BOND BREAKER MATERIAL SHALL BE PLACED BETWEEN THE PANELS AND THE COPING TO PREVENT CRACKING.



SECTION C-C

NTS

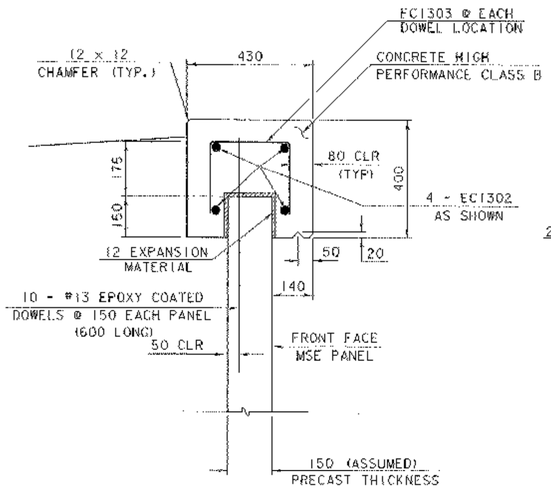


TYPICAL DRAINAGE SECTION-LEFT

TYPICAL DRAINAGE SECTION-RIGHT

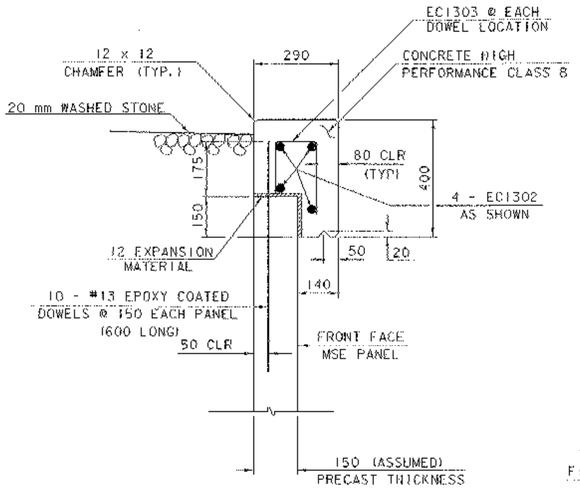
NOTES:

1. ALL MATERIALS FOR DRAINAGE INCLUDING PVC PIPE, ELBOWS, GEOTEXTILE MEMBRANE, GEOTEXTILE ROADBED SEPARATOR, CRUSHED STONE AND INSTALLATION SHALL BE PAID FOR UNDER THE ITEM 526.30 "MECHANICALLY STABILIZED EARTH (MSE) WALL".
2. GEOMEMBRANE SHALL BE PROPERLY SEALED AROUND VERTICAL PVC PIPE TO PREVENT ANY FLUID LEACHING THROUGH SELECTED BACKFILL. CONTRACTOR SHALL SUBMIT PLANS FOR APPROVAL PRIOR TO INSTALLING THIS CONNECTION.
3. GEOTEXTILE FOR ROAD BED SEPARATOR SHALL MEET SPECIFICATION AS PER VAOT ITEM 649.11



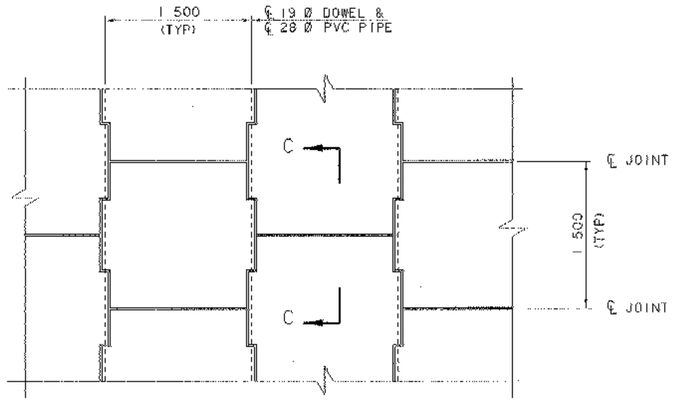
SECTION B-B

NTS



SECTION A-A

NTS



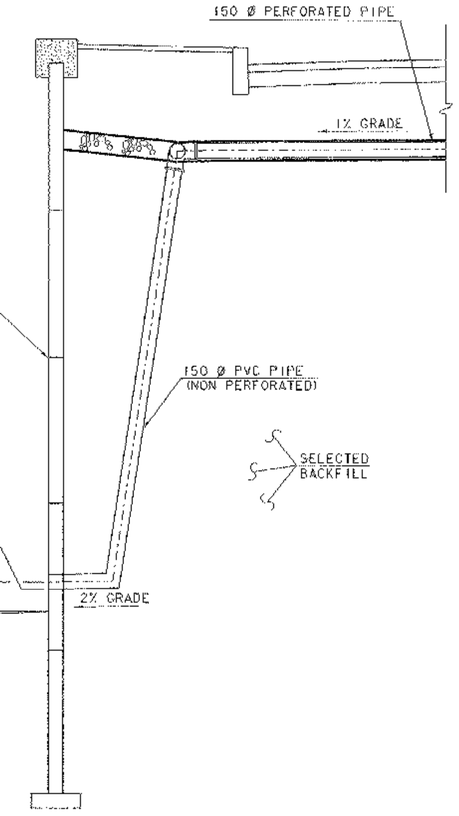
TYPICAL PANEL LAYOUT
PARTIAL ELEVATION - FRONT FACE

NTS

CAST-IN-PLACE CONCRETE COPING

NOTES:

1. THE #13 DOWELS SHALL BE CAST INTO THE PRECAST MSE WALL PANELS. THE DOWELS SHALL BE GRADE 420 EPOXY COATED REINFORCING STEEL.
2. THE CONTRACTOR SHALL EXERCISE CARE NOT TO STAIN THE MSE WALL PANELS WHEN PLACING CAST-IN-PLACE CONCRETE. ANY STAINING AS A RESULT OF CONCRETE PLACEMENT SHALL BE REMOVED AT THE CONTRACTOR'S EXPENSE.
3. THE DRILLING OF HOLES IN THE PRECAST MSE WALL PANELS FOR THE PURPOSE OF FORMING SHALL NOT BE ALLOWED.



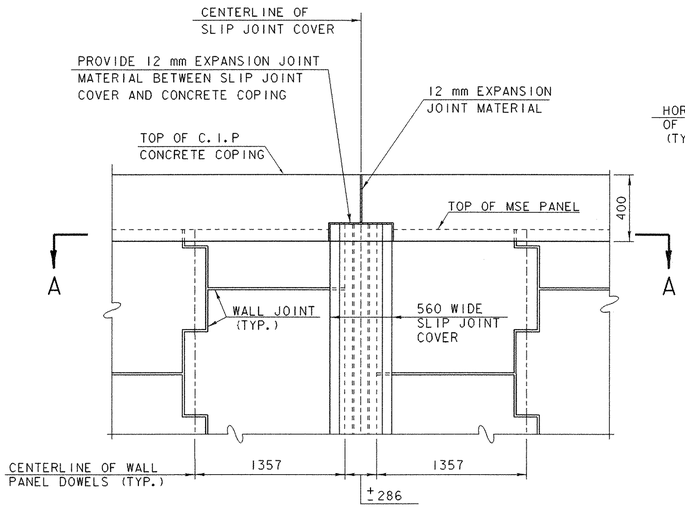
DRAINAGE BEHIND MSE WALL
STA. 1+166.500

DETAILS ON THIS SHEET ARE NOT TO SCALE

NOTE:

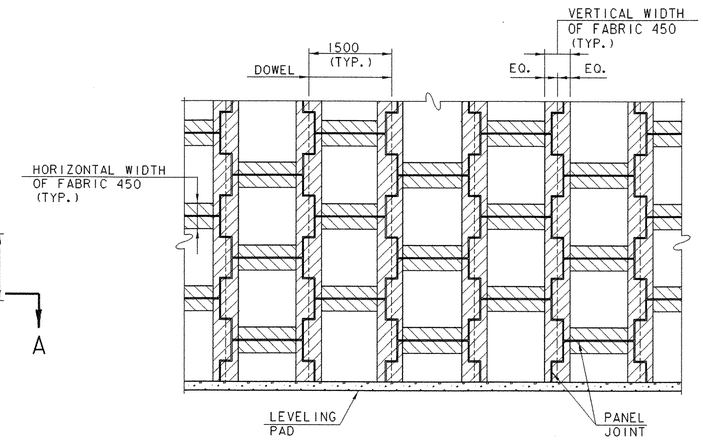
NF = NEAR FACE
FF = FAR FACE
EF = EACH FACE
▲ = CUT TO FIT IN FIELD
80 CLR. UNLESS OTHERWISE SPECIFIED ON THE PLANS.

PROJECT: BETHEL	PROJECT NO.: BRF0241(33)C/2
DESIGN FILE NAME: 02c180/structure/s02c180msedet.dgn	
IPARM FILE NAME: s02c180det2.i	PLOT DATE: 15-APR-2005
DESIGNED BY: M. GAGULIC	DRAWN BY: M. GAGULIC
SQUAD LEADER: C.P. WILLIAMS	CHECKED BY: K.M. HIGGINS
MSE WALL DETAILS	SHEET: 52 OF 130



PARTIAL ELEVATION - FRONT FACE

NTS



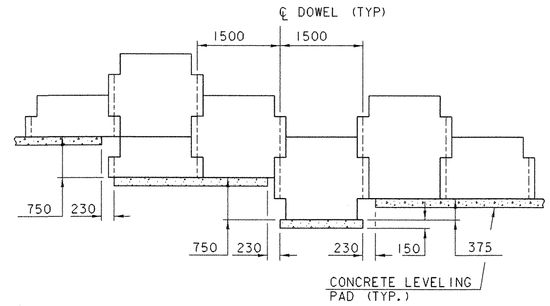
FILTER FABRIC DETAIL
PARTIAL ELEVATION - BACK FACE

NTS

NOTE:

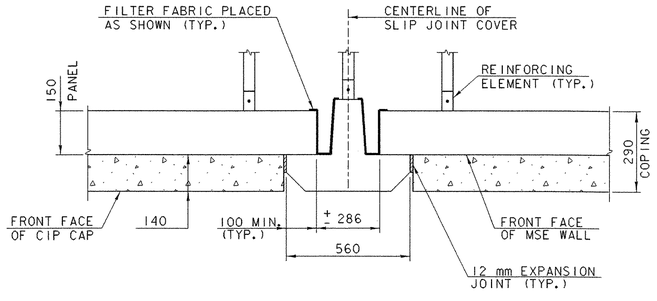
STRIPS OF FILTER FABRIC, MEETING VAOT STANDARD SPECIFICATION 720 FOR GEOTEXTILE UNDER STONE FILL, SHALL BE PLACED ON BACK FACE OF PANEL OVER PANEL JOINTS. FILTER CLOTH SHALL BE ADHERED TO BACK FACE OF PANELS USING AN ADHESIVE COMPOUND SUPPLIED BY THE MANUFACTURER AND APPROVED BY THE PROJECT MANAGER.

THE CONTRACTOR SHALL PROVIDE THE RESIDENT ENGINEER WITH THE MANUFACTURERS TECHNICAL DATA SHEET AND APPLICATION INSTRUCTIONS FOR THE ADHESIVE COMPOUND.



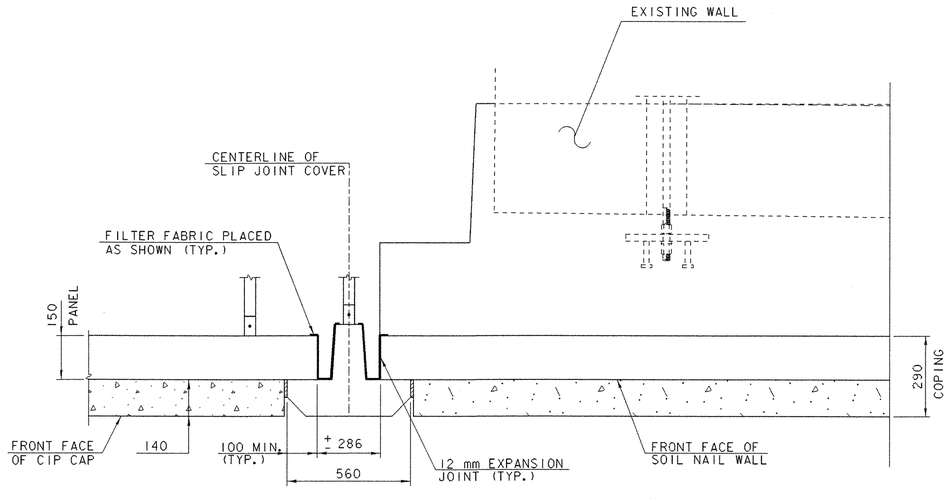
TYPICAL LEVELING PAD STEP DETAIL

NTS



SLIP JOINT COVER PLAN VIEW A-A

NTS



SLIP JOINT COVER BEETWEEN MSE WALL AND SOIL NAIL WALL / RETAINING WALL #2
PLAN VIEW

NTS

PROJECT: BETHEL	PROJECT NO.: BRF0241(33)C/2
DESIGN FILE NAME: 02c180/structure/s02sc180msedet.dgn	
IPARM FILE NAME: s02c180det3.i	PLOT DATE: 15-APR-2005
DESIGNED BY: M. GAGULIC	DRAWN BY: M. GAGULIC
SQUAD LEADER: C.P. WILLIAMS	CHECKED BY: K.M. HIGGINS
MSE WALL DETAILS	SHEET: 53 OF 130

Metric

MECHANICALLY STABILIZED EARTH WALL NOTES

WALL DESIGN

1. FINAL DRAWINGS SHOWING PROPOSED PANEL SIZE, THE REQUIRED NUMBER OF REINFORCEMENT ELEMENTS PER PANEL, THE REINFORCEMENT ELEMENT LENGTHS, REINFORCEMENT ELEMENT LAYOUT, CONCRETE PANEL REINFORCEMENT DETAILS, PANEL TIE-IN DETAILS WITH COPING AND LEVELING PAD SHALL BE PREPARED BY THE CONTRACTOR AND SUBMITTED TO THE PROJECT MANAGER FOR APPROVAL. ALL MATERIALS WITHIN THE MECHANICALLY STABILIZED EARTH (MSE) VOLUME, METHODS OF CONSTRUCTION, AND THE QUALITY OF PREFABRICATED MATERIALS SHALL MEET THE REQUIREMENTS OF THE SPECIAL PROVISIONS FOR THIS PROJECT.

2. DESIGN CRITERIA:

SOIL PARAMETERS FOR DESIGN OF MSE WALLS:

THE PROPORTIES FOR THE FOUNDATION SOIL BELOW THE MSE WALL ARE:

ALLOWABLE BEARING CAPACITIES, qa:	300 kPa
DENSITY:	17.30 kN/m³
INTERNAL SOIL FRICTION ANGLE, :	30°
COHESION	0
COEFFICIENT OF FRICTION, f:	
SOIL AGAINST FORMED CONCRETE:	0.30
CONCRETE CAST AGAINST SOIL:	0.40
FACTOR OF SAFETY AGAINST OVERTURNING:	2.0
FACTOR OF SAFETY AGAINST SLIDING:	1.5
ACTIVE EARTH PRESSURE COEFFICIENT, Ka:	0.31 kN/m

SELECT FILL MATERIAL FOR MSE WALL AND ABUTMENT:

ALLOWABLE BEARING CAPACITIES, qa:	200 kPa
DENSITY:	22.00 kN/m³
INTERNAL SOIL FRICTION ANGLE, :	34°
COEFFICIENT OF FRICTION, f:	
SOIL AGAINST FORMED CONCRETE:	0.35
CONCRETE CAST AGAINST SOIL:	0.45
FACTOR OF SAFETY AGAINST OVERTURNING:	2.0
FACTOR OF SAFETY AGAINST SLIDING:	1.5
ACTIVE EARTH PRESSURE COEFFICIENT, Ka:	0.28

ROADWAY EMBANKMENTS / APPROACH EMBANKMENTS:

DENSITY:	17.30 kN/m³
INTERNAL SOIL FRICTION ANGLE, :	30°
COEFFICIENT OF FRICTION, f:	
SOIL AGAINST FORMED CONCRETE:	0.30
CONCRETE CAST AGAINST SOIL:	0.40
FACTOR OF SAFETY AGAINST OVERTURNING:	2.0
FACTOR OF SAFETY AGAINST SLIDING:	1.5
ACTIVE EARTH PRESSURE COEFFICIENT, Ka:	0.33

ABUTMENT DESIGN LOADS (PER METER ALONG WALL):

VERTICAL LOADS

DEAD LOAD FROM STRUCTURE:	81.57 kN/m
DEAD LOAD FROM APPROACH SLAB:	32.54 kN/m
LIVE LOAD FROM SUPERSTRUCTURE:	47.40 kN/m

HORIZONTAL LOADS

LONGITUDINAL FORCES:	0.58 kN/m
R + S +T :	8.86 kN/m

3. ANY UNSUITABLE FOUNDATION MATERIAL BELOW THE MSE VOLUME, AS DETERMINED BY THE ENGINEER, SHALL BE EXCAVATED AND REPLACED WITH GRANULAR BORROW OR OTHERWISE STABILIZED AS DIRECTED BY THE ENGINEER.

WALL CONSTRUCTION

4. BACKFILL MATERIAL SHALL BE COMPACTED IN ACCORDANCE WITH THE SPECIFICATIONS FOR MSE WALLS TO A LEVEL OF THE CENTER OF THE REINFORCEMENT ELEMENT CONNECTIONS +/- 50. INSTALLATION OF REINFORCING ELEMENTS SHALL BE PERMITTED ONLY AFTER PLACEMENT AND COMPACTION OF THE BACKFILL HAS REACHED THE REQUIRED LEVEL.

5. BACKFILL COMPACTION AND EQUIPMENT SHALL BE KEPT TO A MINIMUM OF 1 METER FROM THE BACK FACE OF THE MSE PANELS. COMPACTION WITHIN 1 METER OF THE PANELS SHALL BE ACHIEVED WITH A MINIMUM OF THREE PASSES OF A LIGHT WEIGHT MECHANICAL TAMPER, ROLLER OR VIBRATORY SYSTEM.

6. THE CONTRACTOR SHALL ACCOMMODATE ANY PIPES, GEOMEMBRANE, GEOTEXTILE ROADBED SEPARATOR, RAIL POST, CRUSHED STONE, DRAINAGE STRUCTURES, FOUNDATIONS, AND ANY OTHER APPURTENANCES THAT ARE WITHIN DESIGNED MSE VOLUME.

7. TOP PANELS SHALL HAVE #13 DOWELS PROTRUDING FROM THE TOP EDGE INTO THE CAST IN PLACE COPING ONLY. THE DOWELS SHALL BE CAST INTEGRALLY WITH THE TOP PANELS. THE COST OF THE DOWELS SHALL BE INCLUDED IN THE UNIT BID PRICE FOR THE ITEM 526.30 "MECHANICALLY STABILIZED EARTH (MSE) WALL".

8. THE CONTRACTOR IS RESPONSIBLE FOR GRADUALLY DEFLECTING UPPER REINFORCING ELEMENTS DOWNWARD TO AVOID CONFLICTS WITH APPROACH SLAB AND/OR BASE SLAB SUBGRADE PREPARATION. THE CONTRACTOR'S ATTENTION IS DIRECTED ESPECIALLY TO THE EFFECTS OF SUPERELEVATION.

9. THE CONTRACTOR IS RESPONSIBLE FOR CONTROLLING THE STORM WATER DRAINAGE IN THE VICINITY OF THE WALL DURING CONSTRUCTION. STORM WATER RUNOFF IS TO BE COLLECTED AND DISCHARGED AWAY FROM THE WALL AND THE REINFORCED BACKFILL.

10. THE REQUIRED HORIZONTAL LIMIT OF SELECT GRANULAR BACKFILL SHALL EXCEED THE NOMINAL REINFORCEMENT ELEMENT LENGTH BY 300mm.

MATERIAL NOTES

11. THE SELECT GRANULAR BACKFILL QUANTITY SHALL BE CALCULATED FOR BIDDING AND PAYMENT PURPOSES BY MULTIPLYING THE NOMINAL REINFORCEMENT LENGTH (PLUS 300) BY THE TRIBUTARY WALL SURFACE AREA AND CONVERTING THE RESULT TO A NEATLINE CUBIC METER QUANTITY.

12. THE PRECAST PANEL FOR THIS PROJECT SHALL HAVE A RUSTIC ASHLAR STONE PATTERN APPROVED BY THE PROJECT MANAGER. THE CONCRETE SHALL BE COLORED IN ACCORDANCE WITH AN APPROVED SUBMITTAL FOR THE CONCRETE PANELS. SEE SPECIAL PROVISIONS.

13. CONCRETE FOR THE CAST-IN-PLACE COPING SHALL BE CONCRETE HIGH PERFORMANCE CLASS B. CONCRETE FOR THE COPING SHALL BE PAID UNDER THE ITEM 501.34 "CONCRETE, HIGH PERFORMANCE CLASS B". REINFORCEMENT IN THE COPING SHALL BE PAID UNDER THE ITEM 507.17 "EPOXY COATED REINFORCING STEEL". THE COST OF MATERIALS AND INSTALLATION OF THE LEVELING PAD SHALL BE INCLUDED IN THE BID PRICE FOR ITEM 526.30, "MECHANICALLY STABILIZED EARTH (MSE) WALL".

NOTE TO CONTRACTORS

14. THE FOLLOWING MATERIALS SHALL BE SUPPLIED BY THE MSE WALL SYSTEM MANUFACTURER UNDER THE ITEM 526.30 "MECHANICALLY STABILIZED EARTH (MSE) WALL".

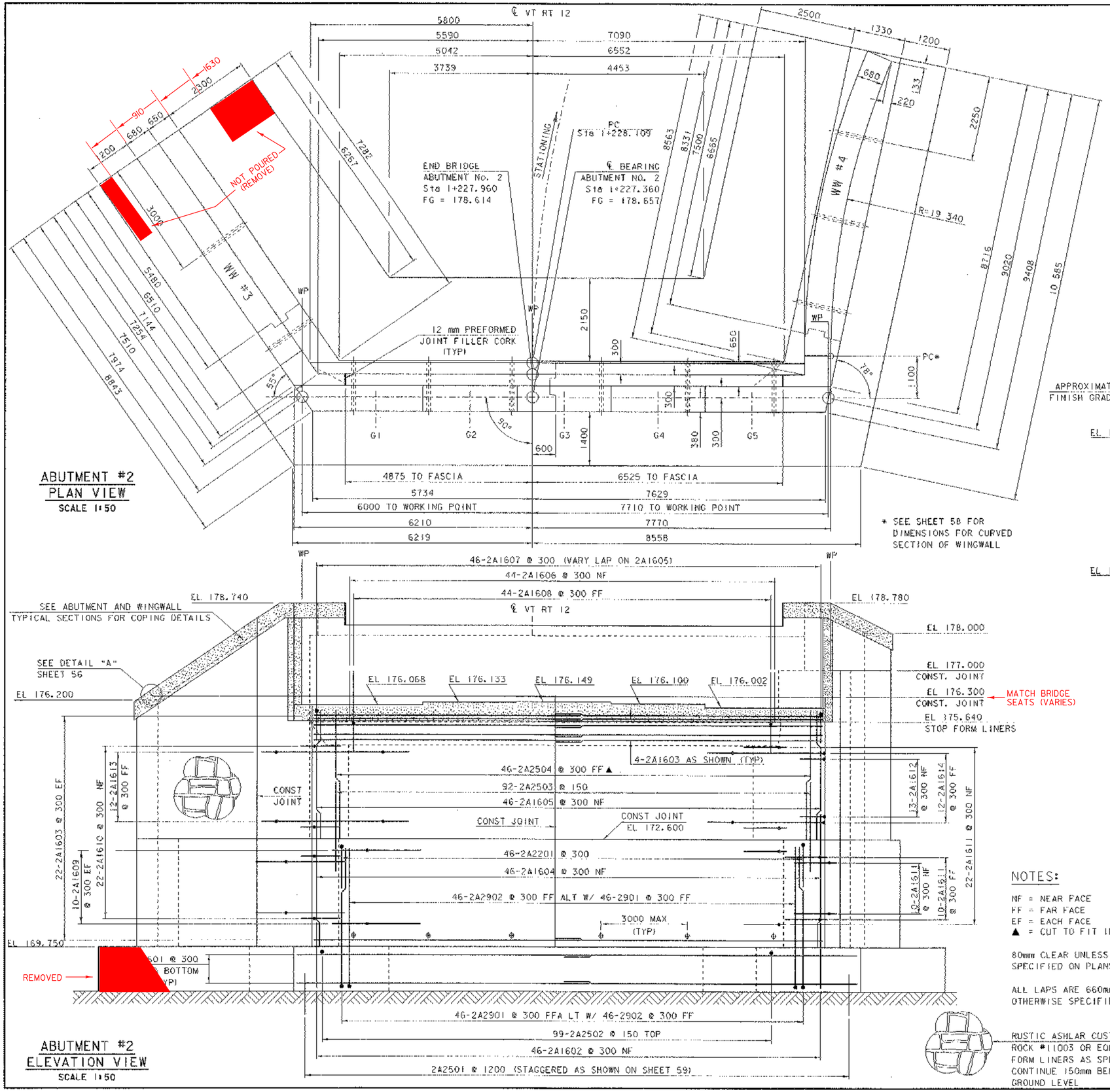
PRECAST CONCRETE FACING
PANELS REINFORCING ELEMENTS
ANY NECESSARY HARDWARE FOR ATTACHING PRECAST PANELS TO REINFORCING ELEMENTS
BEARING BLOCKS
RUBBER SHIMS
FILTER FABRIC AND ADHESIVE FOR PANEL JOINTS

15. OTHER MSE WALL MATERIALS SPECIFIED IN THE CONTRACT PLANS SHALL BE SUPPLIED BY THE CONTRACTOR. THIS MAY INCLUDE, BUT IS NOT LIMITED TO, ANY JOINT MATERIAL SHOWN AT THE INTERFACE OF PRECAST PANELS AND CAST-IN-PLACE CONCRETE ELEMENTS, SANDBLASTING, SEALERS OR OTHER SPECIAL APPLIED COATINGS, PVC PIPE, ELEBOWS, 30 MILL GEOTEXTILE MEMBRANE, GEOTEXTILE ROADBED SEPARATOR, CLAMPS FOR PROVIDING WATER TIGHT SEAL AND CRUSHED STONE. ALL MATERIALS SHALL BE PAID FOR UNDER THE ITEM 526.30 "MECHANICALLY STABILIZED EARTH (MSE) WALL".

16. THE MSE WALL SYSTEM MANUFACTURER SHALL BE RESPONSIBLE FOR DESIGNING AND DETAILING ANY NECESSARY ATTACHMENTS OR REINFORCEMENTS AROUND THE PVC PIPE INVERT AT STATION 1+166.500. THE COST OF DESIGNING, DETAILING AND SUPPLYING AS WELL AS THE INSTALLATION OF THE MODIFIED REINFORCEMENT WILL BE CONSIDERED INCIDENTAL TO THE ITEM 526.30 "MECHANICALLY STABILIZED EARTH (MSE) WALL".

PROJECT:	PROJECT NO.:
BETHEL	BRF0241(33)C/2
DESIGN FILE NAME: 02c180/structure/s02c180msedet.dgn	
IPARM FILE NAME: s02c180msedet4.i	PLOT DATE: 15-APR-2005
DESIGNED BY: M. GAGULIC	DRAWN BY: M. GAGULIC
SQUAD LEADER: C.P. WILLIAMS	CHECKED BY: K.M. HIGGINS
MSE WALL NOTES	SHEET: 54 OF 130

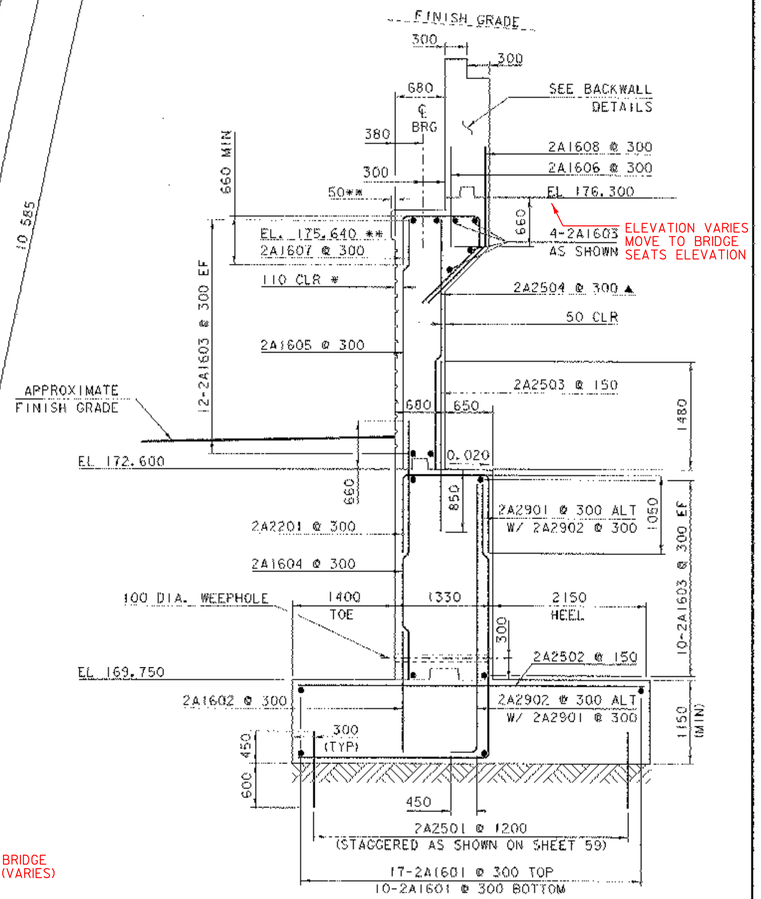
Metric



ABUTMENT #2
PLAN VIEW
SCALE 1:50

ABUTMENT #2
ELEVATION VIEW
SCALE 1:50

* SEE SHEET 58 FOR DIMENSIONS FOR CURVED SECTION OF WINGWALL



* CLEAR COVER INCLUDES 30 mm FOR MAXIMUM FORM LINER RELIEF

** STOP FORM LINERS AND CONSTRUCT COPING (NOT SHOWN IN PLAN VIEW)

ABUTMENT #2
TYPICAL SECTION
SCALE 1:40

NOTES:

NF = NEAR FACE
FF = FAR FACE
EF = EACH FACE
▲ = CUT TO FIT IN FIELD

80mm CLEAR UNLESS OTHERWISE SPECIFIED ON PLANS

ALL LAPS ARE 660mm UNLESS OTHERWISE SPECIFIED ON PLANS

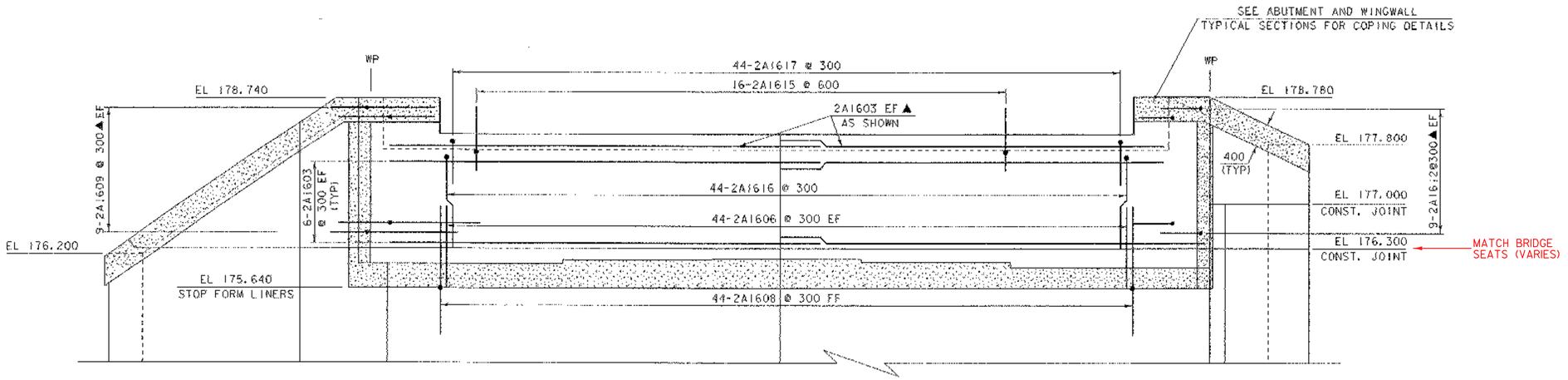
RUSTIC ASHLAR CUSTOM ROCK #11003 OR EQUIVALENT FORM LINERS AS SPECIFIED CONTINUE 150mm BELOW GROUND LEVEL

0 1 2 3 4
SCALE = 1:40

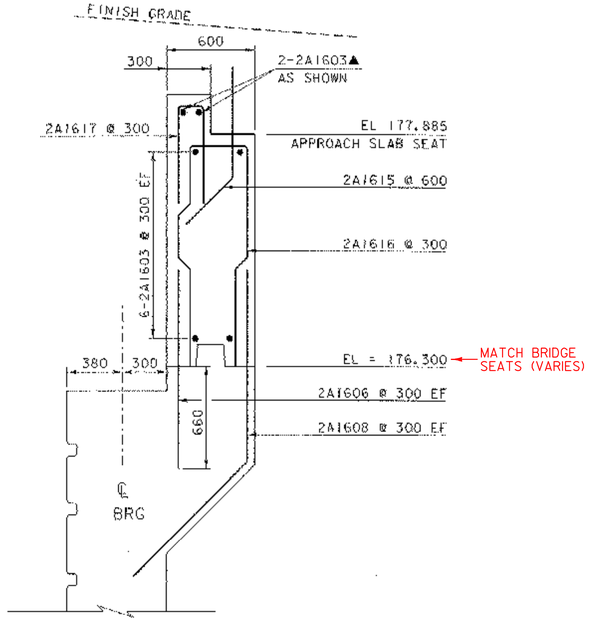
0 1 2 3 4 5
SCALE = 1:50

PROJECT: BETHEL	PROJECT NO.: BRF0241(33)C/2
DESIGN FILE NAME: 02c180/structures/s02c180abut2.dgn	
IPARM FILE NAME: s02c180abut2.i	PLOT DATE: 15-APR-2005
DESIGNED BY: M.GAGULIC	DRAWN BY: E.L.RUSTAY
SQUAD LEADER: C.P.WILLIAMS	CHECKED BY: M.GAGULIC
ABUTMENT #2 DETAILS	SHEET: 55 OF 130

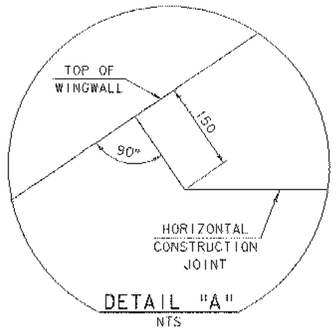
Metric



ABUTMENT #2 BACKWALL
ELEVATION VIEW
SCALE = 1:40



ABUTMENT #2 BACKWALL
TYPICAL DETAIL
SCALE = 1:20



DETAIL "A"
NTS

NOTES:

NF = NEAR FACE
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EF = EACH FACE
▲ = CUT TO FIT IN FIELD

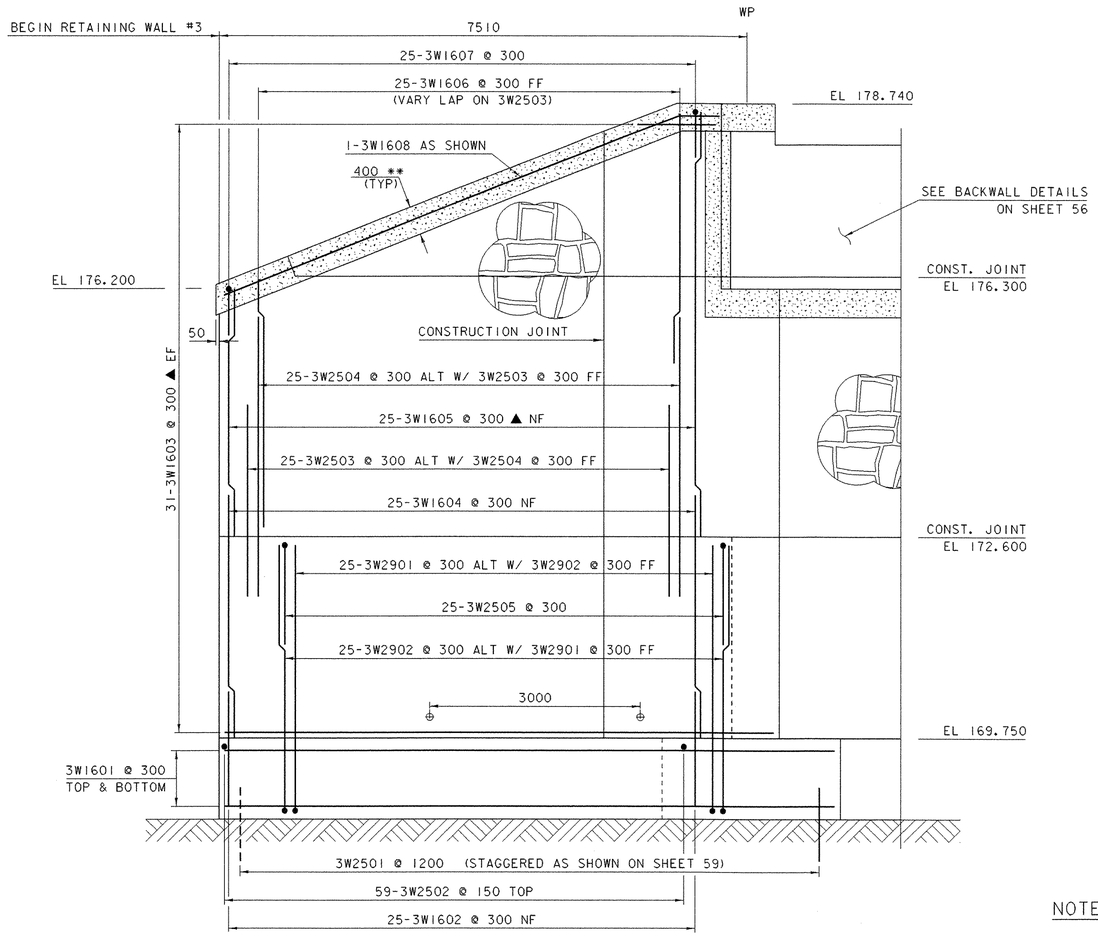
80mm CLEAR UNLESS OTHERWISE SPECIFIED ON PLANS

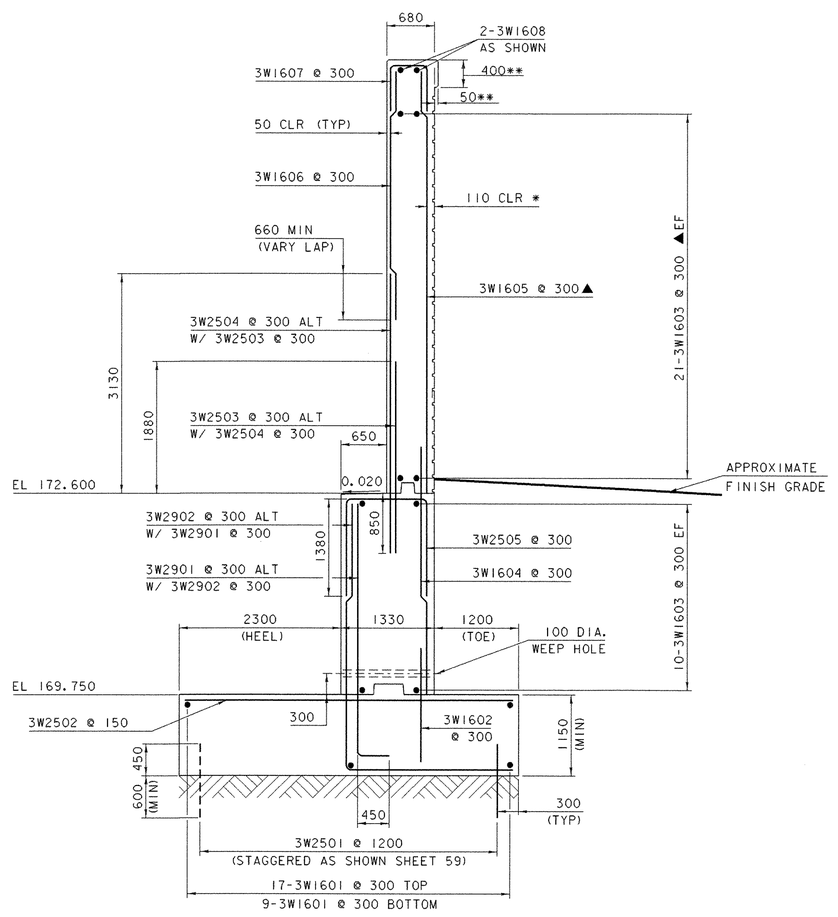
ALL LAPS ARE 660mm UNLESS OTHERWISE SPECIFIED ON PLANS

0 1 2
SCALE = 1:20

0 1 2 3 4
SCALE = 1:40

PROJECT: BETHEL	PROJECT NO.: BRF024I (33) C/2
DESIGN FILE NAME: 02c180/structures/s02c180abut2.dgn	
IPARM FILE NAME: s02c180abut2bw.i	PLOT DATE: 15-APR-2005
DESIGNED BY: E.L.RUSTAY	DRAWN BY: E.L.RUSTAY
SQUAD LEADER: C.P.WILLIAMS	CHECKED BY: K.M.HIGGINS
ABUTMENT #2 BACKWALL DETAILS	SHEET: 56 OF 130



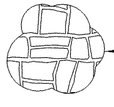


NOTES:

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▲ = CUT TO FIT IN FIELD

80mm CLEAR UNLESS OTHERWISE SPECIFIED ON PLANS

ALL LAPS ARE 660mm UNLESS OTHERWISE SPECIFIED ON PLANS



RUSTIC ASHLAR CUSTOM
ROCK #11003 OR EQUIVALENT
FORM LINERS AS SPECIFIED
CONTINUE 150mm BELOW
GROUND LEVEL

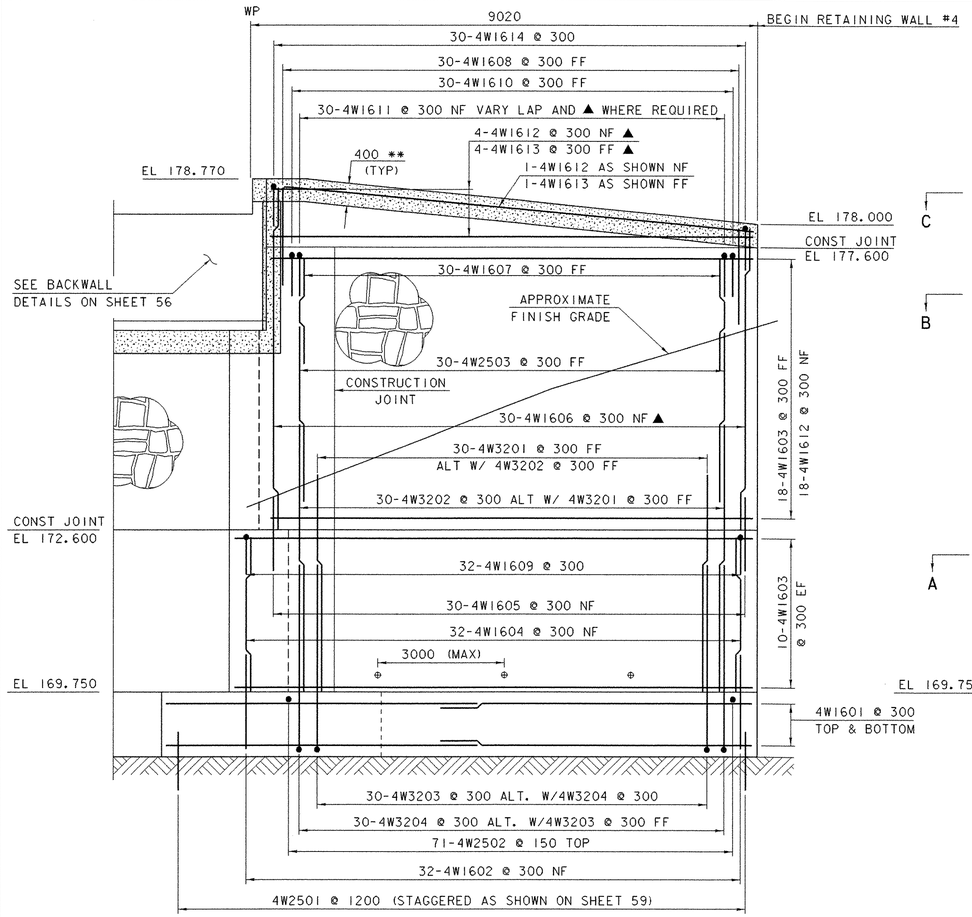
* CLEAR COVER INCLUDES 30 mm FOR MAXIMUM FORM LINER RELIEF

** END FORM LINERS AND CONSTRUCT COPING (NOT SHOWN IN PLAN VIEW)

WINGWALL #3
TYPICAL SECTION
SCALE 1:40

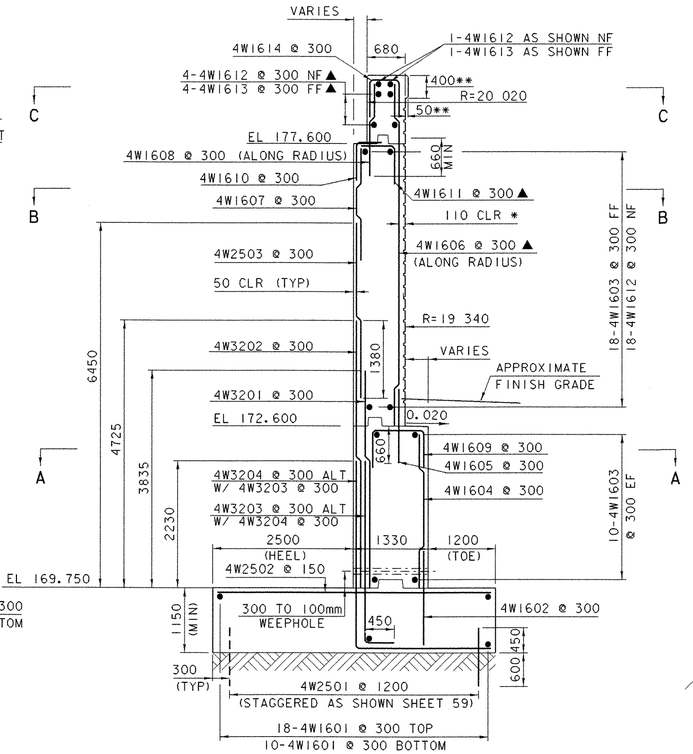
0 1 2 3 4
SCALE = 1:40

PROJECT: BETHEL	PROJECT NO.: BRF0241 (33) C/2
DESIGN FILE NAME: 02c180/structures/s02c180abut2.dgn	
IPARM FILE NAME: s02c180ww3.i	PLOT DATE: 15-APR-2005
DESIGNED BY: E.L.RUSTAY	DRAWN BY: E.L.RUSTAY
SQUAD LEADER: C.P.WILLIAMS	CHECKED BY: K.M.HIGGINS
WINGWALL #3 DETAILS	SHEET: 57 OF 130



WINGWALL #4 (FULL DEPTH) ELEVATION VIEW

SCALE 1:50

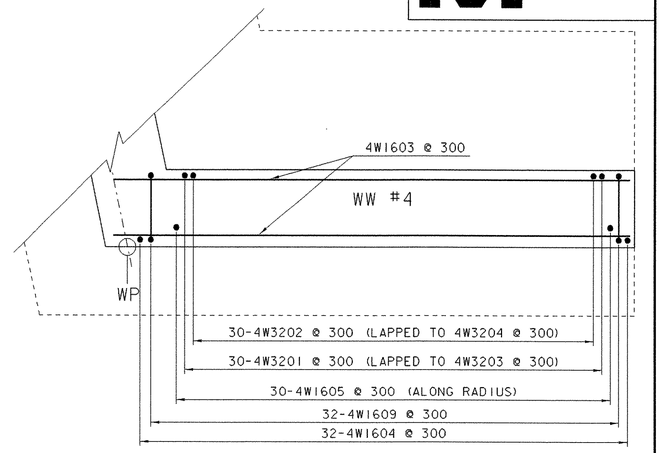


* CLEAR COVER INCLUDES 30 mm FOR MAXIMUM FORM LINER RELIEF

** END FORM LINERS AND CONSTRUCT COPING (NOT SHOWN IN PLAN VIEW)

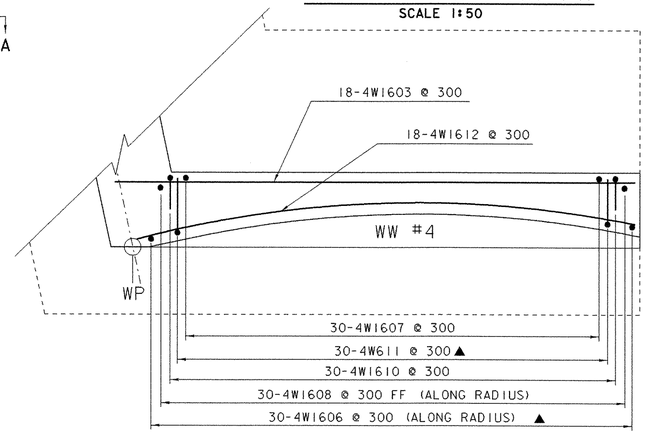
WINGWALL #4 (FULL DEPTH) TYPICAL SECTION

SCALE 1:50



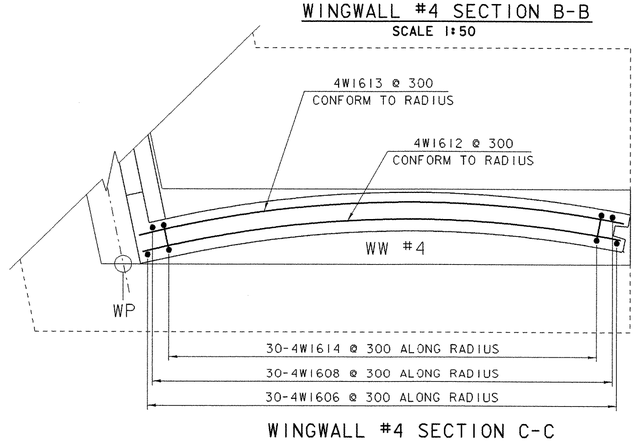
WINGWALL #4 SECTION A-A

SCALE 1:50



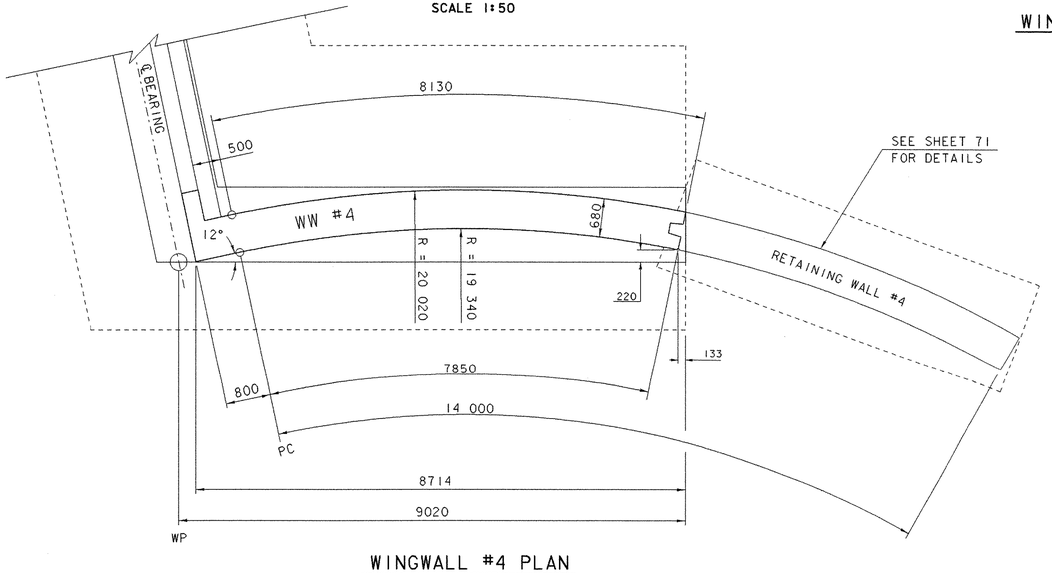
WINGWALL #4 SECTION B-B

SCALE 1:50



WINGWALL #4 SECTION C-C

SCALE 1:50



WINGWALL #4 PLAN

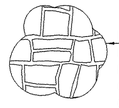
SCALE 1:50

NOTES:

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EF = EACH FACE
▲ = CUT TO FIT IN FIELD

80mm CLEAR UNLESS OTHERWISE SPECIFIED ON PLANS

ALL LAPS ARE 660mm UNLESS OTHERWISE SPECIFIED ON PLANS

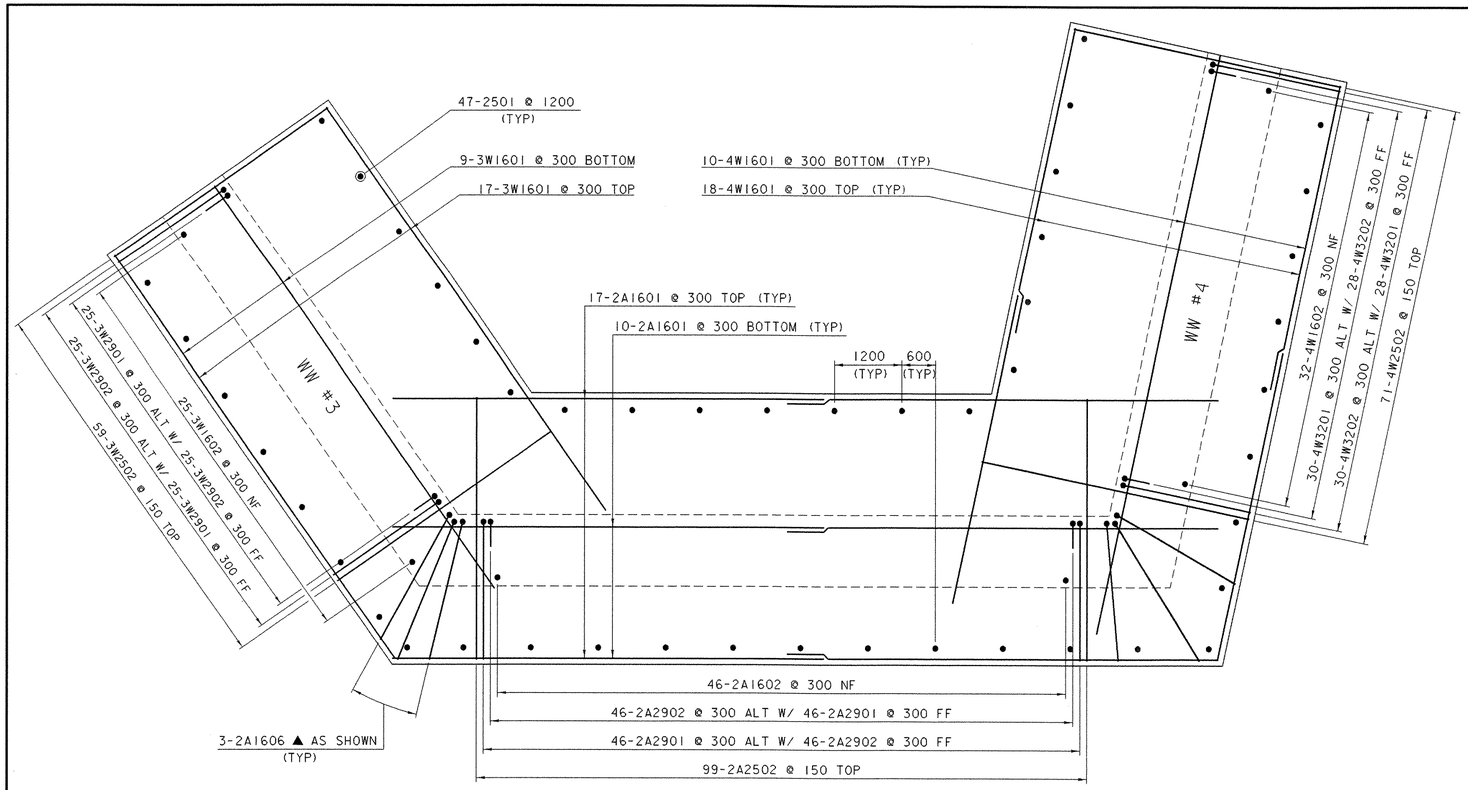


RUSTIC ASHLAR CUSTOM
ROCK #11003 OR EQUIVALENT
FORM LINERS AS SPECIFIED
CONTINUE 150mm BELOW GROUND LEVEL

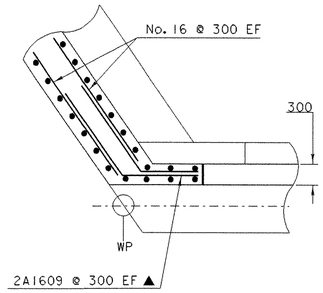
0 1 2 3 4 5

SCALE = 1:50

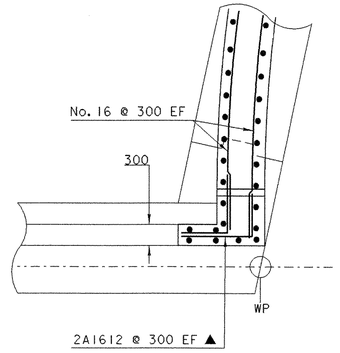
PROJECT: BETHEL	PROJECT NO.: BRF0241(33)C/2
DESIGN FILE NAME: s02c180abut2.dgn	
IPARM FILE NAME: s02c180ww4.i	PLOT DATE: 15-APR-2005
DESIGNED BY: M. GAGULIC	DRAWN BY: E.L. RUSTAY
SQUAD LEADER: C.P. WILLIAMS	CHECKED BY: M. GAGULIC
WINGWALL #4 DETAILS	SHEET: 58 OF 130



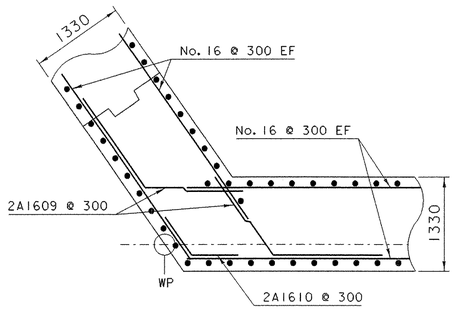
ABUTMENT #2
FOOTING PLAN
SCALE 1:50



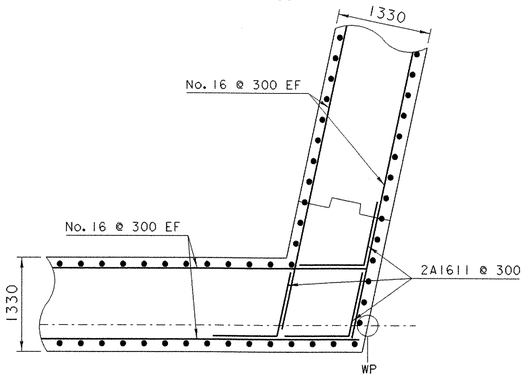
WINGWALL #3 CORNER DETAIL
ABOVE BRIDGE SEAT
SCALE 1:40



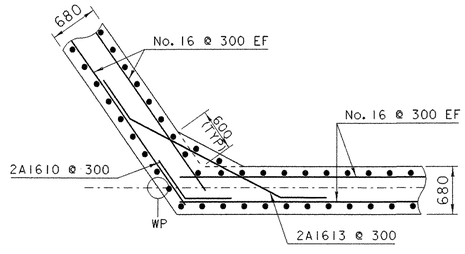
WINGWALL #4 CORNER DETAIL
ABOVE BRIDGE SEAT
SCALE 1:40



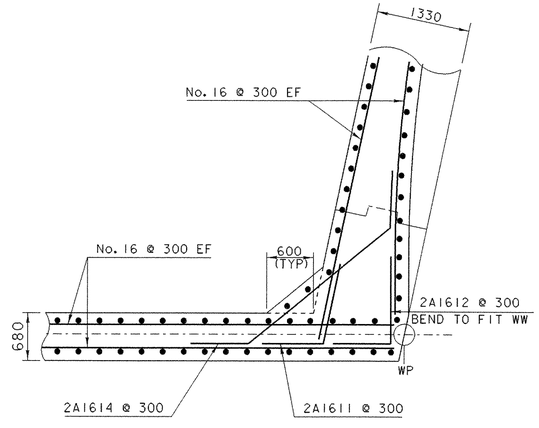
WINGWALL #3 CORNER DETAIL
BELOW BRIDGE SEAT (THICK STEM)
SCALE 1:40



WINGWALL #4 CORNER DETAIL
BELOW BRIDGE SEAT (THICK STEM)
SCALE 1:40



WINGWALL #3 CORNER DETAIL
BELOW BRIDGE SEAT (THIN STEM)
SCALE 1:40



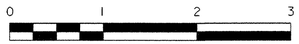
WINGWALL #4 CORNER DETAIL
BELOW BRIDGE SEAT (THIN STEM)
SCALE 1:40

NOTES:

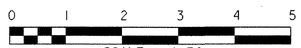
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SCALE = 1:30



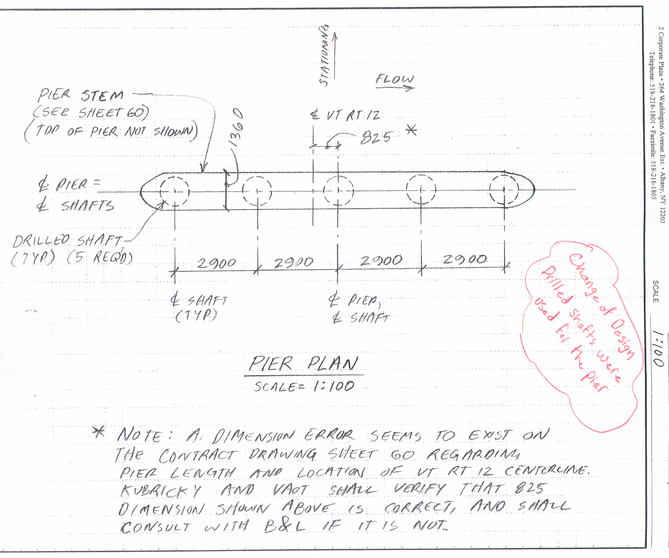
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PROJECT:	PROJECT NO.:
BETHEL	BRF0241(33)C/2

DESIGN FILE NAME: 02c180/structures/s02c180abut2.dgn
IPARM FILE NAME: s02c180ftg2.i — PLOT DATE: 15-APR-2005
DESIGNED BY: M.GAGULIC — DRAWN BY: E.L.RUSTAY
SQUAD LEADER: C.P.WILLIAMS — CHECKED BY: M.GAGULIC
ABUTMENT #2 FOOTING REINFORCEMENT — SHEET: 59 OF 130

Burton & Logiudice, P.C.
Engineers • Environmental Scientists • Planners • Landscape Designers
2 Corporate Plaza • 344 Washington Avenue Ext. • Albany, NY 12203
Telephone: 518-218-1800 • Facsimile: 518-218-1900

JOB 1012.111-KUBRICKY-RETAIL PK DEVEL.
SHEET NO. SK1 OF
CALCULATED BY AHC DATE 8/5/05
CHECKED BY JWB DATE 8/23/05
SCALE 1:100



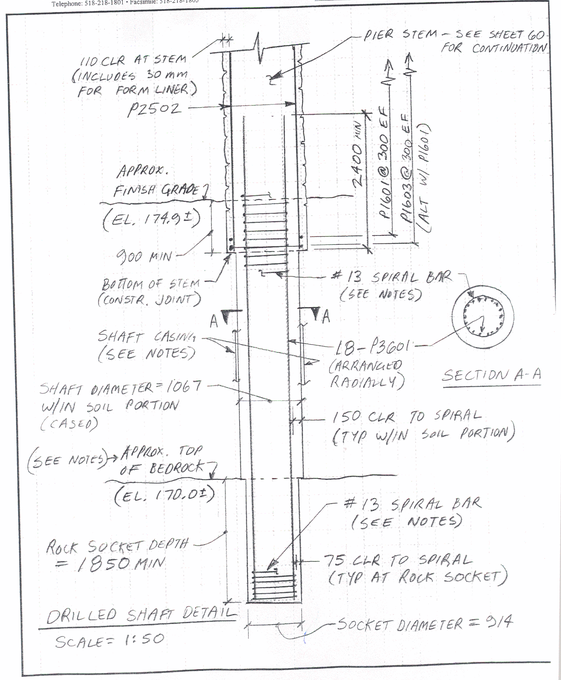
PIER PLAN
SCALE = 1:100

Change of Design
Drilled shafts were
used for the pier

* NOTE: A DIMENSION ERROR SEEMS TO EXST ON THE CONTRACT DRAWING SHEET 60 REGARDING PIER LENGTH AND LOCATION OF VT RT 12 CENTERLINE. KUBRICKY AND VAOT SHALL VERIFY THAT 825 DIMENSION SHOWN ABOVE IS CORRECT, AND SHALL CONSULT WITH B&L IF IT IS NOT.

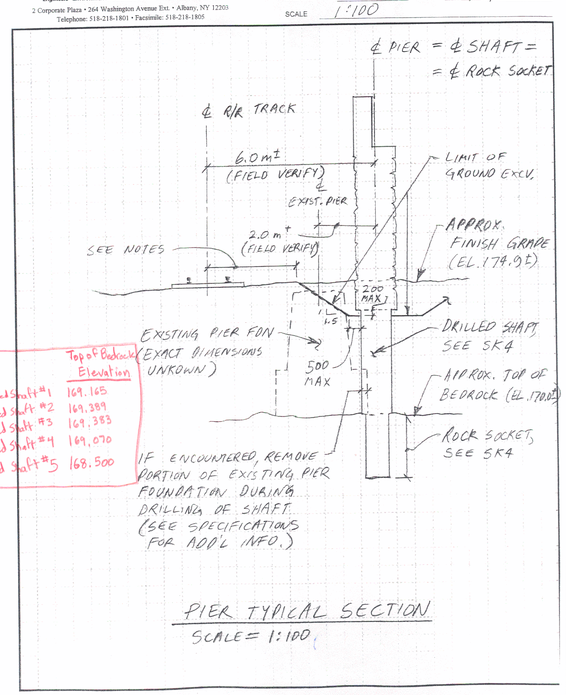
Barton & Loguidice, P.C.
Engineers • Environmental Scientists • Planners • Landscape Designers
2 Corporate Plaza • 264 Washington Avenue Ext. • Albany, NY 12203
Telephone: 518-218-1801 • Facsimile: 518-218-1806

JOB 102.001 - [illegible]
SHEET NO. SK4 OF
CALCULATED BY RHC DATE 8/5/05
CHECKED BY JMB DATE 8/23/05
SCALE 1:50



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Engineers • Environmental Scientists • Planners • Landscape Designers
2 Corporate Plaza • 264 Washington Avenue Ext. • Albany, NY 12203
Telephone: 518-218-1801 • Facsimile: 518-218-1805

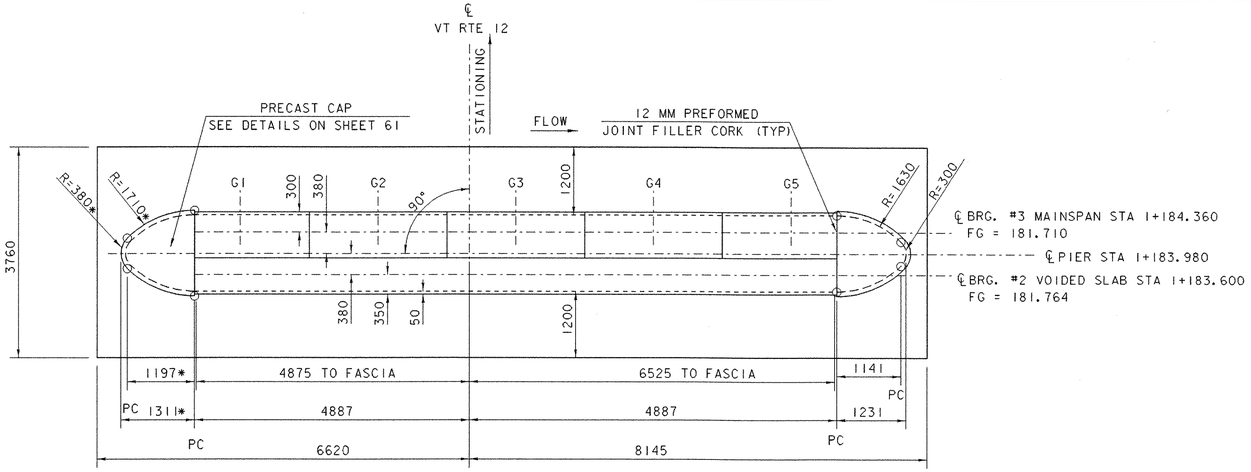
JOB 1012.001 - KUBRICKY-BETTEL, PT BRIDGE
SHEET NO. SK3 OF
CALCULATED BY RHC DATE 8/5/05
CHECKED BY JMB DATE 8/23/05
SCALE 1:100



	Top of Bedrock Elevation
Drilled Shaft #1	169.165
Drilled Shaft #2	169.389
Drilled Shaft #3	169.383
Drilled Shaft #4	169.070
Drilled Shaft #5	168.500

PIER TYPICAL SECTION

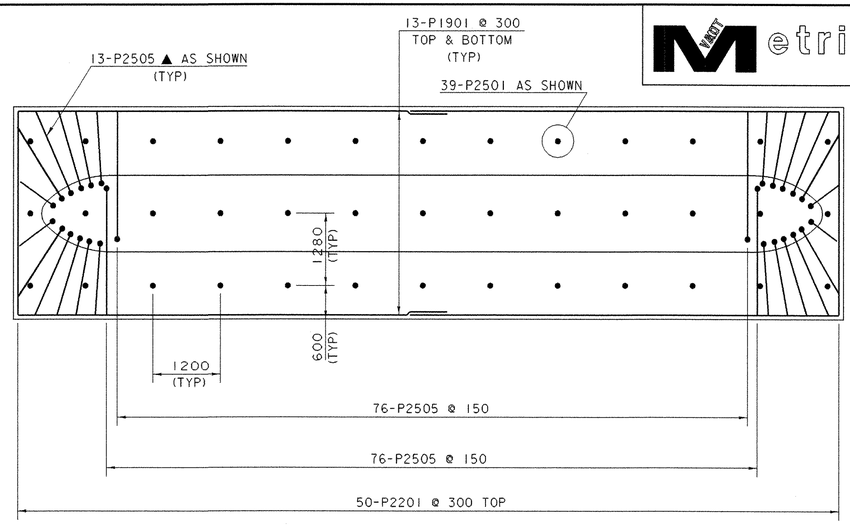
SCALE = 1:100



* DIMENSION FOR CAP

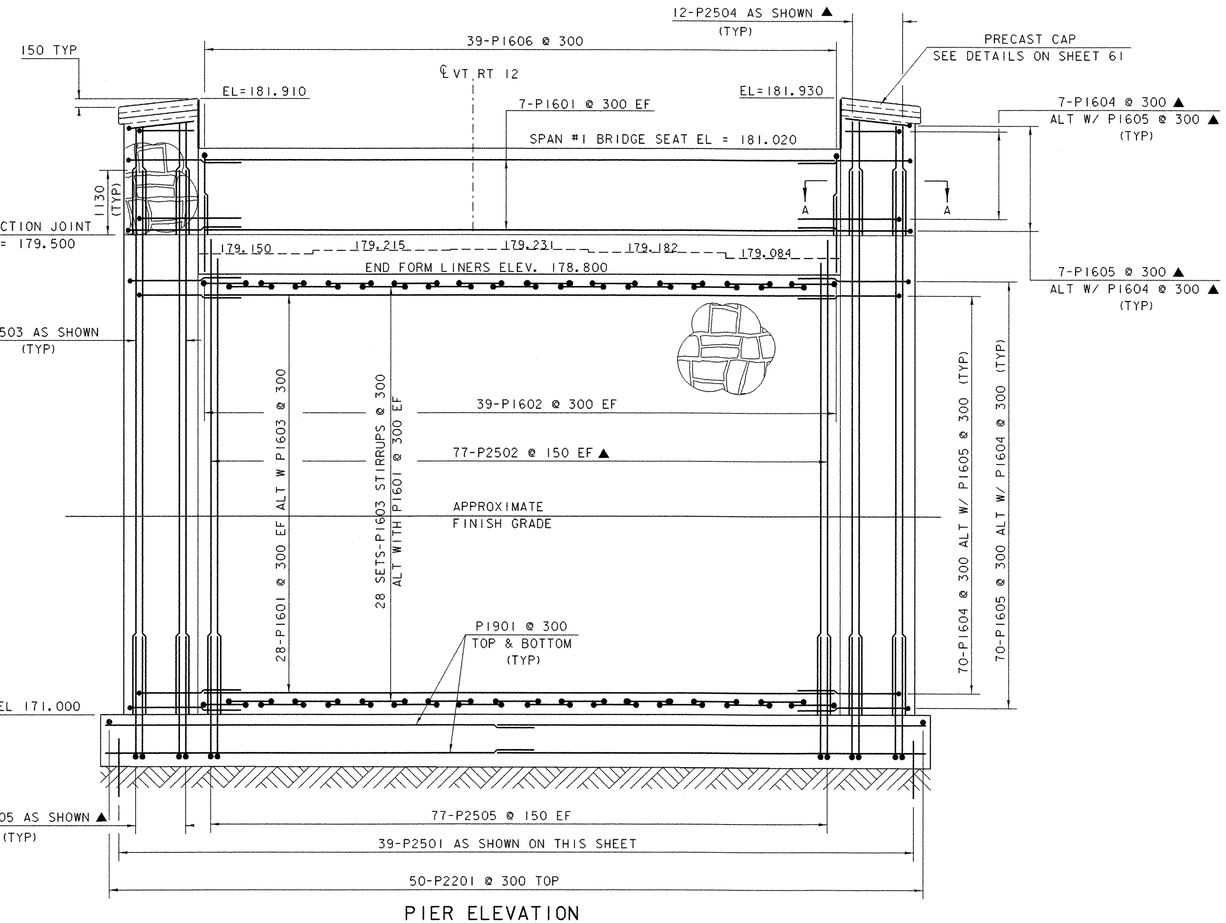
PIER PLAN

Scale = 1:50



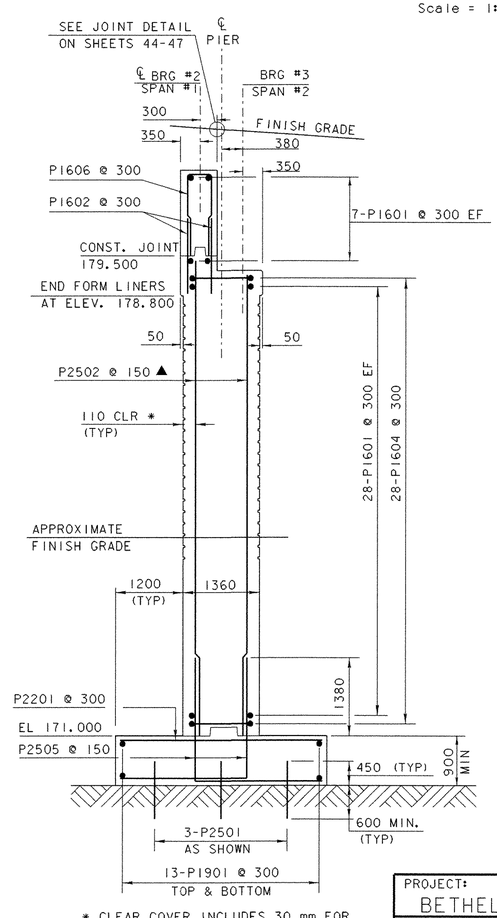
PIER FOOTING REINFORCMENT PLAN

Scale = 1:50



PIER ELEVATION

Scale = 1:50



* CLEAR COVER INCLUDES 30 mm FOR MAXIMUM FORM LINER RELIEF

PIER TYPICAL SECTION

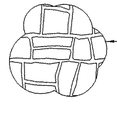
Scale = 1:50

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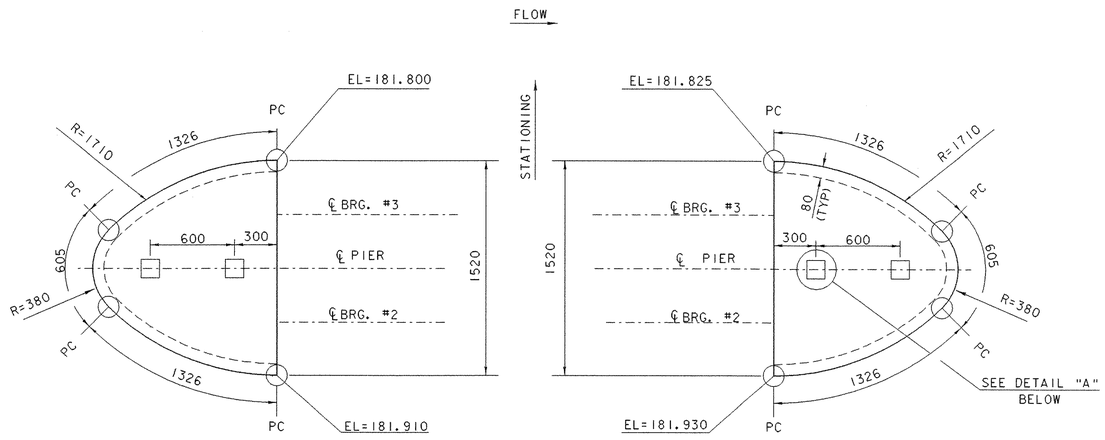
RUSTIC ASHLAR CUSTOM
ROCK #11003 OR EQUIVALENT
FORM LINERS AS SPECIFIED
CONTINUE 150mm BELOW
GROUND LEVEL

0 1 2 3 4 5
SCALE = 1:50

PROJECT:	PROJECT NO.:
BETHEL	BRF0241 (33) C/2

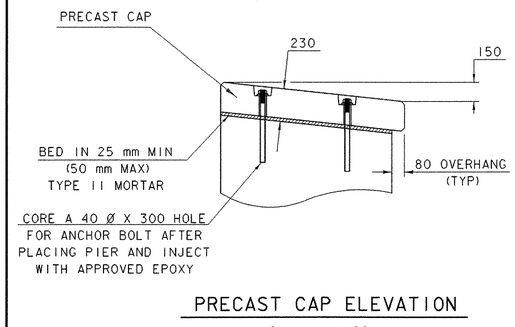
DESIGN FILE NAME: 02c180/structures/s02c180pier.dgn
IPARM FILE NAME: s02c180pier.i — PLOT DATE: 14-APR-2005
DESIGNED BY: K.M.HIGGINS — DRAWN BY: E.L.RUSTAY
SQUAD LEADER: C.P.WILLAIMS — CHECKED BY: K.M.HIGGINS
PIER PLAN AND REINFORCMENT — SHEET: 60 OF 130

Metric



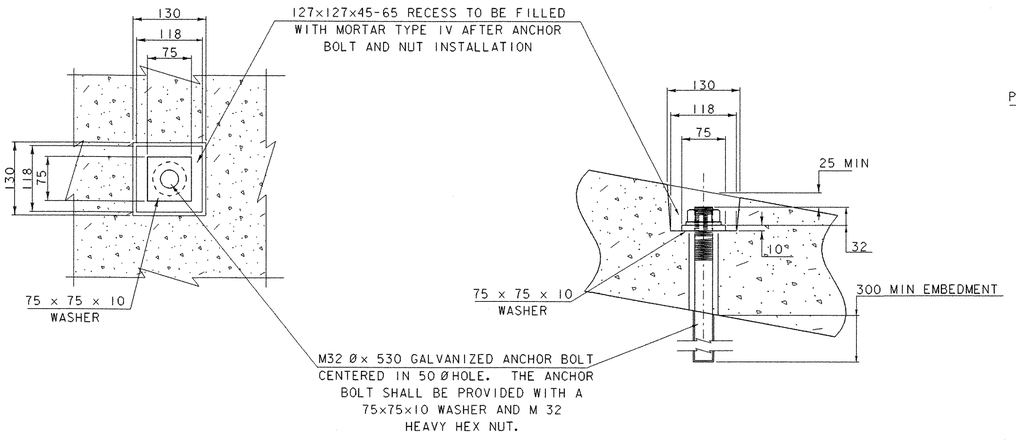
PRECAST CAP PLAN

Scale = 1:20



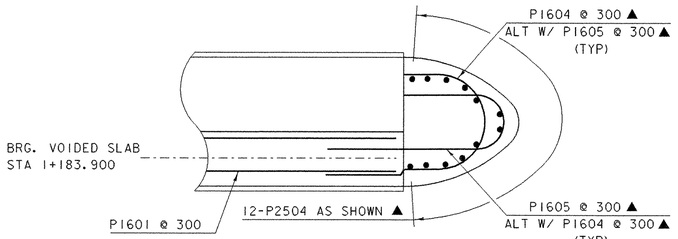
PRECAST CAP ELEVATION

Scale = 1:20



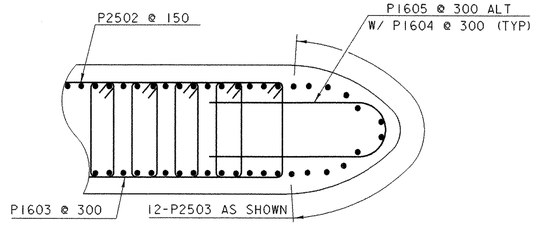
DETAIL "A"

Scale = 1:5



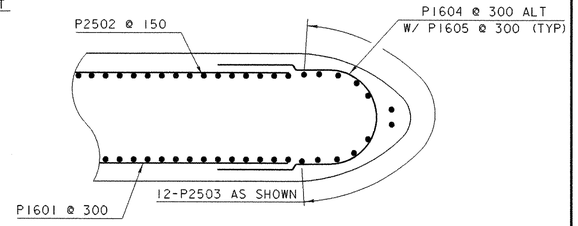
SECTION A-A

Scale = 1:30



PIER NOSING DETAIL STIRRUP BARS

Scale = 1:30



PIER NOSING DETAIL STRAIGHT BAR

Scale = 1:30

CAP NOTES:

1. THE CAPS ARE DETAILED AS PRECAST AND SHALL BE PAID FOR UNDER THE ITEM 501.34 "CONCRETE - HIGH PERFORMANCE CLASS B".
2. THE CONTRACTOR MAY SUBSTITUTE THE PRECAST CAP FOR A CAST IN PLACE CAP. IF THIS IS DONE THE RESIDENT ENGINEER WILL NOTIFY THE PROJECT MANAGER AND A DETAIL OF THE CONNECTION WILL BE SUBMITTED FOR REVIEW AND ACCEPTANCE.
3. ALL DIMENSIONS ARE HORIZONTAL OR VERTICAL AND GIVEN AT 20° C UNLESS OTHERWISE NOTED.
4. ALL CAPS SHALL BE REINFORCED WITH ONE LAYER OF 152 X152-MW13 X MW13 WELDED WIRE FABRIC. THE WELDED WIRE FABRIC SHALL CONFORM TO ASTM A497. THE LAYER OF REINFORCEMENT SHALL BE CENTERED IN ALL THE PRECAST CAPS. THE WELDED WIRE FABRIC SHALL BE PAID UNDER THE ITEM 507.15 "REINFORCING STEEL".
5. THE COST OF THE ANCHOR BOLTS AND RELATED HARDWARE, MORTAR, EPOXY, ERECTION OF THE CAPS AND ALL OTHER INCIDENTALS NECESSARY TO COMPLETE THE PRECAST CAPS SHALL BE INCIDENTAL TO THE ITEM 501.34 "CONCRETE, HIGH PERFORMANCE CLASS B".
6. THE ANCHOR BOLTS SHALL BE ASTM A307, GR. C. THE PLATE WASHERS SHALL BE AASHTO M 270/M 270 GR 250
7. BEFORE THE INSTALLATION OF THE CAPS THE CONTRACTOR SHALL PROVIDE THE RESIDENT ENGINEER WITH THE TECHNICAL DATA SHEET FOR THE EPOXY INTENDED TO SECURE THE ANCHOR BOLTS. THE TECHNICAL DATA SHEET SHALL INCLUDE SPECIFICATIONS AND MANUFACTURER'S APPLICATION INSTRUCTIONS. THE RESIDENT ENGINEER SHALL APPROVE THE PRODUCT AND PROCEDURES PRIOR TO INSTALLATION.
8. THE CONTRACTOR IS RESPONSIBLE FOR DESIGNING ANY NECESSARY LIFTING REQUIRED TO ERECT THE PRECAST CAPS. LIFTING DEVICES SHALL BE REMOVED AND DAMAGED AREAS REPAIRED TO THE SATISFACTION OF THE RESIDENT ENGINEER.

NOTES:

NF = NEAR FACE
FF = FAR FACE
EF = EACH FACE
▲ = CUT TO FIT IN FIELD

80mm CLEAR UNLESS OTHERWISE SPECIFIED ON PLANS

ALL LAPS ARE 660mm UNLESS OTHERWISE SPECIFIED ON PLANS

0 0.25 0.5
SCALE = 1:5

0 1 2
SCALE = 1:20

0 1 2 3
SCALE = 1:30

PROJECT:	PROJECT NO.:
BETHEL	BRF0241 (33) C/2
DESIGN FILE NAME: 02c180/structures/s02c180pier.dgn	
IPARM FILE NAME: s02c180pierdet.i	PLOT DATE: 14-APR-2005
DESIGNED BY: K.M.HIGGINS	DRAWN BY: E.L.RUSTAY
SQUAD LEADER: C.P.WILLAIMS	CHECKED BY: K.M.HIGGINS
PIER DETAILS	SHEET: 61 OF 130

Metric

SOIL NAIL WALL NOTES:

1. ALL MATERIALS AND CONSTRUCTION SHALL CONFORM TO STATE OF VERMONT AGENCY OF TRANSPORTATION STANDARD SPECIFICATIONS FOR CONSTRUCTION DATED 2001 AND ITS LATEST REVISIONS , AND THE AASHTO STANDARD SPECIFICATION FOR HIGHWAY BRIDGES, DATED 2001, AND ITS LATEST REVISIONS.

2. DURING THE CONSTRUCTION OF THE SOIL NAIL WALL, TH 66 MAY BE CLOSED TO ALL TRAFFIC FOR A PORTION OF THE DAY EXCEPT FOR EMERGENCY SITUATIONS AS NOTED IN THE GENERAL NOTES.

3. THE FOLLOWING PARAMETERS WERE USED IN DESIGN:

FILL MATERIAL BEHIND CONCRETE RETAINING WALL:

UNIT WEIGHT OF SOIL BEHIND EXISTING CONCRETE WALL	20.4 kN/m3
FRICTION ANGLE (PHI) OF MATERIAL BEHIND CONCRETE WALL	34°
COHESION	0 KPa
ULTIMATE BOND STRENGTH (GROUT AND SOIL)	75.8 kPa
CALCULATED BOND STRENGTH FOR 150 MM HOLE - ULTIMATE	36.3 kN/m

INSITU MATERIAL BELOW CONCRETE RETAINING WALL:

UNIT WEIGHT OF SOIL BEHIND EXISTING CONCRETE WALL	17.3 kN/m3
FRICTION ANGLE (PHI) OF MATERIAL BEHIND CONCRETE WALL	30°
COHESION	0 KPa
ULTIMATE BOND STRENGTH (GROUT AND SOIL)	48.3 kPa
CALCULATED BOND STRENGTH FOR 150 MM HOLE - ULTIMATE	23.1 kN/m

GLOBAL STABILITY FACTOR OF SAFETY	1.35
INTERNAL STABILITY FACTOR OF SAFETY	1.35
FACING FLEXURE FACTOR OF SAFETY	1.5
FACING PUNCHING SHEAR FACTOR OF SAFETY	1.5
PULLOUT RESISTANCE FACTOR OF SAFETY	2.0
NAIL BAR TENSILE STRENGTH	0.6 Fy
NAIL BAR DIAMETER	2.5 cm
BORE HOLE SIZE	152 cm
ULTIMATE PLATE CAPACITY	169 kN
SOIL NAIL Fy	524 MPa
CONCRETE FACING f'c	27.6 Mpa
GROUT f'c	20.7 Mpa

4. THE EXISTING RETAINING WALL WITHIN THE LIMITS OF THE SOIL NAIL WALL (AS SHOWN ON THE PLANS) SHALL REMAIN IN PLACE.

5. AS SHOWN IN THE PLANS, THE REHABILITATED WALL SYSTEM SHALL CONSIST OF A CAST - IN - PLACE, REINFORCED CONCRETE WALL FACING DIRECTLY IN FRONT OF EXISTING RETAINING WALL, SECURED TO THE EMBANKMENT WITH SOIL NAILS DRILLED THOUGH EXISTING WALL. SOIL NAIL LENGTHS, SPACING AND INCLINATION SHALL BE AS SHOWN IN THE PLANS.

6. FOR DESIGN PURPOSES, ANY POTENTIAL CONTRIBUTION OF THE EXISTING RETAINING WALL TO PERMANENT WALL SUPPORT HAS BEEN IGNORED. FOR SOIL CHARACTERISTICS USED IN DESIGN SEE SPECIAL PROVISIONS AND PROJECT BORINGS ON SHEET 25 OF THE PLANS

7. PROOF AND VERIFICATION WILL BE REQUIRED ON SOIL NAILS. A MINIMUM OF TWO SACRIFICIAL NAILS SHALL BE INSTALLED FOR VERIFICATION TESTS AT LOCATION AGREED UPON BY THE CONTRACTOR AND ENGINEER. THE LOCATIONS MUST BE SELECTED TO APPROXIMATE THE SAME SOIL CONDITIONS INTO WHICH THE PRODUCTION NAILS WILL BE INSERTED. APPROXIMATELY 5% OF THE PERMANENT NAILS SHALL BE PROOF LOAD TESTED TO 1.5 TIMES DESIGN LOAD. NAILS FAILING TO MEET THE REQUIRED PROOF LOADING SHALL BE REMOVED AND REPLACED AT THE CONTRACTOR'S EXPENSE. SEE SPECIAL PROVISIONS FOR ITEM 535 FOR INFORMATION ON THIS TESTING

8. THE FORM LINER PATTERN SHALL BE "RUSTIC ASHLAR", CUSTOM ROCK DURA FORM PATTERN #11003, OR AN APPROVED EQUIVALENT. ANY PROPOSED SUBSTITUTION MUST BE APPROVED IN WRITING BY THE PROJECT MANAGER.

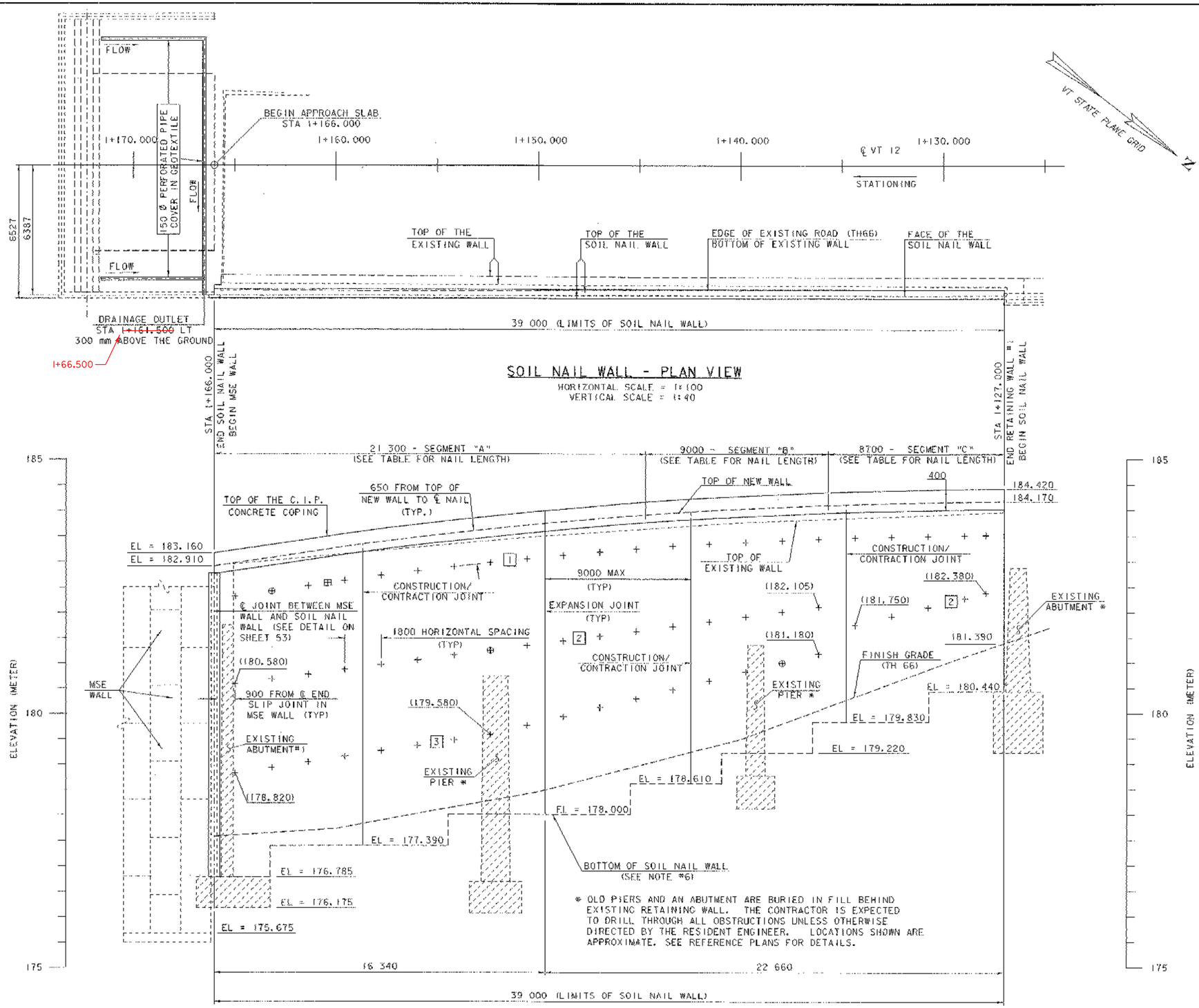
9. THE CONTRACTOR SHALL ACCOMMODATE ANY PIPES, GEOMEMBRANE LINER, DRAINAGE STRUCTURES, FOUNDATIONS, AND ANY OTHER SUCH APPURTENANCES THAT ARE WITHIN THE DESIGNED SOIL NAIL WALL VOLUME.

10. FORM LINERS SHALL BE USED FOR ALL EXPOSED WALL FACINGS . THE SIMULATED COLUMNS AT THE CONSTRUCTION AND EXPANSION JOINTS MAY HAVE HORIZONTAL SCORE MARKS PROVIDED BY CONVENTIONAL FORMING METHODS OR BY FORM LINER PROCESS. THE METHOD SHALL BE INCLUDED IN THE PACKAGE SUBMITTED FOR APPROVAL AS DESCRIBED IN THE SPECIAL PROVISIONS. THE PAYMENT FOR ALL FORM LINER WORK SHALL BE UNDER ITEM 602.25, STONE MASONRY FACING (MODIFIED FORM LINER). SEE SPECIAL PROVISIONS FOR DETAILS CONCERNING THIS ITEM.

11. HORIZONTAL CONSTRUCTION JOINTS HAVE NOT BEEN SHOWN IN THE FACING DETAILS. THE CONTRACTOR MAY PROPOSE THE USE OF HORIZONTAL JOINTS BUT THE FORM LINER PATTERN SHALL BE CONTINUOS THROUGH AND ACROSS ALL HORIZONTAL CONSTRUCTION JOINTS.

12. THE 20 mm PRE MOLDED EXPANSION MATERIAL USED IN VERTICAL EXPANSION JOINTS SHALL BE A COLOR CLOSELY MATCHING THAT OF THE ADJACENT CONCRETE. PAYMENT FOR THE EXPANSION MATERIAL SHALL BE INCIDENTAL TO THE CONCRETE PAY ITEM.

PROJECT:	PROJECT NO.:
BETHEL	BRF 0241 (33) C/2
DESIGN FILE NAME: 02c180/structure/s02sc180soilnail.dgn	
IPARM FILE NAME: s02c180soilnai15.	PLOT DATE: 14-APR-2005
DESIGNED BY: M. GAGULIC	DRAWN BY: M. GAGULIC
SQUAD LEADER: C. P. WILLIAMS	CHECKED BY: E. L. R.
SOIL NAIL WAL NOTES	SHEET: 62 OF 130



SOIL NAIL WALL - ELEVATION VIEW

HORIZONTAL SCALE = 1:100
VERTICAL SCALE = 1:40

SEGMENT "A"

ROW	L	BAR	Q_d
1	4.88	25	1128.500 Kg/m
2	4.88	25	1128.500 Kg/m
3	4.88	25	1128.500 Kg/m

SEGMENT "B"

ROW	L	BAR	Q_d
1	4.27	25	1128.500 Kg/m
2	4.27	25	1128.500 Kg/m
3	4.27	25	1128.500 Kg/m

SEGMENT "C"

ROW	L	BAR	Q_d
1	3.05	25	1128.500 Kg/m
2	3.05	25	1128.500 Kg/m

NOTES:

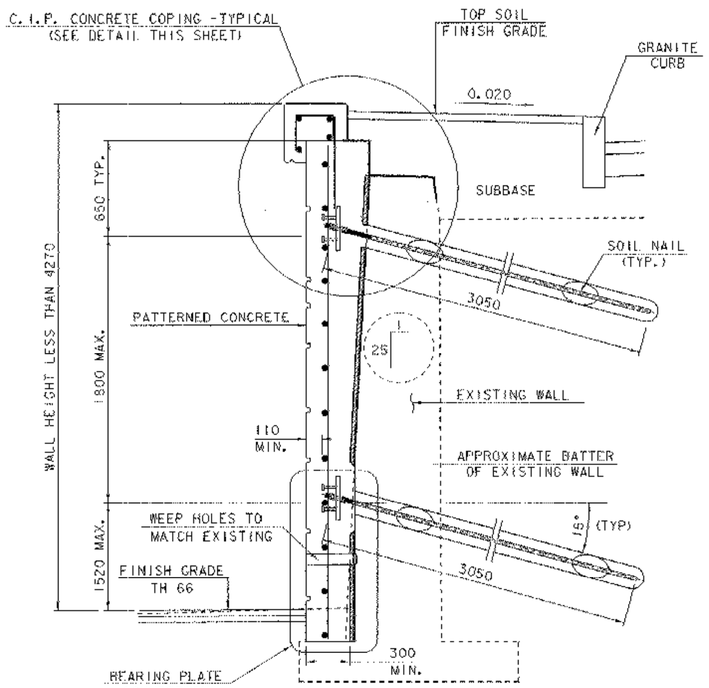
1. NAIL ELEVATIONS NOT SHOWN, EXCEPT THOSE FROM FIRST ROW, SHALL BE LINEARLY INTERPOLATED BETWEEN THOSE SHOWN.
2. LOCATION OF THE FIRST ROW OF NAILS SHALL BE ~~650~~ 850 mm FROM THE TOP OF THE NEW WALL.
3. THE EXPANSION JOINT LOCATION SHALL BE LOCATED PRIOR TO THE CONSTRUCTION OF SOIL NAILS AND AT LEAST 300 MM CLEAR DISTANCE SHALL BE PROVIDED BETWEEN THE JOINT AND THE NAILS.
4. IF REINFORCING BARS WITH CUT THREADS ARE USED FOR NAILS, THE NEXT LARGER BAR SIZE ABOVE THAT SHOWN SHALL BE PROVIDED AT NO ADDITIONAL COST
5. ALL DIMENSIONS AND ELEVATIONS ARE HORIZONTAL OR VERTICAL AND GIVEN TO THE FRONT FACE OF EXISTING WALL UNLESS OTHERWISE NOTED ON THE PLANS
6. BOTTOM OF SOIL NAIL WALL ELEVATIONS ARE TO THE TOP OF THE EXISTING RETAINING WALL FOOTINGS. ELEVATIONS ARE FROM THE REFERENCE PLANS AND MAY BE VARY SLIGHTLY FROM WHAT IS SHOWN ON THE PLANS. THE CONTRACTOR SHALL VARIFY ELEVATIONS PRIOR TO CONSTRUCTING THE SOIL NAIL WALL.
7. THE QUANTITIES FOR THE CONCRETE, REINFORCING STEEL, FORM LINERS AND STAIN FOR PATTERNED WALL HAVE BEEN SHOWN IN THE ROADWAY COLUMN OF SHEETS 3 & 4.

LEGEND:

+	SOIL NAIL
⊕	PROOF TESTS
⊞	LOCATION OF VERIFICATION TEST OF SACRIFICIAL SOIL NAIL
[2]	NAIL ROW
(182.082)	NAIL ELEVATION
181.390	GRADE ELEVATION
L	DRILLED LENGTH OF NAIL (METER)
BAR	STEEL BAR SIZE
Q_d	ALLOWABLE PULLOUT RESISTANCE (KN/m)

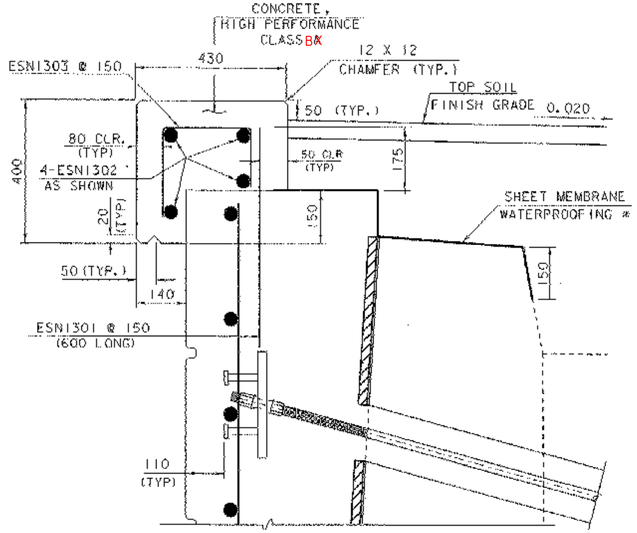
PROJECT: BETHEL	PROJECT NO.: BRF0241(33)C/2
DESIGN FILE NAME: 02c180/structures/s02c180soilnail.dgn	
XPARM FILE NAME: s02c180soilnail,	PLOT DATE: 14-APR-2005
DESIGNED BY: M. GAGULIC	DRAWN BY: M. GAGULIC
SQUAD LEADER: C.P. WILLIAMS	CHECKED BY: K.M. HIGGINS
SOIL NAIL WALL DETAILS - 1	SHEET: 63 OF 130

Metric



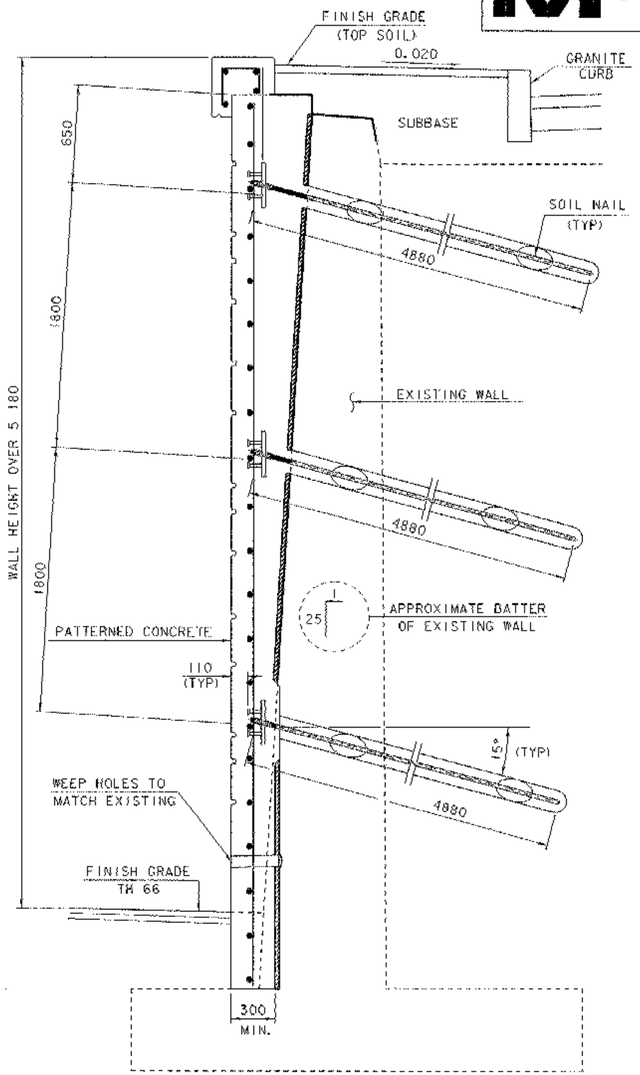
SEGMENT "C" (TYP)

NTS



* SHEET MEMBRANE WATERPROOFING SHALL BE INCIDENTAL TO ITEM 501.34 "CONCRETE-HIGH PERFORMANCE CLASS B"

C.I.P. CONCRETE DETAIL COPING

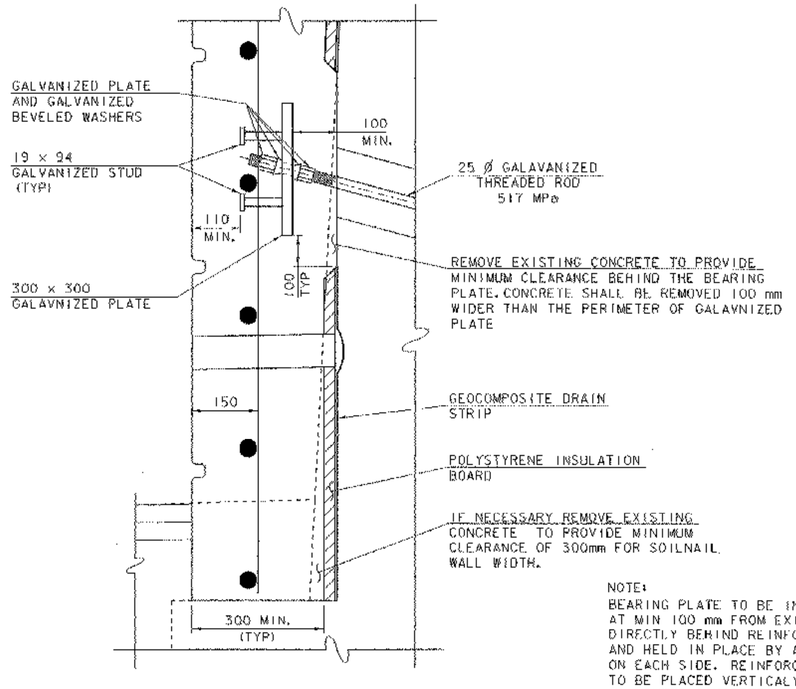


SEGMENT "A"
(TYP)

NTS

SEGMENT "B" (TYP)

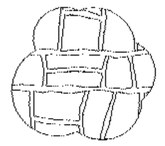
NTS



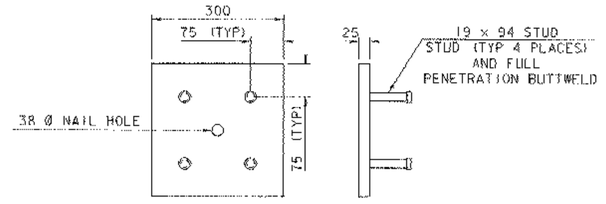
BEARING PLATE CONNECTION - DETAIL A

NTS

NOTE:
BEARING PLATE TO BE INSTALLED AT MIN 100 mm FROM EXISTING WALL, DIRECTLY BEHIND REINFORCING STEEL AND HELD IN PLACE BY A NUT LOCATED ON EACH SIDE. REINFORCING STEEL IS TO BE PLACED VERTICALY IN THE CENTER OF POURED CONCRETE WALL AT MIN DISTANCE OF 150 mm FROM FACE OF NEW SOIL NAIL WALL



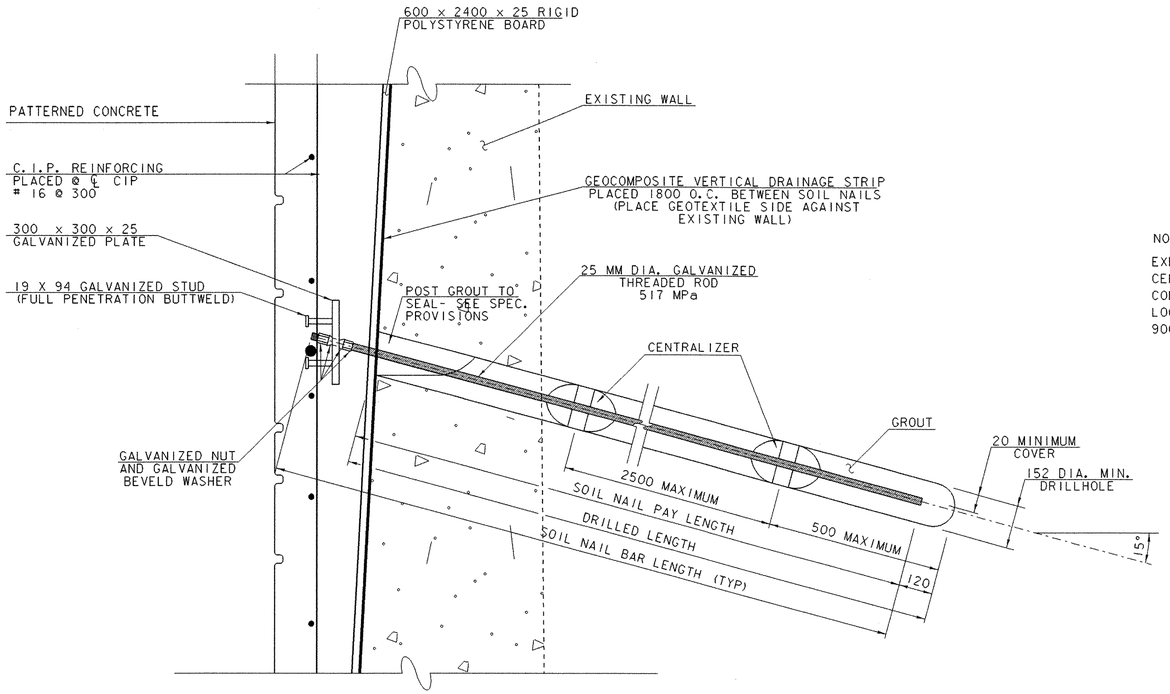
PATTERN SHALL BE RUSTIC ASHLAR CUSTOM ROCK #11003 OR EQUIVALENT FORM LINERS AS SPECIFIED CONTINUE 150mm BELOW GROUND LEVEL



GALVANIZED BEARING PLATE
DETAIL - B

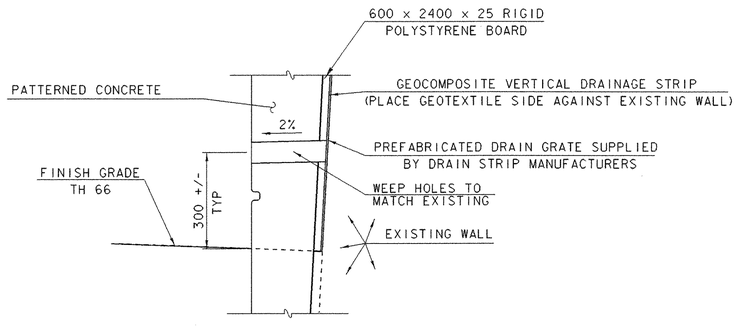
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PROJECT: BETHEL	PROJECT NO.: BRF0241(33)C/2
DESIGN FILE NAME: 02c180/structures/s02c180soilnail.dgn	
1PARM FILE NAME: s02c180soilnail2.	PLOT DATE: 14-APR-2005
DESIGNED BY: M. GAGULIC	DRAWN BY: M. GAGULIC
SQUAD LEADER: C.P. WILLIAMS	CHECKED BY: K.M. HIGGINS
SOIL NAIL WALL DETAILS - 2	SHEET: 64 OF 130



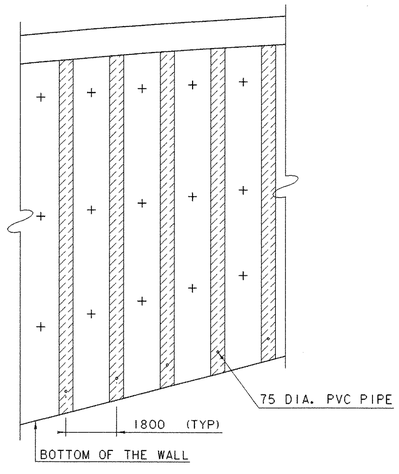
TYPICAL FINISHED WALL SECTION

NTS



TYPICAL WALL BASE DRAIN

NTS

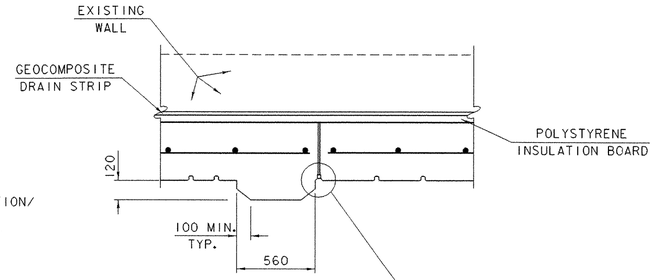


GEOCOMPOSITE DRAINAGE STRIP DETAIL

NTS

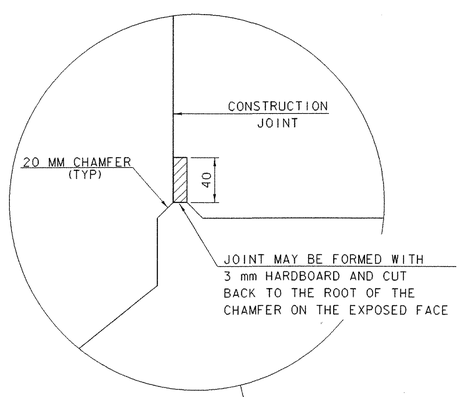
NOTE:

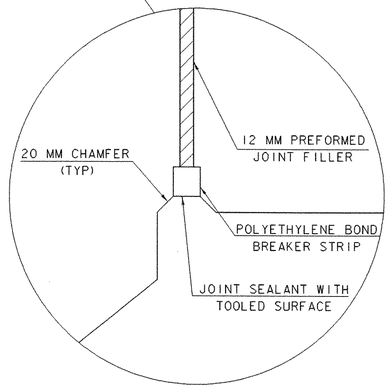
EXPANSION JOINT IN WALL TO BE CENTERED BETWEEN NAILS, CONSTRUCTION/ CONTRACTION JOINTS IN WALL TO BE LOCATED AT THE MAXIMUM SPACING OF 9000mm CENTER TO CENTER.

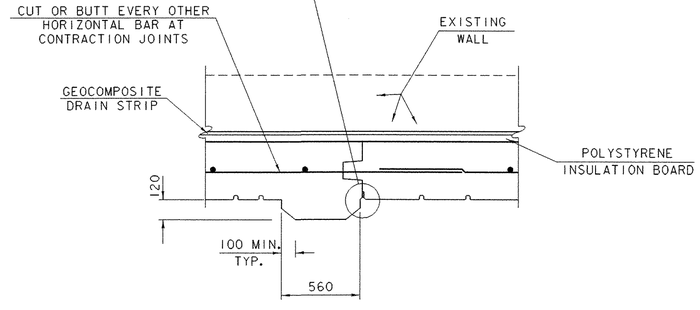


EXPANSION JOINT - TYP

NTS

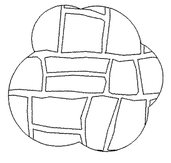






VERTICAL CONSTRUCTION/CONTRACTION JOINT

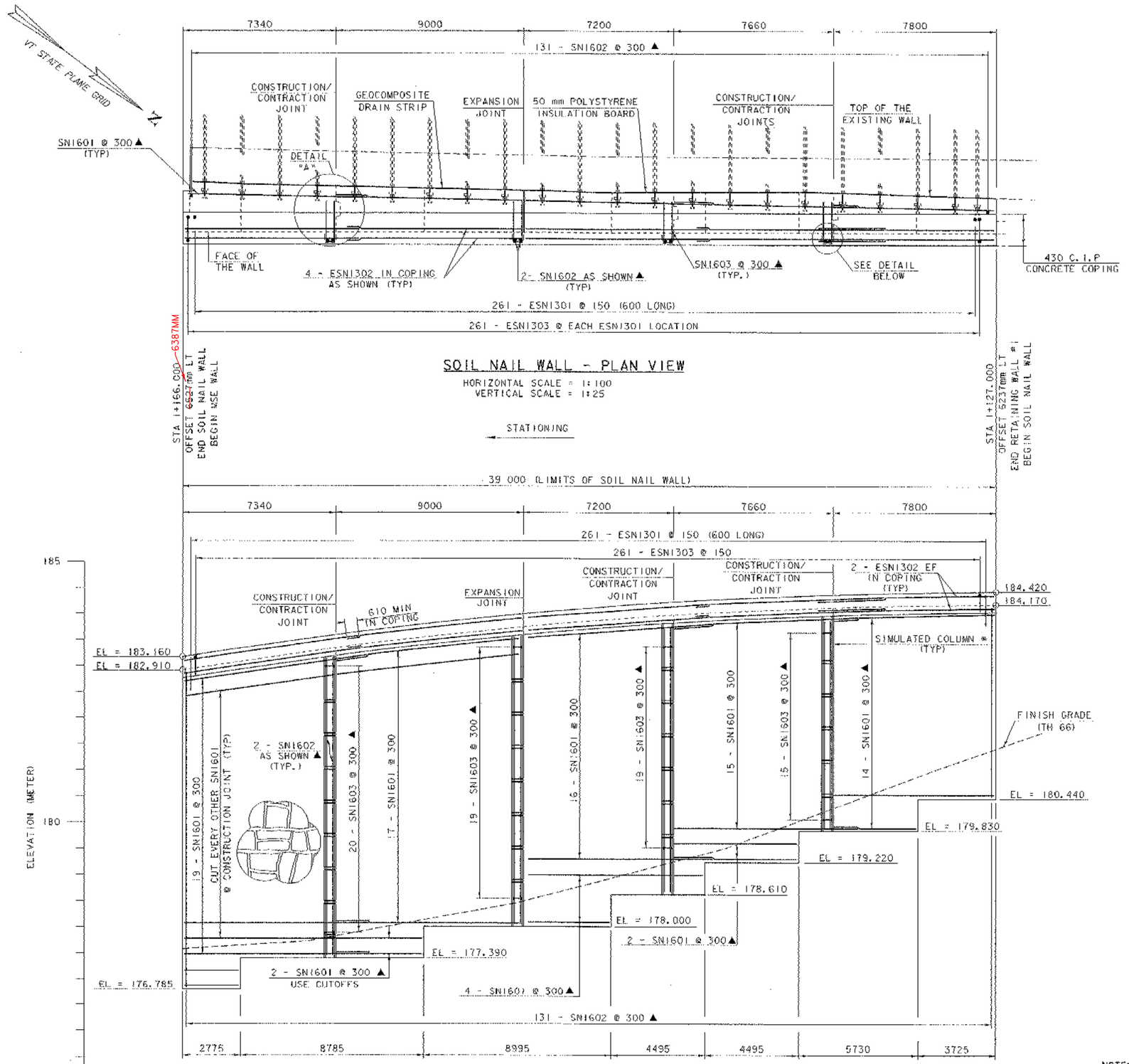
NTS



PATTERN SHALL BE RUSTIC ASHLAR CUSTOM ROCK #11003 OR EQUIVALENT FORM LINERS AS SPECIFIED CONTINUE 150mm BELOW GROUND LEVEL

PROJECT:	PROJECT NO.:
BETHEL	BRF0241(33)C/2

DESIGN FILE NAME: 02c180/structures/s02c180soilnail.dgn
IPARM FILE NAME: s02c180soilnail3. PLOT DATE: 14-APR-2005
DESIGNED BY: M. GAGULIC DRAWN BY: M. GAGULIC
SQUAD LEADER: C.P. WILLIAMS CHECKED BY: K.M. HIGGINS
SOIL NAIL WALL DETAILS - 3 SHEET: 65 OF 130

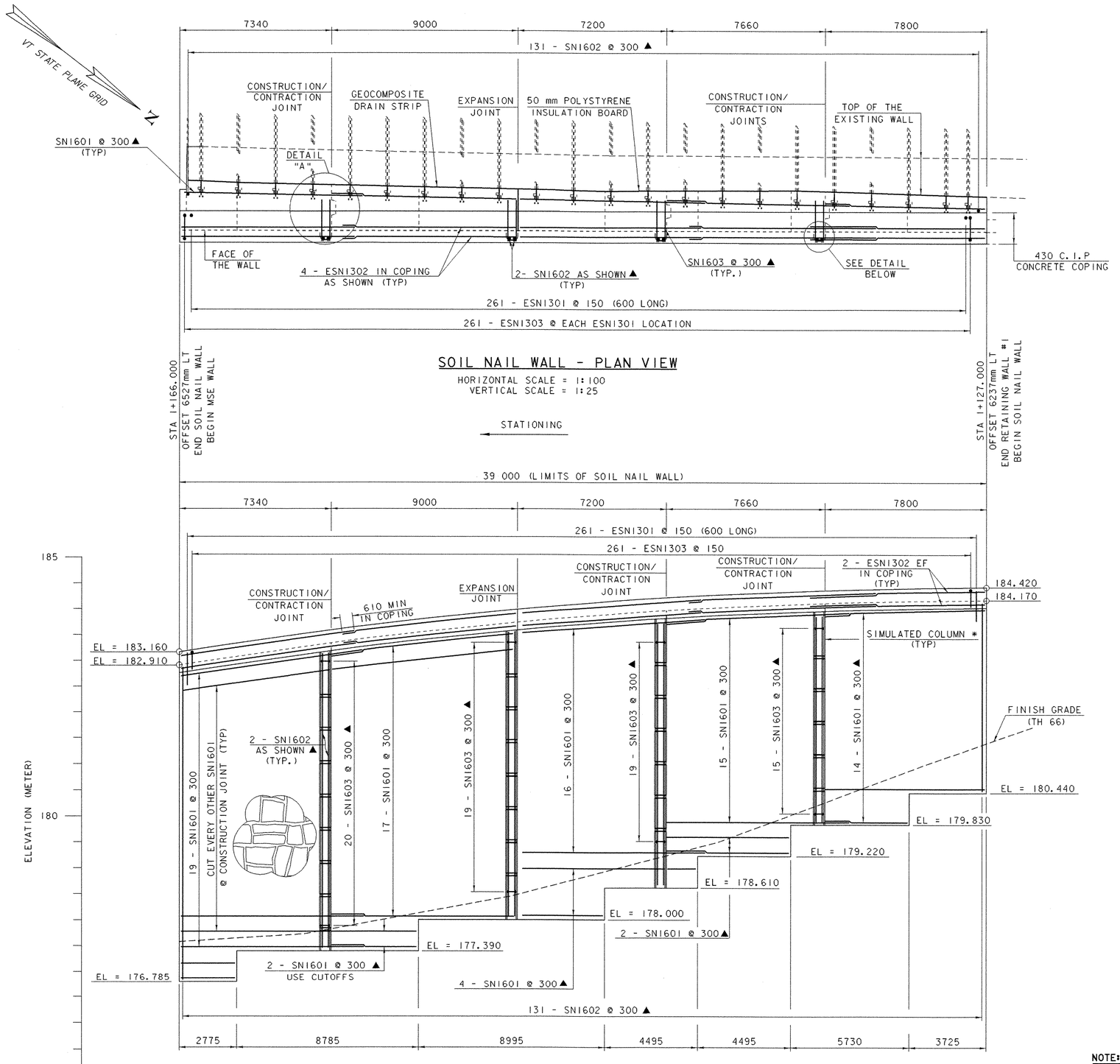


NOTE:

NF = NEAR FACE
FF = FAR FACE
EF = EACH FACE
▲ = CUT TO FIT IN FIELD
80 CLR. UNLESS OTHERWISE SPECIFIED ON THE PLANS.

PROJECT: BETHEL	PROJECT NO.: BRF 024 I (33) C/2
DESIGN FILE NAME: 02c180/structures/s02c180soilnail.dgn	
IPARM FILE NAME: s02c180soilnail4.	PLOT DATE: 14-APR-2005
DESIGNED BY: M. GAGULIC	DRAWN BY: M. FESSEL
SQUAD LEADER: C.P. WILLIAMS	CHECKED BY: M. GAGULIC
SOIL NAIL WALL REINFORCING	SHEET: 66 OF 130

Metric



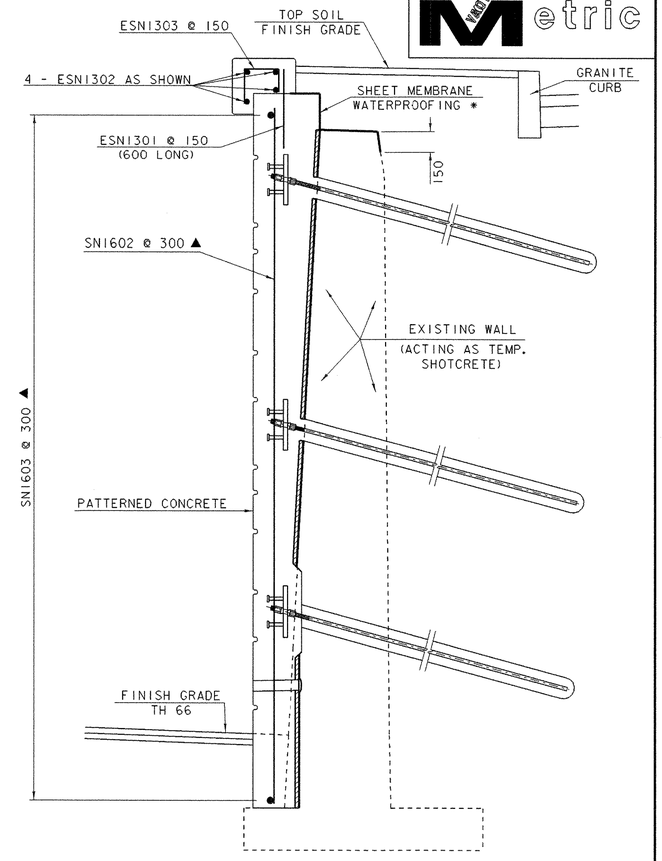
SOIL NAIL WALL - PLAN VIEW

HORIZONTAL SCALE = 1:100
VERTICAL SCALE = 1:25

SOIL NAIL WALL - ELEVATION VIEW

HORIZONTAL SCALE = 1:100
VERTICAL SCALE = 1:40

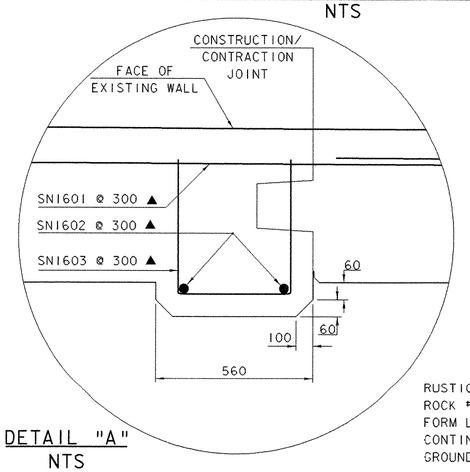
* SIMULATED COLUMN DIMENSIONS AND SCOREMARK LOCATION TO MATCH PREFABRICATED SLIP JOINT COVER ON THE MSE WALL.



* SHEET MEMBRANE WATERPROOFING SHALL BE INCIDENTAL TO ITEM 501.34 "CONCRETE-HIGH PERFORMANCE CLASS B"

SOIL NAIL WALL TYPICAL SECTION

NTS



DETAIL "A"

NTS

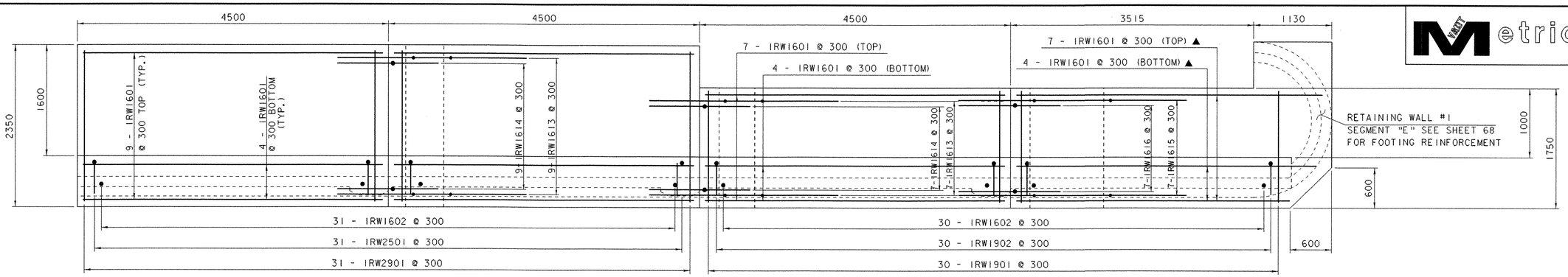
RUSTIC ASHLAR CUSTOM ROCK #11003 OR EQUIVALENT FORM LINERS AS SPECIFIED CONTINUE 150mm BELOW GROUND LEVEL

NOTE:

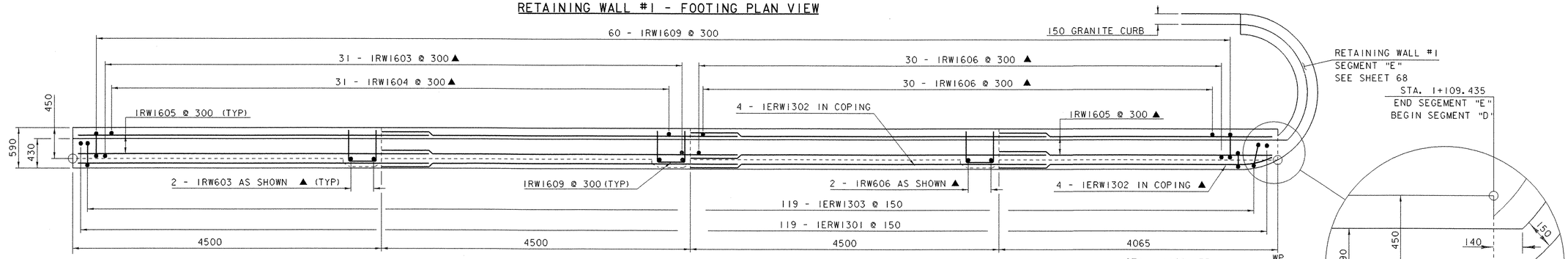
NF = NEAR FACE
FF = FAR FACE
EF = EACH FACE
▲ = CUT TO FIT IN FIELD
80 CLR. UNLESS OTHERWISE SPECIFIED ON THE PLANS.

PROJECT:	PROJECT NO.:
BETHEL	BRF0241 (33) C/2

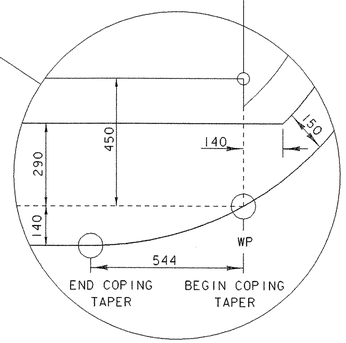
DESIGN FILE NAME: 02c180/structures/s02c180soilnail.dgn
IPARM FILE NAME: s02c180soilnail4. PLOT DATE: 14-APR-2005
DESIGNED BY: M. GAGULIC DRAWN BY: M. FESSEL
SQUAD LEADER: C.P. WILLIAMS CHECKED BY: M. GAGULIC
SOIL NAIL WALL REINFORCING SHEET: 66 OF 130



RETAINING WALL #1 - FOOTING PLAN VIEW

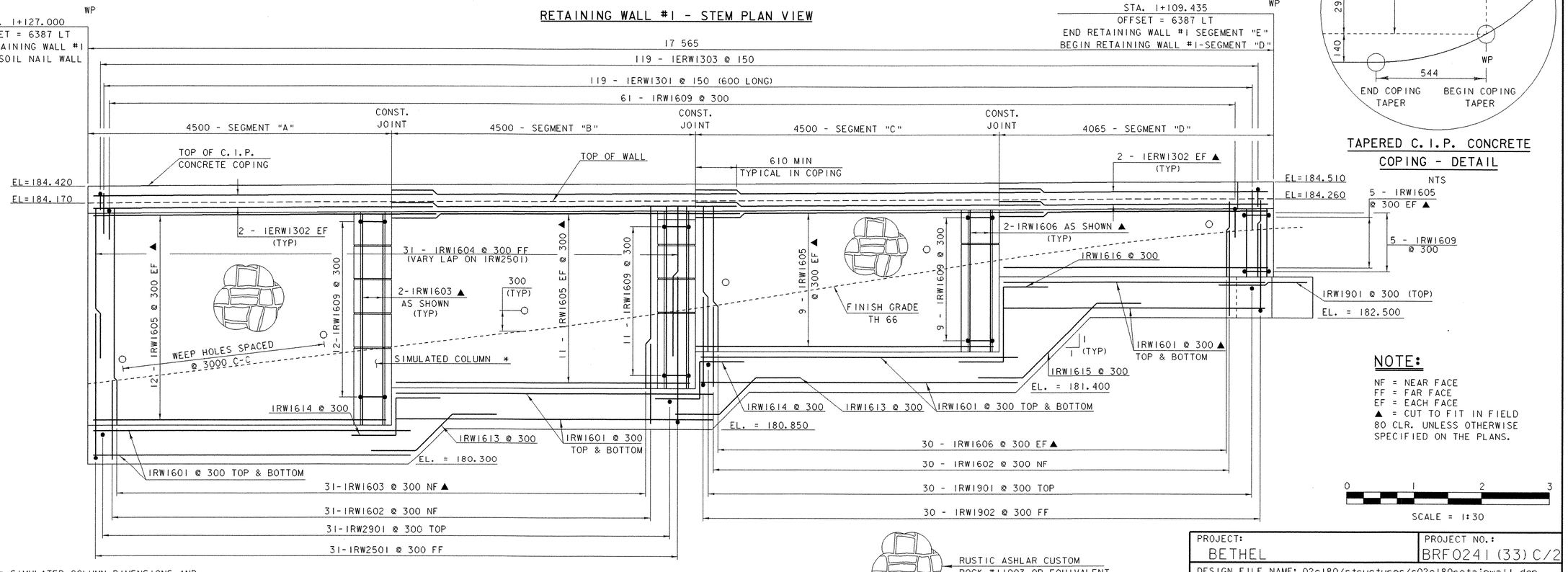


RETAINING WALL #1 - STEM PLAN VIEW



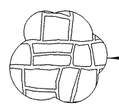
TAPERED C.I.P. CONCRETE COPING - DETAIL

NTS



* SIMULATED COLUMN DIMENSIONS AND SCOREMARK LOCATION TO MATCH PREFABRICATED SLIP JOINT COVER ON THE MSE WALL.

RETAINING WALL #1 - ELEVATION VIEW



RUSTIC ASHLAR CUSTOM
ROCK #11003 OR EQUIVALENT
FORM LINERS AS SPECIFIED
CONTINUE 150mm BELOW GROUND LEVEL

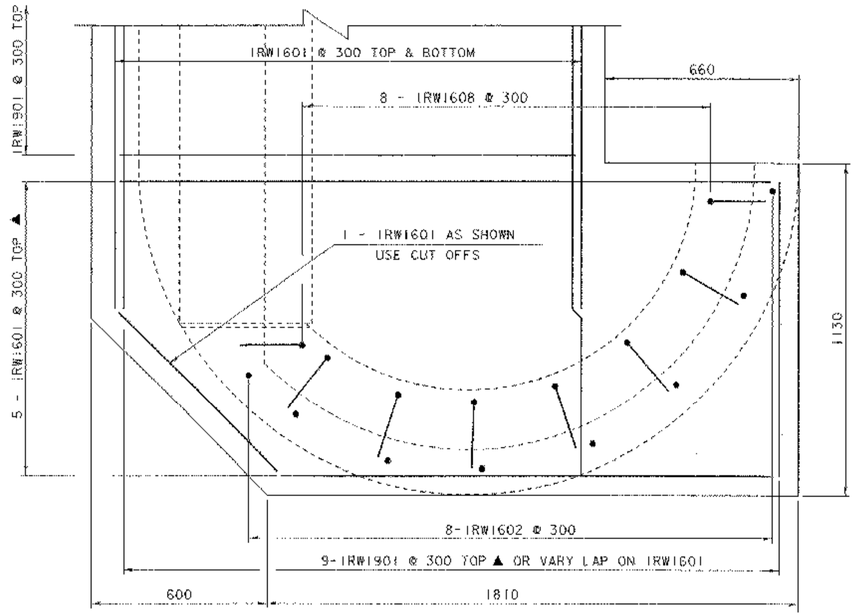
NOTE:

NF = NEAR FACE
FF = FAR FACE
EF = EACH FACE
▲ = CUT TO FIT IN FIELD
80 CLR. UNLESS OTHERWISE SPECIFIED ON THE PLANS.

0 1 2 3

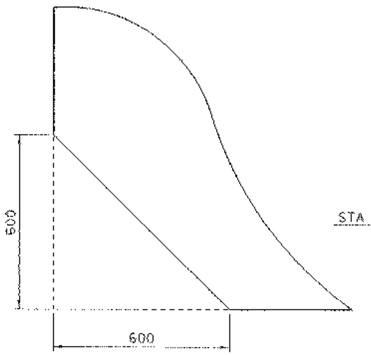
SCALE = 1:30

PROJECT: BETHEL	PROJECT NO.: BRF0241 (33) C/2
DESIGN FILE NAME: 02c180/structures/s02c180retainwall.dgn	
IPARM FILE NAME: s02c180retwall1-1	PLOT DATE: 14-APR-2005
DESIGNED BY: M. GAGULIC	DRAWN BY: M. FESSEL
SQUAD LEADER: C.P. WILLIAMS	CHECKED BY: M. GAGULIC
RETAINING WALL #1 DETAILS	SHEET: 67 OF 130

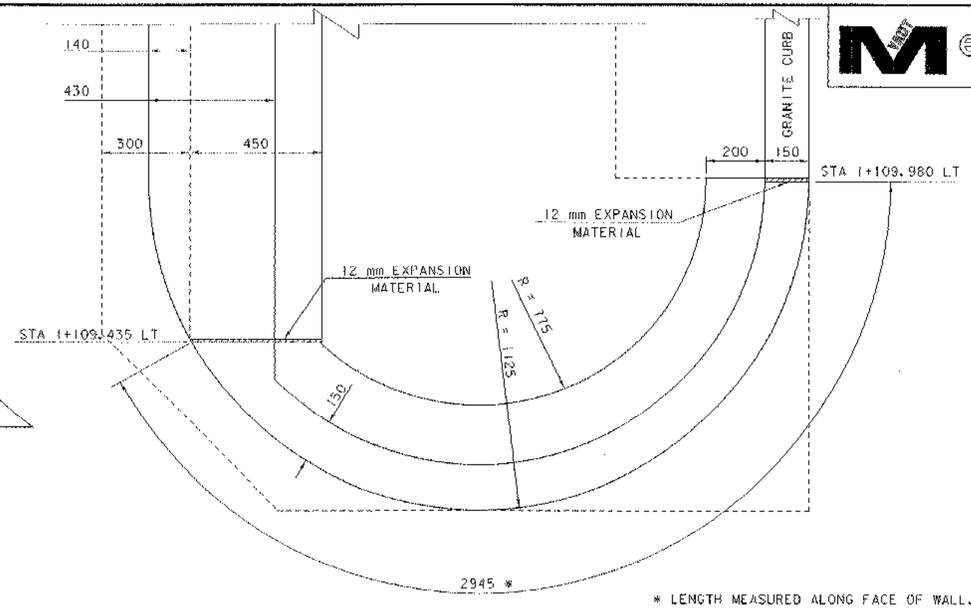


RETAINING WALL # 1-SEGMENT "E"
FOOTING REINFORCEMENT PLAN

SCALE 1 : 10



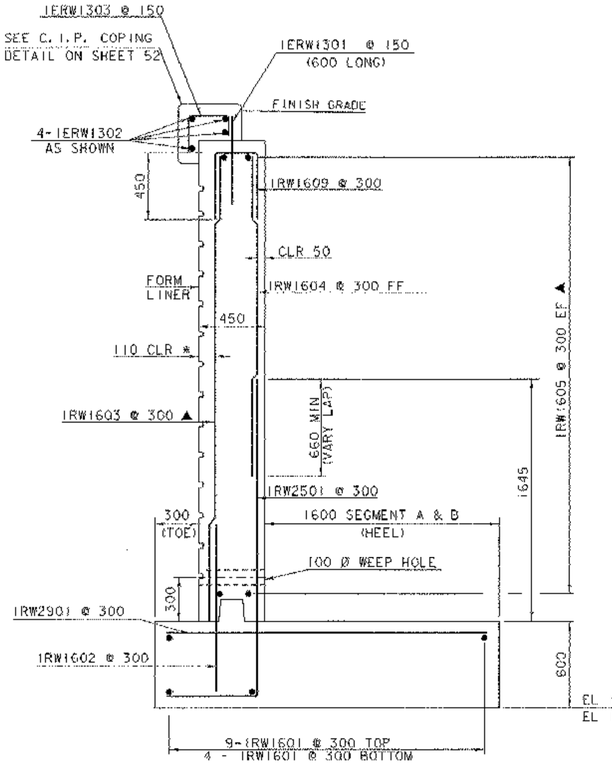
FOOTING CLIP DETAIL



* LENGTH MEASURED ALONG FACE OF WALL. ADJUST LENGTH AS REQUIRED TO CONNECT GRANITE CURB ON VT. RTE 12 AND TH66 RETAINING WALL.

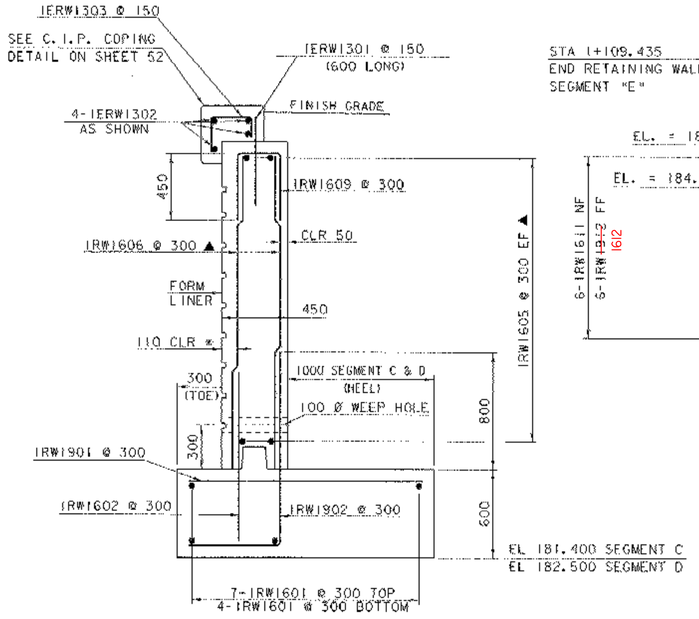
RETAINING WALL # 1-SEGMENT "E" PLAN

SCALE 1 : 10



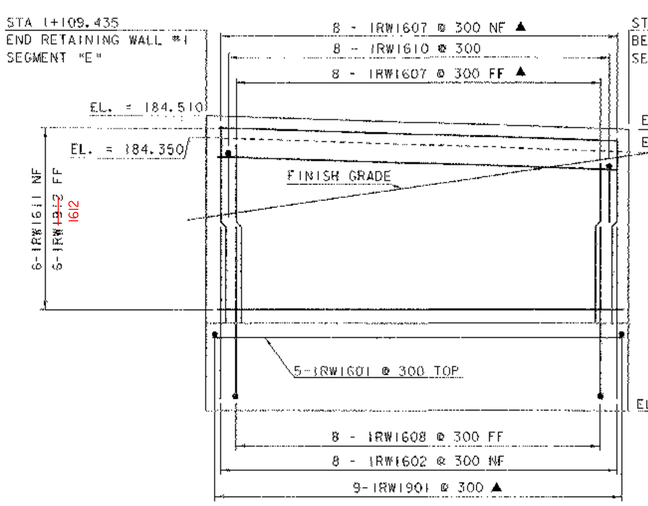
RETAINING WALL # 1
SEGMENTS A & B

SCALE 1 : 20



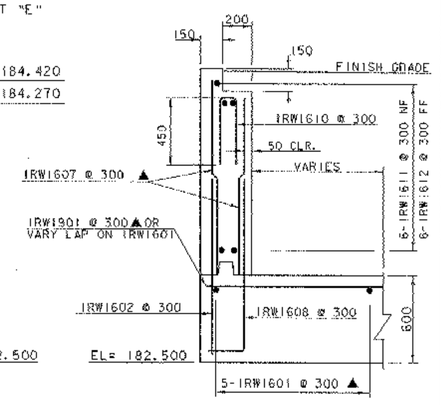
RETAINING WALL # 1
SEGMENTS C & D

SCALE 1 : 20



RETAINING WALL # 1-SEGMENT "E"
ELEVATION VIEW

SCALE 1 : 20



RETAINING WALL # 1-SEGMENT "E"
TYPICAL SECTION

SCALE 1 : 20

* CLEAR COVER INCLUDES 30 mm FOR MAXIMUM FORM LINER RELIEF

0 1 2
SCALE = 1:20

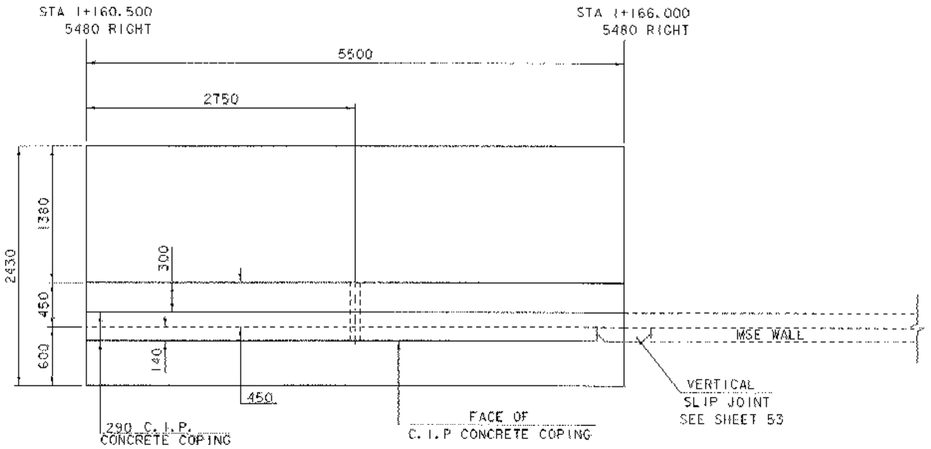
0 0.5 1
SCALE = 1:10

NOTE:

NF = NEAR FACE
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EF = EACH FACE
▲ = CUT TO FIT IN FIELD
80 CLR. UNLESS OTHERWISE SPECIFIED ON THE PLANS.

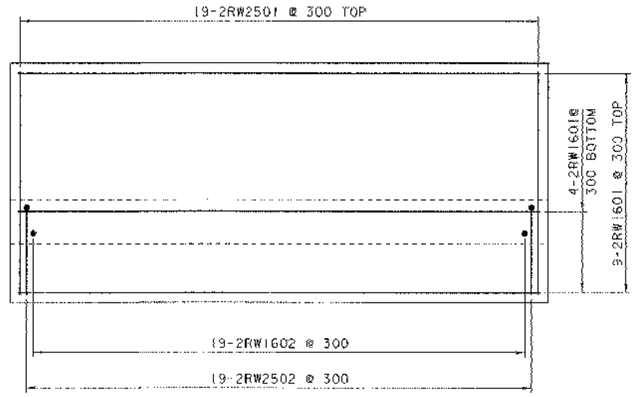
PROJECT: BETHEL	PROJECT NO.: BRF0241(33)C/2
DESIGN FILE NAME: 02c180/structures/s02c180retainwall.dgn	
IPARM FILE NAME: s02c180retwall1-2	PLOT DATE: 14-APR-2005
DESIGNED BY: M. GAGULIC	DRAWN BY: M. FESSEL
SQUAD LEADER: C. P. WILLIAMS	CHECKED BY: M. GAGULIC
RETAINING WALL 1 DETAILS	SHEET: 68 OF 130

Metric



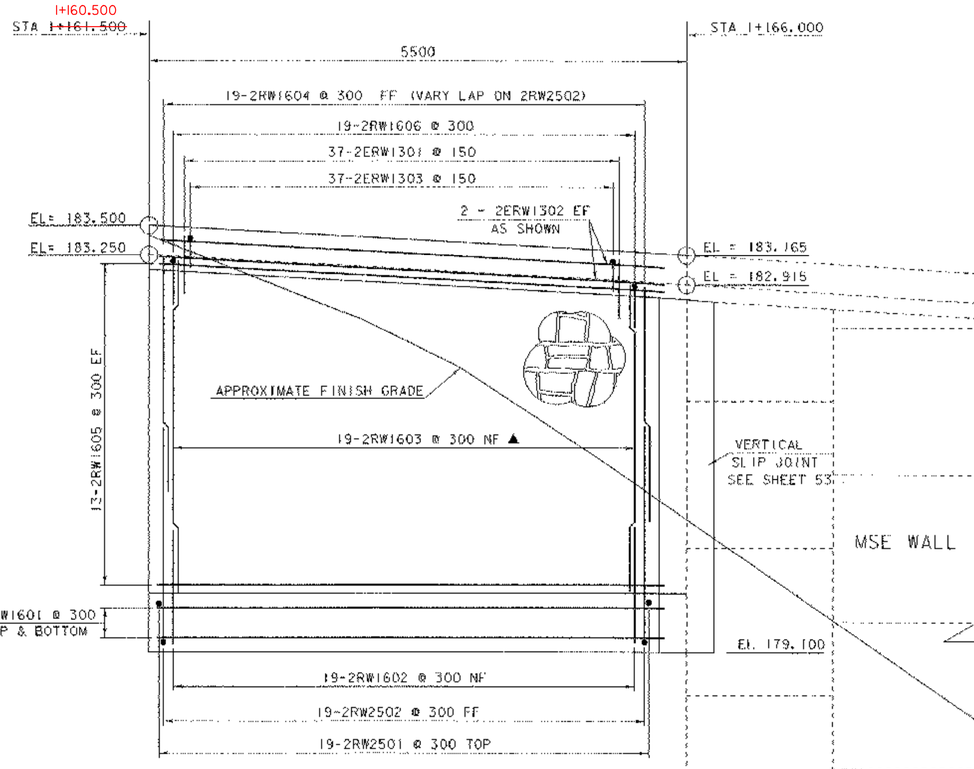
RETAINING WALL #2 PLAN

SCALE = 1:30



FOOTING REINFORCEMENT PLAN
RETAINING WALL #2

SCALE = 1:30



NOTES:

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▲ = CUT TO FIT IN FIELD

80mm CLEAR UNLESS OTHERWISE SPECIFIED ON PLANS

ALL LAPS ARE 660mm UNLESS OTHERWISE SPECIFIED ON PLANS

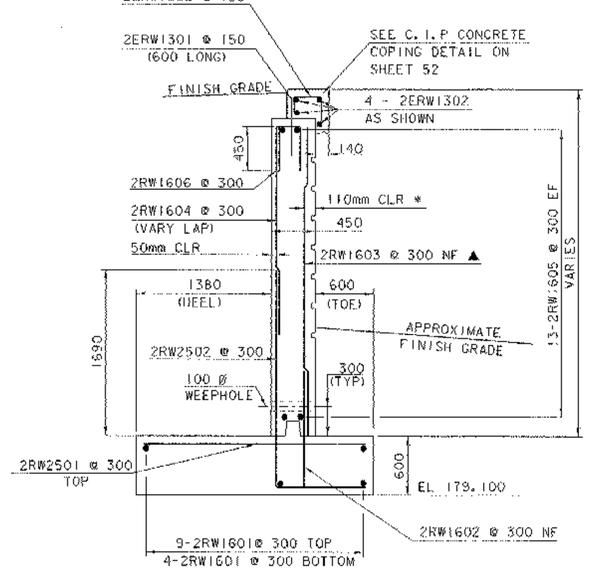


RUSTIC ASHLAR CUSTOM
ROCK #(1003 OR EQUIVALENT
FORM LINERS AS SPECIFIED
CONTINUE 150mm BELOW
GROUND LEVEL

RETAINING WALL #2 ELEVATION

SCALE = 1:30

NOTE:
CONTRACTOR MAY CHOOSE TO EXTEND THE MSE WALL INSTEAD OF CONSTRUCTING RETAINING WALL #2. IF THIS ACTION IS TAKEN, PART OF THE OLD ABUTMENT #1 MAY HAVE TO BE REMOVED. REVISED MSE WALL DETAILS SHALL BE SUBMITTED TO THE PROJECT MANAGER FOR APPROVAL.



* CLEAR COVER INCLUDES 30 mm FOR MAXIMUM FORM LINER RELIEF

TYPICAL SECTION
RETAINING WALL #2

SCALE = 1:30

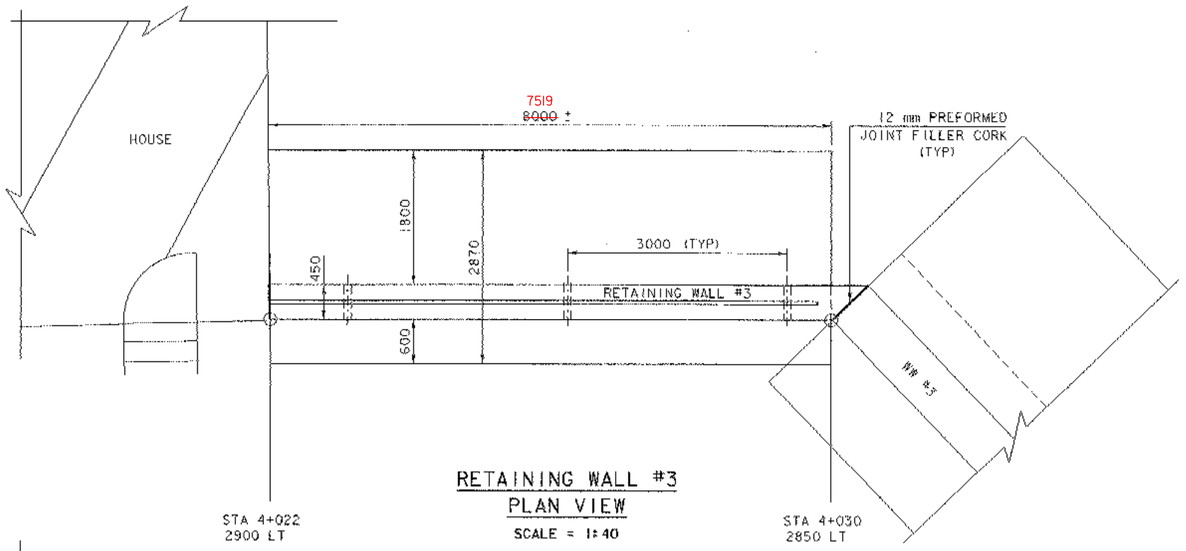
0 1 2 3

SCALE = 1:30

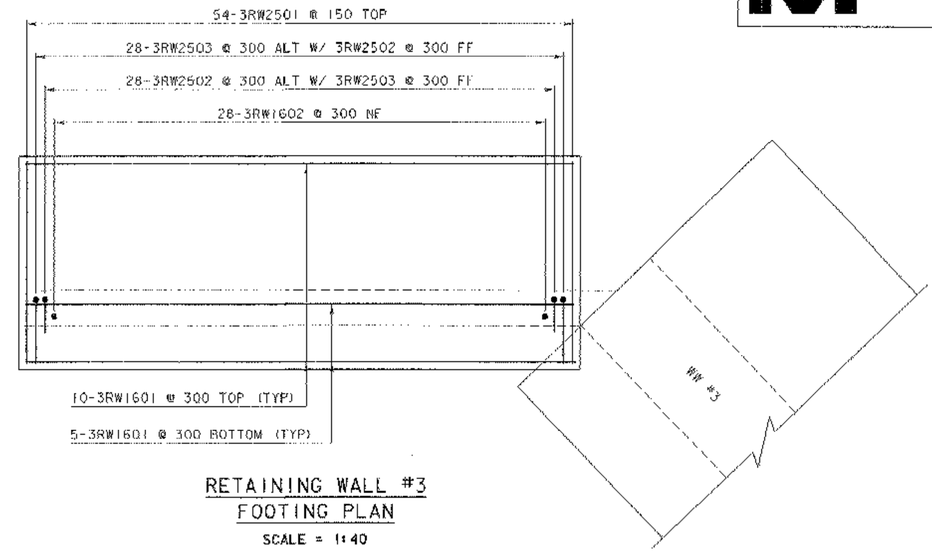
NOTE:
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▲ = CUT TO FIT IN FIELD
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PROJECT:	PROJECT NO.:
BETHEL	BRF024I (33) C/2

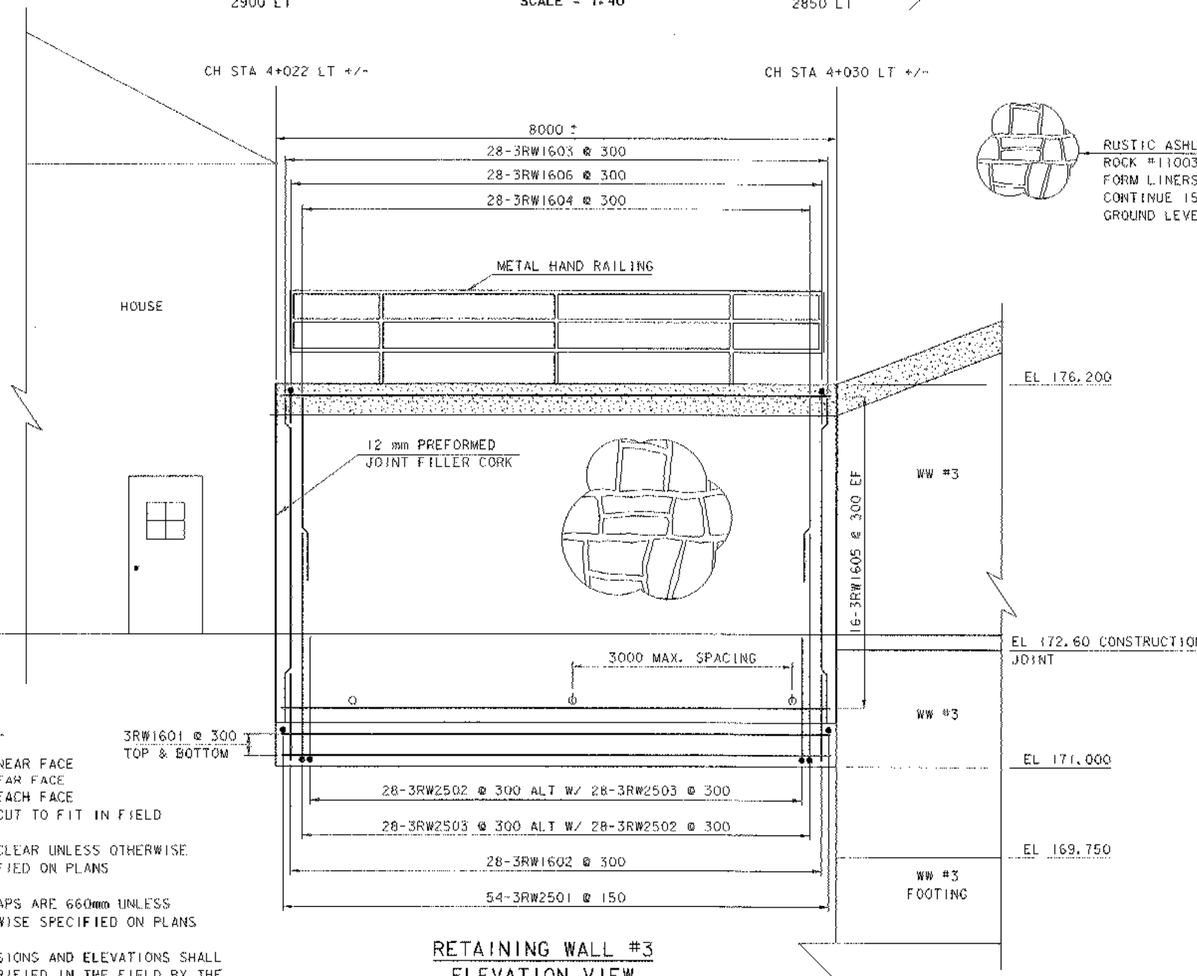
DESIGN FILE NAME: 02c180/structures/s02c180retainwall.dgn
IPARM FILE NAME: s02c180retwall2.i PLOT DATE: 14-APR-2005
DESIGNED BY: E.L.RUSTAY DRAWN BY: E.L.RUSTAY
SQUAD LEADER: C.P.WILLIAMS CHECKED BY: K.M.HIGGINS
RETAINING WALL #2 DETAILS SHEET: 69 OF 130



RETAINING WALL #3
PLAN VIEW
SCALE = 1:40



RETAINING WALL #3
FOOTING PLAN
SCALE = 1:40



NOTES:

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FF = FAR FACE
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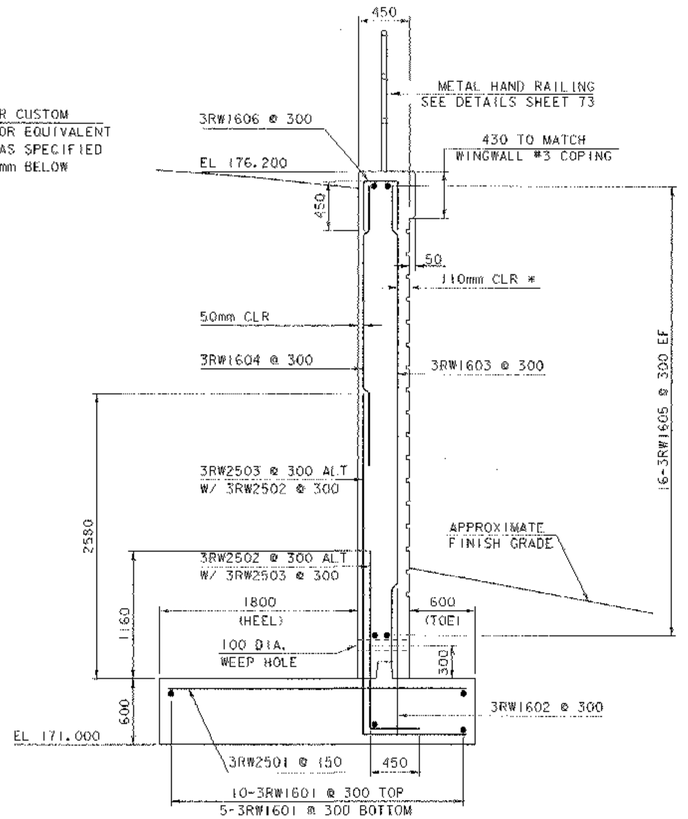
80mm CLEAR UNLESS OTHERWISE SPECIFIED ON PLANS

ALL LAPS ARE 660mm UNLESS OTHERWISE SPECIFIED ON PLANS

DIMENSIONS AND ELEVATIONS SHALL BE VERIFIED IN THE FIELD BY THE RESIDENT ENGINEER.

RETAINING WALL #3
ELEVATION VIEW
SCALE = 1:40

RUSTIC ASHLAR CUSTOM
ROCK #11003 OR EQUIVALENT
FORM LINERS AS SPECIFIED
CONTINUE 150mm BELOW
GROUND LEVEL



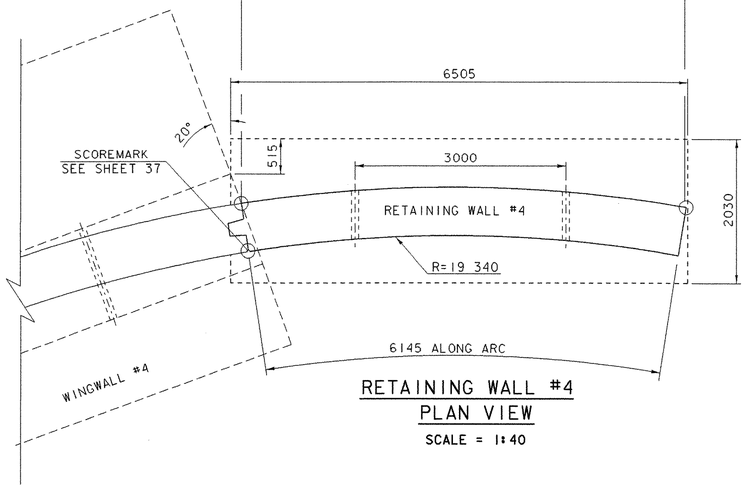
* CLEAR COVER INCLUDES 30 mm FOR MAXIMUM FORM LINER RELIEF

RETAINING WALL #3
TYPICAL SECTION
SCALE = 1:30

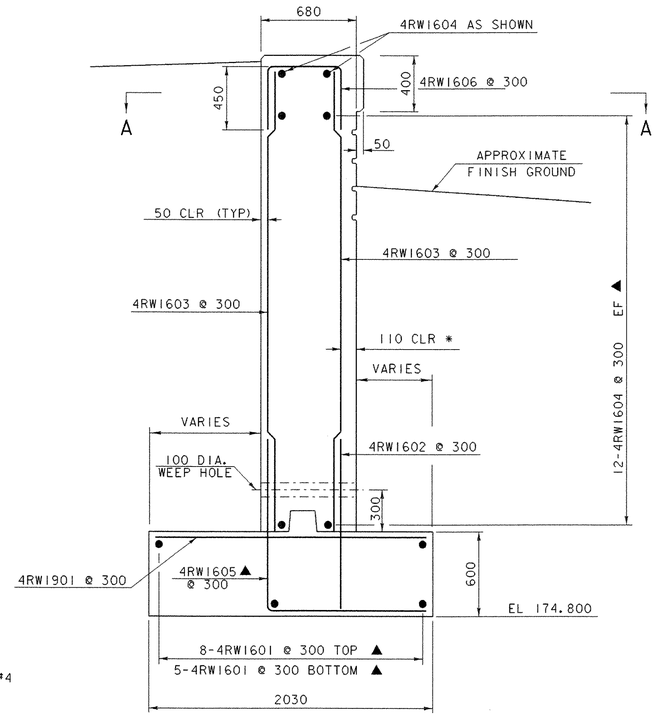
0 1 2 3
SCALE = 1:30

0 1 2 3 4
SCALE = 1:40

PROJECT: BETHEL	PROJECT NO.: BRF0241 (33) C/2
DESIGN FILE NAME: 02c180/structures/s02c180retainwall.dgn	
IPARM FILE NAME: s02c180retwall3.i	PLOT DATE: 14-APR-2005
DESIGNED BY: E.L.RUSTAY	DRAWN BY: E.L.RUSTAY
SQUAD LEADER: C.P.WILLIAMS	CHECKED BY: K.M.HIGGINS
RETAINING WALL #3 DETAILS	SHEET: 70 OF 130

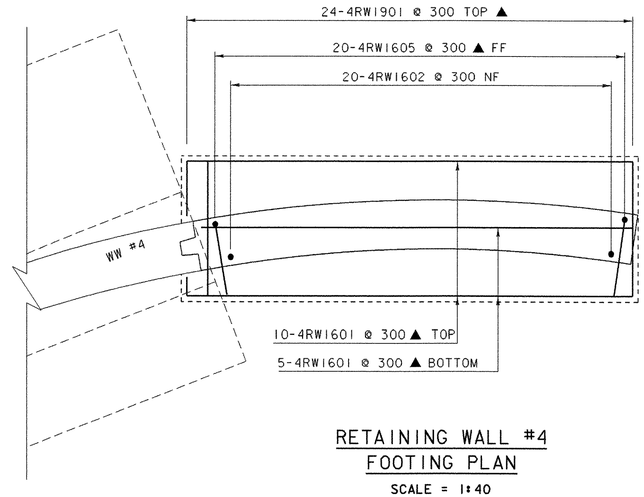


RETAINING WALL #4
PLAN VIEW
SCALE = 1:40

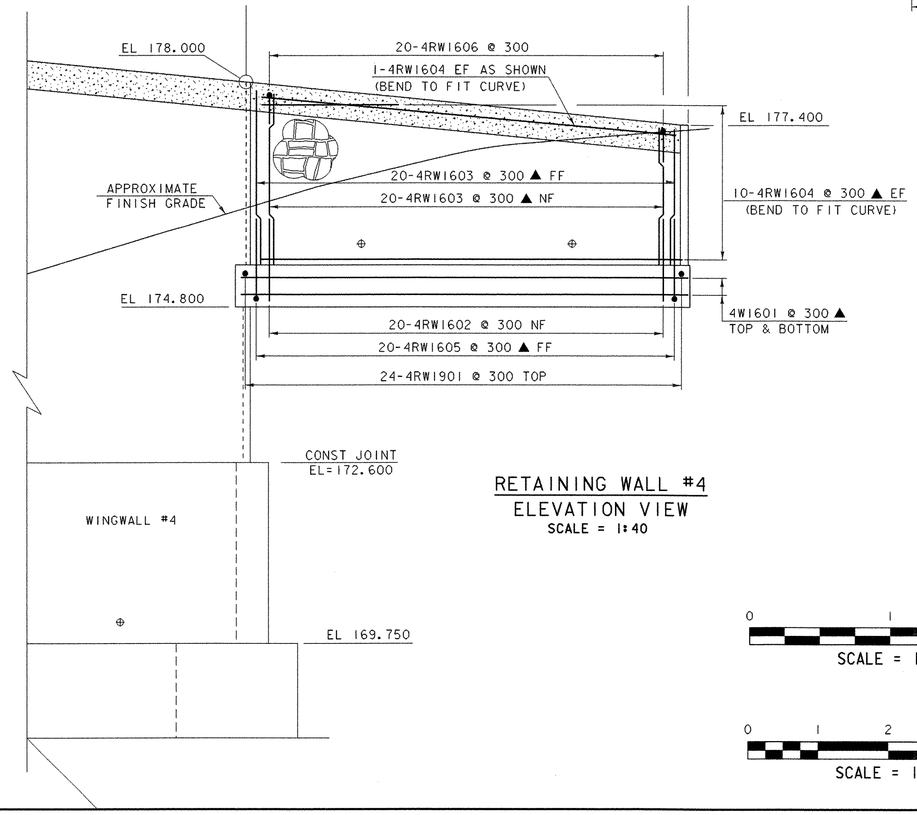


* CLEAR COVER INCLUDES 30 mm FOR MAXIMUM FORM LINER RELIEF

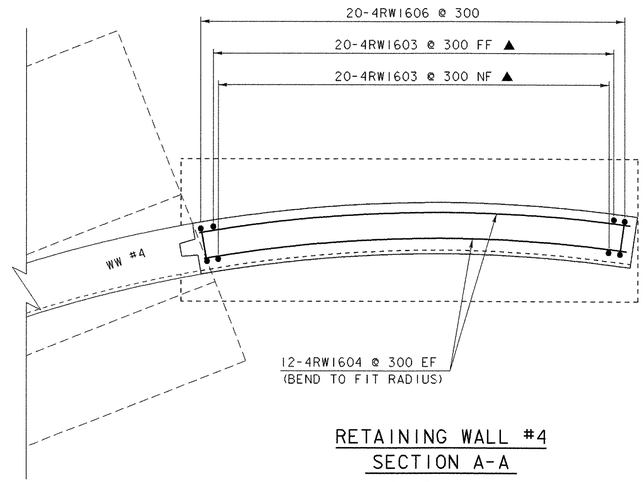
RETAINING WALL #4
TYPICAL SECTION
SCALE = 1:20



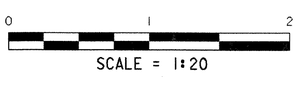
RETAINING WALL #4
FOOTING PLAN
SCALE = 1:40



RETAINING WALL #4
ELEVATION VIEW
SCALE = 1:40



RETAINING WALL #4
SECTION A-A
SCALE = 1:40



SCALE = 1:20



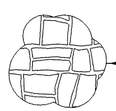
SCALE = 1:40

NOTES:

NF = NEAR FACE
FF = FAR FACE
EF = EACH FACE
▲ = CUT TO FIT IN FIELD

80mm CLEAR UNLESS OTHERWISE SPECIFIED ON PLANS

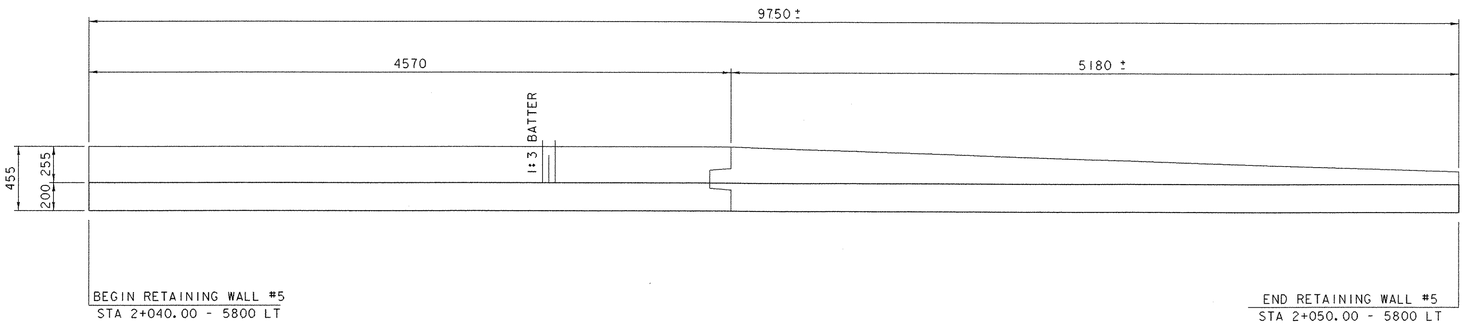
ALL LAPS ARE 660mm UNLESS OTHERWISE SPECIFIED ON PLANS



RUSTIC ASHLAR CUSTOM ROCK #11003 OR EQUIVALENT FORM LINERS AS SPECIFIED CONTINUE 150mm BELOW GROUND LEVEL

PROJECT:	PROJECT NO.:
BETHEL	BRF0241(33)C/2
DESIGN FILE NAME: 02c180/structures/s02c180retainwall.dgn	
IPARM FILE NAME: s02c180retwall14.i	PLOT DATE: 14-APR-2005
DESIGNED BY: E.L.RUSTAY	DRAWN BY: E.L.RUSTAY
SQUAD LEADER: C.P.WILLIAMS	CHECKED BY: K.M.HIGGINS
RETAINING WALL #4 DETAILS	SHEET: 71 OF 130

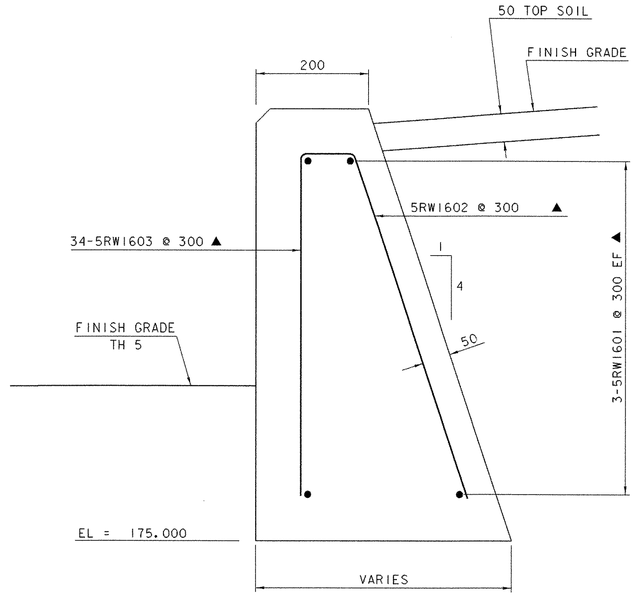
Metric



RETAINING WALL #5
PLAN VIEW

0 1 2

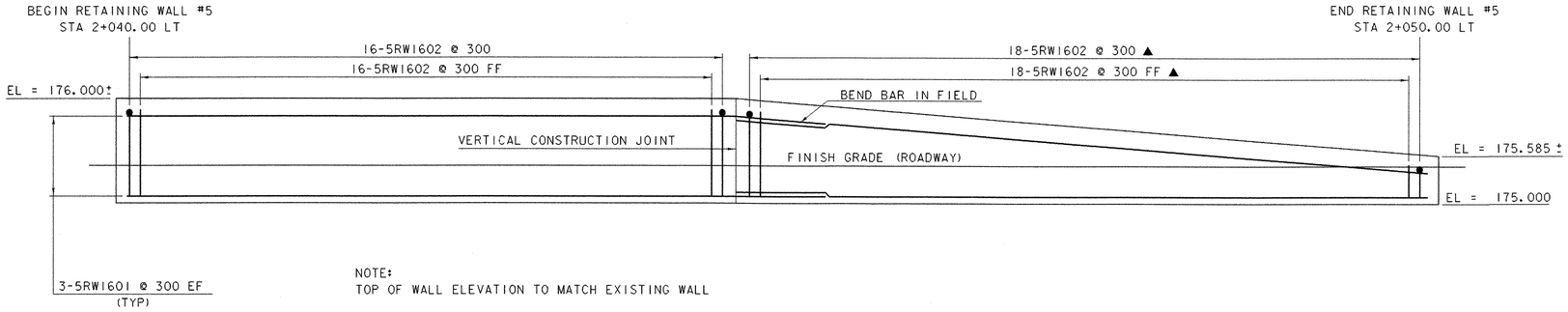
SCALE = 1:20



TYPICAL SECTION
RETAINING WALL #5

0 0.25 0.5

SCALE = 1:5



NOTE:
TOP OF WALL ELEVATION TO MATCH EXISTING WALL

RETAINING WALL #5
ELEVATION VIEW

0 1 2

SCALE = 1:20

NOTES:

NF = NEAR FACE
FF = FAR FACE
EF = EACH FACE
▲ = CUT TO FIT IN FIELD

80mm CLEAR UNLESS OTHERWISE SPECIFIED ON PLANS

ALL LAPS ARE 660mm UNLESS OTHERWISE SPECIFIED ON PLANS

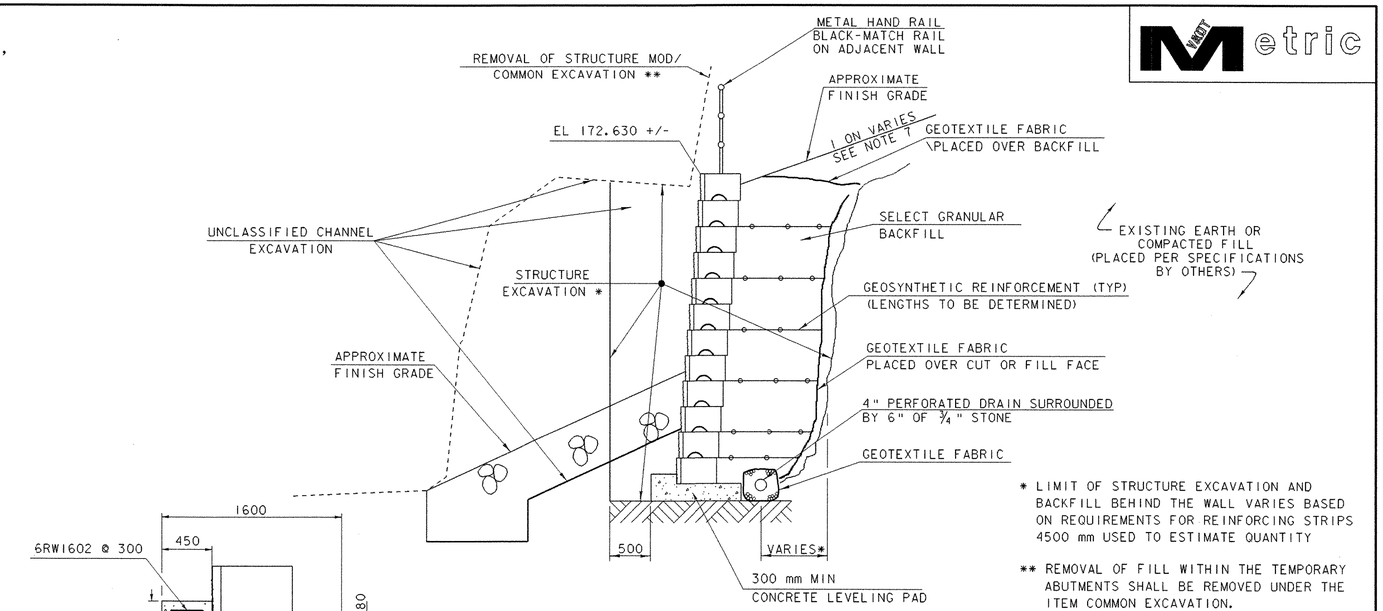
DIMENSIONS AND ELEVATIONS SHALL BE VERIFIED IN THE FIELD BY THE RESIDENT ENGINEER.

THE EXISTING WALL SHALL BE REMOVED UNDER THE ITEM 529.15 "REMOVAL OF STRUCTURE (STA 2+040.000-2+050.000 LT)"

PROJECT: BETHEL	PROJECT NO.: BRF0241(33)C/2
DESIGN FILE NAME: 02c180/structures/s02c180retainwall.dgn	
IPARM FILE NAME: s02c180retwall5.i	PLOT DATE: 14-APR-2005
DESIGNED BY: E.L.RUSTAY	DRAWN BY: E.L.RUSTAY
SQUAD LEADER: C.P.WILLIAMS	CHECKED BY: K.M.HIGGINS
RETAINING WALL #5 DETAILS	SHEET: 72 OF 130

GENERAL NOTES:

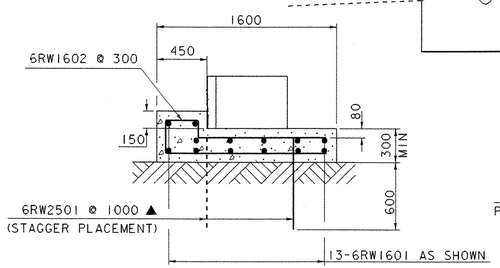
1. ITEM 526.20 CONCRETE BIN-TYPE RETAINING WALL (MOD "REDI-ROCK MSE") SHALL CONSIST OF THE DESIGN, CONSTRUCTION AND ALL MATERIALS INCLUDING BUT NOT LIMITED TO CONCRETE BLOCKS, GEOSYNTHETIC REINFORCEMENT, SELECT GRANULAR BACKFILL, ALL GEOTEXTILE FABRIC AND ANY DRAINAGE MATERIAL REQUIRED FOR THE RETAINING WALL SHOWN ON THIS SHEET.
2. THE DETAILS SHOWN ARE CONCEPTUAL IN NATURE AND ARE INTENDED TO PROVIDE OVERALL INFORMATION SUCH AS BEGINING AND END OF WALL AND APPROXIMATE TOP AND BOTTOM PROFILE OF THE WALL.
3. THE DESIGN SHALL BE IN ACCORDANCE WITH THE APPROPRIATE SECTIONS OF THE AASHTO 2002 STANDARD SPECIFICATIONS 17th EDITION FOR HIGHWAY BRIDGES .
4. FOR DESIGN PURPOSES THE UNIT WEIGHT OF SELECT GRANULAR BACKFILL SHALL BE TAKEN AS 22 KG/m^3 WITH AN INTERNAL FRICTION ANGLE OF 34 DEGREES. THE ALLOWABLE BEARING CAPACITY FOR SPREAD FOOTINGS ON LEDGE IS 480 KPa. SEE SPECIAL PROVISIONS FOR ADDITIONAL DESIGN PARAMETERS.
5. IF LEDGE PROVES TO BE HIGHER OR LOWER THAN WHAT IS SHOWN ON THIS SHEET THE BEARING PAD MAY REQUIRE ADJUSTMENT. ANY ADJUSTMENTS MADE MUST MAINTAIN AN ALLOWABLE BEARING PRESSURE OF 480 KPa.
6. NO LIVE LOAD SURCHARGE.
7. BACK SLOPE VARIES SEE CHANNEL SECTIONS FOR SLOPE VALUES TO USE IN DESIGN OF THE WALL.
8. SEE SHEETS 129 - 130 FOR RETAINING WALL FABRICATION DRAWINGS.
9. THE CONTRACTOR SHALL REMOVE ANY UNSUITABLE MATERIAL AS DIRECTED BY THE ENGINEER. THE OVER EXCAVATED MATERIAL SHALL BE REPLACED WITH MATERIAL MEETING THE REQUIREMENTS FOR ITEM 704.08. GRANULAR BACKFILL FOR STRUCTURES, VT AOT SPECIFICATIONS, LATEST EDITION.
10. THE LEVELING PAD SHALL BE A REINFORCED CONCRETE PAD FOUNDED ON LEDGE AS SHOWN ON THIS SHEET.
11. BACK FILL AND COMPACT THE FILL MATERIAL BEHIND THE WALL AS THE WALL IS INSTALLED.
12. PLACE A GEOTEXTILE FILTER FABRIC OVER THE BACKFILL MATERIAL TO MINIMIZE SOIL MIGRATION FROM THE SURFACE MATERIAL INTO THE DRAINAGE MATERIAL.
13. TURF SHALL BE ESTABLISHED AT THE TOP OF THE WALL BY THE AS SOON AS THE WALL IS COMPLETED.
14. A METAL HAND RAIL SHALL BE PLACED ALONG THE TOP OF THE RETAINING WALL. THE TOP BLOCK MAY BE CORED TO ACCEPT THE RAIL POST. IF CORING THE TOP BLOCK, TYPE IV MORTAR NON-SHRINK GROUT MUST BE USED TO SEAL THE CORED HOLE TO PREVENT WATER INFILTRATION.
15. THE METAL HAND RAIL SHALL MATCH THE GEOMETRY AND COLOR OF THE RAIL ON THE ADJACENT WALL. THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS FOR THE NEW METAL HANDRAIL.
16. IF CONDITIONS ARE DIFFERENT THAN THOSE STATED IN THESE DRAWINGS AND SPECIFICATIONS, THE CONTRACTOR MUST CONTACT THE PROJECT MANAGER PRIOR TO PROCEEDING WITH THE CONSTRUCTION OF THE WALL.
17. CONTRACTOR SHALL ORDER EXTRA BLOCKS AS REQUIRED TO RETAIN THE FILL BETWEEN THE MSE WALL AT ABUTMENT NO. 1 AND AND EXISTING RETAINING WALL ALONG THE RAILROAD TRACKS. PAYMENT FOR THE EXTRA BLOCKS WILL BE MADE UNDER THE ITEM RETAINING WALL (MOD. -"REDI ROCK").
18. THE CONCRETE BLOCKS SHALL BE CONCRETE, HIGH PERFORMANCE CLASS B. A MIX DESIGN SHALL BE SUBMITTED TO THE STRUCTURAL CONCRETE ENGINEER AND APPROVED PRIOR TO CASTING THE BLOCKS.
19. ADVANCE NOTIFICATION OF ATLEAST TWO WEEKS MUST BE PROVIDED BY THE FABRICATOR TO THE PROJECT MANAGER AND THE STRUCTURAL CONCRETE ENGINEER CONCERNING THE PROPOSED INTENTION TO COMMENCE WORK. A MINIMUM OF FIVE DAYS NOTIFICATION MUST BE PROVIDED TO THE STRUCTURAL CONCRETE ENGINEER BY THE FABRICATOR TO CONFIRM THE START DATE AND SCHEDULE AN INSPECTOR TO BE AT THE PLANT.



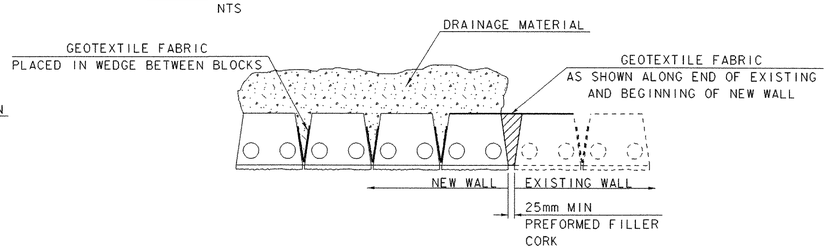
* LIMIT OF STRUCTURE EXCAVATION AND BACKFILL BEHIND THE WALL VARIES BASED ON REQUIREMENTS FOR REINFORCING STRIPS 4500 mm USED TO ESTIMATE QUANTITY

** REMOVAL OF FILL WITHIN THE TEMPORARY ABUTMENTS SHALL BE REMOVED UNDER THE ITEM COMMON EXCAVATION.

TYPICAL SECTION
NTS

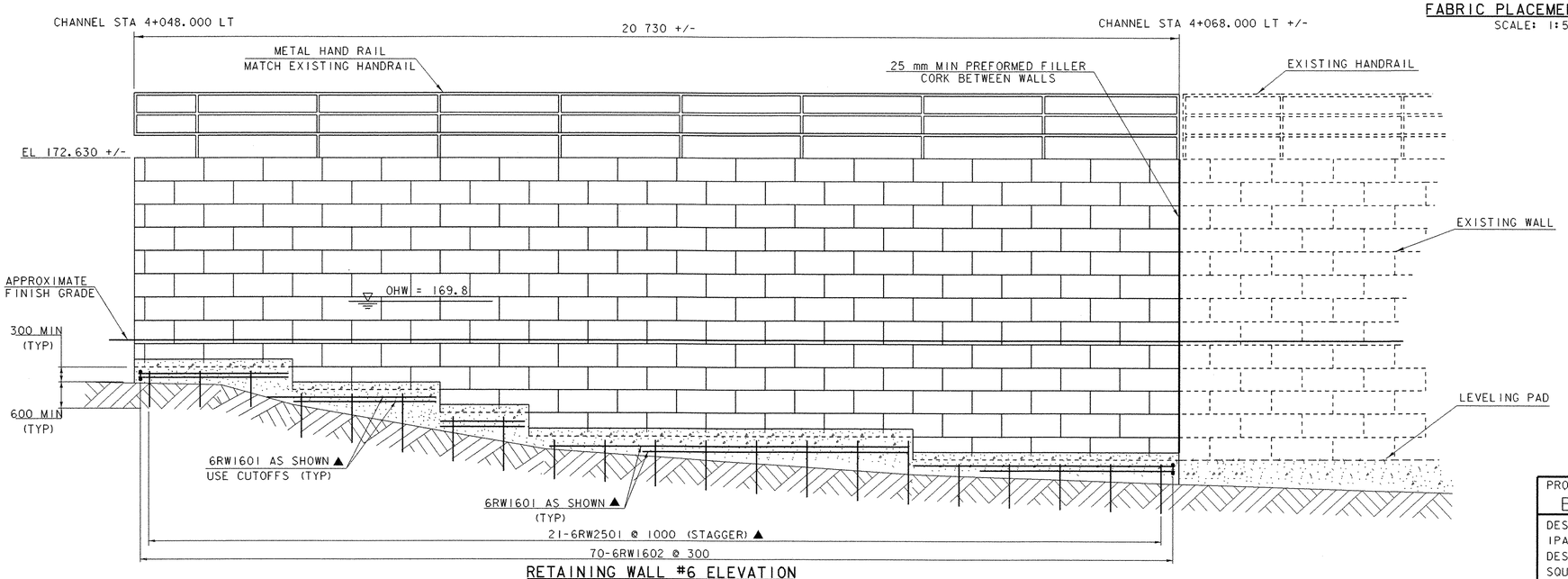


LEVELING PAD DETAILS
NTS

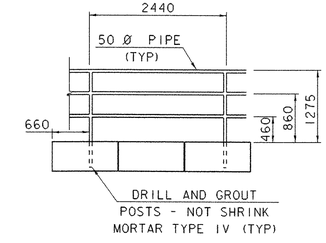


NOTE: MORTARLESS CONSTRUCTION ALLOWS FOR WATER TO DRAIN THROUGH BLOCK GAPS. THE GEOTEXTILE FABRIC MINIMIZES SOIL MIGRATION.

FABRIC PLACEMENT DETAIL
SCALE: 1:50



RETAINING WALL #6 ELEVATION
SCALE: 1:50



VERIFY ALL DIMENSIONS IN THE FIELD
(MATCH EXISTING HAND RAIL)

METAL HAND RAIL DETAIL
SCALE: 1:50

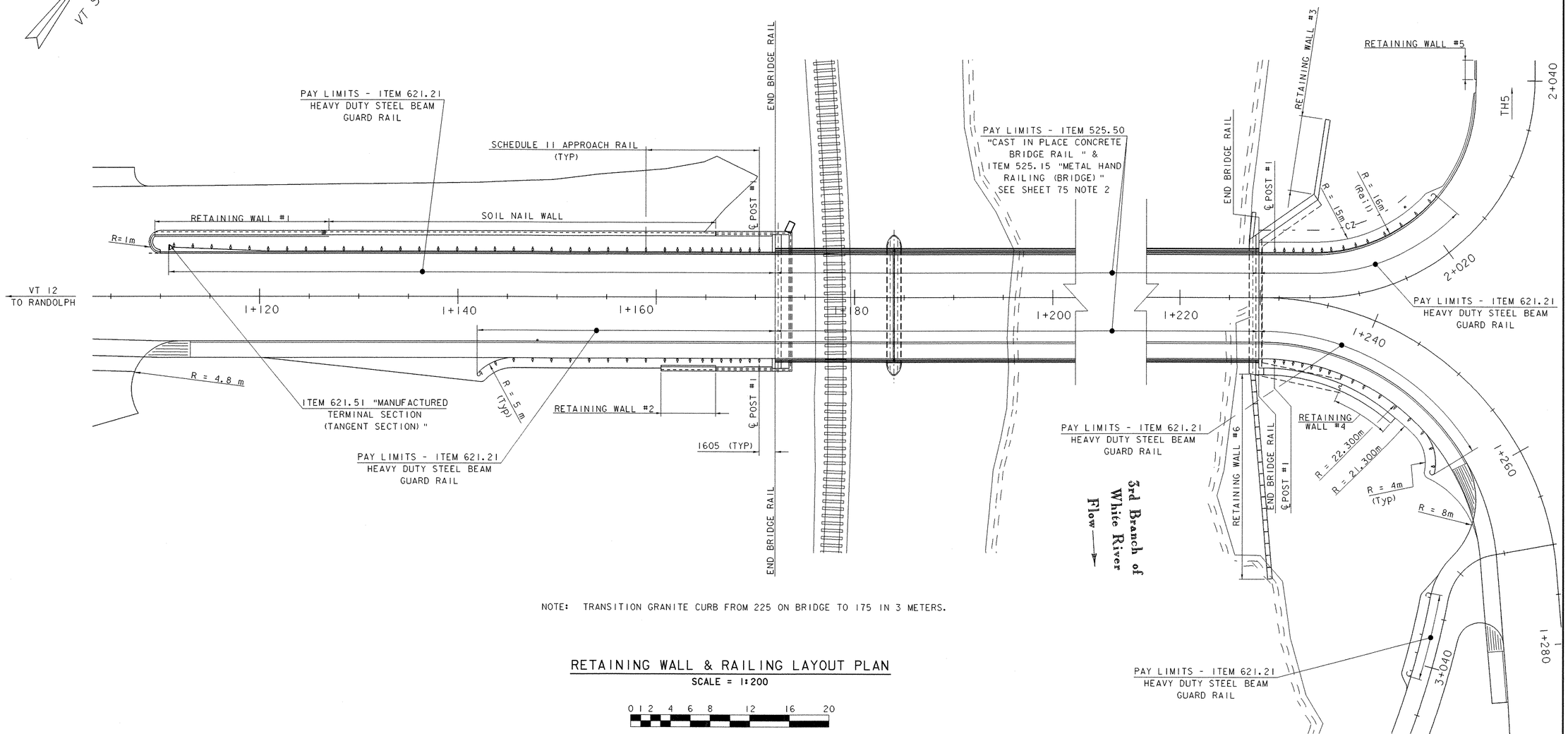
0 1 2 3 4 5
SCALE = 1:50

PROJECT: BETHEL	PROJECT NO.: BRF0241 (33) C/2
DESIGN FILE NAME: 02c180/structures/s02c180retainwall.dgn	
IPARM FILE NAME: s02c180retwall6.i	PLOT DATE: 14-APR-2005
DESIGNED BY: K. M. HIGGINS	DRAWN BY: J. WHITE
SQUAD LEADER: C.P. WILLIAMS	CHECKED BY: K. M. HIGGINS
RETAINING WALL #6 DETAILS	SHEET: 73 OF 130

Metric

N

VT STATE PLANE GRID



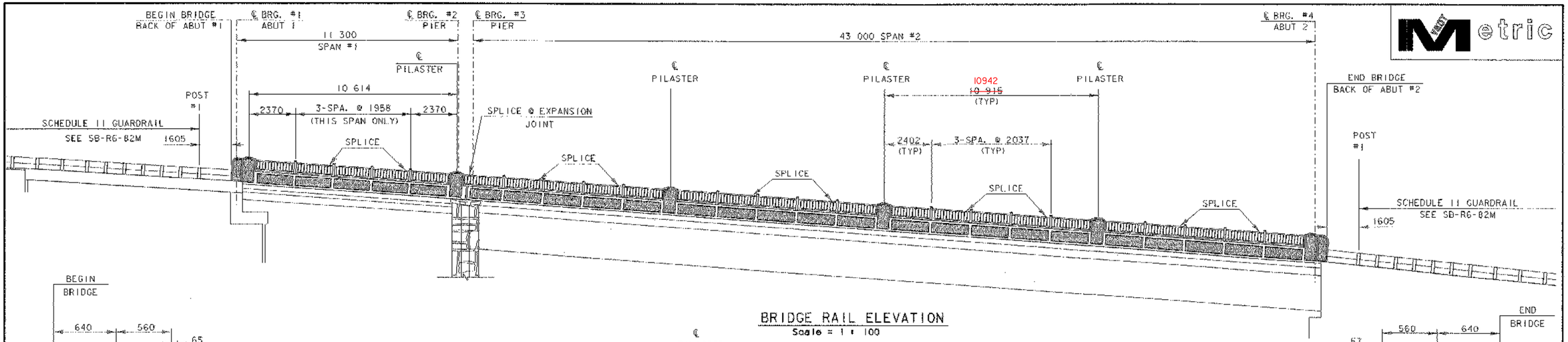
NOTE: TRANSITION GRANITE CURB FROM 225 ON BRIDGE TO 175 IN 3 METERS.

RETAINING WALL & RAILING LAYOUT PLAN

SCALE = 1:200

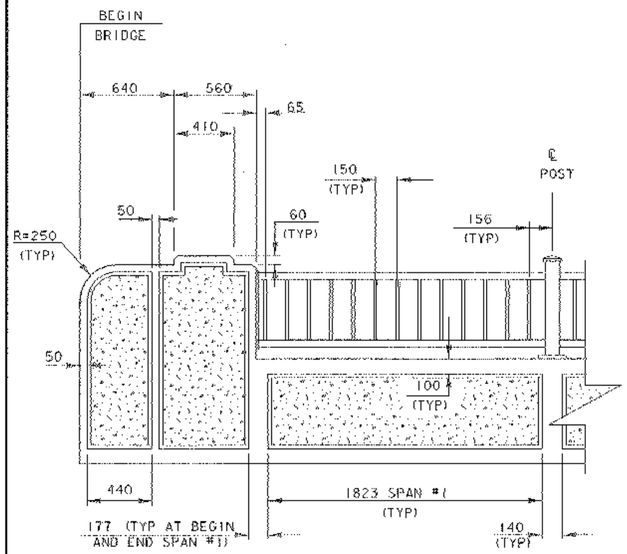
0 1 2 4 6 8 12 16 20

PROJECT: BETHEL	PROJECT NO.: BRF0241 (33) C/2
DESIGN FILE NAME: 02c180/Structures/s02c180rail.dgn	
IPARM FILE NAME: s02c180railp1.i	PLOT DATE: 14-APR-2005
DESIGNED BY: K.M. HIGGINS	DRAWN BY: E.L. RUSTAY
SQUAD LEADER: C.P. WILLIAMS	CHECKED BY: K.M. HIGGINS
RETAINING WALL & RAIL LAYOUT	SHEET: 74 OF 130



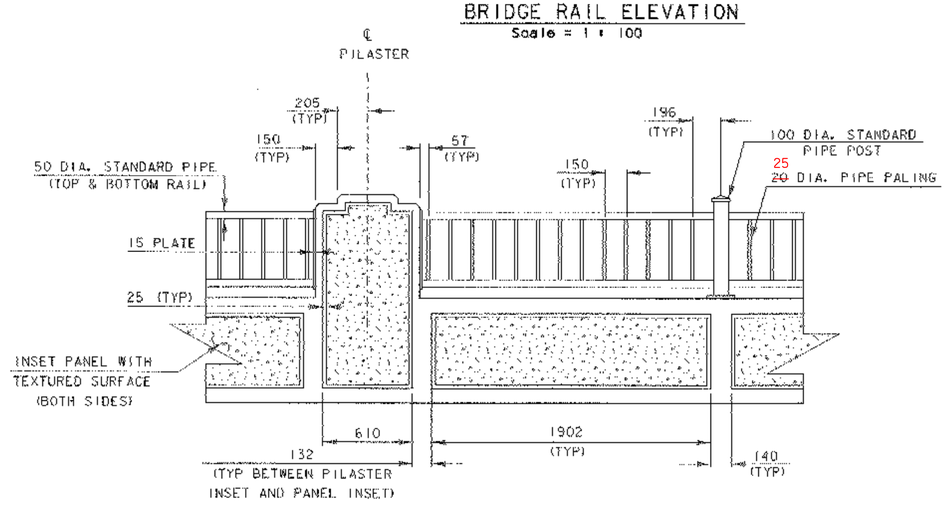
BRIDGE RAIL ELEVATION

Scale = 1 : 100



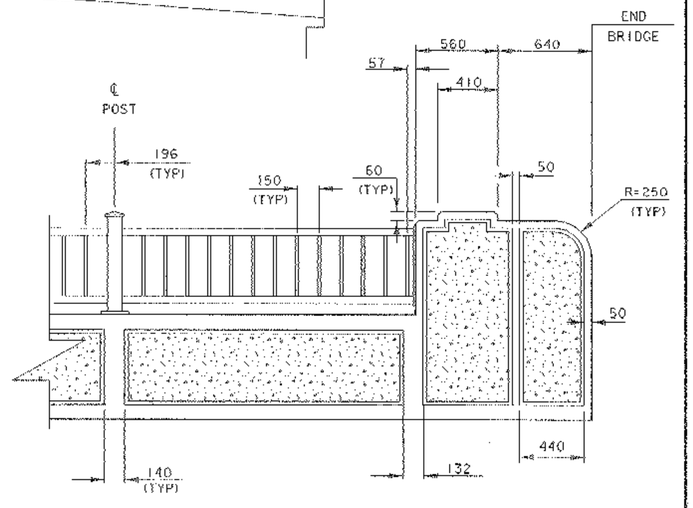
BRIDGE RAIL END BLOCK DETAIL @ BEGIN BRIDGE EXTERIOR FACE

Scale = 1 : 20



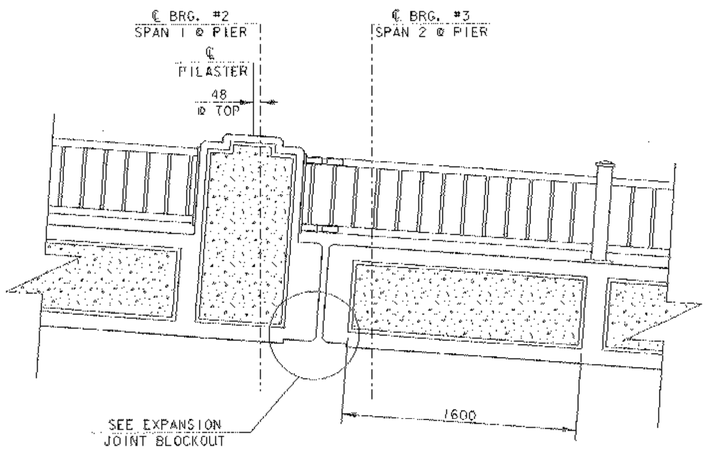
PARTIAL BRIDGE RAIL ELEVATION MAIN SPAN EXTERIOR FACE

Scale = 1 : 20



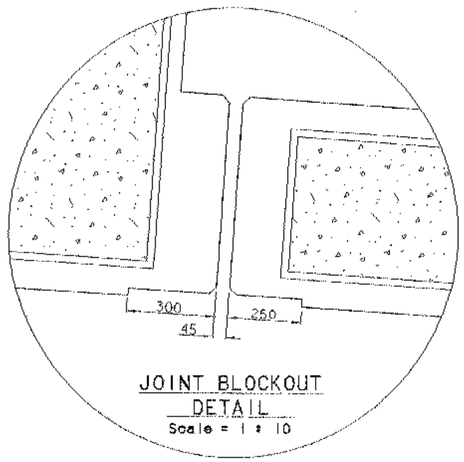
BRIDGE RAIL END BLOCK DETAIL @ END BRIDGE EXTERIOR FACE

Scale = 1 : 20



BRIDGE RAIL DETAIL @ EXPANSION JOINT

Scale = 1 : 20



JOINT BLOCKOUT DETAIL

Scale = 1 : 10

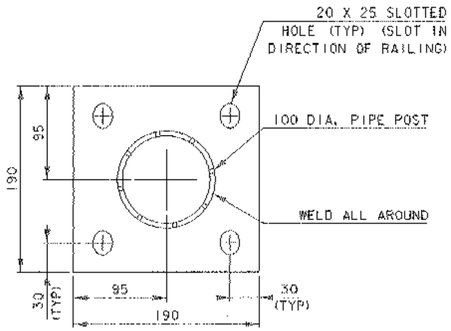
GENERAL RAIL NOTES:

1. ALL DIMENSIONS TO FACE OF CONCRETE UNLESS NOTED OTHERWISE.
2. CONCRETE PILASTERS AND END BLOCKS SHALL BE PAID FOR UNDER ITEM 525.50 "CAST IN PLACE CONCRETE BRIDGE RAIL" AND ARE NOT INCLUDED IN METAL RAILING PAY LIMIT MEASUREMENTS.
3. TEXTURED SURFACES SHOWN AS [redacted] SHALL BE MADE BY USING NATURAL STONE EXPOSED AGGREGATE (NO RUBBED SURFACE REQUIREMENT). COST FOR TEXTURED SURFACES SHALL BE INCIDENTAL TO ITEMS 525.50 "CAST IN PLACE CONCRETE BRIDGE RAIL (MOD)".
4. THE CONTRACTOR SHALL PROVIDE THE RESIDENT ENGINEER WITH A TEST PANEL OF THE EXPOSED AGGREGATE SURFACE FOR APPROVAL OF METHOD AND APPEARANCE PRIOR TO PLACING CONCRETE FOR RAIL.
5. ALL AGGREGATE FOR THE RAIL SHALL BE STOCKPILED PRIOR TO PLACEMENT TO ENSURE UNIFORMITY IN EXPOSED AGGREGATE APPEARANCE.
6. STEEL PIPE FOR POSTS, TOP AND BOTTOM RAIL AND PALINGS SHALL BE SEAMLESS, CONFORMING TO ASTM A53, GRADE B. PLATES SHALL CONFORM TO AASHTO GRADE 250.
7. HIGH STRENGTH BOLTS AND NUTS SHALL CONFORM TO AASHTO M164 (ASTM A325) TYPE 1, WASHERS SHALL BE COMMERCIAL GRADE TYPE A PLAIN WIDE AND SHALL MEET THE DIMENSIONAL REQUIREMENTS OF A.N.S.I. B18.22.
8. ALL METAL RAILING POSTS, RAILS, PIPES, SPLICE PIPES, BOLTS, NUTS, AND WASHERS SHALL BE GALVANIZED AFTER FABRICATION IN CONFORMANCE TO AASHTO M252 (ASTM A53) AND AASHTO M111 (ASTM A123) AND PAINTED GREEN (COLOR CHIP #14062). ALL COMPONENTS OF THE METAL RAIL AND ITS FABRICATION SHALL BE PAID FOR UNDER THE ITEM 525.15 "METAL HAND RAILING (BRIDGE)"

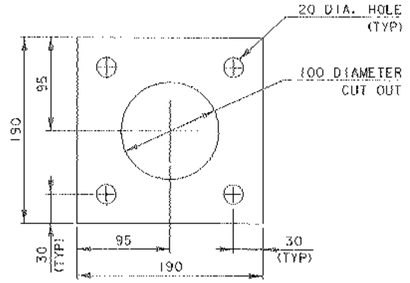
0 1 2
Scale = 1:20

0 2 4 6 8 10
Scale = 1:100

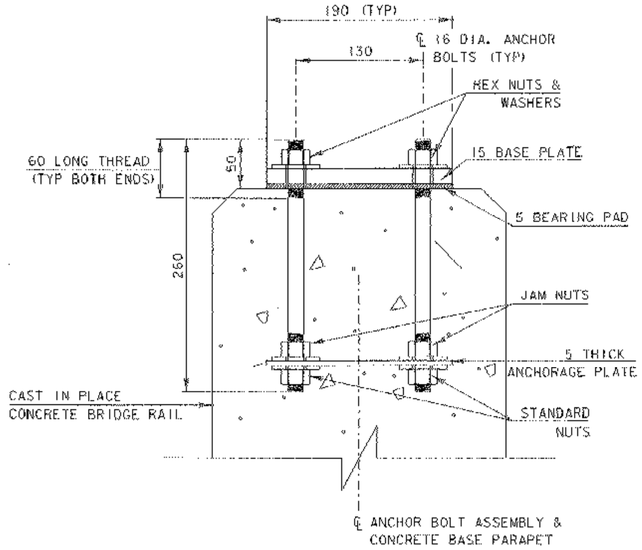
PROJECT: BETHEL	PROJECT NO.: BRF0241(33)C/2
DESIGN FILE NAME: 02c180/Structures/s02c180rail.dgn	
IPARM FILE NAME: s02c180rail.i	PLOT DATE: 14-APR-2005
DESIGNED BY: K.M. HIGGINS	DRAWN BY: E.L. RUSTAY
SQUAD LEADER: C.P. WILLIAMS	CHECKED BY: K.M. HIGGINS
BRIDGE RAIL DIMENSIONS	SHEET: 75 OF 130



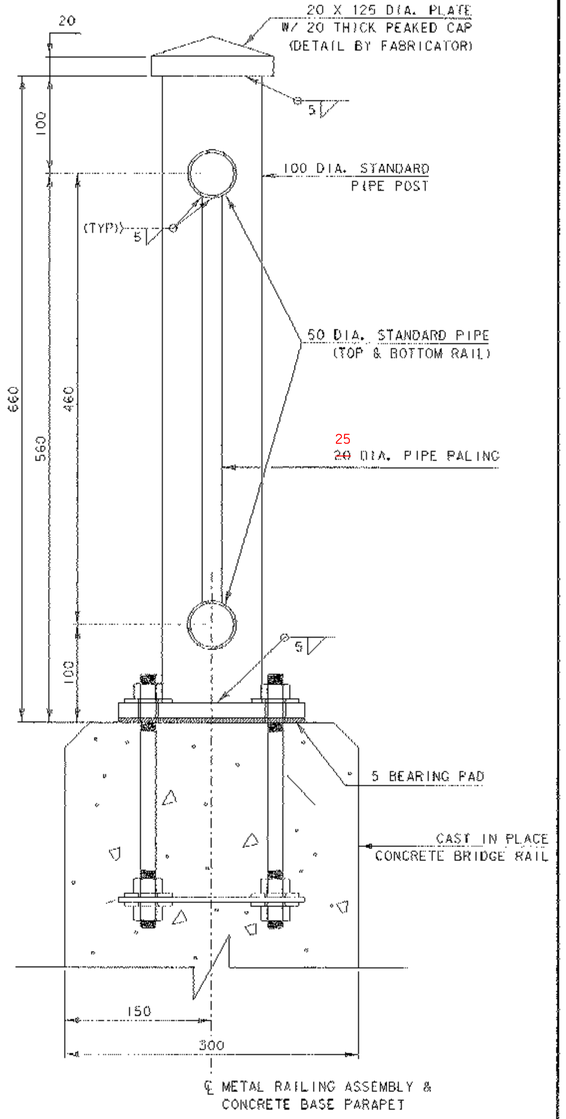
TYPICAL BASE PLATE DETAIL
Scale = 1 : 3



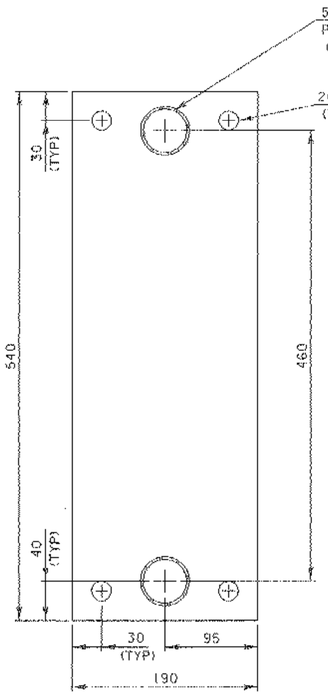
TYPICAL ANCHORAGE PLATE DETAIL
Scale = 1 : 3



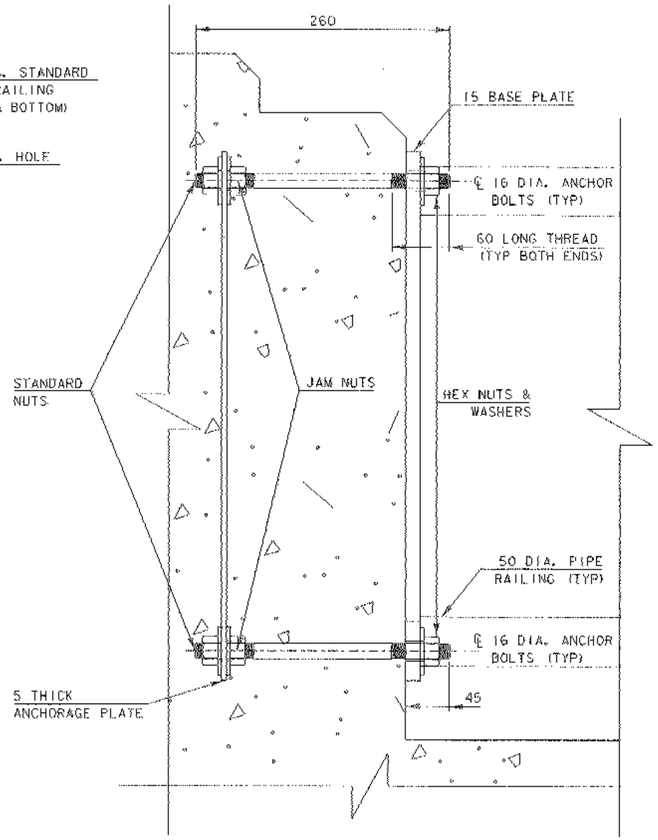
ANCHOR BOLT ASSEMBLY
Scale = 1 : 3



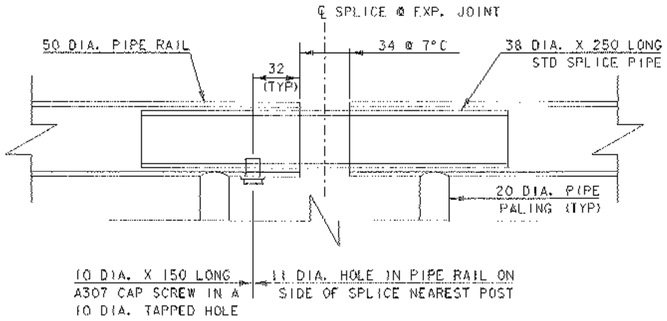
METAL RAILING DETAIL
Scale = 1 : 3



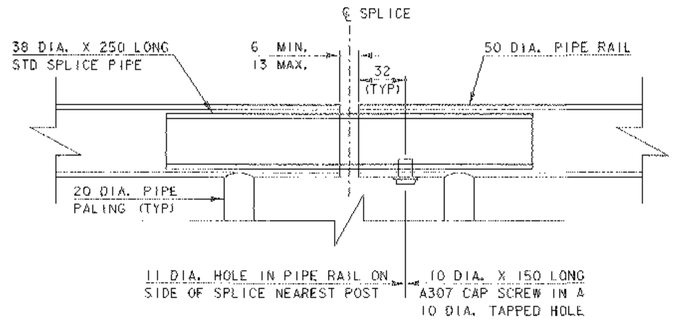
TYPICAL SIDE PLATE DETAIL
Scale = 1 : 3



TYPICAL SIDE PLATE CONNECTION DETAIL
Scale = 1 : 3



SPICE DETAIL @ EXPANSION JOINT (TYP TOP & BOTTOM)
Scale = 1 : 2

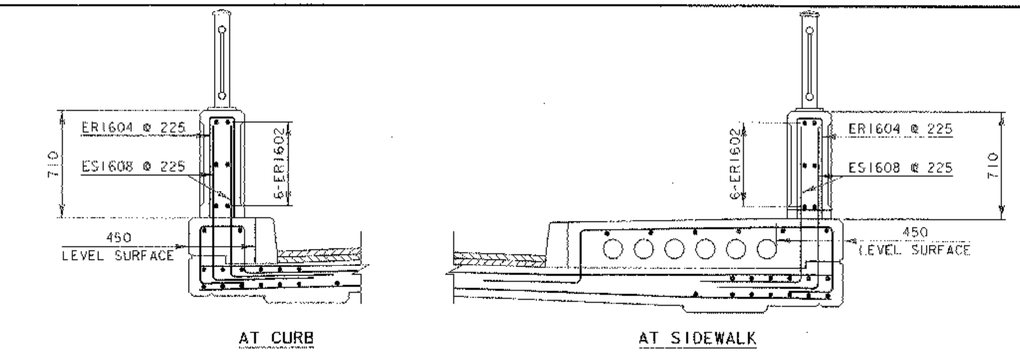


SPICE DETAIL
Scale = 1 : 2

0 0.5 1 1.5 2
Scale = 1:2

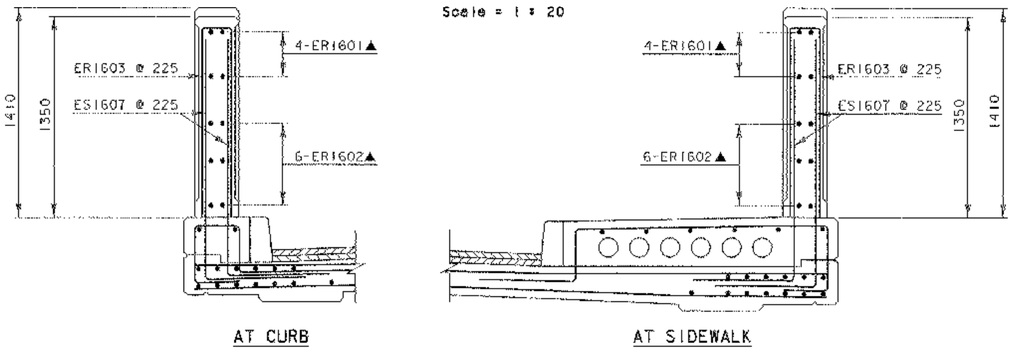
0 1 2 3
Scale = 1:3

PROJECT: BETHEL	PROJECT NO.: BRF0241(33)C/2
DESIGN FILE NAME: 02c180/Structures/s02c180rail.dgn	
IPARM FILE NAME: s02c180handrail.i	PLOT DATE: 14-APR-2005
DESIGNED BY: K.M. HIGGINS	DRAWN BY: E.L. RUSTAY
SQUAD LEADER: C.P. WILLIAMS	CHECKED BY: K.M. HIGGINS
BRIDGE RAIL DETAILS	SHEET: 76 OF 130



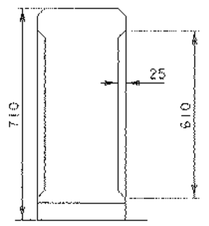
TYPICAL CONCRETE BASE PARAPET SECTIONS AT BRIDGE

Scale = 1 : 20



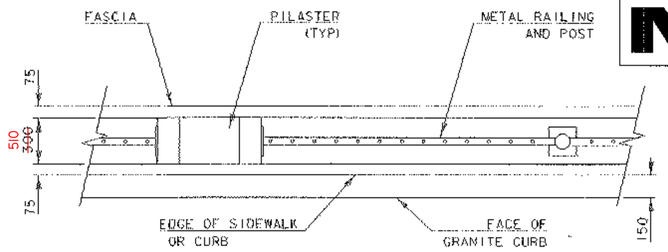
TYPICAL PILASTER SECTION

Scale = 1 : 20



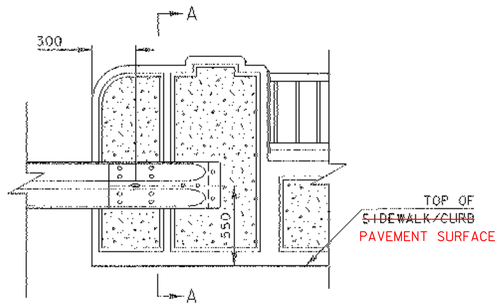
CONCRETE INSET DETAILS

Scale = 1 : 10



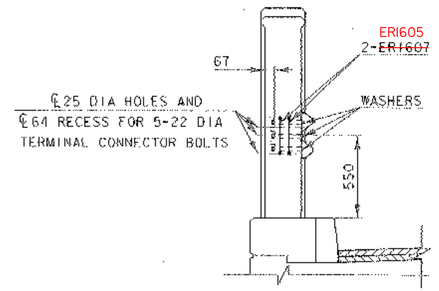
PARTIAL PLAN AT INTERIOR PILASTER ℄ CURB

Scale = 1 : 20



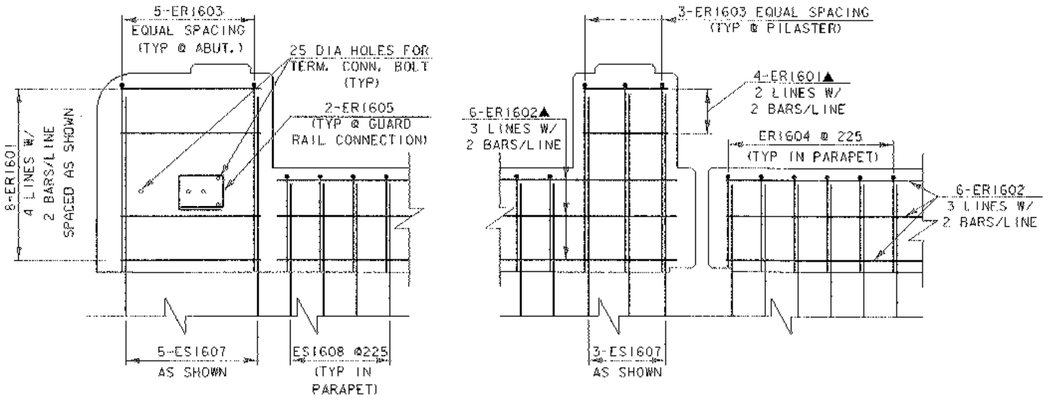
END RAILING DETAIL
INTERIOR FACE

Scale = 1 : 20



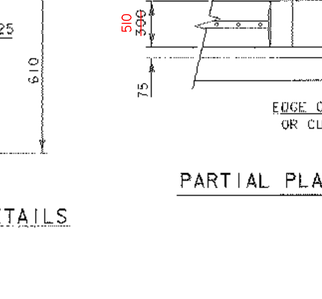
SECTION A-A
(SHOWING TERMINAL CONNECTION)

Scale = 1 : 20



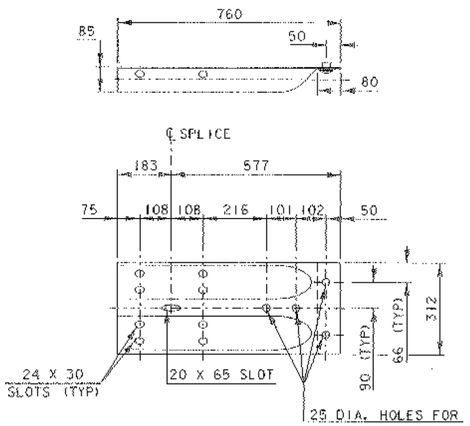
TYPICAL REINFORCING PLACEMENT
(ELEVATION VIEW)

Scale = 1 : 20



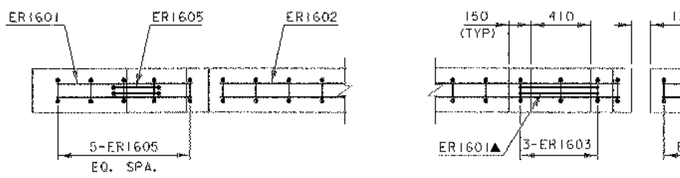
TYPICAL END PILASTER
SECTION

Scale = 1 : 20



TERMINAL CONNECTOR*

Scale = 1 : 10



TYPICAL REINFORCING PLACEMENT
(PLAN VIEW)

Scale = 1 : 20

NOTE: REINFORCING BARS CAST INTO THE SUPERSTRUCTURE HAVE BEEN INCLUDED AND SCHEDULED WITH THE SUPERSTRUCTURE REINFORCING STEEL

*TERMINAL CONNECTOR SHALL RECIEVE THE SAME PROTECTIVE COATING AS THE ATTACHED STEEL BEAM GUARD RAIL.

NOTE:

NF = NEAR FACE
FF = FAR FACE
EF = EACH FACE
▲ = CUT TO FIT IN FIELD
80 CLR UNLESS OTHERISE SPECIFIED ON THE PLANS.

0 0.5 1
Scale = 1:10

0 1 2
Scale = 1:20

PROJECT: BETHEL
PROJECT NO.: BRF0241(33)C/2
DESIGN FILE NAME: D2c180/Structures/s02c180rail.dgn
IPARM FILE NAME: s02c180railrein.i PLOT DATE: 14-APR-2005
DESIGNED BY: K.M. HIGGINS DRAWN BY: E.L. RUSTAY
SQUAD LEADER: C.P. WILLIAMS CHECKED BY: K.M. HIGGINS
BRIDGE RAIL REINFORCEMENT SHEET: 77 OF 130

STATE OF VERMONT
AGENCY OF TRANSPORTATION

REINFORCING STEEL SCHEDULE

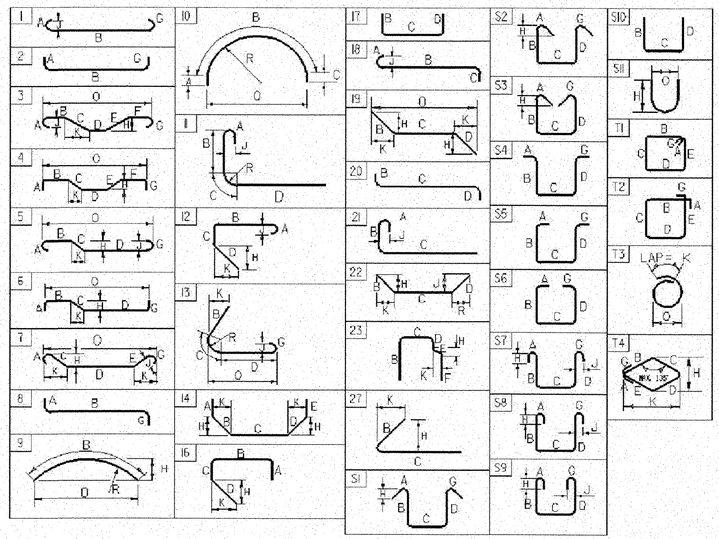
Metric

ITEM	EACH	SIZE	LENGTH	MARK	TYPE	A	B	C	D	E	F	G	H	J	K	R	O
SPAN 1																	
✳	42	16	11240	ES1601	STR												
✳	53	16	11740	ES1602	STR												
	41	16	1760	ES1603	S5	250	310	290	310			600					
	41	16	3530	ES1604	S5	600	310	1710	310			600					
	16	16	2240	ES1607	17		1640	600	---								
	92	16	1600	ES1608	17		1000	600	---								
SPAN 2																	
✳	595	16	11240	ES1601	STR												
✳	421	16	11740	ES1602	STR												
	147	16	1760	ES1603	S5	250	310	290	310			600					
	147	16	3530	ES1604	S5	600	310	1710	310			600					
	32	16	1910	ES1605	S5	150	440	270	1200			---					
	32	16	3260	ES1606	S5	150	840	270	2000			---					
	28	16	2240	ES1607	17		1640	600	---								
	370	16	1600	ES1608	17		1000	600	---								
APPROACH SLAB 1																	
△	23	16	8610	1EAS1601	STR												
△	38	29	6215	1EAS2901	1	375	5840					---					
APPROACH SLAB 2																	
✳ ▲	23	16	8610	2EAS1601	STR												
△	16	16	1200	2EAS1602	STR												
△	38	29	6215	2EAS2901	1	375	5840					---					
ABUT # 1																	
	20	16	6950	1A1601	STR												
✳	47	16	1060	1A1602	STR												
✳	47	16	1040	1A1603	STR												
	14	16	6950	1A1604	STR												
▲	16	16	1490	1A1605	STR												
△ ▲	18	16	2490	1A1606	STR												
▲	16	16	3080	1A1607	17		2010	1070	---								
▲	16	16	1850	1A1608	17		540	770	540								
▲	16	16	1490	1A1609	17		660	170	660								
	30	16	1980	1A1610	17		910	1070	---								
	30	16	1850	1A1611	23		540	440	150	330	390		0		330		
	16	16	1180	1A1612	17		880	300	---								
ABUT # 2																	
	54	16	7640	2A1601	STR												
✳	47	16	1730	2A1602	STR												
▲	124	16	6960	2A1603	STR												
	46	16	3510	2A1604	STR												
✳	47	16	3320	2A1605	STR												
	44	16	1320	2A1606	STR												
	19	25	1050	2A2501	STR												
	99	25	4720	2A2502	STR												
✳	93	25	2330	2A2503	STR												
✳ ▲	47	25	3470	2A2504	STR												
	46	16	2620	2A1607	16		1120	400	1100								
	44	16	2410	2A1608	22		1100	1310	---								
▲	38	16	2880	2A1609	19		1440	1440	---				1190		830		
	22	16	1320	2A1610	19		660	660	---				540		380		
	42	16	1780	2A1611	19		890	890	---				880		190		
▲	31	16	2040	2A1612	17		1020	1020	---								
	12	16	4510	2A1613	22		660	3190	660				300	300	590	590	
	12	16	4510	2A1614	22		660	3190	660				415	490	515	440	
	16	16	1200	2A1615	19		450	750	---								
	44	16	3470	2A1616	17		1500	470	1500								
	44	16	1940	2A1617	17		900	140	900								
△	48	22	3270	2A2201	17		1050	1170	1050								
	46	29	6440	2A2901	17		3840	2600	---								
	46	29	4290	2A2902	17		3840	450	---								

ITEM	EACH	SIZE	LENGTH	MARK	TYPE	A	B	C	D	E	F	G	H	J	K	R	O
WING WALL #3																	
	26	16	8680	3W1601	STR												
	25	16	1730	3W1602	STR												
▲	62	16	7810	3W1603	STR												
	25	16	3510	3W1604	STR												
▲	25	16	6060	3W1605	STR												
	25	16	3590	3W1606	STR												
	13	25	1050	3W2501	STR												
	49	25	4670	3W2502	STR												
	25	25	2730	3W2503	STR												
	25	25	3980	3W2504	STR												
	25	16	1840	3W1607	17		660	520	660								
	2	16	7510	3W1608	19		590	6920	---				215		550		
	25	25	3930	3W2505	17		1380	1170	1380								
✳	26	29	4290	3W2901	17		3840	450	---								
✳	26	29	6400	3W2902	17		3840	2560	---								
WING WALL #4																	
	56	16	5550	4W1601	STR												
	32	16	1730	4W1602	STR												
	38	16	9240	4W1603	STR												
	32	16	2770	4W1604	STR												
	30	16	1320	4W1605	STR												
▲	30	16	6090	4W1606	STR												
	30	16	2080	4W1607	STR												
	30	16	1650	4W1608	STR												
	15	25	1050	4W2501	STR												
	57	25	4870	4W2502	STR												
	30	25	3110	4W2503	STR												
✳	31	32	3840	4W3201	STR												
✳	31	32	4730	4W3202	STR												
	32	16	2490	4W1609	17		660	1170	660								
	30	16	1260	4W1610	17		660	600	---								
▲	30	16	1590	4W1611	17		660	930	---								
▲	23	16	8670	4W1612	9		8670						480			19470	8600
▲	5	16	8730	4W1613	9		8730						480			19950	8600
	30	16	1840	4W1614	17		660	520	660								
	30	32	3750	4W3203	17		3300	450	---								
	30	32	5700	4W3204	17		3300	2400	---								
PIER																	
	70	16	11420	P1601	STR												
✳	79	16	1320	P1602	STR												
△	54	19	7640	P1901	STR												
△	52	22	3600	P2201	STR												
△	41	25	1050	P2501	STR												
	154	25	8420	P2502	STR												
	24	25	9630	P2503	STR												
▲	24	25	2120	P2504	STR												
	532	16	3880	P1603	T1	140	660	1140	660	1140		140					
▲	70	16	3970	P1604	10	1200	1570	1200								500	1000
▲	70	16	4095	P1605	10	1600	895	1600								285	575
	39	16	3340	P1606	17		1440	460	1440								
▲	178	25	5400	P2505	17		3050	2350	---								

~ 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 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: **BETHEL**
PROJECT NUMBER: **BRF 0241(33) C/2**

FILE NAME: **s02c180rss1.xls**
PROJECT MANAGER: **C.P.WILLIAMS**
DESIGNED BY: **M.GAGULIC**
REINFORCING STEEL SCHEDULE SHEET #1

PLOT DATE: **2/3/2005**
DRAWN BY: **M.FESSEL**
CHECKED BY: **K.HIGGINS**
SHEET **78** OF **130**

STATE OF VERMONT
AGENCY OF TRANSPORTATION

REINFORCING STEEL SCHEDULE

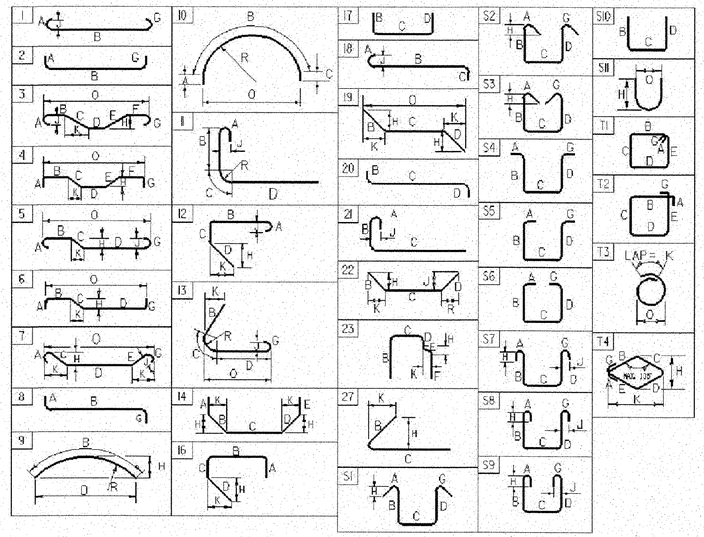
Metric

ITEM	EACH	SIZE	LENGTH	MARK	TYPE	A	B	C	D	E	F	G	H	J	K	R	O
MSE WALL C.I.P. COPING																	
△ ▲	40	13	2840	EC 1302	STR												
	130	13	570	EC 1303	17		170	160	240								
	80	13	710	EC1304	17		170	300	240								
SOIL NAIL WALL																	
	260	13	600	ESN1301	STR												
△	22	13	8400	ESN1302	STR												
▲	90	16	8840	SN1601	STR												
△ ▲	133	16	6040	SN1602	STR												
	260	13	710	ESN1303	17		170	300	240								
▲	73	16	1600	SN1603	17		600	400	600								
RETAINING WALL 1																	
	119	13	600	1ERW1301	STR												
△	18	13	5030	1ERW1302	STR												
▲	53	16	4700	1RW1601	STR												
	69	16	1180	1RW1602	STR												
▲	35	16	3190	1RW1603	STR												
✳ ▲	32	16	2210	1RW1604	STR												
▲	74	16	5080	1RW1605	STR												
✳ ▲	61	16	2180	1RW1606	STR												
▲	16	16	1330	1RW1607	STR												
△ ▲	41	19	1590	1RW1901	STR												
△	33	29	2190	1RW2901	STR												
	119	13	710	1ERW1303	17		170	300	240								
	8	16	1400	1RW1608	17		1180	220	---								
	61	16	1190	1RW1609	17		450	290	450								
	8	16	1120	1RW1610	17		450	220	450								
	6	16	2480	1RW1611	9		2480						661			1029	1922
	6	16	2060	1RW1612	9		2060						528			901	1640
	8	16	2100	1RW1613	19		660	780	660								
	16	16	1870	1RW1614	19		660	550	660				660		0		
	15	16	2880	1RW1615	19		660	1560	660								
	16	16	2420	1RW1616	19		660	1100	660				660		0		
	30	19	1940	1RW1902	17		1320	620	---								
△	33	25	2790	1RW2501	17		2170	620	---								
RETAINING WALL 2																	
	37	13	600	2ERW1301	STR												
△	6	13	5340	2ERW1302	STR												
	13	16	5340	2RW1601	STR												
	19	16	1180	2RW1602	STR												
✳ ▲	20	16	3470	2RW1603	STR												
✳	20	16	2440	2RW1604	STR												
	13	16	5340	2RW1605	STR												
△	21	25	2270	2RW2501	STR												
	37	13	710	2ERW1303	17		170	300	240								
	19	16	1190	2RW1606	17		450	290	450								
	19	25	3130	2RW2502	17		2210	920	---								
RETAINING WALL 3																	
	15	16	7840	3RW1601	STR												
△	30	16	1180	3RW1602	STR												
	28	16	4520	3RW1603	STR												
✳	29	16	2800	3RW1604	STR												
	32	16	7840	3RW1605	STR												
△	56	25	2690	3RW2501	STR												
	28	16	1190	3WR1606	17		450	290	450								
	28	25	2120	3RW2502	17		1670	450	---								
	28	25	4010	3RW2503	17		3090	920	---								

ITEM	EACH	SIZE	LENGTH	MARK	TYPE	A	B	C	D	E	F	G	H	J	K	R	O
RETAINING WALL 4																	
▲	13	16	6640	4RW1601	STR												
△	22	16	1180	4RW1602	STR												
✳ ▲	41	16	3290	4RW1603	STR												
▲	26	16	5850	4RW1604	STR												
△ ▲	26	19	1870	4RW1901	STR												
▲	20	16	2370	4RW1605	17		1180	1190	---								
	20	16	1420	4RW1606	17		450	520	450								
RETAINING WALL 5																	
✳ ▲	13	16	5150	5RW1601	STR												
△ ▲	36	16	860	5RW1602	STR												
▲	34	16	1750	5RW1603	17		840	70	840								
RETAINING WALL 6																	
✳ ▲	28	16	7000	6RW1601	STR												
	70	16	3170	6RW1602	S5	1440	290	140	150			1150					
△ ▲	22	25	1500	6RW2501	STR												

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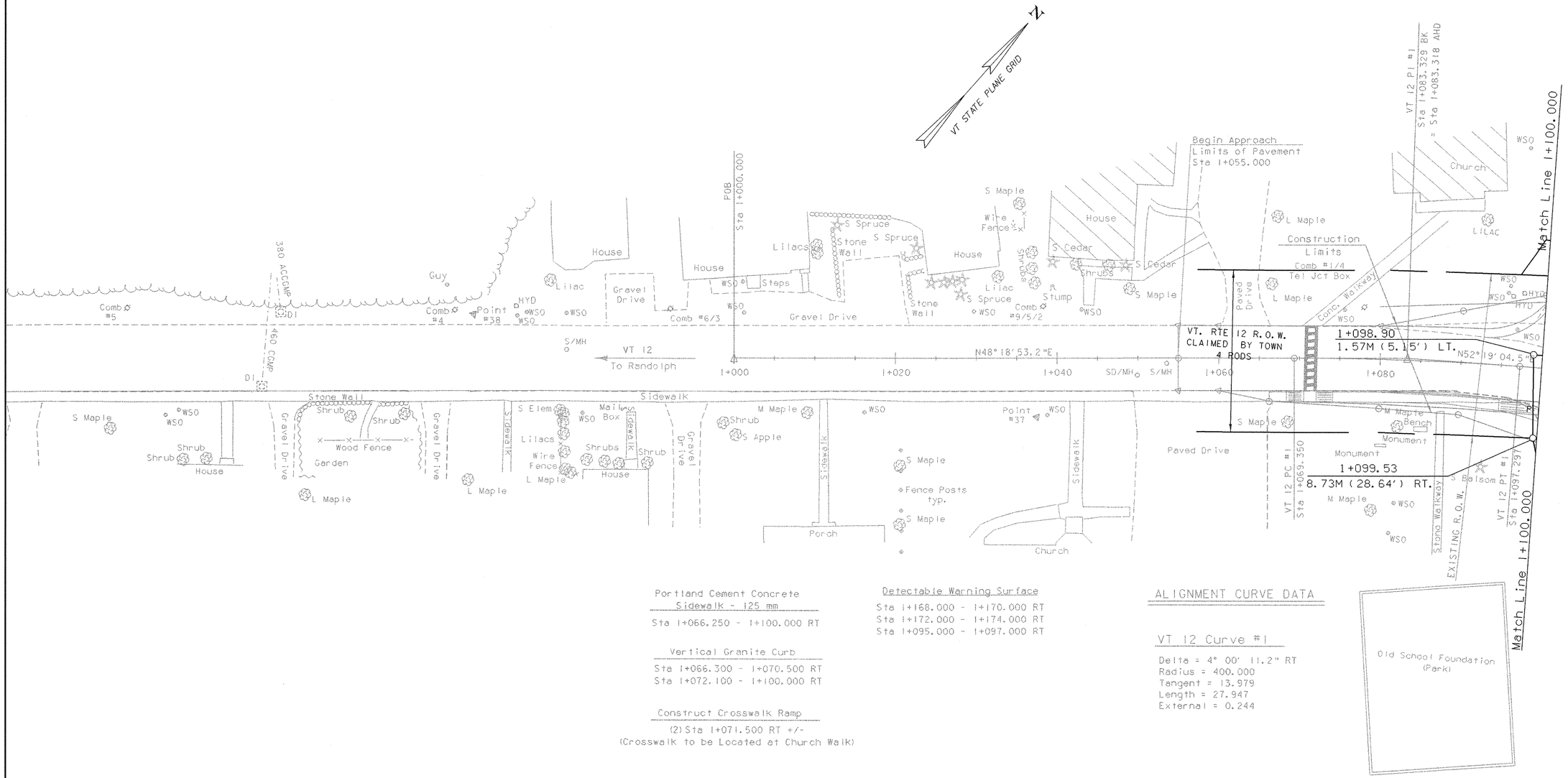
ASTM STANDARD REINFORCING BARS				
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#57	20.240	57.3	2581	180.01

PROJECT NAME: BETHEL
PROJECT NUMBER: BRF 0241 (33) C/2

FILE NAME: s02c180rss.xls
PROJECT MANAGER: C.P.WILLIAMS
DESIGNED BY: M. GAGULIC
REINFORCING STEEL SCHEDULE SHEET #2

PLOT DATE: 2/16/2005
DRAWN BY: M.FESSEL
CHECKED BY: K.M.HIGGINS
SHEET 79 OF 130

VAOT Metric



Portland Cement Concrete
Sidewalk - 125 mm

Sta 1+066.250 - 1+100.000 RT

Vertical Granite Curb

Sta 1+066.300 - 1+070.500 RT
Sta 1+072.100 - 1+100.000 RT

Construct Crosswalk Ramp

(2) Sta 1+071.500 RT +/-
(Crosswalk to be Located at Church Walk)

Detectable Warning Surface

Sta 1+168.000 - 1+170.000 RT
Sta 1+172.000 - 1+174.000 RT
Sta 1+095.000 - 1+097.000 RT

ALIGNMENT CURVE DATA

VT 12 Curve #1

Delta = 4° 00' 11.2" RT
Radius = 400.000
Tangent = 13.979
Length = 27.947
External = 0.244

LAYOUT NO. 1

0 10 20

SCALE 1 : 250

DATUM

VERTICAL NAVD 88
HORIZONTAL NAD 83/92

PROJECT:	PROJECT NO. :
BETHEL	BRF0241 (33) C/2

DESIGN FILE NAME: 02c180/structures/s02c180bdr.dgn
IPARM FILE NAME: sc180ial.i — PLOT DATE: 14-APR-2005
SURVEYED BY: ORVIS — SURVEY DATE: 10/99
SQUAD LEADER: C. P. WILLIAMS — DRAWN BY: K. HIGGINS
R.O.W. SHEET 18 OF 19 SHEETS — R.O.W. SHEET 80 OF 130

BEGIN R.O.W. PROJECT
BRF 0241(33)-C2
STA. 1+104.00 CL.

VT STATE PLANE GRID

Match Line 1+100.000

Begin Project Sta 1+120.000

BM #2 Elev 183.972

EXISTING R.O.W. T.H. 66

HIGHWAY EASENT

SPRINT UNDERGROUND (APPROXIMATE LOCATION)

AT&T UNDERGROUND (APPROXIMATE LOCATION)

PROPOSED SEDIMENT DEWATERING LOCATION (CONTRACTOR TO PROVIDE DETAILS AND METHODOLOGY WITH COFFERDAM DESIGN, SEE EROSION AND SEDIMENT CONTROL NOTES 6 & 7 ON SHEET 111.)

C. V. PROPERTIES, INC. JOINED BY: NEW ENGLAND CENTRAL RAILROAD, INC.

3rd Branch of the White River — FLOW

INSTALL (T)

Chan. POB Sta. 4+015.000

CONST. (T)

End Approach Slab Begin Bridge Sta. 1+172.000

1+174.47 12.00M (39.4') LT.

1+174.94 5.30M (17.4') LT.

Begin Approach Slab Sta. 1+166.000

1+192.06 12.00M (39.4') LT.

17.59M (57.7')

℄ Pier Sta. 1+183.980

1+195.89 5.18M (17.0') LT.

1+160.81 1.74M (5.7') LT.

To Randolph VT 12

N52° 19' 04.5"E

TOWN OF BETHEL

1A

R.O.W. TO PRATT

1+160.17 7.12M (23.4') RT.

Construction Limits

1+104.84 28.19M (92.49') RT.

2A

PRATT, FRANK E. & PLACY, DIANE L.

Temporary Aerial (In Place)

Final Aerial

3A

3B

C. V. PROPERTIES, INC. JOINED BY: NEW ENGLAND CENTRAL RAILROAD, INC.

HIGHWAY EASEMENT

CONST (T)

1+159.02 26.35M (86.5') RT.

1+193.43 26.35M (86.5') RT.

1+195.52 6.65M (21.8') RT.

Temporary Construction Limits

VT 12 PC #2 Sta 1+228.109 = TH 5 POB Sta 2+000.000

1+223.80 19.83M (65.06') RT.

BM Drive PI #2 Sta 3+050.966 BK = Sta 3+050.004 AHD

BM PT #1/PC #2 Sta 3+047.094

INSTALL & MAINT. (P)

Chan. POE Sta 4+080.000

DO NOT DISTURB underground power, vault, sub-station INSTALL (T)

PROPOSED SEDIMENT DEWATERING LOCATION (CONTRACTOR TO PROVIDE DETAILS AND METHODOLOGY WITH COFFERDAM DESIGN, SEE EROSION AND SEDIMENT CONTROL NOTES 6 & 7

End Approach Slab Sta. 1+233.980

1+227.58 12.65M (41.50') LT.

Install (T)

End Bridge Begin Approach Slab Sta. 1+227.960

Sta. 1+205.000 = Chan 4+040.000 Delta = 90°00'

Channel (P)

PUNGER, JANICE E.

TH 5 POE Sta 2+082.65

TH 5 POB Sta 2+000.000

TH 5 PC Sta 2+005.680

TH 5 PT Sta 2+046.454

Slope (T)

Landscape (T)

1+240.40 16.67M (54.69') LT.

Existing R.O.W.

End Approach Limits of Pavement TH5 Sta 2+050.000

End Project Begin Approach TH5 Sta 2+025.000

TH 5 PI #1 2+027.596 BK = 2+018.237 AHD

VT 12 PI #2 1+255.705 BK = 1+245.134 AHD

380 ACCOMP

CHANNEL (P)

1+256.89 16.58M (54.40') RT.

CUL. DR. (P)

REMOVE (T)

1+271.86 9.78M (32.09') RT.

1+270.60 14.07M (46.16') RT.

INSTALL (T)

VT 12 PC #3 Sta 1+289.586

VT 12 PI #3 Sta 1+296.671 BK =Sta 1+296.416 AHD

End Approach Limits of Pavement Sta 1+310.000

VT 12 PT #3 Sta 1+303.502

BM Drive PI #1 Sta 3+025.893 BK = Sta 3+024.927 AHD

VT 12 POE Sta 1+323.071

BM Drive POE Sta 3+060.000 = Sta 1+270.000

VT 12 PT #2 Sta 1+272.730

End Project Sta 1+260.000

BM Drive POE Sta 3+000.000

BM Drive PC #1 Sta 3+003.726

DRIVE (T)

BETHEL MILLS INC.

4A

VT. RTE 12 R.O.W. CLAIMED BY TOWN 4 RODS

Underground Power

Aerial Telephone

Guy

Tel. #9/1

Point #31

Point #32

Point #33

Point #34

Point #35

Point #36

Point #40

Point #41

Point #42

Point #43

Point #44

Point #45

Point #46

Point #47

Point #48

Point #49

Point #50

Point #51

Point #52

Point #53

Point #54

Point #55

Point #56

Point #57

Point #58

Point #59

Point

STATE OF VERMONT
AGENCY OF TRANSPORTATION

RIGHT - OF - WAY DETAIL SHEET

Metric

TABLE OF PROPERTY ACQUISITION

PARCEL NO.	PROPERTY OWNER	SHEET NO.	BEGINNING STATION	ENDING STATION	TAKE	REMAINDER	RIGHT			RECORDING DATA					REMARKS
					AREA ±	AREA ±	TYPE	(T)/(P)	AREA ±	TITLE	DATE	TOWN / CITY	BOOK	PAGE	
1A	TOWN OF BETHEL	18,19													ACQUIRED UNDER CONTRACT 1
2A	PRATT, FRANK E. &	19	1+105.00 RT.												DRIVE 5.7M(18') GRAVEL
	PLACY, DIANE L.														ROW OVER PARCEL #1A
3A	C.V. PROPERTIES, INC. JOINED BY:	19	1+159.02 RT.	1+195.52 RT.	.068 HA										0.17A±, HWY EASE.
	NEW ENGLAND CENTRAL RAILROAD, INC.		1+159.02 RT.	1+175.19 RT.			CONST.	T	4.38 SM						INCLUDES EROSION CONTROL & PDF
															46 S.F.±
3B			1+174.47 LT.	1+195.89 LT.	.013 HA										0.03A±, HWY EASE.
			1+175.17 LT.				INSTALL	T							EROSION CONTROL
			1+178.80 LT.	1+192.06 LT.			CONST.	T	83 SM						INCLUDES EROSION CONTROL & PDF,
															893 S.F.±
4A	BETHEL MILLS, INC.	19	1+270.00 RT.	1+325.27 RT.			DRIVE	T							PAVED 3.7M(12')
			1+270.60 RT.	1+287.00 RT.											"DO NOT DISTURB"
															VAULT, UNDERGROUND POWER
			1+227.360 RT.	1+247.38 RT.			INSTALL & MAINTAIN	P	14.2 SM						RETAINING WALL & FOOTING, 153 S.F.±
															CONNECT TO EXISTING WALL
			1+228.0 RT.	1+241.47 RT.			CUL. & DR.	P							
			1+223.80 RT.	1+234.68 RT.			CHANNEL	P	20.6 SM						222 S.F.±
			1+223.80 RT.	1+325.27 RT.			REMOVE	T	.057 HA						TEMP. BRIDGE, DRIVE &
															APPURTENANCES, 0.14A±
			1+271.38 RT.	1+283.31 RT.			INSTALL	T							GUARDRAIL
			DRIVE STATION	DRIVE STATION											
			3+023.33 LT	3+046.94 LT.			INSTALL	T							EROSION CONTROL & PDF

TABLE OF REVISIONS

REVISION NO.	SHEET NO.	DESCRIPTION	DATE
1	17	PARCEL NO. 8 PUNGER , CHANGE BEGINNING STA. OF	10/19/2004
		CHANNEL (P) FROM STA. 1+226.35 LT. TO 1+231.35 LT.	
		PER C.O. 9388.	
		DRAWN BY: MR APPROVED BY: RPD	
		IPARMS AND SPREADSHEETS TO STRUCTURES	2/14/2005

PLAN LEGEND

- EXISTING RIGHT-OF-WAY
- TAKING WITH ACCESS
- TAKING WITHOUT ACCESS
- CLEAR ZONE (CZ)
- PROPERTY LINE (P / L)
- TOE OF SLOPE
- TOP OF CUT
- SLOPE RIGHT (SR (P))
- CONSTRUCTION RIGHT (CONST. (T))

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

APPROVED: ROGER P. DUMAS DATE: 06-16-04
CHIEF, PLANS & TITLES

2/16/2005

PROJECT NAME: **BETHEL**
PROJECT NUMBER: **BRF 0241(33) C/2**

FILE NAME: **r02c180det.xls**
PROJECT LEADER: **C.P. WILLIAMS**
DESIGNED BY: **K. HIGGINS**
R.O.W. SHEET 16 OF 19

PLOT DATE:
DRAWN BY: **G. FUNK**
CHECKED BY: **F. MALNATI**
SHEET **82** OF **130**

STATE OF VERMONT
AGENCY OF TRANSPORTATION

RIGHT - OF - WAY DETAIL SHEET

Metric

TABLE OF PROPERTY ACQUISITION

PARCEL NO.	PROPERTY OWNER	SHEET NO.	BEGINNING STATION	ENDING STATION	TAKE	REMAINDER	RIGHT			RECORDING DATA					REMARKS
					AREA ±	AREA ±	TYPE	(T)/(P)	AREA ±	TITLE	DATE	TOWN / CITY	BOOK	PAGE	
5	CENTRAL VERMONT PUBLIC SERVICE CORP.														UTILITY
6	VERIZON NEW ENGLAND, INC.														UTILITY
7	ADELPHIA CABLE COMMUNICATIONS														UTILITY
8	PUNGER, JANICE E.	19	1+227.58 LT.	1+232.22 LT.			CONST.	T	41.1 SM						INCLUDES EROSION CONTROL & PDF;
															442 S.F.±
			1+231.35 LT.	TH5 2+006.35 LT.			CHANNEL	P	1.2 SM						13 S.F.±
			TH5 2+004.67 LT.	TH5 2+015.94 LT.			INSTALL	T	12.3 SM						RETAINING WALL & FOOTING; 132 S.F.±
			TH5 2+004.78 LT.	TH5 2+030.83 LT.			SLOPE	T	57.1 SM						INCLUDES EROSION CONTROL , 614 S.F.±
			TH5 2+007.03 LT.	TH5 2+030.83 LT.			LANDSCAPE	T							

TABLE OF REVISIONS

REVISION NO.	SHEET NO.	DESCRIPTION	DATE

PLAN LEGEND

- EXISTING RIGHT-OF-WAY
- TAKING WITH ACCESS
- TAKING WITHOUT ACCESS
- CZ — CLEAR ZONE
- P / L — PROPERTY LINE
- TOE OF SLOPE
- TOP OF CUT
- SR (P) — SLOPE RIGHT
- CONST. (T) — CONSTRUCTION RIGHT

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

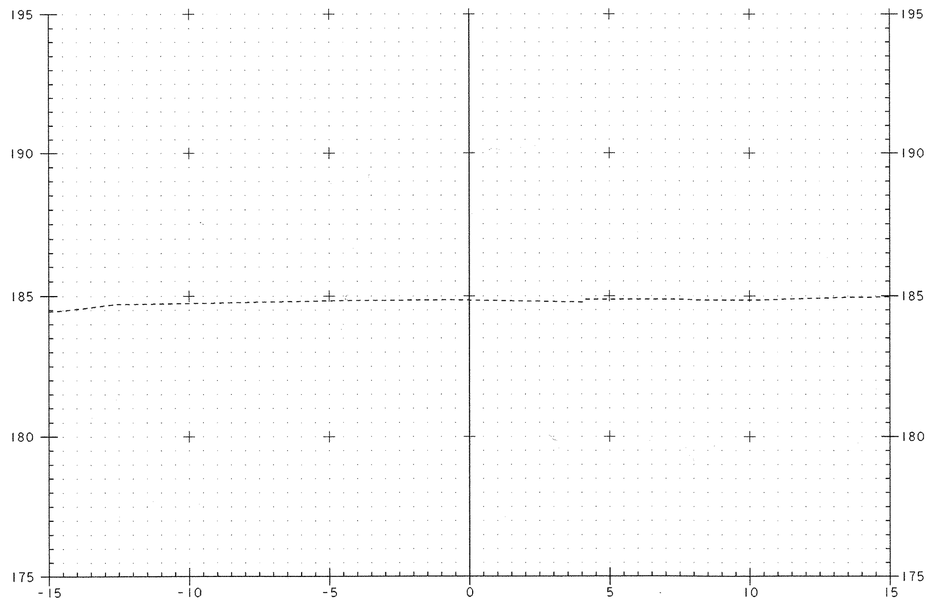
APPROVED: ROGER P. DUMAS DATE: 06-16-04
CHIEF, PLANS & TITLES

DATE PLOTTED 2/16/2005

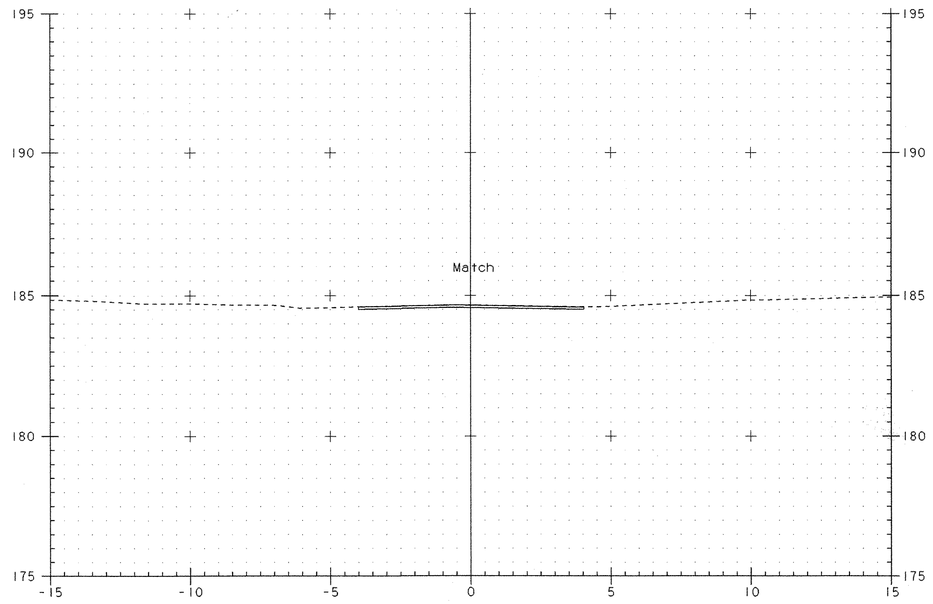
PROJECT NAME: **BETHEL**
PROJECT NUMBER: **BRF 0241(33) C/2**

FILE NAME: r02c180det.xls
PROJECT LEADER: C.P. WILLIAMS
DESIGNED BY: K. HIGGINS
R.O.W. SHEET 17 OF 19

PLOT DATE:
DRAWN BY: G. FUNK
CHECKED BY: F. MALNATI
SHEET 83 OF 130

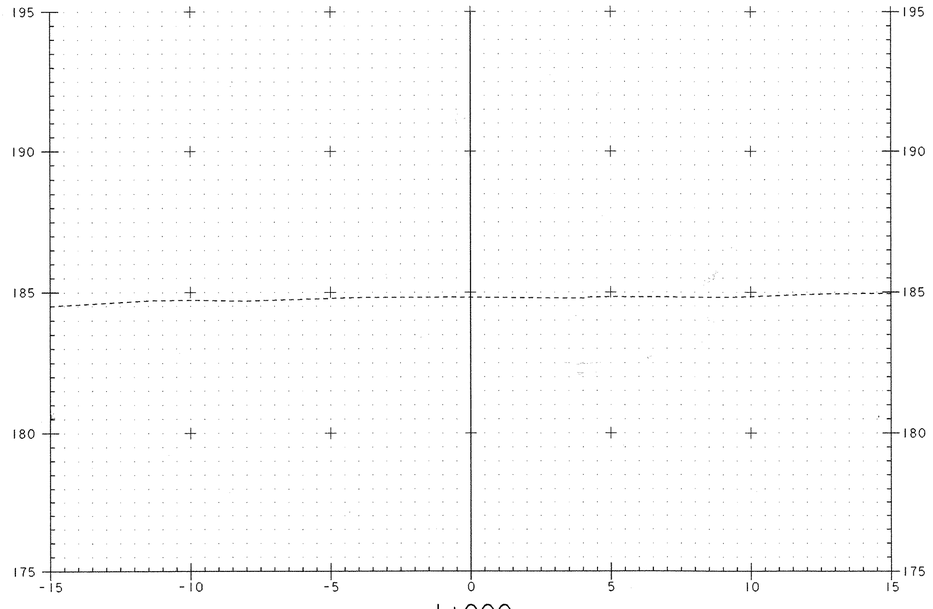


1+020

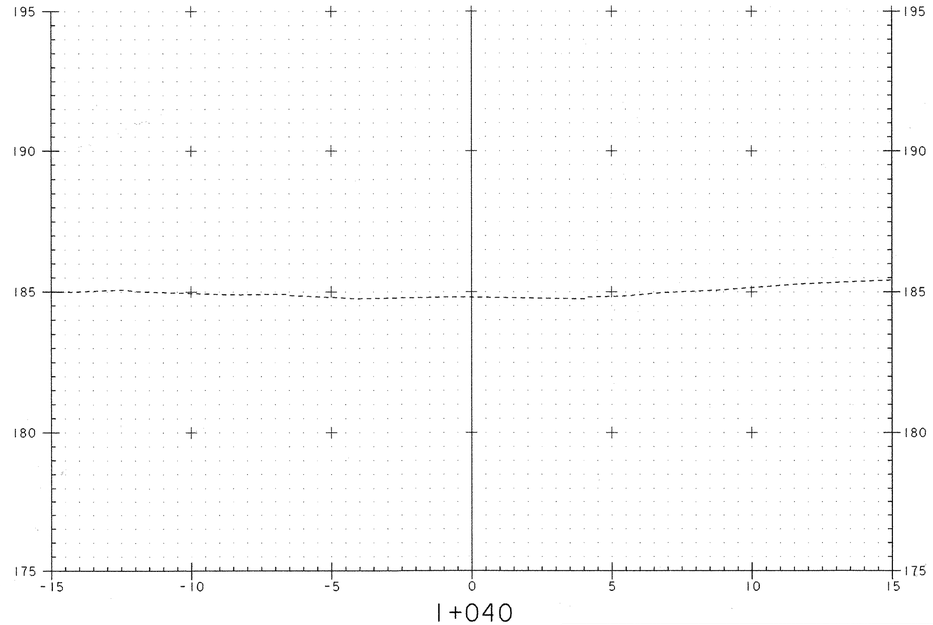


1+060

BEGIN APPROACH
BEGIN COLD PLANING
STA 1+055.000



1+000

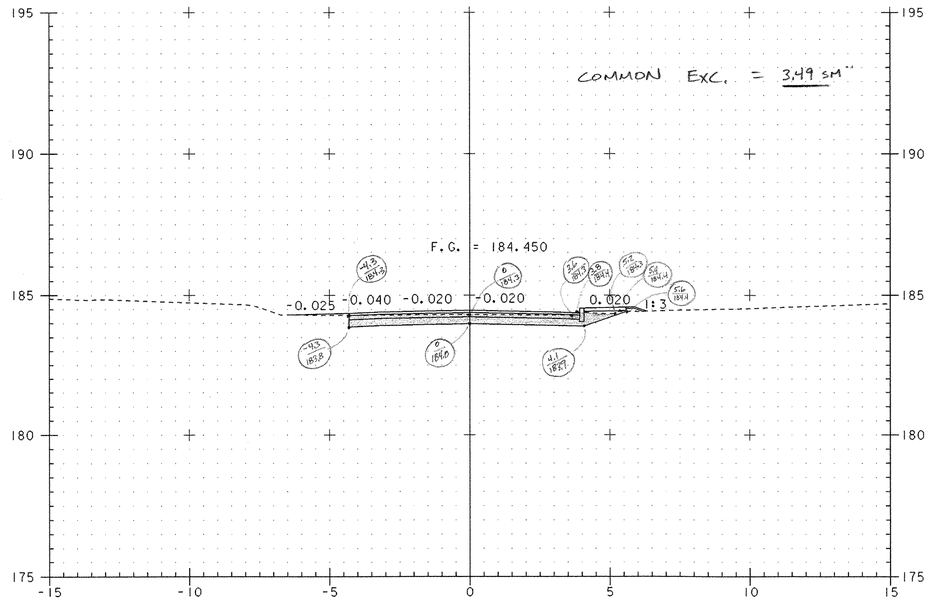


1+040

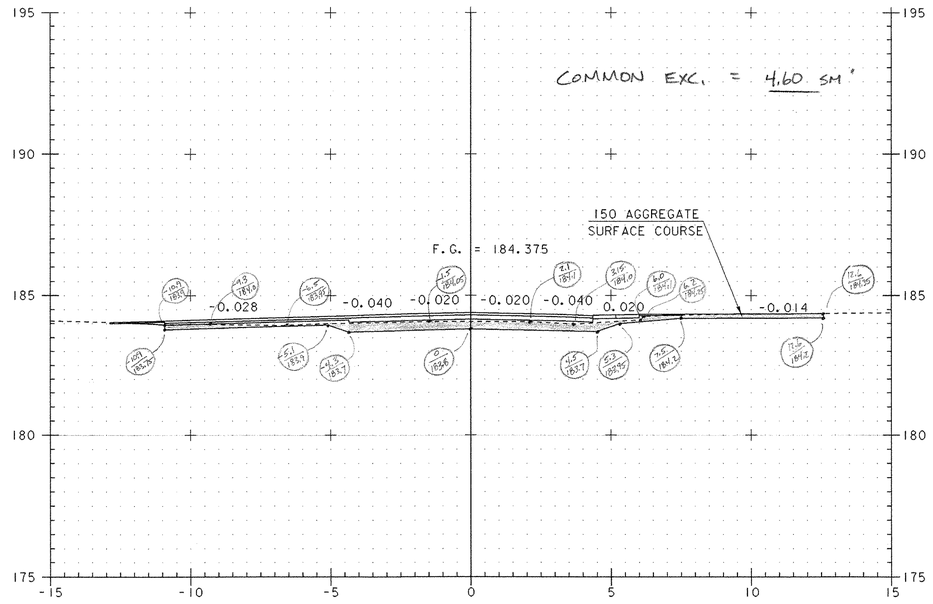
0 2 4 6 8 10

SCALE 1 : 100

PROJECT: BETHEL	PROJECT NO. : BRF0241(33)C/2
DESIGN FILE NAME: 02c180/Structures/s02c180xsec.dgn	
IPARM FILE NAME: sc180m11.i	PLOT DATE: 14-APR-2005
MAINLINE CROSS SECTIONS	
STA 1+000 Thru STA 1+060	SHEET: 84 OF 130

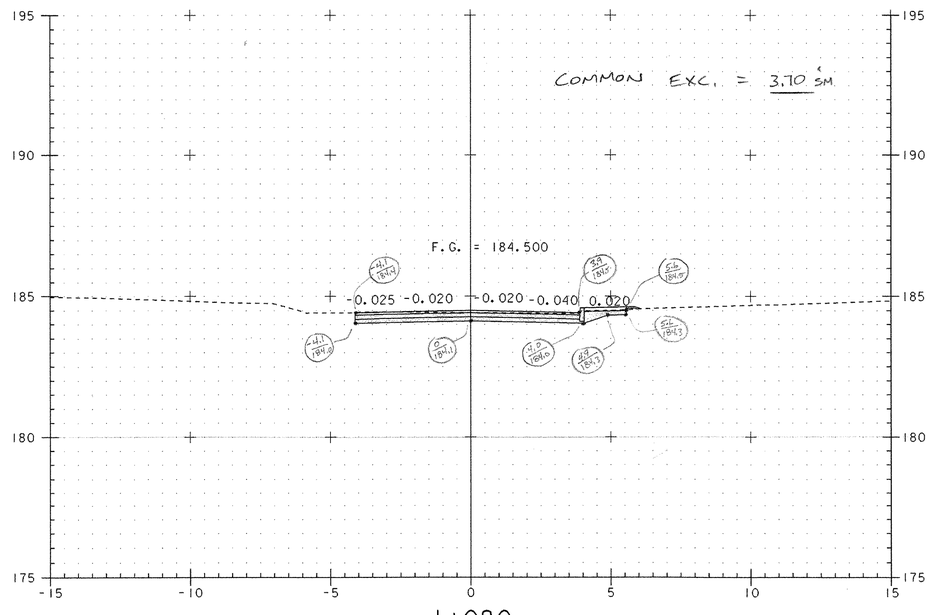


1+090



1+105

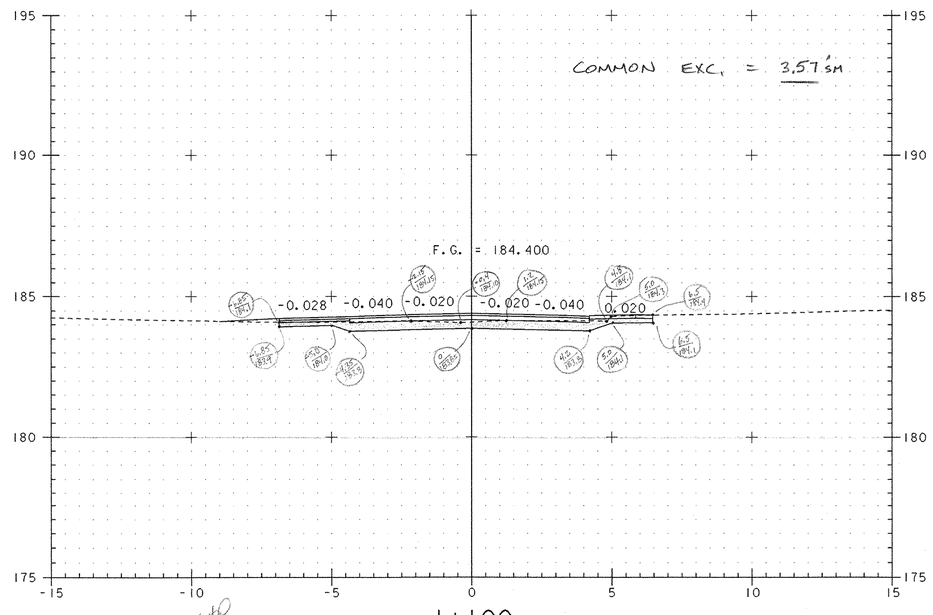
SECTION @ DRIVE



1+080

END COLD PLANING
STA 1+075.000

COMMON EXC. START @ 1+075.00
COMMON EXC. = 3.70 SM

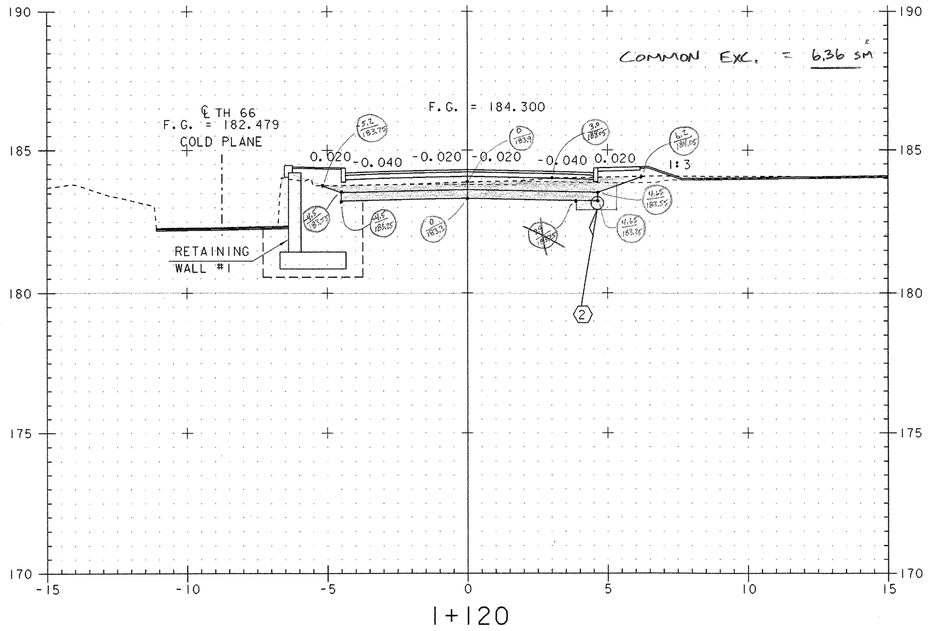


1+100

PAP 4-9-07 JAP 6/07/07

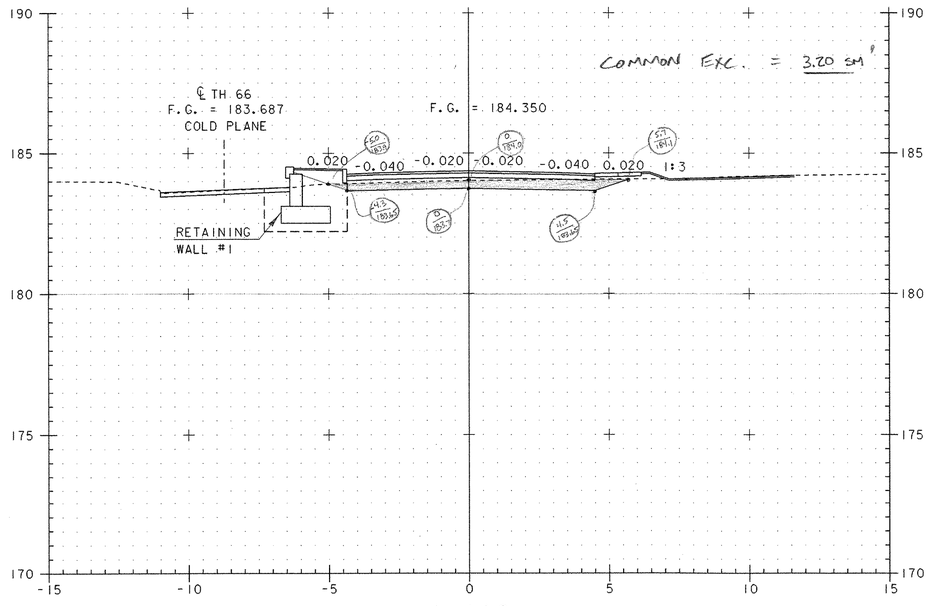
0 2 4 6 8 10
SCALE 1 : 100

PROJECT: BETHEL	PROJECT NO. : BRF0241(33)C/2
DESIGN FILE NAME: 02c180/Structures/s02c180xsec.dgn	
IPARM FILE NAME: sc180m12.i	PLOT DATE: 14-APR-2005
MAINLINE CROSS SECTIONS	
STA 1+080 Thru STA 1+105	SHEET: 85 OF 130

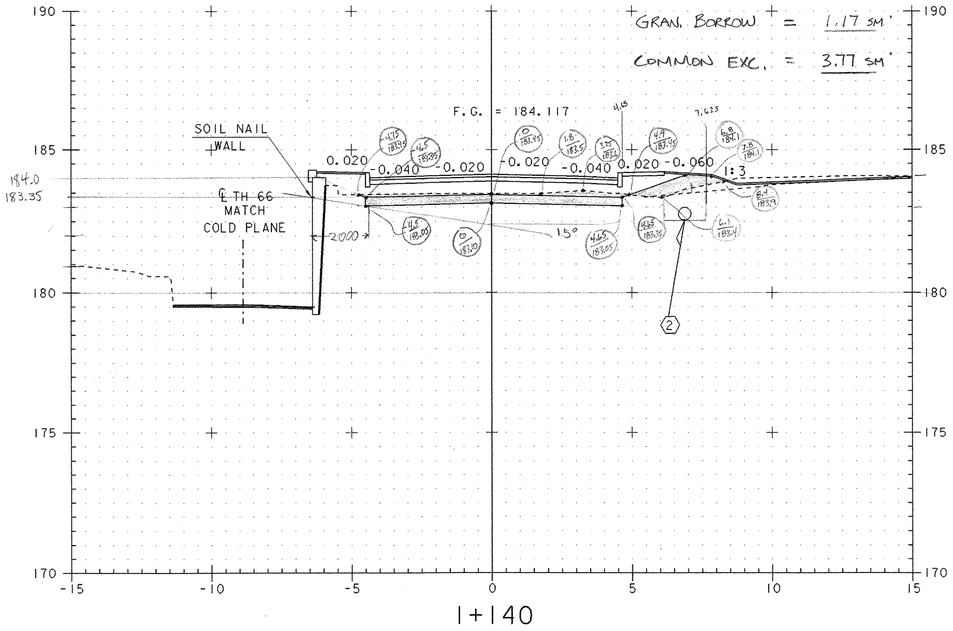


1+120

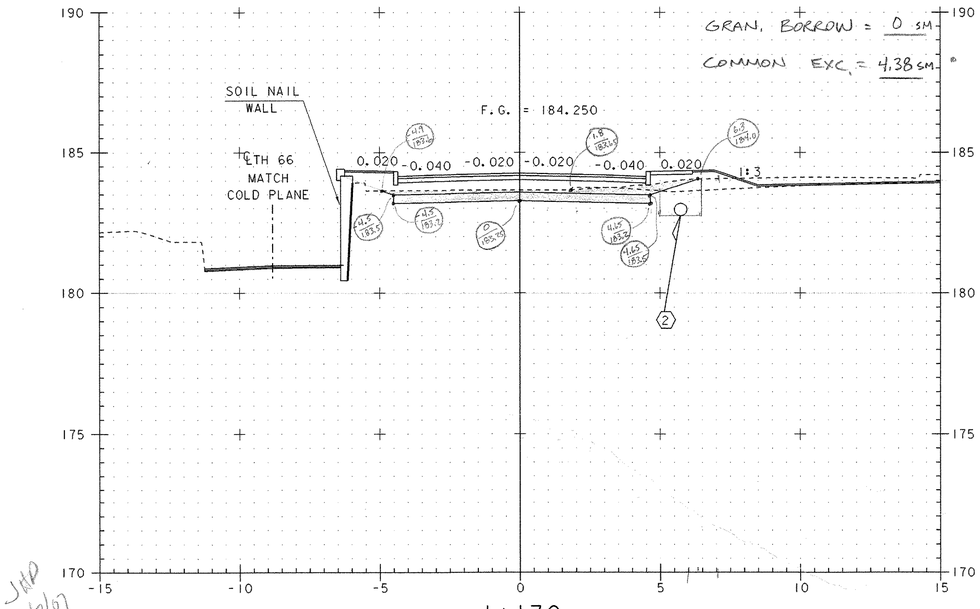
END APPROACH
BEGIN PROJECT
STA 1+120.000



1+110



1+140



1+130

Acr 4-9-07 JHP 6/7/07

0 2 4 6 8 10
SCALE 1 : 100

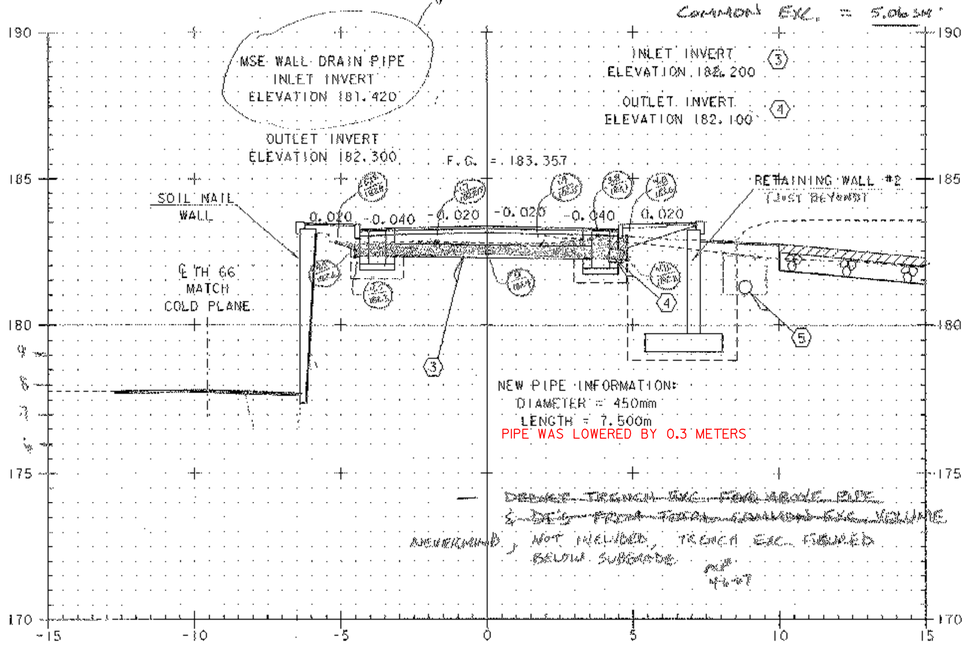
PROJECT: BETHEL	PROJECT NO. : BRF0241(33)C/2
DESIGN FILE NAME: 02c180/Structures/s02c180xsec.dgn IPARM FILE NAME: sc180m13.i	PLOT DATE: 14-APR-2005
MAINLINE CROSS SECTIONS	
STA 1+110 Thru STA 1+140	SHEET: 86 OF 130

PIPE INVERT 177.07

(OMITTED)

GRAN. BORROW = 0 SM

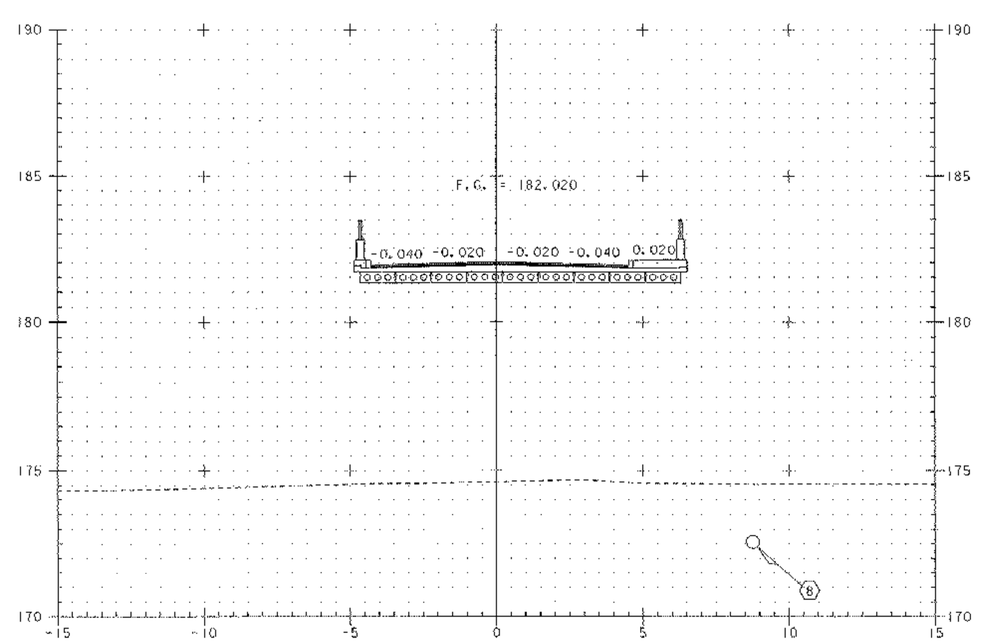
COMMON EXC. = 5.06 SM



1+160

COMMON EXC. STOP @ 1+166

COMMON EXC. = 5.06 SM

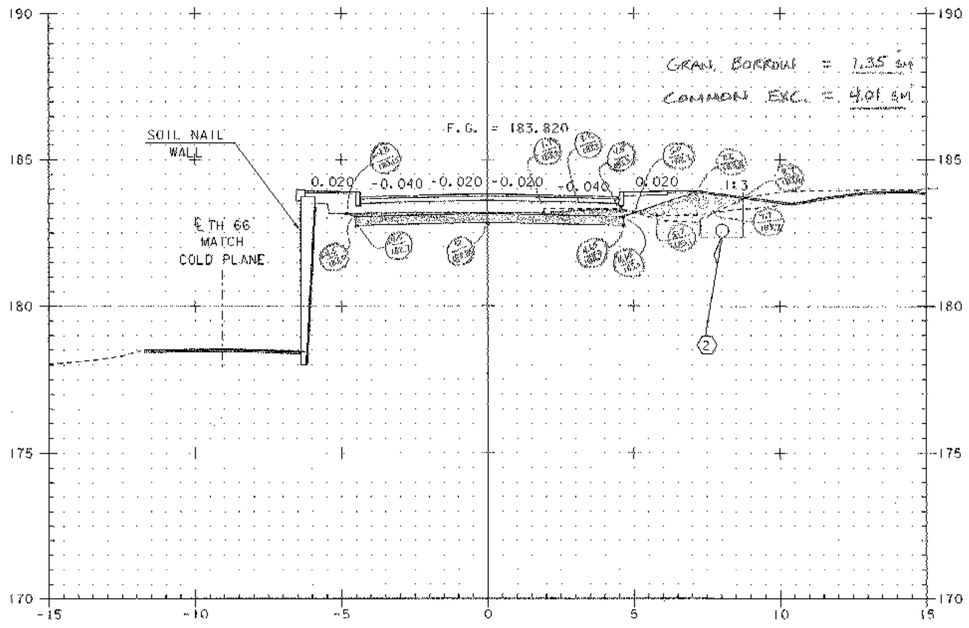


1+180

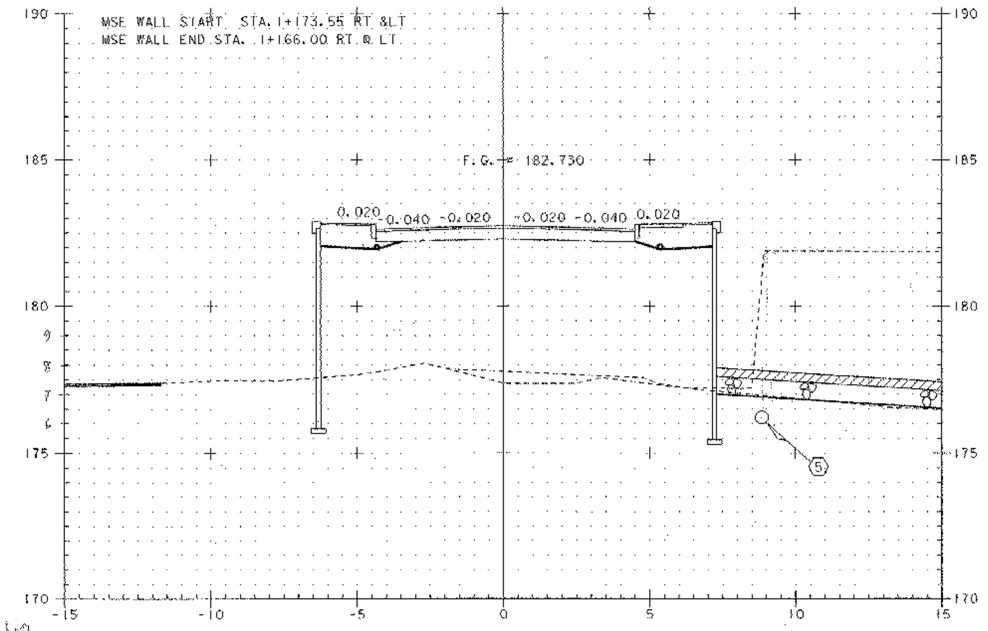
BEGIN BRIDGE 1+172.000

GRAN. BORROW = 1.35 SM

COMMON EXC. = 4.01 SM



1+150

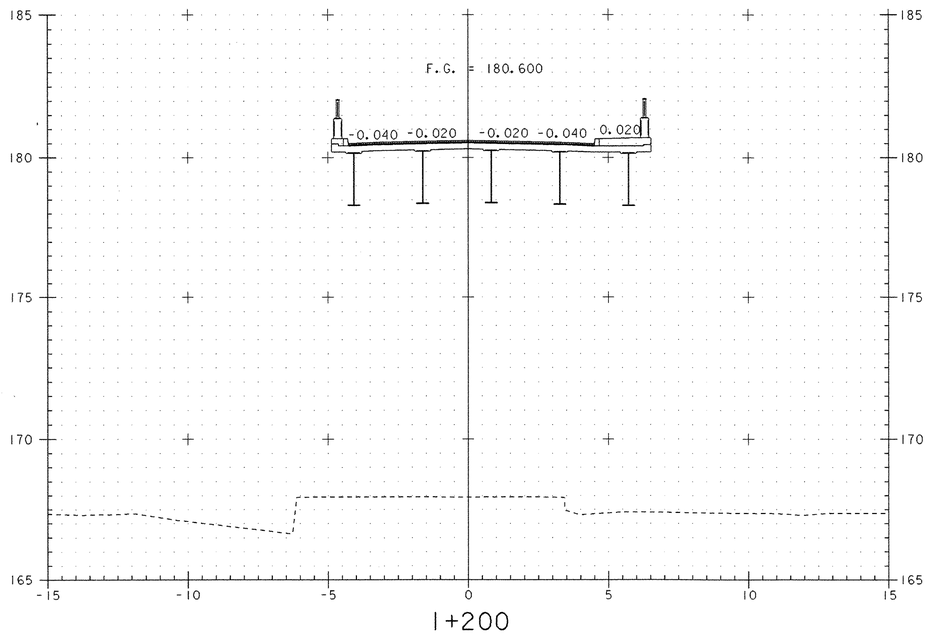


1+170

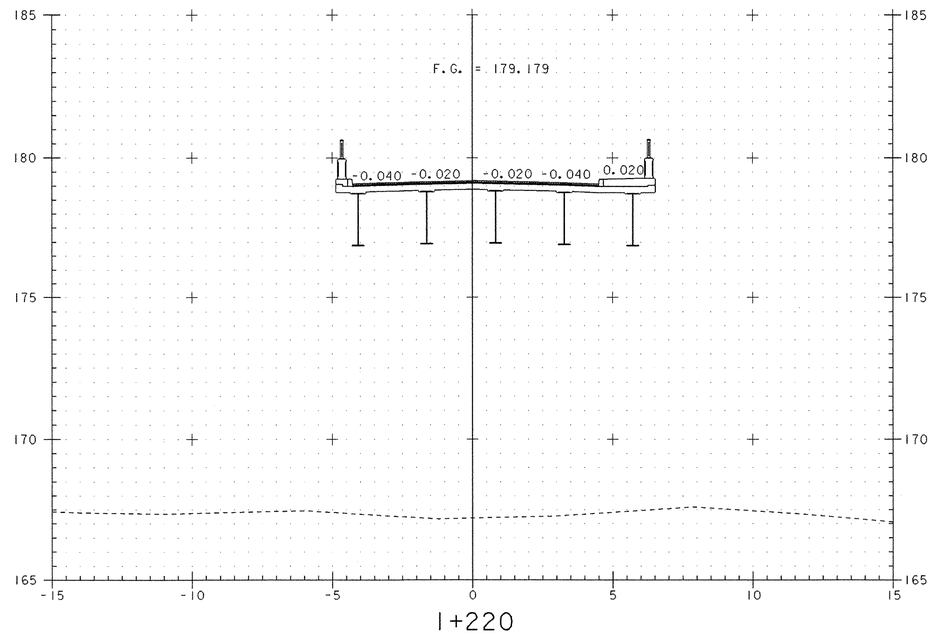
0 2 4 6 8 10

SCALE 1 : 100

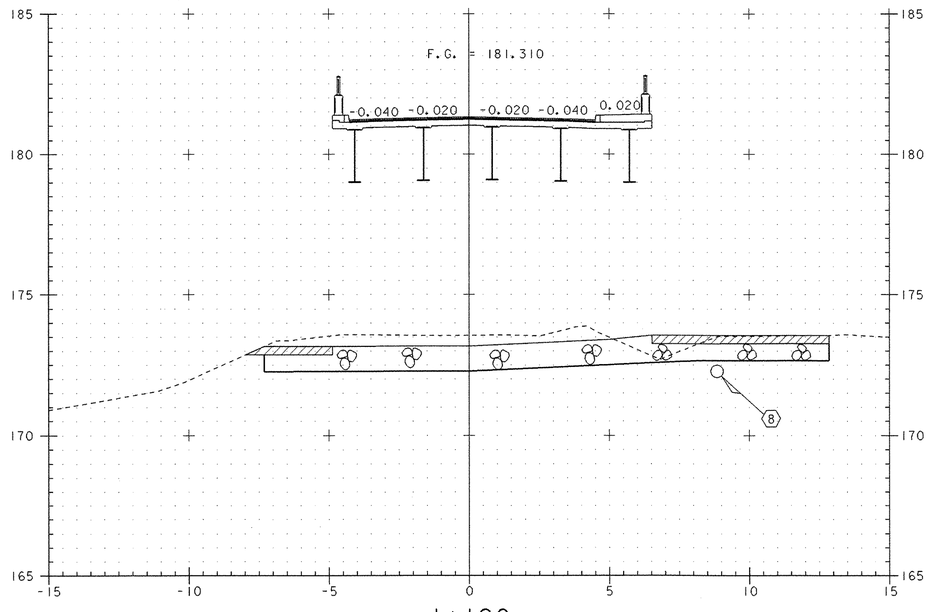
PROJECT: BETHEL	PROJECT NO. : BRF0241 (33) C/2
DESIGN FILE NAME: 02c180/Structures/s02c180xsec.dgn	
IPARM FILE NAME: sc180m14.i	PLOT DATE: 14-APR-2005
MAINLINE CROSS SECTIONS	
STA 1+150 Thru STA 1+180	SHEET: 87 OF 130



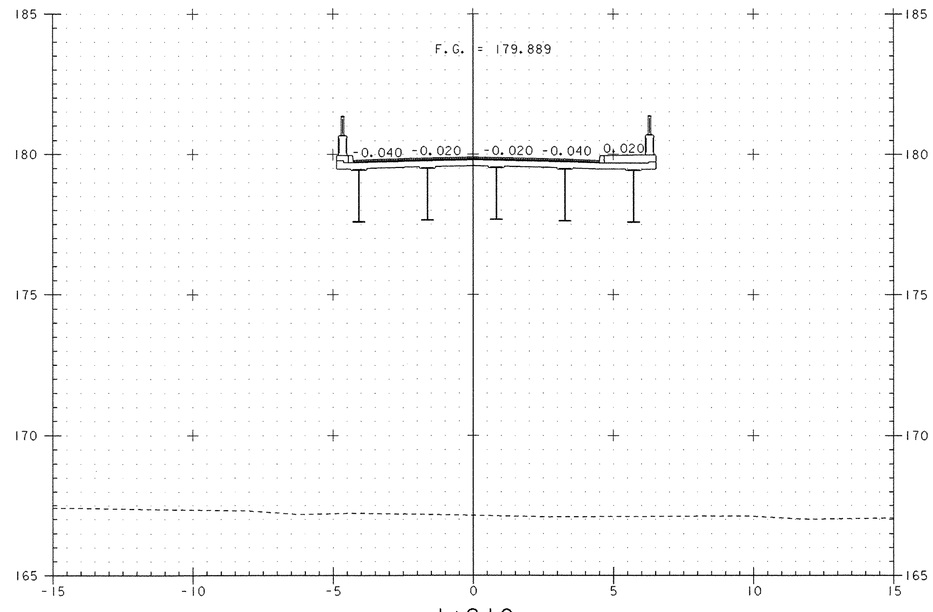
1+200



1+220



1+190



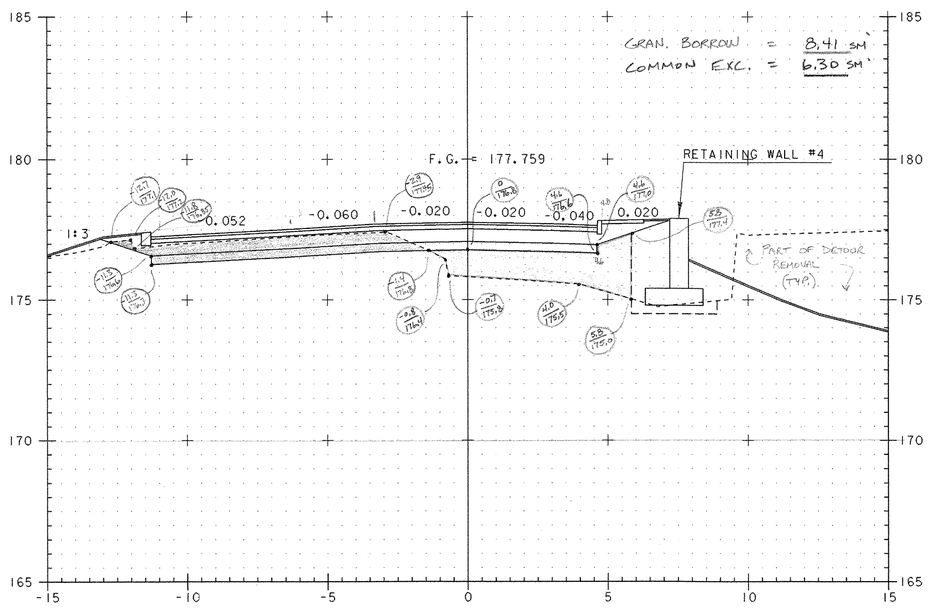
1+210

0 2 4 6 8 10
SCALE 1 : 100

PROJECT: BETHEL	PROJECT NO. : BRF0241 (33) C/2
DESIGN FILE NAME: 02c180/Structures/s02c180xsec.dgn IPARM FILE NAME: sc180m15.i	PLOT DATE: 14-APR-2005
MAINLINE CROSS SECTIONS	
STA 1+190 Thru STA 1+220	SHEET: 88 OF 130

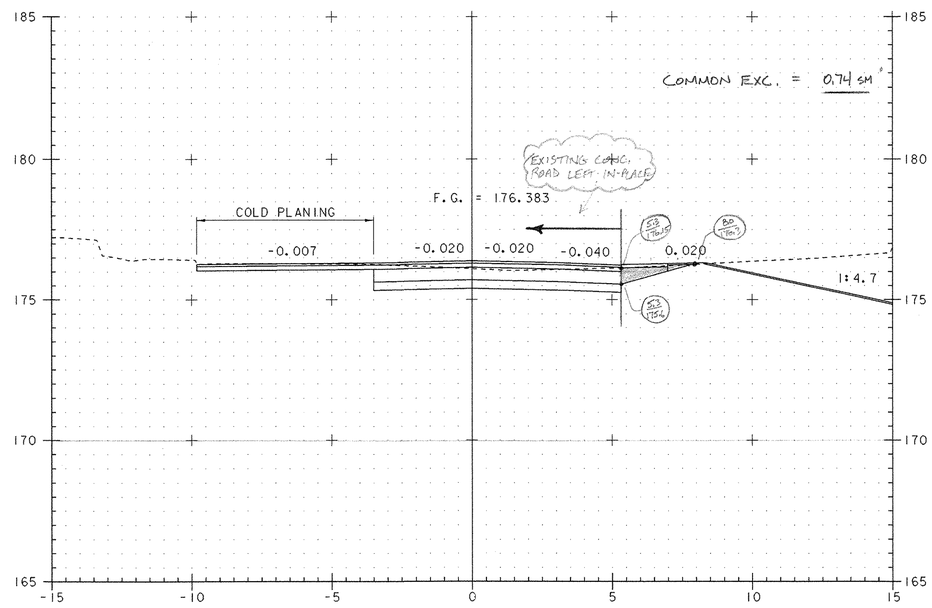
SCALED FROM PLAN. COMMON EXC. @ 1+241 IS FROM ℄ OF ℳ TO 20 m LT. USE SAME AVE DEPTH OF COMMON A 1+240.
(20 m)(0.7m) = COMMON EXC. = 14.00 SM

1+241



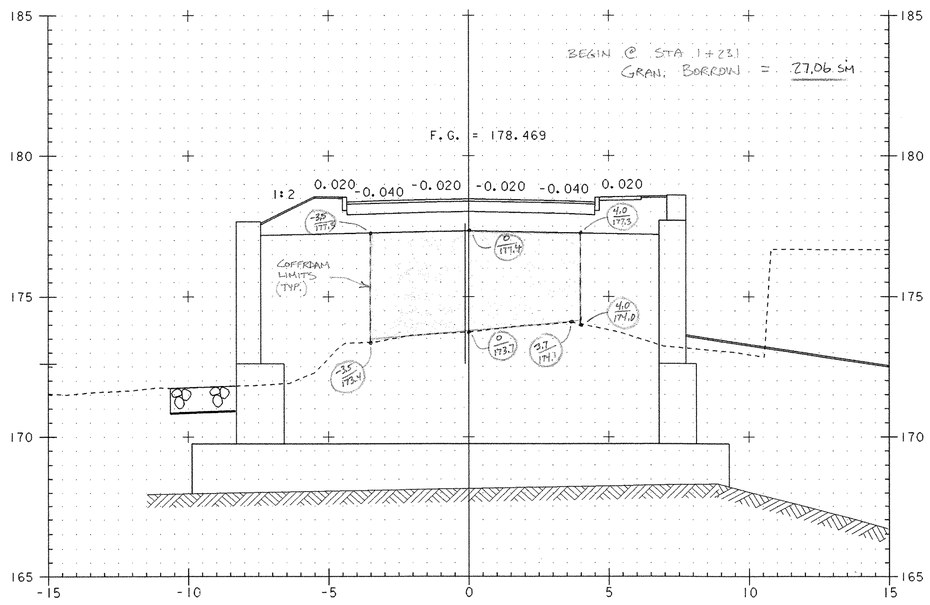
1+240

COMMON EXC. RESUME @ 1+237
COMMON EXC. = 0 SM



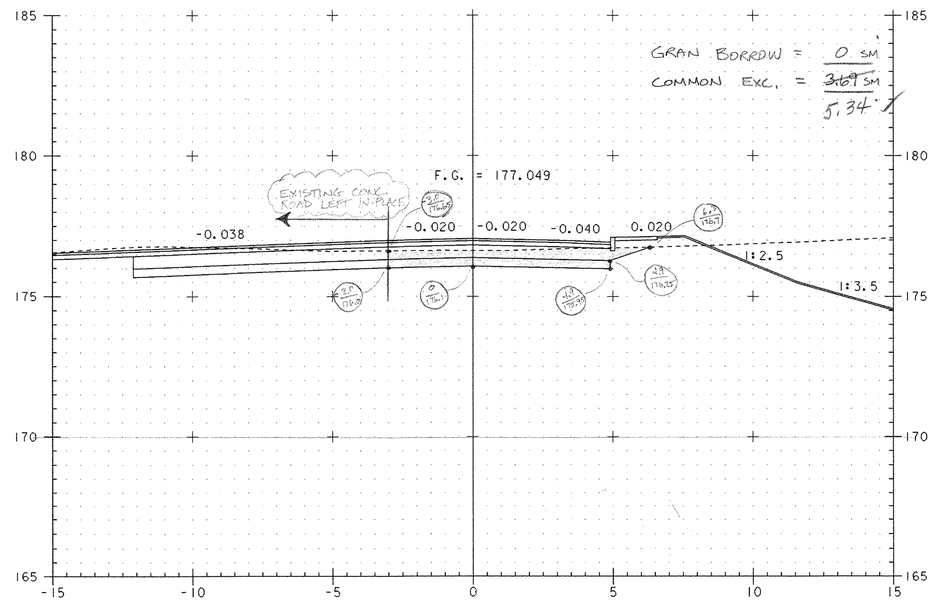
1+260

END PROJECT/BEGIN APPROACH



1+230

END BRIDGE 1+227.960



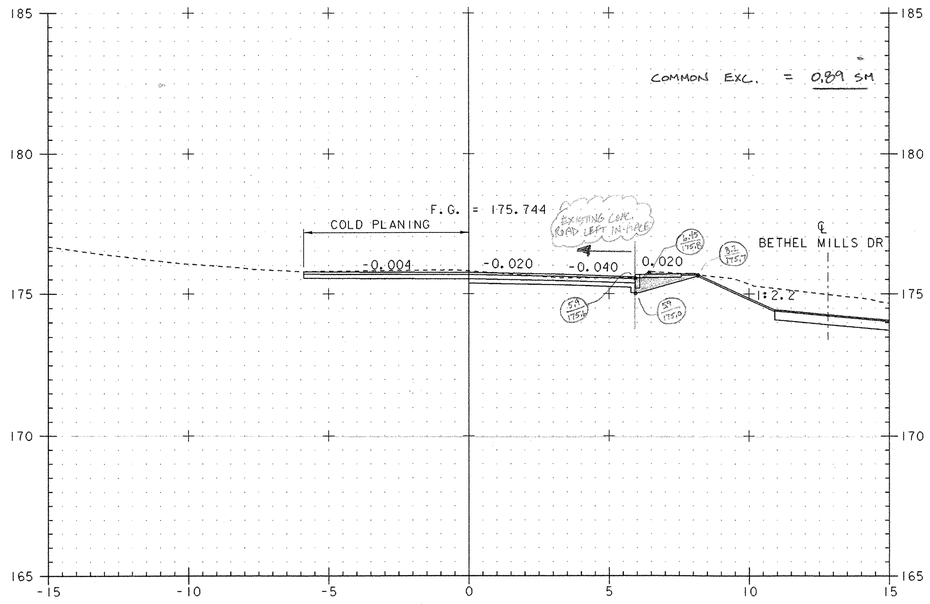
1+250

pdp 4-9-07 VHP 6/07/07 pdp 8/22/07

BEGIN GRAN BORROW 1+231

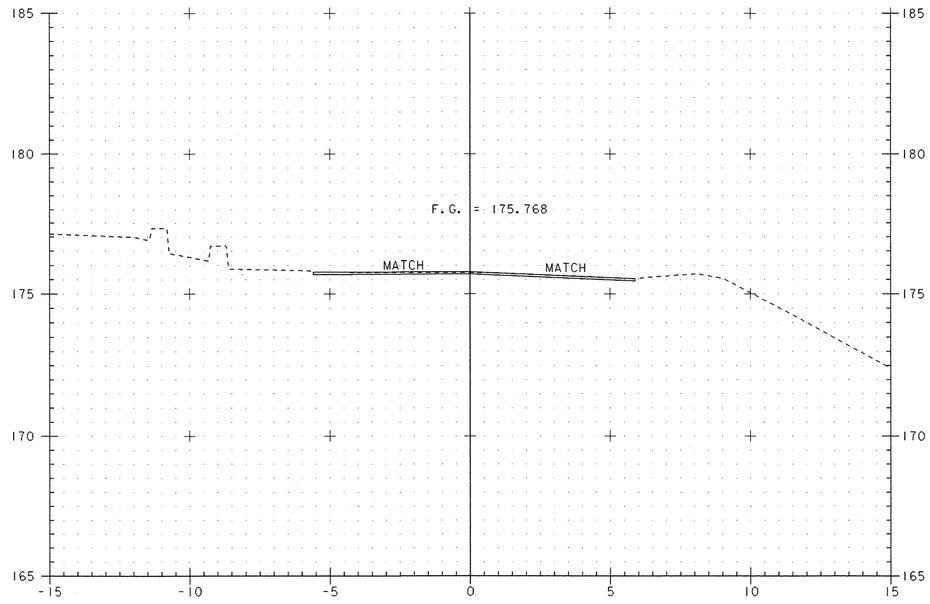
0 2 4 6 8 10
SCALE 1 : 100

PROJECT: BETHEL	PROJECT NO. : BRF0241 (33) C/2
DESIGN FILE NAME: 02c180/Structures/s02c180xsec.dgn	
IPARM FILE NAME: s1250m16.i	PLOT DATE: 14-APR-2005
MAINLINE CROSS SECTIONS	
STA 1+230 Thru STA 1+260	SHEET: 89 OF 130

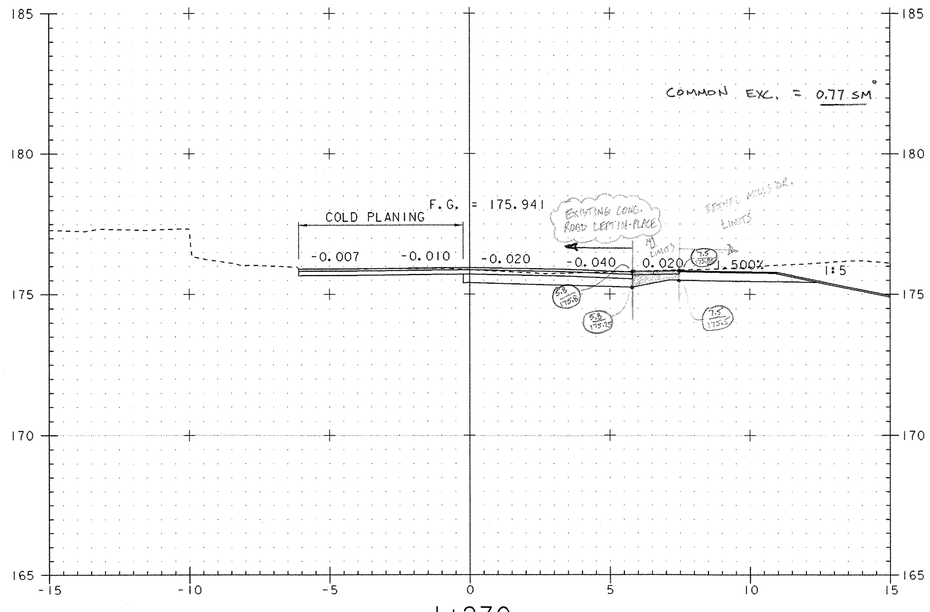


1+280

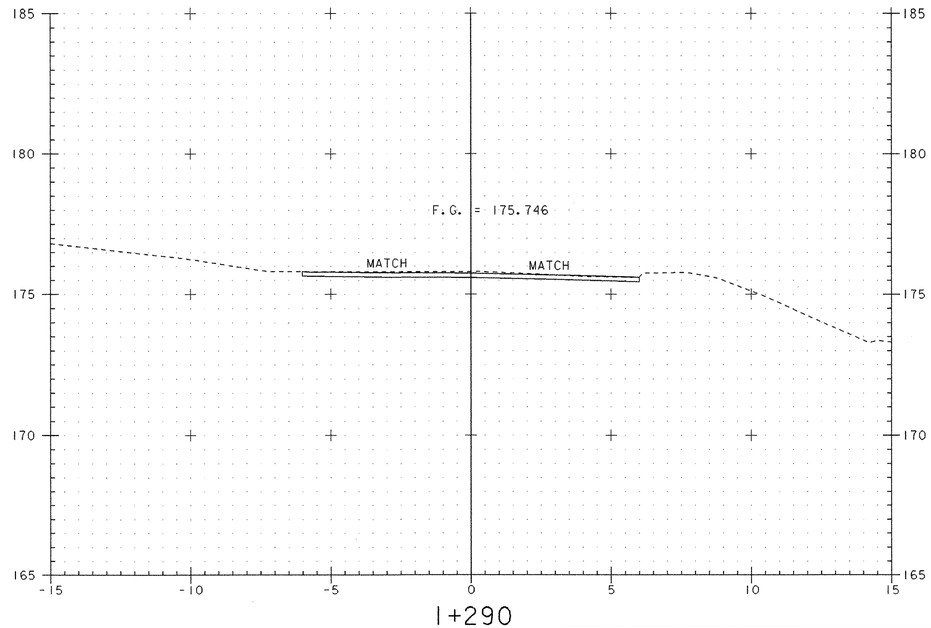
BEGIN COLD PLANING



1+300



1+270



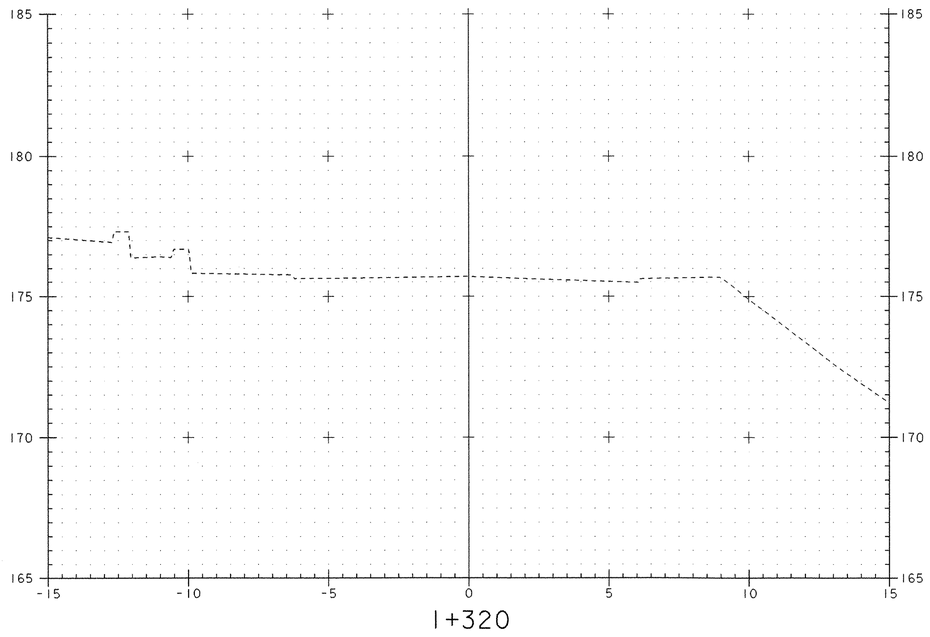
1+290

RLP 4-9-07 SLP 7/06/07

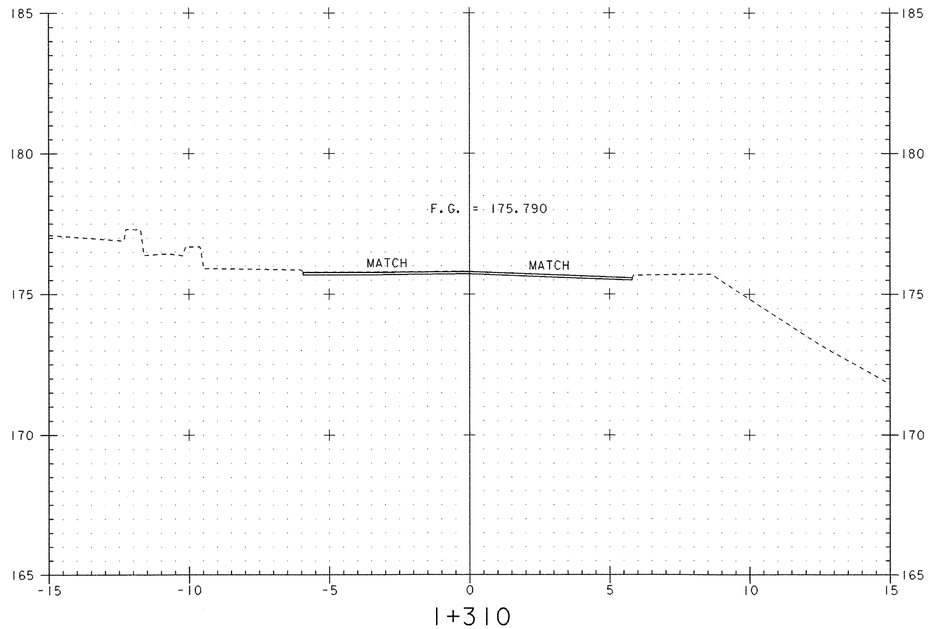
0 2 4 6 8 10

SCALE 1 : 100

PROJECT: BETHEL	PROJECT NO. : BRF0241 (33) C/2
DESIGN FILE NAME: 02c180/Structures/s02c180xsec.dgn	
IPARM FILE NAME: sc180m17.i	PLOT DATE: 14-APR-2005
MAINLINE CROSS SECTIONS	
STA 1+270 Thru STA 1+300	SHEET: 90 OF 130

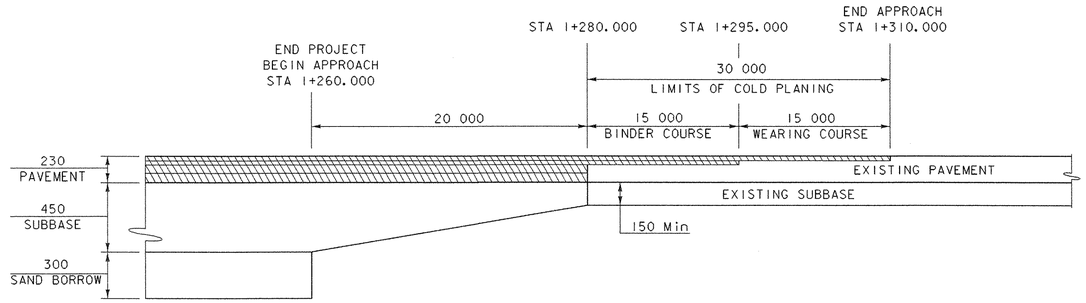


1+320



1+310

END COLD PLANING
END APPROACH



NOTE: SEE CROSS SECTIONS FOR ADDITIONAL COLD PLANING LOCANTIONS

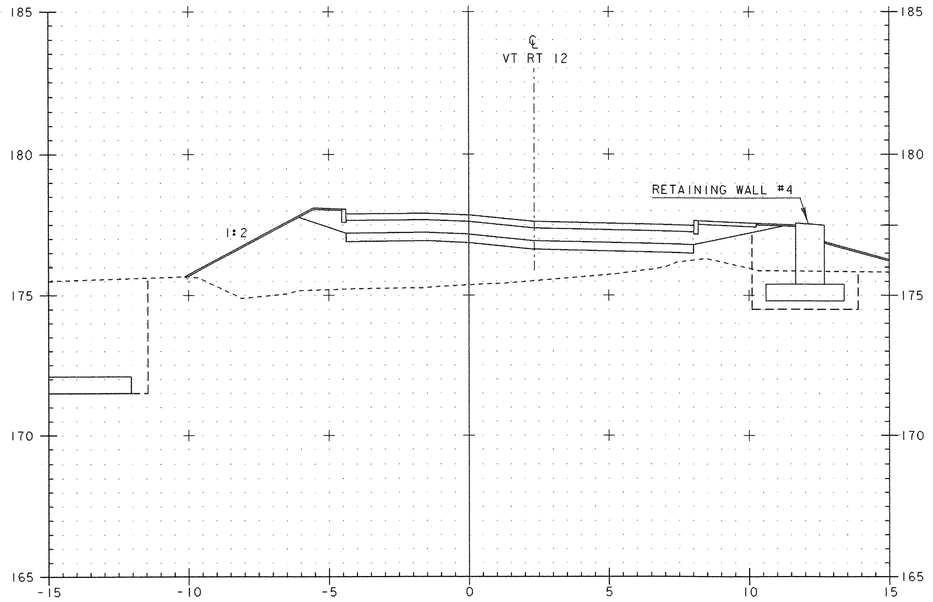
SUBBASE TAPER AT END PROJECT

NTS

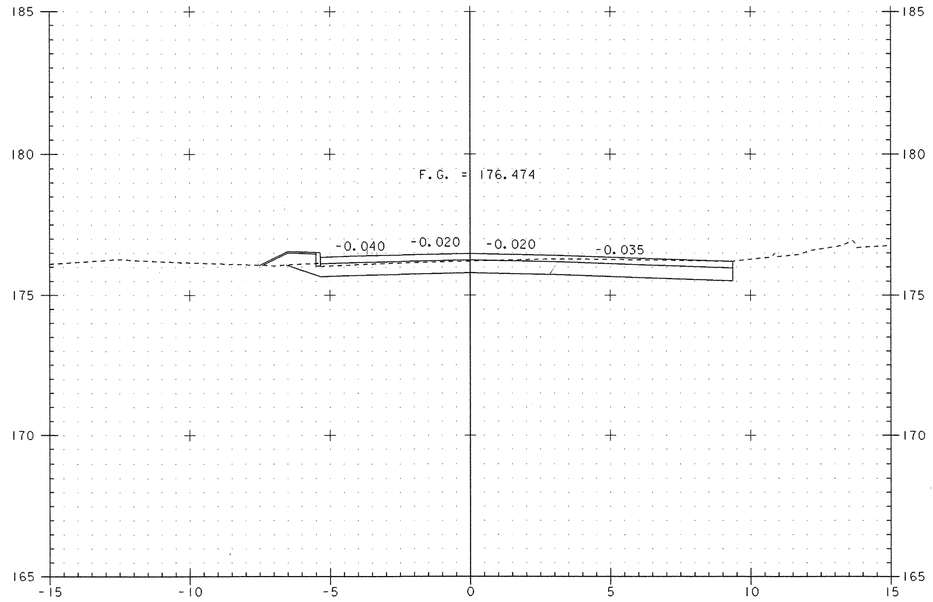
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SCALE 1 : 100

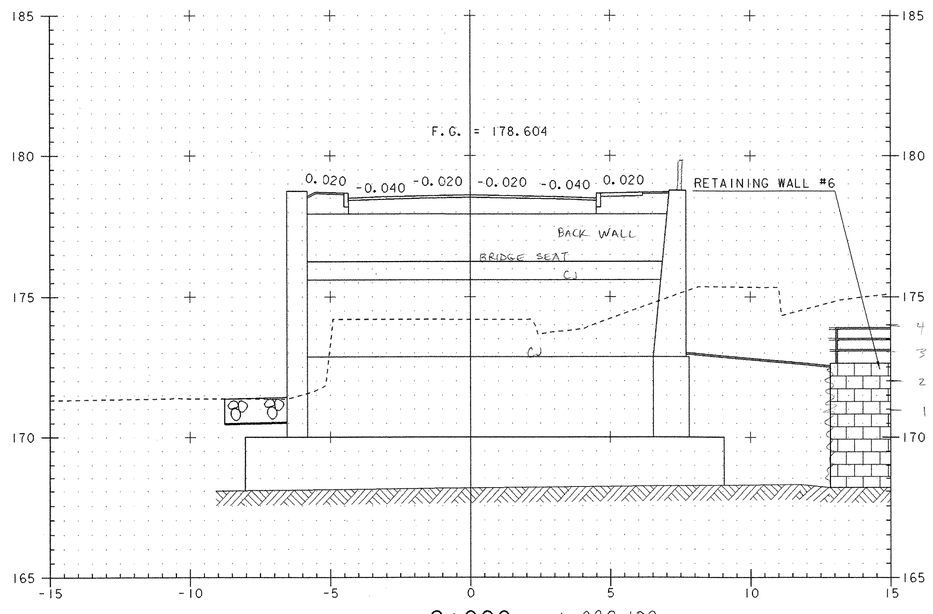
PROJECT: BETHEL	PROJECT NO. : BRF0241(33)C/2
DESIGN FILE NAME: 02c180/Structures/s02c180xsec.dgn IPARM FILE NAME: sc180m18.i	PLOT DATE: 14-APR-2005
MAINLINE CROSS SECTIONS	
STA 1+310 Thur STA 1+310	SHEET: 91 OF 130



2+010

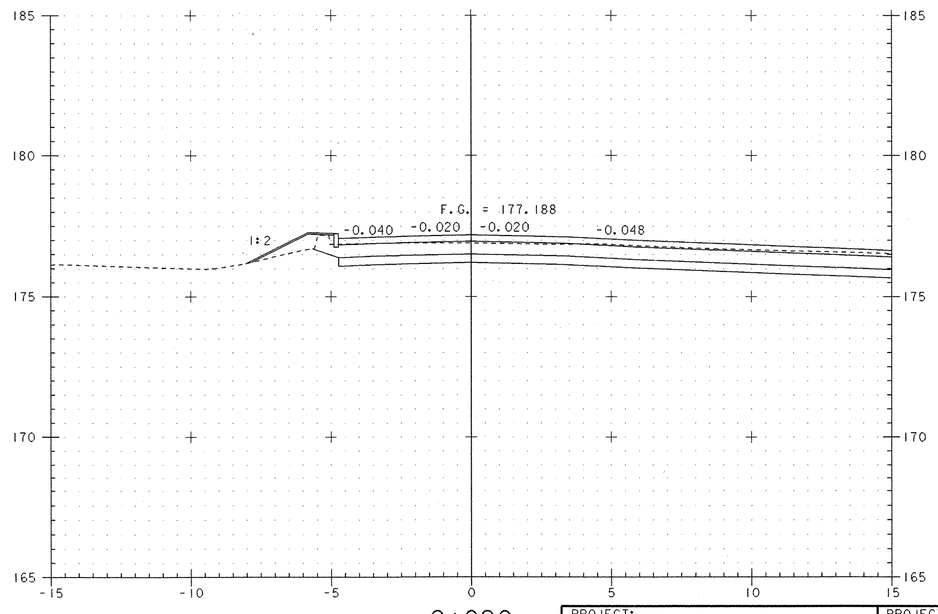


2+030



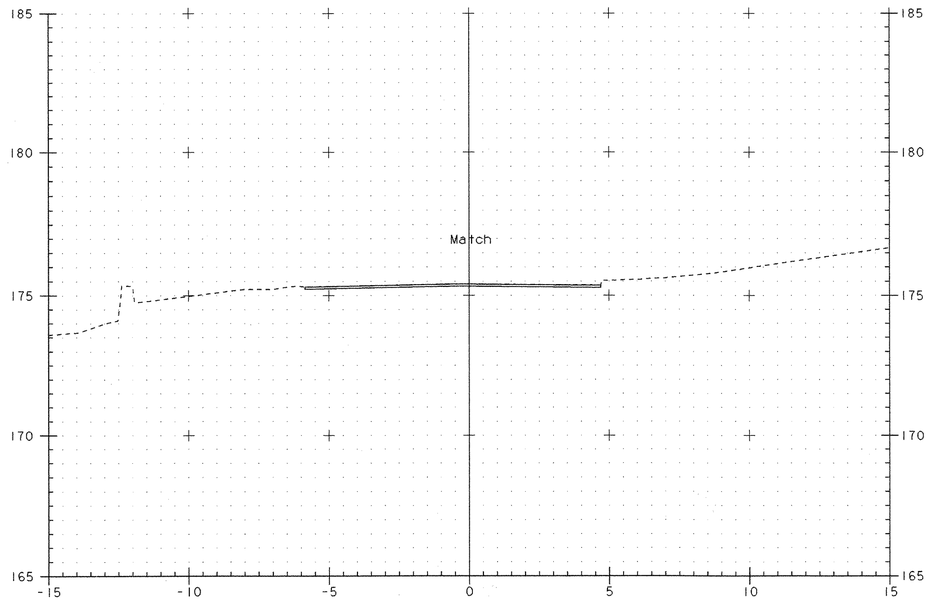
2+000 = 1+228.109

(END BRIDGE/
BEGIN APPROACH = 1+227.960)



2+020

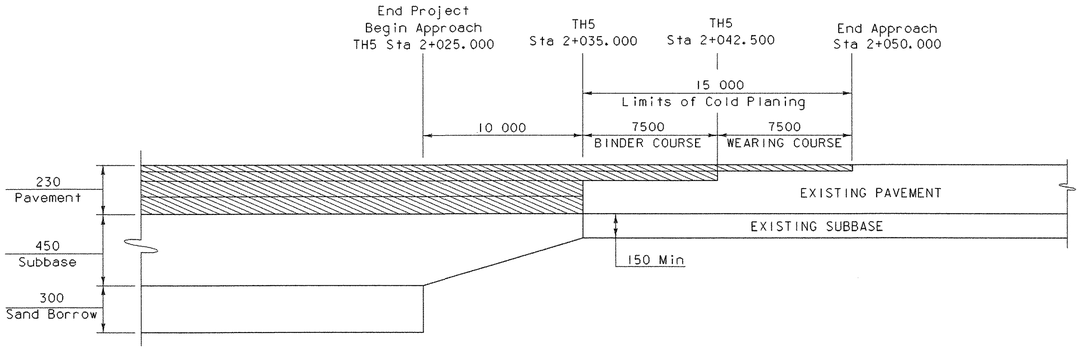
PROJECT: BETHEL	PROJECT NO. : BRF 0241 (33) C/2
DESIGN FILE NAME: 02c180/Structures/s02c180xsec.dgn IPARM FILE NAME: sc180th5l.i	PLOT DATE: 14-APR-2005
TOWN HIGHWAY 5 SECTIONS	
STA 2+000 Thru STA 2+030	SHEET: 92 OF 130



2+050

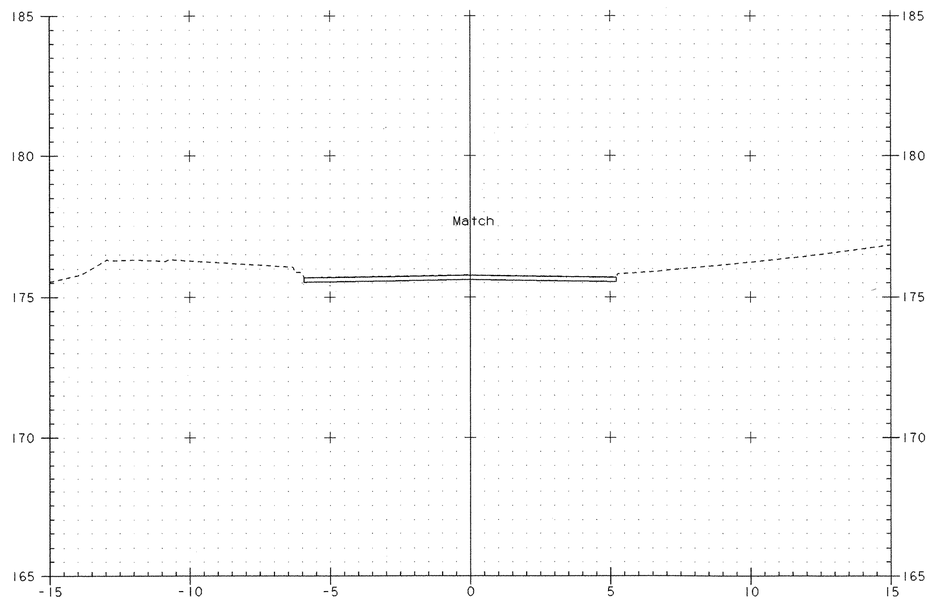
RETAINING WALL #5
STA 2+040.500 (AFTER STEPS)
STA 2+049.500 (TO DRIVEWAY)

END APPROACH
END COLD PLANING
TH5 STA 2+050.000



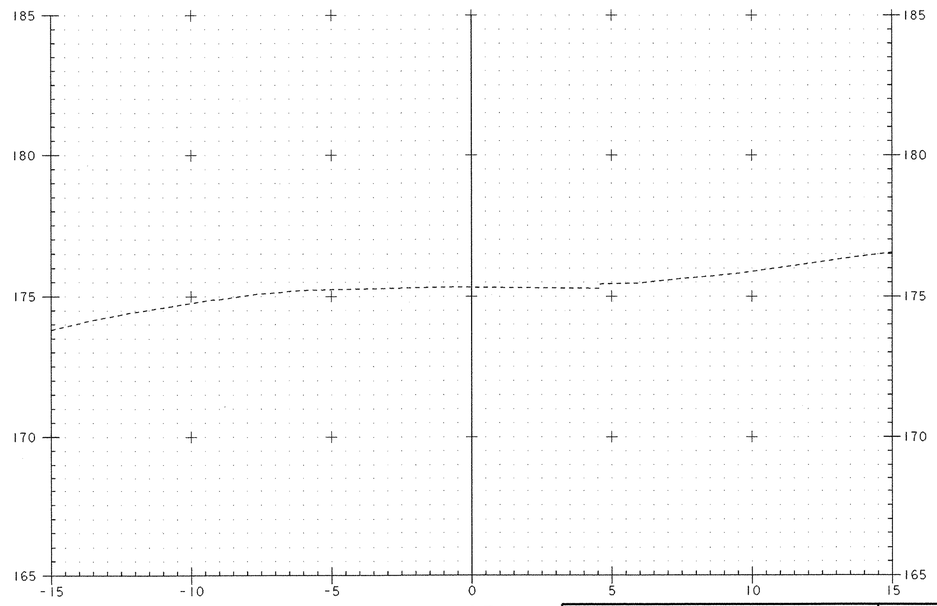
SUBBASE TAPER AT END PROJECT - TH5

NTS



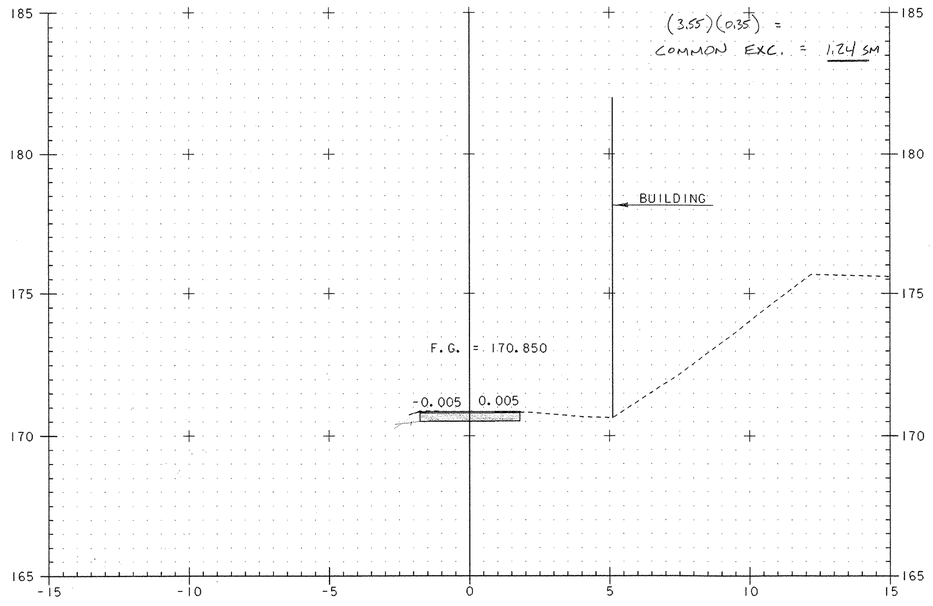
2+040

BEGIN APPROACH
BEGIN COLD PLANING
TH5 STA 2+035.000



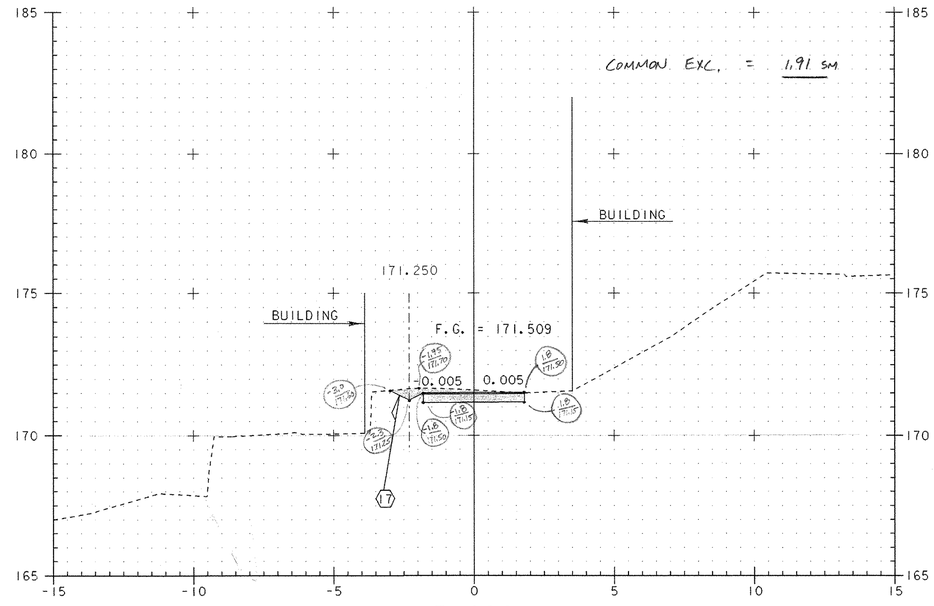
2+053

PROJECT: BETHEL	PROJECT NO. : BRF0241(33)C/2
DESIGN FILE NAME: 02c180/Structures/s02c180xsec.dgn iPARM FILE NAME: sc180th52.i	PLOT DATE: 14-APR-2005
TOWN HIGHWAY 5 SECTIONS	
STA 2+040 Thru STA 2+053	SHEET: 93 OF 130

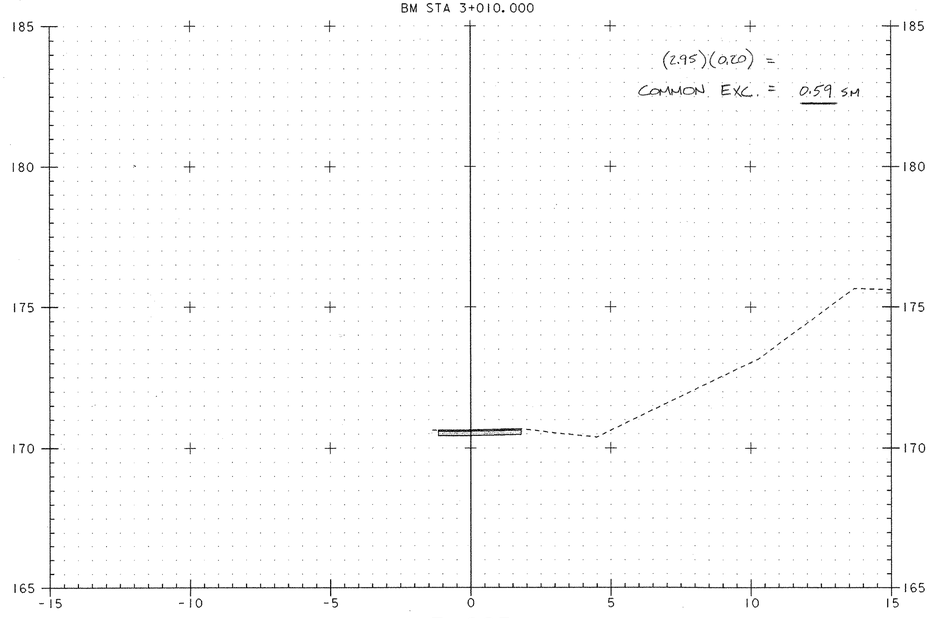


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BM STA 3+010.000



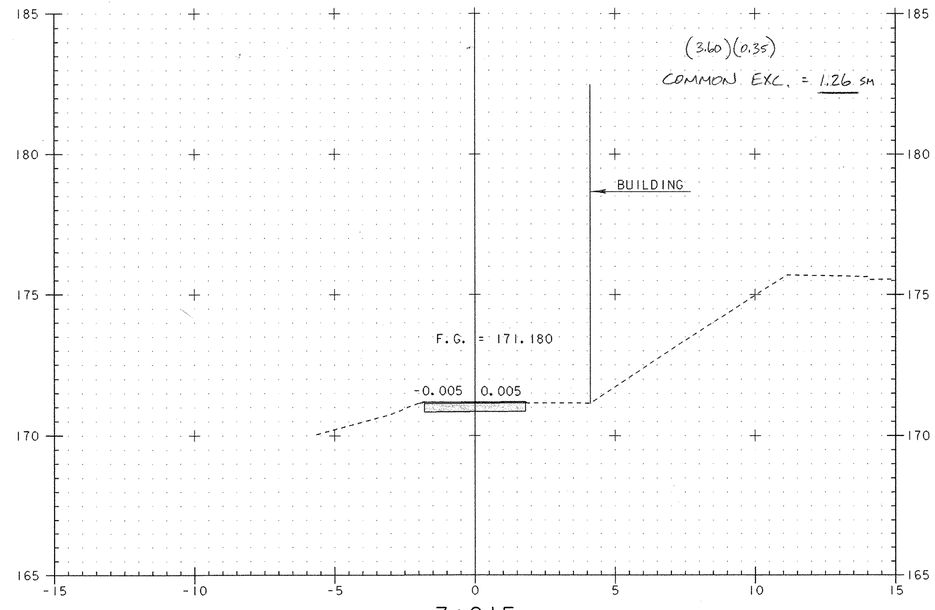
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3+005

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STA 3+003.500

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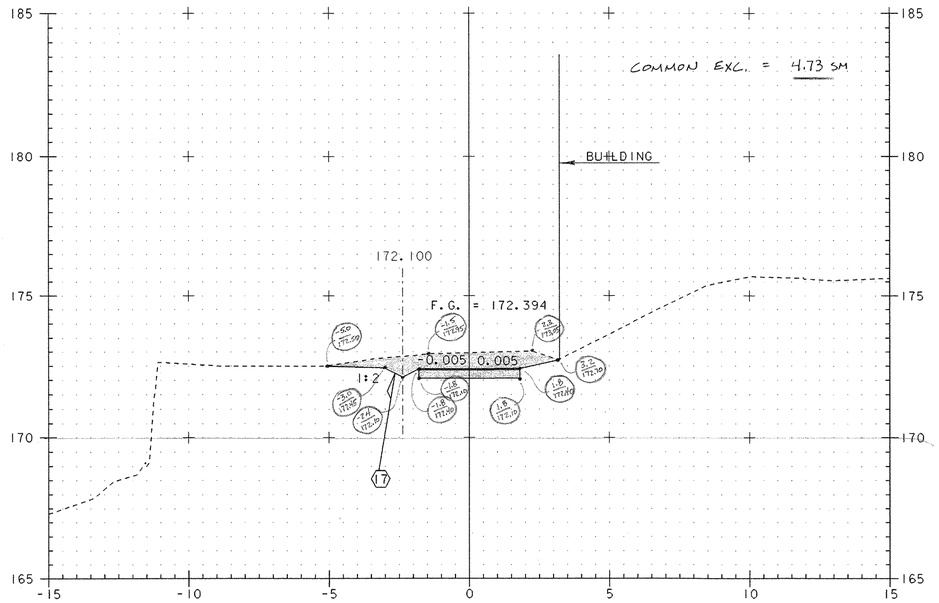


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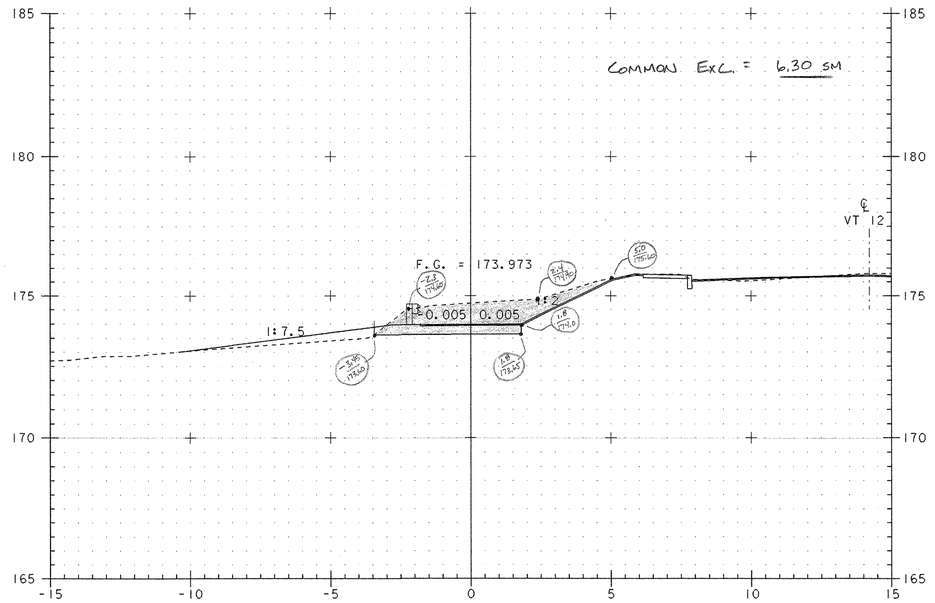
4-9-07

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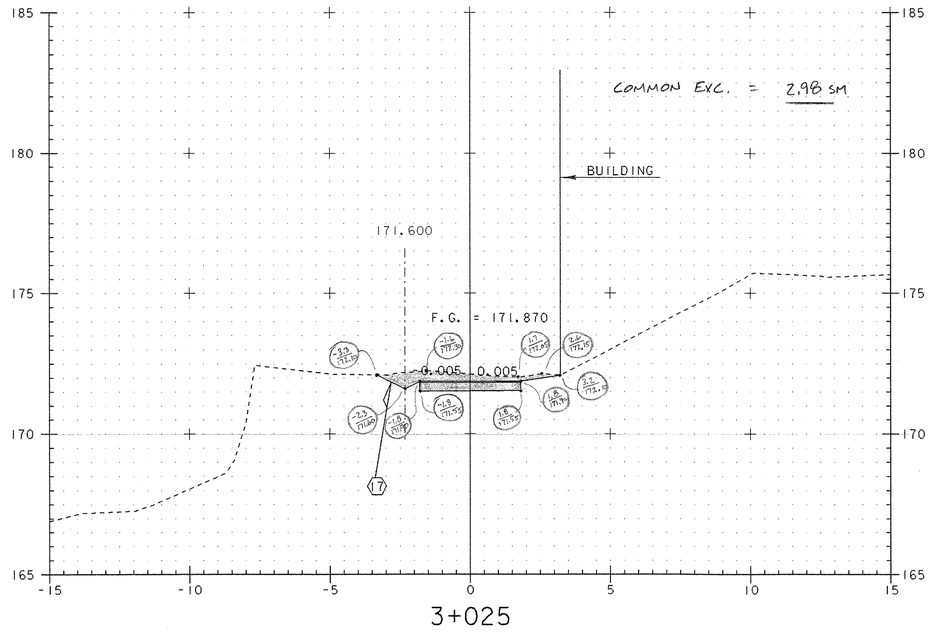
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BETHEL MILLS DRIVE SECTIONS	
STA 3+005 Thru STA 3+020	SHEET: 94 OF 130



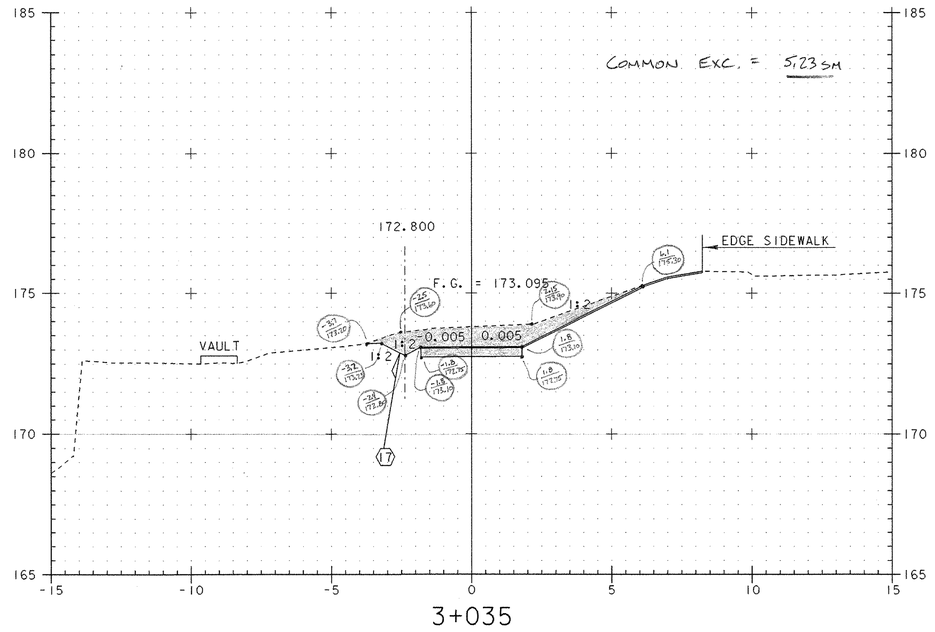
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3+040



3+025

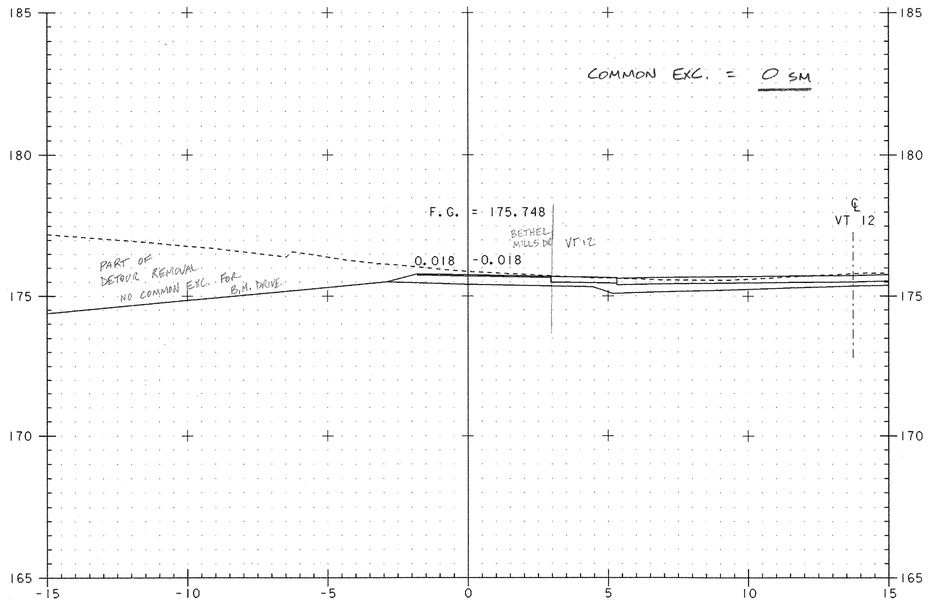


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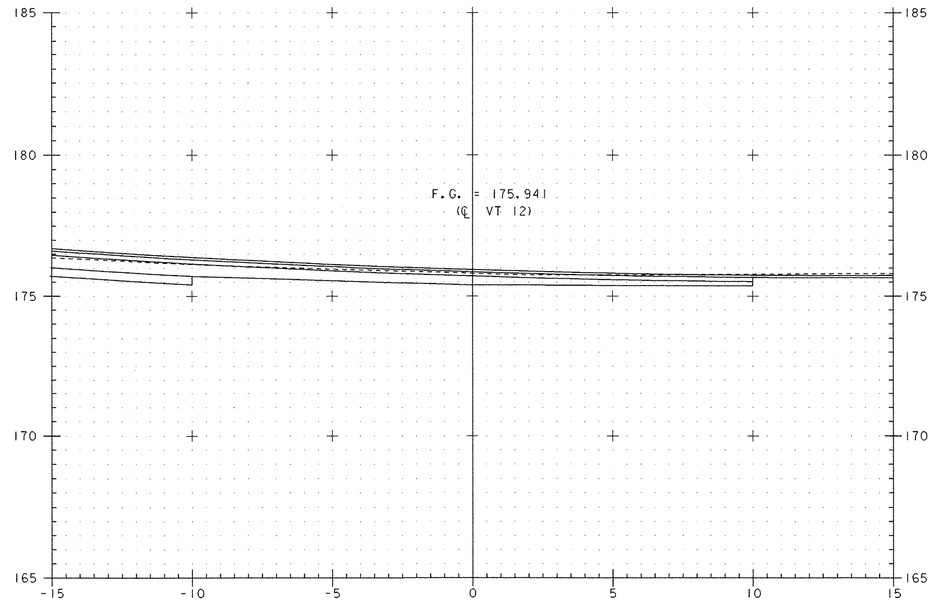
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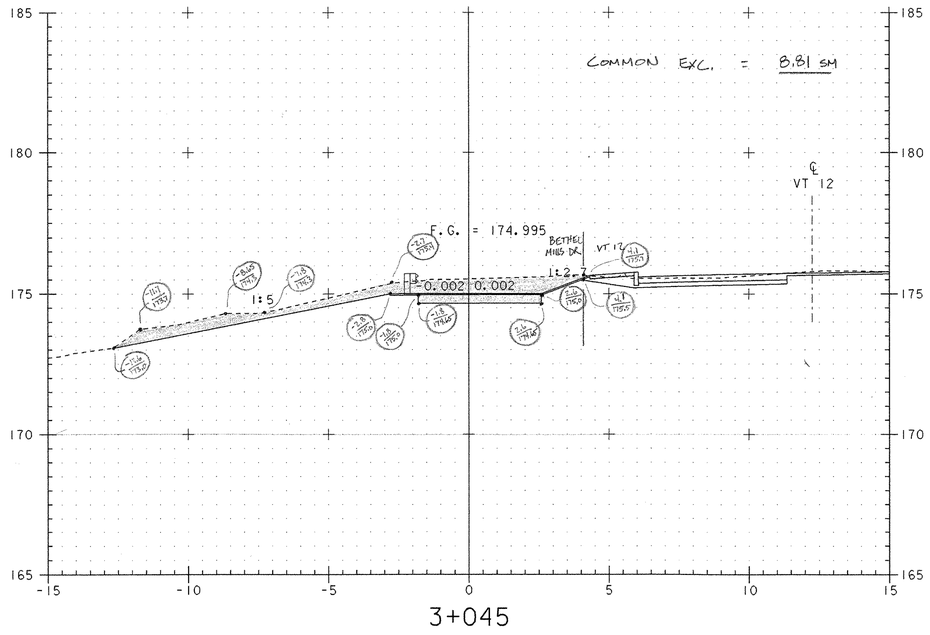
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BETHEL MILLS DRIVE SECTIONS	
STA 3+025 Thru STA 3+040	SHEET: 95 OF 130



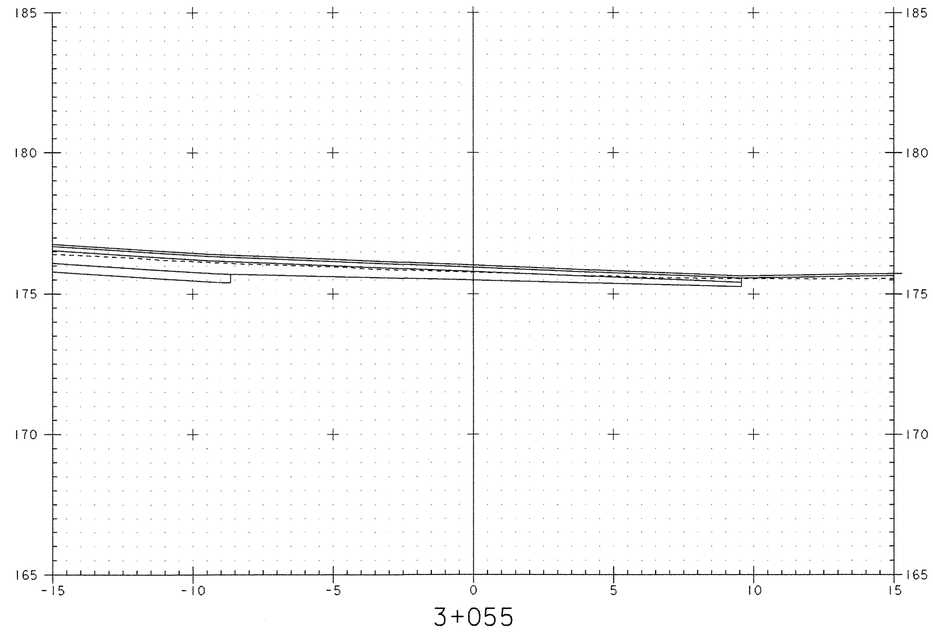
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3+060



3+045

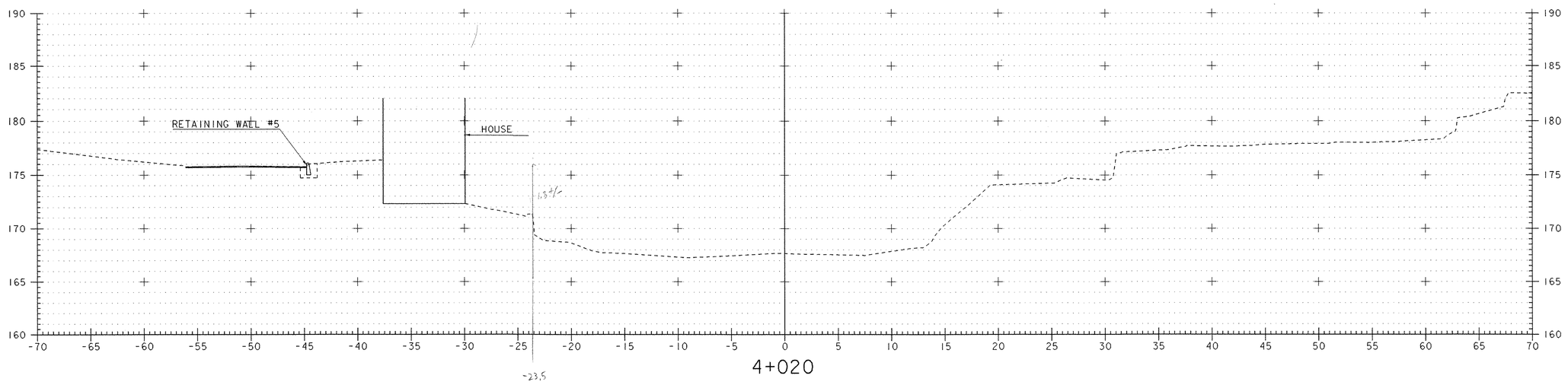


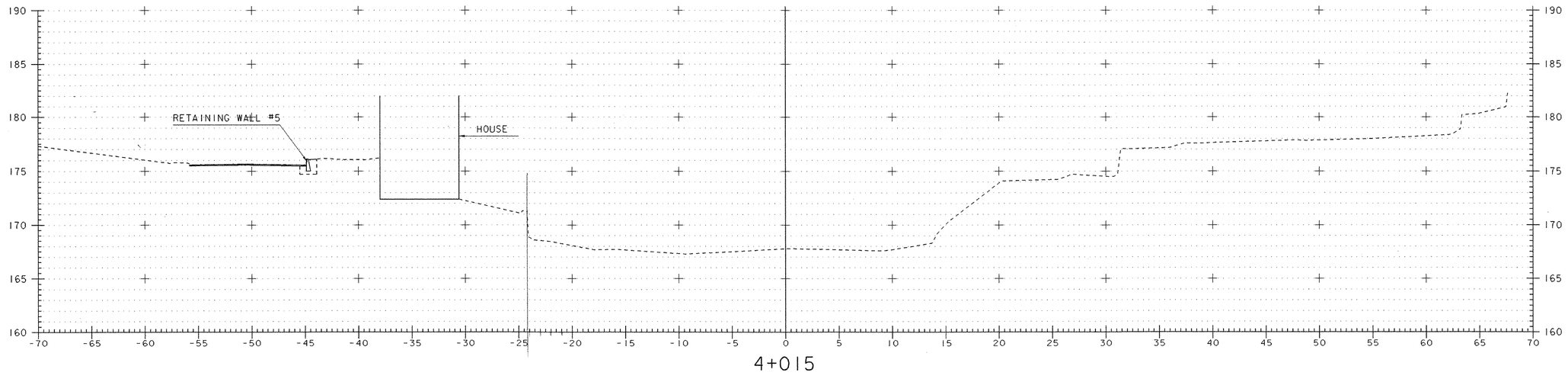
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RKP
4-9-07

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BETHEL MILLS DRIVE SECTIONS	
STA 3+045 Thru STA 3+060	SHEET: 96 OF 130

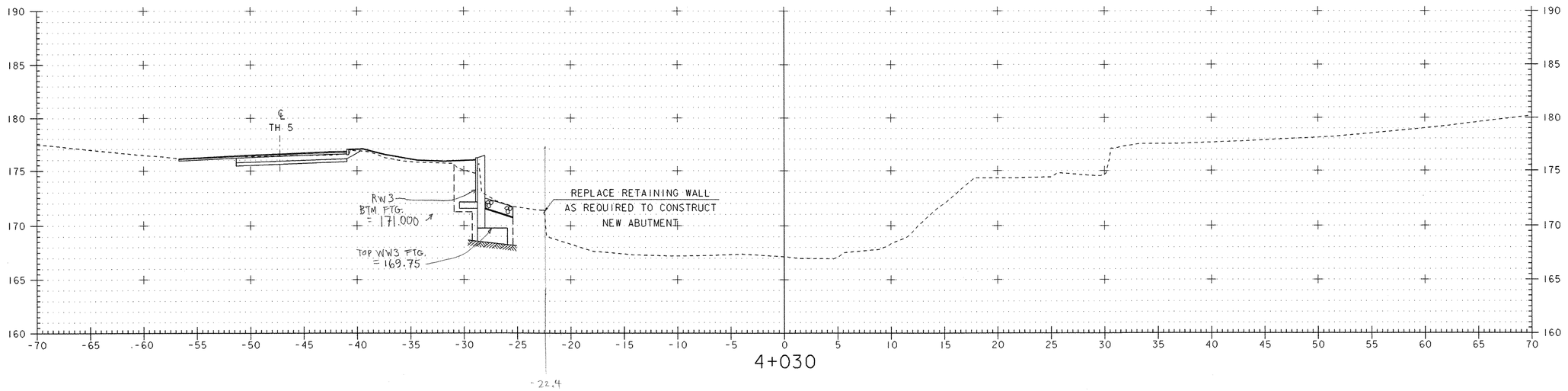




0 2 4 6 8 10 20

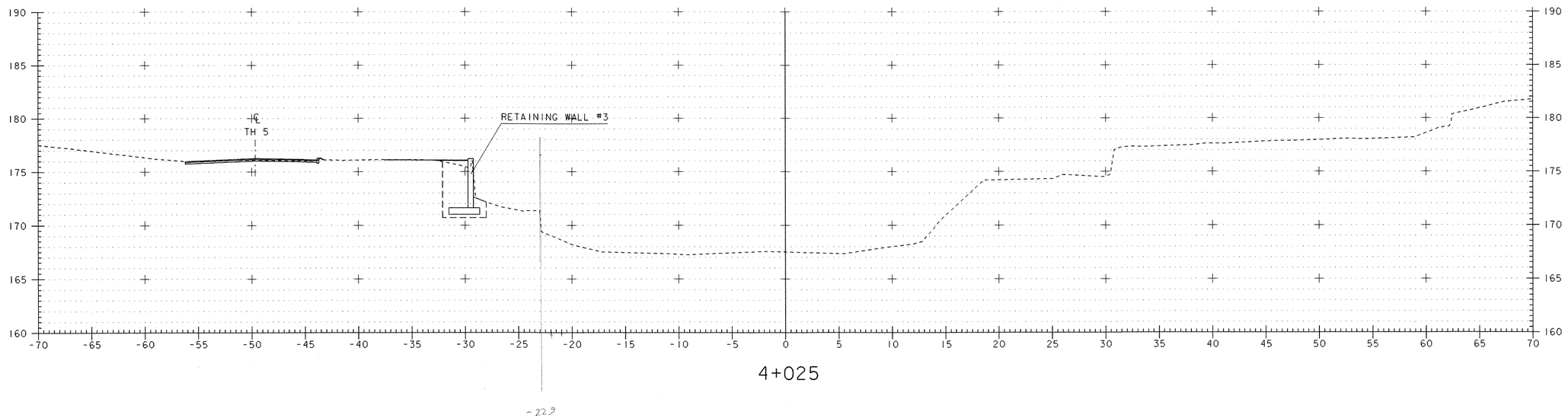
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CHANNEL CROSS SECTIONS	
STA 4+015 AND STA 4+020	SHEET: 97 OF 130



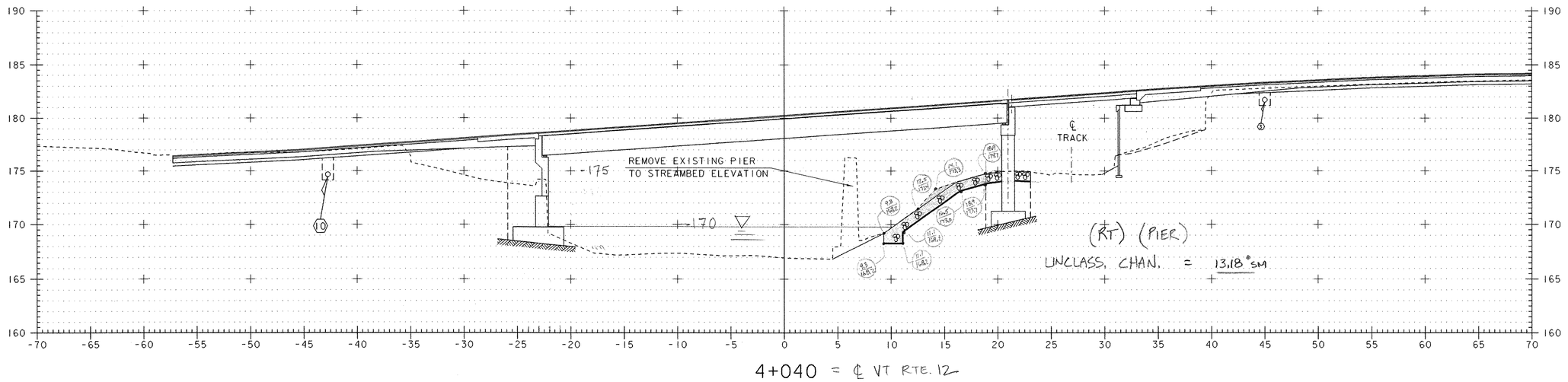
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BEGIN GRUBBING MATERIAL
BEGIN UNCLASSIFIED CHANNEL EXCAVATION

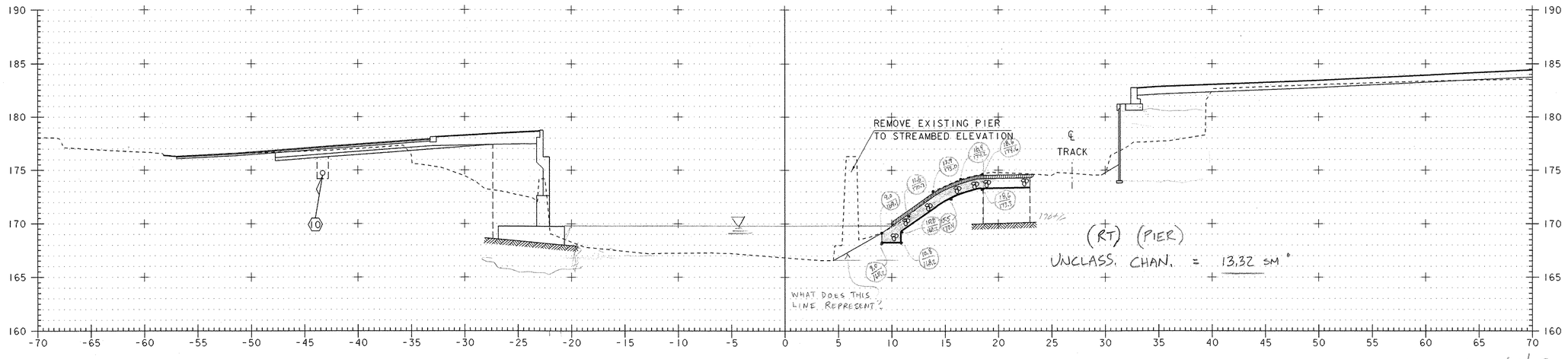


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CHANNEL CROSS SECTIONS	
STA 4+025 AND STA 4+030	SHEET: 98 OF 130



4+040 = ℄ VT RTE. 12



4+035

4+032.8
Beg UNCLASS CHAN 13.32 SM
STA 4+033.000 RT (PIER)

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BEGIN GRUBBING MATERIAL

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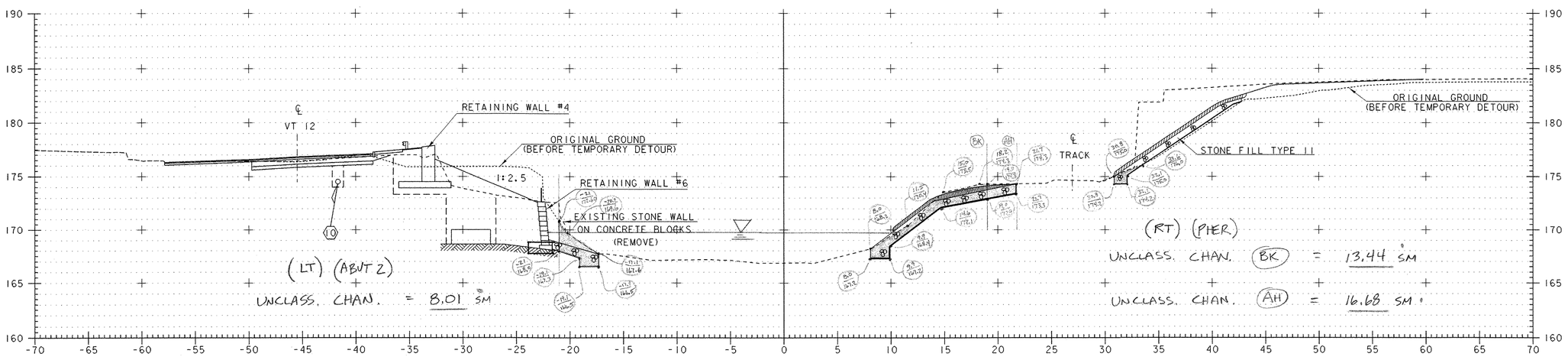
PKP 4-9-07

JHP 6/17/07

PROJECT: BETHEL	PROJECT NO. : BRF0241 (33) C/2
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CHANNEL CROSS SECTIONS	
STA 4+035 AND STA 4+040	SHEET: 99 OF 130

(RT) (ABUT 1)

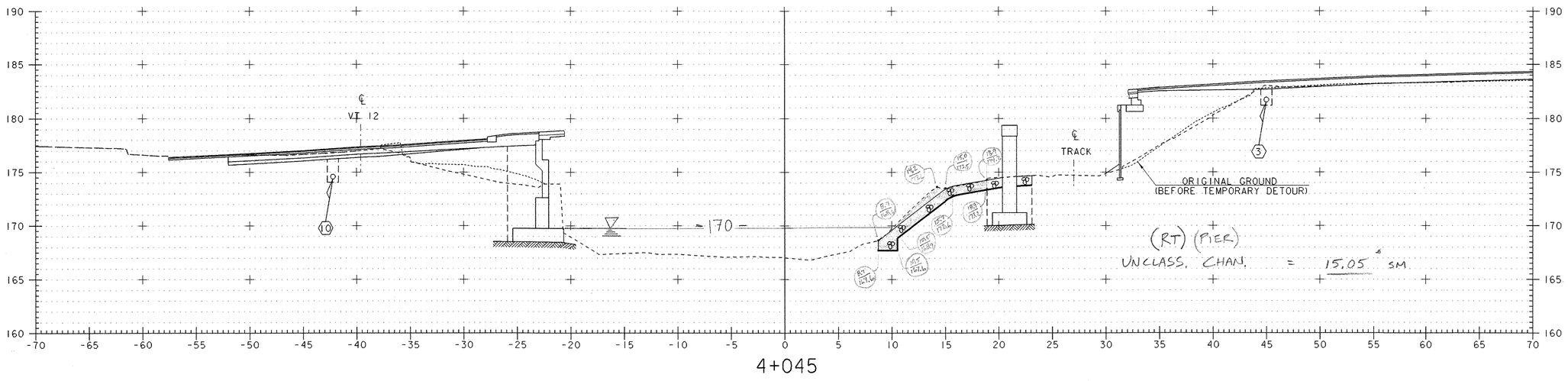
UNCLASS. CHAN. = 1.69 SM



4+050

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BEGIN GRUBBING MATERIAL
BEGIN UNCLASSIFIED CHANNEL EXCAVATION

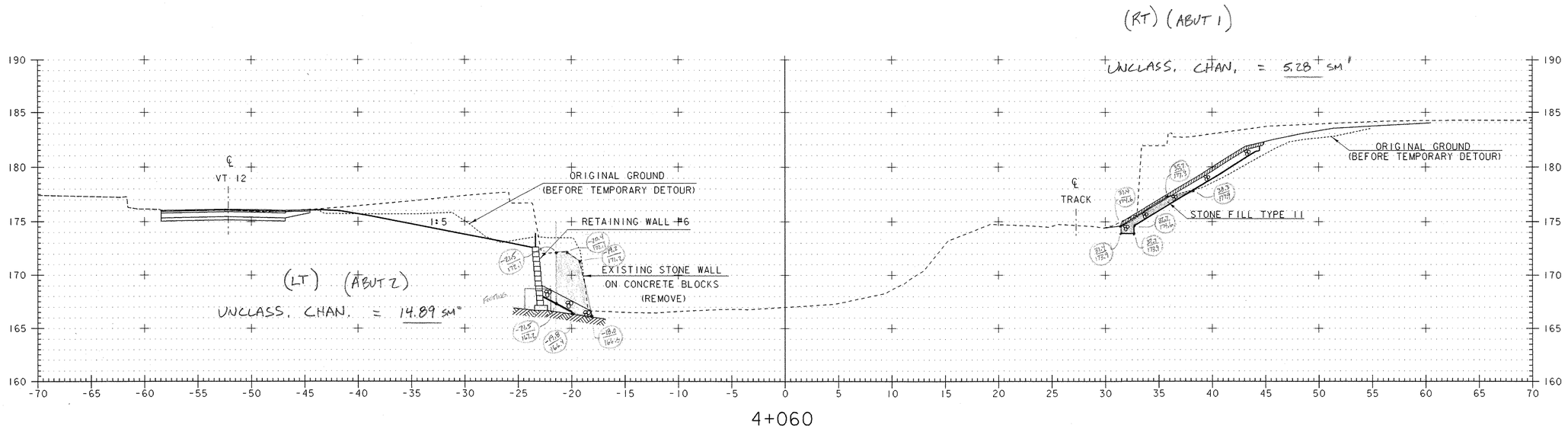


4+045

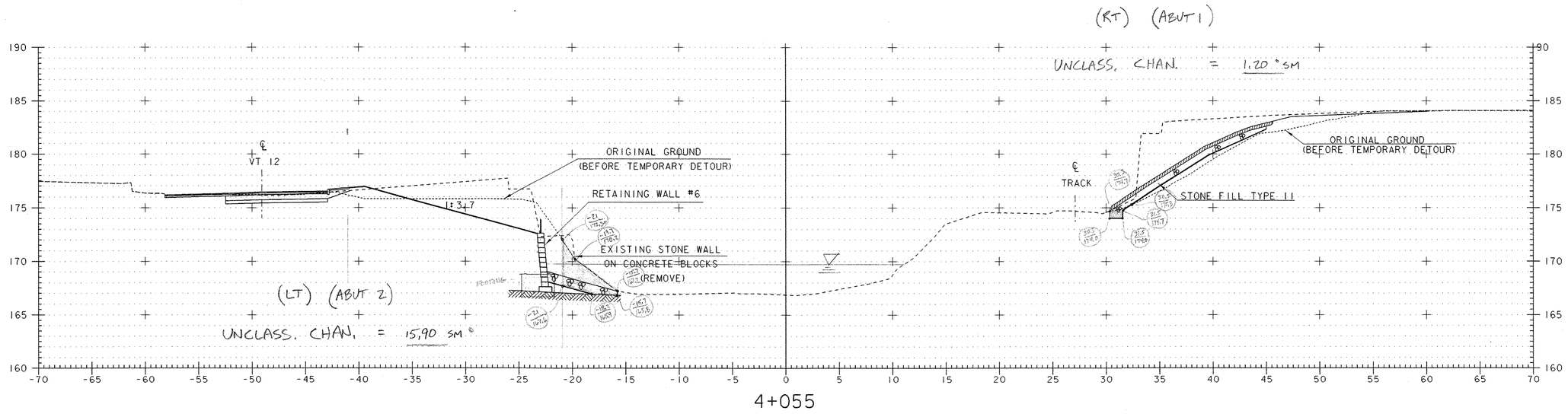
AKP 4-9-07 JHP 6/07/07

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PROJECT: BETHEL	PROJECT NO. : BRF0241 (33) C/2
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CHANNEL CROSS SECTIONS	
STA 4+045 AND STA 4+050	SHEET: 100 OF 130



4+060



4+055

PKP 4-9-07 JHP 6/7/07

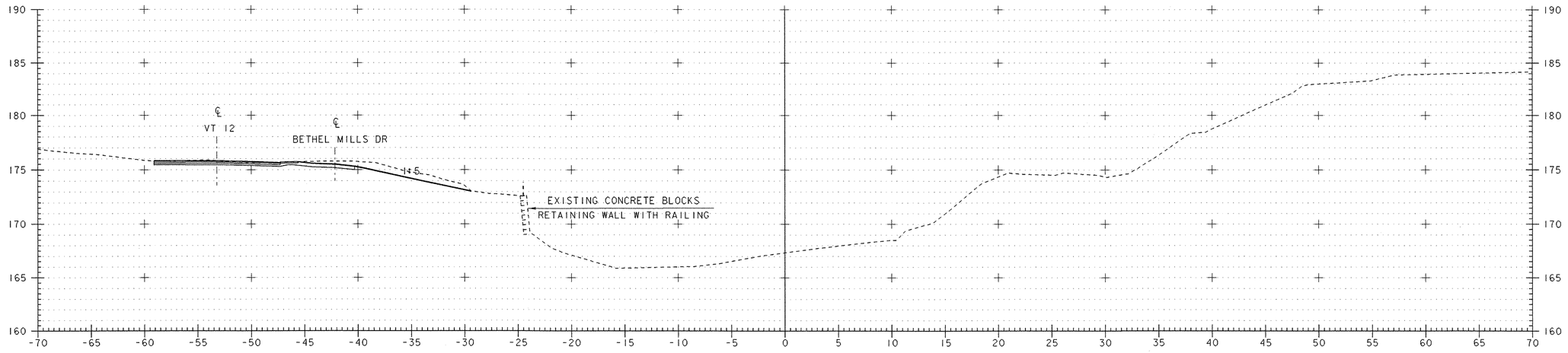
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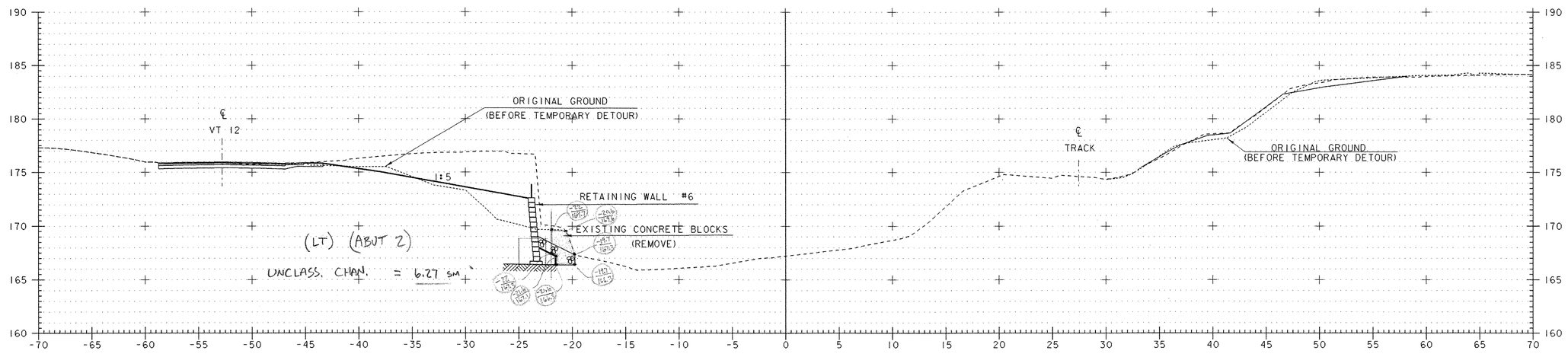
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CHANNEL CROSS SECTIONS	
STA 4+055 AND STA 4+060	SHEET: 101 OF 130



4+070

STA 4+068.~~000~~ 730 LT (ABUTMENT 2)

END STONE FILL TYPE III
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END GRUBBING MATERIAL
END UNCLASSIFIED CHANNEL EXCAVATION



4+065

STA 4+064.500 RT (ABUTMENT 1)

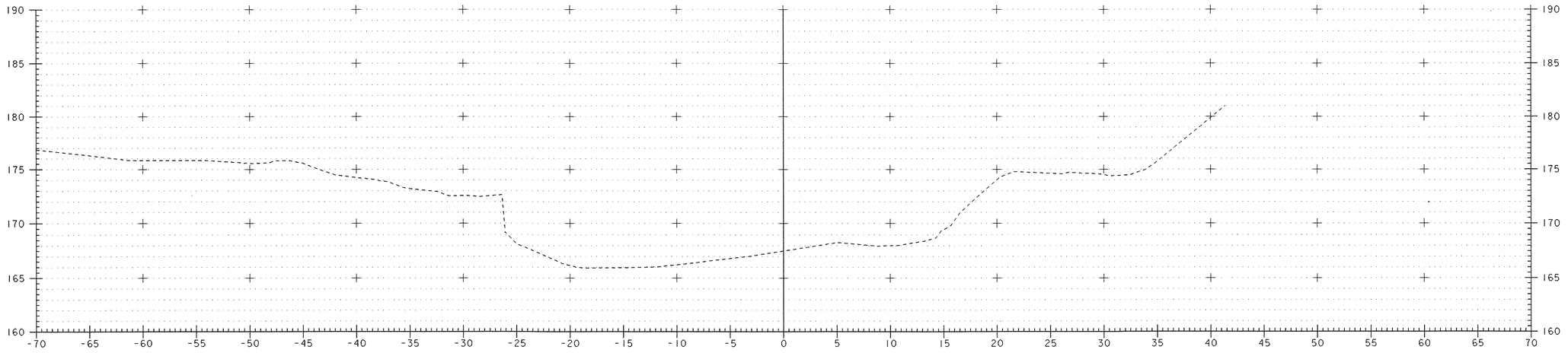
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END GRUBBING MATERIAL
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RLP 4-9-07 JHP 6/07/07

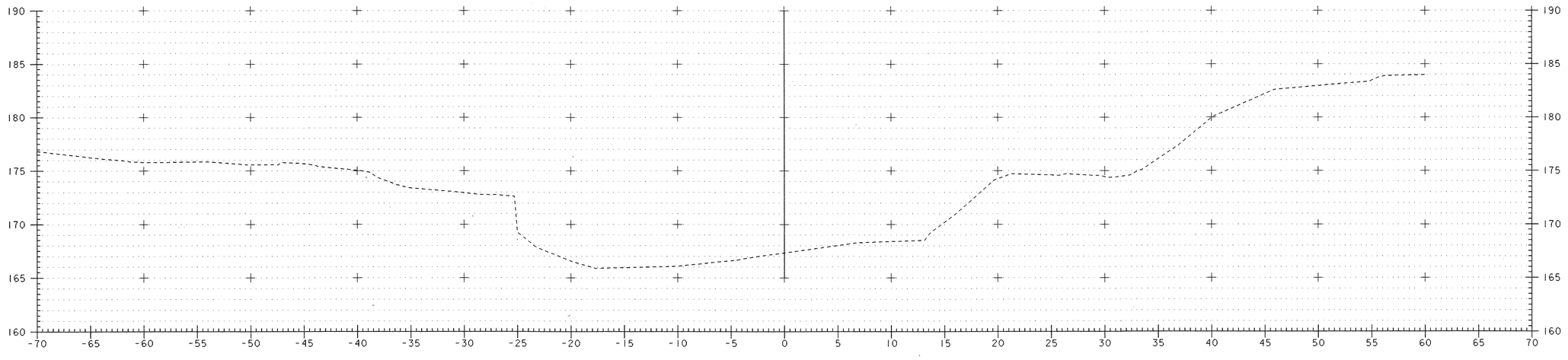
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CHANNEL CROSS SECTIONS	
STA 4+065 ANS STA 4+070	SHEET: 102 OF 130



4+080



4+075

0 2 4 6 8 10 20

SCALE = 1:200

PROJECT: BETHEL	PROJECT NO. : BRF 0241 (33) C/2
DESIGN FILE NAME: 02c180/Structures/s02c180xsec.dgn IPARM FILE NAME: sc180ch8.i	PLOT DATE: 14-APR-2005
CHANNEL CROSS SECTIONS	
STA 4+075 AND STA 4+080	SHEET: 103 OF 130

EROSION PREVENTION AND SEDIMENT CONTROL NARRATIVE

PROJECT DESCRIPTION

Project Bethel BRF 0241 (33) Contract 2 consists of the replacement of Bridge 31 over the Third Branch of the White River in the town of Bethel, VT. This project is located on VT 12 in Bethel beginning at a point approximately 0.75 km from the VT 107 junction, and it extends southerly along VT 12 for a distance of 140 meters. The length of the existing closed Bridge 31 is approximately 56 meters while the length of the roadway portion of the project is about 85 meters. Construction extends along VT 12 and includes the reconstruction of Bridge 31 and the adjacent retaining wall, as well as the rebuilding of the current drainage system within the project limits. The project also involves new bituminous concrete pavement, the removal of the temporary bridge, which was erected during Contract 1, and the re-grading of the land disturbed by the temporary bridge and detour.

It is anticipated that this project will last two full construction seasons.

Riparian buffer zone is 15.24 m from river banks. Minimize all impacts within this buffer zone.

SITE INVENTORY AND ANALYSIS

OFF SITE DRAINAGE CHARACTERISTICS
Due to the nature of the topography of this site there is very little off-site "run-on" to areas which will be disturbed at the time of construction. However, there are critical regions on the site that will be prone to sediment mobilization if proper erosion and sediment control measures are not correctly implemented during construction.

DRAINAGE, WATERWAYS, BODIES OF WATER:
The Third Branch of the White River is the only water source on or near the project location. The river is classified as perennial, sinuous, not braided, and equi-width, with a streambed made up of gravel, cobbles, boulders, and ledge. The drainage area at the bridge crossing is 352 sq km.

TOPOGRAPHY, EXISTING ROADS, BUILDINGS, UTILITIES:
The land on and immediately adjacent to the site is urban, and consists of residential and commercial property. The slope of the land ranges from 0 to 80%, with the steeper portions located in close proximity to the river and railroad tracks.

VEGETATION:
The vegetative cover on the project varies from grass lawns to small, lightly wooded areas located next to the river bank and railroad tracks.

SOILS:
The soil types for this project have been identified as Windsor Loamy Fine Sand, K factor = 0.32, slopes = 25 – 65%, and Urban Land – Windsor – Agawam Complex, K factor = .28, slopes = 0 – 8%. The former is classified as highly erodible and can be found on the steep slopes adjacent to the railroad tracks as well as the river bank on the southwest side of the White River. The latter soil encompasses the remainder of the project and is considered not highly erodible due to soil classification and gentle slopes.
Generally, K-values indicate the following: 0.0-0.23 = low erodibility, 0.24-0.36 = moderate erodibility, 0.37 and higher = higher erodibility.
The United States Department of Agriculture Soil Conservation Service (USDASCS) is the source of the above soil data.

SENSITIVE RESOURCE AREAS:
There are no 'Threatened & Endangered Species' living on or near the project site. There are also no historical, archeological, wetland or farmland areas on the project site.

PROXIMITY TO NATURAL OR MAN-MADE FEATURES:
Soil disturbance near natural or man-made waters will be due to the removal and replacement of Bridge 31 and its abutments, removal of the temporary bridge and some minor approach work. Disturbed stream banks of the White River will be stabilized with Stone Fill, Type III under laid with geo-textile fabric.

TEMPORARY EROSION PREVENTION & SEDIMENT CONTROL

TEMPORARY EROSION PREVENTION MEASURES TO BE UTILIZED INCLUDE:
"Project Demarcation Fencing," denoted -PDF- on the plans, will be used to delineate the limits the contractor can access with construction equipment. This measure limits the area that can be disturbed and exposed to erosion.

Seeding, mulching, and biodegradable erosion control matting or an equivalent product is needed on slopes greater than 3:1. In areas with large slopes, stone fill under laid with geo-textile fabric is required. All slopes shall be stabilized within 48 hours of reaching final grade or during intermittent phases of construction activity.

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

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

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

Sand bags filled with clean, small diameter stone, or an equivalent barrier, will be utilized around any drop inlets to create a temporary ponding area for particles to settle out as water drains through the barrier. Inlet protection shall be installed as soon as there is the possibility of water flowing to the structure. The height of the barrier shall be limited such that the ponding area does not present a hazard to the traveling public. Alternative inlet control measures shall be approved by the engineer prior to implementation.

Measures such as temporary stone check dams, silt fence, and sand bags shall be checked regularly for accumulation of sediment. Sediment build-up shall be removed when the level of sediment reaches one-half the height of the control measure. Sediments shall be disposed of in an area where they will not be subject to further erosion.

Stabilized construction entrances to the project site, staging areas, as well as to waste and borrow areas shall be established. The minimum size of a stabilized construction entrance is 12'X50' (3700X15, 000). All surface water flowing to or diverted toward a construction entrance shall be piped under the stone. Pipes shall be appropriately sized for the contributing area, however, no pipe smaller then 6" (150) diameter shall be used. See typical detail on 'Erosion & Sediment Control Plan' sheet for materials and construction method to be utilized when constructing a stabilized entrance.

Temporary sediment settling basins will be utilized on this project at both ends of the bridge for dewatering of the cofferdams. The settling basins should be sized based upon the following criteria: (See Sediment Settling Basin Sizing Criteria.)

PERMANENT EROSION CONTROL MEASURES

SEVERAL PERMANENT EROSION CONTROL MEASURES WILL BE UTILIZED:
Stone lining of the stream banks with Stone Fill, Type III topped with grubbing material as specified by VTrans Hydraulics personnel. This stone will protect the stream bank from erosion during design storm events. Stone Fill, Type II will be utilized at culvert outlets to dissipate water velocities and reduce erosion potential. Urban seeding formula used to establish turf on Top Soil will be used outside of the roadway limits where stone fill has not been specified.

GENERAL EROSION & SEDIMENT CONTROL GUIDELINES

The Erosion Control Plans are meant as a guideline for preventing erosion and controlling sediment transportation. The work outlined in this narrative consists of applying measures throughout the life of the project to control erosion and minimize the sediment into 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 be the engineer. See section 105.23 of the Vermont AOT Standard Specifications for Construction, dated 2001.

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

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

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

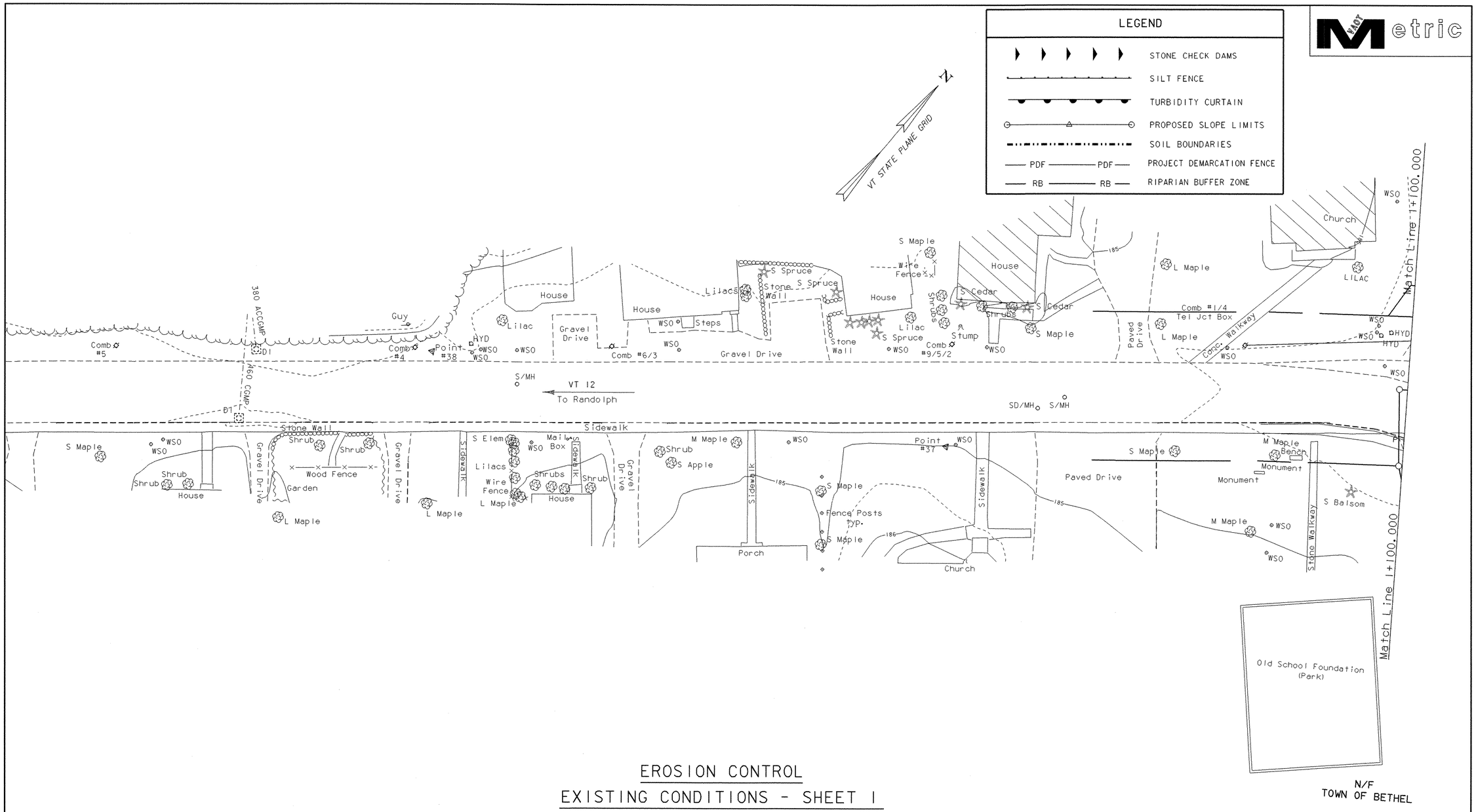
Control only sediment-laden runoff generated by the project site using diversion berms, diversion channels, culverts and/or temporary pipes.

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

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

PROJECT: BETHEL	PROJECT NO.: BRF 0241 (33) C/2
DESIGN FILE NAME: 02c180/structures/s02c180ecnotes.dgn	
IPARM FILE NAME: s02c180eronarr.i	PLOT DATE: 14-APR-2005
DESIGNED BY: E.L.RUSTAY	DRAWN BY: M.FESSEL
SQUAD LEADER: C.P.WILLIAMS	CHECKED BY: K.HIGGINS
EROSION CONTROL NARRATIVE	SHEET: 104 OF 130



EROSION CONTROL
EXISTING CONDITIONS - SHEET 1

0 10 20

SCALE 1 : 250

DATUM

VERTICAL NAVD 88
HORIZONTAL NAD 83/92

PROJECT:	PROJECT NO. :
BETHEL	BRF0241(33)C/2

DESIGN FILE NAME: 02c180/structures/s02c180bdr.dgn
IPARM FILE NAME: sc180excond1.i — PLOT DATE: 14-APR-2005
SURVEYED BY: ORVIS — SURVEY DATE: 10/99
SQUAD LEADER: C. P. WILLIAMS — DRAWN BY: J. L. SCHULTZ
EXISTING CONDITIONS SHEET 1 — SHEET: 105 OF 130

VAOT Metric

SPRINT UNDERGROUND (APPROXIMATE LOCATION)

AT&T UNDERGROUND (APPROXIMATE LOCATION)

VT STATE PLANE GRID

3rd Branch of the White River — FLOW

C.V. PROPERTIES, INC. JOINED BY: NEW ENGLAND CENTRAL RAILROAD, INC.

Match Line 1+100.000

Match Line 1+100.000

Gravel Drive

M. Maple

House

M. Spruce

S. Cedar (2)

BM #2
Elev 183.972

Fence

Comb #X13

Stone Wall

Concrete Wall

S/MH

DI

TH 66

Point #36

Point #35

M Elm

Gravel Drive

Lilacs

S Maple

Garden

Comb #44 9/2

Guy Wire

Next England Central Railroad

To Randolph VT 12

380 RCP

Comb #X11

T/MH

Point #20

TOWN OF BETHEL

380 CMP

ELO #7A BEG

460

R.O.W. TO PRATT

L Willow

L Maple

Temporary Aerial (In Place)

Hedge

PRATT, FRANK E. & PLACY, DIANE L.

House

Final Aerial

C.V. PROPERTIES, INC. JOINED BY: NEW ENGLAND CENTRAL RAILROAD, INC.

Aerial Telephone

Underground Power

PUNGER, JANICE E.

Point #31

Guy

Tel Pedestal

Stairs

Conc. Wall

Shrub

M. Maple

House

Conc. Pad

Garden

380 RCP

Conc. Wall

Conc. Wall

M Elm

M Lac

L Pine

Lilac

M Boxelder

Point #33

Point #32

380 ACCOMP

Sidewalk Fence

underground power vault sub-station

Concrete Dam

Pad

Bethel Mills Drive (Paved)

Building

BETHEL MILLS, INC.

To Interstate 89

Wall

Sidewalk

S/MH

Comb #2/6

TH 5

M Maple

Sidewalk

Light

M. Maple

Concrete Pad

EL #1

Comb #35 1/8

DI

380 RCP

Paved Drive

Point #19 & 21

Light

Wood Wall

WSO

Maple Top

Hyd

Paved Drive

Stone Wall

Maple

Paved Drive

Sidewalk

T/MH

Light

Comb #71/351

Paved Drive

Ditch

Point #30

Flag Pole

BM #1
Elev 178.407

Conc. Drive

Gravel Drive

CPEP

S/MH

Wall

S Lyndon

Wall

Wall

Apple

S Lyndon

Apple

Sidewalk

VT 12

LEGEND

- STONE CHECK DAMS
- SILT FENCE
- TURBIDITY CURTAIN
- PROPOSED SLOPE LIMITS
- SOIL BOUNDARIES
- PDF — PDF — PROJECT DEMARCATION FENCE
- RB — RB — RIPARIAN BUFFER ZONE

EROSION CONTROL
EXISTING CONDITIONS - SHEET 2

0 10 20

SCALE 1 : 250

DATUM

VERTICAL NAVD 88

HORIZONTAL NAD 83/92

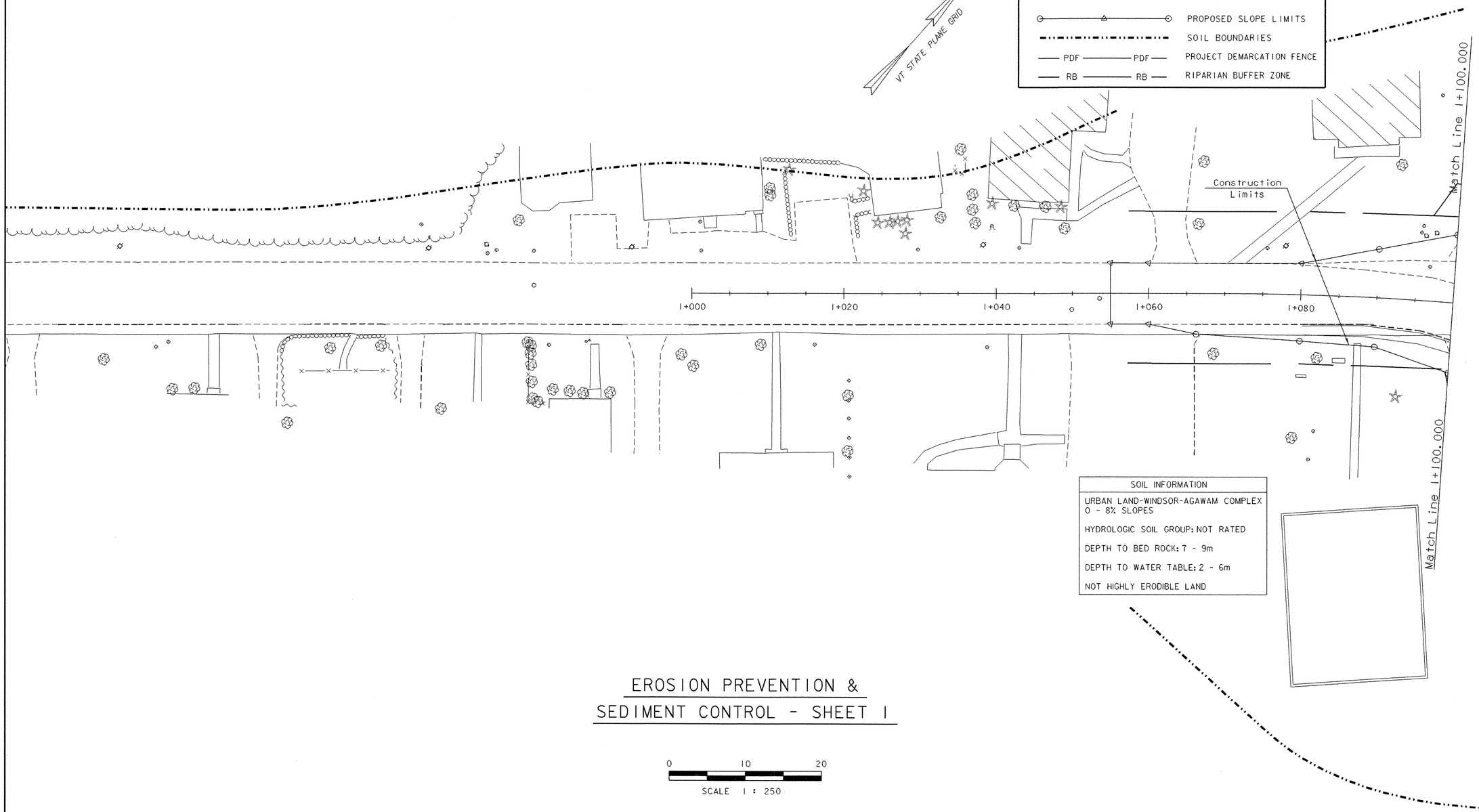
PROJECT: BETHEL	PROJECT NO. : BRF0241 (33) C/2
DESIGN FILE NAME: 02c180/structures/s02c180bdr.dgn	
IPARM FILE NAME: sc180excond2.i	PLOT DATE: 14-APR-2005
SURVEYED BY: ORVIS	SURVEY DATE: 10/99
SQUAD LEADER: C. P. WILLIAMS	DRAWN BY: J. L. SCHULTZ
EXISTING CONDITIONS SHEET 2	SHEET: 106 OF 130

Metric

LEGEND

- STONE CHECK DAMS
- SILT FENCE
- TURBIDITY CURTAIN
- PROPOSED SLOPE LIMITS
- SOIL BOUNDARIES
- PDF — PDF — PROJECT DEMARCATION FENCE
- RB — RB — RIPARIAN BUFFER ZONE

VT STATE PLANE GRID



SOIL INFORMATION
URBAN LAND-WINDSOR-AGAWAM COMPLEX 0 - 8% SLOPES
HYDROLOGIC SOIL GROUP: NOT RATED
DEPTH TO BED ROCK: 7 - 9m
DEPTH TO WATER TABLE: 2 - 6m
NOT HIGHLY ERODIBLE LAND

EROSION PREVENTION & SEDIMENT CONTROL - SHEET 1

0 10 20

SCALE 1 : 250

DATUM

VERTICAL NAVD 88

HORIZONTAL NAD 83/92

PROJECT:	PROJECT NO. :
BETHEL	BRF0241(33)C/2
DESIGN FILE NAME: 02c180/structures/s02c180bdr.dgn	
IPARM FILE NAME: sc180erol.i	PLOT DATE: 14-APR-2005
SURVEYED BY: ORVIS	SURVEY DATE: 10/99
SQUAD LEADER: C. P. WILLIAMS	DRAWN BY: J. L. SCHULTZ
EROSION CONTROL PLAN SHEET 1	SHEET: 107 OF 130

VAOT Metric

PROPOSED SEDIMENT DEWATERING LOCATION (CONTRACTOR TO PROVIDE DETAILS AND METHODOLOGY WITH COFFERDAM DESIGN, SEE EROSION AND SEDIMENT CONTROL NOTES 6 & 7 ON SHEET 111.)

VT STATE PLANE GRID

3rd Branch of the White River — FLOW

PROPOSED SEDIMENT DEWATERING LOCATION (CONTRACTOR TO PROVIDE DETAILS AND METHODOLOGY WITH COFFERDAM DESIGN, SEE EROSION AND SEDIMENT CONTROL NOTES 6 & 7 ON SHEET 111.)

Match Line 1+100.000

Match Line 1+100.000

PDF Construction Limits

Temporary Construction Limits

GRAVEL AND WIRE MESH DROP INLET PROTECTION (SEE EROSION AND SEDIMENT CONTROL DETAIL SHEET).

underground power, vault, sub-station

DOOR

1+120 1+140 1+160 1+180 1+200 1+220 1+240 1+260 1+280 1+300 1+320 2+020 2+040 3+000 3+020 3+040

RB PDF

SOIL INFORMATION
URBAN LAND-WINDSOR-AGAWAM COMPLEX 0 - 8% SLOPES
HYDROLOGIC SOIL GROUP: NOT RATED
DEPTH TO BED ROCK: 7 - 9m
DEPTH TO WATER TABLE: 2 - 6m
NOT HIGHLY ERODIBLE LAND

SOIL INFORMATION
WINDSOR LOAMY FINE SAND 25 - 60% SLOPES
HYDROLOGIC SOIL GROUP A
DEPTH TO BED ROCK: 7 - 9M
DEPTH TO WATER TABLE: 6M
HIGHLY ERODIBLE LAND

SOIL INFORMATION
URBAN LAND-WINDSOR-AGAWAM COMPLEX 0 - 8% SLOPES
HYDROLOGIC SOIL GROUP: NOT RATED
DEPTH TO BED ROCK: 3 - 8m
DEPTH TO WATER TABLE: 2 - 6m
NOT HIGHLY ERODIBLE LAND

LEGEND

- STONE CHECK DAMS
- SILT FENCE
- TURBIDITY CURTAIN
- PROPOSED SLOPE LIMITS
- SOIL BOUNDARIES
- PDF —— PDF — PROJECT DEMARCATION FENCE
- RB —— RB — RIPARIAN BUFFER ZONE

0 10 20

SCALE 1 : 250

EROSION PREVENTION & SEDIMENT CONTROL - SHEET 2

DATUM

VERTICAL NAVD 88
HORIZONTAL NAD 83/92

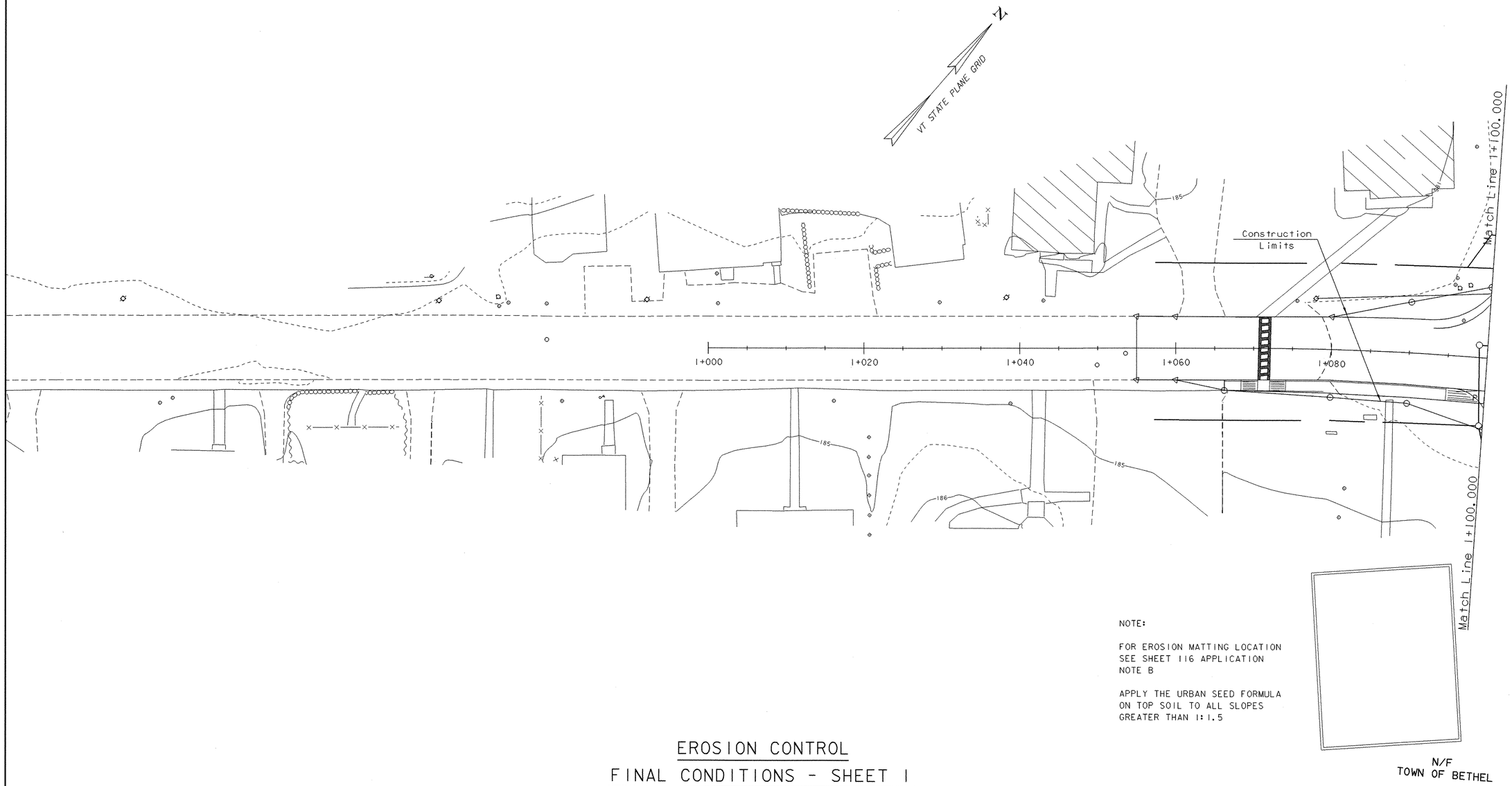
PROJECT: BETHEL

PROJECT NO. : BRF0241(33)C/2

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SURVEYED BY: ORVIS
SQUAD LEADER: C. P. WILLIAMS
EROSION CONTROL PLAN SHEET 2

PLOT DATE: 14-APR-2005
SURVEY DATE: 10/99
DRAWN BY: J. L. SCHULTZ
SHEET: 108 OF 130

VAOT Metric



NOTE:

FOR EROSION MATTING LOCATION SEE SHEET 116 APPLICATION NOTE B

APPLY THE URBAN SEED FORMULA ON TOP SOIL TO ALL SLOPES GREATER THAN 1:1.5

N/F
TOWN OF BETHEL

EROSION CONTROL
FINAL CONDITIONS - SHEET 1

0 10 20
SCALE 1 : 250

DATUM

VERTICAL NAVD 88
HORIZONTAL NAD 83/92

PROJECT: BETHEL	PROJECT NO. : BRF0241(33)C/2
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IPARM FILE NAME: sc180finalcond1.i	PLOT DATE: 14-APR-2005
SURVEYED BY: ORVIS	SURVEY DATE: 10/99
SQUAD LEADER: C. P. WILLIAMS	DRAWN BY: J. L. SCHULTZ
FINAL CONDITIONS SHEET 1	SHEET: 109 OF 130

SPRINT UNDERGROUND
(APPROXIMATE LOCATION)

AT&T UNDERGROUND
(APPROXIMATE LOCATION)

VT STATE PLANE GRID

C.V. PROPERTIES, INC. JOINED BY: NEW ENGLAND CENTRAL RAILROAD, INC.

3rd Branch of the White River — FLOW

Underground Power

Aerial Telephone

PUNGER, JANICE E.

Match Line 1+100.000

Match Line 1+100.000

TOWN OF BETHEL

R.O.W. TO PRATT

Construction Limits

Temporary Construction Limits

C.V. PROPERTIES, INC. JOINED BY: NEW ENGLAND CENTRAL RAILROAD, INC.

PRATT, FRANK E. & PLACY, DIANE L.

underground power vault sub-station

BETHEL MILLS, INC.

1+120 1+140 1+160 1+180 1+200 1+220 1+240 1+260 1+280 1+300 1+320 2+020 2+040 3+000 3+020 3+040

NOTE:

FOR EROSION MATTING LOCATION SEE SHEET 116 APPLICATION NOTE B.

APPLY THE URBAN SEED FORMULA ON TOP SOIL TO ALL SLOPES GREATER THAN 1:1.5

EROSION CONTROL
FINAL CONDITIONS - SHEET 2

0 10 20

SCALE 1 : 250

DATUM	
VERTICAL	NAVD 88
HORIZONTAL	NAD 83/92

PROJECT:	PROJECT NO. :
BETHEL	BRF0241(33)C/2

DESIGN FILE NAME: 02c180/structures/s02c180bdr.dgn
IPARM FILE NAME: sc180finalcond2.i
SURVEYED BY: ORVIS
SQUAD LEADER: C. P. WILLIAMS
FINAL CONDITIONS SHEET 2

PLOT DATE: 14-APR-2005
SURVEY DATE: 10/99
DRAWN BY: J. L. SCHULTZ
SHEET: 110 OF 130

Metric

EROSION AND SEDIMENT CONTROL NOTES:

1. THE AREA OF DISTURBANCE IS 0.65 ha (1.65 ACRES)
2. AN UPGRADED TEMPORARY EROSION PREVENTION AND SEDIMENT CONTROL PLAN SHALL BE SUBMITTED BY THE CONTRACTOR FOR APPROVAL BY THE AGENCY OF TRANSPORTATION.
3. TIME ALL GRADING TO MINIMIZE SOIL EXPOSURE.
4. AT THE END OF EACH DAY'S GRADING OPERATIONS, SHAPE EARTHWORK TO MINIMIZE THE EROSION FROM STORM RUNOFF.
5. PREPARE TEMPORARY DRAINAGEWAYS TO HANDLE CONCENTRATED FLOW UNTIL PERMANENT DRAINAGE IS CONSTRUCTED AND STABILIZED.
6. SPECIAL CONSIDERATION MUST BE GIVEN TO THE FIRST PUMP-DOWN OF THE COFFERDAMS. THIS WILL CONTAIN THE GREATEST VOLUME OF WATER WITH A HIGH SEDIMENT LOAD. THE CONTRACTOR MAY PROVIDE ADDITIONAL SEDIMENT TRAPS WITHIN THE RIGHT-OF-WAY IF REQUIRED OR CONTROL THE RATE OF DRAW-DOWN. ADDITIONAL SEDIMENT TRAPS MUST BE APPROVED BY THE RESIDENT ENGINEER.
7. AFTER COMPLETION OF THE SUBSTRUCTURE, THE SEDIMENT IN THE TRAPS SHALL BE REMOVED AND THE GROUND RESTORED TO ITS ORIGINAL SLOPES OR GRADED AS SHOWN ON THE CONSTRUCTION DRAWINGS.
8. SEE SHEETS 112-117 FOR EROSION PREVENTION AND SEDIMENT CONTROL DETAILS.
9. ASK FOR ASSISTANCE AND RECOMMENDATIONS AS NEEDED.

PERIMETER CONTROL NOTES:

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

GENERAL NOTES:

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

SEEDING FORMULA
URBAN AREAS

% WT.	Kg/ha	NAME	PUR %	GERM %
42.5	38.0	CREEPING RED FESCUE	98	85
10.0	9.0	PERENIAL RYE GRASS	95	90
42.5	38.0	KENTUCKY BLUE GRASS	85	85
5.0	5.0	ANNUAL RYE GRASS	95	85
100.0	90.0			

SEEDING 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.

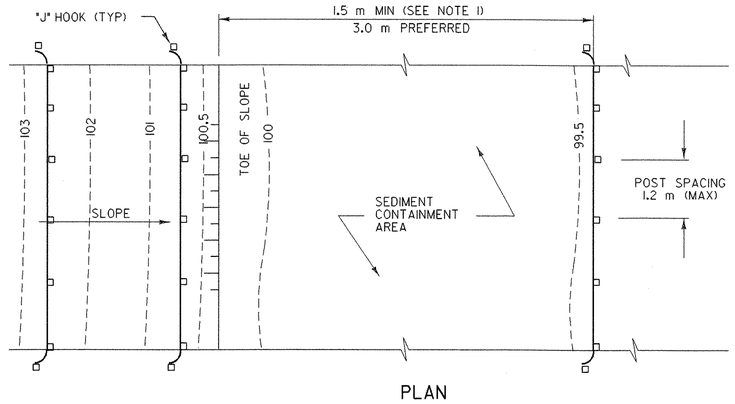
FERTILIZER: FORMULA 10-20-10, TO BE USED WITH SEED, APPLIED AT THE RATE OF 560 kg/ha. (HYDRO SEEDERS MAY USE 19-19-19 FORMULA).

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

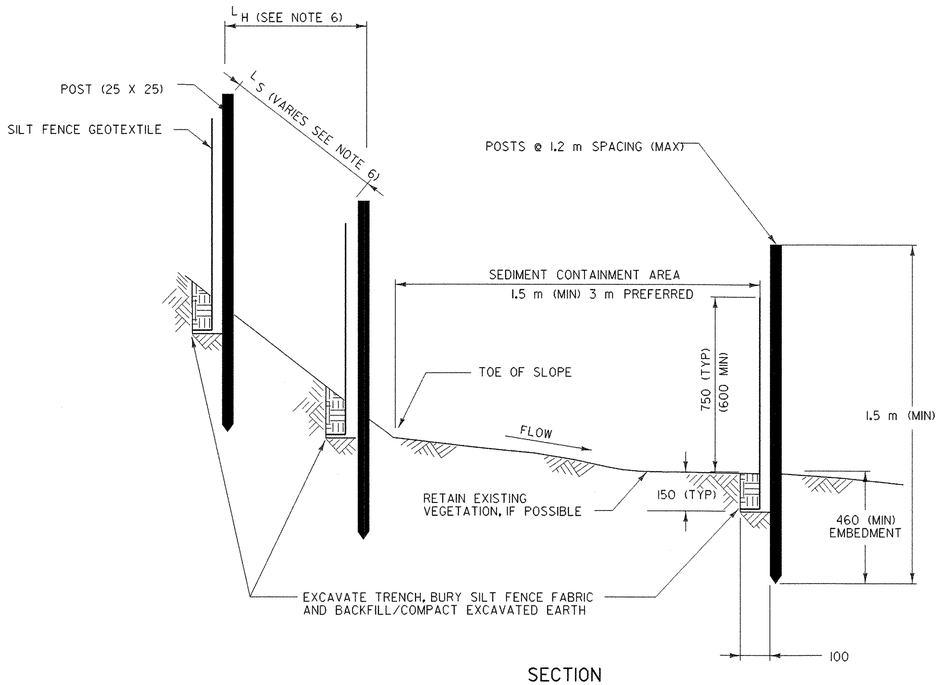
HAY MULCH: TO BE PLACED ON EARTH SLOPES AT THE RATE OF 4500 kg/ha, OR AS DIRECTED BY THE ENGINEER.

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

PROJECT: BETHEL	PROJECT NO.: BRF 0241(33) C/2
DESIGN FILE NAME: 02c180/structures/s02c180ecnotes.dgn	
IPARM FILE NAME: s02c180eronotes.i	PLOT DATE: 14-APR-2005
SURVEYED BY: ORVIS	SURVEY DATE: 10/99
SQUAD LEADER: C. P. WILLIAMS	DRAWN BY: M.FESSEL
EROSION CONTROL NOTES	SHEET: 111 OF 130



PLAN



SECTION

SILT FENCE - TEMPORARY

SILT FENCE

APPLICATION NOTES:

A. THE PRIMARY PURPOSE OF SILT FENCE IS TO REDUCE RUNOFF VELOCITY AND TRAP SEDIMENT. VELOCITY IS REDUCED, WATER IS IMPOUNDED BEHIND THE MEASURE, AND SEDIMENT FALLS OUT OF SUSPENSION.

B. SILT FENCE SHALL BE INSTALLED ON A LINE OF EQUAL ELEVATION (CONTOUR). IT MAY BE INSTALLED AT INTERMEDIATE POINTS UP SLOPES AS WELL AS AT THE BOTTOM, AS SHOWN IN THE DETAIL.

C. SILT FENCE SHALL NOT BE USED ACROSS CONCENTRATED FLOW.

GENERAL NOTES:

1. SILT FENCE SHALL GENERALLY BE PLACED A MINIMUM OF 1.5 m BEYOND TOE OF SLOPE, 3 m PREFERRED, TO PROVIDE ADEQUATE AREA FOR SEDIMENT STORAGE AND FACILITATE MAINTENANCE OF SEDIMENT CONTAINMENT AREA.

2. ALL ENDS SHALL BE "J" HOOKED TO TRAP SEDIMENT.

3. IN AREAS WITH TWO SLOPES, SILT FENCE SHALL BE USED TO ERECT A DAM AND TRAP SEDIMENT AT THE BASE OF THE STEEPER SLOPE.

4. THE BOTTOM EDGE OF SILT FENCE SHALL BE BURIED A MINIMUM OF 150 mm BELOW GROUND, AND KEYED IN 100 mm. THE FENCE SHALL BE INSTALLED WITH THE POSTS ON THE DOWNSTREAM SIDE OF THE FABRIC.

5. MAXIMUM DRAINAGE AREA TRIBUTARY TO 30 m OF SILT FENCE SHALL BE 0.1 Ha.

6. THE FOLLOWING ARE MAXIMUM SLOPE LENGTHS FOR THESE MEASURES:

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

7. MEASURES SHALL BE INSPECTED EVERY SEVEN (7) CALENDAR DAYS AND WITHIN 24 HOURS OF A STORM EVENT GREAT ENOUGH TO CAUSE WATER TO LEAVE THE CONSTRUCTION SITE.

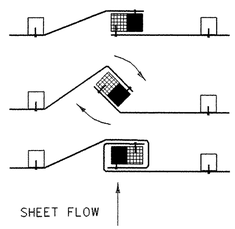
8. MEASURES SHALL BE CLEANED AND REPAIRED AS NEEDED. SEDIMENT SHALL BE REMOVED WHEN ACCUMULATION REACHES ONE-HALF OF THE MEASURE HEIGHT. SEDIMENT SHALL BE DISPOSED OF AS UNSUITABLE MATERIAL.

9. SILT FENCE SHALL BE REMOVED WHEN THE AREA HAS BEEN STABILIZED. AT TIME OF REMOVAL OF THE SILT FENCE, THE DISTURBED AREA SHALL BE REPAIRED AND STABILIZED.

10. PAYMENT FOR INSTALLATION AND REMOVAL OF SILT FENCE SHALL BE MADE UNDER THE GEOTEXTILE FOR SILT FENCE ITEM.

11. PAYMENT FOR MONITORING SILT FENCE SHALL BE MADE UNDER THE MONITORING EROSION & SEDIMENT CONTROL PLAN ITEM.

12. PAYMENT FOR MAINTAINING SILT FENCE SHALL BE MADE UNDER THE FIELD MAINTENANCE OF EROSION & SEDIMENT CONTROL PLAN ITEM, UNLESS MAINTENANCE IS REQUIRED DUE TO POOR INSTALLATION PRACTICES.



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

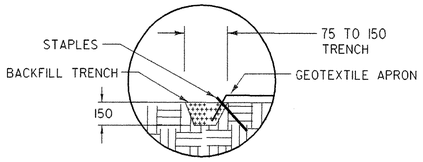
SPLICING DETAIL

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

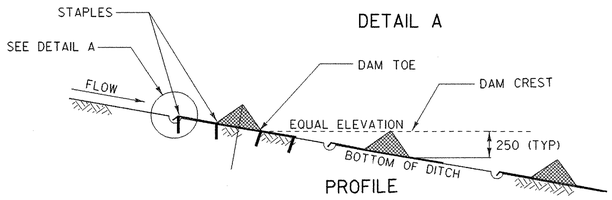
EPSC-1M

EROSION PREVENTION & SEDIMENT CONTROL DETAILS
SILT FENCE

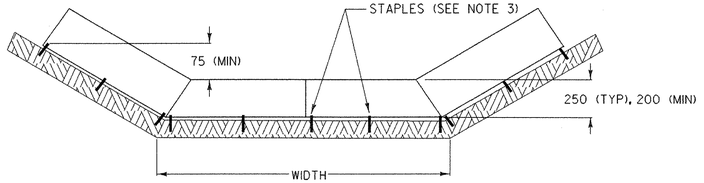
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IPARM FILE NAME: s02c180epscim.i	PLOT DATE: 14-APR-2005
SURVEYED BY: ORVIS	SURVEY DATE: 10/99
SQUAD LEADER: C. P. WILLIAMS	DRAWN BY: M.FESSEL
SILT FENCE	SHEET: 112 OF 130



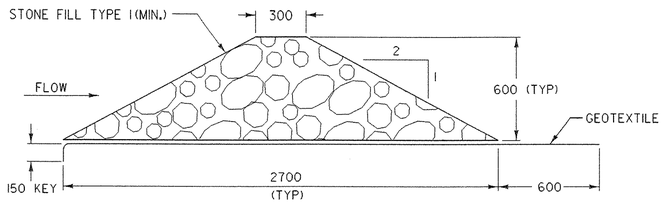
DETAIL A



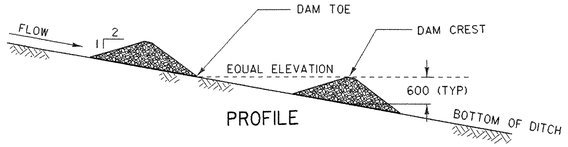
PROFILE



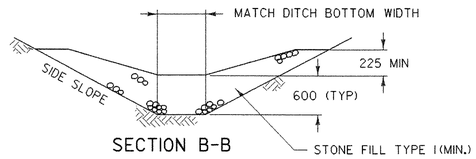
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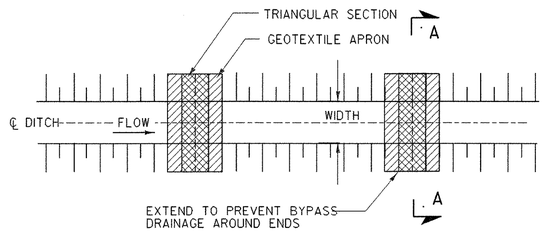
CROSS SECTION



PROFILE



SECTION B-B

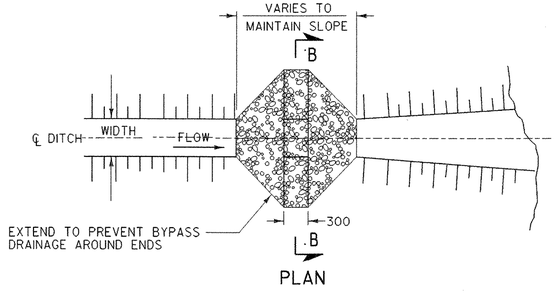


PLAN

CHECK DAM - TEMPORARY
(PREFABRICATED)

PREFABRICATED CHECK DAM PLACEMENT INTERVAL	
DITCH SLOPE	PLACEMENT INTERVAL **
1 %	15 m
2 %	12 m
3 %	8 m
4 %	6 m
5 %	5 m

** BASED ON 0.25 m TYPICAL HEIGHT



PLAN

CHECK DAM - TEMPORARY
(STONE)

STONE CHECK DAM PLACEMENT INTERVAL	
DITCH SLOPE	PLACEMENT INTERVAL **
1 %	60 m
2 %	30 m
3 %	20 m
4 %	15 m
5 %	12 m
6 %	10 m
8 %	7.5 m
10 %	6 m

** BASED ON 0.6 m TYPICAL HEIGHT

CHECK DAMS

Metric

APPLICATION NOTES:

A. THE PRIMARY PURPOSE OF A CHECK DAM IS TO REDUCE EROSION IN A CHANNEL BY REDUCING FLOW VELOCITY.

B. CHECK DAMS WILL CAPTURE SEDIMENT THAT FALLS OUT OF SUSPENSION BEHIND THE CHECK DAM DUE TO DECREASED VELOCITY.

C. CHECK DAMS ARE NOT INTENDED TO FILTER SEDIMENT FROM TURBID WATER.

D. DETAILS SHOWN SHALL BE USED FOR TEMPORARY INSTALLATION ONLY.

E. PREFABRICATED DAMS ARE NOT TO BE USED ON SLOPES GREATER THAN 5% OR PER MANUFACTURER'S SPECIFICATIONS.

F. PREFABRICATED DAM SPECIFICATIONS SHALL BE PROVIDED TO THE ENGINEER FOR APPROVAL PRIOR TO USE.

GENERAL NOTES:

1. GEOTEXTILE SHALL BE INSTALLED UNDER STONE FILL. IT SHALL BE KEYED IN ON THE UP HILL END AND SHALL EXTEND 0.6 m BEYOND THE STONE ON THE DOWN HILL END.

2. CORE MATERIAL FOR THE STONE CHECK DAM SHALL MEET THE GRADATION REQUIREMENTS OF STONE FILL TYPE I (MIN.). STONE SIZE SHOULD BE INCREASED WITH INCREASED SLOPE AND VELOCITY.

3. THE UPHILL END OF THE APRON FOR THE PREFABRICATED CHECK DAM SHALL BE STAPLED AND BURIED AS SHOWN IN DETAIL "A" OR AS RECOMMENDED BY THE MANUFACTURERS LITERATURE.

4. MEASURES SHALL BE INSPECTED EVERY SEVEN (7) CALENDAR DAYS AND WITHIN 24 HOURS OF A STORM EVENT GREAT ENOUGH TO CAUSE WATER TO LEAVE THE CONSTRUCTION SITE.

5. MEASURES SHALL BE CLEANED AND REPAIRED AS NEEDED. SEDIMENT SHALL BE REMOVED WHEN ACCUMULATION REACHES ONE-HALF OF THE MEASURE HEIGHT. SEDIMENT SHALL BE DISPOSED OF AS UNSUITABLE MATERIAL.

6. AT TIME OF REMOVAL OF THE CHECK DAMS, THE DISTURBED AREA SHALL BE REPAIRED AND STABILIZED.

7. PAYMENT FOR INSTALLATION AND REMOVAL OF CHECK DAMS SHALL BE MADE UNDER APPLICABLE ITEMS INCLUDED IN THE CONTRACT PLANS OR UNDER THE FIELD MAINTENANCE OF EROSION & SEDIMENT CONTROL PLAN ITEM.

8. PAYMENT FOR MONITORING CHECK DAMS SHALL BE MADE UNDER THE MONITORING EROSION & SEDIMENT CONTROL PLAN ITEM.

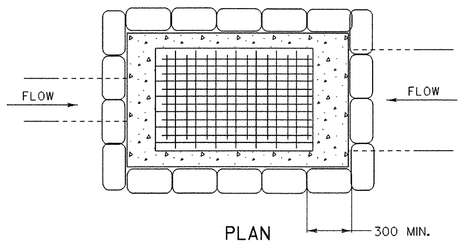
9. PAYMENT FOR MAINTAINING CHECK DAMS SHALL BE MADE UNDER THE FIELD MAINTENANCE OF EROSION & SEDIMENT CONTROL PLAN ITEM, UNLESS MAINTENANCE IS REQUIRED DUE TO POOR INSTALLATION PRACTICES.

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

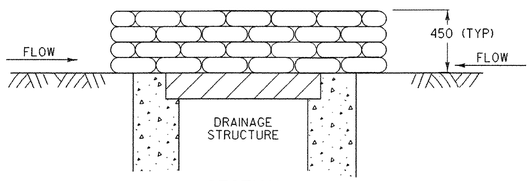
EPSC-2M

EROSION PREVENTION & SEDIMENT CONTROL DETAILS
CHECK DAMS

PROJECT:	PROJECT NO.:
BETHEL	BRF 0241 (33) C/2
DESIGN FILE NAME: 02c180/structures/s02c180ecnotes.dgn	
IPARM FILE NAME: s02c180epsc2m.i	PLOT DATE: 14-APR-2005
SURVEYED BY: ORVIS	SURVEY DATE: 10/99
SQUAD LEADER: C. P. WILLIAMS	DRAWN BY: M.FESSEL
CHECK DAMS	SHEET: 113 OF 130

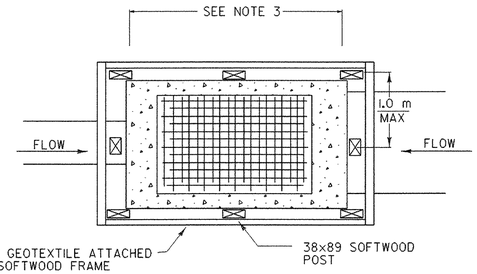


PLAN

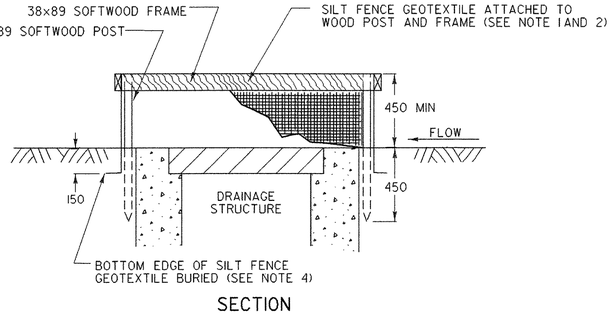


SECTION

GRAVEL BAG DROP INLET PROTECTION

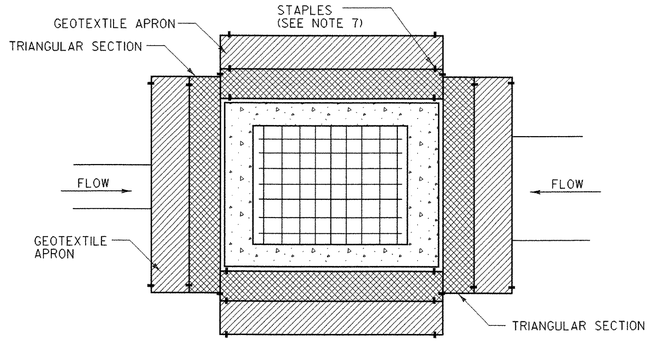


PLAN

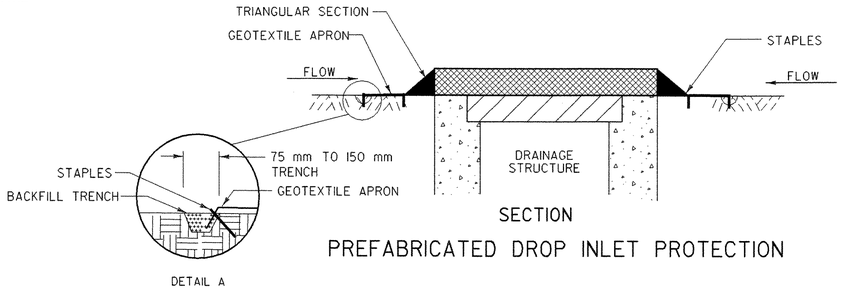


SECTION

SILT FENCE DROP INLET PROTECTION

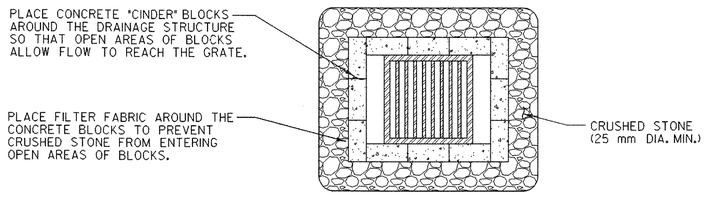


PLAN

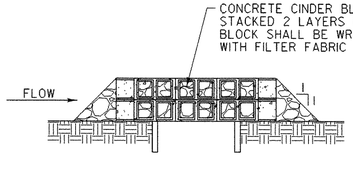


SECTION

PREFABRICATED DROP INLET PROTECTION

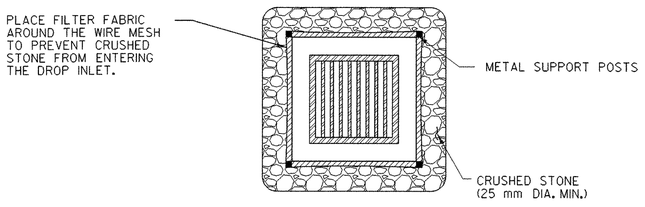


PLAN

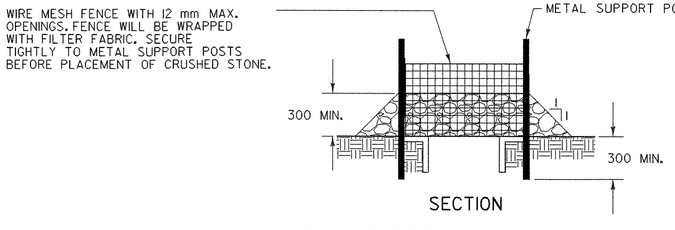


SECTION

ROCK BARRIER DROP INLET PROTECTION
TEMPORARY PAVED AREAS



PLAN



SECTION

ROCK BARRIER INLET PROTECTION
TEMPORARY UNPAVED AREAS

DROP INLET PROTECTION

APPLICATION NOTES:

A. THE PRIMARY PURPOSE OF DRAINAGE STRUCTURE INLET PROTECTION IS TO PREVENT SEDIMENT FROM ENTERING A DRAINAGE SYSTEM BY PONDING WATER WHICH ALLOWS SEDIMENT TO FALL OUT OF SUSPENSION.

B. THESE EXAMPLES OF DROP INLET PROTECTION ARE NOT INTENDED FOR USE ON GRADES. ON GRADE THEY MAY CAUSE WATER TO BYPASS THE STRUCTURE, CREATING ADDITIONAL EROSION OR FLOODING.

C. POSSIBLE MODIFICATIONS FOR USE ON GRADE INCLUDE ADDING A BERM DOWNSTREAM OF THE INLET TO CREATE PONDING. CHECK DAMS MAY ALSO BE USED UPSTREAM OF THE INLET TO SLOW VELOCITIES.

D. PREFABRICATED DROP INLET PROTECTION SPECIFICATIONS SHALL BE PROVIDED TO THE ENGINEER FOR APPROVAL PRIOR TO USE.

GENERAL NOTES:

1. THE TOP OF THE INLET PROTECTION SHALL BE SET AT THE MAXIMUM DESIRED WATER LEVEL, BASED ON FIELD LOCATION AND CONDITIONS.

2. SILT FENCE GEOTEXTILE SHALL BE A SINGLE CONTINUOUS PIECE TO ELIMINATE JOINTS.

3. SPACE SILT FENCE POSTS EVENLY AROUND INLET WITH A MAXIMUM SPACING OF 1.0 m. DRIVE POSTS A MINIMUM OF 450 mm INTO GROUND. WIRE MESH MAY BE REQUIRED BEHIND GEOTEXTILE TO PROVIDE SUPPORT.

4. SILT FENCE GEOTEXTILE SHALL BE EMBEDDED A MINIMUM OF 150 mm AND BACKFILLED. GEOTEXTILE SHALL BE SECURELY FASTENED TO POSTS AND FRAME.

5. GRAVEL BAGS SHALL BE FILLED WITH CLEAN STONE, RATHER THAN SAND, TO PREVENT SEDIMENT FROM ENTERING A DRAINAGE SYSTEM IF BAGS ARE DAMAGED DURING USE.

6. GRAVEL BAGS SHALL BE INDIVIDUALLY TIED, DOUBLE BAGGED AND INVERSELY INSERTED. GRAVEL BAGS SHALL LAP THE JOINTS BETWEEN THE BAGS IN THE LAYER BELOW.

7. SECURE THE ENDS OF THE APRON FOR THE PREFABRICATED DRAINAGE STRUCTURE INLET PROTECTION WITH STAPLES AS DETAILED IN THE PLAN VIEW OR AS RECOMMENDED BY THE MANUFACTURERS LITERATURE.

8. MEASURES SHALL BE INSPECTED EVERY SEVEN (7) CALENDAR DAYS AND WITHIN 24 HOURS OF A STORM EVENT GREAT ENOUGH TO CAUSE WATER TO LEAVE THE CONSTRUCTION SITE.

9. MEASURES SHALL BE CLEANED AND REPAIRED AS NEEDED, SEDIMENT SHALL BE REMOVED WHEN ACCUMULATION REACHES ONE-HALF OF THE MEASURE HEIGHT. SEDIMENT SHALL BE DISPOSED OF AS UNSUITABLE MATERIAL.

10. PAYMENT OF INLET PROTECTION SHALL BE MADE UNDER APPLICABLE ITEMS INCLUDED IN THE CONTRACT PLANS OR UNDER THE FIELD MAINTENANCE OF EROSION & SEDIMENT CONTROL PLAN ITEM.

11. PAYMENT FOR MONITORING INLET PROTECTION SHALL BE MADE UNDER THE MONITORING EROSION & SEDIMENT CONTROL PLAN ITEM.

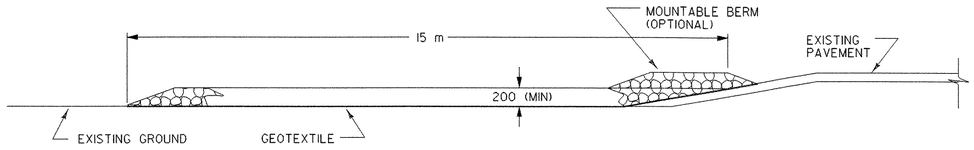
12. PAYMENT FOR MAINTAINING INLET PROTECTION SHALL BE MADE UNDER THE FIELD MAINTENANCE OF EROSION & SEDIMENT CONTROL PLAN ITEM, UNLESS MAINTENANCE IS REQUIRED DUE TO POOR INSTALLATION PRACTICES.

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

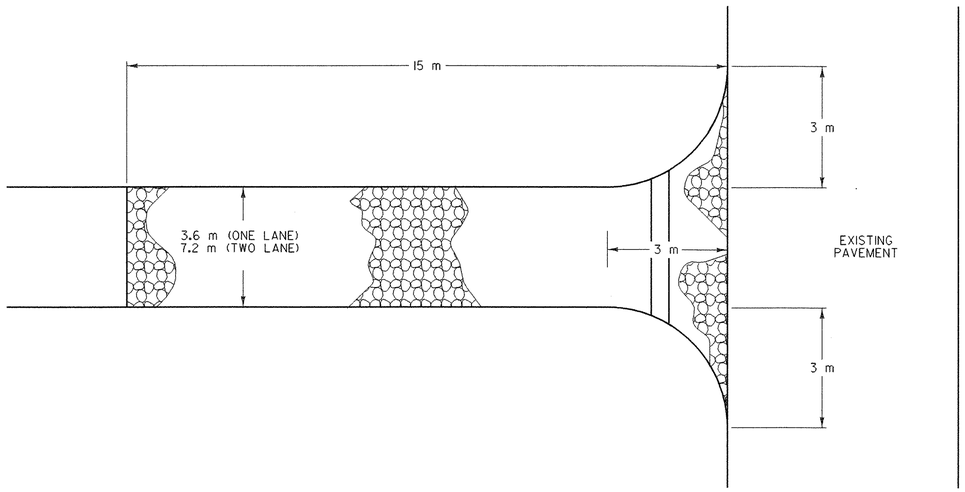
EPSC-3M

EROSION PREVENTION & SEDIMENT CONTROL DETAILS DROP INLET PROTECTION

PROJECT: BETHEL	PROJECT NO.: BRF 0241 (33) C/2
DESIGN FILE NAME: 02c180/structures/s02c180ecnotes.dgn	
IPARM FILE NAME: s02c180epsc3m.i	PLOT DATE: 14-APR-2005
SURVEYED BY: ORVIS	SURVEY DATE: 10/99
SQUAD LEADER: C. P. WILLIAMS	DRAWN BY: M.FESSEL
DROP INLET PROTECTION	SHEET: 114 OF 130



TYPICAL CONSTRUCTION ENTRANCE PROFILE
(CUT AND DITCH SECTIONS)



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

STABILIZED CONSTRUCTION ENTRANCE

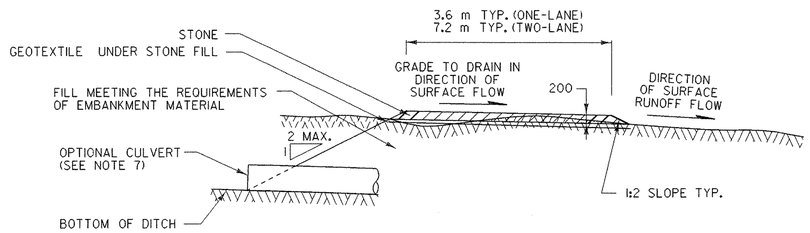
Metric

APPLICATION NOTES:

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

GENERAL NOTES:

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



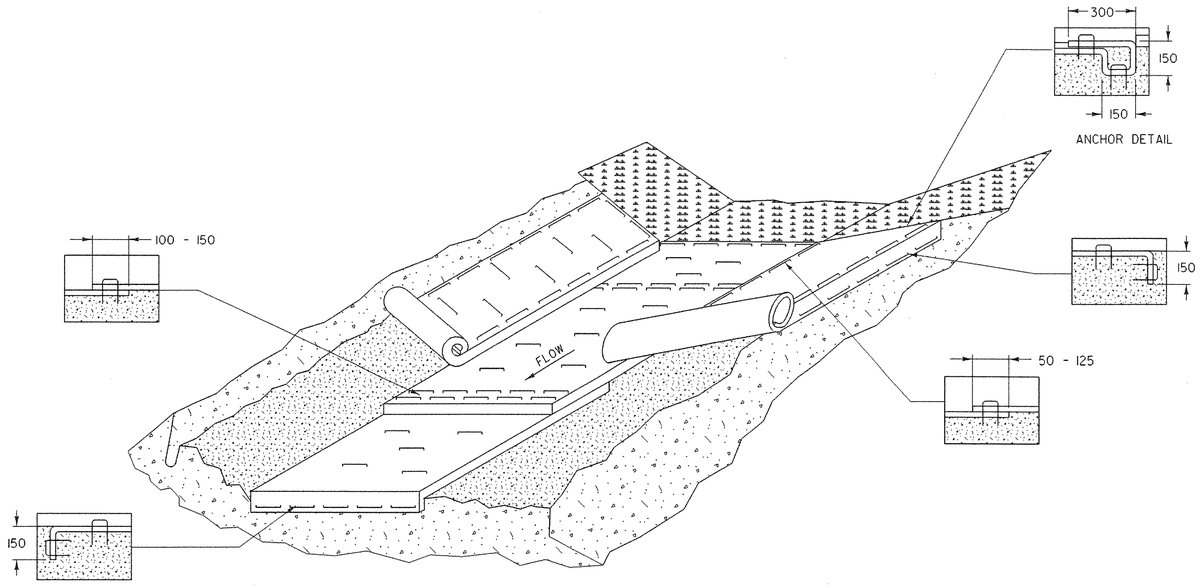
TYPICAL CONSTRUCTION ENTRANCE SECTION

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

EPSC-4M

EROSION PREVENTION & SEDIMENT CONTROL DETAILS CONSTRUCTION ENTRANCE

PROJECT: BETHEL	PROJECT NO.: BRF 0241 (33) C/2
DESIGN FILE NAME: 02c180/structures/s02c180ecnotes.dgn	
IPARM FILE NAME: s02c180epsc4m.i	PLOT DATE: 14-APR-2005
SURVEYED BY: ORVIS	SURVEY DATE: 10/99
SQUAD LEADER: C. P. WILLIAMS	DRAWN BY: M.FESSEL
CONSTRUCTION ENTRANCE	SHEET: 115 OF 130



EROSION PROTECTION FOR DITCHES

APPLICATION NOTES:

A. THE PURPOSE OF LINING THE DITCH WITH EROSION MATTING IS TO REDUCE EROSION AND AID THE ESTABLISHMENT OF VEGETATION AT LOW VELOCITIES.

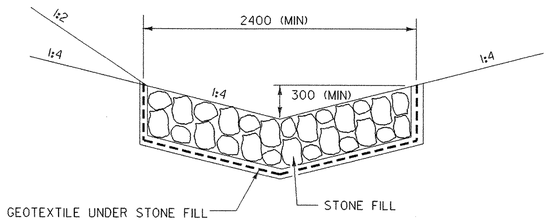
B. THE FOLLOWING CHARTS SHALL BE USED TO DETERMINE THE APPROPRIATE EROSION CONTROL MEASURE:

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

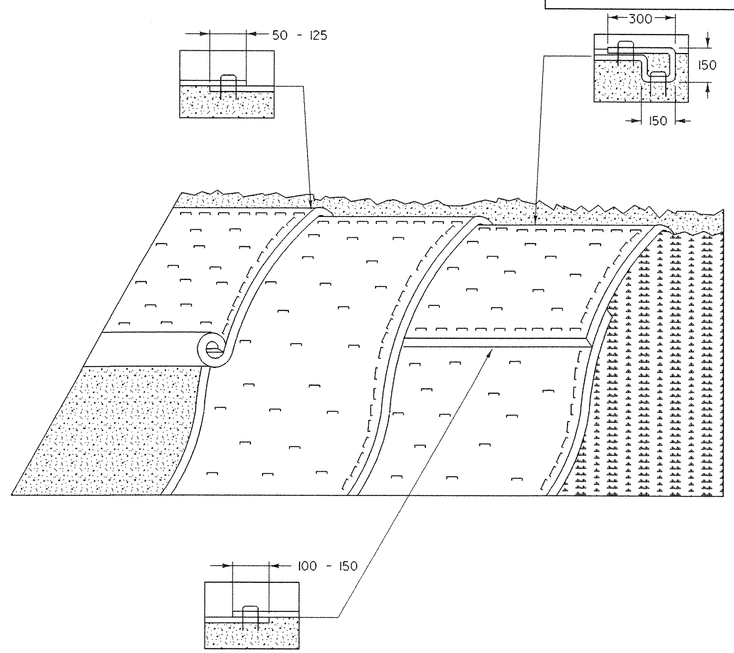
STONE FILL THICKNESS	
STONE FILL TYPE	THICKNESS
TYPE I	0.3 m
TYPE II	0.6 m

GENERAL NOTES:

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



TEMPORARY
STONE LINED
DITCH



EROSION PREVENTION FOR SIDE SLOPES

APPLICATION NOTES:

A. THE PURPOSE OF MATTING ON SIDE SLOPES IS TO REDUCE EROSION AND AID THE ESTABLISHMENT OF VEGETATION

B. EROSION CONTROL MATTING SHALL BE USED FOR THE FOLLOWING REASONS:

- SIDE SLOPES > 3:1 (H:V)
- AREAS WHERE SEED AND MULCH WILL NOT STAY IN PLACE ALONE
- WHERE SEEDING IS OUTSIDE THE GROWING SEASON.

GENERAL NOTES:

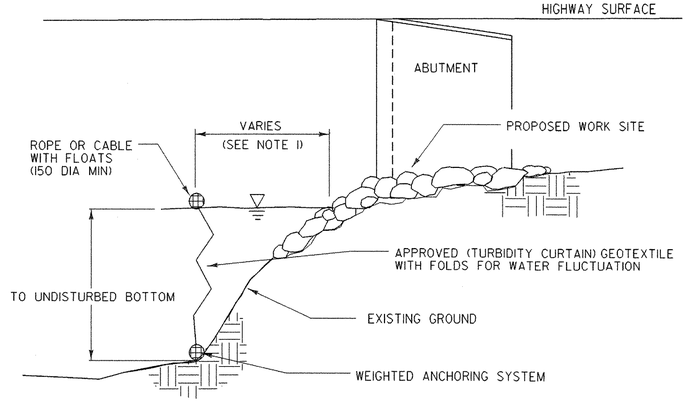
1. GRADE AND SMOOTH THE SLOPE TO PROVIDE GOOD MATTING TO SOIL SURFACE CONTACT.
2. APPLY FERTILIZER, LIME, AND SEED PRIOR TO PLACING MATTING.
3. ANCHOR MATTING AS SHOWN, UTILIZING ANCHOR STAPLES. STAPLE PLACEMENT SHALL BE DETERMINED BY THE MANUFACTURER'S INTALLATION INSTRUCTIONS.
4. UNROLL MATTING VERTICALLY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

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

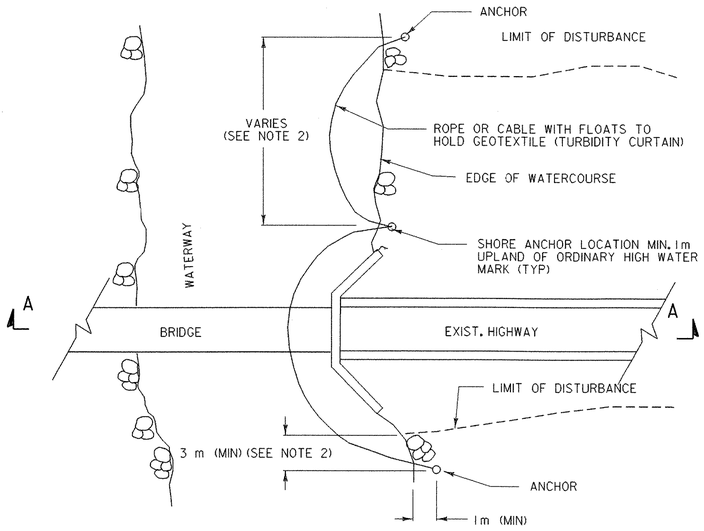
EROSION PREVENTION & SEDIMENT CONTROL DETAILS DITCH & SIDE SLOPE PROTECTION

EPSC-5M

PROJECT:	PROJECT NO.:
BETHEL	BRF 024I (33) C/2
DESIGN FILE NAME: 02cl80/structures/s02cl80ecnotes.dgn	
IPARM FILE NAME: s02cl80epsc5m.i	PLOT DATE: 14-APR-2005
SURVEYED BY: ORVIS	SURVEY DATE: 10/99
SQUAD LEADER: C. P. WILLIAMS	DRAWN BY: M.FESSEL
DITCH & SIDE SLOPE PROTECTION	SHEET: 116 OF 130



SECTION A-A



PLAN

TURBIDITY CURTAIN - TEMPORARY

TURBIDITY CURTAIN

APPLICATION NOTES:

A. THE PURPOSE OF A TURBIDITY CURTAIN IS TO SEPARATE WORK AREAS IN OR ADJACENT TO WATERS, TO PREVENT SEDIMENT FROM ENTERING THE WATERS.

B. TURBIDITY CURTAIN SHALL NOT BE PLACED ACROSS A FLOWING WATERWAY, OR IN A WATERWAY WITH STREAM VELOCITIES GREATER THAN 0.5m/SEC.

C. TURBIDITY CURTAIN SHALL NOT BE PLACED AT THE OUTLET OF A CULVERT OR DITCH UNLESS THE VELOCITY DOES NOT EXCEED 0.5 m/SEC.

D. THE DETAIL DEPICTS WORK AT A BRIDGE LOCATION, BUT TURBIDITY CURTAIN MAY BE APPLIED AT OTHER LOCATIONS.

GENERAL NOTES:

1. THE TURBIDITY CURTAIN SHALL BE PLACED AS CLOSE TO THE WORK AS POSSIBLE WITHOUT INTERFERING WITH CONSTRUCTION OPERATIONS.
2. THE TURBIDITY CURTAIN SHALL BE A MAXIMUM OF 30 m LONG BETWEEN ANCHORS. LAST SECTION SHALL TERMINATE A MINIMUM OF 3 m BEYOND THE LIMIT OF DISTURBANCE.
3. THE CONTRACTOR SHALL MONITOR THE TURBIDITY CURTAIN, TAKING INTO ACCOUNT WEATHER PATTERNS AND PREVAILING WIND DIRECTIONS THAT MAY AFFECT WATER LEVELS, VELOCITY AND MOVEMENT OF THE TURBIDITY CURTAIN.
4. THE TURBIDITY CURTAIN SHALL BE REMOVED BY SLOWLY PULLING TOWARD THE SHORE TO MINIMIZE ESCAPE OF SEDIMENTS INTO THE WATERWAY.
5. THE WEIGHTED ANCHOR SYSTEM SHALL BE A TYPE THAT ALLOWS THE CURTAIN TO CONFORM TO THE CONTOUR ON THE BOTTOM OF THE WATERWAY.
6. PAYMENT FOR INSTALLATION AND REMOVAL OF THE TURBIDITY CURTAIN SHALL BE MADE UNDER THE GEOTEXTILE FOR FILTER CURTAIN ITEM.
7. PAYMENT FOR MONITORING TURBIDITY CURTAIN SHALL BE MADE UNDER THE MONITORING EROSION & SEDIMENT CONTROL PLAN ITEM.
8. PAYMENT FOR MAINTAINING TURBIDITY CURTAIN SHALL BE MADE UNDER THE FIELD MAINTENANCE OF EROSION & SEDIMENT CONTROL PLAN ITEM, UNLESS MINTENANCE IS REQUIRED DUE TO POOR INSTALLATION PRACTICES.

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

EPSC-6M

EROSION PREVENTION & SEDIMENT CONTROL DETAILS TURBIDITY CURTAIN

PROJECT: BETHEL	PROJECT NO.: BRF 0241 (33) C/2
DESIGN FILE NAME: 02c180/structures/s02c180ecnotes.dgn	
IPARM FILE NAME: s02c180epsc6m.i	PLOT DATE: 14-APR-2005
SURVEYED BY: ORVIS	SURVEY DATE: 10/99
SQUAD LEADER: C. P. WILLIAMS	DRAWN BY: M.FESSEL
TURBIDITY CURTAIN	SHEET: 117 OF 130

Metric

GRANITE CURB Lt 22+101-23+45 Rt 22+87.28+64.58 / 27+50-28+12 27+44-28+48.28

TOPSOIL Lt 27+30-28+00 Rt 22+50-25+00 / 27+23-28+50

ONE COURSE CEMENT CONCRETE SIDEWALK Lt 27+44-28+48.63 Rt

THREE CABLE GUARD RAIL WITH STEEL POSTS Lt 23+01-24+48 Rt

GRANITE BRIDGE CURB (Roadway) Lt 23+45-24+68.13 Rt

CONSTRUCT DRIVE Lt 23+00 Rt 22+65

Trav. POT 1+95.43

Sta 22+50.00
BEGIN PROJECT S.A.#10 1963
Construct Satisfactory Approach

Sta. 24+73.61
STOP ROADWAY - BEGIN BRIDGE

Sta 27+23.12
END BRIDGE - RESUME ROADWAY

Channel POT 1+80.70

WHITE RIVER

United Church 2 S. Brick

BM 2
U S Elev. 607.54
5" R 30" Maple
29' Lt 21+52

Church Sign

Gravel Drive

Stone Ret Wall

L.M. & Florence Healy

Glenn & Jenny Brown

John & Alma Baker

1½ S. F. Ho.

2½ S.F Ho.

2½ S. Brick Ho

22+70 Lt+ Conc. D.I. RETAIN

22+70 Lt-22+78 Rt-15" RCP RETAIN

P.I. 22+72.37-22+72.30

To Randolph

N 63° 46' 00" E

N 68° 00' 00" E

Woods of Brush

Log Cribbing

Stone Ret Wall

Chas. H. Dudley

18" Conc Ret. Wall

20" Conc Ret. Wall

25 Stucco Ho

3 Ø 23 KV Power Lines to Sawmill Owned by Mr Raymond

4" CI Sewer Outlet

6" Cedar

37-18" RCP

25+00(Lt)+ ℄ 0+51

W P.I. 27+72.00 - 27+52.00 ℄ 0+00

Sta 27+52.00 ℄ 0+00

N 21° 42' 00" E

30" M

W50 Hydrant 3709

38. Brick Apt. Ho.

P.I. 27+00.89

BM #3
Elev. U.S. 580.64
Spot on Rail

Curve #2
Δ 84°57' 30" Rt.
D 111° 15' 14.3"
R 51.5
T 47.16
L 76.36
E 18.33

Spot on Curb

Bethel M.E.S.

Spot on Curb

P.I. 29+31.51= 29+30.40

Sta. 28+00.00
END PROJECT S.A.#10 1963
Construct Satisfactory Approach

M.L. POT 25+25.00 - Channel POT 31+00.00

Channel POT 31+35.44

M.L. POT 25+28.00 - Channel POT 3100.0 (UNDER BRIDGE)

T 6.66
T 2.27
T 11.06

T 9.30
T 8.72
T 13.32

Curve #1
Δ 4°14' Rt.
D 3°
R 1909.86
T 70.59
L 141.11
E 1.31

POT 20+60.74

Town of Bethel 2 S.F. School

SURVEYED BY Falk's DATE May 63
DRAWN BY: Tatum DATE Dec 63
TRACED BY Cook DATE Jan 64

PROJ. NO. SA #10 BETHEL
SHEET 2 OF 46

THIS DRAWING IS NOT TO SCALE

PROJECT: BETHEL	PROJECT NO.: BRF 0231 (33) C/2
DESIGN FILE NAME: 02c180/structures/sc180ref.dgn	
IPARM FILE NAME: s02c180ref1.i	PLOT DATE: 14-APR-2005
DESIGNED BY: J. WHITE	DRAWN BY: J. WHITE
SQUAD LEADER: C.P. WILLIAMS	CHECKED BY:
REFERENCE SHEET 1	SHEET: 118 OF 130

Metric

United Church
2 S. Brick

1½ SF Ho.
Healy

1½ SF Ho.

Glenn & Jenny Brown
2½ S.F. Ho.

John & Alma Baker
2½ S. Brick Ho.

Chan. Line POT
1+80.70

3 ΦA 2.3 KV
To Sawmill.
Owned by
Mr. Raymond Durfee.

2 S. Stucco Ho.

PT 22+72.37=
22+72.30

church Sign

4 Telephone Wires

Gravel Drive

Conc. Ret. Wall

End pvt.

Cont. Ret. wall

New Conc. Retaining Wall

Sta. 24+63.61

TO RANDOLPH

N 68° E

Bridge Sta. 24+73.61
Fin. Grade 532.60

Woods

PIER No. 1
Sta. 25+20.20
Fin. 532.12

PIER No. 2
Sta. 25+65.2
Fin. 532.16

PIER No. 3
Sta. 26+30.2
Fin. 585.32

ABUT. No. 4
Sta. 27+25.73
Fin. 585.32

White River

Woods

4.6% Corrugated Pipe Culvert

Sta. Wall

6" C.I.P. Sewer Outlet

Conc. Ret. Wall

Conc. Ret. Wall

Cont. Ret. Wall

50'±

48.5' ±

15' Wall

Tel. poles Underground

4½' Cont. walk

18"M

4" M

Conc. walk

Flower bed

Flower bed & 36"M

Conc. Walk

Paved Drive

Pet Wall

Bethel Fire Sta. & Town Hall

Δ=84°57'-30"RT.
PT 27+70.00=
27+52.04=
Tran. Line 0+00

Chan. Line POT
3+00.0

Proposed location for temporary bridge

Chan. Line POT
4+35.44

Electric Power Line To Generating Plant owned by Mr. Raymond Durfee.

Power Line Hooks under Br.

NET & T Co. cable

3 S. Brick Apt. Ho.

1½ S.F. Ho.

2 S.F. School

Drive

PT 24+07.8

PT 24+79.20

Power Service 23+46.35

Power Service 25+46.85

Power Service 27+21.85

Power Service 29+21.85

Ground Surface Elev. 27+55.84

Ground Surface Elev. 29+21.51

Ground Surface Elev. 29+30.40

-1.33.5%

-1.18.2%

PARTIALLY REMOVE EXIST. ABUT.

REMOVE EXIST. PIER TO ELEV. 575.0

REMOVE EXIST. PIER TO ELEV. 583.0

REMOVE EXIST. PIER TO ELEV. 583.0

PARTIALLY REMOVE EXIST. PIER TO ELEV. 574.5

Item 204 (Mod) Cr. Rock Under Struct.

R.V.I. 24+50 ELEV. 601.80 150' V.C.

1238 HN 560.2

Item 204 (mod) Cr. Fr. Under Struct.

Old Ground Profile

River

River

600
590
580
570
560
550
540

22+00 | +50 | 23+00 | +50 | 24+00 | +50 | 25+00 | +50 | 26+00 | +50 | 27+00

BETHEL SA 10/1963

PLAN & ELEVATION OF BRIDGE OVER WHITE RIVER & CWRR.

PROJECT: BETHEL	PROJECT NO.: BRF0231(33)C/2
DESIGN FILE NAME: 02c180/structures/sc180ref.dgn	drawn by: EJM Date
IPARM FILE NAME: s02c180ref2	checked by: EJM
DESIGNED BY: J. WHITE	Scale: FIGT DATE: 14-APR-2005
SQUAD LEADER: C.P. WILLIAMS	Sheet drawn by: J. WHITE
REFERENCE SHEET 2	CHECKED BY:
	SHEET: 119 OF 130

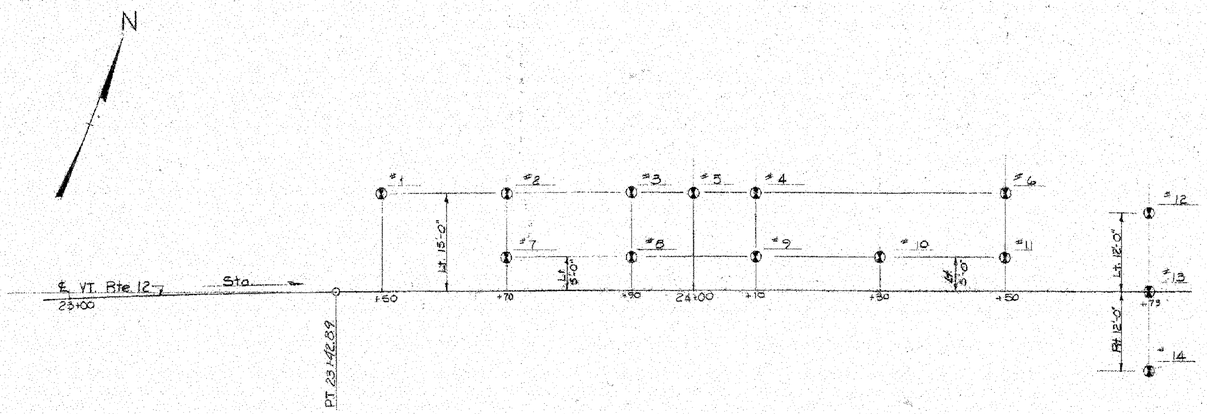
AUGER BORING DATA

BETHEL SA 10/1963

Auger Boring Data

Hole No.	Station	Offset	Grd. Elev.	Depth	Remarks
1	23+50	15' Left	593.1	0'-4.0'	Dry, Brown Silt and Sand, Little Gravel
				4.0'-18.0'	Dry, Light Brown Sand and Silt, Trace of Gravel
				@ 18.0'	Ledge or Boulder
2	23+70	15' Left	591.7	0'-3.0'	Dry, Brown Sand and Silt, Little Gravel
				3.0'-17.0'	Dry, Light Brown Sand and Silt, Trace of Gravel
				17.0'-15.5'	Dry, Brown Sand and Silt, Little Gravel
				@ 15.5'	Ledge or Boulder
3	23+80	15' Left	589.1	0'-4.0'	Dry, Brown Sand and Silt, Little Gravel
				4.0'-12.0'	Dry, Light Brown Sand, Some Silt, Little Gravel
				12.0'-16.0'	Dry, Grey-Brown Silt and Sand, Little Gravel
				16.0'-18.0'	Dry, Grey Sand and Silt, Little Gravel (Possibly Ground Ledge)
				@ 18.0'	Could not Penetrate Further
4	24+10	15' Left	587.4	0'-4.0'	Dry, Brown Sand, Some Gravel, Little Silt
				4.0'-17.0'	Dry, Light Brown Sand, Some Silt, Trace of Gravel
				@ 17.0'	Ledge or Boulder
5	24+00	15' Left	586.0	0'-10.0'	Dry, Brown Sand, Some Gravel, Little Silt
				10.0'-12.5'	Dry, Light Brown Sand, Some Silt, Trace of Gravel
				@ 12.5'	Ledge or Boulder
6	24+50	15' Left	584.6	0'-5.0'	Dry, Brown Sand, Some Gravel, Little Silt
				5.0'-17.0'	Dry, Light Brown Sand, Some Silt, Trace of Gravel
				17.0'-22.5'	Dry, Brown Sand and Silt, Trace of Gravel
				@ 22.5'	Ledge or Boulder
7	23+70	5' Left	590.9	0'-15.0'	Rod Sounding
				@ 15.0'	Ledge or Boulder
8	23+90	5' Left	587.8	0'-13.5'	Rod Sounding
				@ 13.5'	Ledge or Boulder
9	24+10	5' Left	586.5	0'-17.0'	Rod Sounding
				@ 17.0'	Ledge or Boulder
10	24+30	5' Left	585.4	0'-16.0'	Rod Sounding
				@ 16.0'	Ledge or Boulder
11	24+50	5' Left	586.4	0'-9.5'	Rod Sounding
				@ 9.5'	Ledge or Boulder
12	24+70	12' Left	582.1	0'-8.0'	Dry, Brown Sand, Some Gravel, Some Silt
				8.0'-16.5'	Dry, Light Brown Silt and Sand, Trace of Gravel
				@ 16.5'	Ledge or Boulder
13	24+73	Centerline	582.5	0'-19.0'	Rod Sounding
				@ 19.0'	Ledge or Boulder
14	24+73	12' Right	582.0	0'-6.0'	Dry, Brown Sand, Some Gravel, Some Silt
				6.0'-22.5'	Dry, Light Brown Sand, Some Silt, Trace of Gravel
				22.5'	Ledge or Boulder

Note: All Rod Soundings Driven with Jack Hammer.



— BORING LAYOUT —
Scale: 1"=10'

— GENERAL NOTES —

SPECIFICATIONS: ALL MATERIALS AND CONSTRUCTION SHALL CONFORM TO THE STATE OF VERMONT, DEPARTMENT OF HIGHWAYS, STANDARD SPECIFICATIONS FOR HIGHWAY AND BRIDGE CONSTRUCTION DATED JANUARY 1956, AND THE AASHO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES DATED 1961 AS CHANGED BY INTERIM SPECIFICATIONS DATED 1961 AND 1962.

DESIGN IS FOR H 15-44 LOADING APPLIED IN ACCORDANCE WITH THE PROVISIONS OF THE AASHO STANDARD SPECIFICATIONS, ARTICLE 1.2.6.

STRUCTURAL STEEL: UNLESS OTHERWISE NOTED ON THE PLANS, ALL NEW STRUCTURAL STEEL SHALL CONFORM WITH ASTM DESIGNATION: A 36-62 T. UNLESS OTHERWISE DETAILED, ALL FIELD CONNECTIONS SHALL BE MADE WITH 7/8" HIGH STRENGTH A325 BOLTS, USING 15/16" HOLES. WHERE CONNECTIONS ARE NOT DETAILED, THEY SHALL BE DETAILED BY THE CONTRACTOR AND SUBMITTED TO THE STATE FOR APPROVAL.

AFTER THE SUPERSTRUCTURE STEEL HAS BEEN ERECTED, ELEVATIONS OF THE TOP OF THE ERECTED BEARS SHALL BE TAKEN UNDER THE DIRECTION OF THE ENGINEER TO DETERMINE THE FINAL GRADE.

THE FINAL COAT OF PAINT SHALL BE DARK GREEN.

FIELD WELDING WILL BE PERMITTED ON ALL OLD MATERIAL. CONTRACTOR SHALL SUBMIT IN WRITING HIS PROPOSAL FOR WELDING METHODS AND MATERIALS TO THE STATE FOR APPROVAL.

CONCRETE: ALL CONCRETE IN THE SUPERSTRUCTURE SHALL BE CLASS AA (MOD.). ALL EXPOSED EDGES OF CONCRETE SHALL BE CHAMFERED 1"X1" UNLESS OTHERWISE INDICATED ON THE PLANS.

TOP SURFACES OF ALL PIERS AND ABUTMENTS SHALL BE SLOPED 1/4" PER FOOT EXCEPT AT BEARING PADS, WHERE THE SURFACES SHALL BE LEVEL. ABUTMENTS SHALL BE SLOPED FROM THE FRONT EDGE OF THE CURTAIN WALL OR FACE OF BACKWALL, AND PIERS SHALL BE SLOPED FROM THE CENTERLINE OF PIER.

THE ENTIRE EXPOSED TOP SURFACE OF THE ABUTMENTS AND PIERS SHALL BE COATED WITH ASPHALTIC ASBESTOS COATING 1/2" THICK AS PER ITEM 407. THIS ITEM SHALL BE APPLIED AFTER ALL PAINTING AND INCIDENTAL ITEMS ARE COMPLETED.

ALL DIMENSIONS ARE GIVEN AT 60°F.

FRONT FACE OF BACKWALL ABOVE BRIDGE SEATS TO BE MOPPED WITH TWO (2) COATS OF EMULSIFIED ASPHALT, TYPE RS-1, AS SPECIFIED IN ITEM 407.02-AT. COST OF THIS WORK TO BE INCLUDED IN THE UNIT PRICE FOR ITEM 401-B, CONCRETE CLASS B, MOD. (ABUTMENT NO. 2 ONLY).

PREFORMED EXPANSION MATERIAL SHALL NOT CONTAIN ASPHALT OR BITUMINOUS MATERIAL AND IT SHALL CONFORM TO AASHO DESIGNATION: M 153 TYPE II.

REINFORCING STEEL: MINIMUM COVER FOR REINFORCING STEEL, MEASURED FROM THE SURFACE OF THE CONCRETE TO THE FACE OF THE REINFORCEMENT, SHALL BE 3" UNLESS OTHERWISE SPECIFIED.

BORINGS: BORINGS INDICATED ON THE DRAWINGS HAVE BEEN MADE FOR DESIGN PURPOSES ONLY AND ARE NOT WARRANTED TO SHOW ACTUAL SUB-SURFACE CONDITIONS.

STATE OF VERMONT
DEPARTMENT OF HIGHWAYS

TOWN OF BETHEL
ROUTE NO. VT. 12 LOG STA.
BORING DATA
BRIDGE OVER WHITE RIVER
SCALE As Noted
SURVEYED BY
DRAWN BY NBT CHECKED BY EHL
PROJECT NO. SA 10 / 1963
SHEET 5 OF 49

THIS DRAWING IS NOT TO SCALE

PROJECT:	PROJECT NO.:
BETHEL	BRF 0231 (33) C/2
DESIGN FILE NAME: 02c180/structures/s02c180ref.dgn	
IPARM FILE NAME: s02c180ref3.i	PLOT DATE: 14-APR-2005
DESIGNED BY: J. WHITE	DRAWN BY: J. WHITE
SQUAD LEADER: C.P. WILLIAMS	CHECKED BY:
REFERENCE SHEET 3	SHEET: 120 OF 130

For Const. Jt. see SCB-D6-62-Detail 'B'
For Exp. Jt. see SCB-D6-62-Detail 'C'

Remove wall to line indicated

Exp. Jt.

Const. Jt.

Exp. Jt.

Const. Jt.

Exp. Jt.

10'-0" | 28'-9⅝" | 18'-9" | 29'-6" | 29'-6" | 28'-10"

Existing Retaining Wall

Existing Abut.

Sta. 23+14

12" on 12" Batter (Typ.)

Existing pier

℄ Roadway

Existing pier

Proposed New Abut. See Sht. 13 of 33

Sta. 23+46.45
Beginning of existing bridge floor

Sta. 24+67.58

+50 | +75 | 24+00 | +25 | +50

PLAN
Scale 1"=5'-0"

1R812 @ 18" Dowels

1R504 bars

El. 604.27

El. 603.93

El. 603.89
El. @ inside of curb (Typ.)

El. 603.55

El. 603.10

El. 602.61

El. 601.46

El. 600.66

El. 600

1R812 @ 12" NF

Fence Footwall to this elevation

Existing Abut.

590

Typ. N.F. 1R403 @ 16" FF

Typ. N.F. 1R404 @ 16" FF

Typ. N.F. 1R405 @ 16" FF

Typ. N.F. 1R406 @ 16" FF

Typ. N.F. 1R407 @ 16" FF

Typ. N.F. 1R408 @ 16" FF

El. 592

El. 590

El. 588

El. 586

El. 584

El. 582

2'-0" (Typ.)

Approx. line of Exc. limits

Existing pier

Approx. O.G.

Existing pier

580

1R1001 bars bend in field

1R501 bars

Top of existing Footing

1R502 (Cut @ Col.)

SECTION G-G
Scale 1/4"=1'-0"

1'-6"

1R402 @ 16"

1R401 bars Sect "AA"
1R409 bars Sect "BB"

Sect "AA" 1R401 @ 18"
Sect "BB" 1R409 @ 18"

1R501 @ 18" Sect "AA"
1R503 @ 18" Sect "BB"

#6 bars @ 8"

#4 bars @ 16"

1R801 @ 8"

1R1001 @ 16"
1R501 (As shown) Sect "AA"
1R503 " Sect "BB"

Varies 1'-9" Min.

1R502 @ 16"

5'-4"

9'-6"

SECTION A-A (SECT B-B similar)
Scale 1/4"=1'-0"

1R402 @ 16"

1R403 bars

NF

FF

1R403 @ 18"

1R502 @ 16"

#9 bars @ 8"

#4 bars @ 16"

1R1002 @ 12"

1R503 (As shown)

1R901 @ 8"

6'-0"

Varies 1'-9" Min.

1R601 @ 12"

10'-6"

SECTION C-C
Scale 1/4"=1'-0"

ELEVATION
Scale 1"=5'-0"

1R402 @ 16"

1R401 bars

1R401 @ 18"

1R501 @ 18"

#10 bars @ 8"

#4 bars @ 16"

1R1101 @ 12"

1R501 (As shown)

1R1003 @ 8"

7'-0"

Varies 1'-9" Min.

1R601 @ 12"

12'-0"

SECTION D-D
Scale 1/4"=1'-0"

Remove existing wall

1R813 (Dowels)

1R812 (Dowels)

top of existing gravity retaining wall

SECTION E-E
Scale 1/2"=1'-0"

1R504 As shown

1R812 @ 18"

Existing wall

SECTION F-F
Scale 1/2"=1'-0"

ITEM NO.	ITEM	UNIT	NET		TOTAL	FINAL
	CHAN. EXCAV. OF EARTH	C.Y.				
	CHAN. EXCAV. OF ROCK	C.Y.				
	UNCLASS. CHAN. EXCAV.	C.Y.				
107	STRUCT. EXCAV.	C.Y.			275	301
	CONC. CLASS AA (MOD.)	C.Y.				
401-B	CONC. CLASS B (MOD.)	C.Y.			282	307
408	REINF. STEEL	LBS.			23,526	23,526
	ASPHALTIC ASB. COATING	S.Y.				
	TREATED TIMBER PILING	L.F.				
	SPLICES FOR STEEL PILING	EA.				
	STEEL PILING	L.F.				
	UNTREATED TIMBER PILING	L.F.				

STATE OF VERMONT
DEPARTMENT OF HIGHWAYS

TOWN OF BETHEL

ROUTE NO. VT. 12 LOG STA.

RETAINING WALL AT STA. 24+00

BRIDGE OVER WHITE RIVER

SCALE As Noted

SURVEYED BY

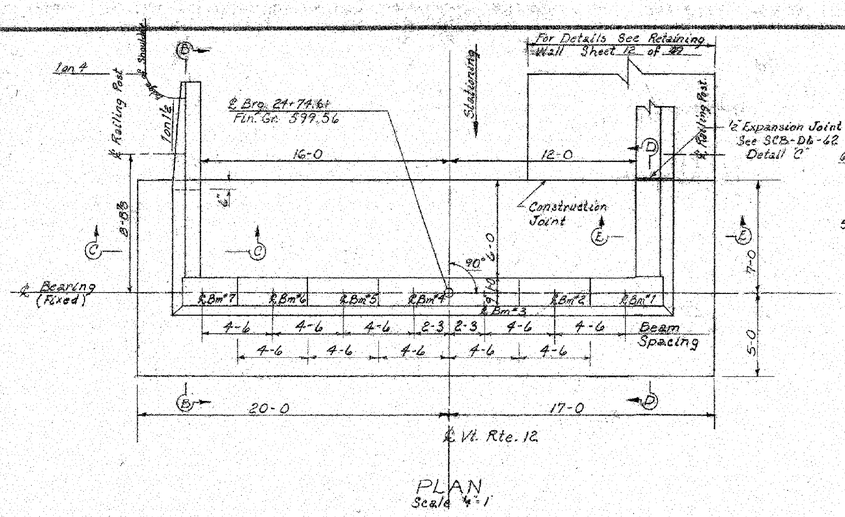
DRAWN BY N.B.T. CHECKED BY R.W.D.

PROJECT NO. SA10/1963

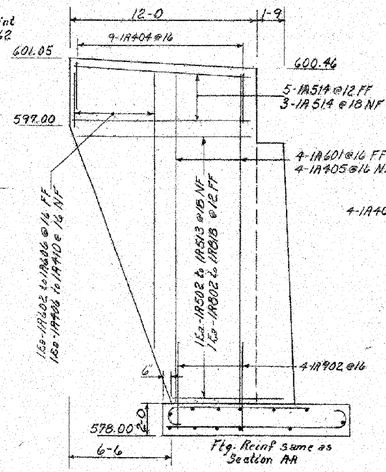
SHEET 12 OF 49

THIS DRAWING IS NOT TO SCALE

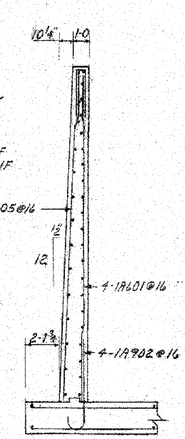
PROJECT: BETHEL	PROJECT NO.: BRF0231(33)C/2
DESIGN FILE NAME: 02c180/structures/s02c180ref.dgn	
IPARM FILE NAME: s02c180ref4.i	PLOT DATE: 14-APR-2005
DESIGNED BY: J. WHITE	DRAWN BY: J. WHITE
SQUAD LEADER: C.P. WILLIAMS	CHECKED BY:
REFERENCE SHEET 4	SHEET: 121 OF 130



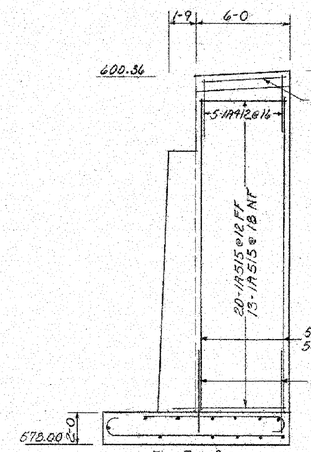
PLAN
Scale 1/4" = 1'



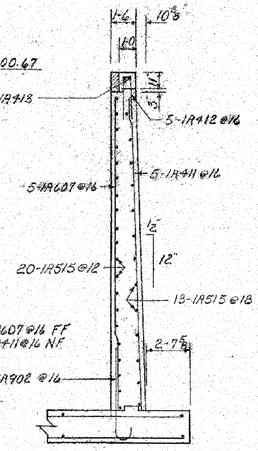
SECTION B-B
Scale 1/4" = 1'



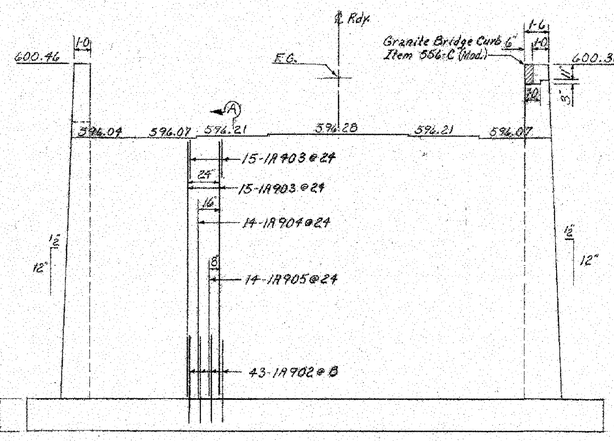
SECTION C-C
Scale 1/4" = 1'



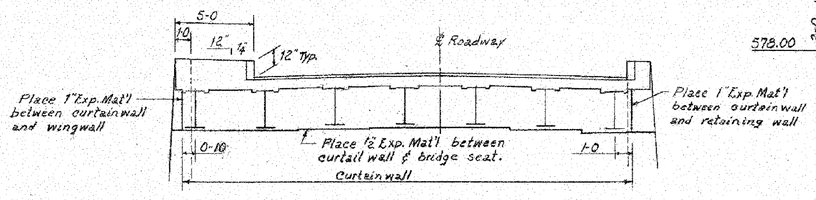
SECTION D-D
Scale 1/4" = 1'



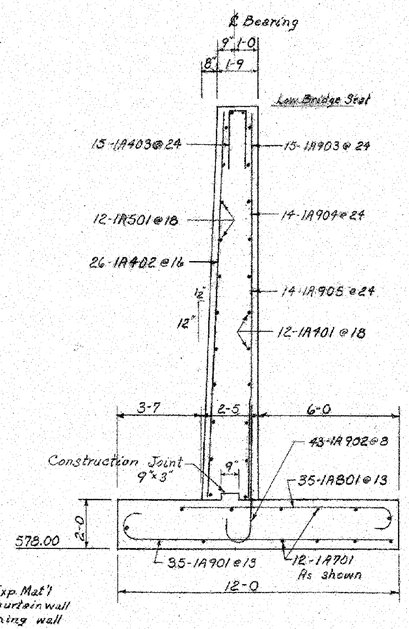
SECTION E-E
Scale 1/4" = 1'



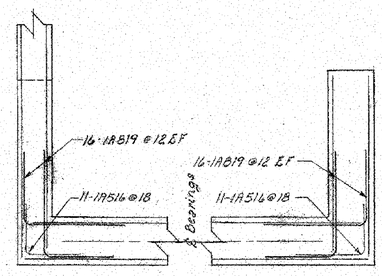
ELEVATION
Scale 1/4" = 1'



DETAILS of SUPERSTRUCTURE at ABUTMENT No. 1 (looking back stationing)
Scale 1/4" = 1'



SECTION A-A
Scale 3/8" = 1'



CORNER DETAILS
Scale 3/8" = 1'

ITEM NO.	ITEM	UNIT	NET		TOTAL	FINAL
	CHAN. EXCAV. OF EARTH	C.Y.				
	CHAN. EXCAV. OF ROCK	C.Y.				
	UNCLASS. CHAN. EXCAV.	C.Y.				
107	STRUCT. EXCAV.	C.Y.			[illegible]	93
	CONC. CLASS AA (MOD.)	C.Y.				
401-B	CONC. CLASS B (MOD.)	C.Y.			[illegible]	91
402	REINF. STEEL	LBS.			[illegible]	10,324
407	ASPHALTIC ASS. COATING	S.Y.			[illegible]	2
	TREATED TIMBER PILING	L.F.				
	SPLICES FOR STEEL PILING	EA.				
	STEEL PILING	L.F.				
	UNTREATED TIMBER PILING	L.F.				
204	Crushed Rock (Mod.) Under Structure	CY			[illegible]	34

STATE OF VERMONT
DEPARTMENT OF HIGHWAYS

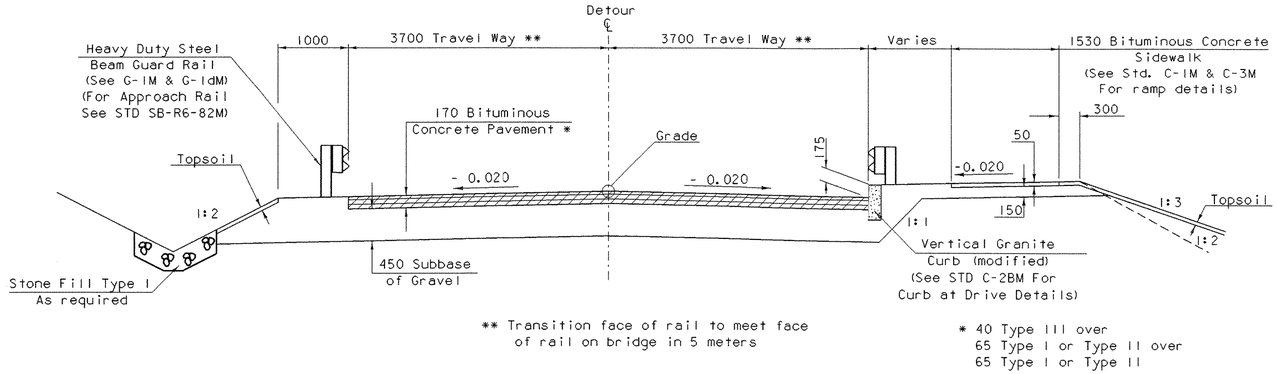
TOWN OF BETHEL
ROUTE NO. Vt 12 LOG STA.
ABUTMENT No. 1

SCALE As shown
SURVEYED BY
DRAWN BY RPG CHECKED BY RMD
PROJECT NO. SA 10, 1963
SHEET 13 OF 40

THIS DRAWING IS NOT TO SCALE

PROJECT:	PROJECT NO.:
BETHEL	BRF0231 (33) C/2

DESIGN FILE NAME: 02c180/structures/s02c180ref.dgn
IPARM FILE NAME: s02c180ref5.i — PLOT DATE: 14-APR-2005
DESIGNED BY: J. WHITE — DRAWN BY: J. WHITE
SQUAD LEADER: C.P. WILLIAMS — CHECKED BY:
REFERENCE SHEET 5 — SHEET: 122 OF 130

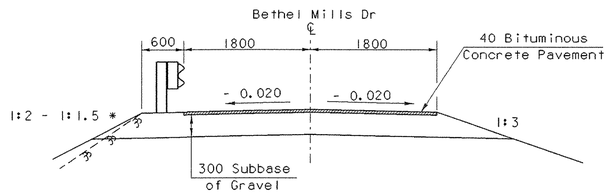


** Transition face of rail to meet face of rail on bridge in 5 meters

* 40 Type III over
65 Type I or Type II over
65 Type I or Type II

DETOUR ROADWAY TYPICAL SECTION

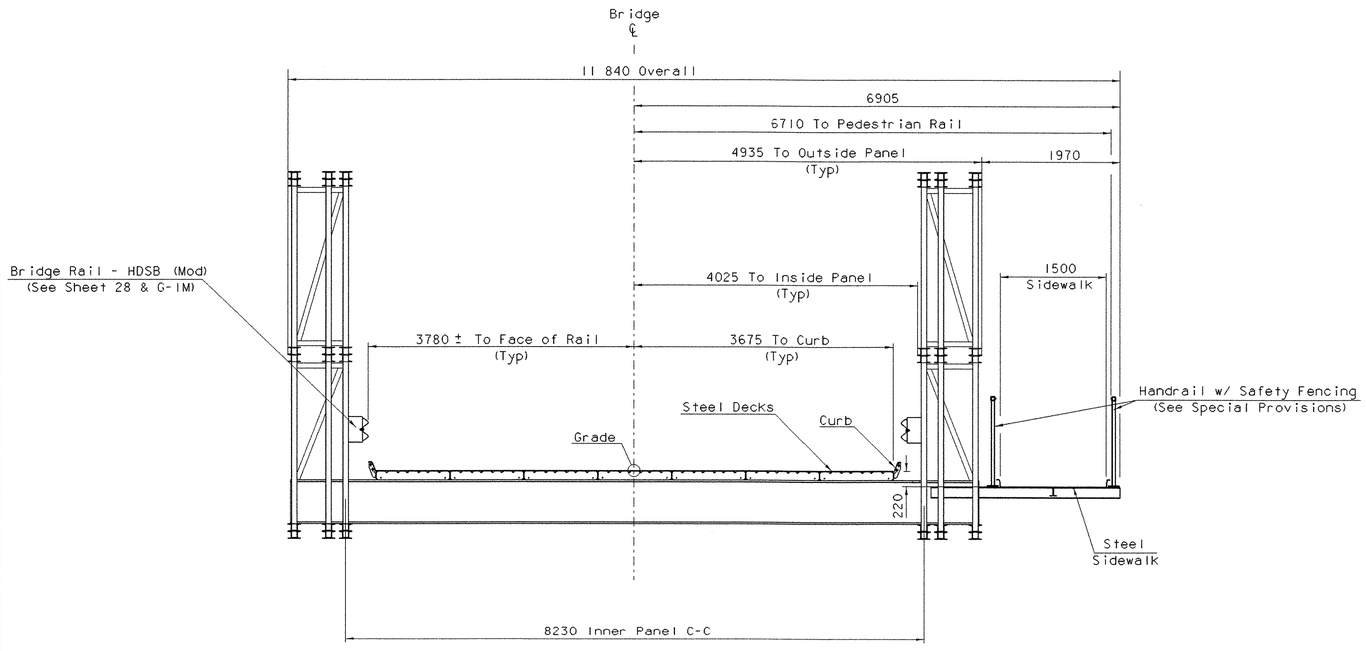
SCALE = 1 : 40



* On slopes greater than 1:2 use Stone Fill Type 1

BETHEL MILLS DRIVE TYPICAL SECTION

SCALE = 1 : 40



TEMPORARY BRIDGE TYPICAL SECTION

SCALE = 1 : 40

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

0 1 2 3 4

SCALE = 1:40

PROJECT: BETHEL REFERENCE SHEET 7	PROJECT NO.: BRF 0241(33)-C1
DESIGN FILE NAME: 96j250/structures/s96j250typ-c1.dgn	
IPARM FILE NAME: s96j250typ-c1.i	PLOT DATE: 14-APR-2005
DESIGNED BY: C. P. WILLIAMS	DRAWN BY: K.M.HIGGINS
SQUAD LEADER: C. P. WILLIAMS	CHECKED BY:
TYPICAL SECTIONS	SHEET: 123 OF 130

Begin Approach
Sta 3+020.000

MATCHLINE A-A
STA 3+020

BM #2
Elev 183.972

VT STATE PLANE GRID

EXISTING ROW

New England Central Railroad

PI #1
Sta 3+036.123 Bk
= 3+035.882 Ahd

PI #2
Sta 3+084.358 Bk
= 3+084.254 Ahd

PI #3
Mainline Sta 3+199.131 Bk
= 3+190.553 Ahd

PI #6
Side Line Sta 6+023.271 Bk
(No Curve Run)

POE Bethel Mills Drive
Sta 9+057.434 =
ML POST 3+193.225
Δ = 75° 52' 34.04" LT

Existing Aerial
3 Ø Power

3rd Branch of the White River
FLOW

Approx. Underground Utility
Relocation Route by Bethel Mills

Construction Limits

To Randolph VT 12

N48° 20' 34.9"E

N70° 22' 39.0"E

N53° 42' 01.4"E

N39° 35' 40.0"W

N42° 38' 27.2"W

N22° 10' 33.0"W

N32° 20' 48.2"W

PC#1 Sta 3+026.389

PT#1 Sta 3+045.617

PC#2 Sta 3+077.029

PT#2 Sta 3+091.583

PC#3 Sta 3+115.866

PT#3 Sta 3+213.824

PC#4 Sta 3+222.176

PT#4 Sta 3+227.807

PC#5 Sta 9+009.569

PT#5 Sta 9+035.860

PI #5
Sta 9+022.595 Bk
= 9+022.595 Ahd

Main 3+150.000
Chan 5+000.000
Delta = 90

CL Brg Abut 2
Sta 3+172.740

End Project
Sta 3+190.000

End Approach
Begin Project
Sta 3+060.000

End Approach
Sta 6+060.000

POB SIDELINE
Sta 6+060.000

POB SIDE LINE
Sta 6+000.000

POE MAINLINE
Sta 3+251.684

End Approach
Sta 3+220.000

POB Bethel Mills Drive
Sta 9+000.000

Abut. Retaining Structure

CL Brg Abut 1
Sta 3+112.000

1.2 m Chain Link Fence

Retaining Wall
(Typ at both Abutments)

1.8 m Chain Link Fence W/ Gate

Concrete Wall

Retaining structure @ Culvert Headwall

Stone Fill Type 1
(Direct Flow to River)

Temporary Aerial Relocation Route

Relocate Existing Power

New Pole w/ Anchor For Temporary Aerial Relocation Route

Concrete Dam

TH 66 (Paved)

TH 5

To Interstate 89 VT 12

Guardrail

Gravel Drive

Stone Wall

Concrete Pad

Sidewalk

Fence

Paved Drive

Wood Chip

Building

Shed

Garden

Steps

Stairs

Flag Pole

Ditch

Light

Guy

Tel. #9/1

Comb #44/7/9/2

Comb #X1/3

Comb #X11

Comb #7/11/35

Comb #2/6

Comb #35 1/8

Point #19 & 21

Point #20

Point #31

Point #32

Point #33

Point #35

Point #36

Swale

Stump

Bench Monument

Foundation

Church

House

Garage

Lilacs

Shrub

Hedge

M. Maple

M. Spruce

S. Cedar (2)

L. Maple

M. Hemlock

M Maple

M Elm

S Maple

S Apple

S Spruce

S Balsom

L Willow

L Maple

M Maple (2)

S Lyndon

L Pine

M Locust

H Lilac

M Boxelder

EL no#

EL #7A BE6

EL Valv.

Tel. Pole #3

S/MH

DI

T/MH

WSO

HYD

380/FCP

310/RCP

380 RCP

380 ACCGMP

460 CGMP

380 CPEP

Heavy Duty Steel Beam Guard Rail
Sta 3+059.500 Lt - 3+112.000 Lt
Sta 3+097.700 Rt - 3+112.000 Rt
Sta 3+172.960 Lt - 6+049.000 Lt
Sta 3+172.960 Rt - 3+194.200 Rt
BM Sta 9+018.000 - 9+045.500 Lt

Anchors For Steel Beam Guard Rail
Sta 3+061.600 Lt
Sta 3+089.500 Rt
Sta 6+048.000 Lt
Sta 3+182.100 Rt
Sta 9+020.000 Lt
Sta 9+043.500 Lt

Bridge Rail - HDSB (Mod)
Sta 3+112.000 Lt - 3+172.960 Lt
Sta 3+112.000 Rt - 3+172.960 Rt

Remove & Salvage Light Pole
Sta 3+191.400 Lt

Bituminous Concrete Sidewalk
Sta 3+025.000 - 3+111.000 Rt
Sta 3+174.000 - 3+214.000 Rt

Removal of Fence
Sta 3+172.000 Lt - 3+174.000 Lt
Sta 3+180.000 Lt - 3+190.500 Lt

Construct Drive w/ 1500 Paved Apron
Sta 3+060.000 Rt
Sta 3+196.000 Rt

Chain Link Fence - 1.2m
Sta 3+097.600 Rt - 3+112.000 Rt
Sta 3+172.960 Rt - 3+193.600 Rt

Chain Link Fence - 1.8m W/ Gate
Chan. Sta 5+011.500 - 5+020.500 Lt
Chan. Sta 5+011.500 - 5+023.000 Rt

Vertical Granite Curb (Modified)
Sta 3+028.250 - 3+053.500 Rt
Sta 3+066.500 - 3+111.750 Rt
Sta 3+173.000 - 3+189.500 Rt
Sta 3+205.300 - 3+214.000 Rt

1200 x 1200 Drop Inlet
(4) Sta 3+110.000 Rt
(6) Sta 3+187.600 Rt

Changing Elevation of DI, CB or MH
(1) Sta 3+046.000 Rt

Capping Existing Drop Inlets
(2) Sta 3+103.000 Lt
(8) Sta 3+188.500 Lt

Special Ditch (Swale)
(3) Sta 3+070.000 - 3+116.000 Lt
(With Erosion Matting)

New 450 diameter - Option Pipes
PCCSP, CAAP or CPEP
(5) Sta 3+110.000 (w/2 Elbows)
(7) Sta 3+187.600 Rt

Cleaning Culvert Pipe in Place
(9) Sta 3+116.700 Lt - 3+125.000 Lt

ALIGNMENT CURVE DATA

CURVE #1
Radius = 50.000
Delta = 22°02'4.15" Rt
Tangent = 9.735
Length = 19.229
External = 0.939

CURVE #2
Radius = 50.000
Delta = 16°40'37.60" Lt
Tangent = 7.328
Length = 14.554
External = 0.534

CURVE #3
Radius = 26.000
Delta = 83°39'31.37" Rt
Tangent = 23.271
Length = 37.963
External = 8.893

CURVE #4
Radius = 10.000
Delta = 26°45'18.51" Rt
Tangent = 2.378
Length = 4.670
External = 0.279

CURVE #5
(Bethel Mills Dr.)
Radius = 80.000
Delta = 18°49'44.8" Lt
Tangent = 13.265
Length = 26.290
External = 1.092

CURVE #6
No Curve Run
Delta = 3°2'47.16" Rt

BM #1
Elev 178.407
Sta 6+006
23.500 m Right
(See Tie Sheet)

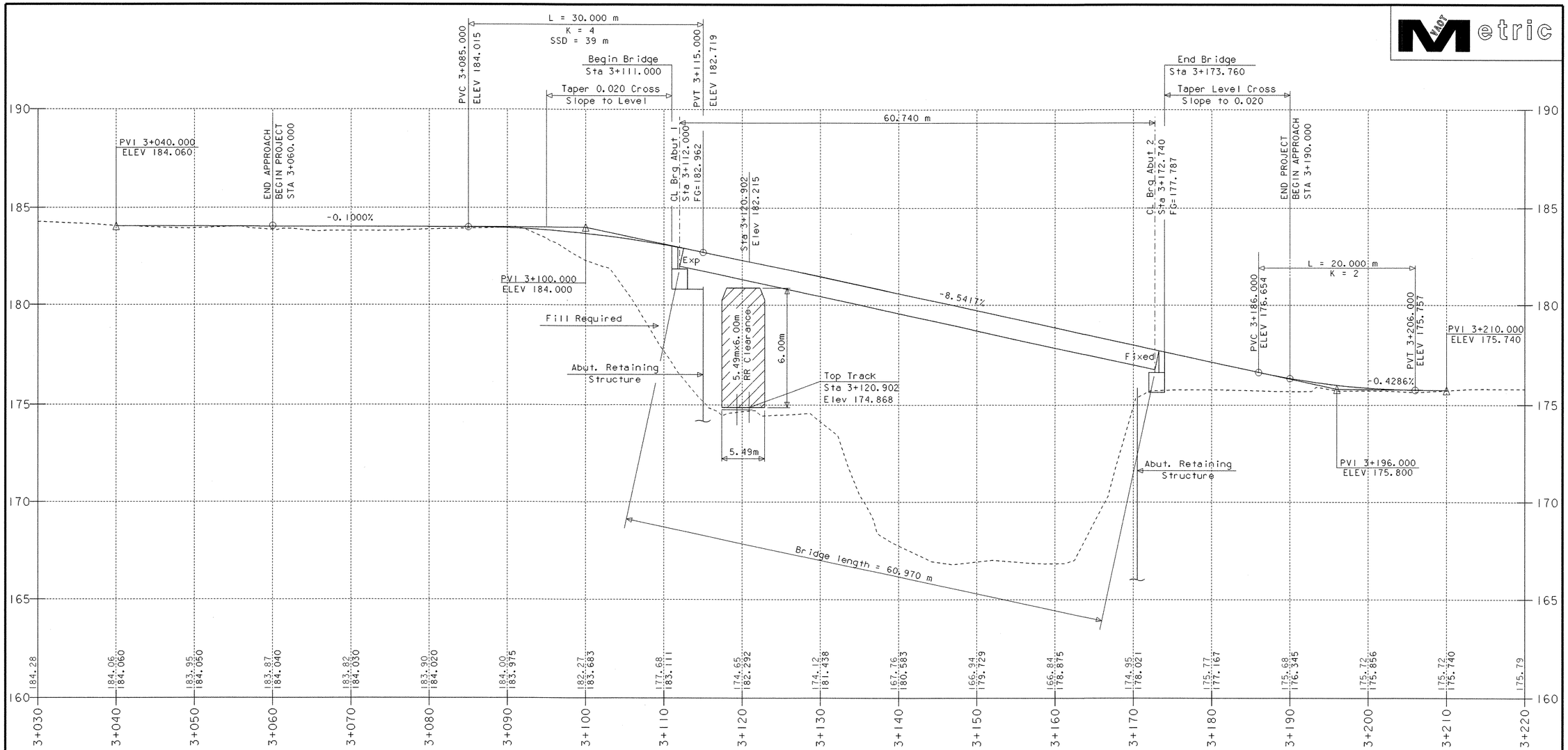
See Sheet 13 for New Signs and New Pavement Markings
See Sheet 21 for Drive, Rail and Sidewalk Radii
See Sheet 16 for Drainage Details

0 10 20
SCALE 1 : 250

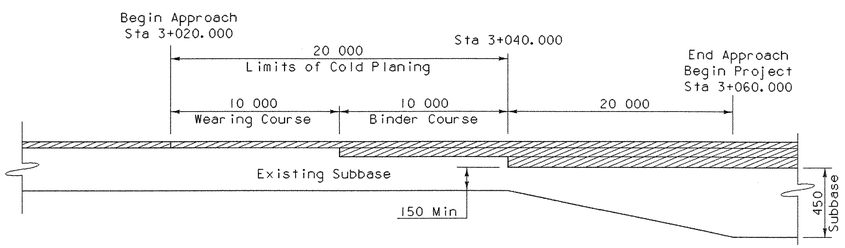
DATUM
VERTICAL NAVD 88
HORIZONTAL NAD 83/92

PROJECT: BETHEL REFERENCE SHEET 8
PROJECT NO. : BRF 0241(33)-C1
DESIGN FILE NAME: 96j250/structures/s96j250bdr-c1.dgn
IPARM FILE NAME: s96j250ia2-c1.i
PLOT DATE: 14-APR-2005
SURVEYED BY: ORVIS
SURVEY DATE: 10/99
SQUAD LEADER: C.P. WILLIAMS
DRAWN BY: KMH
LAYOUT SHEET 2
SHEET: 124 OF 130

Metric

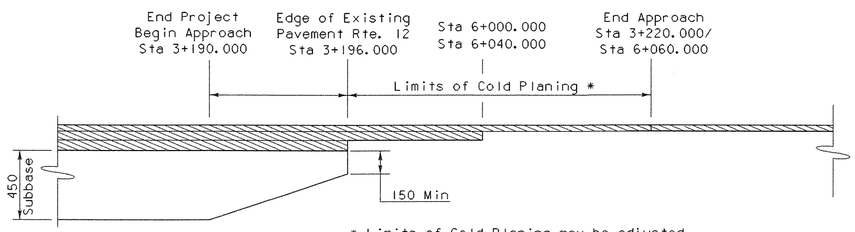


Profile Along Temporary Detour



SUBBASE TAPER AT BEGIN PROJECT

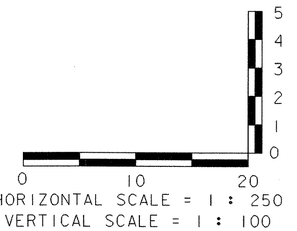
NTS



* Limits of Cold Planing may be adjusted in the field as deemed necessary by the resident engineer.

SUBBASE TAPER AT END PROJECT

NTS

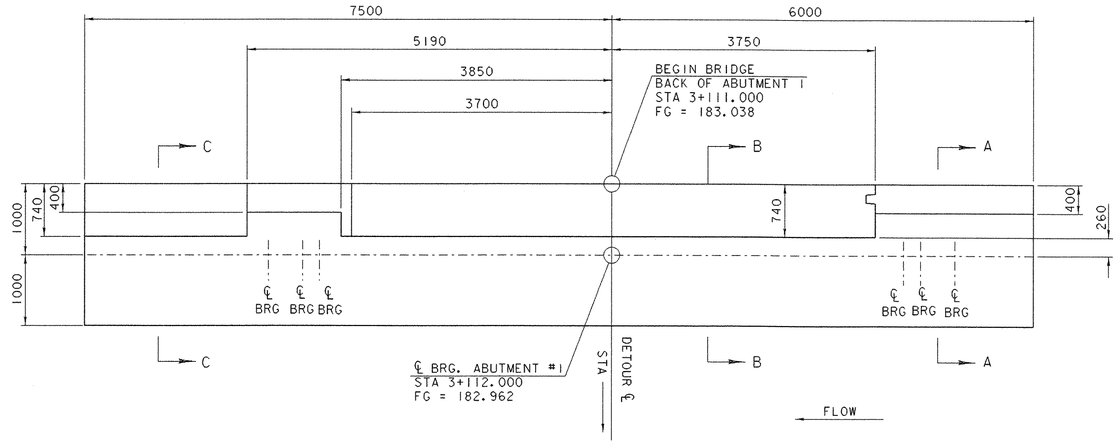


DATUM

VERTICAL NAVD 88

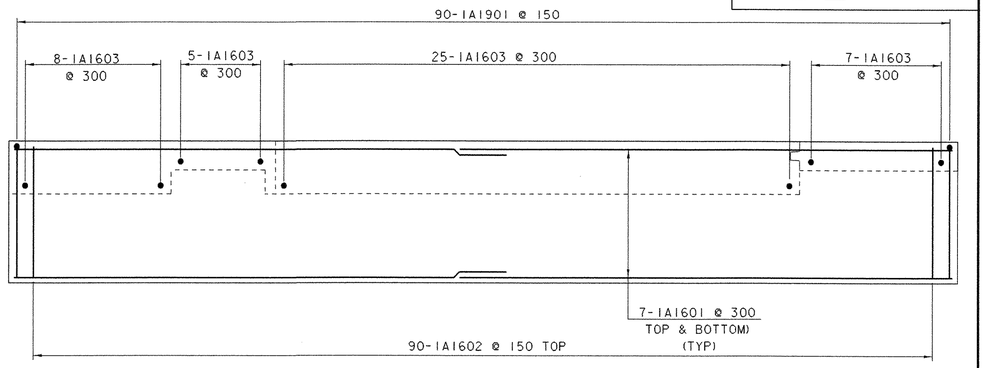
HORIZONTAL NAD 83/92

PROJECT: BETHEL REFERENCE SHEET 9	PROJECT NO. : BRF 0241(33)-C1
DESIGN FILE NAME: 96j250/structures/s96j250pro-c1.dgn	
IPARM FILE NAME: s96j250pr1-c1.i	PLOT DATE: 14-APR-2005
SURVEYED BY: ORVIS	SURVEY DATE: 10/99
SQUAD LEADER: C. P. WILLIAMS	DRAWN BY: KMH
TEMPORARY DETOUR PROFILE	SHEET: 125 OF 130



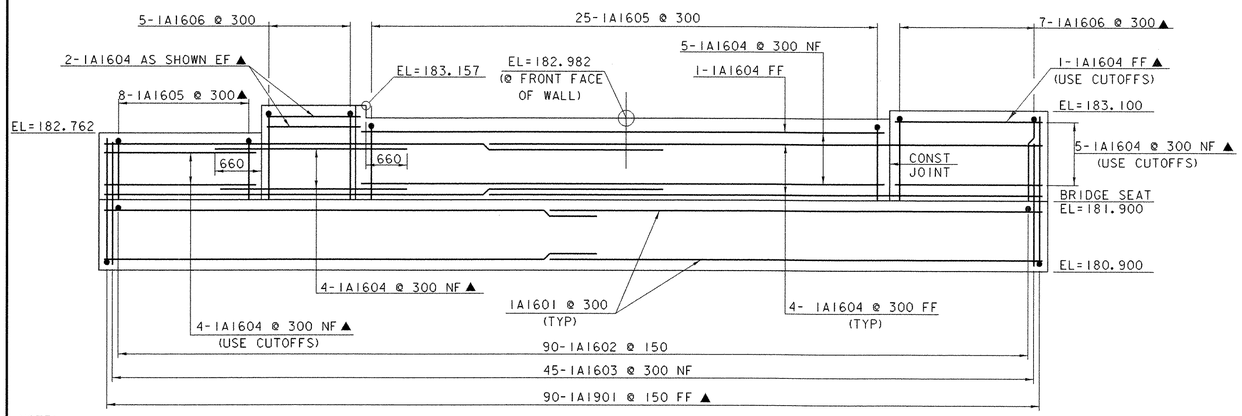
ABUTMENT NO. 1 DIMENSION PLAN

SCALE = 1:40



BRIDGE SEAT NO. 1 REINFORCEMENT PLAN

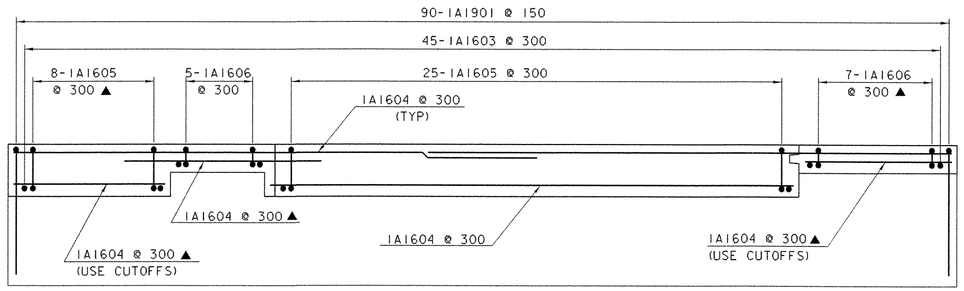
SCALE = 1:40



ABUTMENT NO. 1 ELEVATION

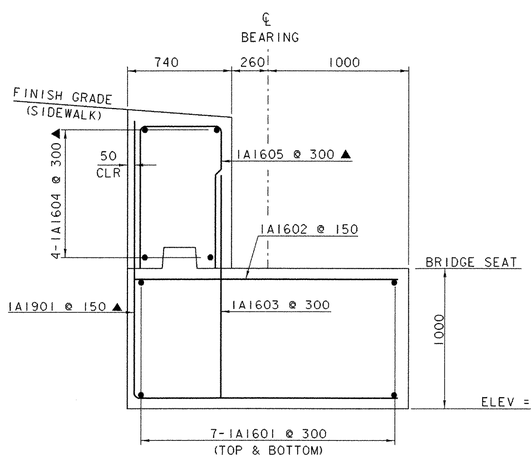
SCALE = 1:40

NOTE:
ALL DIMENSIONS AND ELEVATIONS SHOWN ALONG BACKWALL ARE THEORETICAL. AFTER THE BRIDGE IS IN PLACE ALL DIMENSIONS SHALL BE VERIFIED AND ADJUSTED AS REQUIRED.



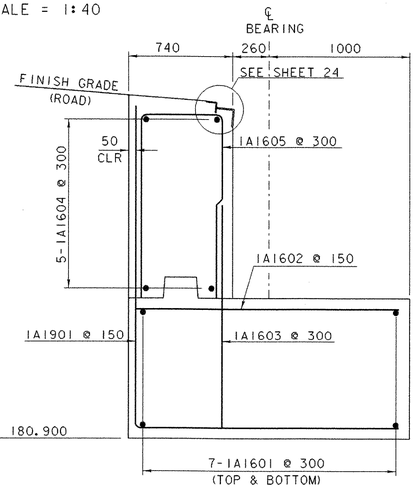
BACKWALL NO. 1 REINFORCEMENT PLAN

SCALE = 1:40



SECTION C-C

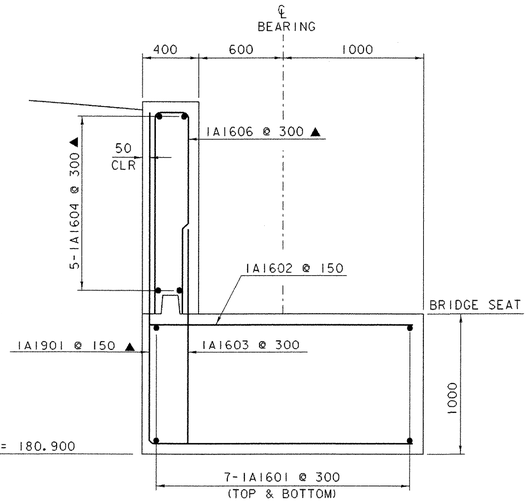
SCALE = 1:20



SECTION B-B

SCALE = 1:20

NOTE:
POUR BACKWALL AFTER BRIDGE IS IN PLACE

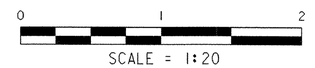


SECTION A-A

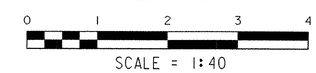
SCALE = 1:20

NOTE:

NF = NEAR FACE
FF = FAR FACE
EF = EACH FACE
▲ = CUT TO FIT IN FIELD
75 CLR. UNLESS OTHERWISE SPECIFIED ON THE PLANS.
ALL LAPS 660 UNLESS OTHERWISE SPECIFIED ON THE PLANS.



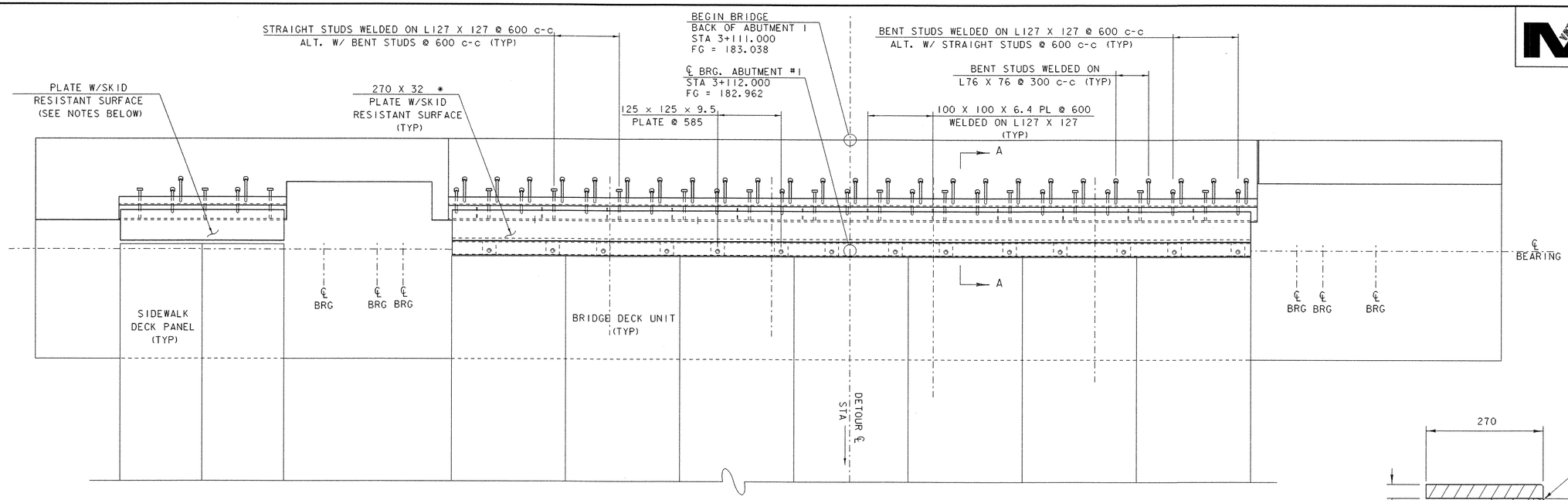
SCALE = 1:20



SCALE = 1:40

PROJECT: BETHEL REFERENCE SHEET 11	PROJECT NO.: BRF 0241(33)-CI
DESIGN FILE NAME: 96j250/structures/sj250ab-ci.dgn	
IPARM FILE NAME: s96j250ab1.i	PLOT DATE: 14-APR-2005
DESIGNED BY: K.M. HIGGINS	DRAWN BY: K. M. HIGGINS
SQUAD LEADER: C.P. WILLIAMS	CHECKED BY: C. P. WILLIAMS
ABUTMENT NO. 1 DETAILS	SHEET: 126 OF 130

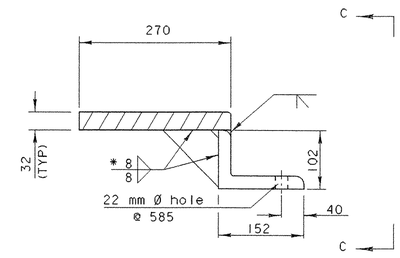
Metric



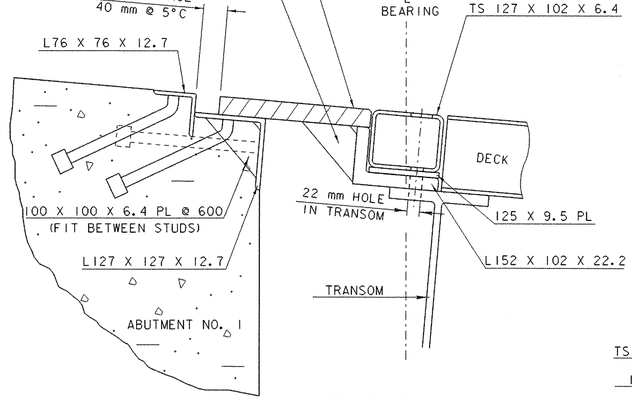
* PLATE MAY BE ONE OR TWO PIECES.

BRIDGE EXPANSION JOINT PLAN AT ABUTMENT NO. 1

SCALE = 1:20



* SAME WELD FOR GUSSET PLATE IN BACKWALL



SECTION A-A

SCALE = 1:5

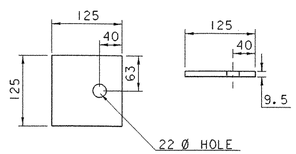
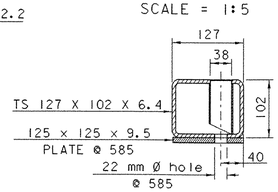


PLATE DETAIL

SCALE = 1:5



STRUCTURAL TUBE DETAIL

SCALE = 1:5

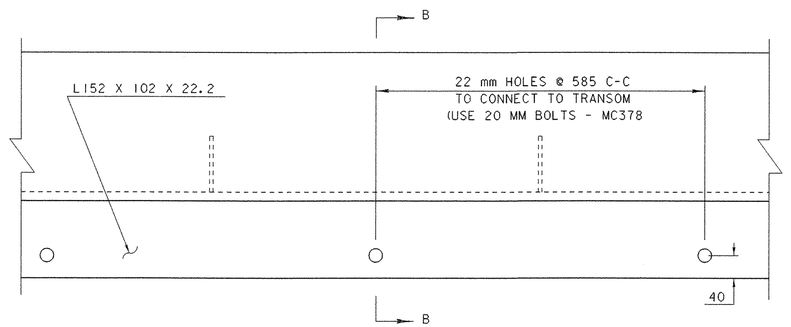
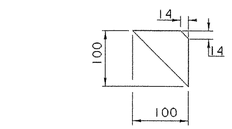


PLATE PLAN

SCALE = 1:5



GUSSET PLATE DETAIL

SCALE = 1:5

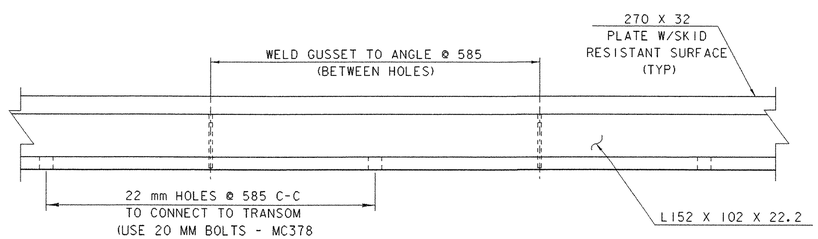
NOTES:

1. DETAILS ON THIS SHEET ARE FOR ITEM 516.10 "BRIDGE EXPANSION JOINT-MOD".
2. AN ALTERNATIVE JOINT CONFIGURATION MAY BE SUBMITTED FOR APPROVAL.
3. DETAILS FOR THE EXPANSION JOINT ON THE SIDEWALK SHALL BE SUPPLIED BY THE CONTRACTOR. ALL MATERIALS REQUIRED FOR THE SIDEWALK JOINT SHALL BE INCLUDED IN THE UNIT BID PRICE FOR ITEM 516.10 "BRIDGE EXPANSION JOINT-MOD".
4. ALL STEEL COMPONENTS SHALL BE AASHTO M270 GRADE 36 GALVANIZED OR METALIZED AS PER SUBSECTION 506.15 (a) OR (b) UNLESS OTHERWISE SPECIFIED.
5. THE ITEM "BRIDGE EXPANSION JOINT-MOD" SHALL INCLUDE THE FABRICATION AND ERECTION OF THE COMPLETE JOINT ASSEMBLY INCLUDING ALL STEEL PLATES, ANGLES, WELDED STUDS AND ANY OTHER MISCELLANEOUS MATERIAL NECESSARY TO INSTALL JOINT.
6. DIMENSIONS FOR HOLE SPACINGS SHALL BE VARIFIED AND SHOP DRAWINGS SHALL BE PROVIDED TO THE PROJECT MANAGER FOR APPROVAL PRIOR TO FABRICATION.
7. COAT CONCRETE CONTACT SURFACES WITH EPOXY BONDING COMPOUND MEETING THE REQUIREMENTS OF SUBSECTION 719.02. PAYMENT SHALL BE INCLUDED IN THE UNIT PRICE BID FOR ITEM 516.10 "BRIDGE EXPANSION JOINT-MOD".
8. THE EXPANSION JOINT SHALL BE SHOP ASSEMBLED AND SHIPPED AS ONE UNIT.

TEMP	"A" DIST.
-15°C	54
-5°C	47
5°C	40
15°C	33
25°C	27
35°C	19
45°C	10

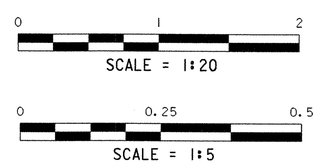
PLATE PLAN

SCALE = 1:5



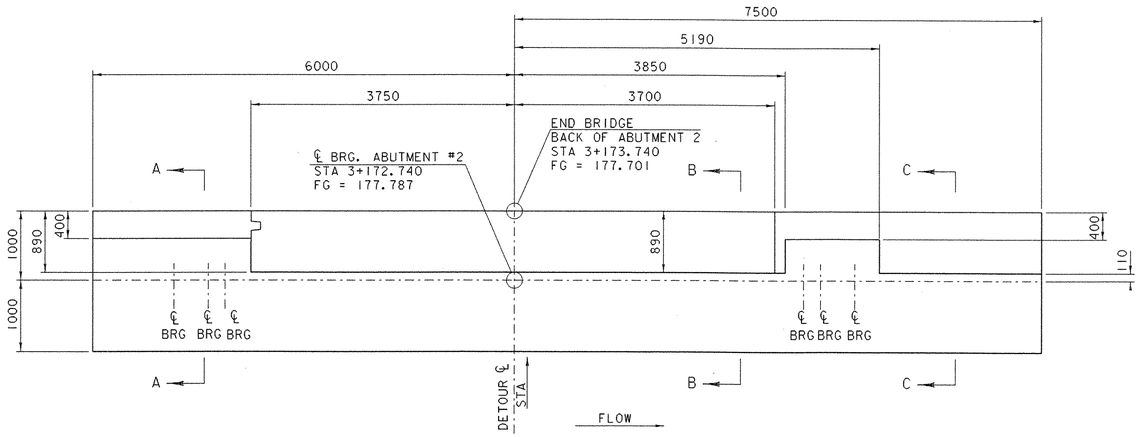
SECTION C-C

SCALE = 1:5



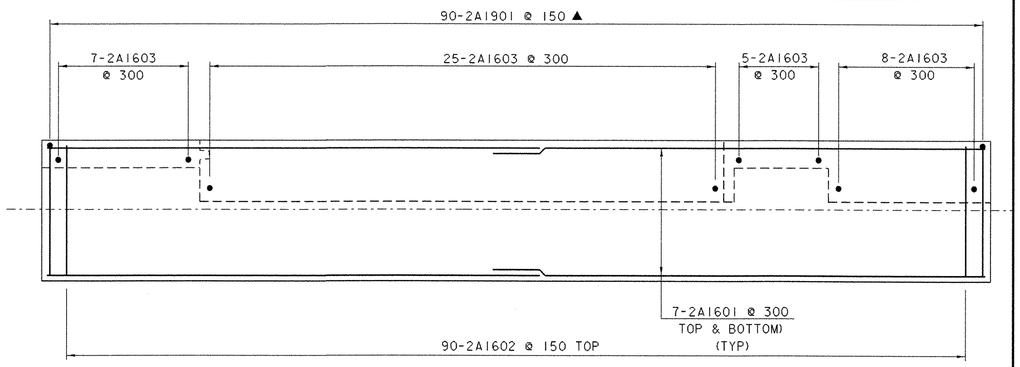
PROJECT:	PROJECT NO.:
BETHEL REFERENCE SHEET 12	BRF 0241(33)-C1
DESIGN FILE NAME: 96j250/structures/sj250ab-c1.dgn	
IPARM FILE NAME: s96j250exp.i	PLOT DATE: 14-APR-2005
DESIGNED BY: K.M. HIGGINS	DRAWN BY: K. M. HIGGINS
SQUAD LEADER: C.P. WILLIAMS	CHECKED BY: C. P. WILLIAMS
EXPANSION JOINT DETAILS	SHEET: 127 OF 130

Metric



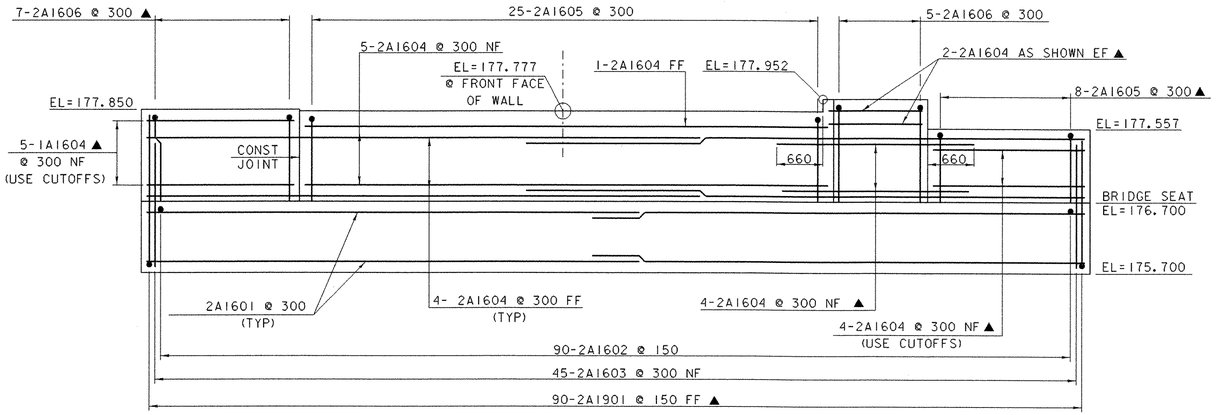
ABUTMENT NO. 2 DIMENSION PLAN

SCALE = 1:40



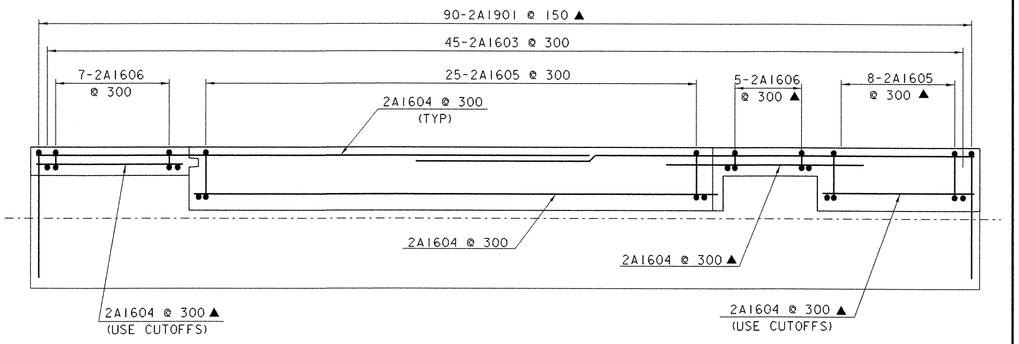
BRIDGE SEAT NO. 2 REINFORCEMENT PLAN

SCALE = 1:40



ABUTMENT NO. 2 ELEVATION

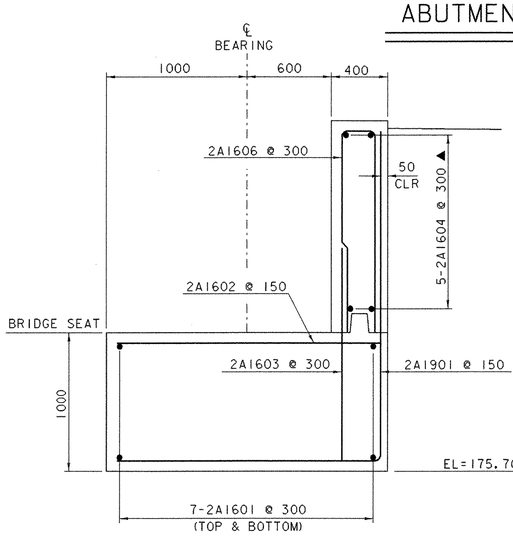
SCALE = 1:40



BACKWALL NO. 2 REINFORCEMENT PLAN

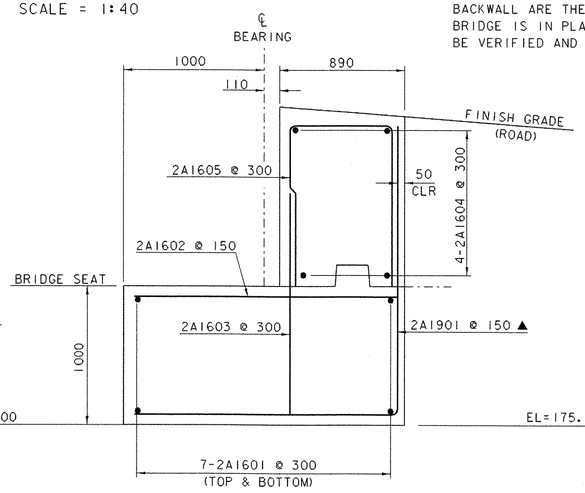
SCALE = 1:40

NOTE:
ALL DIMENSIONS AND ELEVATIONS SHOWN ALONG BACKWALL ARE THEORETICAL. AFTER THE BRIDGE IS IN PLACE ALL DIMENSIONS SHALL BE VERIFIED AND ADJUSTED AS REQUIRED.



SECTION A-A

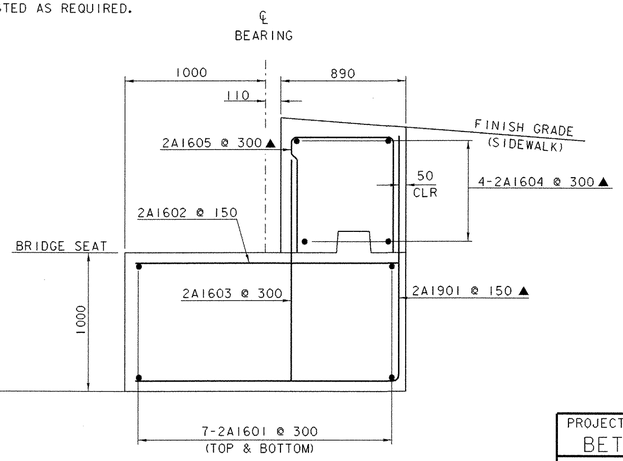
SCALE = 1:20



SECTION B-B

SCALE = 1:20

NOTE:
POUR BACKWALL AFTER BRIDGE IS IN PLACE

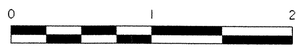


SECTION C-C

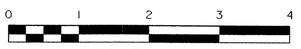
SCALE = 1:20

NOTE:

NF = NEAR FACE
FF = FAR FACE
EF = EACH FACE
▲ = CUT TO FIT IN FIELD
75 CLR. UNLESS OTHERWISE SPECIFIED ON THE PLANS.
ALL LAPS 660 UNLESS OTHERWISE SPECIFIED ON THE PLANS.

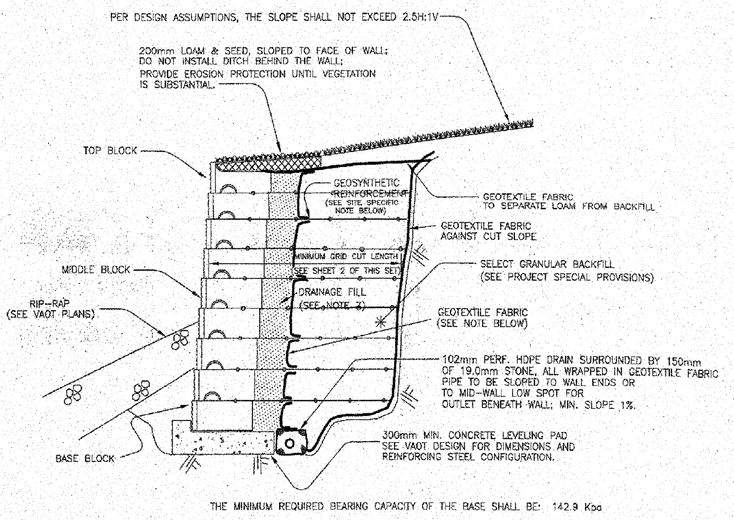


SCALE = 1:20



SCALE = 1:40

PROJECT: BETHEL REFERENCE SHEET 13	PROJECT NO.: BRF 0241(33)-C1
DESIGN FILE NAME: 96j250/structures/sj250ab-c1.dgn	
IPARM FILE NAME: s96j250ab2.i	PLOT DATE: 14-APR-2005
DESIGNED BY: K.M. HIGGINS	DRAWN BY: K. H. HIGGINS
SQUAD LEADER: C.P. WILLIAMS	CHECKED BY: C. P. WILLIAMS
ABUTMENT NO. 2 DETAILS	SHEET: 128 OF 130



THE MINIMUM REQUIRED BEARING CAPACITY OF THE BASE SHALL BE: 142.9 Kpa

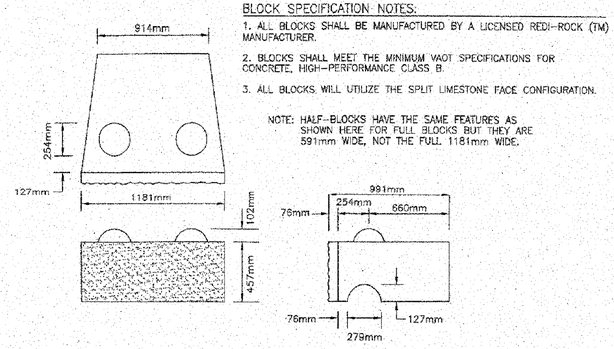
TYPICAL SECTION – REDI ROCK WALL – REINFORCED (TYPICAL DETAIL ONLY – SEE WALL FACE DRAWING FOR SPECIFIC BLOCK CONFIGURATIONS)

"REDIROCK" SEGMENTAL RETAINING WALL
(NOT TO SCALE)

GENERAL NOTES:

1. STRIP ALL VEGETATION, ORGANIC SOILS AND UNSUITABLE FILL SOILS FROM THE WALL ALIGNMENT AREA.
2. BENCH CUT ALL EXCAVATED SLOPES.
3. DO NOT OVER EXCAVATE UNLESS DIRECTED TO DO SO BY THE OWNER'S SITE REPRESENTATIVE IN ORDER TO REMOVE UNSUITABLE SOIL.
4. THE CONTRACTOR SHALL REMOVE ANY UNSUITABLE MATERIAL AS DIRECTED BY THE SITE ENGINEER. THE OVEREXCAVATED MATERIAL SHALL BE REPLACED WITH SELECT GRANULAR BACKFILL.
5. LEVELING PAD SHALL CONSIST OF A REINFORCED CONCRETE PAD FOUNDED ON LEDGE. SEE VTRANS PLANS.
6. FOLLOW APPLICABLE PROVISIONS OF THE MANUFACTURER'S INSTALLATION INSTRUCTIONS AND WRITTEN SPECIFICATIONS, ESPECIALLY WITH REGARDS TO LEVELING OF BLOCKS AND BASE.
7. DRAINAGE FILL SHALL BE 19mm STONE MEETING THE REQUIREMENTS OF VAOT STANDARD SPECIFICATIONS FOR CONSTRUCTION SECTION 704.02 EXTENDING A MINIMUM 600mm (24") BEHIND THE WALL BLOCK. A NON-WOVEN GEOTEXTILE FABRIC MEETING THE REQUIREMENTS OF VAOT ITEM 649.41 SHALL BE USED TO SEPARATE THE DRAINAGE MATERIAL FROM THE REINFORCED BACKFILL MATERIAL AND ALSO TO SEPARATE THE REINFORCED MATERIAL FROM THE CUT OR FILL FACE OF THE EXCAVATION.
8. WHERE PERFORATED HDPE DRAINS ARE USED, PROVIDE OUTLETS AT THE ENDS OF THE WALL OR AT A LOW COLLECTION POINT ALONG THE WALL. (ALTERNATE OUTLET METHODS MAY BE APPROVED BY THE DESIGN ENGINEER.)
9. BACKFILL AND COMPACT THE FILL MATERIAL BEHIND THE WALL AS THE WALL IS INSTALLED.
10. COMPACTION TESTS SHALL BE TAKEN AS THE WALL IS INSTALLED. THE MINIMUM NUMBER OF TESTS SHALL BE DETERMINED BY THE SITE ENGINEER.
11. PLACE A GEOTEXTILE FABRIC OVER THE DRAINAGE MATERIAL TO MINIMIZE SOIL MIGRATION FROM THE SURFACE MATERIAL INTO THE DRAINAGE MATERIAL.
12. PROVIDE LATERAL DRAINAGE SWALES TO DIRECT FLOWS AROUND THE ENDS OF THE WALL AND AWAY FROM THE WALL DURING CONSTRUCTION. DO NOT CONSTRUCT A SWALE BEHIND THE WALL AS PART OF THE FINISHED WALL. GRADE ABOVE THE WALL SO THAT WATER FLOWS OVER THE WALL FACE OR TO A POINT AT LEAST AS FAR BEHIND THE WALL AS THE WALL HEIGHT.
13. TURF, OR SOME ACCEPTABLE FORM OF SOIL EROSION PROTECTION, SHOULD BE ESTABLISHED AT THE TOP OF THE WALL (WHERE REQUIRED) BY THE LANDSCAPE CONTRACTOR AS SOON AS THE WALL IS COMPLETED.
14. FINAL WALL ALIGNMENT SHALL BE LOCATED IN THE FIELD.
15. RECOMMENDED COMPACTION EQUIPMENT WITHIN 4.5 METERS OF THE BACK OF THE WALL IS AS FOLLOWS:
    0 – 1.2 METERS – HAND TAMP OR VIBRATORY PLATE COMPACTOR
    1.2 – 4.5 METERS – NOTHING LARGER THAN TWO-DRUM, WALK-BEHIND VIBRATORY ROLLER
    (LARGER ROLLERS CAN BE USED STATICALLY, PROVIDED LIFT SIZE DOES NOT COMPROMISE ACHIEVEMENT OF NECESSARY COMPACTION RATES.)
16. THESE WALLS HAVE BEEN DESIGNED WITH CONSIDERATION OF SEISMIC LOADINGS.

IF CONDITIONS ARE DIFFERENT THAN THOSE STATED IN THESE DRAWINGS AND SPECIFICATIONS, THE CONTRACTOR MUST CONTACT THE DESIGN ENGINEER PRIOR TO PROCEEDING WITH THE CONSTRUCTION OF THE WALL.



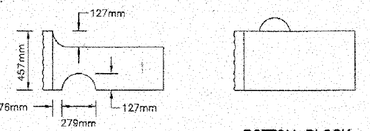
TYPICAL UNIT–MIDDLE BLOCK

UNIT DIMENSIONS
(NOT TO SCALE)

BLOCK SPECIFICATION NOTES:

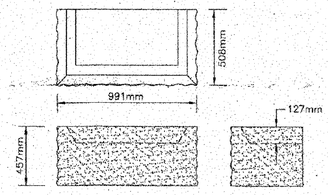
1. ALL BLOCKS SHALL BE MANUFACTURED BY A LICENSED REDI-ROCK (TM) MANUFACTURER.
2. BLOCKS SHALL MEET THE MINIMUM VAOT SPECIFICATIONS FOR CONCRETE, HIGH-PERFORMANCE CLASS B.
3. ALL BLOCKS WILL UTILIZE THE SPLIT LIMESTONE FACE CONFIGURATION.

NOTE: HALF-BLOCKS HAVE THE SAME FEATURES AS SHOWN HERE FOR FULL BLOCKS BUT THEY ARE 591mm WIDE, NOT THE FULL 1181mm WIDE.



TOP BLOCK

BOTTOM BLOCK



TYPICAL END BLOCK

GEOTEXTILE FABRIC NOTE: A GEOTEXTILE FABRIC SHALL BE PLACED BETWEEN THE REINFORCED FILL AND THE DRAINAGE MATERIAL FOR THE ENTIRE HEIGHT OF THE WALL.

SITE SPECIFIC NOTE: THE WALL HEIGHTS AT THIS SITE VARY AND ARE SHOWN ON THE WALL FACE DRAWING ON SHEET 2 OF 2. THE GEOGRID SHALL BE SYNTEEN PRODUCTS AS DETAILED ON THE WALL FACE DRAWING. THE CUT LENGTHS OF THE GEOGRID LAYERS, AND THE PLACEMENT ELEVATIONS OF THE GEOGRID LAYERS ARE SHOWN ON THE WALL FACE DRAWING. THE GEOGRID SHALL PROVIDE 100% COVERAGE.

THE CONTRACTOR SHOULD CONTACT THE DESIGN ENGINEER WITH ANY QUESTIONS.

COMPACTION NOTE: WHERE THE RETAINING WALL PASSES OVER ANY UTILITY LINES, COMPACTION OF THE SOIL WITHIN THE UTILITY TRENCH IS CRITICAL IN ORDER TO PREVENT SETTLEMENT OF THE WALL. COMPACTION OF ALL FILL MATERIAL IN UTILITY TRENCHES WHICH PASS UNDER THIS RETAINING WALL MUST BE AT LEAST 95% OF THE MAXIMUM DENSITY OF THE FILL MATERIAL.

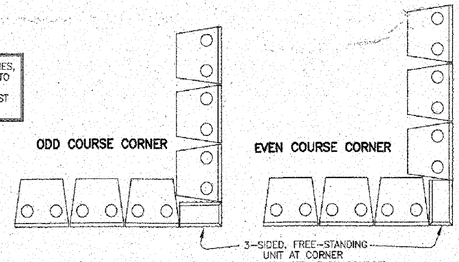
DESIGN ASSUMPTIONS		
SOIL	SOIL UNIT WEIGHT	ϕ
SELECT FILL/BACKFILL	22.0 kN/m	34
RETAINED EARTH	22.0 kN/m	30
FOUNDATION SOIL	ROCK	

APPLIED SURCHARGE LOADING = NONE
SEISMIC ACCELERATION = 0.06
MAX. SLOPE ABOVE WALL = 2.5H:1V

MINIMUM FACTORS OF SAFETY	
OVERTURNING	2.0
SLIDING	1.5
BEARING CAPACITY	2.0
GEOGRID PULLOUT	1.5

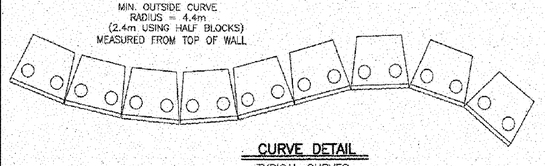
IMPERVIOUS MATERIAL
GENERAL REQUIREMENTS

SIEVE SIZE	% PASSING
75 mm	100%
4.76 mm	80–100%
0.425 mm	50–90%
0.15 mm	40–80%
.075 mm	30–80%



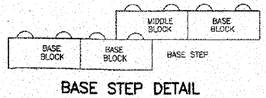
TYPICAL CORNER INSTALLATION

(NOT TO SCALE)



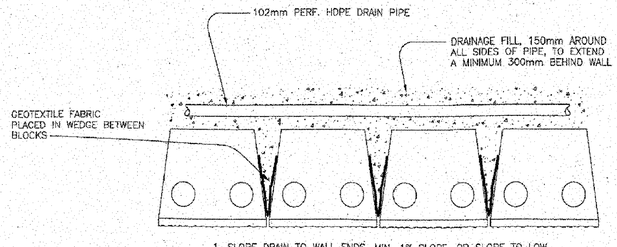
CURVE DETAIL

TYPICAL CURVES
(NOT TO SCALE)



BASE STEP DETAIL

(NOT TO SCALE)



1. SLOPE DRAIN TO WALL ENDS, MIN. 1% SLOPE, OR SLOPE TO LOW POINT AND DROP THE DRAIN UNDER THE WALL.
2. WALL DRAIN MAY TIE TO NEARBY CLOSED DRAINAGE SYSTEM, IF AVAILABLE, OR INTO THE DRAIN OF THE EXISTING, NEIGHBORING WALL.

DRAIN & FABRIC DETAIL

(NOT TO SCALE) REFERENCE SHEET 129 OF 130

REVISION SET NUMBER
1

REVISION #2 4/19/05 – ADDED GEOGRID TO TYP. SECTION	KMH
REVISION #1 3/28/05 MINOR TEXT REVISIONS PER VAOT REVIEW	RHB

New England's SVE Retaining Wall Designers

STATE OF VERMONT – RANDALL H. BRAGDON #6788 CIVIL LICENSED PROFESSIONAL ENGINEER

NOTE: THIS DRAWING WAS PREPARED FOR USE WITH REDI-ROCK (TM) RETAINING WALL SYSTEMS. CONTACT REDI-ROCK WALLS OF NEW ENGLAND AT (603) 863-1000.

SOUHEGAN VALLEY ENGINEERING, INC.
CIVIL ENGINEERING CONSULTANTS — SITE DESIGN SPECIALISTS
434 LEAR HILL ROAD NEWPORT(UNITY), NEW HAMPSHIRE 03773
TEL: (603) 863-5454 FAX: (603) 863-3629
Est. 1990 Available On The Web At www.SVEngineering.com

CLIENT: REDI-ROCK WALLS OF NEW ENGLAND
8 REEDS MILL ROAD, NEWPORT, NH 03773

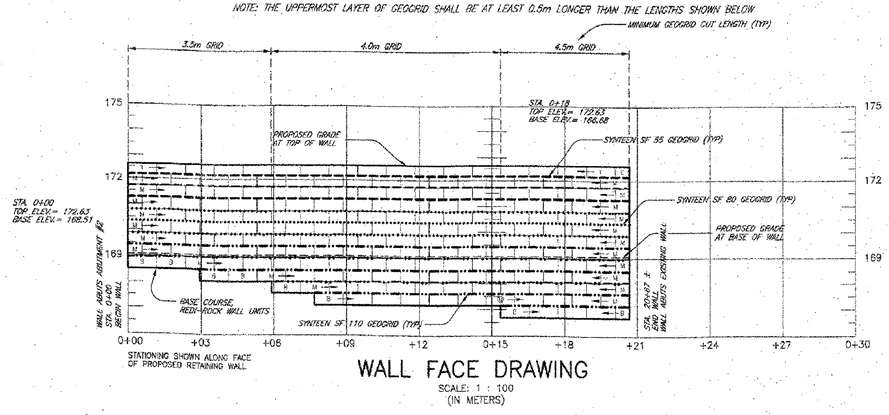
PROJECT: PROPOSED BRIDGE IMPROVEMENT PROJECT
BETHEL, VT

SHEET TITLE: RETAINING WALL DESIGN SHEET 1

DATE: MARCH 7, 2005 SCALE: AS SHOWN PROJECT No.: 05-169

SHEET 1 OF 2

NOTE: THE UPPERMOST LAYER OF GEOGRID SHALL BE AT LEAST 0.5m LONGER THAN THE LENGTHS SHOWN BELOW



WALL FACE DRAWING

SCALE: 1 : 100
(IN METERS)

LEGEND

T	TOP BLOCK
M	MIDDLE BLOCK
B	BOTTOM BLOCK
E	END BLOCK
○	DENOTES CHANGE IN BLOCK TYPE

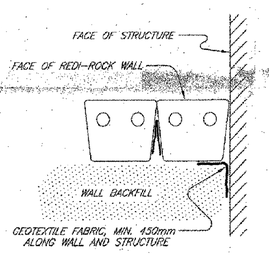
WALL QUANTITIES:

TOP BLOCK – 17
END BLOCK – 1
MIDDLE BLOCK – 163
1/2 MIDDLE BLOCK – 9
BASE BLOCK – 15
1/2 BASE BLOCK – 1

GEOGRID: SYNTEEN SF 55 – **247** SQ. METERS
SYNTEEN SF 80 – **2497**SQ. METERS
SYNTEEN SF 110 – **376** SQ. METERS

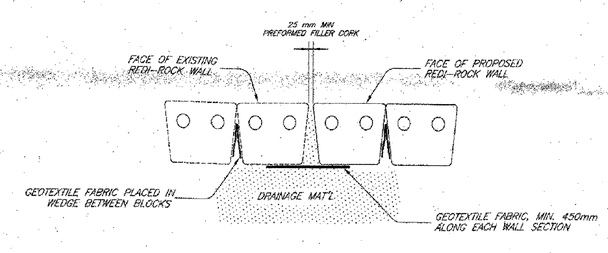
NOTE: ALL WALLS WERE DESIGNED USING GRADING INFORMATION PROVIDED BY OTHERS. IF THE FIELD CONDITIONS INDICATE THE GRADE AT THE BASE AND/OR TOP OF THE WALL TO BE DIFFERENT FROM THAT SHOWN ON THESE PLANS, THE DESIGN ENGINEER SHALL BE CONTACTED TO VERIFY CHANGES TO THE WALL BASE COURSE AND/OR TOP OF WALL ELEVATION.

WHERE THE WALL ABUTS A STRUCTURE OR EXISTING WALL, A GEOTEXTILE FABRIC SHALL BE PLACED VERTICALLY ALONG THE SEAM TO PREVENT MIGRATION OF SOILS BETWEEN THE WALL BLOCK AND THE STRUCTURE. THE FABRIC SHOULD EXTEND AT LEAST 450mm ALONG THE STRUCTURE OR EXISTING WALL AND 450mm ALONG THE REAR OF THE PROPOSED WALL BLOCK.



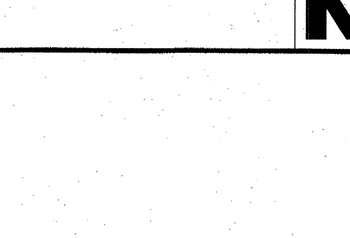
DETAIL
WALL ABUTTING STRUCTURE

(NOT TO SCALE)



DETAIL
WALL ABUTTING EXISTING WALL

(NOT TO SCALE)



GRID–TO–UNIT CONNECTION DETAIL

(NOT TO SCALE)

NOTES:

1. CARE SHOULD BE TAKEN TO REMOVE ALL ORGANIC MATERIAL FROM THE BASE EXCAVATION FOR THE RETAINING WALL.

2. IF THE PERFORATED WALL DRAIN IS TO BE CARRIED UNDER THE WALL TO OUTLET, IT SHALL BE CARRIED DOWNSLOPE ENOUGH DISTANCE TO ALLOW FOR A PROPER DRAINING SLOPE (MIN. 1% SLOPE FROM WALL TO DAYLIGHT) OR TIED TO A CLOSED DRAINAGE SYSTEM.

DRAIN LINES (102mm HDPE) WHICH PASS UNDER THE WALL BASE SHOULD BE CENTERED UNDER THE BASE BLOCK. THE PIPE TRENCH SHALL BE MINIMIZED SO THAT THE BASE BLOCK ACTS AS A LINTEL OVER THE PIPE AND TRENCH.

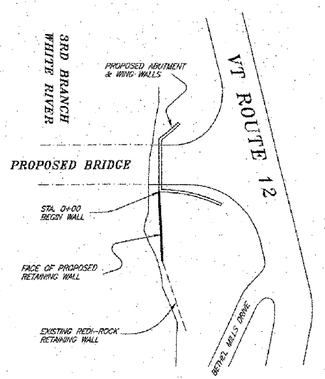
3. GEOGRID CUT LENGTHS ARE MEASURED FROM THE FRONT FACE OF THE RETAINING WALL. ALL GEOGRID IS TO BE PLACED PERPENDICULAR TO THE WALL FACE, i.e. THE GRID ROLL IS PLACED ON THE WALL, ROLLED OUT BEHIND THE WALL, AND CUT TO LENGTH.

CONTRACTOR'S NOTE: THERE ARE THREE (3) DIFFERENT STRUCTURAL TYPES OF SYNTEEN GEOGRID USED IN THESE DESIGNS.

THEY ARE DESIGNATED BY THE SYMBOLS SHOWN BELOW:

- ---------- SYNTEEN SF 55 GEOGRID
- ..... SYNTEEN SF 80 GEOGRID
- -·-·-·-·- SYNTEEN SF 110 GEOGRID

NOTE: GEOGRID SUBSTITUTIONS WILL NOT BE ALLOWED WITHOUT WRITTEN APPROVAL OF THE OWNER AND DESIGN ENGINEER



VICINITY SKETCH

(NOT TO SCALE)
SEE CONSTRUCTION DRAWINGS BY OTHERS

New England's SVE Retaining Wall Designers

STATE OF VERMONT
RANDALL H. BRAGDON #6788 CIVIL LICENSED PROFESSIONAL ENGINEER
3/31/05

NOTE: THIS DRAWING WAS PREPARED FOR USE WITH REDI-ROCK (TM) RETAINING WALL SYSTEMS. CONTACT REDI-ROCK WALLS OF NEW ENGLAND AT (603) 863-1000.

SOUHEGAN VALLEY ENGINEERING, INC.
CIVIL ENGINEERING CONSULTANTS — SITE DESIGN SPECIALISTS
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CLIENT: REDI-ROCK WALLS OF NEW ENGLAND
8 REEDS MILL ROAD, NEWPORT, NH 03773

PROJECT: PROPOSED BRIDGE IMPROVEMENT PROJECT
BETHEL, VT

SHEET TITLE: RETAINING WALL DESIGN SHEET 2

DATE: MARCH 7, 2005 — SCALE: AS SHOWN — PROJECT No.: 05-169

SHEET 2 OF 2

REFERENCE SHEET 130 OF 130

REVISION SET NUMBER			
1	REVISION #2	4/14/05	REVISED WALL DESIGN; REVISED GEOGRID QUANTITIES — KMH
	REVISION #1	3/28/05	REVISED WALL DESIGN; MINOR TEXT CHANGES PER VAOT REVIEW — RMB

NOTES:

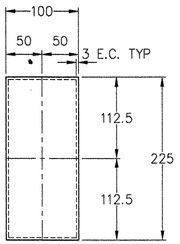
1. BEARING PADS TO BE MANUFACTURED IN ACCORDANCE WITH SECTIONS 531 AND 731 OF THE STATE OF VERMONT 2001 STANDARD SPECIFICATIONS FOR CONSTRUCTION AND THE SPECIAL PROVISIONS FOR THIS PROJECT.

2. ONLY ITEMS SHOWN ON THIS DRAWING ARE TO BE PROVIDED BY SEISMIC ENERGY PRODUCTS, L.P.

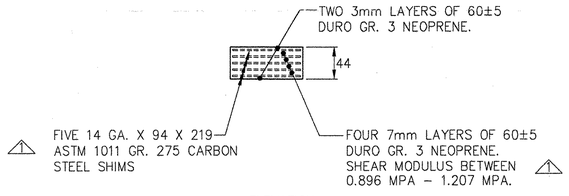
⚠1 3. TEMPERATURE RANGE: −34°C TO 49°C

4. TOLERANCES:

OVERALL HORIZONTAL DIMENSIONS	±1/16"
DESIGN THICKNESS	±1/16"
POSITION OF EXPOSED CONNECTION MEMBERS	±1/16"
SIZE & POSITION OF HOLES/SLOTS	±1/16"
BEVEL SLOPE	±0.002 RADIANS
FLATNESS OF TOP OF SOLE PLATE	0.001 X NOMINAL DIMENSION
FLATNESS OF STAINLESS STEEL & P.T.F.E.	0.010"



PLAN VIEW



ELEVATION

MK. 01, 36 REQUIRED

RECEIVED
CK'D BY KMH CK'D BY
OCT 25 2005
RESIDENT APPROVED
BY CPW DATE 10/25/05

REV.	DESCRIPTION	DATE
⚠1	ADDED SHEAR MODULUS AND TEMP. RANGE	10/14/05

TOWN OF BETHEL	BRIDGE NO. 31
PROJECT NAME TOWN OF BETHEL	PROJECT NUMBER BRF0241 (33) C/2
HIGHWAY NO.	COUNTY WINDSOR

CONTRACTOR:

Seismic Energy Products, L.P.
STRUCTURAL BEARINGS FOR BRIDGES & BUILDINGS
ATHENS, TEXAS

STATE OF VERMONT
DEPARTMENT OF TRANSPORTATION
STRUCTURAL BEARING DETAILS FOR:

WINDSOR COUNTY TOWN OF BETHEL RT VT1

CAD FILE: 26519VT

CUSTOMER:
KUBRICKY CONSTRUCTION CORP.
237 BAY STREET
GLENS FALLS, NY. 12801-7202

DRN. J.P.	09/06/05	P.O. NO. 675 (13166)	S.O. NO. 26519	
CHKD.B.W.	09/06/05			
Q.A. REVW'D.	REV.	DWG. NO. 0805095	SHT 1 OF 1	

VT A.O.T., BETHEL
VT RTE 12 BRIDGE
PROJ.NO. BRF 0241(33) C/2

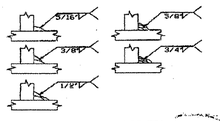
COSMEC INC.

WELDING PROCEDURE SPECIFICATION

SPECIFICATIONS AND CODE: AASHTO--AWS D1.5
MATERIAL SPECIFICATION ASTM A709 GR 50W, GR 50, GR 36
WELDING PROCESS------ FCAW-G
MANUAL OR MACHINE------ SEMI-AUTOMATIC
POSITION OF WELDING---- F & 2F
FILLER METAL SPECIFICATION AWS 5.20 CLASSIFICATION: E71T
MANUFACTURER: LINCOLN ELECTRIC TRADENAME: E71T OUTERSHIELD
FLUX------ INTERNAL
SHIELDING GAS---------- CO2 FLOW RATE 45 CFH
SINGLE OR MULTIPLE PASS MULTIPLE
SINGLE OR MULTIPLE ARC SINGLE
WELDING CURRENT---------- DC
POLARITY: REVERSE (EP)
WELDING PROGRESSION:----------
ROOT TREATMENT---------- CLEANED & PREPARED BRIGHT METAL
PREHEAT AND INTERPASS TEMPERATURE---------- ------ SEE BELOW
POSTHEAT TEMPERATURE N/A
HEAT IMPUT MIN.---------- MAX.----

WELDING PROCEDURE

PASS NO.	ELECTRODE SIZE	WELDING CURRENT AMPERES	VOLTS	TRAVEL SPEED	JOINT DETAIL
ALL	0.045	190-230	27-29	8-9	



PREHEAT TEMPS.

THICKNESS	TEMP.
UP TO 3/4"	50 DEG. F
OVER 3/4" TO 1 1/2"	70 DEG. F
OVER 1 1/2" TO 2 1/2"	150 DEG. F
OVER 2 1/2"	225 DEG. F
INTERPASS TEMP:	400 DEG. F

THIS PROCEURE MAY VARY DUE TO FABRICATION SEQUENCE, FIT-UP, PASS SIZE, ETC. WITHIN THE LIMITATION OF VARIABLES GIVEN IN SECTION 5.

PROCEDURE NO. FCAW-FILLET
SUPPORTING PQR: FCAW-1.0-05
REVISION NO.

CONTRACTOR: COSMEC INC.
AUTHORIZED BY: DONALD VOSE

AWS QC 1 DONALD F VOSE 01106051 CWI

DATE:--- 1/31/2005

VTRANS
JWC
11-7-05
13266

VT A.O.T., BETHEL
VT RTE 12 BRIDGE
PROJ.NO. BRF 0241(33) C/2

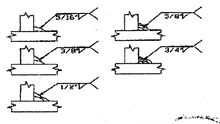
COSMEC INC

WELDING PROCEDURE SPECIFICATION

SPECIFICATIONS AND CODE: AASHTO--AWS D1.5
MATERIAL SPECIFICATION ASTM A709 GR 50W, GR 50, GR 36
WELDING PROCESS-------- FCAW-G
MANUAL OR MACHINE------ SEMI-AUTOMATIC
POSITION OF WELDING---- F & 2F
FILLER METAL SPECIFICATION AWS 5.20 CLASSIFICATION: E71T
MANUFACTURER: LINCOLN ELECTRIC TRADENAME: E71T OUTERSHIELD
FLUX------- INTERNAL
SHIELDING GAS---------- CO2 FLOW RATE 45 CFH
SINGLE OR MULTIPLE PASS MULTIPLE
SINGLE OR MULTIPLE ARC SINGLE
WELDING CURRENT-------- DC
POLARITY: REVERSE (EP)
WELDING PROGRESSION:----------
ROOT TREATMENT---------- CLEANED & PREPARED BRIGHT METAL
PREHEAT AND INTERPASS TEMPERATURE---------- SEE BELOW
POSTHEAT TEMPERATURE N/A
HEAT IMPUT MIN.---------- MAX.----

WELDING PROCEDURE

PASS NO.	ELECTRODE SIZE	WELDING CURRENT AMPERES	VOLTS	TRAVEL SPEED	JOINT DETAIL
ALL	0.045	190-230	27-29	8-9	



PREHEAT TEMPS.

THICKNESS	TEMP.
UP TO 3/4"	50 DEG. F
OVER 3/4" TO 1 1/2"	70 DEG. F
OVER 1 1/2" TO 2 1/2"	150 DEG. F
OVER 2 1/2"	225 DEG. F
INTERPASS TEMP:	400 DEG. F

THIS PROCEURE MAY VARY DUE TO FABRICATION SEQUENCE, FIT-UP, PASS SIZE, ETC. WITHIN THE LIMITATION OF VARIABLES GIVEN IN SECTION 5.

PROCEDURE NO. FCAW-FILLET
SUPPORTING PQR: FCAW-1.0-05
REVISION NO.

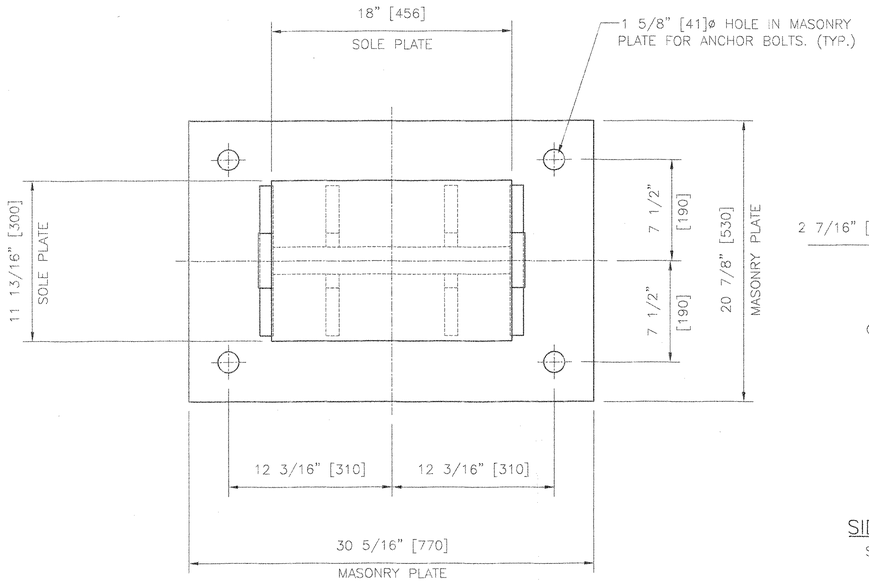
CONTRACTOR: COSMEC INC.
AUTHORIZED BY: DONALD VOSE

AWS QC 1 DONALD F VOSE 01106051 CWI

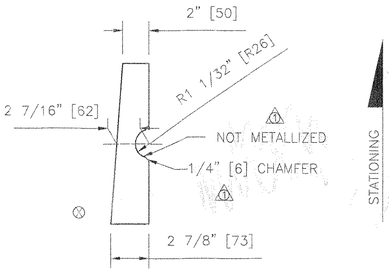
DATE:--- 1/31/2005

VTRANS
JWC
11-7-05

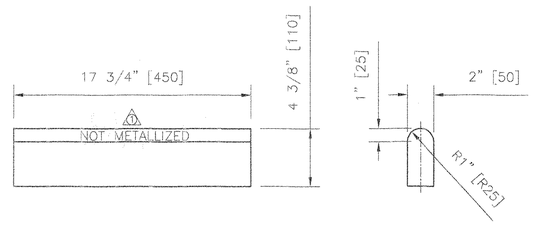
13366



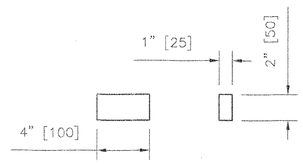
PLAN



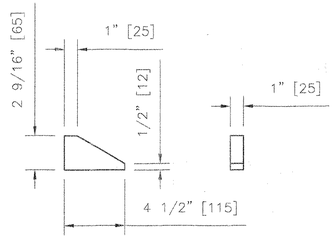
SIDE ELEVATION
SOLE PLATE ONLY



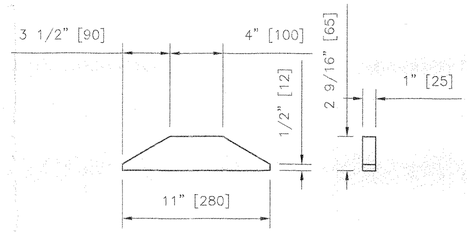
BEARING COLUMN DETAIL



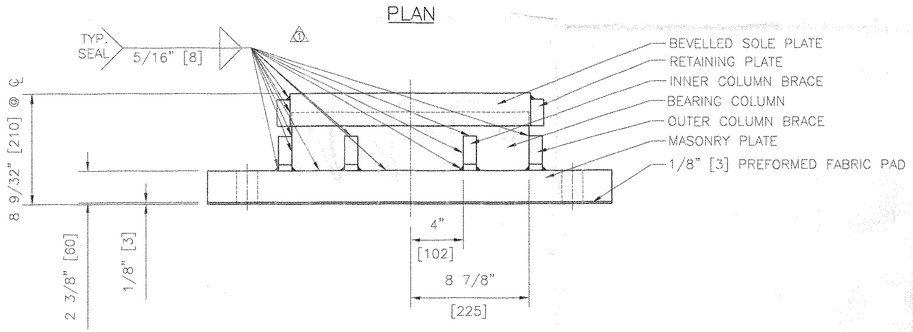
RETAINING PLATE DETAIL
QUANTITY: 2 (PER BRG.)



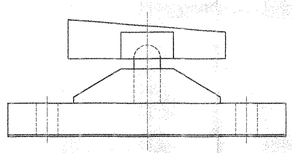
INNER COLUMN BRACE DETAIL
QUANTITY: 4 (PER BRG.)



OUTER COLUMN BRACE DETAIL
QUANTITY: 2 (PER BRG.)



FRONT ELEVATION



SIDE ELEVATION

COSMEC FIXED ROCKER BEARING

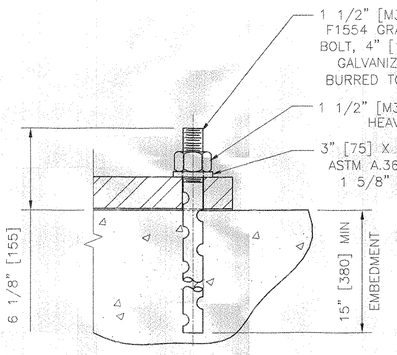
LOCATION: ABUTMENT 2
QUANTITY: 5

NOTES:

1. ALL MATERIAL USED IN THE FABRICATION OF THESE BEARINGS SHALL BE MADE IN THE U.S.A.
2. ⊗ INDICATES THICK END OF BEVEL.
3. LOCATION OF FABRICATION PLANT – 70 SOUTH ST. WALPOLE, MA. 02081
4. COSMEC INC. REPRESENTITIVE – MR. McANDREWS (508)668-6600
5. UNITS = INCHES [mm]

MATERIALS:

STEEL: ASTM A709 GR.50 ZINC METALLIZED AND SEALED
(RADIAL SURFACES SHALL NOT BE COATED)
PREFORMED FABRIC PAD: AASHTO SPEC. 18.4.9.1, DIV. II
ANCHOR BOLTS: ASTM F1554 GR.55 FULLY THREADED ALL GALVANIZED



ANCHOR BOLT DETAIL
QUANTITY: 20

RECEIVED
CK'D BY RMH OK'D BY
DEC 2 0 2005
RESUBMIT APPROVED
BY GPW DATE 1/9/06

STATE OF VERMONT
AGENCY OF TRANSPORTATION

BETHEL, VT.
ROUTE 12 BRIDGE

PROJ. NO. BRF 0241 (33) C/2

COSMEC, INC. 70 SOUTH STREET WALPOLE, MA. 02081

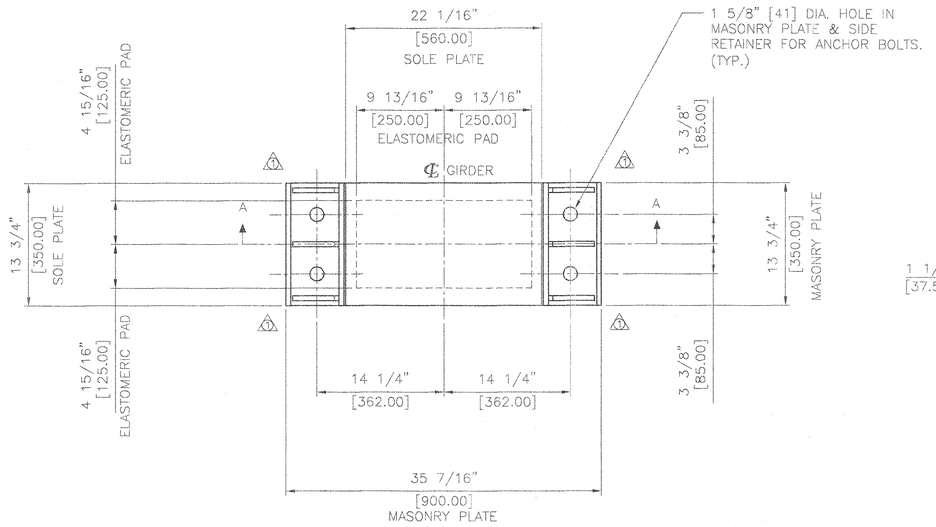
SCALE: 3/16"=1"	DRAWN BY: MRR	CHECKED BY: MCM
DATE:	DATE: 10/05	DATE: 10/21/05

COSMEC FIXED ROCKER BEARING

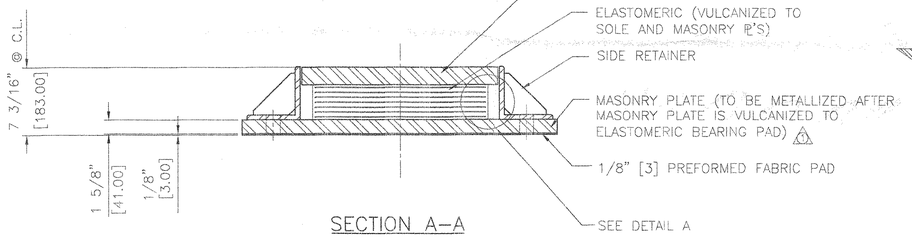
CUSTOMER	S.O. NUMBER	DRAWING NUMBER	REV.
KUBRICKY CONSTRUCTION CORP.	60406	4514	1

REV.		BY	DATE	CK'D	DATE
1	REVISED PER VT A.O.T. COMMENTS	MRR	12/16/05	MM	12/16/05

13466



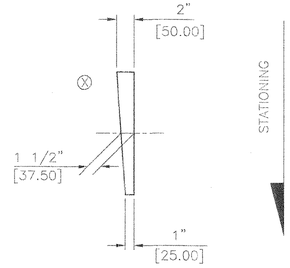
PLAN



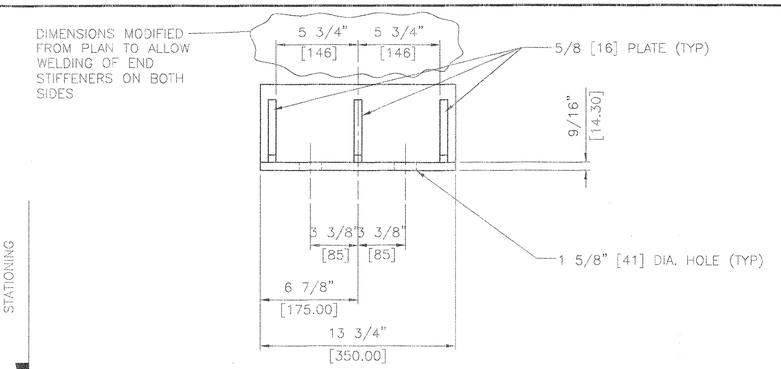
SECTION A–A

COSMEC ELASTOMERIC EXPANSION BEARING

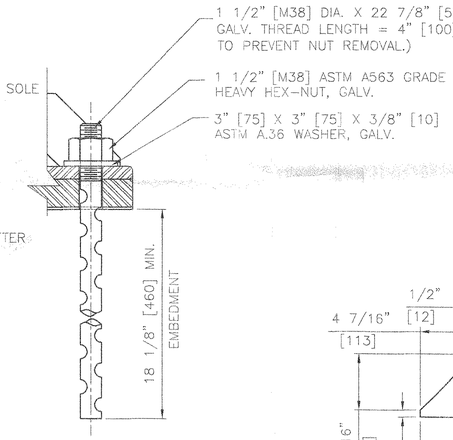
LOCATION: PIER
QUANTITY: 5



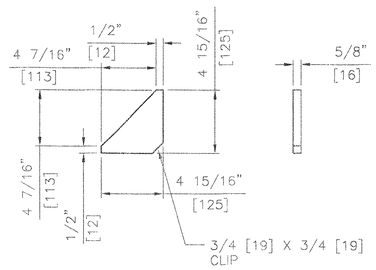
SIDE ELEVATION
SOLE PLATE ONLY



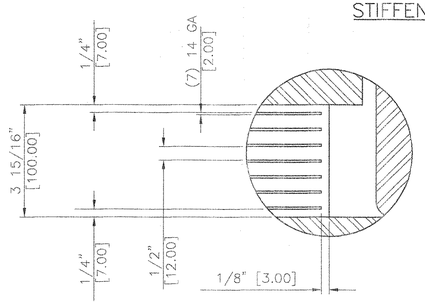
SIDE RETAINER DETAIL ⚠1
N.T.S.



ANCHOR BOLT DETAIL
N.T.S.



STIFFENER PLATE DETAIL ⚠1
N.T.S.



DETAIL A
N.T.S.

⚠1 SHOP NOTES:

1. ALL MATERIAL NOTED AS AASHTO M270 GR.50 MAY BE EITHER AASHTO M270M/M270 GR.345, ASTM A709 GR.345 OR A572 GR.345
2. MATERIAL NOTED AS GALVANIZED SHALL BE GALVANIZED IN ACCORDANCE WITH AASHTO M232 (ASTM A123) OR M232M M232 AASHTO M111M/M111 (ASTM A153) AS APPLICABLE.
3. ALL BEARING DEVICES SHALL BE METALLIZED IN ACCORDANCE WITH SUBSECTIONS 531.04(b) AND 506.15(b) AND SEALED WITH AN APPROVED SEALANT IN ACCORDANCE WITH SUBSECTION 506.15(b) OF THE STANDARD SPECIFICATION.
4. PREFORMED FABRIC BEARING PADS SHALL BE FABRICATED IN ACCORDANCE WITH AASHTO DIV. II SPEC. 18.4.9.1.
5. ANCHOR BOLTS: ASTM F1554 GR.55, GALVANIZED
   STEEL REINFORCEMENT PLATES: ASTM A.1011 GR 36 OR 40
6. ELASTOMER: NATURAL RUBBER, 60 DUROMETER GRADE 4 TEMPERATURE RANGE: –34°C TO 49°C ELASTOMER TO HAVE A SHEAR MODULUS BETWEEN 0.896 AND 1.207 MPa
7. LAMINATED ELASTOMERIC BEARING PADS SHALL BE IN ACCORDANCE WITH AASHTO STANDARD SPECIFICATION FOR HIGHWAY BRIDGES, 1996 EDITION AND ITS LATEST REVISIONS AND AASHTO M251M.
8. ALL SURFACES OF PLATE SHALL BE SMOOTH AND STRAIGHT.
9. ALL CORNERS AND EDGES SHALL BE GROUND TO A 1/16 INCH RADIUS
10. ALL MATERIAL USED IN THE FABRICATION OF THESE BRGS. SHALL BE MADE IN THE U.S.A.
11. ⊗ SHOP SHALL MARK HIGH SIDE OF PLATES.
12. LOCATION OF FABRICATION PLANT – 70 SOUTH ST. WALPOLE, MA 02081
13. COSMEC, INC. REPRESENTATIVE: MR. MATT McANDREWS (508) 668-6600

⚠1 ASSEMBLY AND INSTALLATION NOTES:

1. ALL COMPONENTS SHALL BE ASSEMBLED AND SHIPPED AS AN ASSEMBLY AS MUCH AS PRACTICAL.
2. THE CONTRACTOR IS SOLEY RESPONSIBLE FOR THE CORRECT ORIENTATION, ALLIGNMENT AND MATCHING OF COMPONENTS SHOULD HE ELECT TO DISASSEMBLE THE BEARING ASSEMBLIES FOR ANY REASON.
3. THE CONTRACTOR IS SOLEY RESPONSIBLE FOR THE PROPER PLACEMENT AND SETTING OF THE ANCHOR BOLTS AS REQUIRED BY THE CONTRACT PLANS.
4. AREAS OF METALLIZING DAMAGED BY WELDING AND/OR HANDLING SHALL BE REPAIRED BY METALLIZING IN ACCORDANCE WITH ASTM A760, AT THE CONTRACTOR'S EXPENSE.

RECEIVED
CK'D BY KMH OK'D BY
DEC 20 2005
RESUBMIT APPROVED
BY CPW DATE 1/3/06

REV.	REVISED PER VT A.O.T. COMMENTS	BY	DATE	CHECKED	DATE
⚠1		MRR	12/16/05	MM	12/16/05

STATE OF VERMONT
AGENCY OF TRANSPORTATION

BETHEL, VT.

ROUTE 12 BRIDGE

PROJ. NO. BRF 0241 (33) C/2

COSMEC, INC. 70 SOUTH STREET WALPOLE, MA. 02081

SCALE: 1/8"=1"	DRAWN BY: DSS	CHECK BY: MCM
	DATE: 9-1-05	DATE: 10-17-05

COSMEC ELASTOMERIC BEARINGS

CUSTOMER	S.O. NUMBER	DRAWING NUMBER	REV.
KUBRICKY CONSTRUCTION CORP.	60406	4513	1

135bb

Casco Bay Steel Structures, Inc.
5 Industry Road
South Portland, Maine 04106
hone: (207) 772-2533 Fax: (207) 772-0580

WELDING PROCEDURE SPECIFICATION

Material specification ASTM 709-Gr 36-50-50W (250-345-345W)
Welding process Shielded Metal Arc Welding (SMAW)
Manual or machine Manual
Position of welding Flat (1F), Horizontal (2F)
Filler metal specification ANSI/AWS A5.1 - A5.5
Filler metal classification E7018 - 8018 C3 - 7028
Flux NA
Shielding gas NA Flow rate NA
Single or multiple pass Single and multiple
Single or multiple arc Single
Welding current AC / DC
Polarity Straight / Reverse
Welding progression
Root treatment Meet AWS SPECIFICATION
Preheat and interpass temperature To 3/4(19) 50°(10°) 3/4(19) To 1 1/2(38) 70°(20°) 1 1/2(38) To 2 1/2(63.5) 150°(65°) over 2 1/2(63.5) 225°(110°)
Postheat temperature NA
Heat Input Min NA Max NA

TRANS RECEIVED JUL 14 2005
CK'D BY OK'D BY JWC
REQUEST APPROVED
BY DATE 7-26-05

Bethel - Vermont
Bridge # BRF-0241(33)=/2
Class = 270

(metric)

WELDING PROCEDURE

Pass no.	Electrode size	Welding current: Amperes	Welding current: Volts	Travel speed
	7018			
	1/8 (3.2)	70-170	22-26	
AS	5/32 (3.9)	120-225	22-26	AS
REQ.	3/16 (4.8)	170-300	24-27	REQ
	8018	"	"	
	1/8 (3.2)	90-160	22-26	
	5/32 (3.9)	120-225	22-26	
	3/16 (4.8)	180-290	24-27	
	7028			
	5/32 (3.9)	170-290	22-26	
	3/16 (4.8)	210-330	24-27	

AWS D1.5 Joint detail Fillet

1F

2F

This procedure may vary due to fabrication sequence, fit-up, pass size, etc., within the limitation of variables given in applicable AWS codes or contract specifications

Procedure no. 401
Revision no.
Form III-2

AWS QC 1 PAUL E. GRANGE CWI

Contractor Casco Bay Steel
Authorized By Paul E. Hoodale
Date 3/2/00

132A - SS

Casco Bay Steel Structures, Inc.
75 Spring Hill Road
Saco, Maine 04072
Phone: (207) 282-7360 **Fax: (207) 282-1179**

WELDING PROCEDURE SPECIFICATION

Material specification ASTM 709 Gr36-50-50W (250-345-345W)
Welding process Submerged Arc Welding - AUTO (SAW)
Manual or machine Machine
Position of welding Flat (IF) Horizontal (2F)
Filler metal specification AWS A5.17, AWS A5.23
Filler metal classification F8A2-EM11K-N11 Lincoln
Flux 960 Flux - Lincolnweld - LA-75 Electrode
Shielding gas N/A Flow rate N/A
Single or multiple pass both
Single or multiple arc Single
Welding current Direct
Polarity Reverse Electrode Positive
Welding progression
Root treatment Meet AWS specification
Preheat and interpass temperature To 3/4(19)-50°(60°) 3/4(19) 1½(38)-70°(80°) 1½(38) To 2½(63.5)-150°(65°) over 2½(63.5)-225°(107°)
Postheat temperature N/A
Heat Input Min 41-65 Max 65-45 PQR# 1-59.5 Bethel - Vermont Bridge 31 (Spam 1) Prod# BRF-0241(33) C/A CBSS# 270

(metric)

WELDING PROCEDURE

Pass no.	Electrode size	Welding current: Amperes	Welding current: Volts	Travel speed
	5/32	605 544.5 To 665.5	29.5 27.4 To 31.56	18.5 15.3 To 20.9
	3.9	Metric 605 544.5 To 665.5	29.5 27.4 To 31.56	459.2 388.6 To 525.8

AWS D1.5 Joint detail Fillet

1F

5/16 To 1/2 (8 To 12.7)

2F

1/4 To 5/16 (6 To 8)

VTRANS RECEIVED JUL 14 2005

CK'D BY _____ CK'D BY JWC
RESUBMIT _____ APPROVED ✓
BY _____ DATE 7-26-05

This procedure may vary due to fabrication sequence, fit-up, pass size, etc., within the limitation of variables given in applicable A.W.S. codes or contract specifications

Procedure no. 201
Revision no.

AWS QC1 PAUL E. GOODALE 03/30/2011 CWI

Contractor Casco Bay Steel
Authorized By Paul E. Goodale
Date 3/2/00

Form III-2

1326-55

Casco Bay Steel Structures, Inc.

75 Spring Hill Road
Saco, Maine 04072

Phone: (207) 282-7360 Fax: (207) 282-1179

WELDING PROCEDURE SPECIFICATION

Material specification ASTM A709/A709M - Grade 50W (345W)
Welding process Flux Cored Arc welding (FCAW)
Manual or machine Semi AUTO
Position of welding Horizontal (2F)
Filler metal specification AWS A5.29
Filler metal classification E 81T1-Ni1 Lincoln outerShield 81Ni1-H
Flux N.A.
Shielding gas 75% AR - 25% CO^2 Flow rate 35CFH ±2 (16.54 l/min ±1.0)
Single or multiple pass Single or MulTiple - Electrode Extension 5/8 ± 1/4 (15.89 ± 6.4)
Single or multiple arc Single
Welding current DC
Polarity DC EP
Welding progression See Joint DeTail
Root treatment wire brush - area To be free of loose loose scale, slag, rust, MoisTure
Preheat and interpass temperature Min 50°(65°) MAX 550°F(290°) Max interpass 550°(290°)
Postheat temperature N/A
Heat Input Min 28.6 (1.126) Max 45.0 (1.772) PQR #2 40.9 (1.610)
KJ/in (KJ/mm)

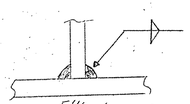
(METRIC)

Bethel - Vermont
Proj #BRF-027(33)C/A
CBSS # 270

WELDING PROCEDURE

AWS 5.13
AWS D1.5 Joint detail Fillet

Size	Pass no.	Electrode size	Welding current Amperes	Welding current Volts	Travel speed
			275	29	IPM 13
5/16	1	1/16	248 To 303	27 To 31	11 To 13
	2	"	"	"	"
		METRIC			mm/min
8	1	1.6	275	29	295
			248 To 303	27 To 31	264 To 325
	2	"	"	"	"



5/16 √TRANS

RECEIVED
JUL 14 2005

CK'D BY ____ OK'D BY JWC
RESUBMIT ____ APPROVED √
BY ____ DATE 7-26-05

This procedure may vary due to fabrication sequence, fit-up, pass size, etc., within the limitation of variables given in applicable A.W.S. codes or contract specifications

Procedure no. 101 Bv ST of ME.
Revision no. #2
Form fil-2

Contractor Casco Bay Steel
Authorized By Paul E. Fowler
Date 4-14-00

1322-55

Casco Bay Steel Structures, Inc.
75 Spring Hill Road
Saco, Maine 04072
Phone: (207) 282-7360 **Fax: (207) 282-1179**

WELDING PROCEDURE SPECIFICATION

Material specification ASTM 709 Gr36-50-50W (250-345-345W)
Welding process Submerged Arc welding - Auto (SAW)
Manual or machine Machine
Position of welding Flat (1G)
Filler metal specification AWS A5.17 AWS A5.23
Filler metal classification F8A2-EM12K-Nil Lincoln
Flux 960 Flux - LINCOLNWELD - LA-75 ElecTrode
Shielding gas N A
Single or multiple pass both
Single or multiple arc Single
Welding current Direct
Polarity Reverse ElecTrode PosITive
Welding progression
Root treatment Meet AWS Specification - Back Gouge Side #2
Preheat and interpass temperature To 3/4(19) 50°(10°) 3/4(19) 150°(65°) 1 1/4(32) 210°(100°) over 2 1/2(63.5) 225°(110°)
Postheat temperature N A
Heat Input Min 41.65 Max 65.45 PQR# 1-59.5

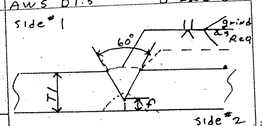
TRANS
RECEIVED
JUL 14 2005
OK'D BY JWC
RESUBMIT APPROVED
BY DATE 7-26-05

Bethel - Vermont
Re-NO 31 (2mm T)
Proj # BRF-0241(32) C/2
CBSS # 270

WELDING PROCEDURE (metric)

Pass no.	Electrode size	Welding current: Amperes	Welding current: Volts	Travel speed
	5/32	605 544.5 TO 665.5	29.5 27.4 To 31.56	18.5 15.3 To 20.7
	3.9	605 544.5 To 665.5	29.5 27.4 To 31.56	457.2 388.6 TO 525.8

Joint detail AWS D1.5 B-L2c-S



T1	
1/8" TO 1" (2.2 TO 25.4)	1/4 min (6)
1" TO 1 1/2" (25.4 TO 38.1)	3/8 min (9.5)
1 1/2" TO 2" (38.1 TO 50)	1/2 min (12)

This procedure may vary due to fabrication sequence, fit-up, pass size, etc., within the limits on of variables given in applicable A.W.S. codes or contract specifications

Procedure no. 202
Revision no.
Form III-2

AWS QC1 PAGE E GENERAL REQUIREMENTS CWI

Contractor Casco Bay STeel
Authorized By Paul E. Woodside
Date 3/2/05

1370-55

Casco Bay Steel Structures, Inc.

75 Spring Hill Road
Saco, Maine 04072

Phone: (207) 282-7360 Fax: (207) 282-1179

WELDING PROCEDURE SPECIFICATION

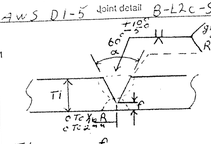
Material specification ASTM-A709/A709M = Gr. 250(A36)-345(A50)-345W(A50W)
Welding process Submerged Arc Welding - Semi-AUTO
Manual or machine machine
Position of welding Flat (G)
Filler metal specification AWS A5-17 - AWS A5-23
Filler metal classification F8A2-EN1K-N1 Lincoln
Flux 960 Lincoln Flux - Electrode, LA-75 Lincoln
Shielding gas N/A Flow rate N/A
Single or multiple pass Both
Single or multiple arc Single Electrod Extension 1"to1¼" - 20.4 to 32mm
Welding current DCEP
Polarity
Welding progression
Root treatment Back gauge - Grind To AWS Specification
Preheat and interpass temperature To 3/4(19) 50°(60°) 3/4"(19) To 1½(38) - 70(200) (65) To 2½(64) - 150(65°) over 2½(64) - 225(110°)
Posheat temperature N/A
Heat Input Min 50KJ/in 2KJ/mm Max 79 KJ/in 3 KJ/mm PQR #5 72KJ/in, 2.8KJ/mm

Bethel - Vermont
Proj # BRF 024(33) C/L
C855 # 270

WELDING PROCEDURE

Pass no.	Electrode size	Welding current Amperes	Welding current Volts	Travel speed
AS	3/32	505	33	14 IPM 356 mm/M
		454 To 556	31 To 35	14 I2 356 I53
REQ				

AWS D1-5 Joint detail B-L2c-S



T1	R
1/2 To 1"	1/4"
12.7 To 25.4	6 mm
1" To 1½	3/8"
25.4 To 38.1	9.5 mm
1½" To 2"	1/2"
38.1 To 50	12 mm

VTRANS RECEIVED
CK'D BY CK'D BY JWC
JUL 14 2005
RESUBMIT APPROVED
BY DATE 7-26-05

This procedure may vary due to fabrication sequence, fit-up, pass size, etc., within the limitation of variables given in applicable A.W.S. codes or contract specifications

Procedure no. 150
Revision no.
Form III-2

Contractor Casco Bay Steel
Authorized By Paul E Goodale
Date 11-20-2002

AWS QC1 PAUL E. GOODALE 03100701 CWI

22e-55

Casco Bay Steel Structures, Inc.
75 Spring Hill Road
Saco, Maine 04072
Phone: (207) 282-7360 Fax: (207) 282-1179

WELDING PROCEDURE SPECIFICATION

Material specification ASTM-709/A709M-Gr 36 (250), 50 (345), 50W (345W)
Welding process Submerged Arc Welding
Manual or machine Machine
Position of welding Horizontal (2F)
Filler metal specification AWS A5-23
Filler metal classification F8A2-EN1K-N1 Lincoln
Flux Lincoln 960 Flux with LA-95 Electrode
Shielding gas N.A. Flow rate N.A.
Single or multiple pass Single - Electrode Ex. 1 3/4 (25.4 ± 17.1)
Single or multiple arc Single
Welding current DC
Polarity DCEN
Welding progression See Joint detail
Root treatment AWS - Spec. - wire brush - grind - Blast Clean area
Preheat and interpass temperature To 3/4 (19) - 50° (10°) - 2 3/4" (19) To 1 1/2 (38) 70° (20°) - 1 1/2 (38) To 2 1/2 (63) 150° (65°) over 2 1/2 (63) - 225° (110°)
Postheat temperature N.A.
Heat Input Min 3.0 KJ/in (1.2 KJ/mm) Max 49.1 KJ/in (1.9 KJ/mm) PQR # 11-428 KJ/in (1.7 KJ/mm)

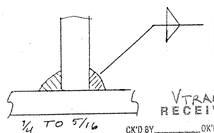
Bethel - Vermont
Brno 31 Spoon-11
Proj # BRF-0241(33)-9A
CBSS # 270

(metric)

WELDING PROCEDURE

Pass no.	Electrode size	Welding current: Amperes	Welding current: Volts	Travel speed
1	3/32	299 269 To 329	31 29 To 33	13 IPM 11 To 15
	2.4	Metric 299 269 To 329	31 29 To 33	330 mm 279 To 381

Fillet
AWS D1-5 Joint detail
2F



VTRANS RECEIVED JUL 14 2005

CK'D BY ____ OK'D BY JWK
RESUBMIT ____ APPROVED ✓
BY ____ DATE 7-26-05

This procedure may vary due to fabrication sequence, fit-up, pass size, etc., within the limitation of variables given in applicable A.W.S. codes or contract specifications

Procedure no. 250
Revision no. ____
Form III-2

AWS D1.1 PAUL E. GOODALE 8810201 CWI

Contractor Casco Bay Steel
Authorized By Paul E Goodale
Date 6-13-00

132-68

Casco Bay Steel Structures, Inc.

75 Spring Hill Road
Saco, Maine 04072

Phone: (207) 282-7360 Fax: (207) 282-1179

WELDING PROCEDURE SPECIFICATION

Material specification ASTM-A709/A709M = Gr 250(A36) - 345(A50) - 345W(A50W)
Welding process Submerged Arc Welding - Semi-Auto
Manual or machine machine
Position of welding FILLET Weld - 1F - 2F
Filler metal specification AWS A5.17 - AWS A5.23
Filler metal classification F6A2-EM1K-M1 Lincoln
Flux 960 Lincoln Flux - Electrode LA-75 Lincoln
Shielding gas NA Flow rate NA
Single or multiple pass Single & multiple Electrode Ex: 1" +¼ -25.4 +20 mm
Single or multiple arc Single
Welding current Direct
Polarity DCEP
Welding progression
Root treatment Wire brush - Grind - blast clean To AWS specification
Preheat and interpass temperature To 3/4 (19) 50° (10°), 1 1/2 (38) TO 2 1/2 (64) 150 (65) 2 1/2 (64) 225 (110)
Postheat temperature NA
Heat Input Min 50KJ/in 2KJ/mm Max 75KJ/in 3KJ/mm PQR 5-72KJ/in, 2.8KJ/mm

WELDING PROCEDURE

Bethel - Vermont
Bridge #1 (Spans #1)
Proj # BRF-024(33)C/A
CBSS # 270

AWS D1-5 Joint detail Fillet

Pass no.	Electrode size	Welding current Amperes	Welding current Volts	Travel speed
		505	33	14IPM 356 mm/m
	3/32	454 TO 556	31 TO 35	14 ±2 356 ±53

1F

½ (12.7mm)

2F

5/16 (8mm)

VTRANS RECEIVED
JUL 14 2005

CK'D BY ____ OK'D BY JWC
RESUBMIT ____ APPROVED ✓
BY ____ DATE 7-26-05

This procedure may vary due to fabrication sequence, fit-up, pass size, etc., within the limitation of variables given in applicable A.W.S. codes or contract specifications

Procedure no. 151
Revision no. ____
Form III-2

Contractor Casco Bay Steel
Authorized By Paul E. Goodale
Date 11-20-2002

AWS QC-1 PAUL E. GOODALE 93100201 CWI

1270-55

GENERAL NOTES

CONSTRUCTION SPECIFICATIONS

1). ALL MATERIAL AND WORKMANSHIP TO BE IN ACCORDANCE WITH THE STATE OF VERMONT AGENCY OF TRANSPORTATION STANDARD SPECIFICATIONS FOR CONSTRUCTION DATED 2001 WITH LATEST REVISIONS.

DESIGN SPECIFICATIONS

1). AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS (A.A.S.H.T.O) STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES, 1996 EDITION WITH LATEST REVISIONS.

MATERIAL SPECIFICATIONS

1). UNLESS NOTED, ALL STEEL TO BE AASHTO M270M GRADE 345W.

2). HIGH STRENGTH BOLTS: AASHTO M164 (ASTM A325 TYPE 3) (7/8") 22mm DIA IN UNPAINTED AREAS.
AASHTO M164 (ASTM A325 TYPE 1) (7/8") DIA IN PAINTED AREAS.
ALL TYPE I BOLTS SHALL BE GALVANIZED PER AASHTO M232.

3). GIRDER WEB & BOTTOM FLANGES SHALL BE CHARPY V NOTCH TESTED IN ACCORDANCE WITH THE REQUIREMENTS OF VERMONT STANDARD SPECIFICATIONS. DRAWINGS SHALL CALL OUT "H2-3" FOR EACH APPLICABLE ITEM IN THE BILLS OF MATERIAL.

FABRICATION

1). ALL HOLES SHALL BE PUNCHED OR DRILLED FULL SIZE (UN).
2). STUDS ARE FURNISHED AND FIELD APPLIED BY OTHERS.

WELDING

1). THE CONFIGURATION OF THE WELD JOINTS AND ALL WELDING PROCEDURES SHALL BE IN ACCORDANCE WITH AASHTO/AWS D1.5-02 BRIDGE WELDING CODE AND IN ADDITION TO SPECIFICATIONS SHOWN ABOVE. ALL WELDING WILL BE DETAILED TO PRE-QUALIFIED JOINTS, UNLESS PROHIBITED BY THE DESIGNER.

2). WELDING OF MAIN LOAD CARRYING MEMBERS AND ATTACHMENTS SHALL BE PERFORMED USING THE AUTOMATIC SUBMERGED ARC & SHIELDED METAL ARC PROCESSES. ALL WELDS ARE CONTINUOUS U.N.

3). NON DESTRUCTIVE TESTING OF WELDS SHALL BE IN ACCORDANCE WITH THE REFERENCED SPECIFICATION.

CLEANING:

1). ALL STEEL SHALL BE BLAST CLEANED AS PER SSPC SP-10 PER SPEC. 506.14(a)

PAINTING

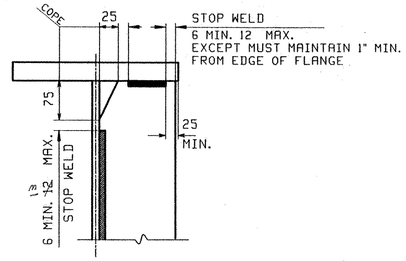
1). THE EXPANSION END OF THE GIRDERS & PIER CROSSFRAMES SHALL BE PAINTED AND GREASED PER SUPPLEMENTAL SPECIFICATION 513. SEE SKETCH "P1"

FIELD CONNECTIONS

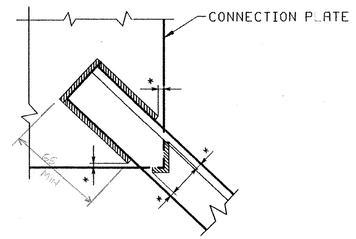
1). ALL FIELD CONNECTIONS SHALL BE MADE WITH (7/8") DIAMETER 22mm HIGH STRENGTH A-325 BOLTS, INSTALLED PER SECTION 506.19(c).

2). BOLTS SHALL HAVE HEAVY HEX NUT, HEX HEAD, & ONE FLAT WASHER EACH (WASHER TO BE PLACED UNDER TURNED ELEMENT).

3). PIECE MARKS WILL BE LOCATED AS SHOWN ON ERECTION DRAWINGS.

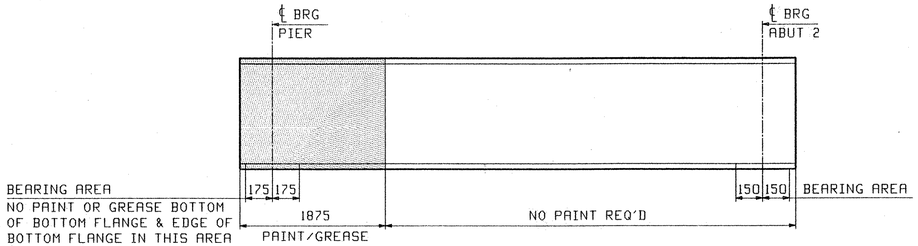


DETAIL "WS1"



* NO WELD FOR 6 MIN, 12 MAX

TYP. WELD TERMINATION AT CROSSFRAMES



SKETCH "P1"

NOTE TO ENGINEER:
THESE NOTES ARE NOT INTENDED TO BE ALL INCLUSIVE AND COMPLIANCE WITH RELEVANT SPECIFICATIONS REMAIN UNCHANGED.

REV.	REMARKS	DATE	DWN	CHK	APP	Q.A.	NO.	DIA.	LGT	TYPE	WASHER
	OUT FOR APPROVAL	7505									
	OUT FOR APPROVAL										
	ISSUED TO SHOP										
	FIELD & OFFICE										

MATERIAL:	ELECTRODES:	HOLES:	SHOP BOLTS:

SURFACE PREP. & PAINT:

DESCRIPTION:	GENERAL NOTES	DRAWN BY	DAT
JOB:	VT ROUTE 12 BRIDGE OVER WHITE RIVER	JTB	05/30
	BRIDGE NO: 31 (SPAN #2)	CHKD BY	
	TOWN OF BETHEL, VERMONT	TJB	06/22
	COUNTY OF WINDSOR	APPROV BY	
TENSOR 2563	CONTRACTOR: KUBRICKY CONST CORP.	SUPERVISOR	W. J. GOTTI
PROJ NO.	BRF028(33) C/2	Q.A.	
CUSTOMER:	VERMONT AOT		

CASCO BAY STEEL STRUCTURES, INC.

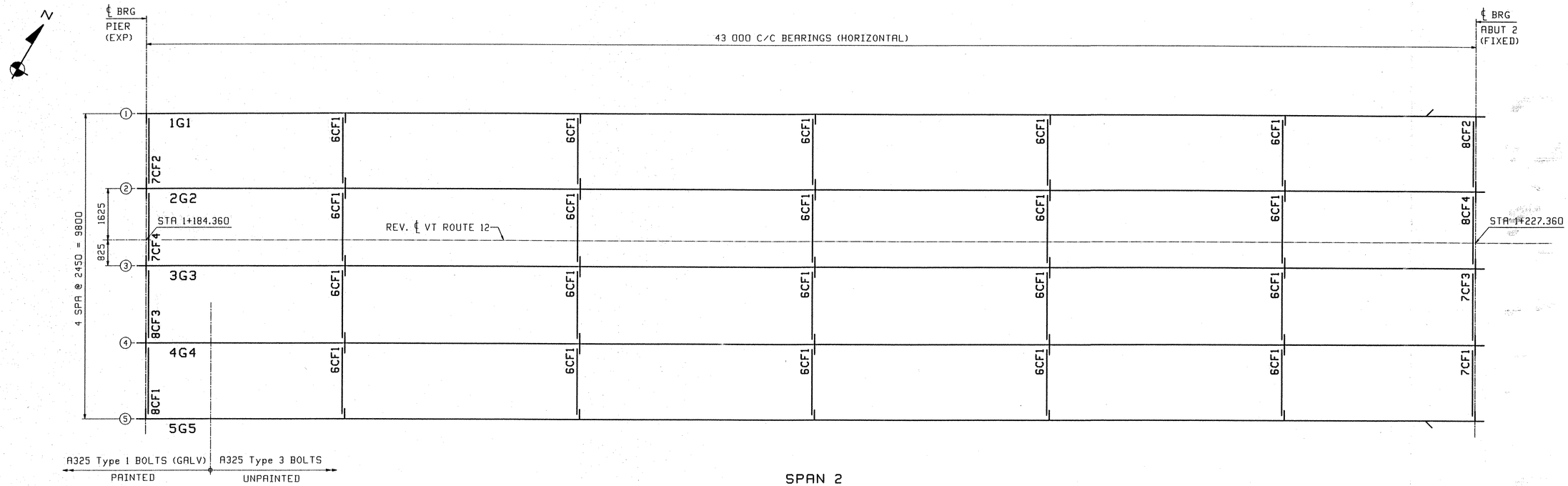
75 SPRING HILL ROAD SACO, MAINE 04072
PHONE (207) 282-7360 FAX. (207) 282-1179

JOB NO.	DRG. NO.
270	GN1
13255	REV. △

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CK'D BY KMH CK'D BY HES
JUL 14 2005
RESUBMIT APPROVED As Noted
BY CPW DATE 7/28/05

OFFICE COPY

TJB Thu Jun 23 11:18:23 EDT 2005 /users/jobs/2563/GN1.dwg



SPAN 2

FRAMING PLAN

FIELD BOLT LIST — A325 Type 3 BOLTS

LINE	NO REQ'D.	BOLT DIAM.	BOLT LEN.	BOLTS/CONN.	# OF CONN.	GRIP	THICKNESS OF PCS. CONNECTED	WASH CODE	PIECES CONNECTED AND REMARKS
1									**INT CROSSFRAMES**
2	120	7/8	2 1/2	3	40	28	14 14	1	TOP GUSSET PLATE TO CONNECTION PLATE
3	200	7/8	2 1/2	5	40	28	14 14	1	BTM GUSSET PLATE TO CONNECTION PLATE
4									
5									**ABUT 2 END CROSSFRAMES**
6	96	7/8	2 3/4	12	8	36	14 22	1	TOP GUSSET PLATE TO BRG STIFFENER
7	80	7/8	2 3/4	10	8	36	14 22	1	BTM GUSSET PLATE TO BRG STIFFENER

WASHER CODES

1: 1 Hard Flat Washer

FIELD BOLT LIST — A325 Type 1 BOLTS (GALV)

LINE	NO REQ'D.	BOLT DIAM.	BOLT LEN.	BOLTS/CONN.	# OF CONN.	GRIP	THICKNESS OF PCS. CONNECTED	WASH CODE	PIECES CONNECTED AND REMARKS
8									**PIER END CROSSFRAMES**
9	96	7/8	2 3/4	12	8	36	14 22	1	TOP GUSSET PLATE TO BRG STIFFENER
10	80	7/8	2 3/4	10	8	36	14 22	1	BTM GUSSET PLATE TO BRG STIFFENER

WASHER CODES

1: 1 Hard Flat Washer

FIELD BOLT SUMMARY — 2% ADDED, MIN. 2 EXTRA

LINE	NO. OF BOLTS	BOLT DIAM.	TYPE	BOLT LEN	ACTUAL COUNT	REMARKS
1	~~326~~ 332	7/8	A325 Type 3	2 1/2	320	
2	180	7/8	A325 Type 3	2 3/4	176	AT ABUT 2 END CROSSFRAMES
3	506	Hard Flat Washers	for 7/8 ø	BOLT		TYPE 436W
4						
5						
6						
7	180	7/8	A325 Type 1	2 3/4	176	(GALV) AT PIER END CROSSFRAMES
8	180	Hard Flat Washers	for 7/8 ø	BOLT		(GALV) TYPE 436
9						

RECEIVED
JUL 14 2005

REV.	REMARKS	DATE	DWN	CHK	APP	Q.A.	NO.	DIA.	LGT	TYPE	WASHER
	OUT FOR APPROVAL	7-5-05									
	OUT FOR APPROVAL										
	ISSUED TO SHOP										
	FIELD & OFFICE										

MATERIAL: | ELECTRODES: | HOLES: | SHOP BOLTS:

SURFACE PREP. & PAINT:

DESCRIPTION: FRAMING PLAN

JOB: VT ROUTE 12 BRIDGE OVER WHITE RIVER
BRIDGE NO: 31 (SPAN #2)
TOWN OF BETHEL, VERMONT
COUNTY OF WINDSOR
CONTRACTOR: KUBRICKY CONST CORP.

TENSOR 2563

PROJ NO. BRF0241(33) C/2

CUSTOMER: VERMONT AOT

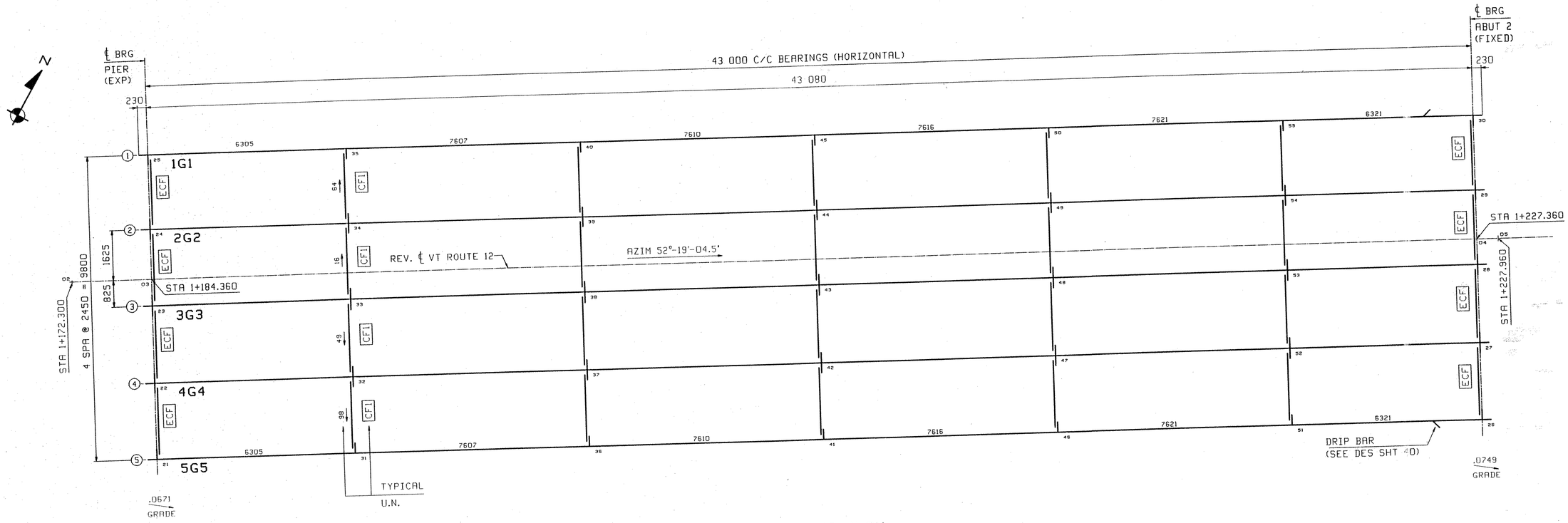
DRAWN BY	DATE
JTB	05/30
CHKD BY	
TJB	06/22
APPROV BY	
SUPERVISOR	W. J. GATTI
Q.A.	

CASCO BAY STEEL STRUCTURES, INC.
75 SPRING HILL ROAD SACO, MAINE 04072
PHONE (207) 282-7360 FAX. (207) 282-1179

JOB NO. 270 | DRG. NO. E1 | REV. △

CK'D BY KMH OK'D BY WJG
RESUBMIT ____ APPROVED As Noted
BY CPW DATE 7/28/05

TJB Thu Jun 23 10:28:28 EDT 2005 /var/adot/2563/E1.dgn



FRAMING PLAN

**** NOTE ****
THE PURPOSE OF THIS DRAWING IS TO COORDINATE GEOMETRIC CONTROL INFORMATION. THIS DWG IS SUBMITTED FOR INFORMATION ONLY AND IS NOT INTENDED FOR SHOP FABRICATION.

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CK'D BY KWH OK'D BY HES
JUL 14 2005
RESUBMIT ____ APPROVED ____
BY CPW DATE 7/28/05

NOTES
1. LONGITUDINAL DIMENSIONS ARE SLOPING ALONG BOTTOM OF GIRDER WITH CORRECTIONS MADE FOR GRADE & DL CAMBER (UN).
2. TRANSVERSE DIMENSIONS ARE IN A HORIZONTAL PLANE (UN).
3. ARROW POINTS TOWARD LOW END OF MEMBER.
4. ENDS OF GIRDERS AND BEARING STIFFENERS ARE VERTICAL AFTER DL ROTATION.
5. CROSSFRAME STIFFENERS ARE NORMAL TO GRADE.
6. BOTTOM POINT NUMBERS = TOP POINT NUMBERS + 100
7. FOR LAYOUTS SEE DRAWING TD1.

REV.	REMARKS	DATE	DWN	CHK	APP	Q.A.	NO.	DIA.	LGT	TYPE	WASHER
	OUT FOR APPROVAL	7-5-05									
	OUT FOR APPROVAL										
	ISSUED TO SHOP										
	FIELD & OFFICE										

MATERIAL:	ELECTRODES:	HOLES:	SHOP BOLTS:

SURFACE PREP. & PAINT:

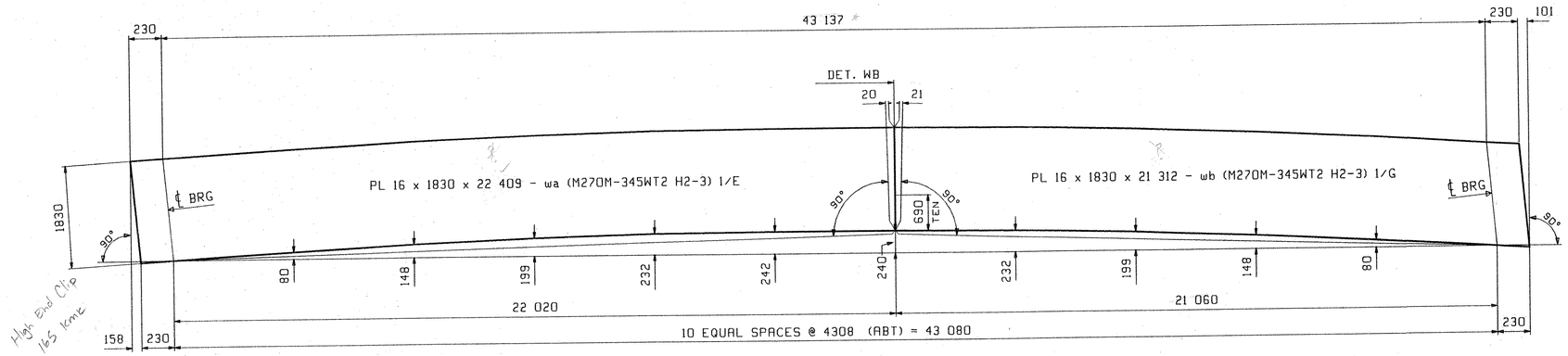
DESCRIPTION: CALCULATION PLAN		DRAWN BY	DATE
JOB: VT ROUTE 12 BRIDGE OVER WHITE RIVER		JTB	07-27
BRIDGE NO: 31 (SPAN #2)		CHK'D BY	
TOWN OF BETHEL, VERMONT		TJB	06/22
COUNTY OF WINDSOR		APPROV BY	
CONTRACTOR: KUBRICKY CONST CORP.		SUPERVISOR	W. J. GATTI
PROJ NO. BRFD0241(33) C/2		Q.A.	
CUSTOMER: VERMONT AOT			

TENSOR 2563

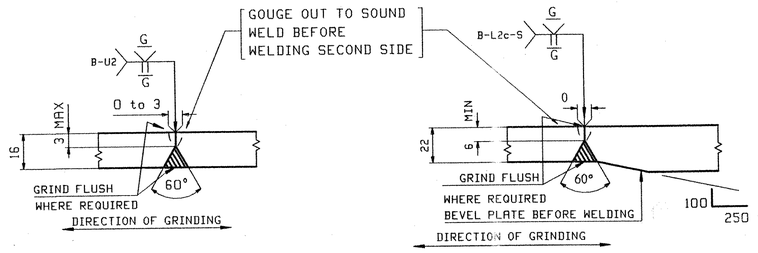
CASCO BAY STEEL STRUCTURES, INC.
75 SPRING HILL ROAD SACO, MAINE 04072
PHONE (207) 282-7360 FAX. (207) 282-1179

JOB NO.	DRG. NO.
270	WS
/3455	REV. 1

JTB Mon Jun 27 14:20:03 EDT 2005 /users/jmk/2562/dgl Rev0

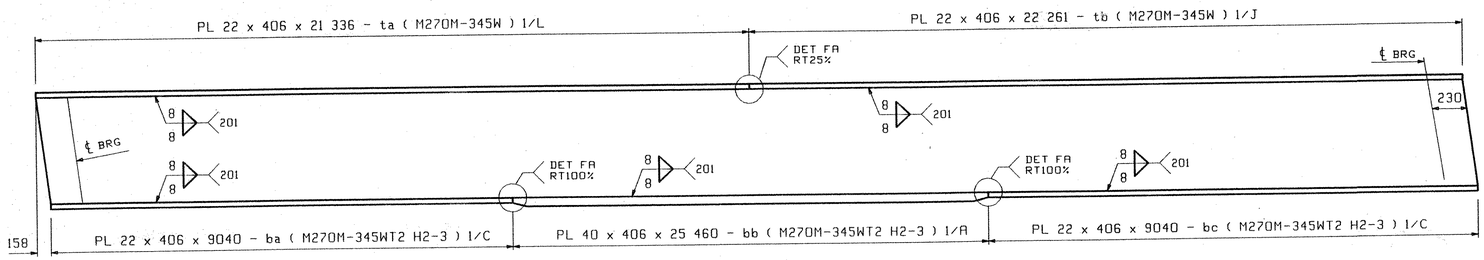


CAMBER DIAGRAM FOR 1G1 THRU 5G5



WEB PLATE SPLICE DETAIL "WA"

FLANGE PLATE SPLICE DETAIL "FA"



FLANGE DIAGRAM FOR 1G1 THRU 5G5

RECEIVED
CK'D BY KMH OK'D BY HTS
JUL 14 2005
RESUBMIT ____ APPROVED ✓
BY CPW DATE 7/28/05

NOTES:

1. FOR GENERAL NOTES AND WELD DETAILS SEE DWG GN1.
2. H2-3 DENOTES MATERIAL SUBJECT TO CHARPY V-NOTCH TEST AT H FREQ. FOR ZONE 2

REV.	REMARKS	DATE	DWN	CHK	APP	Q.A.	NO.	DIA.	LGT	TYPE	WASHER
	OUT FOR APPROVAL	7-5-05									
	OUT FOR APPROVAL										
	ISSUED TO SHOP										
	FIELD & OFFICE										

MATERIAL:	ELECTRODES:	HOLES:	SHOP BOLTS:

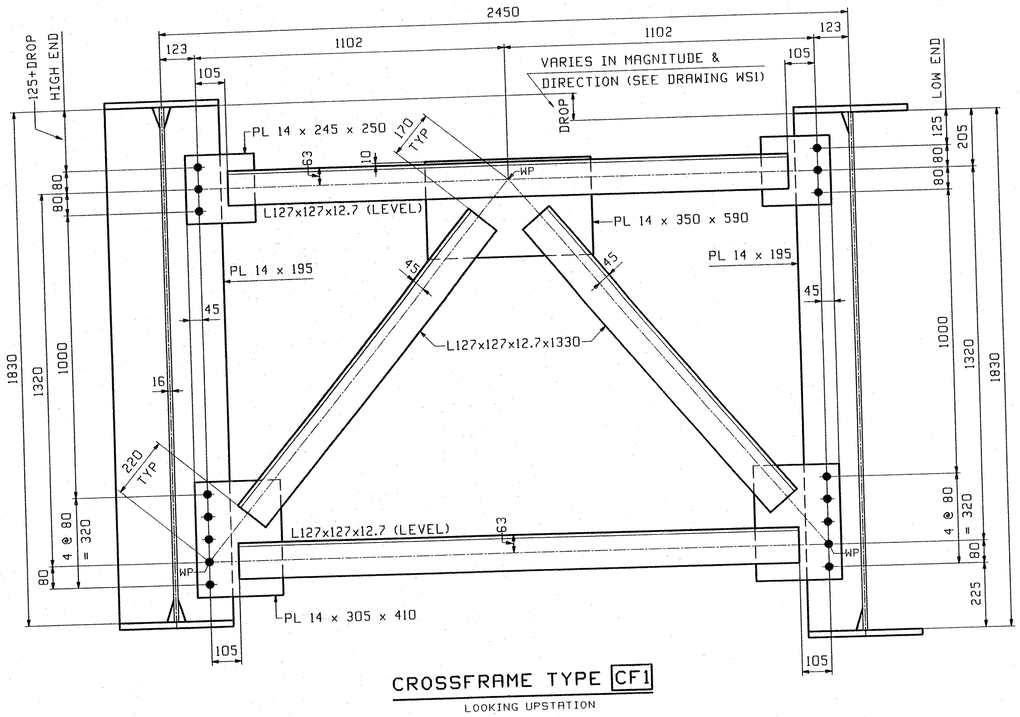
SURFACE PREP. & PAINT:

DESCRIPTION:	CAMBER DIAGRAMS	DRAWN BY	DATE
JOB:	VT ROUTE 12 BRIDGE OVER WHITE RIVER	JTB	05/30
	BRIDGE NO: 31 (SPAN #2)	CHK'D BY	
	TOWN OF BETHEL, VERMONT	TJB	06/22
	COUNTY OF WINDSOR	APPROV BY	
TENSOR 2563	CONTRACTOR: KUBRICKY CONST CORP.	SUPERVISOR	W. J. HATTL
PROJ NO.	BRF0241(33) C/2	Q.A.	
CUSTOMER:	VERMONT AOT		

CASCO BAY STEEL STRUCTURES, INC.
75 SPRING HILL ROAD SACO, MAINE 04072
PHONE (207) 282-7360 FAX. (207) 282-1179

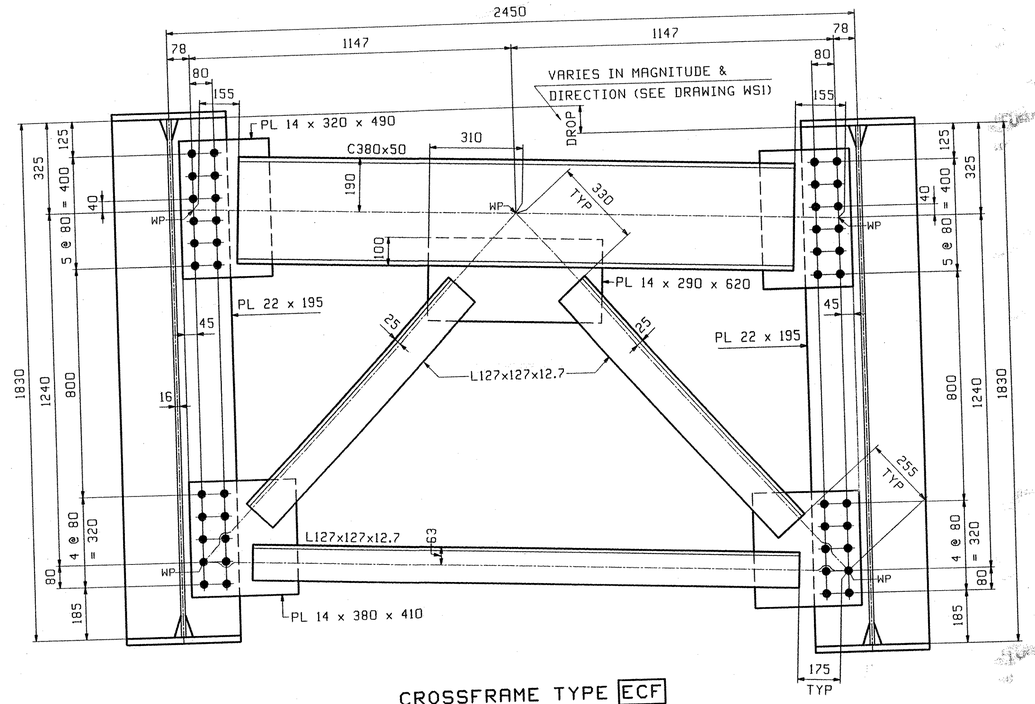
JOB NO.	DRG. NO.
270	G 1
13555	REV. 1

JTB Mon Jun 27 14:41:56 EDT 2005 /users/jtb/2563/G1.dwg



CROSSFRAME TYPE CF1

LOOKING UPSTATION



CROSSFRAME TYPE ECF

LOOKING UPSTATION

RECEIVED

CK'D BY KMH OK'D BY HES

JUL 14 2005

RESUBMIT _____ APPROVED As Noted

BY CPW DATE 7/28/05

**** NOTE ****
THE PURPOSE OF THIS DRAWING IS TO COORDINATE GEOMETRIC CONTROL INFORMATION AND CONNECTION SPACING. THIS DWG IS SUBMITTED FOR INFORMATION ONLY & IS NOT INTENDED FOR SHOP FABRICATION. DETAIL DWGS WILL SHOW ALL WELDING AND DIMENSIONS REQ'D FOR FABRICATION.

NOTES:

1. MATERIAL SHALL BE ASTM M270M-345W M2570 GRADE 50W.
2. ALL BOLTS SHALL BE $\frac{7}{8}$"ø A325 TYPE 3 HSB IN $\frac{15}{16}$"ø HOLES. 24 mm 22 mm

REV.	REMARKS	DATE	DWN	CHK	APP	Q.A.
	OUT FOR APPROVAL	7.5.05				
	OUT FOR APPROVAL					
	ISSUED TO SHOP					
	FIELD & OFFICE					

NO.	DIA.	LGT	TYPE	WASHER

MATERIAL: M270-50W M270M-345W

ELECTRODES:

HOLES: $\frac{15}{16}$"ø 24 mm

SHOP BOLTS: $\frac{7}{8}$"ø A325-3 22 mm

SURFACE PREP. & PAINT:

SEE DRAWING GN1

DESCRIPTION: DIAPHRAGM LAYOUT

JOB: VT ROUTE 12 BRIDGE OVER WHITE RIVER
BRIDGE NO: 31 (SPAN #2)
TOWN OF BETHEL, VERMONT
COUNTY OF WINDSOR
CONTRACTOR: KUBRICKY CONST CORP.

PROJ NO. BRF0241(33) C/2

CUSTOMER: VERMONT AOT

DRAWN BY	DATE
JTB	05/
CHK'D BY	
TJB	06/23
APPROV BY	
SUPERVISOR	W. J. GHITTI
Q.A.	

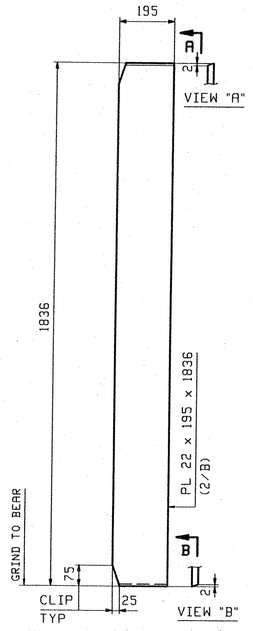
TENSOR 2563

CASCO BAY STEEL STRUCTURES, INC.

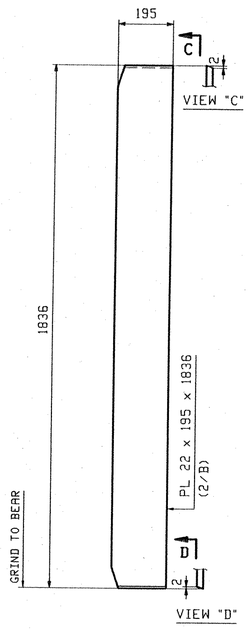
75 SPRING HILL ROAD SACO, MAINE 04072
PHONE (207) 282-7360 FAX. (207) 282-1179

JOB NO.	DRG. NO
270	TL-
136 S5	REV. 5

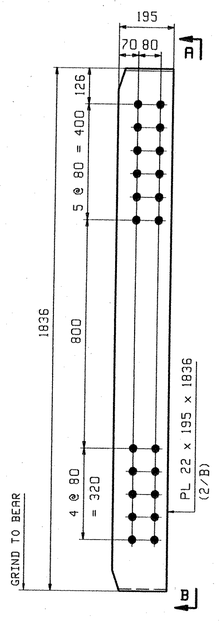
TJB Thu Jun 23 15:24:52 EDT 2005 /users/jobs/2563/TS1.dwg



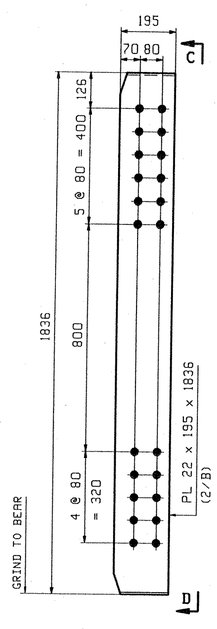
2 ~ x1a
BRG STIFF
FASCIA SIDE



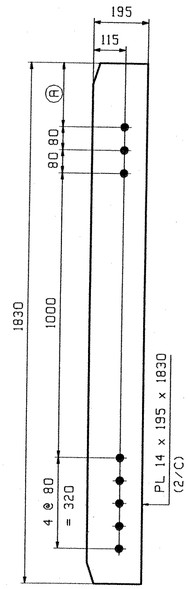
2 ~ x1b
BRG STIFF
FASCIA SIDE



8 ~ x1c
BRG STIFF

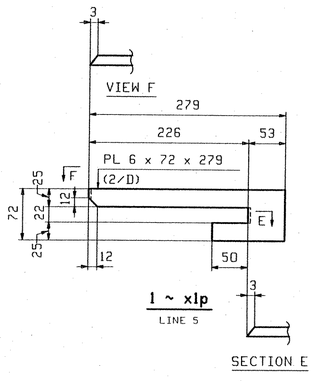


8 ~ x1d
BRG STIFF



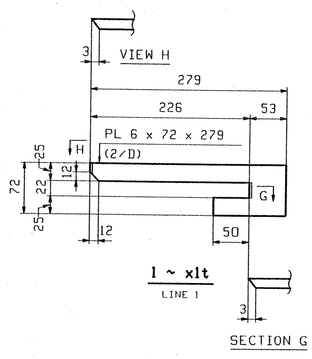
MARK "A"
CONN PL

MARK "A"	QTY	Ⓐ	
x1f	20	125	LOW END
x1g	5	141	DROP - 16
x1k	5	174	DROP - 49
x1m	5	189	DROP - 64
x1n	5	223	DROP - 98



1 ~ x1p
LINE 5

SECTION E



1 ~ x1t
LINE 1

SECTION G

NOTES:
ALL MATERIAL SHALL BE M270M-345W.
ALL BOLT HOLES SHALL BE $\frac{15}{16}$"Ø FOR $\frac{7}{8}$"Ø HSB.
FOR GENERAL NOTES SEE SHEET GN1.

24mm 22mm

REV.	REMARKS	DATE	DWN	CHK	APP	Q.A.	NO.	DIA.	LGT	TYPE	WASHER
	OUT FOR APPROVAL	7505									
	OUT FOR APPROVAL										
	ISSUED TO SHOP										
	FIELD & OFFICE										

MATERIAL:	ELECTRODES:	HOLES:	SHOP BOLTS:
M270M-345W		$\frac{15}{16}$"Ø 24	NONE

SURFACE PREP. & PAINT:
SEE DRAWING GN1

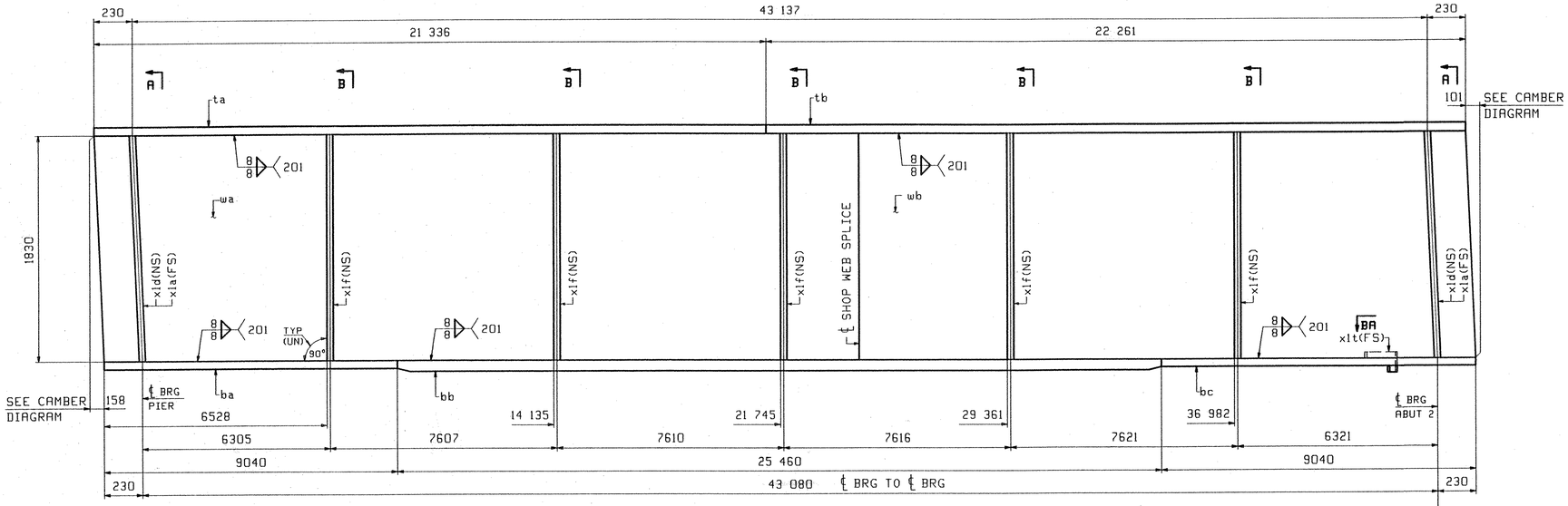
RECEIVED
CK'D BY KMH OK'D BY HES
JUL 14 2005
RESUBMIT APPROVED As Noted
BY CPW DATE 7/28/05

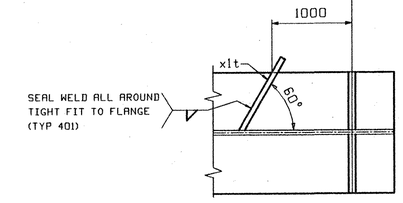
DESCRIPTION:	GIRDER STANDARDS	DRAWN BY	DATE
JOB:	VT ROUTE 12 BRIDGE OVER WHITE RIVER	JTB	05/3
	BRIDGE NO: 31 (SPAN #2)	CHKD BY	
	TOWN OF BETHEL, VERMONT	TJB	06/?2
TENSOR 2569	COUNTY OF WINDSOR	APPROV BY	
	CONTRACTOR: KUBRICKY CONST CORP.	SUPERVISOR	W. J. GUTTI
PROJ NO.	BRF0241(33) C/2	Q.A.	
CUSTOMER:	VERMONT AOT		

CASCO BAY STEEL STRUCTURES, INC.
75 SPRING HILL ROAD SACO, MAINE 04072
PHONE (207) 282-7360 FAX. (207) 282-1179

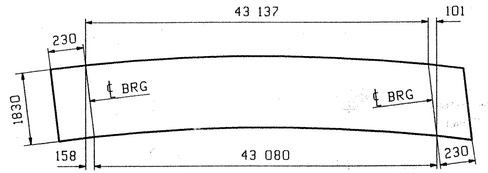
JOB NO.	DRG. NO.
270	X1
13755	REV. △

JTB Mon May 30 16:04:40 EDT 2005 c:\work\jobs\2563\f1\ Rev0





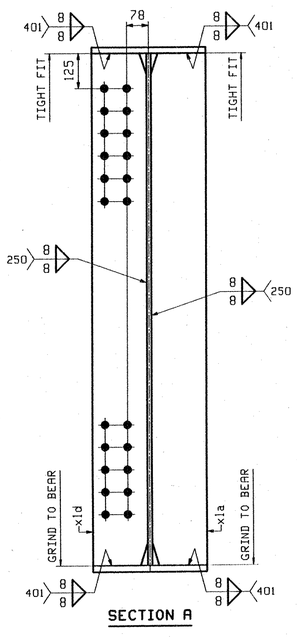
SECTION BA



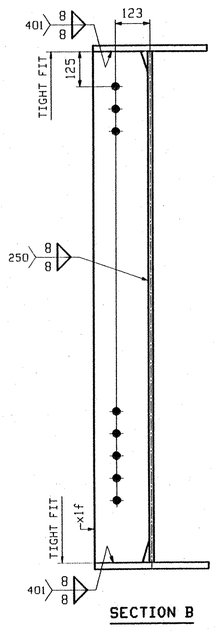
ORIENTATION DIAGRAM
SEE DRAWING C1

ONE - GIRDER - 1G1

FOR GIRDER STANDARD DETAILS SEE DRAWING X1.
FOR CAMBER DIAGRAM SEE DRAWING C1.
FOR GENERAL NOTES SEE DRAWING GN1.
H2-3 DENOTES MATERIAL SUBJECT TO CHARPY V-NOTCH TESTING.



SECTION A



SECTION B

ABM INFO		SHIP	BILL OF MATERIAL					JOB NO.	DRAWING NO.	REV.
									1	
PAGE	LINE	MARK	QTY	MARK	MATERIAL	LENGTH m	LENGTH mm	REMARKS	WT	PROCUREMENT NOTES
		1G1	1		GIRDER			18064 kg 39824 lbs		
1	E		1	wa	PL 16x1830	22	409	(M270M-345WT2)	(H2-3)	
1	G		1	wb	PL 16x1830	21	312	(M270M-345WT2)	(H2-3)	
1	L		1	ta	PL 22x406	21	336			
1	J		1	tb	PL 22x406	22	261			
1	C		1	ba	PL 22x406	9	040	(M270M-345WT2)	(H2-3)	
1	A		1	bb	PL 40x406	25	460	(M270M-345WT2)	(H2-3)	
1	C		1	bc	PL 22x406	9	040	(M270M-345WT2)	(H2-3)	
2	B		2	xla	PL 22x195	1	836	MIE		
2	B		2	xld	PL 22x195	1	836	MIE		
2	C		5	xlf	PL 14x195	1	830			
2	D		1	xlt	PL 6x72	0	279			

REV.	REMARKS	DATE	DWN	CHK	APP	Q.A.
	OUT FOR APPROVAL	7.505				
	OUT FOR APPROVAL					
	ISSUED TO SHOP					
	FIELD & OFFICE					

NO.	DIA.	LGT	TYPE	WASHER

MATERIAL: M270M GR 345W
ELECTRODES:
HOLES: 15/16ϕ 24mm
SHOP BOLTS: NONE
SURFACE PREP. & PAINT: SEE DRAWING GN1

RECEIVED
CK'D BY KMH OK'D BY HES
JUL 14 2005
RESUBMIT ____ APPROVED As Noted
BY CPW DATE 7/28/05

DESCRIPTION: GIRDER - 1G1
JOB: VT ROUTE 12 BRIDGE OVER WHITE RIVER
BRIDGE NO: 31 (SPAN #2)
TOWN OF BETHEL, VERMONT
COUNTY OF WINDSOR
CONTRACTOR: KUBRICKY CONST CORP.
PROJ NO. BRF0241(33) C/2
CUSTOMER: VERMONT AOT

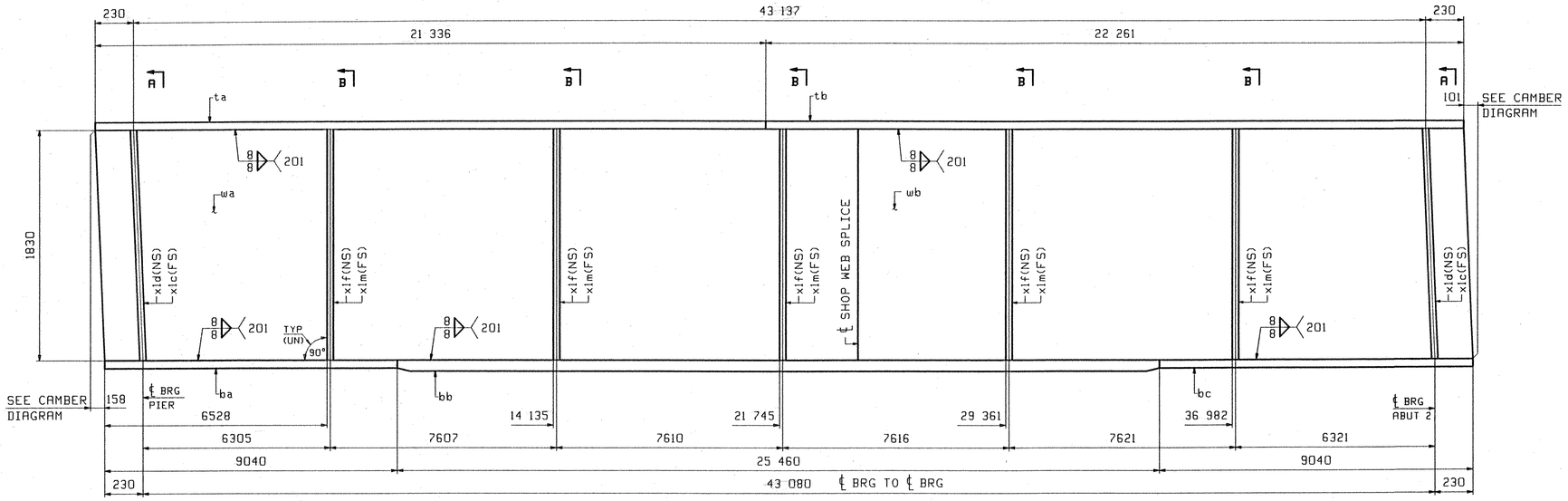
DRAWN BY	DATE
JTB	05/30
CHKD BY	
TJB	06/22
APPROV BY	
SUPERVISOR	W. J. GATTI
Q.A.	

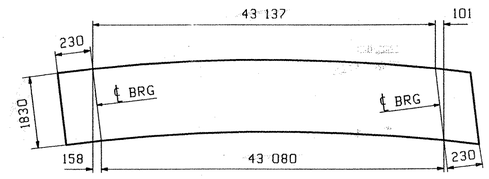
TENSOR 2563

CASCO BAY STEEL STRUCTURES, INC.
75 SPRING HILL ROAD SACO, MAINE 04072
PHONE (207) 282-7360 FAX. (207) 282-1179

JOB NO.	DRG. NO
270	1
13855	REV. △

T:\B Tue Jun 28 09:09:01 EDT 2005 c:\work\jobs\2563\1.dwg

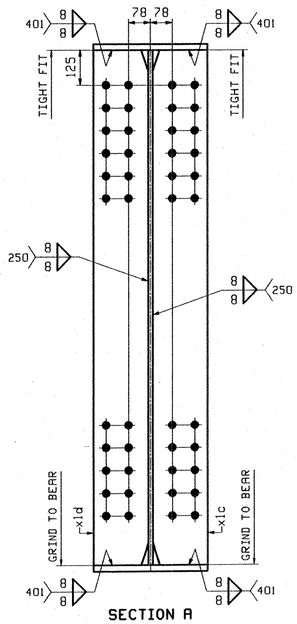




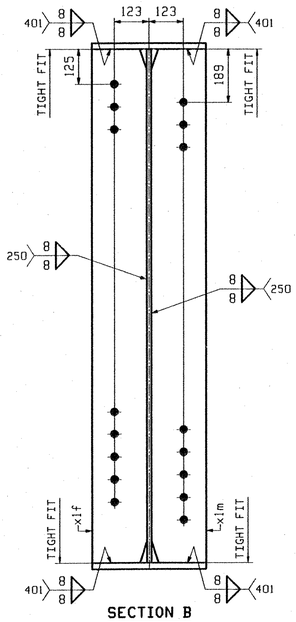
ORIENTATION DIAGRAM
SEE DRAWING C1

ONE - GIRDER - 2G2

FOR GIRDER STANDARD DETAILS SEE DRAWING X1.
FOR CAMBER DIAGRAM SEE DRAWING C1.
FOR GENERAL NOTES SEE DRAWING GN1.
H2-3 DENOTES MATERIAL SUBJECT TO CHARPY V-NOTCH TESTING.



SECTION A



SECTION B

ABM INFO		SHIP	BILL OF MATERIAL					JOB NO.	DRAWING NO.	
									2	
PAGE	LINE	MARK	QTY	MARK	MATERIAL	LENGTH m	LENGTH mm	REMARKS	WT	PROCUREMENT NOTES
		2G2	1		GIRDER				18259 kg 40254 lbs	
1	E		1	wa	PL 16x1830	22	409	(M270M-345WT2)	(H2-3)	
1	G		1	wb	PL 16x1830	21	312	(M270M-345WT2)	(H2-3)	
1	L		1	ta	PL 22x406	21	336			
1	J		1	tb	PL 22x406	22	261			
1	C		1	ba	PL 22x406	9	040	(M270M-345WT2)	(H2-3)	
1	A		1	bb	PL 40x406	25	460	(M270M-345WT2)	(H2-3)	
1	C		1	bc	PL 22x406	9	040	(M270M-345WT2)	(H2-3)	
2	B		2	x1c	PL 22x195	1	836	MIE		
2	B		2	x1d	PL 22x195	1	836	MIE		
2	C		5	x1f	PL 14x195	1	830			
2	C		5	x1m	PL 14x195	1	830			

RECEIVED
OK'D BY KMH OK'D BY HFS
JUL 14 2005
RESUBMIT ____ APPROVED As Noted
BY CPW DATE 7/28/05

REV.	REMARKS	DATE	DWN	CHK	APP	Q.A.
	OUT FOR APPROVAL	7-5-05				
	OUT FOR APPROVAL					
	ISSUED TO SHOP					
	FIELD & OFFICE					

NO.	DIA.	LGT	TYPE	WASHER

MATERIAL: M270M GR 345W
ELECTRODES:
HOLES: 15 16ø 24
SHOP BOLTS: NONE
SURFACE PREP. & PAINT: SEE DRAWING GN1

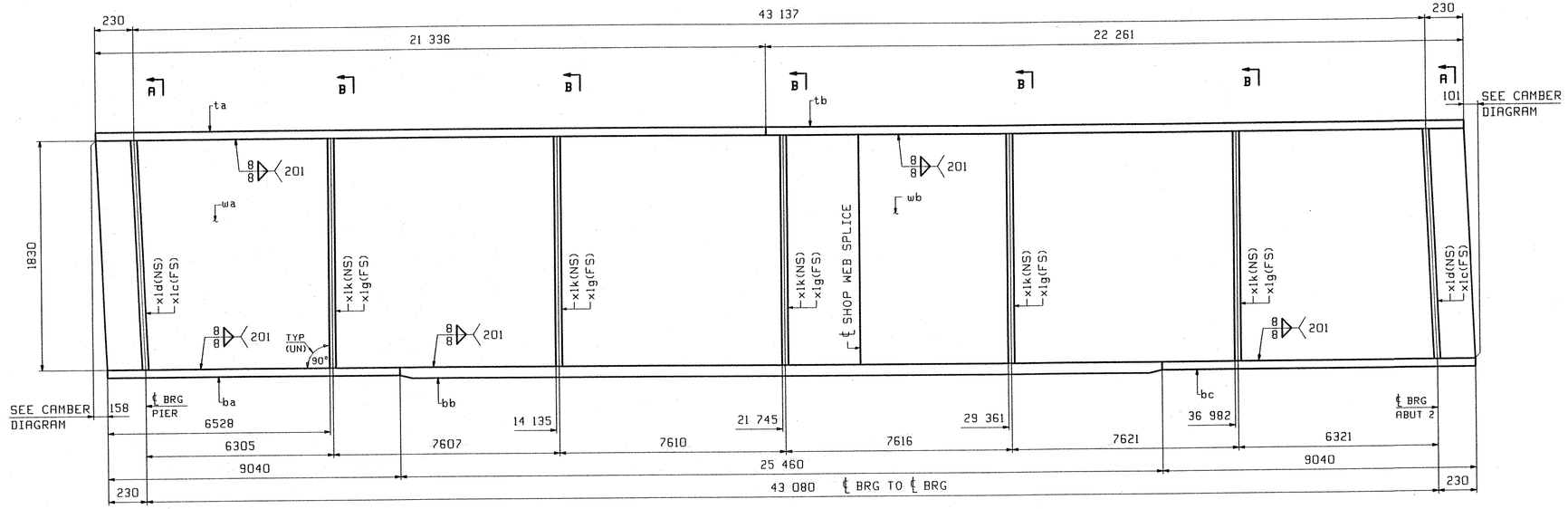
DESCRIPTION:	GIRDER - 2G2	DRAWN BY	DATE
JOB:	VT ROUTE 12 BRIDGE OVER WHITE RIVER	JTB	05/30
	BRIDGE NO: 31 (SPAN #2)	CHKD BY	
	TOWN OF BETHEL, VERMONT	TJB	06/22
	COUNTY OF WINDSOR	APPROV BY	
	CONTRACTOR: KUBRICKY CONST CORP.	SUPERVISOR	W. J. GRITTI
PROJ NO.	BRF0241(33) C/2	Q.A.	
CUSTOMER:	VERMONT AOT		

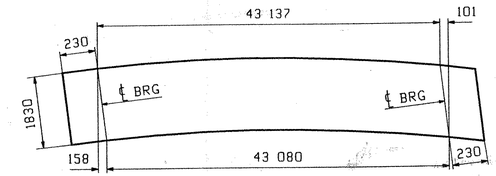
TENSOR 2363

CASCO BAY STEEL STRUCTURES, INC.
75 SPRING HILL ROAD SACO, MAINE 04072
PHONE (207) 282-7360 FAX. (207) 282-1179

JOB NO.	DRG. NO.
270	2
13955	REV.

T2B Tue Jun 28 10:31:15 EDT 2005 /users/jake/2592/2 | Rev0



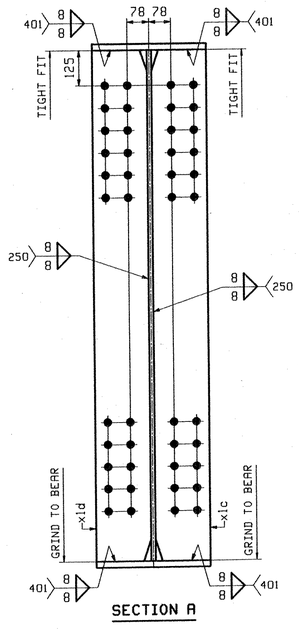


ORIENTATION DIAGRAM

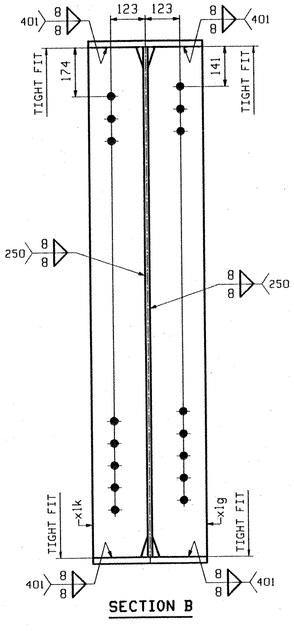
SEE DRAWING C1

ONE - GIRDER - 3G3

FOR GIRDER STANDARD DETAILS SEE DRAWING X1.
FOR CAMBER DIAGRAM SEE DRAWING C1.
FOR GENERAL NOTES SEE DRAWING GN1.
H2-3 DENOTES MATERIAL SUBJECT TO CHARPY V-NOTCH TESTING.



SECTION A



SECTION B

ABM INFO		SHIP	BILL OF MATERIAL			LENGTH		JOB NO.	DRAWING NO. 3	REV.
PAGE	LINE	MARK	QTY	MARK	MATERIAL	m	mm	REMARKS	WT	PROCUREMENT NOTES
		3G3	1		GIRDER				18259 kg 40254 lbs	
1	E		1	wa	PL 16x1830	22	409	(M270M-345WT2)	(H2-3)	
1	G		1	wb	PL 16x1830	21	312	(M270M-345WT2)	(H2-3)	
1	L		1	ta	PL 22x406	21	336			
1	J		1	tb	PL 22x406	22	261			
1	C		1	ba	PL 22x406	9	040	(M270M-345WT2)	(H2-3)	
1	A		1	bb	PL 40x406	25	460	(M270M-345WT2)	(H2-3)	
1	C		1	bc	PL 22x406	9	040	(M270M-345WT2)	(H2-3)	
2	B		2	x1c	PL 22x195	1	836	MIE		
2	B		2	x1d	PL 22x195	1	836	MIE		
2	C		5	x1g	PL 14x195	1	830			
2	C		5	x1k	PL 14x195	1	830			

REV.	REMARKS	DATE	DWN	CHK	APP	Q.A.	NO.	DIA.	LGT	TYPE	WASHER
	OUT FOR APPROVAL	7-5-05									
	OUT FOR APPROVAL										
	ISSUED TO SHOP										
	FIELD & OFFICE										

MATERIAL:	ELECTRODES:	HOLES:	SHOP BOLTS:
M270M GR 345W		15/16ø 24mm	NONE

SURFACE PREP. & PAINT:

SEE DRAWING GN1

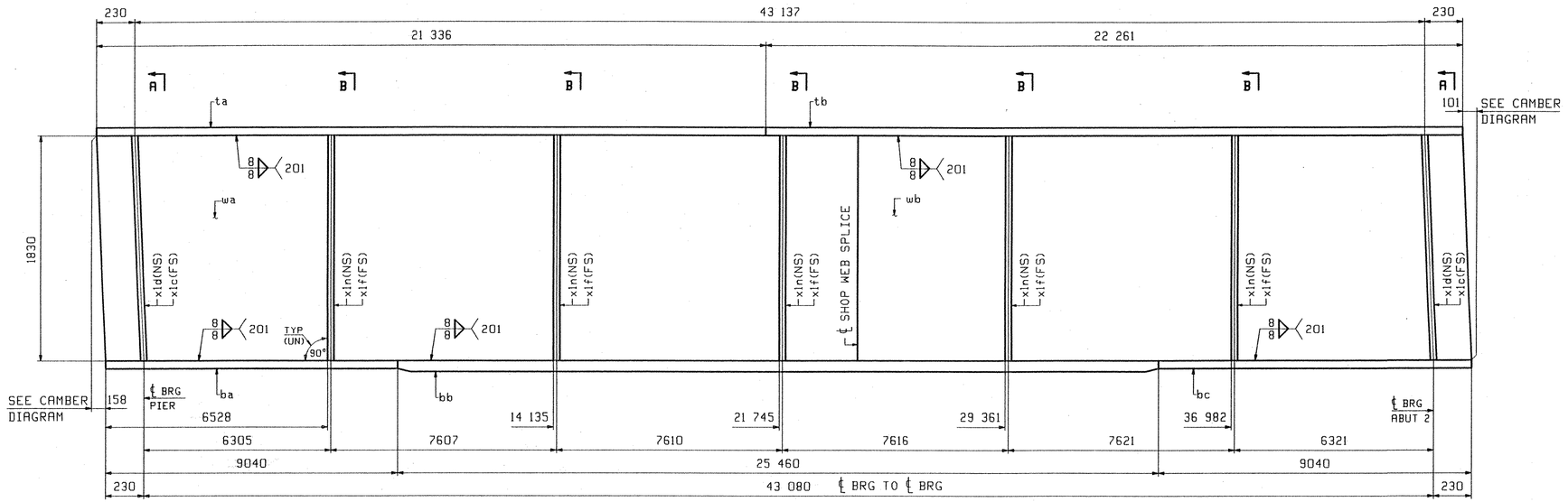
RECEIVED
CK'D BY KMH OK'D BY HJS
JUL 14 2005
RESUBMIT ____ APPROVED As Noted
BY CPW DATE 7/28/05

DESCRIPTION: GIRDER - 3G3	DRAWN BY	DATE
JOB: VT ROUTE 12 BRIDGE OVER WHITE RIVER	JTB	05/ 0
BRIDGE NO: 31 (SPAN #2)	CHKD BY	
TOWN OF BETHEL, VERMONT	TJB	06/22
COUNTY OF WINDSOR	APPROV BY	
TENSOR 2563 CONTRACTOR: KUBRICKY CONST CORP.	SUPERVISOR	W. J. GATTI
PROJ NO. BRF0241(33) C/2	Q.A.	
CUSTOMER: VERMONT AOT		

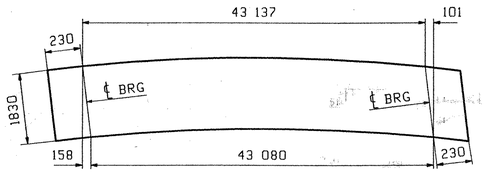
CASCO BAY STEEL STRUCTURES, INC.
75 SPRING HILL ROAD SACO, MAINE 04072
PHONE (207) 282-7360 FAX. (207) 282-1179

JOB NO.	DRG. NO.
270	3
14055	REV.

Tue Jun 28 10:49:19 EDT 2005 //server/jobs/2563/3.dwg
TJB



ABM INFO		SHIP	BILL OF MATERIAL					JOB NO.	DRAWING NO.	REV
PAGE	LINE	MARK	QTY	MARK	MATERIAL	LENGTH m	LENGTH mm	REMARKS	WT	PROCUREMENT NOTES
		4G4	1		GIRDER				19259 kg 42454 lbs	
1	E		1	wa	PL 16x1830	22	409	(M270M-345WT2)	(H2-3)	
1	G		1	wb	PL 16x1830	21	312	(M270M-345WT2)	(H2-3)	
1	L		1	ta	PL 22x406	21	336			
1	J		1	tb	PL 22x406	22	261			
1	C		1	ba	PL 22x406	9	040	(M270M-345WT2)	(H2-3)	
1	A		1	bb	PL 40x406	25	460	(M270M-345WT2)	(H2-3)	
1	C		1	bc	PL 22x406	9	040	(M270M-345WT2)	(H2-3)	
2	B		2	x1c	PL 22x195	1	836	MIE		
2	B		2	x1d	PL 22x195	1	836	MIE		
2	C		5	x1f	PL 14x195	1	830			
2	C		5	x1n	PL 14x195	1	830			

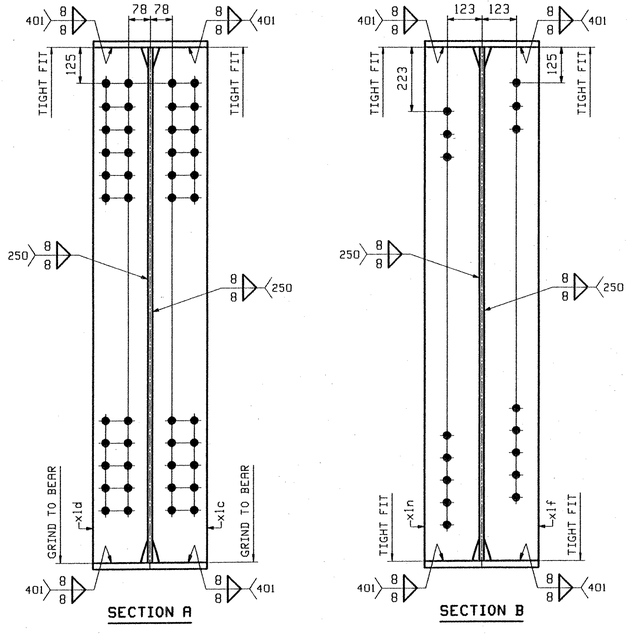


ORIENTATION DIAGRAM

SEE DRAWING C1

ONE - GIRDER - 4G4

FOR GIRDER STANDARD DETAILS SEE DRAWING X1.
FOR CAMBER DIAGRAM SEE DRAWING C1.
FOR GENERAL NOTES SEE DRAWING GN1.
H2-3 DENOTES MATERIAL SUBJECT TO CHARPY V-NOTCH TESTING.



OUT FOR APPROVAL	7-5-05									
OUT FOR APPROVAL										
ISSUED TO SHOP										
FIELD & OFFICE										
REV.	REMARKS	DATE	DWN	CHK	APP	Q.A.	NO.	DIA.	LGT	TYPE	WASHER

MATERIAL:	ELECTRODES:	HOLES:	SHOP BOLTS:
M270M GR 345W		15 / 16Ø 24mm	NONE

SURFACE PREP. & PAINT:

SEE DRAWING GN1

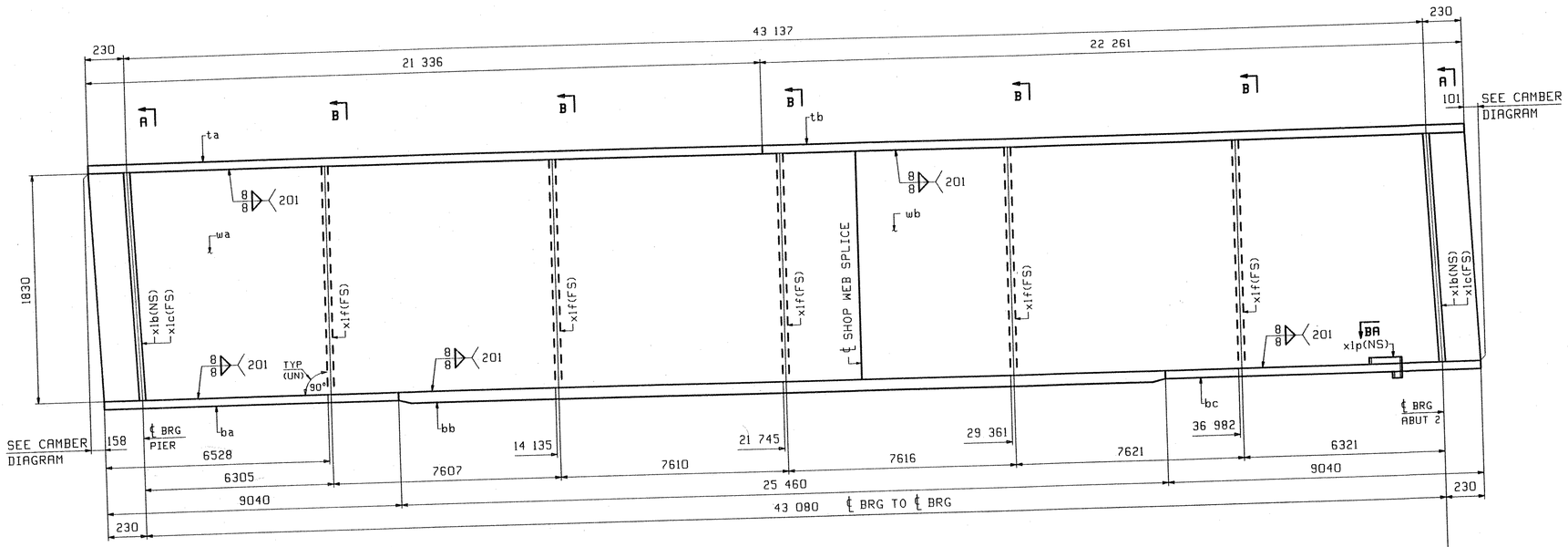
DESCRIPTION:	GIRDER - 4G4	DRAWN BY	DATE
JOB:	VT ROUTE 12 BRIDGE OVER WHITE RIVER	JTB	05/20
	BRIDGE NO: 31 (SPAN #2)	CHKD BY	
	TOWN OF BETHEL, VERMONT	TJB	06/22
TENSOR 2563	COUNTY OF WINDSOR	APPROV BY	
	CONTRACTOR: KUBRICKY CONST CORP.	SUPERVISOR	W. J. GITTI
PROJ NO.	BRFD241(33) C/2	Q.A.	
CUSTOMER:	VERMONT AOT		

CASCO BAY STEEL STRUCTURES, INC.
75 SPRING HILL ROAD SACO, MAINE 04072
PHONE (207) 282-7360 FAX. (207) 282-1179

JOB NO.	DRG. NO.
270	4
14155	REV.

RECEIVED
CK'D BY KMH OK'D BY HES
JUL 14 2005
RESUBMIT ____ APPROVED As Noted
BY CPW DATE 7/28/05

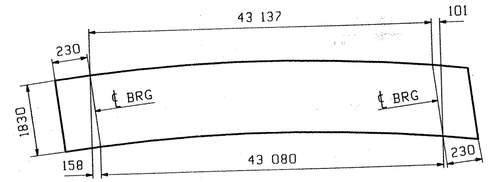
T2B Tue Jun 28 10:58:21 CDT 2005 /users/jobs/2562/4 : Rev0



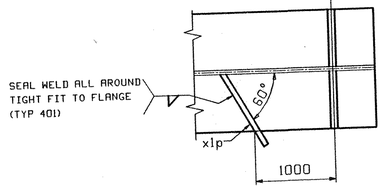
ONE - GIRDER - 5G5

FOR GIRDER STANDARD DETAILS SEE DRAWING X1.
FOR CAMBER DIAGRAM SEE DRAWING C1.
FOR GENERAL NOTES SEE DRAWING GN1.
H2-3 DENOTES MATERIAL SUBJECT TO CHARPY V-NOTCH TESTING.

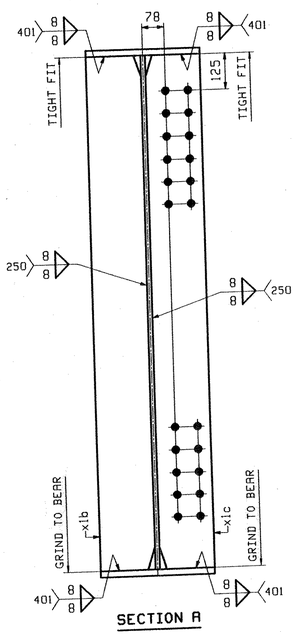
ABM INFO PAGE	ABM INFO LINE	SHIP MARK	QTY	MARK	MATERIAL	LENGTH m	LENGTH mm	REMARKS	WT	PROCUREMENT NOTES
		5G5	1		GIRDER				19064 kg 39824 lbs	
1	E		1	wa	PL 16x1830	22	409	(M270M-345WT2) (H2-3)		
1	G		1	wb	PL 16x1830	21	312	(M270M-345WT2) (H2-3)		
1	L		1	ta	PL 22x406	21	336			
1	J		1	tb	PL 22x406	22	261			
1	C		1	ba	PL 22x406	9	040	(M270M-345WT2) (H2-3)		
1	A		1	bb	PL 40x406	25	460	(M270M-345WT2) (H2-3)		
1	C		1	bc	PL 22x406	9	040	(M270M-345WT2) (H2-3)		
2	B		2	x1b	PL 22x195	1	836	MIE		
2	B		2	x1c	PL 22x195	1	836	MIE		
2	C		5	x1f	PL 14x195	1	830			
2	D		1	x1p	PL 6x72	0	279			



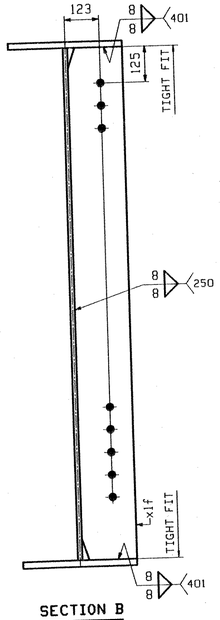
ORIENTATION DIAGRAM
SEE DRAWING C1



SECTION BA



SECTION A



SECTION B

RECEIVED
CK'D BY EJM OK'D BY HTS
JUL 14 2005
RESUBMIT ____ APPROVED As Noted
BY CPW DATE 7/28/05

REV.	REMARKS	DATE	DWN	CHK	APP	Q.A.
	OUT FOR APPROVAL	7-5-05				
	OUT FOR APPROVAL					
	ISSUED TO SHOP					
	FIELD & OFFICE					

NO.	DIA.	LGT	TYPE	WASHER

MATERIAL: M270M GR 345W
ELECTRODES:
HOLES: 15/16 Ø 24mm
SHOP BOLTS: NONE
SURFACE PREP. & PAINT: SEE DRAWING GN1

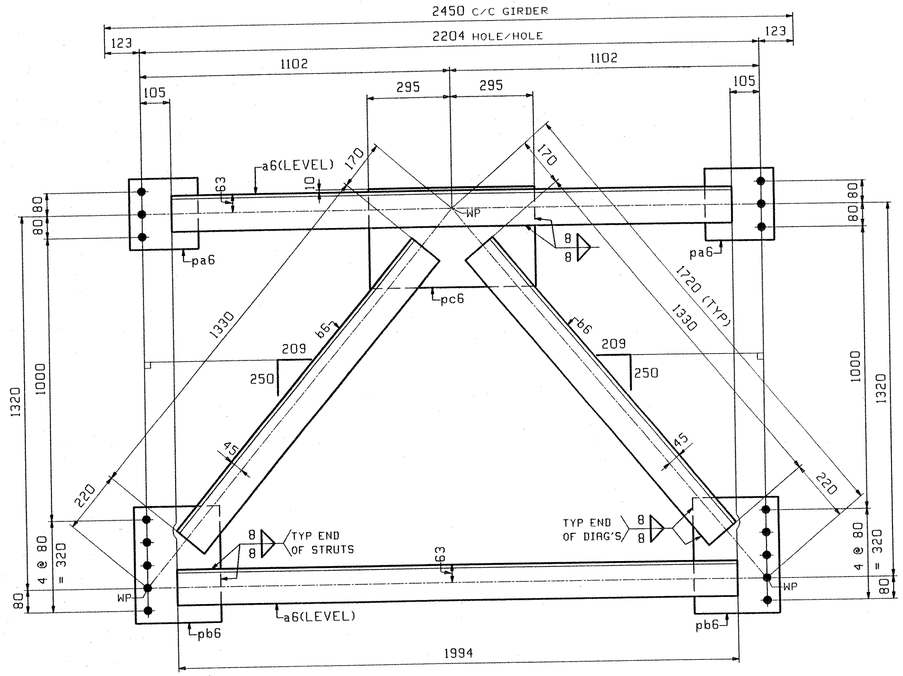
DESCRIPTION: GIRDER - 5G5
JOB: VT ROUTE 12 BRIDGE OVER WHITE RIVER
BRIDGE NO: 31 (SPAN #2)
TOWN OF BETHEL, VERMONT
COUNTY OF WINDSOR
CONTRACTOR: KUBRICKY CONST CORP.
PROJ NO. BRF0241(33) C/2
CUSTOMER: VERMONT AOT

DRAWN BY DAE
JTB 05 JU
CHKD BY
TJB 06 22
APPROV BY
SUPERVISOR W. J. GAT E
Q.A.

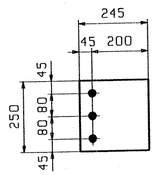
CASCO BAY STEEL STRUCTURES, INC.
75 SPRING HILL ROAD SACO, MAINE 04072
PHONE (207) 282-7360 FAX. (207) 282-1179

JOB NO. 270 / 14255
DRG NO. 5
REV.

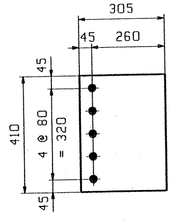
T28 Tue Jun 28 10:16:50 EDT 2005 /users/jobs/2552/5.1 Rev0



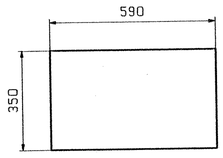
20 ~ CROSSFRAMES ~ 6CF1



DETAIL - pa6
40 REQ'D



DETAIL - pb6
40 REQ'D



DETAIL - pc6
20 REQ'D

ABM INFO		SHIP	BILL OF MATERIAL					JOB NO.	DRAWING NO.		REV.
									6		
PAGE	LINE	MARK	QTY	MARK	MATERIAL	LENGTH m	LENGTH mm	REMARKS	WT	PROCUREMENT NOTES	
		6CF1	20		INT CROSSFRAMES				224 kg 493 lbs		
2	J		40	a6	L 127x127x12.7	1	994				
2	K		40	b6	L 127x127x12.7	1	330				
2	L		40	pa6	PL 14x245	0	250				
2	M		40	pb6	PL 14x305	0	410				
2	N		20	pc6	PL 14x350	0	590				

REV.	REMARKS	DATE	DWN	CHK	APP	Q.A.
	OUT FOR APPROVAL	7-5-05				
	OUT FOR APPROVAL					
	ISSUED TO SHOP					
	FIELD & OFFICE					

NO.	DIA.	LGT	TYPE	WASHER

MATERIAL: M270M GR 345W

ELECTRODES:

HOLES: 15/16ø 24mm

SHOP BOLTS: NONE

SURFACE PREP. & PAINT:

SEE DRAWING GN1

DESCRIPTION: INT. CROSSFRAMES

JOB: VT ROUTE 12 BRIDGE OVER WHITE RIVER
BRIDGE NO: 31 (SPAN #2)
TOWN OF BETHEL, VERMONT
COUNTY OF WINDSOR
CONTRACTOR: KUBRICKY CONST CORP.

TENSOR 2563

PROJ NO. BRF0241(33) C/2

CUSTOMER: VERMONT AOT

DRAWN BY	DATE
JTB	05/28
CHK'D BY	
TJB	06/22
APPROV BY	
SUPERVISOR	W. J. GATTI
Q.A.	

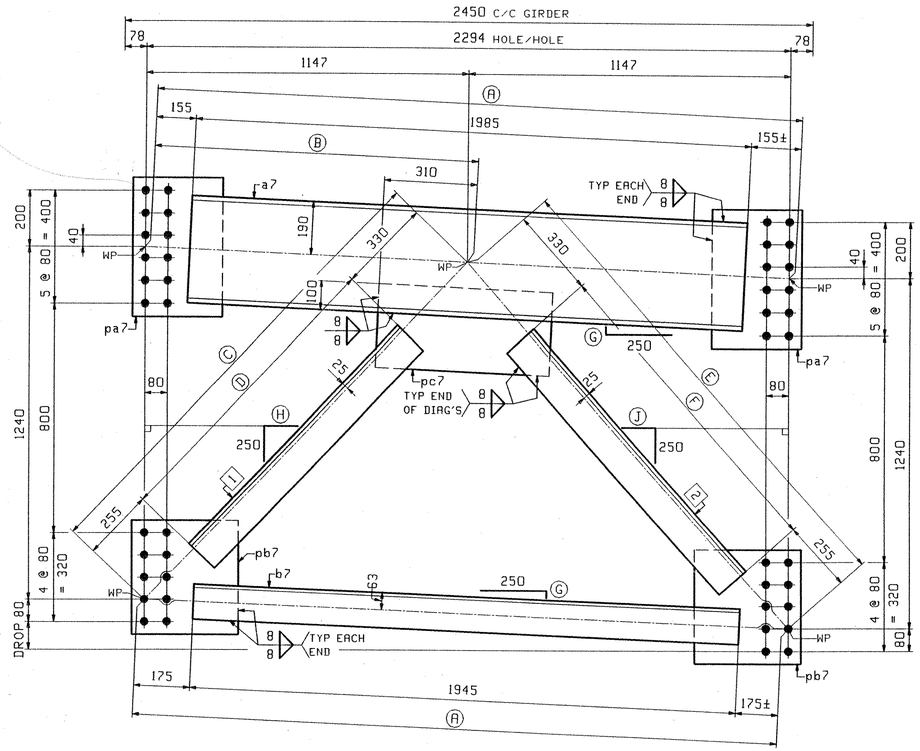
CASCO BAY STEEL STRUCTURES, INC.

75 SPRING HILL ROAD SACO, MAINE 04072
PHONE (207) 282-7360 FAX. (207) 282-1179

JOB NO.	DRG. NO.
270	6
14355	REV.

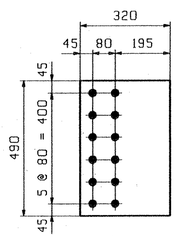
RECEIVED
CK'D BY KWH OK'D BY HZS
JUL 14 2005
RESUBMIT APPROVED As Noted
BY CPW DATE 7/28/05

JTB Mon May 30 15:15:53 EDT 2005 /users/jobs/28974 rev0

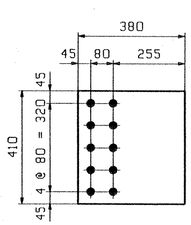


END CROSSFRAMES ~ MARK

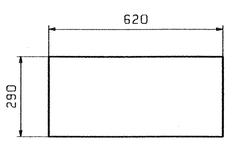
	MARK	QTY	DROP	Ⓐ	Ⓑ	Ⓒ	Ⓓ	Ⓔ	Ⓕ	Ⓖ	Ⓗ	Ⓙ	1	2	
	7CF1	1	98	2296	1148	1654	1069	1725	1140	11	241	222	c7	d7	ABUT 2 LINES 4-5
PAINTED→	7CF2	1	64	2295	1147	1666	1081	1713	1128	7	237	225	f7	g7	PIER LINES 1-2
	7CF3	1	49	2295	1147	1671	1086	1707	1122	5	236	227	k7	m7	ABUT 2 LINES 3-4
PAINTED→	7CF4	1	16	2294	1147	1683	1098	1695	1110	2	233	230	n7	p7	PIER LINES 2-3



DETAIL - pa7
16 REQ'D



DETAIL - pb7
16 REQ'D



DETAIL - pc7
8 REQ'D

ABM INFO PAGE	ABM INFO LINE	SHIP MARK	QTY	MARK	MATERIAL	LENGTH m	LENGTH mm	REMARKS	WT	PROCUREMENT NOTES
		7CF1	1		END CROSSFRAMES				288 kg 634 lbs	
2	R		1	a7	C 380x50	1	985			
2	S		1	b7	L 127x127x12.7	1	945			
2	T		1	c7	L 127x127x12.7	1	069			
2	T		1	d7	L 127x127x12.7	1	140			
2	U		2	pa7	PL 14x320	0	490			
2	V		2	pb7	PL 14x380	0	410			
2	W		1	pc7	PL 14x290	0	620			
		7CF2	1		END CROSSFRAMES			PAINTED	288 kg 634 lbs	
2	R		1	a7	C 380x50	1	985			
2	S		1	b7	L 127x127x12.7	1	945			
2	T		1	f7	L 127x127x12.7	1	081			
2	T		1	g7	L 127x127x12.7	1	128			
2	U		2	pa7	PL 14x320	0	490			
2	V		2	pb7	PL 14x380	0	410			
2	W		1	pc7	PL 14x290	0	620			
		7CF3	1		END CROSSFRAMES				288 kg 634 lbs	
2	R		1	a7	C 380x50	1	985			
2	S		1	b7	L 127x127x12.7	1	945			
2	T		1	k7	L 127x127x12.7	1	086			
2	T		1	m7	L 127x127x12.7	1	122			
2	U		2	pa7	PL 14x320	0	490			
2	V		2	pb7	PL 14x380	0	410			
2	W		1	pc7	PL 14x290	0	620			
		7CF4	1		END CROSSFRAMES			PAINTED	288 kg 634 lbs	
2	R		1	a7	C 380x50	1	985			
2	S		1	b7	L 127x127x12.7	1	945			
2	T		1	n7	L 127x127x12.7	1	098			
2	T		1	p7	L 127x127x12.7	1	110			
2	U		2	pa7	PL 14x320	0	490			
2	V		2	pb7	PL 14x380	0	410			
2	W		1	pc7	PL 14x290	0	620			

BILL OF MATERIAL

JOB NO.

DRAWING NO. 7

REV.

PROCUREMENT NOTES

REV.	REMARKS	DATE	DWN	CHK	APP	Q.A.
	OUT FOR APPROVAL	7-5-05				
	OUT FOR APPROVAL					
	ISSUED TO SHOP					
	FIELD & OFFICE					

NO.	DIA.	LGT	TYPE	WASHER

MATERIAL: M270M GR 345W

ELECTRODES:

HOLES: 15/16ø 24mm

SHOP BOLTS: NONE

SURFACE PREP. & PAINT:

SEE DRAWING GN1

RECEIVED
JUL 14 2005
RESUBMIT____ APPROVED As Noted
BY GPW DATE 7/28/05

CK'D BY KMH CK'D BY HJS

DESCRIPTION: END CROSSFRAMES

JOB: VT ROUTE 12 BRIDGE OVER WHITE RIVER
BRIDGE NO: 31 (SPAN #2)
TOWN OF BETHEL, VERMONT
COUNTY OF WINDSOR
CONTRACTOR: KUBRICKY CONST CORP.

PROJ NO. BRF0241(33) C/2

CUSTOMER: VERMONT AOT

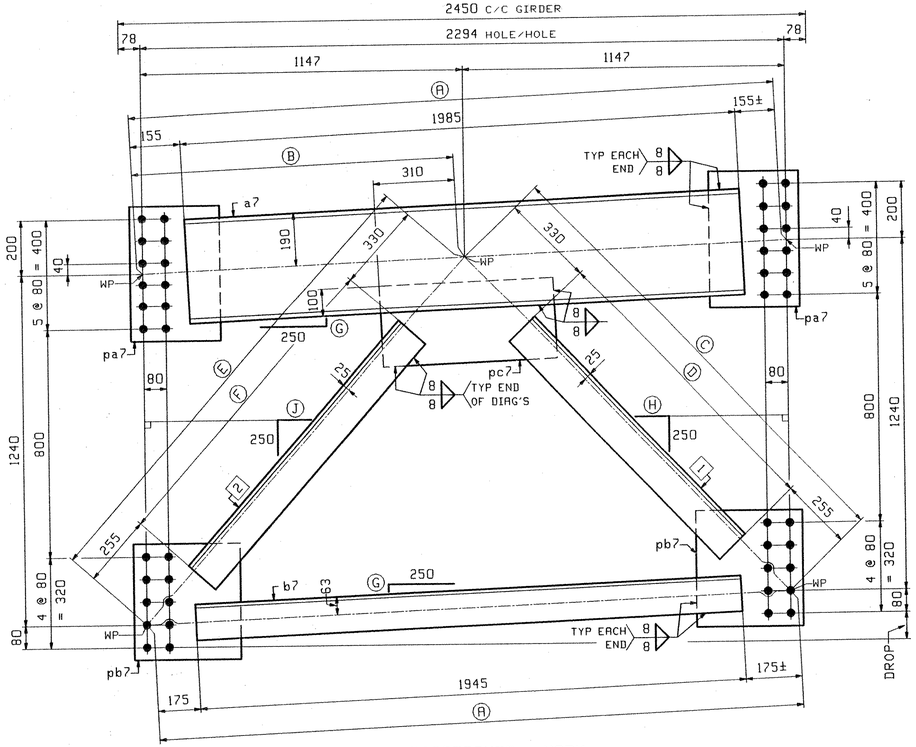
DRAWN BY	DATE
JTB	05/
CHKD BY	
TJB	06/ 2
APPROV BY	
SUPERVISOR	W. J. G
Q.A.	

CASCO BAY STEEL STRUCTURES, INC.
75 SPRING HILL ROAD SACO, MAINE 04072
PHONE (207) 282-7360 FAX. (207) 282-1179

JOB NO.	DRG. NO
270	7
14455	REV. △

TENSOR 2563

JTB Mon May 30 10:48:13 EDT 2005 /users/jobs/2582/7.dwg



END CROSSFRAMES ~ MARK

	MARK	QTY	DROP	Ⓐ	Ⓑ	Ⓒ	Ⓓ	Ⓔ	Ⓕ	Ⓖ	Ⓗ	Ⓙ	1	2	
PAINTED →	8CF1	1	98	2296	1148	1654	1069	1725	1140	11	241	222	c7	d7	PIER LINES 4-5
	8CF2	1	64	2295	1147	1666	1081	1713	1128	7	237	225	f7	g7	ABUT 2 LINES 1-2
PAINTED →	8CF3	1	49	2295	1147	1671	1086	1707	1122	5	236	227	k7	m7	PIER LINES 3-4
	8CF4	1	16	2294	1147	1683	1098	1695	1110	2	233	230	n7	p7	ABUT 2 LINES 2-3

ABM INFO PAGE	ABM INFO LINE	SHIP MARK	QTY	MARK	MATERIAL	LENGTH m	LENGTH mm	REMARKS	WT	PROCUREMENT NOTES
		8CF1	1		END CROSSFRAMES			PAINTED	288 kg 634 lbs	
2	R		1	a7	C 380x50	1	985			
2	S		1	b7	L 127x127x12.7	1	945			
2	T		1	c7	L 127x127x12.7	1	069			
2	T		1	d7	L 127x127x12.7	1	140			
2	U		2	pa7	PL 14x320	0	490			
2	V		2	pb7	PL 14x380	0	410			
2	W		1	pc7	PL 14x290	0	620			
		8CF2	1		END CROSSFRAMES				288 kg 634 lbs	
2	R		1	a7	C 380x50	1	985			
2	S		1	b7	L 127x127x12.7	1	945			
2	T		1	f7	L 127x127x12.7	1	081			
2	T		1	g7	L 127x127x12.7	1	128			
2	U		2	pa7	PL 14x320	0	490			
2	V		2	pb7	PL 14x380	0	410			
2	W		1	pc7	PL 14x290	0	620			
		8CF3	1		END CROSSFRAMES			PAINTED	288 kg 634 lbs	
2	R		1	a7	C 380x50	1	985			
2	S		1	b7	L 127x127x12.7	1	945			
2	T		1	k7	L 127x127x12.7	1	086			
2	T		1	m7	L 127x127x12.7	1	122			
2	U		2	pa7	PL 14x320	0	490			
2	V		2	pb7	PL 14x380	0	410			
2	W		1	pc7	PL 14x290	0	620			
		8CF4	1		END CROSSFRAMES				288 kg 634 lbs	
2	R		1	a7	C 380x50	1	985			
2	S		1	b7	L 127x127x12.7	1	945			
2	T		1	n7	L 127x127x12.7	1	098			
2	T		1	p7	L 127x127x12.7	1	110			
2	U		2	pa7	PL 14x320	0	490			
2	V		2	pb7	PL 14x380	0	410			
2	W		1	pc7	PL 14x290	0	620			

JOB NO. | DRAWING NO. 8

BILL OF MATERIAL

REV.	REMARKS	DATE	DWN	CHK	APP	Q.A.
	OUT FOR APPROVAL	2-5-05				
	OUT FOR APPROVAL					
	ISSUED TO SHOP					
	FIELD & OFFICE					

NO.	DIA.	LGT	TYPE	WASHER

MATERIAL: M270M GR 345W

ELECTRODES:

HOLES: 15/16Ø 24mm

SHOP BOLTS: NONE

SURFACE PREP. & PAINT:

SEE DRAWING GN1

DESCRIPTION: END CROSSFRAMES

JOB: VT ROUTE 12 BRIDGE OVER WHITE RIVER
BRIDGE NO: 31 (SPAN #2)
TOWN OF BETHEL, VERMONT
COUNTY OF WINDSOR
CONTRACTOR: KUBRICKY CONST CORP.

TENSOR 2563

PROJ NO. BRF0241(33) C/2

CUSTOMER: VERMONT AOT

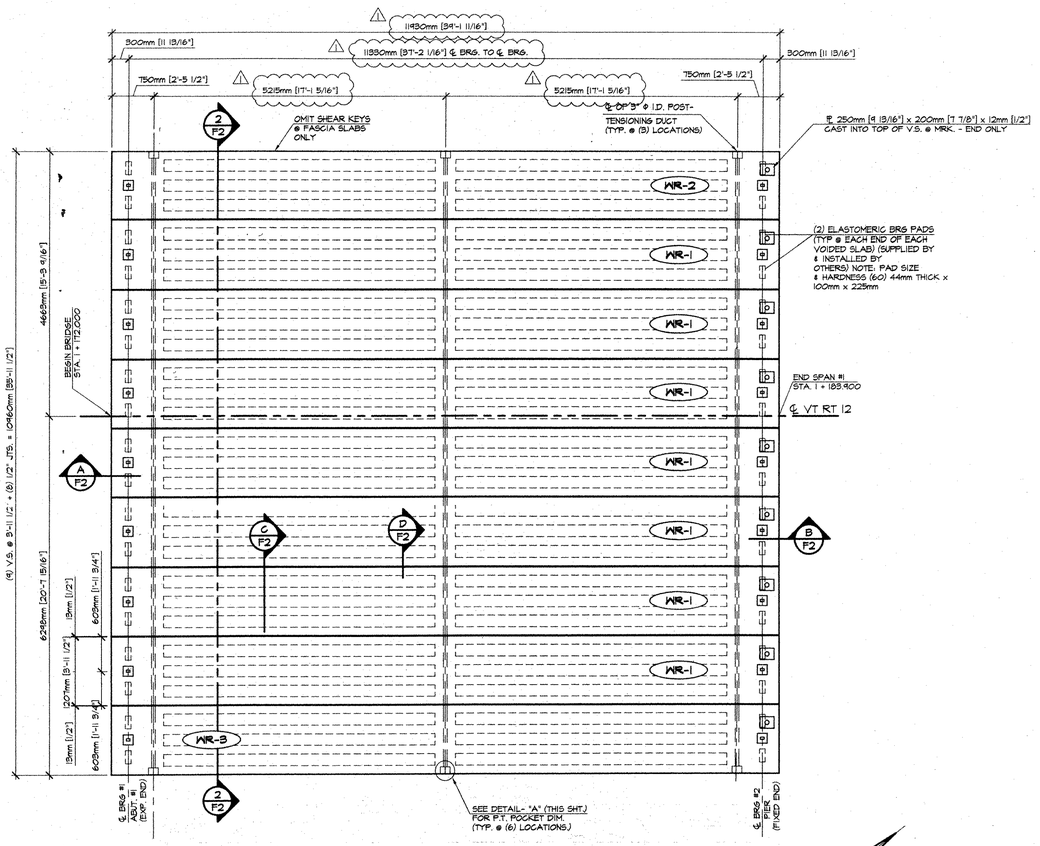
DRAWN BY	DATE
JTB	05/3
CHK'D BY	
TJB	06/2
APPROV BY	
SUPERVISOR	W. J. GAITI
Q.A.	

CASCO BAY STEEL STRUCTURES, INC.
75 SPRING HILL ROAD SACO, MAINE 04072
PHONE (207) 282-7360 FAX. (207) 282-1179

JOB NO.	DRG. NO.
270	8
1455	REV.

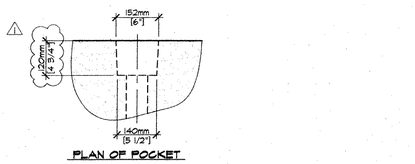
RECEIVED
CK'D BY _____ CK'D BY HES
JUL 14 2005
RESUBMIT _____ APPROVED As Noted
BY CPW DATE 7/28/05

JTB Mon May 30 15:27:46 EDT 2005 /users/jobs/2563/8 : Rev0

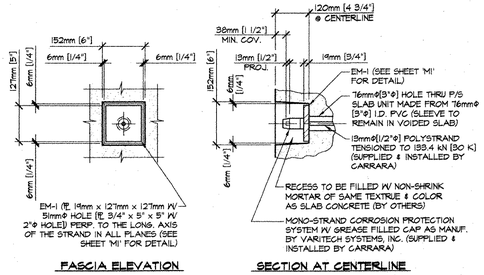


1 / F1 PRESTRESSED VOIDED SLAB LAYOUT
1:50

DESIGN LOAD: AASHTO MS-22.5 LIVE LOAD



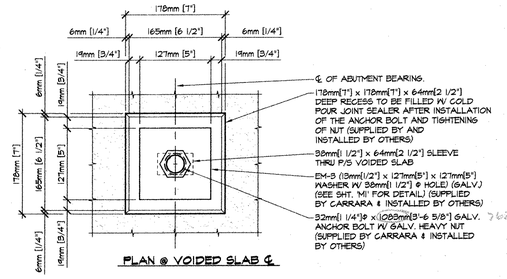
PLAN OF POCKET



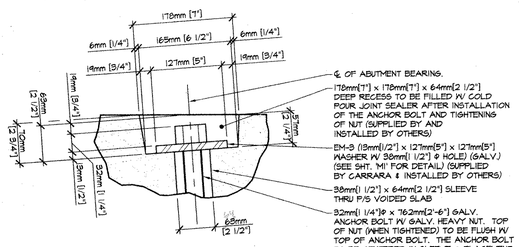
FASCIA ELEVATION

SECTION AT CENTERLINE

DETAIL - "A"
1:10



PLAN @ VOIDED SLAB ℄



SECTION @ VOIDED SLAB ℄

DETAIL - "B"
1:5

GENERAL NOTES

1. MIN. CONCRETE STRENGTH AT 28 DAYS: f'c = 45 MPa [6,500 PSI] MIN. CONCRETE STRENGTH AT STRESS TRANSFER, f'ci = 30 MPa [4,350 PSI]
2. REINFORCING STEEL SHALL BE GR-420 [GR-60]. AASHTO M 31M ASTM A-615 AND SHALL BE EPOXY COATED.
3. PRESTRESSING STRANDS SHALL CONFORM TO ASTM A-416 (AASHTO M 203M) AND SHALL CONSIST OF 15mm[0.60"]ø x 1860 MPa [270 KSI] 7-WIRE LOW RELAXATION STRANDS.
4. PRESTRESSING STRANDS SHALL EACH BE PULLED TO HAVE A NET TENSION OF 195.5 kN [44.0 K] AFTER ACCOUNTING FOR CHUCK SLIPPAGE. TENSION SHALL BE VERIFIED BY MEASURING STRAND ELONGATION. SEE EXAMPLE ELONGATION CALCULATION AND TENSIONING PROCEDURE (THIS SHEET).
5. END OF PRESTRESSING STRANDS SHALL BE CUT WITH A TORCH, RECESSED & PATCHED, WITH AN APPROVED VT DOT MATERIAL. (2)
6. TOP OF THE BEAMS SHALL RECEIVE A RAKE FINISH ROUGHNESS TO 6mm (1/4") AMPLITUDE (UNLESS NOTED OTHERWISE).
7. SLABS SHALL BE HANDLED AND ERECTED USING THE LIFTING LOOPS ONLY. THE MINIMUM SLING ANGLE FROM THE HORIZONTAL SHALL BE 60°. SLABS SHALL BE STORED AND TRANSPORTED WITH TIMBER SUPPORTS WITHIN 610mm[2'-0"] OF THE SLAB ENDS, UNLESS APPROVED BY J.P. CARRARA & SONS, INC.
8. SHEAR KEY SURFACES SHALL BE BLAST CLEAN.
9. DESIGN MIX: J.P.C. BRIDGE MIX #45IMESCC (2)
   - 107kg [180 LBS] FLY ASH - ISG RESOURCES
   - 427.2 kg [720 LBS.] TYPE III CEMENT - GLENS FALLS CEMENT
   - 742 kg [1250 LBS.] FINE AGGREGATE
   - 860 kg [1450 LBS.] COARSE AGGREGATE
   - 168 L [34.0 GAL.] WATER - 128.4 kg [283 LBS.]
   - 4.5% - 8.5% AIR CONTENT (242 mL [8.18 OZ.] DAREX II) ADJ. AS REQ.
   - 586.7 mL MB 3400 PER 100 kg CEMENT, SPREAD 559mm - 711mm [4.00 OZ. MB 3400 PER 100 LBS. CEMENT, SPREAD 22" - 28"]
   - 196 mL DIT OR D65 PER 100 kg CEMENT [6.62 OZ. DIT OR D65 PER 100 LBS. CEMENT]
   - 14.85 L [3.92 GAL.] DCI
10. QUALITY CONTROL PROCEDURES ARE IN ACCORDANCE WITH PCI REQUIREMENTS. J.P. CARRARA & SONS, INC. IS A PCI CERTIFIED PLANT.
11. THE ENGINEER OF RECORD WILL BE NOTIFIED (7) WORKING DAYS SO THAT ALL PRECAST OPERATIONS MAY BE WITNESSED.
12. THE VOIDS MUST BE VENTED DURING THE CURING PERIOD.
13. CURING METHOD: (2)
    NATURAL CURE: AS SOON AS THE TOP OF THE BEAM IS FINISHED, COVER WITH POLY UNTIL RELEASE STRENGTH IS ACHIEVED.
14. TRANSVERSE POST-TENSIONING SEQUENCE:
    A. ONCE VOIDED BEAMS ARE ERECTED, POST-TENSION TENDONS TO APPROXIMATELY 22 kN [4,946 LBS].
    B. GROUT SHEAR KEYS (BY OTHERS) (2)
    C. ONCE SHEAR KEY GROUT HAS ATTAINED A MINIMUM COMPRESSIVE STRENGTH OF 10.3 MPa [1,500 PSI], POST-TENSION TENDONS TO 133.4 kN [30,000 LBS].
15. POST-TENSIONING STRANDS SHALL CONFORM TO AASHTO M 203M [ASTM A-416] AND SHALL CONSIST OF 13mm[1/2"]ø x 1860 MPa [270 KSI] POLYSTRAND.
16. NO INSERTS SHALL BE FIELD INSTALLED IN SLABS WITHOUT APPROVAL OF J.P. CARRARA & SONS, INC.

EXAMPLE PRESTRESSING STRAND ELONGATION CALCULATION AND TENSIONING
(NOT TO BE USED FOR CONSTRUCTION)

SIZE & GRADE: 0.60"ø x 270 KSI

AREA: 0.217 IN^2

TENSION: 44,000 LBS. EACH STRAND

GRIP TO GRIP: 192'-9 3/4" = 192.813'

Es = 28,600,000 PSI (ASSUMED FOR THESE CALCULATIONS; VALUE TO BE OBTAINED FOR STRAND SPOOL ACTUALLY USED)

EXAMPLE: $\Delta = \frac{PL}{AE} = \frac{(44{,}000 - 3{,}000) \times 192.813 \times 12}{0.217 \times 28{,}600{,}000} = 15.29"$

THEREFORE: TOLERANCES: ± 5%
- Δ UPPER LIMIT = 1.05 x 15.29" = 16.05" = 16 1/16"
- Δ LOWER LIMIT = 0.95 x 15.29" = 14.53" = 14 1/2"

EXTRA FORCE REQUIRED TO COMPENSATE FOR 1/2" CHUCK SLIPPAGE:

$\Delta P = \frac{0.5 \times 41{,}000}{15.29} = 1{,}341$ LBS.

TOTAL TENSIONING FORCE = 44,000 + 1,341 = 45,341 LBS. [201.7 kN]

STRAND TENSIONING PROCEDURE

1. PULL EACH STRAND INITIALLY TO 13.34 kN* [3,000 LBS]* & MARK STRAND.
2. THE PULL EACH STRAND TO A TOTAL TENSION OF 201.7 kN* [45,341 LBS]* AND MEASURE ELONGATION AFTER SEATING. IT MUST BE BETWEEN 369mm[14 1/2"] AND 408mm[16 1/16"].

* NOTE: FORCES READ ON STRESSING JACK GAUGES MUST BE MADE TO CORRESPOND TO ABOVE VALUES BASED ON CALIBRATION DATA FOR SPECIFIC JACK USED.

REV. 2 11-7-05 GEN. REV. PER ENGR. COMM. T. D.
REV. 1 9-7-05 GEN. REV. PER ENGR. COMM. TJD.

APPROVAL STAMP:

RECEIVED
OK'D BY KMH OK'D BY M G
NOV 10 2005
RESUBMIT ____ APPROVED ✓ As Noted
BY GpW DATE 11/4/05

J.P. CARRARA & SONS INC.
Precast & Prestress Manufacturer
2464 CASE STR., MIDDLEBURY, VERMONT 05753 Phone:(802)388-6361 Fax:(802)388-9010

KUBRICKY CONST. CORP.
CONTRACTOR
GLENS FALLS, NEW YORK

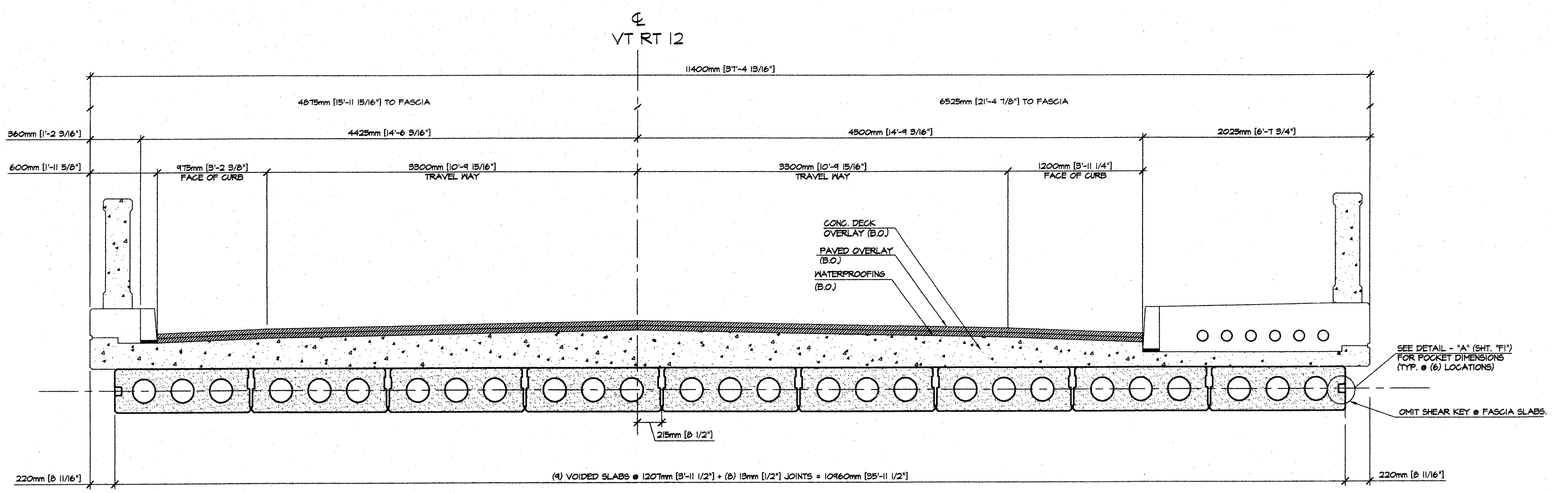
STATE OF VERMONT A.O.T.
COUNTY OF WINDSOR

DATE: JULY 13, 2005
SCALE: NOTED
CHKD: - DFTM: T.J.D.
JOB NO: 23224-05

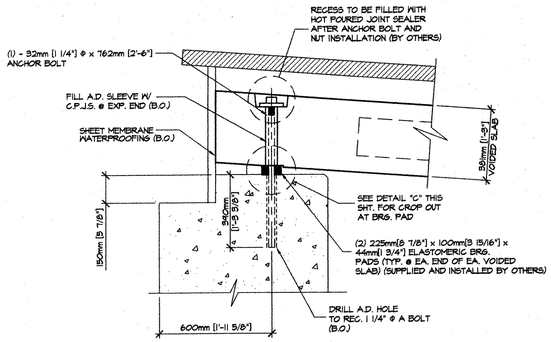
TOWN OF BETHEL - BRIDGE #31
VT RT 12 OVER 3RD BRANCH OF WHITE RIVER

SUPERSTRUCTURE PLAN & DETAILS

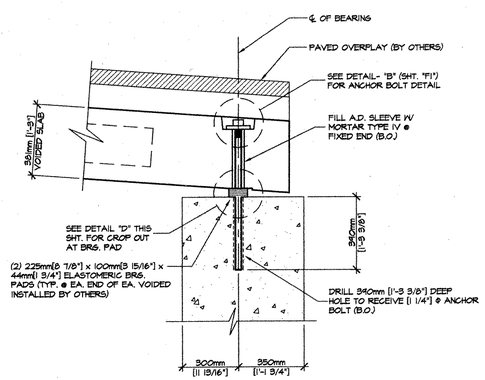
DWG. NO: F1
146 PC



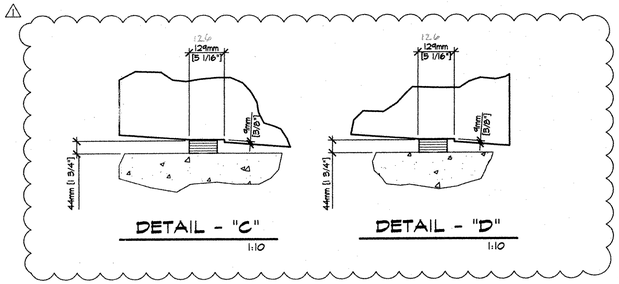
2 / F2 TRANSVERSE SECTION
1:25

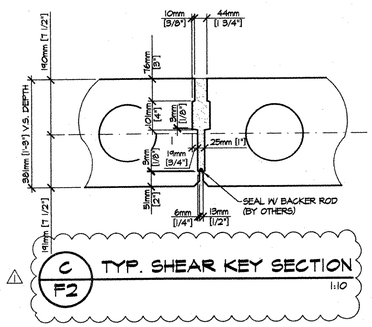


A / F2 SECTION @ BEARING
EXP. END 1:15

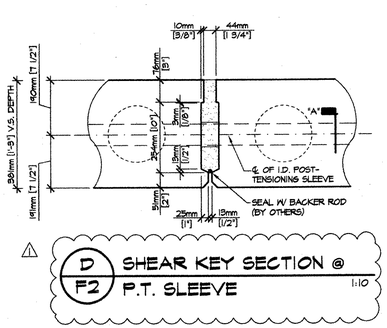


B / F2 SECTION @ BEARING
FIXED END 1:15

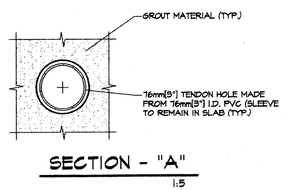




C / F2 TYP. SHEAR KEY SECTION
1:10



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



SECTION - "A"
1:5

REV.) 9-7-05 GEN. REV. PER ENGR. COMM. T.J.D.

APPROVAL STAMP:

RECEIVED
BY KMH FROM M.G.
SEP 29 2005
ACKLESEY APPROVED ✓ As Noted
BY CPW DATE 11/14/05

J.P. CARRARA & SONS INC.
Precast & Prestress Manufacturer
2464 CASE STR., MIDDLEBURY, VERMONT 05753 Phone:(802)388-6361 Fax:(802)388-9010

KUBRICKY CONST. CORP.
CONTRACTOR
GLENS FALLS, NEW YORK

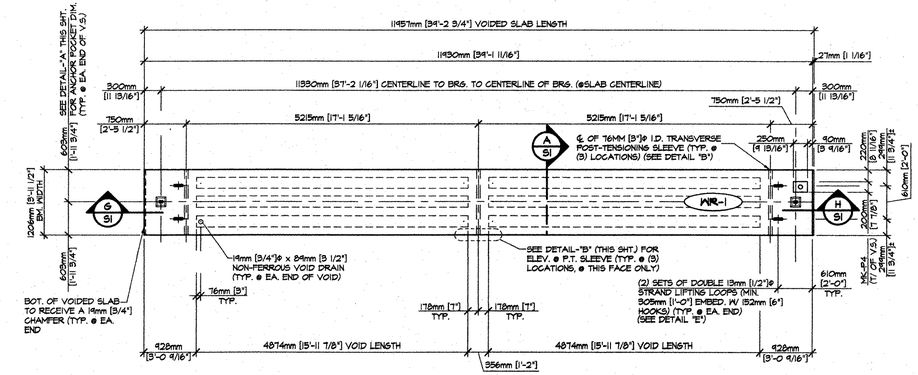
STATE OF VERMONT A.O.T.
COUNTY OF WINDSOR

DATE: JULY 13, 2005
SCALE: NOTED
CHKD: - DFTM: T.J.D.
JOB NO: 23224-05

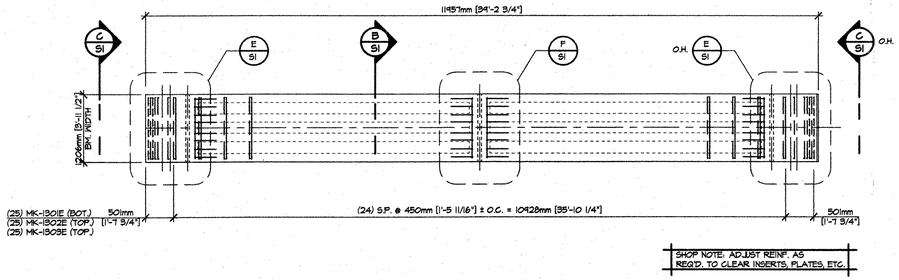
TOWN OF BETHEL - BRIDGE # 31
VT ROUTE 12 OVER 3RD BRANCH OF WHITE RIVER

SECTION AND DETAILS

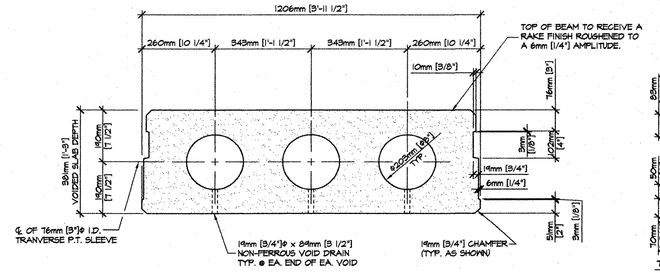
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147 PC



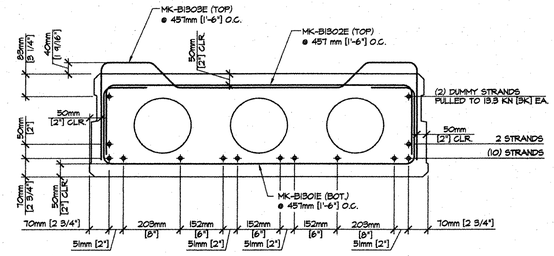
1 S1 DIMENSIONAL PLAN VIEW IN FORM
1:50



2 S1 REINFORCING PLAN VIEW IN FORM
1:50

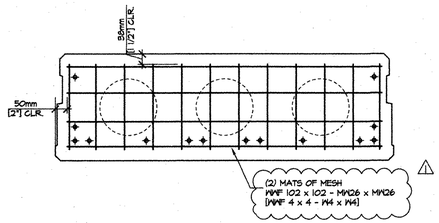


A S1 DIMENSIONAL SECTION
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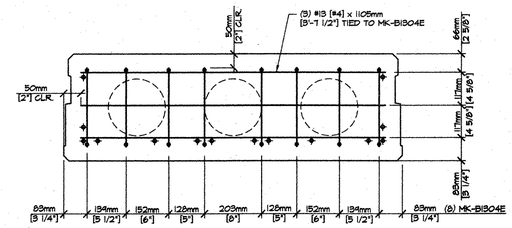


B S1 REINFORCING SECTION
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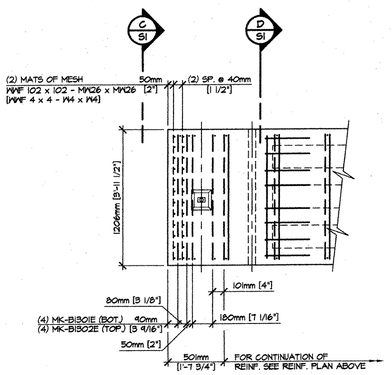
TOTAL (12) 15.25mm [.6"]ø x 1860 MPa [270KSI] STRANDS PULLED TO 137.7 KN [31.0K] EA.



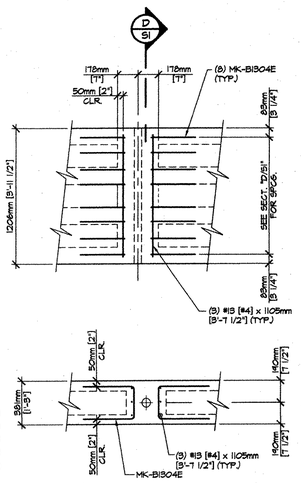
C S1 END BLOCK REINF. SECTION
1:10



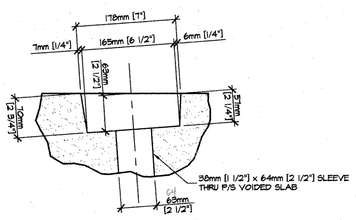
D S1 DIAPHRAGM REINF.
1:10



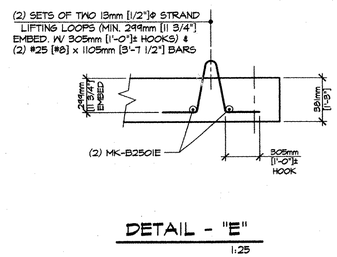
E S1 END BLOCK REINF. PLAN
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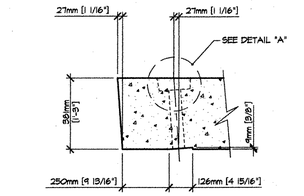
F S1 DIAPHRAGM REINF.
1:25



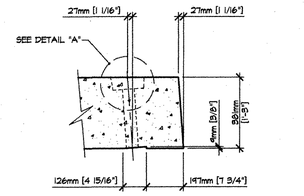
DETAIL - "A"
1:5



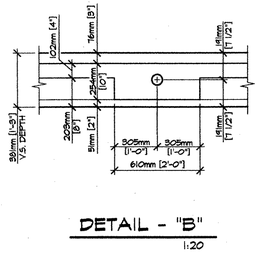
DETAIL - "E"
1:25



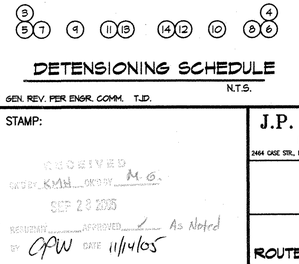
S S1 END SECTION
1:15



H S1 END SECTION
1:15



DETAIL - "B"
1:20



DETENSIONING SCHEDULE
N.T.S.

REV. 1 9-7-05 GEN. REV. PER ENGR. COMM. TJD.

MARK: WR-1	QTY: 7	WT.: 10,868 kg [10.14 T]	VOL.: 4.52 m³ [5.91 cy]
MARK:	QTY:	WT.:	VOL.:

MATERIAL LIST / VOIDED SLAB

ITEM	MARK	DESCRIPTION	QTY./SLAB	
1	130IE	#13[#4] BENT BAR (EPOXY COATED)	98	
2	130ZE	#13[#4] BENT BAR (EPOXY COATED)	98	
3	130BE	#13[#4] BENT BAR (EPOXY COATED)	25	
4	130AE	#13[#4] BENT BAR (EPOXY COATED)	32	
5		#13[#4] x 1105mm [3'-7 1/2"]	12	
6		MWF 102 x 102 - MW26 x MW26 [MWF 4 x 4 - W4 x W4]	4	
7				
8	MKP4	℄ 12mm [1/2"] x 200mm [7/8"] x 250mm [9 13/16"] W/ ANCHORS	1	
9		209mm [8"]ø x 4874mm [15'-11 7/8"] LONG VOID	6	
10		19mm [3/4"]ø x 120mm [4"] NON-FERROUS VOID DRAIN	12	
11		DOUBLE 13mm [1/2"]ø STRAND LIFTING LOOPS	4	
12	250IE	#25[#8] x 1105mm [3'-7 1/2"]	4	

APPROVAL STAMP:

RECEIVED
ORDER KMH ORDER M.G.
SEP 28 2005
RESUBMIT APPROVED As Noted
BY CPW DATE 11/14/05

J.P. CARRARA & SONS INC.
Precast & Prestress Manufacturer
2464 CASE STR., MIDDLEBURY, VERMONT 05753 Phone:(802)388-6361 Fax:(802)388-9010

KUBRICKY CONST. CORP.
CONTRACTOR
GLENS FALLS, N.Y.

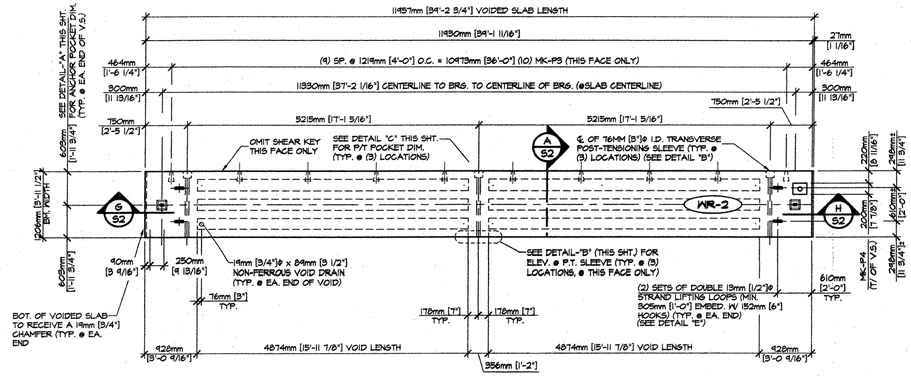
STATE OF VERMONT A.O.T.
COUNTY OF WINDSOR

TOWN OF BETHEL
ROUTE VT. OVER NEW ENGLAND CENTRAL RAILROAD

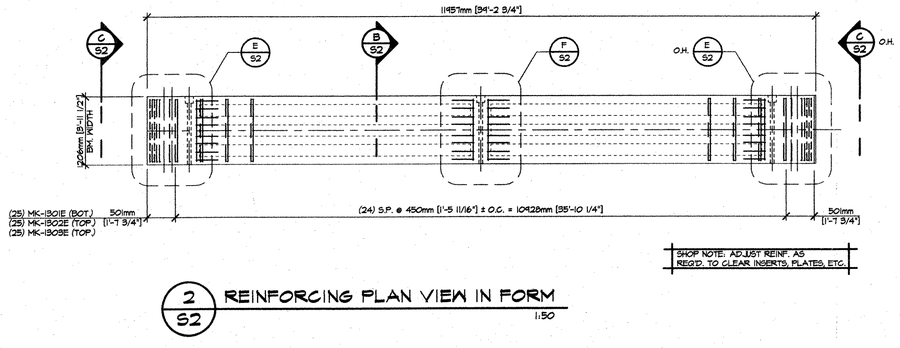
P/S VOIDED SLAB DETAILS

DATE: JULY 29, 2005
SCALE: NOTED
CHKD: - DFTM: T.J.D
JOB NO: 23224-05
DWG. NO: S1
148 PC

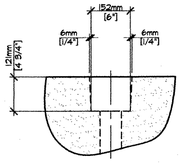
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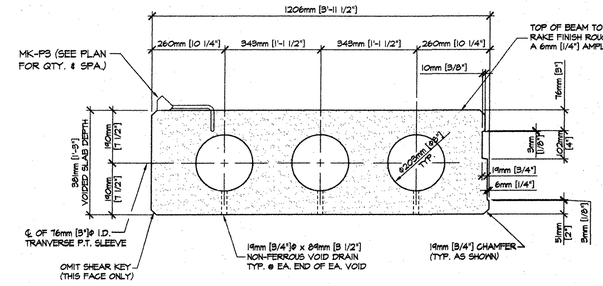
1 / S2 DIMENSIONAL PLAN VIEW IN FORM
1:50



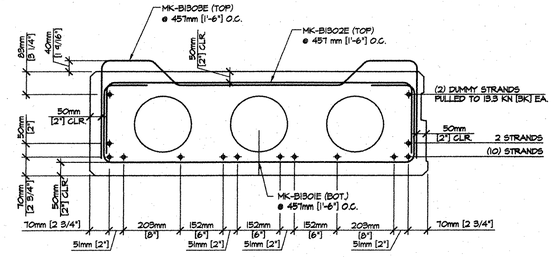
2 / S2 REINFORCING PLAN VIEW IN FORM
1:50



DETAIL - "C"
1:10

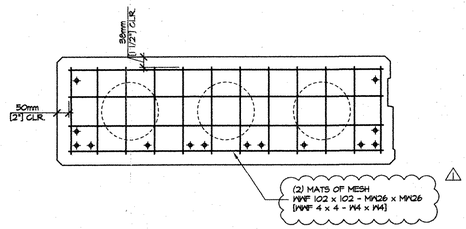


A / S2 DIMENSIONAL SECTION
1:10

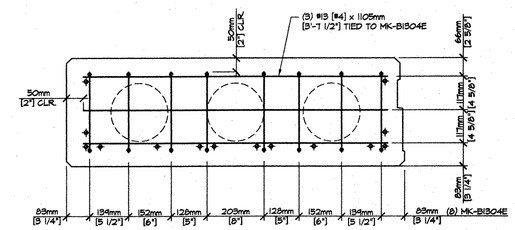


B / S2 REINFORCING SECTION
1:10

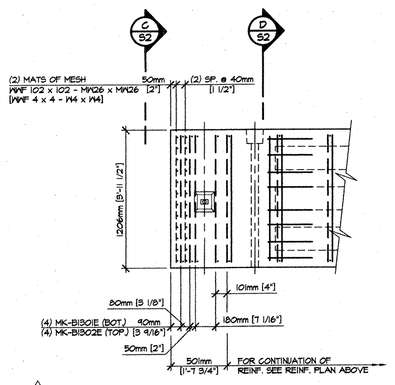
TOTAL (12) 15.25mm [.6"]ø x 1860 MPa [270KSI] STRANDS PULLED TO 1317 KN [31.0K] EA.



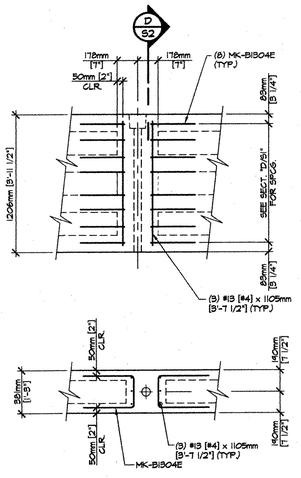
C / S2 END BLOCK REINF. SECTION
1:10



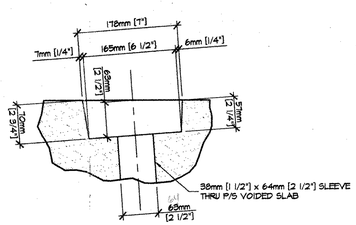
D / S2 DIAPHRAGM REINF.
1:10



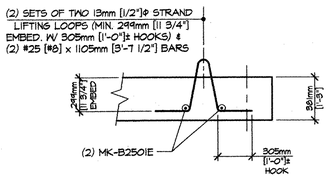
E / S2 END BLOCK REINF. PLAN
1:25



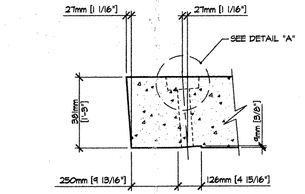
F / S2 DIAPHRAGM REINF.
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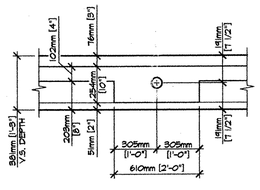
DETAIL - "A"
1:5



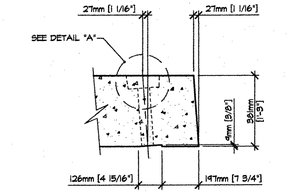
DETAIL - "E"
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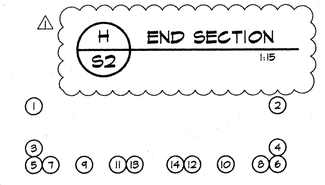
G / S2 END SECTION
1:15



DETAIL - "B"
1:20



H / S2 END SECTION
1:15



DETENSIONING SCHEDULE
N.T.S.

MARK: WR-2	QTY: 1	WT.: 10,868 kg [10.14 T]	VOL.: 4.52 m³ [5.91 cy]
MARK:	QTY:	WT.:	VOL.:

MATERIAL LIST / VOIDED SLAB

ITEM	MARK	DESCRIPTION	QTY./SLAB	
1	1301E	#13[#4] BENT BAR (EPOXY COATED)	88	
2	1302E	#13[#4] BENT BAR (EPOXY COATED)	88	
3	1308E	#13[#4] BENT BAR (EPOXY COATED)	25	
4	1304E	#13[#4] BENT BAR (EPOXY COATED)	32	
5		#13[#4] x 1105mm [3'-7 1/2"]	12	
6		WWF 102 x 102 - MW26 x MW26 [WWF 4 x 4 - W16 x W16]	4	
7	MKP3	DAYTON C24 TYPE 4-APR PRECAST HALF HANGER	10	
8	MKP4	PL 12mm [1/2"] x 200mm [7/8"] x 250mm [9 13/16"] W/ ANCHORS	1	
9		203mm [8"]ø x 4874mm [15'-11 7/8"] LONG VOID	6	
10		19mm [3/4"]ø x 120mm [4"] NON-FERROUS VOID DRAIN	12	
11		DOUBLE 13mm [1/2"]ø STRAND LIFTING LOOPS	4	
12	2501E	#25[#8] x 1105mm [3'-7 1/2"]	4	

REV. 1 9-7-05 GEN. REV. PER ENGR. COMM. TJD.

APPROVAL STAMP:

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BY KMW DATE BY M.G.
SEP 29 2005
RESIDENT APPROVED ✓ As Noted
BY CPW DATE 11/14/05

J.P. CARRARA & SONS INC.
Precast & Prestress Manufacturer
2464 OSE STR., MIDDLEBURY, VERMONT 05753 Phone:(802)388-6361 Fax:(802)388-9010

KUBRICKY CONST. CORP.
CONTRACTOR
GLENS FALLS, N.Y.

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

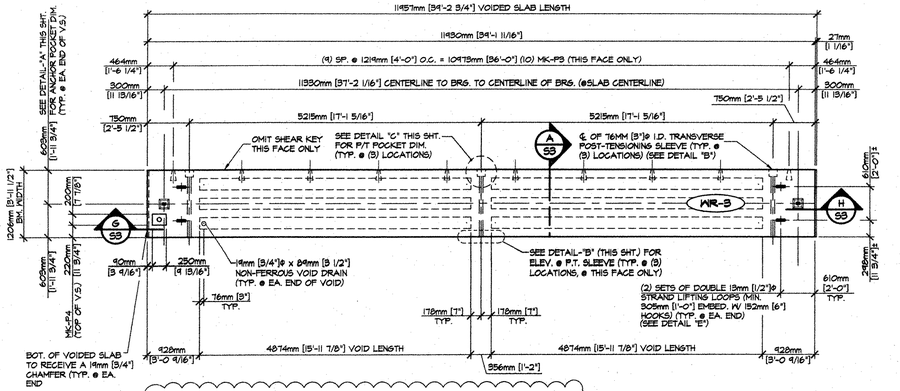
DATE: JULY 29, 2005
SCALE: NOTED
CHKD: - DFTM: T.J.D
JOB NO: 23224-05

TOWN OF BETHEL
ROUTE VT. OVER NEW ENGLAND CENTRAL RAILROAD

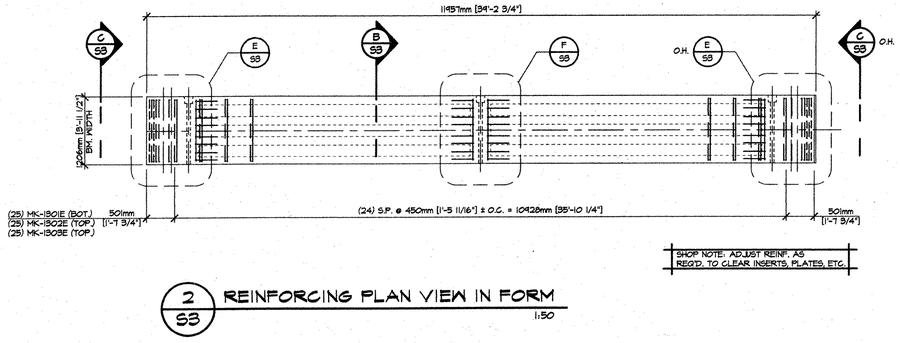
P/S VOIDED SLAB DETAILS

DWG. NO: S2
149 Pc

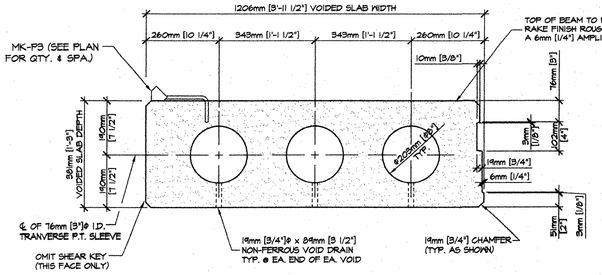
F:\VT-Bridges\23224-05 Bethel #3\123224-P2.dwg, 09/15/2005 08:55:26 AM



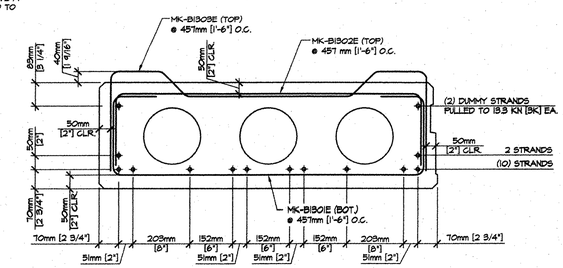
1 / S3 DIMENSIONAL PLAN VIEW IN FORM
1:50



2 / S3 REINFORCING PLAN VIEW IN FORM
1:50

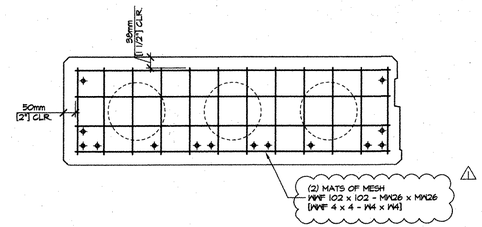


A / S3 DIMENSIONAL SECTION
1:10

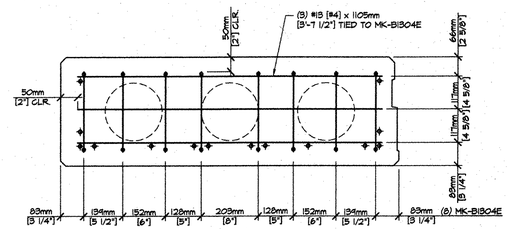


B / S3 REINFORCING SECTION
1:10

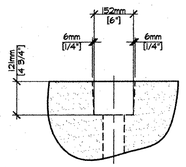
TOTAL (12) 15.25mm [.6"]ø x 1860 MPa [270KSI] STRANDS PULLED TO 137.7 KN [31.0K] EA.



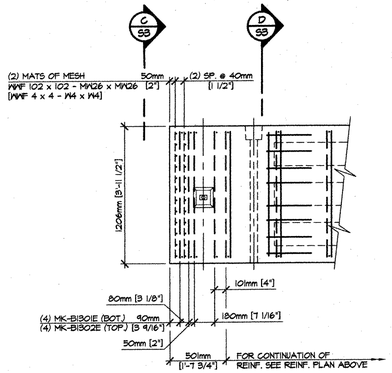
C / S3 END BLOCK REINF. SECTION
1:10



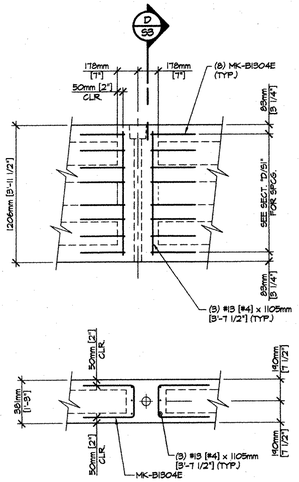
D / S3 DIAPHRAGM REINF.
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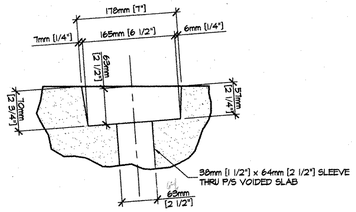
DETAIL - "C"
1:10



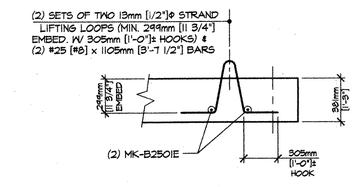
E / S3 END BLOCK REINF. PLAN
1:25



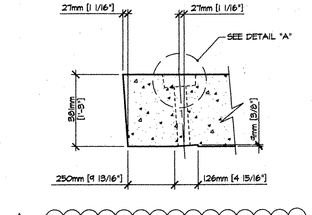
F / S3 DIAPHRAGM REINF.
1:25



DETAIL - "A"
1:5

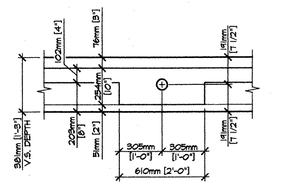


DETAIL - "E"
1:25

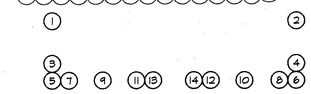


G / S3 END SECTION
1:15

H / S3 END SECTION
1:15



DETAIL - "B"
1:20



DETENSIONING SCHEDULE
N.T.S.

REV.1 4-7-05 GEN. REV. PER ENGR. COMM. T.J.D.

MARK: WR-3	QTY: 1	WT.: 10,268 kg [10.14 T]	VOL.: 4.52 m³ [5.91 cy]
MARK:	QTY:	WT.:	VOL.:

MATERIAL LIST / VOIDED SLAB

ITEM	MARK	DESCRIPTION	QTY./SLAB	
1	I30IE	#13[#4] BENT BAR (EPOXY COATED)	38	
2	I302E	#13[#4] BENT BAR (EPOXY COATED)	38	
3	I303E	#13[#4] BENT BAR (EPOXY COATED)	25	
4	I304E	#13[#4] BENT BAR (EPOXY COATED)	32	
5		#13[#4] x 1105mm [3'-7 1/2"]	12	
6		MWF 102 x 102 - MW26 x MW26 [MWF 4 x 4 - W4 x W4]	4	
7	MKP3	DAYTON C24 TYPE 4-APR PRECAST HALF HANGER	10	
8	MKP4	PL 12mm [1/2"] x 200mm [7/8"] x 250mm [9 13/16"] W/ ANCHORS	1	
9		203mm [8"]ø x 4874mm [15'-11 7/8"] LONG VOID	6	
10		19mm [3/4"]ø x 120mm [4"] NON-FERROUS VOID DRAIN	12	
11		DOUBLE 13mm [1/2"]ø STRAND LIFTING LOOPS	4	
12	250IE	#25[#8] x 1105mm [3'-7 1/2"]	4	

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J.P. CARRARA & SONS INC.
Precast & Prestress Manufacturer
2444 CASE STR., MIDDLEBURY, VERMONT 05753 Phone:(802)388-6361 Fax:(802)388-9010

KUBRICKY CONST. CORP.
CONTRACTOR
GLENS FALLS, N.Y.

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

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JOB NO: 23224-05

TOWN OF BETHEL
ROUTE VT. OVER NEW ENGLAND CENTRAL RAILROAD

P/S VOIDED SLAB DETAILS

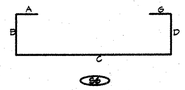
DWG. NO: S3
150 PC

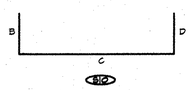
BENT BARS, TIES, & STIRRUPS

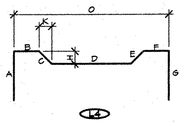
ITEM	MARK	QTY.	SIZE	LENGTH	TYPE	A	B	C	D	E	F/R	G	H	J	K	O	GRADE	REMARKS
1	1301E	297	#13 [#4]	1870mm [6'-1 5/8"]	S6	152mm [6"]	281mm [11"]	1105mm [3'-7 1/2"]	281mm [11"]			152mm [6"]					420 [60]	EPOXY COATED
2	1302E	297	#13 [#4]	1616mm [5'-3 5/8"]	S10		281mm [11"]	1105mm [3'-7 1/2"]	281mm [11"]			152mm [6"]					420 [60]	EPOXY COATED
3	1303E	225	#13 [#4]	1787mm [5'-10 3/8"]	L4	355mm [1'-2"]	180mm [7 1/16"]	127mm [5"]	565mm [1'-10 1/4"]	127mm [5"]	180mm [7 1/16"]	355mm [1'-2"]	90mm [3 9/16"]		90mm [3 9/16"]	1105mm [3'-7 1/2"]	420 [60]	EPOXY COATED
4	1304E	288	#13 [#4]	1143mm [3'-9"]	S10		457mm [1'-6"]	281mm [11"]	457mm [1'-6"]								420 [60]	EPOXY COATED
5																		
6																		
7																		
8	2501E	28	#25 [#8]	1105mm [3'-9"]	STR.												420 [60]	EPOXY COATED
9																		
10																		
11																		
12																		
13																		
14																		
15																		

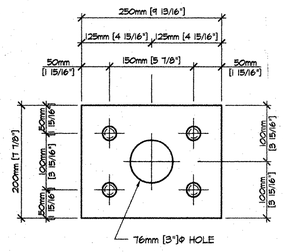
MISCELLANEOUS MATERIAL

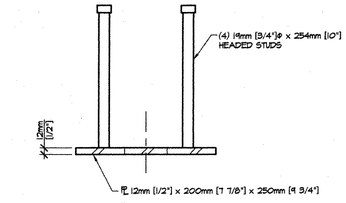
ITEM	MARK	QTY.	DESCRIPTION	REMARKS
1	MKP3	20	DAYTON C24 TYPE 4-APR PRECAST HALF HANGER	FOR ERECTION (SEE DETAIL, THIS SHEET)
2	MKP4	9	PL 12mm [1/2"] x 200mm [7 7/8"] x 250mm [9 13/16"] W/ ANCHORS	FOR ERECTION (SEE DETAIL, THIS SHEET)
3		54	203mm [8"]Ø x 4874mm [15'-11 7/8"] LONG VOID	
4		108	19mm [3/4"]Ø x 120mm [4"] NON-FERROUS VOID DRAINS	
5		36	DOUBLE 13mm [1/2"]Ø STRAND LIFTING LOOPS	
6	EM-1	6	PL 19mm [3/4"] x 127mm [5"] x 127mm [5"] W/ (1) 51mm [2"]Ø HOLE (GALV.)	FOR ERECTION (SEE DETAIL, THIS SHEET)
7		3	13mm [1/2"]Ø x 11887mm [39'-6"] POLYSTRAND	
8		6	SINGLE USE STRESSING CHUCK	
9	EM-3	18	PL 13mm [1/2"] x 127mm [5"] x 127mm [5"] W/ (1) 38mm [1 1/2"]Ø HOLE (GALV.)	FOR ERECTION (SEE DETAIL, THIS SHEET)
10		36	MAF 102 x 102 - MX26 x MX26 [MAF 4 x 4 - M4 x M4] / 305mm x 1105mm [1'-0" x 3'-7 1/2"]	
11				
12		18	THREADED ROD 32mm [1 1/4"]Ø x 762mm [2'-6"] (HOT DIPPED GALV.) (A36)	FOR ERECTION (SEE DETAIL, THIS SHEET)
13		18	32mm [1 1/4"]Ø NUT (GALV.)	FOR ERECTION (SEE DETAIL, THIS SHEET)
14		18	STANDARD WASHER (GALV.)	FOR ERECTION (SEE DETAIL, THIS SHEET)
15				
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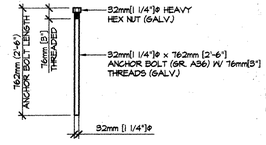




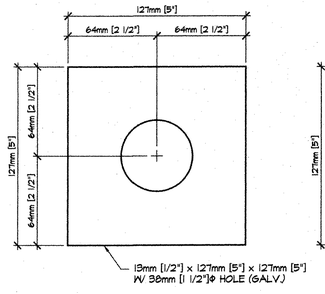




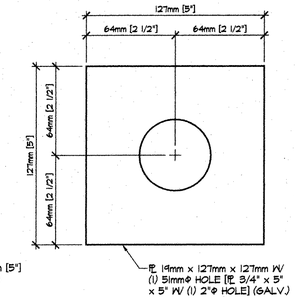
MK-P4
1:2



ANCHOR BOLT DETAIL
1:20



EM - 3
1:2



EM - 1
1:2

REV.1 9-7-05 GEN. REV. PER ENGR. COMM. T.J.D.

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SEP 20 2005
DISTRICT APPROVED
TO QPW DATE 11/14/05

J.P. CARRARA & SONS INC.
Precast & Prestress Manufacturer
2484 CASE STR., MIDDLEBURY, VERMONT 05753 Phone:(802)388-6361 Fax:(802)388-9010

KUBRICKY CONST. CORP.
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JOB NO: 23224-05

TOWN OF BETHEL
ROUTE VT. OVER NEW ENGLAND CENTRAL RAILROAD

MATERIALS LIST

DWG. NO: M1
1 S/1 PC.

The Reinforced Earth Company

133 PARK STREET, NORTH READING, MA 01864 (978) 664-2830

GENERAL NOTES

DESIGN CRITERIA

1. DESIGN IS BASED ON THE ASSUMPTION THAT THE MATERIAL WITHIN THE REINFORCED EARTH VOLUME, METHODS OF CONSTRUCTION AND QUALITY OF PREFABRICATED MATERIALS SHALL CONFORM TO THE CONTRACTING AGENCY'S TECHNICAL SPECIFICATIONS FOR REINFORCED EARTH WALLS.

2. SOILS CHARACTERISTICS ASSUMED FOR DESIGN (PER NOTE 30, SHT. 37 OF 63):

   SELECT FILL MATERIAL FOR MSE WALLS
   $\emptyset$ = 34 degrees, c = 0 KPa., γ = 22 KN/m^3

   EMBANKMENT BACKFILL (RETAINED SOIL)
   $\emptyset$ = 30 degrees, c = 0 KPa., γ = 17.3 KN/m^3

   FOUNDATION MATERIAL (ALLOWABLE BEARING CAPACITY = 300 kPa)
   $\emptyset$ = 30 degrees, c = 0 KPa., γ = 17.3 KN/m^3

3. THE MAXIMUM APPLIED BEARING PRESSURE AT THE FOUNDATION LEVEL IS AS SHOWN ON THE WALL ELEVATIONS FOR EACH DESIGN CASE. IT IS THE RESPONSIBILITY OF THE OWNER TO DETERMINE THAT THIS APPLIED BEARING PRESSURE IS ALLOWABLE FOR THAT LOCATION.

4. ANY UNSUITABLE FOUNDATION MATERIAL BELOW THE REINFORCED EARTH VOLUME, AS DETERMINED BY THE VTRANS RESIDENT ENGINEER, SHALL BE EXCAVATED AND REPLACED WITH GRANULAR BORROW OR OTHERWISE STABILIZED AS DIRECTED BY THE VTRANS RESIDENT ENGINEER.

5. REINFORCING STRIPS SHALL BE 50mm WIDE AND 4mm THICK, AND SHALL CONFORM TO THE PHYSICAL AND MECHANICAL PROPERTIES OF ASTM A-572 GRADE 450. GALVANIZATION SHALL BE APPLIED IN ACCORDANCE WITH ASTM A-123 OR AASHTO M111 (610 g/m^2).

WALL CONSTRUCTION

6. STATIONS SHOWN ARE ALONG VT-12 BASELINE.

7. FOR LOCATION AND ALIGNMENT OF REINFORCED EARTH WALL. SEE SHEET NO. 2 OF THESE PLANS AND CONTRACT DRAWINGS.

8. IF MANHOLES OR DROP INLETS ARE PRESENT WITHIN THE REINFORCED EARTH VOLUME AND SPECIFIC DETAILS HAVE NOT BEEN INCLUDED IN THESE PLANS, CONTACT THE REINFORCED EARTH COMPANY FOR APPROPRIATE DETAILS.

9. FOR PILES LOCATED WITHIN THE REINFORCED EARTH VOLUME, THEY SHALL BE DRIVEN PRIOR TO CONSTRUCTION OF THE REINFORCED EARTH WALL UNLESS A METHOD TO PROTECT THE STRUCTURE, WHICH IS ACCEPTABLE TO VTRANS AND THE REINFORCED EARTH COMPANY, AND IS PROPOSED AND APPROVED IN WRITING.

10. BACKFILL MATERIAL SHALL BE COMPACTED IN ACCORDANCE WITH THE SPECIFICATIONS FOR REINFORCED EARTH WALLS TO A LEVEL OF 5 cm ± ABOVE THE TIE STRIPS EMBEDDED IN THE PANELS. INSTALLATION OF REINFORCING STRIPS SHALL BE PERMITTED ONLY AFTER PLACEMENT AND COMPACTION OF THE BACKFILL MATERIAL HAS REACHED THE REQUIRED LEVEL.

WALL CONSTRUCTION (CONT.)

11. COMPACTION AND OPERATION EQUIPMENT SHALL BE KEPT A MINIMUM DISTANCE OF 1M FROM THE BACK FACE OF THE REINFORCED EARTH PANELS. COMPACTION WITHIN 1M OF THE REINFORCED EARTH PANELS SHALL BE ACHIEVED WITH AT LEAST THREE (3) PASSES OF A LIGHTWEIGHT MECHANICAL TAMPER, ROLLER OR VIBRATORY SYSTEM. NO COMPACTION DENSITY TESTS SHALL BE TAKEN WITHIN THE 1M . ZONE.

12. IF STRUCTURES IN EXCESS OF 6M IN HEIGHT OCCUR, THE FINISHED GRADE IN FRONT OF THE WALL SHALL BE PLACED AND COMPACTED BEFORE WALL CONSTRUCTION EXCEEDS A HEIGHT OF 6M . FINISHED GRADE BACKFILL SHALL BE COMPACTED TO 95% OF ASTM D-698, METHODS 'C' OR 'D', UNLESS OTHERWISE DIRECTED BY THE ENGINEER.

13. IT IS THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE THE LOCATION OF ANY GUARDRAIL POSTS BEHIND THE REINFORCED EARTH PANELS. PRIOR TO PLACEMENT OF THE TOP LAYER OF REINFORCING STRIPS, INDIVIDUAL STRIPS MAY BE SKEWED TO AVOID THE POST LOCATIONS IF AUTHORIZED BY THE REINFORCED EARTH COMPANY. ANY DAMAGE DONE TO THE REINFORCING STRIPS DUE TO THE INSTALLATION OF THE GUARDRAIL SHALL BE REPAIRED BY THE CONTRACTOR AT THE CONTRACTOR'S EXPENSE.

14. IF EXISTING OR FUTURE STRUCTURES, PIPES, FOUNDATIONS OR GUARDRAIL POSTS WHICH ARE WITHIN THE REINFORCED EARTH VOLUME INTERFERE WITH THE NORMAL PLACEMENT OF REINFORCING STRIPS AND SPECIFIC DIRECTION HAS NOT BEEN PROVIDED ON THE PLANS, THE CONTRACTOR SHALL NOTIFY THE REINFORCED EARTH COMPANY TO DETERMINE WHAT COURSE OF ACTION SHOULD BE TAKEN.

15. ALL DETAILING AND CHECKING OF REINFORCING STEEL FOR ANY C.I.P. CONCRETE WORK IS THE RESPONSIBILITY OF THE CONTRACTOR.

16. TOP PANELS BELOW COPING SHALL EACH HAVE (3) THREE #13 (#4 US) DOWELS.

17. FOR OTHER INFORMATION PERTAINING TO WALL CONSTRUCTION PLEASE REFER TO THE REINFORCED EARTH CONSTRUCTION MANUAL.

18. THE CONTRACTOR IS RESPONSIBLE FOR GRADUALLY DEFLECTING UPPER REINFORCING STRIPS DOWNWARD TO AVOID CONFLICTS WITH PAVING, FOUNDATIONS AND SUBGRADE PREPARATION. THE CONTRACTOR'S ATTENTION IS DIRECTED ESPECIALLY TO SITUATIONS WHERE ROADWAY SUPERELEVATION, IMPERVIOUS MEMBRANES AND/OR SOIL MIXING ARE ANTICIPATED.

19. THE CONTRACTOR IS RESPONSIBLE FOR CONTROLLING STORM WATER DRAINAGE IN THE VICINITY OF THE WALL DURING CONSTRUCTION. STORM WATER RUNOFF IS TO BE COLLECTED AND DISCHARGED AWAY FROM THE WALL AND REINFORCED BACKFILL.

MATERIALS NOTES

20. NOMINAL STRIP LENGTHS

THE REINFORCING STRIP LENGTHS SHOWN ON THE PLANS, MEASURED FROM BACK FACE OF PANEL, ARE THE NOMINAL LENGTHS REQUIRED BY CALCULATION. THE ACTUAL FABRICATED STRIP LENGTHS ARE OFTEN LONGER (UP TO 15cm) DUE TO MANUFACTURING TOLERANCES. THE REQUIRED HORIZONTAL LIMIT OF GRANULAR BACKFILL IS EQUAL TO THE NOMINAL STRIP LENGTH. ADDITIONAL GRANULAR BACKFILL BEYOND THE NOMINAL STRIP LENGTH IS NOT REQUIRED BY CALCULATION.

MATERIALS NOTES (CONT.)

21. SELECT BACKFILL QUANTITY

THE SELECT BACKFILL QUANTITY IS CALCULATED BY MULTIPLYING THE NOMINAL STRIP LENGTHS SHOWN ON THE PLANS (PLUS 300mm) BY THEIR TRIBUTARY WALL SURFACE AREA AND CONVERTING THE RESULT TO A NEATLINE CUBIC METER QUANTITY. THE CONTRACTOR MUST CALCULATE HIS OWN EXCAVATION AND BACKFILL QUANTITIES BASED UPON THE SPECIFIC CONDITIONS OF THE PROJECT.

22. PANEL FINISH

PRECAST FACING PANELS SHALL HAVE AN ASHLAR STONE FORM LINER FINISH. PANEL TYPES "CE" (CORNER ELEMENTS) AND "J" (SLIP JOINT COVER PIECES) SHALL HAVE A PLAIN STEEL FORM FINISH. ALL PRECAST PIECES SHALL BE COLORED WITH APPROVED STAIN (BY CONTRACTOR) UPON COMPLETION OF WALL CONSTRUCTION.

23. NOTE TO CONTRACTORS

ONLY THE FOLLOWING MATERIALS ARE SUPPLIED BY THE REINFORCED EARTH COMPANY:

- PRECAST CONCRETE FACING PANELS
- REINFORCING STRIPS
- BOLT SETS (FOR ATTACHING REINFORCING STRIPS TO PANELS)
- BEARING BLOKS
- RUBBER SHIMS
- FILTER CLOTH AND ADHESIVE (FOR PANEL JOINTS ONLY)

ANY OTHER MATERIALS CALLED FOR IN THE CONTRACT PLANS OR SPECIFICATIONS ARE TO BE SUPPLIED BY THE CONTRACTOR. ANY JOINT MATERIALS SHOWN AT THE INTERFACE OF PRECAST PANELS AND CAST-IN-PLACE CONCRETE STRUCTURES ARE TO BE SUPPLIED BY THE ERECTION CONTRACTOR. ALL SANDBLASTING, PAINTING, SEALERS, STAIN OR OTHER SPECIAL APPLIED COATINGS ARE ALSO SUPPLIED/INSTALLED BY THE CONTRACTOR IN THE FIELD FOLLOWING PANEL ERECTION.

ALL GEOTEXTILES, GEOGRIDS, IMPERVIOUS MEMBRANES ARE SUPPLIED BY THE CONTRACTOR.

24. THE REINFORCED EARTH COMPANY SUPPLIES PRECAST CONCRETE FACING PANELS AND ACCESSORIES TO BE USED IN CONJUNCTION WITH OTHER MATERIALS IN THE CONSTRUCTION OF THE REINFORCED EARTH® RETAINING WALLS DETAILED HEREIN. THE CONSTRUCTION AND QUALITY CONTROL PROCEDURES MANUAL FURNISHED BY THE REINFORCED EARTH COMPANY IS INTENDED TO PROVIDE A GENERAL EXPLANATION OF THE SYSTEM. IT IS THE CONTRACTOR'S OBLIGATION TO DEVISE AND EXECUTE A PROJECT SPECIFIC ERECTION SEQUENCE, PANEL UNLOADING, HANDLING AND BRACING SYSTEM, AND FALL PROTECTION SYSTEM. THE BRACING SYSTEM SHOWN IN THE CONSTRUCTION AND QUALITY CONTROL PROCEDURES MANUAL IS GENERAL IN NATURE AND DOES NOT ACCOUNT FOR PROJECT SPECIFIC CRITERIA. COMPLIANCE WITH THE GUIDELINES IN THIS MANUAL DOES NOT RELIEVE THE CONTRACTOR OF ITS RESPONSIBILITY TO ADHERE TO THE PROJECT PLANS, SPECIFICATIONS AND CONTRACT DOCUMENTS OR COMPLIANCE WITH ALL FALL PROTECTION, SAFETY, LAWS, STANDARDS AND PROCEDURES AT THE JOBSITE. CONTRACTORS SHOULD TAKE SPECIAL PRECAUTIONS TO PREVENT THE PANELS FROM SHIFTING OR FALLING DURING THE ERECTION PROCESS.

25. PROJECT NOTES

SEE CONTRACT DRAWINGS 51, 52, 53, AND 54 OF 130 FOR ADDITIONAL NOTES. SEE PROJECT SPECIAL PROVISIONS SECTION 526 FOR ADDITIONAL REQUIREMENTS.

INDEX

SHEET NO.	CONTENTS
1	GENERAL NOTES
2	ABUTMENT #1 – PLAN AND ELEVATION VIEWS
3	TYPICAL SECTIONS
4	MISC. DETAILS
5	STANDARD PANEL DETAILS

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STATE OF VERMONT
PIETER L. ANDERSON
0181
PROFESSIONAL ENGINEER
9/25/05

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VT AOT PROJ. NO. BRF 0241 (33) C/2

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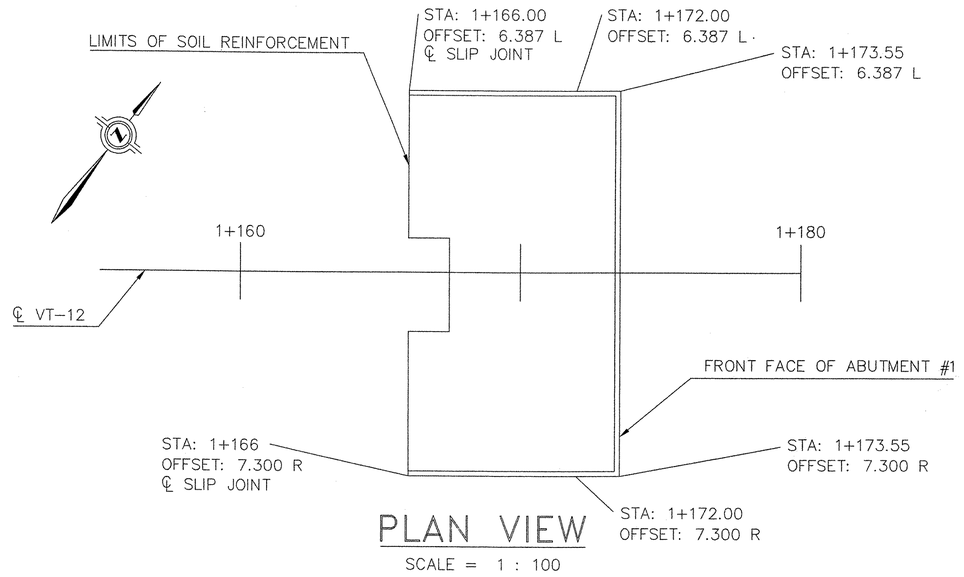
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The Reinforced Earth Company
8614 Westwood Center Drive Suite 1100, Vienna, Virginia 22182 (703) 821-1175

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DESIGNED BY: JMKC				PROJECT NAME	BRIDGE IMPROVEMENT VT 12 OVER NEW ENGLAND CENTRAL RAILROAD	DATE 7/21/2005
PROJECT ENGR: JMKC				LOCATION	BETHEL VERMONT	CONTRACT NO. 11843
CHECKED BY: KPB				OWNER	VT AOT 152REW	DRAWING NO. 1 OF 5
ENG. MANAGER	REV.	DATE	DESCRIPTION	DRAWING COVERS	GENERAL NOTES – R.E. WALLS	SCALE AS SHOWN

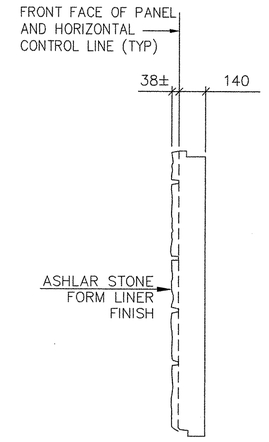
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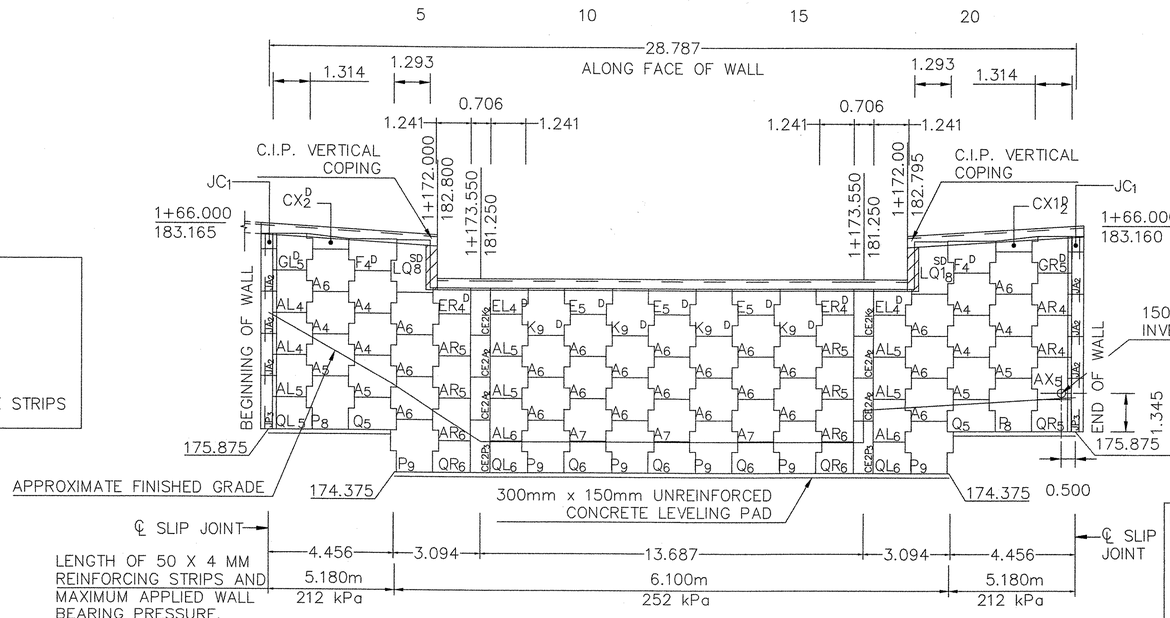
PLAN VIEW

SCALE = 1 : 100

ALL DIMENSIONS ON THIS SHEET ARE IN METERS UNLESS NOTED OTHERWISE.



SECTION THRU FACING PANEL



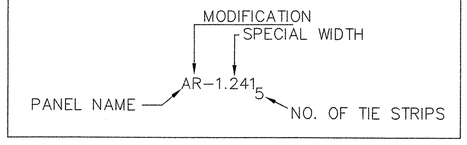
ELEVATION – FRONT FACE

SCALE = 1 : 100

SUMMARY OF MATERIAL QUANTITIES	
FACING PANEL AREA MSE ABUTMENT #1	200 SM
REQUIRED BACKFILL MSE ABUTMENT #1	710 CM
C.I.P. COPING *	33 LM
LEVELING PAD	29 LM

* C.I.P. COPING INCLUDES VERTICAL COPING.

KEY:



NOTE:

** TOP OF LEVELING PAD ELEVATIONS SET 0.125m BELOW ELEVATIONS GIVEN IN CONTRACT PLANS TO ALLOW FOR STANDARD PANEL UNITS.

NOTES: LENGTH OF LEVELING PAD IS BASED ON INDIVIDUAL PANEL WIDTHS, ℄ OF EAR TO ℄ OF EAR. USE THE STEP DETAIL ON SHEET No. 3 TO DETERMINE THE ACTUAL LEVELING PAD STEP LOCATION.

FOR TYPICAL WALL SECTIONS SEE SHEET No. 3.

FOR COPING DETAILS – SEE CONTRACT PLANS (INCL SHEET 52 OF 130).

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STATE OF VERMONT PIETER L. ANDERSON 5161 PROFESSIONAL ENGINEER
7/25/05

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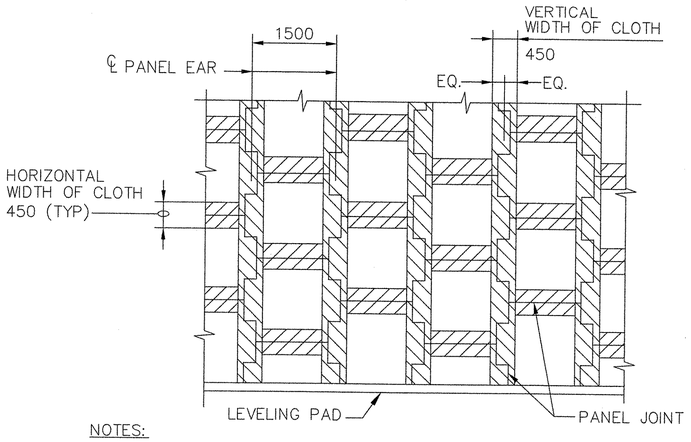
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8614 Westwood Center Drive Suite 1100, Vienna, Virginia 22182 (703) 821-1175

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DESIGNED BY: JMKC				PROJECT NAME	BRIDGE IMPROVEMENT VT 12 OVER NEW ENGLAND CENTRAL RAILROAD	DATE	7/21/2005
PROJECT ENGR: JMKC				LOCATION	BETHEL VERMONT	CONTRACT NO.	11843
CHECKED BY: KPB				OWNER	VT AOT 153 ROW	DRAWING NO.	2 OF 5
ENG. MANAGER	REV.	DATE	DESCRIPTION	DRAWING COVERS	ABUTMENT NO. 1	SCALE	AS SHOWN

C:\PROJ\NE\11843\11843 WALL 1.DWG

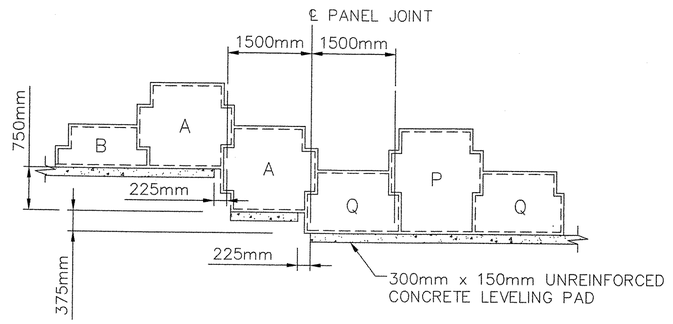


NOTES:

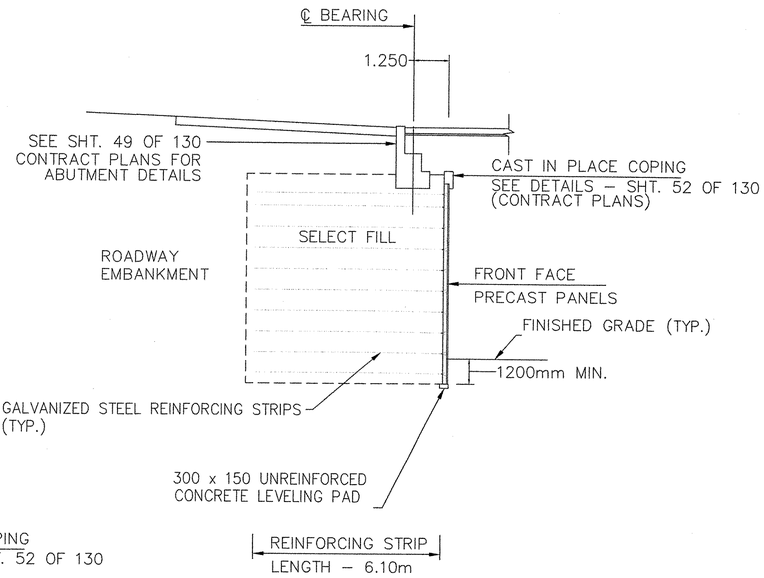
1. STRIPS OF FILTER CLOTH SHALL BE PLACED ON BACK FACE OF PANEL, OVER PANEL JOINTS. FILTER CLOTH SHALL BE ADHERED TO BACK FACE OF PANELS USING AN ADHESIVE COMPOUND SUPPLIED BY THE REINFORCED EARTH COMPANY.
2. THE CONTRACTOR SHALL PROVIDE THE RESIDENT ENGINEER WITH THE MANUFACTURERS TECHNICAL DATA SHEET AND APPLICATION INSTRUCTIONS FOR THE ADHESIVE COMPUND.

FILTER CLOTH DETAIL
PARTIAL ELEVATION - BACK FACE

SCALE 1:50

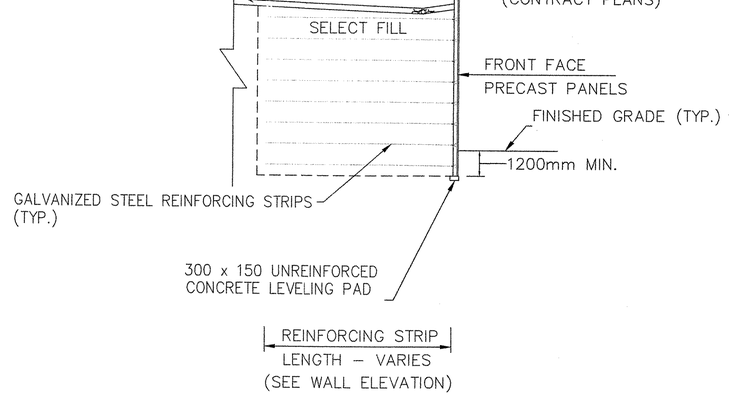


TYPICAL LEVELING PAD STEP DETAIL



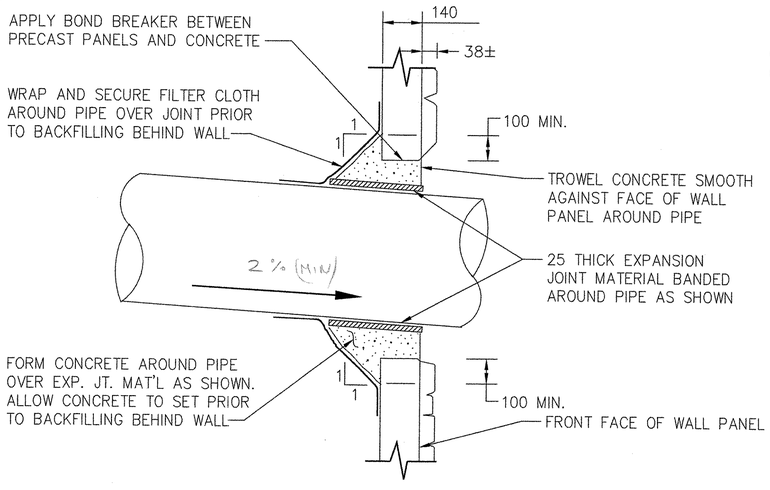
TYPICAL SECTION
AT ABUTMENT

SCALE: 1 : 100



TYPICAL SECTION
AT WINGWALLS

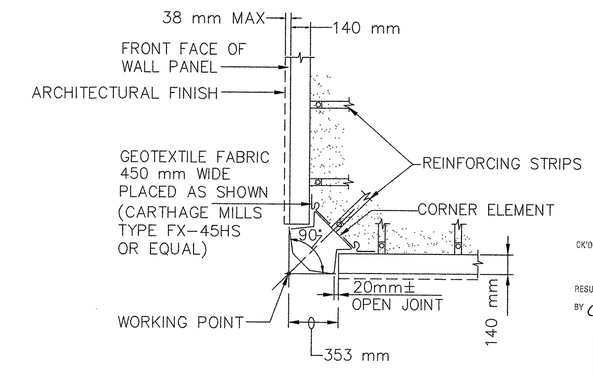
SCALE: 1 : 100



PIPE PENETRATION AT WALL FACE DETAIL

SCALE: 1 : 100

NOTE:
SEE SHEET 52 OF 130 IN THE CONTRACT PLANS
FOR C.I.P. COPING DETAILS



90° CORNER ELEMENT DETAIL

SCALE 1:20

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STATE OF VERMONT
PETER L. ANDERSON
8181
PROFESSIONAL ENGINEER
7/25/05

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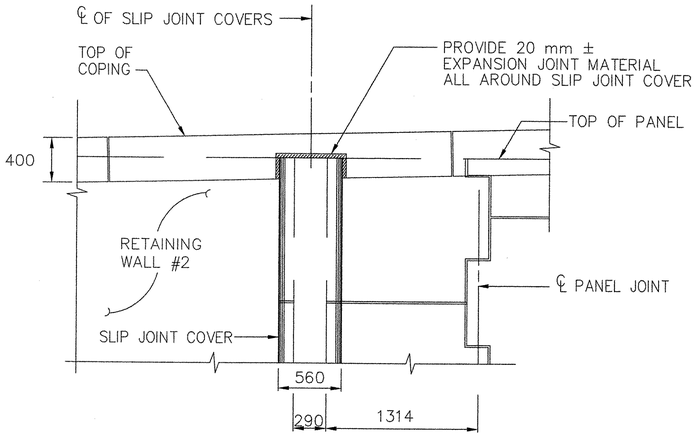
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PROJECT ENGR: JMKC					LOCATION	BETHEL VERMONT	CONTRACT NO. 11843
CHECKED BY: KPB					OWNER	VT AOT 154 BRN	DRAWING NO. 3 OF 5
ENG. MANAGER	REV.	DATE	DESCRIPTION		DRAWING COVERS	TYPICAL SECTIONS	SCALE AS SHOWN

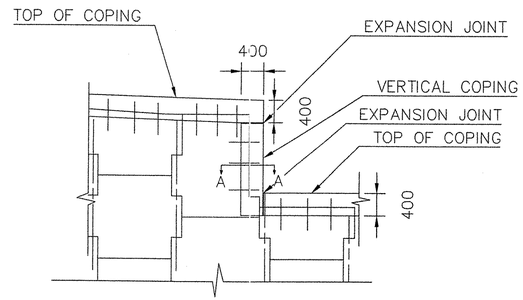
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CAST–IN–PLACE COPING OVER SLIP JOINT COVER

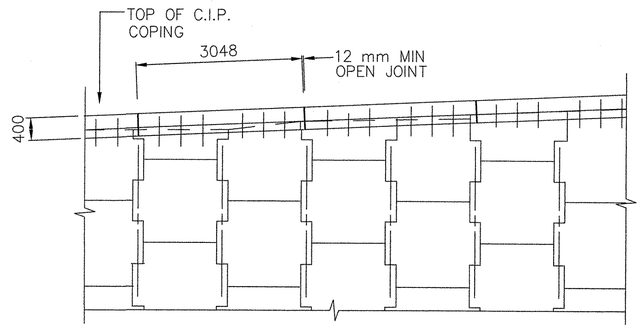
SCALE 1:25

DETAIL AT RETAINING WALL #2 SHOWN.
CONNECTION AT SOIL NAIL WALL SIMILAR.



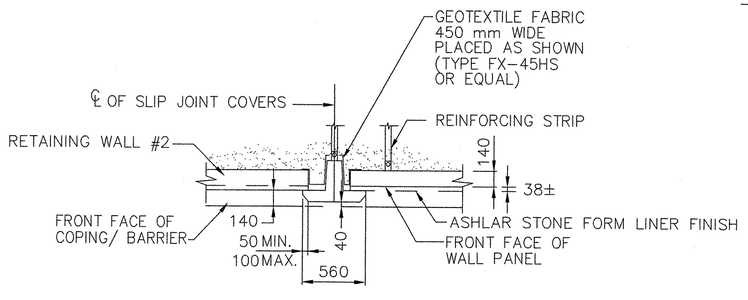
CAST–IN–PLACE VERTICAL COPING PARTIAL PLAN VIEW

SCALE 1:50



CAST–IN–PLACE COPING – PARTIAL ELEVATION

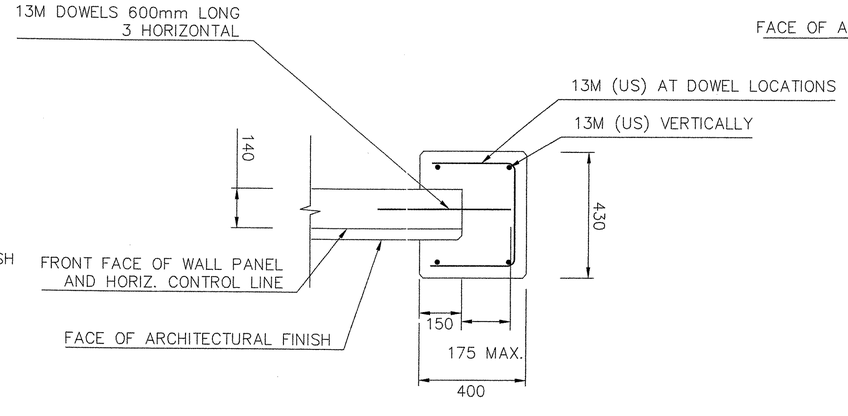
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SLIP JOINT COVER DETAIL

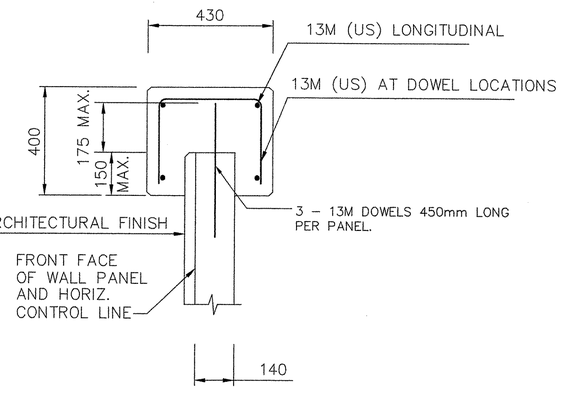
SCALE 1:25

DETAIL AT RETAINING WALL #2 SHOWN.
CONNECTION AT SOIL NAIL WALL SIMILAR.



CAST–IN–PLACE VERTICAL COPING SECTION A–A

SCALE: 1:100



CAST–IN–PLACE COPING

SCALE: 1:100

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STATE OF VERMONT
PIETER L. ANDERSON
8161
PROFESSIONAL ENGINEER
7/25/05

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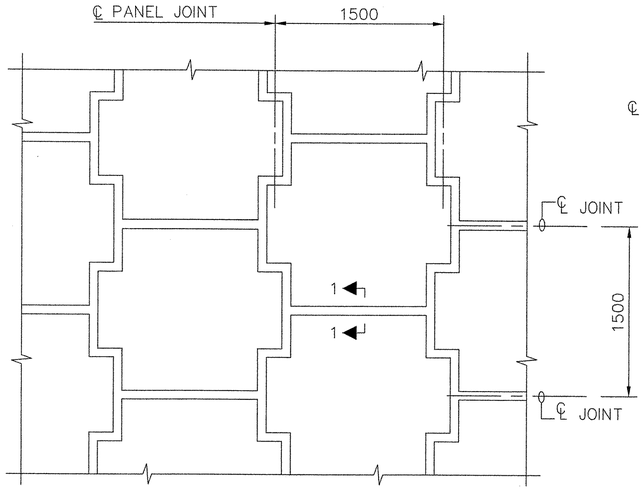
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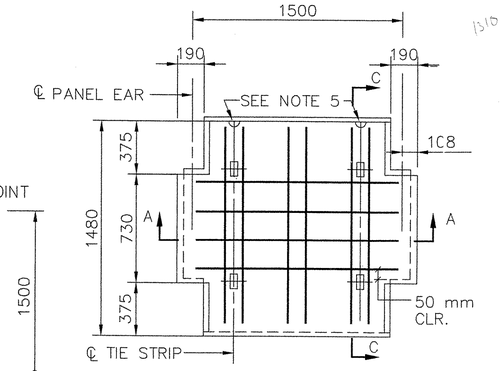
DESIGNED BY: JMKC				PROJECT NAME	BRIDGE IMPROVEMENT VT 12 OVER NEW ENGLAND CENTRAL RAILROAD	DATE 7/21/2005
PROJECT ENGR: JMKC				LOCATION	BETHEL VERMONT	CONTRACT NO. 11843
CHECKED BY: KPB				OWNER	VT AOT	DRAWING NO. 4 OF 5
ENG. MANAGER	REV.	DATE	DESCRIPTION	DRAWING COVERS	MISC. DETAILS 155 REW	SCALE AS SHOWN

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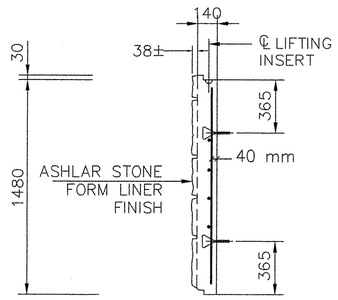
TYPICAL PANEL LAYOUT
PARTIAL ELEVATION - FRONT FACE

SCALE 1:25



PANEL TYPE "A"
WITH R6 REINFORCEMENT
BACK FACE VIEW

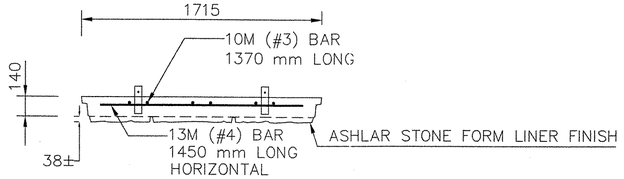
SCALE 1:20



SECTION C-C

SCALE 1:20

PANEL THICKNESS	REINFORCEMENT DESIGNATION	PANEL REINFORCEMENT	MAXIMUM ALLOWABLE HORIZONTAL STRESS AT FACING (KPa)
140+38	R6	6–10M(#3) ø VERT. 4–13M(#4) ø HORIZ.	77 kPa

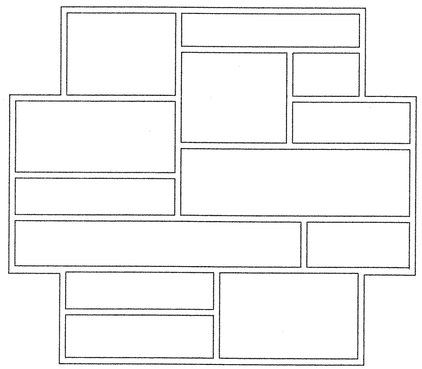


SECTION A-A

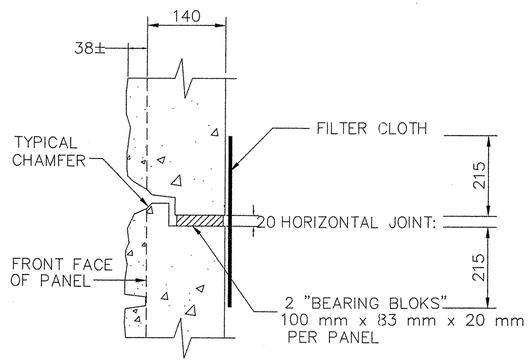
SCALE 1:20

NOTES:

1. REINFORCING STEEL TO BE A615 GRADE 420. EPOXY COATED
2. 28 DAY COMPRESSIVE STRENGTH OF CONCRETE = 27.6 MPa
3. 10 mm x 10 mm CHAMFER SHALL BE PROVIDED ON ALL EXPOSED EDGES (FRONT FACE ONLY).
4. ALL PANEL TYPES AND OTHER RELATED ELEMENTS WILL BE DETAILED ON SHOP DRAWINGS.
5. ALL PANELS SHALL HAVE TWO LIFTING INSERTS OF ONE TON CAPACITY EACH.
6. FACING PANEL FINISH SHALL BE AN ASHLAR STONE FORM LINER FINISH. THE CONCRETE SHALL BE FIELD STAINED WITH APPROVED DYE.
7. PANEL DESIGN THICKNESS IS 140 mm.
8. BEARING BLOKS SHALL BE EPDM RUBBER PADS WITH DUROMETER HARDNESS OF 80±5, CONFORMING TO ASTM D2000.
9. SHIMS SHALL BE EPDM RUBBER PADS WITH DUROMETER HARDNESS OF 80±5, CONFORMING TO ASTM D2000. NOMINAL DIMENSION OF SHIM IS 50mm X 85mm X 5mm THICK.
10. SEE CONSTRUCTION MANUAL FOR ADDITIONAL INFORMATION.

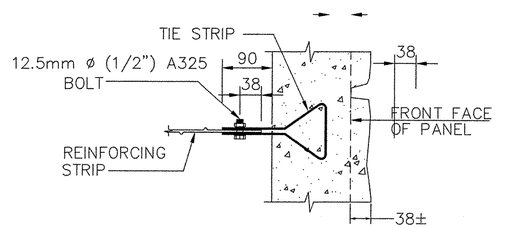


ASHLAR STONE PANEL FINISH
PANEL TYPE A
(LOOKING AT PANEL FACE)



SECTION 1-1

SCALE 1:5



CONNECTION DETAIL

SCALE 1:5

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JUL 28 2005
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BY GPW DATE 8/31/05

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STATE OF VERMONT
PETER L. ANDERSON
6161
PROFESSIONAL ENGINEER
9/25/05

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VT AOT PROJ. NO. BRO 1446(26)

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DESIGNED BY:				PROJECT NAME	BRIDGE IMPROVEMENT VT 12 OVER NEW ENGLAND CENTRAL RAILROAD	DATE
JMKC						7/21/2005
PROJECT ENGR: JMKC				LOCATION	BETHEL VERMONT	CONTRACT NO. 11843
CHECKED BY: KPB				OWNER	VT AOT	DRAWING NO. 5 OF 5
ENG. MANAGER	REV.	DATE	DESCRIPTION	DRAWING COVERS	STANDARD PANELS 156 REW	SCALE AS SHOWN

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The Reinforced Earth Company

133 PARK STREET, NORTH READING, MASSACHUSETTS 01864 (978) 664-2830

PRECAST PANEL SHOP DRAWINGS

PANEL GENERAL NOTES

1. REINFORCING BARS SHALL BE STEEL ASTM A615 GRADE 60. (AASHTO M31) AND BE EPOXY COATED DEFORMED BAR.
2. TIE STRIPS SHALL BE STEEL ASTM A1011 (FORMERLY A570) GRADE 50 (GALVANIZED PER ASTM A-123/ AASHTO M-111).
3. ALL FRONT EDGES OF PANELS, EXCEPT THE BOTTOM EDGE OF THE BOTTOM PANEL COURSE, SHALL HAVE A 10mm CHAMFER.
4. TIE STRIPS SHALL BE PLACED WITHIN 25mm OF THE DIMENSIONS SHOWN ON THE FABRICATION DRAWINGS.
5. PANEL DESIGN THICKNESS IS 140mm. THE 28 DAY COMPRESSIVE STRENGTH OF CONCRETE SHALL BE 27.6 MPa (4000 psi) AND BE IN ACCORDANCE WITH THE SPECIAL PROVISIONS FOR ITEM 526A – MECHANICALLY STABILIZED EARTH WALL.
6. DIMENSIONS SPECIFIED ON INDIVIDUAL FABRICATION DRAWINGS SUPERCEDE THOSE CALLED OUT ON THE STANDARD SECTIONS AND DETAILS.
7. VERTICAL REINFORCING BARS SHALL BE PLACED 38mm MIN. – 50mm (TYP.) CLEAR FROM THE BACK FACE OF THE 140mm PANEL.
8. ALL REINFORCING BARS SHALL BE STOPPED 50mm MIN. CLEAR FROM ANY EDGE OF PANEL UNLESS NOTED ON INDIVIDUAL FABRICATION DRAWING OR AS INDICATED IN NOTE #9.
9. IN ALL SLOPED PANELS THE TWO (2) VERTICAL REINFORCING BARS ADJACENT TO A COMMON TIE STRIP SHALL BE OF THE SAME LENGTH.
10. ALL INDIVIDUAL FABRICATION DRAWINGS ARE SHOWN BACK FACE.
11. PRECAST FACING PANELS FOR R.E WALLS SHALL HAVE AN ASHLAR STONE FORM LINER FINISH.

    CORNER ELEMENTS AND SLIP JOINT COVERS SHALL HAVE A PLAIN STEEL FORM FINISH FOR ALL WALLS ON THIS PROJECT. CONCRETE SHALL BE PLAIN GRAY IN COLOR. FIELD APPLIED STAIN (AFTER PANEL INSTALLATION) BY CONTRACTOR.

12. REINFORCING BARS IN A STANDARD "A" PANEL SHALL BE AS FOLLOWS:

PANEL REINFORCEMENT

PIECE MARK	HORIZONTAL BARS	VERTICAL BARS
XX-XX-R6	4- 13M (#4)	6-10M (#3)

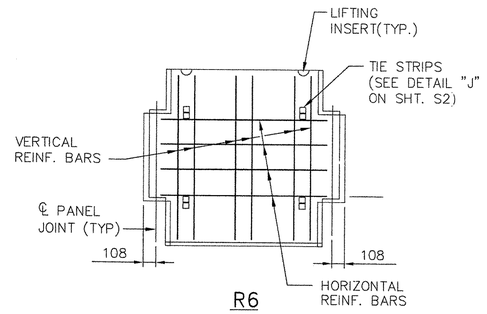
HORIZONTAL REINFORCEMENT IN THE OTHER PANEL TYPES IS PROPORTIONAL TO THEIR RELATIVE HEIGHT.

13. KEY TO PIECE MARK:

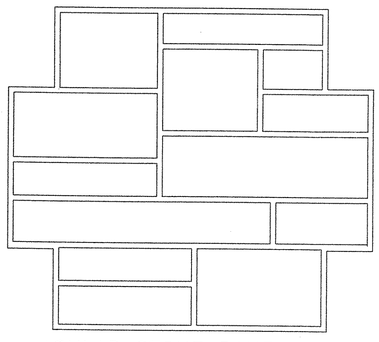
AL-4-R6-1355

- AL – PANEL TYPE
- 4 – MODIFICATION (ONE OR MORE)
- R6 – NUMBER OF TIE STRIPS
- 1355 – PANEL REINFORCEMENT TYPE
- 1355 – MODIFICATION DIMENSION (PANEL WIDTH)

14. KEY TO PANELS:

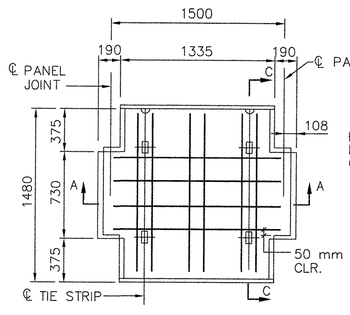


R6
BACK FACE

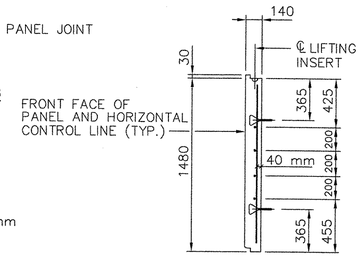


ASHLAR STONE PANEL FINISH

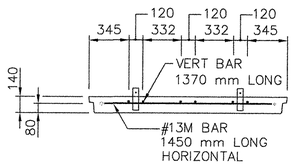
(LOOKING AT PANEL FACE)



PANEL TYPE "A"
WITH R6 REINFORCEMENT
BACK FACE VIEW
SCALE 1:20



SECTION C-C
SCALE 1:20



SECTION A-A
SCALE 1:20

ALL DIMENSIONS ARE IN (mm) MILLIMETERS

RECEIVED
OK'D BY KMH OK'D BY M.G.
JUL 28 2005
RESUBMIT ____ APPROVED ✓
BY CPW DATE 8/31/05

CERTIFIED WITH RESPECT TO THE INTERNAL STABILITY OF REINFORCED EARTH STRUCTURES ONLY

STATE OF VERMONT
PETER L. ANDERSON
6161
PROFESSIONAL ENGINEER
7/25/05

VT AOT PROJ. NO. BRF 0241 (33) C/2

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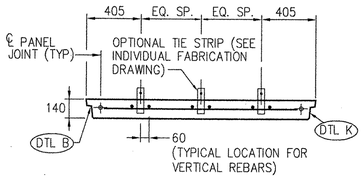
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The Reinforced Earth Company
8614 Westwood Center Drive Suite 1100, Vienna, Virginia 22182 (703) 821-1175

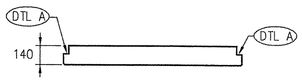
"REINFORCED EARTH" is the registered trademark of The Reinforced Earth Company.

DESIGNED BY: JMKC					PROJECT NAME	BRIDGE IMPROVEMENT VT 12 OVER NEW ENGLAND CENTRAL RAILROAD	DATE 7/21/2005
PROJECT ENGR: JMKC					LOCATION	BETHEL VERMONT	CONTRACT NO. 11843
CHECKED BY: KPB					OWNER	VT AOT	DRAWING NO. S1 OF S8
ENG. MANAGER	REV.	DATE	DESCRIPTION		DRAWING COVERS	GENERAL NOTES 157REW	SCALE AS SHOWN

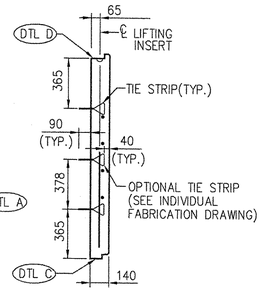
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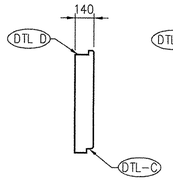
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SCALE 1:20



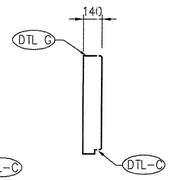
SECTION B–B
SCALE 1:20



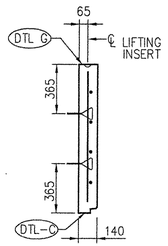
SECTION C–C
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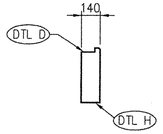
SECTION D–D
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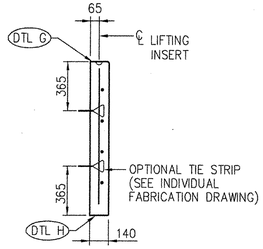
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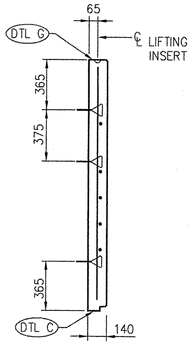
SECTION F–F
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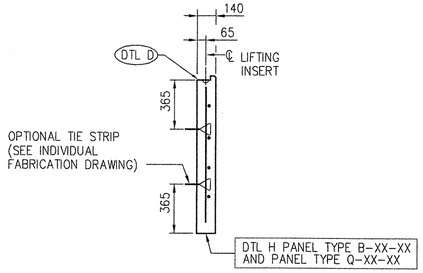
SECTION G–G
SCALE 1:20



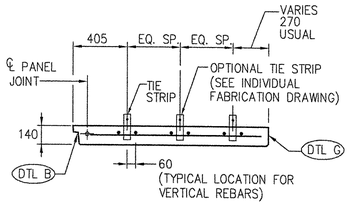
SECTION H–H
SCALE 1:20



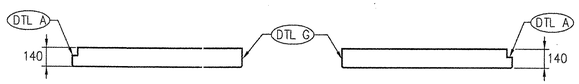
SECTION J–J
SCALE 1:20



SECTION K–K
SCALE 1:20

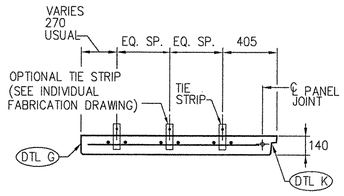


SECTION L–L
SCALE 1:20



SECTION M–M
SCALE 1:20

SECTION P–P
SCALE 1:20



SECTION R–R
SCALE 1:20

RECEIVED
CK'D BY KMH OK'D BY M G
JUL 28 2005
RESUBMIT ____ APPROVED ✓
BY GPW DATE 8/31/05

NOTES:
ASHLAR STONE FINISH
NOT SHOWN FOR CLARITY

SEE INDIVIDUAL FABRICATION DRAWING FOR PLACEMENT OF REBARS.

ALL DIMENSIONS ARE IN MILLIMITERS UNLESS OTHERWISE NOTED

CERTIFIED WITH RESPECT TO THE INTERNAL STABILITY OF REINFORCED EARTH STRUCTURES ONLY

STATE OF VERMONT
PETER L. ANDERSON
6161
PROFESSIONAL ENGINEER
8/25/05

VT AOT PROJ. NO. BRF 0241 (33) C/2

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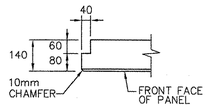
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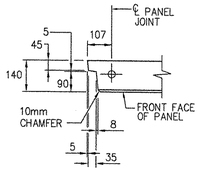
DESIGNED BY: JMKC				PROJECT NAME	BRIDGE IMPROVEMENT VT 12 OVER NEW ENGLAND CENTRAL RAILROAD	DATE 7/21/2005
PROJECT ENGR: JMKC				LOCATION	BETHEL VERMONT	CONTRACT NO. 11843
CHECKED BY: KPB				OWNER	VT AOT	DRAWING NO. S2 OF S8
ENG. MANAGER	REV.	DATE	DESCRIPTION	DRAWING COVERS	STANDARD SHOP SECTIONS	SCALE AS SHOWN

1588ev

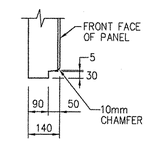
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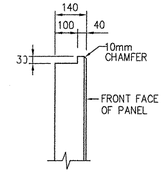
DETAIL "A"
SCALE: 1:10



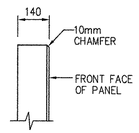
DETAIL "B"
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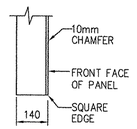
DETAIL "C"
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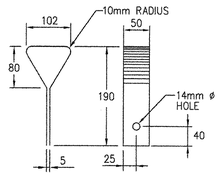
DETAIL "D"
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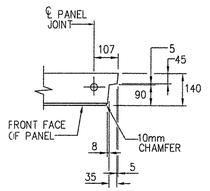
DETAIL "G"
SCALE: 1:10



DETAIL "H"
SCALE: 1:10

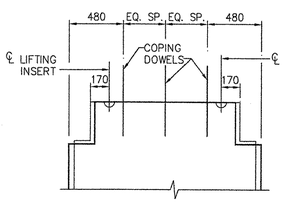


DETAIL "J"
SCALE: NONE
(GENERAL NOTE No. 2)

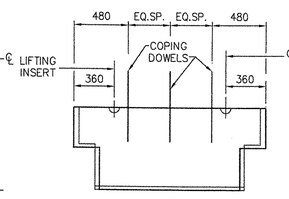


DETAIL "K"
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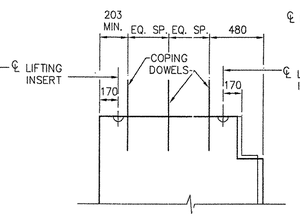
NOTES:
ASHLAR STONE FINISH
NOT SHOWN FOR CLARITY



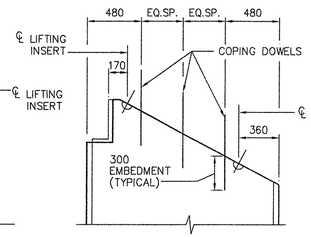
DETAIL "N"
SCALE 1:20



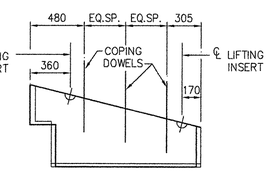
DETAIL "O"
SCALE 1:20



DETAIL "P"
SCALE 1:20



DETAIL "Q"
SCALE 1:20



DETAIL "R"
SCALE 1:20

ALL DIMENSIONS ARE IN MILLIMITERS
UNLESS OTHERWISE NOTED

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STATE OF VERMONT
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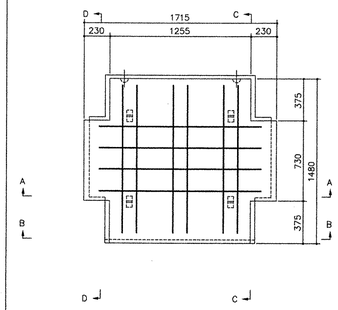
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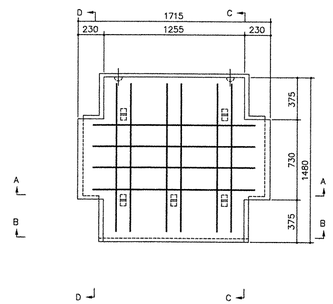
DESIGNED BY: JMKC				PROJECT NAME	BRIDGE IMPROVEMENT VT 12 OVER NEW ENGLAND CENTRAL RAILROAD	DATE 7/22/2005
PROJECT ENGR: KPB				LOCATION	BETHEL VERMONT	CONTRACT NO. RE-11843
CHECKED BY: KPB				OWNER	VT AOT	DRAWING NO. S3 OF S8
ENG. MANAGER	REV.	DATE	DESCRIPTION	DRAWING COVERS	STANDARD SHOP DETAILS 159 REW	SCALE AS SHOWN

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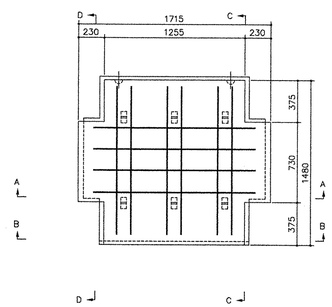
A-4-R6

NOTE: FOR LOCATION OF LIFTING INSERTS SEE DETAIL N



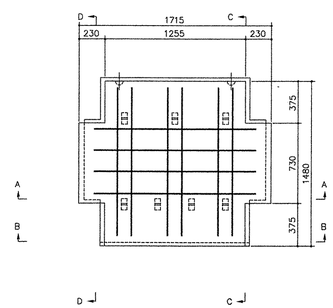
A-5-R6

NOTE: FOR LOCATION OF LIFTING INSERTS SEE DETAIL N



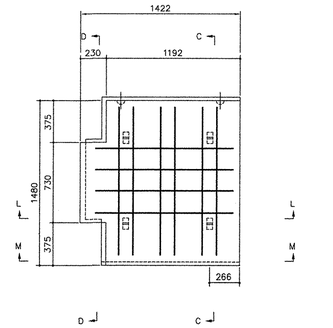
A-6-R6

NOTE: FOR LOCATION OF LIFTING INSERTS SEE DETAIL N



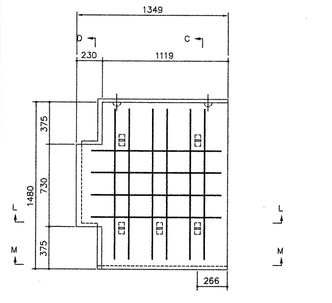
A-7-R6

NOTE: FOR LOCATION OF LIFTING INSERTS SEE DETAIL N



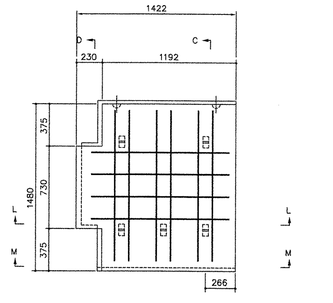
AL-4-R6-1314

NOTE: FOR LOCATION OF LIFTING INSERTS SEE DETAIL P



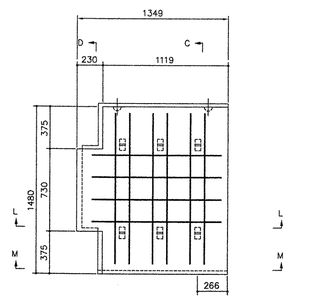
AL-5-R6-1241

NOTE: FOR LOCATION OF LIFTING INSERTS SEE DETAIL P



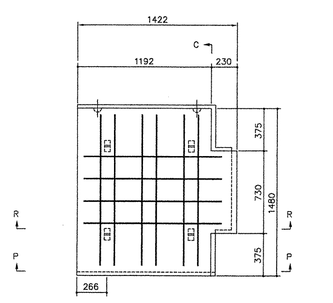
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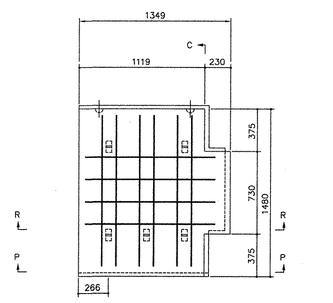
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NOTE: FOR LOCATION OF LIFTING INSERTS SEE DETAIL P



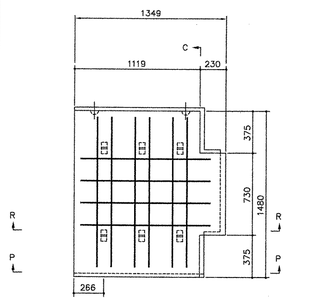
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NOTE: FOR LOCATION OF LIFTING INSERTS SEE DETAIL P



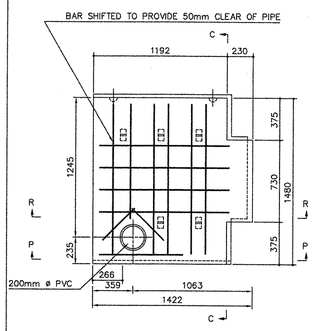
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NOTE: FOR LOCATION OF LIFTING INSERTS SEE DETAIL P



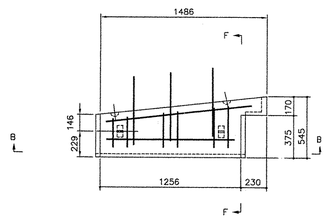
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NOTE: FOR LOCATION OF LIFTING INSERTS SEE DETAIL P



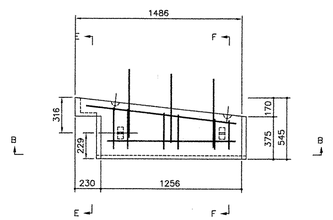
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NOTE: FOR LOCATION OF LIFTING INSERTS SEE DETAIL N



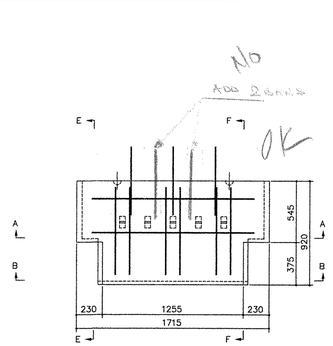
CX-2-R6*

NOTE: FOR LOCATION OF LIFTING INSERTS AND COPING DOWELS SEE DETAIL O



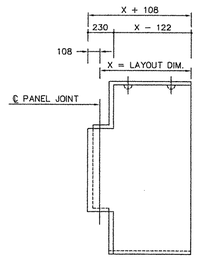
CX1-2-R6*

NOTE: FOR LOCATION OF LIFTING INSERTS AND COPING DOWELS SEE DETAIL O



E-5-R6*

NOTE: FOR LOCATION OF LIFTING INSERTS AND COPING DOWELS SEE DETAIL O



"CUT" PANEL DIMENSION METHOD

NOTE: "LEFT" CUT SHOWN, RIGHT CUT MIRROR IMAGE

ALL PANELS SHOWN BACKFACE

FOR SECTIONS A-A THRU H-H; K-K THRU M-M, P-P, AND R-R THRU U-U SEE SHEET S2

FOR DETAILS N, O AND P, SEE SHEET S3

ALL DOWELS ARE 450mm IN LENGTH WITH 300mm EMBEDDED

2" tall 10" thick

RECEIVED
CK'D BY KmH OK'D BY M.G
JUL 28 2005
RESUBMIT ____ APPROVED ✓
BY CPW DATE 8/31/05

CERTIFIED WITH RESPECT TO THE INTERNAL STABILITY OF REINFORCED EARTH STRUCTURES ONLY

STATE OF VERMONT
PETER L. ANDERSON
8161
PROFESSIONAL ENGINEER
7/25/05

VT AOT PROJ. NO. BRF 0241 (33) C/2

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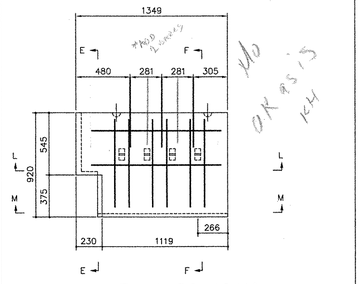
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The Reinforced Earth Company
8614 Westwood Center Drive Suite 1100, Vienna, Virginia 22182 (703) 821-1175

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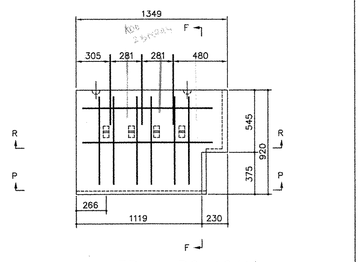
DESIGNED BY:				PROJECT NAME	BRIDGE IMPROVEMENT VT 12 OVER NEW ENGLAND CENTRAL RAILROAD	DATE
JMKC						7/21/2005
PROJECT ENGR:				LOCATION	BETHEL VERMONT	CONTRACT NO.
JMKC						11843
CHECKED BY:				OWNER	VT AOT 160 ROW	DRAWING NO.
KPB						S4 OF S8
ENG. MANAGER	REV.	DATE	DESCRIPTION	DRAWING COVERS	PANEL CASTING DRAWINGS	SCALE
						AS SHOWN

C:\SHARED\11843\SHOPS\11843_S04.DWG



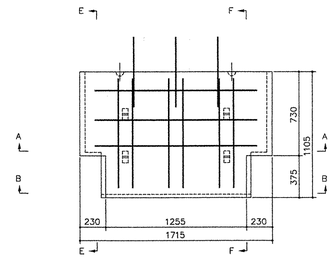
EL-4-R6-1241*

NOTE: FOR LOCATION OF LIFTING INSERTS AND COPING DOWELS SEE DETAIL P



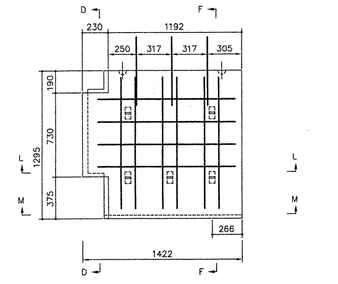
ER-4-R6-1241*

NOTE: FOR LOCATION OF LIFTING INSERTS AND COPING DOWELS SEE DETAIL P



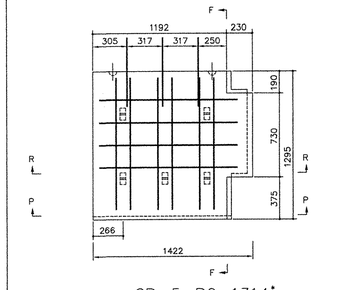
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NOTE: FOR LOCATION OF LIFTING INSERTS AND COPING DOWELS SEE DETAIL O



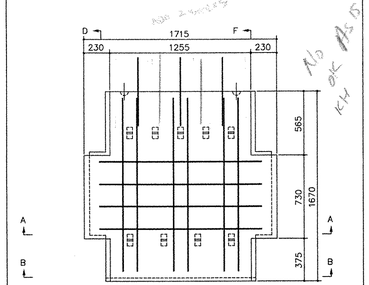
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NOTE: FOR LOCATION OF LIFTING INSERTS AND COPING DOWELS SEE DETAIL P



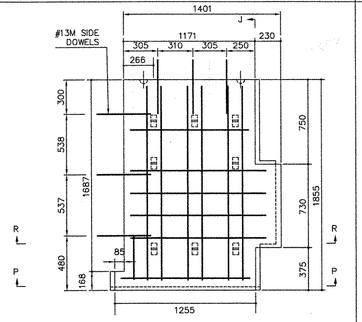
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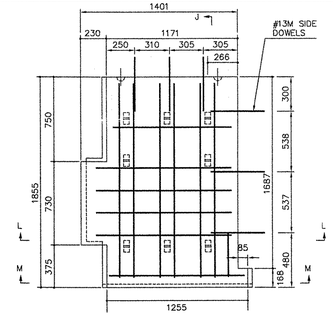
K-9-R6*

NOTE: FOR LOCATION OF LIFTING INSERTS AND COPING DOWELS SEE DETAIL N



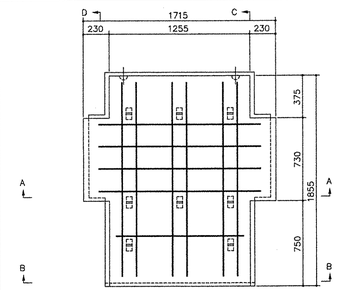
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NOTE: FOR LOCATION OF LIFTING INSERTS AND COPING DOWELS SEE DETAIL P



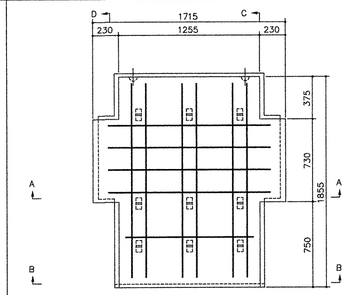
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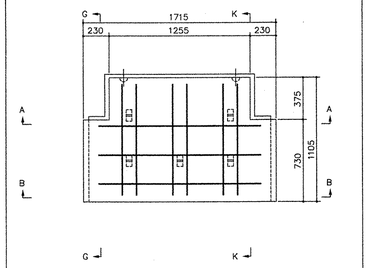
P-8-R6

NOTE: FOR LOCATION OF LIFTING INSERTS SEE DETAIL N



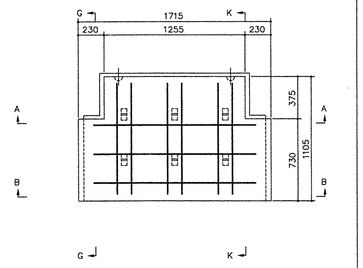
P-9-R6

NOTE: FOR LOCATION OF LIFTING INSERTS SEE DETAIL N



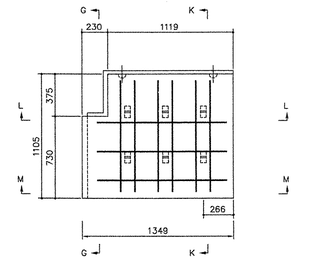
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NOTE: FOR LOCATION OF LIFTING INSERTS SEE DETAIL N



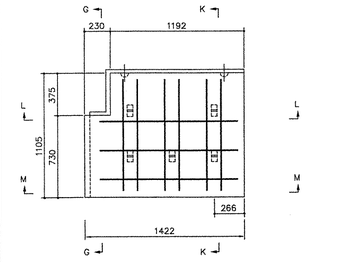
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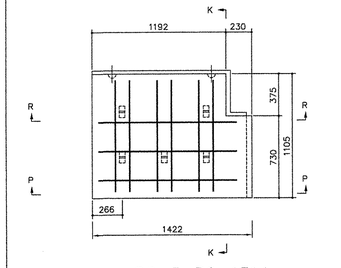
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NOTE: FOR LOCATION OF LIFTING INSERTS SEE DETAIL P



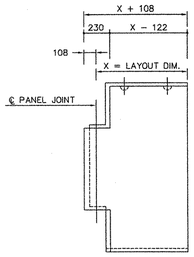
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NOTE: FOR LOCATION OF LIFTING INSERTS SEE DETAIL P



QR-5-R6-1314

NOTE: FOR LOCATION OF LIFTING INSERTS SEE DETAIL P



"CUT" PANEL DIMENSION METHOD

NOTE: "LEFT" CUT SHOWN, RIGHT CUT MIRROR IMAGE

ALL PANELS SHOWN BACKFACE

FOR SECTIONS A-A THRU H-H; K-K THRU M-M, P-P, AND R-R THRU U-U SEE SHEET S2

FOR DETAILS N, O AND P, SEE SHEET S3

* ALL DOWELS ARE 450mm IN LENGTH WITH 300mm EMBEDDED

RECEIVED
CK'D BY KMH OK'D BY MG
JUL 28 2005
RESUBMIT ____ APPROVED ✓
BY CPW DATE 8/31/05

CERTIFIED WITH RESPECT TO THE INTERNAL STABILITY OF REINFORCED EARTH STRUCTURES ONLY

STATE OF VERMONT
PETER L. ANDERSON
6161
PROFESSIONAL ENGINEER
7/25/05

VT AOT PROJ. NO. BRF 0241 (33) C/2

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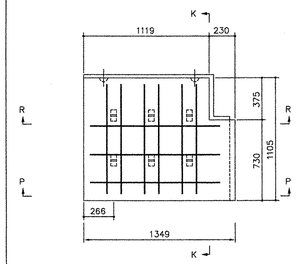
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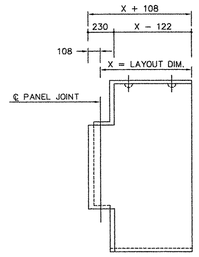
DESIGNED BY: JMKC				PROJECT NAME	BRIDGE IMPROVEMENT VT 12 OVER NEW ENGLAND CENTRAL RAILROAD	DATE	7/21/2005
PROJECT ENGR: JMKC				LOCATION	BETHEL VERMONT	CONTRACT NO.	11843
CHECKED BY: KPB				OWNER	VT AOT 161 REW	DRAWING NO.	S5 OF S8
ENG. MANAGER	REV.	DATE	DESCRIPTION	DRAWING COVERS	PANEL CASTING DRAWINGS	SCALE	AS SHOWN

C:\SHARED\11843\SHOPS\11843_S05.DWG



QR-6-R6-1241

NOTE: FOR LOCATION OF LIFTING INSERTS SEE DETAIL P



"CUT" PANEL DIMENSION METHOD

NOTE: "LEFT" CUT SHOWN, RIGHT CUT MIRROR IMAGE

ALL PANELS SHOWN BACKFACE

FOR SECTIONS A-A THRU H-H; K-K THRU M-M, P-P, AND R-R THRU U-U SEE SHEET S2

FOR DETAILS N, O AND P, SEE SHEET S3

RECEIVED
OK'D BY KMH OK'D BY M.G.
JUL 28 2005
RESUBMIT ____ APPROVED ✓
BY CPW DATE 3/31/05

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STATE OF VERMONT
PIETER L. ANDERSON
6161
PROFESSIONAL ENGINEER
9/25/05

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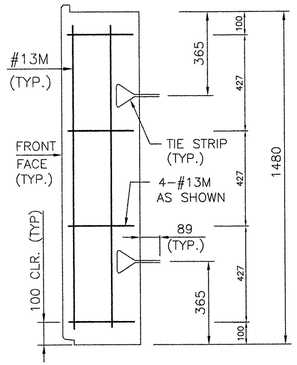
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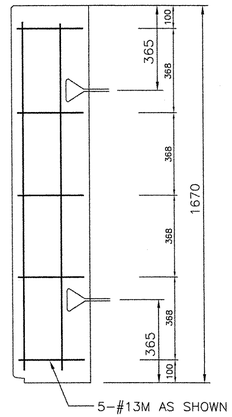
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DESIGNED BY: JMKC				PROJECT NAME	BRIDGE IMPROVEMENT VT 12 OVER NEW ENGLAND CENTRAL RAILROAD	DATE	7/21/2005
PROJECT ENGR: JMKC				LOCATION	BETHEL VERMONT	CONTRACT NO.	11843
CHECKED BY: KPB				OWNER	VT AOT 162 REV	DRAWING NO.	S6 OF S8
ENG. MANAGER	REV.	DATE	DESCRIPTION	DRAWING COVERS	PANEL CASTING DRAWINGS	SCALE	AS SHOWN

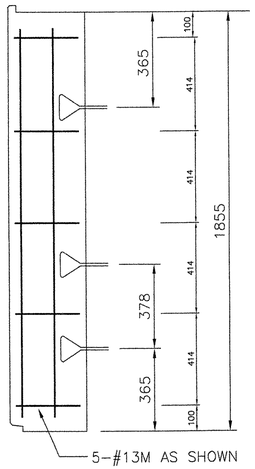
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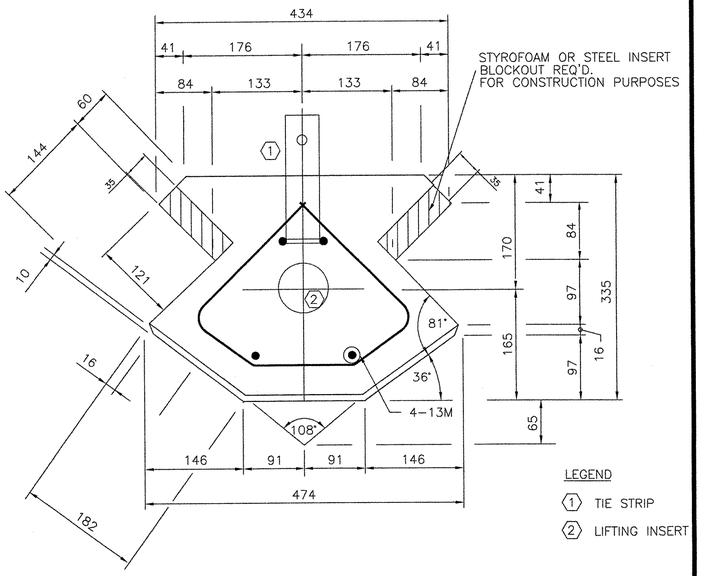
CE2A-2-R4



CE2K-2-R4



CE2P-3-R4

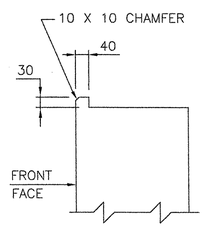


CORNER ELEMENT TYPE 2 90°± – 118°±

SCALE: 1:5

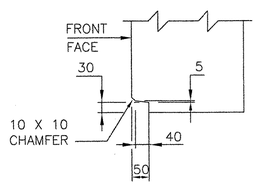
CORNER ELEMENT TYPICAL SECTIONS

SCALE: 1"=1'-0"



DETAIL "A"

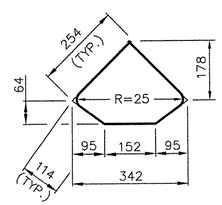
SCALE: 1:20



DETAIL "B"

SCALE: 1:20

NOTE: 38 MIN.CLR.
ON ALL REBAR.



BAR DETAIL

SCALE: 1:20

(DIMENSIONS SHOWN ARE OUT TO OUT)

KEY TO PIECE MARK

CE2A-2-R6

- R6 — PANEL REINFORCEMENT
- 2 — NO. OF TIE STRIPS
- A — PANEL HEIGHT
- 2 — TYPE
- CE — CORNER ELEMENT

RECEIVED
CK'D BY KMH OK'D BY MG
JUL 28 2005
RESUBMIT ____ APPROVED ✓
BY CKW DATE 8/31/05

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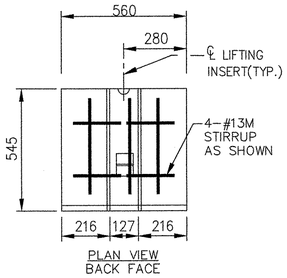
The Reinforced Earth Company
8614 Westwood Center Drive Suite 1100, Vienna, Virginia 22182 (703) 821-1175

"REINFORCED EARTH" is the registered trademark of The Reinforced Earth Company.

DESIGNED BY: JMKC				PROJECT NAME	BRIDGE IMPROVEMENT VT 12 OVER NEW ENGLAND CENTRAL RAILROAD
PROJECT ENGR: JMKC				LOCATION	BETHEL VERMONT
CHECKED BY: KPB				OWNER	VT AOT 163 REN
ENG. MANAGER	REV.	DATE	DESCRIPTION	DRAWING COVERS	CORNER ELEMENT DETAILS

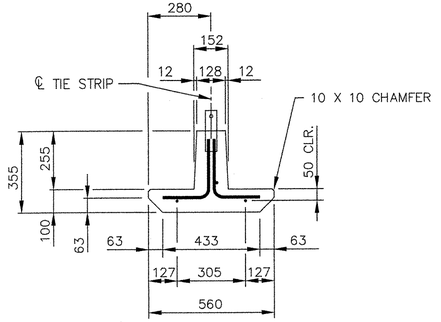
DATE	7/21/2005
CONTRACT NO.	11843
DRAWING NO.	S7 OF S8
SCALE	AS SHOWN

C:\SHARED\11843\SHOPS\11843_S07.DWG

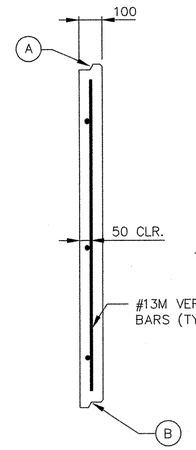


PLAN VIEW
BACK FACE

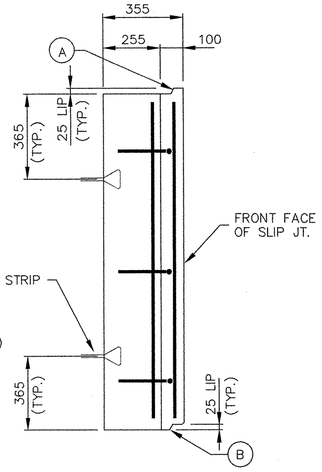
JC–1–R3



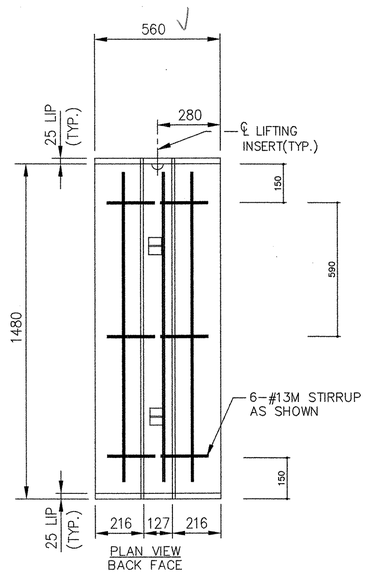
SECTION A–A
SCALE: 1:10



SECTION B–B
SCALE: 1:10

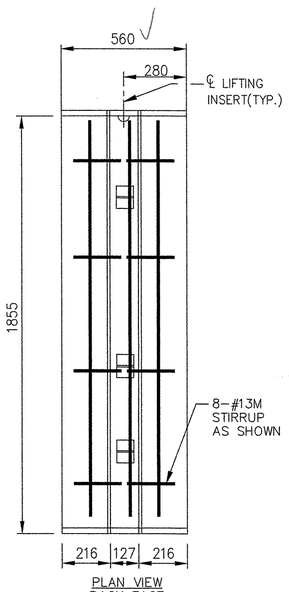


SECTION C–C
SCALE: 1:10



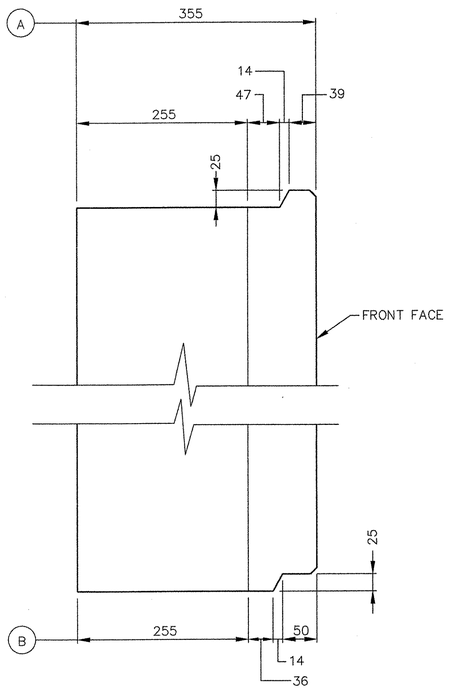
PLAN VIEW
BACK FACE

JA–2

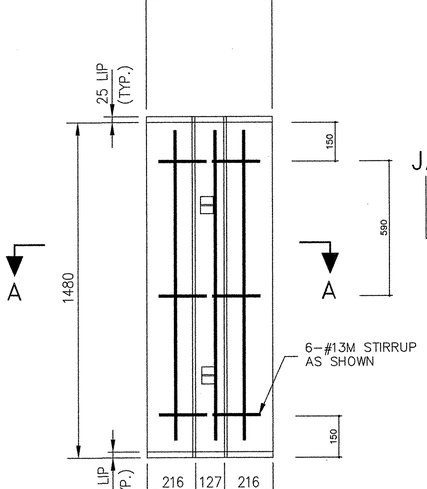


PLAN VIEW
BACK FACE

JP–3–R3



TYPICAL JOINT DETAIL
SCALE: 1:5



JA–2
BACK FACE

LEGEND

JA–2–R3
- PANEL REINFORCEMENT TYPE
- NO. OF TIE STRIPS
- PANEL TYPE

ALL REBAR 13M (#4 ENGLISH)

RECEIVED
CK'D BY KMH OK'D BY M.G.
JUL 28 2005
RESUBMIT ____ APPROVED ____
BY OPW DATE 8/31/05

CERTIFIED WITH RESPECT TO THE INTERNAL STABILITY OF REINFORCED EARTH STRUCTURES ONLY

STATE OF VERMONT
PETER L. ANDERSON
6161
PROFESSIONAL ENGINEER
7/25/05

VT AOT PROJ. NO. BRF 0241 (33) C/2

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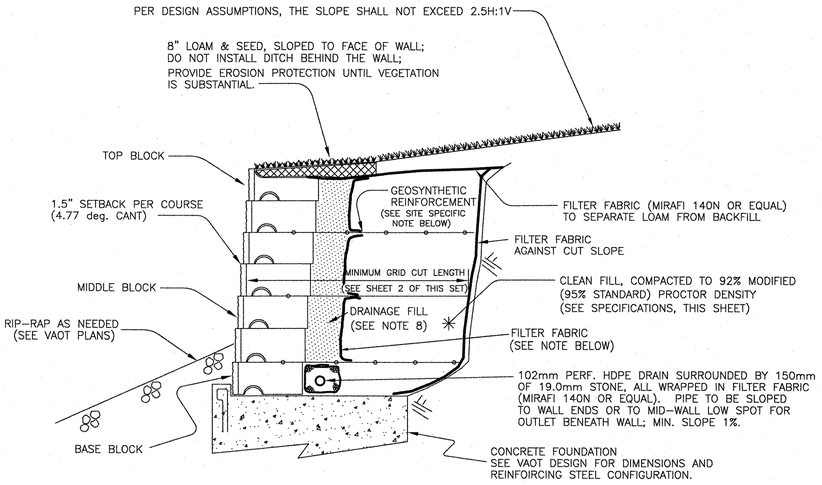
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The Reinforced Earth Company
8614 Westwood Center Drive Suite 1100, Vienna, Virginia 22182 (703) 821–1175

"REINFORCED EARTH" is the registered trademark of The Reinforced Earth Company.

DESIGNED BY:				PROJECT NAME	BRIDGE IMPROVEMENT VT 12 OVER NEW ENGLAND CENTRAL RAILROAD	DATE
JMKC						7/21/2005
PROJECT ENGR: JMKC				LOCATION	BETHEL VERMONT	CONTRACT NO. 11843
CHECKED BY: KPB				OWNER	VT AOT 164 REW	DRAWING NO. S8 OF S8
ENG. MANAGER	REV.	DATE	DESCRIPTION	DRAWING COVERS	SLIP JOINT DETAILS	SCALE AS SHOWN

C:\PROJ\NE\11843\SHOPS\11843_S08.DWG



THE MINIMUM REQUIRED BEARING CAPACITY OF THE BASE SHALL BE: 94 Kpa

TYPICAL SECTION – REDI ROCK WALL – REINFORCED (TYPICAL DETAIL ONLY – SEE WALL FACE DRAWING FOR SPECIFIC BLOCK CONFIGURATIONS)

"REDIROCK" SEGMENTAL RETAINING WALL
(NOT TO SCALE)

GENERAL NOTES:

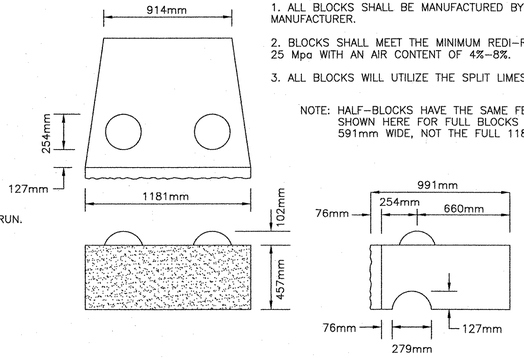
1. STRIP ALL VEGETATION, ORGANIC SOILS AND UNSUITABLE FILL SOILS FROM THE WALL ALIGNMENT AREA.
2. BENCH CUT ALL EXCAVATED SLOPES.
3. DO NOT OVER EXCAVATE UNLESS DIRECTED TO DO SO BY THE OWNER'S SITE REPRESENTATIVE IN ORDER TO REMOVE UNSUITABLE SOIL.
4. THE OWNER'S SITE REPRESENTATIVE SHALL VERIFY FOUNDATION SOILS AS BEING COMPETENT PER THE DESIGN STANDARDS AND PARAMETERS.
5. LEVELING PAD SHALL CONSIST OF COMPACTED, 19.0mm CRUSHED GRAVEL, 300mm THICK AND EXTENDING AT LEAST 300mm TO EITHER SIDE OF THE BASE BLOCK. A SMOOTHING SURFACE LAYER OF 9.5mm CRUSHED STONE MAY BE UTILIZED.
6. MINIMUM EMBEDMENT OF WALL BELOW FINISH GRADE SHALL BE AS INDICATED ON THE WALL FACE DRAWING.
7. FOLLOW APPLICABLE PROVISIONS OF THE MANUFACTURER'S INSTALLATION INSTRUCTIONS AND WRITTEN SPECIFICATIONS, ESPECIALLY WITH REGARDS TO LEVELING OF BLOCKS AND BASE.
8. DRAINAGE FILL SHALL CONSIST OF BANK-RUN SAND AND GRAVEL, LESS THAN 10% FINES, PLACED AND COMPACTED BEHIND THE WALL FOR A DEPTH OF AT LEAST 600mm BEHIND THE WALL. 19.0mm CRUSHED STONE MAY BE SUBSTITUTED FOR THE BANK-RUN. A FILTER FABRIC SHALL BE PLACED OVER THE CUT OR FILL FACE BEHIND THE WALL AREA TO PREVENT SOIL MIGRATION INTO THE DRAINAGE MATERIAL.
9. WHERE PERFORATED HDPE DRAINS ARE USED, PROVIDE OUTLETS AT THE ENDS OF THE WALL OR AT A LOW COLLECTION POINT ALONG THE WALL. (ALTERNATE OUTLET METHODS MAY BE APPROVED BY THE DESIGN ENGINEER.)
10. BACKFILL AND COMPACT THE FILL MATERIAL BEHIND THE WALL AS THE WALL IS INSTALLED.
11. COMPACTION TESTS SHALL BE TAKEN AS THE WALL IS INSTALLED. THE MINIMUM NUMBER OF TESTS SHALL BE DETERMINED BY THE OWNER'S SITE REPRESENTATIVE.
12. PLACE A FILTER FABRIC (MIRAFI 140N, OR EQUAL) OVER THE DRAINAGE MATERIAL TO MINIMIZE SOIL MIGRATION FROM THE SURFACE MATERIAL INTO THE DRAINAGE MATERIAL.
13. COMPACTION SHALL BE TO 92% (MODIFIED PROCTOR) OR 95% (STANDARD PROCTOR).
14. PROVIDE LATERAL DRAINAGE SWALES TO DIRECT FLOWS AROUND THE ENDS OF THE WALL AND AWAY FROM THE WALL DURING CONSTRUCTION. DO NOT CONSTRUCT A SWALE BEHIND THE WALL AS PART OF THE FINISHED WALL. GRADE ABOVE THE WALL SO THAT WATER FLOWS OVER THE WALL FACE OR TO A POINT AT LEAST AS FAR BEHIND THE WALL AS THE WALL HEIGHT.
15. TURF, OR SOME ACCEPTABLE FORM OF SOIL EROSION PROTECTION, SHOULD BE ESTABLISHED AT THE TOP OF THE WALL (WHERE REQUIRED) BY THE LANDSCAPE CONTRACTOR AS SOON AS THE WALL IS COMPLETED.
16. FINAL WALL ALIGNMENT SHALL BE LOCATED IN THE FIELD.
17. RECOMMENDED COMPACTION EQUIPMENT WITHIN 4.5 METERS OF THE BACK OF THE WALL IS AS FOLLOWS:
    0 – 1.2 METERS HAND TAMP OR VIBRATORY PLATE COMPACTOR
    1.2 – 4.5 METERS NOTHING LARGER THAN TWO-DRUM, WALK-BEHIND VIBRATORY ROLLER
    (LARGER ROLLERS CAN BE USED STATICALLY, PROVIDED LIFT SIZE DOES NOT COMPROMISE ACHIEVEMENT OF NECESSARY COMPACTION RATES.)
18. THESE WALLS HAVE BEEN DESIGNED WITH CONSIDERATION OF SEISMIC LOADINGS.

IF CONDITIONS ARE DIFFERENT THAN THOSE STATED IN THESE DRAWINGS AND SPECIFICATIONS, THE CONTRACTOR MUST CONTACT THE DESIGN ENGINEER PRIOR TO PROCEEDING WITH THE CONSTRUCTION OF THE WALL.

BLOCK SPECIFICATION NOTES:

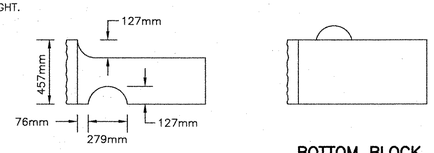
1. ALL BLOCKS SHALL BE MANUFACTURED BY A LICENSED REDI-ROCK (TM) MANUFACTURER.
2. BLOCKS SHALL MEET THE MINIMUM REDI-ROCK SPECIFICAITONS OF 25 Mpa WITH AN AIR CONTENT OF 4%-8%.
3. ALL BLOCKS WILL UTILIZE THE SPLIT LIMESTONE FACE CONFIGURATION.

NOTE: HALF-BLOCKS HAVE THE SAME FEATURES AS SHOWN HERE FOR FULL BLOCKS BUT THEY ARE 591mm WIDE, NOT THE FULL 1181mm WIDE.



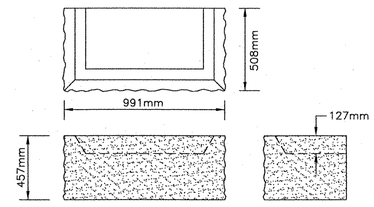
TYPICAL UNIT-MIDDLE BLOCK

UNIT DIMENSIONS
(NOT TO SCALE)

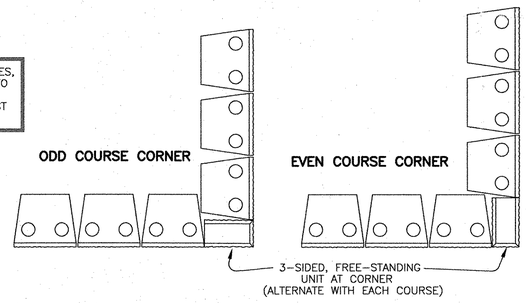


TOP BLOCK

BOTTOM BLOCK



TYPICAL END BLOCK



TYPICAL CORNER INSTALLATION

(NOT TO SCALE)

REINFORCED BACKFILL GENERAL REQUIREMENTS	
SIEVE SIZE	% PASSING
75 mm	100%
12.5 mm	50–85%
4.76 mm	40–75%
0.297 mm	8–28%
.075 mm	0–10%

NOTE: THE DESIGN ENGINEER MUST BE MADE AWARE WHENEVER THE PERCENT PASSING THE .075 mm SIEVE EXCEEDS 10%. GROUNDWATER CONTROL METHODS MAY BE REQUIRED.

FILTER FABRIC NOTE: A FILTER FABRIC (MIRAFI 140N OR EQUAL) SHALL BE PLACED BETWEEN THE REINFORCED FILL AND THE DRAINAGE MATERIAL (WHERE THEY ARE NOT OF THE SAME MATERIAL) FOR THE ENTIRE HEIGHT OF THE WALL.

SITE SPECIFIC NOTE: THE WALL HEIGHTS AT THIS SITE VARY AND ARE SHOWN ON THE WALL FACE DRAWINGS ON SHEET 2 OF 2. THE GEOGRID SHALL BE SYNTEEN PRODUCTS AS DETAILED ON THE WALL FACE DRAWINGS. THE CUT LENGTHS OF THE GEOGRID LAYERS, AND THE PLACEMENT ELEVATIONS OF THE GEOGRID LAYERS ARE SHOWN ON THE WALL FACE DRAWINGS. THE GEOGRID SHALL PROVIDE 100% COVERAGE.

THE CONTRACTOR SHOULD CONTACT THE DESIGN ENGINEER WITH ANY QUESTIONS.

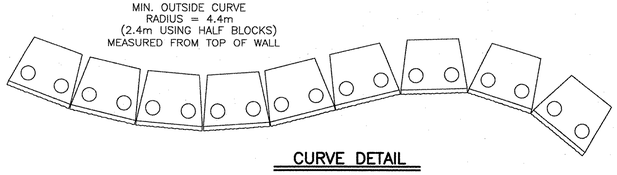
COMPACTION NOTE: WHERE THE RETAINING WALL PASSES OVER ANY UTILITY LINES, COMPACTION OF THE SOIL WITHIN THE UTILITY TRENCH IS CRITICAL IN ORDER TO PREVENT SETTLEMENT OF THE WALL. COMPACTION OF ALL FILL MATERIAL IN UTILITY TRENCHES WHICH PASS UNDER THIS RETAINING WALL MUST BE AT LEAST 95% OF THE MAXIMUM DENSITY OF THE FILL MATERIAL.

DESIGN ASSUMPTIONS		
SOIL	SOIL UNIT WEIGHT	ϕ
SELECT FILL/BACKFILL	22.0	34
RETAINED EARTH	22.0	30
FOUNDATION SOIL	22.0	36

APPLIED SURCHARGE LOADING = NONE
SEISMIC ACCELERATION = 0.06
MAX. SLOPE ABOVE WALL = 2.5H:1V (STA. 0+02)
MAX. SLOPE ABOVE WALL = 5H:1V (STA. 0+18)

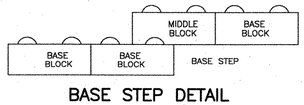
MINIMUM FACTORS OF SAFETY	
OVERTURNING	1.5
SLIDING	1.5
BEARING CAPACITY	2.0

IMPERVIOUS MATERIAL GENERAL REQUIREMENTS	
SIEVE SIZE	% PASSING
75 mm	100%
4.76 mm	80–100%
0.425 mm	50–90%
0.15 mm	40–80%
.075 mm	30–80%



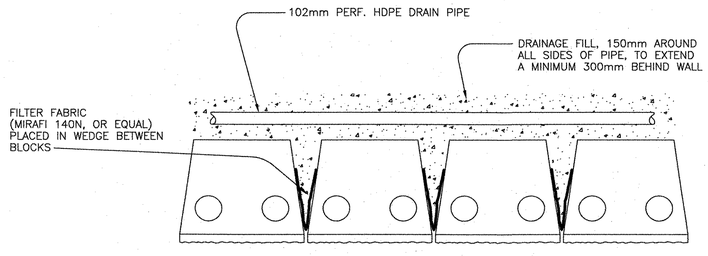
CURVE DETAIL

TYPICAL CURVES
(NOT TO SCALE)



BASE STEP DETAIL

(NOT TO SCALE)



1. SLOPE DRAIN TO WALL ENDS, MIN. 1% SLOPE, OR SLOPE TO LOW POINT AND DROP THE DRAIN UNDER THE WALL
2. WALL DRAIN MAY TIE TO NEARBY CLOSED DRAINAGE SYSTEM, IF AVAILABLE

DRAIN & FABRIC DETAIL

(NOT TO SCALE)

RECEIVED
OK'D BY Kent OK'D BY
FEB 08 2007
RESUBMIT APPROVED
BY DATE 2/8/07

STATE OF VERMONT RANDALL H. BRAGDON #6788 CIVIL LICENSED PROFESSIONAL ENGINEER
1/5/07

New England's SVE Retaining Wall Designers

NOTE: THIS DRAWING WAS PREPARED FOR USE WITH REDI-ROCK (TM) RETAINING WALL SYSTEMS. CONTACT REDI-ROCK WALLS OF NEW ENGLAND AT (603) 863-1000.

SOUHEGAN VALLEY ENGINEERING, INC.
CIVIL ENGINEERING CONSULTANTS — SITE DESIGN SPECIALISTS
434 LEAR HILL ROAD NEWPORT(UNITY), NEW HAMPSHIRE 03773
TEL: (603) 863-5454 FAX: (603) 863-3629
Est. 1990 Available On The Web At www.SVEngineering.com

CLIENT: REDI-ROCK WALLS OF NEW ENGLAND
8 REEDS MILL ROAD, NEWPORT, NH 03773

PROJECT: PROPOSED BRIDGE IMPROVEMENT PROJECT
BETHEL, VT

SHEET TITLE: RETAINING WALL DESIGN SHEET 1

DATE: MARCH 7, 2005 SCALE: AS SHOWN PROJECT No.: 05-169

REVISION SET NUMBER 2

REVISION #1 1/5/07 REVISE WALL DESIGN TO REFLECT CONCRETE FOUNDATION DESIGNED BY VAOT ETM

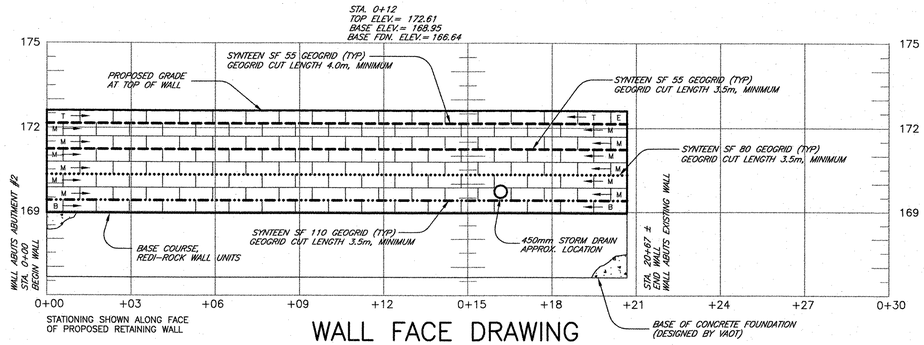
SHEET 1 OF 2

165 CBW

LEGEND

T	TOP BLOCK
M	MIDDLE BLOCK
B	BOTTOM BLOCK
E	END BLOCK
○	DENOTES CHANGE IN BLOCK TYPE

STA. 0+00
TOP ELEV.= 172.61
BASE WALL ELEV.= 168.95
BASE FDN. ELEV.= 166.64



WALL FACE DRAWING

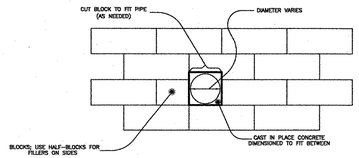
SCALE: 1 : 100
(IN METERS)

NOTE: ALL WALLS WERE DESIGNED USING GRADING INFORMATION PROVIDED BY OTHERS. IF THE FIELD CONDITIONS INDICATE THE GRADE AT THE BASE AND/OR TOP OF THE WALL TO BE DIFFERENT FROM THAT SHOWN ON THESE PLANS, THE DESIGN ENGINEER SHALL BE CONTACTED TO VERIFY CHANGES TO THE WALL BASE COURSE AND/OR TOP OF WALL ELEVATION.

WALL QUANTITIES:

TOP BLOCK – 17
END BLOCK – 1
MIDDLE BLOCK – 102
1/2 MIDDLE BLOCK – 6
BASE BLOCK – 17
1/2 BASE BLOCK – 1

GEOGRID: SYNTEEN SF 55 – 155 SQ. METERS
SYNTEEN SF 80 – 73 SQ. METERS
SYNTEEN SF 110 – 73 SQ. METERS

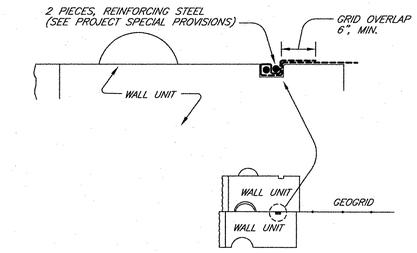


PIPE OUTLET THROUGH WALL FACE
TYPICAL DETAIL
(NOT TO SCALE)

WHERE THE WALL ABUTS A STRUCTURE OR EXISTING WALL, A GEOTEXTILE FABRIC SHALL BE PLACED VERTICALLY ALONG THE SEAM TO PREVENT MIGRATION OF SOILS BETWEEN THE WALL BLOCK AND THE STRUCTURE. THE FABRIC SHOULD EXTEND AT LEAST 450mm ALONG THE STRUCTURE OR EXISTING WALL AND 450mm ALONG THE REAR OF THE PROPOSED WALL BLOCK.

DETAIL
WALL ABUTTING STRUCTURE
(NOT TO SCALE)

DETAIL
WALL ABUTTING EXISTING WALL
(NOT TO SCALE)



GRID–TO–UNIT CONNECTION DETAIL
(NOT TO SCALE)

NOTES:

1. CARE SHOULD BE TAKEN TO REMOVE ALL ORGANIC MATERIAL FROM THE BASE EXCAVATION FOR THE RETAINING WALL.

2. IF THE PERFORATED WALL DRAIN IS TO BE CARRIED UNDER THE WALL TO OUTLET, IT SHALL BE CARRIED DOWNSLOPE ENOUGH DISTANCE TO ALLOW FOR A PROPER DRAINING SLOPE (MIN. 1% SLOPE FROM WALL TO DAYLIGHT) OR TIED TO A CLOSED DRAINAGE SYSTEM.

DRAIN LINES (102mm HDPE) WHICH PASS UNDER THE WALL BASE SHOULD BE CENTERED UNDER THE BASE BLOCK. THE PIPE TRENCH SHALL BE MINIMIZED SO THAT THE BASE BLOCK ACTS AS A LINTEL OVER THE PIPE AND TRENCH.

3. GEOGRID CUT LENGTHS ARE MEASURED FROM THE FRONT FACE OF THE RETAINING WALL. ALL GEOGRID IS TO BE PLACED PERPENDICULAR TO THE WALL FACE, i.e. THE GRID ROLL IS PLACED ON THE WALL, ROLLED OUT BEHIND THE WALL, AND CUT TO LENGTH.

CONTRACTOR'S NOTE: THERE ARE THREE (3) DIFFERENT STRUCTURAL TYPES OF SYNTEEN GEOGRID USED IN THESE DESIGNS.

THEY ARE DESIGNATED BY THE SYMBOLS SHOWN BELOW:

- ---------- SYNTEEN SF 55 GEOGRID
- ..... SYNTEEN SF 80 GEOGRID
- –·–·–·– SYNTEEN SF 110 GEOGRID

NOTE: GEOGRID SUBSTITUTIONS WILL NOT BE ALLOWED WITHOUT WRITTEN APPROVAL OF THE OWNER AND DESIGN ENGINEER

VICINITY SKETCH
(NOT TO SCALE)
SEE CONSTRUCTION DRAWINGS BY OTHERS

RECEIVED
CK'D BY KmH OK'D BY
FEB 08 2007
RESUBMIT APPROVED
BY DATE 2/8/07

New England's SVE Retaining Wall Designers

STATE OF VERMONT
RANDALL H. BRAGDON
#6788
CIVIL
LICENSED PROFESSIONAL ENGINEER
1/15/07

NOTE: THIS DRAWING WAS PREPARED FOR USE WITH REDI–ROCK (TM) RETAINING WALL SYSTEMS. CONTACT REDI–ROCK WALLS OF NEW ENGLAND AT (603) 863–1000.

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CLIENT: REDI–ROCK WALLS OF NEW ENGLAND
8 REEDS MILL ROAD, NEWPORT, NH 03773

PROJECT: PROPOSED BRIDGE IMPROVEMENT PROJECT
BETHEL, VT

SHEET TITLE: RETAINING WALL DESIGN SHEET 2

DATE: MARCH 7, 2005 SCALE: AS SHOWN PROJECT No.: 05–169

SHEET 2 OF 2

REVISION #	DATE	DESCRIPTION	BY
#2	1/5/07	REVISE WALL DESIGN TO REFLECT CONCRETE FOUNDATION DESIGNED BY VAOT	ETM
#1	3/28/05	REVISED WALL DESIGN; MINOR TEXT CHANGES PER VAOT REVIEW	RHB

REVISION SET NUMBER 2

166 CBW

Casco Bay Steel Structures, Inc.

75 Spring Hill Road
Saco, Maine 04072

Phone: (207) 282-7360 Fax: (207) 282-1179

WELDING PROCEDURE SPECIFICATION

Material specification ASTM 709 Gr 36-50-50W (250-345-345W)
Welding process GMAW
Manual or machine Semi-Auto
Position of welding Flat - Horizontal
Filler metal specification AWS 5.18
Filler metal classification ER 70S-6 Hobart
Flux NA
Shielding gas 75% AR. -25% CO2 Flow rate 40 CFH ± 5
Single or multiple pass Single Electrod STICKout 3/8 TO 3/4
Single or multiple arc Single
Welding current D.C.
Polarity DCEP
Welding progression AS. REQ.
Root treatment TO AWS spec Clean rust Free
Preheat and interpass temperature To 3/4"-50°; 3/4" TO 1 1/2" 70°F
Postheat temperature NA
Heat Input Min NA Max NA

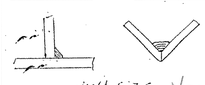
Bethel VT
Proj: BRF-024163.00
BP. 81 - CBSS: 2599

WELDING PROCEDURE

Pass no.	Electrode size	Welding current: Amperes	Welding current: Volts	Travel speed
		±20	±2	52
1	.045	180	22	1CIPM

Joint detail AWS D1-5 Fillet

Horizontal Flat



Weld size 3/16 TO 1/4 VTRAC

RECEIVED
MAR 21 2006

OK'D BY _____ OK'D BY STAR
RESUBMIT _____ APPROVED
BY _____ DATE 4/6/06

This procedure may vary due to fabrication sequence, fit-up, pass size, etc., within the limitation of variables given in applicable A.W.S. codes or contract specifications

Procedure no. 302
Revision no. _____
Form III-2

Contractor Casco Bay Steel
Authorized By Paul L. Fordale
Date 6-24-04

167a

Casco Bay Steel Structures, Inc.

75 Spring Hill Road
Saco, Maine 04072

Phone: (207) 282-7360 Fax: (207) 282-1179

WELDING PROCEDURE SPECIFICATION

Material specification ASTM A709/A709M - Grade 36(250) 50(345) 50W(345W) (FCAW)
Welding process Flux Cored Arc welding
Manual or machine semi AUTo
Position of welding FleT (1F) Horizontal (2F)
Filler metal specification AWS A5.20
Filler metal classification E71T-1
Flux N/A
Shielding gas 75% AR 25% CO2 Flow rate 40CFH ±5
Single or multiple pass Single and multiple - ElecTrode ExTension 5/8 ±1/4 (15.87 ± 6.35)
Single or multiple arc Single
Welding current DC
Polarity Reverse
Welding progression
Root treatment To meet AWS SPECIFICATION
Preheat and Interpass temperature To 3/4 (19): 50°(10°) - 3/4 (19) To 1 1/2 (38): 70°(20°) - 1 1/2 (38) To 2 1/2 (63) 150°(65°) over 2 1/2 (63) = 225°(110°)
Postheat temperature N/A
Heat Input Min N/A Max N/A

RoTheL VT.
Proj. BRF-0241(33)X
RN 31 - CASCO BAY

WELDING PROCEDURE

(METRIC)

Pass no.	Electrode size	Welding current: Amperes	Welding current: Volts	Travel speed
	1/16	275 247.5 TO 302.5	28.8 26.8 TO 30.8	11.6 10.4 TO 12.8
	(METRIC)			
	1.6	275 247.5 TO 302.5	28.8 26.8 TO 30.8	294.6 264.2 TO 325.12

For AWS D1.5 Joint detail Fillet

1F



To 1/2 (12.7)

2F



To 3/8 (9.5)

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MAR 21 2006
VTRANS

OK'D BY _____ OK'D BY _____
RESUBMIT _____ APPROVED
BY _____ DATE 4/4/06

This procedure may vary due to fabrication sequence, fit-up, pass size, etc., within the limitation of variables given in applicable A.W.S. codes or contract specifications

Procedure no. 101
Revision no. _____
Form III-2

AWS CWI PAUL E. RUSSELL 08102701

Contractor Casco Bay Steel
Authorized By Pat E. Goodale
Date 3/23/06

1676

Casco Bay Steel Structures, Inc.
5 Industry Road
South Portland, Maine 04106
hone: (207) 772-2533 Fax: (207) 772-0580

WELDING PROCEDURE SPECIFICATION

Material specification ASTM 709 Gr 36-50-50W (250-345-345W)
Welding process Shielded Metal Arc Welding (SMAW)
Manual or machine Manual
Position of welding Fillet (1F) Horizontal (2F)
Filler metal specification AWS/AWS A5.1 - A5.5
Filler metal classification E7018 - 8018 C1/G3 - 7028
Flux NA
Shielding gas NA Flow rate NA
Single or multiple pass Single and multiple
Single or multiple arc Single
Welding current AC / DC
Polarity Straight / Reverse
Welding progression
Root treatment Meet AWS SPECIFICATION
Preheat and interpass temperature To 3/4(19) 50°(10°) 3/4(19) TO 1 1/2(38) 70°(20°) 1 1/2(38) To 2 1/2(63.5) 150°(65°) over 2 1/2(63.5) 225°(110°)
Postheat temperature NA
Heat Input Min NA Max NA

TRANS
RECEIVED
OK'D BY: OK'D BY:
MAR 2 1 2006
RESUBMIT APPROVED
BY DATE 3/16/06

Bethel VT
Proj. BRF-022413(38)
Bk 31 - Pg 55

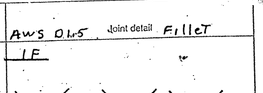
WELDING PROCEDURE (metric)

Pass no.	Electrode size	Welding current Amperes	Welding current Volts	Travel speed
	7018			
	1/8 (3.2)	70-170	22-26	
AS	5/32 (3.9)	120-225	22-26	AS
REQ	3/16 (4.8)	170-300	24-27	REQ
	8018			
	1/8 (3.2)	90-160	22-26	
	5/32 (3.9)	120-225	22-26	
	3/16 (4.8)	180-290	24-27	
	7028			
	5/32 (3.9)	190-290	22-26	
	3/16 (4.8)	210-330	24-27	

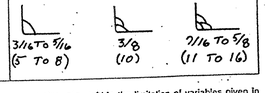
Joint detail Fillet

AWS D1.5

1F



2F



This procedure may vary due to fabrication sequence, fit-up, pass size, etc., within the limitation of variables given in applicable Building codes or contract specifications

Procedure no. 401
Revision no.
Form III-2

Contractor Casco Bay Steel
Authorized By Paul E. Hoodale
Date 3/2/00

167c

Casco Bay Steel Structures, Inc.
5 Industry Road
South Portland, Maine 04106
Phone: (207) 772-2533
Fax: (207) 772-0580

WELDING PROCEDURE SPECIFICATION

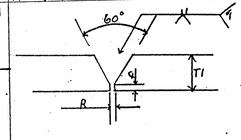
Material specification A36-A572-A588 or (ASTM 709 Gr 36-50-50w
Welding process Flux Cored Arc welding (FCAW)
Manual or machine Semi-AUTO
Position of welding Flat-1G
Filler metal specification AWS A5.20
Filler metal classification E71T-1
Flux N/A
Shielding gas 75% AR 25% CO2 Flow rate 40 ±5
Single or multiple pass Both Electrode Stick out 3/4 ±1/4
Single or multiple arc Single
Welding current Direct current
Polarity Reverse Electrode positive
Welding progression See detail
Root treatment weld side #1, backgouge side #2 + grind + then weld
Preheat and interpass temperature To 3/4-50° (10-10°) + 3/4 To 1 1/2-70° (+19 To 38-20°)
Postheat temperature N/A
Heat Input Min N/A Max N/A

Bethel, VT.
Proj. BRF-0241(32)X/6
BR 31 - CBSS

WELDING PROCEDURE

Pass no.	Electrode size	Welding current Amperes	Welding current Volts	Travel speed
	1/16	280 ±28	25 ±1.9	11 ±1.1
	1.6	280 ±28	25 ±1.9	280 ±28

AWS D1.5 Joint detail BU2-F



T1 - Unlimited
f - 0 To 1/8 / 0 To 3.2mm
R - 0 To 1/8 / 0 To 3.2mm

1-Grind as required

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MAR 21 2006
CK'D BY OK'D BY JSW
RESUBMIT APPROVED ✓
BY DATE 4/6/06

This procedure may vary due to fabrication sequence, fit-up, pass size, etc., within the limitation of variables given in applicable A.W.S. codes or contract specifications

Procedure no. 104
Revision no.
Form III-2
AWS - QC1
Paul E. Goodale
83100201
C.W.I.

Contractor Casco Bay Steel
Authorized By Paul E Goodale
Date 2/2/99

167d
192

Casco Bay Steel Structures, Inc.

75 Spring Hill Road
Saco, Maine 04072

Phone: (207) 282-7360 **Fax: (207) 282-1179**

WELDING PROCEDURE SPECIFICATION

Material specification ASTM-A709/A709M-Gr36-50-50w(250-345-345W)
Welding process Stud Welder (S.W)
Manual or machine Machine
Position of welding Flat
Filler metal specification NA
Filler metal classification NA
Flux NA
Shielding gas NA Flow rate NA
Single or multiple pass Single
Single or multiple arc Single
Welding current DC
Polarity DC EN
Welding progression NA
Root treatment Clean Surface To be welded
Preheat and interpass temperature To 3/4-50°, 3/4" To 1 1/2-70°, 1 1/2" To 2 1/2-150°, over 2 1/2-225°F
Postheat temperature NA
Heat Input Min NA Max NA

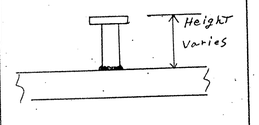
VTRANS
RECEIVED
MAR 21 2005
CK'D BY ____ CK'D BY ____
RESUBMIT ____ APPROVED ____
BY ____ DATE ____

Rothel VT
Proj. BRF-0241(33)46
BV 31 - C855 2797

WELDING PROCEDURE

Pass no.	Electrode size	Welding current: Amperes	Welding current: Volts	Travel speed
	Stud Size		Weld Time	
	1/2	350 650	.35±	
	5/8	350 650	.35±	NA
	3/4	550 750	.40±	
	7/8	650 850	1.0±	

AWS D1-1 Joint detail AWS D1-5



note!
This Procedure is only a guide To Setup.

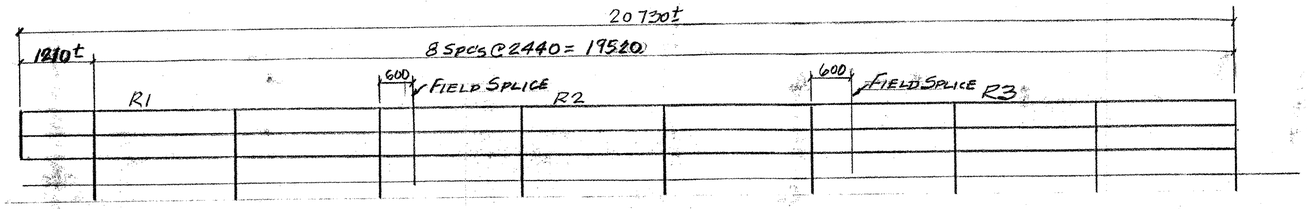
This procedure may vary due to fabrication sequence, fit-up, pass size, etc., within the limitation of variables given in applicable A.W.S. codes or contract specifications

Procedure no. # 1 S.W.
Revision no. ____

Contractor Casco Bay Steel
Authorized By [signature]
Date May 3-1999

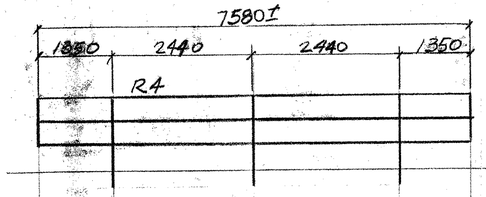
QC 1
Paul E. Rochelle
Date
CWI 167e

Form III-2



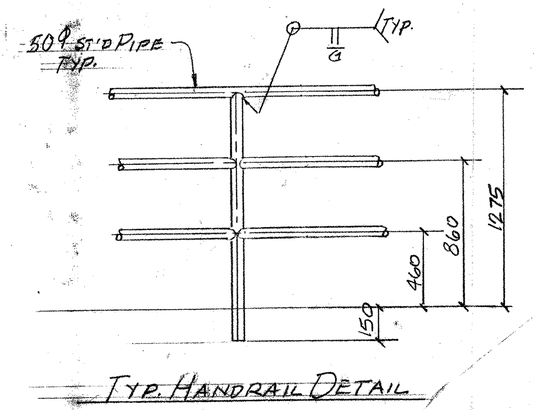
HANDRAIL @ RETAINING WALL #6

SHOP TO PROVIDE 12.5 mm HOLES FOR SPLICE LOCKS.

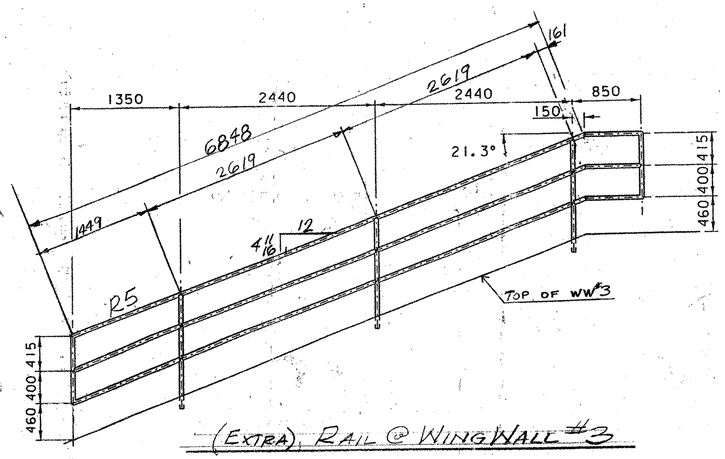


HANDRAIL @ RETAINING WALL #3

G.C.-VERIFY ALL DIM'S IN THE FIELD TO MATCH EXISTING HANDRAIL



TYP. HANDRAIL DETAIL



(EXTRA) RAIL @ WINGWALL #3

RECEIVED
CK'D BY KMH CK'D BY
SEP 19 2006
RESUBMIT APPROVED
BY CPW DATE 9/22/06

PLANS DRAWN USING METRIC DIMENSIONS

ABM INFO

SHOP BILL — JOB NO. 279 — DRG. NO. M1

PAGE	LINE	NO.	DESCRIPTION	PIECE MARK	ASSEM. MARK	SHIPPING MARK	REMARKS	WEIGHT
		1	HANDRAIL	6690I		R1		
		1	DO	7580		R2		
		1	DO	6730		R3		
		1	DO	7580		R4		
			50ϕ STD PIPE	185040I				
		6	50ϕ SPLICE LOCKS	180		FIELD	R4 BW AG #6 #3 #5 #4	
		1	SLOPED 3/4			R5	EXTRA	
			50ϕ STD PIPE	26450				

PAY ITEM 525.15

REV.	REMARKS	DATE	DWN	CHK	APP	Q.A.
	OUT FOR APPROVAL	7-18-06				
	OUT FOR APPROVAL	9-6-06				
	ISSUED TO SHOP					
	FIELD & OFFICE					

NO.	DIA.	LGT	TYPE	WASHER

PROJECT NO. BRF-0241(33)X STATE PROJECT NO. 31

MATERIAL: ASTM A572 GR 50 ELECTRODES: SEE PROC. HOLES: AS NOTED SHOP BOLTS:

SURFACE PREP. & PAINT:
COLOR G GALVANIZED AFTER FAB.
ASTM A385 OR A123 BLACK COLOR CHIP #27038

DESCRIPTION: HANDRAIL-RET WALL #3 & #6

JOB: VT. 12 OVER NEW ENGLAND GE RR & 3RD BRA. CH OF WHITE RIVER BETHEL, VT.

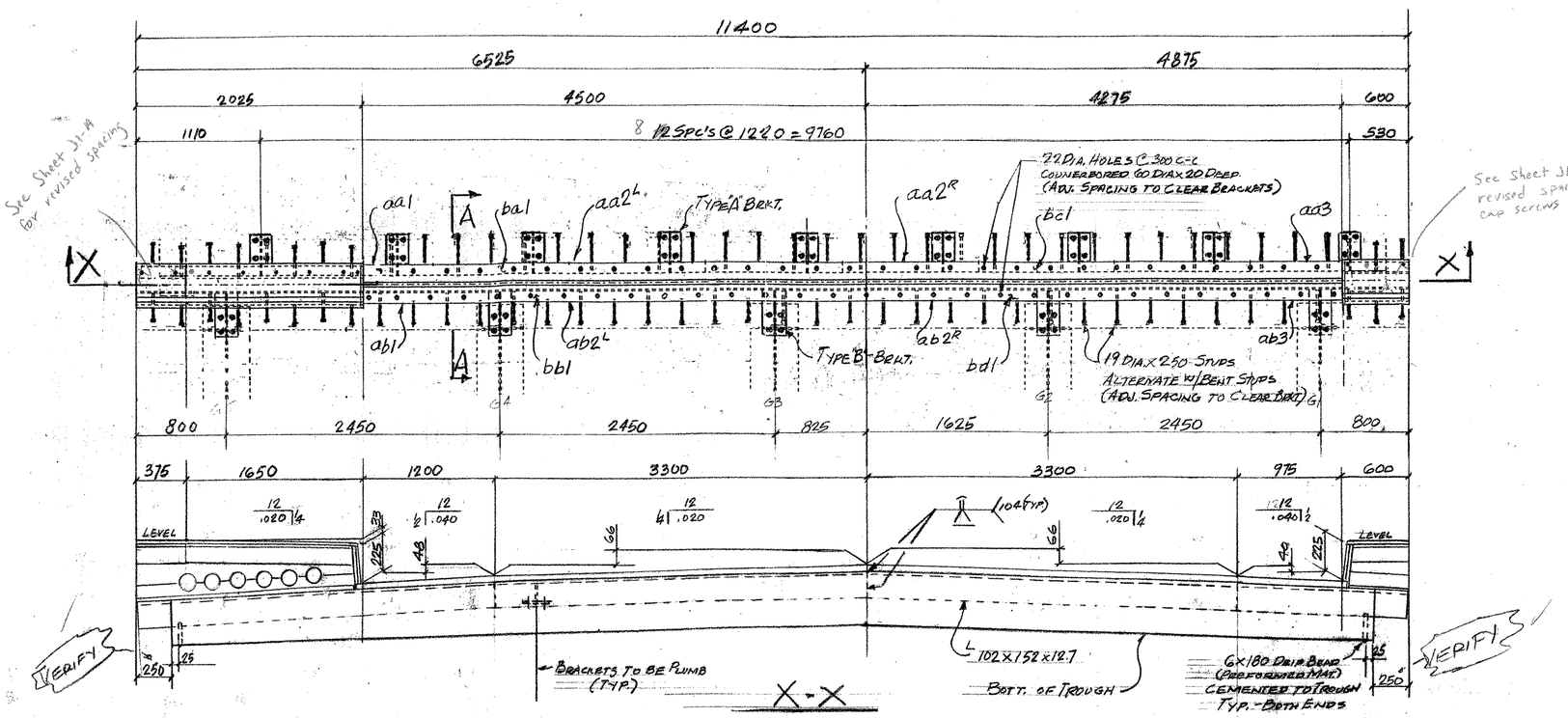
CUSTOMER: KUBRICKY CONSTR. CO.

DRAWN BY	DATE
JPF	7-06
CHKD BY	
E.J.	
APPROV BY	
Q.A.	

CASCO BAY STEEL STRUCTURES, INC.
75 SPRING HILL ROAD SACO, MAINE 04072
PHONE (207) 282-1360 FAX. (207) 282-1179

JOB NO. 279 DRG. NO. M1 REV. △

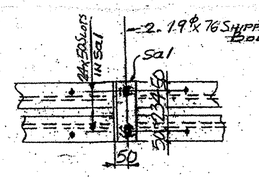
767 HR



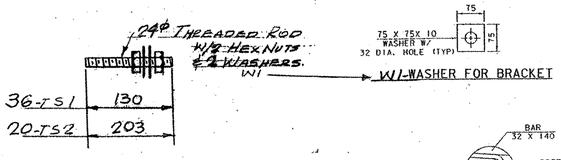
X-X

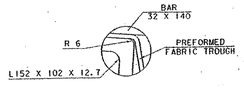
EJ1 - ONE REQ'D (@ PIER)

WORK THIS DWG. W/ DWG. J1A



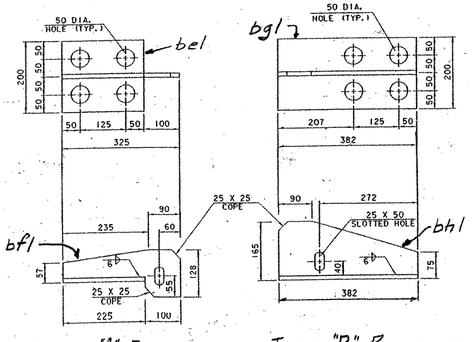
SHIPPING DEVICE SPACED 1500 o.c. MAX.





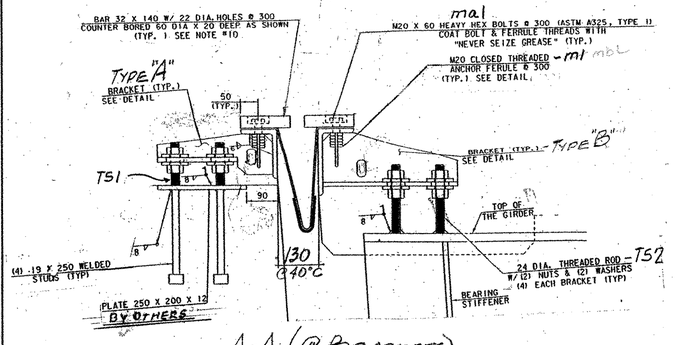
DETAIL "A"

ANCHOR FERRULE

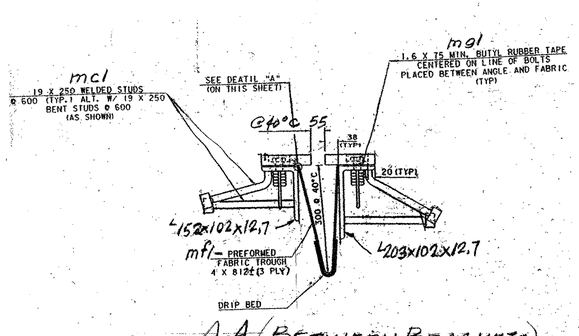


TYPE "A" BRACKET

TYPE "B" BRACKET



A-A (@ BRACKETS)



A-A (BETWEEN BRACKETS)

RECEIVED
CK'D BY KRM CK'D BY M.G.
MAR 2 1 2006
RESUBMIT APPROVED As Noted
BY CPW DATE 4/20/06

PLANS DRAWN USING METRIC DIMENSIONS

ABM INFO PAGE	LINE	NO.	DESCRIPTION	m/m	ASSEM. MARK	SHIPPING MARK	REMARKS	WEIGHT
		1	EXP. JNT. ASSY.	11400		EJ1		
		1	L152x102x12.7	3225	aa1			
		2	DO	3300	aa2R			
		1	DO	1575	aa3			
		1	L203x102x12.7	3225	ab1			
		2	DO	3300	ab2R			
		1	DO	1575	ab3			
		1	BAR 32x140	4324	ba1			
		1	DO	4324	bb1			
		1	DO	4299	bc1			
		1	DO	4299	bd1			
		9	R12x128	345	be1	bf1		
		9	R12x200	225	bf1	be1		
		5	R12x200	382	bg1			
		5	R12x153	382	bh1			
		59	36 M20 HEX BOLTS	60	ma1			
		59	52 M20 CLOSED THREADED ANC FERRULES		mb1			
		76	19Φ ANC STUDS	280	mc1			
		1	PREFORMED FABRIC TROUGH 203mm X 812mm	11000	mf1		3 PLY MIN. 30 GSM/SQ.M.	
		2	BUTYL RUBBER TAPE 1.6 x 75	11400	mg1		ASSUMED MIN 18-TYPE II	
		36	24Φ THREADED RODS	130		TS1		
		20	DO	203		TS2		
		112	24Φ HEX NUTS					
		112	R10x75	75	w1			
		1	R12x279	2000	cp1		SKP-NOT ANTI SKID SURFACE	
		1	R12x50	2000	cp2			
		1	L102x102x12.7	2025	ca3		FIT	
		1	R12x340	2013	cp4			
		1	R12x340	1998	cp5			
		2	R12x279	210	cp6			
		2	R12x50	210	cp7			
		2	R12x114	190	cp8			
		1	R12x279	575	cp11			
		1	R12x50	575	cp12			
		1	L102x102x12.7	600	ca13		FIT	
		1	R12x233	588	cp14			
		1	R12x233	575	cp15			
		1	L102x102x12.7	2025	ca1		FIT	
		2	DO	2013	ca2		FIT	
		1	DO	600	ca3		FIT	
		2	DO	588	ca4			
		58	M20 HEX BOLTS	60	ma1			
		58	M20 CLOSED THREADED ANC FERRULES		mb1			
		8	10 M20 CAP SCREW	25	ma1		GALV.	
		18	19Φ ANC. STUDS	190	mh1			
							PAY ITEM 516.10	

REV.	REMARKS	DATE	DWN	CHK	APP	Q.A.
	OUT FOR APPROVAL	3-13-06				
	OUT FOR APPROVAL					
	ISSUED TO SHOP					
	FIELD & OFFICE					

NO.	DIA.	LGT	TYPE	WASHER

PROJECT NO. BRF-0241(33) C/2 STATE PROJECT NO. 31

MATERIAL: AASHTO M270 GR 50 | ELECTRODES: SEE SPEC. | HOLES: AS NOTED | SHOP BOLTS: M20 A325-GALV.

SURFACE PREP. & PAINT: GALVANIZED AFTER FAB. (ASTM A123)

DESCRIPTION: EXP. JOINT @ PIER

JOB: VT. 12 OVER NEW ENGLAND SRR & 3RD BRANCH OF WHITE RIVER BETHEL, VT.

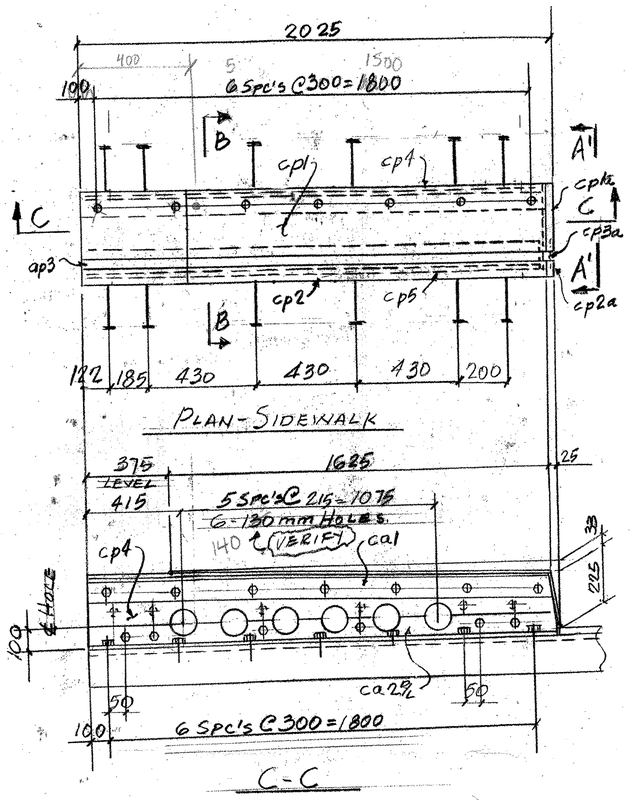
CUSTOMER: KUBRICKY CONSTR. CO.

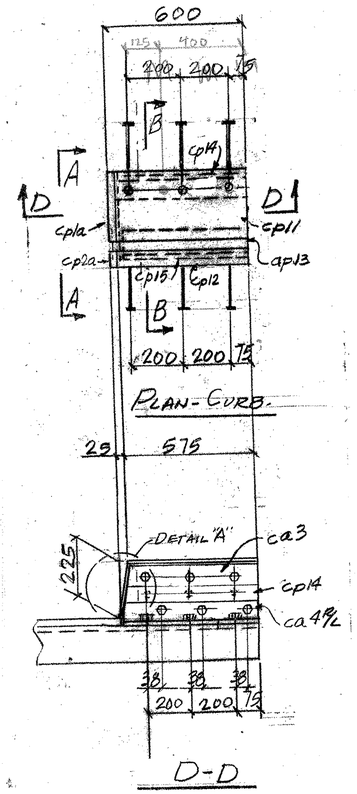
	DRAWN BY	DATE
	JPF	2-06
CHK'D BY	EJ	
APPROV BY		
Q.A.		

CASCO BAY STEEL STRUCTURES, INC.
75 SPRING HILL ROAD SACO, MAINE 04072
PHONE (207) 282-7360 FAX. (207) 282-1179

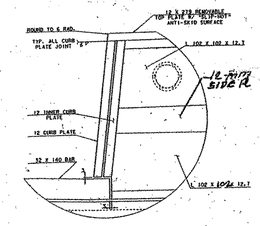
JOB NO. 279 | DRG. NO. J1 | REV.

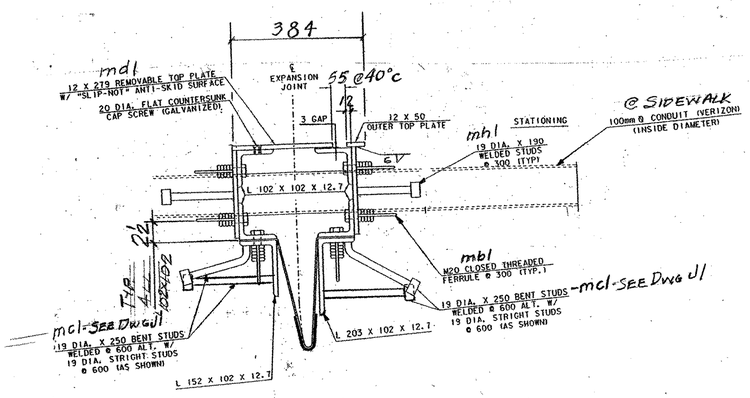
JOB NO. 279 | DRG. NO. J1A

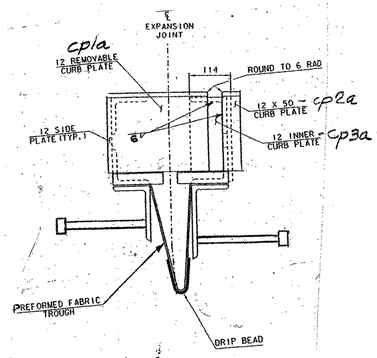




Concrete railing will block access to cap screws. Spacing adjusted.







A-A- As Shoinn
A'-A'- Opp. Hand.

RECEIVED
CK'D BY KevH OK'D BY M.G
MAR 21 2006
RESUBMIT APPROVED As Noted
BY CPW DATE 4/20/06

PLANS DRAWN USING METRIC DIMENSIONS

REV.	REMARKS	DATE	DWN	CHK	APP	Q.A.	NO.	DIA.	LGT	TYPE	WASHER
	OUT FOR APPROVAL	3-13-06									
	OUT FOR APPROVAL										
	ISSUED TO SHOP										
	FIELD & OFFICE										

PROJECT NO. BRF-0244(33) 5/2 STATE PROJECT NO. 31
MATERIAL AASHTO M270 GR 250 ELECTRODES: SEE PROC HOLES: AS NOTED SHOP BOLTS: M20
SURFACE PREP. & PAINT: A325 GALV.
GALVANIZED AFTER FAB. (ASTM A123)

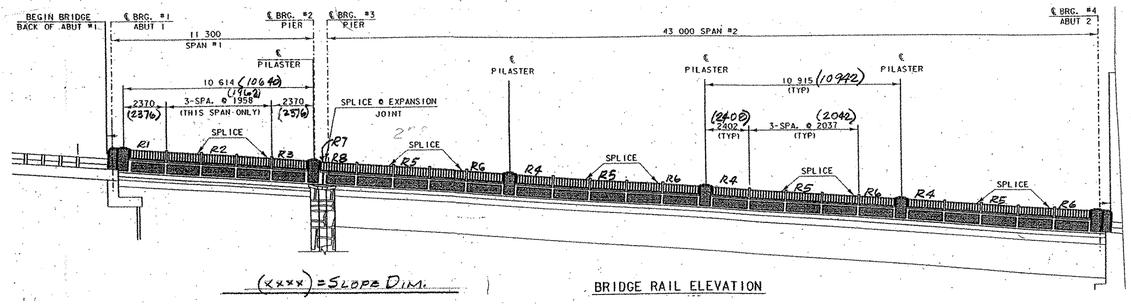
DESCRIPTION: EXP. JOINT @ PIER
JOB: VT. 12 OVER NEW ENGLAND GRR & 3RD BRANCH OF WHITE RIVER BETHEL, VT.
CUSTOMER: K.V. BRICKY CONSTR. CO.

	DRAWN BY	DATE
	JPF	2-06
CHK'D BY	EJ	
APPROV BY		
Q.A.		

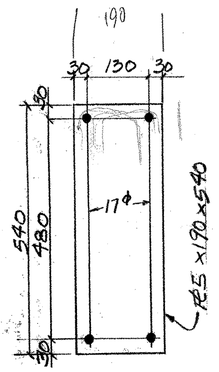
CASCO BAY STEEL STRUCTURES, INC.
75 SPRING HILL ROAD SACO, MAINE 04072
PHONE (207) 282-7360 FAX. (207) 282-1179

JOB NO. 279 | DRG. NO. J1A | REV. △

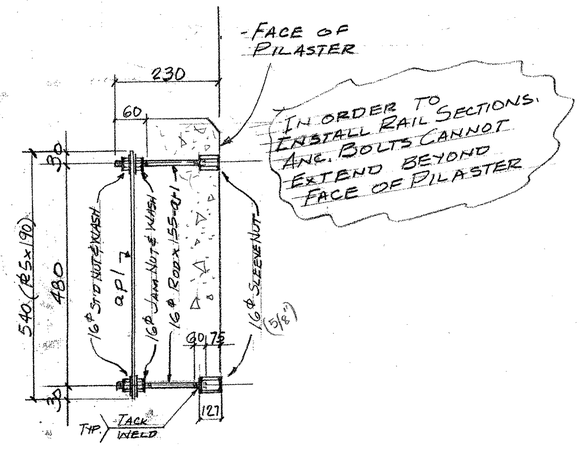
169 B5



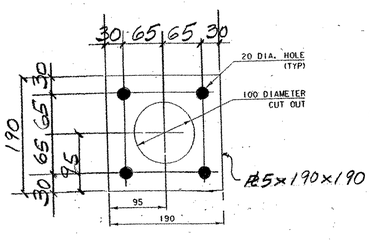
BRIDGE RAIL ELEVATION



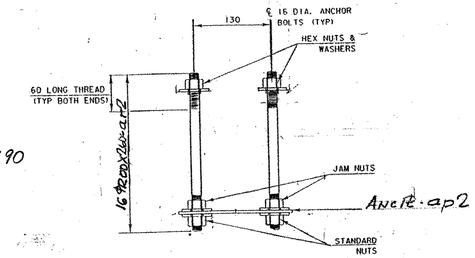
ap1-DETAIL



PAP-20 REQ'D.



TYPICAL ANCHORAGE
PLATE DETAIL-ap2



PAB-40-REQ'D.

ABM INFO		SHOP BILL					JOB NO. 279	DRG. NO. R1
PAGE	LINE	NO.	DESCRIPTION	[illegible]	[illegible]	ASSEM. MARK	SHIPPING MARK	REMARKS	WEIGHT
		20	ANC. ASS'Y.	540			PAP		—
		20	R 5x190	540		ap1			
		80	16ϕ ROD	155		ar1			
		80	16ϕ STD NUTS			SHOP			
		80	16ϕ JAM NUTS			DO			
		80	16ϕ SLEEVE NUTS	127		DO			
		160	16ϕ WASHERS			SHOP			
		80	16ϕ BOLTS	38			FIELD	COLOR GALV	
		40	ANC ASS'Y	260			PAB		—
		40	R 5 x 190	180		ap2			
		160	16ϕ ROD	260		ar2			
		320	16ϕ STD NUTS						
		160	16ϕ JAM NUTS						
		480	16ϕ WASHERS						

PAY ITEM: 525.50

RECEIVED
CK'D BY [illegible] OK'D BY EVK
MAR 2 1 2006
RESUBMIT ____ APPROVED ____
BY GPW DATE 4/20/06

PLANS DRAWN USING
METRIC
DIMENSIONS

REV.	REMARKS	DATE	DWN	CHK	APP	Q.A.	NO.	DIA.	LGT	TYPE	WASHER
	OUT FOR APPROVAL	3-13-06									
	OUT FOR APPROVAL										
	ISSUED TO SHOP										
	FIELD & OFFICE										

PROJECT NO. BRF-0241(33) 5/12 STATE PROJECT NO. 31

MATERIAL: AASHTO GRADE 250 ELECTRODES: SEE PROC HOLES: AS NOTED SHOP BOLTS:

SURFACE PREP. & PAINT:

COLOR GALVANIZE AFTER FAB. (ASTM A53 & A123)
GREEN COLOR CHIP # 14062

DESCRIPTION: BRIDE RAIL

JOB: VT. 12 OVER NEW ENGLAND GRR & 3RD BRANCH OF WHITE RIVER BETHEL, VT.

CUSTOMER: KUBRICKY CONSTR. CO.

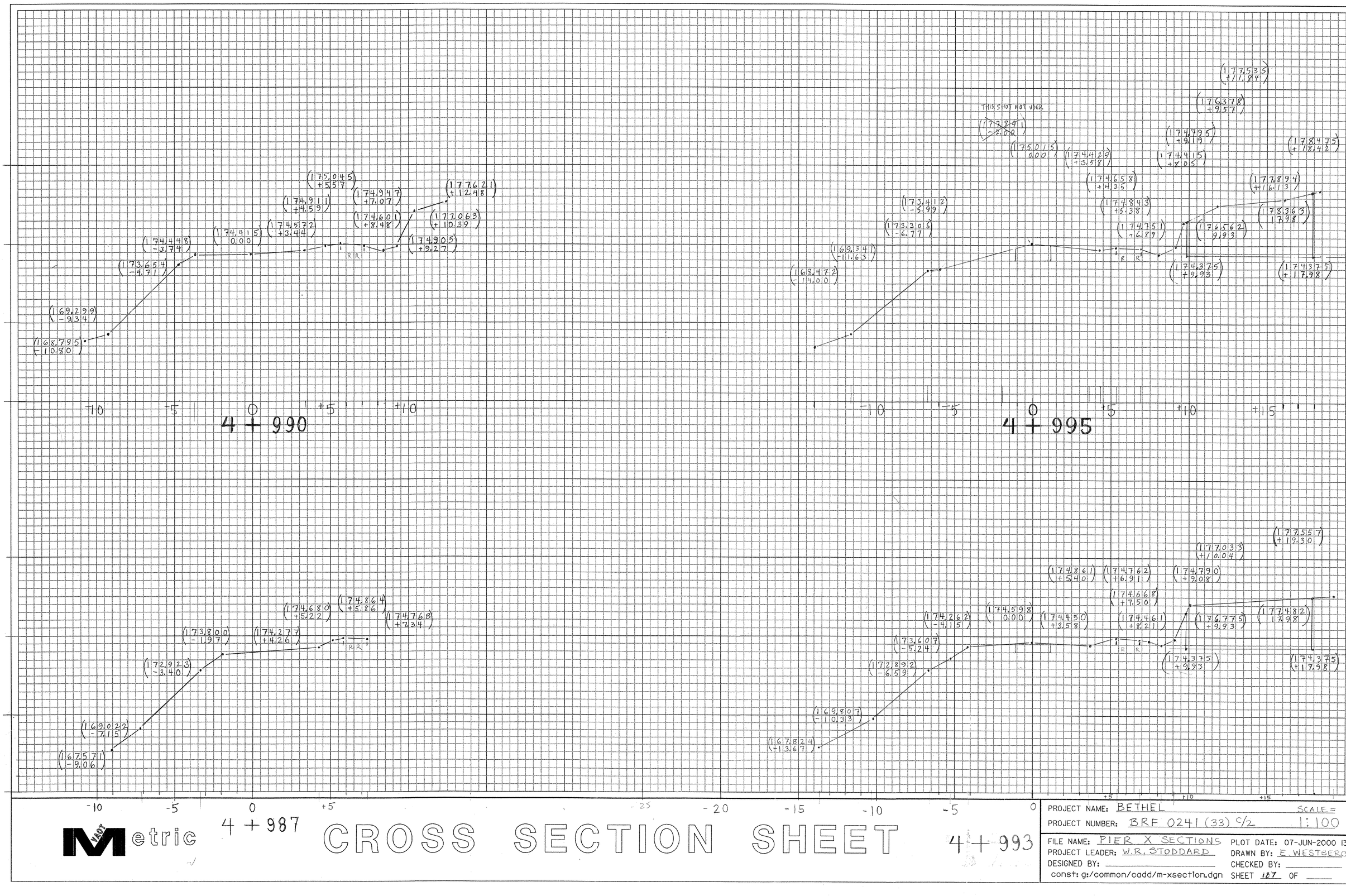
DRAWN BY	DATE
JPF	2-06
CHK'D BY	
Ed	
APPROV BY	
Q.A.	

CASCO BAY STEEL STRUCTURES, INC.
75 SPRING HILL ROAD SACO, MAINE 04072
PHONE (207) 282-7360 FAX. (207) 282-1179

JOB NO. 279 DRG. NO. R1 REV. △

1" = 1'-0

169 BR

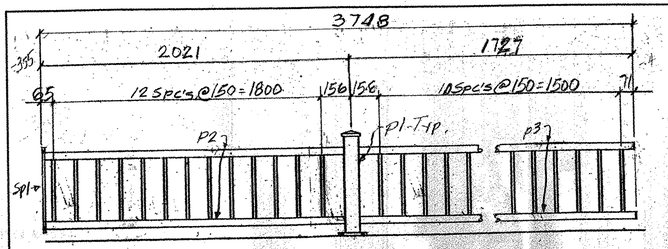


Metric

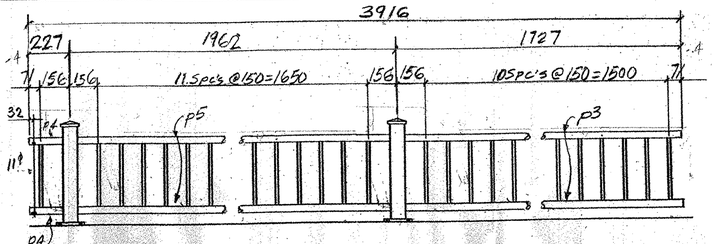
CROSS SECTION SHEET

PROJECT NAME: BETHEL SCALE=
PROJECT NUMBER: BRF 0241 (33) C/2 1:100

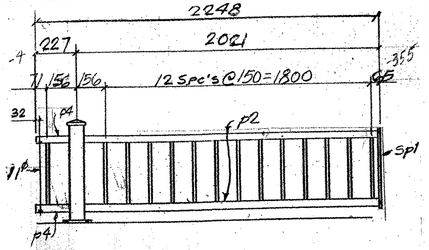
FILE NAME: PIER X SECTIONS PLOT DATE: 07-JUN-2000 13:
PROJECT LEADER: W.R. STODDARD DRAWN BY: E. WESTBERG
DESIGNED BY: _____ CHECKED BY: _____
const: g:/common/cadd/m-xsection.dgn SHEET 187 OF _____



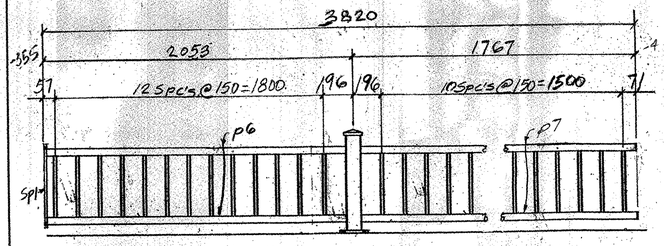
R1-2-REQ'D.



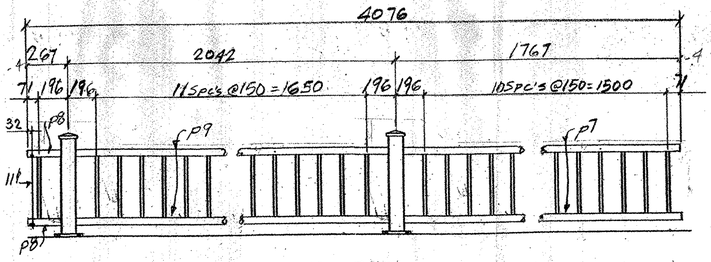
R2-2-REQ'D.



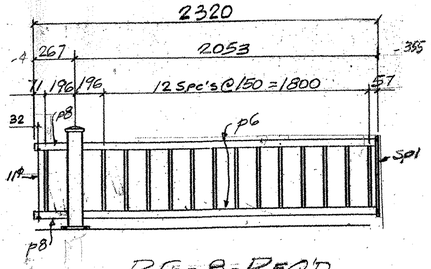
R3-2-REQ'D.



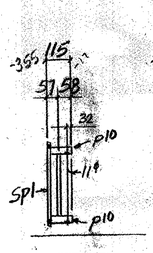
R4-6-REQ'D.



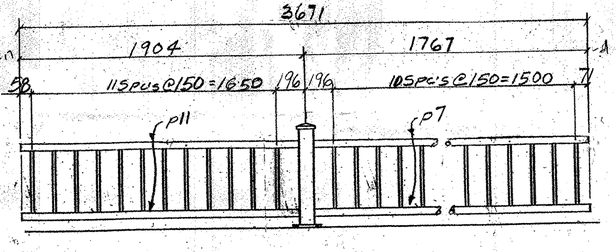
R5-8-REQ'D.



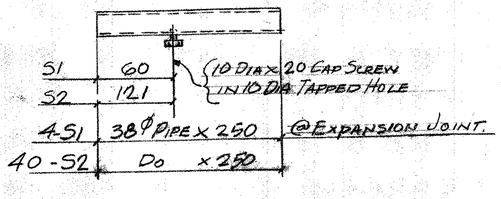
R6-8-REQ'D.

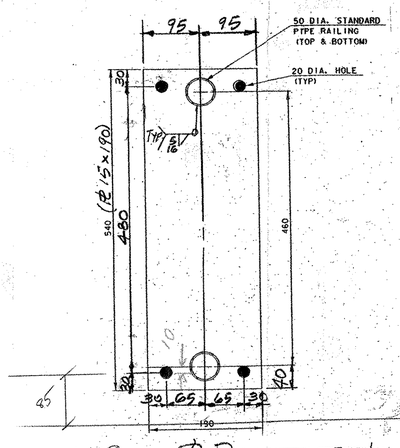


R7-1-REQ'D.



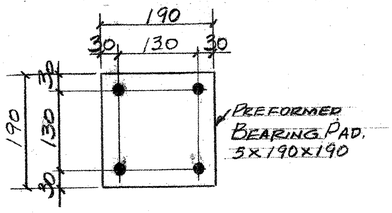
R8-2-REQ'D.



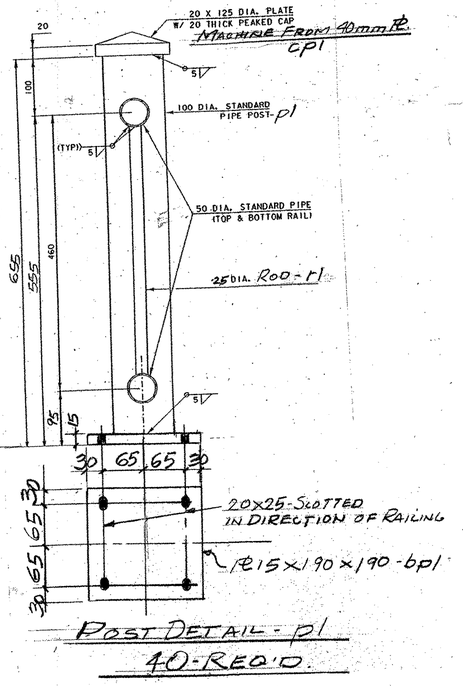


SIDE R. DETAIL - Sp1

20-REQ'D.



PFP-40-REQ'D.



POST DETAIL - P1

40-REQ'D.

RECEIVED
OK'D BY Kml OK'D BY EJ
MAR 21 2006
RESUBMIT APPROVED
BY CPW DATE 4/20/06

PLANS DRAWN USING
METRIC
DIMENSIONS

SHOP BILL

JOB NO. 279 DRG. NO. R2

ABM INFO PAGE	LINE	NO.	DESCRIPTION	mm	ASSEM. MARK	SHIPPING MARK	REMARKS	WEIGHT
		2	RAIL ASS'Y	3748		R1		—
		2		3916		R2		—
		2		2248		R3		—
		6		3820		R4		—
		8		4076		R5		—
		8		2820		R6		—
		2		115		R7		—
		2	RAIL ASS'Y	3671		R8		—
		40	100ϕ PIPE	640	P1		ASTM-A53-B SEAMLESS	
		40	P15x190	190	bP1			
		40	P40x125	125	cP1		○ MACHINED CAP.	
		20	P15x190	540	sP1			
		8	50ϕ PIPE	1914	P2		ASTM-A53-B SEAMLESS	
		8		1670	P3			
		8		170	P4			
		4		1898	P5			
		28		1952	P6			
		32		1710	P7			
		32		210	P8			
		16		1928	P9			
		4		190	P10			
		4	50ϕ PIPE	1847	P11			
		680	25ϕ ROD	400	R1			
		4	38ϕ PIPE	250		S1	ASTM-A53-B SEAMLESS	
		40	DO	250		S2	DO	
		44	10ϕ CAP SCREW	20		SMP	A307	
		40	5x190 PAD.	190		PFP	PREFORMED BEARING PAD.	

SHOP NOTE
RAILS TO BE PROPERLY VENTED FOR GALVANIZING

PAY ITEM: 525.50

REV.	REMARKS	DATE	DWN	CHK	APP	Q.A.
	OUT FOR APPROVAL	3-13-06				
	OUT FOR APPROVAL					
	ISSUED TO SHOP					
	FIELD & OFFICE					

NO.	DIA.	LGT	TYPE	WASHER

PROJECT NO. BRF-024(32) 9/2 STATE PROJECT NO. 31

MATERIAL: AASHTO GRADE 36D ELECTRODES: SEE PROC. HOLES: AS NOTED SHOP BOLTS:

SURFACE PREP. & PAINT:
COLOR GALVANIZE AFTER FAB (ASTM-A53&A123)
GREEN: COLOR CHIP # 14062

DESCRIPTION: BRIDGE RAIL

JOB:
VT. 12 OVER NEW ENGLAND GRRR & 3RD BRANCH OF WHITE RIVER
BETHEL, VT.

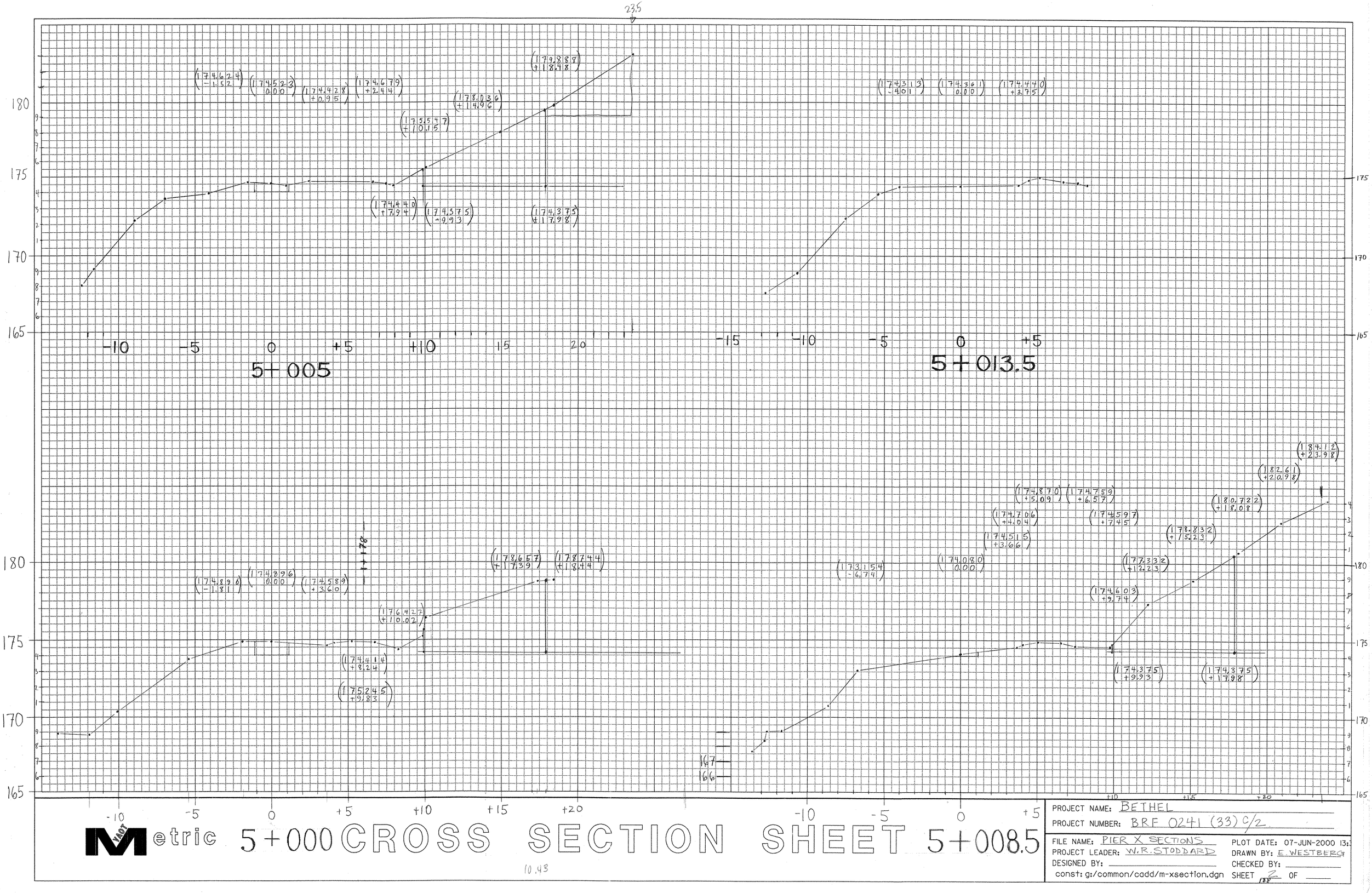
CUSTOMER: KUBRICKY CONSTR. CO.

	DRAWN BY	DATE
	JPF	2-06
CHK'D BY	EJ	
APPROV BY		
Q.A.		
JOB NO.	279	
DRG. NO.	R2	
REV.	△	

CASCO BAY STEEL STRUCTURES, INC.
75 SPRING HILL ROAD SACO, MAINE 04072
PHONE (207) 282-7360 FAX. (207) 282-1179

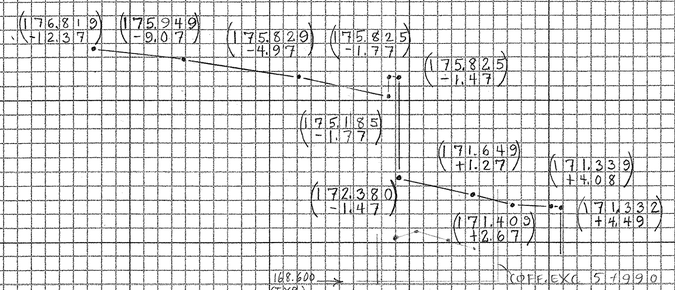
1" = 1'-0

170 BR

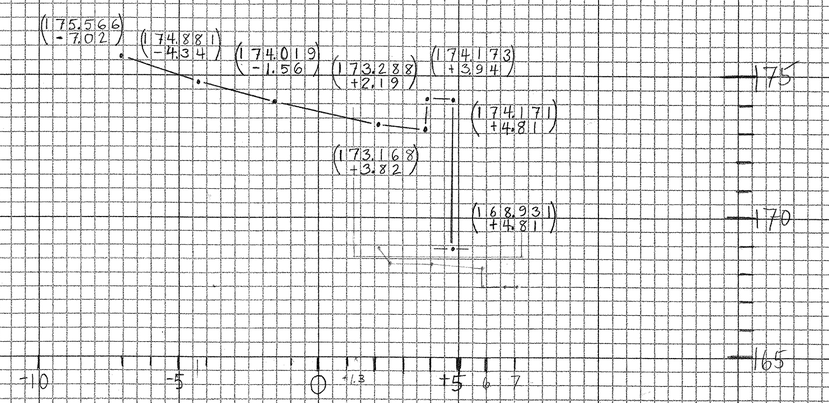

23.5
(174.624 / -1.52)
(174.523 / 0.00)
(174.428 / +0.95)
(174.679 / +2.44)
(178.888 / +18.48)
(178.036 / +14.96)
(175.547 / +10.15)
(174.440 / +7.94)
(174.375 / -0.93)
(174.375 / +17.98)
-10 -5 0 +5 +10 15 20
5+005
(174.313 / -4.01)
(174.361 / 0.00)
(174.440 / +3.75)
-15 -10 -5 0 +5
5+013.5
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(178.744 / +18.44)
(176.427 / +10.02)
(174.414 / +8.24)
(175.245 / +9.83)
(173.154 / -6.74)
(174.080 / 0.00)
(174.870 / +5.09)
(174.759 / +6.57)
(174.706 / +4.04)
(174.515 / +3.66)
(174.597 / +7.45)
(174.603 / +9.74)
(177.332 / +12.23)
(178.832 / +15.23)
(180.722 / +18.08)
(182.61 / +20.98)
(184.12 / +23.98)
(174.375 / +9.93)
(174.375 / +17.98)
-10 -5 0 +5 +10 +15 +20
5+000
5+008.5
Metric
CROSS SECTION SHEET
PROJECT NAME: BETHEL
PROJECT NUMBER: BRF 0241 (33) C/2
FILE NAME: PIER X SECTIONS
PROJECT LEADER: W.R. STODDARD
DESIGNED BY:
const: g:/common/cadd/m-xsection.dgn
PLOT DATE: 07-JUN-2000 13:
DRAWN BY: E. WESTBERG
CHECKED BY:
SHEET 28 OF

10.43

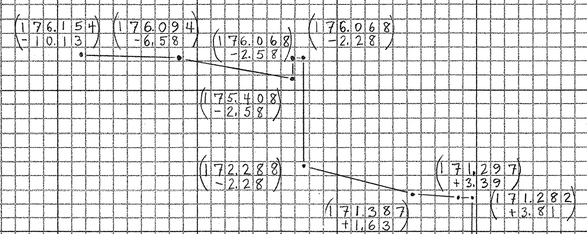
5+990 SAME AS 5+988



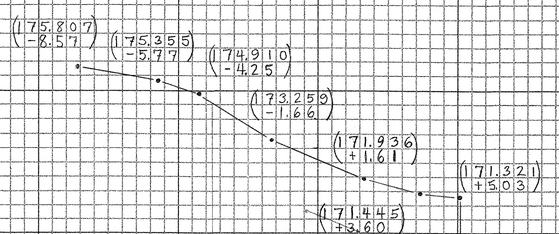
5+988



5+996.5



5+982



5+993

-170
-9
-8
-7

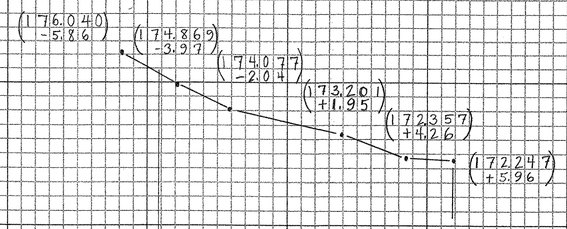
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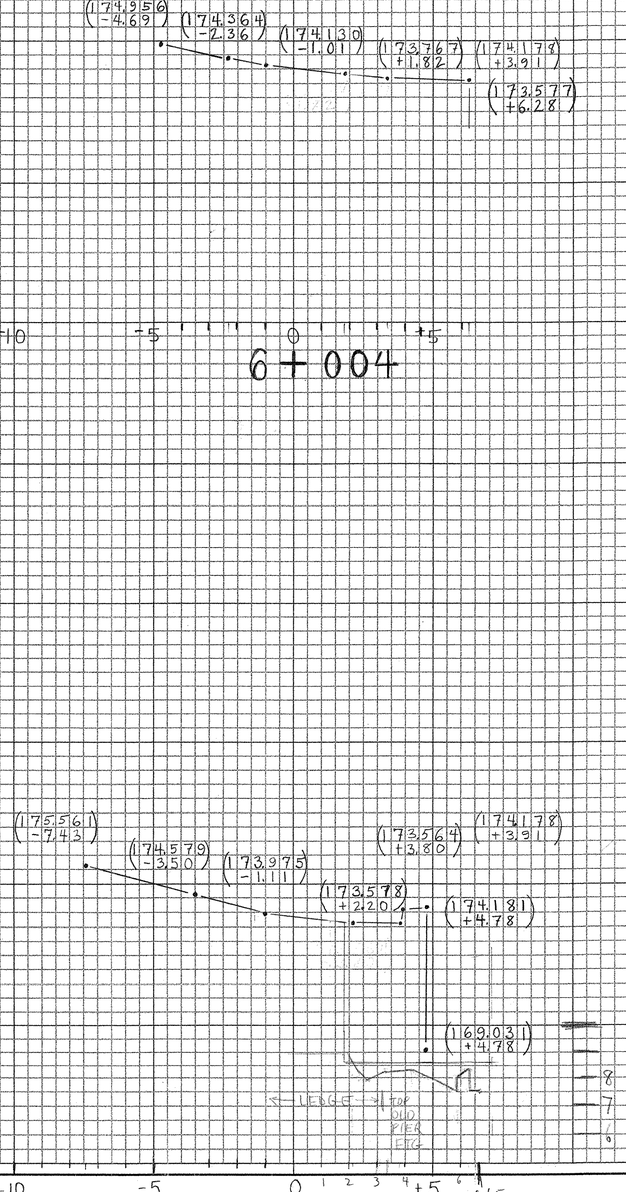
MnDOT Metric

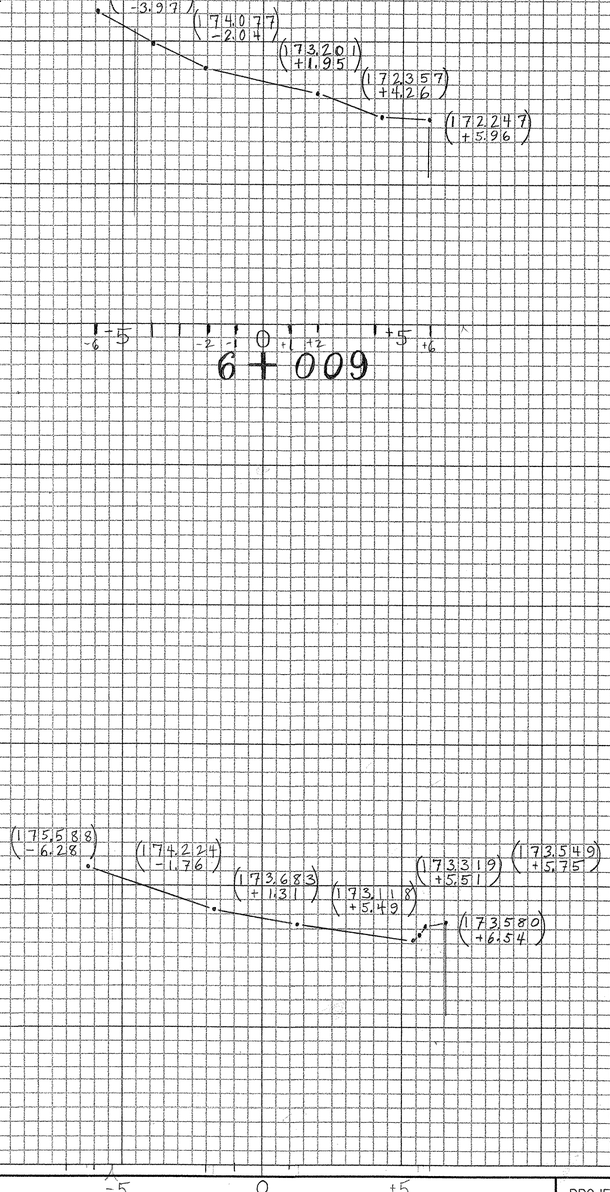
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PROJECT NUMBER: BRF 0241 (33) C/2

FILE NAME: ABUT. 2 X SECTIONS
PROJECT LEADER: W.R. STODDARD
DESIGNED BY: _____
const: g:/common/cadd/m-xsection.dgn

PLOT DATE: 07-JUN-2000 13:
DRAWN BY: E. WESTBERG
CHECKED BY: _____
SHEET 1/184 OF 2







CROSS SECTION SHEET

Metric

6 + 000

6 + 005.5

6 + 004

6 + 009

PROJECT NAME: BETHEL
PROJECT NUMBER: BRF 0241 (33) C/2

FILE NAME: ABUT. 2 X SECTIONS
PROJECT LEADER: W.R. STODDARD
DESIGNED BY:
const: g:/common/cadd/m-xsection.dgn

PLOT DATE: 07-JUN-2000 13:
DRAWN BY: E. WESTBERG
CHECKED BY:
SHEET 2 OF 2

(18397 6.0) (18391 -3.0)

(18358 -9.0)

18.5

18.0

185 4 3 2 1 180 175

-10 +7.2 +5 +4.4 0

1+109

-10 -5 0

1+122

185 4 3 2 1 180

A

B

175

-10 -5 0

1+113

-10 -5 0

1+127

185 4 3 2 1 180

175

-10 -5 -3 0

1+117 B

(WIDER FTG.)

(FOR RET. WALL #1)

CROSS SECTION SHEET

VAOT Metric

PROJECT NAME: BETHEL SCALE = 1:100

PROJECT NUMBER: BRF 0241(33)c/2

FILE NAME: ABUT.1/APPROACH X SECT. PLOT DATE: 07-JUN-2000 13:

PROJECT LEADER: W.R. STODDARD DRAWN BY: E. WESTBERG

DESIGNED BY: _____ CHECKED BY: _____

const: g:/common/cadd/m-xsection.dgn SHEET 19/19 OF _____