INDEX OF SHEETS

VAOT STANDARDS

B-5M	SLOPE GRADING, EMBANKMENTS, MUCK	01-03-00
B-11M	UNDERDRAIN - ROCK SUBGRADE, SLOPE STABILIZATION	06-13-97
B-71M	RESIDENTIAL AND COMMERCIAL DRIVES	02-01-04
D-3M	TREATED GUTTERS	06-13-97
D-6M	REINFORCED CONCRETE DROP INLET WITH GRATE, FOR USE IN DITCHES	06-13-97
D-8M	REINFORCED CONCRETE DROP INLET WITH GRATE	01-03-00
D-15M	CAST IRON FRAME WITH GRATE TYPE D	06-13-97
E-100M	CONSTRUCTION APPROACH SIGNS	03-01-04
E-101M	CONSTRUCTION SIGN DETAILS	05-30-03
E-102M	CONSTRUCTION SIGN DETAILS	06-30-03
E-102AM	CONSTRUCTION SIGN DETAILS	06-13-97
E-106M	TRAFFIC CONTROL MISCELLANEOUS DETAILS	03-01-04
E-107M	DELINEATION, BARRICADES AND DETOURS FOR CONSTRUCTION AREAS	06-30-03
E-107AM	BREAKAWAY BARRICADE DETAILS	06-13-97
E-108M	CONSTRUCTION ZONE LONGITUDINAL DROP OFFS	06-13-97
E-120M	STANDARD SIGN PLACEMENT EXPRESSWAY AND FREEWAY	06-13-97
E-121M	STANDARD SIGN PLACEMENT CONVENTIONAL ROAD	06-13-97
E-142M	REGULATORY SIGN DETAILS	06-13-97
E-150M	WARNING SIGN DETAILS	06-13-97
E-151M	WARNING SIGN DETAILS	06-13-97
E-152M	WARNING SIGN DETAILS	06-13-97
E-153M	WARNING SIGN DETAILS	06-13-97
E-155M	WARNING SIGN DETAILS	06-13-97
E-160M	FLANGED CHANNEL STEEL SIGN POST	06-13-97
E-164M	SQUARE STEEL SIGN POSTS	06-13-97
E-171AM	TRAFFIC CONTROL SIGNALS, GENERAL NOTES AND DETAILS	06-13-97
E-171BM	TRAFFIC CONTROL SIGNALS, MISCELLANEOUS DETAILS	06-13-97
E-171CM	TRAFFIC CONTROL SIGNALS, CANTILEVER MNTG. DETAILS	06-13-97
E-172M	VEHICLE DETECTOR LOOP DETAILS	06-13-97
E-173M	PULLBOXES AND JUNCTION BOXES	06-13-97
E-175M	POWER DROP STANCHIONS	06-13-97
E-193M	PAVEMENT MARKING DETAILS	06-13-97
F-2M	DRIVE GATE FOR CHAIN LINK FENCE, TYPE I	01-03-00
G-1M	STEEL BEAM GUARD RAIL (50 MPH & OVER)	01-03-00
G-1DM	STEEL BEAM GUARD RAIL (40 MPH & LESS)	01-03-00
G-4M	MARKERS, STEEL MARKER POSTS	06-13-97
G-18M	PRECAST CONCRETE TEMPORARY TRAFFIC BARRIER	06-13-97
J-1M	PROJECT AND BOUNDARY MARKERS	06-13-97

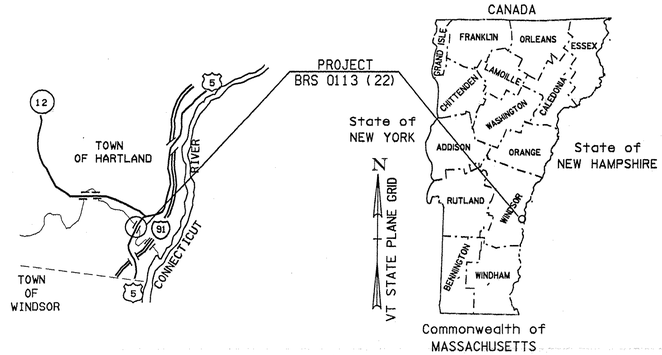
STATE OF VERMONT
AGENCY OF TRANSPORTATION

PROPOSED IMPROVEMENT
TOWN OF HARTLAND
COUNTY OF WINDSOR
U.S. RTE. 5
HARTLAND BRS 0113 (22)

BEGINNING AT A POINT APPROXIMATELY 2.135 KILOMETERS
NORTH OF THE WINDSOR-HARTLAND TOWN LINE AND EXTENDING NORTH 0.110 KILOMETERS

WORK TO BE PERFORMED ON THIS PROJECT INCLUDES REPLACEMENT OF BRIDGE #60 OVER LULLS BROOK AND NECESSARY ROADWAY APPROACHES.

LENGTH OF STRUCTURES	0.044 KILOMETERS
LENGTH OF ROADWAY	0.066 KILOMETERS
LENGTH OF PROJECT	0.110 KILOMETERS



RECORD PLANS

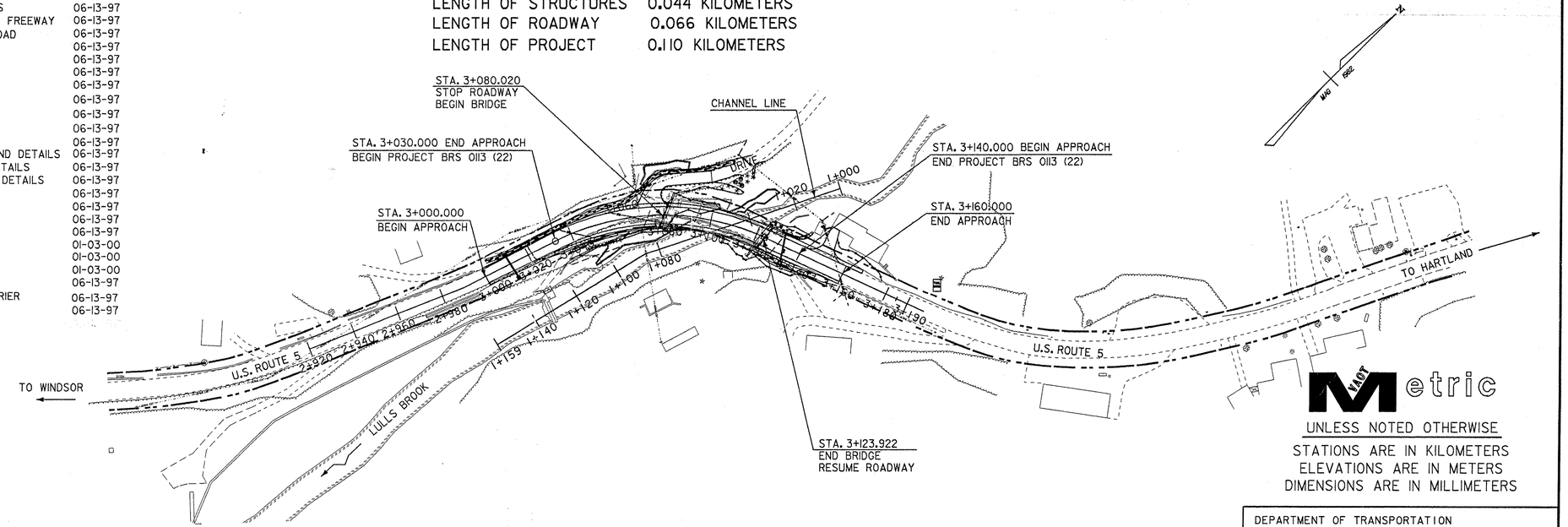
CONTRACTOR: MILLER CONSTRUCTION, INC. - WINDSOR, VT
RESIDENT ENGINEER: DARYL BASSETT
CONSTRUCTION BEGAN: APRIL 18, 2005
CONSTRUCTION COMPLETE: SEPTEMBER 20, 2007
RECORD PLANS BY: DARYL BASSETT & AMOS KEMPTON

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

BY _____ RESIDENT ENGINEER

DATE 2/7/12

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



CONVENTIONAL SYMBOLS

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

SURVEYED BY :
SURVEYED DATE :

DATUM
VERTICAL NGVD 1929
HORIZONTAL N/A

PLANS PREPARED BY

McFARLAND-JOHNSON, INC.
BINGHAMTON N.Y.

BY _____

40 30 20 10 0 20 40
SCALE 1:1000

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.

DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATOR
APPROVED _____ DATE _____

DIRECTOR OF PROGRAM DEVELOPMENT
APPROVED _____ DATE 2/4/04

PROJECT MANAGER : CRAIG KELLER

PROJECT NAME : BRS 0113 (22)
PROJECT NUMBER : HARTLAND

SHEET 1 OF 86 SHEETS

M:\14562O1 VAOT Hartland\zf204nul.dgn

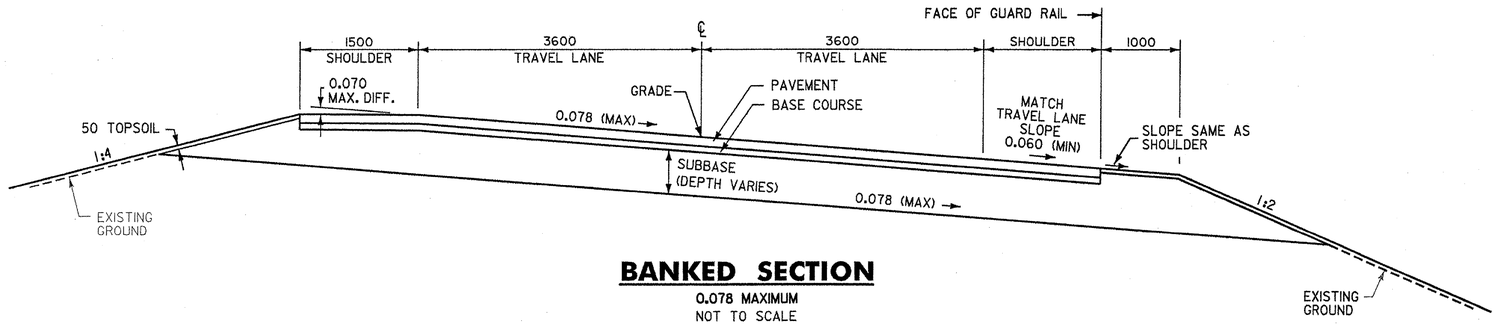
12-AUG-2004

TYPICAL SECTIONS

115 BITUMINOUS CONCRETE PAVEMENT (50 TYPE III OVER 65 TYPE II)
80 BASE COURSE OF BITUMINOUS CONCRETE PAVEMENT ~~(TYPE I~~, ONE LIFT) TYPE II
SUBBASE OF CRUSHED GRAVEL (COARSE GRADED) - MODIFIED (DEPTH VARIES - SEE TRANSITION DETAILS, SHEETS 78 & 84)

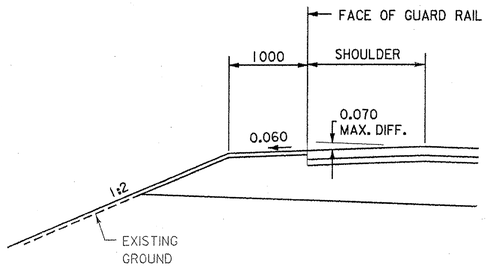
MATERIAL ITEM	THICKNESS TOLERANCE
PAVEMENT (TOTAL DEPTH)	+/- 5
SUBBASE	+/- 30

SHOULDERS: 115 BITUMINOUS CONCRETE PAVEMENT
80 BASE COURSE OF BITUMINOUS CONCRETE PAVEMENT



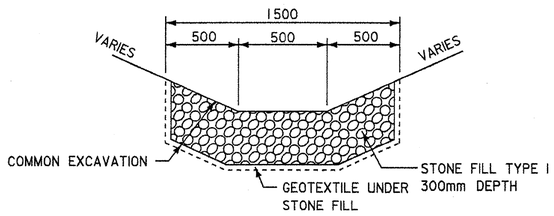
BANKED SECTION

0.078 MAXIMUM
NOT TO SCALE



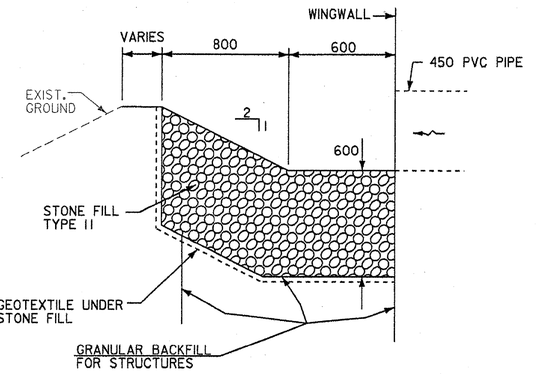
DETAIL OF GUARD RAIL ON HIGH SIDE OF BANKED SECTION

NOT TO SCALE



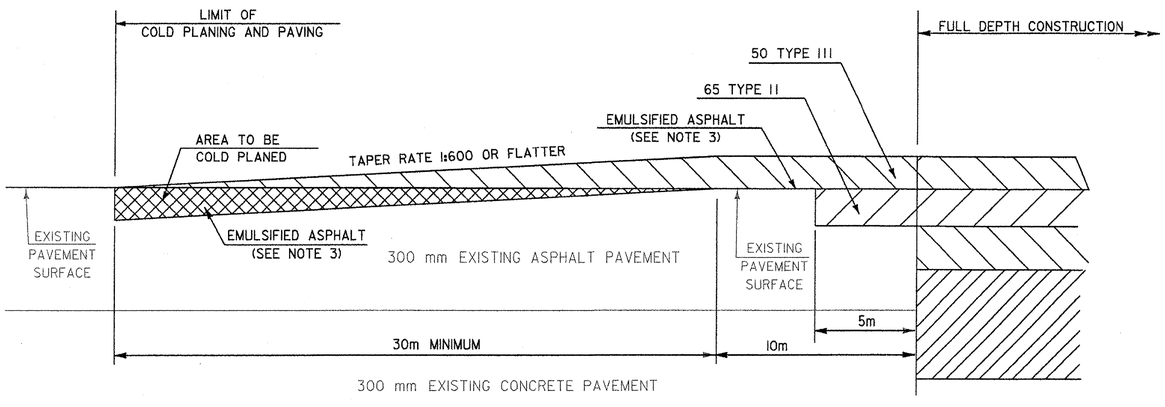
STONE FILLED DITCH DETAIL I

NOT TO SCALE



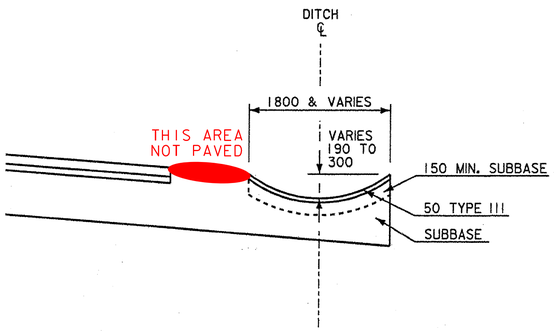
STONE FILLED DITCH DETAIL II

NOT TO SCALE



COLD PLANE DETAIL

STA. 3+000 TO 3+030
NOT TO SCALE



PAVED GUTTER DETAIL

NOT TO SCALE

NOTES

1. THE PAVEMENT WEARING COURSE SHALL BE TYPE III, BITUMINOUS CONCRETE PAVEMENT. ASPHALT CEMENT USED IN THE BITUMINOUS CONCRETE PAVEMENT SHALL BE PG 58-28.
2. COLD PLANING TO BE COMPLETED ACCORDING TO TYPICAL OR AS NOTED OTHERWISE ON THE PLANS. ALL COLD PLANED AREAS SHALL BE TACKED WITH EMULSIFIED ASPHALT.
3. EMULSIFIED ASPHALT TO BE APPLIED ON EXISTING PAVEMENT, BETWEEN ALL COURSES OF PAVEMENT AND ON COLD PLANED AREAS AT THE RATE OF 0.07 L/m^2 OR AS DIRECTED BY THE ENGINEER.
4. CLEANING OF PIPE INLET AND OUTLET AREAS, AND DITCH CLEANING THROUGHOUT THE PROJECT SHALL BE PERFORMED AT LOCATIONS AS INDICATED ON PLANS, OR AS DIRECTED BY THE ENGINEER. PAYMENT SHALL BE MADE UNDER APPLICABLE RENTAL ITEM(S).
5. SLOPE ROUNDING - ALL CUT SLOPE ROUNDINGS TO BE ROUNDED IN ACCORDANCE WITH STANDARD SHEET B-5M.
6. MILEMARKERS DISTURBED BY CONSTRUCTION SHALL BE RESET AT THE DIRECTION OF THE ENGINEER WITH PAYMENT TO BE SUBSIDIARY TO OTHER ITEMS OF WORK.
7. SEED: 90 KG/Ha
   TO BE APPLIED PER SEEDING MIXTURES 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 4500kg/ha, OR AS DIRECTED BY THE ENGINEER.
   HAY MULCH:
   TO BE PLACED ON EARTH SLOPES AT THE RATE OF 4500kg/ha, OR AS DIRECTED BY THE ENGINEER.
   TOPSOIL:
   TO BE USED AS INDICATED ON THE PLANS, OR AS DIRECTED BY THE ENGINEER.

RURAL AREAS - SEED MIXTURE

% WT	kg/ha	NAME	PUR %	GERM %
37.1	26.0	CREEPING RED FESCUE	98	85
37.1	26.0	TALL FESCUE	95	90
5.7	4.0	RED TOP	95	90
14.4	10.0	BIRDSFOOT TREFOIL	98	85
5.7	4.0	ANNUAL RYE GRASS	95	85
100.0	70.0			

URBAN AREAS (LAWNS) - SEED MIXTURE

% WT	kg/ha	NAME	PUR %	GERM %
42.5	38.0	CREEPING RED FESCUE	98	85
10.0	9.0	PERENNIAL 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			

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

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

NOTE: ALL DIMENSIONS ON THIS SHEET IN MILLIMETERS EXCEPT WHERE OTHERWISE INDICATED

STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of HARTLAND	Bridge No. 60
Highway No. U.S. ROUTE 5	Log Sta.
	Surv. Sta.
U.S. ROUTE 5 OVER LULLS BROOK	
TYPICAL SECTIONS	
Designed By S.E. COSILMON	Drawn By R. REMY / G.F. O'NEIL
Checked By J.R. McDUFFEE Date 2/04	Bridge Design Supervisor J. MIECZKOWSKI Date 2/04
PROJECT HARTLAND	PROJECT NO. BRS No. 0113(22)
I.G.C. Info. M:\145620\VAOT Hartland\zf204frm.dgn	
Bridge Sheet No.	Sheet 2 of 86

12-AUG-2004

STATE OF VERMONT
AGENCY OF TRANSPORTATION

QUANTITY SHEET

VAOT Metric

SUMMARY OF ESTIMATED QUANTITIES

FULL E & C	EROSION CONTROL			BRIDGE	ROADWAY	QUANTITIES GRAND TOTAL	UNIT	ITEMS	ITEM NUMBER	RND
					1	1	LS	CLEARING AND GRUBBING	201.10	
					1	1	EA	DEMOLITION AND DISPOSAL OF BUILDING (NO. 1 STA 3+145 LT.) (MOD.)	202.10	
					570	570	m^3	COMMON EXCAVATION	203.15	4
					300	300	m^3	SOLID ROCK EXCAVATION	203.16	2
				600		600	m^3	UNCLASSIFIED CHANNEL EXCAVATION	203.27	
				40	29	69	m^3	GRANULAR BORROW	203.32	
					800	800	m^2	FINE GRADING - SUBGRADE	203.40	13
	1				99	100	m^3	TRENCH EXCAVATION OF EARTH	204.20	2
				1040		1040	m^3	STRUCTURE EXCAVATION	204.25	
				445		445	m^3	GRANULAR BACKFILL FOR STRUCTURES	204.30	9
					290	290	m^2	COLD PLANING - BITUMINOUS PAVEMENT	210.10	3
					520	520	m^3	SUBBASE OF CRUSHED GRAVEL (COARSE GRADED) (MOD.)	301.25	4
				80	121	201	kg	EMULSIFIED ASPHALT	404.65	
				96	450	546	†	BITUMINOUS CONCRETE PAVEMENT (PG 58-28)	406.25	4
					5	5	m^3	CONCRETE, CLASS B	501.25	0.17
				148		148	m^3	CONCRETE, HIGH PERFORMANCE CLASS A	501.33	
				494		494	m^3	CONCRETE, HIGH PERFORMANCE CLASS B	501.34	
				163,000		163,000	kg	STRUCTURAL STEEL (PLATE GIRDER) (CURVED)	506.55	
				22,020	250	22,270	kg	REINFORCING STEEL	507.15	
				25,874		25,874	kg	EPOXY COATED REINFORCING STEEL	507.17	
				1		1	LS	SHEAR CONNECTORS (1128 - 22 MM x 175 MM)	508.15	
				1		1	LS	STRUCTURAL PAINTING ,SHOP APPLIED (18 METRIC TONS)	513.25	
	1					1	LS	CONTAINMENT & ENVIRONMENTAL PROTECTION, FIELD (MOD.-FLOATING BOOM)	513.36	
				1		1	LS	SURFACE PREPARATION, SHOP (18 METRIC TONS)	513.40	
				195		195	l	WATER REPELLENT	514.10	
				12		12	m	BRIDGE EXPANSION JOINT (VERMONT JOINT)	516.10	
				566		566	m^2	SHEET MEMBRANE WATERPROOFING (MOD.- TORCH APPLIED)	519.20	
				124		124	m	BRIDGE RAILING - 3 RAIL ALUMINUM (MOD.-ANODIZED BLACK)	525.22	
				1		1	LS	ONE WAY TEMPORARY BRIDGE (150 SM - EST.)	528.10	
				295		295	m^2	REMOVAL OF BRIDGE PAVEMENT	529.10	

DETAILED SUMMARY OF QUANTITIES

QUANTITIES	UNIT	ITEMS
		• COMMON EXCAVATION
376	m^3	U.S. ROUTE 5
75	m^3	DRAINAGE
115	m^3	DRIVEWAYS
4	m^3	ROUNDING
570	m^3	TOTAL
		• SUBBASE OF CRUSHED GRAVEL (COARSE GRADED) MODIFIED
474	m^3	U.S. ROUTE 5
35	m^3	DRIVEWAYS
11	m^3	ROUNDING
520	m^3	TOTAL
		• BITUMINOUS CONCRETE PAVEMENT (PG 58-28)
297	†	U.S. ROUTE 5
52	†	DRIVEWAYS
96	†	BRIDGE
98	†	DETOUR
3	†	ROUNDING
450	†	TOTAL
		• FINE GRADING - SUBGRADE
788	m^2	U.S. ROUTE 5
12	m^2	ROUNDING
800	m^2	TOTAL
		• TEMPORARY EROSION CONTROL
1	m^3	TRENCH EXCAVATION OF EARTH
75	m^3	STONE FILL TYPE I
460	m^2	GEOTEXTILE FABRIC FOR SILT FENCE
3	kg	SEED (WINTER RYE)
0.55	†	HAY MULCH
385	m^2	EROSION MATTING

DETAILED SUMMARY OF QUANTITIES

QUANTITIES	UNIT	ITEMS

STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of HARTLAND	Bridge No. 60
Highway No. U.S. ROUTE 5	Log Sta. / Surv. Sta.

U.S. ROUTE 5 OVER LULLS BROOK

SUMMARY OF QUANTITIES

Designed By S.E. COSILMON	Drawn By R. REMY / G.F. O'NEIL
Checked By J. McDUFFEE Date 2/04	Bridge Design Supervisor J. MIECZKOWSKI Date 2/04
PROJECT HARTLAND	PROJECT NO. BRS No. 0113(22)
I.G.C. Info. M:\145620I VAOT Hartland\zf204frm.dgn	
Bridge Sheet No.	Sheet 3 of 86

13-AUG-2004

STATE OF VERMONT
AGENCY OF TRANSPORTATION

QUANTITY SHEET

VAOT Metric

SUMMARY OF ESTIMATED QUANTITIES

FULL E & C	EROSION CONTROL			BRIDGE	ROADWAY	QUANTITIES GRAND TOTAL	UNIT	ITEMS	ITEM NUMBER	RND
				1		1	EA	REMOVAL OF STRUCTURE (300 SM - EST.)	529.15	
				10		10	EA	BEARING DEVICE ASSEMBLY (POT)	531.10	
								***** BEGIN OPTION ITEMS *****		
					11	11	m	450mm PCCSP 2.01(68mm x 12mm)	601.0416	
					11	11	m	450mm CAAP 1.91(68mm x 12mm)	601.0216	
					11	11	m	450mm CPEP	601.0915	
								***** END OPTION ITEMS *****		
					3	3	EA	CAST IRON GRATE WITH FRAME, TYPE D	604.47	
					5	5	HR	BULLDOZER RENTAL, TYPE I	608.10	EST
					10	10	HR	ALL PURPOSE EXCAVATOR RENTAL, TYPE I	608.25	EST
					10	10	HR	TRUCK RENTAL	608.37	EST
					5	5	HR	LOADER RENTAL, TYPE I	608.40	EST
					3600	3600	HR	TRUCK-MOUNTED ATTENUATOR	608.45	EST
					40	40	m^3	DUST CONTROL WITH WATER	609.10	EST
					1	1	t	DUST AND ICE CONTROL WITH CALCIUM CHLORIDE	609.15	EST
	75					75	m^3	STONE FILL TYPE I	613.10	
	12					12	m^3	STONE FILL TYPE II	613.11	
					7	7	t	BITUMINOUS CONCRETE GUTTERS AND TRAFFIC ISLANDS	616.47	
					10	10	EA	BOUNDARY MARKERS	619.10	EST
					1	1	EA	STEEL MARKER POSTS	619.16	
					2	2	EA	REMOVING AND RESETTING PROPERTY MARKERS	619.20	EST
	160					160	m	CHAIN LINK FENCE, 1.2m (MOD.)	620.11	
					330	330	m	SNOW FENCE (MOD. - PDF)	620.70	
					46	46	m	STEEL BEAM GUARD RAIL	621.20	
					1	1	EA	MANUFACTURED TERMINAL SECTION (TANGENT)	621.505	
					3	3	EA	ENERGY ABSORPTION ATTENUATOR	621.56	
					1	1	EA	ANCHOR FOR STEEL BEAM RAIL	621.60	
				38		38	m	ALUMINUM APPROACH RAILING (MOD.-ANODIZED BLACK)	621.74	
					70	70	m	REMOVAL AND DISPOSAL OF GUARDRAIL	621.80	0.1
					140	140	m	TEMPORARY TRAFFIC BARRIER	621.90	3

DETAILED SUMMARY OF QUANTITIES

QUANTITIES	UNIT	ITEMS

DETAILED SUMMARY OF QUANTITIES

QUANTITIES	UNIT	ITEMS

STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of HARTLAND	Bridge No. 60
Highway No. U.S. ROUTE 5	Log Sta. Surv. Sta.
U.S. ROUTE 5 OVER LULLS BROOK	

SUMMARY OF QUANTITIES

Designed By S.E. COSILMON	Drawn By R. REMY / G.F. O'NEIL
Checked By Date J. R. McDUFFEE 2/04	Bridge Design Supervisor J. MIECZKOWSKI Date 2/04
PROJECT HARTLAND	PROJECT NO. BRS No. 0113(22)
I.G.C. Info. M:\14562O1 VAOT Hartland\zf204frm.dgn	
Bridge Sheet No.	Sheet 4 of 86

12-AUG-2004

STATE OF VERMONT
AGENCY OF TRANSPORTATION

QUANTITY SHEET

Metric

SUMMARY OF ESTIMATED QUANTITIES

FULL E & C	EROSION CONTROL			BRIDGE	ROADWAY	QUANTITIES GRAND TOTAL	UNIT	ITEMS	ITEM NUMBER	RND
				1		1	m	SLEEVES FOR UTILITY (1 SLEEVE x 530 MM DIAMETER)	625.10	0.5
					13	13	m	PVC SEWER PIPE (450 mm)	628.35	
					100	100	HR	UNIFORMED TRAFFIC OFFICERS	630.10	EST
					220	220	HR	FLAGGERS	630.15	EST
1						1	LS	FIELD OFFICE - ENGINEERS	631.10	
1						1	LS	TESTING EQUIPMENT - CONCRETE	631.16	
1						1	LS	TESTING EQUIPMENT - BITUMINOUS (MOD.)	631.17	
1						1	LU	FIELD OFFICE TELEPHONE (NOT A BID ITEM)	631.25	
					520	520	HR	EMPLOYEE TRAINEESHIP	634.10	EST
					1	1	LS	MOBILIZATION	635.10	
					1	1	LS	TRAFFIC CONTROL	641.10	
					330	330	m	DURABLE 100mm WHITE LINE	646.40	10
					330	330	m	DURABLE 100mm YELLOW LINE	646.41	10
					720	720	m	TEMPORARY 100mm WHITE LINE	646.60	10
					330	330	m	TEMPORARY 100mm YELLOW LINE	646.61	10
					10	10	m	TEMPORARY 600mm STOP BAR	646.66	
					15	15	m^2	REMOVAL OF EXISTING PAVEMENT MARKINGS	646.85	2
	346					346	m^2	GEOTEXTILE UNDER STONE FILL	649.31	
	460					460	m^2	GEOTEXTILE FOR SILT FENCE	649.51	14
					7	7	kg	SEED	651.15	0.8
	3					3	kg	SEED, WINTER RYE	651.17	EST
					55	55	kg	FERTILIZER	651.18	5
					0.45	0.45	t	AGRICULTURAL LIMESTONE	651.20	0.05
	0.55					0.55	t	HAY MULCH	651.25	
					50	50	m^3	TOPSOIL	651.35	5
	1					1	LS	EROSION PREVENTION AND SEDIMENT CONTROL PLAN	652.10	
	150					150	HR	MONITORING EROSION PREVENTION AND SEDIMENT CONTROL PLAN	652.20	
	1					1	LU	FIELD MAINTENANCE OF EROSION PREVENTION AND SEDIMENT CONTROL PLAN (N.A.B.I.)	652.30	

DETAILED SUMMARY OF QUANTITIES

QUANTITIES	UNIT	ITEMS

DETAILED SUMMARY OF QUANTITIES

QUANTITIES	UNIT	ITEMS

STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of HARTLAND	Bridge No. 60
	Log Sta.
Highway No. U.S. ROUTE 5	Surv. Sta.
U.S. ROUTE 5 OVER LULLS BROOK	

SUMMARY OF QUANTITIES

Designed By S.E. COSILMON	Drawn By R. REMY / G.F. O'NEIL
Checked By Date J. R. McDUFFEE 2/04	Bridge Design Supervisor J. MIECZKOWSKI Date 2/04
PROJECT HARTLAND	PROJECT NO. BRS No. 0113(22)
I.G.C. Info. M:\145620\VAOT Hartland\zf204frm.dgn	
Bridge Sheet No.	Sheet 5 of 86

12-AUG-2004

STATE OF VERMONT
AGENCY OF TRANSPORTATION

QUANTITY SHEET

VAOT Metric

SUMMARY OF ESTIMATED QUANTITIES

FULL E & C	EROSION CONTROL			BRIDGE	ROADWAY	QUANTITIES GRAND TOTAL	UNIT	ITEMS	ITEM NUMBER	RND
	385					385	m^2	EROSION MATTING	654.10	
					7	7	EA	EVERGREEN TREES (PINUS STROBUS) (WHITE PINE) (60mm CALIPER - B&B)	656.20	
					11	11	EA	EVERGREEN TREES (JUNIPEROUS VIRGINIANA) (RED CEDAR) (60mm CALIPER - B&B)	656.20	
					3	3	EA	DECIDUOUS TREES (BETULA PAPYRIFERA) (WHITE BIRCH) (60mm CALIPER-B&B)	656.30	
					3	3	m^2	TRAFFIC SIGNS (TYPE A)	675.20	.03
								••••• BEGIN OPTION ITEMS •••••		
					35	35	m	FLANGED CHANNEL SIGN POSTS	675.301	2.6
					35	35	m	SQUARE TUBE STEEL POSTS AND ANCHORS	675.341	2.6
								••••• END OPTION ITEMS •••••		
					8	8	EA	REMOVING SIGNS	675.50	
					3	3	EA	ERECTING SALVAGED SIGNS	675.60	
					2	2	EA	SETTING SALVAGED POSTS	675.61	
					1	1	EA	TEMPORARY TRAFFIC SIGNAL SYSTEM (MOD. - PRE-EMPTIVE)	678.40	
					2	2	EA	TEMPORARY DETECTOR	678.42	

DETAILED SUMMARY OF QUANTITIES

QUANTITIES	UNIT	ITEMS

DETAILED SUMMARY OF QUANTITIES

QUANTITIES	UNIT	ITEMS

STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of HARTLAND	Bridge No. 60
Highway No. U.S. ROUTE 5	Log Sta. / Surv. Sta.
U.S. ROUTE 5 OVER LULLS BROOK	
SUMMARY OF QUANTITIES	
Designed By S.E. COSILMON	Drawn By R. REMY / G.F. O'NEIL
Checked By J. R. McDUFFEE Date 2/04	Bridge Design Supervisor J. MIECZKOWSKI Date 2/04
PROJECT HARTLAND	PROJECT NO. BRS No. 0113(22)
I.G.C. Info. M:\145620\VAOT Hartland\zf204frm.dgn	
Bridge Sheet No.	Sheet 6 of 86

20-AUG-2004

STATE OF VERMONT
AGENCY OF TRANSPORTATION

DRAINAGE DETAIL SHEET

VAOT Metric

DRAINAGE STRUCTURES

STATION km + m	STATION km + m	POS.	ASKEW	INLET/OUTLET TYPE		DITCH		PIPE ARCH			PIPE		ALLOWABLE OPTIONS						PIPE ELBOW	ES	CB	PRCDI	DEPTH DI	CONC CL 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
				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	I	mm	m^3	kg	TYPE	EA	m^3	EARTH m^3	ROCK m^3	m^3	m^3	m^3	m^3	m^3	m^2	m^3	TYPE	LT ea	RT ea	
3+003	3+011	LT																										4.6		75						75	I			STONE FILLED DITCH & REMOVE EXISTING PIPE
3+011	3+011	LT/RT		1.2 x 1.8 RCDI							450	11	2.01	1.91			X					1650	2.63	129	D (2)			46.9		1.2						11.2	II	1		TWO CAST IRON GRATES, & REMOVE EXISTING D.I. & 18" PIPE
3+041.4	3+041.4	RT/RT		1.2X1.2 RCDI							450	5					X						2.57	118	E														
3+105	3+140	RT																																						SPECIAL DITCH - COMMON EXCAVATION INCLUDED AS CROSS SECTION EARTHWORK
3+134	3+131	RT/LT		1.2 x 1.2 RCDI	THROUGH WALL						450	13										1800	2.20	120	D			44.8		15										PVC SEWER PIPE USED FOR DRAINAGE. USE 530 SLEEVE THRU WALL.
TEMPORARY EROSION CONTROL																																			70					TEMPORARY EROSION CONTROL
TOTALS											450	11	(3 WAY OPTION PIPE)									4.83	249	3-D				96.3		91.2					70	75	I	1	
											450	12	(PVC SEWER PIPE)																								11.2	II			

STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of HARTLAND	Bridge No. 60
Highway No. U.S. ROUTE 5	Log Sta. / Surv. Sta.
U.S. ROUTE 5 OVER LULLS BROOK	

DRAINAGE DETAIL SHEET

Designed By S.E. COSILMON	Drawn By R. REMY / G.F. O'NEIL
Checked By J. R. McDUFFEE Date 2/ 04	Bridge Design Supervisor J. MIECZKOWSKI Date 2/ 04
PROJECT HARTLAND	PROJECT NO. BRS No. 0113(22)
I.G.C. Info. M:\145620\VAOT Hartland\zf204frm.dgn	
Bridge Sheet No.	Sheet 7 of 86

12-AUG-2004

STATE OF VERMONT
AGENCY OF TRANSPORTATION

EARTHWORKS

VAOT Metric

STATION km + m	DIST m	TOTAL EXCAVATION EARTH & ROCK AREA m²	TOTAL EXCAVATION EARTH & ROCK VOLUME m³	* ROCK EXCAVATION AREA m²	* ROCK EXCAVATION VOLUME m³	EMBANKMENT AREA m²	EMBANKMENT VOLUME m³	AREA m²	VOLUME m³
U.S. ROUTE 5									
3+030		0				0		C=263	
	10		26				0	F=30	
3+040		5.3				0		F.FAC.=0.15	
	20		108				10	EX. C.=229	
3+060		5.4				1			
	20		129				20		
3+080		7.4				1			
(3+050 TO 3+080)					177				
		+080 BEGIN BRIDGE							
		+123 END BRIDGE							
3+123		16				0			
	17		264				0	C=411	
3+140		15				0		F=0	
	10		111				0	F. FAC.=0.15	
3+150		7.2				0		EX. C.=411	
	10		36						
3+160		0							
(3+123 TO 3+150)					121				

*EXISTING PCC PAVEMENT

STATION km + m	DIST m	TOTAL EXCAVATION EARTH & ROCK AREA m²	TOTAL EXCAVATION EARTH & ROCK VOLUME m³	ROCK EXCAVATION AREA m²	ROCK EXCAVATION VOLUME m³	EMBANKMENT AREA m²	EMBANKMENT VOLUME m³	AREA m²	VOLUME m³

STATION km + m	DIST m	TOTAL EXCAVATION EARTH & ROCK AREA m²	TOTAL EXCAVATION EARTH & ROCK VOLUME m³	ROCK EXCAVATION AREA m²	ROCK EXCAVATION VOLUME m³	EMBANKMENT AREA m²	EMBANKMENT VOLUME m³	AREA m²	VOLUME m³

SUMMARY AND BALANCES

STATION TO STATION km + m	km + m	TOTAL EXC. EARTH & ROCK m³	ROCK EXCAVATION m³	EMBANKMENT m³	EXCESSES CUT	EXCESSES FILL	ACCUMULATIVE EXCESSES CUT	ACCUMULATIVE EXCESSES FILL
3+030	3+080	263	177	30	233		233	
3+123	3+160	411	121	0	411		411	
U.S. ROUTE 5 TOTAL		674	298	30	644		644	
DRAINAGE		75	--	0	75		719	
DRIVES		115	--	0	115		834	
		864	298	30	834		834	

REMARKS

EARTH AND ROCK EXCAVATION	864
SOLID ROCK EXCAVATION	298
EARTH EXCAVATION	566
PLANIMETERED FILL (EXCLUSIVE OF GRANULAR BORROW)	30
LESS FACTORED SOLID ROCK	—
LESS DISPLACEMENT OF ANY LARGE STRUCTURES	—
NET PLANIMETERED FILL	30
FACTOR 0.15	5
PLANIMETERED FILL INCLUDING FACTOR	35
MATERIALS AVAILABLE FOR FILLS	—
EARTH EXCAVATION	566
CHANNEL EXCAVATION	0
UNDERDRAIN EXCAVATION	0
STRUCTURE EXCAVATION	1040 x 0.75 = 780
UNCLASSIFIED EXCAVATION	600 x 0.75 = 450
TOTAL MATERIAL AVAILABLE FOR FILL	1796
TOTAL FILL INCLUDING FACTOR	35
TOTAL MATERIAL FOR FILL	1831
BORROW	
EXCESS EXCAVATION	

STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of HARTLAND	Bridge No. 60
	Log Sta.
Highway No. U.S. ROUTE 5	Surv. Sta.

U.S. ROUTE 5 OVER LULLS BROOK

EARTHWORK SHEET

Designed By S.E. COSILMON	Drawn By R. REMY / G.F. O'NEIL
Checked By J. R. McDUFFEE Date 02/04	Bridge Design Supervisor J. MIECZKOWSKI Date 02/04
PROJECT HARTLAND	PROJECT NO. BRS No. 0113(22)
I.G.C. Info. M:\145620I VAOT Hartland\zf204frm.dgn	
Bridge Sheet No.	Sheet 8 of 86

13-AUG-2004

Metric

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

TABLE OF PROJECT PROPERTY ACQUISITION

PARCEL NO.	GRANTOR	SHEET NO.	BEGINNING STATION	ENDING STATION	TAKING	REM.	RIGHTS	TITLE TAKEN	DATE	TOWN OR CITY RECORDED	BK.	PG.	REMARKS
1	FIRST CONGREGATIONAL	9,10	3+000.00 CL	3+056.48 CL	0.059 HA±		ALL R. T. & I.	QCD	11-25-03	HARTLAND	147	543-	U.S. RT. 5 (0.15A±)
	CHURCH OF HARTLAND, VERMONT, INC.											544	
2A	MARTINSVILLE HYDRO CORPORATION	9,10	3+033.57 RT.	3+109.36 RT.	0.038 HA±			WD	09-22-03	HARTLAND	145	527-	(0.09A±)
			3+033.57 RT.	3+109.36 RT.			EXCEPT & RESERVE					529	FLOWAGE RIGHTS
			3+028.00 RT.				INSTALL (T)						GEOGRID NET
2B		9,10	3+000.00 CL	3+117.58 LT.	0.081 HA±		ALL R. T. & I.						U.S. RT. 5 (0.20A±)
			2+990.58 RT.	3+076.56 RT.			CONST. (T) 0.041 HA±						INCLUDES EROSION CONTROL
													WITH ROCK REMOVAL
													CONTAINMENT SYSTEM (0.10A±)
			3+011.47 RT.	3+012.87 RT.			DIT. & DR. (P) 0.3 S.M.±						(3.2 S.F.±)
			3+023.00 RT.	3+046.00 RT.			REMOVE & RESET (T)						FENCE
3	JAMES, LOUISE M.	10	3+056.48 LT.	3+118.88 LT.	0.048 HA±		ALL R. T. & I.	WD	09-22-03	HARTLAND	145	524-	U.S. RT. 5 (0.12A±)
			3+068.63 LT.	3+132.93 LT.			DETOUR (T) 0.093 HA±					525	INCLUDES EROSION CONTROL
													WITH ROCK REMOVAL
													CONTAINMENT SYSTEM,
													LANDSCAPING (0.23A±)
			3+075.00 LT.				DRIVE (T)						MM 1359, 5 M (16.4')
			3+079.50 LT.	3+082.65 LT.			INSTALL & MAINTAIN (P)						APPROACH RAIL
			3+082.65 LT.	3+107.82 LT.			INSTALL (T)						GUARDRAIL
4A	COCKWILL, NEIL J &	10	3+103.55 RT.	3+131.54 RT.	80.3 S.M±			WD	03-20-03	HARTLAND	140	257-	(864 S.F.±)
	HEIDI P.											258	
			3+112.21 RT.	3+129.55 RT.			CONST. (T) 17.4 S.M.±						(187.3 S.F.±)
			3+114.78 RT.	3+121.19 RT.			SLOPE (T) 3.1 S.M.±						(33.4 S.F.±)
			3+120.13 RT.	3+130.15 RT.			INSTALL (T)						PROTECTIVE FENCE 11 M±
													(36.1'±)
4B		10	3+109.36 RT.	3+130.74 RT.	0.012 HA±		ALL R. T. & I.	WD	03-20-03	HARTLAND	140	257-	U.S. RT. 5 (0.03A±)
												258	
5	TOWN OF HARTLAND	10	3+110.41 LT.	3+128.38 LT.	70.43 S.M.±		ALL R. T. & I.	QCD	08-01-03	HARTLAND	144	196-	U.S. RT.5 (758.1 S.F.±)
			3+123.57 LT.	3+146.71 LT.			DETOUR (T) 0.012 HA±					197	INCLUDES EROSION CONTROL
													WITH ROCK REMOVAL
													CONTAINMENT SYSTEM (0.03A±)
			3+124.28 LT.	3+129.07 LT.			SLOPE (T) 2.25 S.M.±						(24.2 S.F.±)
			3+125.90 LT.	3+133.14 LT.			INSTALL (T)						PROTECTIVE FENCE 21 M±
													(69.9'±)
5A		11	3+212.21 LT.	3+239.98 LT.			EASE. (T) 71.9 S.M.±						INSTALL PARKING AREA FOR
													PARCEL #6 BY OPTION ONLY
													(774 S.F.±)
6	TURNER, BRENT A. &	10	3+119.31 CL	3+160.00 CL	0.028 HA±		ALL R. T. & I.			HARTLAND			U.S. RT.5 (0.07A±)
	ARLENE J.		3+128.38 LT.	3+140.36 LT.			SLOPE (T) 13.7 S.M.±						(147.5 S.F.±)
			3+128.38 LT.	3+174.56 LT.			DETOUR (T) 0.024 HA±						INCLUDES EROSION CONTROL
													(0.06A±)
			3+141.15 LT.	3+141.63 LT.			INSTALL & MAINTAIN (P)						APPROACH RAIL
			3+144.00 LT.	4+000.00 LT.			REMOVE & RELOCATE (T)						SHED
			3+150.00 LT.				DRIVE (T)						MM 1401, 4.4 M (14.4')
6A		11	3+205.12 LT.	3+212.21 LT.			EASE. (T) 17.7 S.M.±						INSTALL PARKING AREA FOR
													PARCEL #6 BY OPTION ONLY
													(191 S.F.±)
7A	GEST, DOUGLAS M.	10	3+130.74 RT.	3+160.00 RT.	91.25 S.M.±			WD	07-30-03	HARTLAND	144	169-	(982 S.F.±) INCLUDES
												170	
													CONCRETE WALL
7B		10	3+128.83 CL	3+160.00 CL	0.023 HA±		ALL R. T. & I.						U.S. RT. 5 (0.057A±)
8	CENTRAL VERMONT PUBLIC SERVICE CORP.												UTILITY
9	VERMONT TELEPHONE COMPANY, INC.												UTILITY
10	VERIZON NEW ENGLAND, INC.												UTILITY

REVISION NO.	SHEET	DESCRIPTION OF REVISION	DATE	MADE BY	APPROVED BY
1	8,10	PARCEL NO. 3 JAMES. EXTENDED ALL R.T.& I. TO INCLUDE PART OF LULLS BROOK TO THE P/L. CORRECTED RUNNING DISTANCES, FLAGS, AND RECALCULATED TAKE AREA. PER C.O. 9228.	04-08-02	G. J. F.	R. P. D.
2	8,10	PARCEL NO. 5 TOWN OF HARTLAND. EXTENDED ALL R.T.& I. TO INCLUDE PART OF LULLS BROOK TO THE P/L. CORRECTED RUNNING DISTANCES, FLAGS, AND RECALCULATED TAKE AREA. PER C.O. 9229.	04-08-02	G. J. F.	R. P. D.
3	8,10	PARCEL NO. 2 MARTINSVILLE HYDRO CORPORATION. CHANGE ENDING STA. OF ALL R. T. & I. ON PARCEL 2B FROM 3+117.21 CL TO 3+117.58 LT.; 0.081HA±; (0.20A±). PER C.O. 9232.	04-15-02	M. J. R.	R. P. D.
4	8,10	PARCEL NO. 6 TURNER. CHANGE BEGINNING STA. OF ALL R. T. & I. FROM 3+119.01 CL TO 3+119.31 LT. PER C.O. 9231.	04-15-02	M. J. R.	R. P. D.
5	8,9	PARCEL NO. 2 MARTINSVILLE HYDRO CORPORATION. ADD REMOVE & RESET (T) FOR FENCE AT 3+023 RT. ~ 3+046 RT. PER C.O. 9230.	04-15-02	M. J. R.	R. P. D.
6	ALL	PARCEL NO. 5 TOWN OF HARTLAND. ADD PARCEL 5A CONSISTING OF EASE. (T) AT STA. 3+212.21 LT. ~ 3+239.98 LT.; 71.9 SM±; INSTALL PARKING AREA FOR PARCEL 6. BY OPTION ONLY. CREATE NEW SHEET 11. PER C.O. 9251.	09-11-02	G. J. F.	R. P. D.
7	ALL	PARCEL NO. 6 TURNER. ADD PARCEL 6A CONSISTING OF EASE. (T) AT STA. 3+205.12 LT. ~ 3+212.21 LT.; 17.7 SM±; INSTALL PARKING AREA FOR PARCEL 6. BY OPTION ONLY. CREATE NEW SHEET 11. PER C.O. 9252.	09-11-02	G. J. F.	R. P. D.
		ELECTRONIC FILES TO STRUCTURES	2-27-04		

ACCT. gshangraw
IP_PWP:dms0502\rf204d.dgn
DATE PLOTTED 03-MAR-2004

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

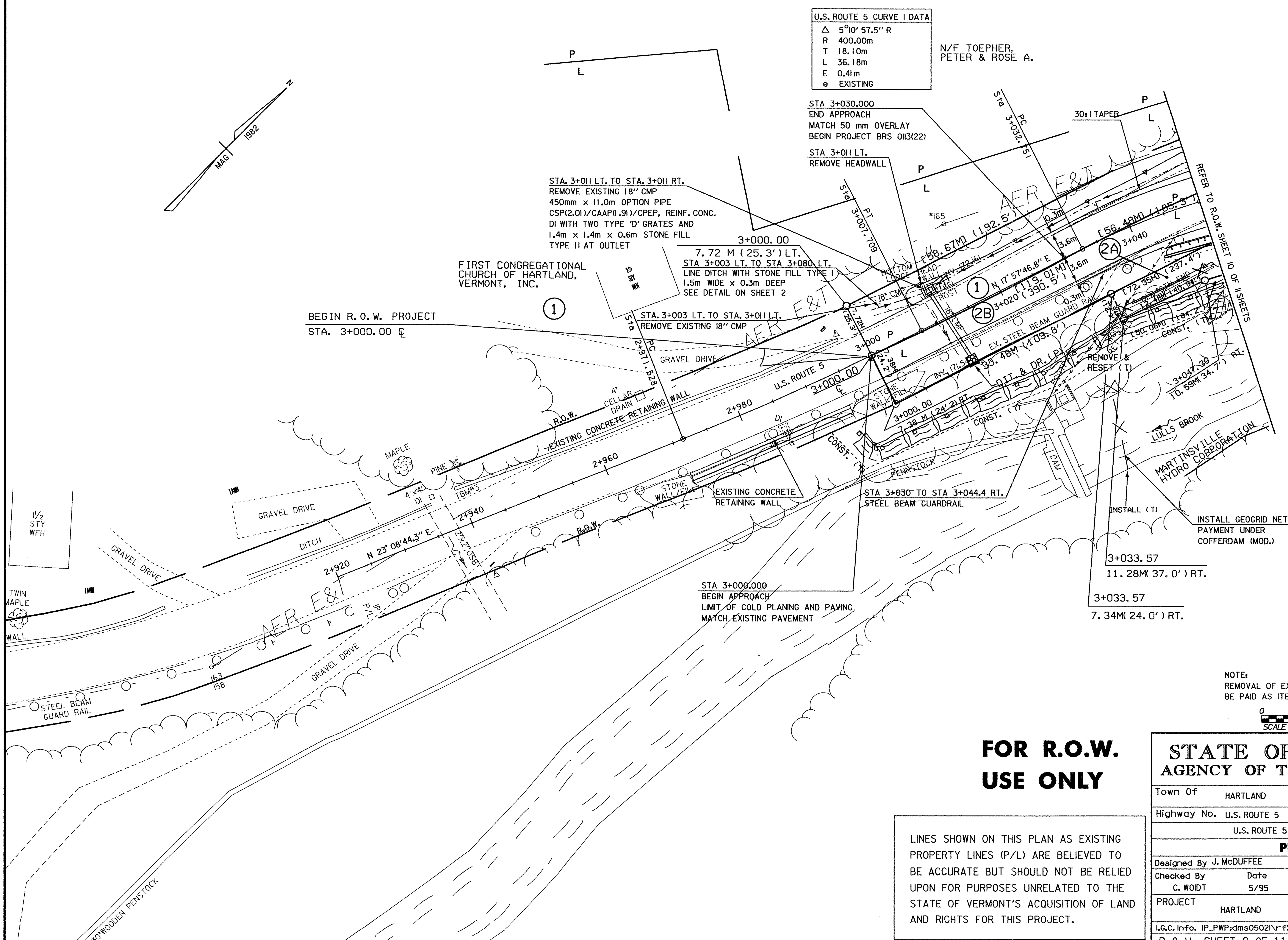
PRESENT R.O.W.
TAKING WITHOUT ACCESS
TAKING WITHOUT ACCESS ALONG PROPERTY LINE
TAKING WITH ACCESS
(P) PERMANENT EASEMENT
(T) TEMPORARY EASEMENT

LEGEND
C&T (P) CLEARING & TRIMMING
CZ (P) CLEAR ZONE
CONST. (T) CONSTRUCTION EASEMENT
SR SR SLOPE RIGHTS
P L PROPERTY LINE
TOP OF CUT
TOE OF SLOPE
UE (P) PERMANENT UTILITY EASEMENT

APPROVED: ROGER P. DUMAS DATE: 04/30/01
CHIEF, PLANS & TITLES

R. O. W. PLANS
HARTLAND
BRS 0113 (22)
R.O.W. SHEET 8 OF 11 SHEETS
SHEET 9 OF 86

Metric


U.S. ROUTE 5 CURVE 1 DATA
Δ 5°10' 57.5" R
R 400.00m
T 18.10m
L 36.18m
E 0.41m
e EXISTING
N/F TOEPHER, PETER & ROSE A.
MAG 1982
STA 3+030.000
END APPROACH
MATCH 50 mm OVERLAY
BEGIN PROJECT BRS 0113(22)
STA 3+011 LT.
REMOVE HEADWALL
STA. 3+011 LT. TO STA. 3+011 RT.
REMOVE EXISTING 18" CMP
450mm x 11.0m OPTION PIPE
CSP(2.01)/CAAP(1.91)/CPEP, REINF. CONC.
DI WITH TWO TYPE 'D' GRATES AND
1.4m x 1.4m x 0.6m STONE FILL
TYPE II AT OUTLET
3+000.00
7.72 M (25.3') LT.
STA 3+003 LT. TO STA 3+080 LT.
LINE DITCH WITH STONE FILL TYPE I
1.5m WIDE x 0.3m DEEP
SEE DETAIL ON SHEET 2
FIRST CONGREGATIONAL CHURCH OF HARTLAND, VERMONT, INC.
BEGIN R.O.W. PROJECT
STA. 3+000.00 ℄
STA. 3+003 LT. TO STA. 3+011 LT.
REMOVE EXISTING 18" CMP
30:1 TAPER
REFER TO R.O.W. SHEET 10 OF 11 SHEETS
GRAVEL DRIVE
U.S. ROUTE 5
EXISTING CONCRETE RETAINING WALL
CELLAR DRAIN
MAPLE
PINE
TBM#3
DITCH
N 23° 08' 44.3" E
N 17° 57' 46.8" E
AER E&T
STONE WALL/FILL
EX. STEEL BEAM GUARD RAIL
REMOVE & RESET (T)
LULLS BROOK
MARTINSVILLE HYDRO CORPORATION
PENSTOCK
DAM
EXISTING CONCRETE RETAINING WALL
STA 3+030 TO STA 3+044.4 RT.
STEEL BEAM GUARDRAIL
INSTALL (T)
INSTALL GEOGRID NET
PAYMENT UNDER
COFFERDAM (MOD.)
3+033.57
11.28M(37.0') RT.
3+033.57
7.34M(24.0') RT.
STA 3+000.000
BEGIN APPROACH
LIMIT OF COLD PLANING AND PAVING
MATCH EXISTING PAVEMENT
1 1/2 STY WFH
TWIN MAPLE
STEEL BEAM GUARD RAIL
30" WOODEN PENSTOCK

NOTE:
REMOVAL OF EXISTING CONCRETE PAVEMENT WILL BE PAID AS ITEM 203.16, SOLID ROCK EXCAVATION

0 5 10
SCALE IN METERS

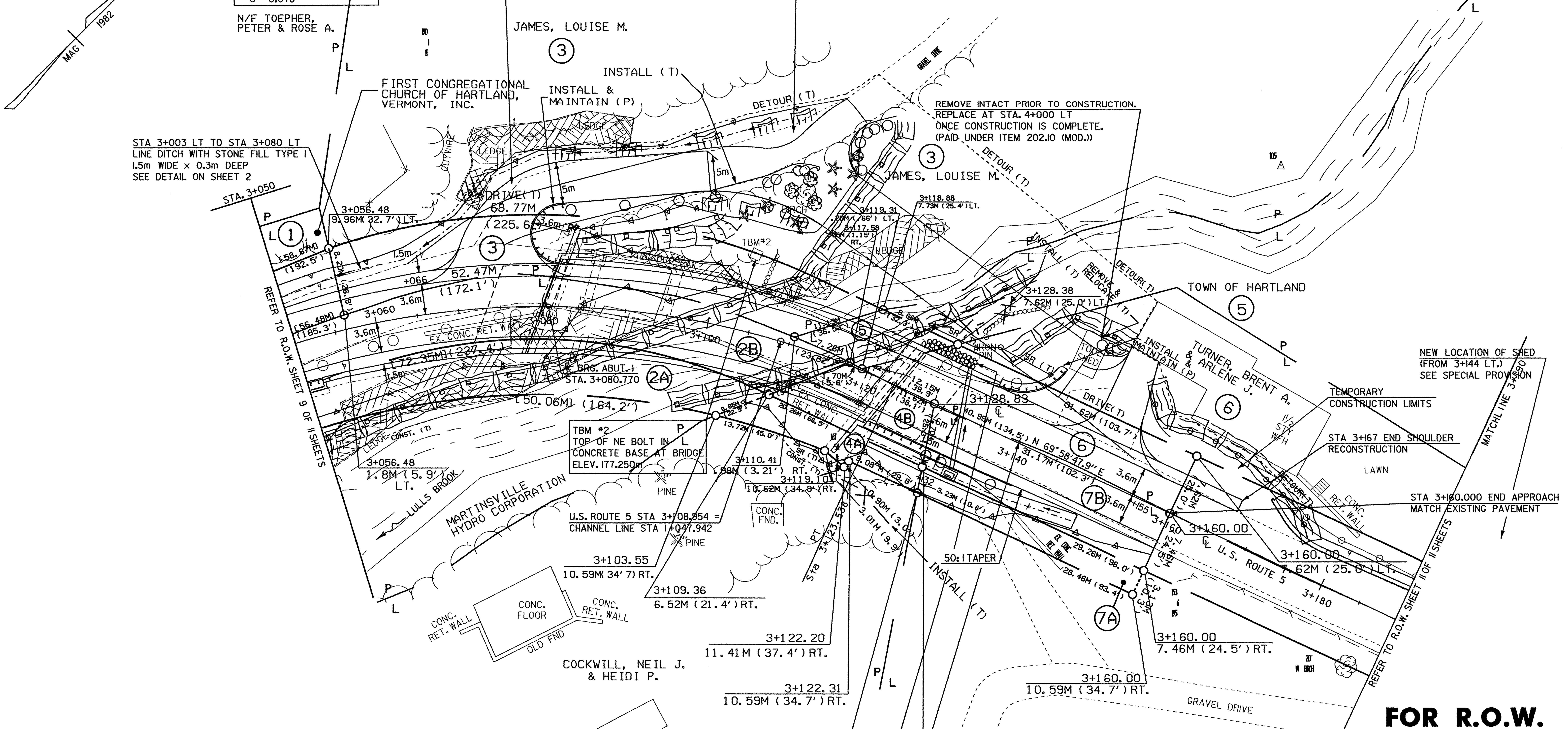
FOR R.O.W. USE ONLY

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

STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of HARTLAND	Bridge No. 60
Highway No. U.S. ROUTE 5	Log Sta. / Surv. Sta.
U.S. ROUTE 5 OVER LULLS BROOK	
PLAN	
Designed By J. McDUFFEE	Drawn By R.REMY
Checked By C. WOIDT — Date 5/95	Bridge Design Supervisor J.MIECZKOWSKI — Date DEC. 1998
PROJECT HARTLAND	PROJECT NO. BRS No. 0113(22)
I.G.C. Info. IP_PWP:dms05021\rf204zzz.dgn	

U.S. ROUTE 5 CURVE 2 DATA
Δ 52°01′ 01.1″ R
R 100.00m
T 48.79m
L 90.79m
E 11.27m
e 0.078



NOTES:
1. REMOVAL OF EXISTING CONCRETE PAVEMENT WILL BE PAID AS ITEM 203.16, SOLID ROCK EXCAVATION.
2. FOR REMOVAL OF STRUCTURE, SEE GENERAL NOTES 23 AND 24 ON SHEET 27.

FOR R.O.W. USE ONLY

0 5 10 SCALE IN METERS

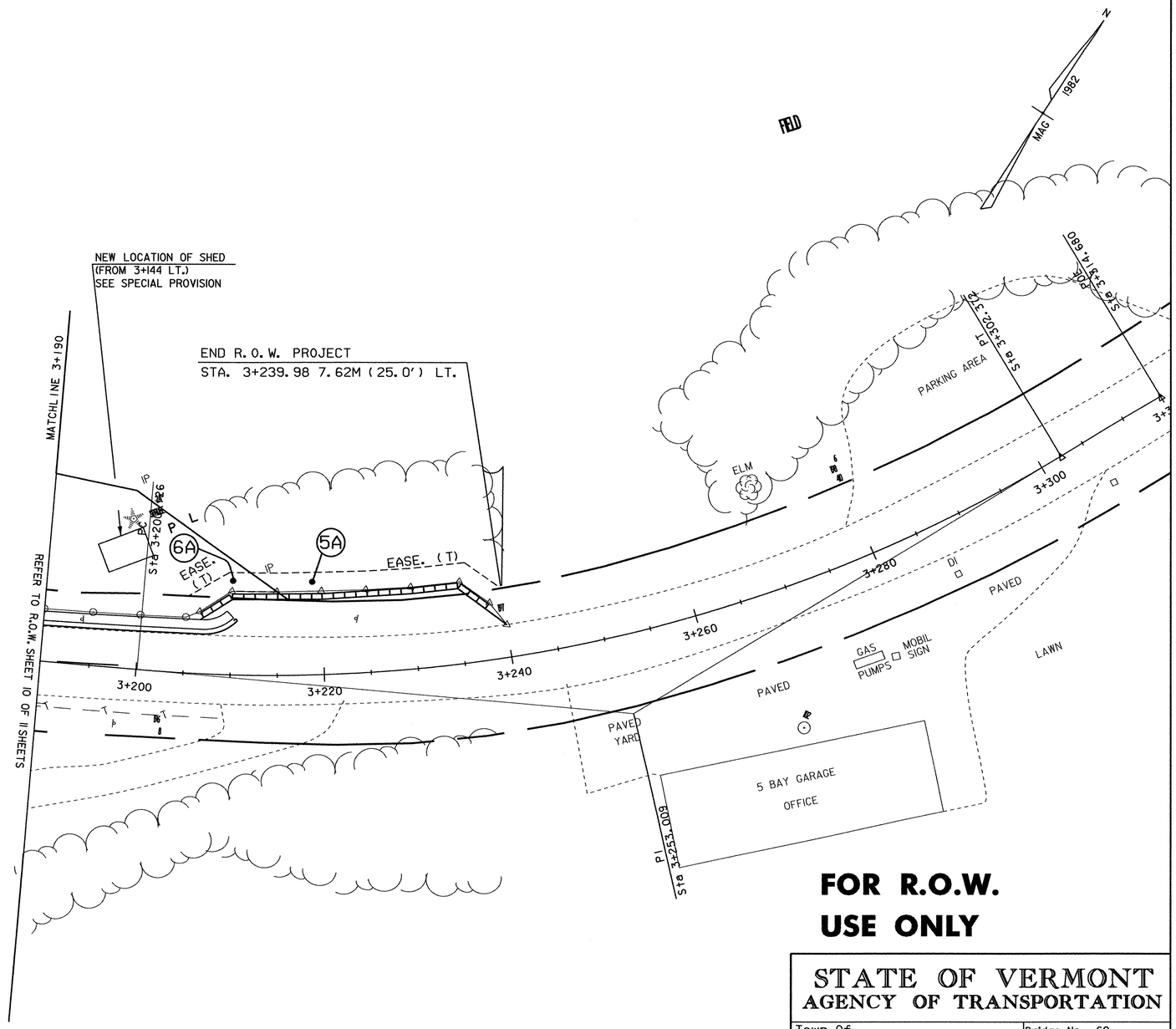
DRIVEWAY TABLE			
DRIVEWAY LOCATION	RADIUS	WIDTH	REMARKS
STA 3+075 LT	6m	5m	COMPLETE PAVING FOLLOWING DETOUR REMOVAL
STA 3+150 LT	6m	4.4m	PAVED

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

STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of HARTLAND	Bridge No. 60
Highway No. U.S. ROUTE 5	Log Sta. / Surv. Sta.
U.S. ROUTE 5 OVER LULLS BROOK	
PLAN	
Designed By J. McDUFFEE	Drawn By R.REMY
Checked By C. WOIDT — Date 5/95	Bridge Design Supervisor J.MIECZKOWSKI — Date DEC. 1998
PROJECT HARTLAND	PROJECT NO. BRS No. 0113(22)
I.G.C. Info. IP_PWP:dms05021\rf204zzz.dgn	

VAOT Metric



FOR R.O.W. USE ONLY

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

0 1 2 3 4 5 10

SCALE IN METERS

STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of HARTLAND	Bridge No. 60
	Log Sta.
Highway No. U.S. ROUTE 5	Surv. Sta.
U.S. ROUTE 5 OVER LULLS BROOK	
Designed By	Drawn By
Checked By Date	Bridge Design Supervisor Date
PROJECT HARTLAND	PROJECT NO. BRS No. 0113(22)
I.G.C. Info. IP_PWP:dms05021\rf204zzz.dgn	
R. O. W. SHEET 11 OF 11 SHEETS	SHEET 12 OF 86

Metric

U.S. ROUTE 5 CURVE 1 DATA	
Δ	5°10′57.5″ R
R	400.00m
T	18.10m
L	36.18m
E	0.41m
e	EXISTING

3+030.000
STA ~~3+040.000~~
BEGIN FULL SECTION RECONSTRUCTION

STA 3+030.000
END APPROACH
MATCH 50 mm OVERLAY
BEGIN PROJECT BRS 0113 (22)

STA. 3+002 TO 3+011 LT
150mm X 9m CPEP(SL) UD
OUTLETS TO RCDI AT 3+011 LT

STA 3+011 LT.
REMOVE HEADWALL

STA. 3+011 LT. TO STA. 3+011 RT.
REMOVE EXISTING 18″ CMP
450mm x 11.0m OPTION PIPE
PCCSP(2.01)/CAAP(1.91)/CPEP, REINF. CONC.
D.I. WITH TWO TYPE 'D' GRATES AND
1.4m x 1.4m x 0.6m STONE FILL
TYPE II AT OUTLET

STA. 3+041.4 RT
RCDI 1.2mX1.2m TYPE E GRATE
450mm CPEP(SL) X 5m PIPE.
TYPE III STONE FILL AT
OUTLET WITH GEOTEXTILE
FABRIC UNDERNEATH.

FIRST CONGREGATIONAL CHURCH OF HARTLAND, VERMONT, INC.

1 STY WFH

STA. 3+003 LT. TO STA 3+105 LT.
LINE DITCH WITH STONE FILL TYPE I
1.5m WIDE x 0.3m DEEP
SEE DETAIL ON SHEET 2

STA. 3+003 LT. TO STA. 3+011 LT.
REMOVE EXISTING 18″ CMP

11 RED CEDARS @ 1.5 METER CENTERS
STA. 3+045 TO 3+060
USE 1.5 METER HEIGHT PLACED
IN 600 mm BED OF SOIL

DO-NOT DISTURB FRAGILE AREA. SEE SHEET TITLED "HISTORIC SITES DETAIL"

STA. 3+042 RT.
~~LINE DITCH WITH STONE FILL TYPE I~~
~~1.5m WIDE x 0.3m DEEP~~
~~SEE DETAIL ON SHEET 2~~

STA 3+044.4 RT.
END STEEL BEAM GUARDRAIL
BEGIN ALUMINUM APPROACH RAIL

TAPER SHOULDER FROM END OF RETAINING WALL TO MATCH EXISTING SHOULDER WIDTH AT STA 3+000

STA ~~3+030~~ 3+011 TO STA 3+044.4 RT.
STEEL BEAM GUARDRAIL
(MOD. 2.4m POSTS)

INSTALL FLOATING BOOM
PAYMENT UNDER ITEM 513.36

STA 3+043.000, 5.420m RT.
BEGIN RETAINING WALL

STA ~~3+030~~ 3+011 RT. TO STA 3+083 RT.
REMOVE AND DISPOSE OF
EXISTING GUARDRAIL

STA 3+022 RT
CONCRETE STEPS WITH
METAL HAND RAILING

STA 3+009~3+052 RT
TREATED TIMBER CURB W/ BIT. FILLET

STA 3+000.000
BEGIN APPROACH
LIMIT OF COLD PLANING AND PAVING
MATCH EXISTING PAVEMENT
AND SHOULDER

MATCHLINE SEE NEXT SHEET

NOTE:
REMOVAL OF EXISTING CONCRETE PAVEMENT WILL BE PAID AS ITEM 203.16, SOLID ROCK EXCAVATION.

0 5 10
SCALE IN METERS

CENTERLINE TIES		
U.S. ROUTE 5		
P.O.S.T. STA 3+000.000= STA. 3+000.001, 0.074 RT.	P.I. STA 3+081.543= STA 3+074.746	P.O.T. STA 3+180.000
U.S. RTE 5 TO HARTLAND; 6.259m; 4.718m; 4.859m; NOTCHES IN STEEL GUARD POSTS	#6 166 II 0.3m PINE; 9.687m; 8.416m; GRAVEL ROAD; 6.184m; COR. CONC. BRIDGE RAIL; U.S. RTE 5 TO HARTLAND	TACK IN HOUSE CORNER 0.3m UP FROM STONE; 13.259m; 17.310m; 25.745m; U.S. RTE 5 TO HARTLAND; #153 6 195 9; #196 8; GRAVEL DR.

STATE OF VERMONT AGENCY OF TRANSPORTATION	
Town Of HARTLAND	Bridge No. 60
	Log Sta.
Highway No. U.S. ROUTE 5	Surv. Sta.
U.S. ROUTE 5 OVER LULLS BROOK	
ROADWAY PLAN	
Designed By S.E.COSILMON	Drawn By R.REMY / G.F. O'NEIL
Checked By J. R. McDUFFEE Date 2 /04	Bridge Design Supervisor J.MIECZKOWSKI Date 2 /04
PROJECT HARTLAND	PROJECT NO. BRS No. 0113(22)
I.G.C. Info. B:\145620I VAOT Hartland\zf204bdr.dgn	
Bridge Sheet No.	Sheet 13 of 86

17-AUG-2004

VAOT Metric

U.S. ROUTE 5 CURVE 2 DATA	
Δ	52°01′ 01.1″ R
R	100.00m
T	48.79m
L	90.79m
E	11.27m
e	0.078

COMPLETE PAVED DRIVEWAY FOLLOWING DETOUR REMOVAL
(PAID UNDER UNIT ITEMS) USE 450mm SUBBASE AND 90mm PAVEMENT TO MATCH DETOUR DEPTH

STA 3+080.8 LT
ALUMINUM APPROACH RAILING
SEE DETAILS ON SHEET 34

STA 3+080.020
STOP ROADWAY
BEGIN BRIDGE

APPROX.PERMANENT AERIAL
LOCATION BY CVPS

ROCK CUT FOR BEAM
CLEARANCE PAID UNDER
UNCLASSIFIED CHANNEL
EXCAVATION ITEM 203.27

STA. 3+082.2 LT TO STA. 3+108.4 LT
INSTALL STEEL BEAM GUARDRAIL
INSTALL GUARDRAIL APPROACH END
(5.0m RADIUS STD. G-IDM)
INSTALL ANCHOR FOR STEEL BEAM RAIL

APPROX. POLE
LOCATION BY CVPS

TEMPORARY CONSTRUCTION
LIMITS

FIRST CONGREGATIONAL CHURCH OF HARTLAND, VERMONT, INC.

REMOVE PAVEMENT AND APPROACH EMBANKMENT
(PAID UNDER ITEM 528.10)
TOPSOIL AND SEED (FOLLOWING DETOUR REMOVAL)
STA. 3+085~3+088.5 LT
TYPE III STONE EMBANKMENT STABILIZATION

END RETAINING WALL,
BEGIN WINGWALL
STA. 3+070.685, 5.035m RT.

STA 3+003 LT TO STA 3+105 LT
LINE DITCH WITH STONE FILL TYPE I
1.5m WIDE x 0.3m DEEP
SEE DETAIL ON SHEET 2

JAMES, LOUISE M.

RELOCATE TOOL SHED TO NEW
LOCATION AT STA. 4+000 LT
(PAID UNDER ITEM 202.10 (MOD.))

APPROX. POLE
LOCATION BY CVPS

APPROX.PERMANENT AERIAL
LOCATION BY CVPS

STA 3+135.0 LT TO STA 3+146.1 LT
ALUMINUM APPROACH RAILING
SEE DETAILS ON SHEET 34

~~DECIDUOUS TREES~~
~~(WHITE BIRCH (TYP.)~~
~~EVERGREEN TREES~~ NOT PLANTED
~~(WHITE PINE) (TYP.)~~

STA 3+121 LT TO STA 3+138 LT
REMOVE AND DISPOSE OF
EXISTING GUARDRAIL

℄ BRG. ABUT. 2
STA. 3+123.110

S 26° 23′ 44.9″ W

REMOVE PAVEMENT AND APPROACH EMBANKMENT
(PAID UNDER ITEM 528.10). TOPSOIL
AND SEED (FOLLOWING DETOUR REMOVAL)

TEMPORARY
CONSTRUCTION LIMITS

STA 3+140.000
END PROJECT BRS 0113 (22)
BEGIN APPROACH

REMOVE PAVEMENT AND APPROACH
EMBANKMENT (PAID UNDER ITEM 528.10)
TOPSOIL AND SEED (FOLLOWING
DETOUR REMOVAL)

TOWN OF HARTLAND

TEMPORARY
CONSTRUCTION LIMITS

TURNER, ARLENE J.
& BRENT A.

STA 3+167 END SHOULDER
RECONSTRUCTION

~~NEW LOCATION OF TOOL~~
~~SHED (FROM 3+144 LT.)~~
~~SEE SPECIAL PROVISION~~

TEMPORARY WALKWAY, GUARDRAIL, WALL,
AND PARKING AREA
SEE TRAFFIC CONTROL PLAN
AND CROSS SECTIONS
FOR DETAILS

MATCHLINE SEE PREVIOUS SHEET

DO NOT ~~DISTURB~~ FRAGILE
AREA SEE SHEET TITLED
"HISTORIC SITES DETAIL"

TBM #2
TOP OF NE BOLT IN
CONCRETE BASE AT BRIDGE
ELEV. 177.250m

℄ BRG. ABUT. 1
STA. 3+080.770

U.S. ROUTE 5 STA 3+108.954 =
CHANNEL LINE STA 1+047.942

ROCK CUT FOR BEAM CLEARANCE
PAID UNDER UNCLASSIFIED
CHANNEL EXCAVATION
ITEM 203.27

STA 3+123.922
END BRIDGE
RESUME ROADWAY

STA 3+122.4 RT TO STA 3+130.0 RT
ALUMINUM APPROACH RAILING
SEE DETAILS ON SHEET 34

STA 3+134 RT TO STA 3+131LT
450mm x 12.0m PVC PIPE,
REIN. CONC. D.I. WITH TYPE 'D' GRATE.
OUTLET PIPE THROUGH WINGWALL
USING 530mm SLEEVE

STA 3+130.0 RT TO STA 3+~~141.4~~ 146 RT
MANUFACTURED TERMINAL SECTION
(TANGENT), SEE DETAILS ON SHEET 34

STA 3+125.0 LT TO STA 3+132.0 LT
LINE DITCH WITH STONE FILL TYPE II
1.4 m WIDE x 0.6m DEEP
SEE DETAIL ON SHEET 2

11 RED CEDARS @ 1.5 METER CENTERS
STA. 3+045 TO 3+060
USE 1.5 METER HEIGHT PLACED IN
600 mm BED OF SOIL

STA. 3+052.000,
4.715m LT. BEGIN WINGWALL,
WITH BRIDGE RAILING
(3) RAIL ALUMINUM WITH
OFFSET BLOCK, WITH
BLACK ANODIZED FINISH

MARTINSVILLE HYDRO CORPORATION

COCKWILL, NEIL J.
& HEIDI P.

50:1 TAPER

STA 3+150 END FULL
SECTION RECONSTRUCTION

STA 3+120 RT TO STA 3+~~150~~ 146 RT
PAVED GUTTER
SEE DETAIL ON SHEET 2

~~STA 3+160.000~~ 177.000 END APPROACH
MATCH EXISTING PAVEMENT

OLD MILL CABINET SHOP INC

GEST, DOUGLAS M.

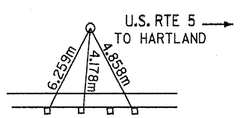
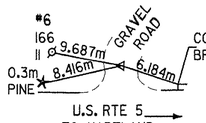
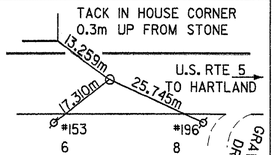
U.S. ROUTE 5

NOTES:
1. REMOVAL OF EXISTING CONCRETE PAVEMENT WILL BE PAID AS ITEM 203.16, SOLID ROCK EXCAVATION.
2. FOR REMOVAL OF STRUCTURE, SEE GENERAL NOTES 23 AND 24 ON SHEET 37.

DRIVEWAY TABLE			
DRIVEWAY LOCATION	RADIUS	WIDTH	REMARKS
STA 3+075 LT	6m	5m	COMPLETE PAVING FOLLOWING DETOUR REMOVAL
STA 3+150 LT	6m	4.4m	PAVED

CENTERLINE TIES

U.S. ROUTE 5

P.O.S.T. STA 3+000.000= STA. 3+000.001, 0.074 RT.	P.I. STA 3+081.543= STA 3+074.746	P.O.T. STA 3+180.000
		

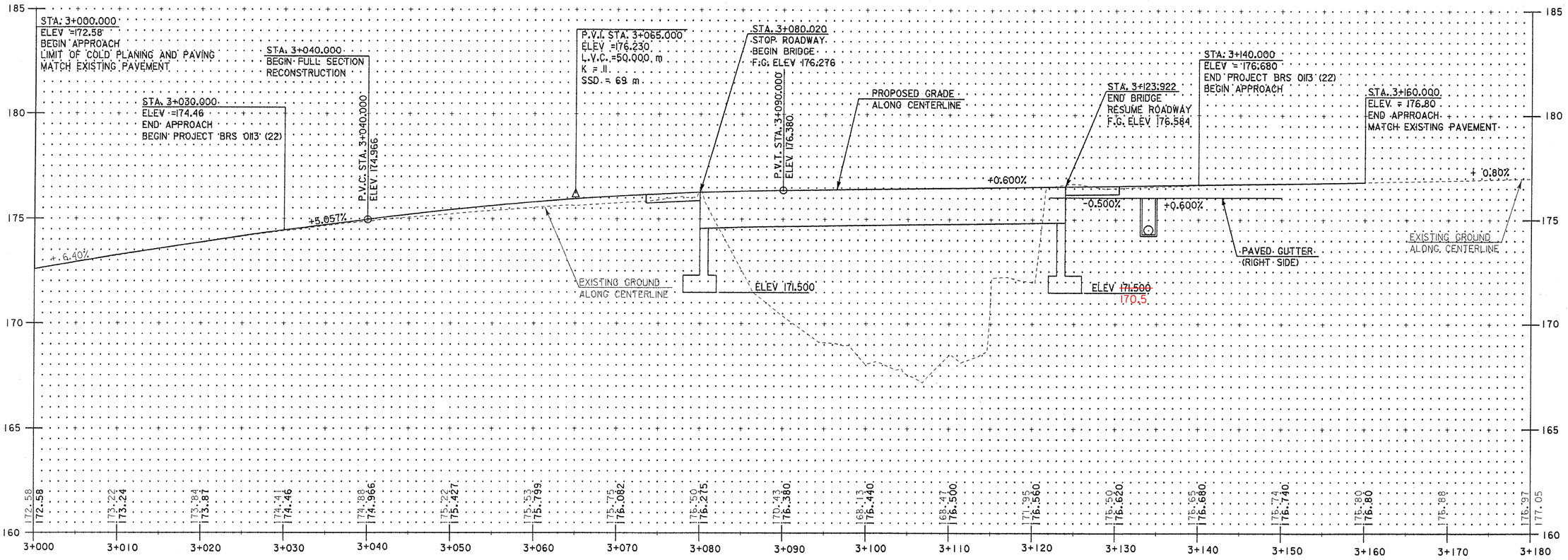
STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of HARTLAND	Bridge No. 60
	Log Sta.
Highway No. U.S. ROUTE 5	Surv. Sta.
U.S. ROUTE 5 OVER LULLS BROOK	

ROADWAY PLAN

Designed By S.E. COSILMON	Drawn By R.REMY / G.F. O'NEIL
Checked By J. R. McDUFFEE Date 2/ 04	Bridge Design Supervisor J.MIECZKOWSKI Date 2/ 04
PROJECT HARTLAND	PROJECT NO. BRS No. 0113(22)
I.G.C. Info. M:\145620I VAOT Hartland\zf204bdr.dgn	
Bridge Sheet No.	Sheet 14 of 86

16-AUG-2004



U. S. ROUTE 5

0 5 10
SCALE IN METERS

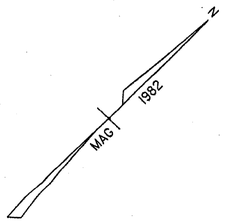
5 0
SCALE IN METERS

STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of HARTLAND	Bridge No. 60
	Log Sta.
Highway No. U.S. ROUTE 5	Surv. Sta.
U.S. ROUTE 5 OVER LULLS BROOK	
PROFILE	
Designed By S.E. COSILMON	Drawn By R. REMY / G.F. O'NEIL
Checked By J. R. McDUFFEE Date 2/ 04	Bridge Design Supervisor J. MIECZKOWSKI Date 2/ 04
PROJECT HARTLAND	PROJECT NO. BRS No. 0113(22)
I.G.C. info. M:\145620\VAOT Hartland\zf204xsl.dgn	
Bridge Sheet No.	Sheet 15 of 86

12-AUG-2004

Metric



0 5 10
SCALE IN METERS

STATE OF VERMONT
AGENCY OF TRANSPORTATION

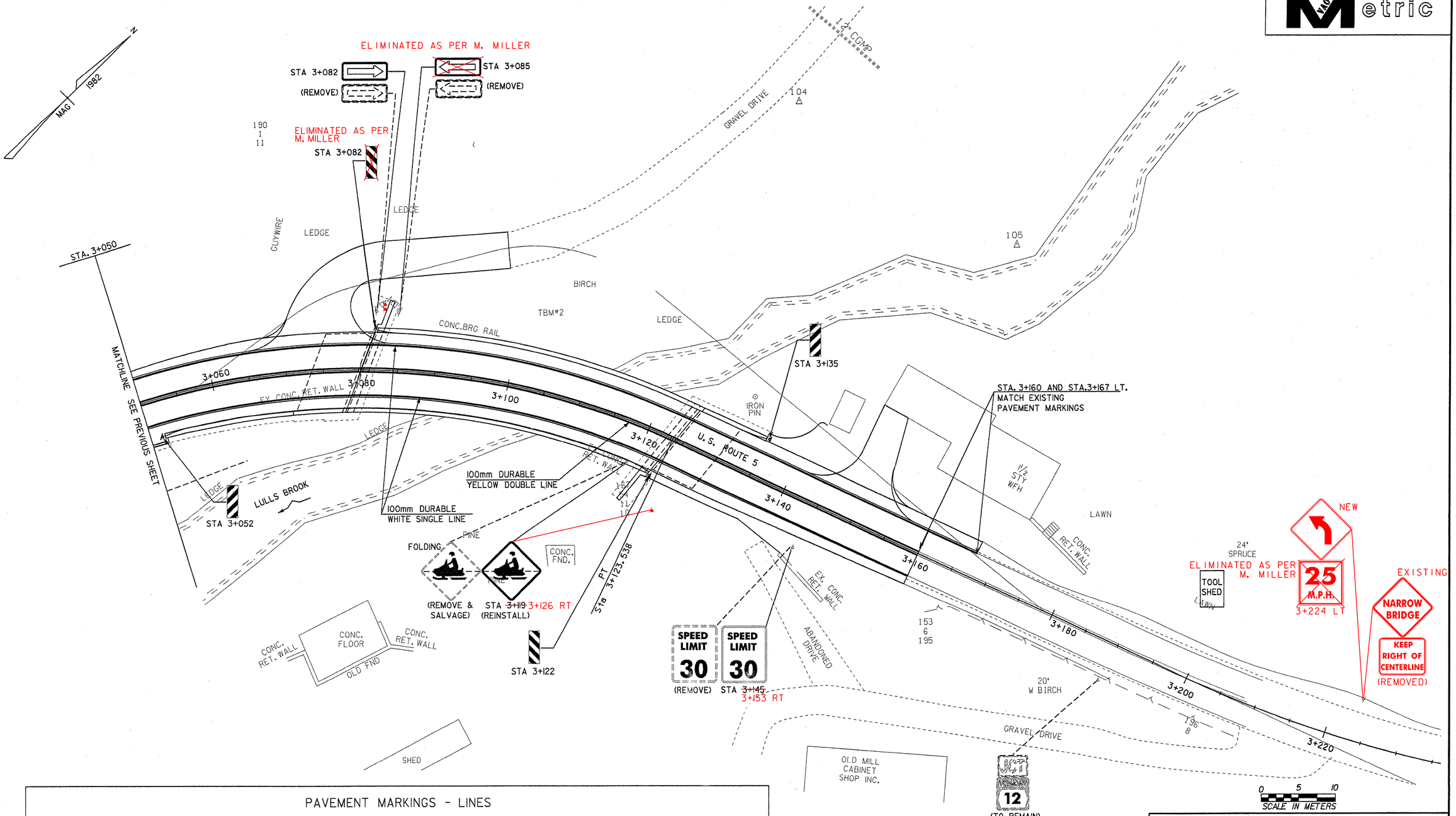
Town Of HARTLAND	Bridge No. 60
	Log Sta.
Highway No. U.S. ROUTE 5	Surv. Sta.
U.S. ROUTE 5 OVER LULLS BROOK	

PAVEMENT MARKING AND SIGN LAYOUT

Designed By S.E. COSILMON	Drawn By R.REMY / G.F. O'NEIL
Checked By Date J. R. McDUFFEE 2/ 04	Bridge Design Supervisor J.MIECZKOWSKI Date 2/ 04
PROJECT HARTLAND	PROJECT NO. BRS No. 0113(22)
I.G.C. Info. M:\145620I VAOT Hartland\zf204bdr.dgn	
Bridge Sheet No.	Sheet 16 of 86

16-AUG-2004

VAOT Metric



PAVEMENT MARKINGS - LINES

	LOCATION	TYPE: DURABLE 100mm WHITE, SINGLE	TYPE: DURABLE 100mm YELLOW, DOUBLE	TYPE: TEMPORARY 100mm WHITE, SINGLE	TYPE: TEMPORARY 100mm YELLOW, DOUBLE	TYPE: TEMPORARY 600mm WHITE, STOP BAR	REMARKS
	U.S. RTE 5						
2+952	STA ~~3+000~~ TO ~~3+167~~ LT 3+193.4	~~167m~~ 241.4m		334m			
2+952	STA ~~3+000~~ TO ~~3+160~~ RT 3+193.4	~~160m~~ 241.4m		320m			
2+952	STA ~~3+000~~ TO ~~3+160~~ ℄ 3+194.4		~~2 x 160m =320m~~		320		
	U.S.RTE. 5 STA 2+965, RT		2X242.4=484.8m			3m	SEE TRAFFIC CONTROL PLAN
	U.S. 5 STA 2+970 LT TO DETOUR STA 5+064 LT			153m			
	U.S. 5 STA 2+970 RT TO DETOUR STA 5+064 RT			148m			
	DETOUR STA 5+058 LT					3m	
	DETOUR STA 5+099 LT TO U.S. 5 STA 3+182 LT			41m			
	DETOUR STA 5+099 RT TO U.S. 5 STA 3+194 RT			54m			
	U.S. RTE. 5 STA 3+195, LT					4m	
	TOTAL	327m	320m	1050m	320m	10m	

STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of HARTLAND	Bridge No. 60
Highway No. U.S. ROUTE 5	Log Sta. / Surv. Sta.
U.S. ROUTE 5 OVER LULLS BROOK	

PAVEMENT MARKING AND SIGN LAYOUT

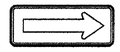
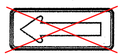
Designed By S.E. COSILMON	Drawn By R.REMY / G.F. O'NEIL
Checked By J. R. McDUFFEE Date 2/ 04	Bridge Design Supervisor J.MIECZKOWSKI Date 2/ 04
PROJECT HARTLAND	PROJECT NO. BRS No. 0113(22)
I.G.C. Info. M:\145620I VAOT Hartland\zf204bdr.dgn	
Bridge Sheet No.	Sheet 17 of 86

16-AUG-2004

STATE OF VERMONT
AGENCY OF TRANSPORTATION

TRAFFIC SIGN SUMMARY SHEET

VAOT Metric

KILOMETER MARKER, STATION, OR SIGN NUMBER	SIGN LEGEND (FOR ALL POST LENGTHS SEE ORIGINAL RECROD PLANS)	SIGN DIMENSIONS EA	WIDTH (mm)	HEIGHT (mm)	NEW AND SALVAGED SIGNS "A"	"B"	SALV. SIGN	SALV. T.I.S.	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) kg/m 44 3.4	50 3.9	63 5.0	ANCHOR	SLEEVE	TUBULAR ALUMINUM Ø (mm) kg/m 75 1.9	100 2.5	100 MOD 2.5	TUBULAR STEEL Ø (mm) FOUNDATION	kg/m 75 11.3	89 13.4	100 16.1	125 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
STA. 3+009, RT.			750	750	0.56		+			+				X																			WI-2R		E-151M
			450	450			+																										WI3-1		E-155M
U.S. ROUTE 5 STA. 3+052, RT.		1	300	900	~~0.27~~						1			X			X																OM-3R		E-120M
STA. 3+082, LT.		1	300	900	0.27						1			X			X																OM-3L		E-120M
STA. 3+082, LT ~~RT.~~		1	1200	600	~~0.72~~						2			X			X																WI-6		E-152M
STA. 3+085, LT.		1	1200	600	0.72						2			X			X																WI-6		E-152M
STA. ~~3+119, RT.~~ 3+126 RT			750	750			1			+																						WII-6		E-153M
STA. 3+122, RT.		1	300	900	0.27						1			X			X																OM-3L		E-120M
STA. 3+135, LT.		1	300	900	0.27						1			X			X																OM-3R		E-120M
STA. ~~3+145, RT.~~ 3+153 RT		1	600	750	0.45						1			X			X																R2 - 1		E-142M
STA 3+224 LT			750	750	0.56									X																			WI-2L		E-151M
TOTAL THIS SHEET			1.71									m 32.4			m 32.4					kg			EA	kg										
TOTALS			M^2 ~~3.10~~ ~~2.97~~		M^2		EA ~~1~~ ~~3~~		M^2			m 32.4			m 32.4					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 AND SAFETY DIVISION'S "SIGN POST DESIGN GUIDELINE."

STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of HARTLAND	Bridge No. 60
Highway No. U.S. ROUTE 5	Log Sta. / Surv. Sta.
U.S. ROUTE 5 OVER LULLS BROOK	

TRAFFIC SIGN SUMMARY

Designed By S.E. COSILMON	Drawn By R. REMY /G.F. O'NEIL
Checked By J. McDUFFEE Date 2/04	Bridge Design Supervisor J. MIECZKOWSKI Date 2/04
PROJECT HARTLAND	PROJECT NO. BRS No. 0113(22)
I.G.C. Info. M:\1456201\VAOT Hartland\zf204frm.dgn	
Bridge Sheet No.	Sheet 18 of 86

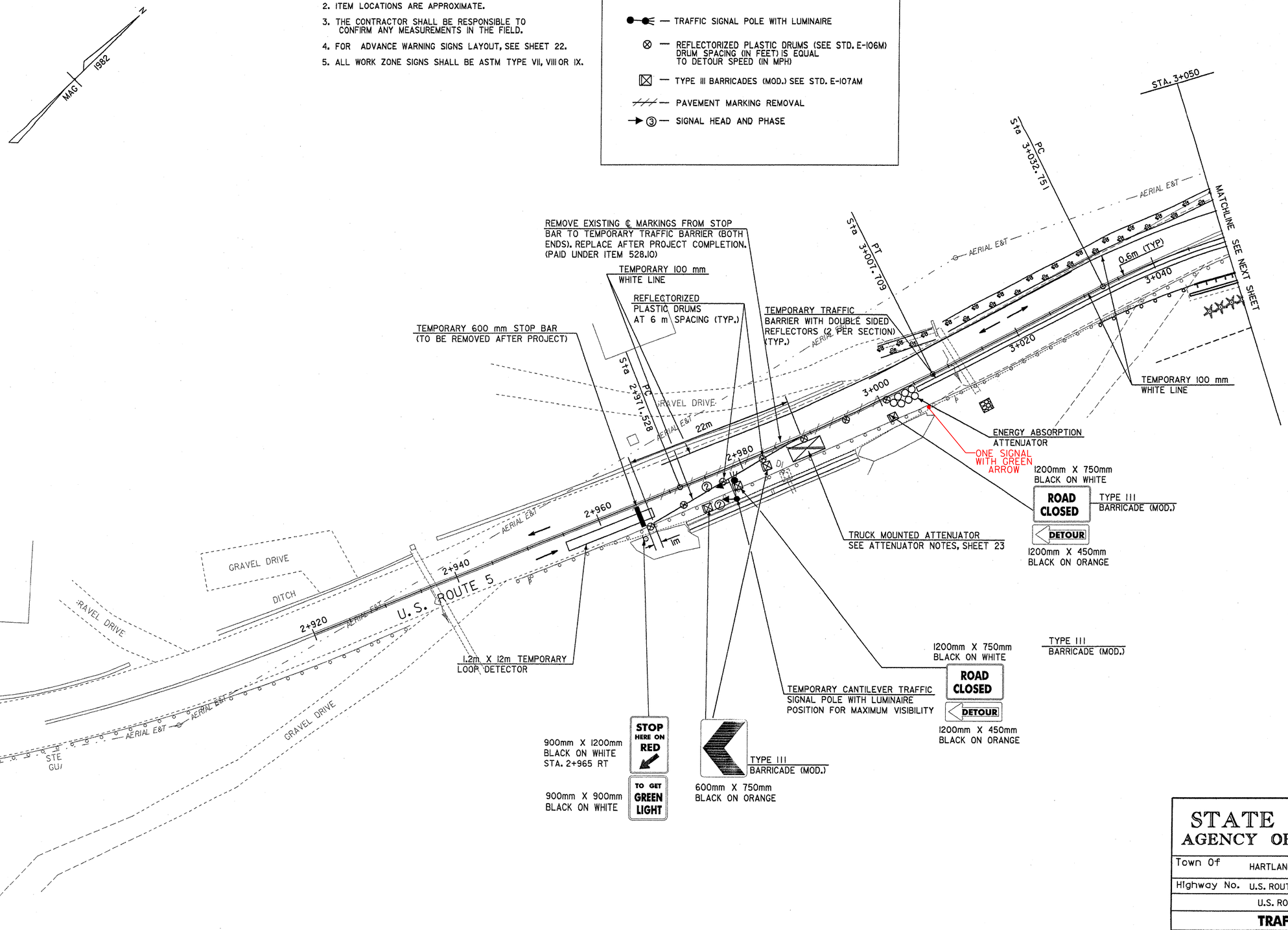
12-AUG-2004

NOTES:

1. ALL TRAFFIC RELATED SIGNS SHALL BE REMOVED OR COVERED WHEN SIGNAL IS NOT OPERATING.
2. ITEM LOCATIONS ARE APPROXIMATE.
3. THE CONTRACTOR SHALL BE RESPONSIBLE TO CONFIRM ANY MEASUREMENTS IN THE FIELD.
4. FOR ADVANCE WARNING SIGNS LAYOUT, SEE SHEET 22.
5. ALL WORK ZONE SIGNS SHALL BE ASTM TYPE VII, VIII OR IX.

LEGEND

- TRAFFIC SIGNAL POLE WITH LUMINAIRE
- REFLECTORIZED PLASTIC DRUMS (SEE STD. E-106M) DRUM SPACING (IN FEET) IS EQUAL TO DETOUR SPEED (IN MPH)
- TYPE III BARRICADES (MOD.) SEE STD. E-107AM
- PAVEMENT MARKING REMOVAL
- SIGNAL HEAD AND PHASE



STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of HARTLAND	Bridge No. 60
	Log Sta.
Highway No. U.S. ROUTE 5	Surv. Sta.
U.S. ROUTE 5 OVER LULLS BROOK	

TRAFFIC CONTROL PLAN

Designed By S.E. COSILMON	Drawn By R.REMY / G.F. O'NEIL
Checked By J. McDUFFEE Date 2/ 04	Bridge Design Supervisor J.MIECZKOWSKI Date2/ 04
PROJECT HARTLAND	PROJECT NO. BRS No. 0113(22)
I.G.C. Info. M:\145620\VAOT Hartland\zf204bdr.dgn	
Bridge Sheet No.	Sheet 19 of 86

16-AUG-2004

Metric

750mm X 750mm BLACK ON ORANGE STA 5+035 RT

600mm X 600mm BLACK ON ORANGE

15 M.P.H.

TEMPORARY TRAFFIC BARRIER WITH DOUBLE SIDED REFLECTORS (2 PER SECTION) (TYP.)

TEMPORARY CANTILEVER SIGNAL POLE

600mm X 750mm BLACK ON ORANGE STA 5+047 LT

600mm X 750mm BLACK ON ORANGE STA 5+052 LT

TEMPORARY 600mm STOP BAR (TO BE REMOVED AFTER PROJECT)

STOP HERE ON RED — 900mm X 1200mm BLACK ON WHITE STA 5+056 LT

TO GET GREEN LIGHT — 900mm X 900mm BLACK ON WHITE

1.2m X 6m TEMPORARY LOOP DETECTOR MATCH EXISTING DRIVEWAY

STEEL BEAM GUARDRAIL TERMINAL END SECTION

600mm X 750mm BLACK ON ORANGE STA 5+063 LT

600mm X 750mm BLACK ON ORANGE STA 5+064 LT

750mm X 750mm BLACK ON ORANGE STA 5+066 LT

15 M.P.H. — 600mm X 600mm BLACK ON ORANGE

REFLECTORIZED PLASTIC DRUMS AT 6 m SPACING (TYP.)

ONE-WAY TEMPORARY BRIDGE

DETOUR & APPROACH TO BE PAVED

TEMPORARY 100mm WHITE LINE

Sta 5+016.286 PC; Sta 5+021.202 PI; Sta 5+025.993 PT; Sta 5+044.276 PC; Sta 5+056.985 PI; Sta 5+067.792 PT

STA. 3+050; POB Sta 5+000.000; MATCHLINE SEE PREVIOUS SHEET

EX. CONC. RET. WALL; CONC. BRG. RAIL; AERIAL E&T

25m R; 22.7m R; 22.1m R; 2.4m; 3.6m R

U.S. ROUTE 5 N 69°58'47.9" E

PT Sta 3+123.538

NO ACCESS DURING CONSTRUCTION

TOOL SHED

TEMPORARY CANTILEVER TRAFFIC SIGNAL POLE WITH LUMINAIRE POSITION FOR MAXIMUM VISIBILITY

DETOUR & APPROACH TO BE PAVED

BEGIN TEMPORARY GUARDRAIL
BEGIN TEMPORARY GRAVEL SIDEWALK
STA. 3+170, LEFT

TEMPORARY 100mm WHITE LINE

POE Sta 5+136.580

CONTROLLER

TEMPORARY TRAFFIC BARRIER WITH DOUBLE SIDED REFLECTORS (2 PER SECTION) (TYP.)

ENERGY ABSORPTION ATTENUATOR

TYPE III BARRICADES (MOD.)

600mm X 750mm BLACK ON ORANGE

REFLECTORIZED PLASTIC DRUMS AT 6 m SPACING (TYP.)

1200mm X 750mm BLACK ON WHITE

ROAD CLOSED

DETOUR

1200mm X 450mm BLACK ON ORANGE

REMOVE EXISTING ℄ MARKINGS FROM STOP BAR TO TEMPORARY TRAFFIC BARRIER (BOTH ENDS). REPLACE AFTER PROJECT COMPLETION. (PAID UNDER ITEM 528.10)

STOP HERE ON RED — 900mm X 1200mm BLACK ON WHITE STA 3+195 LT

TEMPORARY GRAVEL SIDEWALK

TEMPORARY GUARDRAIL

NEW LOCATION OF TOOL SHED (FROM 3+144, LT.)

OVERHEAD COMMUNICATION CABLE FOR FIRE PRE-EMPTION ACTUATION. HANG ON EXISTING POLES. EXTEND APPROX. 1070 m TO FIRE STATION. (PAID UNDER ITEM 678.40)

TEMPORARY 600 mm STOP BAR (TO BE REMOVED AFTER PROJECT)

BEGIN TEMPORARY PRECAST CONCRETE BLOCK WALL STA. 3+206, LEFT

BEGIN TEMPORARY GUARDRAIL STA. 3+209, LEFT

END TEMPORARY PRECAST CONCRETE BLOCK WALL STA. 3+240, LEFT

END TEMPORARY GUARDRAIL
END TEMPORARY GRAVEL SIDEWALK
STA. 3+210, LEFT

TEMPORARY PRECAST CONCRETE BLOCK WALL

TEMPORARY PARKING AREA

END TEMPORARY GUARDRAIL STA. 3+237, LEFT

TOOL SHED Sta 3+200.126 PC

3+120; 3+140; 3+160; 3+180; 3+200; 3+220; 3+240

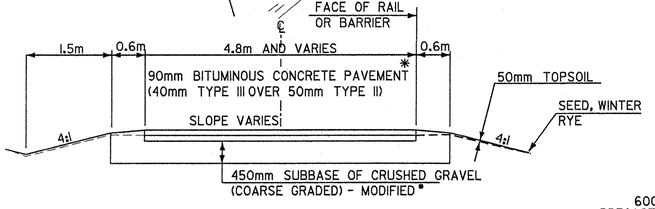
N 1982 MAG

0 5 10 SCALE IN METERS

TEMPORARY DETOUR

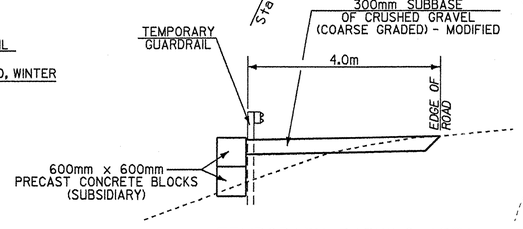
NOT TO SCALE

*PAYMENT FOR ALL ITEMS WITHIN DETOUR TYPICAL TO BE PAID UNDER ITEM 528.10, EXCEPT BITUMINOUS CONCRETE PAVEMENT



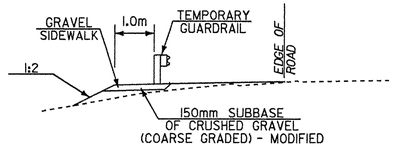
TEMPORARY PARKING AREA

(TO BE PAID UNDER ITEM 528.10)
NOT TO SCALE



TEMPORARY SIDEWALK

(TO BE PAID UNDER ITEM 528.10)
NOT TO SCALE



LEGEND

- — TRAFFIC SIGNAL POLE WITH LUMINAIRE
- ⊗ — REFLECTORIZED PLASTIC DRUMS (SEE STD. E-106M) DRUM SPACING (IN FEET) IS EQUAL TO DETOUR SPEED (IN MPH)
- — TYPE III BARRICADES SEE STD. E-107AM
- — PAVEMENT MARKING REMOVAL
- ③ — SIGNAL HEAD AND PHASE

TEMPORARY DRIVEWAY TABLE

DRIVEWAY LOCATION	RADIUS	WIDTH	REMARKS
DETOUR STA 5+059 LT	6m, 3.6m	4m	PAVED

NOTES:

1. ALL TRAFFIC RELATED SIGNS SHALL BE REMOVED OR COVERED WHEN SIGNAL IS NOT OPERATING.
2. ITEM LOCATIONS ARE APPROXIMATE.
3. THE CONTRACTOR SHALL BE RESPONSIBLE TO CONFIRM ANY MEASUREMENTS IN THE FIELD.
4. PAYMENT FOR THE TEMPORARY PARKING AREA, SIDEWALK, BLOCK WALL, AND GUARDRAIL SHALL BE INCLUDED UNDER ITEM 582.10 AND SHALL INCLUDE COSTS FOR REMOVAL.
5. FOR ADVANCE WARNING SIGNS LAYOUT, SEE SHEET 22
6. ALL WORK ZONE SIGNS SHALL BE ASTM TYPE VII, VIII OR IX.

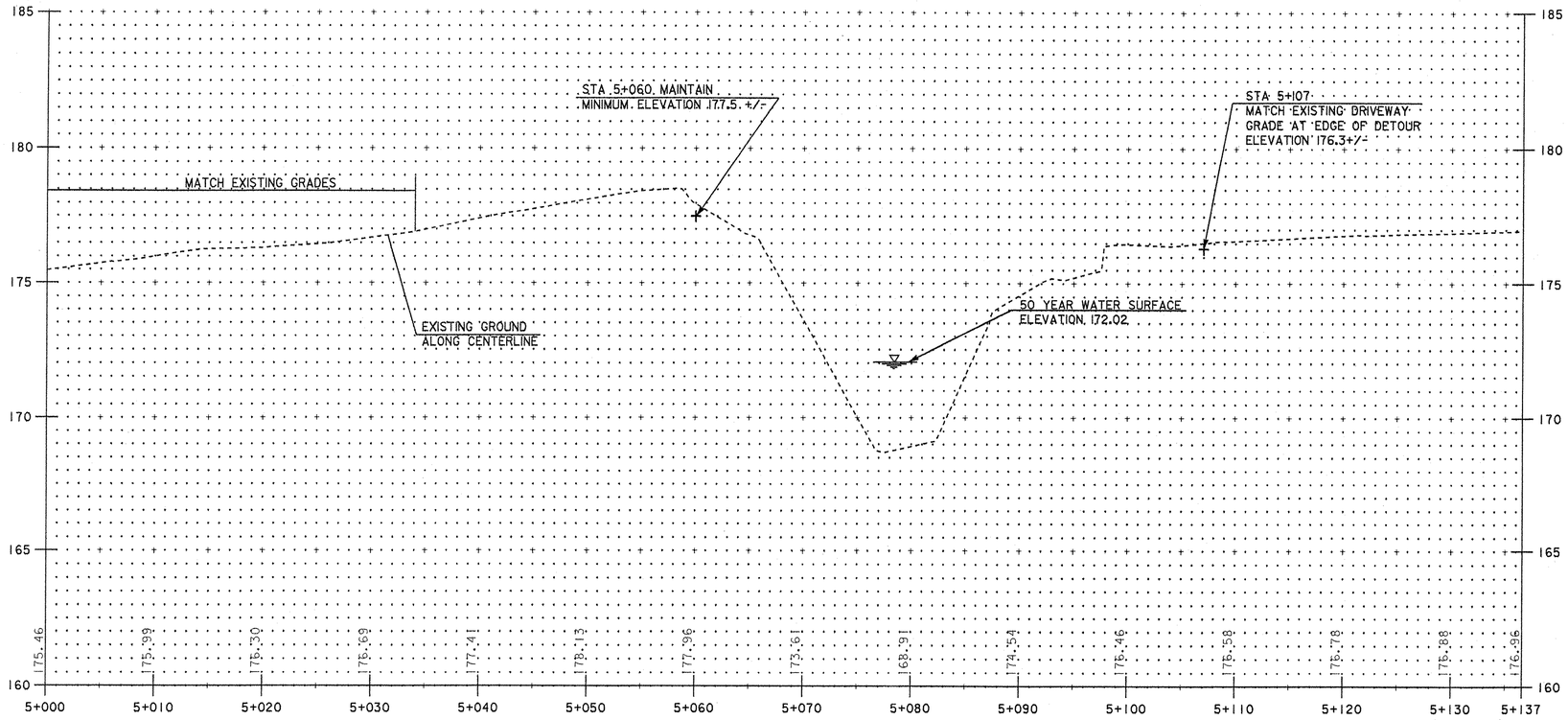
STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of HARTLAND	Bridge No. 60
	Log Sta.
Highway No. U.S. ROUTE 5	Surv. Sta.
U.S. ROUTE 5 OVER LULLS BROOK	

TRAFFIC CONTROL PLAN

Designed By S.E. COSILMON	Drawn By R.REMY / G.F. O'NEIL
Checked By J. R. McDUFFEE 2/ 04 Date	Bridge Design Supervisor J.MIECZKOWSKI Date2/ 04
PROJECT HARTLAND	PROJECT NO. BRS No. 0113(22)
I.G.C. Info. M:\145620I VAOT Hartland\zf204bdr.dgn	
Bridge Sheet No.	Sheet 20 of 86

16-AUG-2004



TEMPORARY DETOUR

0 5 10
SCALE IN METERS

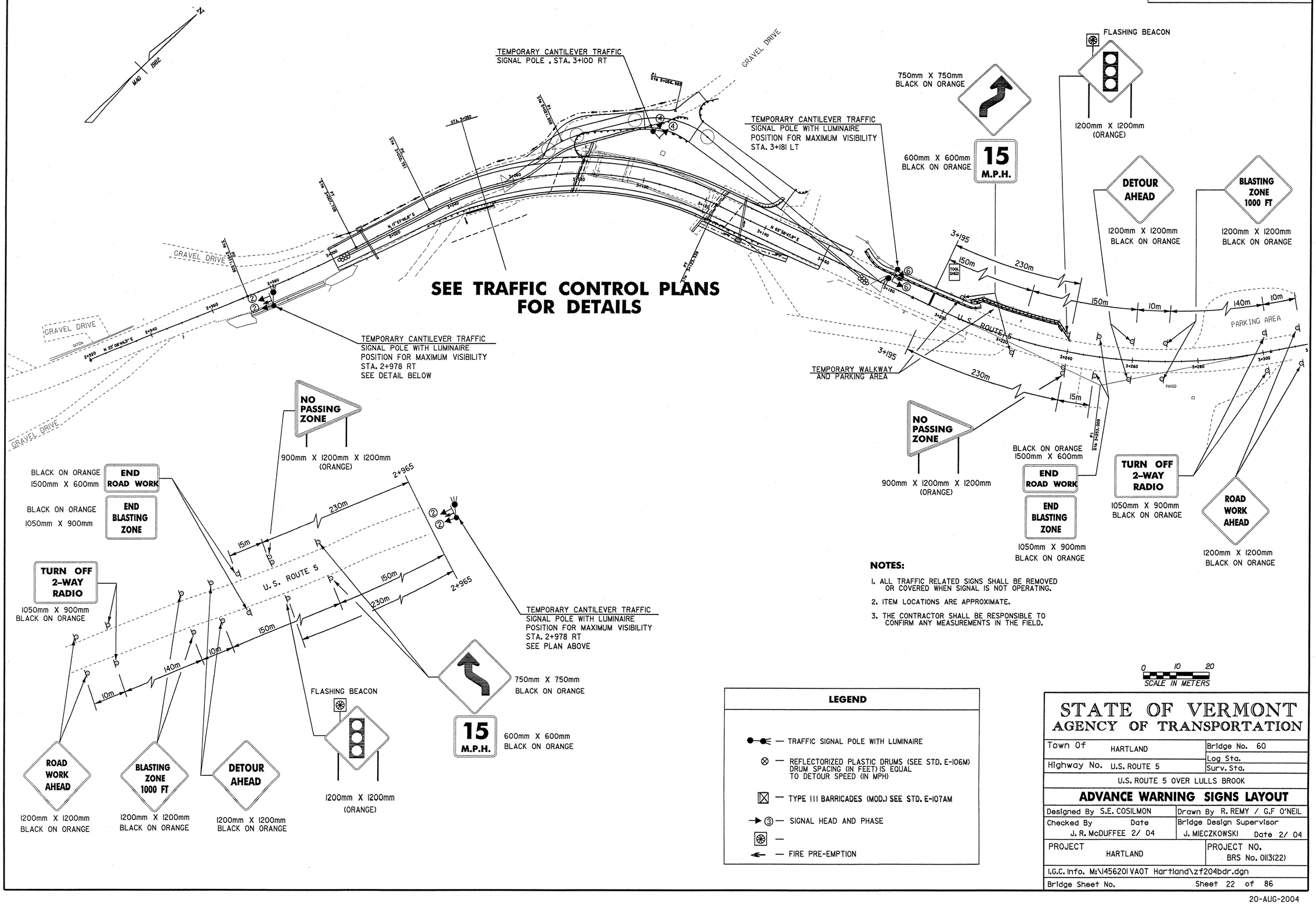
5 0
SCALE IN METERS

STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of HARTLAND	Bridge No. 60
	Log Sta.
Highway No. U.S. ROUTE 5	Surv. Sta.
U.S. ROUTE 5 OVER LULLS BROOK	
TEMPORARY DETOUR PROFILE	
Designed By S.E. COSILMON	Drawn By R. REMY / G.F. O'NEIL
Checked By Date J. R. McDUFFEE 2/ 04	Bridge Design Supervisor J. MIECZKOWSKI Date 2/ 04
PROJECT HARTLAND	PROJECT NO. BRS No. 0113(22)
I.G.C. Info. M:\145620\VAOT Hartland\zf204xsl.dgn	
Bridge Sheet No.	Sheet 21 of 86

12-AUG-2004

VAOT Metric



NOTES:

1. ALL TRAFFIC RELATED SIGNS SHALL BE REMOVED OR COVERED WHEN SIGNAL IS NOT OPERATING.
2. ITEM LOCATIONS ARE APPROXIMATE.
3. THE CONTRACTOR SHALL BE RESPONSIBLE TO CONFIRM ANY MEASUREMENTS IN THE FIELD.

LEGEND

- — TRAFFIC SIGNAL POLE WITH LUMINAIRE
- — REFLECTORIZED PLASTIC DRUMS (SEE STD. E-106M) DRUM SPACING (IN FEET) IS EQUAL TO DETOUR SPEED (IN MPH)
- — TYPE III BARRICADES (MOD.) SEE STD. E-107AM
- — SIGNAL HEAD AND PHASE
- —
- — FIRE PRE-EMPTION

0 10 20
SCALE IN METERS

STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of HARTLAND	Bridge No. 60
Highway No. U.S. ROUTE 5	Log Sta. / Surv. Sta.
U.S. ROUTE 5 OVER LULLS BROOK	

ADVANCE WARNING SIGNS LAYOUT

Designed By S.E. COSILMON	Drawn By R. REMY / G.F O'NEIL
Checked By J. R. McDUFFEE 2/ 04 Date	Bridge Design Supervisor J. MIECZKOWSKI Date 2/ 04
PROJECT HARTLAND	PROJECT NO. BRS No. 0113(22)
I.G.C. Info. M:\145620\VAOT Hartland\zf204bdr.dgn	
Bridge Sheet No.	Sheet 22 of 86

20-AUG-2004

PHASING DIAGRAM AND SPECIAL NOTES
FOR EACH LOCATION

PHASE	2			1			4			3		
MINIMUM	10						10			90		
EXTENSION	2						2			2		
MAXIMUM	35	3	42	35	3	42	27	3	42	100	3	42
HEAD 2	G	Y	R	R	R	R	R	R	R	R	R	R
HEAD 1	R	R	R	G	Y	R	R	R	R	G	Y	R
HEAD 4	R	R	R	R	R	R	G	Y	R	R	R	R

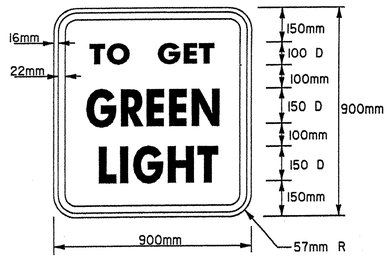
APPROACH 4 IS A SIDE DRIVE APPROACH

NOTES:
1. SET RECALL TO PHASE 1.
2. PHASE 3 IS UTILIZED FOR FIRE PRE-EMPTION

SPECIAL REQUIREMENTS

APPROACH	TEMPORARY VEHICLE DETECTOR	DILEMMA ZONE LOOP	FLASHING BEACON OR ADVANCED WARNING SIGN
2	X		X
1			X
4	X		

ENTER CHECK MARK IN APPROPRIATE BOX WHEN REQUIRED ON THIS PROJECT



COLORS: BLACK TEXT AND BORDER
WHITE REFL. BACKGROUND
MATERIALS: PER STD. E-142M

STANDARD SHEETS REQUIRED FOR USE WITH TEMPORARY DETOUR SHEETS INCLUDE:

E-100M	E-171AM
E-101M	E-171BM
E-102M	E-171CM
E-102AM	E-172M
E-106M	E-173M
E-107M	E-175M
E-107AM	
E-121M	
E-140M	

Metric

ATTENUATOR NOTES

TO ALLOW THE CONTRACTOR ACCESS TO THE WORK AREA, NO BARRIER TAPER WILL BE INSTALLED. ENERGY ABSORPTION ATTENUATORS SHALL BE INSTALLED AT BOTH ENDS OF THE BARRIER AND A TRUCK-MOUNTED ATTENUATOR INSTALLED AT THE SOUTHERN END ONLY.

THE TRUCK-MOUNTED ATTENUATOR WILL BE PAID FOR UNDER ITEM 608.45, AND THE ENERGY ABSORPTION ATTENUATORS WILL BE PAID FOR UNDER ITEM 621.56. THE ATTENUATORS SHALL MEET THE REQUIREMENTS OF THE 2002 AASHTO "ROADSIDE DESIGN GUIDE", AND SHALL BE DESIGNED FOR A 4500 LB VEHICLE AT 30 MPH.

GENERAL NOTES

1. DESIGN OF SIGNAL SUPPORT(S) AND ANY REQUIRED GUYING IS THE RESPONSIBILITY OF THE CONTRACTOR.
2. SIGNAL TIMING/TIMING ADJUSTMENTS REQUESTED BY THE RESIDENT ENGINEER SHALL BE ACCOMPLISHED WITHIN A 48 HOUR PERIOD AND PAYMENT SHALL BE SUBSIDIARY TO THE TRAFFIC SIGNAL ITEM. THE ALL-RED CLEARANCE INTERVAL IS BASED ON AN ASSUMED SPEED OF 10-20 MPH. THE RESIDENT ENGINEER SHALL MAKE SEVERAL TRIAL RUNS TO DETERMINE THE PROPER ALL-RED CLEARANCE INTERVAL.
3. SIGNAL FACES SHALL CONSIST OF 305mm LENSES, (RED, YELLOW, AND GREEN).
4. THE BOTTOM OF THE HOUSING OF THE SIGNAL FACE SUSPENDED OVER A ROADWAY SHALL NOT BE LESS THAN 5.0m NOR MORE THAN 5.8m ABOVE THE PAVEMENT GRADE AT THE CENTER OF THE ROADWAY. THE BOTTOM OF THE SIGNAL FACE NOT MOUNTED OVER A ROADWAY SHALL NOT BE LESS THAN 2.4m NOR MORE THAN 4.6m ABOVE THE GROUND. CAUTION SHOULD BE USED TO INSURE COMPLIANCE WITH THE HEIGHT REQUIREMENTS IN THE EVENT THE NEW APPROACH GRADES DIFFER SIGNIFICANTLY FROM THE OLD ROAD GRADE.
5. SIGNAL FACES FOR ANY ONE APPROACH SHALL NOT BE LESS THAN 2.4m APART MEASURED HORIZONTALLY BETWEEN CENTER OF FACES.
6. SIGNAL HEADS MAY BE HUNG ON A SPAN WIRE OR ON A CANTILEVER MAST ARM. AT LEAST ONE SIGNAL HEAD SHALL BE UNMISTAKABLY IN LINE WITH THE CENTER OF APPROACHING TRAFFIC AT ALL TIMES. THE SECOND SIGNAL HEAD MAY BE POST MOUNTED, LOCATED AT A DISTANCE NO GREATER THAN 4.4m FROM THE CENTER OF THE APPROACH LANE WHEN THE STOP BAR IS 12.2m FROM THE SIGNAL HEAD. CONSULT THE M.U.T.C.D. FOR ADDITIONAL INFORMATION CONCERNING SIGNAL PLACEMENT.
7. SIGNAL HEAD PLACEMENT IS CRITICAL. HEADS SHALL BE ADJUSTED TO REFLECT LANE LOCATION CHANGES.
8. THE SIGNAL SYSTEM SHALL CONSIST OF POLES, SIGNS AND POSTS, WARNING SIGNS, LUMINAIRES, FLASHING BEACONS, FIRE PRE-EMPTION AND SIGNAL EQUIPMENT TO PROVIDE FOR AN ADEQUATE DESIGN. IT ALSO INCLUDES PERMITS AND COST ASSOCIATED WITH PROVIDING ELECTRICAL POWER.
9. THE CONTRACTOR SHALL PROVIDE AN ACTUATED CONTROLLER. THE APPROACHES NOTED SHALL HAVE A TEMPORARY VEHICLE DETECTOR. THE TYPE OF DETECTION SHALL BE INDUCTANCE . THE CONTROLLER, VEHICLE DETECTORS AND ALL OTHER SIGNAL EQUIPMENT SHALL MEET OR EXCEED ALL NEMA STANDARDS.
10. VEHICLE DETECTOR LOOPS SHALL BE 1.2m X 12m FOR PRESENCE DETECTION ON U.S. ROUTE 5 AND 1.2m X 6m FOR SIDE APPROACH. THE NEAR PORTION OF THE LOOPS SHALL EXTEND 1.5m BEYOND THE STOP BAR.
11. INTERVAL TIMING SHOWN IN SECONDS.
12. INTERCONNECT BETWEEN SIGNAL POLES BY WHATEVER MEANS POSSIBLE OR CONVENIENT TO PROVIDE FOR A SAFE INSTALLATION.
13. PLACE TEMPORARY POLES BEHIND GUARDRAIL WHERE POSSIBLE.
14. POLES SUPPORTING SPAN WIRES AND/OR MAST ARMS SHALL BE ADEQUATELY BRACED OR GUYED AND SHALL NOT BE PLACED SO AS TO CREATE A HAZARD TO THE TRAVELING PUBLIC.
15. ALL TEMPORARY SIGNAL EQUIPMENT, SIGNS, ETC., SHALL BELONG TO THE CONTRACTOR AT THE END OF THE PROJECT AND HE SHALL BE RESPONSIBLE FOR THEIR REMOVAL, INCLUDING ANY TEMPORARY PAVEMENT MARKINGS, UTILITY POLES, WIRES, ETC.
16. A 250 WATT MERCURY OR 150 WATT HPS LUMINAIRE AND MAST ARM SHALL BE PROVIDED ON A POLE ON EACH APPROACH AT A MOUNTING HEIGHT OF 9.1m ABOVE ROADWAY CENTERLINE TO LIGHT UP THE AREA AROUND THE SIGNAL HEADS AND STOP BAR FOR VISIBILITY. THE RESIDENT ENGINEER SHALL DETERMINE THE ADEQUACY OF THE LIGHTING AND DIRECT CHANGES IF THE LIGHTING IS INSUFFICIENT.
17. STOP BARS SHALL BE LOCATED A MINIMUM OF 12.2m AND A MAXIMUM OF 36.6m FROM THE NEAREST SIGNAL HEAD.
18. PAYMENT FOR TEMPORARY VEHICLE LOOP DETECTOR ITEM SHALL BE FOR EACH UNIT INSTALLED.
19. SIGNS AND POSTS AS SHOWN ON THIS SHEET AND NOTED BELOW ARE SUBSIDIARY TO THE TRAFFIC CONTROL SIGNAL ITEM ("STOP HERE ON RED," "SIGNAL AHEAD," "NO PASSING ZONE," AND "TO GET GREEN LIGHT." ETC.) THE TEMPORARY STOP BARS SHOULD BE PAID UNDER THE TEMPORARY 600 mm STOP BAR ITEM.
20. SEE STD. E-140M FOR "STOP HERE ON RED" SIGN DETAIL AND E-101M FOR "SIGNAL AHEAD" SYMBOL SIGN. SEE STD. E-121M FOR SIGN PLACEMENT, SEE STDS. E-171AM THROUGH E-172M FOR ADDITIONAL INFORMATION ON SIGNALS AND DETECTORS.
21. A "SIGNAL AHEAD" SIGN SHALL BE PLACED AT LEAST 225m FROM THE SIGNAL OR AT A POSITION TO BE DETERMINED BY THE ENGINEER.
22. THE "NO PASSING" SIGN SHALL BE USED TO PREVENT PASSING FOR 225m IN ADVANCE OF THE STOP BAR. THE SIGN SHALL BE PER STD. E-102M.
23. ALL ELECTRICAL WORK SHALL MEET THE REQUIREMENTS OF THE NATIONAL ELECTRICAL CODE AND STATE INSPECTOR.
24. APPROACH WIDTHS SHALL BE AS DETAILED IN SECTION 528.04(b)2 TO MINIMIZE VEHICLE DELAY.
25. TRAFFIC CONTROL WARNING SIGNS SHALL BE PROVIDED ON EACH APPROACH PER STANDARD E-107M. ADDITIONAL PROJECT CONSTRUCTION SIGNS SHALL BE INSTALLED AS REQUIRED BY THE RESIDENT ENGINEER PER STANDARD E-100M, E-101M, E-102M & E-102AM. PAYMENT FOR THESE SIGNS, THE REFLECTORIZED PLASTIC DRUMS, ETC. SHALL BE PAID AS PART OF THE "MAINTENANCE OF TRAFFIC FOR BRIDGE PROJECTS" ITEM OR THE "TRAFFIC CONTROL" ITEM.
26. THE "TO GET GREEN LIGHT" SIGN IS TO BE USED ONLY ON APPROACHES WITH VEHICLE DETECTOR LOOPS.
27. TEMPORARY TRAFFIC BARRIER SHALL BE SUBSTITUTED FOR THE CHANNELIZING DEVICES SHOWN WHEN ANY OF THE FOLLOWING ARE MET:
    A.) THE BRIDGE DECK IS REMOVED
    B.) THE BRIDGE RAIL IS REMOVED, OR
    C.) IN THE JUDGEMENT OF THE RESIDENT ENGINEER TEMPORARY BARRIER IS NEEDED.
28. PAYMENT FOR THE TEMPORARY BARRIER USED SHALL BE MADE UNDER THE APPROPRIATE ITEM.
29. INSTALL TEMPORARY FIRE PRE-EMPTION EQUIPMENT ON SIGNALS AT STA. 2+978, RT. AND STA. 3+181, LT.

STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of HARTLAND	Bridge No. 60
	Log Sta.
Highway No. U.S. ROUTE 5	Surv. Sta.
U.S. ROUTE 5 OVER LULLS BROOK	

TEMPORARY DETOUR NOTES

Designed By S.E. COSILMON	Drawn By R. REMY / G.F. O'NEIL
Checked By J. McDUFFEE Date 2/04	Bridge Design Supervisor J. MIECZKOWSKI Date 2/04
PROJECT HARTLAND	PROJECT NO. BRS No. 0113(22)
I.G.C. Info. M:\145620I VA0T Hartland\zf204frm.dgn	
Bridge Sheet No.	Sheet 23 of 86

20-AUG-2004

INDEX OF SHEETS

STATE OF VERMONT
AGENCY OF TRANSPORTATION

PROJECT LOCATION

EROSION PREVENTION AND SEDIMENT CONTROL MEASURES FOR THE

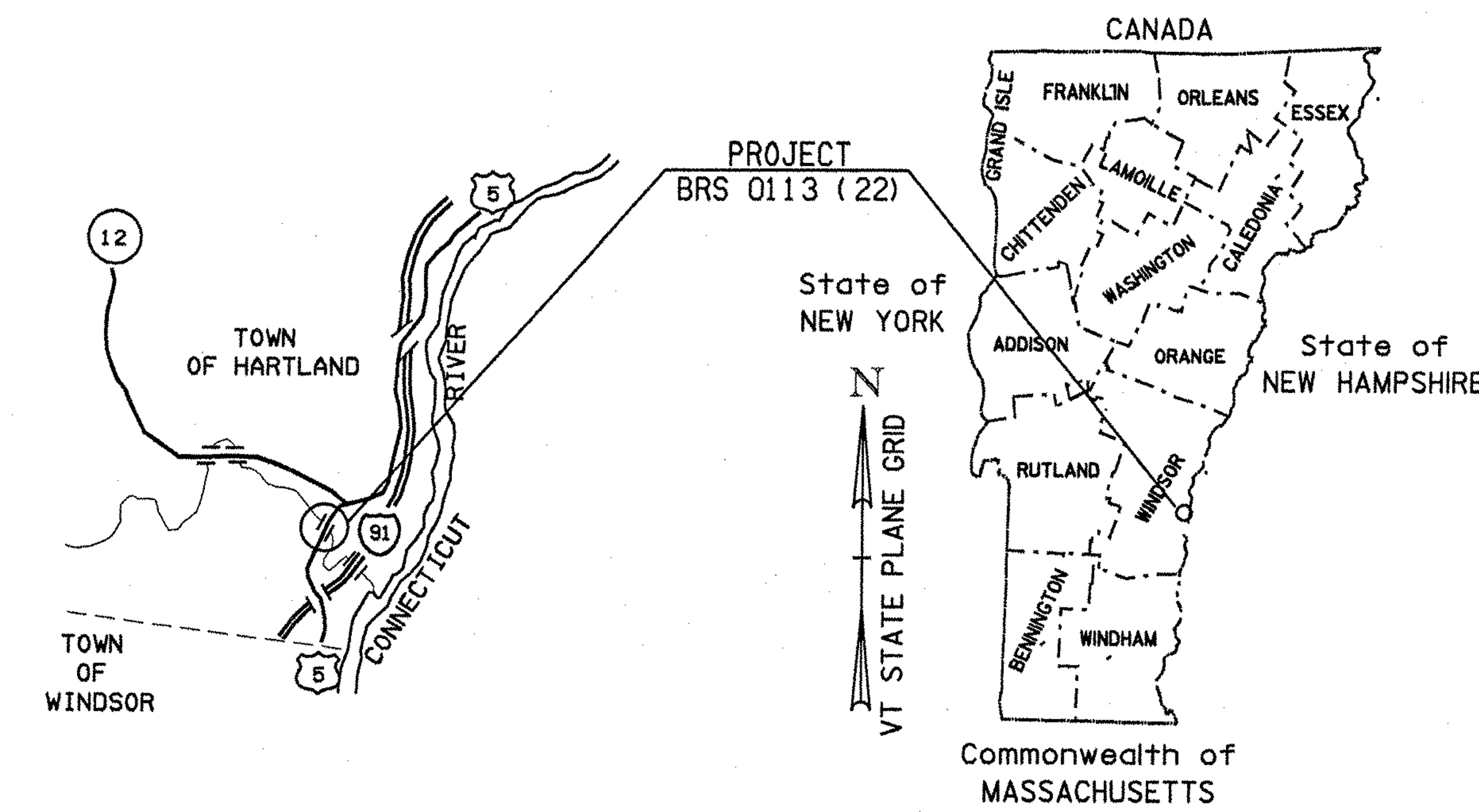
PROPOSED IMPROVEMENT TOWN OF HARTLAND COUNTY OF WINDSOR U.S. RTE. 5

HARTLAND BRS 0113 (22)

BEGINNING AT A POINT APPROXIMATELY 2.135 KILOMETERS NORTH OF THE WINDSOR-HARTLAND TOWN LINE AND EXTENDING NORTH 0.110 KILOMETERS

WORK TO BE PERFORMED ON THIS PROJECT INCLUDES REPLACEMENT OF BRIDGE #60 OVER LULLS BROOK AND NECESSARY ROADWAY APPROACHES.

LENGTH OF STRUCTURES	0.044 KILOMETERS
LENGTH OF ROADWAY	0.066 KILOMETERS
LENGTH OF PROJECT	0.110 KILOMETERS



CONVENTIONAL SYMBOLS

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

SURVEYED BY :
SURVEYED DATE :

DATUM
VERTICAL NGVD 1929
HORIZONTAL N/A

PLANS PREPARED BY

McFARLAND-JOHNSON, INC.
BINGHAMTON N.Y.

BY ____________

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.

VAOT Metric

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

DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATOR
APPROVED ____________ DATE ______

DIRECTOR OF PROJECT DEVELOPMENT
APPROVED ____________ DATE ______

PROJECT MANAGER : CRAIG KELLER

PROJECT NAME : BRS 0113 (22)
PROJECT NUMBER : HARTLAND

SHEET 24A OF 86 SHEETS

M:\1456201 VAOT Hartland\zf204ES_LOC.dgn 19-AUG-2004

STATE OF VERMONT
AGENCY OF TRANSPORTATION

EROSION CONTROL NARRATIVE

Metric

DESCRIPTION OF PROJECT

THIS PROJECT INCLUDES REMOVAL AND REPLACEMENT OF BRIDGE #60 ON ROUTE 5 OVER LULLS BROOK AND THE NECESSARY ROADWAY APPROACH IMPROVEMENTS ASSOCIATED WITH THE BRIDGE. THE PROJECT IS LOCATED APPROXIMATELY 2.135 KM NORTH OF THE WINDSOR-HARTLAND TOWN LINE AND EXTENDS NORTH 0.110 KM. TOTAL ROADWAY WORK, INCLUDING BOTH APPROACHES, IS APPROXIMATELY 160 METERS. AN EXISTING PRIVATELY OWNED TOOL SHED WILL BE RELOCATED TO ALLOW FOR CONSTRUCTION OF A TEMPORARY DETOUR ROADWAY AND BRIDGE JUST NORTH OF THE EXISTING STRUCTURE. CONSTRUCTION OF THE PROPOSED BRIDGE WILL OCCUR ABOVE THE ORDINARY HIGH WATER ELEVATION AND NO WORK WITHIN THE FLOWING WATER IS ANTICIPATED DURING CONSTRUCTION. LULLS BROOK IS CLASSIFIED AS CLASS B WATERS AND IS LOCATED IN THE LOWER CONNECTICUT RIVER BASIN.
THE LIMITS OF CONSTRUCTION DO NOT ENCROACH UPON WETLANDS.
NO THREATENED OR ENDANGERED SPECIES HAVE BEEN IDENTIFIED IN THE PROJECT AREA. THE PROJECT WILL INVOLVE AN ADVERSE EFFECT ON A MULTIPLE RESOURCE DISTRICT CONSISTING OF THE EXISTING BRIDGE, STANDING STRUCTURES AND ARCHAEOLOGICAL SITES DETERMINED ELIGIBLE FOR THE NATIONAL REGISTER OF HISTORIC PLACES. THESE EFFECTS WILL BE MITIGATED BY IMPLEMENTATION OF THE STIPULATIONS CONTAINED IN A SECTION 106 MOA SIGNED BY THE FHWA ON JULY 13, 1998.

THE SITE IS LOCATED AT APPROXIMATELY 433218 N, 722407 W (NAD 83/92)
IT IS ANTICIPATED THAT THE PROJECT WILL LAST TWO CONSTRUCTION SEASONS.
NO WINTER CONSTRUCTION IS ANTICIPATED.
TOTAL DISTURBED AREA (EXCLUDING WASTE, BORROW AND STAGING AREAS):
0.283 ha (0.70 ACRES)

SITE INVENTORY & ANALYSIS

OFF SITE DRAINAGE CHARACTERISTICS:
THE PROPERTY SURROUNDING THE PROJECT SITE CONSISTS OF WELL ESTABLISHED VEGETATION WITH STEEP SLOPES OF VARIOUS GRASSES, SHRUBS AND TREES. STORMWATER RUNOFF FROM AREAS NORTHWEST AND SOUTHEAST OF THE CROSSING ARE CONVEYED INTO LULLS BROOK VIA A SERIES OF ROADSIDE DITCHES AND CULVERTS UNDER US RT 5. SOUTHWEST AND NORTHEAST OF THE CROSSING RUNOFF IS CONVEYED AS SHEET FLOW AND DISCHARGED DIRECTLY INTO LULLS BROOK.

DRAINAGE, WATERWAYS, BODIES OF WATER:
LULLS BROOK IS LOCATED WITHIN THE PROJECT AREA. THERE ARE NO OTHER WATER BODIES OR WETLANDS WITHIN THE PROJECT AREA. LULLS BROOK IS CLASSIFIED AS A CLASS B STREAM AND IS A COLD WATER FISHERY. THE BROOK IS A TRIBUTARY OF THE CONNECTICUT RIVER. THE CONTRIBUTING DRAINAGE AREA OF LULLS BROOK AT THE EXISTING CROSSING IS 55.4 SQ. KM. (21.4 SQ. MI.). THE FEMA DELINEATED 100-YEAR FLOODPLAIN IS EXTREMELY NARROW THROUGHOUT THE PROJECT AREA DUE TO STEEP OVERBANK SIDESLOPES AND CHANNEL SLOPE.

TOPOGRAPHY, EXISTING ROADS, BUILDINGS, UTILITIES:
THE TOPOGRAPHY OF THE PROJECT SITE CONSISTS OF A ROCKY GORGE IMMEDIATELY UPSTREAM AND DOWNSTREAM OF THE EXISTING BRIDGE. SLOPES ON EITHER SIDE OF THE STREAM ARE PARTIALLY WOODED. EXISTING LAND USE IS LOW DENSITY RESIDENTIAL AND COMMERCIAL. THE LAND IMMEDIATELY SURROUNDING THE BRIDGE IS UNDEVELOPED DUE TO STEEP SLOPES ASSOCIATED WITH LULLS BROOK GORGE. A SMALL HYDROELECTRIC FACILITY IS LOCATED SOUTHEAST OF THE EXISTING BRIDGE.
UTILITY POLES WILL BE RELOCATED AS PART OF THE PROJECT.

VEGETATION:
VEGETATION ON EITHER SIDE OF THE STREAM IS PARTIALLY WOODED WITH SPECIES SUCH AS AMERICAN ELM, BOX ELDER AND STAGHORN SUMAC. OTHER SPECIES OBSERVED ARE BUSH HONEYSUCKLE, RASPBERRY AND TIGER LILLIES. NORTHEAST OF THE BRIDGE IS DOMINATED BY MATURE WHITE PINES. NORTHWEST AND SOUTHWEST OF THE EXISTING BRIDGE IS SIMILAR. THE STEEP ROCKY SLOPES CONSIST A MIX OF SEVERAL TREE SPECIES THAT INCLUDE WHITE PINE, RED OAK. BOX ELDER, AMERICAN ELM AND BASSWOOD. BUSH HONEYSUCKLE, BRAMBLES AND STAGHORN SUMAC ARE THE PRIMARY UNDERSTORY VEGETATION.

SOILS:
THE SOIL SURVEY IDENTIFIES TWO SOIL TYPES IN THE WORK AREA: SHELBURNE ON THE NORTH AND RUMNEY ON THE SOUTH. A DESCRIPTION OF THE SOIL TYPES IS INCLUDED IN THE PLAN SHEET TITLED "EXISTING CONDITIONS SITE PLAN".
SHELBURNE:
SHELBURNE FINE, SANDY LOAM IS A HIGHLY ERODIBILE SOIL.
RUMNEY:
RUMNEY FINE, SANDY LOAM IS NOT HIGHLY ERODIBILE

SEVEN SOIL BORINGS WERE TAKEN IN THE PROJECT AREA. ALL BORINGS INDICATED BEDROCK WITHIN THE TOP 3.3M OF THE SAMPLES. MATERIALS BETWEEN THE SURFACE AND THE BEDROCK WERE CLASSIFIED AS SILT, SAND, STONES, LOOSE AND/OR SOFT ROCK OR GRAVEL.

SENSITIVE RESOURCE AREAS:
NO THREATENED OR ENDANGERED SPECIES HAVE BEEN IDENTIFIED WITHIN THE PROJECT LIMITS AND ADVERSE EFFECTS TO HISTORIC OR ARCHAEOLOGICAL FEATURES WILL BE MITIGATED AS STATED IN THE MOA. LULLS BROOK IS AN IDENTIFIED RESOURCE. THERE ARE NO WETLANDS WITHIN THE VICINITY OF THE PROJECT.

PROXIMITY TO NATURAL OR MAN-MADE WATER FEATURES:
DISTURBANCE OF SOILS NEAR NATURAL OR MAN-MADE WATERWAYS CONSISTS OF THAT WHICH IS NECESSARY TO CONSTRUCT THE NEW STRUCTURE AND THE TEMPORARY DETOUR ROAWAY AND BRIDGE. TEMPORARY DISTURBANCES TO THE STREAM BANKS DURING CONSTRUCTION WILL BE STABILIZED WITH STONE FILL, TYPE II. STONE FILL WILL BE REMOVED UPON REMOVAL OF THE TEMPORARY ROADWAY AND BRIDGE.

TEMPORARY EROSION PREVENTION & SEDIMENT CONTROL

TEMPORARY EROSION PREVENTION MEASURES TO BE UTILIZED INCLUDE:
"PROJECT DEMARCATION FENCING," DENOTED -PDF- ON THE PLANS, 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, WILL BE UTILIZED ON ALL SLOPES STEEPER THAN 3:1 THAT ARE NOT LINED WITH STONE FILL. THESE SLOPES SHALL BE STABILIZED WITHIN 48 HOURS OF REACHING FINAL GRADE OR DURING INTERMITTENT PHASES OF CONSTRUCTION ACTIVITY UNLESS THE FORECAST OF RAINFALL DICTATES STABILIZATION SOONER.

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.

WHERE NECESSARY 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 DITCHES IS COMPLETE AND THE SURROUNDING AREA STABILIZED.

TEMPORARY MEASURES TO CONTROL SEDIMENT TRANSPORT INCLUDE:
SILT FENCE WILL BE INSTALLED 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 30 M (100'). 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 THE DROP INLET 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 EACH WORKDAY AND AFTER EACH RAINFALL EVENT 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 APPROVED AREA SUCH THAT THEY WILL NOT BE SUBJECT TO EROSION.

TEMPORARY SEDIMENT SETTLING BASINS MAY OR MAY NOT BE UTILIZED ON THIS PROJECT. IF A SEDIMENT SETTLING BASIN IS TO BE USED FOR DEWATERING A COFFERDAM, IT SHOULD BE SIZED BASED UPON THE FOLLOWING CRITERIA:
(SEE SEDIMENT SETTLING BASIN SIZING CRITERIA ON NEXT SHEET.)

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

PERMANENT EROSION CONTROL MEASURES

SEVERAL PERMANENT EROSION CONTROL MEASURES WILL BE UTILIZED:
STONE FILL, TYPE I WILL BE UTILIZED TO LINE THE DRAINAGE DITCH ON THE NORTH SIDE OF THE PROJECT. STONE FILL, TYPE II WILL BE UTILIZED AT THE OUTLET OF THE DRAINPIPE AT THE SOUTH END OF THE PROJECT.

GRASS, OR OTHER SUITABLE GROUND COVER WILL BE ESTABLISHED OUTSIDE OF THE ROADWAY LIMITS WHERE STONE LINING HAS NOT BEEN SPECIFIED. ALL 3:1 SLOPE SHALL BE SEEDED AND MULCHED PROMPTLY UPON ACHIEVING FINAL GRADE. SLOPES GREATER THAN 3:1 SHALL RECEIVE EROSION CONTROL MATTING.
AFTER PLACEMENT, GRUBBING MATERIAL SHALL BE STABILIZED WITH STRAW MATTING AND/OR SEED AND MULCH AS DIRECTED BY THE RESIDENT ENGINEER.

EROSION & SEDIMENT CONTROL GUIDELINES

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

IF THE CONTRACTOR WOULD LIKE TO IMPLEMENT ALTERNATE TEMPORARY EROSION CONTROL MEASURES, A PLAN SHALL BE SUBMITTED BY THE CONTRACTOR FOR APPROVAL BY THE AGENCY OF TRANSPORTATION.

THE CONTRACTOR SHALL 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. THE CONTRACTOR SHALL EMPLOY TEMPORARY STABILIZATION PRACTICES IN INCREMENTAL STAGES AS CONSTRUCTION PROCEEDS. THE CONTRACTOR WILL USE ADDITIONAL EROSION CONTROL MEASURES AS NECESSITATED BY THE SEQUENCE OF CONSTRUCTION AND AS DIRECTED BY THE ENGINEER. SEE SECTION 105.23 OF THE VERMONT AOT STANDARD SPECIFICATIONS FOR CONSTRUCTION, DATED 2001.

THE TYPE, SIZE, AND LOCATION OF ANY EROSION CONTROL DEVICES SHALL NOT BE CHANGED UNLESS PRIOR APPROVAL IS OBTAINED FROM THE ENGINEER. ANY APPROVED CHANGES SHALL BE NOTED ON THE EROSION CONTROL PLANS AND DISCUSSED IN THE WEEKLY REPORT.

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

PREVENTING INITIAL SOIL EROSION IS MUCH MORE EFFECTIVE THAN TREATING ERODED SEDIMENT. THE CONTRACTOR SHALL 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, OTHER TEMPORARY CONTROLS SHALL BE INSTALLED 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 SHALL BE ESTABLISHED WHEREVER POSSIBLE.

THE CONTRACTOR NEED ONLY CONTROL SEDIMENT-LADEN RUNOFF GENERATED BY THE PROJECT SITE. THE CONTRACTOR SHALL COLLECT AND ROUTE CLEAN OFFSITE RUNOFF AROUND OR THROUGH THE PROJECT SITE USING DIVERSION BERMS, DIVERSION CHANNELS, CULVERTS, AND/OR TEMPORARY PIPES.

CONSTRUCTION EQUIPMENT SHALL NOT BE OPERATED ON THE DOWN SLOPE SIDE OF PERIMETER CONTROL MEASURES.

CONSTRUCTION EQUIPMENT WILL NOT BE ALLOWED TO CROSS THE FLOWING STREAM OR DISTURB THE EXISTING STREAM BANKS UNLESS AUTHORIZED BY THE ENGINEER.

IN GENERAL, PRESERVE EXISTING VEGETATION, SHRUBS, AND TREES WHENEVER POSSIBLE.

SILT FENCE SHALL BE PLACED AT THE TOES OF ALL FILL SLOPES AND SHALL BE CONSTRUCTED SO THAT FLOWS CANNOT BYPASS THE ENDS, AREAS DIRECTLY BELOW (DOWNHILL) OF THE SILT FENCES MUST BE UNDISTURBED AND VEGETATED.

STRAW MATTING WILL BE INSTALLED AS SOON AS PRACTICAL ON ALL TEMPORARY DETOUR CUT AND FILL SLOPES AND PERMANENT CUT AND FILL SLOPES.

AS CONSTRUCTION PROGRESSES, IMPLEMENTATION OF ADDITIONAL EROSION CONTROL MEASURES MAY BE REQUIRED AS DEEMED NECESSARY BY THE ON-SITE COORDINATOR AND AS APPROVED BY THE RESIDENT ENGINEER.

THE PROJECT COMPLETION DATE HAS BEEN SET FOR OCTOBER 15TH TO ENSURE ALL FINAL EROSION CONTROL MEASURES FOR THE ESTABLISHMENT OF PERMANENT VEGETATION WILL TAKE PLACE DURING THE GROWING SEASON. THEREFORE WINTER STABILIZATION METHODS WILL NOT BE SHOWN ON THE PLANS OR DESCRIBED IN THE NARRATIVE.

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

PRIOR TO ANY CONSTRUCTION OR STAGING THE CONTRACTOR SHALL INSTALL STABILIZED CONSTRUCTION ENTRANCES LEADING TO STAGING AREAS AND THE PROJECT SITE TO PREVENT THE TRACKING OF SILTS AND SEDIMENTS OFFSITE. COARSE STONE FILL OVER FILTER FABRIC SHOULD BE UTILIZED WHERE AN ALREADY ESTABLISHED STABLE ENTRANCE DOES NOT EXIST. THE CRUSHED STONE PRODUCT USED FOR THE CONSTRUCTION OF THE STABILIZED ENTRANCES SHALL BE MONITORED FOR SEDIMENT ACCUMULATION AND REPLACED AS NECESSARY OR AS DIRECTED BY THE

PROJECT NAME:	U.S. 5 OVER LULLS BROOK		
PROJECT NUMBER:			
FILE NAME:	ZF204EC.XLS	PLOT DATE:	7/29/2004
PROJECT LEADER:	J. MIECZKOWSKI	DRAWN BY:	A. DUGON
DESIGNED BY:	A. DUGON/L. DOLPHIN	CHECKED	L. DOLPHIN
EROSION CONTROL NARRATIVE		SHEET	24B OF 86

EROSION CONTROL NARRATIVE

ENGINEER. STABILIZED CONSTRUCTION ENTRANCES SHALL ALSO BE ESTABLISHED AND MAINTAINED AT ALL OFFSITE WASTE AND BORROW AREAS. THE MINIMUM SIZE OF A STABILIZED CONSTRUCTION ENTRANCE SHALL BE 4 METERS WIDE BY 15 METERS LONG. ALL SURFACE WATER FLOWING TO OR DIVERTED TOWARDS A CONSTRUCTION ENTRANCE SHALL BE PIPED UNDER THE STONE. PIPES SHALL BE APPROPRIATELY SIZED FOR THE CONTRIBUTING AREA, HOWEVER, NO PIPES SMALLER THAN 150mm DIAMETER SHALL BE USED.

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

THE CONTRACTOR SHALL INSTALL PERIMETER SILT FENCE IN AREAS OF PROPOSED WORK AS SHOWN ON THE PLANS PRIOR TO GRUBBING AND FILLING ACTIVITIES. IN AREAS OF HIGH EXPOSURE IT MAY BE NECESSARY TO DOUBLE UP PROTECTION WITH ADDITIONAL SILT FENCING. IN AREAS OF EXPOSED LEDGE, STONE CHECK DAMS SHALL BE UTILIZED.

DURING GRUBBING OPERATIONS, STONE CHECK DAM BARRIERS SHALL BE INSTALLED AT ANY OBVIOUS CONCENTRATED FLOW DISCHARGE POINTS, OR AS DIRECTED BY THE RESIDENT ENGINEER.

AFTER GRUBBING OPERATIONS, ALL AREAS OF EXPOSED SOILS SHALL BE TEMPORARILY STABILIZED WITH SEEDING & MULCHING, EROSION MATTING, OR STRAW MATTING AS SOON AS PRACTICABLE AND BEFORE ANY PREDICTED RAINFALL EVENT. THESE TEMPORARY EROSION CONTROL MEASURES CAN BE PLACED IN ANY COMBINATION IN AREAS OF POTENTIAL EROSION AS DEEMED NECESSARY BY THE RESIDENT ENGINEER.

AFTER PERIMETER CONTROLS ARE IN PLACE, AND PRIOR TO GRADING OPERATIONS, THE CONTRACTOR SHALL CONSTRUCT TEMPORARY ONSITE SEDIMENT TRAPS WHERE NECESSARY OR AS DIRECTED BY THE ENGINEER. DISTURBED AREAS SHALL BE GRADED TO DRAIN TOWARDS SEDIMENT TRAP WHERE POSSIBLE.

ANY MATERIAL STOCKPILES, INCLUDING BUT NOT LIMITED TO, GRUBBING MATERIAL, SAND BORROW, EARTH BORROW, GRANULAR BORROW, TOPSOIL, AND ANY EXCAVATED WASTE PILES SHALL BE MULCHED AND SHALL ALSO HAVE SILT FENCE INSTALLED AROUND THE BASE OF THE STOCKPILE.

ANY OFF-SITE AREAS WHERE BORROW OR EXCAVATED MATERIALS WILL BE STOCKPILED AND ANY WASTE DISPOSAL AREAS WILL HAVE TWO INSTALLATIONS OF SILT FENCE, 600 mm APART AROUND THE BASE OF EACH STOCKPILE. SEEDING AND MULCHING SHALL BE PERFORMED IMMEDIATELY AFTER FINAL GRADING. REMOVAL OF THE SILT FENCES AROUND THE WASTE AREAS SHALL BE PERFORMED ONLY AFTER APPROVAL FROM THE RESIDENT ENGINEER IS OBTAINED.

INFORMATION REQUIRED BY THE CONTRACTOR

MUCH OF THE INFORMATION SHOWN ON THE EROSION CONTROL PLANS AND DESCRIBED IN THIS NARRATIVE IS GENERAL IN NATURE. MORE SITE SPECIFIC INFORMATION IS NOT YET AVAILABLE AS A CONTRACTOR HAS NOT YET BEEN SELECTED. THE FOLLOWING LIST OUTLINES THE SPECIFIC INFORMATION THAT IS NOT INCLUDED IN THE EROSION CONTROL PLANS AND DESCRIBED IN THIS NARRATIVE:

1. THE LOCATION OF ALL STABILIZED CONSTRUCTION ENTRANCES.
2. THE LOCATION OF STOCK PILES, STAGING AND DISPOSAL AREAS.
3. THE NAME, TITLE, QUALIFICATIONS, AND CONTACT INFORMATION FOR THE ON-SITE COORDINATOR
4. THE PROPOSED DATES ASSOCIATED WITH PROJECT MILESTONES INDICATED ON THE SEQUENCE CONSISTENT WITH THE PROJECT CPM SCHEDULE.
5. ANY PROPOSED MODIFICATIONS OR ADDITIONS REQUIRED TO THESE EROSION AND SEDIMENT CONTROL PLANS.

MAINTENANCE PLAN FOR EROSION AND SEDIMENT CONTROLS

THE FOLLOWING MAINTENANCE REQUIREMENTS WILL BE MET THROUGHOUT THE DURATION OF THE PROJECT:

1. AN ASSIGNED INDIVIDUAL WHO IS NOT PERMANENTLY ASSOCIATED WITH THE DAY-TO-DAY OPERATIONS OF THE PROJECT SHALL DO MONITORING OF THE EROSION CONTROL MEASURES. THE INSPECTOR WILL BE FAMILIAR WITH THE PLANS, EROSION AND SEDIMENT CONTROL PROCEDURES, AND ROAD AND BRIDGE CONSTRUCTION TECHNIQUES. SITE INSPECTIONS WILL BE PERFORMED AT LEAST ONCE EVERY SEVEN CALENDAR DAYS AND AFTER EACH RAIN EVENT OF MORE THAN 13mm (1/2") IN A TWENTY FOUR HOUR PERIOD.

2. A COPY OF THE MONITORING REPORT PREPARED BY THE SITE REVIEWER SHALL BE GIVEN TO THE RESIDENT ENGINEER AFTER EACH SITE VISIT. THE REPORT WILL BE A WRITTEN REPORT STATING THE DATE OF THE REVIEW, AND A DESCRIPTION OF THE EROSION AND SEDIMENT CONTROL MEASURES REVIEWED. ALSO INCLUDED WILL BE THE EFFECTIVENESS OF THE EROSION CONTROL MEASURE, ANY DEFICIENCIES AND CORRECTIVE ACTION TO BE UNDERTAKEN.

3. THE PLAN PREPARER WILL BE AVAILABLE FOR ON-SITE CONSULTATION WITH THE ENGINEER WITHIN TWENTY FOUR HOURS OF A REQUEST.

4. ALL SILT FENCES AND STONE CHECK DAMS WILL BE INSPECTED EACH SITE VISIT BY THE DESIGNATED INSPECTOR, AS DESCRIBED BELOW:

   A. THESE CONTROLS WILL BE MAINTAINED IN GOOD CONDITION, ANY SILT FENCE OR STONE CHECK DAMS THAT ARE INEFFECTIVE WILL BE REPAIRED OR REPLACED IMMEDIATELY.

   B. SEDIMENT DEPOSITS WILL BE REMOVED WHEN THEY REACH ONE-HALF THE HEIGHT OF THE SEDIMENT CONTROL DEVICE, OR SIGNIFICANT RAINFALL IS EXPECTED.

   C. ALL SEDIMENT REMOVED WILL BE DEPOSITED IN AN UPLAND PORTION OF THE PROJECT SITE OR DEPOSITED OFF-SITE IN THE DESIGNATED PROJECT WASTE SITE.

5. ALL SLOPES WILL BE CHECKED EACH SITE VISIT AND ANY ERODED AREAS WILL BE IMMEDIATELY REPAIRED. TEMPORARY STABILIZATION METHODS WILL BE USED AS NECESSARY OR AS DIRECTED BY THE ENGINEER UNTIL FINAL STABILIZATION MEASURES ARE IN PLACE.

6. BOTH TEMPORARY AND PERMANENT SEEDING AND MULCHING WILL BE CHECKED EACH SITE VISIT FOR VEGETATIVE GROWTH. ANY AREAS REQUIRING RE-VEGETATION WILL BE REPAIRED IMMEDIATELY.

7. DRAINAGE STRUCTURES WILL BE CLEANED AS NECESSARY TO REMOVE ANY SEDIMENT BUILDUP IN THE SUMP OR AT THE INLET OF THE STRUCTURE.

   A. ANY INLET CONTROL FOUND TO BE INEFFECTIVE WILL BE REPLACED AS NECESSARY AND WILL BE DONE IMMEDIATELY.

   B. ALL SEDIMENTS REMOVED WILL BE DEPOSITED IN AN UPLAND PORTION OF THE PROJECT SITE OR DEPOSITED OFF-SITE IN THE DESIGNATED PROJECT WASTE SITE.

8. TEMPORARY CONSTRUCTION ACCESSES WILL BE MONITORED EACH SITE VISIT.

9. ALL TEMPORARY EROSION CONTROL DEVICES WILL STAY IN PLACE UNTIL FINAL GRASS GROWTH HAS BEEN ESTABLISHED AND COMPLETE STABILIZATION OF THE AREA HAS OCCURRED.

10. ONCE STABILIZATION HAS OCCURRED, ALL TEMPORARY EROSION CONTROL MEASURES WILL BE REMOVED AND ALL DISTURBED AREAS WILL BE STABILIZED WITH STRAW MATTING AND/OR SEED AND MULCH.

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

12. REMOVE ALL REMAINING TEMPORARY EROSION CONTROL MEASURES. REGRADE ANY AREAS IF NECESSARY. TREAT ALL REGRADED AREAS WITH STRAW MATTING OR SEED AND MULCH. ESTABLISH ANY FINAL EROSION CONTROL DEVICES AS DEEMED NECESSARY BY THE RESIDENT ENGINEER.

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 NAME:	U.S. 5 OVER LULLS BROOK		
PROJECT NUMBER:			
FILE NAME:	ZF204EC.XLS	PLOT DATE:	7/29/2004
PROJECT LEADER:	J. MIECZKOWSKI	DRAWN BY:	A. DUGON
DESIGNED BY:	A. DUGON/L. DOLPHIN	CHECKED	L. DOLPHIN
EROSION CONTROL NARRATIVE		SHEET 25	OF 86

LEGEND:

- SOIL BOUNDARY
- P / L — PROPERTY LINE
- FLOOD PLAIN — FLOOD PLAIN BOUNDARY
- RIPARIAN BUFFER — RIPARIAN BUFFER
- HIGHWAY RIGHT-OF-WAY
- TEST UNIT INDICATING HISTORIC MATERIAL
- (ID) SOIL TYPE
- VT-WN-XXX HISTORIC SITE

VTrans Metric

SOILS KEY AND DESCRIPTION

(ID) HITCHCOCK SILT LOAM

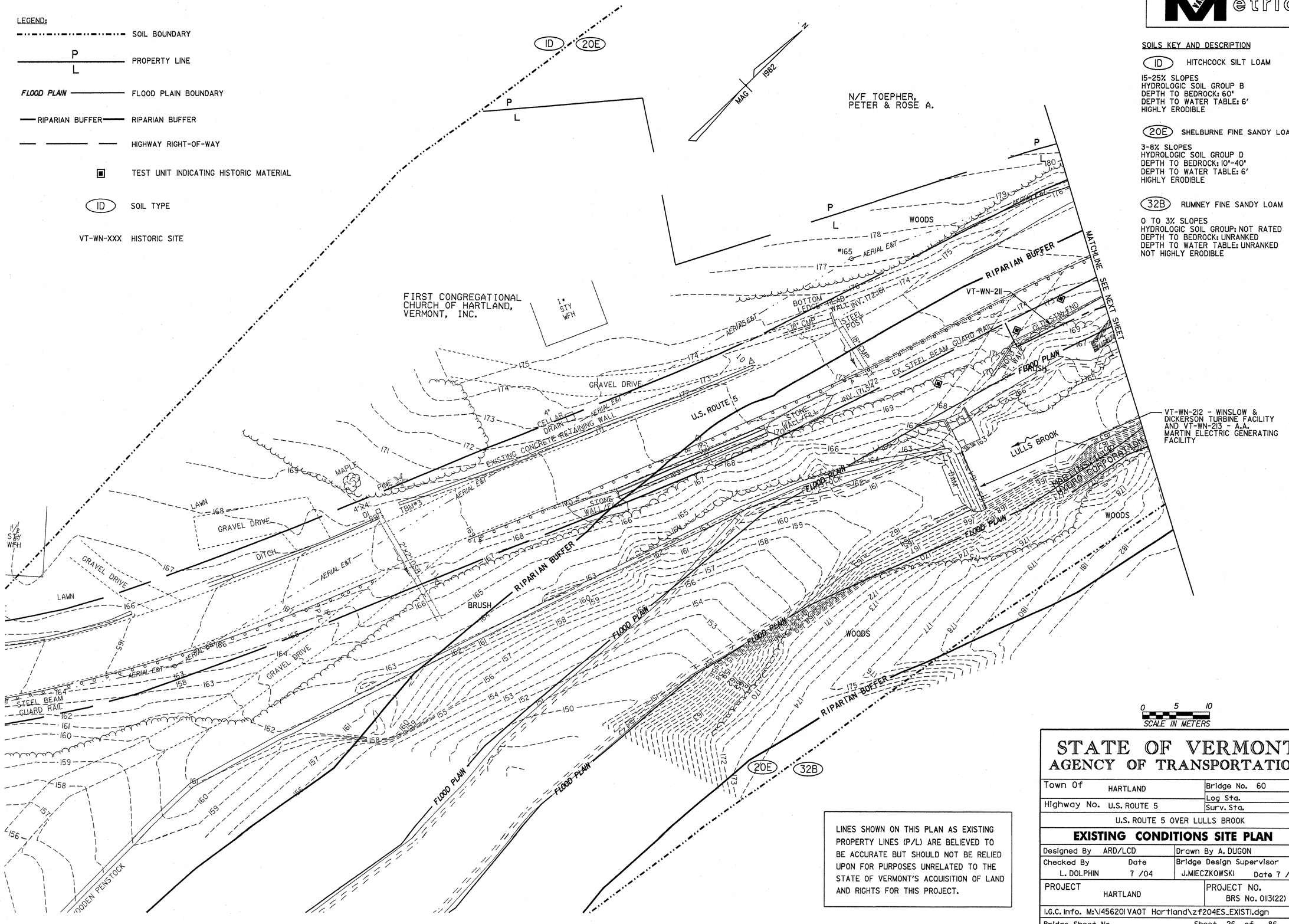
15-25% SLOPES
HYDROLOGIC SOIL GROUP B
DEPTH TO BEDROCK: 60"
DEPTH TO WATER TABLE: 6'
HIGHLY ERODIBLE

(20E) SHELBURNE FINE SANDY LOAM

3-8% SLOPES
HYDROLOGIC SOIL GROUP D
DEPTH TO BEDROCK: 10'-40"
DEPTH TO WATER TABLE: 6'
HIGHLY ERODIBLE

(32B) RUMNEY FINE SANDY LOAM

0 TO 3% SLOPES
HYDROLOGIC SOIL GROUP: NOT RATED
DEPTH TO BEDROCK: UNRANKED
DEPTH TO WATER TABLE: UNRANKED
NOT HIGHLY ERODIBLE



0 5 10
SCALE IN METERS

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

STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of HARTLAND	Bridge No. 60
Highway No. U.S. ROUTE 5	Log Sta. / Surv. Sta.
U.S. ROUTE 5 OVER LULLS BROOK	

EXISTING CONDITIONS SITE PLAN

Designed By ARD/LCD	Drawn By A. DUGON
Checked By L. DOLPHIN Date 7/04	Bridge Design Supervisor J.MIECZKOWSKI Date 7/04
PROJECT HARTLAND	PROJECT NO. BRS No. 0113(22)
I.G.C. Info. M:\145620I VAOT Hartland\zf204ES_EXISTI.dgn	
Bridge Sheet No.	Sheet 26 of 86

13-AUG-2004

LEGEND:

- SOIL BOUNDARY
- P/L PROPERTY LINE
- FLOOD PLAIN — FLOOD PLAIN BOUNDARY
- RIPARIAN BUFFER — RIPARIAN BUFFER
- HIGHWAY RIGHT-OF-WAY
- TEST UNIT INDICATING HISTORIC MATERIAL
- (ID) SOIL TYPE
- VT-WN-XXX HISTORIC SITE

SOILS KEY AND DESCRIPTION

(ID) HITCHCOCK SILT LOAM

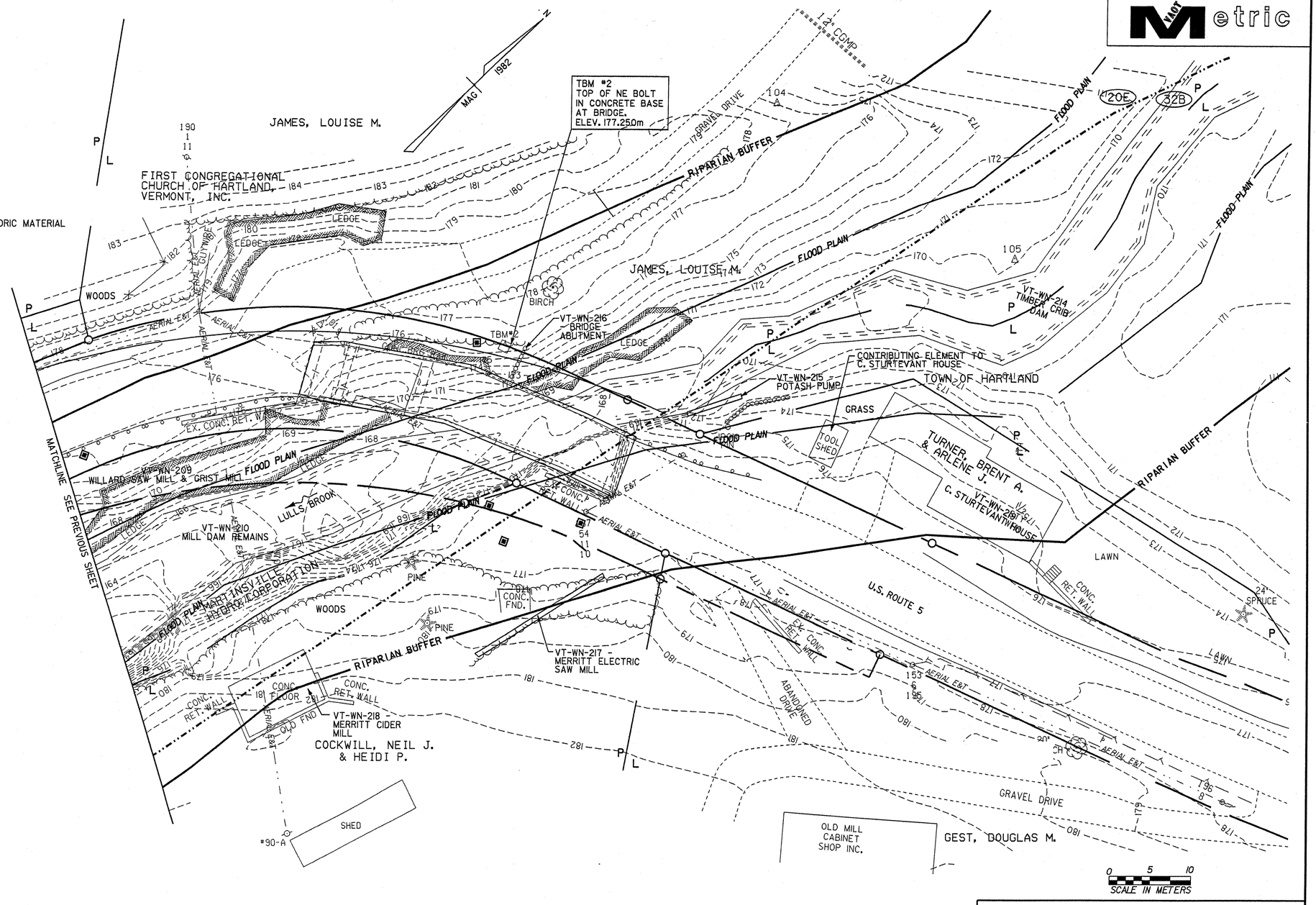
15-25% SLOPES
HYDROLOGIC SOIL GROUP B
DEPTH TO BEDROCK: 60"
DEPTH TO WATER TABLE: 6'
HIGHLY ERODIBLE

(20E) SHELBURNE FINE SANDY LOAM

3-8% SLOPES
HYDROLOGIC SOIL GROUP D
DEPTH TO BEDROCK: 10'-40'
DEPTH TO WATER TABLE: 6'
HIGHLY ERODIBLE

(32B) RUMNEY FINE SANDY LOAM

0 TO 3% SLOPES
HYDROLOGIC SOIL GROUP: NOT RATED
DEPTH TO BEDROCK: UNRANKED
DEPTH TO WATER TABLE: UNRANKED
NOT HIGHLY ERODIBLE



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

STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of HARTLAND	Bridge No. 60
	Log Sta.
Highway No. U.S. ROUTE 5	Surv. Sta.
U.S. ROUTE 5 OVER LULLS BROOK	

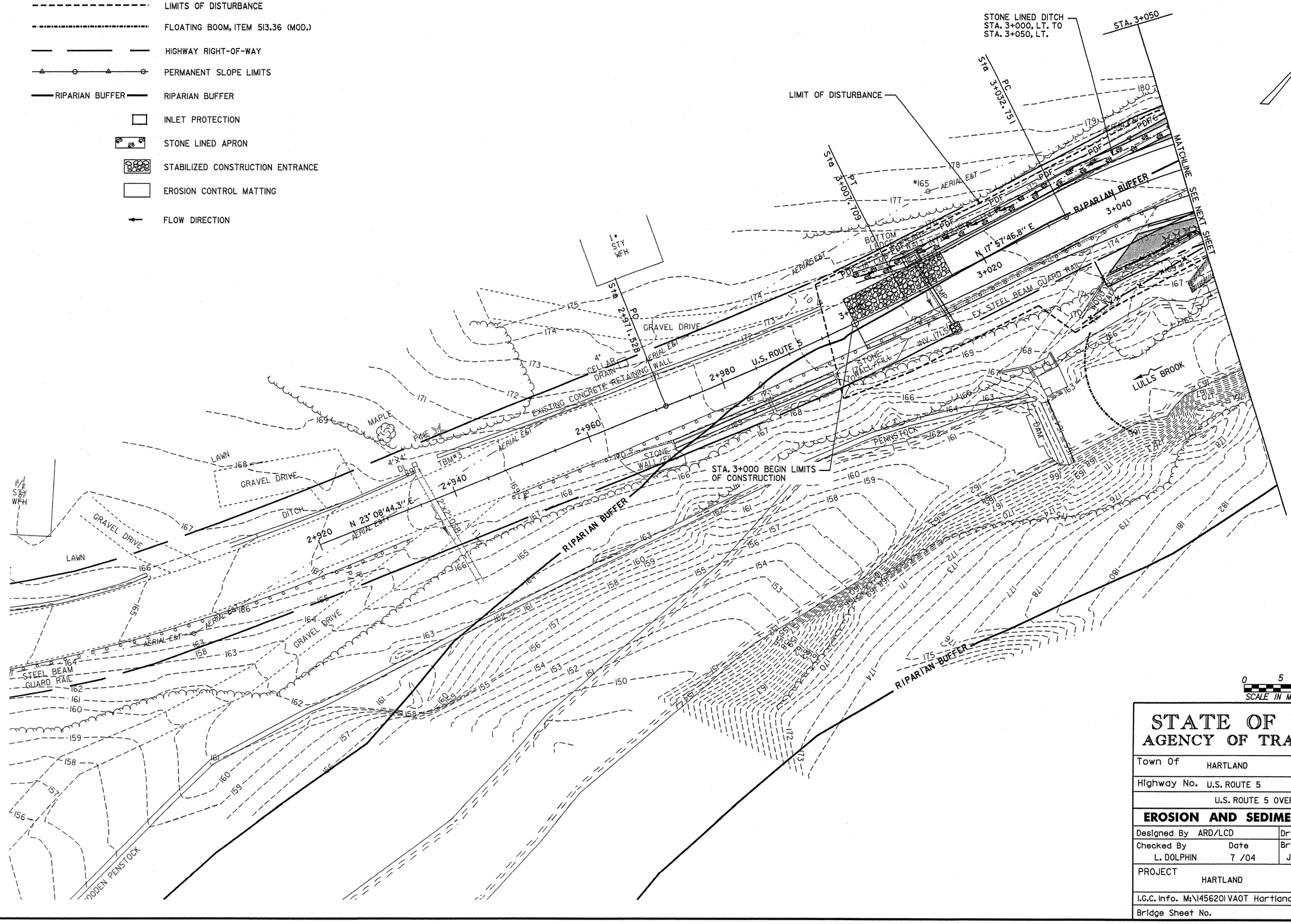
EXISTING CONDITIONS SITE PLAN

Designed By A. DUGON	Drawn By A. DUGON
Checked By L. DOLPHIN Date 7 /04	Bridge Design Supervisor J.MIECZKOWSKI Date 7 /04
PROJECT HARTLAND	PROJECT NO. BRS No. 0113(22)
I.G.C. Info. M:\145620\VAOT Hartland\zf204ES_EXIST2.dgn	
Bridge Sheet No.	Sheet 27 of 86

13-AUG-2004

LEGEND:

- PDF ——— PDF ——— PROJECT DEMARCATION FENCE, ITEM 620.70 (MOD.)
- ROCK CONTAINMENT SYSTEM, ITEM 620.11 (MOD.)
- SILT FENCE, ITEM 649.51
- LIMITS OF DISTURBANCE
- FLOATING BOOM, ITEM 513.36 (MOD.)
- HIGHWAY RIGHT-OF-WAY
- PERMANENT SLOPE LIMITS
- RIPARIAN BUFFER — RIPARIAN BUFFER
- INLET PROTECTION
- STONE LINED APRON
- STABILIZED CONSTRUCTION ENTRANCE
- EROSION CONTROL MATTING
- FLOW DIRECTION



STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of HARTLAND	Bridge No. 60
	Log Sta.
Highway No. U.S. ROUTE 5	Surv. Sta.

U.S. ROUTE 5 OVER LULLS BROOK

EROSION AND SEDIMENT CONTROL PLAN

Designed By ARD/LCD	Drawn By A. DUGON
Checked By L. DOLPHIN Date 7 /04	Bridge Design Supervisor J.MIECZKOWSKI Date 7 /04
PROJECT HARTLAND	PROJECT NO. BRS No. 0113(22)
I.G.C. Info. M:\145620\VAOT Hartland\zf204ES_1.dgn	
Bridge Sheet No.	Sheet 28 of 86

13-AUG-2004

VAOT Metric

TBM #2
TOP OF NE BOLT
IN CONCRETE BASE
AT BRIDGE.
ELEV. 177.250m

STONE LINED DITCH
STA. 3+050, LT. TO
STA. 3+105, LT.

STA. 3+050

MATCHLINE SEE PREVIOUS SHEET

U.S. ROUTE 5

RIPARIAN BUFFER

TEMPORARY DETOUR

STONE FILL, TYPE II WILL BE PLACED WITHIN LIMITS OF DISTURBED BANKS DURING INSTALLATION OF TEMPORARY DETOUR AND BRIDGE. COST TO BE INCIDENTAL TO ITEM 528.10, ONE WAY TEMPORARY BRIDGE.

TOOL SHED TO BE RELOCATED

NEW LOCATION OF TOOL SHED

TEMPORARY PARKING AREA

LULLS BROOK

EX. CONC. RET. WALL

CONC. RET. WALL

CONC. FLOOR

OLD FND

CONC. FND.

PINE

BIRCH

LEDGE

LAWN

GRAVEL DRIVE

SHED

OLD MILL CABINET SHOP INC.

N 69°58'47.9" E

PAVED GUTTER
STA. 3+120, RT. TO
STA. 3+150, RT.

INSTALL EROSION CONTROL MATTING ON BACK SLOPE OF PAVED GUTTER STA. 3+120, RT. TO 3+160, RT.

LIMIT OF DISTURBANCE (TYP.)

STA. 3+160 END LIMITS OF CONSTRUCTION

MAG 1982

SCALE IN METERS 0 5 10

LEGEND:

- PDF——PDF—— PROJECT DEMARCATION FENCE, ITEM 620.70 (MOD.)
- ROCK CONTAINMENT SYSTEM, ITEM 620.11 (MOD.)
- SILT FENCE, ITEM 649.51
- LIMITS OF DISTURBANCE
- HIGHWAY RIGHT-OF-WAY
- PERMANENT SLOPE LIMITS
- RIPARIAN BUFFER—— RIPARIAN BUFFER
- INLET PROTECTION
- STONE LINED APRON
- STABILIZED CONSTRUCTION ENTRANCE
- EROSION CONTROL MATTING
- FLOW DIRECTION

STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of HARTLAND	Bridge No. 60
Highway No. U.S. ROUTE 5	Log Sta. / Surv. Sta.
U.S. ROUTE 5 OVER LULLS BROOK	

EROSION AND SEDIMENT CONTROL PLAN

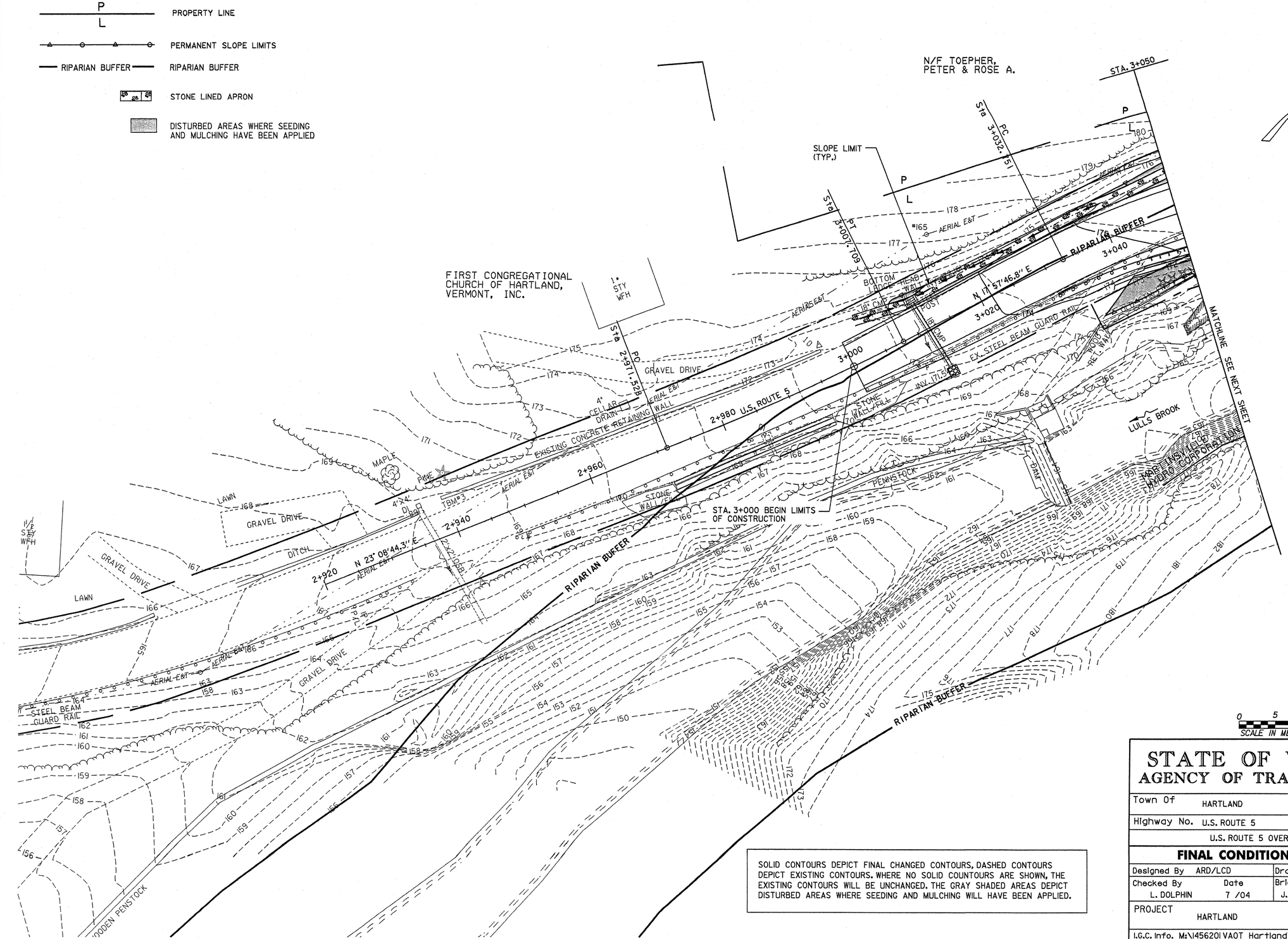
Designed By ARD/LCD	Drawn By A. DUGON
Checked By L. DOLPHIN Date 7/04	Bridge Design Supervisor J.MIECZKOWSKI Date 7/04
PROJECT HARTLAND	PROJECT NO. BRS No. 0113(22)
I.G.C. Info. M:\145620I VAOT Hartland\zf204ES_2.dgn	
Bridge Sheet No.	Sheet 29 of 86

13-AUG-2004

VAOT Metric

LEGEND:

- P/L — PROPERTY LINE
- PERMANENT SLOPE LIMITS
- RIPARIAN BUFFER — RIPARIAN BUFFER
- STONE LINED APRON
- DISTURBED AREAS WHERE SEEDING AND MULCHING HAVE BEEN APPLIED



SOLID CONTOURS DEPICT FINAL CHANGED CONTOURS, DASHED CONTOURS DEPICT EXISTING CONTOURS. WHERE NO SOLID COUNTOURS ARE SHOWN, THE EXISTING CONTOURS WILL BE UNCHANGED. THE GRAY SHADED AREAS DEPICT DISTURBED AREAS WHERE SEEDING AND MULCHING WILL HAVE BEEN APPLIED.

STATE OF VERMONT
AGENCY OF TRANSPORTATION

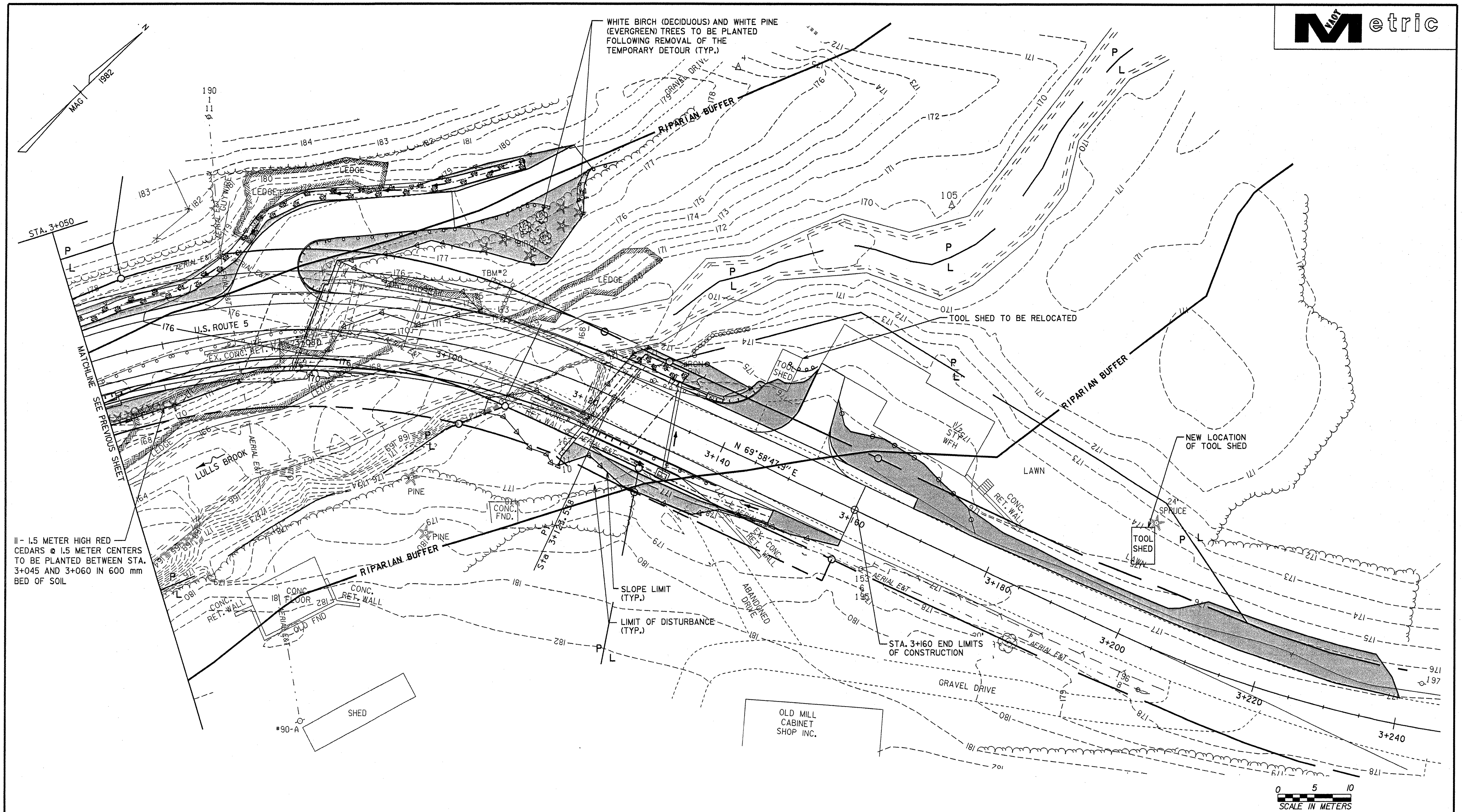
Town Of HARTLAND	Bridge No. 60
	Log Sta.
Highway No. U.S. ROUTE 5	Surv. Sta.

U.S. ROUTE 5 OVER LULLS BROOK

FINAL CONDITIONS SITE PLAN

Designed By ARD/LCD	Drawn By A. DUGON
Checked By L. DOLPHIN Date 7 /04	Bridge Design Supervisor J.MIECZKOWSKI Date 7 /04
PROJECT HARTLAND	PROJECT NO. BRS No. 0113(22)
I.G.C. Info. M:\145620\VAOT Hartland\zf204ES_ECFINAL1.dgn	
Bridge Sheet No.	Sheet 30 of 86

13-AUG-2004



SOLID CONTOURS DEPICT FINAL CHANGED CONTOURS, DASHED CONTOURS DEPICT EXISTING CONTOURS. WHERE NO SOLID COUNTOURS ARE SHOWN, THE EXISTING CONTOURS WILL BE UNCHANGED. THE GRAY SHADED AREAS DEPICT DISTURBED AREAS WHERE SEEDING AND MULCHING WILL HAVE BEEN APPLIED.

LEGEND:

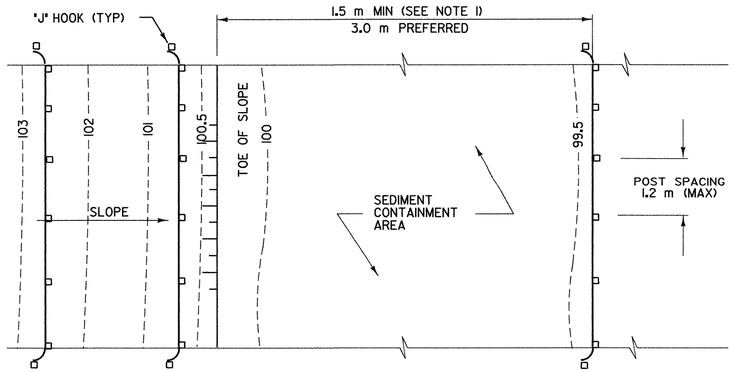
- P/L — PROPERTY LINE
- PERMANENT SLOPE LIMITS
- RIPARIAN BUFFER — RIPARIAN BUFFER
- STONE LINED APRON
- DISTURBED AREAS WHERE SEEDING AND MULCHING HAVE BEEN APPLIED

VAOT Metric

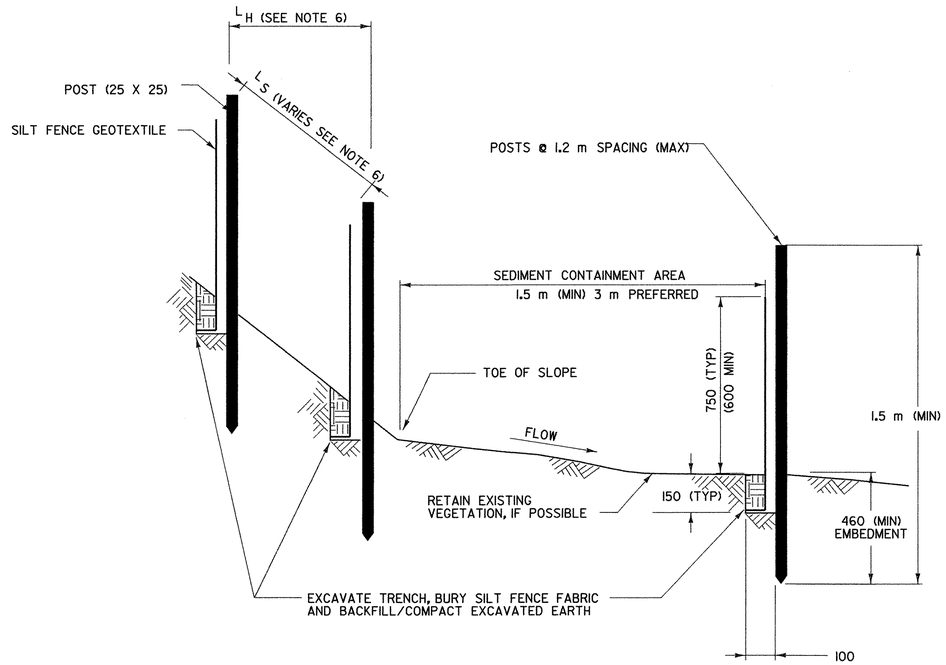
STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of HARTLAND	Bridge No. 60
Highway No. U.S. ROUTE 5	Log Sta. / Surv. Sta.
U.S. ROUTE 5 OVER LULLS BROOK	
FINAL CONDITIONS SITE PLAN	
Designed By ARD/LCD	Drawn By A. DUGON
Checked By L. DOLPHIN Date 7 /04	Bridge Design Supervisor J.MIECZKOWSKI Date 7 /04
PROJECT HARTLAND	PROJECT NO. BRS No. 0113(22)
I.G.C. Info. M:\1456201 VAOT Hartland\zf204ES_ECFINAL2.dgn	
Bridge Sheet No.	Sheet 31 of 86

13-AUG-2004



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.

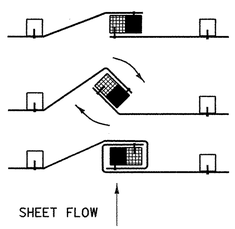
C. SILT FENCE SHALL NOT BE USED ACROSS CONCENTRATED FLOW.

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.

REVISIONS AND CORRECTIONS

MAY 18, 2004 N. GARBACIK

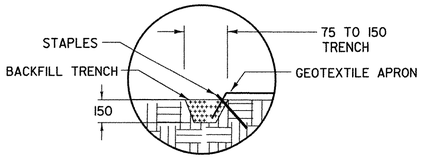
EROSION PREVENTION & SEDIMENT CONTROL DETAILS SILT FENCE

VERMONT AGENCY OF VAOT

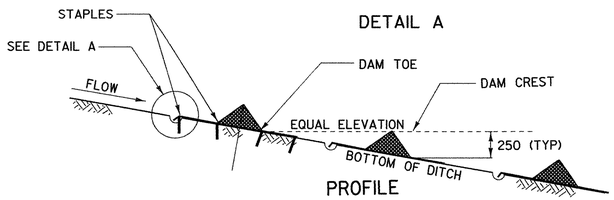
Hartland BRS 0113(22)
Sheet 32A of 86 Sheets

Metric DETAIL

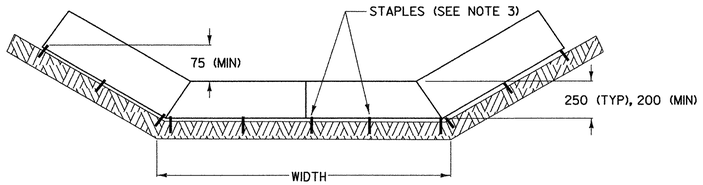
EPSC-1M



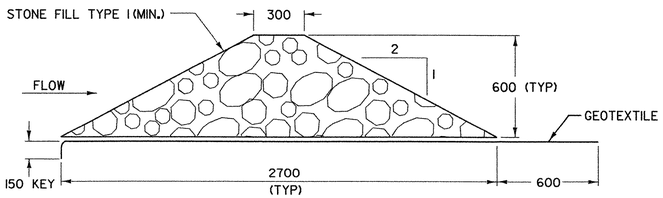
DETAIL A



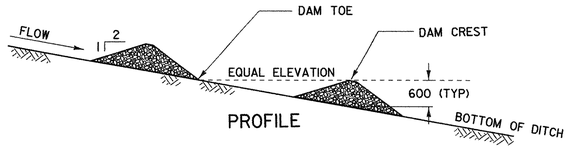
PROFILE



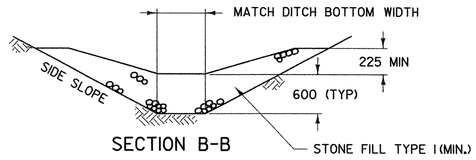
SECTION A-A



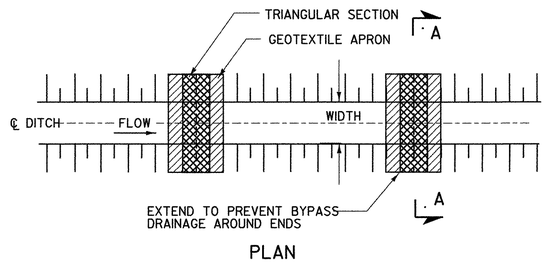
CROSS SECTION



PROFILE

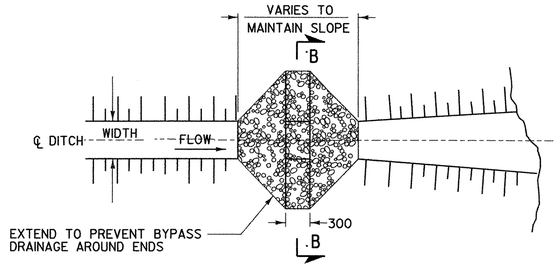


SECTION B-B



PLAN

CHECK DAM - TEMPORARY
(PREFABRICATED)



PLAN

CHECK DAM - TEMPORARY
(STONE)

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

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

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.

REVISIONS AND CORRECTIONS

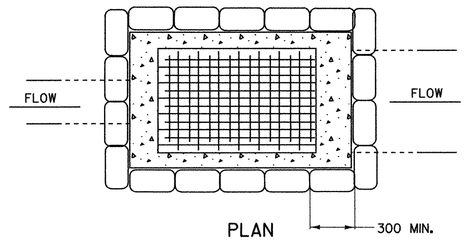
MAY 15, 2004 N. GARBACIK

EROSION PREVENTION & SEDIMENT CONTROL DETAILS CHECK DAMS

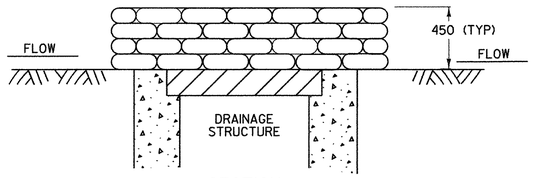
VERMONT AGENCY OF TRANSPORTATION

Hartland BRS 0113(22)
Sheet 32B of 86 Sheets

VAOT Metric DETAIL EPSC-2M

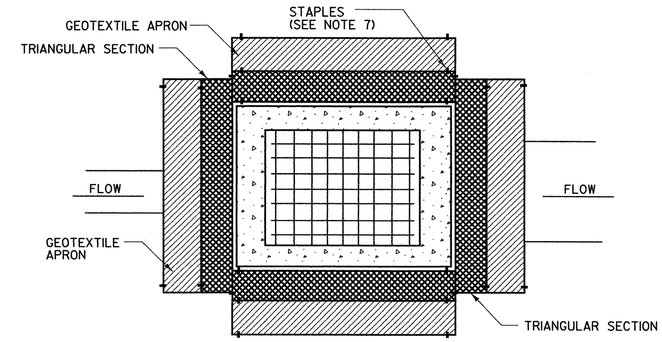


PLAN

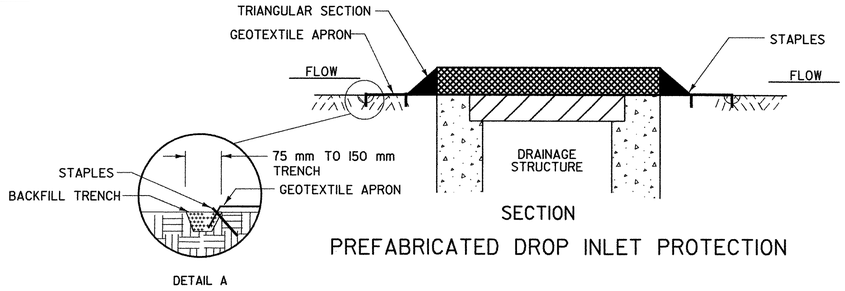


SECTION

GRAVEL BAG DROP INLET PROTECTION

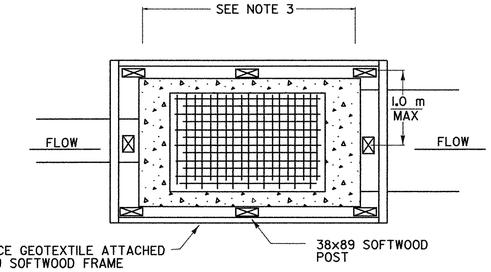


PLAN

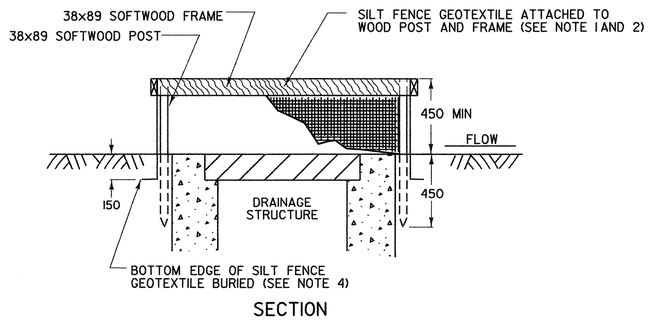


SECTION

PREFABRICATED DROP INLET PROTECTION



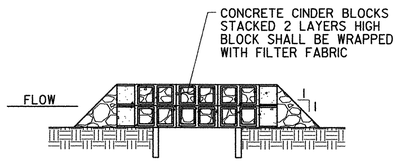
PLAN



SECTION

SILT FENCE DROP INLET PROTECTION

PLAN



SECTION

ROCK BARRIER DROP INLET PROTECTION TEMPORARY PAVED 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.

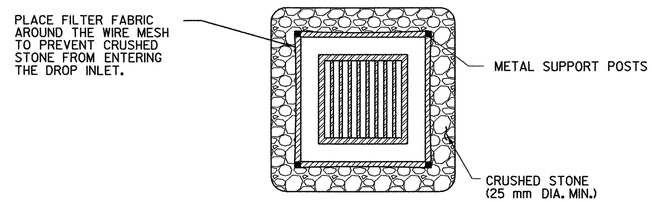
B. THESE EXAMPLES OF DROP INLET PROTECTION ARE NOT INTENDED FOR USE ON GRADES. ON GRADE THEY MAY CAUSE WATER TO BYPASS THE STRUCTURE, CREATING ADDITIONAL EROSION OR FLOODING.

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.

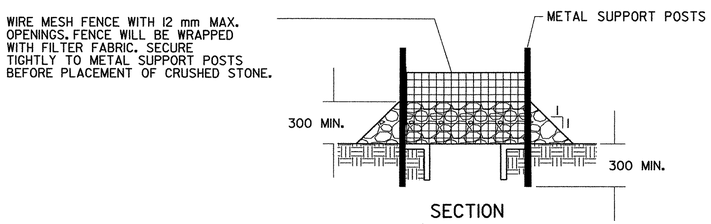
D. PREFABRICATED DROP INLET PROTECTION SPECIFICATIONS SHALL BE PROVIDED TO THE ENGINEER FOR APPROVAL PRIOR TO USE.

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.



PLAN



SECTION

ROCK BARRIER INLET PROTECTION TEMPORARY UNPAVED AREAS

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

REVISIONS AND CORRECTIONS

MAY 18, 2004 N. GARBACIK

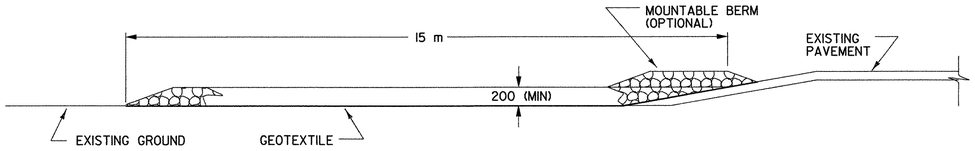
EROSION PREVENTION & SEDIMENT CONTROL DETAILS DROP INLET PROTECTION

VERMONT AGENCY OF

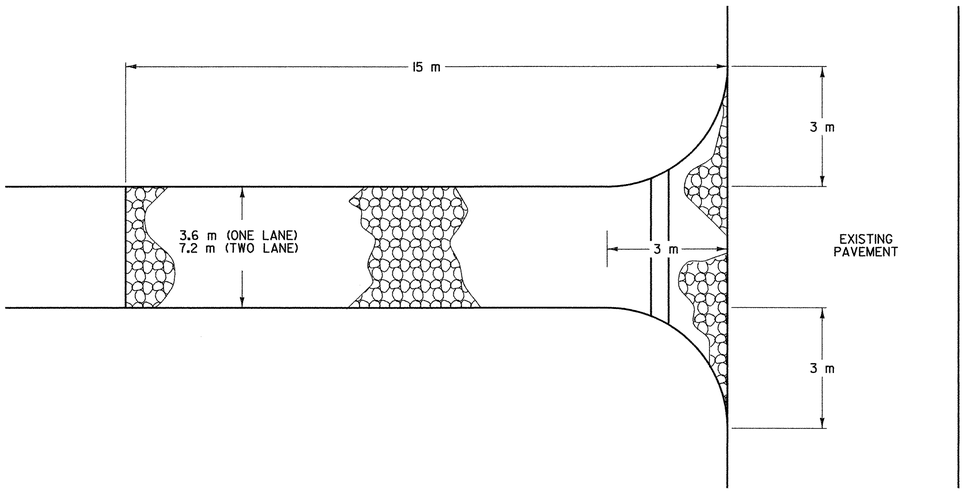
Hartland BRS 0113(22)
Sheet 32C of 86 Sheets

VAOT Metric DETAIL

EPSC-3M



TYPICAL CONSTRUCTION ENTRANCE PROFILE
(CUT AND DITCH SECTIONS)



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

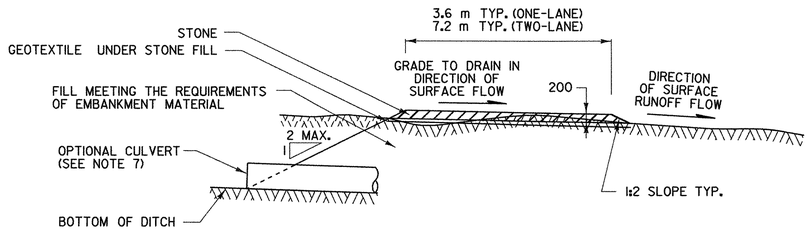
STABILIZED CONSTRUCTION ENTRANCE

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.

REVISIONS AND CORRECTIONS

MAY 18, 2004 N. GARBACIK

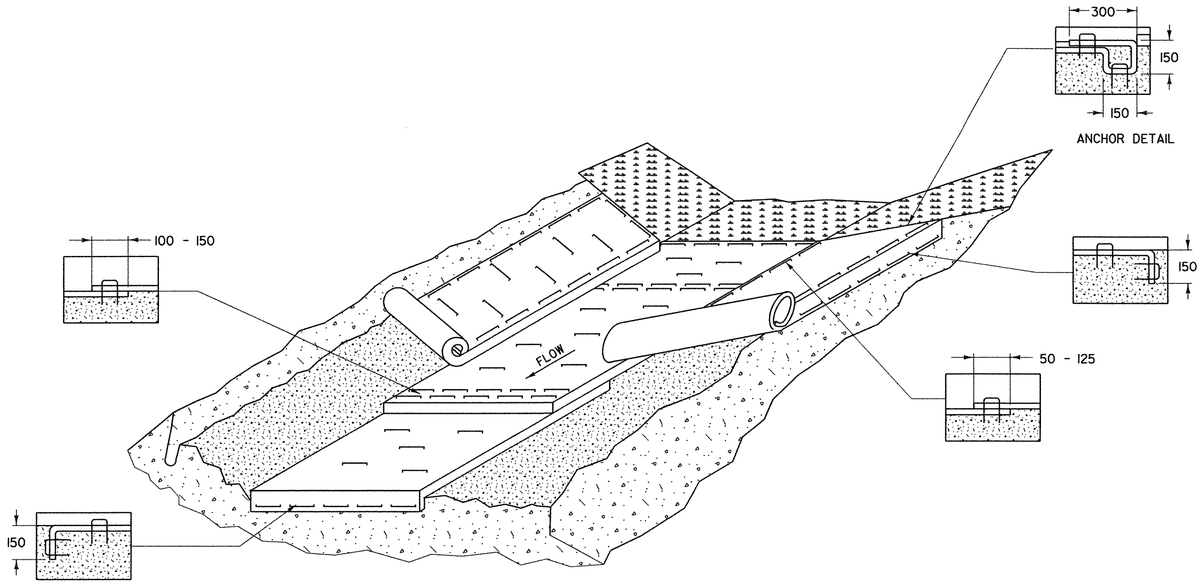
EROSION PREVENTION & SEDIMENT CONTROL DETAILS CONSTRUCTION ENTRANCE

VERMONT AGENCY OF TRANSPORTATION

Hartland BRS 0113(22)
Sheet 32D of 86 Sheets

Metric DETAIL

EPSC-4M



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.

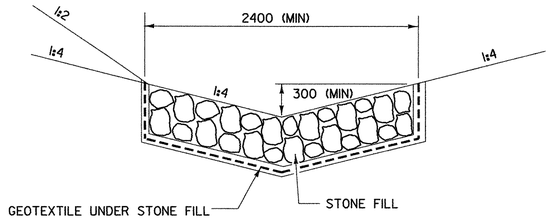
B. THE FOLLOWING CHARTS SHALL BE USED TO DETERMINE THE APPROPRIATE EROSION CONTROL MEASURE:

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

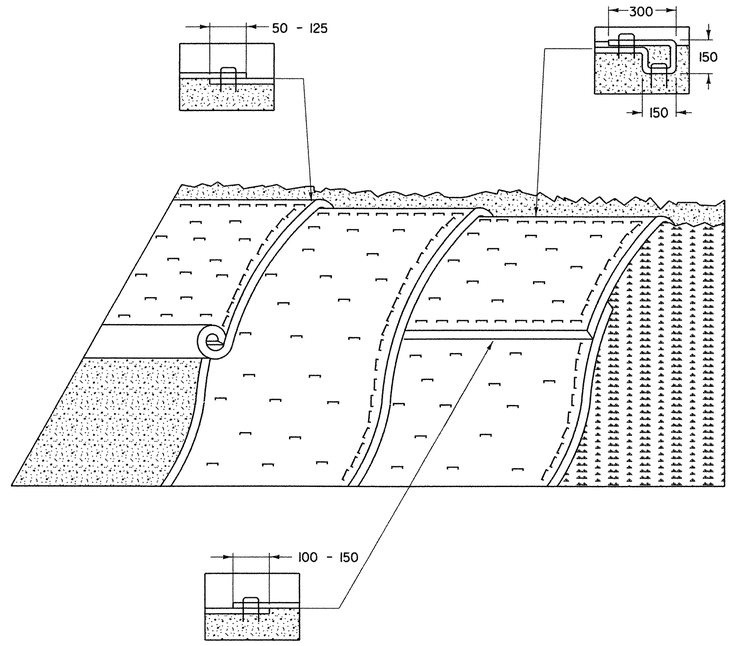
STONE FILL THICKNESS	
STONE FILL TYPE	THICKNESS
TYPE I	0.3 m
TYPE II	0.6 m

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.

REVISIONS AND CORRECTIONS

MAY 18, 2004 N. GARBACIK

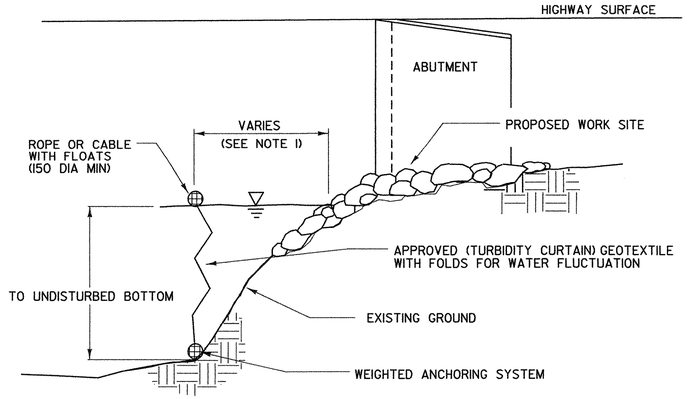
EROSION PREVENTION & SEDIMENT CONTROL DETAILS DITCH & SIDE SLOPE PROTECTION

VERMONT AGENCY OF VAOT

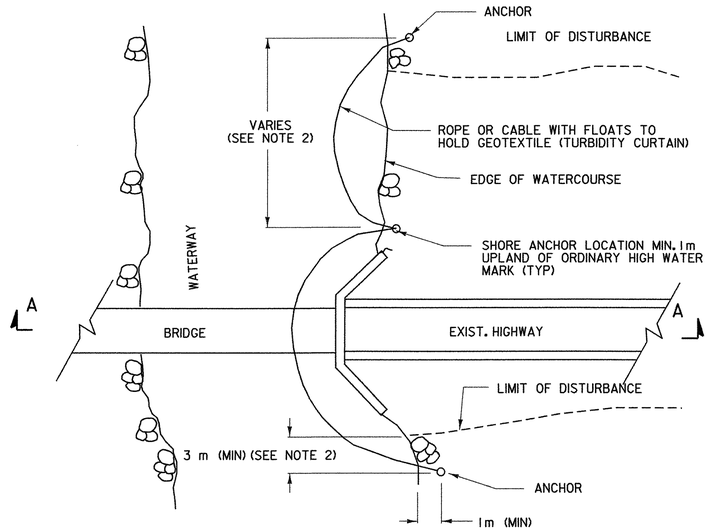
Hartland BRS 0113(22)
Sheet 32E of 86 Sheets

Metric DETAIL

EPSC-5M



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.

REVISIONS AND CORRECTIONS

MAY 18, 2004 N. GARBACIK

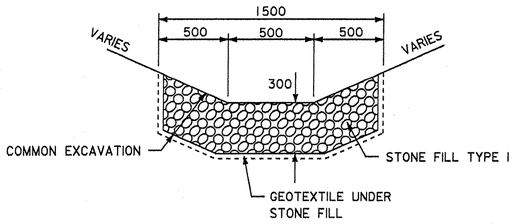
EROSION PREVENTION & SEDIMENT CONTROL DETAILS TURBIDITY CURTAIN

VERMONT AGENCY OF TRANSPORTATION

Hartland BRS 0113(22)
Sheet 32F of 86 Sheets

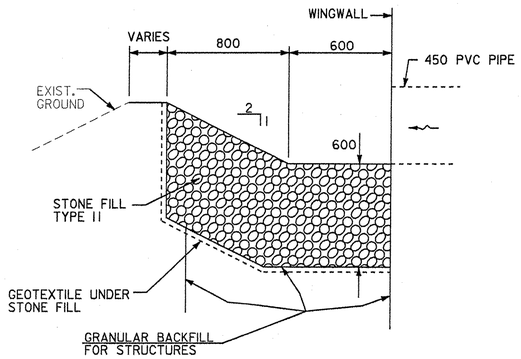
VAOT Metric DETAIL

EPSC-6M



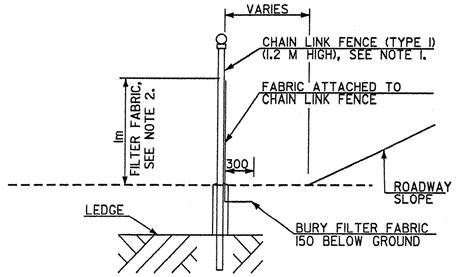
STONE FILLED DITCH DETAIL I

(STA. 3+003, LT. TO STA. 3+105, LT.)
NOT TO SCALE



STONE FILLED DITCH DETAIL II

(STA. 3+125, LT. TO STA. 3+132, LT.)
NOT TO SCALE



ROCK REMOVAL CONTAINMENT SYSTEM

NOT TO SCALE

NOTE:

1. SEE VAOT STD. DWG. F-2M FOR CHAIN LINK FENCE (TYPE I) DETAILS USED AS PART OF ROCK CONTAINMENT SYSTEM.

2. IN LOCATIONS WHERE THE EXISTING SOIL CONDITIONS PROHIBIT EMBEDMENT OF THE SILT FENCE, THE FILTER FABRIC SHALL BE ATTACHED TO THE CHAIN LINK FENCE AND SLOPE INTERCEPTOR DEVICES SHALL BE PLACED AND ANCHORED AT THE BASE OF THE FENCE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.

VAOT Metric

0 5 10
SCALE IN METERS

STATE OF VERMONT
AGENCY OF TRANSPORTATION

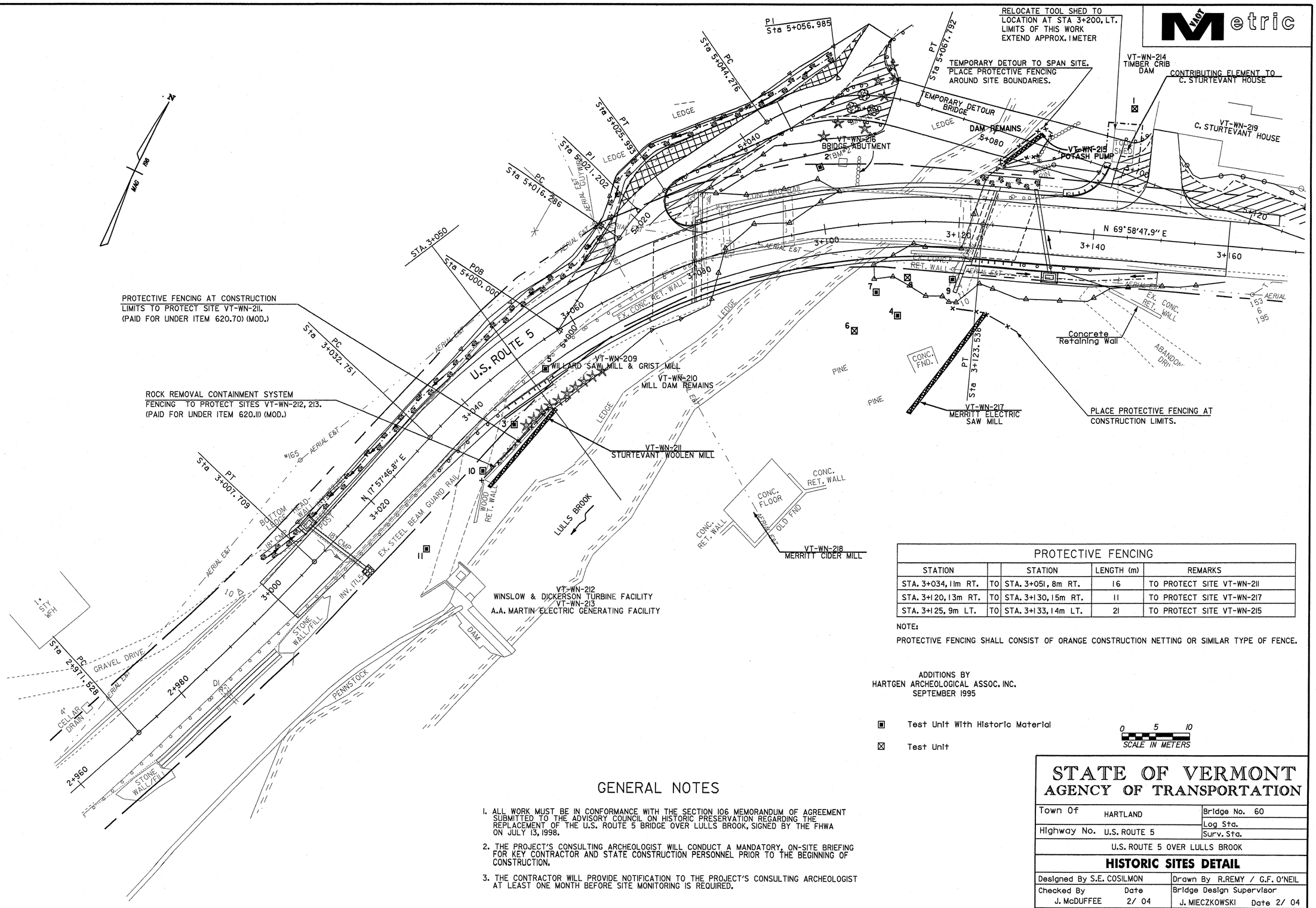
Town Of HARTLAND	Bridge No. 60
Highway No. U.S. ROUTE 5	Log Sta. / Surv. Sta.
U.S. ROUTE 5 OVER LULLS BROOK	

EROSION AND SEDIMENT CONTROL DETAILS

Designed By ARD/LCD	Drawn By A. DUGON
Checked By J. McDUFFEE Date 2 /04	Bridge Design Supervisor J.MIECZKOWSKI Date 2 /04
PROJECT HARTLAND	PROJECT NO. BRS No. 0113(22)
I.G.C. Info. M:\145620\VAOT Hartland\zf204ES_DET2.dgn	
Bridge Sheet No.	Sheet 32G of 86

13-AUG-2004

VAOT Metric



PROTECTIVE FENCING				
STATION		STATION	LENGTH (m)	REMARKS
STA. 3+034, 11m RT.	TO	STA. 3+051, 8m RT.	16	TO PROTECT SITE VT-WN-211
STA. 3+120, 13m RT.	TO	STA. 3+130, 15m RT.	11	TO PROTECT SITE VT-WN-217
STA. 3+125, 9m LT.	TO	STA. 3+133, 14m LT.	21	TO PROTECT SITE VT-WN-215

NOTE:
PROTECTIVE FENCING SHALL CONSIST OF ORANGE CONSTRUCTION NETTING OR SIMILAR TYPE OF FENCE.

ADDITIONS BY
HARTGEN ARCHEOLOGICAL ASSOC. INC.
SEPTEMBER 1995

▣ Test Unit With Historic Material

⊠ Test Unit

0 5 10
SCALE IN METERS

GENERAL NOTES

1. ALL WORK MUST BE IN CONFORMANCE WITH THE SECTION 106 MEMORANDUM OF AGREEMENT SUBMITTED TO THE ADVISORY COUNCIL ON HISTORIC PRESERVATION REGARDING THE REPLACEMENT OF THE U.S. ROUTE 5 BRIDGE OVER LULLS BROOK, SIGNED BY THE FHWA ON JULY 13, 1998.
2. THE PROJECT'S CONSULTING ARCHEOLOGIST WILL CONDUCT A MANDATORY, ON-SITE BRIEFING FOR KEY CONTRACTOR AND STATE CONSTRUCTION PERSONNEL PRIOR TO THE BEGINNING OF CONSTRUCTION.
3. THE CONTRACTOR WILL PROVIDE NOTIFICATION TO THE PROJECT'S CONSULTING ARCHEOLOGIST AT LEAST ONE MONTH BEFORE SITE MONITORING IS REQUIRED.

STATE OF VERMONT
AGENCY OF TRANSPORTATION

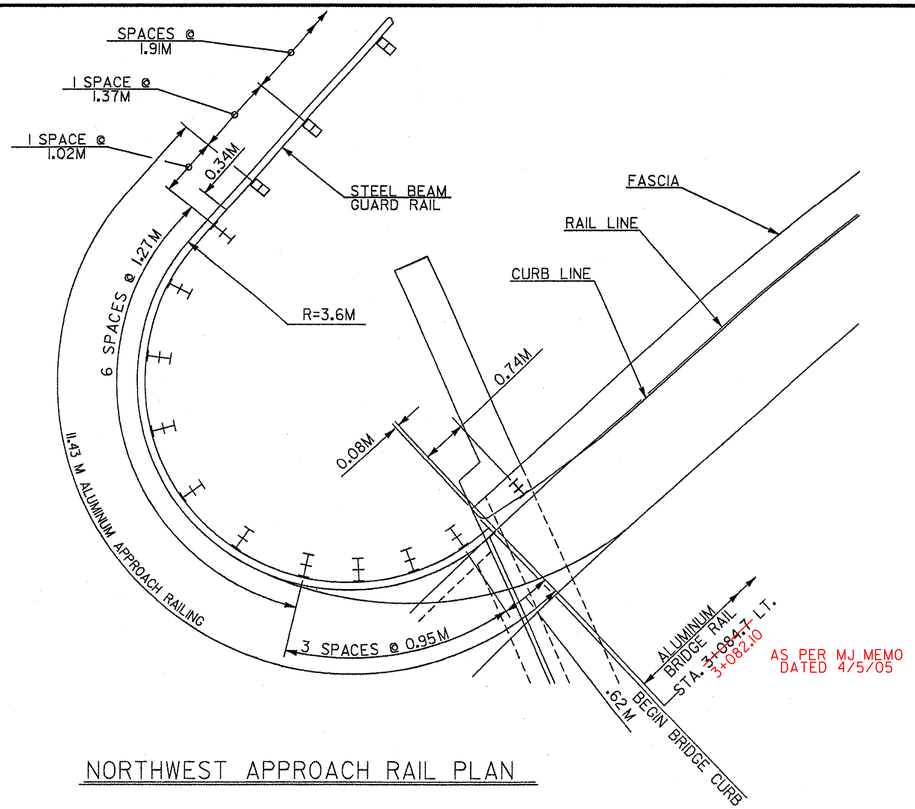
Town Of HARTLAND	Bridge No. 60
Highway No. U.S. ROUTE 5	Log Sta. / Surv. Sta.
U.S. ROUTE 5 OVER LULLS BROOK	

HISTORIC SITES DETAIL

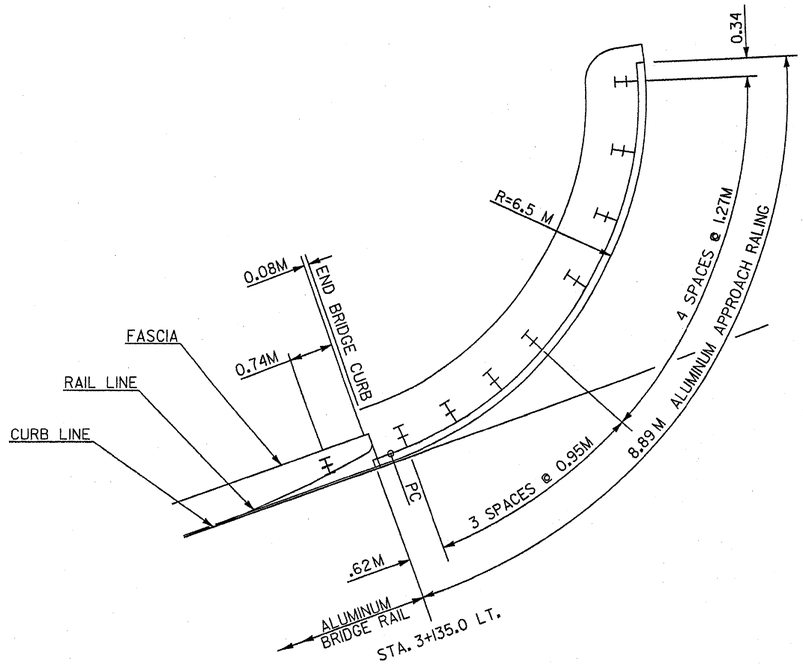
Designed By S.E. COSILMON	Drawn By R.REMY / G.F. O'NEIL
Checked By J. McDUFFEE Date 2/ 04	Bridge Design Supervisor J. MIECZKOWSKI Date 2/ 04
PROJECT HARTLAND	PROJECT NO. BRS No. 0113(22)
I.G.C. Info. M:\145620\VAOT Hartland\zf204bdr.dgn	
Bridge Sheet No.	Sheet 33 of 86

16-AUG-2004

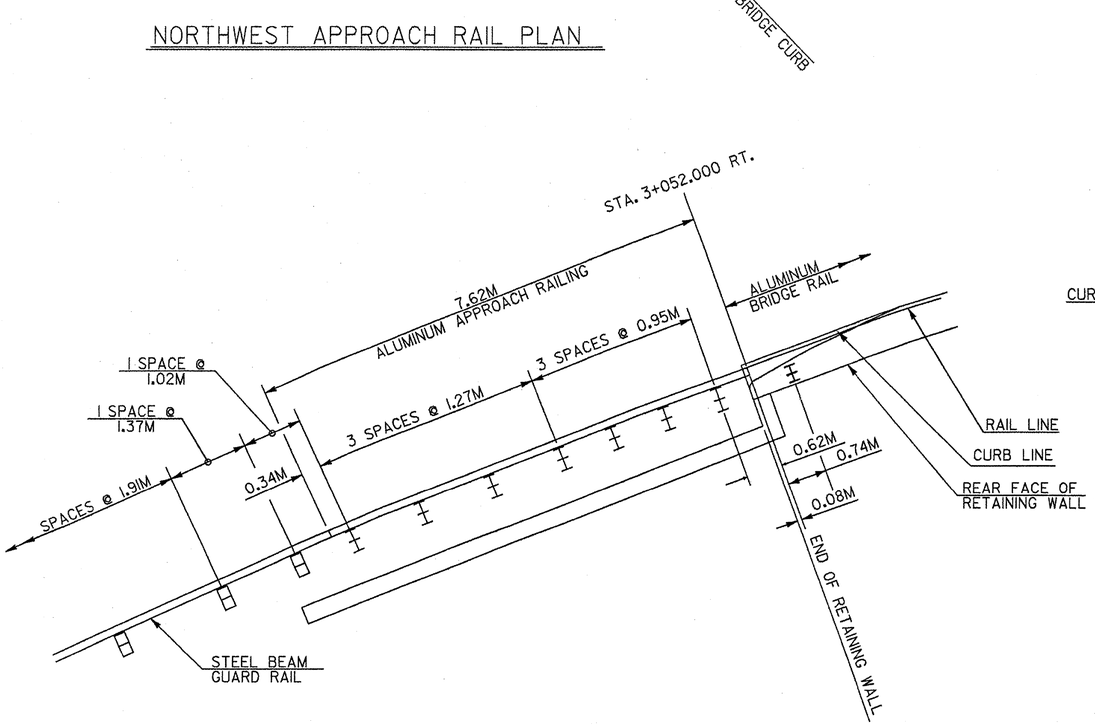
Metric



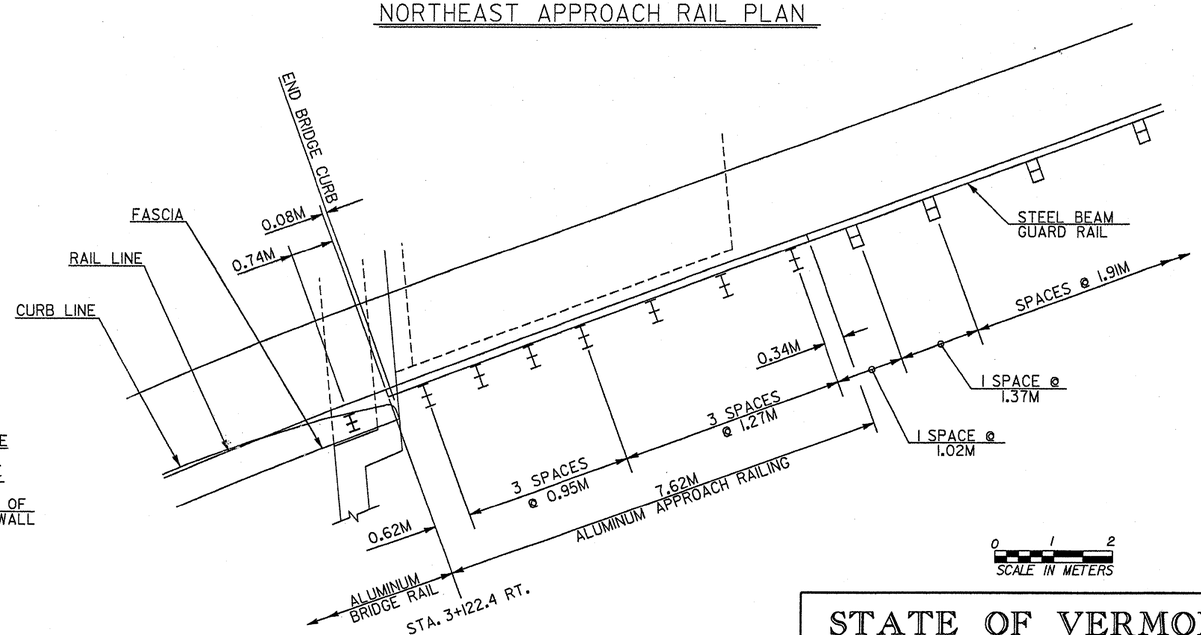
NORTHWEST APPROACH RAIL PLAN



NORTHEAST APPROACH RAIL PLAN



SOUTHWEST APPROACH RAIL PLAN



SOUTHEAST APPROACH RAIL PLAN

0 1 2
SCALE IN METERS

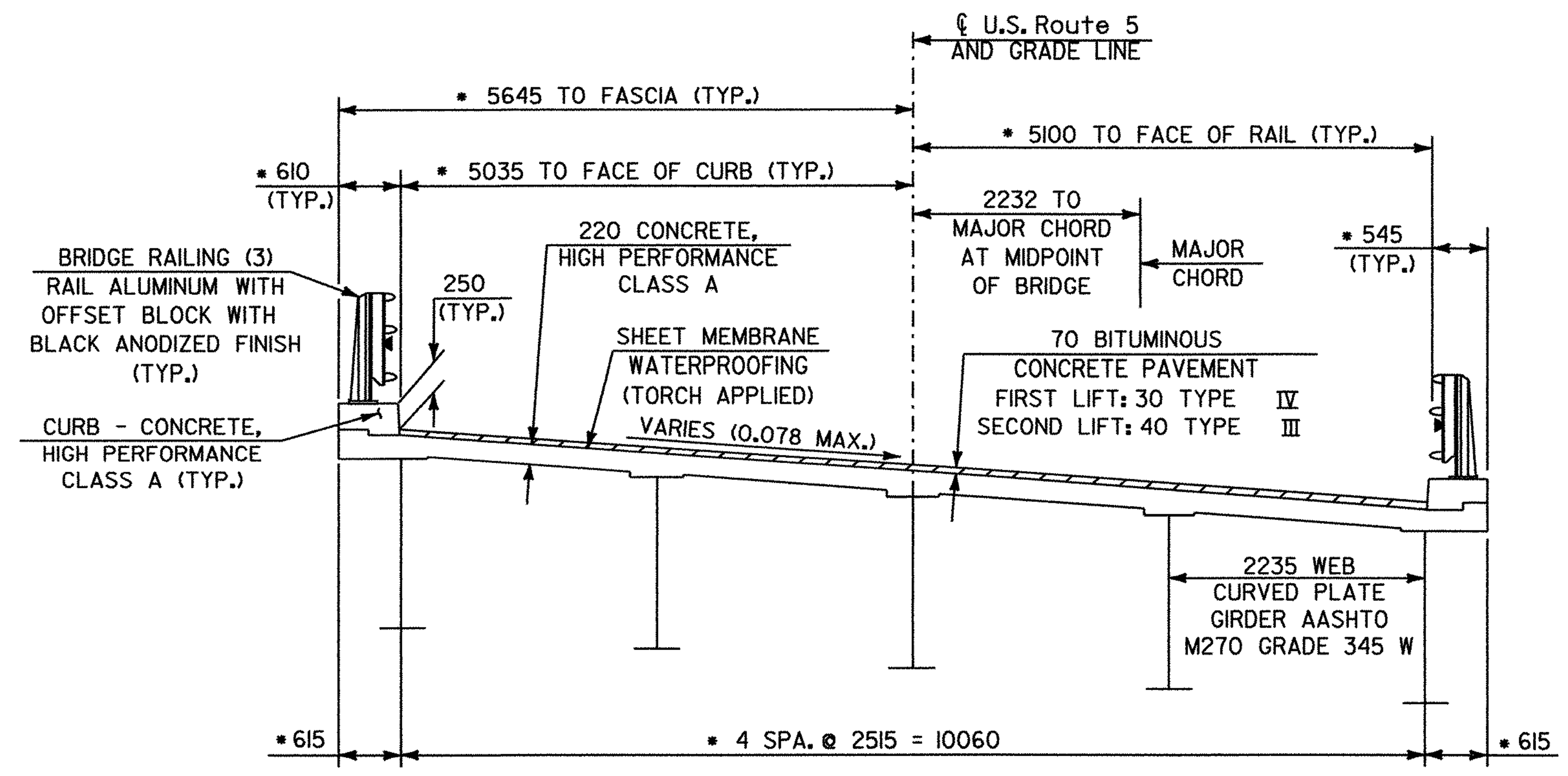
STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of HARTLAND	Bridge No. 60
	Log Sta.
Highway No. U.S. ROUTE 5	Surv. Sta.
U.S. ROUTE 5 OVER LULLS BROOK	

APPROACH RAIL DETAILS

Designed By S.E. COSILMON	Drawn By R. REMY / G.F.O'NEIL
Checked By Date J.R. McDUFFEE 2/ 04	Bridge Design Supervisor J. MIECZKOWSKI Date 2/ 04
PROJECT HARTLAND	PROJECT NO. BRS No. 0113(22)
I.G.C. Info. M:\145620I VAOT Hartland\zf204frm.dgn	
Bridge Sheet No.	Sheet 34 of 86

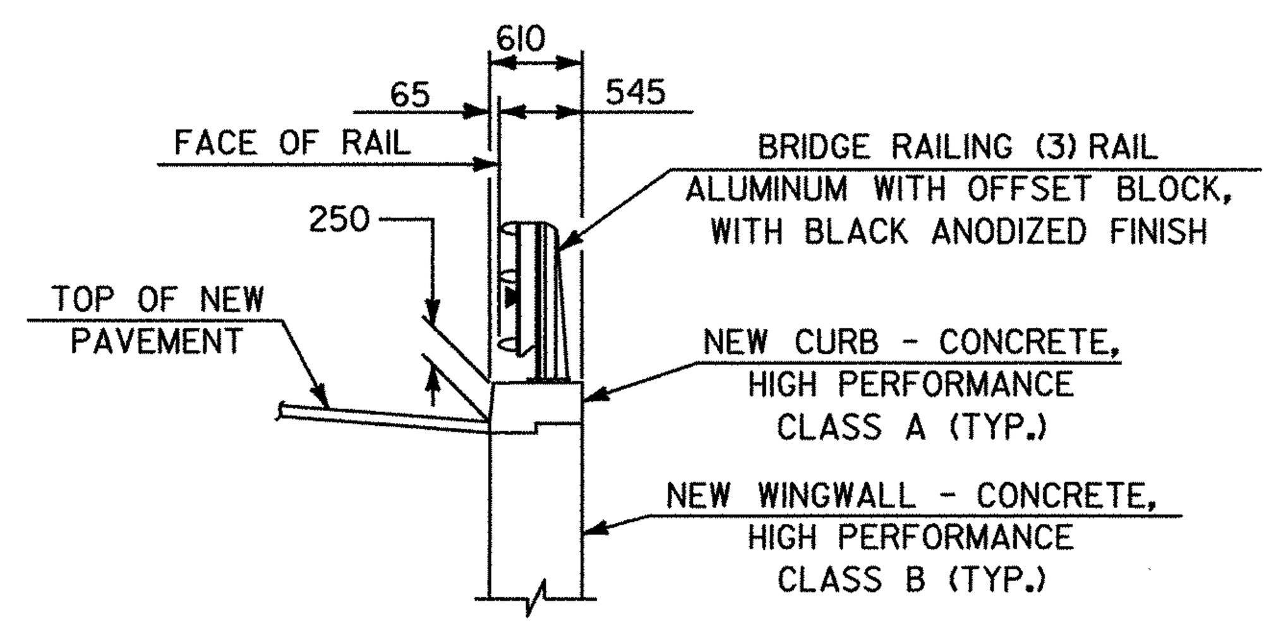
12-AUG-2004



• DIMENSIONS ARE RADIAL.

TYPICAL SECTION

0 1000 2000 4000
SCALE IN MILLIMETERS



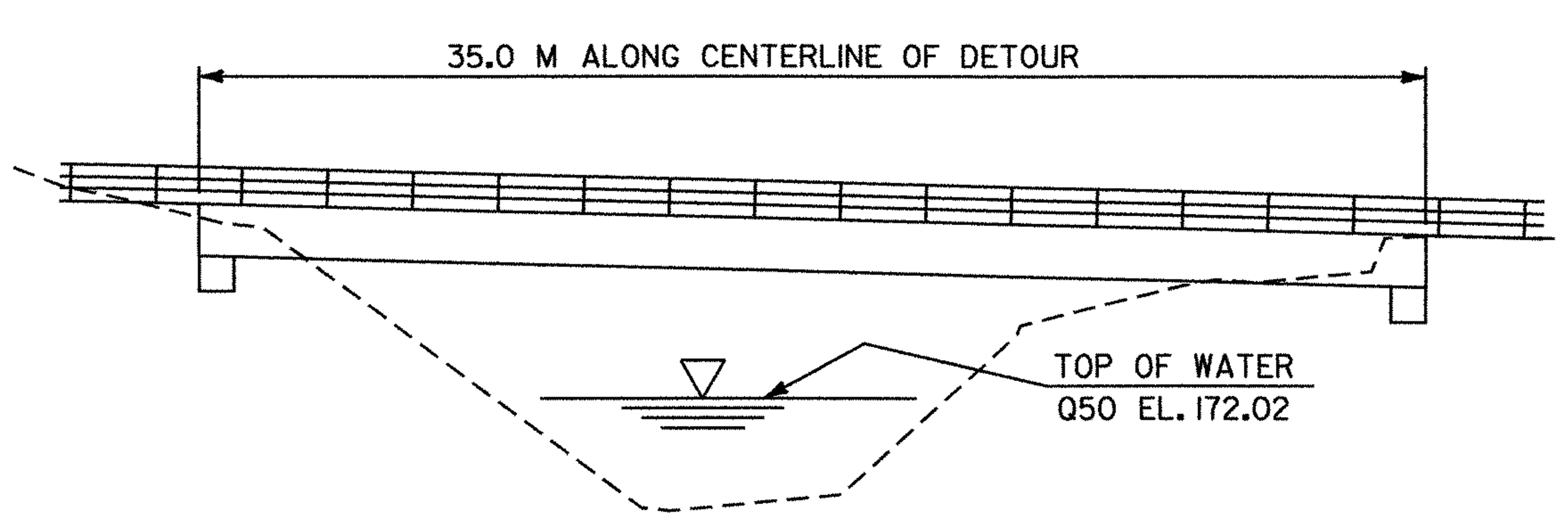
TYPICAL SECTION AT

NEW WINGWALL NO.'S 2 AND 3

0 1000 2000 4000
SCALE IN MILLIMETERS

INDEX OF BRIDGE SHEETS

TEMPORARY BRIDGE NOTE:
BEGIN ABUTMENT SHALL BE SET BEHIND ROCK LEDGE.
END ABUTMENT SHALL BE SET TO AVOID HISTORICALLY SENSITIVE AREAS (STONE WALL AND POTASH PUMP).



TEMPORARY BRIDGE INFORMATION
NOT TO SCALE

FINAL HYDRAULICS REPORT

HYDROLOGIC DATA

DRAINAGE AREA= 55.4 sq.km.
CHARACTER OF TERRAIN: HILLY
CHARACTER & TYPE OF STREAM: DEEP, GORGE-LIKE CHANNEL

NATURE OF STREAMBED: LEDGE

Q2.33= 24.5 cms — Q50= 95.8 cms
Q10= 53.8 cms — Q100= 117.8 cms
Q25= 73.1 cms — Q500= 184.3 cms

DATE OF FLOOD OF RECORD: NONE DOCUMENTED
WATER SURFACE ELEV.: N/A ESTIMATED DISCHARGE: N/A
NATURAL STREAM VELOCITY @ Q 25 - 4.2 mps
ICE CONDITIONS: MINOR DEBRIS: MINOR
DOES THE STREAM REACH MAXIMUM HIGH WATER ELEVATION RAPIDLY? NO
IS ORDINARY RISE RAPID? NO
IS STAGE AFFECTED BY UPSTREAM OR DOWNSTREAM CONDITIONS? YES
IF YES, DESCRIBE. BACK WATER PRODUCED BY A DAM IMPOUNDMENT 76.2 m DOWNSTREAM

WATERSHED STORAGE ______ HEADWATERS ______ UNIFORM THROUGHOUT WATERSHED ______
IMMEDIATELY ABOVE SITE ______

EXISTING STRUCTURE

STRUCTURE TYPE: SINGLE SPAN STEEL GIRDER W/TWO CONCRETE SLABS YEAR BUILT: 1926
CLEAR SPAN (NORMAL TO STREAM): 11.4 m
VERTICAL CLEARANCE ABOVE STREAMBED: 8.6 m
WATERWAY OF FULL OPENING: 80.3 SQUARE METERS
DISPOSITION OF STRUCTURE: REMOVE

TYPE OF MATERIAL UNDER SUBSTRUCTURE: LEDGE

WATER SURFACE ELEV. @		VELOCITY=
Q2.33=	169.79 m	3.10 mps
Q10=	170.48 m	3.87 mps
Q25=	170.84 m	4.21 mps
Q50=	171.22 m	4.52 mps
Q100=	171.55 m	4.78 mps

LONG TERM STREAM BED CHANGES: NONE NOTED

IS THE ROADWAY OVERTOPPED BELOW THE Q100? NO FREQUENCY: ——
RELIEF ELEVATION: —— DISCHARGE OVER ROAD @ Q100: ——

UPSTREAM STRUCTURE: TOWN: HARTLAND DISTANCE: 2134.00 m
HIGHWAY NO.: VT RTE. 12 STRUCTURE NO.: 2
STRUCTURE TYPE: SINGLE SPAN STEEL BEAM BRIDGE W/ CONCRETE DECK
CLEAR SPAN: 12.80 m CLEAR HEIGHT: 3.35 m
YEAR BUILT: 1931 FULL WATERWAY: 42.70 sm

DOWNSTREAM STRUCTURE: TOWN: HARTLAND DISTANCE: 396.00 M
HIGHWAY NO.: T.H. 46 STRUCTURE NO.: 20
STRUCTURE TYPE: SINGLE SPAN STEEL BEAM BRIDGE W/ CONCRETE DECK
CLEAR SPAN: 12.80 m CLEAR HEIGHT: 4.72 m
YEAR BUILT: 1956 FULL WATERWAY: UNKNOWN

PROPOSED STRUCTURE

STRUCTURE TYPE: SIMPLE SPAN MULTI-STEEL CURVED GIRDER

CLEAR SPAN (NORMAL TO STREAM): 16.5 m
VERTICAL CLEARANCE ABOVE STREAMBED: 5.7 m
WATERWAY OF FULL OPENING: 84.2 SQUARE METERS

WATER SURFACE ELEV. @		VELOCITY=
Q2.33=	169.79 m	3.10 mps
Q10=	170.47 m	= 3.87 mps
Q25=	170.84 m	= 4.21 mps
Q50=	171.20 m	= 4.52 mps
Q100=	171.66 m	= 4.78 mps

IS THE ROADWAY OVERTOPPED BELOW THE Q100? NO FREQUENCY: ——
RELIEF ELEVATION: —— DISCHARGE OVER ROAD @ Q100: ——

MINIMUM LOW ELEVATION OF SUPERSTRUCTURE: 174.1 m
VERTICAL CLEARANCE @ Q100 = 2.44 m

SCOUR: 0.0 m
REQUIRED CHANNEL PROTECTION: NONE

PERMIT INFORMATION

AVERAGE DAILY FLOW: 1.2 cms
ORDINARY LOW WATER: 0.6 cms DEPTH: 0.3 m
ORDINARY HIGH WATER: 14.2 cms DEPTH: 0.9 m

ADDITIONAL COMMENTS

DESIGN CRITERIA:
1. DESIGN LIVE LOAD AASHTO MS 22.5
2. DESIGN SPAN 43.90 m
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 N/A
5. STRUCTURAL STEEL AASHTO GRADE M270 GRADE 345W : TENSION 190 MPa*
6. REINFORCING STEEL GRADE 420
7. CONCRETE, HIGH PERFORMANCE CLASS A f'_c : 30 MPa
CONCRETE, HIGH PERFORMANCE CLASS B f'_c : 25 MPa

*WORKING STRESS METHOD IS USED TO DESIGN THE CURVED STEEL PLATE GIRDER. THE BRIDGE SHALL BE LOAD RATED USING THE LOAD FACTOR METHOD.

TRAFFIC MAINTENANCE:
1. IS TRAFFIC TO BE MAINTAINED? YES IF YES, ON EXISTING STRUCTURE NO OR ON TEMPORARY BRIDGE YES
2. TEMPORARY BRIDGE REQUIREMENTS: ONE OR TWO WAY ONE TRAFFIC CONTROL SIGNALS REQUIRED YES
MINIMUM CLEAR SPAN (NORMAL TO STREAM): 35 m VERTICAL CLEARANCE ABOVE STREAMBED: 5.85m (TO CLEAR HISTORIC STONEWALL)
WATERWAY OF FULL OPENING: 95.0 sq. m
ARE SIDEWALKS REQUIRED? NO IF SO, ON WHAT SIDE? ——
STRUCTURE TYPE:

TRAFFIC DATA

YEAR	ADT	DHV	% D	% T	ADTT
2001	4600	630	55	2	310
2021	6100	800	55	2	320

20 year ESAL for flexible pavement from 2001 to 2021 : 2,074,000
40 year ESAL for flexible pavement from 2001 to 2041 :
Design speed: 30 km/hr Functional Classification: Rural Local Road

LOAD RATING (TONS)

LOADING LEVELS (LOAD FACTOR)	TRUCK						
	M	MS	3S2	6 AXLE	3A. STR.	4A. STR.	5A. SEMI
INVENTORY A =	47	50					
POSTED A =	66	70	75		68	68	73
OPERATING A =		83	90	97	81	82	

$$RF = \frac{\phi M_N - 1.3\, M_{DL}}{A \times M_{LL+I}}$$

STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of HARTLAND	Bridge No. 60
Highway No. U.S. ROUTE 5	Log Sta.
	Surv. Sta.

U.S. ROUTE 5 OVER LULLS BROOK

PRELIMINARY INFORMATION SHEET

Designed By S. BAKI 12/98	Drawn By W. GAYNOR 12/98
Checked By S. BAKI Date 12/98	Bridge Design Supervisor J. MIECZKOWSKI Date 12/98
PROJECT HARTLAND	PROJECT NO. BRS No. 0113(22)

I.G.C. Info. C:\PWWorking\GShangraw\dms05022\z[illegible] 27-SEP-2004
Bridge Sheet No. BR100 Sheet 35 of 86

BRIDGE QUANTITY SHEET

Metric

	ITEM NO.	ITEM	UNIT	QUANTITY BREAKDOWN												TOTAL	FINAL
				SUPER STRCT.		ABUT. #1		ABUT. #2		APPR. SLAB#1		APPR. SLAB#2		CHAN.			
SEE NOTE 31 OF GENERAL NOTES *	203.27	UNCLASSIFIED CHANNEL EXCAVATION	m^3			360		240								600	
	203.32	GRANULAR BORROW	m^3			40										40	
	204.25	STRUCTURE EXCAVATION	m^3			590		450								1040	
	204.30	GRANULAR BACKFILL FOR STRUCTURES	m^3			315		130								445	
	404.65	EMULSIFIED ASPHALT	Kg	62						9		9				80	
	406.25	BITUMINOUS CONCRETE PAVEMENT (PG 58-28)	T	74						11		11				96	
	501.33	CONCRETE, HIGH PERFORMANCE CLASS A	m^3	141		5		2								148	
	501.34	CONCRETE, HIGH PERFORMANCE CLASS B	m^3			300		145		24		25				494	
	506.55	STRUCTURAL STEEL (PLATE GIRDER)	Kg	163000												163000	
	507.15	REINFORCING STEEL	Kg			13933		8087								22020	
	507.17	EPOXY COATED REINFORCING STEEL	Kg	22171				195		1750		1758				25874	
	508.15	SHEAR CONNECTORS (1128 - 22 DIA. X 175 LONG)	LS	1												1	
	513.25	STRUCTURAL PAINTING, SHOP APPLIED (18 METRIC TONS)	LS	1												1	
	513.40	SURFACE PREPARATION, SHOP	LS	1												1	
	514.10	WATER REPELLENT	L	40		105		50								195	
	516.10	BRIDGE EXPANSION JOINT (VERMONT JOINT)	m	12												12	
	519.20	SHEET MEMBRANE WATERPROOFING (TORCH APPLIED)	m^2	438						64		64				566	
	525.22	BRIDGE RAILING - 3 RAIL ALUMINUM (MODIFIED) (W/ OFFSET BLOCK, W/ BLACK ANODIZED FINISH)	m	124												124	
	528.10	ONE-WAY TEMPORARY BRIDGE	LS	1												1	
	529.10	REMOVAL OF BRIDGE PAVEMENT	m^2	295												295	
SEE NOTE 23 OF GENERAL NOTES *	529.15	REMOVAL OF STRUCTURE	EA	0.56		0.03		0.21						0.20		1	
	531.10	BEARING DEVICE ASSEMBLY (POT BEARINGS)	EA	10												10	
	621.74	ALUMINUM APPROACH RAILING (MODIFIED) (W/ BLACK ANODIZED FINISH)	M					20		18						38	
	625.10	SLEEVES FOR UTILITIES (530 MM)	M					1								1	
	631.16	TESTING EQUIPMENT - CONCRETE	LS	0.2		0.2		0.2		0.2		0.2				1	

BRIDGE(S) AT STATION(S) BEGIN STA. 3+080.020 END STA. 3+123.922

LOCATION(S) U.S. ROUTE 5 OVER LULLS BROOK

PREPARED BY: B. TYLER CHECKED BY: W. GAYNOR

SUPERVISOR: J. MIECZKOWSKI

PROJECT: HARTLAND PROJECT NO: BRS. NO. 0113(22)

BR 101 OF 135 SHEET NO: 36 OF 86

M:\145620I VAOT Hartland\struct\zff204qsh.dgn

REVISED: 08-12-04 WJG PLOT SCALE: 100:1 PLOT FILENAME: qsh.1

Metric

GENERAL NOTES

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

2. DESIGN IS FOR MS 22.5 LOADING, USING SERVICE LOAD METHOD.

3. WORKING STRESS METHOD IS USED TO DESIGN THE CURVED STEEL PLATE GIRDER. THE BRIDGE SHALL BE LOAD RATED USING THE LOAD FACTOR METHOD.

4. ALL STRUCTURAL STEEL SHALL BE DETAILED AND FABRICATED USING PROCEDURES AND TOLERANCES IN ACCORDANCE WITH SECTION 506.03 OF THE STANDARD SPECIFICATIONS.

5. AFTER SUPERSTRUCTURE STEEL HAS BEEN ERECTED, ELEVATIONS ALONG THE TOP OF BEAMS SHALL BE TAKEN AS DIRECTED BY THE ENGINEER FOR USE IN DETERMINING FINAL GRADE.

6. ANY HOLES IN FASCIA BEAMS OR FASCIA GIRDER WEBS NOT OTHERWISE FILLED SHALL BE FILLED WITH BUTTON HEAD OR HEX HEAD BOLTS. THESE BOLTS SHALL BE TIGHTENED IN ACCORDANCE WITH SECTION 506.19.

7. FASCIA OVERHANG BRACKETS SHALL BE SPACED AT A MAXIMUM OF 1.2 m, AND SHALL BE DESIGNED BY THE CONTRACTOR.

8. ALL FIELD CONNECTIONS SHALL BE MADE WITH THE FOLLOWING:
   A. UNPAINTED AREAS: 22 mm DIAMETER BOLTS, MEETING ASTM DESIGNATION A-325 M (AASHTO M164, TYPE III)
   B. PAINTED AREAS: 22 mm DIAMETER BOLTS, MEETING ASTM DESIGNATION A-325 M (AASHTO M164, TYPE I, GALVANIZED)
   HOLES SHALL BE 24 mm DIAMETER. CONNECTIONS NOT DESIGNATED SHALL BE DETAILED BY THE FABRICATOR.

9. ALL REINFORCING STEEL SHALL BE DETAILED AND FABRICATED USING PROCEDURES AND TOLERANCES IN ACCORDANCE WITH APPLICABLE PUBLICATIONS OF THE 'CONCRETE REINFORCING STEEL INSTITUTE'.

10. MINIMUM COVER FOR REINFORCING STEEL IN SUBSTRUCTURES SHALL BE 50 mm ALONG BACK FACES OF WALLS AGAINST EARTH AND 80 mm ELSEWHERE, UNLESS OTHERWISE DESIGNATED ON PLANS.

11. REINFORCING PLACEMENT TOLERANCES SHALL BE:
    SPACING +/- 25 mm
    CLEARANCE +/- 6 mm

12. CONCRETE FOR DECK AND CURBS SHALL BE 'CONCRETE, HIGH PERFORMANCE CLASS A'. ALL OTHER CONCRETE SHALL BE 'CONCRETE, HIGH PERFORMANCE CLASS B', UNLESS OTHERWISE DESIGNATED ON THE PLANS.

13. ALL EXPOSED EDGES OF CONCRETE SHALL BE CHAMFERED 25 X 25.

14. WATER REPELLENT SHALL BE APPLIED TO ALL EXPOSED CONCRETE SURFACES EXCEPT THE UNDERSIDE OF DECK BETWEEN DRIP BEADS.

15. ALL DIMENSIONS ARE HORIZONTAL OR VERTICAL AND ARE GIVEN AT 20° C.

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

17. THE KEY IN CONCRETE CONSTRUCTION JOINTS SHALL BE MONOLITHIC AND CONTINUOUS FOR THE FULL LENGTH OF THE JOINT.

18. DECK POURS ARE TO BE CONSTRUCTED IN ONE CONTINUOUS OPERATION WITH A MAXIMUM DURATION OF EIGHT HOURS. IF, DURING THE PLACEMENT, UNFORESEEN CIRCUMSTANCES MAKE PLACEMENT WITHIN THE EIGHT HOUR PERIOD IMPOSSIBLE, THE CONTRACTOR SHALL BE PREPARED TO PLACE A BULKHEAD, AS DIRECTED BY THE ENGINEER, TO LIMIT THE PLACEMENT TO EIGHT HOURS. IF THE PLACEMENT IS STOPPED AND A BULKHEAD IS PLACED, NEW CONCRETE SHALL NOT BE PLACED AGAINST THE VERTICAL CONSTRUCTION JOINT UNTIL THE PREVIOUSLY PLACED CONCRETE HAS BEEN IN PLACE A MINIMUM OF SEVENTY TWO HOURS.

19. SURFACES OF BRIDGE SEATS UNDER BEARING DEVICES SHALL BE LEVEL. OTHER BRIDGE SEAT AREAS SHALL BE SLOPED 12 PER 300. ABUTMENT SEATS SHALL BE SLOPED FULL WIDTH TOWARD CENTER SPAN. THE ENTIRE BRIDGE SEAT SURFACE SHALL BE SMOOTHED WITH EITHER A WOOD OR MAGNESIUM FLOAT FINISH.

20. ALL STRUCTURAL STEEL WITHIN 2.5 m OF ABUTMENT NO. 2 SHALL BE COATED WITH A PROTECTIVE PAINT SYSTEM AS SPECIFIED IN SUPPLEMENTAL SPECIFICATION 513. THE COLOR OF PAINT WILL BE BROWN, COLOR CHIP 20059.

21. PAYMENT FOR REMOVAL OF ALL EXISTING BRIDGE BITUMINOUS CONCRETE PAVEMENT SHALL BE MADE UNDER ITEM 529.10. THE MATERIAL SHALL BECOME THE PROPERTY OF THE CONTRACTOR AND SHALL BE DISPOSED OF PROPERLY AT AN OFF SITE LOCATION.

22. ITEM 529.15, REMOVAL OF STRUCTURE, SHALL INCLUDE THE REMOVAL OF THE SUPERSTRUCTURE; REMOVAL OF THE SOUTH PIER; REMOVAL OF THE INTERMEDIATE BENT; REMOVAL OF THE EXISTING RETAINING WALL AT THE SOUTH ABUTMENT TO 0.300 m BELOW THE SUBBASE LAYER; REMOVAL OF THE NORTH ABUTMENT LOCATED OUTSIDE THE STRUCTURE EXCAVATION. THE SOUTH PIER AND THE INTERMEDIATE PIER REPRESENTS 0.20 OF THE TOTAL REMOVAL OF STRUCTURE AND IS SHOWN IN THE CHANNEL COLUMN OF THE BRIDGE QUANTITY SHEET.

23. ITEM 204.25 STRUCTURE EXCAVATION, SHALL INCLUDE THE REMOVAL OF THE SOUTH ABUTMENT AND PART OF THE EXISTING SOUTHEAST RETAINING WALL, PART OF THE NORTH ABUTMENT AND PART OF THE EXISTING NORTHEAST RETAINING WALL LOCATED INSIDE THE STRUCTURE EXCAVATION.

24. TRAFFIC WILL BE MAINTAINED ON A TEMPORARY ONE WAY BRIDGE WITH TRAFFIC CONTROL SIGNALS

25. THE STRUCTURAL STEEL OF THE EXISTING BRIDGE ON THIS PROJECT IS PAINTED WITH A MATERIAL WHICH MAY CONTAIN LEAD. THE STRUCTURAL STEEL BECOMES THE PROPERTY OF THE CONTRACTOR AND THE CONTRACTOR MAY DISPOSE OF IT OR RETAIN IT FOR FUTURE USE. THE CONTRACTOR WILL INFORM THE ENGINEER OF HIS/HER PLANS FOR THE DISPOSAL OR RETAINAGE OF THE STRUCTURAL STEEL PRIOR TO ITS REMOVAL.

26. EXISTING BRIDGE PLANS (BUILT 1926) ARE AVAILABLE FOR THIS PROJECT AND CAN BE OBTAINED THROUGH THE VERMONT AGENCY OF TRANSPORTATION.

27. WHERE TOP OF SOUND LEDGE IS BELOW THE FOOTING ELEVATION, A SUB-FOOTING SHALL BE POURED SEPERATELY, UP TO THE BOTTOM OF THE FOOTING, USING 'CONCRETE, HIGH PERFORMANCE CLASS B'. THE SUB-FOOTING SHALL BE FOUNDED ON LEDGE WHICH HAS BEEN CLEANED OF ALL LOOSE ROCK AND OTHER DEBRIS. THE TOP OF THE SUB-FOOTING SHALL BE INTENTIONALLY ROUGHENED TO CREATE A BOND WITH THE FOOTING CONCRETE. THE OUTSIDE LIMITS OF THE SUB-FOOTING SHALL BE 300 mm OUTSIDE THE FOOTING.

28. WHERE LEDGE IS STEEPLY SLOPED, A 1200 X 1200 GRID PATTERN OF #25 DOWELS SHALL BE DRILLED INTO LEDGE UNDER FOOTING. THE DOWELS SHOULD HAVE 600 mm EMBEDMENT INTO LEDGE AND SHALL EXTEND 450 mm INTO FOOTING.

29. UPON COMPLETION OF THE STRUCTURE EXCAVATION, AND PRIOR TO THE PLACING OF THE CONCRETE FORMS, THE RESIDENT ENGINEER SHALL CONTACT THE SOILS AND FOUNDATIONS ENGINEER/ENGINEERING GEOLOGIST FROM THE VERMONT AGENCY OF TRANSPORTATION, TO INSPECT THE ROCK TO DETERMINE IF IT IS COMPETENT TO SUPPORT THE DESIGN BEARING PRESSURE SHOWN ON THE PLANS. THE GEOLOGIST SHALL BE ALLOWED 5 WORKING DAYS FROM NOTICE OF EXCAVATION TO MAKE HIS INSPECTION AND REPORT HIS DETERMINATION ON THE COMPETENCY OF THE ROCK.

30. UNCLASSIFIED CHANNEL EXCAVATION SHALL INCLUDE EITHER EARTH EXCAVATIONOR SOLID ROCK EXCAVATION, OR BOTH. PART OF THE EXISTING NORTHEAST RETAINING WALL ABOVE THE BOTTOM OF THE EXISTING FOOTING SHALL BE REMOVED UNDER ITEM 203.27, UNCLASSIFIED CHANNEL EXCAVATION.

31. ROCK CUT FOR BEAM CLEARANCE SHALL BE PAID UNDER UNCLASSIFIED CHANNEL EXCAVATION, ITEM 203.27. A QUANTITY OF 34 m³ WAS ADDED TO THE QUANTITY SHEET.

STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of HARTLAND	Bridge No. 60
	Log Sta.
Highway No. U.S. ROUTE 5	Surv. Sta.

U.S. ROUTE 5 OVER LULLS BROOK

GENERAL NOTES

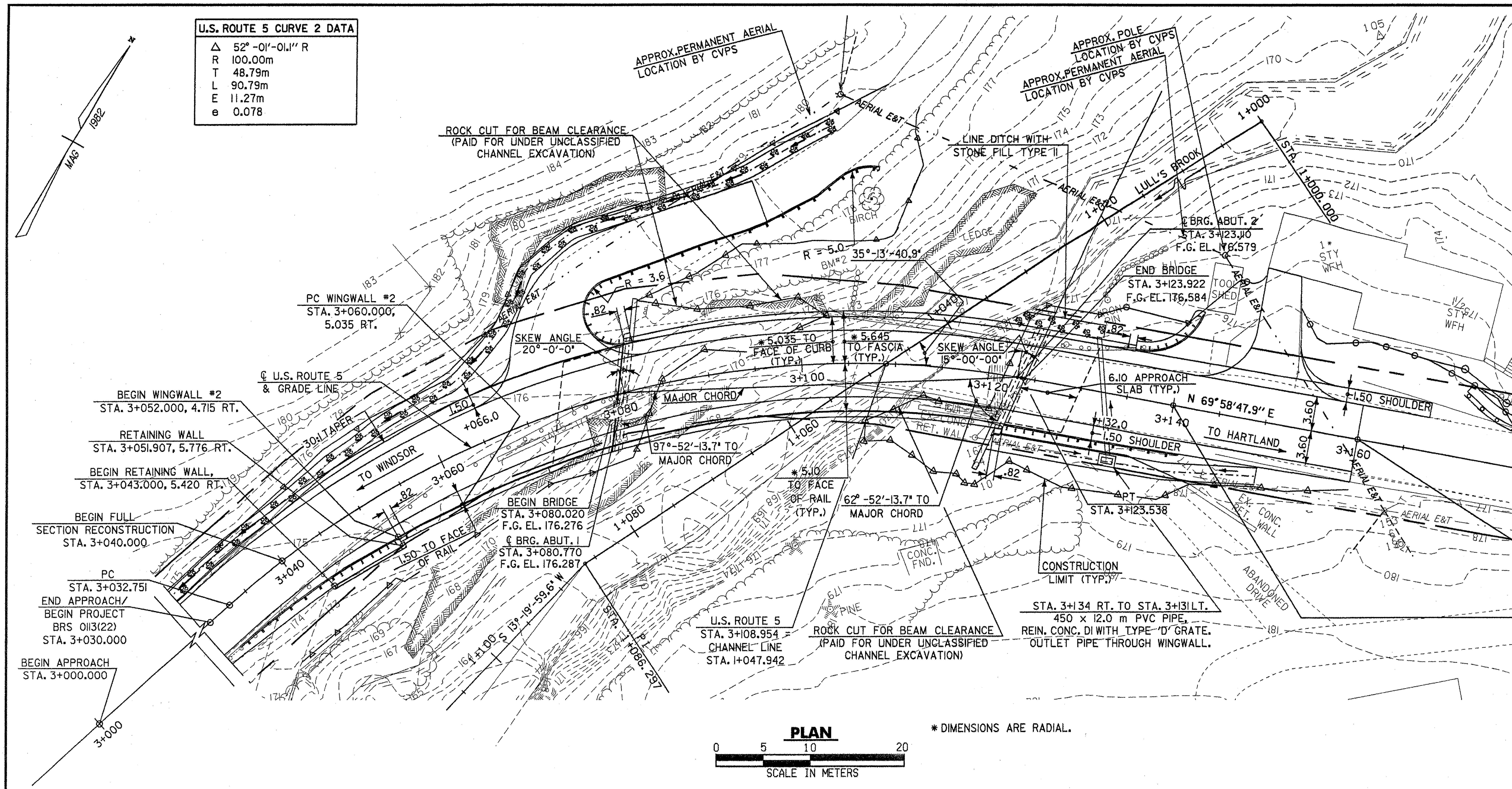
Designed By S. BAKI	Drawn By B. TYLER
Checked By S. BAKI Date	Bridge Design Supervisor J. MIECZKOWSKI Date
PROJECT HARTLAND	PROJECT NO. BRS No. 0113(22)
I.G.C. Info. M:\14562\VAOT Hartland\struct\zf204gen.dgn	
Bridge Sheet No. BRI02	Sheet 37 of 86

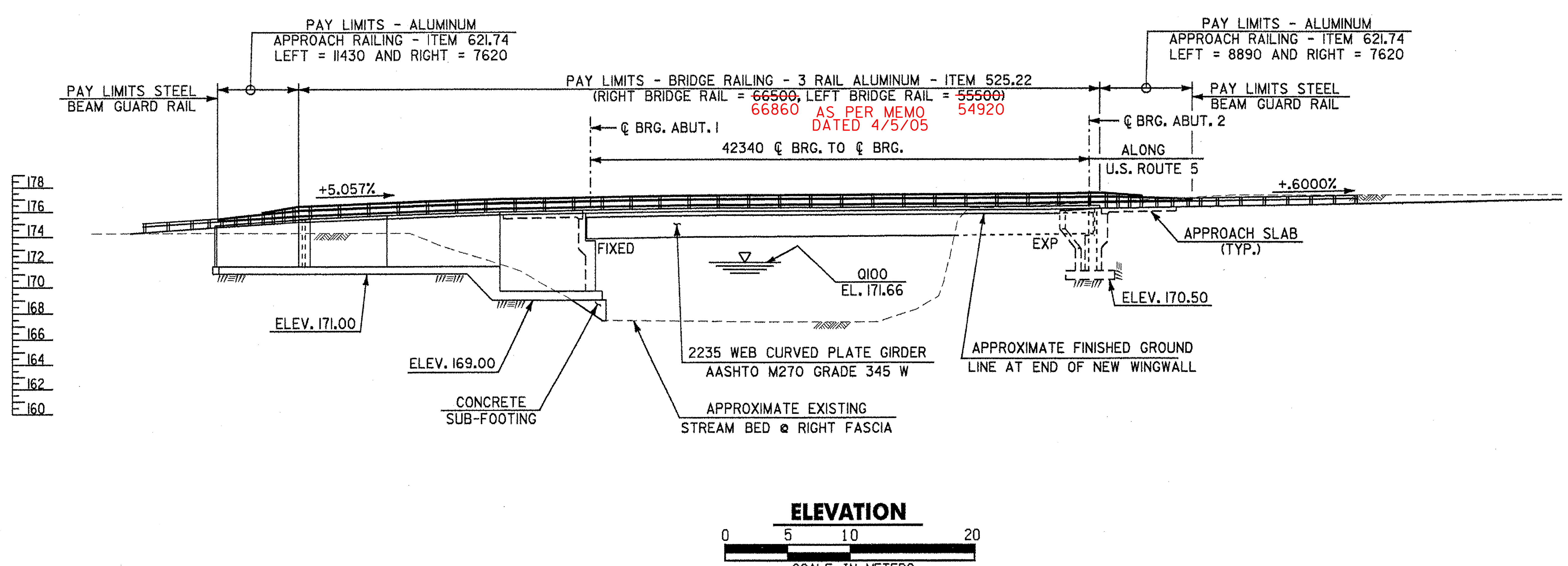
12-AUG-2004

REVISED: 8-12-04 WJG PLOT SCALE: 100:1 IPLOT FILENAME:ZF204GEN.I

Metric

U.S. ROUTE 5 CURVE 2 DATA	
Δ	52° -01'-01.1" R
R	100.00m
T	48.79m
L	90.79m
E	11.27m
e	0.078


MAG 1982
APPROX.PERMANENT AERIAL LOCATION BY CVPS
APPROX. POLE LOCATION BY CVPS
APPROX.PERMANENT AERIAL LOCATION BY CVPS
ROCK CUT FOR BEAM CLEARANCE (PAID FOR UNDER UNCLASSIFIED CHANNEL EXCAVATION)
LINE DITCH WITH STONE FILL TYPE II
LULL'S BROOK
STA. 1+000.000
℄ BRG. ABUT. 2 STA. 3+123.110 F.G. EL. 176.579
END BRIDGE STA. 3+123.922 F.G. EL. 176.584
TOOL SHED
1 STY WFH
PC WINGWALL #2 STA. 3+060.000, 5.035 RT.
SKEW ANGLE 20°-0'-0"
*5.035 TO FACE OF CURB (TYP.)
*5.645 TO FASCIA (TYP.)
SKEW ANGLE 15°-00'-00"
R = 5.0
R = 3.6
35°-13'-40.9"
℄ U.S. ROUTE 5 & GRADE LINE
BEGIN WINGWALL #2 STA. 3+052.000, 4.715 RT.
RETAINING WALL STA. 3+051.907, 5.776 RT.
BEGIN RETAINING WALL, STA. 3+043.000, 5.420 RT.
BEGIN FULL SECTION RECONSTRUCTION STA. 3+040.000
PC STA. 3+032.751
END APPROACH/ BEGIN PROJECT BRS 0113(22) STA. 3+030.000
BEGIN APPROACH STA. 3+000.000
MAJOR CHORD
97°-52'-13.7" TO MAJOR CHORD
6.10 APPROACH SLAB (TYP.)
N 69°58'47.9" E
TO HARTLAND
1.50 SHOULDER
TO WINDSOR
30:1 TAPER
BEGIN BRIDGE STA. 3+080.020 F.G. EL. 176.276
℄ BRG. ABUT. 1 STA. 3+080.770 F.G. EL. 176.287
*5.10 TO FACE OF RAIL (TYP.)
62°-52'-13.7" TO MAJOR CHORD
PT STA. 3+123.538
CONSTRUCTION LIMIT (TYP.)
U.S. ROUTE 5 STA. 3+108.954 = CHANNEL LINE STA. 1+047.942
ROCK CUT FOR BEAM CLEARANCE (PAID FOR UNDER UNCLASSIFIED CHANNEL EXCAVATION)
STA. 3+134 RT. TO STA. 3+131 LT. 450 x 12.0 m PVC PIPE, REIN. CONC. DI WITH TYPE 'D' GRATE. OUTLET PIPE THROUGH WINGWALL.
STA. 3+160.000 END APPROACH MATCH EXISTING PAVEMENT
STA. 3+140.000 END PROJECT BRS 0113 (22) BEGIN APPROACH
EX. CONC. RET. WALL
ABANDONED DRIVE
CONC. FND.
PINE
BIRCH
LEDGE
S 13°-19'-59.6" W
STA. 1+086.297
* DIMENSIONS ARE RADIAL.
PLAN
SCALE IN METERS


PAY LIMITS - ALUMINUM APPROACH RAILING - ITEM 621.74 LEFT = 11430 AND RIGHT = 7620
PAY LIMITS - ALUMINUM APPROACH RAILING - ITEM 621.74 LEFT = 8890 AND RIGHT = 7620
PAY LIMITS STEEL BEAM GUARD RAIL
PAY LIMITS - BRIDGE RAILING - 3 RAIL ALUMINUM - ITEM 525.22 (RIGHT BRIDGE RAIL = 66500, LEFT BRIDGE RAIL = 55500)
66860 AS PER MEMO DATED 4/5/05 54920
℄ BRG. ABUT. 1
℄ BRG. ABUT. 2
42340 ℄ BRG. TO ℄ BRG.
ALONG U.S. ROUTE 5
+5.057%
+.6000%
FIXED
EXP
APPROACH SLAB (TYP.)
Q100 EL. 171.66
ELEV. 170.50
ELEV. 171.00
ELEV. 169.00
CONCRETE SUB-FOOTING
2235 WEB CURVED PLATE GIRDER AASHTO M270 GRADE 345 W
APPROXIMATE FINISHED GROUND LINE AT END OF NEW WINGWALL
APPROXIMATE EXISTING STREAM BED @ RIGHT FASCIA
ELEVATION
SCALE IN METERS

NOTES:

1. FOR EXISTING STRUCTURE LAYOUT SEE HIGHWAY PLAN SHEET
2. FOR TEMPORARY DETOUR LAYOUT SEE TRAFFIC CONTROL PLAN SHEETS.
3. FOR REMOVAL AND RELOCATION OF EXISTING TOOL SHED SEE HIGHWAY PLAN SHEET

STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of HARTLAND	Bridge No. 60
Highway No. U.S. ROUTE 5	Log Sta. / Surv. Sta.

U.S. ROUTE 5 OVER LULLS BROOK

BRIDGE PLAN AND ELEVATION

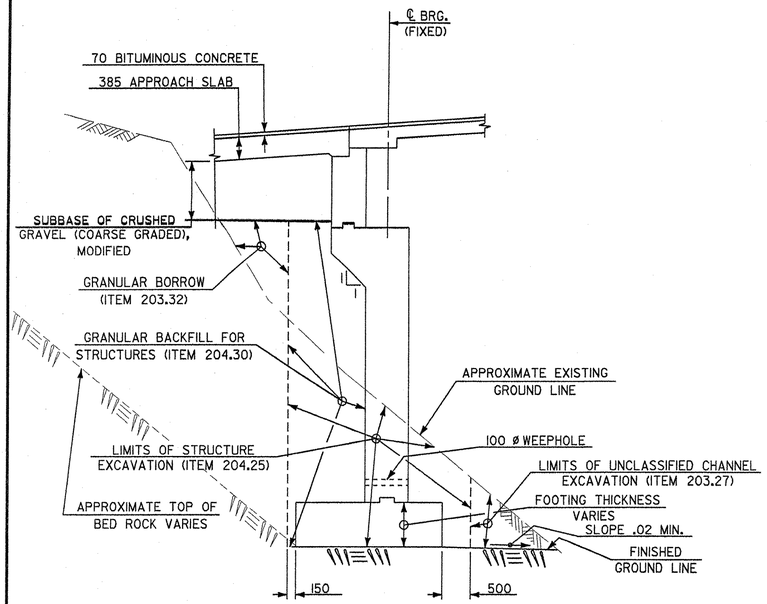
Designed By S. BAKI 12/98	Drawn By W. GAYNOR 12/98
Checked By S. BAKI Date 12/98	Bridge Design Supervisor J. MIECZKOWSKI Date 12/98
PROJECT HARTLAND	PROJECT NO. BRS No. 0113(22)

I.G.C. Info. M:\1456201 VAOT Hartland\struct\zf204gpl.dgn

Bridge Sheet No. BRI03 Sheet 38 of 86

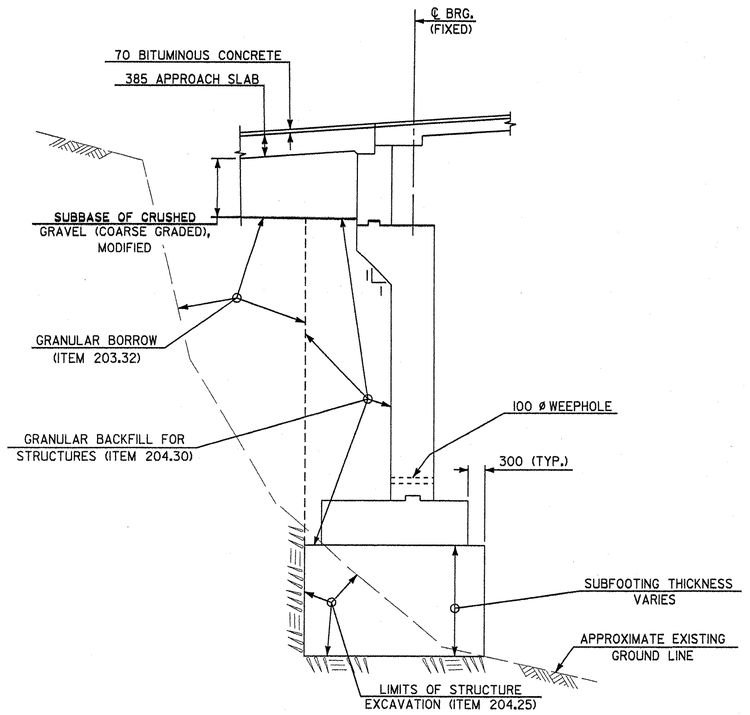
16-AUG-2004

WJG 8-16-04 250:1 FILE NAME: P:\J9145621\STRUCT\GPL.I



TYPICAL ABUTMENT EARTHWORK SECTION
WITH FOOTING ON TOP OF ROCK

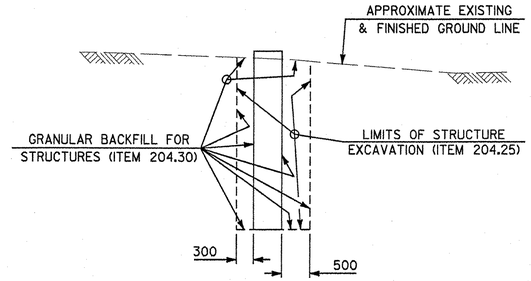
0 1000 2000 4000
SCALE IN MILLIMETERS



TYPICAL ABUTMENT EARTHWORK SECTION
WITH FOOTING ON TOP OF SUBFOOTING

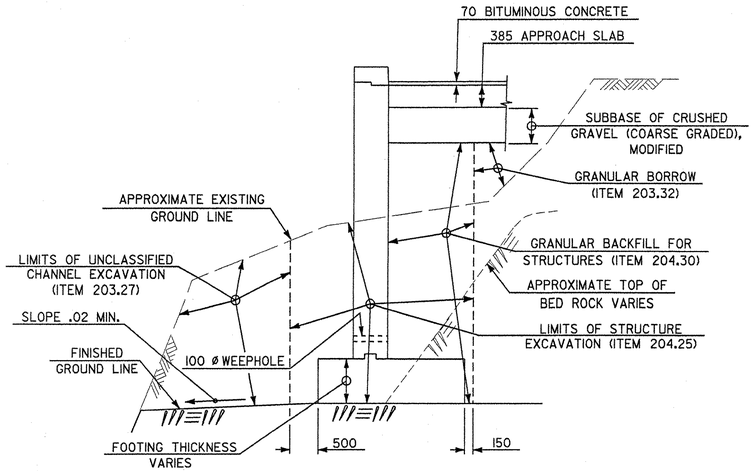
WINGWALL SUBFOOTING SIMILAR

0 1000 2000 4000
SCALE IN MILLIMETERS



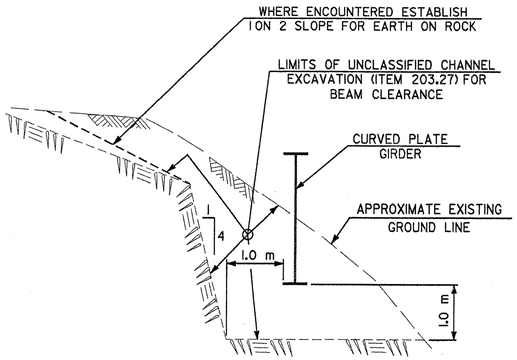
TYPICAL EARTHWORK SECTION
AT CANTILEVERED WINGWALL

0 1000 2000 4000
SCALE IN MILLIMETERS



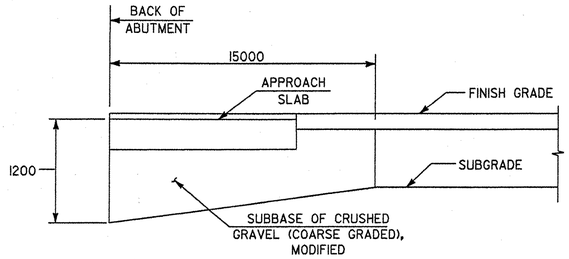
TYPICAL WINGWALL EARTHWORK SECTION
WITH FOOTING ON TOP OF ROCK

0 1000 2000 4000
SCALE IN MILLIMETERS



EXCAVATION FOR BEAM CLEARANCE

0 1000 2000 4000
SCALE IN MILLIMETERS



SUBBASE DETAIL AT ABUTMENT
NOT TO SCALE

STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of HARTLAND	Bridge No. 60
	Log Sta.
Highway No. U.S. ROUTE 5	Surv. Sta.
U.S. ROUTE 5 OVER LULLS BROOK	

TYPICAL ABUTMENT & WINGWALL SECTIONS

Designed By S. BAKI 12/98	Drawn By W. GAYNOR 12/98
Checked By S. BAKI Date 12/98	Bridge Design Supervisor J. MIECZKOWSKI Date 12/98
PROJECT HARTLAND	PROJECT NO. BRS No. 0113(22)
I.G.C. Info. M:\145620\VAOT Hartland\struct\zf204aty.dgn	
Bridge Sheet No. BRI04	Sheet 39 of 86

REVISED: 1-12-04 WJG PLOT SCALE: 100:1 PLOT FILENAME: ZF204ATY.I

12-AUG-2004

SOIL CLASSIFICATION

AASHTO

A1	GRAVEL AND SAND
A3	FINE SAND
A2	SILTY OR CLAYEY GRAVEL AND SAND
A4	SILTY SOIL - LOW COMPRESSIBILTY
A5	SILTY SOIL - HIGHLY COMPRESSIBLE
A6	CLAYEY SOIL - LOW COMPRESSIBILITY
A7	CLAYEY SOIL - HIGHLY COMPRSSIBLE

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) N	DESCRIPTIVE TERM	CONSISTENCY (COHESIVE SOILS) 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 FOOT 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 STEAM AUGER
AX	CORE SIZE 28.5 mm
BX	CORE SIZE 41.2 mm
NX	CORE SIZE 52.1 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
RQD	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
GR	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 mm. (#200 SIEVE)

SILT - SOIL < 75 mm (#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 MATERIALS).

MOISTURE CONTENT - WEIGHT OF WATER DIVIDED BY DRY WEIGHT OF SOIL.

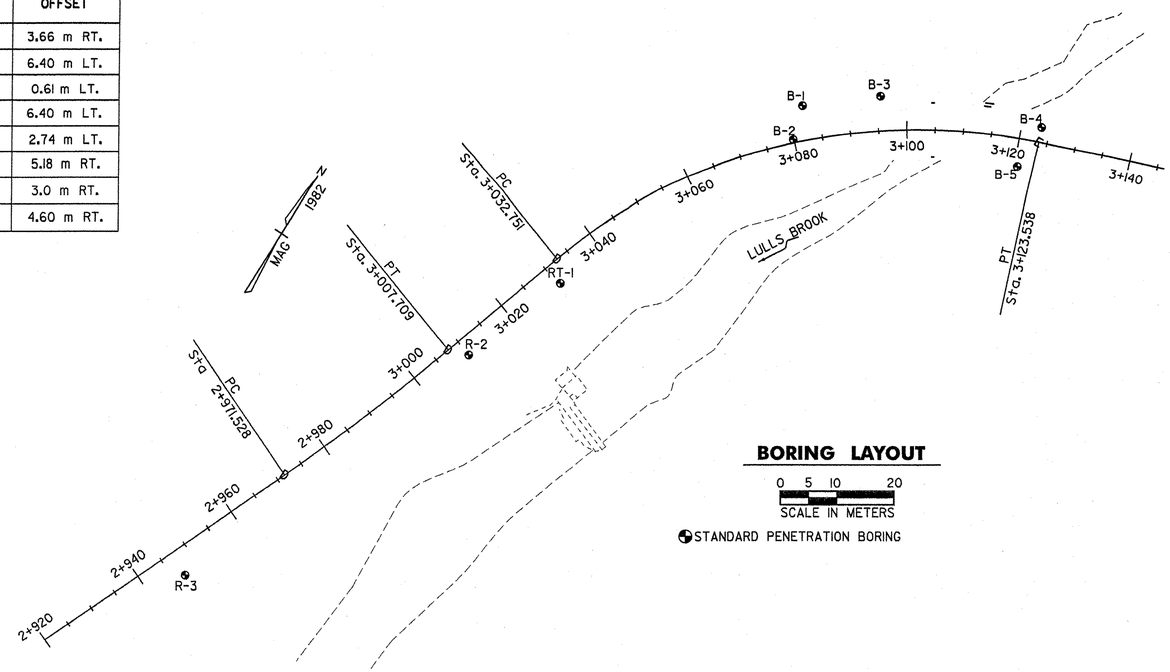
FLOWING SAND - GRANULAR SOIL SO SATURATED (LOOSE) THAT IT FLOWS INTO DRILL CASING DURING EXTRACTION OF WASH ROD.

STRIKE - ANGLE FROM MAGNETIC NORTH TO LINE OF INTERSECTION OF BED WITH A HORIZONTAL PLANE.

DIP - INCLINATION OF BED WITH A HORIZONTAL PLANE.

REFUSAL - RATE OF 100 OR MORE BLOWS PER 1FOOT PENETRATION DURING STANDARD PENETRATION TEST.

STANDARD PENETRATION BORINGS		
BORING NO.	STATION	OFFSET
RT-1	3+030.48	3.66 m RT.
B-1	3+082.60	6.40 m LT.
B-2	3+079.86	0.61 m LT.
B-3	3+095.71	6.40 m LT.
B-4	3+123.44	2.74 m LT.
B-5	3+120.70	5.18 m RT.
R-2	3+010.00	3.0 m RT.
R-3	2+947.00	4.60 m RT.



BORING LAYOUT

0 5 10 20
SCALE IN METERS

STANDARD PENETRATION BORING

AUGER BORINGS AND ROD SOUNDINGS			
BORING NO.	STATION	OFFSET	LEDGE ELEVATION
AB-1	3+041.00	3.0 m RT.	172.600
AB-1A	3+041.00	5.0 m RT.	170.745
AB-1B	3+041.00	8.0 m RT.	170.780
AB-2	3+050.00	2.0 m RT.	172.950
AB-2A	3+050.00	4.5 m RT.	172.885
AB-2B	3+050.00	7.0 m RT.	172.975
AB-2C	3+050.00	9.0 m RT.	172.255
AB-3	3+060.00	1.5 m RT.	173.620
AB-3A	3+060.00	5.0 m RT.	174.012
AB-3B	3+060.00	7.0 m RT.	173.081
AB-3C	3+060.00	8.5 m RT.	171.958

AUGER BORINGS AND ROD SOUNDINGS			
BORING NO.	STATION	OFFSET	LEDGE ELEVATION
AB-4	3+070.00	0	173.965
AB-4A	3+070.00	4.0 m RT.	172.851
AB-4B	3+070.00	6.0 m RT.	171.228
AB-5	3+125.00	5.0 m RT.	174.260
AB-6	3+126.00	3.0 m LT.	173.120
AB-7	3+136.00	3.0 m LT.	172.745
AB-8	3+140.00	10.0 m RT.	177.565
AB-9	3+140.00	11.5 m RT.	177.900
TB-1	3+110.00	18.0 m LT.	176.270
TB-1A	3+110.00	15.0 m LT.	175.950
TB-1B	3+110.00	21.0 m LT.	176.675
TB-2	3+143.00	9.5 m LT.	172.690

GENERAL NOTES

1. THE SUBSURFACE EXPLORATIONS SHOWN HEREIN WERE MADE BETWEEN 8/1/94 AND 2/2/96 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 EN - COUNTERED 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 INTER - PRETATION OF SUBSURFACE DATA WAS PER - FORMED 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 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. TERMINOLOGY USED ON BORING LOGS TO DESCRIBE THE HARDNESS DEGREE OF WEATHER AND SPACING OF FRACTURES, JOINTS AND OTHER DISCONTINUITIES IN THE BEDROCK IS DEFINED IN THE AASHTO MANUAL SUBSURFACE INVESTIGATIONS, 1988.

6. 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

STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of HARTLAND	Bridge No. 60
	Log Sta.
Highway No. U.S. ROUTE 5	Surv. Sta.
U.S. ROUTE 5 OVER LULLS BROOK	

BORING INFORMATION SHT. - 1

Designed By S. BAKI 12/98	Drawn By W. GAYNOR 12/98
Checked By S. BAKI Date 12/98	Bridge Design Supervisor J. MIECZKOWSKI Date 12/98
PROJECT HARTLAND	PROJECT NO. BRS No. 0113(22)
I.G.C. Info. M:\145620\VAOT Hartland\struct\zf204bpl.dgn	
Bridge Sheet No. BRI05	Sheet 40 of 86

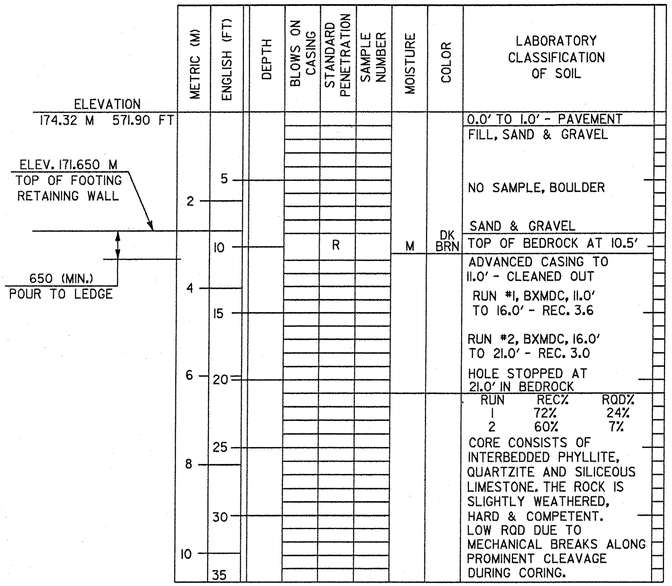
REVISED: 8-12-04 WJG

PLOT SCALE: 500:1 PLOT FILENAME: ZF204BPL.I

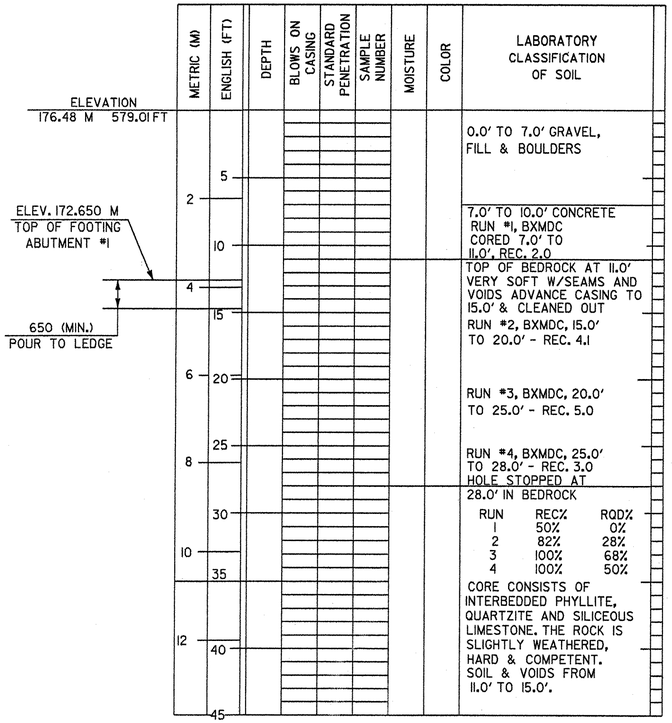
12-AUG-2004

VAOT Metric

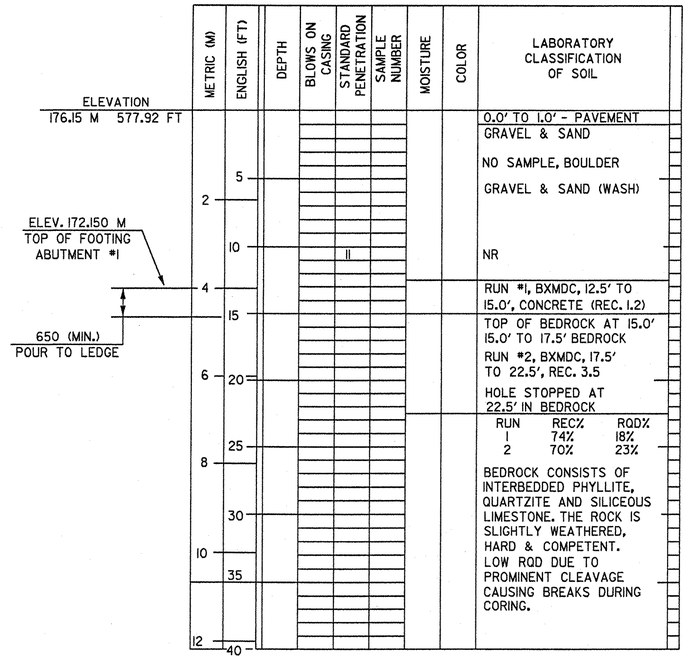
HARTLAND BRS-0113(22)
BORING NO. RT-1



HARTLAND BRS-0113(22)
BORING NO. B-1



HARTLAND BRS-0113(22)
BORING NO. B-2



NOTE:

BORINGS RT-1, B-1 AND B-2 ARE SHOWN IN ENGLISH UNITS (SCALE: 3/16" = 1'-0") AND ARE SHOWN IN THE RIGHT COLUMN TO THE LEFT SIDE OF THE BORING LOG. EQUIVALENT METRIC DEPTHS ARE SHOWN NEXT TO THE ENGLISH DEPTHS IN THE LEFT COLUMN TO THE LEFT SIDE OF THE BORING LOG.

STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of HARTLAND	Bridge No. 60
Highway No. U.S. ROUTE 5	Log Sta. / Surv. Sta.
U.S. ROUTE 5 OVER LULLS BROOK	

BORING INFORMATION SHT. - 2

Designed By S. BAKI 12/98	Drawn By W. GAYNOR 12/98
Checked By S. BAKI Date 12/98	Bridge Design Supervisor J. MIECZKOWSKI Date 12/98
PROJECT HARTLAND	PROJECT NO. BRS No. 0113(22)
I.G.C. Info. M:\145620\VAOT Hartland\struct\zf204bl1.dgn	
Bridge Sheet No. BRI06	Sheet 41 of 86

REVISED: 8-12-04 WJG PLOT SCALE: 100:1 IPLOT FILENAME: ZF204BL1.I

12-AUG-2004

HARTLAND BRS-0113(22)

BORING NO. B-3

ELEVATION 172.96 M 567.47 FT

METRIC (M)	ENGLISH (FT)	DEPTH	BLOWS ON CASING	STANDARD PENETRATION	SAMPLE NUMBER	MOISTURE	COLOR	LABORATORY CLASSIFICATION OF SOIL
								OVERHANG 0.0' TO 11.0'
2	5							
	10							TOP OF BEDROCK AT 11.0'
4	15							RUN #1, BXMDC, 11.0' TO 16.0' - REC. 2.5 RUN #2, BXMDC, 16.0' TO 21.0' - REC. 5.0
6	20							HOLE STOPPED AT 21.0' IN BEDROCK RUN REC% RQD% 1 50% 9% 2 100% 48%
8	25							CORE CONSISTS OF INTERBEDDED PHYLLITE, QUARTZITE AND SILICEOUS LIMESTONE. THE ROCK IS SLIGHTLY WEATHERED, HARD & COMPETENT. LOW RQD DUE TO MECHANICAL BREAKS ALONG PROMINENT CLEAVAGE DURING CORING.
10	30							
	35							

HARTLAND BRS-0113(22)

BORING NO. B-4

ELEVATION 176.71M 579.77 FT

ELEV. 171.200 M TOP OF FOOTING ABUTMENT #2

700 (MIN.) POUR TO LEDGE

METRIC (M)	ENGLISH (FT)	DEPTH	BLOWS ON CASING	STANDARD PENETRATION	SAMPLE NUMBER	MOISTURE	COLOR	LABORATORY CLASSIFICATION OF SOIL
								0.0' TO 1.0' PAVEMENT 1.0' TO 2.0' CONCRETE
2	5			19		M	BRN	SILT SAND W/STONES, REC. 0.5
	10							TOP OF BEDROCK AT 9.0' RUN #1, BXMDC, 9.0' 14.0', REC. 2.4
4	15							RUN #2, BXMDC, 14.0' TO 19.0', REC. 2.6
6	20							RUN #3, BXMDC, 19.0' TO 23.0', REC. 1.9
	25							HOLE STOPPED AT 23.0' IN BEDROCK RUN REC% RQD% 1 48% 7% 2 52% 13% 3 48% 15%
8	30							CORE CONSISTS OF INTERBEDDED PHYLLITE, QUARTZITE AND SILICEOUS LIMESTONE. THE ROCK IS SLIGHTLY WEATHERED, HARD & COMPETENT OVERALL. LOW RQD DUE TO NUMEROUS MECHANICAL BREAKS DURING CORING.
10	35							
12	40							

HARTLAND BRS-0113(22)

BORING NO. B-5

ELEVATION 176.31M 578.46 FT

ELEV. 171.200 M TOP OF FOOTING ABUTMENT #2

700 (MIN.) POUR TO LEDGE

METRIC (M)	ENGLISH (FT)	DEPTH	BLOWS ON CASING	STANDARD PENETRATION	SAMPLE NUMBER	MOISTURE	COLOR	LABORATORY CLASSIFICATION OF SOIL
								0.0' TO 4.0', GRAVEL & SAND
2	5							CORED 4.0' TO 6.0', LOOSE ROCK OR BOULDERS
	10							ADVANCED CASING TO 10.0' CORED 10.0' TO 12.0'
4	15							ADVANCED CASING TO 16.0' LOOSE ROCK OR FILL CLEANED OUT HOLE
6	20							TOP OF BEDROCK AT 16.0' RUN #1, BXMDC, 16.0' TO 18.0', REC. 0.4 RUN #2, BXMDC, 18.0' TO 23.0', REC. 3.9
8	25							RUN #3, BXMDC, 23.0' TO 28.0', REC. 4.4
10	30							RUN #4, BXMDC, 28.0' TO 33.0', REC. 4.8
12	35							HOLE STOPPED AT 33.0' IN BEDROCK RUN REC% RQD% 1 20% 0% 2 78% 7% 3 88% 48% 4 96% 78%
14	40							CORE CONSISTS OF INTERBEDDED PHYLLITE, QUARTZITE AND SILICEOUS LIMESTONE. THE ROCK IS HARD, SLIGHTLY WEATHERED IN THE TOP 8.0' AND COMPETENT OVERALL.
	45							
	50							

NOTE:

BORINGS B-3, B-4 AND B-5 ARE SHOWN IN ENGLISH UNITS (SCALE: 3/16" = 1'-0") AND ARE SHOWN IN THE RIGHT COLUMN TO THE LEFT SIDE OF THE BORING LOG. EQUIVALENT METRIC DEPTHS ARE SHOWN NEXT TO THE ENGLISH DEPTHS IN THE LEFT COLUMN TO THE LEFT SIDE OF THE BORING LOG.

STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of HARTLAND	Bridge No. 60
	Log Sta.
Highway No. U.S. ROUTE 5	Surv. Sta.
U.S. ROUTE 5 OVER LULLS BROOK	

BORING INFORMATION SHT. - 3

Designed By S. BAKI 12/98	Drawn By W. GAYNOR 12/98
Checked By S. BAKI Date 12/98	Bridge Design Supervisor J. MIECZKOWSKI Date 12/98
PROJECT HARTLAND	PROJECT NO. BRS No. 0113(22)
I.G.C. Info. M:\145620I VAOT Hartland\struct\zf204bli.dgn	
Bridge Sheet No. BRI07	Sheet 42 of 86

12-AUG-2004

REVISED: 8-12-04 WJG PLOT SCALE: 100:1 IPLOT FILENAME: ZF204BLI.I

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

HOLE NO.: R-2
SHEET 1 OF 1
DATE STARTED: 12/28/95
DATE COMPLETED: 12/28/95

PROJECT NAME: HARTLAND
SITE NAME: US Route 5
STATION: 3+010.00
GROUND EL.: 173.238

PROJECT NUMBER: BRS 0113(22)
SITE NO.: BR 60
OFFSET: 3.00
G.W. DEPTH:

BORING CREW
CREW CHIEF: WILLIS
DRILLER: WARREN
LOGGER: CHABOT

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

DEPTH	SYMBOL	CLASSIFICATION OF MATERIALS (Description)	BLOWS PER FOOT	M.C. %	GRAVEL %	SAND %	FINES %	LL	PI
		A-2-4, Grsisa, Moist, dk Brn, Rec. = 0.6.	27	16.7	25.3	44.9	29.8	0	0
		Possible very soft Rock. Rec. = 0.36.	68						
				Bed rock @ 3.22					
5		BXMDC 3.22-3.91, Rec = 0.69 BXMDC 3.91-5.44, Rec = 1.52 BXMDC 5.44-6.66, Rec = 1.01 See Geologist's report							
				Hole Stopped @ 6.66					
10		Geologist's Report Run Rec(%) RQD(%) DIP(deg.) 1 45 48 45/60 2 100 50 45 3 66 20 55/60 Run #1: Dark gray slightly Cal-Careous phyllite with quartz veins. Medium to soft, slightly to very slightly weathered.							
15		Run #2: Gray slightly Cal-Careous phyllite with quartz veins. Medium to soft, fresh to very slight weathering.							
20		Run #3: Gray quartzose slightly CalCareous phyllite with quartz veins. Varies from medium to moderately hard dependent upon quartz Content. Fresh to very slight weathering.							
25									
30									

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

HOLE NO.: R-3
SHEET 1 OF 1
DATE STARTED: 12/18/95
DATE COMPLETED: 12/19/95

PROJECT NAME: HARTLAND
SITE NAME: US Route 5
STATION: 2+947.00
GROUND EL.: 168.873

PROJECT NUMBER: BRS 0113(22)
SITE NO.: BR 60
OFFSET: 4.60
G.W. DEPTH:

BORING CREW
CREW CHIEF: MCGLYNN
DRILLER: WARREN
LOGGER: KELLY

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

DEPTH	SYMBOL	CLASSIFICATION OF MATERIALS (Description)	BLOWS PER FOOT	M.C. %	GRAVEL %	SAND %	FINES %	LL	PI
		0.0-3.0, Boulders							
			Top of Bed rock @ 3.00						
		Run #1: BXMDC 3.00-3.91, Rec. = 0.67 Run #2: BXMDC 3.91-4.82 Rec. = 0.45 Run #3: BXMDC 4.82-6.35 Rec. = 1.51 Run #4: BXMDC 6.35-7.88 Rec. = 1.48 See Geologist's report							
5									
			Hole stopped @ 7.88						
10		Geologist's Report Run Rec(%) RQD(%) DIP(deg.) 1 44 7 45 2 29 10 50 3 100 45 50 4 100 77 50 Run #1: Gray, slightly Cal-Careous schist interbedded with quartzite. Hard to moderately hard. Slight weathering.							
15		Run #2: (Top 0.16 m) Gray Cal-Careous quartzite. Hard, fresh weathering. (Bottom 0.24 m) Gray phyllite with thin quartz stringers. Soft to medium hardness, moderately weathered.							
20		Run #3: Gray slightly Cal-Careous quartzite interbedded with gray phyllite and quartzite. Hard, fresh weathering.							
25		Run #4: Same as above.							
30									

STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of HARTLAND	Bridge No. 60
	Log Sta.
Highway No. U.S. ROUTE 5	Surv. Sta.
U.S. ROUTE 5 OVER LULLS BROOK	

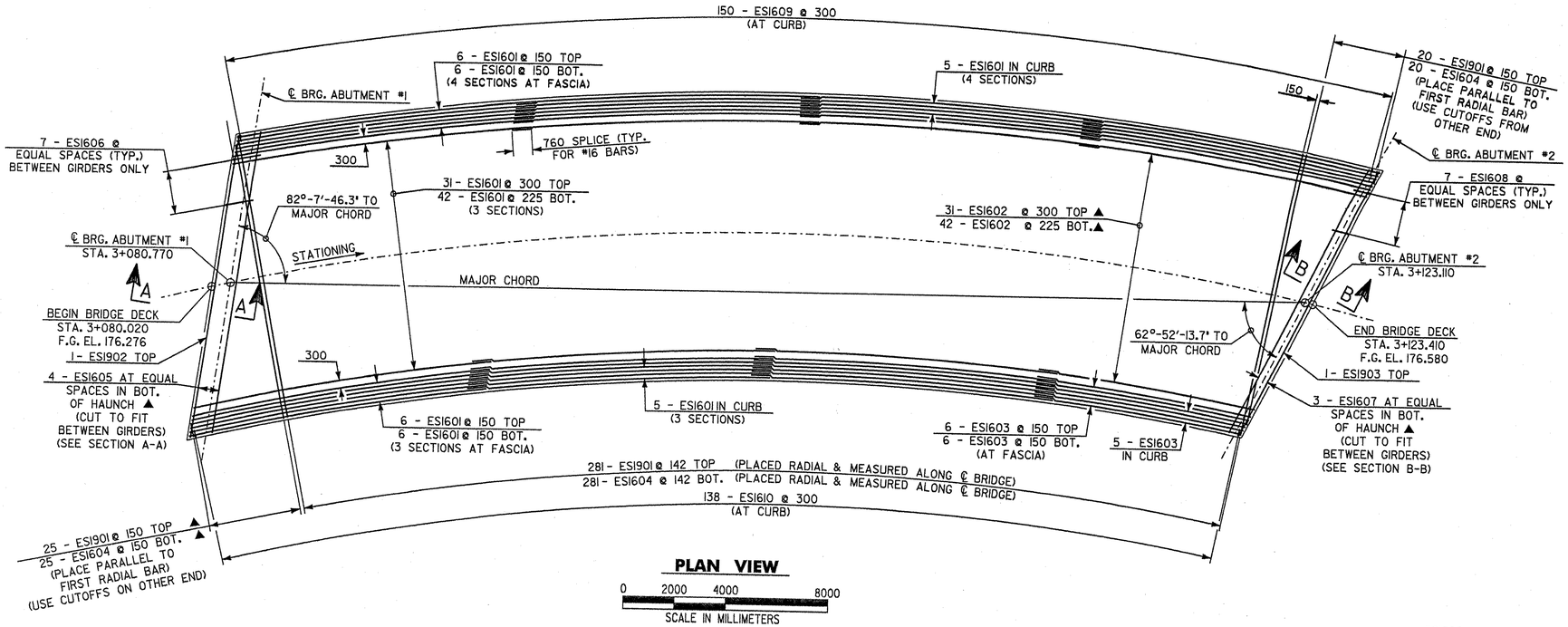
BORING INFORMATION SHT. - 4

Designed By S. BAKI 12/98	Drawn By W. GAYNOR 12/98
Checked By S. BAKI Date 12/98	Bridge Design Supervisor J. MIECZKOWSKI Date 12/98
PROJECT HARTLAND	PROJECT NO. BRS No. 0113(22)
I.G.C. Info. M:\145620\VAOT Hartland\struct\zf204bli.dgn	
Bridge Sheet No. BRI08	Sheet 43 of 86

12-AUG-2004

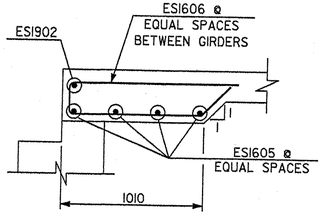
REVISED: 8-12-04 WJG PLOT SCALE: 100:1 PLOT FILENAME: ZF204BLI.I

Not Metric

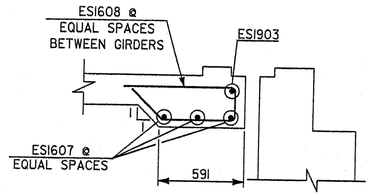


PLAN VIEW

0 2000 4000 8000
SCALE IN MILLIMETERS



SECTION A-A
NOT TO SCALE



SECTION B-B
NOT TO SCALE

NOTES:

▲ - CUT TO FIT IN FIELD
FOR TYPICAL BRIDGE SECTION, SEE SHEET BRII0.

STATE OF VERMONT
AGENCY OF TRANSPORTATION

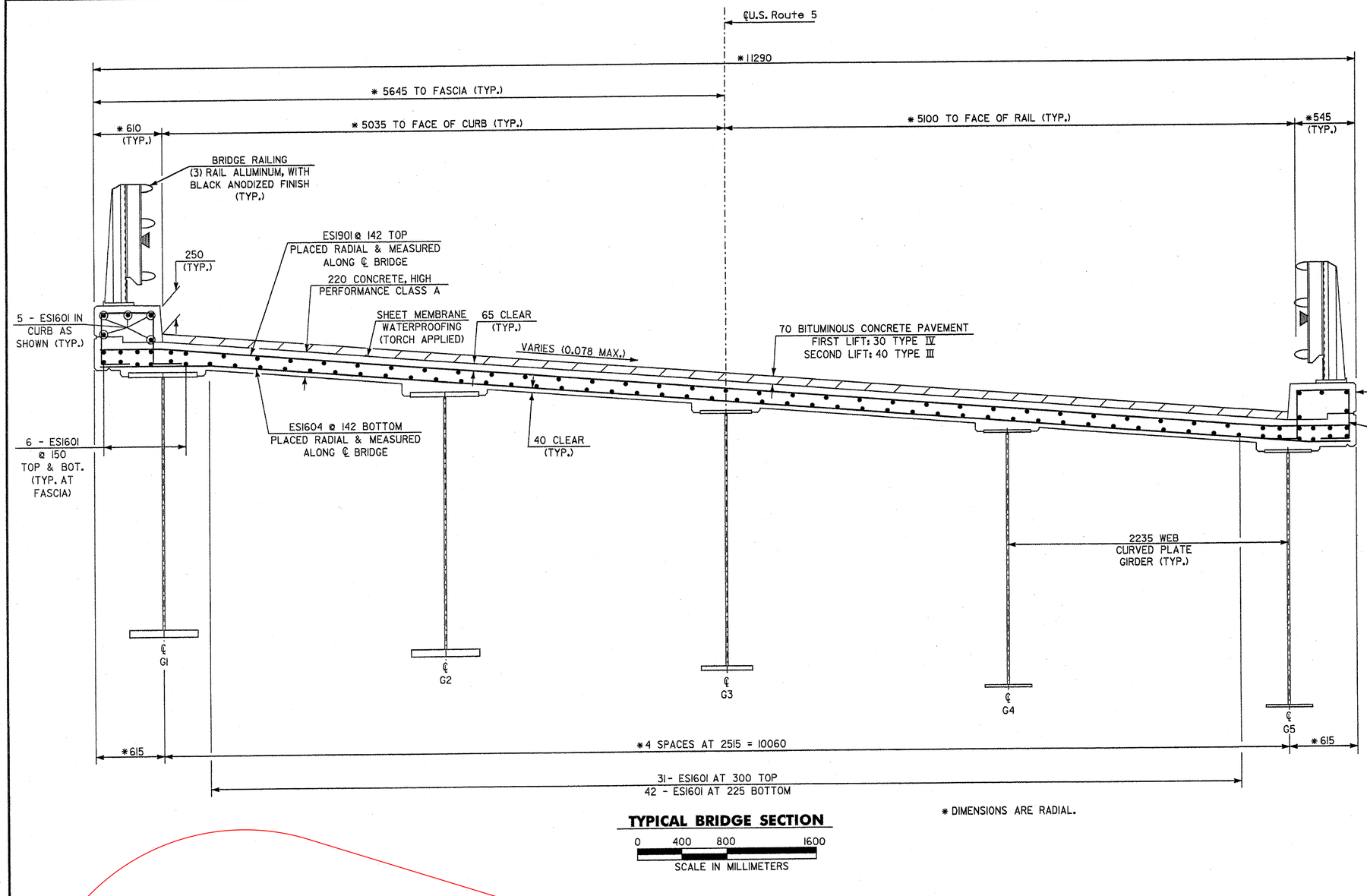
Town Of HARTLAND	Bridge No. 60
Highway No. U.S. ROUTE 5	Log Sta. Surv. Sta.
U.S. ROUTE 5 OVER LULLS BROOK	

DECK REINFORCING PLAN AND SECTIONS

Designed By S. BAKI	Drawn By W. GAYNOR 11/99
Checked By S. BAKI Date	Bridge Design Supervisor J. MIECZKOWSKI Date
PROJECT HARTLAND	PROJECT NO. BRS No. 0113(22)
I.G.C. Info. M:\145620I VAOT Hartland\struct\zf204dpl.dgn	
Bridge Sheet No. BRI09	Sheet 44 of 86

REVISED: 8-12-04 WJG PLOT SCALE: 100:1 IPLOT FILENAME: ZF204DPL.I

VAOT Metric



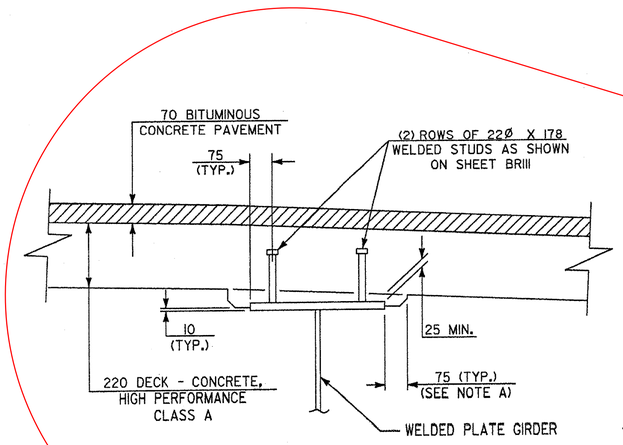
TYPICAL BRIDGE SECTION

0 400 800 1600
SCALE IN MILLIMETERS

* DIMENSIONS ARE RADIAL.

CURB DETAIL

0 200 400 800
SCALE IN MILLIMETERS



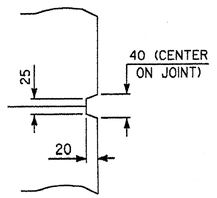
HAUNCH DETAIL

0 200 400 800
SCALE IN MILLIMETERS

REVISED AS PER MJ MEMO. SEE HALF SIZE SHEET FOR REVISED DETAIL.

NOTE A:
AS AN ALTERNATIVE HAUNCH FORMING SYSTEM, THE CONTRACTOR MAY ELIMINATE THE 75 mm HORIZONTAL SECTION, BUT ONLY WITH THE APPROVAL OF THE STRUCTURES ENGINEER.

NOTES:
REINFORCING COVER 80 CLEAR AT FACES OF CURB AND AT EDGE OF DECK FASCIA.
FOR DECK REINFORCING PLAN AND SECTIONS, SEE SHEET BRI09.



SCORE MARK DETAIL

0 100 200 400
SCALE IN MILLIMETERS

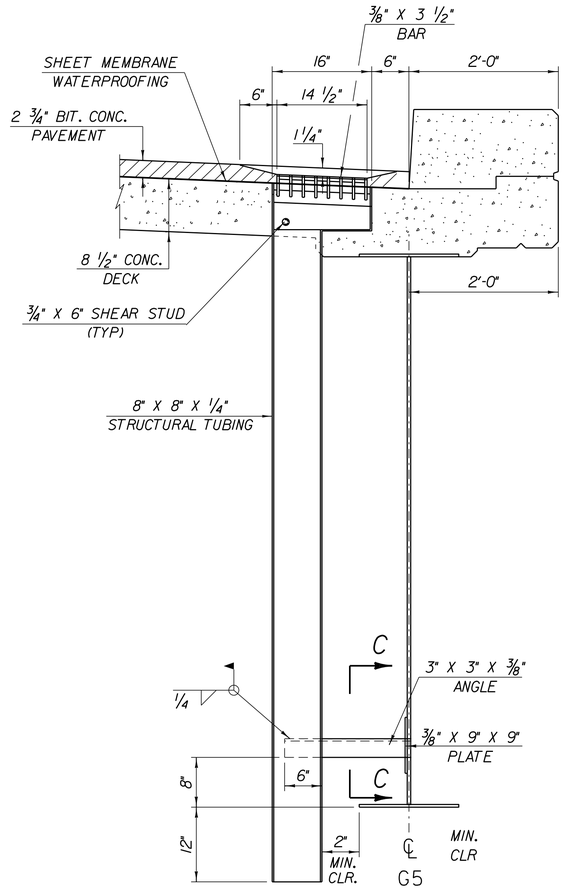
STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of HARTLAND	Bridge No. 60
	Log Sta.
Highway No. U.S. ROUTE 5	Surv. Sta.
U.S. ROUTE 5 OVER LULLS BROOK	

TYPICAL BRIDGE SECTION AND DETAILS

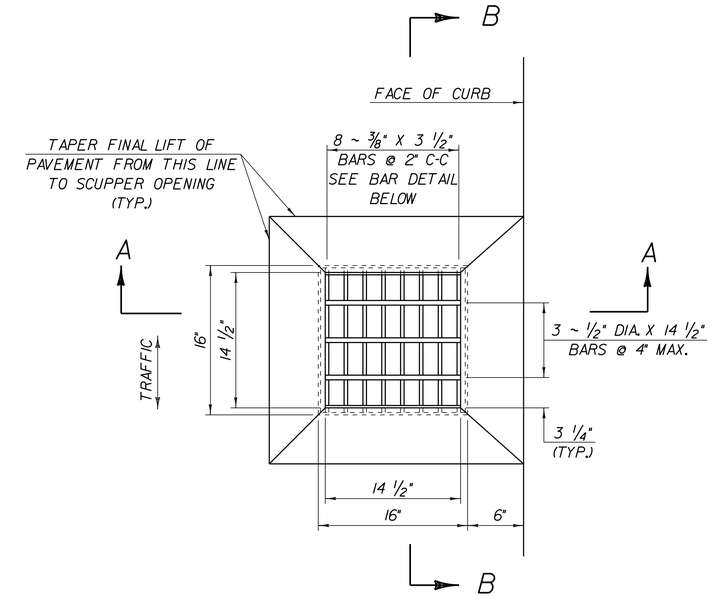
Designed By S. BAKI	Drawn By W. GAYNOR
Checked By S. BAKI Date	Bridge Design Supervisor J. MIECZKOWSKI Date
PROJECT HARTLAND	PROJECT NO. BRS No. 0113(22)
I.G.C. Info. M:\145620I VAOT Hartland\struct\zf204dty.dgn	
Bridge Sheet No. BRII0	Sheet 45 of 86

12-AUG-2004



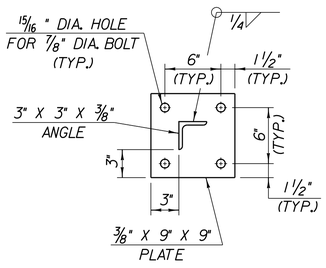
SECTION A - A (AT CURB)

SCALE: 1" = 1'-0"



SCUPPER PLAN

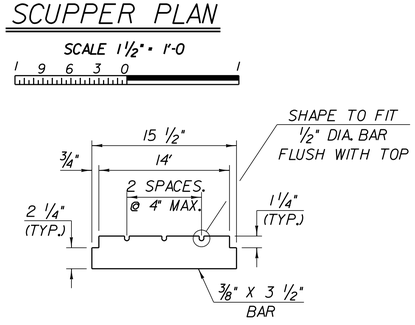
SCALE 1 1/2" = 1'-0



NOTE: HOLES SHALL BE FIELD DRILLED IN PLATE GIRDER.

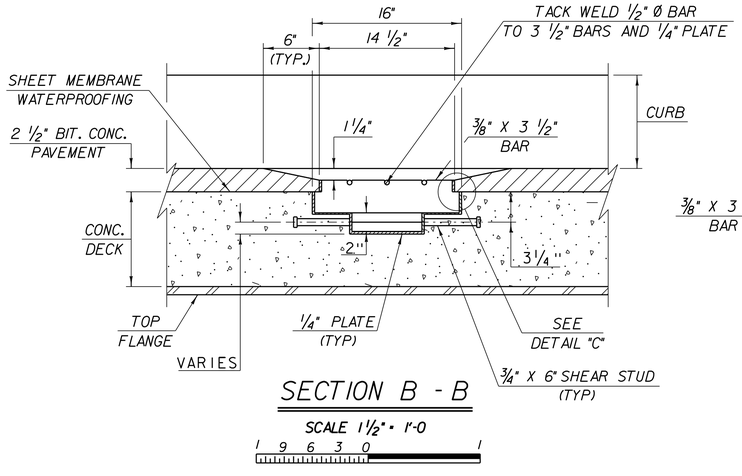
SECTION C - C

SCALE 1 1/2" = 1'-0



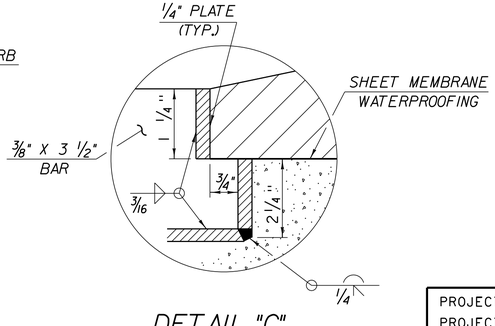
BAR DETAIL FOR GRATE

SCALE 1 1/2" = 1'-0



SECTION B - B

SCALE 1 1/2" = 1'-0



DETAIL "C"

NTS

SCUPPER AND DOWNSPOUT NOTES

1. HOLLOW STRUCTURAL STEEL TUBING SHALL CONFORM TO ASTM A-500 GR. B.
2. ALL PLATES, BARS, AND ANGLES SHALL CONFORM TO AASHTO M 270/M 270M GR. 36.
3. ALL SCUPPERS, DOWNSPOUTS & SUBSTRUCTURE DRAINS SHALL BE GALVANIZED IN ACCORDANCE WITH AASHTO M 111M/M 111 AFTER FABRICATION.
4. THE TOP SURFACE OF SCUPPER SHALL BE SLOPED TO MATCH ROADWAY SLOPE AND GRADE.
5. THE BAR AND GRATE SECTION MAY BE PREFABRICATED PROVIDING THE GEOMETRY AND SECTION PROPERTIES ARE EQUIVALENT TO THE DETAILS SHOWN.
6. SCUPPERS & DOWNSPOUTS SHALL BE PAID FOR AS EXTRA WORK.
7. ALL REQUIRED WELDS FOR SCUPPERS & DOWNSPOUTS SHALL BE DETAILED ON SHOP DRAWINGS WHICH SHALL ALSO INCLUDE ALL APPLICABLE WELDING PROCEDURES.
8. AFTER ALL PAVING AND CONCRETING OPERATIONS THE SCUPPERS & DOWNSPOUTS SHALL BE CLEANED OF ALL CONTAMINATION BY FLUSHING.
9. SCUPPER CONNECTION BOLTS SHALL BE 7/8" Ø AASHTO M 164/M 164M, TYPE III.

ENTIRE SHEET ADDED TO PLANS

SCUPPER LOCATION

STA. 3+085 RT
STA. 3+110 RT

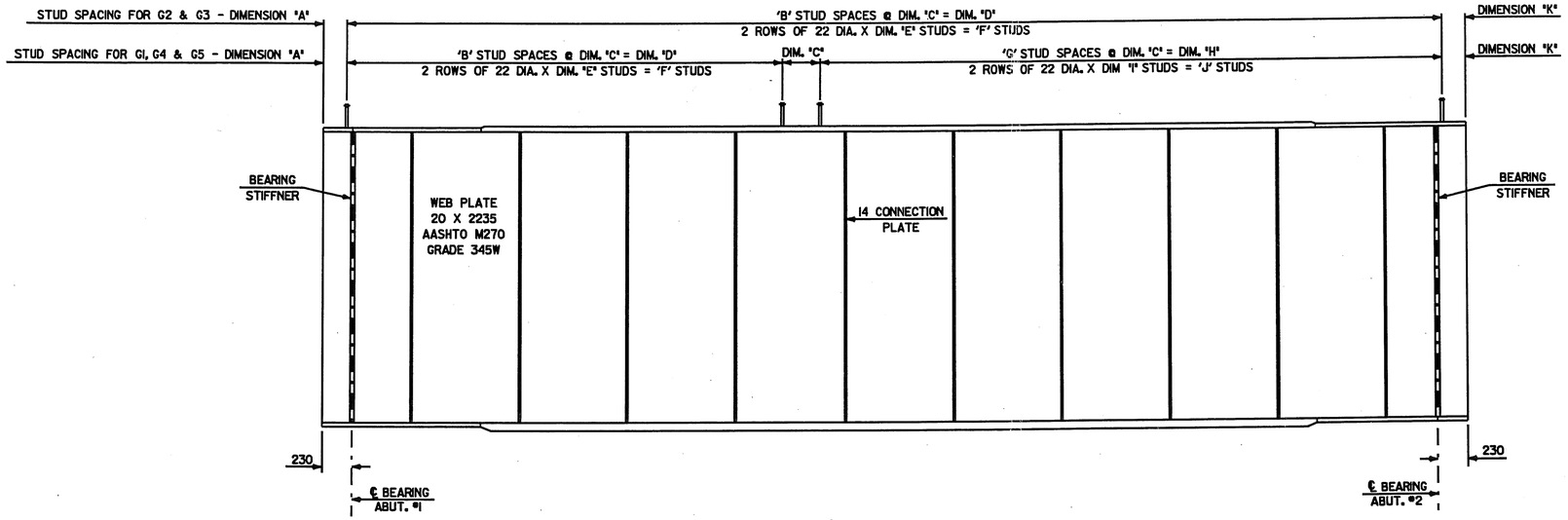
PROJECT NAME:
PROJECT NUMBER: HARTLAND BRS 0113 (22)

FILE NAME: 78f204/structures/scupper.dgn
IPARM NAME: scupper.i
PROJECT LEADER: W. SYMONDS
DESIGNED BY: STR
SCUPPER DETAILS

PLOT DATE: 11-SEP-2012 13:44
DRAWN BY: STR
CHECKED BY: STR
SHEET 45A OF 86

Metric

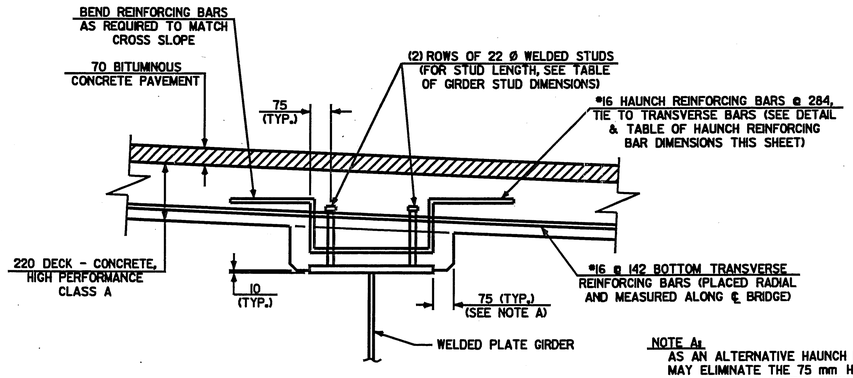
Revised Sheet
As per MJ Memo
3/24/05
Job No. 14562.01



GIRDER ELEVATION
NOT TO SCALE

TABLE OF GIRDER STUD DIMENSIONS

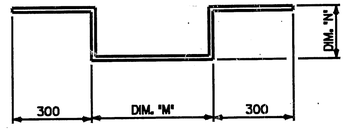
GIRDER NO.	DIM. 'A'	NO. OF SPA. 'B'	STUD SPA. DIM. 'C'	DIM. 'D'	STUD LENGTH DIM. 'E'	NO. OF STUDS 'F'	NO. OF SPA. 'G'	DIM. 'H'	STUD LENGTH DIM. 'I'	NO. OF STUDS 'J'	DIM. 'K'
G1	215	22	355	7810	225	46	101	35855	178	204	215
G2	197	131	330	43230	178	264	-	-	-	-	197
G3	278	119	355	42245	178	240	-	-	-	-	277
G4	253	94	432	40608	178	190	1	432	225	4	253
G5	242	82	457	37474	178	166	6	2742	225	14	242



REINFORCED HAUNCH DETAIL
NOT TO SCALE

NOTE A:
AS AN ALTERNATIVE HAUNCH FORMING SYSTEM, THE CONTRACTOR MAY ELIMINATE THE 75 mm HORIZONTAL SECTION, BUT ONLY WITH THE APPROVAL OF THE STRUCTURES ENGINEER. IF THE CONTRACTOR DOES ELIMINATE THE 75 MM HORIZONTAL SECTION, THE HAUNCH REINFORCING BAR DIMENSIONS SHOWN IN THE TABLE MUST BE ADJUSTED TO MATCH.

NOTES:
1. FOR STUD LENGTH, SEE TABLE OF GIRDER STUD DIMENSIONS ON THIS SHEET.
2. FOR LOCATION OF HAUNCH REINFORCEMENT BARS, SEE TABLE OF HAUNCH REINFORCEMENT DIMENSIONS ON THIS SHEET.



HAUNCH REINFORCING BAR DETAIL
NOT TO SCALE

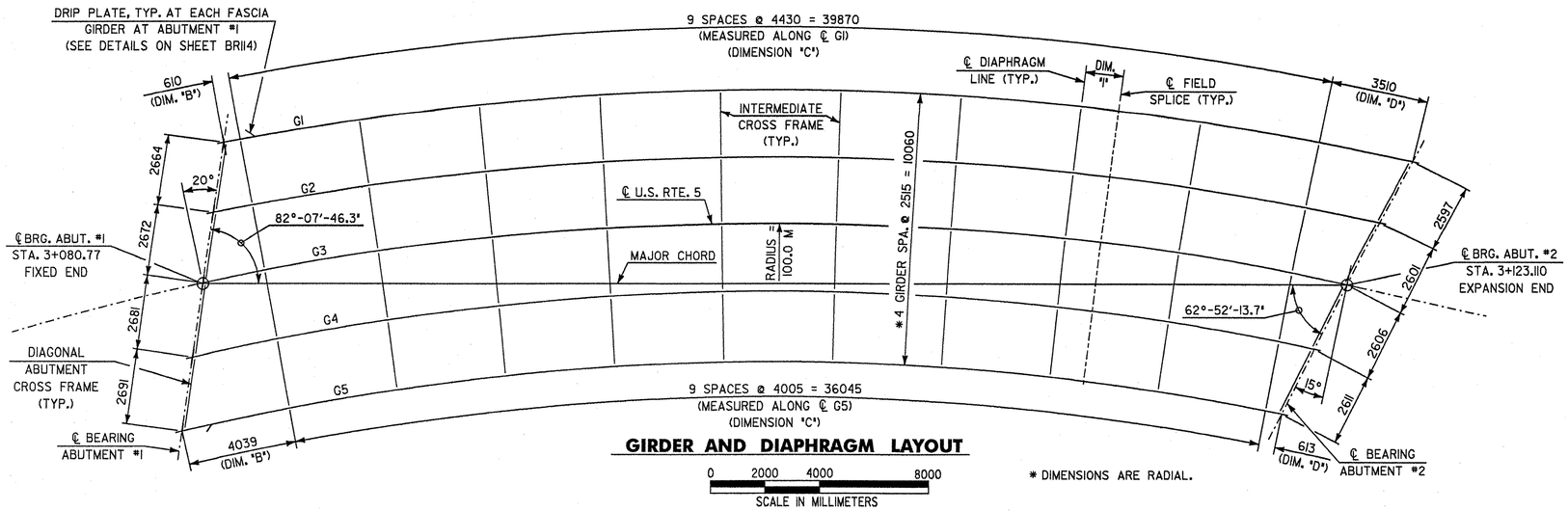
TABLE OF HAUNCH REINFORCING BAR DIMENSIONS

GIRDER NO.	LOCATION ALONG ℄ GIRDER FROM	TO	DIM. 'M'	DIM. 'N'	NO. OF BARS REQUIRED
G1	℄ ABUT. #1	13197	610	200	48
G2	℄ ABUT. #1	6132	610	150	23
G3	NONE		-	-	-
G4	℄ ABUT. #2	2999	410	150	12
G5	℄ ABUT. #2	4307	410	200	17

STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of HARTLAND	Bridge No. 60
	Log Sta.
Highway No. U.S. ROUTE 5	Surv. Sta.
U.S. ROUTE 5 OVER LULLS BROOK	
HAUNCH REINFORCING DETAILS	
Designed By W. GAYNOR	Drawn By W. GAYNOR
Checked By Y. LIU Date	Bridge Design Supervisor J. MIECZKOWSKI Date
PROJECT HARTLAND	PROJECT NO. BRS No. 0113(22)
L.G.C. Info. M:\14562\01 VAOT Hartland\struct\zf204fpl.dgn	
Bridge Sheet No.	Sheet of

23-MAR-2005

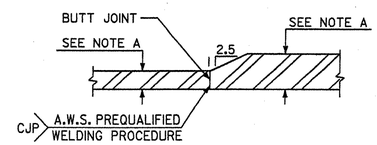


GIRDER AND DIAPHRAGM LAYOUT

0 2000 4000 8000

SCALE IN MILLIMETERS

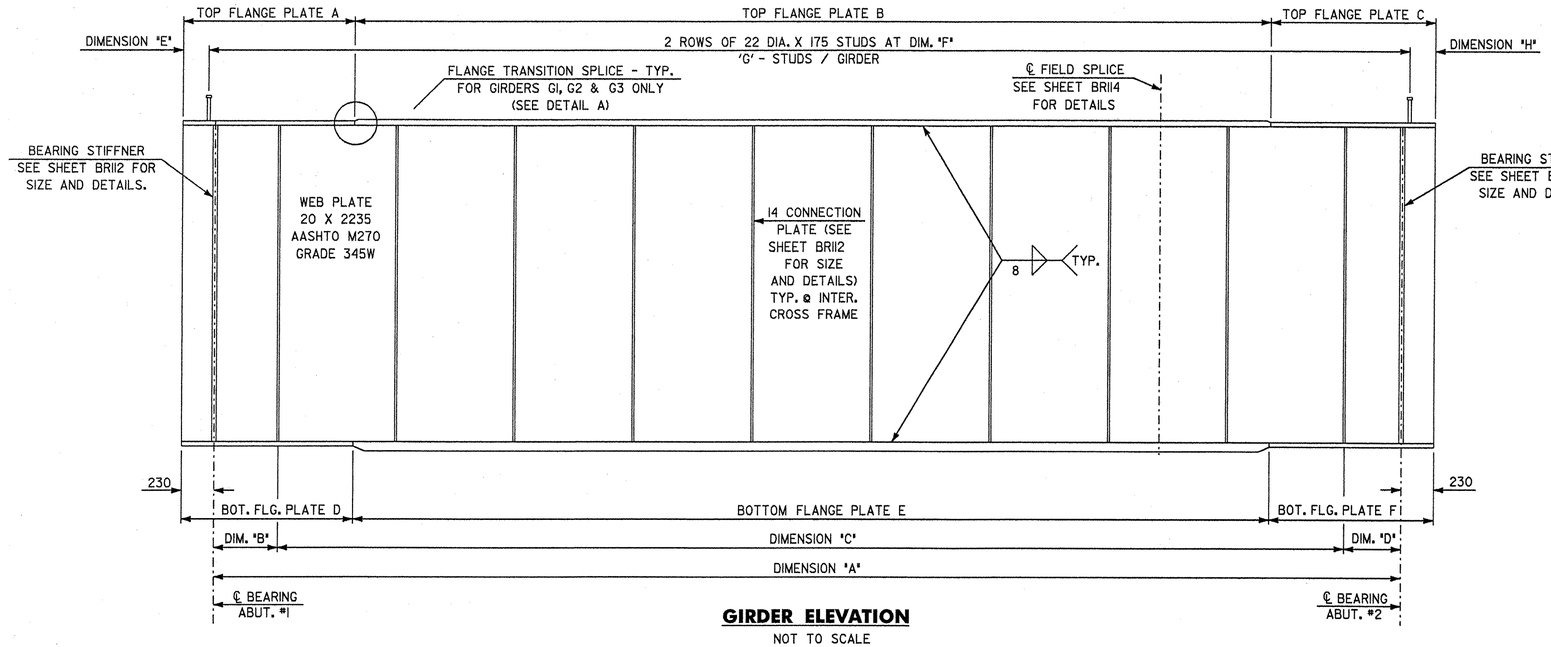
* DIMENSIONS ARE RADIAL.



DETAIL A

NOT TO SCALE

NOTE A:
FLANGE PLATE THICKNESS VARIES, SEE TABLE OF GIRDER DIMENSIONS FOR PLATE THICKNESS.



GIRDER ELEVATION

NOT TO SCALE

GIRDER NOTES

1. DIMENSIONS ARE ALONG THE ARC OF ℄ GIRDER AND ℄ BEARING.
2. INTERMEDIATE CROSS FRAMES ARE ON RADIAL LINES FROM THE CENTER OF THE CURVE.
3. BEARING STIFFENERS SHALL BE PLUMB AND PERPENDICULAR TO THE WEB IN THEIR FINAL POSITION.
4. CONNECTION PLATES AT INTERMEDIATE CROSS FRAMES SHALL BE PERPENDICULAR TO FLANGES
5. CONNECTION PLATES AT ABUTMENTS SHALL BE PERPENDICULAR TO FLANGES AND PARALLEL TO CENTER LINE OF BEARING AND WEBS.
6. ENDS OF GIRDERS SHALL BE FABRICATED AS TO BE PLUMB UNDER FULL DEAD LOAD AND SUPERIMPOSED DEAD LOAD.
7. ALL CROSS FRAMES, TENSION FLANGES, AND WEBS SHALL HAVE 'CHARPY V-NOTCH TEST' PERFORMED AS SPECIFIED IN SUBSECTION 714.01 AND 714.03.

TABLE OF GIRDER DIMENSIONS

GIRDER NO.	RADIUS (METERS)	DIMENSION 'A'	TOP FLANGE PLATE			BOTTOM FLANGE PLATE			DIMENSION 'B'	DIMENSION 'C'	DIMENSION 'D'	DIMENSION 'E'	DIMENSION 'F'	'G' - NO. OF STUDS / GIRDER	DIMENSION 'H'	DIMENSION 'I'
			PLATE A	PLATE B	PLATE C	PLATE D	PLATE E	PLATE F								
GI	105.030	43990	32 X 610 X 4970	45 X 610 X 31610	32 X 610 X 7870	32 X 610 X 4970	65 X 610 X 31610	32 X 610 X 7870	610	9 SPA. @ 4430 = 39870	3510	215	355	250	215	1382
G2	102.515	43164	32 X 610 X 5716	45 X 610 X 30868	32 X 610 X 7040	32 X 610 X 5716	65 X 610 X 30868	32 X 610 X 7040	1462	9 SPA. @ 4324 = 38916	2786	197	330	264	197	1349
G3	100.000	42340	25 X 460 X 42800 (FULL LENGTH)			25 X 460 X 6466	32 X 460 X 30126	25 X 460 X 6208	2318	9 SPA. @ 4218 = 37962	2060	278	355	240	277	1316
G4	97.485	41518	22 X 410 X 41978 (FULL LENGTH)			22 X 410 X 41978 (FULL LENGTH)			3177	9 SPA. @ 4111 = 36999	1342	253	432	194	253	1283
G5	94.970	40697	22 X 410 X 41157 (FULL LENGTH)			22 X 410 X 41157 (FULL LENGTH)			4039	9 SPA. @ 4005 = 36045	613	242	457	180	242	1250

STATE OF VERMONT
AGENCY OF TRANSPORTATION

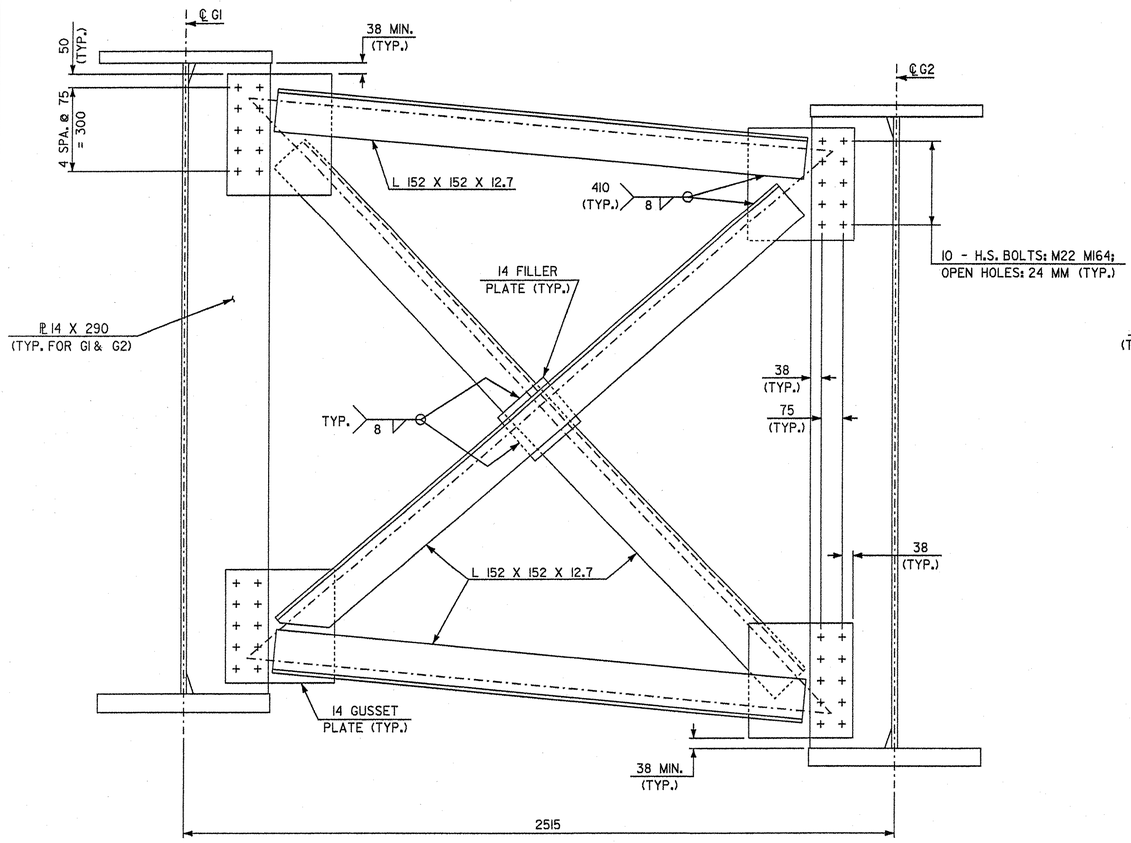
Town Of HARTLAND	Bridge No. 60
Highway No. U.S. ROUTE 5	Log Sta. / Surv. Sta.
U.S. ROUTE 5 OVER LULLS BROOK	

FRAMING PLAN AND GIRDER ELEVATION

Designed By S. BAKI	Drawn By W. GAYNOR
Checked By S. BAKI Date	Bridge Design Supervisor J. MIECZKOWSKI Date
PROJECT HARTLAND	PROJECT NO. BRS No. 0113(22)
I.G.C. Info. M:\145620I VAOT Hartland\struct\zf204fpl.dgn	
Bridge Sheet No. BRIII	Sheet 46 of 86

REVISED: 8-12-04 WJG PLOT SCALE: 100:1 IPLOT FILENAME: ZF204FPL.I

12-AUG-2004



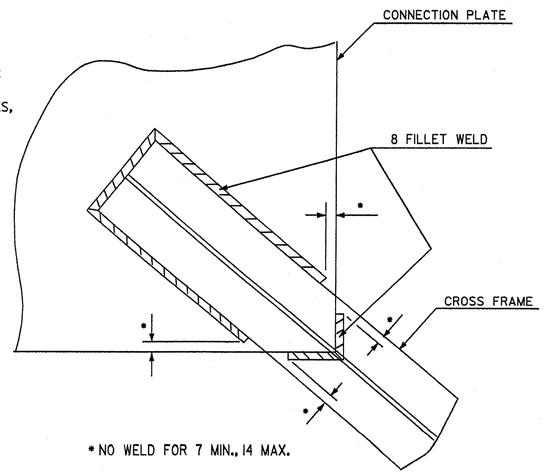
INTERMEDIATE CROSS FRAME

0 200 400 800

SCALE IN MILLIMETERS

NOTE:

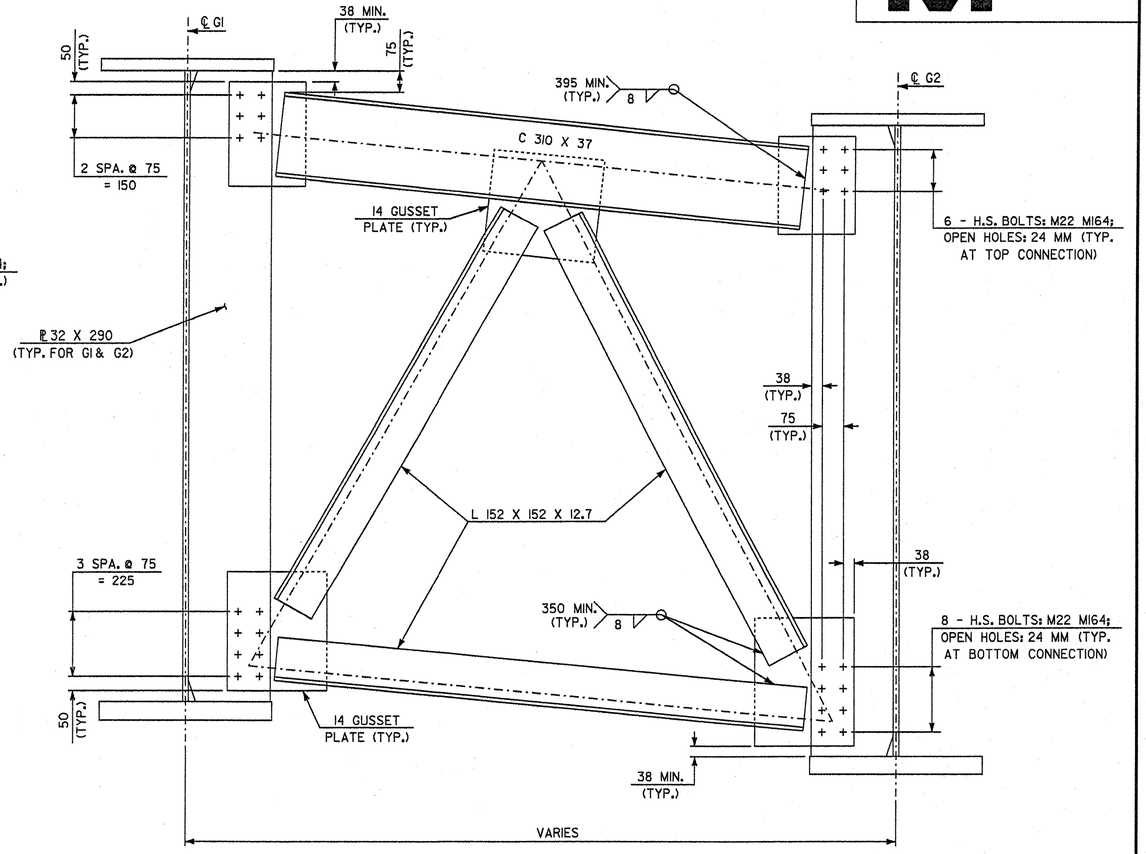
INTERMEDIATE CROSS FRAME DETAIL SHOWN FOR BAY BETWEEN G1 AND G2, BAYS BETWEEN G2 AND G5 ARE SIMILAR EXCEPT FOR DIFFERENT SIZES FOR FLANGE PLATES AND CONNECTION PLATES. FOR FLANGE PLATE SIZES, SEE TABLE OF GIRDER DIMENSIONS ON SHEET BRIII. FOR CONNECTION PLATE SIZES, SEE TABLE OF CONNECTION PLATE DIMENSIONS ON SHEET BRII3.



* NO WELD FOR 7 MIN., 14 MAX.

WELD LOCATION DETAIL AT CROSS FRAMES AND LATERAL BRACING

NOT TO SCALE



ABUTMENT CROSS FRAME

0 200 400 800

SCALE IN MILLIMETERS

NOTE:

ABUTMENT CROSS FRAME DETAIL SHOWN FOR BAY BETWEEN G1 AND G2, BAYS BETWEEN G2 AND G5 ARE SIMILAR EXCEPT FOR DIFFERENT SIZES FOR FLANGE PLATES AND BEARING STIFFENER PLATES. FOR FLANGE PLATE SIZES, SEE TABLE OF GIRDER DIMENSIONS ON SHEET BRIII. FOR BEARING STIFFENER PLATE SIZES, SEE TABLE OF BEARING STIFFENER DIMENSIONS ON SHEET BRII3.

NOTES:

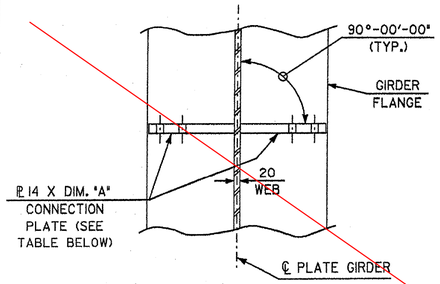
1. FOR INTERMEDIATE CROSS FRAME CONNECTION PLATE DETAIL, SEE SHEET BRII3.
2. FOR BEARING STIFFENER AND CONNECTION PLATE DETAIL AT ABUTMENT CROSS FRAMES, SEE SHEET BRII3.
3. FOR SPACING OF ABUTMENT CROSS FRAMES, SEE FRAMING PLAN ON SHEET BRIII.

STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of HARTLAND	Bridge No. 60
Highway No. U.S. ROUTE 5	Log Sta. / Surv. Sta.
U.S. ROUTE 5 OVER LULLS BROOK	
CROSS FRAME DETAILS	
Designed By S. BAKI	Drawn By W. GAYNOR
Checked By S. BAKI Date	Bridge Design Supervisor J. MIECZKOWSKI Date
PROJECT HARTLAND	PROJECT NO. BRS No. 0113(22)
I.G.C. Info. M:\145620\VAOT Hartland\struct\zf204cdt.dgn	
Bridge Sheet No. BRII2	Sheet 47 of 86

REVISED: 8-12-04 WJG PLOT SCALE: 100:1 PLOT FILENAME: ZF204CDT.I

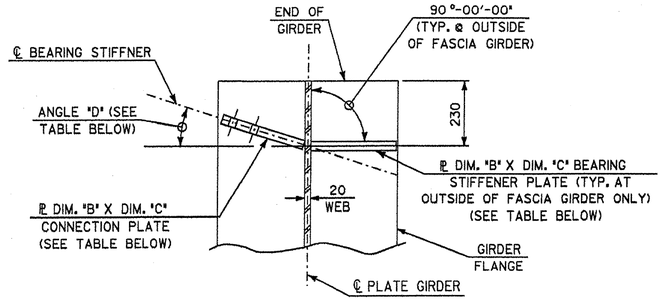
16-AUG-2004



SECTION A–A

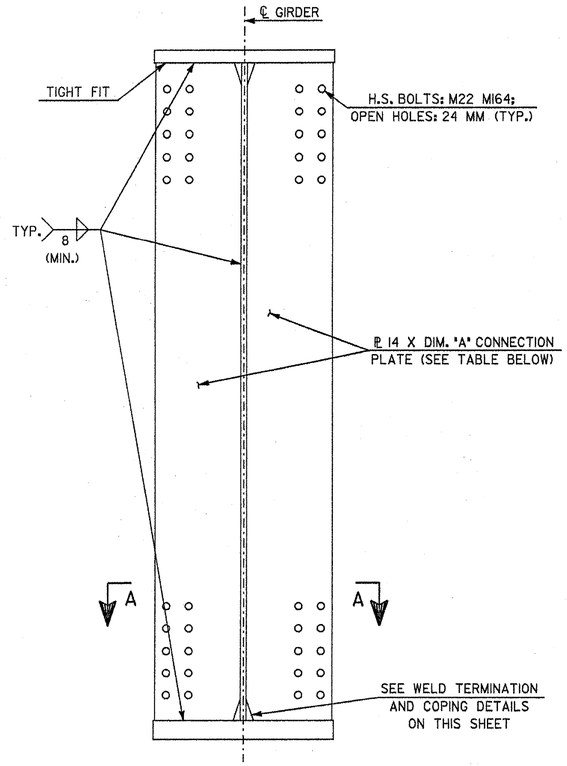
0 200 400 800
SCALE IN MILLIMETERS

NOTE: NO CONNECTION PLATE AT OUTSIDE OF FASCIA GIRDER.



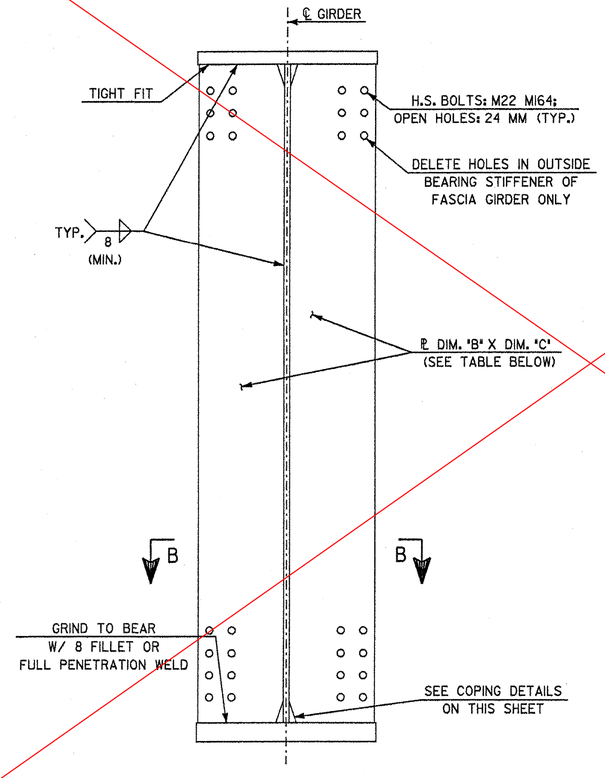
SECTION B–B

0 200 400 800
SCALE IN MILLIMETERS



INTERMEDIATE CROSS FRAME CONNECTION PLATE DETAIL

0 200 400 800
SCALE IN MILLIMETERS



ABUTMENT CROSS FRAME BEARING STIFFENER AND CONNECTION PLATE DETAIL

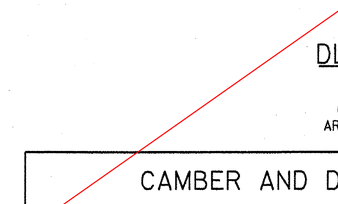
0 200 400 800
SCALE IN MILLIMETERS

TABLE OF CONNECTION PLATE DIMENSIONS

GIRDER	DIMENSION "A"
G1	290
G2	290
G3	215
G4	190
G5	190

TABLE OF BEARING STIFFENER & CONNECTION PLATE DIMENSIONS

GIRDER NO.	DIMENSION "B"	DIMENSION "C"	ABUTMENT #1 ANGLE "D"	ABUTMENT #2 ANGLE "D"
G1	32	290	19°-00'-15.8"	14°-15'-57.6"
G2	32	290	19°-29'-21.2"	14°-37'-25.3"
G3	25	215	20°-00'-00.0"	15°-00'-00.0"
G4	22	190	20°-32'-20.2"	15°-23'-47.2"
G5	22	190	21°-06'-30.5"	15°-48'-52.9"



WELD TERMINATION AND COPING DETAILS FOR WELDED PLATE GIRDERS

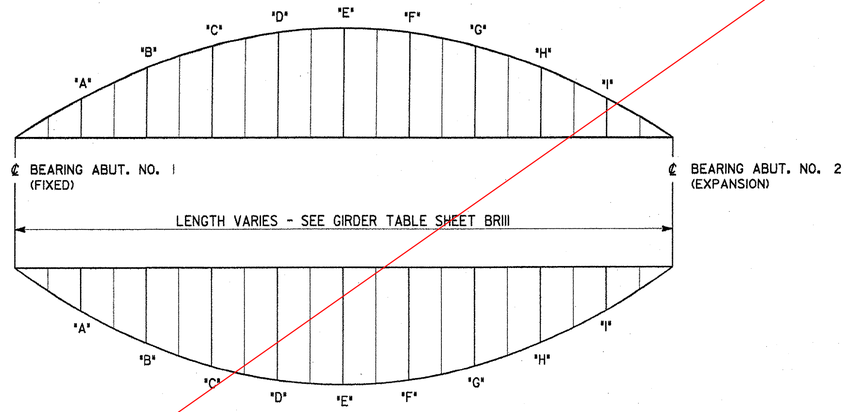
* NO WELD FOR 7 MIN. 14 MAX.

0 100 200 400
SCALE IN MILLIMETERS

VAOT Metric

CAMBER DIAGRAM

NOT TO SCALE



DL DEFLECTION DIAGRAM

NOT TO SCALE

CAMBER AND DEFLECTION MEASUREMENTS ARE GIVEN IN MILLIMETERS AT TENTH POINTS

CAMBER AND DL DEFLECTION ORDINATE SCHEDULE

L = TOTAL LENGTH ℄BRG. ABUT. NO. 1 TO ℄BRG. ABUT. NO. 2 (SEE GIRDER TABLE SHEET BRIII)

GIRDER NO.		℄ BRG. ABUT. NO. 1	"A" 0.1OL	"B" 0.2OL	"C" 0.3OL	"D" 0.4OL	"E" 0.5OL	"F" 0.6OL	"G" 0.7OL	"H" 0.8OL	"I" 0.9OL	℄BRG. ABUT. NO. 2
1	CAMBER	0	64	117	158	184	192	184	158	118	65	0
	DL DEFLECTION	0	-40	-75	-103	-121	-127	-121	-103	-76	-41	0
2	CAMBER	0	57	103	139	162	170	164	142	106	59	0
	DL DEFLECTION	0	-33	-62	-85	-100	-106	-102	-88	-65	-35	0
3	CAMBER	0	48	90	122	142	150	144	126	94	51	0
	DL DEFLECTION	0	-26	-50	-69	-82	-87	-84	-73	-54	-29	0
4	CAMBER	0	43	80	108	125	132	126	110	82	45	0
	DL DEFLECTION	0	-21	-41	-56	-66	-70	-67	-58	-43	-23	0
5	CAMBER	0	40	72	96	110	115	109	94	71	39	0
	DL DEFLECTION	0	-17	-32	-44	-51	-53	-50	-42	-31	-16	0

SHEET REVISED

STATE OF VERMONT
AGENCY OF TRANSPORTATION

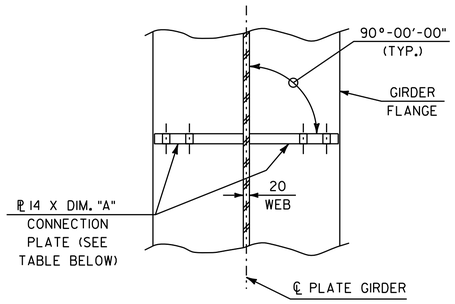
Town Of HARTLAND	Bridge No. 60
	Log Sta.
Highway No. U.S. ROUTE 5	Surv. Sta.
U.S. ROUTE 5 OVER LULLS BROOK	

MISC. GIRDER DETAILS

Designed By S. BAKI	Drawn By W. GAYNOR
Checked By S. BAKI Date	Bridge Design Supervisor J. MIECZKOWSKI Date
PROJECT HARTLAND	PROJECT NO. BRS No. 0113(22)
I.G.C. Info. M:\145620\VAOT Hartland\struct\zf204cdt.dgn	
Bridge Sheet No. BRII3	Sheet 48 of 86

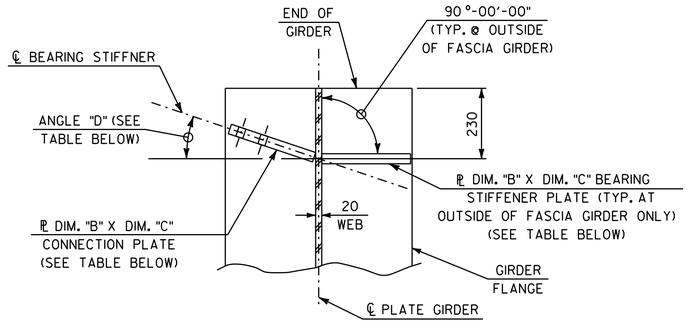
16-AUG-2004

REVISED: 8-12-04 WJG PLOT SCALE: 100:1 PLOT FILENAME: ZF204CDT.I

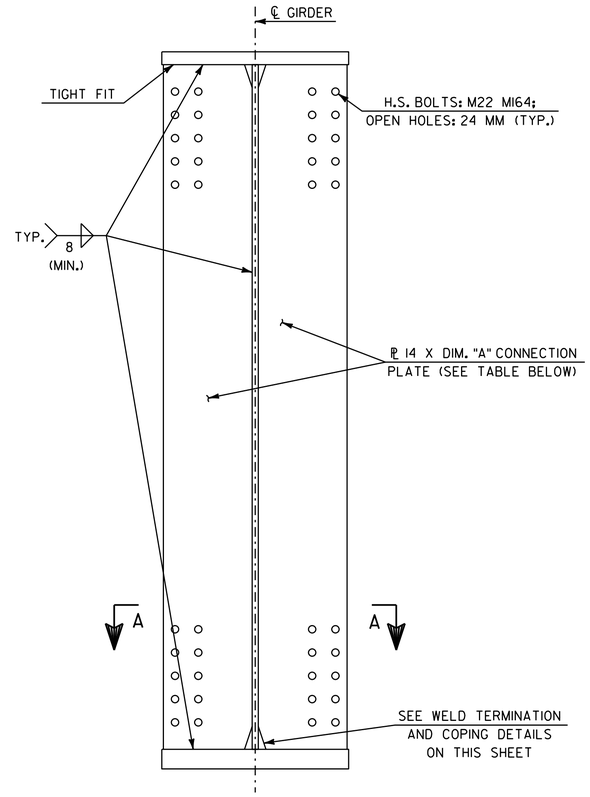


SECTION A–A

NOTE: NO CONNECTION PLATE AT OUTSIDE OF FASCIA GIRDER.

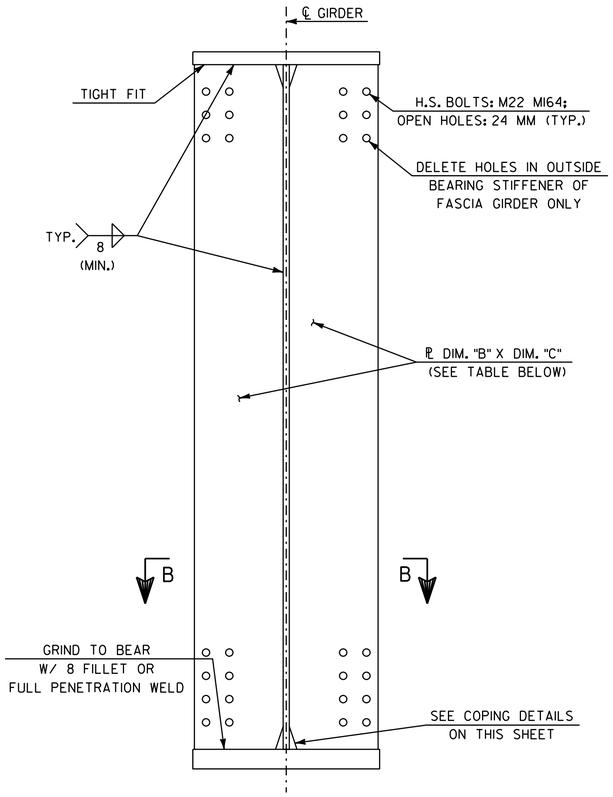


SECTION B–B



INTERMEDIATE CROSS FRAME CONNECTION PLATE DETAIL

TABLE OF CONNECTION PLATE DIMENSIONS	
GIRDER	DIMENSION "A"
G1	290
G2	290
G3	215
G4	190
G5	190

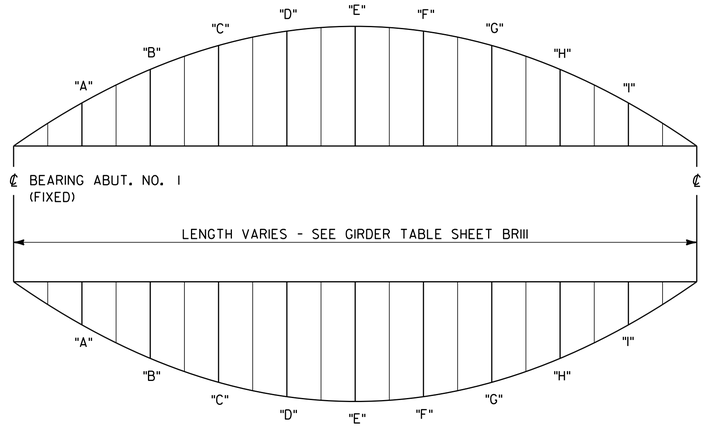


ABUTMENT CROSS FRAME BEARING STIFFENER AND CONNECTION PLATE DETAIL

TABLE OF BEARING STIFFENER & CONNECTION PLATE DIMENSIONS				
GIRDER NO.	DIMENSION "B"	DIMENSION "C"	ABUTMENT #1 ANGLE "D"	ABUTMENT #2 ANGLE "D"
G1	32	290	19°-00'-15.8"	14°-15'-57.6"
G2	32	290	19°-29'-21.2"	14°-37'-25.3"
G3	25	215	20°-00'-00.0"	15°-00'-00.0"
G4	22	190	20°-32'-20.2"	15°-23'-47.2"
G5	22	190	21°-06'-30.5"	15°-48'-52.9"

CAMBER DIAGRAM

NOT TO SCALE



DL DEFLECTION DIAGRAM

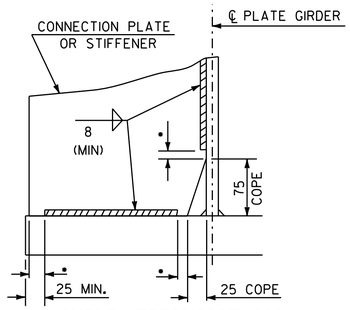
NOT TO SCALE

CAMBER AND DEFLECTION MEASUREMENTS
ARE GIVEN IN MILLIMETERS AT TENTH POINTS

CAMBER AND DL DEFLECTION ORDINATE SCHEDULE

L = TOTAL LENGTH ℄BRG. ABUT. NO. 1 TO ℄BRG. ABUT. NO. 2 (SEE GIRDER TABLE SHEET BRIII)

GIRDER NO.		℄ BRG. ABUT. NO. 1	"A" 0.1OL	"B" 0.2OL	"C" 0.3OL	"D" 0.4OL	"E" 0.5OL	"F" 0.6OL	"G" 0.7OL	"H" 0.8OL	"I" 0.9OL	℄BRG. ABUT. NO. 2
1	CAMBER	0	57	105	142	165	173	165	142	105	57	0
	DL DEFLECTION	0	-40	-75	-103	-121	-127	-121	-103	-76	-41	0
2	CAMBER	0	50	91	123	144	151	144	123	91	50	0
	DL DEFLECTION	0	-33	-62	-85	-100	-106	-102	-88	-65	-35	0
3	CAMBER	0	41	78	106	124	131	124	106	78	41	0
	DL DEFLECTION	0	-26	-50	-69	-82	-87	-84	-73	-54	-29	0
4	CAMBER	0	36	68	92	107	113	107	92	68	36	0
	DL DEFLECTION	0	-21	-41	-56	-66	-70	-67	-58	-43	-23	0
5	CAMBER	0	33	60	80	92	96	92	80	60	33	0
	DL DEFLECTION	0	-17	-32	-44	-51	-53	-50	-42	-31	-16	0



WELD TERMINATION AND COPING DETAILS FOR WELDED PLATE GIRDERS

• NO WELD FOR 7 MIN. 14 MAX.

STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of HARTLAND	Bridge No. 60
	Log Sta.
Highway No. U.S. ROUTE 5	Surv. Sta.
U.S. ROUTE 5 OVER LULLS BROOK	

MISC. GIRDER DETAILS

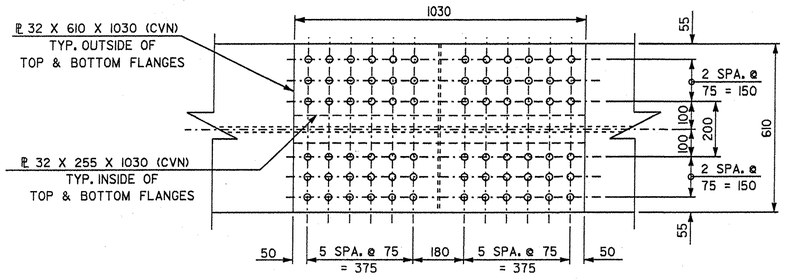
Designed By S. BAKI	Drawn By W. GAYNOR
Checked By S. BAKI Date	Bridge Design Supervisor J. MIECZKOWSKI Date
PROJECT HARTLAND	PROJECT NO. BRS No. 0113(22)
I.G.C. Info. M:\Projects\78f204\Construction\zf204cdt_ri.dgn	
Bridge Sheet No. BRII3	Sheet 48 of 86

REVISED: 8-12-04 WJG
4-20-05 SFD

PLOT SCALE: 100:1

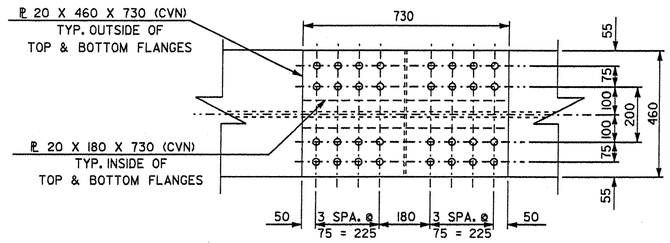
IPLOT FILENAME: ZF204CDT.I

11-SEP-2012 13:44



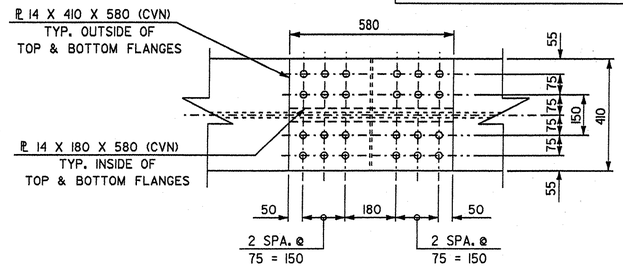
VIEW A-A
GIRDER G1 & G2

0 200 400 800
SCALE IN MILLIMETERS



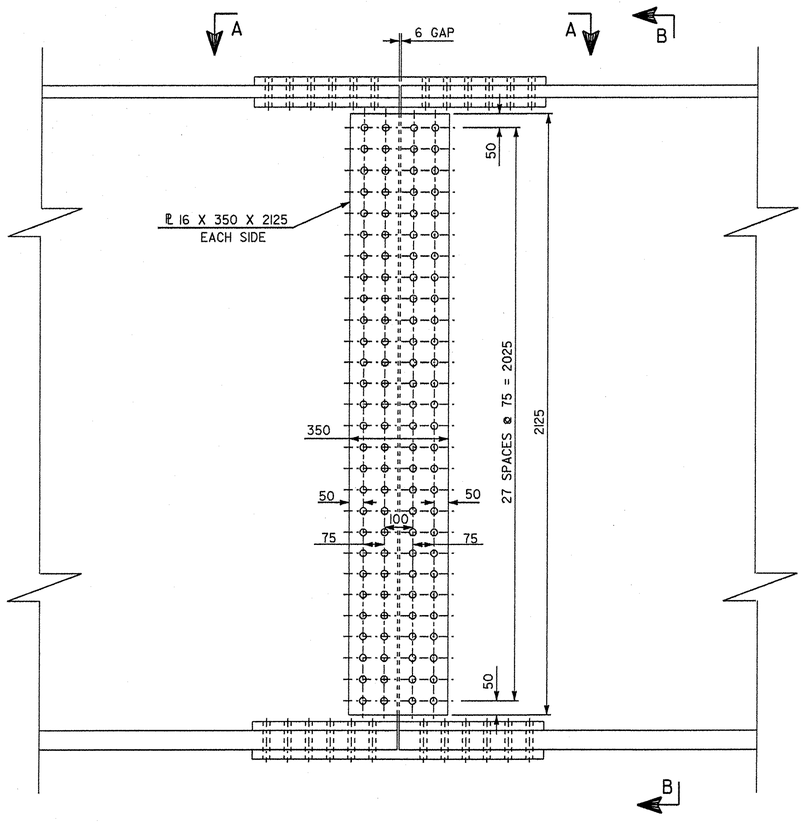
VIEW A-A
GIRDER G3

0 200 400 800
SCALE IN MILLIMETERS

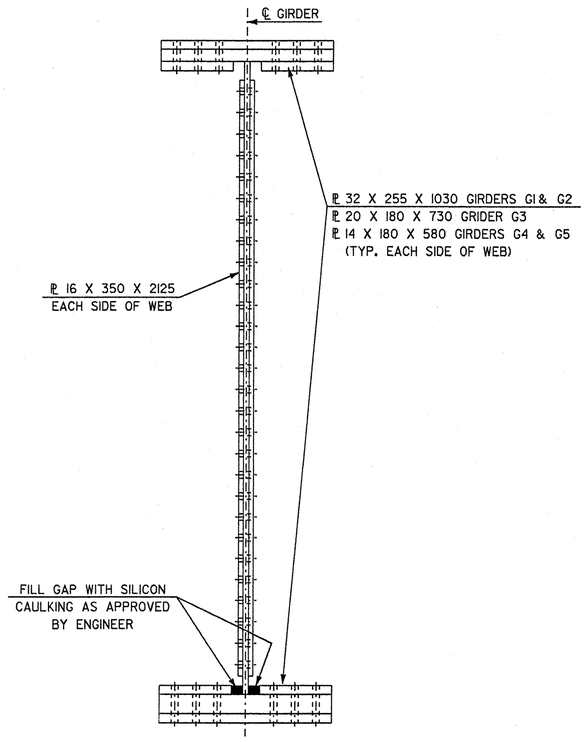


VIEW A-A
GIRDER G4 & G5

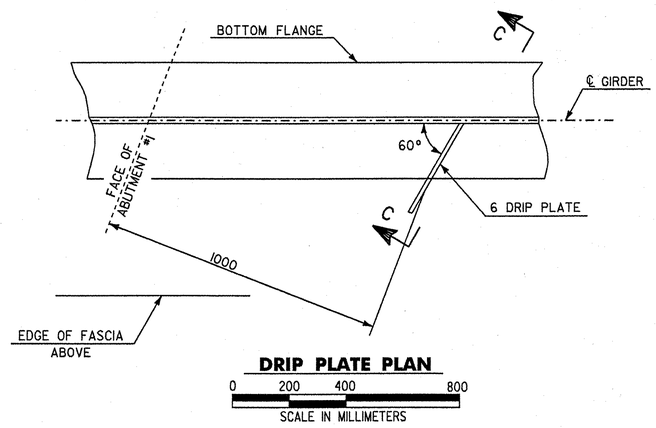
0 200 400 800
SCALE IN MILLIMETERS



ELEVATION

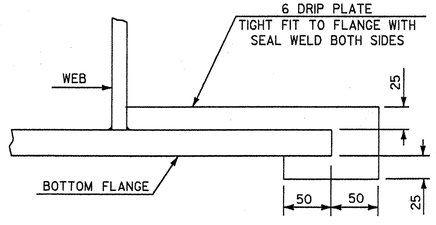


SECTION B-B



DRIP PLATE PLAN

0 200 400 800
SCALE IN MILLIMETERS



VIEW C-C
NOT TO SCALE

NOTE:
DRIP PLATES SHALL BE PLACED ON OUTSIDE EDGE OF FASCIA GIRDERS. SEE FRAMING PLAN ON SHEET BRIII FOR LOCATIONS.

FIELD SPLICE NOTES

1. WEB SPLICES ARE THE SAME FOR GIRDERS G1 THRU G5.
2. ALL SPLICE CONNECTIONS SHALL BE MADE USING 22 Ø AASHTO M164 BOLTS IN 25Ø HOLES.
3. CVN = CHARPY V - NOTCH TESTING REQUIRED
4. CONNECTION DETAILS FOR BOLTED FIELD SPLICE SHALL HAVE A CLASS 'B' SURFACE CONDITION WITH BOLT THREADS PRECLUDED FROM THE SHEAR PLANE.

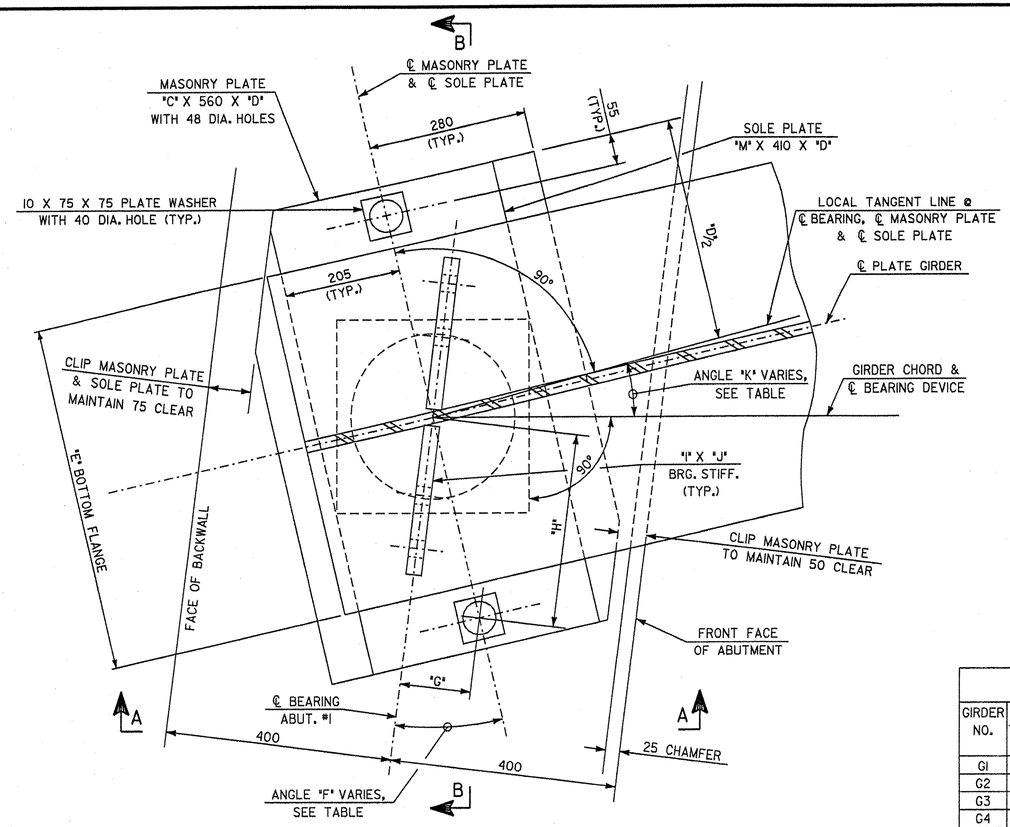
GIRDER SPLICE DETAILS

0 200 400 800
SCALE IN MILLIMETERS

NOTE:
GIRDER SPLICE ELEVATION AND SECTION B-B ARE SHOWN FOR GIRDERS G1 AND G2, ELEVATION AND SECTION B-B FOR GIRDERS G3, G4 AND G5 ARE SIMILAR.

STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of HARTLAND	Bridge No. 60
Highway No. U.S. ROUTE 5	Log Sta. Surv. Sta.
U.S. ROUTE 5 OVER LULLS BROOK	
GIRDER SPLICE DETAILS	
Designed By S. BAKI	Drawn By B. TYLER
Checked By S. BAKI Date	Bridge Design Supervisor J. MIECZKOWSKI Date
PROJECT HARTLAND	PROJECT NO. BRS No. 0113(22)
I.G.C. Info. M:\145620I VAOT Hartland\struct\zf204sdt.dgn	
Bridge Sheet No. BRII4	Sheet 49 of 86



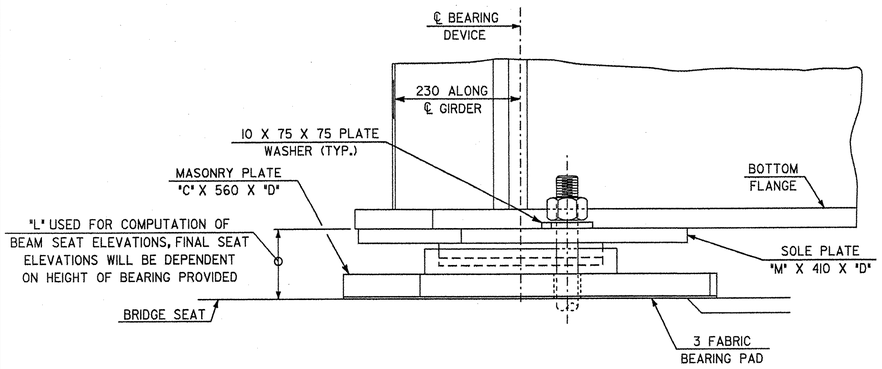
PLAN VIEW

BEARING NOTES

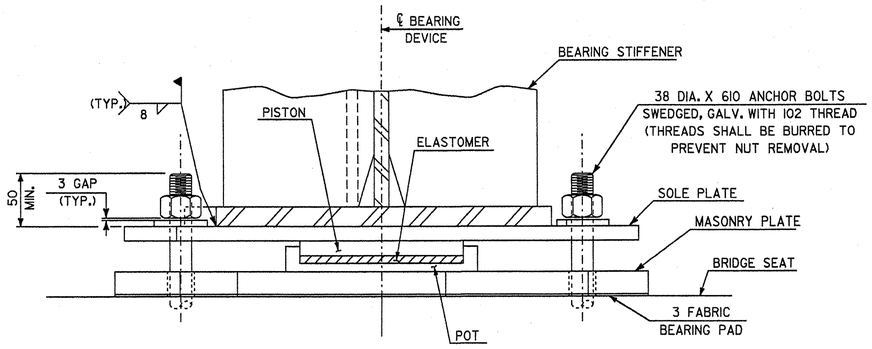
1. BEARINGS SHALL CONFORM TO APPLICABLE SUBSECTIONS OF SECTION 531 AND 731 AND SHALL BE PAID FOR UNDER THE ITEM 531.10 "BEARING DEVICE ASSEMBLY".
2. THE FIELD WELD CONNECTING THE BOTTOM FLANGE WITH THE BEARING DEVICE SHALL BE MADE WITH E7018 RODS.
3. ALL BEARING DEVICES SHALL BE GALVANIZED OR METALIZED AS PER SECTION 531.04(b) AND 506.15(a) AND (b). AREAS OF GALVANIZING OR METALIZING DAMAGED BY FIELD WELDS OR HANDLING SHALL BE PAINTED WITH AN APPROVED SEALANT IN ACCORDANCE WITH SUBSECTION 531.04.
4. 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, AND SHALL MAINTAIN THE ANCHORAGE SYSTEM SHOWN.
5. BRIDGE SEAT ELEVATIONS MAY BE REVISED TO ACCOMODATE AN ALTERNATE CONFIGURATION.
6. THE CONCRETE SURFACE UNDER THE BEARING DEVICE SHALL BE LEVEL.
7. "A" DISTANCE IS THE FINAL SETTING FOR THE BEARING PAD AFTER THE CONCRETE SLAB, CURB, PAVEMENT AND BRIDGE RAIL ARE PLACED. "B" DISTANCE IS LISTED FOR SETTING THE BEARING AFTER THE STRUCTURAL STEEL IS ERECTED AND BEFORE THE CONCRETE DECK IS POURED. THE DIFFERENCE IS THE THEORETICAL ELONGATION OF THE BOTTOM FLANGE DUE TO DEAD LOAD DEFLECTION. THE FINAL "A" DISTANCE AS SHOWN IN THE TABLE, MUST BE ATTAINED WITHIN 3 MM.
8. DESIGN CRITERIA:
   - A. BASE PLATE TO CONCRETE DESIGN PRESSURE = 6,895 kPa MAXIMUM.
   - B. MINIMUM ALLOWABLE DESIGN ROTATION = 0.015 RADIANS.
   - C. HORIZONTAL CAPACITY SHALL BE A MINIMUM 10% OF VERTICAL LOAD. GUIDE BARS SHALL BE DESIGNED FOR THIS CAPACITY.
   - D. DESIGN LOAD PER BEARING = 1,690 kN AT ABUTMENT 1 AND 1,335 kN AT ABUTMENT 2.
9. THE MINIMUM GAP BETWEEN THE GUIDE BARS AND THE BEARING ON THE EXPANSION BEARINGS SHALL 14 MIN. TO ALLOW FOR LATERAL MOVEMENT.

TABLE OF FIXED BEARING DIMENSIONS AT ABUTMENT NO. 1

GIRDER NO.	PLATE THICKNESS. DIM. "C"	PLATE LENGTH DIM. "D"	FLANGE WIDTH DIM. "E"	ANGLE "F" BETWEEN ℄ BRG. & ℄ MAS. ℙ	HOLE DIM. "G"	HOLE DIM. "H"	STIFF. ℙ DIM. "I"	STIFF. ℙ DIM. "J"	ANGLE "K" BETWEEN GIRDER CHORD & LOCAL TANGENT ø ℄ BEARING	HEIGHT "L" BETWEEN TOP OF BRIDGE SEAT & BOTTOM OF GIRDER FLANGE	PLATE THICKNESS. DIM. "M"
G1	60	840	610	19°-00'-15.8"	119	345	32	290	11°-59'-55.3"	174	38
G2	48	840	610	19°-29'-21.2"	122	344	32	290	12°-03'-44.2"	154	30
G3	32	686	460	20°-00'-00.0"	99	271	25	215	12°-07'-46.3"	133	25
G4	32	636	410	20°-32'-20.0"	92	246	22	190	12°-12'-02.7"	127	25
G5	32	636	410	21°-06'-30.6"	95	245	22	190	12°-16'-35.1"	127	25



SECTION A–A



SECTION B–B

FIXED BEARING DETAIL AT ABUTMENT NO. 1

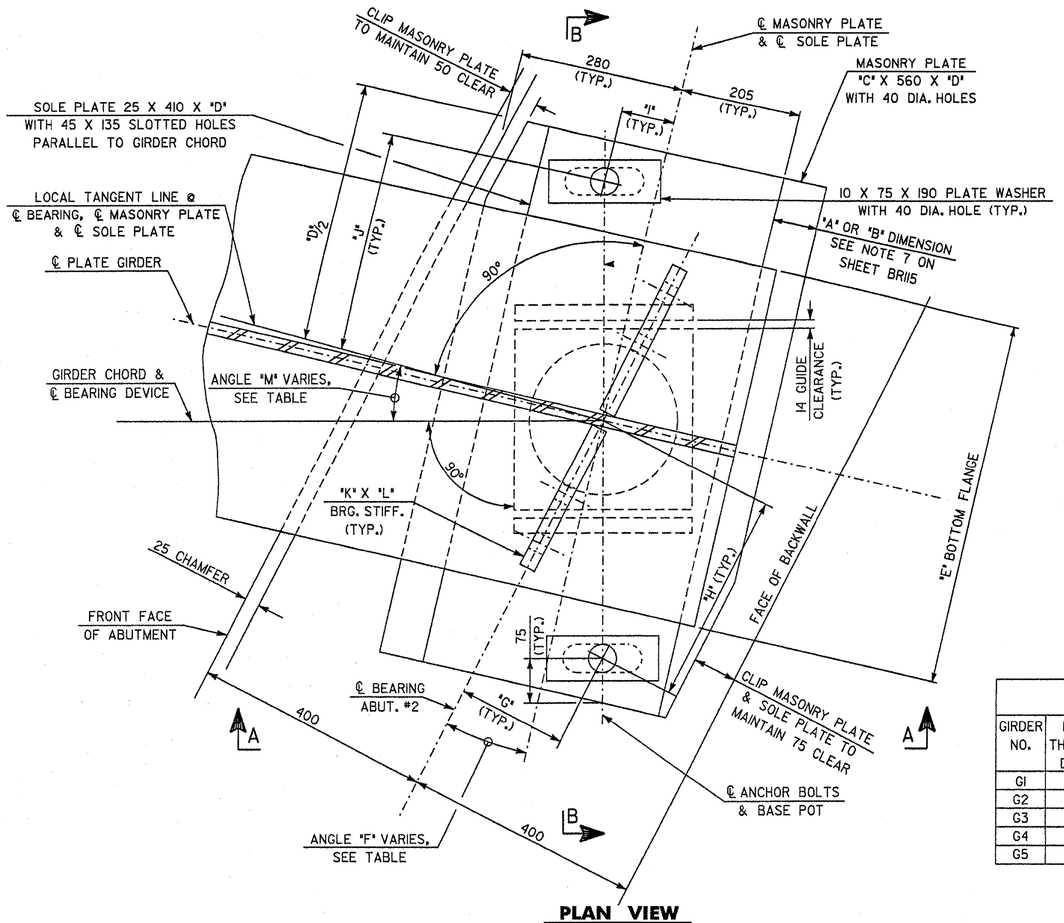
0 100 200 400
SCALE IN MILLIMETERS

STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of HARTLAND	Bridge No. 60
	Log Sta.
Highway No. U.S. ROUTE 5	Surv. Sta.
U.S. ROUTE 5 OVER LULLS BROOK	
ABUTMENT NO. 1 FIXED BEARING	
Designed By S. BAKI	Drawn By W. GAYNOR
Checked By S. BAKI Date	Bridge Design Supervisor J. MIECZKOWSKI Date
PROJECT HARTLAND	PROJECT NO. BRS No. 0113(22)
I.G.C. Info. M:\145620I VAOT Hartland\struct\zf204bdt.dgn	
Bridge Sheet No. BRII5	Sheet 50 of 86

12-AUG-2004

REVISED: 8-12-04 W.JG PLOT SCALE: 100:1 IPLOT FILENAME: ZF204BDT.I

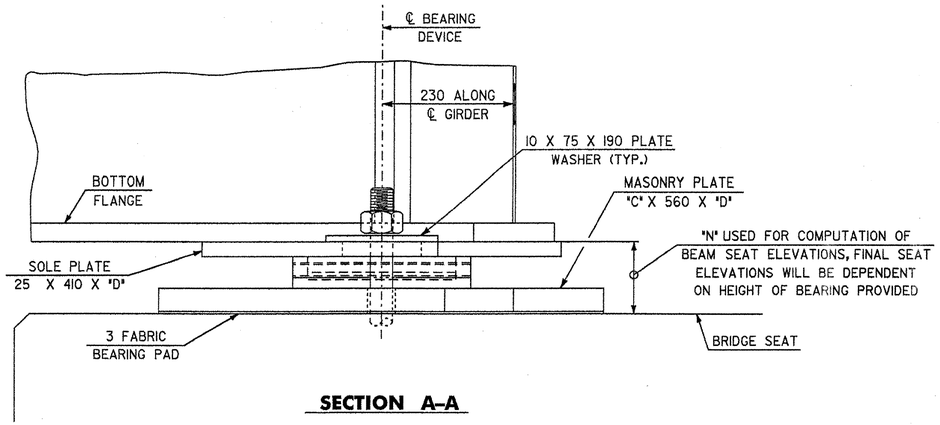


PLAN VIEW

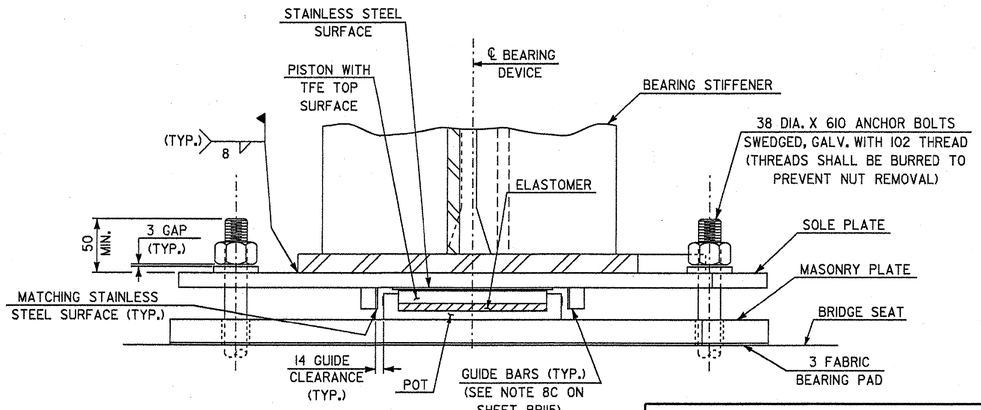
ABUTMENT NO. 2		
TEMP	"A" DIST	"B" DIST
0°C ~~°F~~	89	104
15°C ~~°F~~	85	100
30°C ~~°F~~	80	96
45°C ~~°F~~	76	92
60°C ~~°F~~	72	87
75°C ~~°F~~	68	83
90°C ~~°F~~	63	79
105°C ~~°F~~	59	74

TABLE OF EXPANSION BEARING DIMENSIONS AT ABUTMENT NO. 2

GIRDER NO.	PLATE THICKNESS DIM. "C"	PLATE LENGTH DIM. "D"	FLANGE WIDTH DIM. "E"	ANGLE "F" BETWEEN ℄ BRG. & ℄ MAS. ℙ	HOLE DIM. "G"	HOLE DIM. "H"	HOLE DIM. "I"	HOLE DIM. "J"	STIFF. ℙ DIM. "K"	STIFF. ℙ DIM. "L"	ANGLE "M" BETWEEN GIRDER CHORD & LOCAL TANGENT @ ℄ BEARING	HEIGHT "N" BETWEEN TOP OF BRIDGE SEAT & BOTTOM OF GIRDER FLANGE
G1	55	916	610	14°-15'-57.6"	174	352	82	385	32	290	11°-59'-55.3"	165
G2	55	916	610	14°-37'-25.3"	177	351	82	385	32	290	12°-03'-44.2"	165
G3	32	762	460	15°-00'-00.0"	144	280	66	308	25	215	12°-07'-46.3"	142
G4	32	712	410	15°-23'-47.0"	134	256	61	283	22	190	12°-12'-02.7"	142
G5	32	712	410	15°-48'-52.9"	136	255	62	283	22	190	12°-16'-35.1"	130



SECTION A-A



SECTION B-B

EXPANSION BEARING DETAIL AT ABUTMENT NO. 2

0 100 200 400
SCALE IN MILLIMETERS

STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of HARTLAND	Bridge No. 60
	Log Sta.
Highway No. U.S. ROUTE 5	Surv. Sta.
U.S. ROUTE 5 OVER LULLS BROOK	

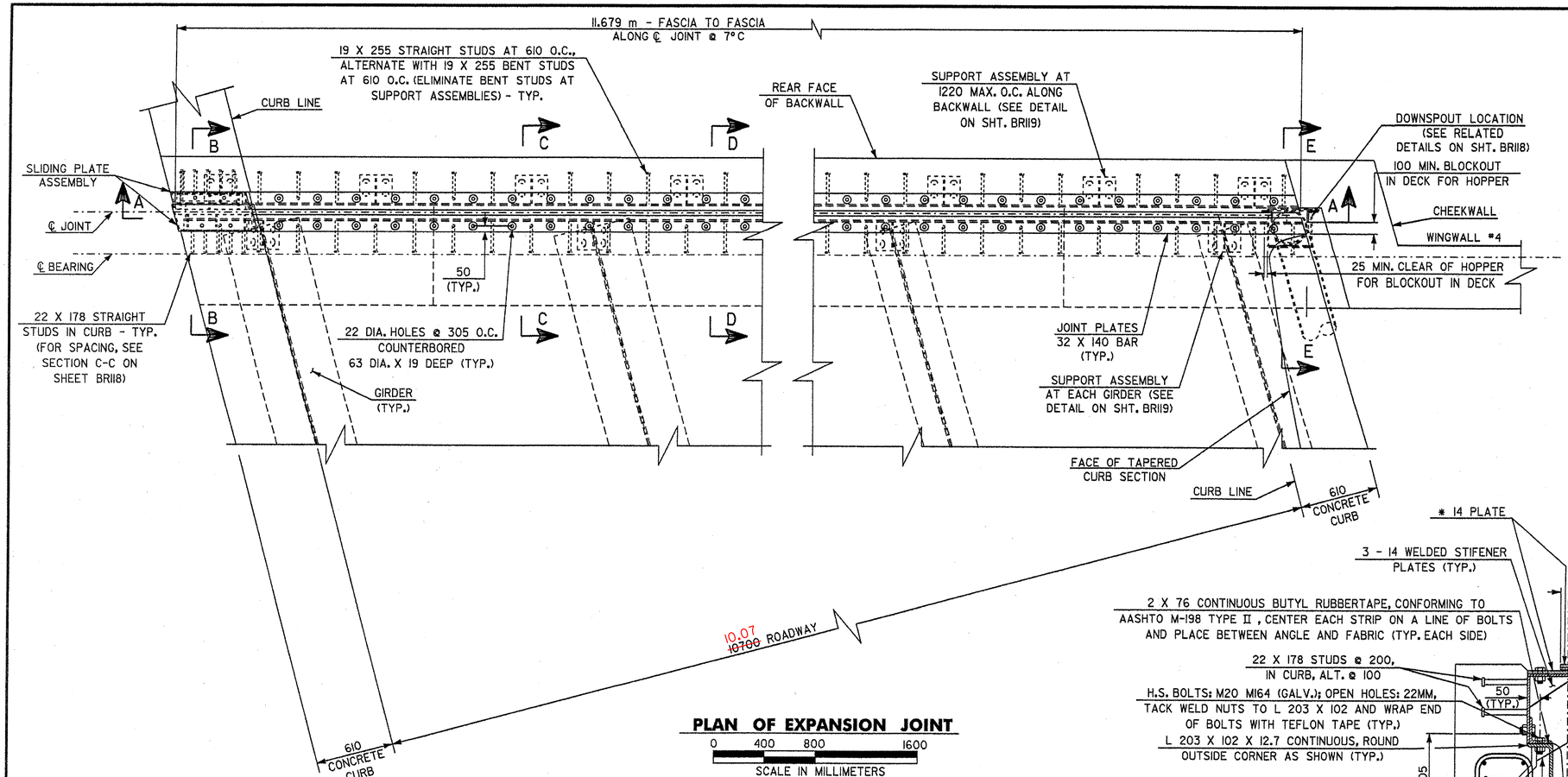
ABUTMENT NO. 2 EXPANSION BEARING

Designed By S. BAKI	Drawn By W. GAYNOR
Checked By S. BAKI Date	Bridge Design Supervisor J. MIECZKOWSKI Date
PROJECT HARTLAND	PROJECT NO. BRS No. 0113(22)
I.G.C. Info. M:\145620I VAOT Hartland\struct\zf204bdt.dgn	
Bridge Sheet No. BRII6	Sheet 51 of 86

REVISED: 8-12-04 WJG PLOT SCALE: 100:1 IPLOT FILENAME: ZF204BDT.I

12-AUG-2004

VAOT Metric



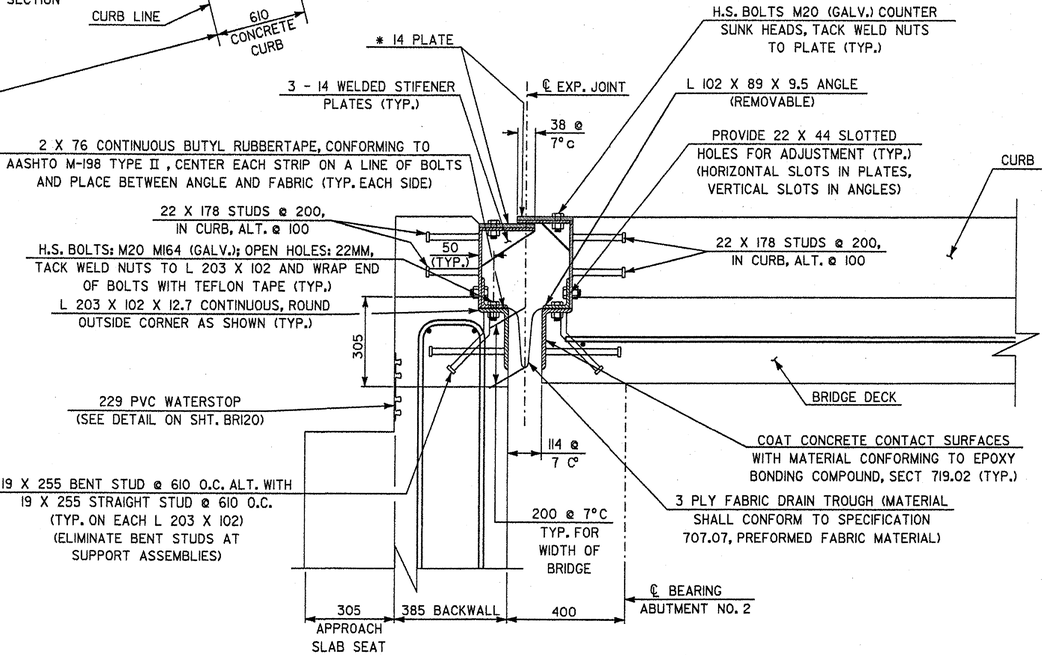
MAG 1982

JOINT DIMENSION TABLE	
TEMPERATURE	"A" DISTANCE
-18° C	51
-9° C	47
-1°C	42
7° C	38
16° C	34
24° C	30
32°C	25
4ºC	21

NOTE:
FOR SECTIONS C-C, D-D AND E-E, SEE SHEET BRII8.

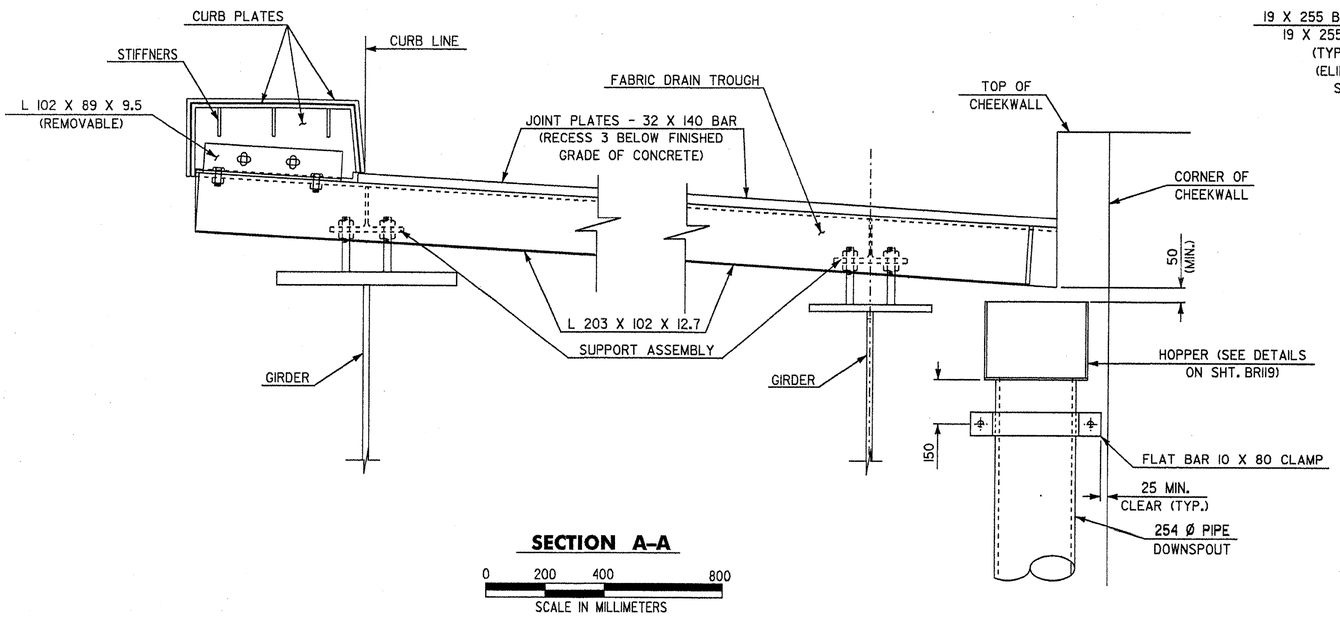
PLAN OF EXPANSION JOINT

0 400 800 1600
SCALE IN MILLIMETERS



SECTION B-B

0 200 400 800
SCALE IN MILLIMETERS



SECTION A-A

0 200 400 800
SCALE IN MILLIMETERS

* PROVIDE 3 CLEARANCE BETWEEN SURFACES OF THE FIXED AND SLIDING CURB PLATES.

STATE OF VERMONT
AGENCY OF TRANSPORTATION

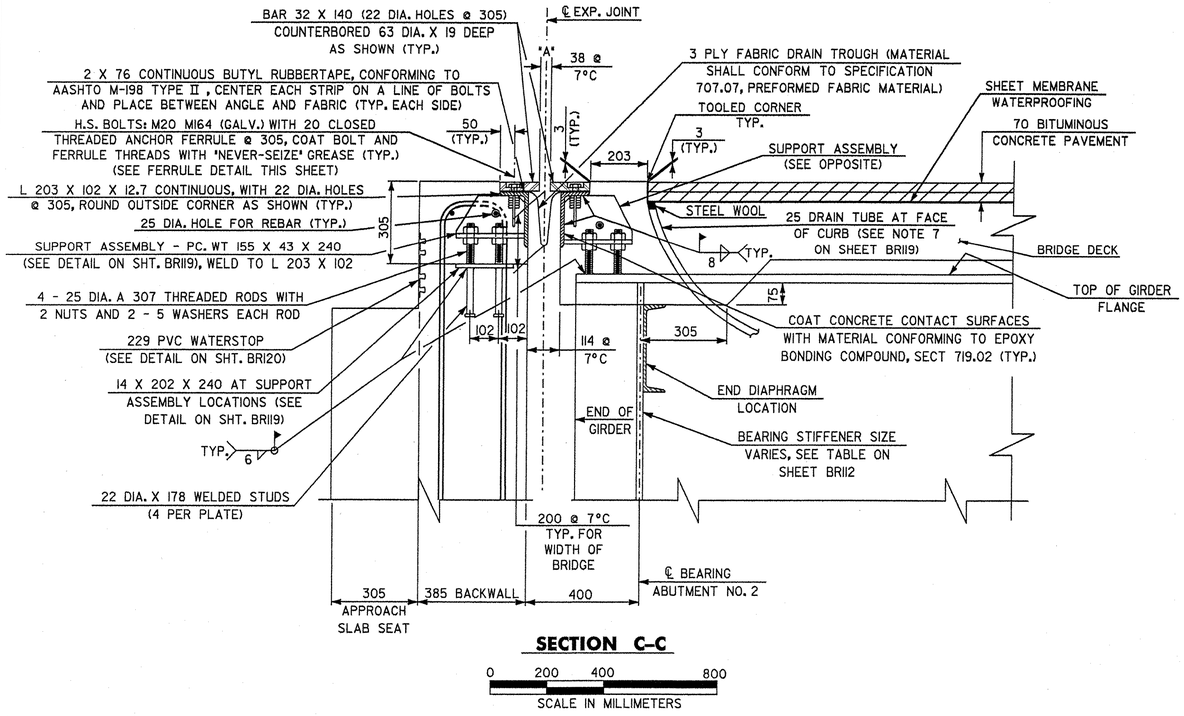
Town Of HARTLAND	Bridge No. 60
	Log Sta.
Highway No. U.S. ROUTE 5	Surv. Sta.
U.S. ROUTE 5 OVER LULLS BROOK	

EXPANSION JOINT DETAILS AT ABUT. NO. 2

Designed By S. BAKI	Drawn By W. GAYNOR
Checked By S. BAKI Date	Bridge Design Supervisor J. MIECZKOWSKI Date
PROJECT HARTLAND	PROJECT NO. BRS No. 0113(22)
I.G.C. Info. M:\145620I VAOT Hartland\struct\zf204jdt.dgn	
Bridge Sheet No. BRII7	Sheet 52 of 86

REVISED: 8-12-04 WJG PLOT SCALE: 100:1 IPLOT FILENAME: ZF204JDT.I

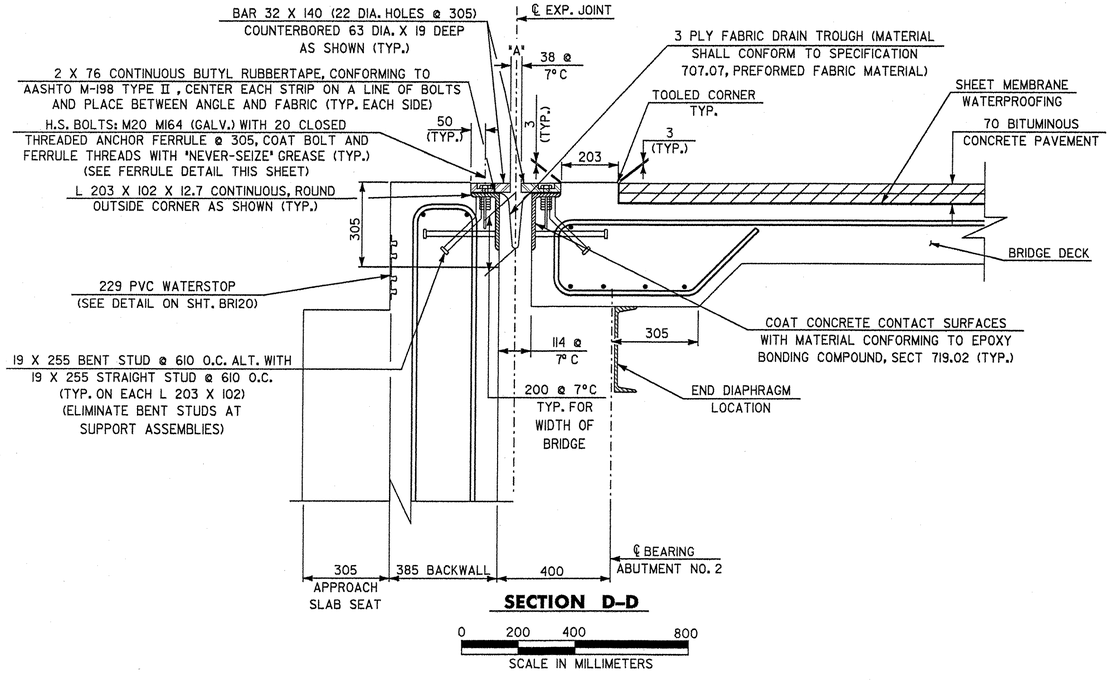
16-AUG-2004



SECTION C-C

0 200 400 800

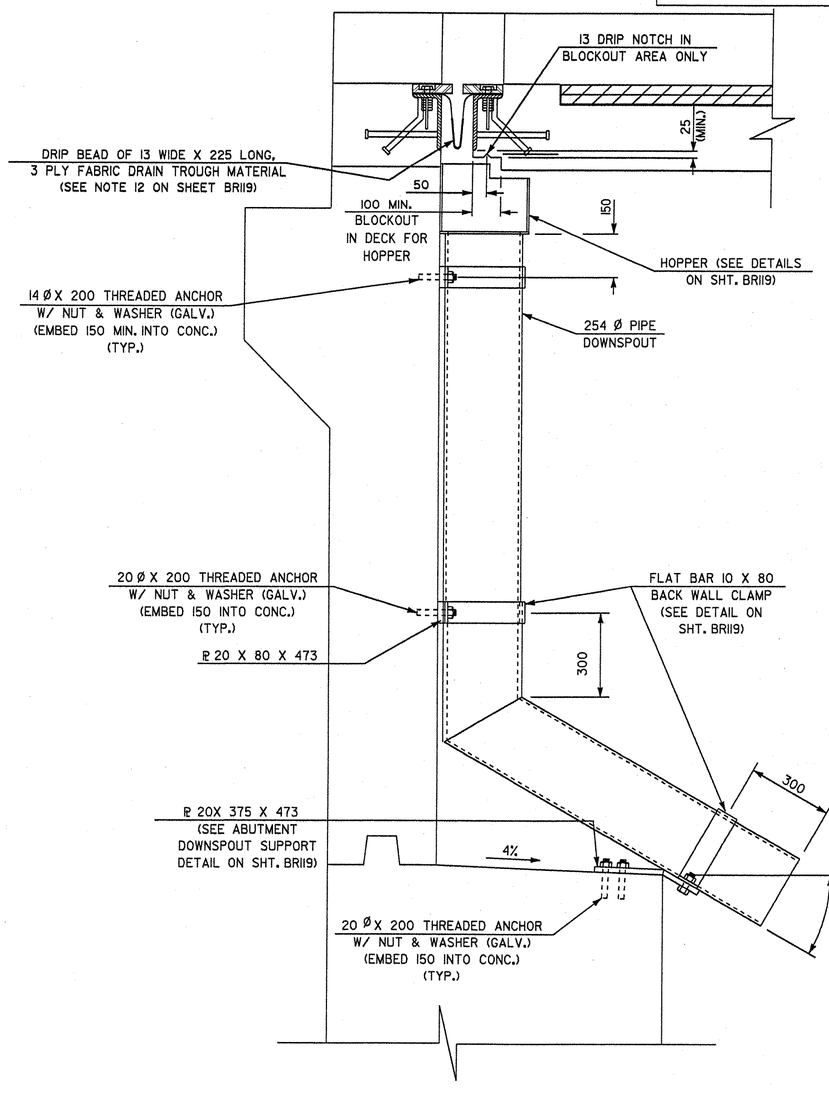
SCALE IN MILLIMETERS



SECTION D-D

0 200 400 800

SCALE IN MILLIMETERS



SECTION E-E

0 200 400 800

SCALE IN MILLIMETERS

ANCHOR FERRULE DETAIL

0 100 200 400

SCALE IN MILLIMETERS

NOTE:
CLOSED THREADED FERRULE NUTS
WITHOUT ANCHOR LOOPS MAY BE USED.

STATE OF VERMONT
AGENCY OF TRANSPORTATION

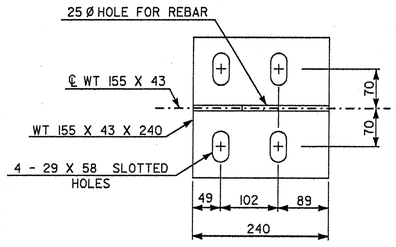
Town Of HARTLAND	Bridge No. 60
Highway No. U.S. ROUTE 5	Log Sta. / Surv. Sta.
U.S. ROUTE 5 OVER LULLS BROOK	

EXPANSION JOINT DETAILS AT ABUT. NO. 2

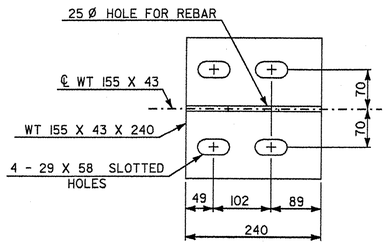
Designed By S. BAKI	Drawn By W. GAYNOR
Checked By S. BAKI Date	Bridge Design Supervisor J. MIECZKOWSKI Date
PROJECT HARTLAND	PROJECT NO. BRS No. 0113(22)
I.G.C. Info. M:\145620\VAOT Hartland\struct\zf204jdt.dgn	
Bridge Sheet No. BRII8	Sheet 53 of 86

REVISED: 8-12-04 WJG PLOT SCALE: 100:1 PLOT FILENAME: ZF204JDT.I

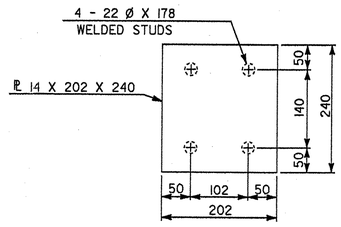
16-AUG-2004



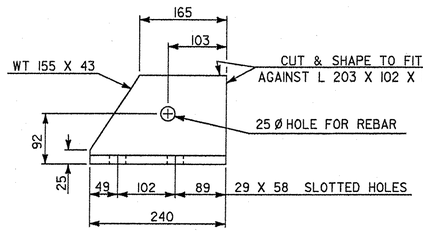
PLAN



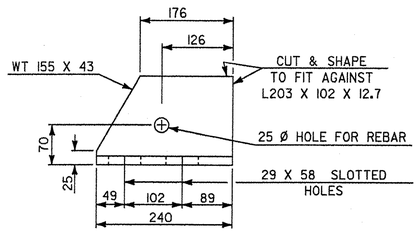
PLAN



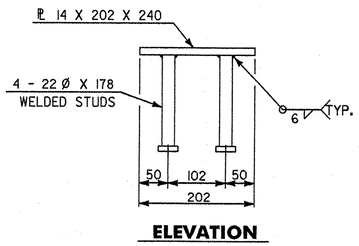
PLAN



ELEVATION



ELEVATION



ELEVATION

BACKWALL SUPPORT ASSEMBLY BRACKET DETAIL

0 100 200 400

SCALE IN MILLIMETERS

GIRDER SUPPORT ASSEMBLY BRACKET DETAIL

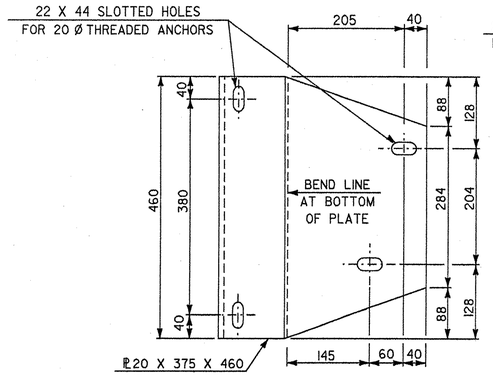
0 100 200 400

SCALE IN MILLIMETERS

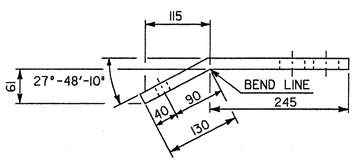
BACKWALL SUPPORT ASSEMBLY PLATE DETAIL

0 100 200 400

SCALE IN MILLIMETERS



PLAN

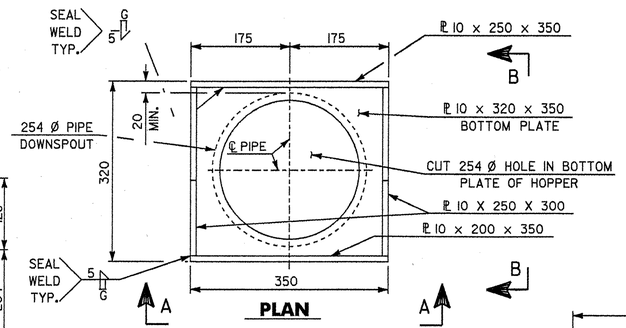


ELEVATION

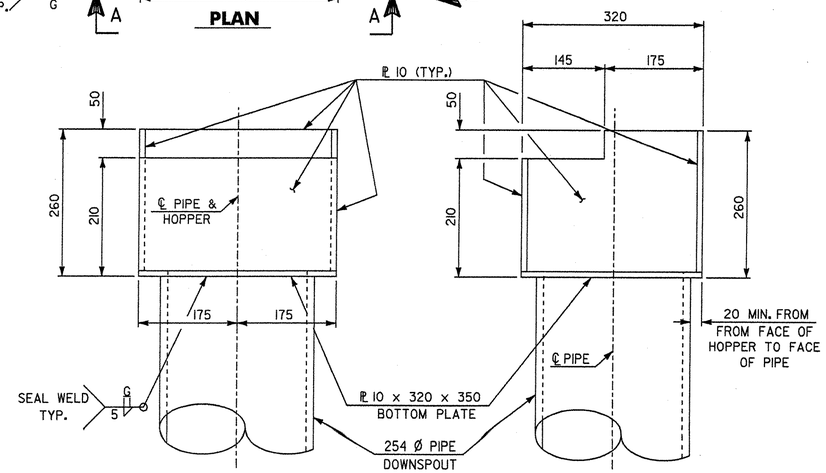
ABUTMENT DOWNSPOUT SUPPORT PLATE DETAIL

0 100 200 400

SCALE IN MILLIMETERS



PLAN

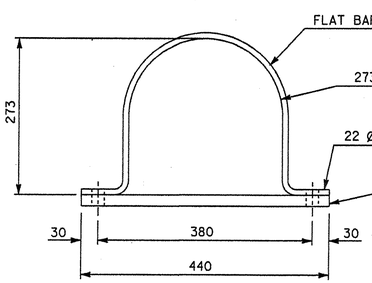


ELEVATION A–A ELEVATION B–B

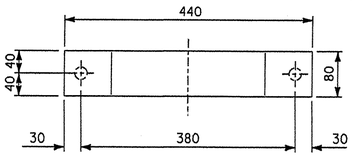
HOPPER AND DOWNSPOUT ASSEMBLY DETAILS

0 100 200 400

SCALE IN MILLIMETERS



ELEVATION



PLAN

CLAMP DETAILS

0 100 200 400

SCALE IN MILLIMETERS

EXPANSION JOINT NOTES

1. THE FINAL FINISH OF THE EXPANSION JOINT SHALL BE COVERED DURING THE PLACING OF THE BRIDGE DECK CONCRETE.
2. ALL STEEL COMPONENTS SHALL BE AASHTO M270M GR 250 MPa GALVANIZED OR METALIZED AS PER SUBSECTION 506.15 (b) OR (c), UNLESS OTHERWISE NOTED. PAYMENT FOR THE CURB EXPANSION PLATE ASSEMBLY, COMPLETE IN PLACE, SHALL BE UNDER BRIDGE EXPANSION JOINT, ITEM 516.10, TOTAL MOVEMENT 30.
3. THE ITEM "BRIDGE EXPANSION JOINT" SHALL INCLUDE THE FABRICATION AND ERECTION OF THE COMPLETE JOINT ASSEMBLY INCLUDING ALL STEEL PLATES, BRACKETS, ANGLES, WELDED STUDS OR RODS, PREFORMED FABRIC DRAIN TROUGH MATERIAL AND PLASTIC DRAIN TUBES, BUTYL RUBBER TAPE AND ANY OTHER MISCELLANEOUS MATERIAL NECESSARY TO INSTALL JOINT.
4. THE FABRIC TROUGH SHALL BE CONTINUOUS PREFORMED FABRIC MATERIAL CONFORMING TO SECTION 707.07. THE HIGH END OF THE FABRIC TROUGH SHALL BE CLOSED BY FOLDING.
5. PAYMENT FOR THE DOWNSPOUT ASSEMBLY SHALL BE INCLUDED IN THE UNIT PRICE BID FOR BRIDGE EXPANSION JOINT, ITEM 516.10
6. WHERE INDICATED, EPOXY BONDING COMPOUND CONFORMING TO SECTION 719.02 SHALL BE APPLIED. PAYMENT TO BE INCLUDED IN UNIT PRICE BID FOR BRIDGE EXPANSION JOINT, ITEM 516.10
7. A 25 DIAMETER PLASTIC DRAIN TUBE SHALL BE INSTALLED AS SHOWN AT THE FACE OF CURB ON THE LOW SIDE. THE UPPER END IS TO BE PLUGGED WITH STEEL WOOL AND THE LOWER END IS TO EXTEND BELOW THE BOTTOM OF THE ADJACENT GIRDER. THE DRAIN TUBES SHALL BE FASTENED TO THE GIRDERS USING A METHOD APPROVED BY THE ENGINEER.
8. FILL COUNTERBORED HOLES IN THE JOINT PLATES WITH HOT POURED JOINT SEALER AFTER BOLT INSTALLATION. PAYMENT FOR THE WORK SHALL BE SUBSIDIARY TO BRIDGE EXPANSION JOINT, ITEM 516.10
9. PAYMENT FOR WATERSTOP SHALL BE SUBSIDIARY TO CONCRETE, HIGH PERFORMANCE CLASS B, ITEM 501.34.
10. FABRIC TROUGH SHALL BE THOROUGHLY CLEANED AND FLUSHED AFTER PAVING OPERATION.
11. THE EXPANSION JOINT SHALL BE SHOP ASSEMBLED AND SHIPPED AS ONE UNIT.
12. A DRIP BEAD OF 13 WIDE X 228 LONG OF PREFORMED FABRIC MATERIAL, SHALL BE CEMENTED TO THE BOTTOM OF THE FABRIC TROUGH WITH AN ADHESIVE APPROVED BY THE FABRIC MANUFACTURER. THE DRIP BEAD SHALL BE APPLIED 25 FROM THE HOPPER END OF THE FABRIC TROUGH.
13. 32 X 140 BARS SHALL BE FURNISHED IN 2 EQUAL LENGTH PIECES EACH SIDE OF JOINT.
14. THE 32 X 140 BARS SHALL BE REMOVED AFTER CONCRETE IS POURED. THE FABRIC TROUGH SHALL THEN BE THOROUGHLY CLEANED AND THIS SURFACE IS TO BE SEALED FULL LENGTH OF THE JOINT WITH BUTYL RUBBERTAPE. THE COST IS TO BE SUBSIDIARY TO THE BRIDGE EXPANSION JOINT, ITEM 516.10.
15. THE L 203 X 102 X 12.7 SHALL BE FURNISHED IN ONE CONTINUOUS PIECE.

NOTE:
FABRICATOR SHALL VERIFY OUTSIDE DIAMETER OF DOWNSPOUT PIPE PRIOR TO FABRICATION OF CLAMP AND SUPPORT PLATE, AND ADJUST DIMENSIONS SHOWN IF REQUIRED. FABRICATOR SHALL SHOP FIT CLAMP AND SUPPORT PLATE TO DOWNSPOUT PIPE TO ASSURE PROPER FIT IN THE FIELD.

STATE OF VERMONT
AGENCY OF TRANSPORTATION

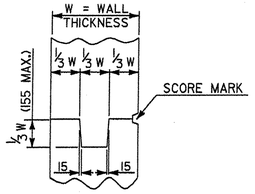
Town Of HARTLAND	Bridge No. 60
Highway No. U.S. ROUTE 5	Log Sta. / Surv. Sta.
U.S. ROUTE 5 OVER LULLS BROOK	

EXPANSION JOINT DETAILS AT ABUT. NO. 2

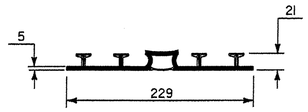
Designed By S. BAKI	Drawn By W. GAYNOR
Checked By S. BAKI Date	Bridge Design Supervisor J. MIECZKOWSKI Date
PROJECT HARTLAND	PROJECT NO. BRS No. 0113(22)
I.G.C. Info. M:\145620I VAOT Hartland\struct\zf204jdt.dgn	
Bridge Sheet No. BRII9	Sheet 54 of 86

REVISED: 8-12-04 WJG PLOT SCALE: 100:1 IPLOT FILENAME: ZF204JDT.I

12-AUG-2004

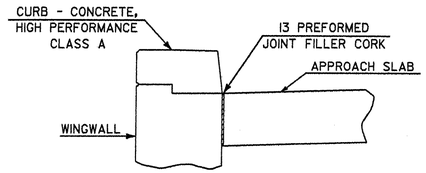


TYPICAL CONCRETE CONSTRUCTION JOINT
NOT TO SCALE

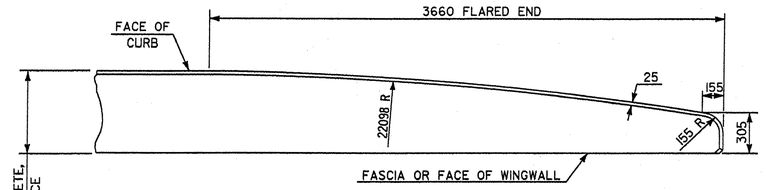


P. V. C. WATERSTOP FOR EXPANSION JOINTS
NOT TO SCALE

THE COSTS FOR P. V. C. WATERSTOP SHALL BE INCLUDED IN THE UNIT PRICE BID FOR CONCRETE, HIGH PERFORMANCE CLASS B, ITEM 501.34. OTHER CONFIGURATIONS MAY BE USED UPON APPROVAL OF THE STRUCTURES ENGINEER.

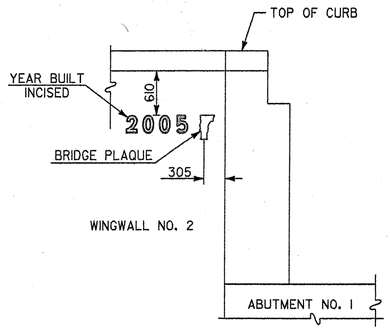


DETAIL OF APPROACH SLAB AGAINST WINGWALL
0 400 800 1600
SCALE IN MILLIMETERS

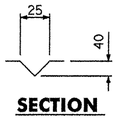


FLARED END DETAIL FOR 2'-0" CURB
0 400 800 1600
SCALE IN MILLIMETERS

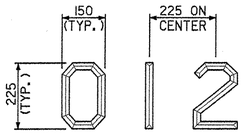
CURB REINFORCING STIRRUP BARS SHALL BE TURNED AS REQUIRED TO FIT FLARED END.



ELEVATION

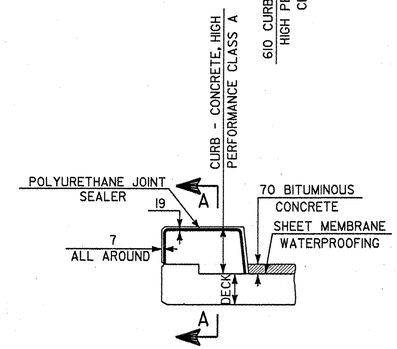


SECTION

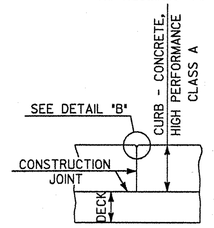


ELEVATION

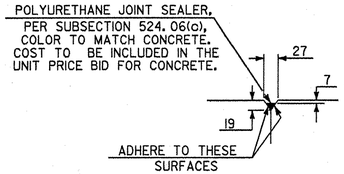
INCISED NUMBERS DETAIL
N. T. S.



TYPICAL SECTION THROUGH CONCRETE CURB CONSTRUCTION JOINT
NOT TO SCALE



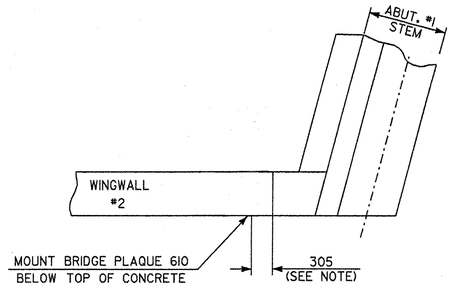
SECTION A-A
NOT TO SCALE



DETAIL "B"
NOT TO SCALE

NOTES:

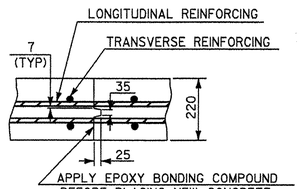
1. CONSTRUCTION JOINTS THROUGH CONCRETE CURBS SHALL BE SPACED MAXIMUM 6100 CENTER TO CENTER AND SHALL BE 455 MINIMUM FROM THE CENTER OF THE NEAREST BRIDGE RAIL POST. CONCRETE SHALL BE PLACED IN ALTERNATING SECTIONS WITH A MINIMUM OF 48 HOURS DELAY BETWEEN ADJACENT POURS.
2. LONGITUDINAL REINFORCING SHALL PASS THROUGH CONCRETE CURB CONSTRUCTION JOINTS.
3. POLYURETHANE MEMBRANE AND BLAST CLEANING SHALL BE INCLUDED IN THE UNIT PRICE BID FOR SHEET MEMBRANE WATERPROOFING.
4. SHEET MEMBRANE WATERPROOFING SHALL EXTEND TO FACE OF CURB AS SHOWN ABOVE LEFT.
5. ALL CONCRETE IN CURBS SHALL BE CONCRETE, HIGH PERFORMANCE CLASS A.



PLAN

BRIDGE PLAQUE LOCATION DETAIL
NOT TO SCALE

THE BRIDGE PLAQUE WILL BE SUPPLIED BY THE AGENCY OF TRANSPORTATION AND SHALL BE INSTALLED BY THE CONTRACTOR AT ABUTMENT NO. 1 ON THE RIGHT SIDE AS SHOWN OR AS DIRECTED BY THE ENGINEER.



TRANSVERSE BRIDGE SLAB CONSTRUCTION JOINT DETAILS
NOT TO SCALE

STATE OF VERMONT
AGENCY OF TRANSPORTATION

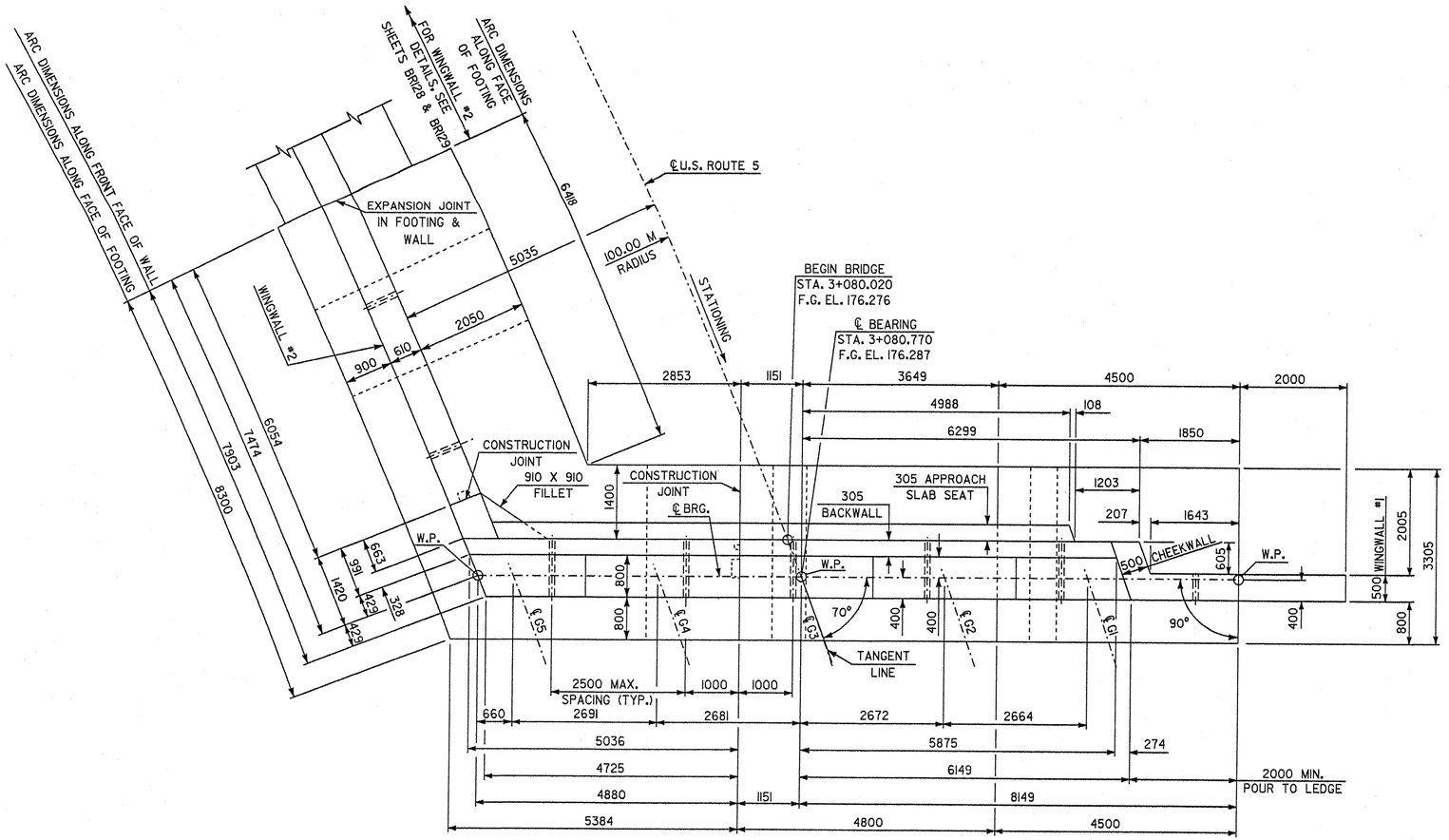
Town Of HARTLAND	Bridge No. 60
	Log Sta.
Highway No. U.S. ROUTE 5	Surv. Sta.
U.S. ROUTE 5 OVER LULLS BROOK	

MISCELLANEOUS DETAILS

Designed By S. BAKI	Drawn By W. GAYNOR
Checked By S. BAKI Date	Bridge Design Supervisor J. MIECZKOWSKI Date
PROJECT HARTLAND	PROJECT NO. BRS No. 0113(22)
I.G.C. Info. M:\145620\VAOT Hartland\struct\zf204mdt.dgn	
Bridge Sheet No. BRI20	Sheet 55 of 86

REVISED: 8-12-04 WJG PLOT SCALE: 100:1 PLOT FILENAME: ZF204MDT.I

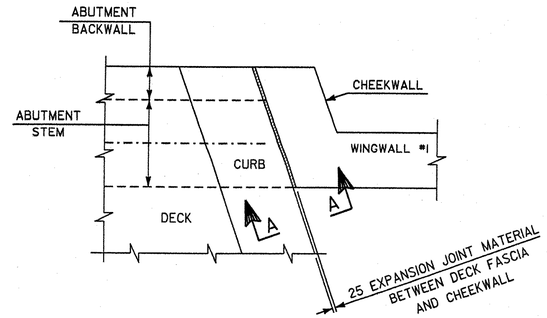
12-AUG-2004



ABUTMENT NO. 1 PLAN

0 1000 2000 4000

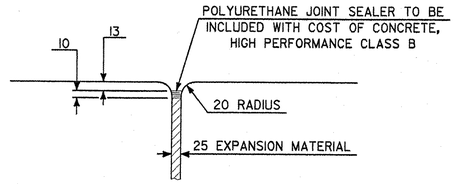
SCALE IN MILLIMETERS



PLAN

0 500 1000 2000

SCALE IN MILLIMETERS



SECTION A-A

NOT TO SCALE

JOINT BETWEEN FASCIA AND CHEEKWALL

NOTES:

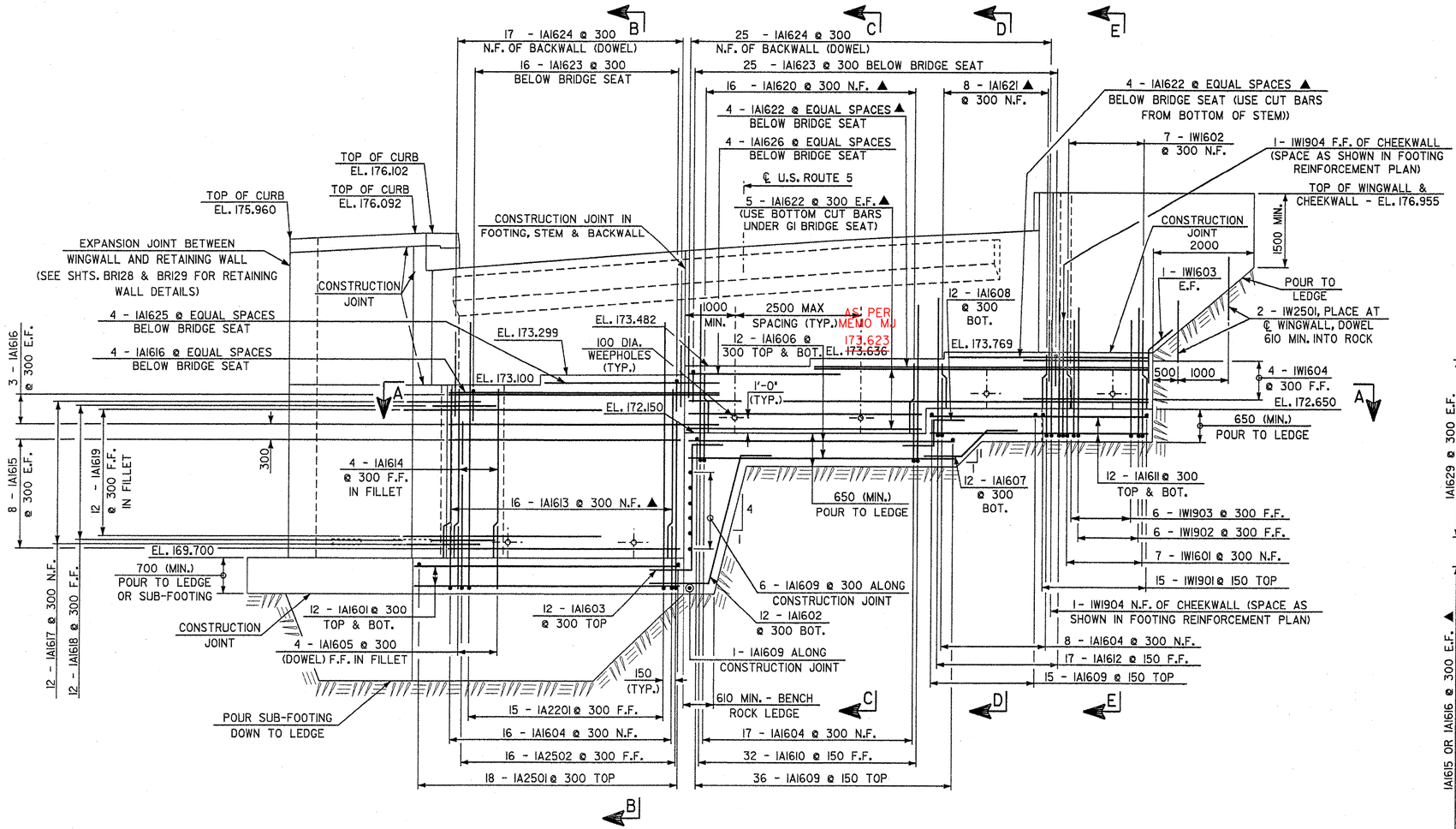
1. FOR ABUTMENT ELEVATION AND SECTIONS, SEE SHEET BRI22.
2. FOR ABUTMENT SECTIONS, SEE SHEET BRI26.
3. FOR FOOTING REINFORCING PLAN, SEE SHEET BRI30.
4. FOR ABUTMENT BACKWALL PLAN AND ELEVATION, SEE SHEET BRI26.

STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of HARTLAND	Bridge No. 60
Highway No. U.S. ROUTE 5	Log Sta. Surv. Sta.
U.S. ROUTE 5 OVER LULLS BROOK	
ABUTMENT NO. 1 PLAN	
Designed By S. BAKI	Drawn By W. GAYNOR
Checked By S. BAKI Date	Bridge Design Supervisor J. MIECZKOWSKI Date
PROJECT HARTLAND	PROJECT NO. BRS No. 0113(22)
I.G.C. Info. M:\145620I VAOT Hartland\struct\zf204ami.dgn	
Bridge Sheet No. BRI2I	Sheet 56 of 86

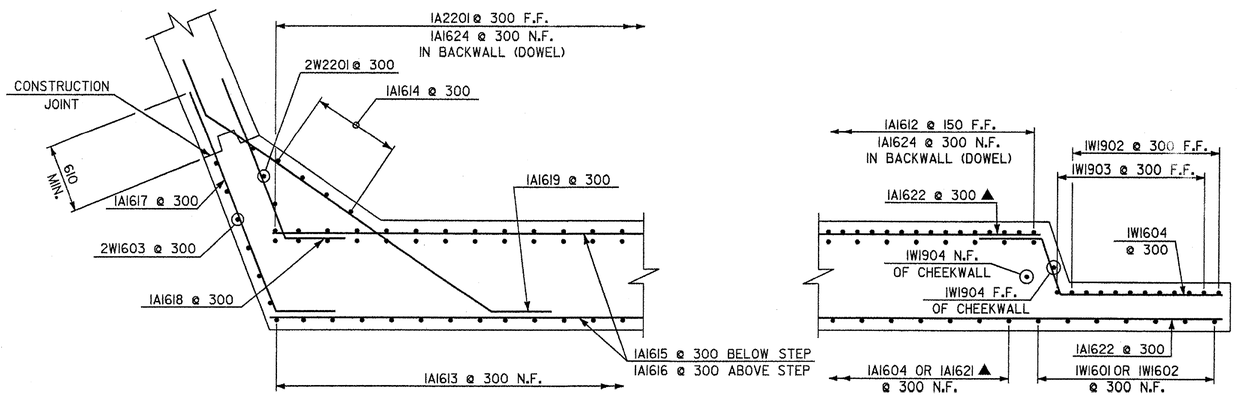
REVISED: 8-12-04 WJG PLOT SCALE: 100:I IPLOT FILENAME: ZF204AMI.I

12-AUG-2004



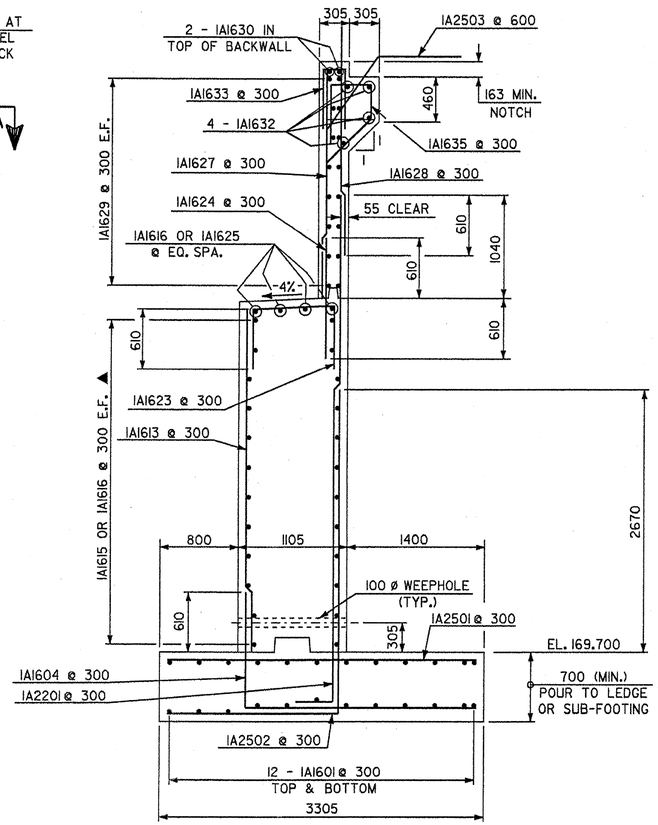
ABUTMENT NO. 1 ELEVATION

0 1000 2000 4000
SCALE IN MILLIMETERS



SECTION A-A

0 500 1000 2000
SCALE IN MILLIMETERS



SECTION B-B AT ABUTMENT NO. 1

0 500 1000 2000
SCALE IN MILLIMETERS

NOTES:

N.F. - NEAR FACE
F.F. - FAR FACE
E.F. - EACH FACE
REINFORCING COVER 80 CLEAR ON ALL FACES EXCEPT WHERE NOTED.
MINIMUM LAP LENGTH FOR HORIZONTAL #16 BARS IS 610 UNLESS NOTED OTHERWISE.
▲ - CUT TO FIT IN FIELD
FOR SECTIONS C-C & D-D, SEE SHEET BRI26.
FOR SECTIONS E-E, SEE SHEET BRI25.

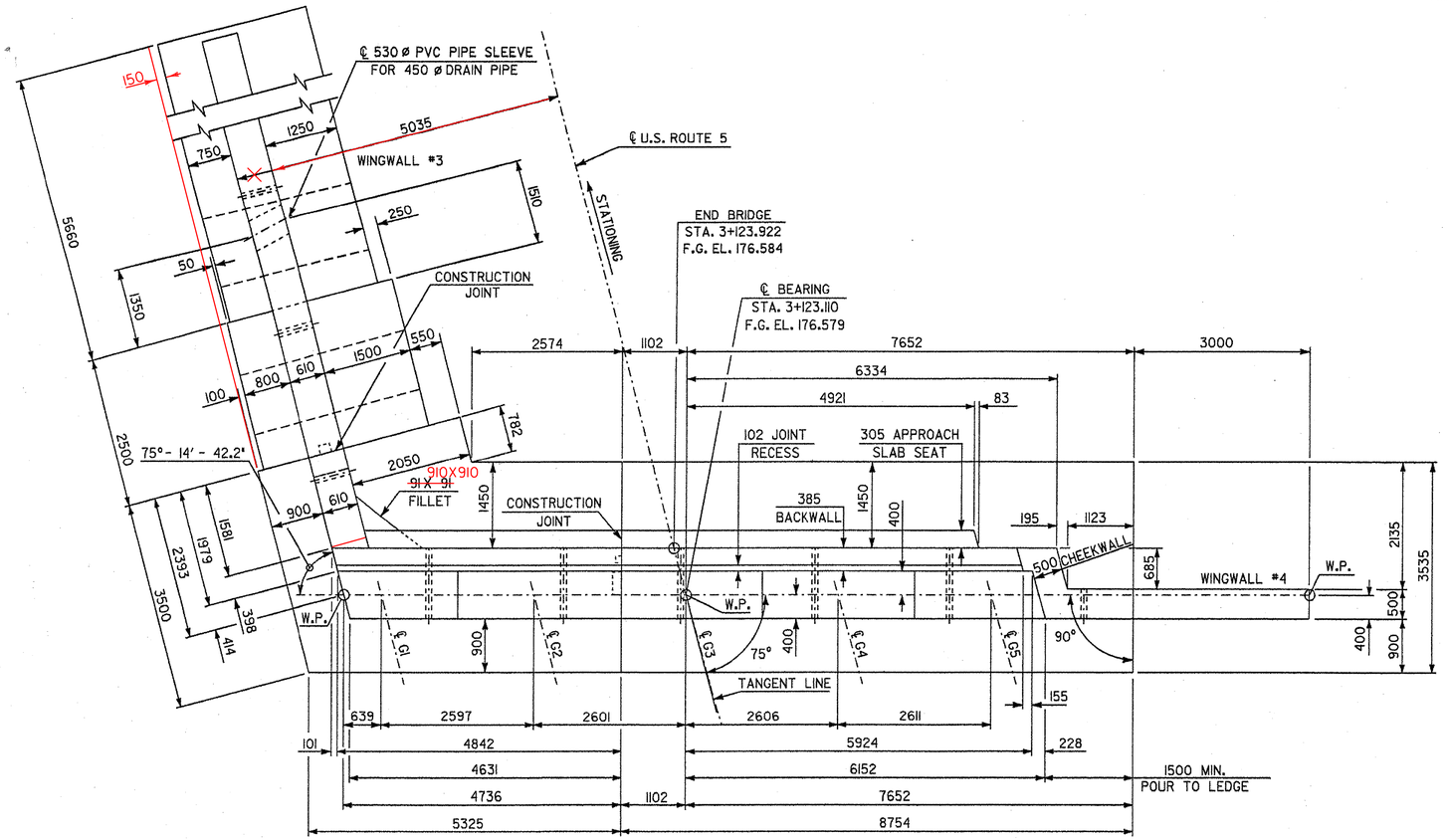
STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of HARTLAND	Bridge No. 60
Highway No. U.S. ROUTE 5	Log Sta. / Surv. Sta.
U.S. ROUTE 5 OVER LULLS BROOK	

ABUT. NO. 1 ELEVATION AND SECTIONS

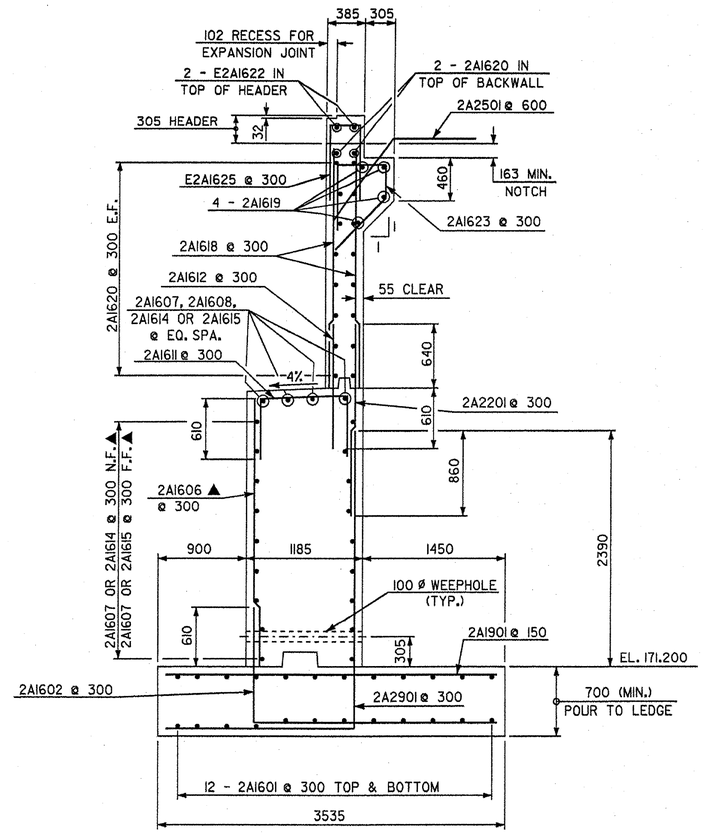
Designed By S. BAKI	Drawn By W. GAYNOR
Checked By S. BAKI Date	Bridge Design Supervisor J. MIECZKOWSKI Date
PROJECT HARTLAND	PROJECT NO. BRS No. 0113(22)
I.G.C. Info. M:\145620I VAOT Hartland\struct\zf204ami.dgn	
Bridge Sheet No. BRI22	Sheet 57 of 86

REVISED: 8-12-04 WJG
PLOT SCALE: 100:1 PLOT FILENAME: ZF204AMI.I
12-AUG-2004



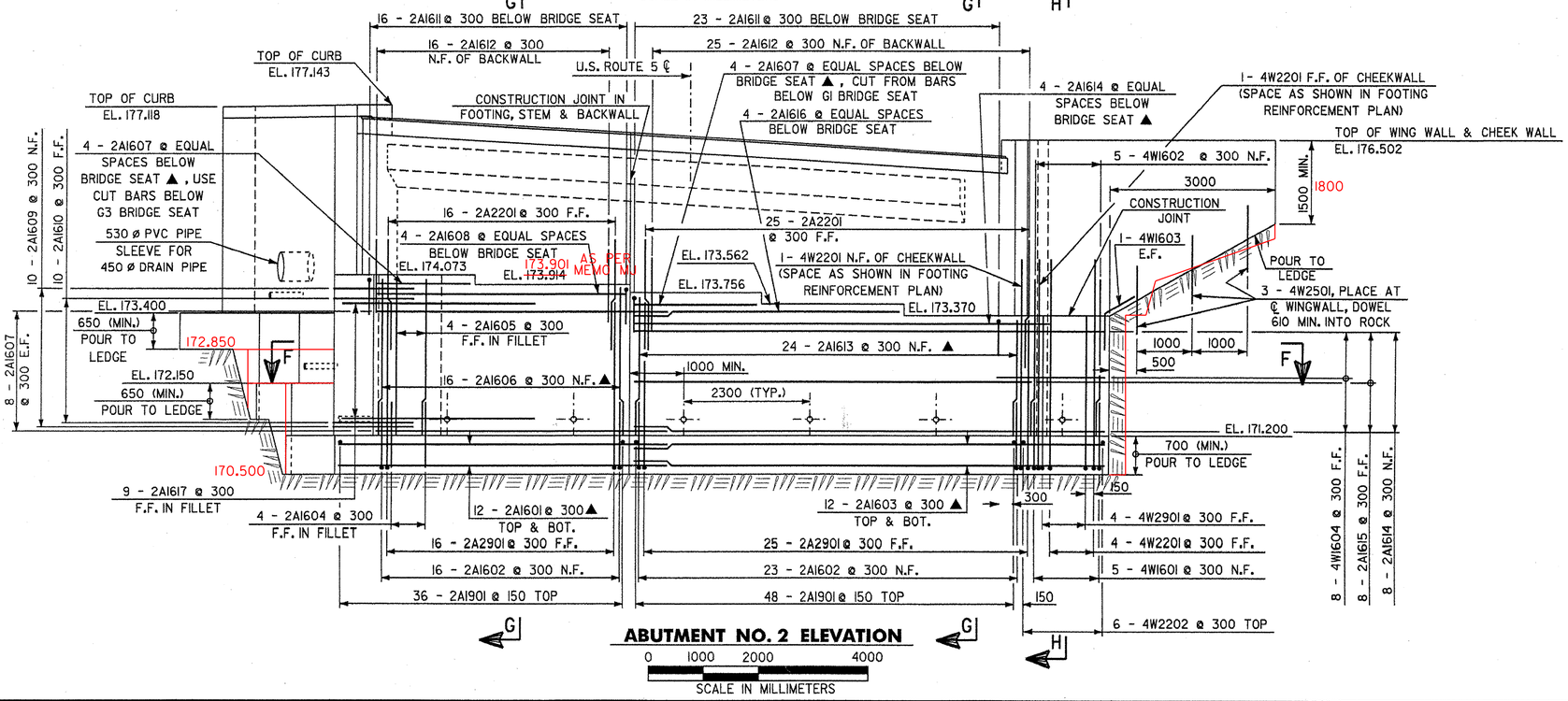
ABUTMENT NO. 2 PLAN

0 1000 2000 4000
SCALE IN MILLIMETERS



SECTION G-G

0 500 1000 2000
SCALE IN MILLIMETERS



ABUTMENT NO. 2 ELEVATION

0 1000 2000 4000
SCALE IN MILLIMETERS

NOTES:

N.F. - NEAR FACE
F.F. - FAR FACE
E.F. - EACH FACE
REINFORCING COVER 80 CLEAR ON ALL FACES EXCEPT WHERE NOTED.
MINIMUM LAP LENGTH FOR HORIZONTAL #16 BARS IS 610 UNLESS NOTED OTHERWISE.
E - DENOTES EPOXY COATED REINFORCEMENT.
▲ - CUT TO FIT IN FIELD
FOR SECTIONS F-F AND H-H, SEE SHEET BRI27.

STATE OF VERMONT
AGENCY OF TRANSPORTATION

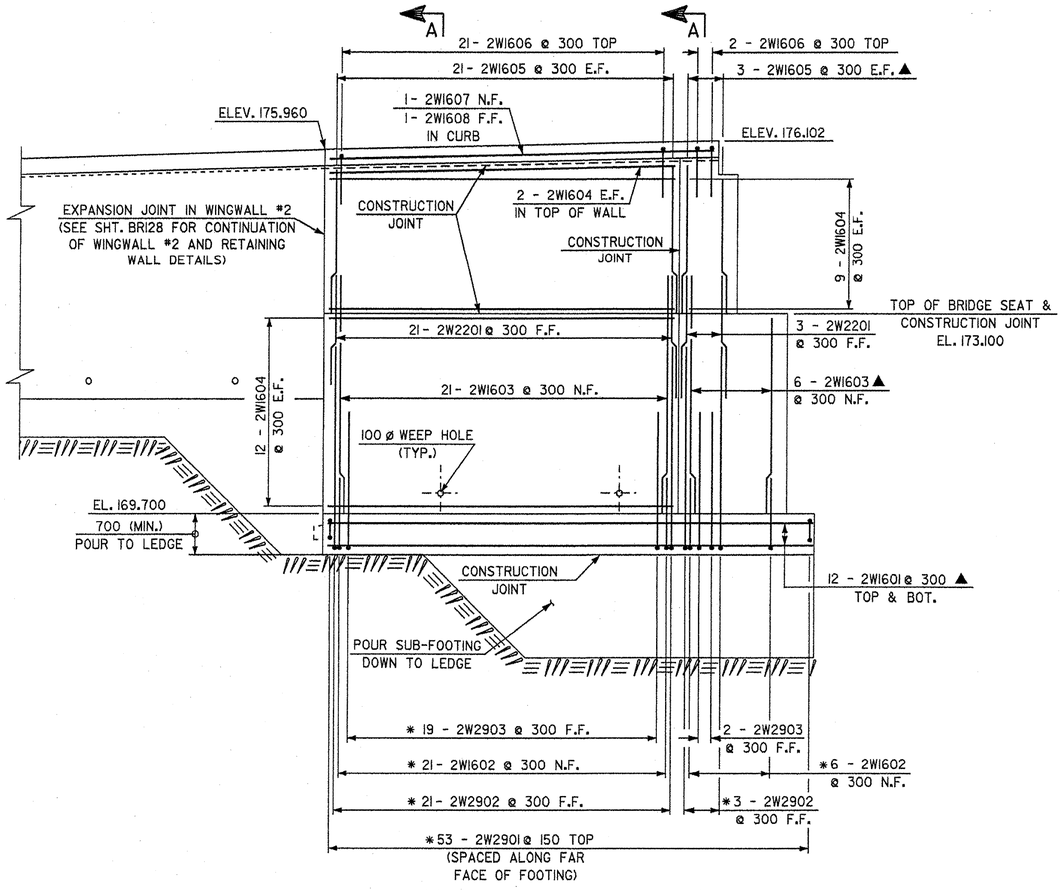
Town Of HARTLAND	Bridge No. 60
	Log Sta.
Highway No. U.S. ROUTE 5	Surv. Sta.
U.S. ROUTE 5 OVER LULLS BROOK	

ABUTMENT NO. 2 DETAILS

Designed By S. BAKI	Drawn By W. GAYNOR
Checked By S. BAKI Date	Bridge Design Supervisor J. MIECZKOWSKI Date
PROJECT HARTLAND	PROJECT NO. BRS No. 0113(22)
I.G.C. Info. M:\145620\VAOT Hartland\struct\zf204am2.dgn	
Bridge Sheet No. BRI23	Sheet 58 of 86

REVISED: 8-12-04 W.IG PLOT SCALE: 100:1 PLOT FILENAME: ZF204AM2.I

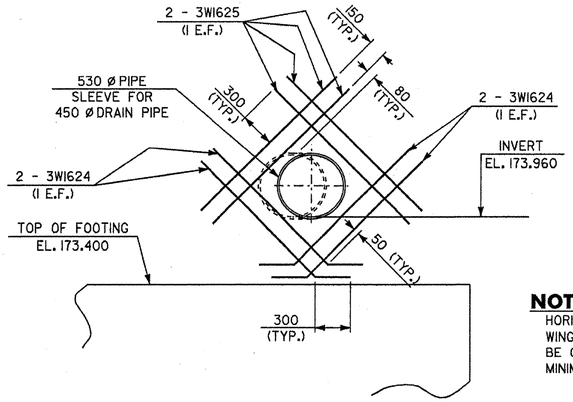
12-AUG-2004



WINGWALL NO. 2 ELEVATION

0 1000 2000 4000

SCALE IN MILLIMETERS



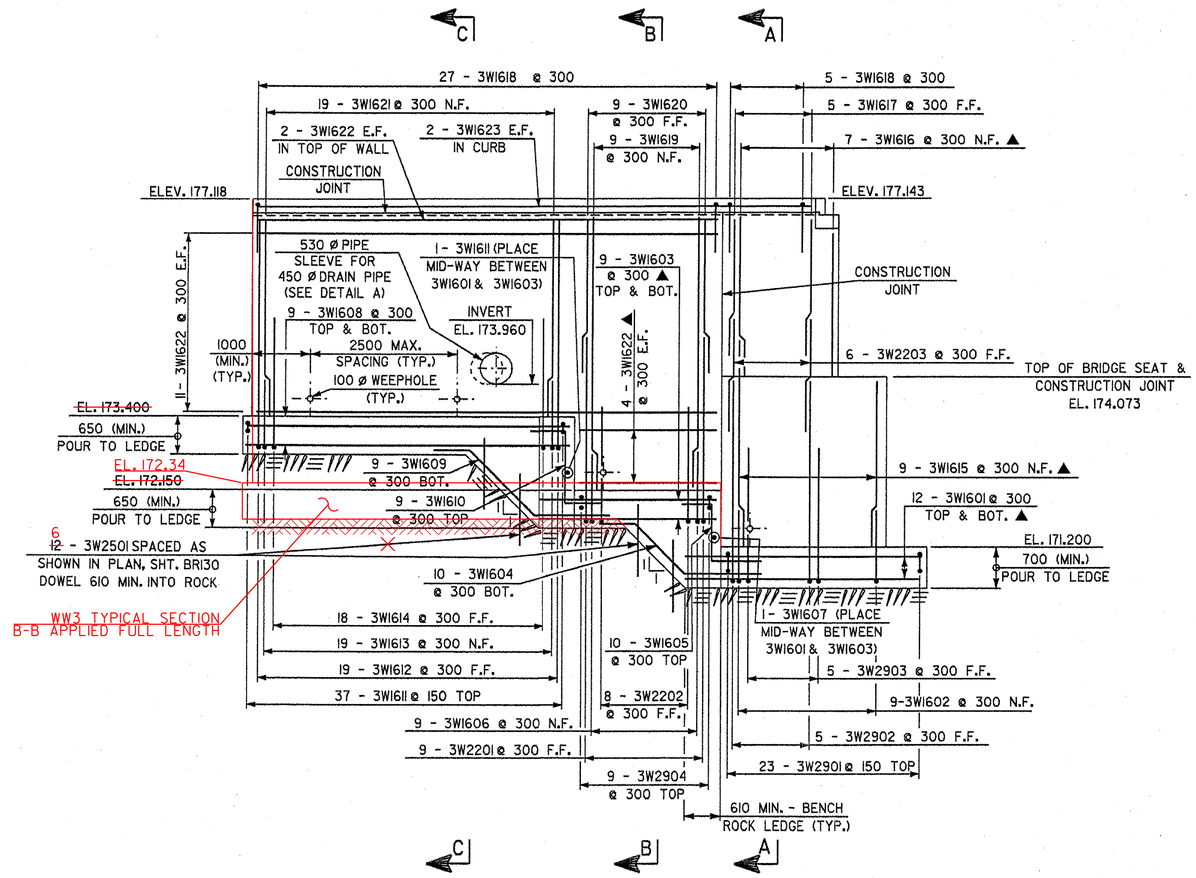
DETAIL A

0 500 1000 2000

SCALE IN MILLIMETERS

NOTE:

HORIZONTAL AND VERTICAL REINFORCING IN WINGWALL, NOT SHOWN IN DETAIL A, SHALL BE CUT AS REQUIRED TO MAINTAIN A MINIMUM 80 COVER AROUND PIPE SLEEVE.



WINGWALL NO. 3 ELEVATION

0 1000 2000 4000

SCALE IN MILLIMETERS

NOTES:

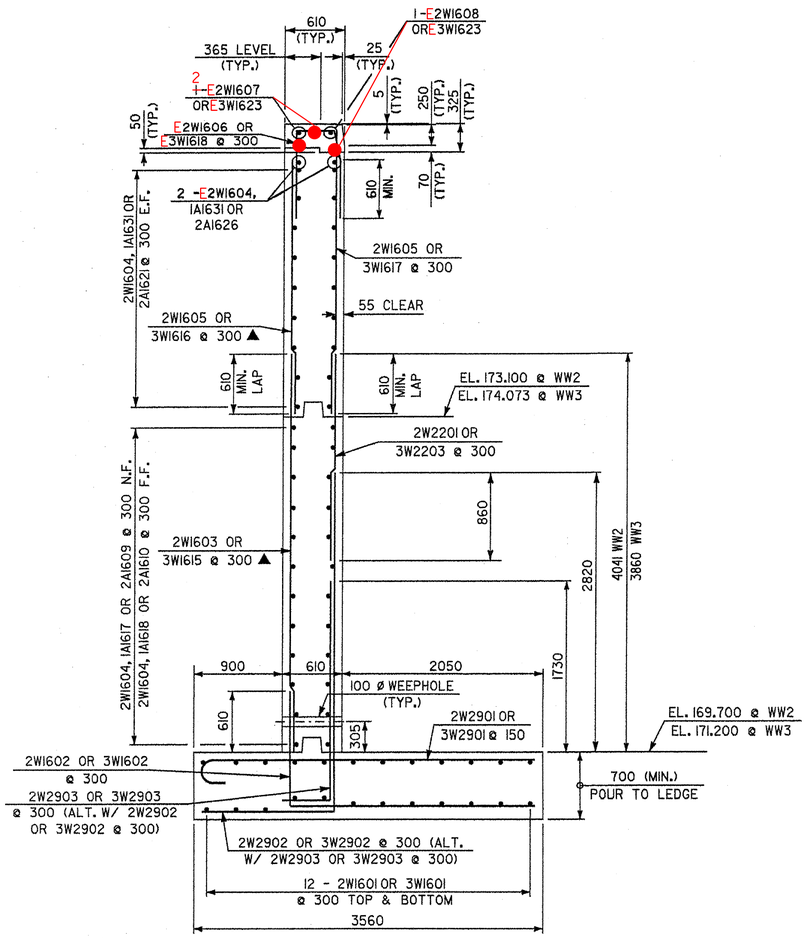
N.F. - NEAR FACE
F.F. - FAR FACE
E.F. - EACH FACE
REINFORCING COVER 80 CLEAR ON ALL FACES EXCEPT WHERE NOTED.
MINIMUM LAP LENGTH FOR HORIZONTAL #16 BARS IS 610 UNLESS NOTED OTHERWISE.
▲ - CUT TO FIT IN FIELD
* - PLACED RADIAL.
FOR SECTIONS A-A, B-B AND C-C, SEE SHEET BRI25.

STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of HARTLAND	Bridge No. 60
Highway No. U.S. ROUTE 5	Log Sta. / Surv. Sta.
U.S. ROUTE 5 OVER LULLS BROOK	

WINGWALL NO. 2 & NO. 3 ELEVATIONS

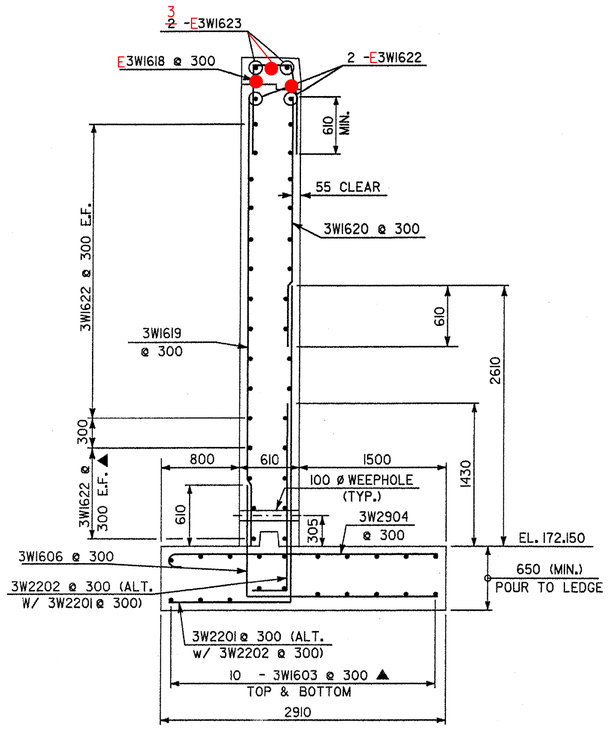
Designed By S. BAKI	Drawn By W. GAYNOR
Checked By S. BAKI Date	Bridge Design Supervisor J. MIECZKOWSKI Date
PROJECT HARTLAND	PROJECT NO. BRS No. 0113(22)
I.G.C. Info. M:\145620\VAOT Hartland\struct\zf204wdt.dgn	
Bridge Sheet No. BRI24	Sheet 59 of 86



SECTION A–A AT WINGWALL NO. 2 & NO. 3

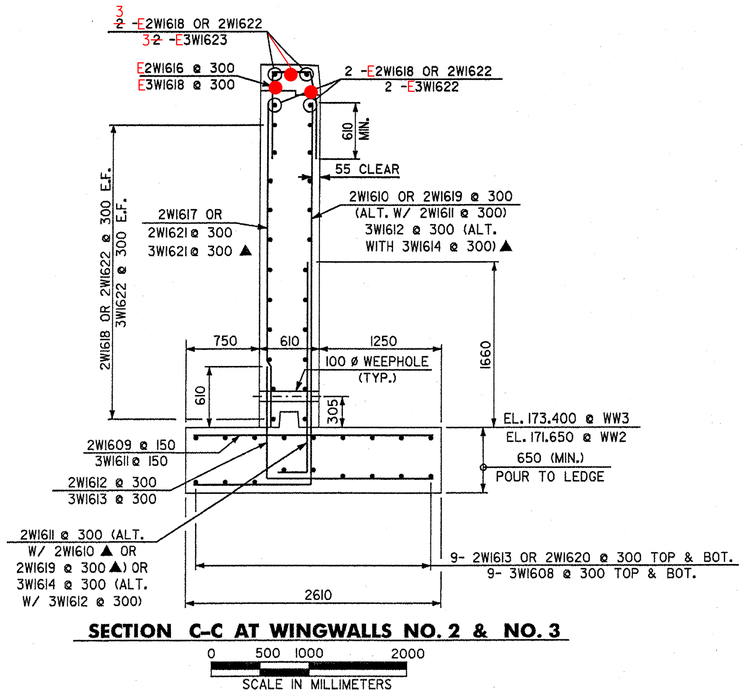
0 500 1000 2000
SCALE IN MILLIMETERS

NOTE: REBAR MARKS WITH A 2W PREFIX INDICATES A WINGWALL NO. 2 BAR, REBAR MARKS WITH A 2A OR 3W PREFIX INDICATES A WINGWALL NO. 3 BAR.



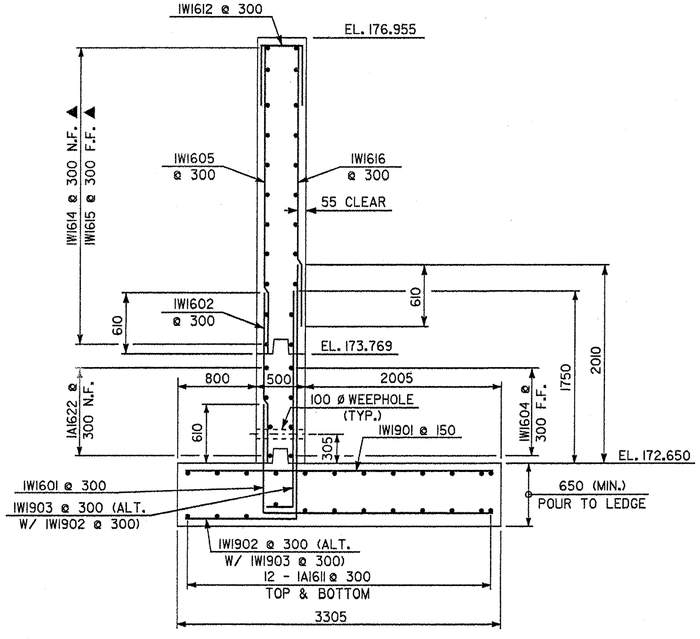
SECTION B–B AT WINGWALL NO. 3

0 500 1000 2000
SCALE IN MILLIMETERS



SECTION C–C AT WINGWALLS NO. 2 & NO. 3

0 500 1000 2000
SCALE IN MILLIMETERS



SECTION E–E AT WINGWALL NO. 1

0 500 1000 2000
SCALE IN MILLIMETERS

NOTES:

N.F. - NEAR FACE
F.F. - FAR FACE
E.F. - EACH FACE
REINFORCING COVER 80 CLEAR ON ALL FACES EXCEPT WHERE NOTED.
FOR LOCATION OF SECTIONS A-A, B-B AND C-C, SEE SHEET BRI24.
FOR LOCATION OF SECTION E-E, SEE SHEET BRI22.

STATE OF VERMONT
AGENCY OF TRANSPORTATION

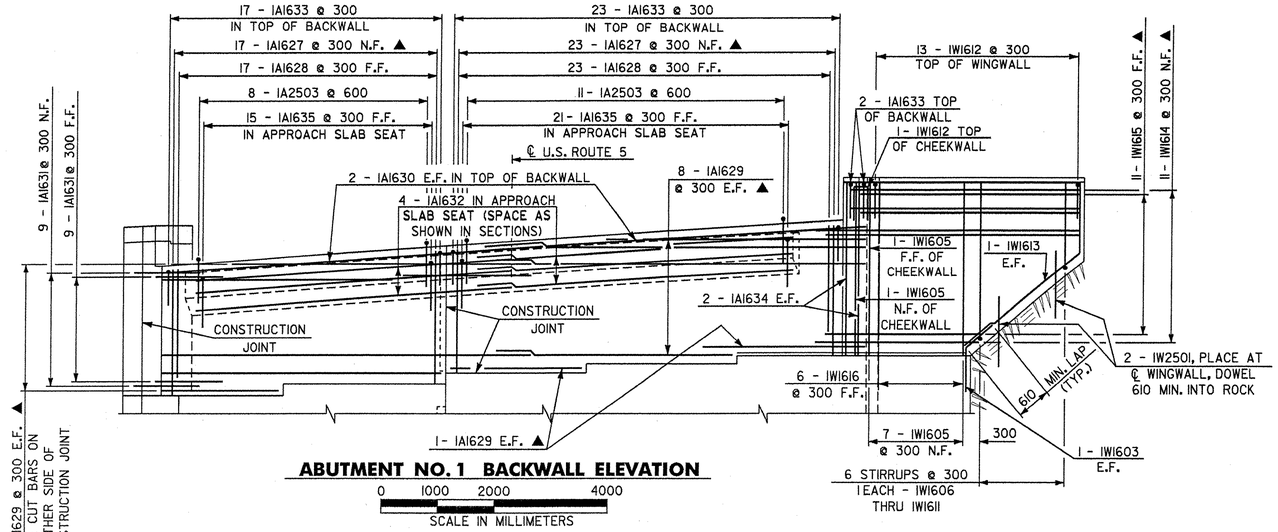
Town Of HARTLAND	Bridge No. 60
	Log Sta.
Highway No. U.S. ROUTE 5	Surv. Sta.
U.S. ROUTE 5 OVER LULLS BROOK	

WINGWALL NO. 1, NO. 2 & NO. 3 SECTIONS

Designed By S. BAKI	Drawn By W. GAYNOR
Checked By S. BAKI Date	Bridge Design Supervisor J. MIECZKOWSKI Date
PROJECT HARTLAND	PROJECT NO. BRS No. 0113(22)
I.G.C. Info. M:\145620I VAOT Hartland\struct\zf204wdt.dgn	
Bridge Sheet No. BRI25	Sheet 60 of 86

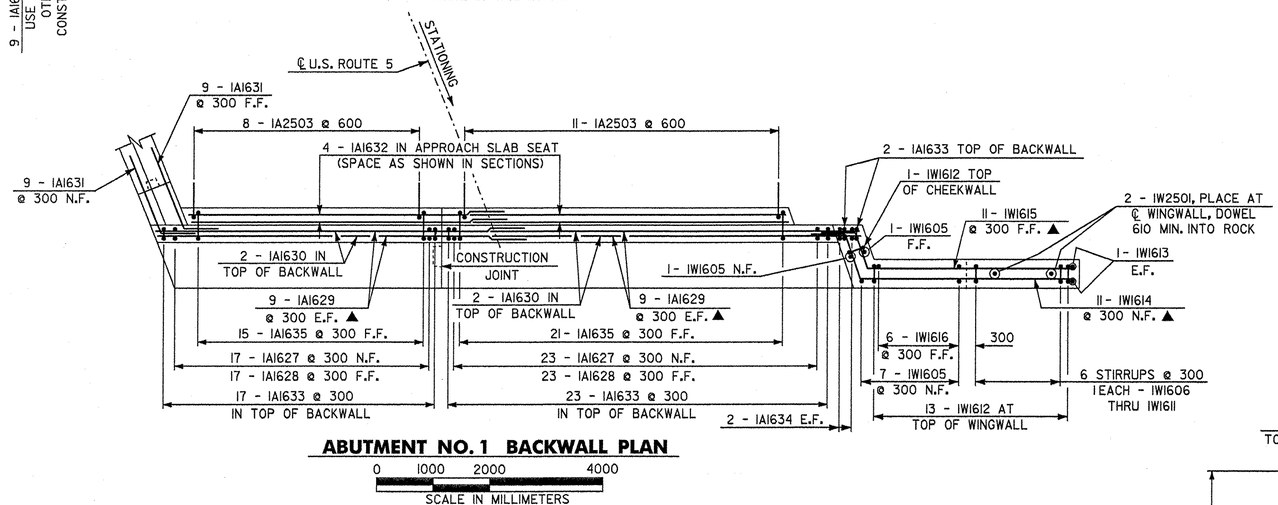
REVISED: 8-12-04 WJG PLOT SCALE: 100:1 IPLOT FILENAME: ZF204WDT.I

12-AUG-2004



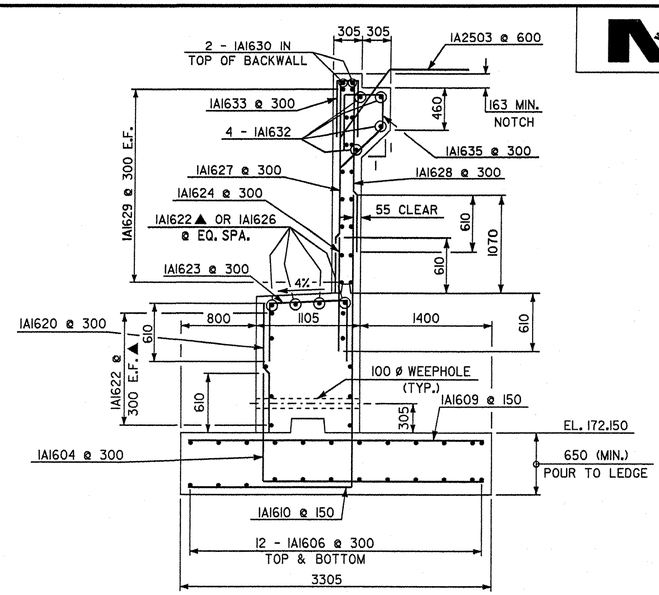
ABUTMENT NO. 1 BACKWALL ELEVATION

0 1000 2000 4000
SCALE IN MILLIMETERS



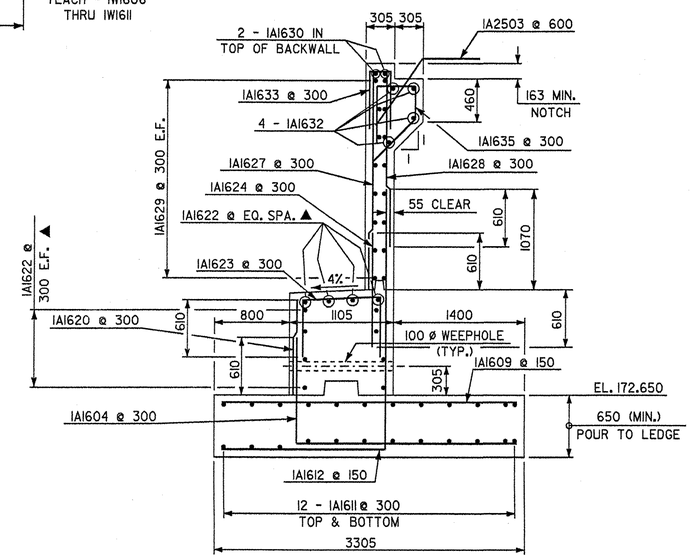
ABUTMENT NO. 1 BACKWALL PLAN

0 1000 2000 4000
SCALE IN MILLIMETERS



SECTION C–C AT ABUTMENT NO. 1

0 500 1000 2000
SCALE IN MILLIMETERS



SECTION D–D AT ABUTMENT NO. 1

0 500 1000 2000
SCALE IN MILLIMETERS

NOTES:

N.F. - NEAR FACE
F.F. - FAR FACE
E.F. - EACH FACE
REINFORCING COVER 80 CLEAR ON ALL FACES EXCEPT WHERE NOTED.
MINIMUM LAP LENGTH FOR HORIZONTAL #16 BARS IS 610 UNLESS NOTED OTHERWISE.
▲ - CUT TO FIT IN FIELD.
FOR LOCATION OF SECTIONS C-C AND D-D, SEE SHEET BRI22.

STATE OF VERMONT
AGENCY OF TRANSPORTATION

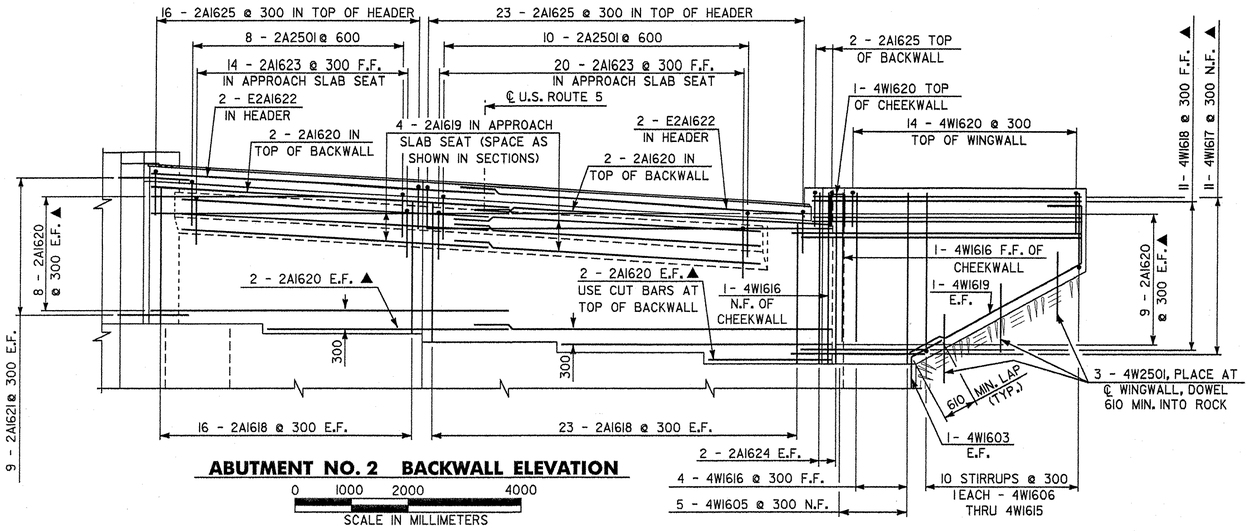
Town Of HARTLAND	Bridge No. 60
	Log Sta.
Highway No. U.S. ROUTE 5	Surv. Sta.
U.S. ROUTE 5 OVER LULLS BROOK	

ABUT. NO. 1 BACKWALL DETAILS & SECTIONS

Designed By S. BAKI	Drawn By W. GAYNOR
Checked By S. BAKI Date	Bridge Design Supervisor J. MIECZKOWSKI Date
PROJECT HARTLAND	PROJECT NO. BRS No. 0113(22)
I.G.C. Info. M:\145620I VAOT Hartland\struct\ZF204ARI.DGN	
Bridge Sheet No. BRI26	Sheet 61 of 86

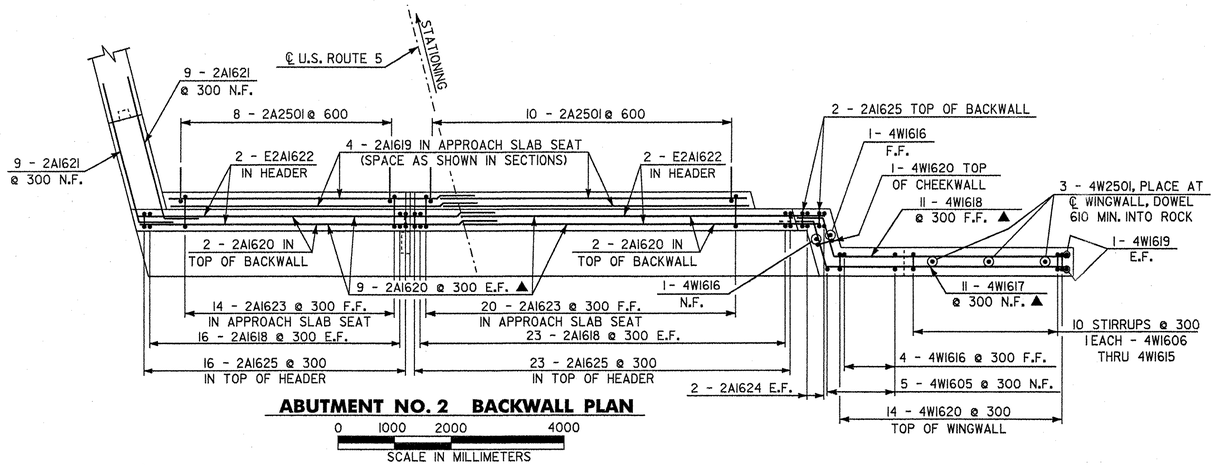
12-AUG-2004

REVISED: 8-12-04 WJG PLOT SCALE: 100:1 PLOT FILENAME ZF204ARI.I



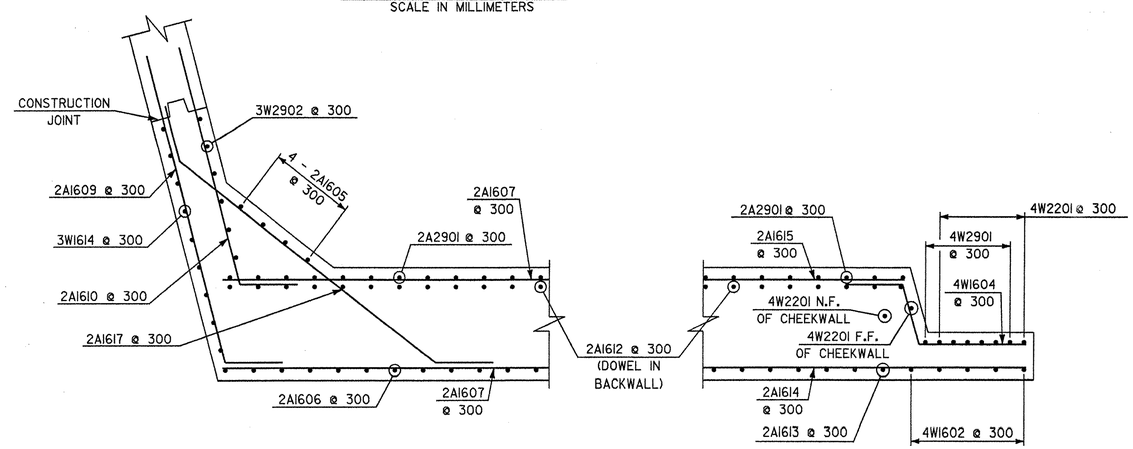
ABUTMENT NO. 2 BACKWALL ELEVATION

0 1000 2000 4000
SCALE IN MILLIMETERS



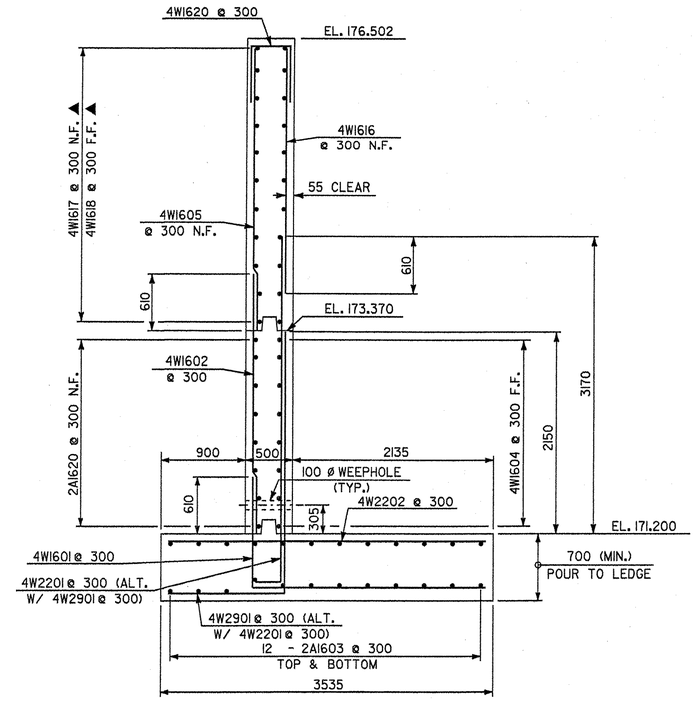
ABUTMENT NO. 2 BACKWALL PLAN

0 1000 2000 4000
SCALE IN MILLIMETERS



SECTION F-F AT ABUTMENT NO. 2

0 500 1000 2000
SCALE IN MILLIMETERS



SECTION H-H AT WINGWALL 4

0 500 1000 2000
SCALE IN MILLIMETERS

NOTES:

N.F. - NEAR FACE
F.F. - FAR FACE
E.F. - EACH FACE
REINFORCING COVER 80 CLEAR ON ALL FACES EXCEPT WHERE NOTED.
MINIMUM LAP LENGTH FOR HORIZONTAL #16 BARS IS 610 UNLESS NOTED OTHERWISE.
▲ - CUT TO FIT IN FIELD
FOR LOCATION OF SECTIONS F-F AND H-H, SEE SHEET BRI23.

STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of HARTLAND	Bridge No. 60
	Log Sta.
Highway No. U.S. ROUTE 5	Surv. Sta.
U.S. ROUTE 5 OVER LULLS BROOK	

ABUT. NO. 2 BACKWALL DETAILS & SECTIONS

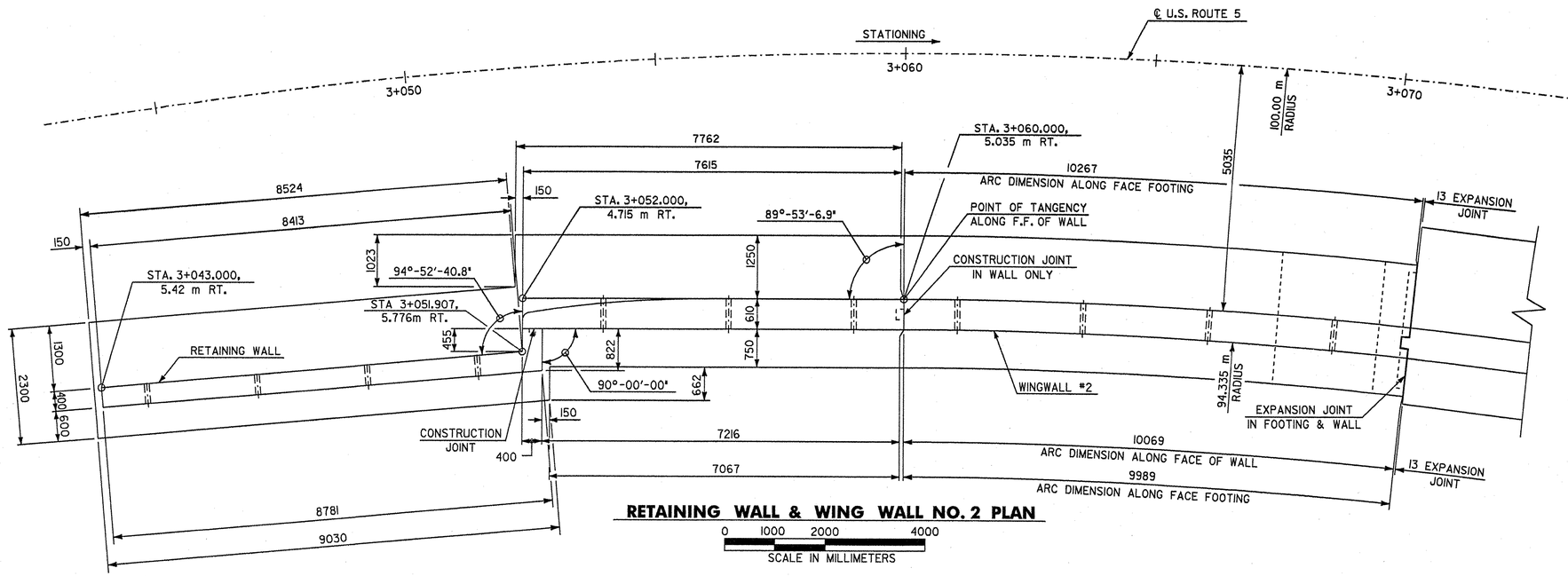
Designed By S. BAKI	Drawn By W. GAYNOR
Checked By S. BAKI Date	Bridge Design Supervisor J. MIECZKOWSKI Date
PROJECT HARTLAND	PROJECT NO. BRS No. 0113(22)
I.G.C. Info. M:\145620I VAOT Hartland\struct\ZF204ARI.DGN	
Bridge Sheet No. BRI27	Sheet 62 of 86

REVISED: 8-12-04 WJG

PLOT SCALE: 100:1 IPLOT FILENAME: ZF204ARI.I

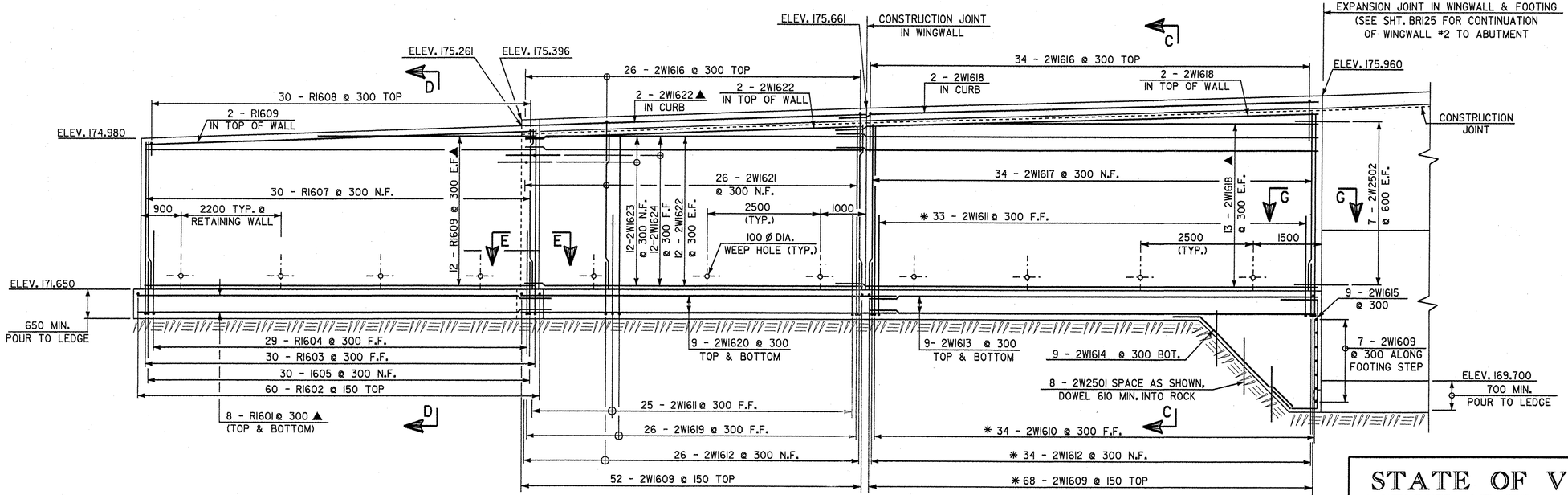
12-AUG-2004

VAOT Metric



RETAINING WALL & WING WALL NO. 2 PLAN

0 1000 2000 4000
SCALE IN MILLIMETERS



RETAINING WALL & WING WALL NO. 2 DEVELOPED ELEVATION

0 1000 2000 4000
SCALE IN MILLIMETERS

NOTES:

N.F. - NEAR FACE
F.F. - FAR FACE
E.F. - EACH FACE
REINFORCING COVER 80 CLEAR ON ALL FACES EXCEPT WHERE NOTED.
MINIMUM LAP LENGTH FOR HORIZONTAL #16 BARS IS 610 UNLESS NOTED OTHERWISE.
▲ - CUT TO FIT IN FIELD
* - PLACED RADIAL.
FOR SECTIONS C-C, SEE SHEET BRI25.
FOR SECTION D-D,E-E, AND G-G, SEE SHEET BRI29.

STATE OF VERMONT
AGENCY OF TRANSPORTATION

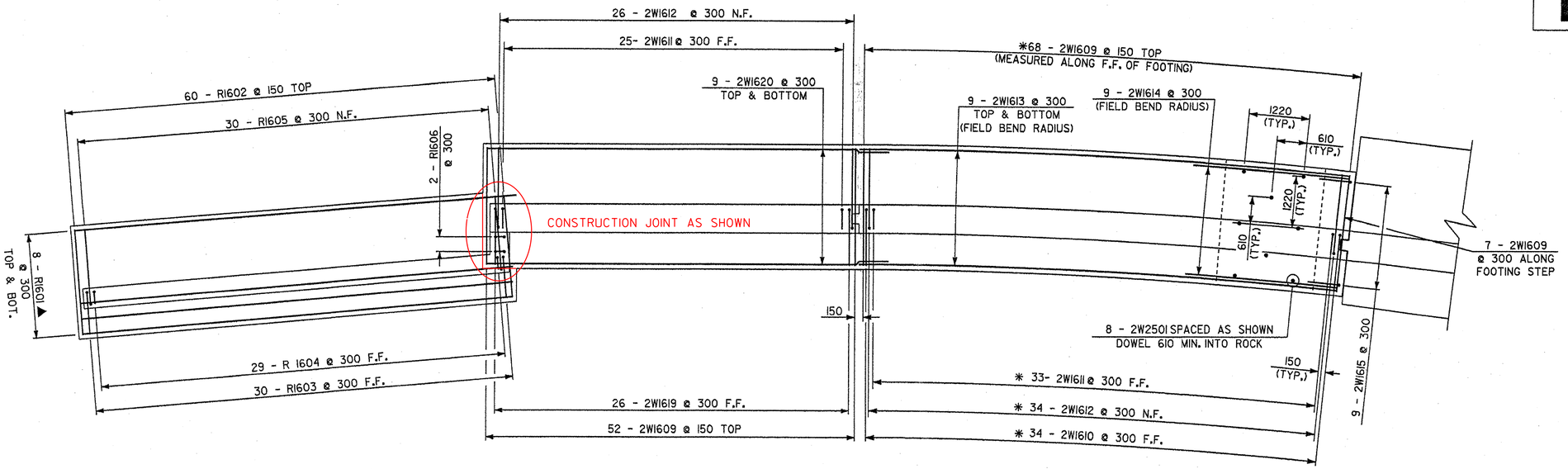
Town Of HARTLAND	Bridge No. 60
Highway No. U.S. ROUTE 5	Log Sta. / Surv. Sta.
U.S. ROUTE 5 OVER LULLS BROOK	

RETAINING WALL PLAN AND ELEVATION

Designed By S. BAKI	Drawn By B. TYLER
Checked By S. BAKI Date	Bridge Design Supervisor J. MIECZKOWSKI Date
PROJECT HARTLAND	PROJECT NO. BRS No. 0113(22)
I.G.C. Info. M:\145620\VAOT Hartland\struct\zf204rmi.dgn	
Bridge Sheet No. BRI28	Sheet 63 of 86

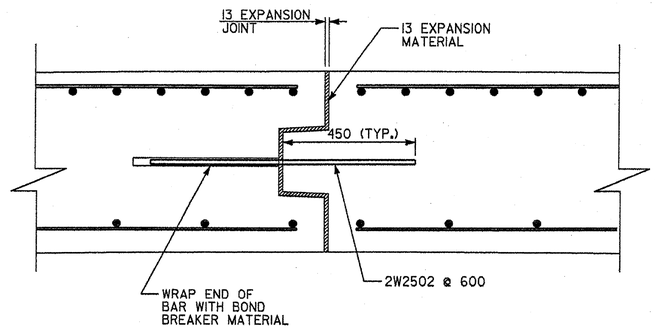
REVISED: 8-12-04 WJG PLOT SCALE: 100:1 IPLOT FILENAME: ZF204RMI.I

12-AUG-2004



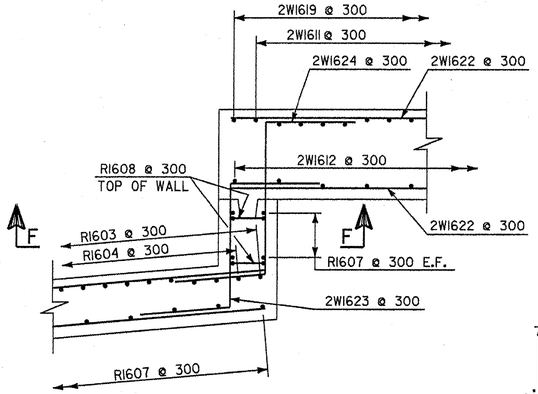
RETAINING WALL & WING WALL NO. 2
REINFORCING PLAN

0 1000 2000 4000
SCALE IN MILLIMETERS



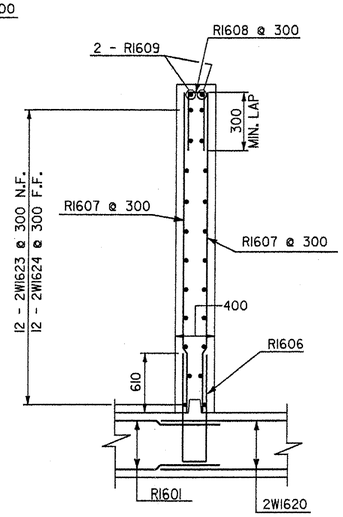
SECTION G-G

0 250 500 1000
SCALE IN MILLIMETERS



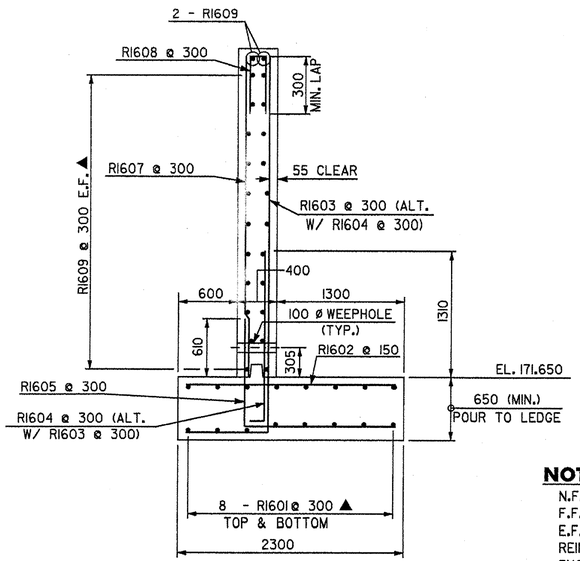
SECTION E-E AT RETAINING WALL

0 400 800 1600
SCALE IN MILLIMETERS



SECTION F-F AT RETAINING WALL

0 500 1000 2000
SCALE IN MILLIMETERS



SECTION D-D AT RETAINING WALL

0 500 1000 2000
SCALE IN MILLIMETERS

NOTES:

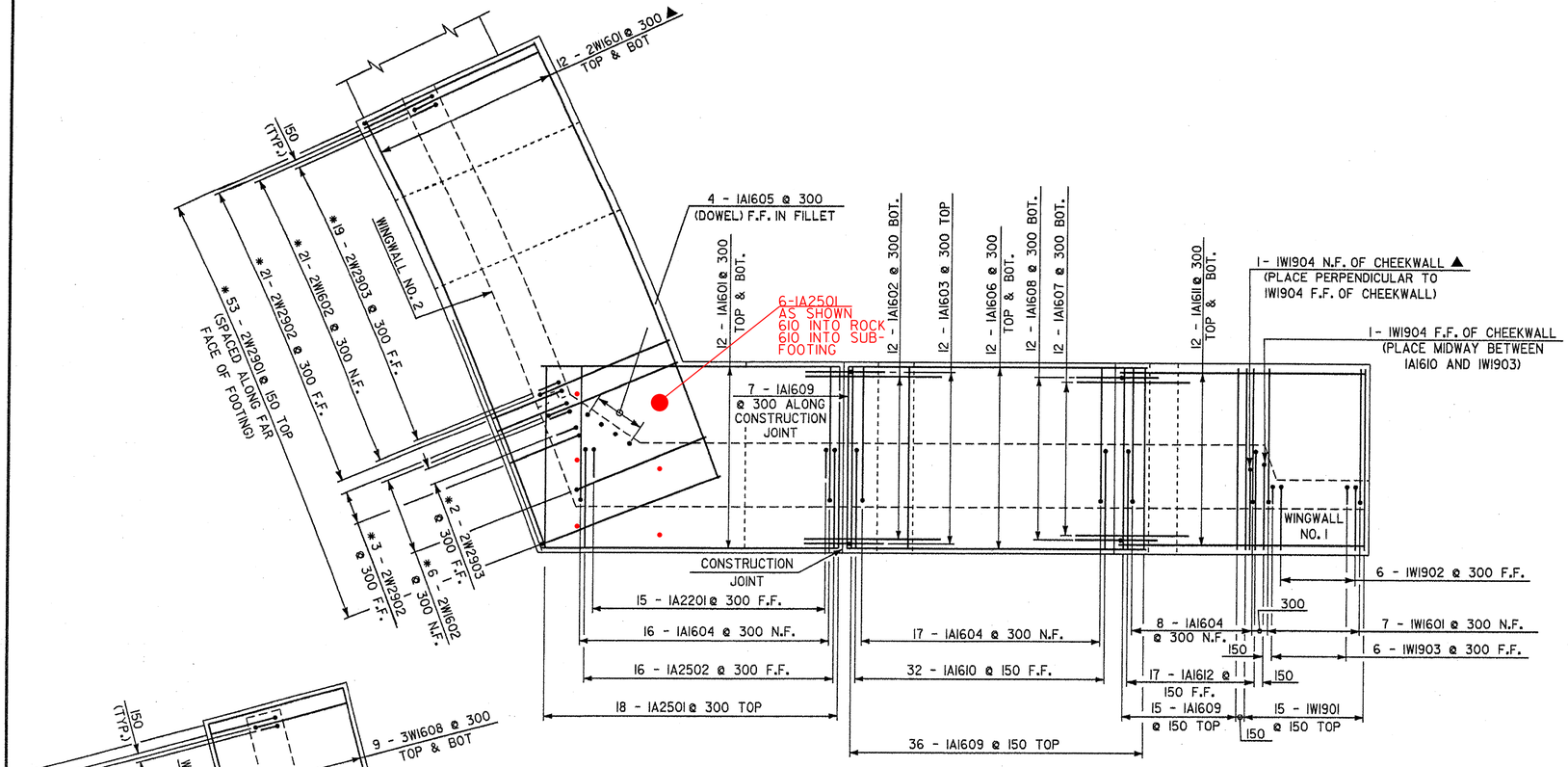
N.F. - NEAR FACE
F.F. - FAR FACE
E.F. - EACH FACE
REINFORCING COVER 80 CLEAR ON ALL FACES EXCEPT WHERE NOTED.
MINIMUM LAP LENGTH FOR HORIZONTAL #16 BARS IS 610 UNLESS NOTED OTHERWISE.
▲ - CUT TO FIT IN FIELD
* - PLACED RADIAL.
FOR LOCATION OF SECTIONS E-E AND G-G, SEE SHEET BRI28.

STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of HARTLAND	Bridge No. 60
Highway No. U.S. ROUTE 5	Log Sta. / Surv. Sta.
U.S. ROUTE 5 OVER LULLS BROOK	
RETAINING WALL DETAILS	
Designed By S. BAKI	Drawn By B. TYLER
Checked By S. BAKI Date	Bridge Design Supervisor J. MIECZKOWSKI Date
PROJECT HARTLAND	PROJECT NO. BRS No. 0113(22)
I.G.C. Info. M:\145620I VAOT Hartland\struct\zf204rmi.dgn	
Bridge Sheet No. BRI29	Sheet 64 of 86

REVISED: 8-12-04 WJG PLOT SCALE: 100:1 PLOT FILENAME: ZF204RMI.I

12-AUG-2004



ABUTMENT NO. 1 FOOTING REINFORCING

0 1000 2000 4000

SCALE IN MILLIMETERS

ABUTMENT NO. 2 FOOTING REINFORCING

0 1000 2000 4000

SCALE IN MILLIMETERS

NOTES:

N.F. - NEAR FACE
F.F. - FAR FACE
E.F. - EACH FACE
REINFORCING COVER 80 ON ALL FACES.
MINIMUM LAP LENGTH FOR HORIZONTAL #16 BARS IS 610 UNLESS NOTED OTHERWISE.
▲ - CUT TO FIT IN FIELD
* - PLACED RADIAL.
FOR WINGWALL NO. 2 AND NO. 3 ELEVATIONS, SEE SHEET BRI24.

STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of HARTLAND	Bridge No. 60
Highway No. U.S. ROUTE 5	Log Sta. / Surv. Sta.
U.S. ROUTE 5 OVER LULLS BROOK	

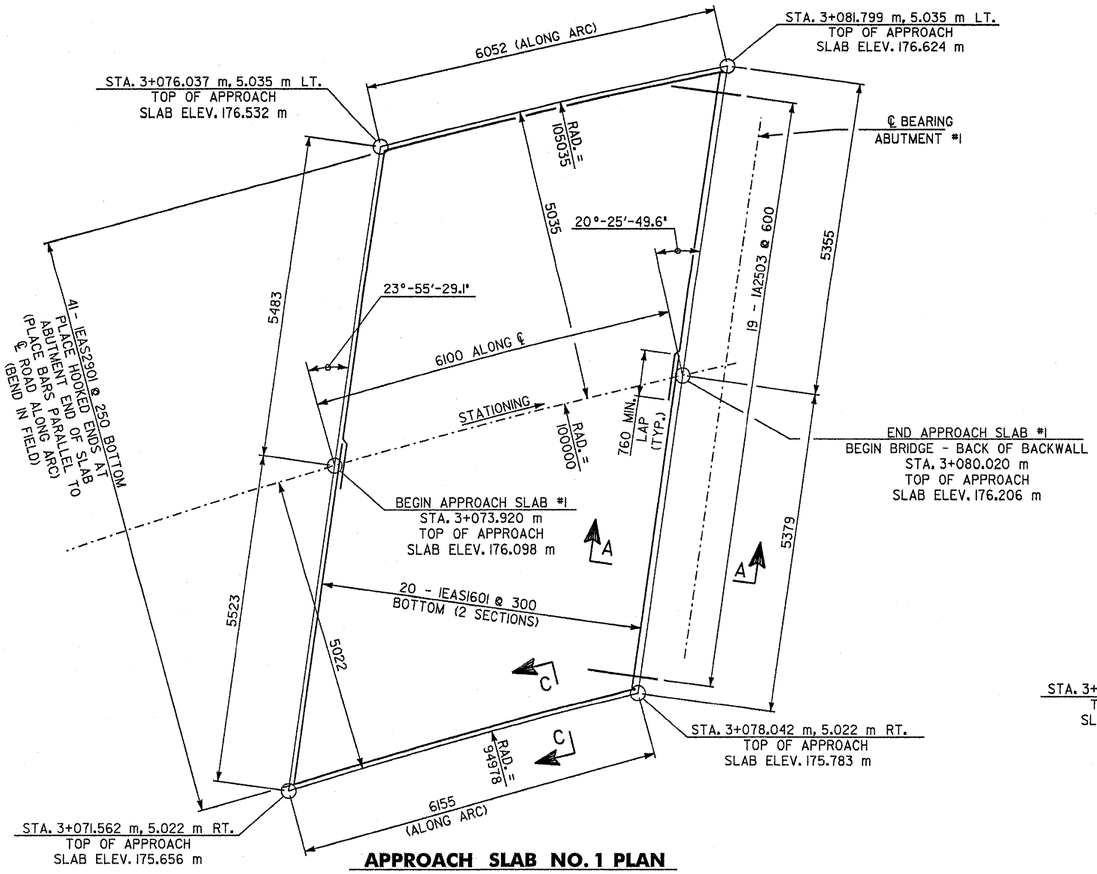
ABUT. NO. 1 & NO. 2 FOOTING REINF.

Designed By S. BAKI	Drawn By W. GAYNOR
Checked By S. BAKI Date	Bridge Design Supervisor J. MIECZKOWSKI Date
PROJECT HARTLAND	PROJECT NO. BRS No. 0113(22)
I.G.C. Info. M:\145620I VAOT Hartland\struct\zf204fmI.dgn	
Bridge Sheet No. BRI30	Sheet 65 of 86

REVISED: 8-12-04 WJG PLOT SCALE: 100:I PLOT FILENAME: ZF204FMI.I

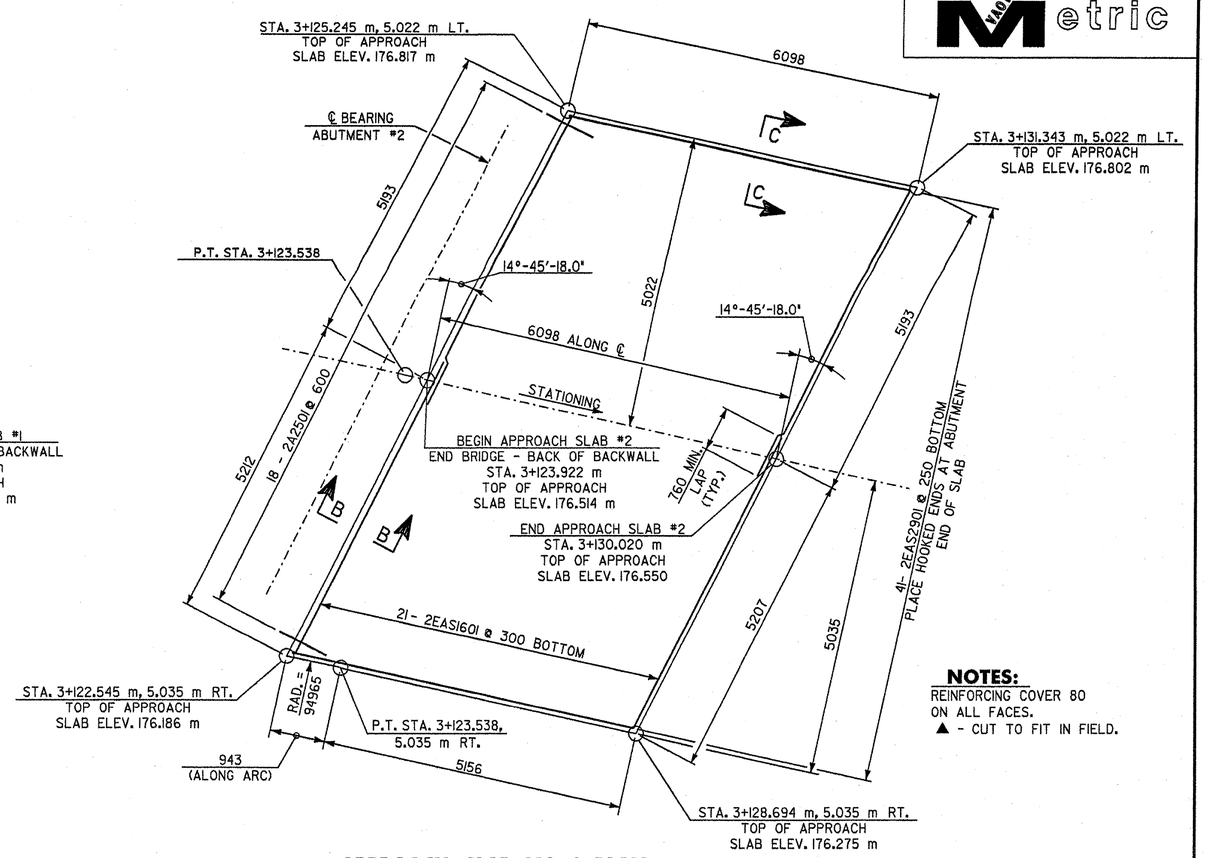
12-AUG-2004

VAOT Metric



APPROACH SLAB NO. 1 PLAN

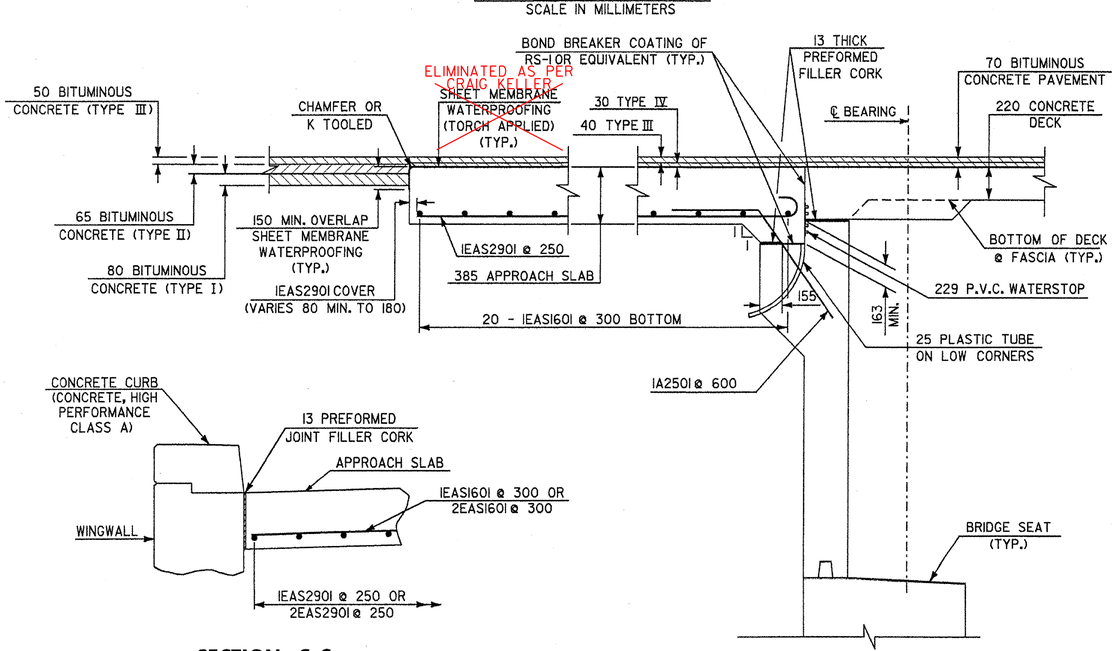
0 1000 2000 4000
SCALE IN MILLIMETERS



APPROACH SLAB NO. 2 PLAN

0 1000 2000 4000
SCALE IN MILLIMETERS

NOTES:
REINFORCING COVER 80
ON ALL FACES.
▲ - CUT TO FIT IN FIELD.

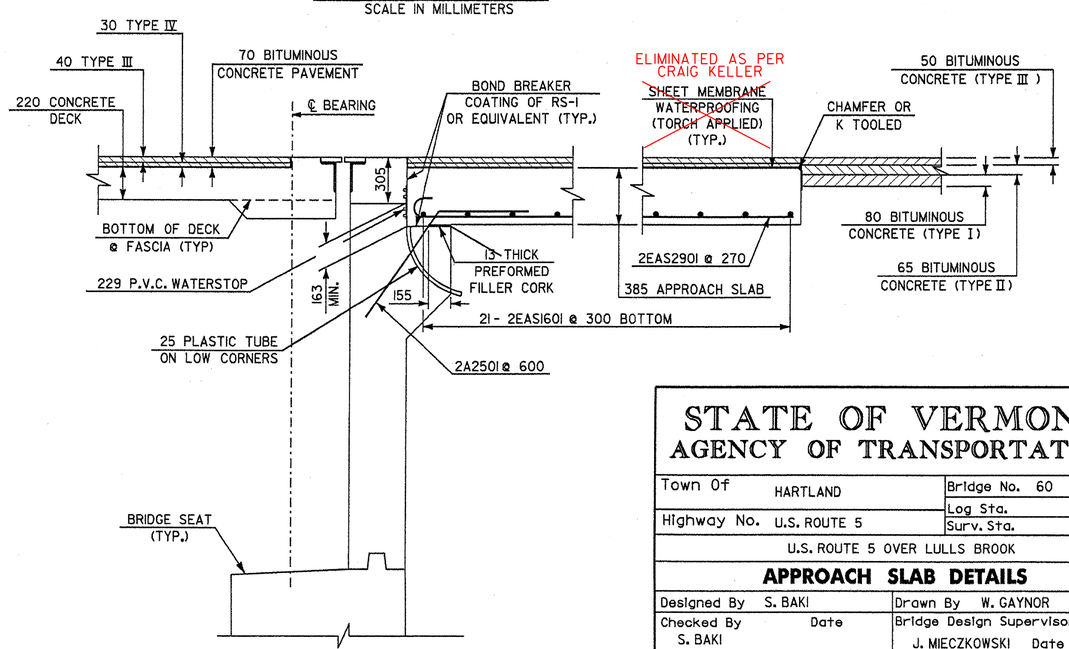


SECTION A-A

0 400 800 1600
SCALE IN MILLIMETERS

SECTION C-C

0 400 800 1600
SCALE IN MILLIMETERS



SECTION B-B

0 400 800 1600
SCALE IN MILLIMETERS

STATE OF VERMONT
AGENCY OF TRANSPORTATION

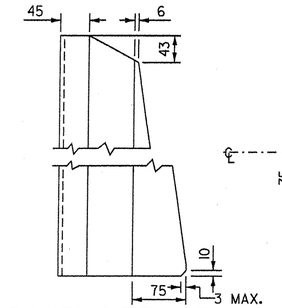
Town Of HARTLAND	Bridge No. 60
Highway No. U.S. ROUTE 5	Log Sta. Surv. Sta.
U.S. ROUTE 5 OVER LULLS BROOK	

APPROACH SLAB DETAILS

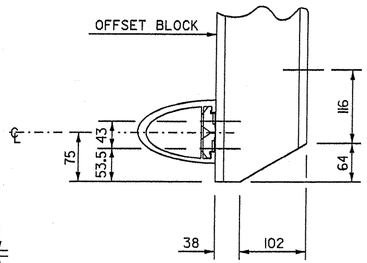
Designed By S. BAKI	Drawn By W. GAYNOR
Checked By S. BAKI Date	Bridge Design Supervisor J. MIECZKOWSKI Date
PROJECT HARTLAND	PROJECT NO. BRS No. 0113(22)
I.G.C. Info. M:\145620\VAOT Hartland\struct\zf204aps.dgn	
Bridge Sheet No. BRI31	Sheet 66 of 86

12-AUG-2004

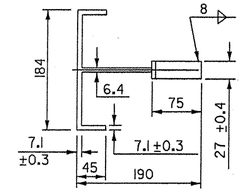
REVISED: 8-12-04 WJG PLOT SCALE: 100:1 PLOT FILENAME: ZF204APS.I



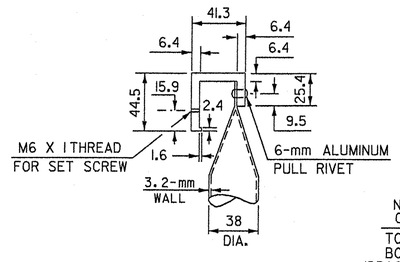
POST SIDE VIEW



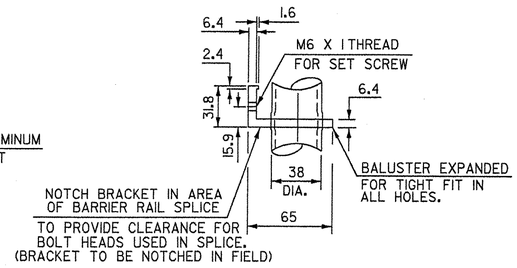
COPING DETAIL



POST PLAN VIEW



DETAIL A



DETAIL B

SIDE ELEVATION OF THREE RAIL
TO BE USED ON CURB SIDE

RAIL POST DETAILS ON SUPERSTRUCTURE

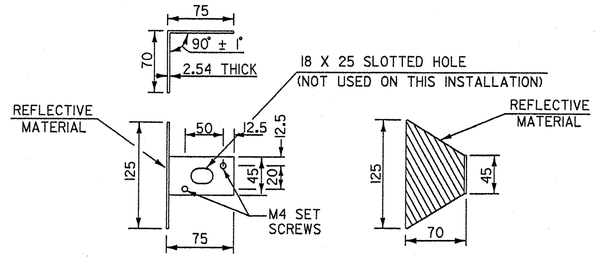
THIS REFLECTORIZED ALUMINUM DELINEATOR IS TO BE ERECTED EVERY 9 m (OR CLOSEST POST) WITH 2 M4 X 0.7 X 20 SET SCREWS.

DELINEATORS SHALL MEET SPECIFICATION REQUIREMENTS FOR ASTM B 209M ALLOY 5052-H32.

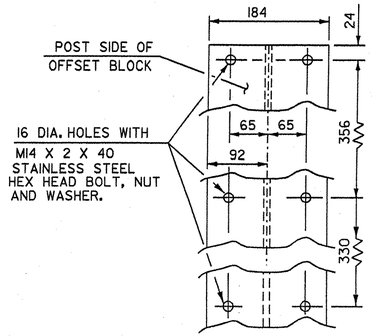
REFLECTIVE MATERIAL SHALL MEET THE REQUIREMENTS OF SUBSECTION 750.08 AND SHALL BE OF ENCAPSULATED LENS SILVER OR AMBER. AMBER IS TO BE INSTALLED ON THE DRIVER'S LEFT AND SILVER ON THEIR RIGHT.

ON BRIDGES WITH A SIDEWALK, DELINEATORS ARE NOT TO BE INSTALLED ON THE SIDEWALK SIDE OF THE BRIDGE (I.E. DELINEATORS INSTALLED ONLY ON THE CURB SIDE AND ON THE APPROACH RAIL ON THE CURB SIDE)

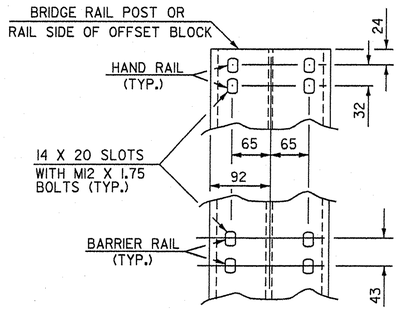
PAYMENT SHALL BE SUBSIDIARY TO ALL OTHER ITEMS.



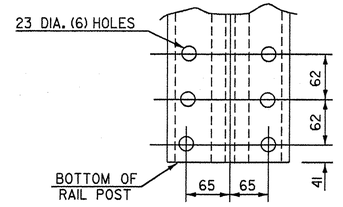
REFLECTOR DETAILS



OFFSET BLOCK
CONNECTION



RAIL CONNECTION



POST BASE
BOLT HOLE DETAILS

REVISIONS AND CORRECTIONS
DECEMBER 18, 1997 - ORIGINAL APPROVAL DATE
REVISION: COPING DETAIL MOFIDIFED. JHW 06/16/98

STATE OF VERMONT
AGENCY OF TRANSPORTATION

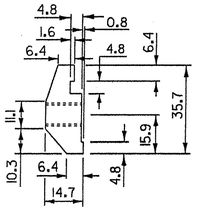
Town Of HARTLAND	Bridge No. 60
Highway No. U.S. ROUTE 5	Log Sta. / Surv. Sta.
U.S. ROUTE 5 OVER LULLS BROOK	

ALUMINUM BRIDGE RAILING DETAILS 1 OF 3

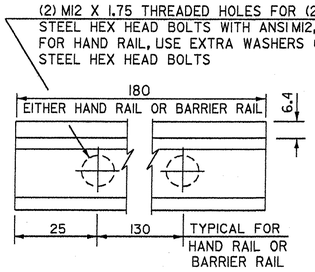
Designed By VAOT	Drawn By VAOT
Checked By S. BAKI Date 1/00	Bridge Design Supervisor J. MIECZKOWSKI Date 1/00
PROJECT HARTLAND	PROJECT NO. BRS No. 0113(22)
I.G.C. Info# M:\145620\VAOT Hartland\struct\zf204rd.dgn	
Bridge Sheet No. BRI32	Sheet 67 of 86

REVISED: 8-12-04 WJG PLOT SCALE: 10:1 IPLOT FILENAME: ZF204RDT.I

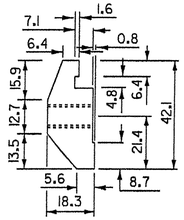
12-AUG-2004



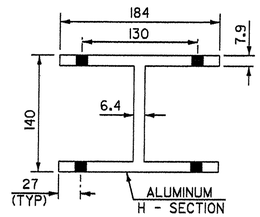
POST CONNECTION HAND RAIL SECTION



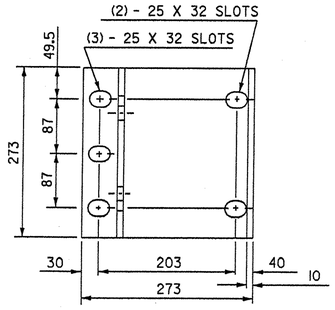
POST CONNECTION ELEVATION



POST CONNECTION BARRIER RAIL SECTION



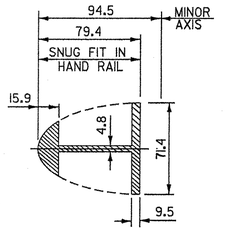
PLAN VIEW OF OFFSET BLOCK (TO BE USED ON SUPERSTRUCTURE ON CURB SIDE)



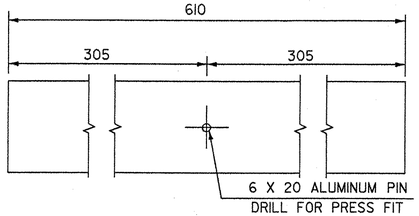
POST BASE PLAN

NOTES

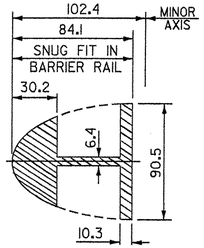
1. ANCHOR BOLTS, WASHERS & HEAVY HEXAGONAL NUTS MAY BE ANY OF THE FOLLOWING:
   A. ASTM F 568M, CLASS 8.8 GALVANIZED.
   B. ASTM M 164M GALVANIZED, OR
   C. BOLTS AND WASHERS OF STAINLESS STEEL ASTM F 738M, CLASS A1-70, CONDITION CW, ALLOY TYPE 304 WITH STAINLESS STEEL NUTS OF ASTM F 836M, CLASS A1-70, CONDITION CW, ALLOY TYPE 304.
2. ALUMINUM POSTS, POST BASES, SPLICE BARS, CONNECTION BARS, RAILS AND BALUSTER FRAMES SHALL CONFORM TO ASTM B 221M ALLOY 6061-T6 OR ALLOY 6351-T5. MINIMUM YIELD STRNGTH Fy = 240 MPa.
3. ALUMINUM BALUSTER TUBES SHALL CONFORM TO ASTM B 210M ALLOY 6061-T5 OR 6063-T5.
4. ALUMINUM RAIL AND CAPS SHALL CONFORM TO ASTM B 26/B 26M ALLOY 356-T6.
5. THE POST, RAIL AND OFFSET CONNECTION BOLTS AND WASHERS SHALL CONFORM TO ASTM F 738M, CLASS A1-50, CONDITION AF, ALLOY TYPE 304. NUTS FOR THESE BOLTS SHALL CONFORM TO ASTM 836M, CLASS A1-50, CONDITION AF, ALLOY TYPE 304.
6. SET SCREWS FOR ATTACHING BALUSTERS TO RAILING SHALL CONFORM TO ASTM F 880M, CLASS A1-70, CONDITION CW, ALLOY TYPE 304.
7. RIVETS SHALL BE COLD DRIVEN HIGH BUTTON HEAD "CONE POINT", CONFORMING TO ASTM B 316/B 316M ALLOY 6061-T6.
8. THE ANCHOR PLATE FOR THE POST ANCHOR ASSEMBLY SHALL BE AASHTO M 183M/M 183 STRUCTURAL STEEL.
9. WELDING SHALL CONFORM TO THE REQUIREMENTS OF SUBSECTION 506.10 USING THE GMAW-INERT GAS PROCESS AND AWS ER 5356 ELECTRODE WIRE.
10. UNLESS OTHERWISE SPECIFIED, ANCHOR BOLTS SHALL BE CAST INTO THE CONCRETE AS DETAILED.
11. WHENEVER FEASIBLE, BARRIER RAIL AND HAND RAIL SECTIONS SHALL BE FULL LENGTH SECTIONS (12 m ±) AND WHEN PRACTICAL SHALL BE ATTACHED TO THREE POSTS. RAILS SHALL BE SPLICED AT EACH DECK JOINT AND INTERMITTENTLY AS REQUIRED. SPLICES SHALL OCCUR WITHIN THE SAME PANEL.
12. ENDS OF RAILS SHALL BE CUT SQUARE AND GROUND FREE OF BURRS OR RAGGED EDGES. EXPOSED ENDS SHALL BE CAPPED.
13. THE CONCRETE CONTACT SURFACE AT THE POST BASE SHALL BE BUSH HAMMERED AND/OR SHIMMED AS REQUIRED FOR PROPER POST ALIGNMENT. POST HEIGHT ADJUSTMENTS LESS THAN 6 mm SHALL BE WITH 2-mm AND 3-mm SHIMS. CORRECTIONS EXCEEDING 6 mm SHALL BE WITH EPOXY MORTAR CONFORMING WITH SECTION 530. FABRIC BEARING PADS AND ANY REQUIRED SHIMS OR EPOXY MORTAR ARE SUBSIDIARY TO THE UNIT PRICE BID FOR THE RAILING.
14. SHIMS AND 3-mm FABRIC BEARING PADS SHALL BE 273 mm SQUARE WITH SLOTTED HOLES SIZED AND LOCATED THE SAME AS THE POST BASE DETAIL. FABRIC BEARING PADS SHALL CONFORM TO SUBSECTION 731.01 OR 731.02, SHIM MATERIAL SHALL BE ASTM B 209M ALLOY 1100-0.
15. EXTRUDED SECTIONS ARE DETAILED TO COMPLY WITH CURRENT AASHTO-AGC-ARTBA STANDARDS. MINOR VARIATIONS OF THE DETAILS SHOWN MAY BE CONSIDERED PROVIDING THEY DO NOT REDUCE THE STRENGTH CAPACITY OF THE RAIL SYSTEM.
16. ALUMINUM WASHERS SHALL BE ASTM B209M ALLOY ACLAD 2024-T4.
17. OFFSET BLOCKS AND ALUMINUM APPROACH RAIL POSTS SHALL CONFORM TO ASTM SPECIFICATION B 308/ B 308M.



HAND RAIL SPLICE SECTION

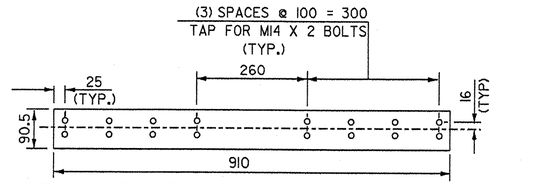


ELEVATION OF HAND RAIL SPLICE BAR

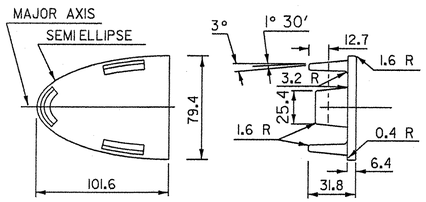


BARRIER RAIL SPLICE SECTION

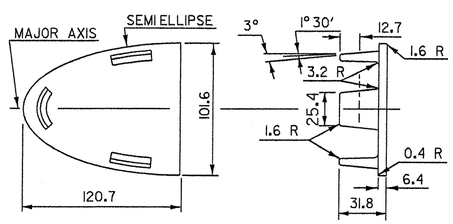
(SEE SHEET 1 OF 2 FOR ELEVATION OF BARRIER RAIL SPLICE BAR)



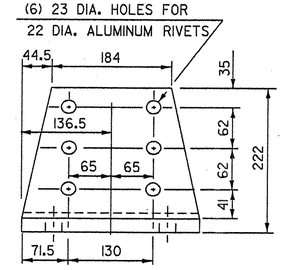
ELEVATION OF STD. BARRIER RAIL SPLICE BAR (FROM BACK)



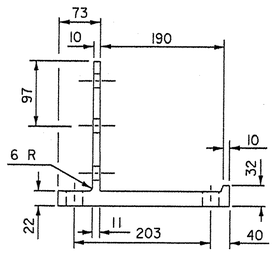
HAND RAIL END CAP



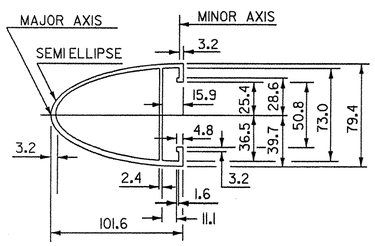
BARRIER RAIL END CAP



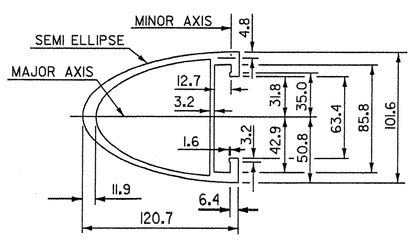
POST BASE FRONT ELEVATION



POST BASE SECTION

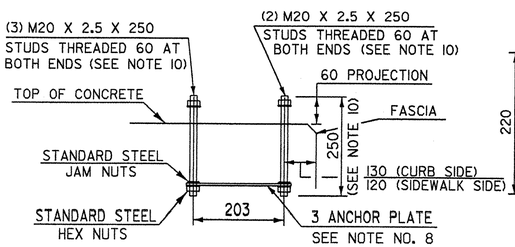


HAND RAIL SECTION

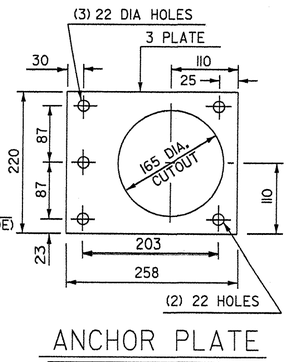


BARRIER RAIL SECTION

(SEE SHEET 1 OF 2 FOR ELEVATION OF BARRIER RAIL)



POST ANCHOR ASSEMBLY



ANCHOR PLATE

REVISIONS AND CORRECTIONS
DECEMBER 18, 1997 - ORIGINAL APPROVAL DATE

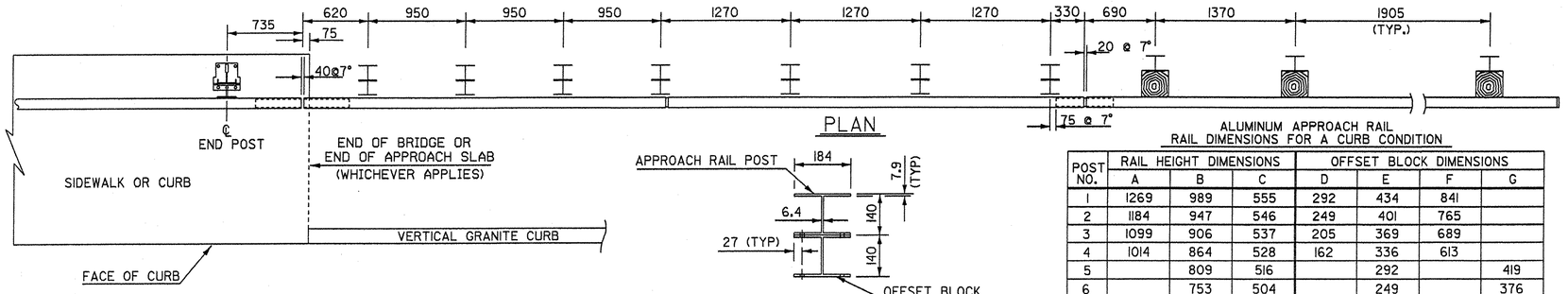
STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of HARTLAND	Bridge No. 60
Highway No. U.S. ROUTE 5	Log Sta. / Surv. Sta.
U.S. ROUTE 5 OVER LULLS BROOK	

ALUMINUM BRIDGE RAILING DETAILS 2 OF 3

Designed By VAOT	Drawn By VAOT
Checked By S. BAKI Date 1/00	Bridge Design Supervisor J. MIECZKOWSKI Date 1/00
PROJECT HARTLAND	PROJECT NO. BRS No. 0113(22)
I.G.C. Info. M:\145620\VAOT Hartland\struct\zf204rd.dgn	
Bridge Sheet No. BRI33	Sheet 68 of 86

Metric



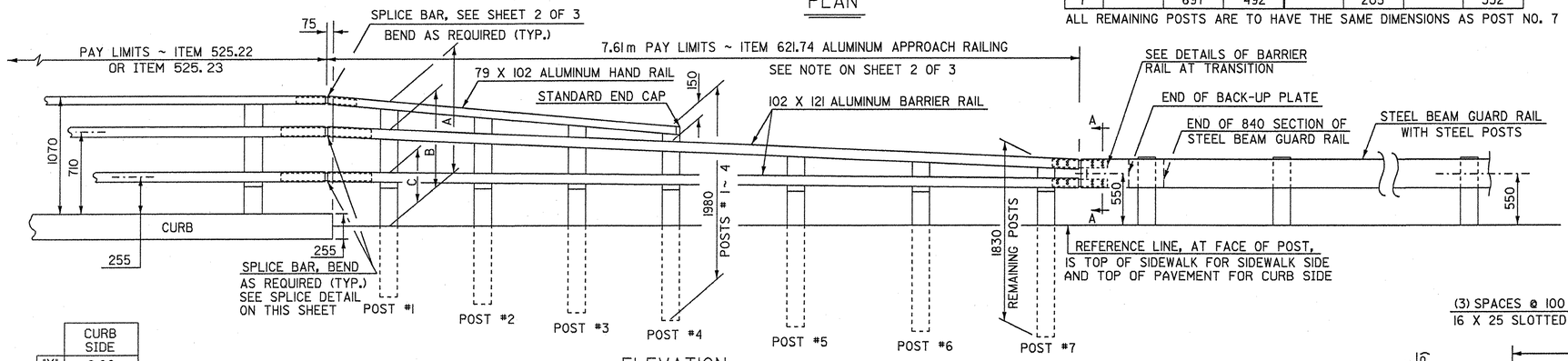
PLAN

PLAN

ALUMINUM APPROACH RAIL
RAIL DIMENSIONS FOR A CURB CONDITION

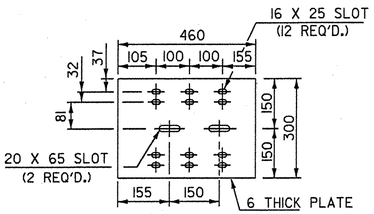
POST NO.	RAIL HEIGHT DIMENSIONS			OFFSET BLOCK DIMENSIONS			
	A	B	C	D	E	F	G
1	1269	989	555	292	434	841	
2	1184	947	546	249	401	765	
3	1099	906	537	205	369	689	
4	1014	864	528	162	336	613	
5		809	516		292		419
6		753	504		249		376
7		697	492		205		332

ALL REMAINING POSTS ARE TO HAVE THE SAME DIMENSIONS AS POST NO. 7

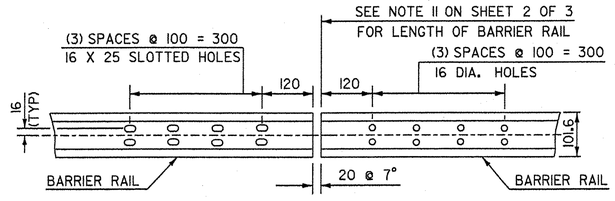


ELEVATION

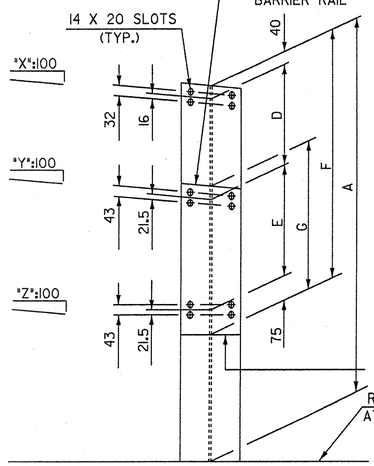
	CURB SIDE
"X"	8.96
"Y"	4.38
"Z"	0.95



BACK-UP PLATE DETAILS



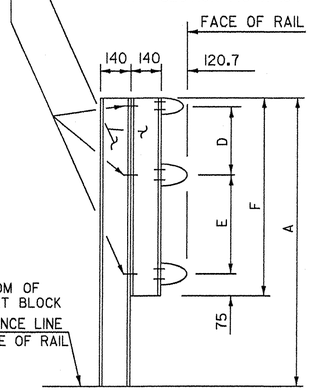
ELEVATION OF BARRIER RAIL (FROM BACK)
AT ALL INTERMEDIATE RAIL SPLICES



FRONT ELEVATION

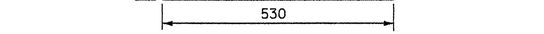
ATTACH OFFSET BLOCK TO POST WITH
M14 X 2 X 40 STAINLESS STEEL
HEX HEAD BOLTS, NUTS AND WASHERS.
6 BOLTS PER POST, POST 1 THRU 4;
4 BOLTS PER POST, POST 5 THRU 7.

ALUMINUM APPROACH RAIL POST AND OFFSET BLOCK
H - SECTION 140 X 184

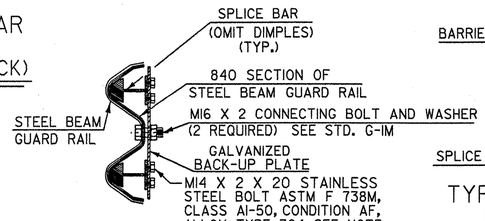


SIDE ELEVATION

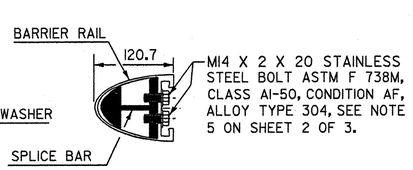
APPROACH RAIL DETAILS



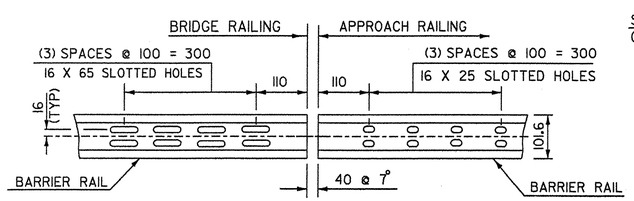
ELEVATION OF BARRIER RAIL SPLICE BAR
TO BE USED AT TRANSITION BETWEEN
APPROACH RAIL & GUARD RAIL (FROM BACK)



SECTION A-A

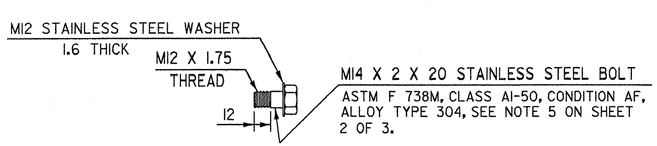


TYPICAL SECTION THROUGH
BARRIER RAIL SPLICE

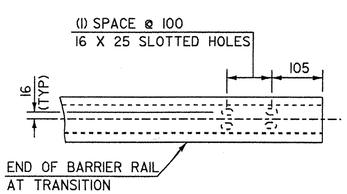


ELEVATION OF BARRIER RAIL (FROM BACK)

M12 STAINLESS STEEL WASHER
1.6 THICK



STAINLESS STEEL BOLT DETAILS
(FOR SPLICE BARS)



ELEVATION OF BARRIER RAIL
(FROM FRONT) AT TRANSITION

NOTES

1. POST 1 THROUGH 7 SHALL BE EXTRUDED ALUMINUM.
2. ALL STRUCTURAL STEEL SHALL BE AASHTO M 270/M 270M GRADE 250 GALVANIZED AFTER FABRICATION.
3. ALL ITEMS NOT OTHERWISE INDICATED SHALL MEET THE SPECIFICATION REQUIREMENTS OF THE STANDARD SHEETS ON WHICH THEY ARE DETAILED.
4. SEE STANDARD G-1M FOR STEEL BEAM GUARD RAIL DETAILS. SEE SHEETS 1 OF 3 AND 2 OF 3 FOR ALUMINUM BRIDGE RAILING DETAILS.
5. THE COST OF ALL MATERIALS AND LABOR FOR THE SPLICE BETWEEN THE ALUMINUM APPROACH RAILING AND THE STEEL BEAM GUARD RAIL SHALL BE SUBSIDIARY TO ITEM 621.74, ALUMINUM APPROACH RAILING.
6. DETAILS ARE SHOWN FOR TRANSITION TO A 3 RAIL ALUMINUM BRIDGE RAILING.
7. DIMENSIONS SHOWN ARE FROM A REFERENCE LINE AT THE FACE OF POST FOR A NORMAL CROWNED SECTION. APPROPRIATE CORRECTIONS SHALL BE MADE FOR CROSS SLOPES OTHER THAN A NORMAL SECTION.

REVISIONS AND CORRECTIONS
DECEMBER 18, 1997 - ORIGINAL APPROVAL DATE

STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of HARTLAND	Bridge No. 60
	Log Sta.
Highway No. U.S. ROUTE 5	Surv. Sta.
U.S. ROUTE 5 OVER LULLS BROOK	

ALUMINUM BRIDGE RAILING DETAILS 3 OF 3

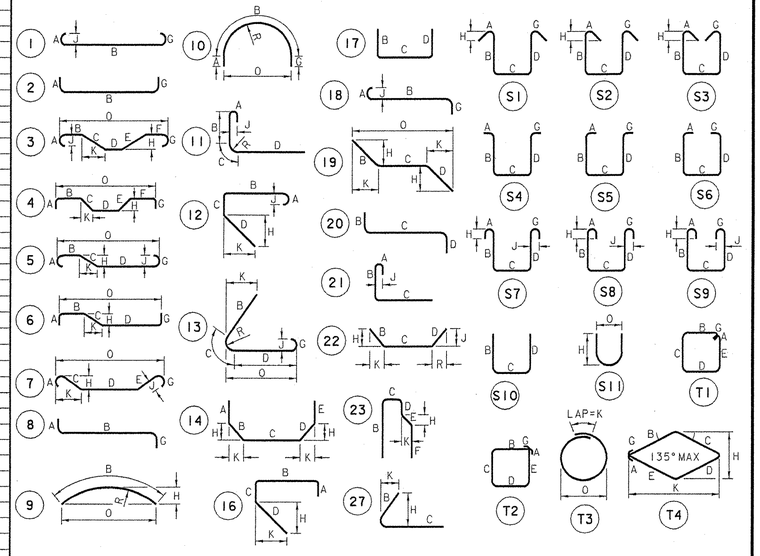
Designed By VAOT	Drawn By VAOT
Checked By S. BAKI Date 1/00	Bridge Design Supervisor J. MIECZKOWSKI Date 1/00
PROJECT HARTLAND	PROJECT NO. BRS No. 0113(22)
I.G.C. Info. M:\145620\VAOT Hartland\struct\zf204rd.dgn	
Bridge Sheet No. BRI34	Sheet 69 of 86

12-AUG-2004

REVISED: 8-12-04 WJG PLOT SCALE: 10:1 PLOT FILENAME: ZF204RDT.I

ITEM	NO. PIECES	SIZE	LENGTH	MARK	TYPE	A	B	C	D	E	F	G	H	J	K	R	O
				DECK													
	338	16	11.830	ES1601	STR												
▲	63	16	11.540	ES1602	STR												
	17	16	8.620	ES1603	STR												
▲	306	16	11.170	ES1604	STR												
▲	4	16	11.900	ES1605	STR												
	28	16	2.785	ES1606	16	1.220	0.270	0.935	0.360				0.255		0.255		
▲	3	16	11.560	ES1607	STR												
	28	16	2.015	ES1608	16	0.880	0.270	0.505	0.360				0.255		0.255		
*	151	16	1.845	ES1609	S5	0.250	0.455	0.435	0.455			0.250					
*	139	16	1.835	ES1610	S5	0.250	0.450	0.435	0.450			0.250					
▲	139	16	1.835	ES1611	S5	0.250	0.450	0.435	0.450			0.250					
*	306	19	11.170	ES1901	STR												
*	2	19	11.900	ES1902	STR												
	2	19	11.560	ES1903	STR												
				APPROACH SLAB 1													
△	42	16	5.900	1EAS1601	STR												
△	43	29	6.275	1EAS2901	1	0.375	0.375					/		0.375			
				APPROACH SLAB 2													
△	44	16	5.600	2EAS1601	STR												
△	43	29	6.325	2EAS2901	1	0.375	5.950					/		0.375			
				ABUTMENT 1													
	24	16	5.240	1A1601	STR												
	12	16	4.430	1A1602	6	/	0.610	2.570	1.250	/	/	/	2.494		0.623		2.483
	12	16	3.860	1A1603	20		0.790	2.460	0.610								
	41	16	3.575	1A1604	17		1.230	2.345									
	4	16	1.230	1A1605	STR												
	24	16	5.290	1A1606	STR												
	12	16	1.970	1A1607	6		0.630	0.710	0.630				0.502		0.502		1.762
*	13	16	1.720	1A1608	20		0.610	0.500	0.610								
	58	16	3.145	1A1609	STR												
	32	16	4.900	1A1610	17		3.130	1.770									
	24	16	4.340	1A1611	STR												
	17	16	4.530	1A1612	17		2.760	1.770									
▲	16	16	3.520	1A1613	STR												
	4	16	3.320	1A1614	STR												
	16	16	4.620	1A1615	STR												
	10	16	5.390	1A1616	STR												
	12	16	3.090	1A1617	19		0.610	2.480					0.569		0.219		
	12	16	2.310	1A1618	19		0.610	1.700					0.567		0.224		
	12	16	5.240	1A1619	22		0.610	4.020	0.610				0.334	0.342	0.510		0.505
▲	16	16	1.400	1A1620	STR												
	8	16	1.040	1A1621	STR												
▲	14	16	9.140	1A1622	STR												
	41	16	2.190	1A1623	14	0.610	0.720	0.250		0.610			0.031		0.719		
	42	16	1.220	1A1624	STR												
	4	16	3.490	1A1625	STR												
	4	16	3.020	1A1626	STR												
▲	40	16	2.370	1A1627	STR												
*	41	16	1.940	1A1628	STR												
▲	36	16	6.540	1A1629	STR												
	4	16	6.760	1A1630	STR												
	18	16	2.150	1A1631	19		0.610	1.540					0.567		0.224		
	8	16	5.600	1A1632	STR												
	42	16	1.770	1A1633	17		0.800	0.170	0.800								
	2	16	3.110	1A1634	STR												
	36	16	2.120	1A1635	16	0.610	0.475	0.365	0.670				0.474		0.474		
△	17	22	5.635	1A2201	2	0.375	5.260					/					
*	19	25	3.145	1A2501	STR												
	16	25	5.060	1A2502	17		3.290	1.770									
*	20	25	1.740	1A2503	19		0.840	0.900					0.688		0.482		
				WINGWALL 1													
	7	16	3.525	1W1601	17		1.180	2.345	/								
*	8	16	1.730	1W1602	STR												
	2	16	1.280	1W1603	19		0.610	0.670	/				0.467		0.393		
	4	16	2.850	1W1604	6	/	0.610	0.640	1.600	/	/	/	0.605		0.209		2.419
*	10	16	3.100	1W1605	STR												
	1	16	6.065	1W1606	17		2.850	0.365	2.850								
	1	16	5.561	1W1607	17		2.598	0.365	2.598								
	1	16	5.057	1W1608	17		2.346	0.365	2.346								
	1	16	4.553	1W1609	17		2.094	0.365	2.094								
	1	16	4.049	1W1610	17		1.842	0.365	1.842								
	1	16	3.545	1W1611	17		1.590	0.365	1.590								
	14	16	1.585	1W1612	17		0.610	0.365	0.610								
	2	16	3.980	1W1613	22		1.360	2.620	/				1.041	/	0.878	/	
▲	11	16	5.290	1W1614	4	/	0.610	0.845	3.835	/	/	/	0.800		0.274		
▲	11	16	4.850	1W1615	4	/	0.610	0.640	3.600	/	/	/	0.605		0.209		
	6	16	2.830	1W1616	STR												
*	16	19	3.145	1W1901	STR												
	6	19	3.745	1W1902	17		2.580	1.165	/								
*	7	19	2.620	1W1903	17		2.320	0.300	/								
▲	2	19	3.790	1W1904	17		2.300	1.490	/								
△	4	25	1.220	1W2501	STR												

ITEM	NO. PIECES	SIZE	LENGTH	MARK	TYPE	A	B	C	D	E	F	G	H	J	K	R	O
				WINGWALL 2													
	24	16	8.450	2W1601	STR	▲											
	27	16	3.730	2W1602	17		1.230	2.500	/								
	27	16	4.020	2W1603	STR	▲											
	44	16	5.890	2W1604	STR												
	48	16	2.480	2W1605	STR	▲											
	23	16	2.529	2W1606	23		1.050	0.425	/	0.329	0.725		0.325		0.050		
	1	16	6.530	2W1607	STR												
	1	16	6.730	2W1608	STR												
	127	16	2.450	2W1609	STR												
	34	16	5.425	2W1610	17		4.200	1.225	/								
	58	16	2.480	2W1611	2	0.250	2.230					/					
	60	16	2.880	2W1612	17		1.180	1.700	/								
	18	16	10.190	2W1613	STR												
	9	16	3.440	2W1614	19		0.610	2.830	/				0.431		0.431		
	9	16	4.145	2W1615	16	0.610	2.460	0.465	0.610				0.431		0.431		
	60	16	2.849	2W1616	17		1.210	0.425	/	0.329	0.885		0.325		0.050		
	34	16	3.635	2W1617	STR												
	30	16	10.800	2W1618	STR	▲											
	26	16	5.155	2W1619	17		3.930	1.225	/								
	18	16	8.300	2W1620	STR												
	26	16	3.340	2W1621	STR												
	28	16	7.480	2W1622	STR	▲											
	12	16	2.070	2W1623	23			0.610	0.850	0.610			0.052		0.608		
	12	16	2.274	2W1624	23			0.610	1.054	0.610			0.052		0.608		
△	26	22	2.085	2W2201	STR												
△	10	25	1.220	2W2501	STR												
	7	25	0.915	2W2502	STR							/					
*	54	29	3.775	2W2901	1		3.400										
	24	29	4.815	2W2902	17		3.440	1.375	/								
*	22	29	2.825	2W2903	17		2.350	0.475	/								
				RETAINING WALL													
	16	16	9.130	R1601	STR												
	60	16	2.140	R1602	STR												
	30	16	4.685	R1603	17		3.820	0.865	/			/					
	29	16	2.130	R1604	2	0.250	1.880										
	30	16	2.720	R1605	17		1.180	1.540	/								
	2	16	2.625	R1606	17		1.180	0.265	1.180								
	34	16	3.250	R1607	STR												
	32	16	1.445	R1608	17		0.590	0.265	0.590								
	26	16	8.620	R1609	STR	▲											



NOTES

1. UNLESS OTHERWISE DESIGNATED, ALL BAR REINFORCEMENT FOR CONCRETE IN SIZES UP TO AND INCLUDING 55M SHALL CONFROM TO THE REQUIREMENT OF THE "SPECIFICATIONS FOR DEFORMED BILLET-STEEL BARS FOR CONCRETE REINFORCEMENT", AASHTO M 31M (ASTM A 615M-SI). ALL BARS SHALL BE GRADE 400, 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 ARE TO BE SHOWN ONLY WHEN NECESSARY TO RESTRICT HOOK SIZE. OTHERWISE, STANDARD HOOKS ARE TO BE USED.
6. "H" DIMENSION ON STIRRUPS ARE TO BE SHOWN ONLY WHEN NECCESSARY TO MAINTAIN CLEARANCES.
7. WHERE SLOPE DIFFERS FROM 45 DEGREES, DIMENSIONS "H" AND "K" MUST BE SHOWN.
8. ▲ DENOTES BARS TO BE CUT IN FIELD.
9. * DENOTES ONE EXTRA BAR ADDED FOR TESTING PURPOSES.
10. △ DENOTES TWO EXTRA BARS ADDED FOR TESTING PURPOSES.
11. "E" IN PREFIX DENOTES EPOXY COATED REINFORCING STEEL.

ASTM STANDARD REINFORCING BARS

BAR SIZE DESIGNATION	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

STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of HARTLAND	Bridge No. 60
	Log Sta.
Highway No. U.S. ROUTE 5	Surv. Sta.
U.S. ROUTE 5 OVER LULLS BROOK	

REINFORCING BAR SCHEDULE

Designed By S. BAKI	Drawn By W. GAYNOR
Checked By S. BAKI Date	Bridge Design Supervisor J. MIECZKOWSKI Date
PROJECT HARTLAND	PROJECT NO. BRS No. 0113(22)
I.G.C. Info. M:\145620I VAOT Hartland\struct\zf204rbs.dgn	
Bridge Sheet No. BRI35	Sheet 70 of 86

12-AUG-2004

REVISED: 8-12-04 WJG PLOT SCALE: 100:1 IPLOT FILENAME: RBS1.I

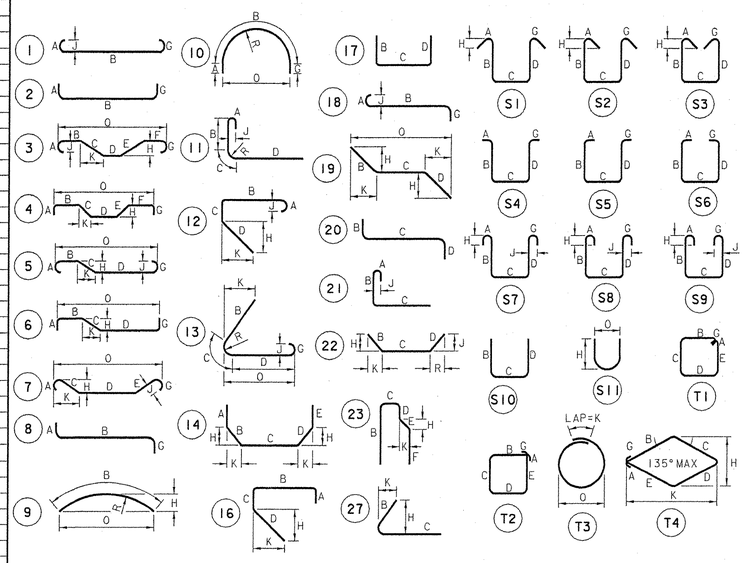
ITEM	NO. PIECES	SIZE	LENGTH	MARK	TYPE	A	B	C	D	E	F	G	H	J	K	R	O
				ABUTMENT 2													
3	24	16	5.970	2A1601	STR												
4	39	16	3.705	2A1602	17		1.230	2.475	/								2.483
5	12	16	8.600	2A1603	STR												
6	* 5	16	1.220	2A1604	STR												
7	4	16	2.800	2A1605	STR												
8	▲ 16	16	2.790	2A1606	STR												
9	▲ 20	16	5.300	2A1607	STR												1.762
10	4	16	4.540	2A1608	STR												
11	10	16	4.030	2A1609	19		0.610	3.420	/				0.590		0.155		
12	10	16	3.110	2A1610	19		0.610	2.500	/				0.590		0.155		
13	* 40	16	2.270	2A1611	14	0.610	0.720	0.330	/	0.610			0.031	/	0.719	/	
14	* 42	16	1.250	2A1612	STR												
15	▲ 24	16	2.480	2A1613	STR												
16	▲ 12	16	8.580	2A1614	STR												
17	8	16	7.325	2A1615	STR												
18	4	16	4.885	2A1616	STR												
19	9	16	5.100	2A1617	22		0.610	3.880	0.610				0.372	0.372	0.483	0.483	
20	39	16	2.340	2A1618	STR												
21	8	16	5.440	2A1619	STR												0.505
22	42	16	6.360	2A1620	STR												
23	18	16	3.210	2A1621	19		0.610	2.600	/				0.590		0.155		
24	4	16	6.090	E2A1622	STR												
25	34	16	2.280	2A1623	16	0.610	0.555	0.365	0.750				0.530		0.530		
26	2	16	3.070	2A1624	STR												
27	41	16	2.470	E2A1625	17		1.110	0.250	1.110								
28	△ 86	19	3.375	2A1901	STR												
29	△ 20	25	1.880	2A2501	19		0.840	1.040	/				0.688		0.482		
30	△ 43	29	4.960	2A2901	17		3.010	1.950	/								
31																	
32																	
33																	
34				**WINGWALL 3**													
35	▲ 24	16	4.050	3W1601	STR												
36	9	16	3.730	3W1602	17		1.230	2.500	/								
37	▲ 20	16	3.030	3W1603	STR												
38	10	16	3.290	3W1604	6	/	0.610	1.410	1.270	/	/	/	0.997		0.997		2.877
39	▲ 10	16	2.350	3W1605	20		0.790	0.950	0.610								
40	9	16	3.130	3W1606	17		1.180	1.950	/								
41	1	16	2.750	3W1607	STR												
42	9	16	5.500	3W1608	STR												
43	9	16	3.650	3W1609	6	/	0.610	1.770	1.270	/	/	/	1.252		1.252		3.132
44	9	16	2.470	3W1610	20		0.610	1.250	0.610								
45	38	16	2.450	3W1611	STR												
46	19	16	5.130	3W1612	17		3.905	1.225	/								
47	19	16	2.880	3W1613	17		1.180	1.700	/								
48	18	16	2.480	3W1614	2	0.250	2.230					/					
49	▲ 9	16	2.795	3W1615	STR												
50	▲ 7	16	2.670	3W1616	STR												
51	5	16	2.670	3W1617	STR												
52	32	16	2.299	3W1618	23		0.935	0.425	/	0.329	0.610		0.325		0.050		
53	9	16	4.600	3W1619	STR												
54	9	16	2.600	3W1620	STR												
55	19	16	3.340	3W1621	STR												
56	▲ 28	16	7.850	3W1622	STR												
57	2	16	9.460	3W1623	STR												
58	8	16	1.700	3W1624	19		0.300	1.400	/				0.212		0.212		
59	* 8	16	1.640	3W1625	STR												
60	9	22	4.455	3W2201	17		3.180	1.275	/								
61	* 18	22	2.375	3W2202	2	0.375	2.000					/					
62	6	22	1.900	3W2203	STR												
63	△ 12	25	1.220	3W2501	STR												
64	23	29	3.775	3W2901	1	0.375	3.400					/		0.300			
65	5	29	4.815	3W2902	17		3.440	1.375	/								
66	* 5	29	2.825	3W2903	2	0.475	2.350					/					
67	9	29	3.125	3W2904	1	0.375	2.750					/		0.300			
68																	
69																	
70																	
71				**WINGWALL 4**													
72	5	16	3.705	4W1601	17		1.230	2.475	/								
73	5	16	2.780	4W1602	STR												
74	2	16	1.290	4W1603	19		0.610	0.680	/				0.535		0.294		
75	8	16	2.419	4W1604	6	/	0.610	0.712	1.097			/	0.684		0.198		1.905
76	5	16	3.060	4W1605	STR												
77	1	16	6.105	4W1606	17		2.870	0.365	2.870								
78	1	16	5.776	4W1607	17		2.706	0.365	2.706								
79	1	16	5.447	4W1608	17		2.541	0.365	2.541								
80	1	16	5.118	4W1609	17		2.377	0.365	2.377								
81	1	16	4.789	4W1610	17		2.212	0.365	2.212								
82	1	16	4.461	4W1611	17		2.048	0.365	2.048								
83	1	16	4.132	4W1612	17		1.883	0.365	1.883								
84	1	16	3.803	4W1613	17		1.719	0.365	1.719								
85	1	16	3.474	4W1614	17		1.554	0.365	1.554								
86	1	16	3.145	4W1615	17		1.390	0.365	1.390								
87	6	16	2.670	4W1616	STR												
88	▲ 11	16	5.790	4W1617	6	/	0.610	0.832	4.348			/	0.800		0.228		5.186
89	▲ 11	16	5.419	4W1618	6	/	0.610	0.712	4.097			/	0.684		0.198		4.905
90	2	16	5.350	4W1619	16	/	0.610	1.360	3.380				1.626		2.963		
91	* 16	16	1.585	4W1620	17		0.610	0.365	0.610								
92	7	22	4.165	4W2201	2	0.375	3.790					/					
93	* 7	22	3.375	4W2202	STR												
94	△ 5	25	1.220	4W2501	STR												
95	* 4	29	4.035	4W2901	17		2.770	1.265	/								
96																	
97																	
98																	
99																	

ITEM	NO. PIECES	SIZE	LENGTH	MARK	TYPE	A	B	C	D	E	F	G	H	J	K	R	O
100																	
101																	
102																	
103																	
104																	
105																	
106																	
107																	
108																	
109																	
110																	
111																	
112																	
113																	
114																	
115																	
116																	
117																	
118																	
119																	
120																	
121																	
122																	
123																	
124																	
125																	
126																	
127																	
128																	
129																	
130																	
131																	
132																	
133																	
134																	
135																	
136																	
137																	
138																	
139																	
140																	
141																	
142																	
143																	
144																	
145																	
146																	
147																	
148																	
149																	
150																	
151																	
152																	
153																	
154																	
155																	
156																	
157																	
158																	
159																	
160																	
161																	
162																	
163																	
164																	
165																	
166																	
167																	
168																	
169																	
170																	
171																	
172																	
173																	
174																	
175																	
176																	
177																	
178																	
179																	
180																	
181																	
182																	
183																	
184																	
185																	
186																	
187																	
188																	
189																	
190																	
191																	
192																	
193																	
194																	
195																	
196																	
197																	
198																	

Not Metric

NOTES

1. UNLESS OTHERWISE DESIGNATED, ALL BAR REINFORCEMENT FOR CONCRETE IN SIZES UP TO AND INCLUDING 55M SHALL CONFROM TO THE REQUIREMENT OF THE "SPECIFICATIONS FOR DEFORMED BILLET-STEEL BARS FOR CONCRETE REINFORCEMENT", AASHTO M 31M (ASTM A 615M-SI). ALL BARS SHALL BE GRADE 400, 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 ARE TO BE SHOWN ONLY WHEN NECESSARY TO RESTRICT HOOK SIZE. OTHERWISE, STANDARD HOOKS ARE TO BE USED.
6. "H" DIMENSION ON STIRRUPS ARE TO BE SHOWN ONLY WHEN NECCESSARY TO MAINTAIN CLEARANCES.
7. WHERE SLOPE DIFFERS FROM 45 DEGREES, DIMENSIONS "H" AND "K" MUST BE SHOWN.
8. ▲ DENOTES BARS TO BE CUT IN FIELD.
9. * DENOTES ONE EXTRA BAR ADDED FOR TESTING PURPOSES.
10. △ DENOTES TWO EXTRA BARS ADDED FOR TESTING PURPOSES.
11. "E" IN PREFIX DENOTES EPOXY COATED REINFORCING STEEL.



ASTM STANDARD REINFORCING BARS

BAR SIZE DESIGNATION	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

STATE OF VERMONT
AGENCY OF TRANSPORTATION

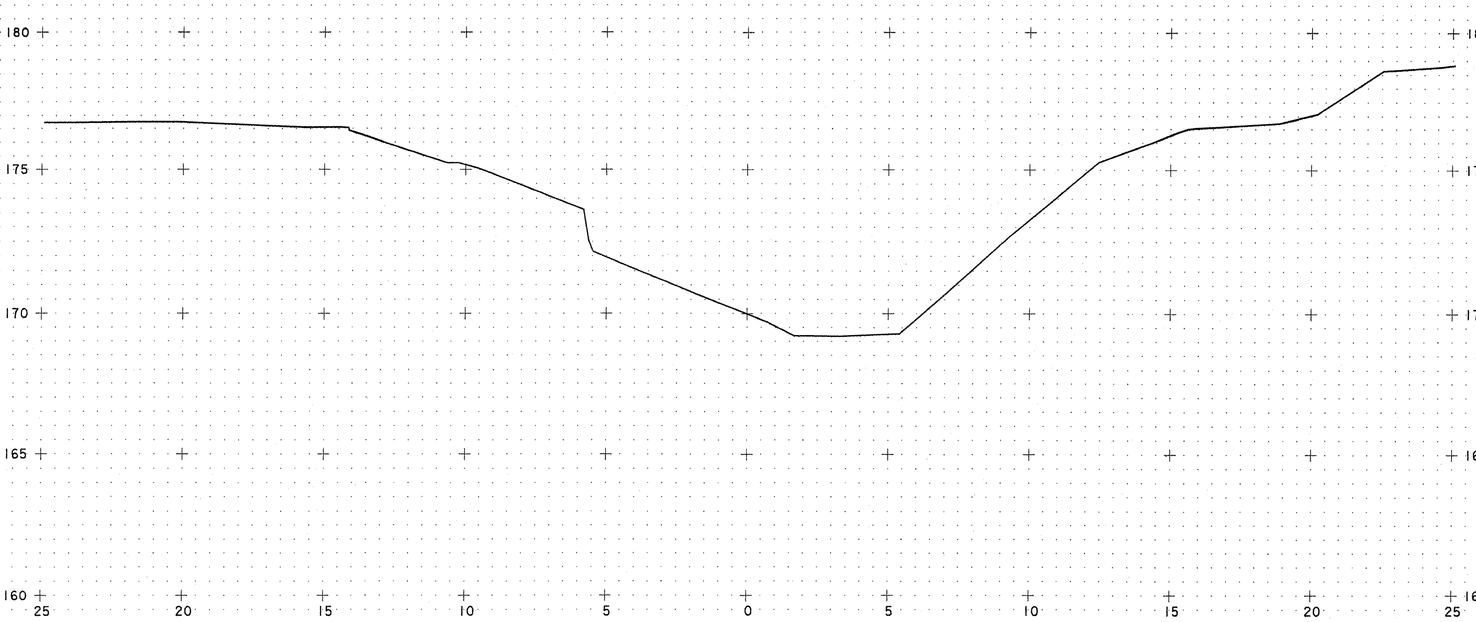
Town Of HARTLAND	Bridge No. 60
	Log Sta.
Highway No. U.S. ROUTE 5	Surv. Sta.
U.S. ROUTE 5 OVER LULLS BROOK	

REINFORCING BAR SCHEDULE

Designed By S. BAKI	Drawn By W. GAYNOR
Checked By S. BAKI Date	Bridge Design Supervisor J. MIECZKOWSKI Date
PROJECT HARTLAND	PROJECT NO. BRS No. 0113(22)
I.G.C. Info. M:\145620I VAOT Hartland\struct\zf204rbs.dgn	
Bridge Sheet No. BRI36	Sheet 71 of 86

REVISED: 8-12-04 WJG PLOT SCALE: 100:1 IPLOT FILENAME: RBSI.I

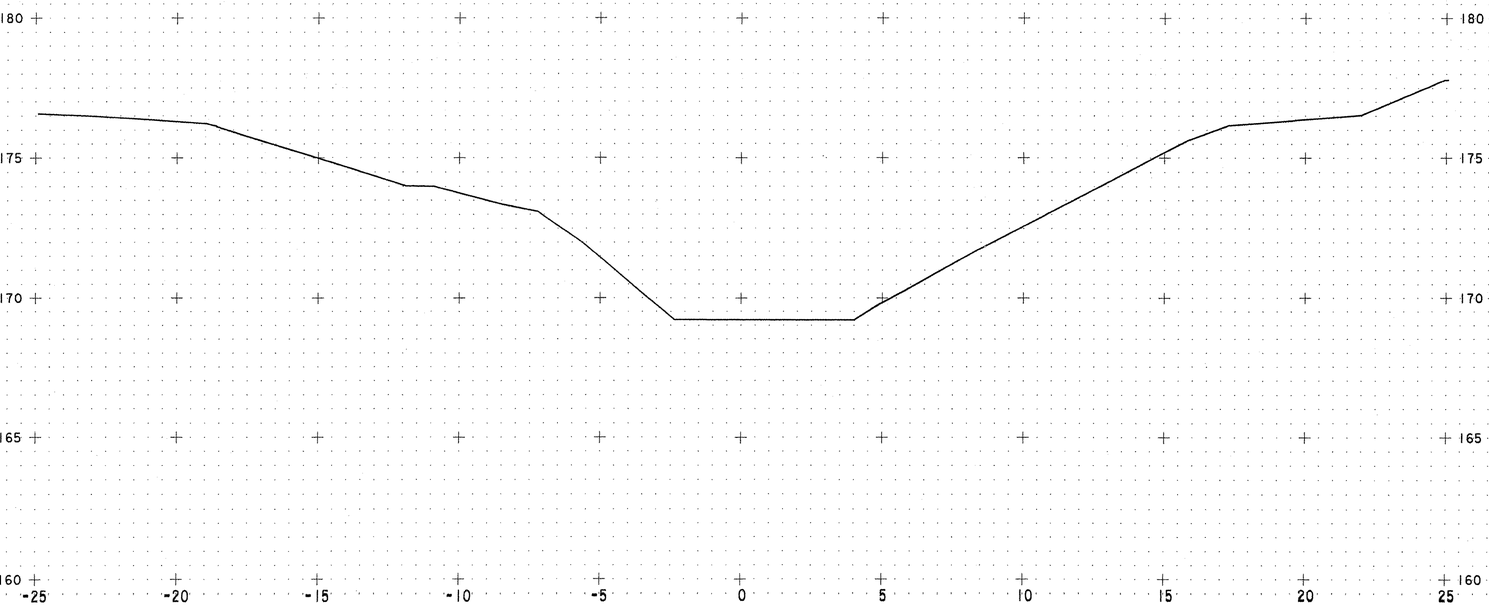
12-AUG-2004



1+020

STA. 1+025, LT.
BEGIN GRANULAR BACKFILL
FOR STRUCTURES.

STA. 1+024, LT.
BEGIN STRUCTURE EXCAVATION.
BEGIN UNCLASSIFIED CHANNEL EXCAVATION.

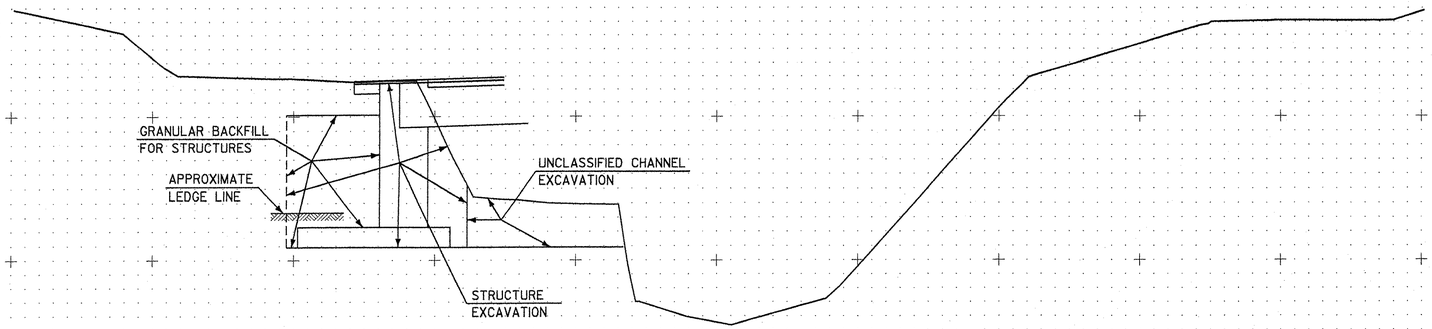


1+010

SCALE ⊢⊣ 1m

CHANNEL SECTIONS

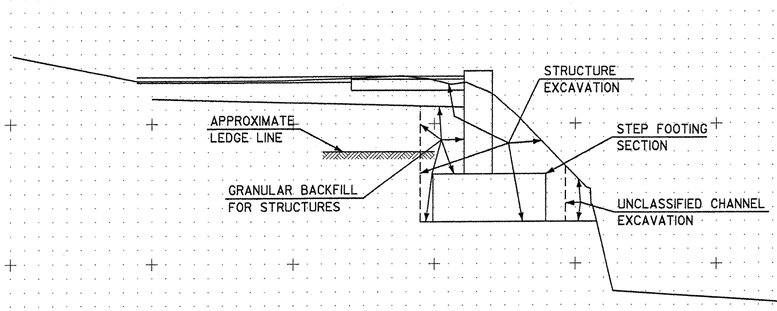
FROM STA. 1+010 TO STA. 1+020
PROJECT NAME: U.S. ROUTE 5 OVER LULLS BROOK
PROJECT NO. BRS 0113 (22)
PLOTTED BY: CJM 5/11/95 CHECKED BY: SAB 5/11/95
SHEET 71A OF 86 SHEETS



STA. 1+047.0, LT.
END STRUCTURE EXCAVATION.
END UNCLASSIFIED CHANNEL EXCAVATION.

STA. 1+046.7, LT.
END GRANULAR BACKFILL
FOR STRUCTURES.

1+040

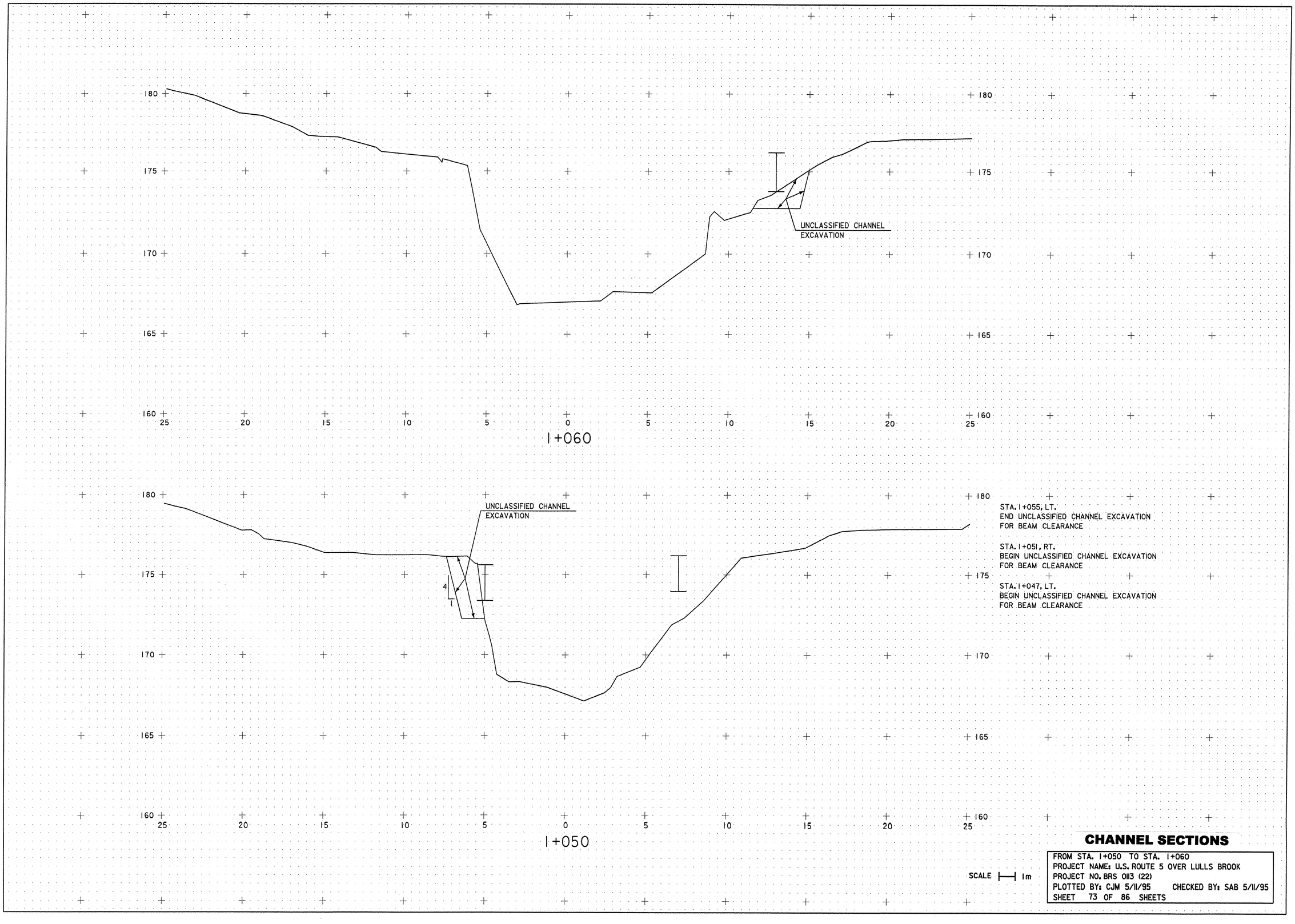


1+030

CHANNEL SECTIONS

FROM STA. 1+030 TO STA. 1+040
PROJECT NAME: U.S. ROUTE 5 OVER LULLS BROOK
PROJECT NO. BRS 0113 (22)
PLOTTED BY: CJM 5/11/95 CHECKED BY: SAB 5/11/95
SHEET 72 OF 86 SHEETS

SCALE 1m



STA. 1+055, LT.
END UNCLASSIFIED CHANNEL EXCAVATION
FOR BEAM CLEARANCE

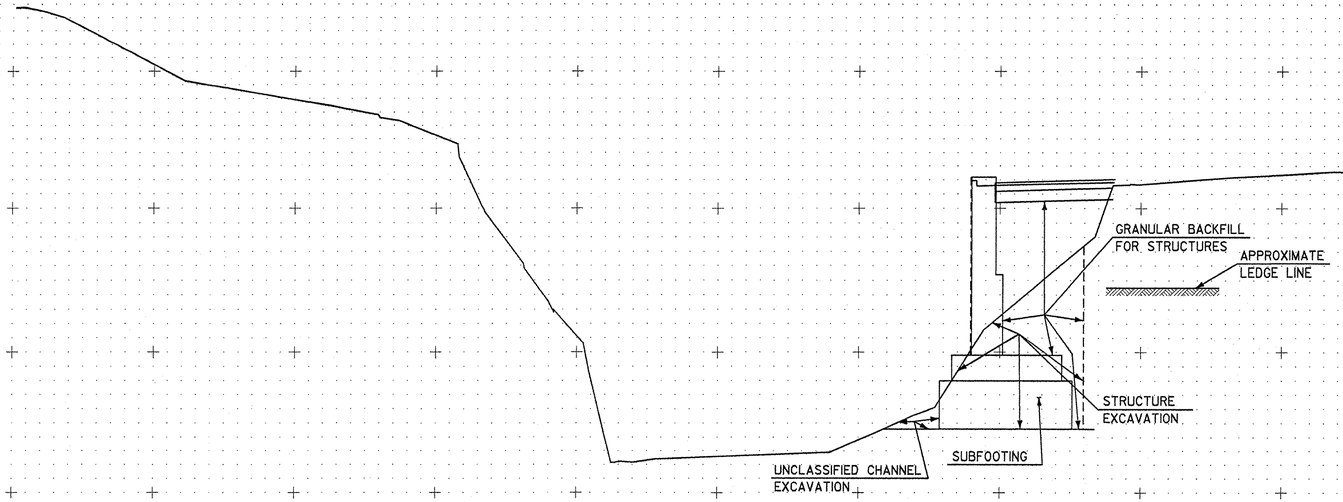
STA. 1+051, RT.
BEGIN UNCLASSIFIED CHANNEL EXCAVATION
FOR BEAM CLEARANCE

STA. 1+047, LT.
BEGIN UNCLASSIFIED CHANNEL EXCAVATION
FOR BEAM CLEARANCE

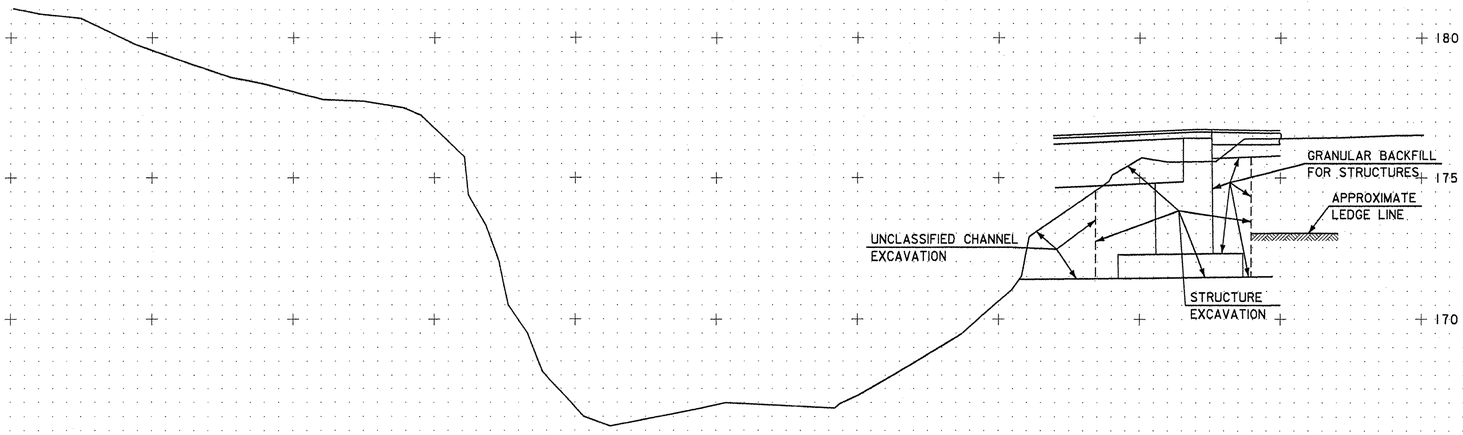
SCALE 1m

CHANNEL SECTIONS

FROM STA. 1+050 TO STA. 1+060
PROJECT NAME: U.S. ROUTE 5 OVER LULLS BROOK
PROJECT NO. BRS 0113 (22)
PLOTTED BY: CJM 5/11/95 CHECKED BY: SAB 5/11/95
SHEET 73 OF 86 SHEETS



1+080



1+070

STA. 1+069, RT.
BEGIN GRANULAR BACKFILL
FOR STRUCTURES.

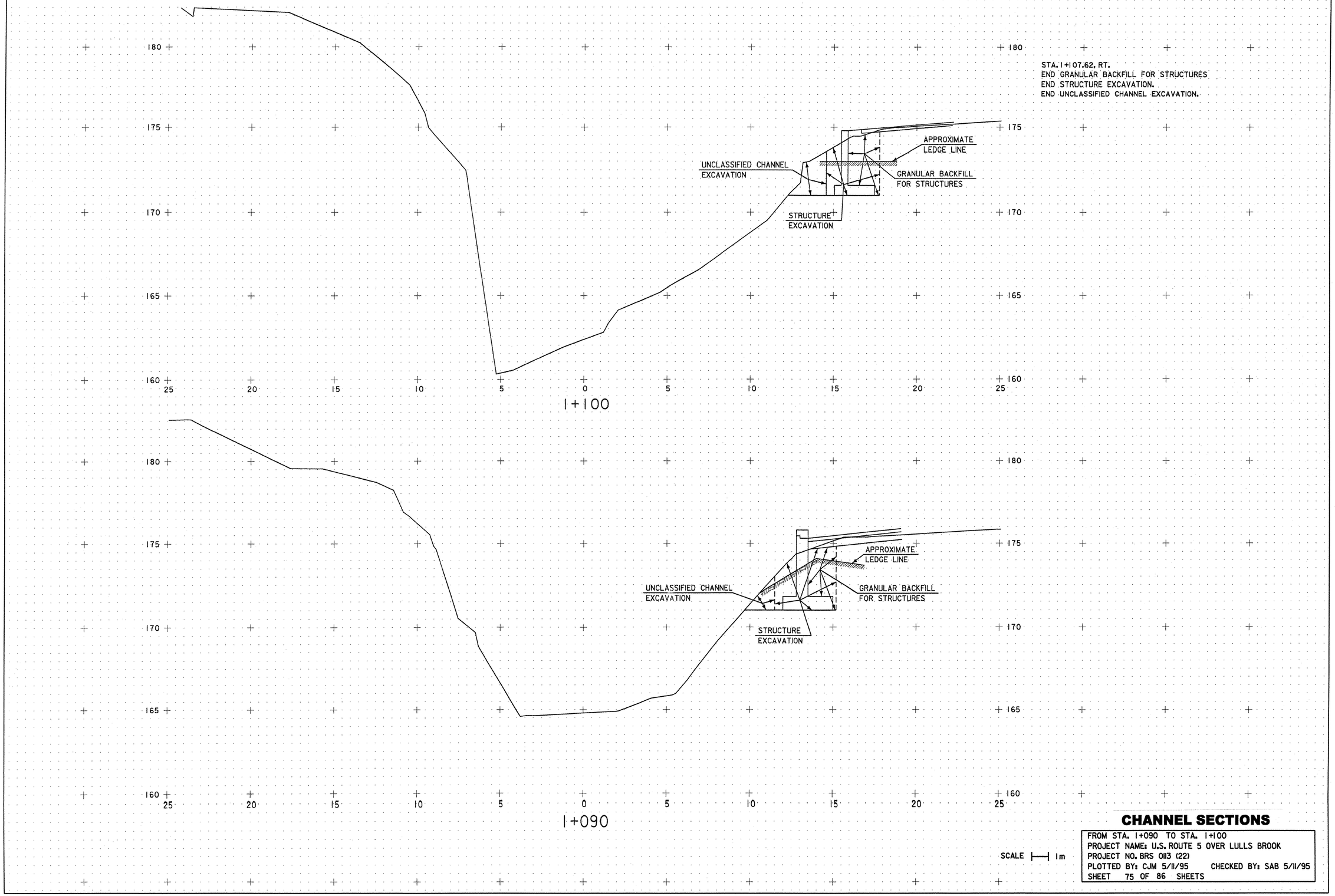
STA. 1+068, RT.
BEGIN UNCLASSIFIED CHANNEL EXCAVATION
FOR BEAM CLEARANCE.

STA. 1+067, RT.
BEGIN STRUCTURE EXCAVATION.
BEGIN UNCLASSIFIED CHANNEL EXCAVATION.

SCALE 1m

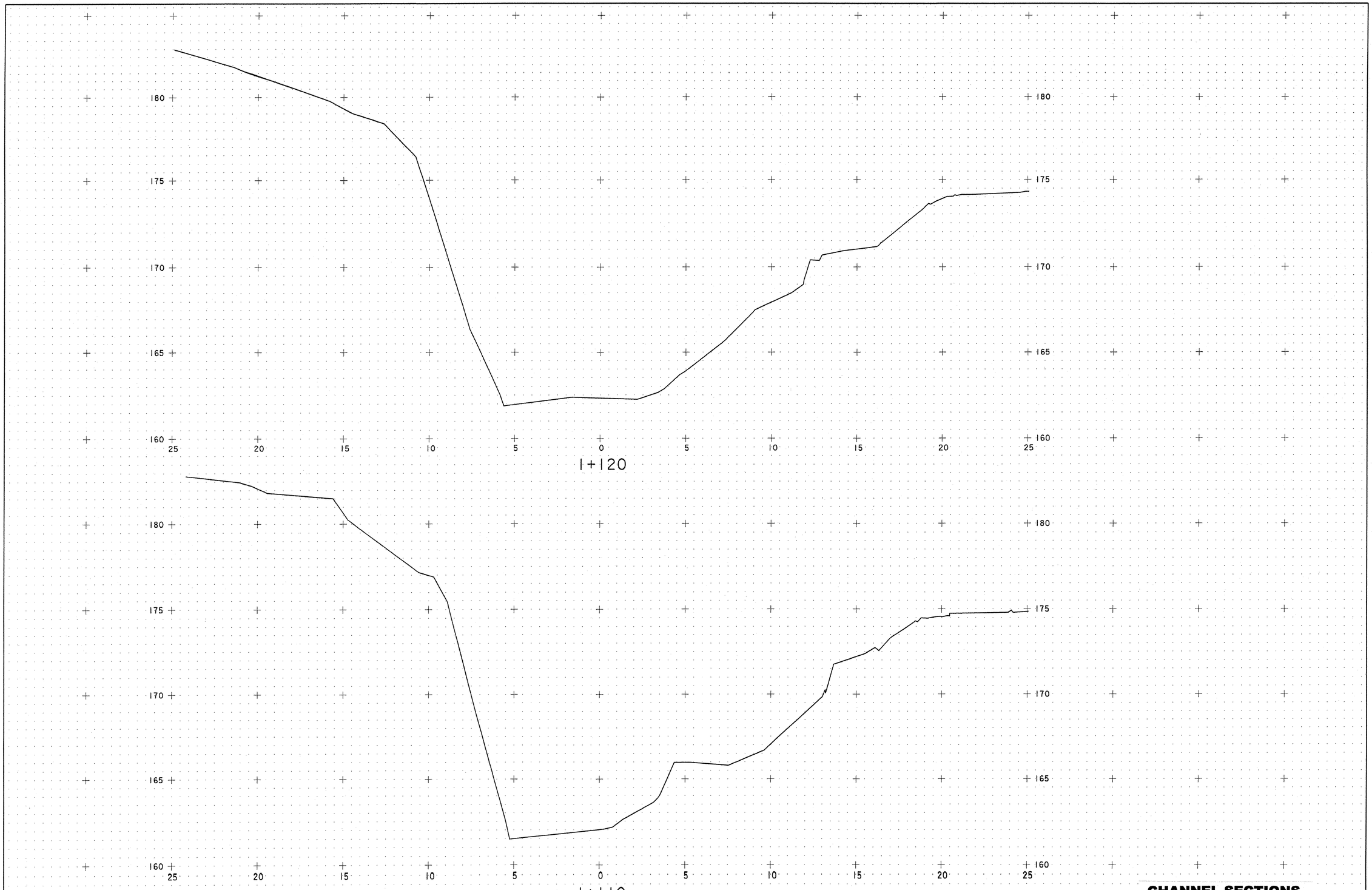
CHANNEL SECTIONS

FROM STA. 1+070 TO STA. 1+080
PROJECT NAME: U.S. ROUTE 5 OVER LULLS BROOK
PROJECT NO. BRS 0113 (22)
PLOTTED BY: CJM 5/11/95 CHECKED BY: SAB 5/11/95
SHEET 74 OF 86 SHEETS



CHANNEL SECTIONS

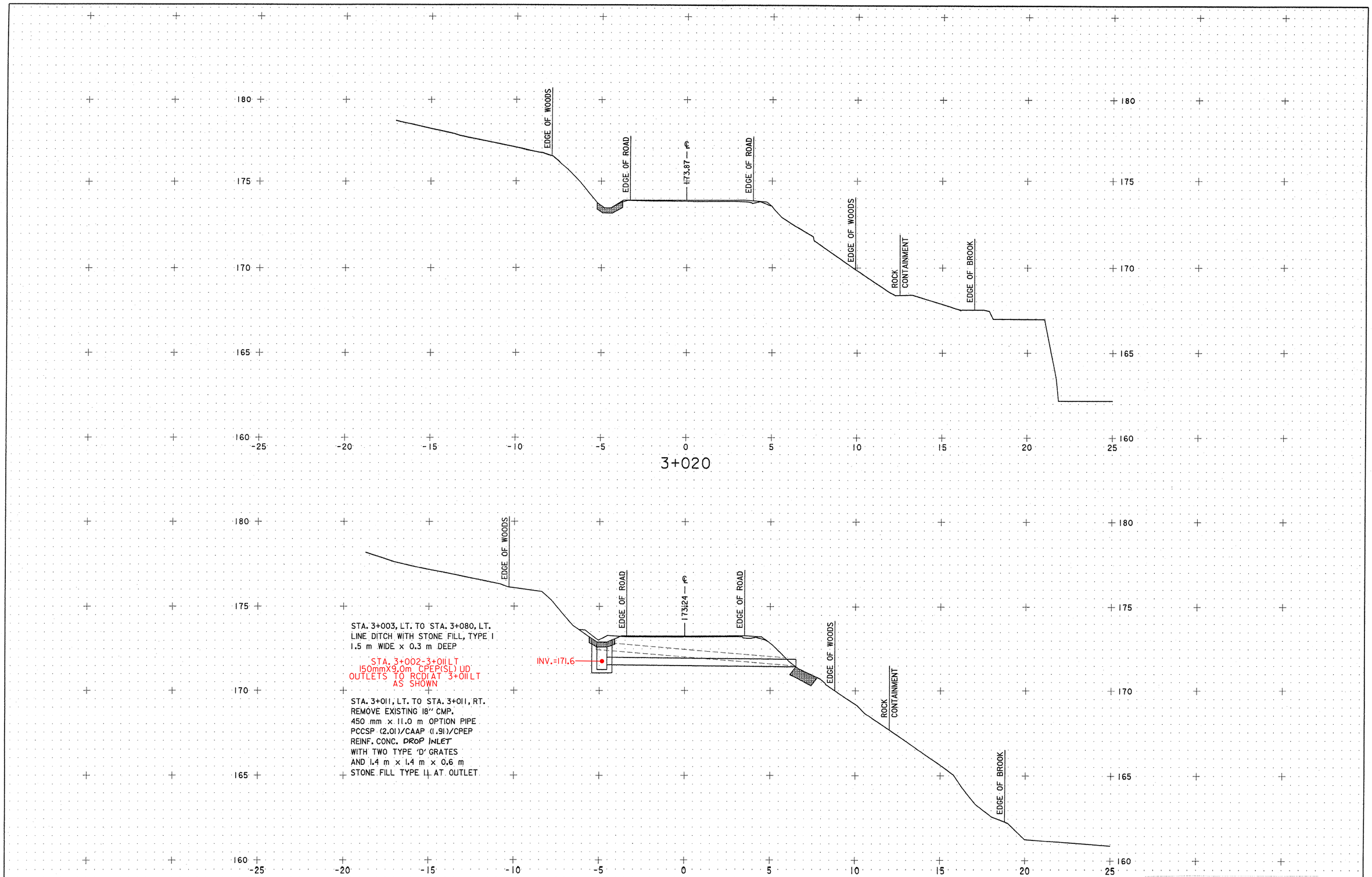
FROM STA. 1+090 TO STA. 1+100
PROJECT NAME: U.S. ROUTE 5 OVER LULLS BROOK
PROJECT NO. BRS 0113 (22)
PLOTTED BY: CJM 5/11/95 CHECKED BY: SAB 5/11/95
SHEET 75 OF 86 SHEETS



CHANNEL SECTIONS

FROM STA. 1+110 TO STA. 1+120
PROJECT NAME: U.S. ROUTE 5 OVER LULLS BROOK
PROJECT NO. BRS 0113 (22)
PLOTTED BY: CJM 5/11/95 CHECKED BY: SAB 5/11/95
SHEET 76 OF 86 SHEETS

SCALE ⊢⊣ 1m



ROADWAY SECTIONS

FROM STA. 3+010 TO STA. 3+020
PROJECT NAME: U.S. ROUTE 5 OVER LULLS BROOK
PROJECT NO. BRS 0113 (22)
PLOTTED BY: CJM 5/11/95 CHECKED BY: SAB 5/11/95
SHEET 77 OF 86 SHEETS

STA. 3+080
ABUTMENT

APPROACH SLAB

SUBBASE

STA. 3+065

RECONSTRUCTION

80 mm TYPE I

50 mm TYPE III

65 mm TYPE II

550 mm

PAVEMENT AND BASE COURSE TRANSITION

5m

MILLED SURFACE

50 mm TYPE III

STA. 3+030

30m

MILLED SURFACE
TYPE III OVER
EMULSIFIED ASPHALT

300 mm EXISTING ASPHALT PAVEMENT

300 mm EXISTING CONCRETE PAVEMENT

STA. 3+000

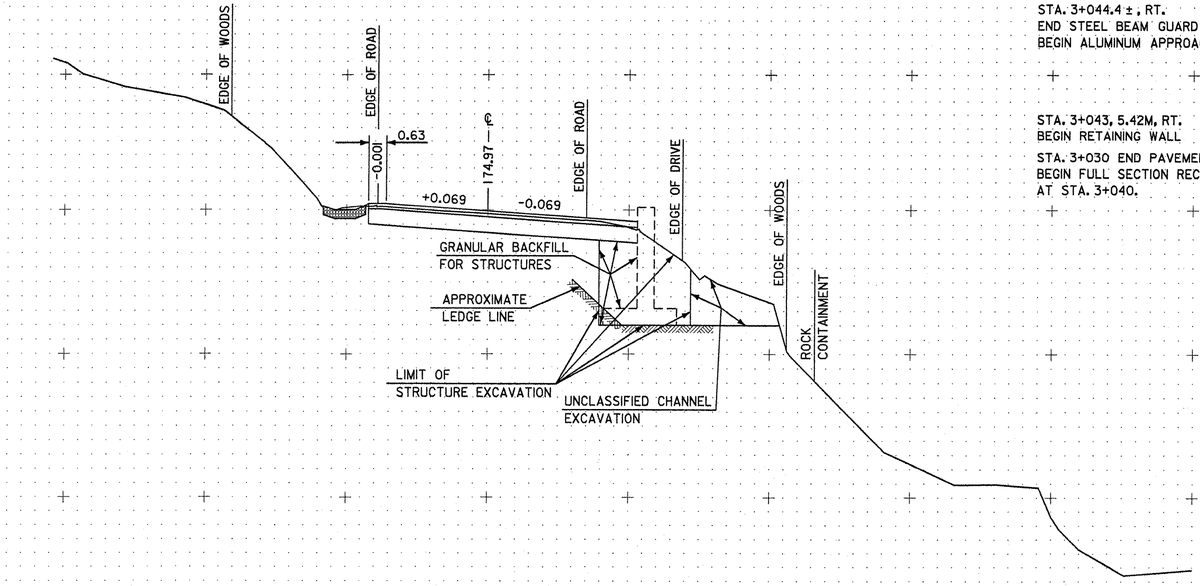
EMULSIFIED ASPHALT

EXIST. PAVEMENT

1m

10m

NOTE:
SEE COLD PLANE DETAIL, SHEET 2



3+040

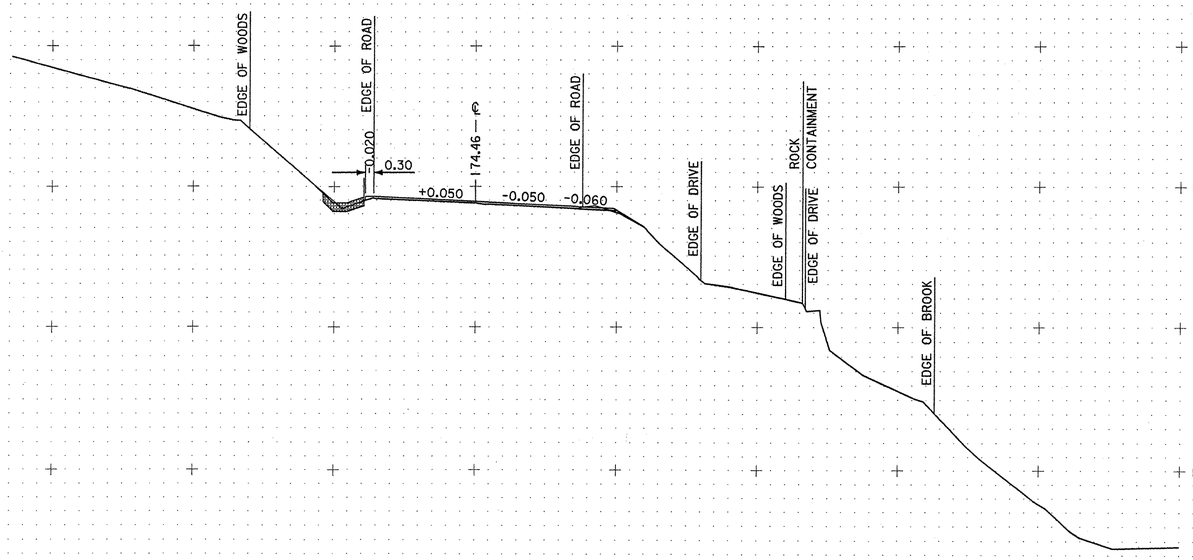
STA. 3+044.4 ±, RT.
END STEEL BEAM GUARD RAIL
BEGIN ALUMINUM APPROACH RAIL

STA. 3+043, 5.42M, RT.
BEGIN RETAINING WALL

STA. 3+030 END PAVEMENT OVERLAY
BEGIN FULL SECTION RECONSTRUCTION
AT STA. 3+040.

0.1m/m

10m



3+030

STA. 3+045
+0.078

3+050

3+040

3+030

-0.078

LT.

RT.

PC STA. 3+032.751

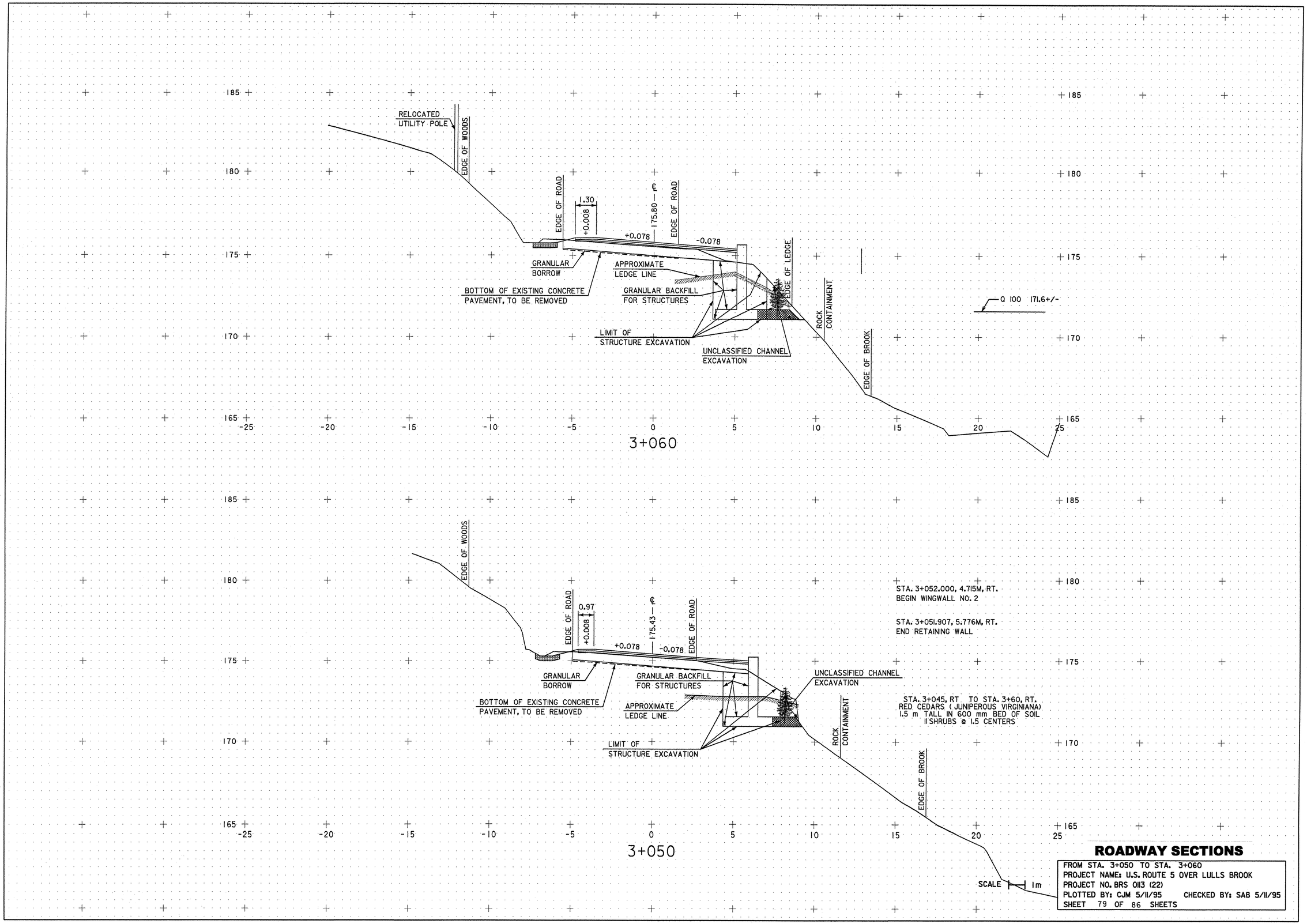
STA. 3+030

BANKING TRANSITION DIAGRAM

SCALE 1m

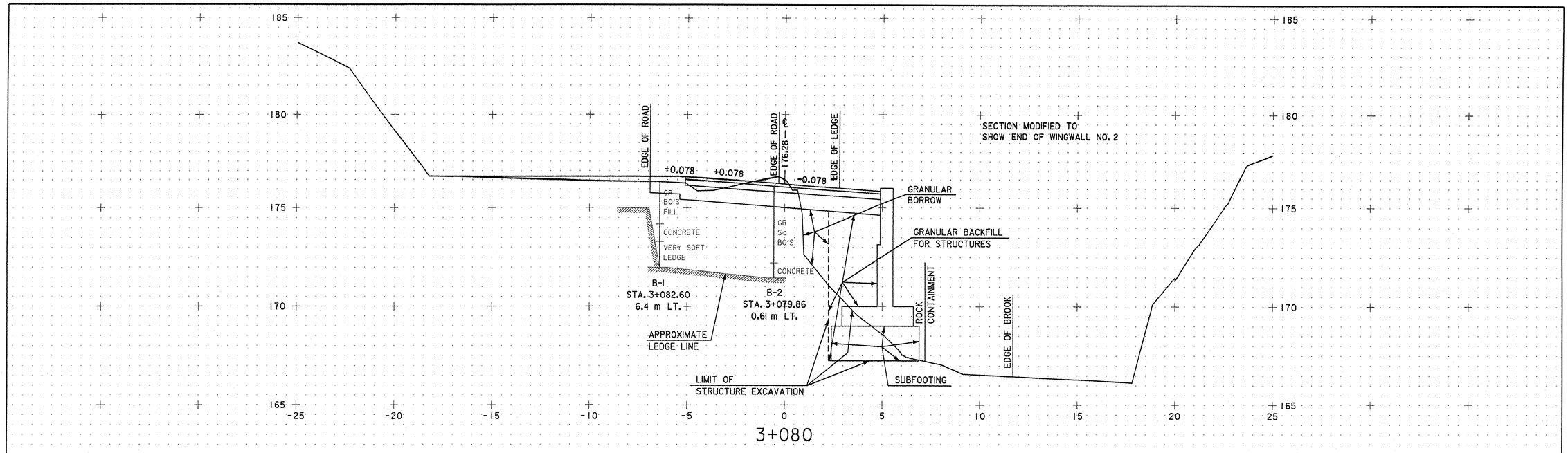
ROADWAY SECTIONS

FROM STA. 3+030 TO STA. 3+040
PROJECT NAME: U.S. ROUTE 5 OVER LULLS BROOK
PROJECT NO. BRS 0113 (22)
PLOTTED BY: CJM 5/11/95 CHECKED BY: SAB 5/11/95
SHEET 78 OF 86 SHEETS



ROADWAY SECTIONS

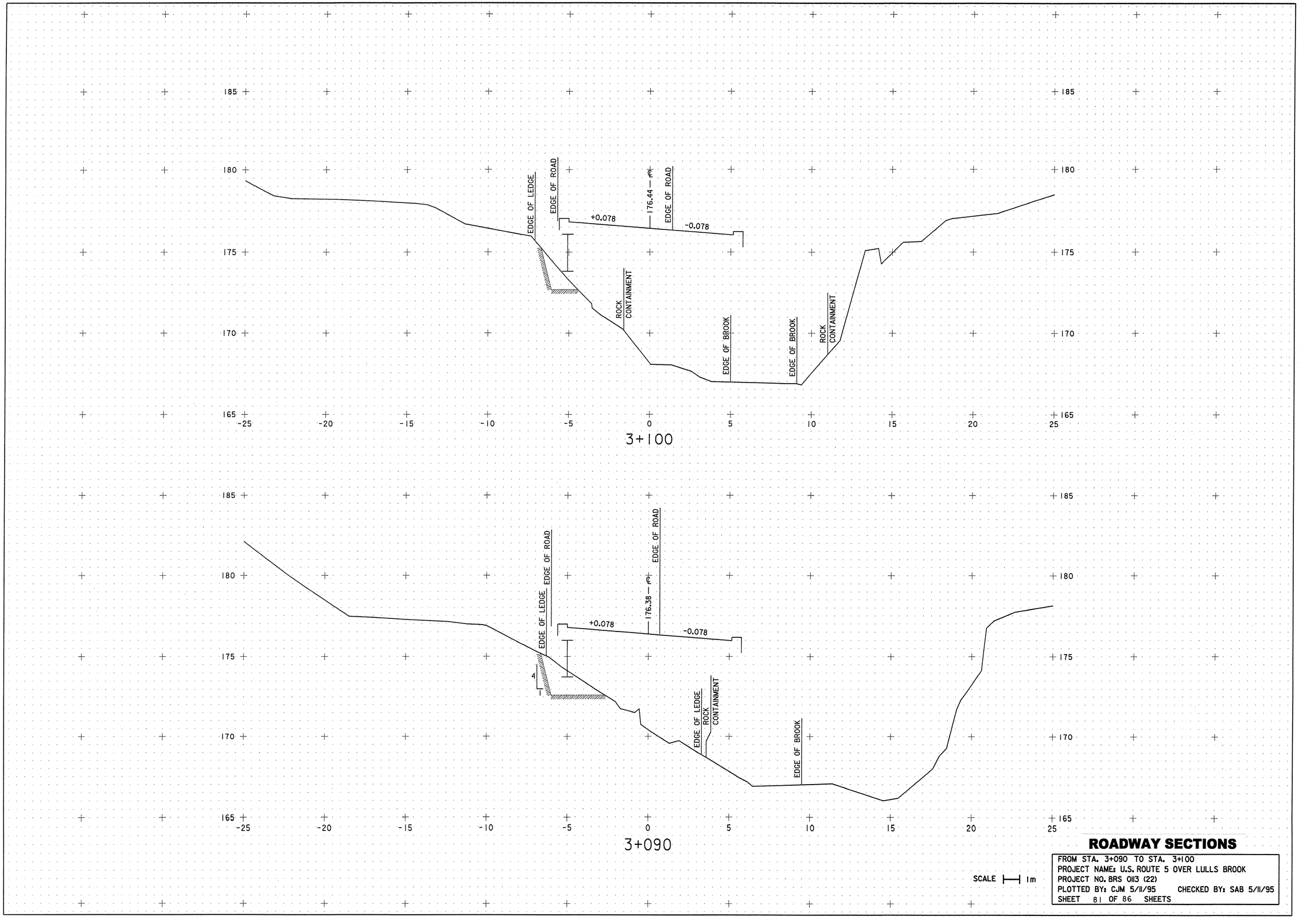
FROM STA. 3+050 TO STA. 3+060
PROJECT NAME: U.S. ROUTE 5 OVER LULLS BROOK
PROJECT NO. BRS 0113 (22)
PLOTTED BY: CJM 5/11/95 CHECKED BY: SAB 5/11/95
SHEET 79 OF 86 SHEETS



ROADWAY SECTIONS

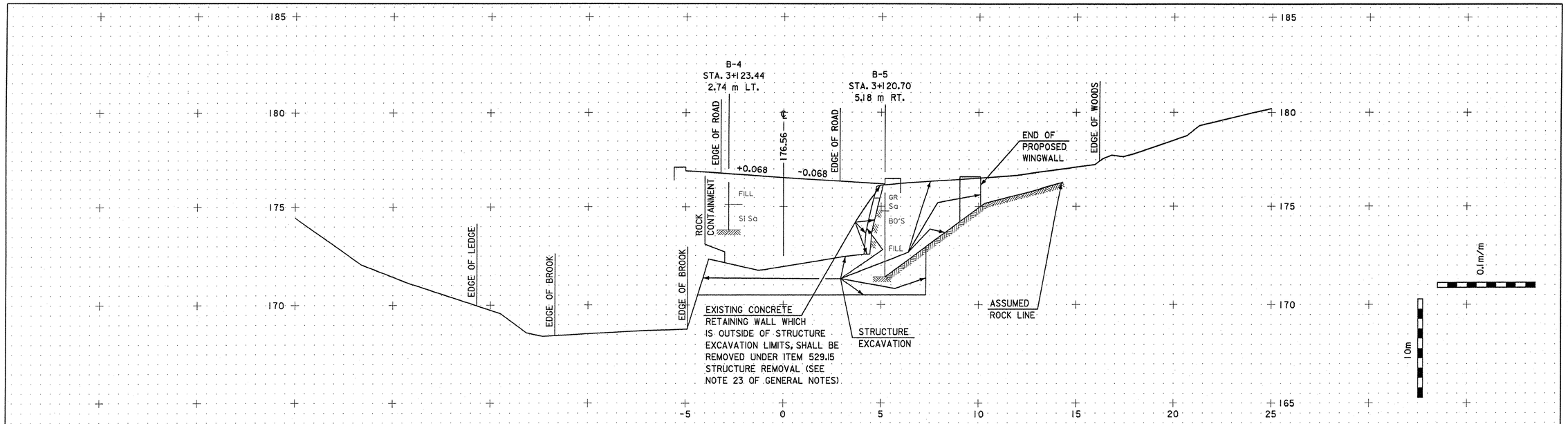
FROM STA. 3+070 TO STA. 3+080
PROJECT NAME: U.S. ROUTE 5 OVER LULLS BROOK
PROJECT NO. BRS 0113 (22)
PLOTTED BY: CJM 5/11/95 CHECKED BY: SAB 5/11/95
SHEET 80 OF 86 SHEETS

SCALE — 1m

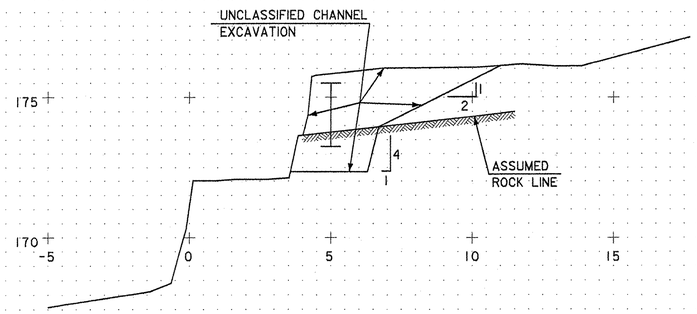


ROADWAY SECTIONS

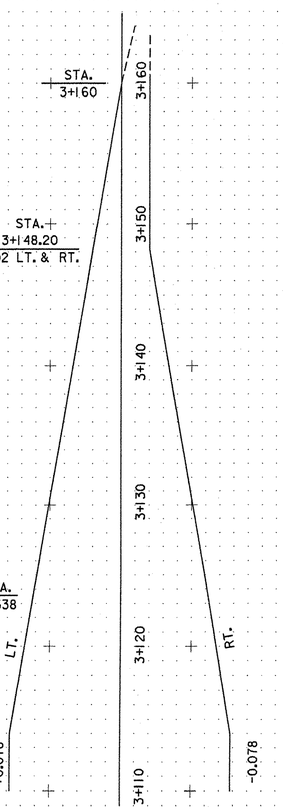
FROM STA. 3+090 TO STA. 3+100
PROJECT NAME: U.S. ROUTE 5 OVER LULLS BROOK
PROJECT NO. BRS 0113 (22)
PLOTTED BY: CJM 5/11/95 CHECKED BY: SAB 5/11/95
SHEET 81 OF 86 SHEETS

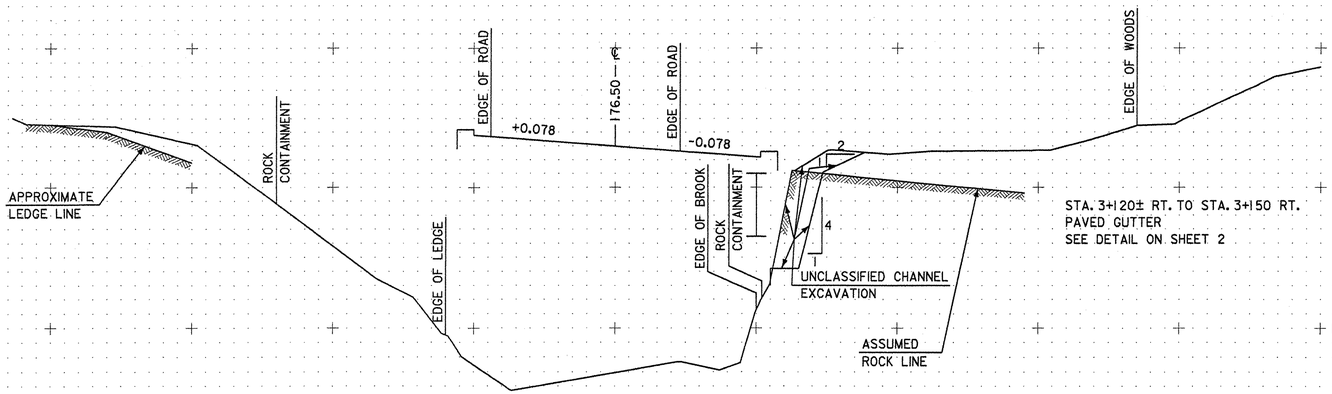


3+120



3+115





3+110

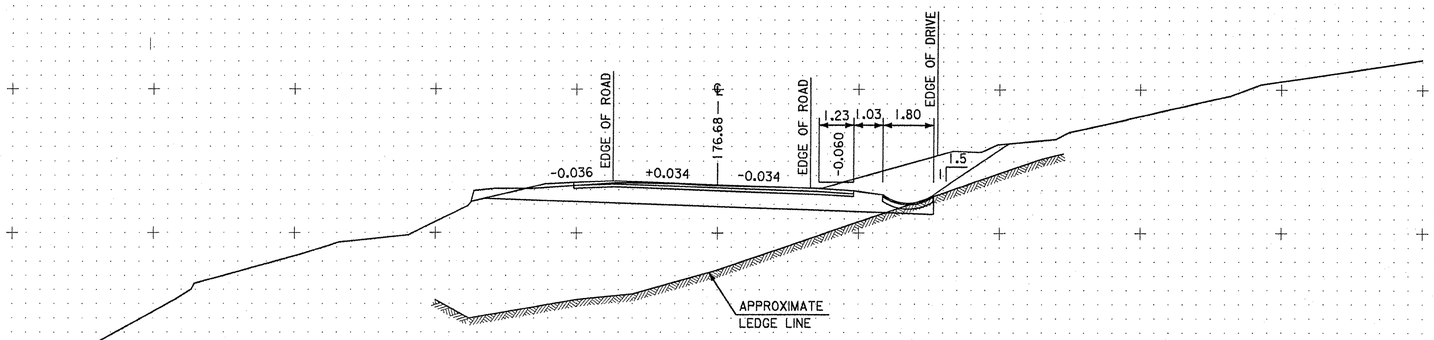
SCALE 1m

ROADWAY SECTIONS

FROM STA. 3+110 TO STA. 3+120
PROJECT NAME: U.S. ROUTE 5 OVER LULLS BROOK
PROJECT NO. BRS 0113 (22)
PLOTTED BY: CJM 5/11/95 CHECKED BY: SAB 5/11/95
SHEET 82 OF 86 SHEETS

STA. 3+140 RT. TO STA. 3+160 RT.
CONSTRUCT SPECIAL DITCH.
LINE WITH STONE FILL TYPE I,
2.0 m WIDE x 0.3 m DEEP, IF ROCK
NOT ENCOUNTERED AT DITCH BOTTOM

STA. 3+141.4 RT.
END MANUFACTURED TERMINAL END SECTION

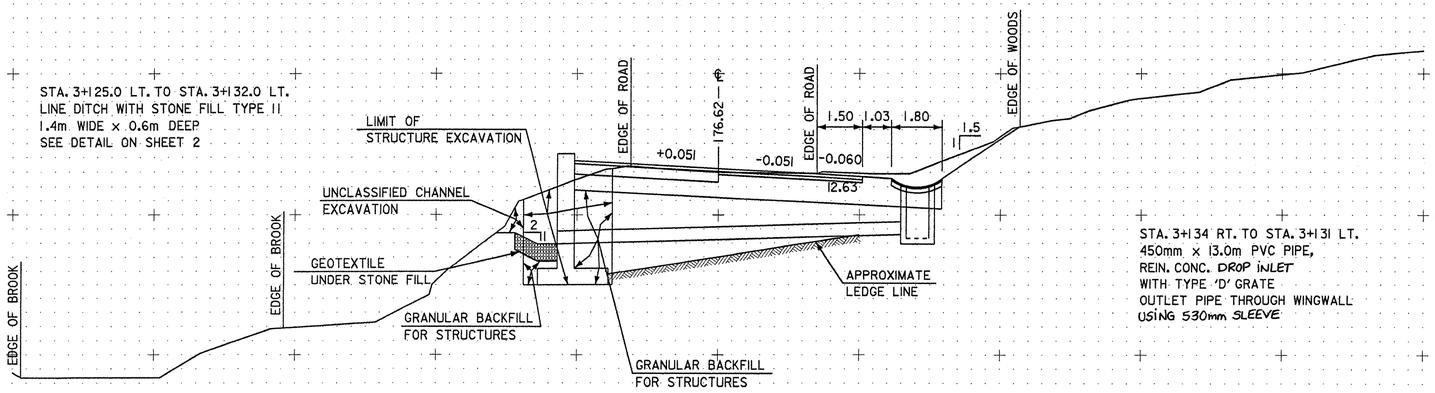


185 180 175 170 165
-25 -20 -15 -10 -5 0 5 10 15 20 25

3+140

STA. 3+130 ± RT.
END ALUMINUM APPROACH RAILING
BEGIN STEEL BEAM GUARD RAIL

STA. 3+125.0 LT. TO STA. 3+132.0 LT.
LINE DITCH WITH STONE FILL TYPE II
1.4m WIDE x 0.6m DEEP
SEE DETAIL ON SHEET 2



185 180 175 170 165
-25 -20 -15 -10 -5 0 5 10 15 20 25

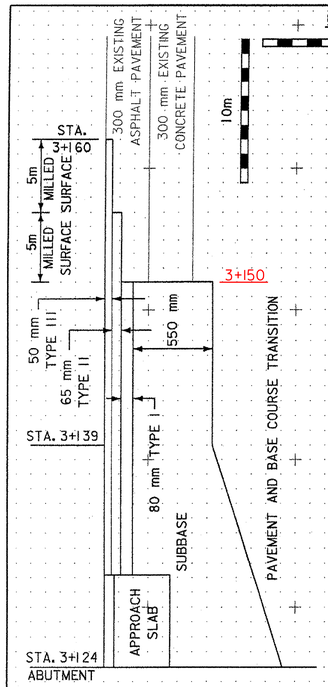
3+130

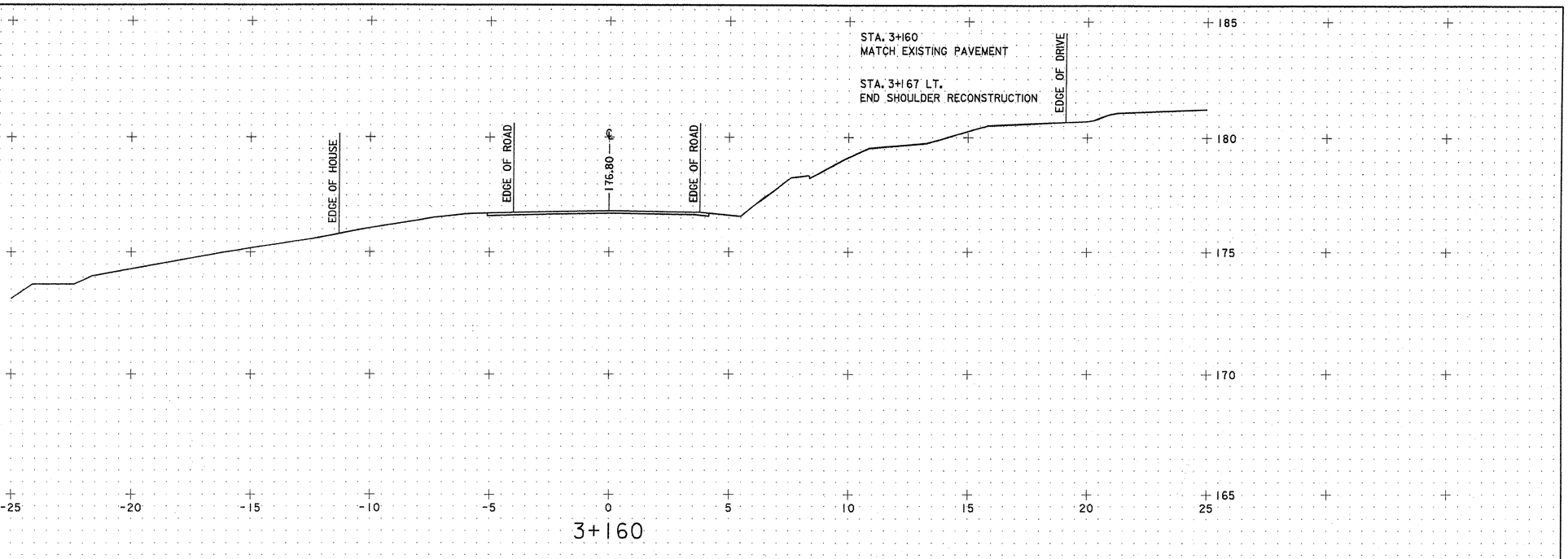
STA. 3+134 RT. TO STA. 3+131 LT.
450mm x 13.0m PVC PIPE,
REIN. CONC. DROP INLET
WITH TYPE 'D' GRATE
OUTLET PIPE THROUGH WINGWALL
USING 530mm SLEEVE

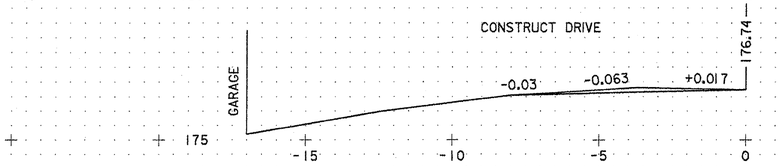
ROADWAY SECTIONS

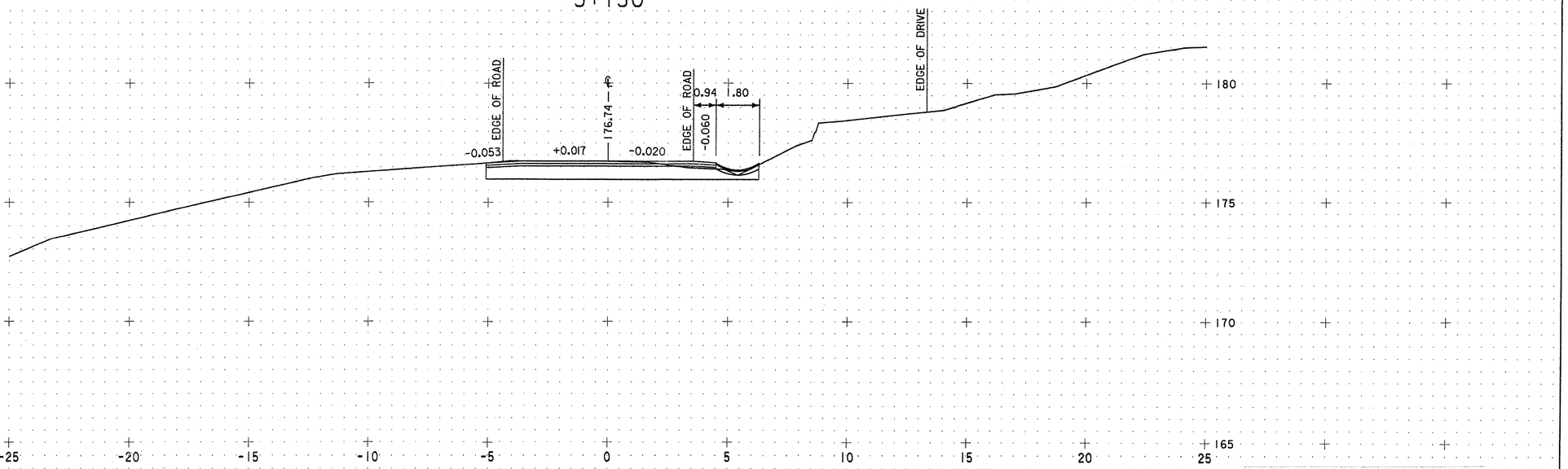
SCALE 1m

FROM STA. 3+130 TO STA. 3+140
PROJECT NAME: U.S. ROUTE 5 OVER LULLS BROOK
PROJECT NO. BRS 0113 (22)
PLOTTED BY: CJM 5/11/95 CHECKED BY: SAB 5/11/95
SHEET 83 OF 86 SHEETS





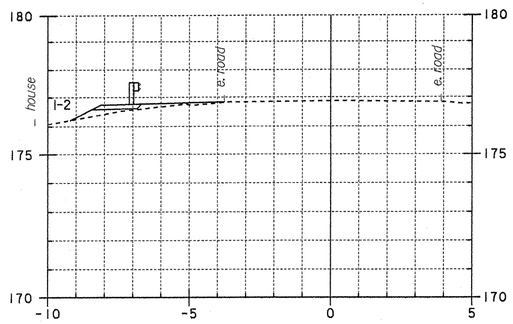




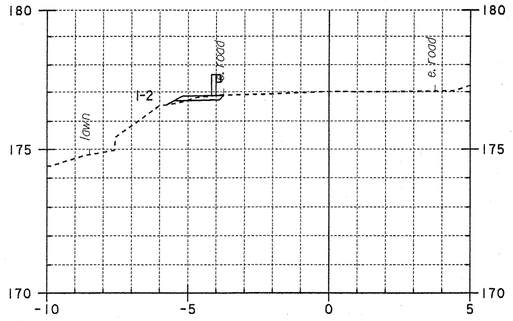
ROADWAY SECTIONS

SCALE 1m

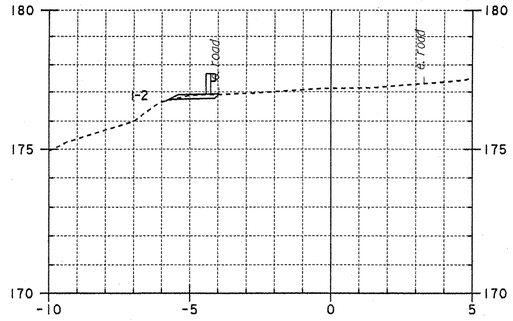
FROM STA. 3+150 TO STA. 3+160
PROJECT NAME: U.S. ROUTE 5 OVER LULLS BROOK
PROJECT NO. BRS 0113 (22)
PLOTTED BY: CJM 5/11/95 CHECKED BY: SAB 5/11/95
SHEET 84 OF 86 SHEETS



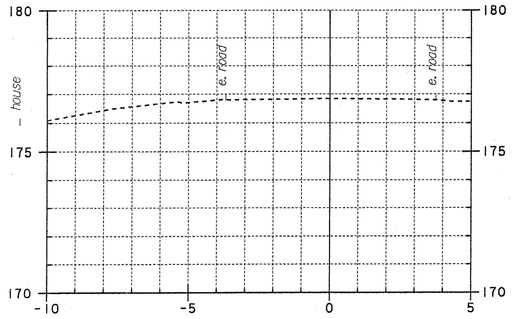
3+170
Begin Guardrail Left
Begin Gravel Sidewalk Left



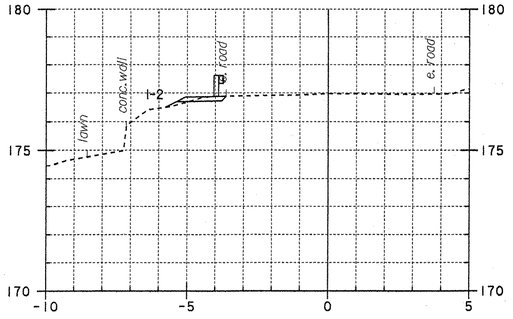
3+185



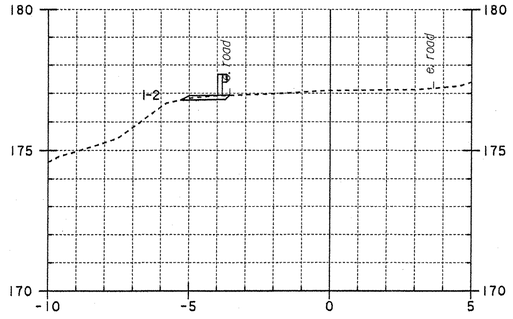
3+200



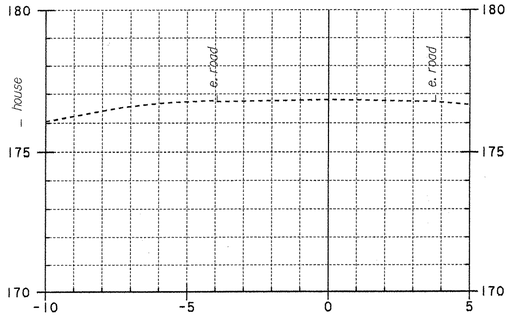
3+165



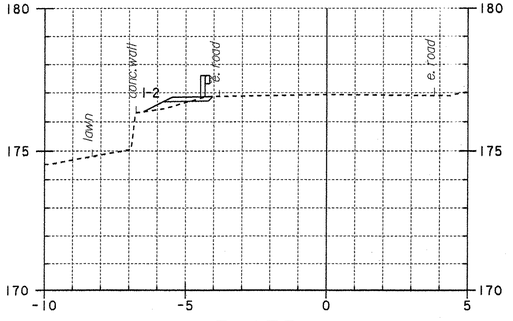
3+180



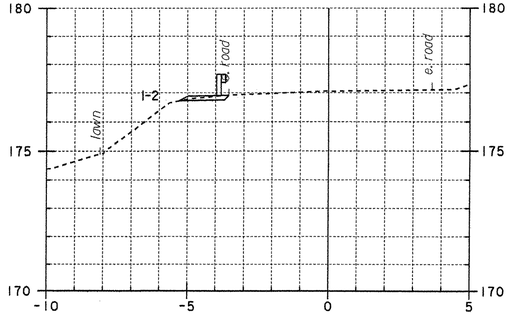
3+195



3+160



3+175

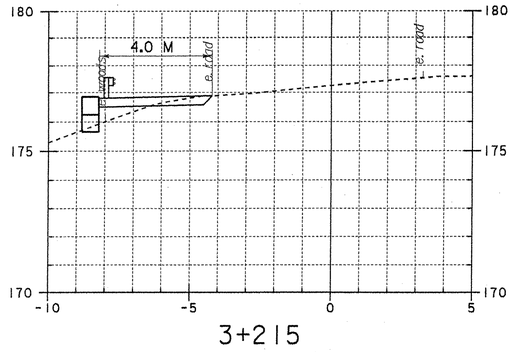


3+190

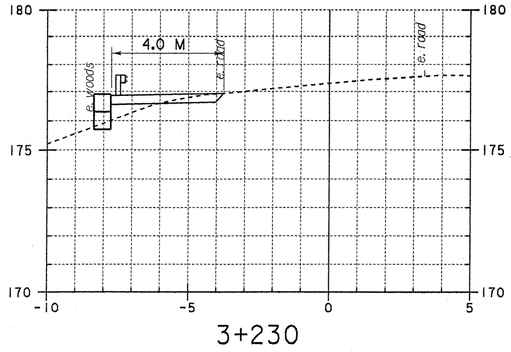
Temporary Sidewalk & Retaining Wall Sections

PROJECT NAME:	Hartland
PROJECT NUMBER:	BRS 0113(22)

FILE NAME: /str5/78f204/sf204park.dgn	PLOT DATE: 17-AUG-2004
PROJECT LEADER: C. Keller	DRAWN BY: G. Shangraw
DESIGNED BY: G. Shangraw	CHECKED BY:
sf204park2.i	SHEET 85 OF 86

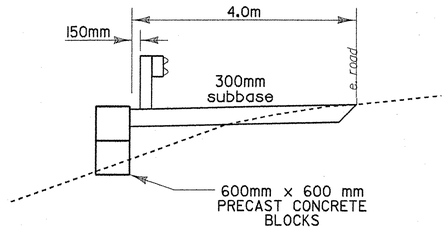


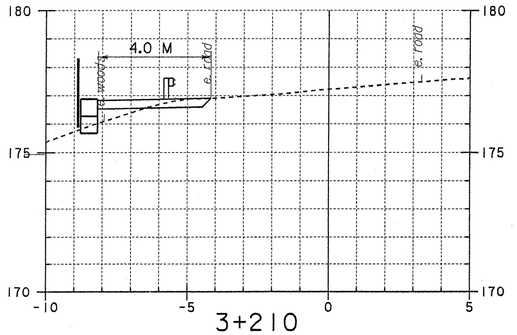
3+215



3+230

TYPICAL SECTION

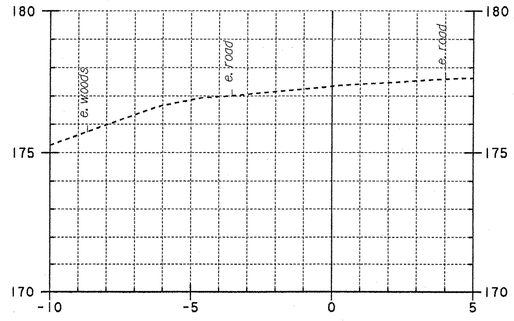




3+210

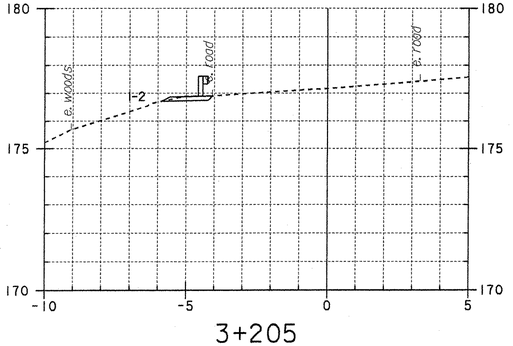
3+210 End Guardrail & Sidewalk Left
3+206 Begin Precast Concrete Block Wall
3+209 Begin Guardrail for Parking Area

3+225

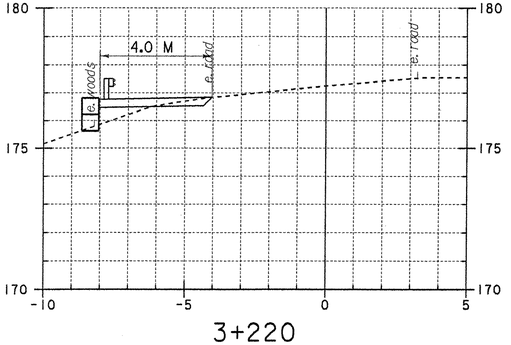


3+240

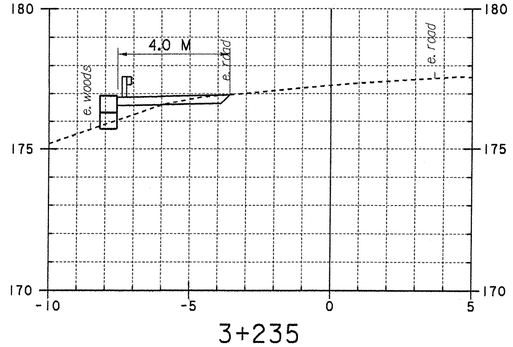
End Concrete Block Wall Left
End Guardrail @ Sta. 3+237



3+205



3+220

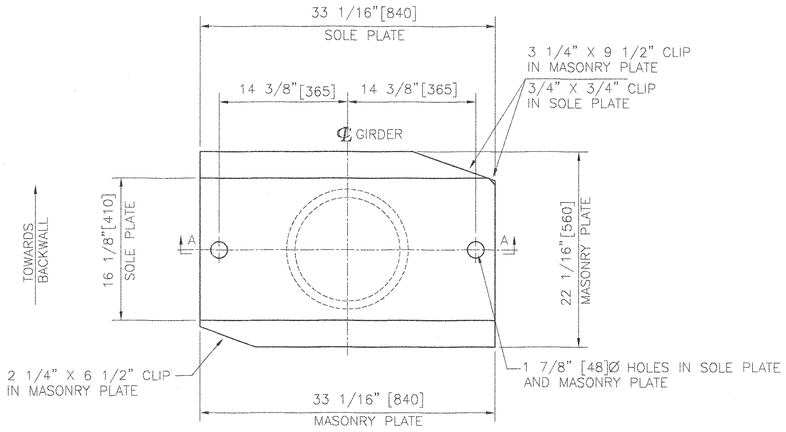


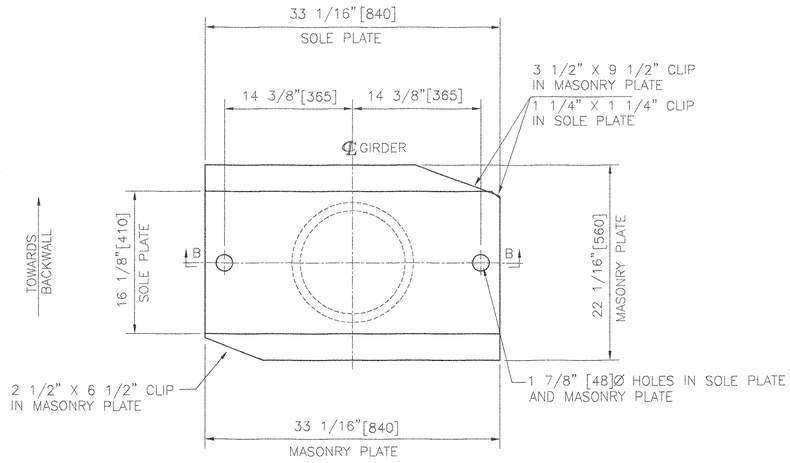
3+235

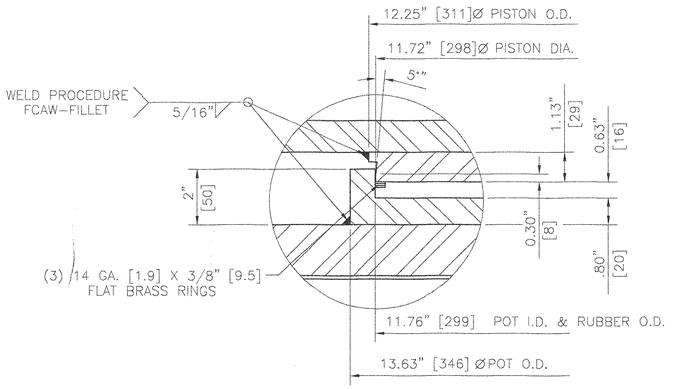
Temporary Sidewalk & Retaining Wall Sections

PROJECT NAME:	Hartland
PROJECT NUMBER:	BRS 0113(22)

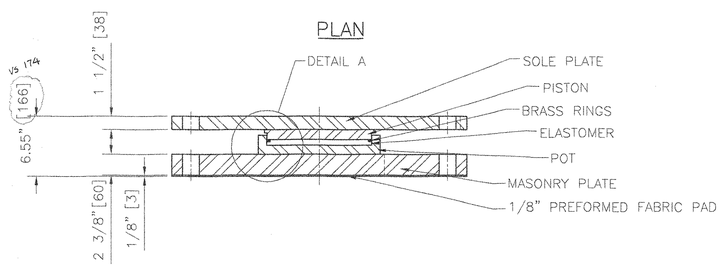
FILE NAME: /str5/78f204/sf204park.dgn	PLOT DATE: 17-AUG-2004
PROJECT LEADER: C. Keller	DRAWN BY: G. Shangraw
DESIGNED BY: G. Shangraw	CHECKED BY:
sf204park3.i	SHEET 86 OF 86







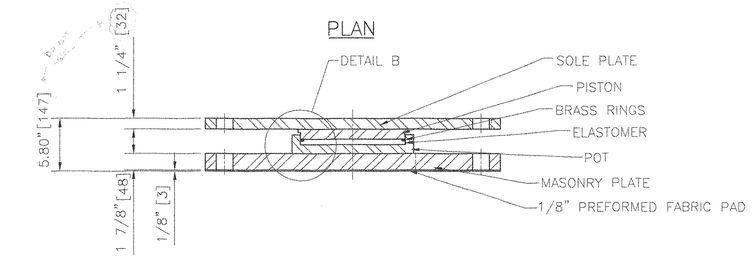
DETAIL B – BEARING
N.T.S.



SECTION A–A

COSMEC FIXED POT BEARING

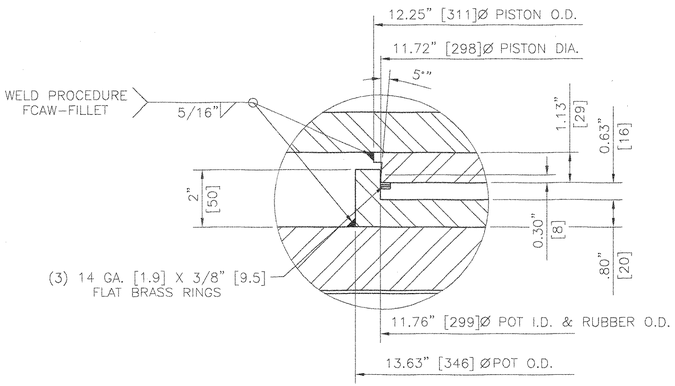
LOCATION: ABUTMENT #1; GIRDER #G1
QUANTITY: 1
TOTAL VERTICAL CAPACITY= 380 KIPS [1690 Kn]
TOTAL HORIZONTAL CAPACITY= 38 KIPS [169 Kn]
MOVEMENT CAPACITY= 0"
ROTATION CAPACITY= 0.015 RADIANS



SECTION B–B

COSMEC FIXED POT BEARING

LOCATION: ABUTMENT #1; GIRDER #G2
QUANTITY: 1
TOTAL VERTICAL CAPACITY= 380 KIPS [1690 Kn]
TOTAL HORIZONTAL CAPACITY= 38 KIPS [169 Kn]
MOVEMENT CAPACITY= 0"
ROTATION CAPACITY= 0.015 RADIANS



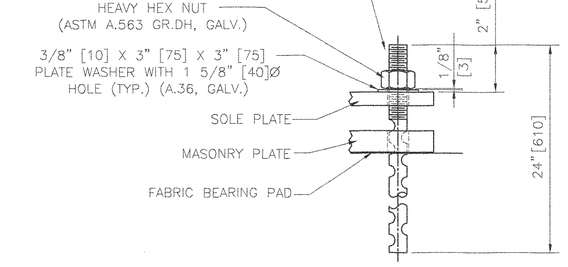
DETAIL A – BEARING
N.T.S.

BEARING NOTES

1. ALL MATERIALS USED IN THE FABRICATION OF THESE BEARINGS SHALL BE MADE IN THE U.S.A.
2. BEARINGS ARE TO BE SHIPPED AS COMPLETE UNITS, STEEL BANDED, AND SHALL BE WRAPPED TO PROTECT FROM MOISTURE AND DIRT DURING TRANSIT AND STORAGE.
3. LOCATION OF FABRICATION PLANT – 70 SOUTH STREET WALPOLE, MA 02081
4. COSMEC, INC. REPRESENTATIVE – MR. MATT McANDREWS (508) 668-6600
5. BEARINGS SHALL BE STORED IN A CLEAN, DRY, LEVEL UPRIGHT POSITION.
6. UNITS: INCH[mm]
7. BEARINGS MUST NOT BE DISASSEMBLED
8. ALL BEARINGS SHALL BE METALLIZED AS PER SECTION 531.04(B) & 506.15 (a) & (b). AREAS OF METALLIZED DAMAGED BY FIELD WELDS OR HANDLING SHALL BE REPAIRED PER SUPPLEMENTAL SPECIFICATION 513.06(F).
9. PRIOR TO METALLIZING, ALL CORNERS AND EDGES OF STEEL PLATES, SHAPES, ETC. SHALL BE GROUND TO A 1/16" [1.6] RADIUS.

MATERIALS

STEEL – ASTM A709 GRADE 36, ZINC METALLIZED & SEALED
PREFORMED FABRIC PAD – AASHTO DIV. II SPEC. 18.4.9.1
ANCHOR BOLTS – ASTM F1554 GRADE 55
ELASTOMER – AASHTO 50 DUROMETER NEOPRENE
BRASS SEALING RINGS – ASTM B.36 HALF HARD



ANCHOR BOLT DETAIL
N.T.S.

RECEIVED
CK'D BY JWC CK'D BY JKF
SEP 22 2005
RESUBMIT ____ APPROVED ✓
BY TAS DATE 11/2/05

REV.		BY	DATE	CK'D	DATE

STATE OF VERMONT
AGENCY OF TRANSPORTATION

TOWN OF HARTLAND
U.S. ROUTE 5 OVER LULLS BROOK
BRIDGE NO. 60

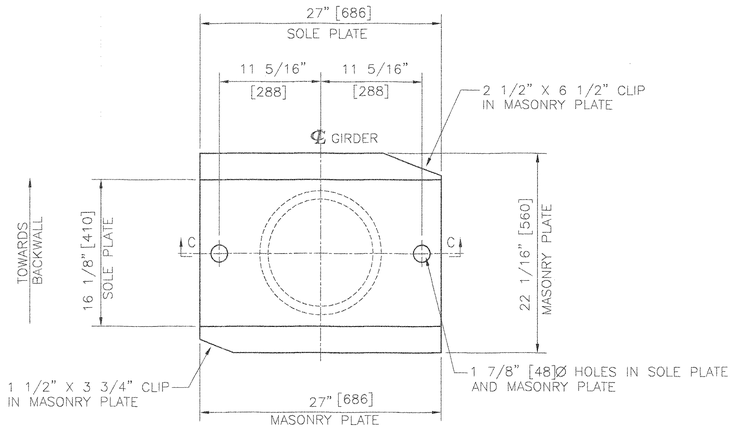
COSMEC, INC. 70 SOUTH STREET WALPOLE, MA. 02081

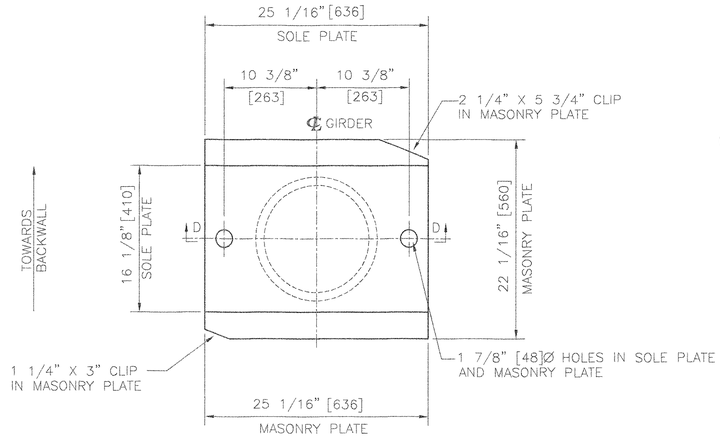
SCALE: 1/8"=1"	DRAWN BY: MRR	CHECKED BY: MCM
	DATE: 7-20-05	DATE: 8-17-05

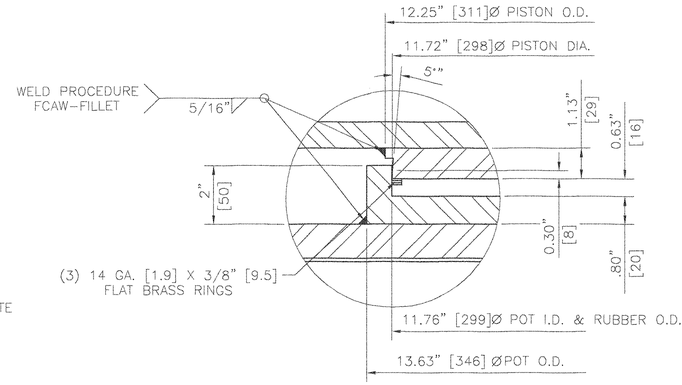
COSMEC POT BEARINGS

CUSTOMER	S.O. NUMBER	DRAWING NUMBER	REV.
MILLER CONSTRUCTION, INC.	60304	4460	

08766

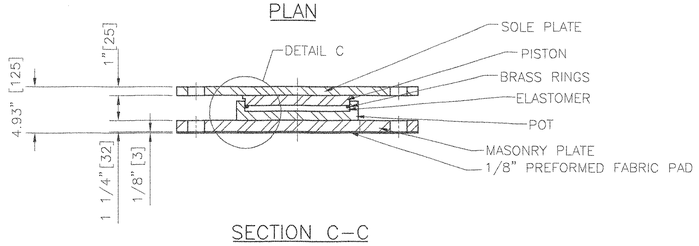






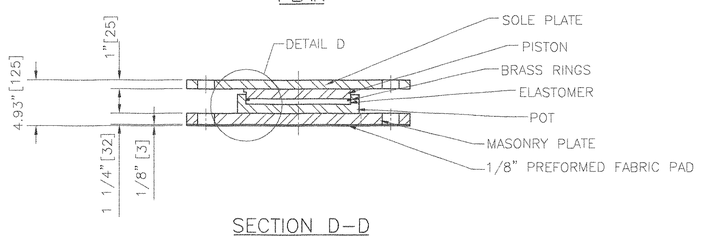
DETAIL D – BEARING
N.T.S.

PLAN



SECTION C–C

PLAN



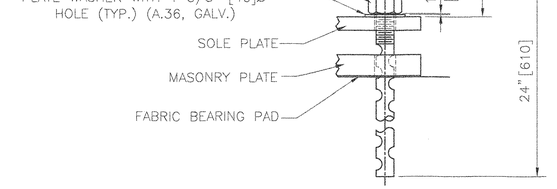
SECTION D–D

COSMEC FIXED POT BEARING

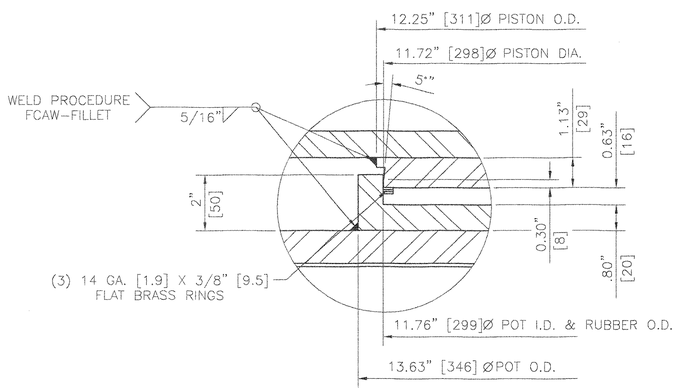
LOCATION: ABUTMENT #1; GIRDER #G3
QUANTITY: 1
TOTAL VERTICAL CAPACITY= 380 KIPS [1690 Kn]
TOTAL HORIZONTAL CAPACITY= 38 KIPS [169 Kn]
MOVEMENT CAPACITY= 0"
ROTATION CAPACITY= 0.015 RADIANS

COSMEC FIXED POT BEARING

LOCATION: ABUTMENT #1; GIRDER #G4
QUANTITY: 1
TOTAL VERTICAL CAPACITY= 380 KIPS [1690 Kn]
TOTAL HORIZONTAL CAPACITY= 38 KIPS [169 Kn]
MOVEMENT CAPACITY= 0"
ROTATION CAPACITY= 0.015 RADIANS



ANCHOR BOLT DETAIL
N.T.S.



DETAIL C – BEARING
N.T.S.

BEARING NOTES

1. ALL MATERIALS USED IN THE FABRICATION OF THESE BEARINGS SHALL BE MADE IN THE U.S.A.
2. BEARINGS ARE TO BE SHIPPED AS COMPLETE UNITS, STEEL BANDED, AND SHALL BE WRAPPED TO PROTECT FROM MOISTURE AND DIRT DURING TRANSIT AND STORAGE.
3. LOCATION OF FABRICATION PLANT – 70 SOUTH STREET WALPOLE, MA 02081
4. COSMEC, INC. REPRESENTATIVE – MR. MATT McANDREWS (508) 668-6600
5. BEARINGS SHALL BE STORED IN A CLEAN, DRY, LEVEL UPRIGHT POSITION.
6. UNITS: INCH[mm]
7. BEARINGS MUST NOT BE DISASSEMBLED
8. ALL BEARINGS SHALL BE METALLIZED AS PER SECTION 531.04(B) & 506.15 (a) & (b). AREAS OF METALLIZED DAMAGED BY FIELD WELDS OR HANDLING SHALL BE REPAIRED PER SUPPLEMENTAL SPECIFICATION 513.06(F).
9. PRIOR TO METALLIZING, ALL CORNERS AND EDGES OF STEEL PLATES, SHAPES, ETC. SHALL BE GROUND TO A 1/16" [1.6] RADIUS.

MATERIALS

STEEL – ASTM A709 GRADE 36, ZINC METALLIZED & SEALED
PREFORMED FABRIC PAD – AASHTO DIV. II SPEC. 18.4.9.1
ANCHOR BOLTS – ASTM F1554 GRADE 55
ELASTOMER – AASHTO 50 DUROMETER NEOPRENE
BRASS SEALING RINGS – ASTM B.36 HALF HARD

RECEIVED
OK'D BY JJJ OK'D BY TAF
SEP 2 2 2005
RESUBMIT ____ APPROVED ✓
BY TAS DATE 9/2/05

REV.		BY	DATE	CK'D	DATE

STATE OF VERMONT
AGENCY OF TRANSPORTATION

TOWN OF HARTLAND
U.S. ROUTE 5 OVER LULLS BROOK
BRIDGE NO. 60

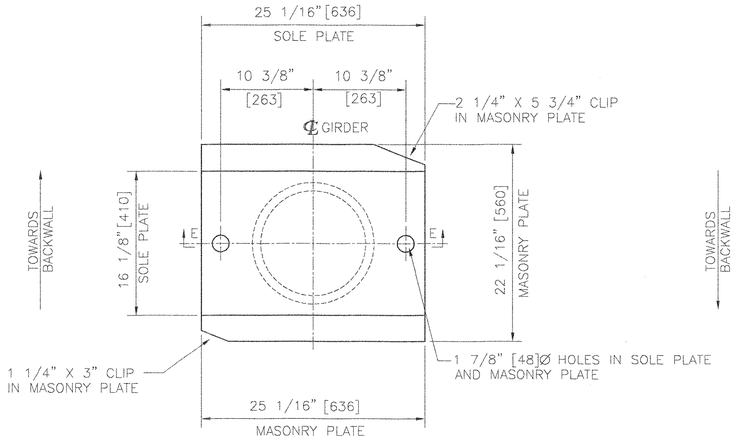
COSMEC, INC. 70 SOUTH STREET WALPOLE, MA. 02081

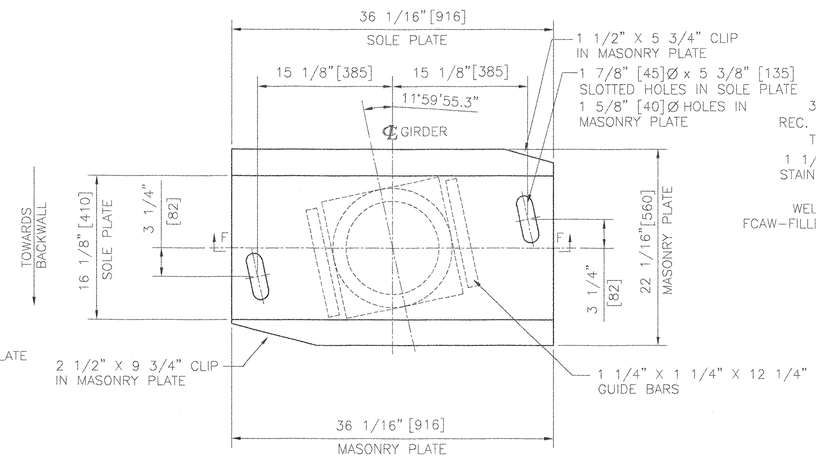
SCALE: 1/8"=1"	DRAWN BY: MRR	CHECKED BY: MCM
	DATE: 7-20-05	DATE: 8-17-05

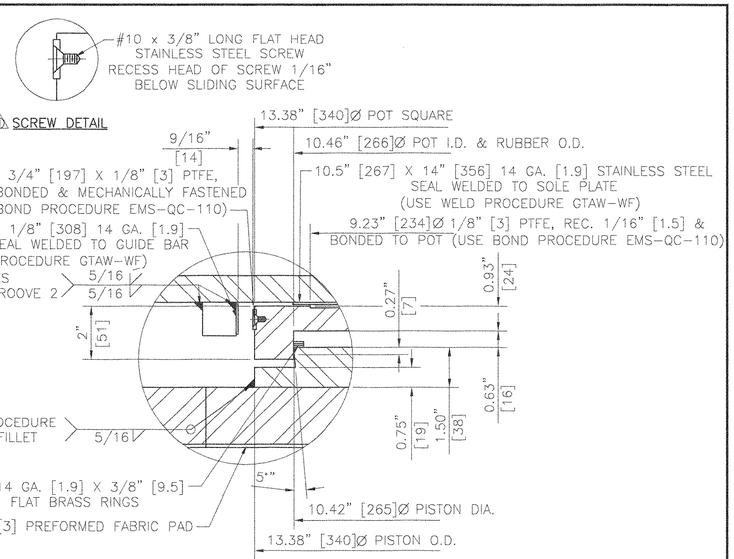
COSMEC POT BEARINGS

CUSTOMER	S.O. NUMBER	DRAWING NUMBER	REV.
MILLER CONSTRUCTION, INC.	60304	4461	

08866

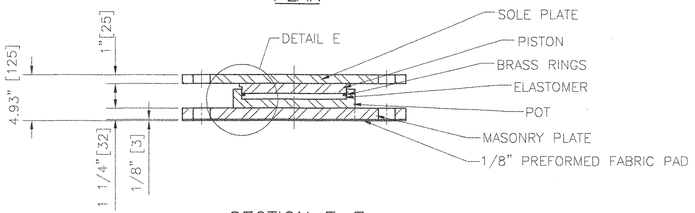






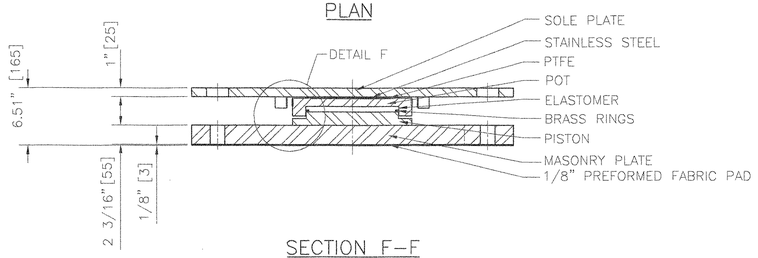
⚠ DETAIL F – BEARING
N.T.S.

PLAN



SECTION E–E

PLAN



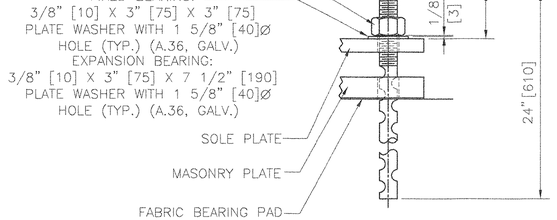
SECTION F–F

COSMEC FIXED POT BEARING

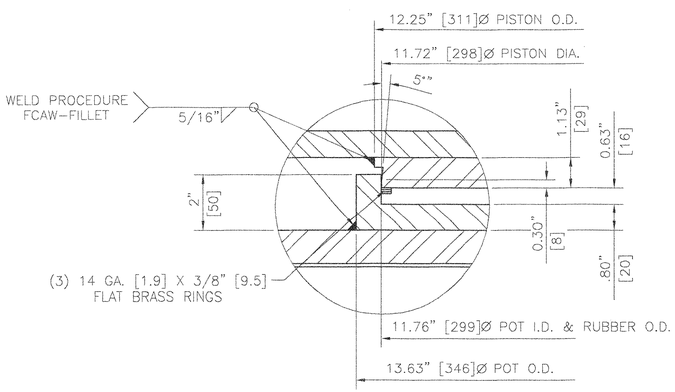
LOCATION: ABUTMENT #1; GIRDER #G5
QUANTITY: 1
TOTAL VERTICAL CAPACITY= 380 KIPS [1690 Kn]
TOTAL HORIZONTAL CAPACITY= 38 KIPS [169 Kn]
MOVEMENT CAPACITY= 0"
ROTATION CAPACITY= 0.015 RADIANS

COSMEC GUIDED EXPANSION POT BEARING

LOCATION: ABUTMENT #2; GIRDER #G1
QUANTITY: 1
TOTAL VERTICAL CAPACITY= 300 KIPS [1335 Kn]
TOTAL HORIZONTAL CAPACITY= 30 KIPS [133.5 Kn]
MOVEMENT CAPACITY= 3 13/16" [97]
TRANSVERSE MOVEMENT CAPACITY= 1 1/8" [28]
ROTATION CAPACITY= 0.015 RADIANS



ANCHOR BOLT DETAIL
N.T.S.



DETAIL E – BEARING
N.T.S.

BEARING NOTES

1. ALL MATERIALS USED IN THE FABRICATION OF THESE BEARINGS SHALL BE MADE IN THE U.S.A.
2. BEARINGS ARE TO BE SHIPPED AS COMPLETE UNITS, STEEL BANDED, AND SHALL BE WRAPPED TO PROTECT FROM MOISTURE AND DIRT DURING TRANSIT AND STORAGE.
3. LOCATION OF FABRICATION PLANT – 70 SOUTH STREET WALPOLE, MA 02081
4. COSMEC, INC. REPRESENTATIVE – MR. MATT McANDREWS (508) 668-6600
5. BEARINGS SHALL BE STORED IN A CLEAN, DRY, LEVEL UPRIGHT POSITION.
6. UNITS: INCH[mm]
7. BEARINGS MUST NOT BE DISASSEMBLED
8. ALL BEARINGS SHALL BE METALLIZED AS PER SECTION 531.04(B) & 506.15 (a) & (b). AREAS OF METALLIZED DAMAGED BY FIELD WELDS OR HANDLING SHALL BE REPAIRED PER SUPPLEMENTAL SPECIFICATION 513.06(F).
9. PROTECT PTFE & S.S. SURFACES FROM DIRT, WELD SPATTER, & ANY OTHER FOREIGN SUBSTANCES.
10. PRIOR TO METALLIZING, ALL CORNERS AND EDGES OF STEEL PLATES, SHAPES, ETC. SHALL BE GROUND TO A 1/16" [1.6] RADIUS.

MATERIALS

STEEL – ASTM A709 GRADE 36, ZINC METALLIZED & SEALED
STAINLESS STEEL – ASTM A240 TYPE 304, 10 RMS FINISH OR LESS
PREFORMED FABRIC PAD – AASHTO DIV. II SPEC. 18.4.9.1
ANCHOR BOLTS – ASTM F1554 GRADE 55
PTFE – ASTM D.4894 VIRGIN UNFILLED
ELASTOMER – AASHTO 50 DUROMETER NEOPRENE
BRASS SEALING RINGS – ASTM B.36 HALF HARD

RECEIVED
CK'D BY JWC OK'D BY
NOV 09 2005
RESUBMIT APPROVED ✓
BY TRD DATE 11/16/05

STATE OF VERMONT
AGENCY OF TRANSPORTATION

TOWN OF HARTLAND
U.S. ROUTE 5 OVER LULLS BROOK
BRIDGE NO. 60

COSMEC, INC. 70 SOUTH STREET WALPOLE, MA. 02081

SCALE: 1/8"=1"	DRAWN BY: MRR	CHECKED BY: MCM
	DATE: 7-20-05	DATE: 8-17-05

COSMEC POT BEARINGS

CUSTOMER	S.O. NUMBER	DRAWING NUMBER	REV.
MILLER CONSTRUCTION, INC.	60304	4462	1

REV.	DETAIL MECHANICAL FASTENER	BY	DATE	CK'D	DATE
⚠1		MRR	11-3-05	MCM	11-4-05

08966

State of Vermont
Agency of
Transportation
1 National Life Drive
Drawer 33
Montpelier, Vermont

VTrans Working to Get You There

Program Development
Structures Design Section
Phone: (802) 828-2621 – FAX: (802) 828-3566

DATE: November 14, 2005

Miller Construction, Inc.
P.O. Box 86 Ascutney Blvd
Windsor, VT 05089-0086

Project Name: Hartland, Vermont **Project #:** BRS 0113(22)

Structure Identification: Bridge No. 60 on U.S. Route 5 over Lulls Brook

The following Pot Bearing details for Item 531.10, Bearing Device Assembly (Pot), for the above project have been reviewed and are being returned herewith.

Sheets:

1) Bearing Prints, Drawing Number 4462, Revised 11/03/2005
2) Bearing Prints, Drawing Number 4463, Revised 11/03/2005
3) Bearing Prints, Drawing Number 4464, Revised 11/03/2005

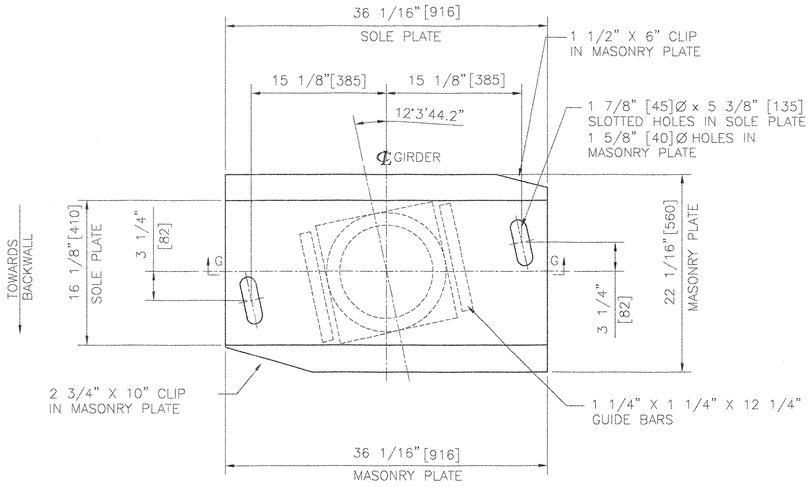
are approved.

Sincerely,

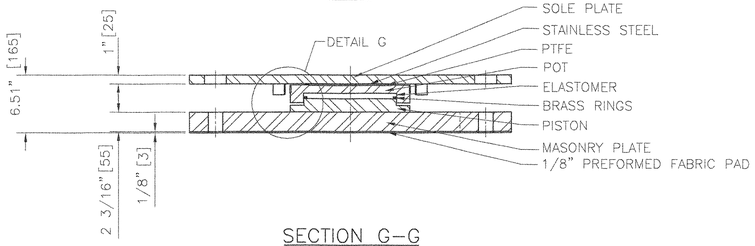
Todd A. Sumner

Todd Sumner, Acting Structures Project Manager

Attachments
cc: [x] Resident Engineer, Daryl Bassett w/prints
[x] Shop Inspector, Jeff Clark w/prints
[x] Miller Construction, Inc., Roger C. Gilman w/prints
[x] Cosmec, Inc., Matt McAndrews w/prints
[x] Construction Section – letter only
[x] Materials & Research Section (C&IA Unit) – letter only
[x] Files (Structures & Central)



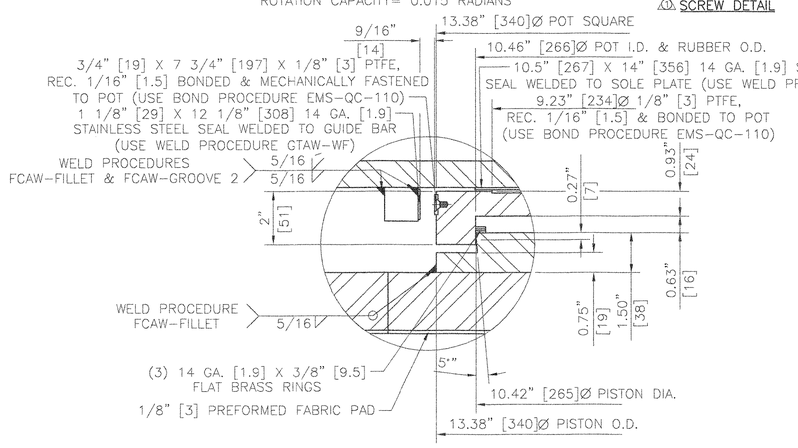
PLAN



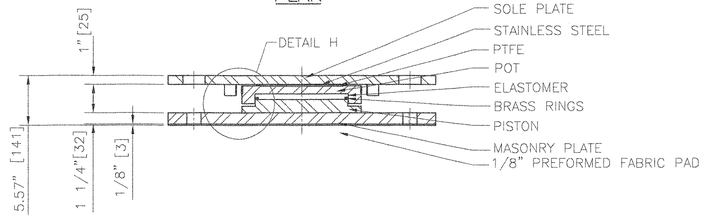
SECTION G–G

COSMEC GUIDED EXPANSION POT BEARING

LOCATION: ABUTMENT #2; GIRDER #G2
QUANTITY: 1
TOTAL VERTICAL CAPACITY= 300 KIPS [1335 Kn]
TOTAL HORIZONTAL CAPACITY= 30 KIPS [133.5 Kn]
MOVEMENT CAPACITY= 3 13/16" [97]
TRANSVERSE MOVEMENT CAPACITY= 1 1/8" [28]
ROTATION CAPACITY= 0.015 RADIANS



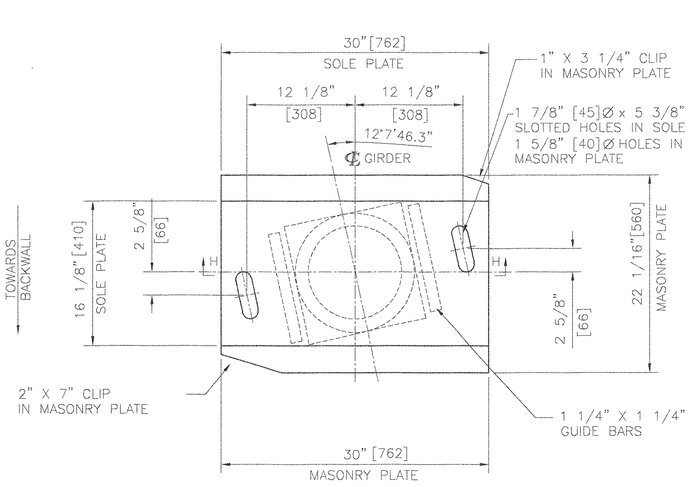
⚠ DETAIL G – BEARING
N.T.S.



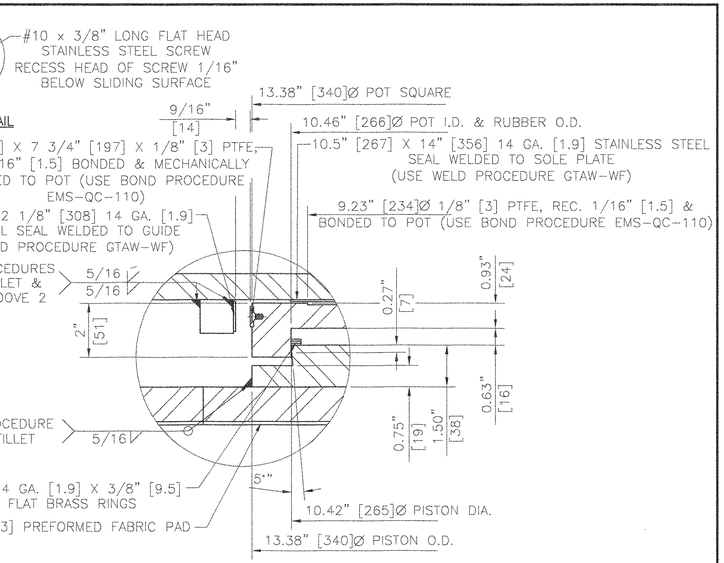
SECTION H–H

COSMEC GUIDED EXPANSION POT BEARING

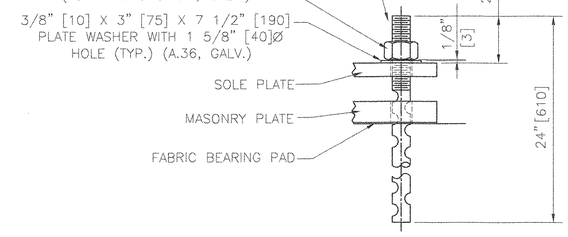
LOCATION: ABUTMENT #2; GIRDER #G3
QUANTITY: 1
TOTAL VERTICAL CAPACITY= 300 KIPS [1335 Kn]
TOTAL HORIZONTAL CAPACITY= 30 KIPS [133.5 Kn]
MOVEMENT CAPACITY= 3 13/16" [97]
TRANSVERSE MOVEMENT CAPACITY= 1 1/8" [28]
ROTATION CAPACITY= 0.015 RADIANS



PLAN



⚠ DETAIL H – BEARING
N.T.S.



ANCHOR BOLT DETAIL
N.T.S.

RECEIVED
CK'D BY JWC OK'D BY
NOV 09 2005
RECOMMT APPROVED ✓
BY TAS DATE 11/16/05

BEARING NOTES

1. ALL MATERIALS USED IN THE FABRICATION OF THESE BEARINGS SHALL BE MADE IN THE U.S.A.
2. BEARINGS ARE TO BE SHIPPED AS COMPLETE UNITS, STEEL BANDED, AND SHALL BE WRAPPED TO PROTECT FROM MOISTURE AND DIRT DURING TRANSIT AND STORAGE.
3. LOCATION OF FABRICATION PLANT – 70 SOUTH STREET WALPOLE, MA 02081
4. COSMEC, INC. REPRESENTATIVE – MR. MATT McANDREWS (508) 668–6600
5. BEARINGS SHALL BE STORED IN A CLEAN, DRY, LEVEL UPRIGHT POSITION.
6. UNITS: INCH[mm]
7. BEARINGS MUST NOT BE DISASSEMBLED
8. ALL BEARINGS SHALL BE METALLIZED AS PER SECTION 531.04(B) & 506.15 (a) & (b). AREAS OF METALLIZED DAMAGED BY FIELD WELDS OR HANDLING SHALL BE REPAIRED PER SUPPLEMENTAL SPECIFICATION 513.06(F).
9. PROTECT PTFE & S.S. SURFACES FROM DIRT, WELD SPATTER, & ANY OTHER FOREIGN SUBSTANCES.
10. PRIOR TO METALLIZING, ALL CORNERS AND EDGES OF STEEL PLATES, SHAPES, ETC. SHALL BE GROUND TO A 1/16" [1.6] RADIUS.

MATERIALS

STEEL – ASTM A709 GRADE 36, ZINC METALLIZED & SEALED
STAINLESS STEEL – ASTM A240 TYPE 304, 10 RMS FINISH OR LESS
PREFORMED FABRIC PAD – AASHTO DIV. II SPEC. 18.4.9.1
ANCHOR BOLTS – ASTM F1554 GRADE 55
PTFE – ASTM D.4894 VIRGIN UNFILLED
ELASTOMER – AASHTO 50 DUROMETER NEOPRENE
BRASS SEALING RINGS – ASTM B.36 HALF HARD

REV.		BY	DATE	CK'D	DATE
⚠	DETAIL MECHANICAL FASTENER	MRR	11-3-05	MCM	11-4-05

STATE OF VERMONT
AGENCY OF TRANSPORTATION

TOWN OF HARTLAND
U.S. ROUTE 5 OVER LULLS BROOK
BRIDGE NO. 60

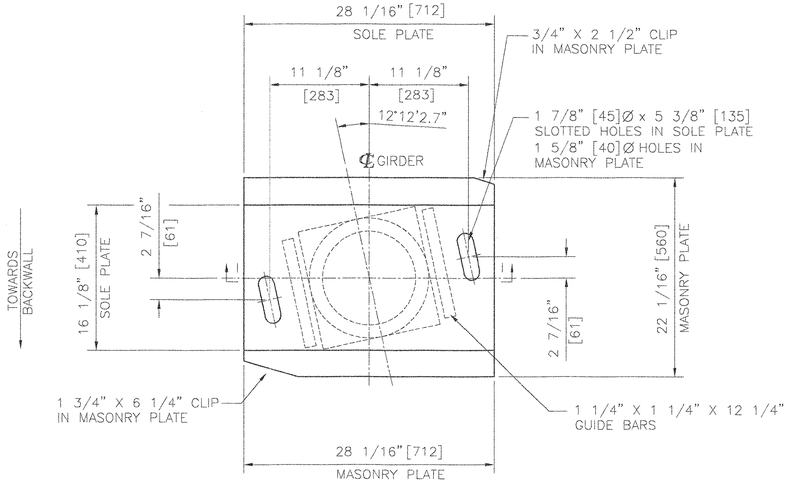
COSMEC, INC. 70 SOUTH STREET WALPOLE, MA. 02081

SCALE: 1/8"=1"	DRAWN BY: MRR	CHECKED BY: MCM
	DATE: 7-20-05	DATE: 8-17-05

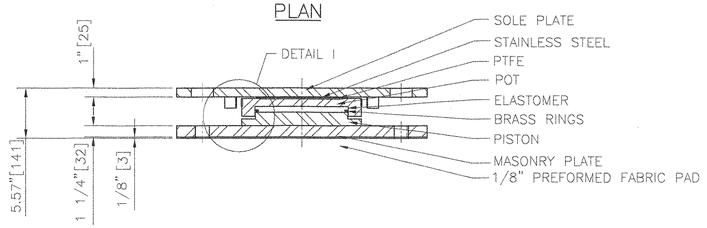
COSMEC POT BEARINGS

CUSTOMER	S.O. NUMBER	DRAWING NUMBER	REV.
MILLER CONSTRUCTION, INC.	60304	4463	1

04066



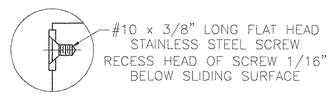
PLAN



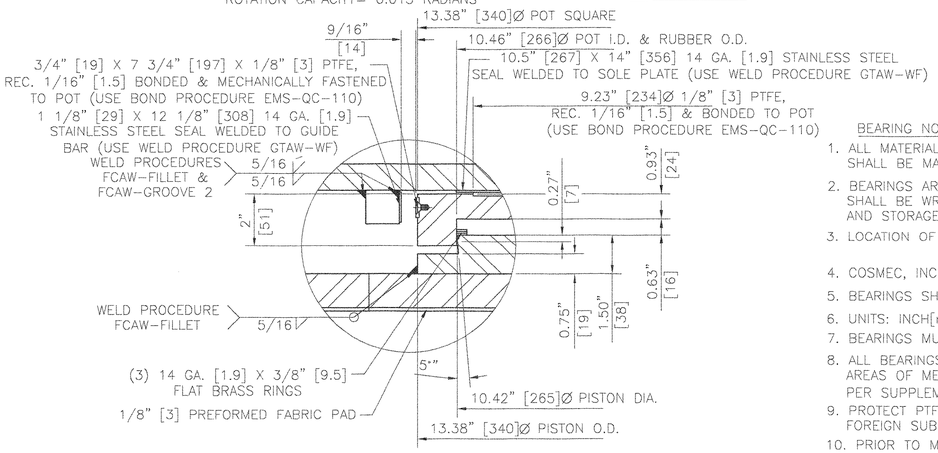
SECTION I–I

COSMEC GUIDED EXPANSION POT BEARING

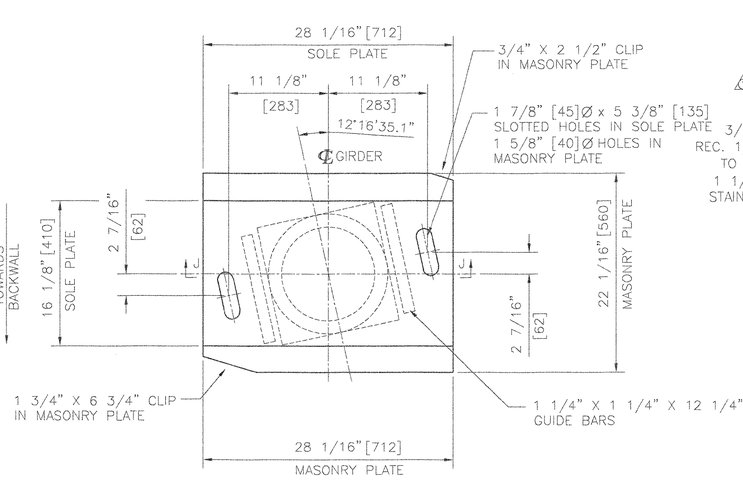
LOCATION: ABUTMENT #2; GIRDER #G4
QUANTITY: 1
TOTAL VERTICAL CAPACITY= 300 KIPS [1335 Kn]
TOTAL HORIZONTAL CAPACITY= 30 KIPS [133.5 Kn]
MOVEMENT CAPACITY= 3 13/16" [97]
TRANSVERSE MOVEMENT CAPACITY= 1 1/8" [28]
ROTATION CAPACITY= 0.015 RADIANS



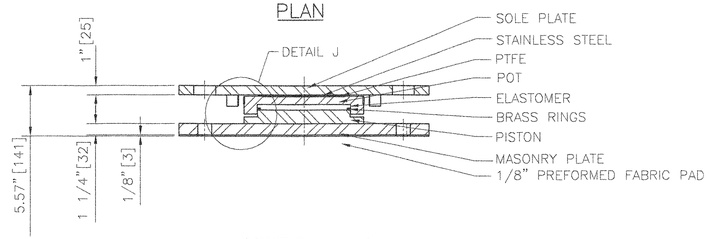
⚠ SCREW DETAIL



⚠ DETAIL I – BEARING
N.T.S.



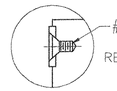
PLAN



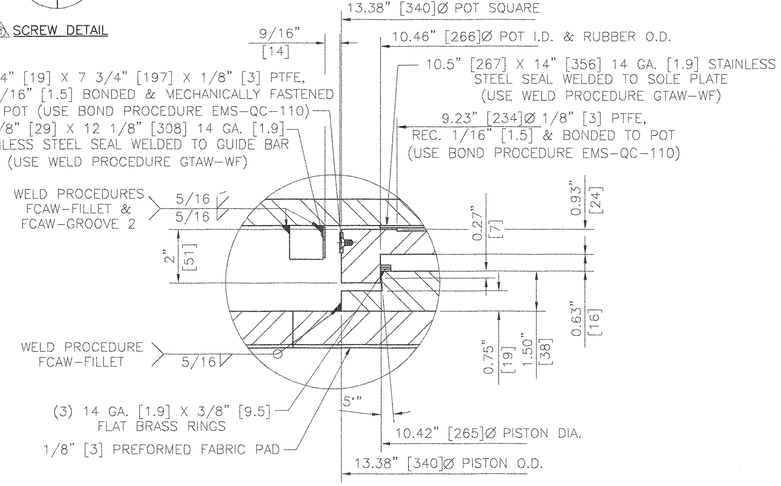
SECTION J–J

COSMEC GUIDED EXPANSION POT BEARING

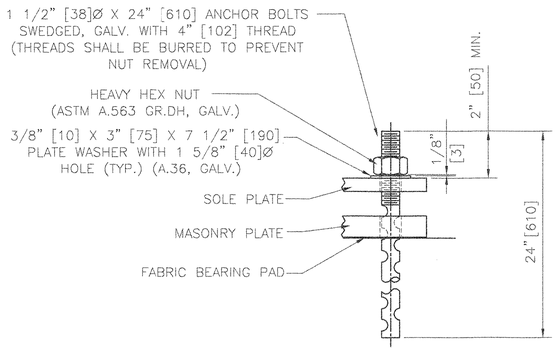
LOCATION: ABUTMENT #2; GIRDER #G5
QUANTITY: 1
TOTAL VERTICAL CAPACITY= 300 KIPS [1335 Kn]
TOTAL HORIZONTAL CAPACITY= 30 KIPS [133.5 Kn]
MOVEMENT CAPACITY= 3 13/16" [97]
TRANSVERSE MOVEMENT CAPACITY= 1 1/8" [28]
ROTATION CAPACITY= 0.015 RADIANS



⚠ SCREW DETAIL



⚠ DETAIL J – BEARING
N.T.S.



ANCHOR BOLT DETAIL
N.T.S.

BEARING NOTES

1. ALL MATERIALS USED IN THE FABRICATION OF THESE BEARINGS SHALL BE MADE IN THE U.S.A.
2. BEARINGS ARE TO BE SHIPPED AS COMPLETE UNITS, STEEL BANDED, AND SHALL BE WRAPPED TO PROTECT FROM MOISTURE AND DIRT DURING TRANSIT AND STORAGE.
3. LOCATION OF FABRICATION PLANT – 70 SOUTH STREET WALPOLE, MA 02081
4. COSMEC, INC. REPRESENTATIVE – MR. MATT McANDREWS (508) 668–6600
5. BEARINGS SHALL BE STORED IN A CLEAN, DRY, LEVEL UPRIGHT POSITION.
6. UNITS: INCH[mm]
7. BEARINGS MUST NOT BE DISASSEMBLED
8. ALL BEARINGS SHALL BE METALLIZED AS PER SECTION 531.04(B) & 506.15 (a) & (b). AREAS OF METALLIZED DAMAGED BY FIELD WELDS OR HANDLING SHALL BE REPAIRED PER SUPPLEMENTAL SPECIFICATION 513.06(F).
9. PROTECT PTFE & S.S. SURFACES FROM DIRT, WELD SPATTER, & ANY OTHER FOREIGN SUBSTANCES.
10. PRIOR TO METALLIZING, ALL CORNERS AND EDGES OF STEEL PLATES, SHAPES, ETC. SHALL BE GROUND TO A 1/16" [1.6] RADIUS.

MATERIALS

STEEL – ASTM A709 GRADE 36, ZINC METALLIZED & SEALED
STAINLESS STEEL – ASTM A240 TYPE 304, 10 RMS FINISH OR LESS
PREFORMED FABRIC PAD – AASHTO DIV. II SPEC. 18.4.9.1
ANCHOR BOLTS – ASTM F1554 GRADE 55
PTFE – ASTM D.4894 VIRGIN UNFILLED
ELASTOMER – AASHTO 50 DUROMETER NEOPRENE
BRASS SEALING RINGS – ASTM B.36 HALF HARD

RECEIVED
CK'D BY JJC OK'D BY
NOV 09 2005
RESUBMIT APPROVED
BY TAS DATE 11/16/05

STATE OF VERMONT
AGENCY OF TRANSPORTATION

TOWN OF HARTLAND
U.S. ROUTE 5 OVER LULLS BROOK
BRIDGE NO. 60

REV.	DETAIL MECHANICAL FASTENER	BY	DATE	CK'D	DATE
1		MRR	11-3-05	MCM	11-4-05

COSMEC, INC. 70 SOUTH STREET WALPOLE, MA. 02081

SCALE: 1/8"=1"	DRAWN BY: MRR	CHECKED BY: MCM
	DATE: 7-20-05	DATE: 8-17-05

COSMEC POT BEARINGS

CUSTOMER	S.O. NUMBER	DRAWING NUMBER	REV.
MILLER CONSTRUCTION, INC.	60304	4464	1

09166

State of Vermont
Agency of Transportation
National Life Building
Drawer 33
Montpelier, VT
05633-5001

VTrans Working to Get You There

July 18, 2005

High Steel Structures, Inc.
1770 Hempstead Road
Lancaster, PA 17605-0008

Project Name: **Hartland, Vermont**
Project Number: **BRS 0113(22)**

The following girder shop drawing sheets, for the above-referenced bridge project (General Contractor – Miller Construction, Inc.), have been reviewed and are being returned herewith:

1. WS1 of WS1, Worksheet – Calculation Plan, revised 04-25-05;
2. E1 of E2, Erection Framing Plan, revised 04-25-05;
3. E2 of E2, Erection Plan – Stud Layout, revised 04-26-05;
4. SA1 of SA1, Shop Assembly Diagram, revised 04-26-05;
5. FS1 of FS3, Flange Splice Details, revised 04-26-05;
6. FS2 of FS3, Flange Splice Details, revised 04-26-05;
7. FS3 of FS3, Flange Splice Details, revised 04-26-05;
8. WC1 of WC1, Web Camber Diagrams, revised 04-28-05;
9. HC1 of HC1, Horizontal Curve Diagrams, revised 04-28-05;
10. TD1 of TD1, Typical Detail – Crossframe Layouts, dated 04-12-05;
11. M1 of M1, Crossframe Job Standards, dated 04-18-05;
12. X1 of X2, Girder Job Standards, dated 04-13-05;
13. X2 of X2, Girder Job Standards, dated 04-13-05;
14. **GN1 of GN1, General Shop Notes, dated 03-04-05;**
15. 1 of 15, Crossframes (CF1 thru CF8), dated 04-18-05;
16. 2 of 15, Crossframes (CF9 thru CF14), dated 04-18-05;
17. 3 of 15, Crossframes (CF15 thru CF21), dated 04-18-05;
18. 4 of 15, Crossframes (CF22 thru CF27), dated 04-18-05;
19. 5 of 15, Crossframes (CF28 thru CF33), dated 04-18-05;
20. 6 of 15, Girder G1A, revised 04-26-05;
21. 7 of 15, Girder G2A, revised 04-26-05;
22. 8 of 15, Girder G3A, revised 04-26-05;
23. 9 of 15, Girder G4A, revised 04-26-05;

(continued next page)

092 55

24. 10 of 15, Girder G5A, revised 04-26-05;
25. **11 of 15, Girder G1B, revised 04-26-05;**
26. **12 of 15, Girder G1B, revised 04-26-05;**
27. **13 of 15, Girder G1B, revised 04-26-05;**
28. **14 of 15, Girder G1B, revised 04-26-05** and
29. **15 of 15, Girder G1B, revised 04-26-05.**

Are approved except as noted [X]
(*shown as bold underlined text above)*

Additionally, the Welding Procedures have been approved and are attached.

Sincerely,

Todd Sumner
Acting Structures Project Manager

Attachments

cc: [x] Resident Engineer, Daryl Bassett w/attachments
[x] Contractor, Miller Construction, Inc. w/attachments
[x] McFarland-Johnson, Inc. (Concord, NH), Ed Weingartner w/attachments
[x] Shop Inspector, Jeff Clark w/attachments
[x] Construction Section – letter only
[x] Materials & Research Section (C&IA Unit) – letter only
[x] Central Files
[x] Project File

09355

WELDING PROCEDURE FOR AWS PREQUALIFIED JOINTS

W2 - METRIC

PROCEDURE SPECIFICATIONS

MATERIAL SPECIFICATION	ASTM A709 GRADES: 250, 345, 345W
WELDING PROCESS	SHIELDED METAL ARC WELDING
MANUAL OR MACHINE	MANUAL
POSITION OF WELDING	ALL (EXCEPT AS NOTED BELOW)
FILLER METAL SPECIFICATION	AWS A5.1 AND A5.5
WELD METAL CLASSIFICATION	E7018/E7028 (TACKING ONLY) AND E8018-C3
WIRE/FLUX	D.N.A.
POLARITY	DC+ OR AC
ROOT TREATMENT	MANUAL CLEANING
PREHEAT AND INTERPASS TEMPERATURE	SEE PREHEAT CHART
ELECTRICAL STICK-OUT	D.N.A.
SHIELDING GAS	D.N.A.

REVISED: 7/27/98

ORIGINAL ISSUE: 4/9/96

WELDING PROCEDURE

PASS NO.	WIRE SIZE (mm)	CURRENT RANGE E7018 DC+	CURRENT RANGE E7018 AC	TRAVEL SPEED (mm/min)	JOINT DETAIL
1	3.2	90-150	110-170	152-228	TACK WELDS
1	4.0	120-190	135-225	203-330	GROOVE ROOT PASSES AND TACK WELDS

PASS NO.	WIRE SIZE (mm)	CURRENT RANGE E7028 DC+	CURRENT RANGE E7028 AC	TRAVEL SPEED (mm/min)	JOINT DETAIL (LIMITED TO FLAT AND HORIZONTAL TACK WELDS AND FLAT POSITION GROOVE ROOT PASSES)
1	4.0	170-240	180-270	203-330	GROOVE ROOT PASSES AND TACK WELDS

PASS NO.	WIRE SIZE (mm)	CURRENT RANGE E8018-C3 DC+	CURRENT RANGE E8018-C3 AC	TRAVEL SPEED (mm/min)	JOINT DETAIL
1	4.0	130-190	140-225	203-330	GROOVE ROOT PASSES, REPAIR WELDS AND TACKS
ALL	4.0	130-190	140-225	203-330	FILLET WELDS
ALL	4.8	180-270	210-290	228-381	FILLET WELDS (FLAT AND HORIZONTAL WELDS ONLY)
ALL	4.8	250-330	270-370	228-406	FILLET WELDS (FLAT AND HORIZONTAL WELDS ONLY)

* WELD SIZE DETERMINED BY TRAVEL SPEED

Z:\HS\JOBS\05017\wp1.dgn 04/27/05 10:00:46 AM

VTRANS
RECEIVED
JUN 0 3 2005

OK'D BY _____ OK'D BY JWC

RESUBMIT _____ APPROVED ✓

BY _____ DATE 7-6-05

09455

WELDING PROCEDURE FOR AWS PREQUALIFIED JOINTS

GMAW - TACK

PROCEDURE SPECIFICATIONS

MATERIAL SPECIFICATION	ASTM A709 GRADES: 250, 345, 345W
WELDING PROCESS	GAS METAL ARC WELDING
MANUAL OR MACHINE	SEMIAUTOMATIC
POSITION OF WELDING	1F OR 2F
FILLER METAL SPECIFICATION	AWS A5.18
WELD METAL CLASSIFICATION	ER70S-6
WIRE/FLUX	NATIONAL STANDARD NS-115
WIRE DIAMETER	1.6 mm
SINGLE OR MULTIPLE ARC	SINGLE ARC
POLARITY	DC+
ROOT TREATMENT	MANUAL CLEANING
PREHEAT AND INTERPASS TEMPERATURE	SEE PREHEAT CHART*
ELECTRICAL STICK-OUT	19.1 mm
SHIELDING GAS	92% AR + 8% CO2

REVISED:

ORIGINAL ISSUE: 1/21/03

WELDING PROCEDURE

PASS NO.	AMPS	VOLTS	TRAVEL SPEED (mm/MIN.)	GAS FLOW (l/MIN.)	JOINT DETAIL
1	283-325	25.2-28.7	394-432	15-20	TACK WELDS REMELTED BY THE SAW PROCESS

* PREHEAT NOT REQUIRED FOR TACKING.

THIS PROCEUDRE IS ONLY TO BE USED FOR TACKING CROSS FRAMES / DIAPHRAGMS.

PROCEDURE QUALIFICATION RECORD NS-01-02 (EXPIRES 9/10/06)

Z:\HS\JOBS\05017\wp1.dgn 04/27/05 10:24:26 AM

VTRANS
RECEIVED
JUN 0 3 2005

CK'D BY _____ OK'D BY JWC

RESUBMIT _____ APPROVED [signature]

BY _____ DATE 7-6-05

095 ss

WELDING PROCEDURE FOR AWS PREQUALIFIED JOINTS

W14 - METRIC

PROCEDURE SPECIFICATIONS

MATERIAL SPECIFICATION	ASTM A709 GRADES: 250, 345, 345W
WELDING PROCESS	SUBMERGED ARC WELDING
MANUAL OR MACHINE	SEMIAUTOMATIC OR MACHINE
POSITION OF WELDING	2F
FILLER METAL SPECIFICATION	AWS A5.17
WELD METAL CLASSIFICATION	F7A2-EM12K
WIRE/FLUX	LINCOLN L61/960
WIRE DIAMETER	2.4mm
SINGLE OR MULTIPLE ARC	SINGLE ARC
POLARITY	DC-
ROOT TREATMENT	MANUAL CLEANING
PREHEAT AND INTERPASS TEMPERATURE	SEE PREHEAT CHART
ELECTRICAL STICK-OUT	25.4mm
SHIELDING GAS	D.N.A.

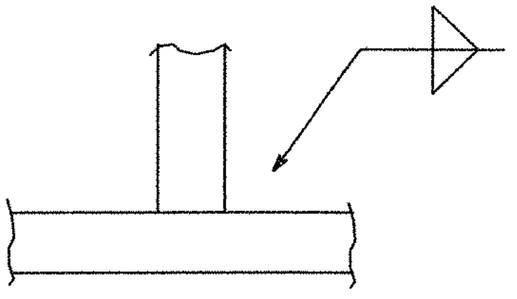
REVISED: 3/3/03

ORIGINAL ISSUE: 3/4/96

WELDING PROCEDURE

PASS NO.	WELDING CURRENT			TRAVEL SPEED (mm/m)	JOINT DETAIL
	AMPS	WIRE FEED SPEED	VOLTS		
1	405-550	3.3-5.0	34.5-39.5	394-635	8mm FILLET WELD

PRIMARY USE:
WEB TO FLANGE
(AND OTHER APPLICATIONS AS NEEDED)



PROCEDURE QUALIFICATION RECORD 01-1 (EXPIRES 3/19/06)
PROCEDURE QUALIFICATION RECORD AWS-03-7 (EXPIRES 2/4/08)

Z:\HS\JOBS\05017\wp1.dgn 04/27/05 10:01:25 AM

VTRANS
RECEIVED
JUN 0 3 2005

CK'D BY _____ OK'D BY JWC

RESUBMIT _____ APPROVED ✓

BY _____ DATE 7-6-05

096SS

WELDING PROCEDURE FOR AWS PREQUALIFIED JOINTS

W34 - METRIC

PROCEDURE SPECIFICATIONS

MATERIAL SPECIFICATION	ASTM A709 GRADES: 250, 345, 345W
WELDING PROCESS	SUBMERGED ARC WELDING
MANUAL OR MACHINE	SEMIAUTOMATIC OR MACHINE
POSITION OF WELDING	2F
FILLER METAL SPECIFICATION	AWS A5.17
WELD METAL CLASSIFICATION	F7A2-EM12K
WIRE/FLUX	LINCOLN L61/761
WIRE DIAMETER	2.4mm
SINGLE OR MULTIPLE ARC	SINGLE ARC
POLARITY	DC-
ROOT TREATMENT	MANUAL CLEANING
PREHEAT AND INTERPASS TEMPERATURE	SEE PREHEAT CHART
ELECTRICAL STICK-OUT	25.4mm
SHIELDING GAS	D.N.A.

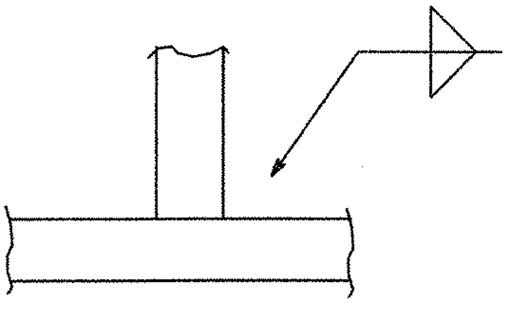
REVISED: 5/5/03

ORIGINAL ISSUE: 3/4/96

WELDING PROCEDURE

PASS NO.	WELDING CURRENT			TRAVEL SPEED (mm/m)	JOINT DETAIL
	AMPS	WIRE FEED SPEED	VOLTS		
1	360-440	2.9-3.7	29.0-36.0	279-686	8mm FILLET WELD

PRIMARY USE:
STIFFENER TO WEB
(AND OTHER APPLICATIONS AS NEEDED)



PROCEDURE QUALIFICATION RECORD AWS-FCM-02-4 (EXPIRES 6/27/07)
PROCEDURE QUALIFICATION RECORD AWS-FCM-02-5A (EXPIRES 7/16/07)

Z:\HS\JOBS\05017\wp1.dgn 04/27/05 10:01:33 AM

VTRANS
RECEIVED
OK'D BY _____ OK'D BY JWC
JUN 0 3 2005
RESUBMIT _____ APPROVED ✓
BY DATE 7-6-05

09755

WELDING PROCEDURE FOR AWS PREQUALIFIED JOINTS

W44 - METRIC

PROCEDURE SPECIFICATIONS

MATERIAL SPECIFICATION	ASTM A709 GRADES: 250, 345, 345W
WELDING PROCESS	SUBMERGED ARC WELDING
MANUAL OR MACHINE	SEMIAUTOMATIC OR MACHINE
POSITION OF WELDING	2F
FILLER METAL SPECIFICATION	AWS A5.17
WELD METAL CLASSIFICATION	F7A2-EM12K
WIRE/FLUX	LINCOLN L61/761
WIRE DIAMETER	2.4mm
SINGLE OR MULTIPLE ARC	SINGLE ARC
POLARITY	DC-
ROOT TREATMENT	MANUAL CLEANING
PREHEAT AND INTERPASS TEMPERATURE	SEE PREHEAT CHART
ELECTRICAL STICK-OUT	25.4mm
SHIELDING GAS	D.N.A.

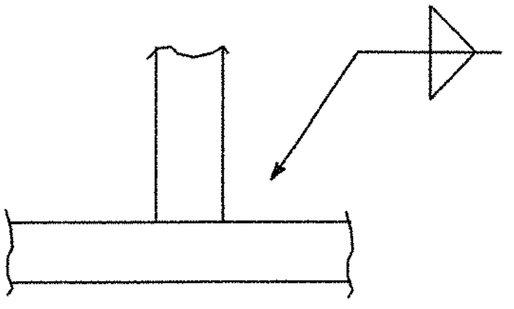
REVISED: 5/5/03

ORIGINAL ISSUE: 3/4/96

WELDING PROCEDURE

PASS NO.	WELDING CURRENT			TRAVEL SPEED (mm/m)	JOINT DETAIL
	AMPS	WIRE FEED SPEED	VOLTS		
1	360-440	2.9-3.7	29.0-36.0	279-685	8mm FILLET WELD

PRIMARY USE:
STIFFENER TO FLANGE
(AND OTHER APPLICATIONS AS NEEDED)



PROCEDURE QUALIFICATION RECORD AWS-FCM-02-4 (EXPIRES 6/27/07)
PROCEDURE QUALIFICATION RECORD AWS-FCM-02-5A (EXPIRES 7/16/07)

Z:\HS\JOBS\05017\wp1.dgn 04/27/05 10:01:41 AM

VTRANS
RECEIVED
JUN 0 3 2005

CK'D BY _____ OK'D BY JWC

RESUBMIT _____ APPROVED ✓

BY _____ DATE 7-6-05

09855

WELDING PROCEDURE FOR AWS PREQUALIFIED JOINTS

W54 - METRIC

PROCEDURE SPECIFICATIONS

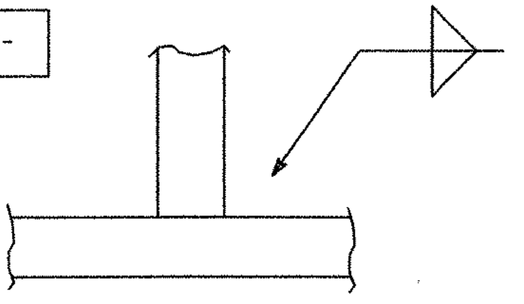
MATERIAL SPECIFICATION	ASTM A709 GRADES: 250, 345, 345W
WELDING PROCESS	SUBMERGED ARC WELDING
MANUAL OR MACHINE	SEMIAUTOMATIC OR MACHINE
POSITION OF WELDING	2F
FILLER METAL SPECIFICATION	AWS A5.17
WELD METAL CLASSIFICATION	F7A2-EM12K
WIRE/FLUX	LINCOLN L61/960
WIRE DIAMETER	SEE BELOW
SINGLE OR MULTIPLE ARC	SINGLE ARC
POLARITY	SEE BELOW
ROOT TREATMENT	MANUAL CLEANING
PREHEAT AND INTERPASS TEMPERATURE	SEE PREHEAT CHART
ELECTRICAL STICK-OUT	25.4mm
SHIELDING GAS	D.N.A.

REVISED: 5/5/03

ORIGINAL ISSUE: 10/25/00

WELDING PROCEDURE

PASS NO.	WELDING CURRENT			TRAVEL SPEED (mm/m)	WIRE DIA.	POL.	JOINT DETAIL
	AMPS	WIRE FEED SPEED	VOLTS				
1	400-550	3.1-5.5	32.5-39.5	431-584	2.0mm	DC+	8mm FILLET WELDS
1	400-550	3.3-5.0	32.5-39.5	431-584	2.4mm	DC-	



PRIMARY USE:
CROSS FRAMES AND DIAPHRAGMS
(AND OTHER APPLICATIONS AS NEEDED)

PROCEDURE QUALIFICATION RECORD AWS-03-7 (EXPIRES 2/4/08)
PROCEDURE QUALIFICATION RECORD 01-1 (EXPIRES 3/19/06)
PROCEDURE QUALIFICATION RECORD AWS-03-5 (EXPIRES 1/28/08)
PROCEDURE QUALIFICATION RECORD AWS-03-6 (EXPIRES 1/31/08)

Z:\HS\JOBS\05017\wp1.dgn 04/27/05 10:01:49 AM

VTRANS
RECEIVED
CK'D BY _____ OK'D BY JWC
JUN 0 3 2005
RESUBMIT _____ APPROVED ✓
BY _____ DATE 7-6-05

09955

WELDING PROCEDURE FOR AWS PREQUALIFIED JOINTS

W71X-2 METRIC

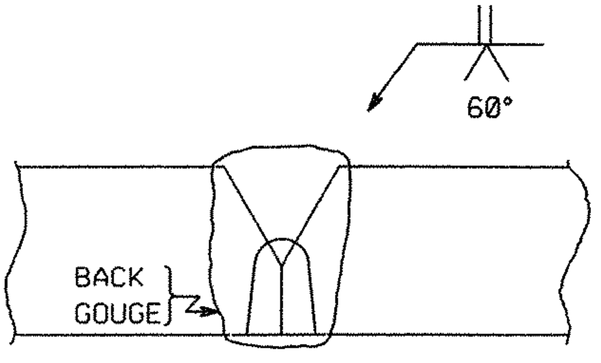
PROCEDURE SPECIFICATIONS

MATERIAL SPECIFICATION	ASTM A709 GRADES: 250, 345, 345W
WELDING PROCESS	SUBMERGED ARC WELDING
MANUAL OR MACHINE	SEMIAUTOMATIC OR MACHINE
POSITION OF WELDING	1G
FILLER METAL SPECIFICATION	AWS A5.23
WELD METAL CLASSIFICATION	F8A2-EN1K-N1-H8
WIRE/FLUX	LINCOLN LA-75/960
WIRE DIAMETER	2.4 mm
SINGLE OR MULTIPLE ARC	SINGLE ARC
POLARITY	DC+
ROOT TREATMENT	MANUAL CLEANING
PREHEAT AND INTERPASS TEMPERATURE	SEE PREHEAT CHART
ELECTRICAL STICK-OUT	25.4 mm
SHIELDING GAS	D.N.A.

REVISED:
ORIGINAL ISSUE: 3/10/03

WELDING PROCEDURE

PASS NO.	AMPS	WIRE FEED SPEED (m/MIN.)	VOLTS	TRAVEL SPEED (mm/MIN.)	JOINT DETAIL
ALL	448-550	2.3-3.2	31.0-38.0	381-635	B-L2c-S



PROCEDURE QUALIFICATION RECORD AWS-04-1 (EXPIRES 4/29/09)
PROCEDURE QUALIFICATION RECORD AWS-04-2 (EXPIRES 2/2/09)

Z:\HS\JOBS\05017\wp1.dgn 04/27/05 10:00:54 AM

VTRANS
RECEIVED
CK'D BY _____ OK'D BY JWC
JUN 0 3 2005
RESUBMIT _____ APPROVED
BY DATE 7-6-05

100 SS

WELDING PROCEDURE FOR AWS PREQUALIFIED JOINTS

W71X - AC - METRIC

PROCEDURE SPECIFICATIONS

MATERIAL SPECIFICATION	ASTM A709 GRADES: 250, 345, 345W
WELDING PROCESS	SUBMERGED ARC WELDING
MANUAL OR MACHINE	SEMIAUTOMATIC OR MACHINE
POSITION OF WELDING	1G
FILLER METAL SPECIFICATION	AWS A5.23
WELD METAL CLASSIFICATION	F8A2-EN1K-N1-H8
WIRE/FLUX	LINCOLN LA-75/960
WIRE DIAMETER	2.4 mm
SINGLE OR MULTIPLE ARC	SINGLE ARC
POLARITY	AC (SEE RESTRICTIONS BELOW)
ROOT TREATMENT	MANUAL CLEANING
PREHEAT AND INTERPASS TEMPERATURE	SEE PREHEAT CHART
ELECTRICAL STICK-OUT	25.4 mm
SHIELDING GAS	D.N.A.

REVISED: 2/18/03

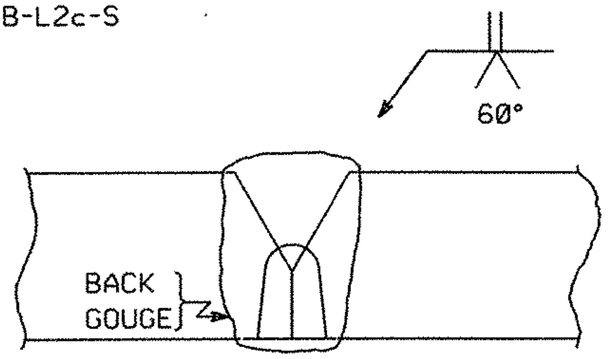
ORIGINAL ISSUE: 5/10/02

WELDING PROCEDURE

PASS NO.	AMPS	WIRE FEED SPEED (IN/MIN.)	VOLTS	TRAVEL SPEED (mm/MIN.)
ALL	462-670	108-205	34.0-36.0	381-508

JOINT DETAIL

B-L2c-S



NOTE: THIS PROCEDURE SHALL ONLY BE USED WITH A MILLER SUMMIT ARC 1000 POWER SOURCE WITH A FREQUENCY OF 60HZ AND A 66/34 (DC+/DC-) POLARITY BALANCE PLUG.

THE MAXIMUM WELDING CURRENT TO BE USED IN MAKING A GROOVE WELD FOR ANY PASS THAT HAS FUSION TO BOTH FACES OF THE GROOVE SHALL BE 600 AMPS / 171 WIRE FEED SPEED.

PROCEDURE QUALIFICATION RECORD AWS-03-1 (EXPIRES 1/8/08)
PROCEDURE QUALIFICATION RECORD AWS-03-2 (EXPIRES 1/9/08)

Z:\HS\JOBS\05017\wp1.dgn 04/27/05 10:01:01 AM

VT RAOS
RECEIVED
JUN 0 3 2005

OK'D BY _____ OK'D BY JWC

RESUBMIT _____ APPROVED ✓

BY _____ DATE 7-6-05

60155

WELDING PROCEDURE FOR AWS PREQUALIFIED JOINTS

W72X-2 METRIC

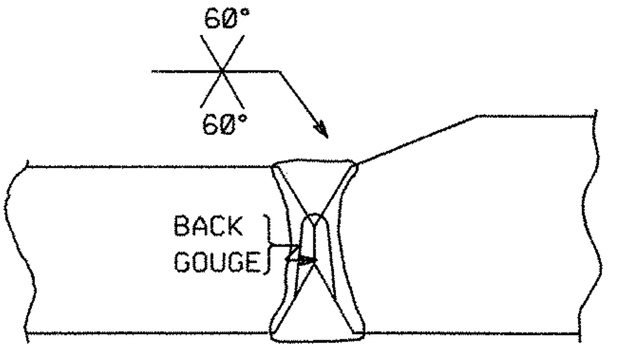
PROCEDURE SPECIFICATIONS

MATERIAL SPECIFICATION	ASTM A709 GRADES: 250, 345, 345W
WELDING PROCESS	SUBMERGED ARC WELDING
MANUAL OR MACHINE	SEMIAUTOMATIC OR MACHINE
POSITION OF WELDING	1G
FILLER METAL SPECIFICATION	AWS A5.23
WELD METAL CLASSIFICATION	F8A2-EN1K-N1-H8
WIRE/FLUX	LINCOLN LA-75/960
WIRE DIAMETER	2.4 mm
SINGLE OR MULTIPLE ARC	SINGLE ARC
POLARITY	DC+
ROOT TREATMENT	MANUAL CLEANING
PREHEAT AND INTERPASS TEMPERATURE	SEE PREHEAT CHART
ELECTRICAL STICK-OUT	25.4 mm
SHIELDING GAS	D.N.A.

REVISED:
ORIGINAL ISSUE: 3/10/03

WELDING PROCEDURE

PASS NO.	AMPS	WIRE FEED SPEED (m/MIN.)	VOLTS	TRAVEL SPEED (mm/MIN.)	JOINT DETAIL
ALL	448-550	2.3-3.2	31.0-38.0	381-635	B-U3c-S



PROCEDURE QUALIFICATION RECORD AWS-04-1 (EXPIRES 4/29/09)
PROCEDURE QUALIFICATION RECORD AWS-04-2 (EXPIRES 2/2/09)

Z:\HS\JOBS\05017\wp1.dgn 04/27/05 10:03:06 AM

VTRANS
RECEIVED
OK'D BY _____ OK'D BY JWC
JUN 0 3 2005
RESUBMIT _____ APPROVED ✓
BY DATE 7-6-05

10255

WELDING PROCEDURE FOR AWS PREQUALIFIED JOINTS

W72X - AC - METRIC

PROCEDURE SPECIFICATIONS

MATERIAL SPECIFICATION	ASTM A709 GRADES: 250, 345, 345W
WELDING PROCESS	SUBMERGED ARC WELDING
MANUAL OR MACHINE	SEMIAUTOMATIC OR MACHINE
POSITION OF WELDING	1G
FILLER METAL SPECIFICATION	AWS A5.23
WELD METAL CLASSIFICATION	F8A2-EN1K-N1-H8
WIRE/FLUX	LINCOLN LA-75/960
WIRE DIAMETER	2.4 mm
SINGLE OR MULTIPLE ARC	SINGLE ARC
POLARITY	AC (SEE RESTRICTIONS BELOW)
ROOT TREATMENT	MANUAL CLEANING
PREHEAT AND INTERPASS TEMPERATURE	SEE PREHEAT CHART
ELECTRICAL STICK-OUT	25.4 mm
SHIELDING GAS	D.N.A.

REVISED: 2/18/03

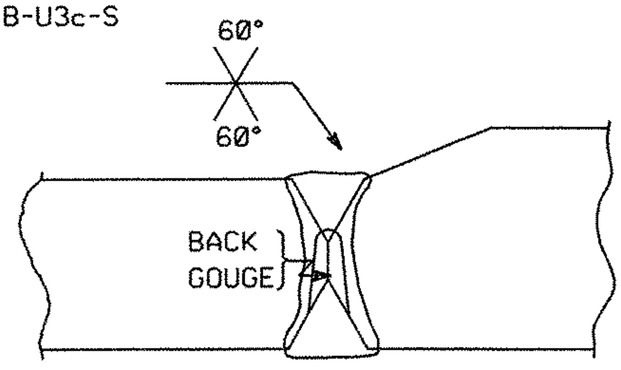
ORIGINAL ISSUE: 5/10/02

WELDING PROCEDURE

PASS NO.	AMPS	WIRE FEED SPEED (IN/MIN.)	VOLTS	TRAVEL SPEED (mm/MIN.)
ALL	462-670	108-205	34.0-36.0	381-508

JOINT DETAIL

B-U3c-S



NOTE: THIS PROCEDURE SHALL ONLY BE USED WITH A MILLER SUMMIT ARC 1000 POWER SOURCE WITH A FREQUENCY OF 60HZ AND A 66/34 (DC+/DC-) POLARITY BALANCE PLUG.

THE MAXIMUM WELDING CURRENT TO BE USED IN MAKING A GROOVE WELD FOR ANY PASS THAT HAS FUSION TO BOTH FACES OF THE GROOVE SHALL BE 600 AMPS / 171 WIRE FEED SPEED.

PROCEDURE QUALIFICATION RECORD AWS-03-1 (EXPIRES 1/8/08)
PROCEDURE QUALIFICATION RECORD AWS-03-2 (EXPIRES 1/9/08)

Z:\HS\JOBS\05017\wp1.dgn 04/27/05 10:01:17 AM

VTRANS
RECEIVED
CK'D BY _____ OK'D BY JWC
JUN 0 3 2005
RESUBMIT _____ APPROVED ✓
BY DATE 7-6-05

10355

MINIMUM PREHEAT AND INTERPASS TEMPERATURE

SHIELDED METAL-ARC WELDING WITH LOW HYDROGEN ELECTRODES, OR SUBMERGED ARC WELDING, OR FLUX CORED ARC WELDING

THICKNESS OF THICKEST PART AT POINT OF WELDING - (mm)	ASTM A-36, A-572, AND A-588 M183, M223, AND M222 ASTM A709, GRADE 250 ASTM A709, GRADE 345 ASTM A709, GRADE 345W
TO 19.1, INCL.	10°C
OVER 19.1 TO 38.1, INCL.	20°C
OVER 38.1 TO 63.5, INCL.	65°C
OVER 63.5	110°C

THE MAXIMUM PREHEAT TEMPERATURE SHALL NOT EXCEED 232°C.
THE MAXIMUM INTERPASS TEMPERATURE SHALL NOT EXCEED 288°C.

REFER TO THE FOLLOWING CHART FOR EQUIVALENT STEEL TYPES.

ASTM A-36 AND A-709 GRADE 36 AND AASHTO M183
ASTM A-572 AND A-709 GRADE 50 AND AASHTO M223
ASTM A-588 AND A-709 GRADE 50W AND AASHTO M222

CONTACT QUALITY CONTROL FOR PREHEAT REQUIREMENTS ON ANY STEEL NOT SPECIFICALLY NOTED ABOVE

REVISED:

ORIGINAL ISSUE: 3/4/96

Z:\HS\JOBS\05017\wp1.dgn 04/27/05 10:00:38 AM

VTRANS
RECEIVED
OK'D BY _____ OK'D BY Jue
JUN 0 3 2005
RESUBMIT _____ APPROVED
BY DATE 7-6-05

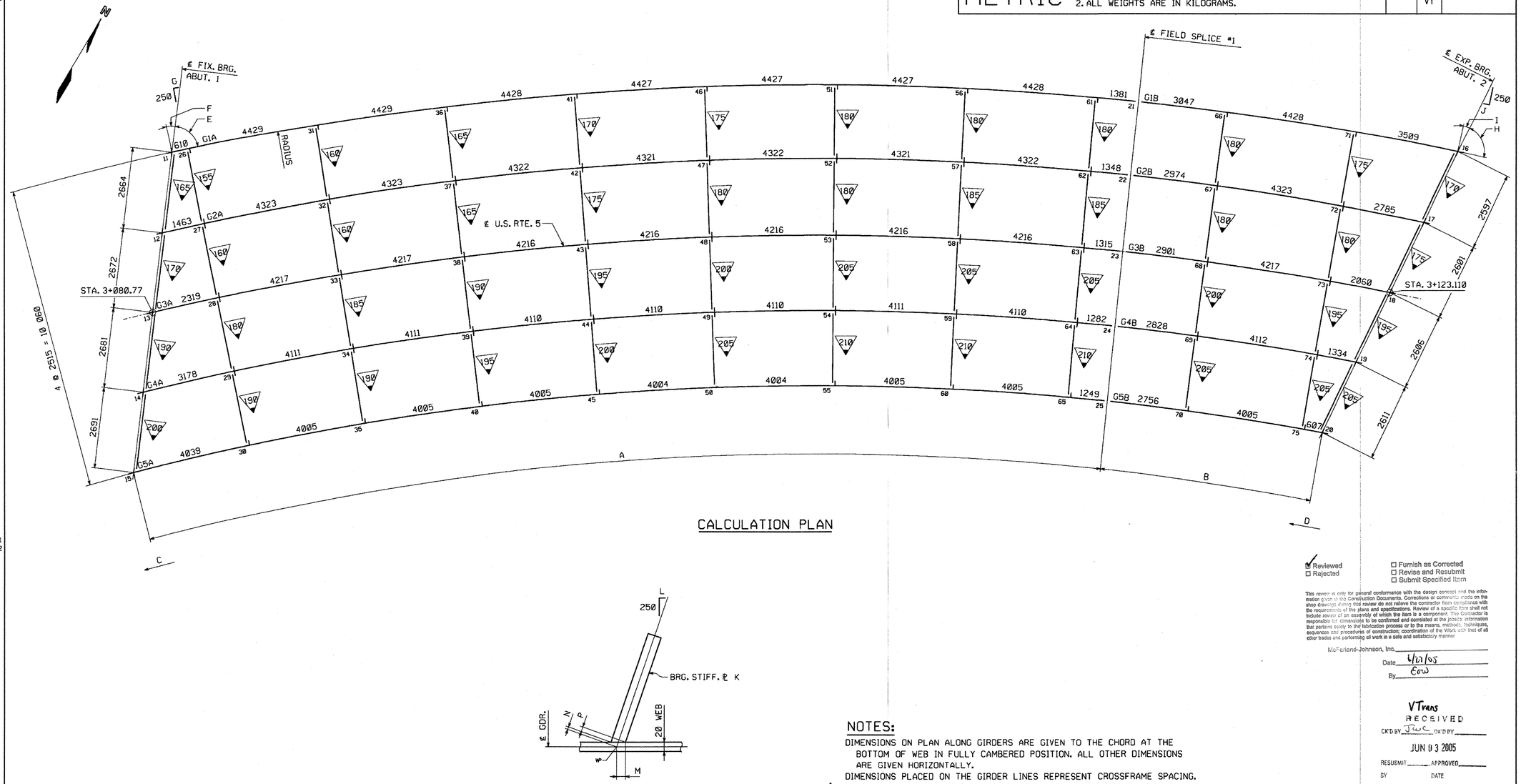
10455

METRIC

METRIC

1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE NOTED.
2. ALL WEIGHTS ARE IN KILOGRAMS.

FED. ROAD DIV. NO.	STATE	FED. AID PROJ. NO.
	VT	



CALCULATION PLAN

SKEWED BRG. STIFF. LAYOUT

PT. NO.	K	L	M	N	P
11	32 x 290	86	22	5	12
12	32 x 290	88	22	5	12
13	25 x 215	91	17	6	9
14	22 x 190	94	16	6	8
15	22 x 190	97	16	6	8
16	32 x 290	64	21	6	9
17	32 x 290	65	21	6	9
18	25 x 215	67	16	7	7
19	22 x 190	69	14	7	6
20	22 x 190	71	14	7	6

LINE	RADIUS	A	B	C ⚠	D ⚠	E	F	G	H	I	J
G1	105 030	32 986	10 984	.0110	.0027	70°-59'-44.2"	19°-00'-15.8"	86	75°-44'-02.4"	14°-15'-57.6"	64
G2	102 515	33 065	10 082	.0114	.0026	70°-30'-38.8"	19°-29'-21.2"	88	75°-22'-34.7"	14°-37'-25.3"	65
G3	100 000	33 148	9178	.0103	.0041	70°-00'-00.0"	20°-00'-00.0"	91	75°-00'-00.0"	15°-00'-00.0"	67
G4	97 485	33 233	8274	.0107	.0036	69°-27'-39.8"	20°-32'-20.2"	94	74°-36'-12.8"	15°-23'-47.2"	69
G5	94 970	33 321	7368	.0111	.0017	68°-53'-29.5"	21°-06'-30.5"	97	74°-11'-07.1"	15°-48'-52.9"	71

NOTES:

DIMENSIONS ON PLAN ALONG GIRDERS ARE GIVEN TO THE CHORD AT THE BOTTOM OF WEB IN FULLY CAMBERED POSITION. ALL OTHER DIMENSIONS ARE GIVEN HORIZONTALLY.
DIMENSIONS PLACED ON THE GIRDER LINES REPRESENT CROSSFRAME SPACING.
⚠ FIGURES GIVEN THUS: 0110 ARE THE GRADES OF THE GIRDERS AT THE BEARINGS IN FINAL POSITION; ARROW POINTS DOWNGRADE.
ALL STIFFENER AND CONNECTION PLATE SPACINGS ARE GIVEN TO ℄ PLATE.
ENDS OF GIRDERS AND ALL BEARING STIFFENERS TO BE VERTICAL IN FINAL POSITION.
ALL STEEL TO BE AASHTO M270M GR. 345W (U.N.).
IN UNPAINTED AREAS ALL FIELD CONNECTIONS TO BE MADE WITH ⅞"ø H.S. (A325 TYPE 3) BOLTS.
IN PAINTED AREAS ALL FIELD CONNECTIONS TO BE MADE WITH ⅞"ø H.S. (A325 TYPE 1) BOLTS (MECH. GALV. TO ASTM B695 CLASS 50.
FIGURES GIVEN THUS: ▽5 ARE THE DIFFERENCES IN ELEVATIONS OF GIRDERS (IN THE PLANE OF THE CROSSFRAME IN ERECTED POSITION) AT CROSSFRAMES; ARROW POINTS TOWARD LOW GIRDER.
FOR TYPICAL DETAIL LAYOUTS, SEE DRAWINGS PREFIXED 'TD'.
ALL STATIONS ARE GIVEN IN METERS.

NOTE
THE PURPOSE OF THIS DRAWING IS TO COORDINATE GEOMETRIC CONTROL INFORMATION. THIS DRAWING IS SUBMITTED FOR INFORMATION ONLY AND IS NOT INTENDED FOR SHOP FABRICATION. THIS DRAWING IS FOR REFERENCE ONLY, APPROVAL IS NOT REQUIRED.

☑ Reviewed ☐ Furnish as Corrected
☐ Rejected ☐ Revise and Resubmit
☐ Submit Specified Item

This review is only for general conformance with the design concept and the information given in the Construction Documents. Corrections or comments made on the shop drawings during this review do not relieve the contractor from compliance with the requirements of the plans and specifications. Review of a specific item shall not include review of an assembly of which the item is a component. The Contractor is responsible for dimensions to be confirmed and correlated at the jobsite; information that pertains solely to the fabrication process or to the means, methods, techniques, sequences and procedures of construction; coordination of the Work with that of all other trades and performing all work in a safe and satisfactory manner

McFarland-Johnson, Inc.
Date 4/11/05
By EOW

VTrans
RECEIVED
CK'D BY JWC CK'D BY
JUN 03 2005
RESUBMIT APPROVED
BY DATE

NO.	REVISION	BY	DATE
1	CAMBER DESIGN CHANGE	MGK	4-25-05

HIGH STEEL STRUCTURES, INC.
1770 Hempstead Road
Lancaster, PA 17605-0008
Phone 717/299-521
A Division of High Industries, Inc.

WORKSHEET - CALCULATION PLAN
U.S. RTE. 5 (BRIDGE #60) OVER LULLS BROOK
U.S. RTE. 5 STA. 3+080.77 TO STA. 3+123.110
TOWN OF HARTLAND
WINDSOR COUNTY, VERMONT
STATE OF VERMONT, AGENCY OF TRANSPORTATION

STATE CONTRACT OR REF. NO. PROJECT NO. BRS-0113(22)
CONTRACTOR MILLER CONSTRUCTION, INC.
IN CHARGE: GLIDDEN (IH) MADE BY: MGK CHK'D. BY: RC DATE: 4/11/05
CONTRACT NUMBER: VT-05017-1 DRAWING NUMBER: WS1 OF WS1

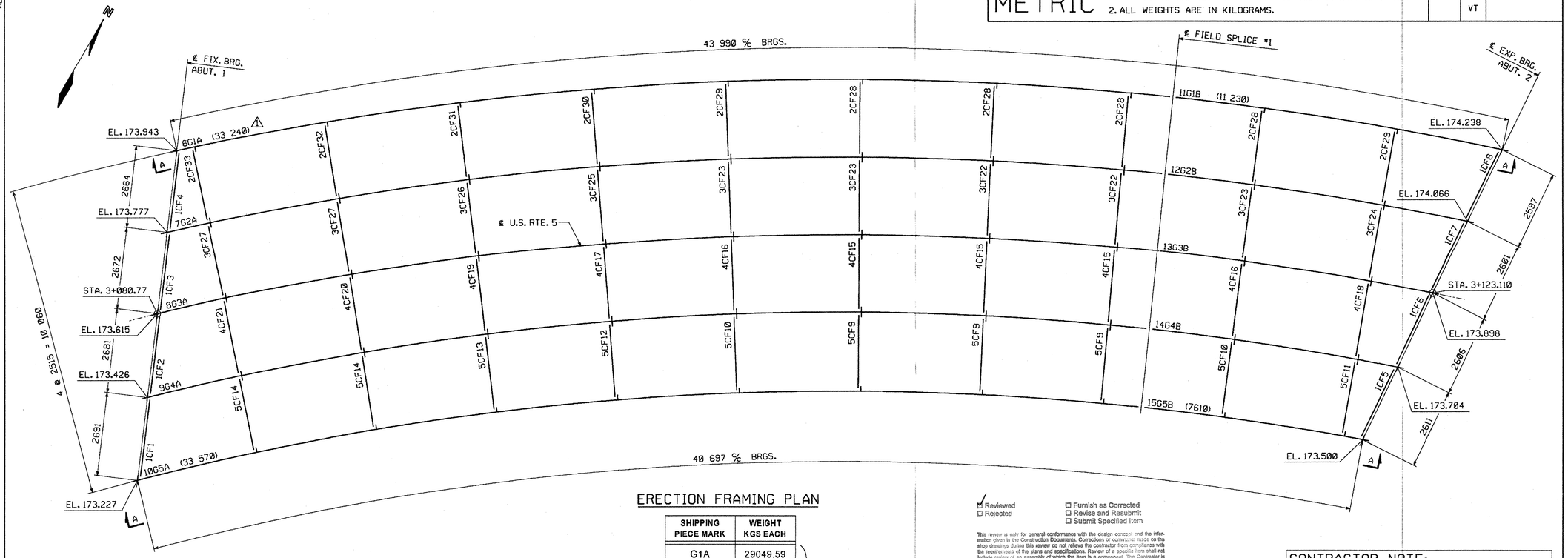
10555

05017 X2 5/12/05 5/Resubmit For Approval TO:Miller Construction, Inc.

Scale = 0.015000 of full size.
PLOTTED: 4/28/2005 9:38:34 AM
BY: mk-eudel

METRIC

METRIC	1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE NOTED. 2. ALL WEIGHTS ARE IN KILOGRAMS.	FED. ROAD DIV. NO.	STATE	FED. AID PROJ. NO.
			VT	



ERECTION FRAMING PLAN

SHIPPING PIECE MARK	WEIGHT KGS EACH
G1A	29049.59
G2A	29601.80
G3A	19582.59
G4A	17488.97
G5A	17104.96
G1B	9370.05
G2B	8922.99
G3B	5889.77
G4B	4836.31
G5B	4283.07

⚠

☑ Reviewed ☐ Furnish as Corrected
☐ Rejected ☐ Revise and Resubmit
☐ Submit Specified Item

This review is only for general conformance with the design concept and the information given in the Construction Documents. Corrections or comments made on the shop drawings during this review do not relieve the contractor from compliance with the requirements of the plans and specifications. Review of a specific item shall not include review of an assembly of which the item is a component. The Contractor is responsible for: dimensions to be confirmed and correlated at the jobsite; information that pertains solely to the fabrication process or to the means, methods, techniques, sequences and procedures of construction; coordination of the Work with that of all other trades and performing all work in a safe and satisfactory manner.

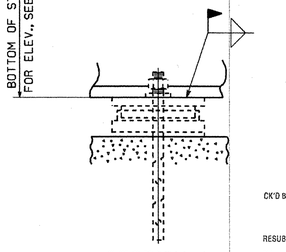
McFarland-Johnson, Inc.
Date 4/28/05
By EW

NOTES:

NO CREDIT WILL BE ALLOWED FOR WORK PERFORMED BY OTHERS IN REPLACING OR CORRECTING MATERIALS OR WORKMANSHIP COVERED BY THIS DRAWING UNLESS EXPRESSLY AUTHORIZED BY HIGH STEEL STRUCTURES, INC.
ALL FIELD CONNECTIONS IN UNPAINTED AREAS TO BE MADE WITH ⅞"ø HIGH STRENGTH (A325, TYPE 3) BOLTS.
ALL FIELD CONNECTIONS IN PAINTED AREAS TO BE MADE WITH ⅞"ø HIGH STRENGTH (A325, TYPE 1) BOLTS (MECH. GALV. ASTM B-695, CLASS 50.
ALL DIMENSIONS ARE GIVEN HORIZONTALLY (U.N.).
DIMENSIONS GIVEN THUS: (33 240) ARE THE SHIPPING LENGTHS OUT TO OUT OF FASCIA GIRDERS. ⚠
HIGH STEEL STRUCTURES, INC. DOES NOT SUPPLY SHEAR STUDS, EXPANSION DAM MATERIAL, SCUPPERS OR ANY OTHER BRIDGE DRAINAGE MATERIAL, BEARING ASSEMBLIES INCLUDING PADS AND ANCHOR BOLTS.
SEE DRAWING SA1 FOR MATCH MARKING SYSTEM.
WORK THIS DRAWING WITH DRAWING E2.
NOTICE: WEIGHTS OF MEMBERS LISTED ON THESE DRAWINGS ARE ESTIMATED WEIGHTS AND ACTUAL WEIGHTS WILL VARY. HIGH STEEL STRUCTURES, INC. WILL NOT BE RESPONSIBLE FOR ANY ERECTION PROCEDURES, SHIPPING PROCEDURES, ETC. DEVELOPED USING ESTIMATED WEIGHTS AS SHOWN.
ERECTOR NOTE: ELEVATIONS, CAMBER CHECKS AND HORIZONTAL ALIGNMENT OF FIELD SPLICES MUST BE COMPLETED PRIOR TO FINAL BOLTING. HIGH STEEL STRUCTURES IS TO BE NOTIFIED AND CONSULTED, PRIOR TO FINAL BOLTING, IF SPLICE LOCATIONS ARE NOT WITHIN ACCEPTABLE TOLERANCE. BOTH VERTICAL & HORIZONTAL CORRECTION OF ANY UNACCEPTABLE SPLICES AFTER FINAL BOLTING WILL BE AT NO COST TO HIGH STEEL STRUCTURES.
NOTICE TO ERECTOR & CONTRACTOR: THIS STRUCTURAL STEEL IS BEING DELIVERED WITH THE FINAL FINISH COAT APPLIED. YOUR SPECIAL ATTENTION REQUIRES EXTREME CARE AND APPROPRIATE EQUIPMENT FOR HANDLING DURING ERECTION AND SUBSEQUENT FIELD OPERATIONS. HIGH STEEL STRUCTURES, INC. WILL NOT BE RESPONSIBLE FOR ANY TOUCH-UP REQUIRED DUE TO YOUR FAILURE TO PROPERLY PROTECT FINISH PAINT.
ANCHOR BOLTS MUST BE SET BEFORE CROSSFRAMES AT BEARINGS ARE ERECTED.
ALL FIELD BOLTS THRU BOTTOM FLANGE ARE TO HAVE HEADS UP.
ALL FIELD BOLTS THRU WEB OF FASCIA GIRDERS ARE TO HAVE HEADS ON OUTSIDE OF WEB.
THE SHIPPING MARKS SHOWN CONSIST OF THE PREFIX INDICATING THE SHEET NUMBER UPON WHICH THE PIECE IS DETAILED ALONG WITH THE SHIPPING PIECE MARK.
ALL ELEVATIONS AND STATIONS ARE GIVEN IN METERS.
FILL GAP BETWEEN INSIDE SPLICE PLATES AND WEB AT BOTTOM FLANGE WITH SILICON CAULKING AS APPROVED BY ENGINEER (NOT BY H.S.S.I.).

CONTRACTOR NOTE:

ELEVATIONS ARE GIVEN TO BOTTOM OF STEEL - DO NOT POUR TO FINAL ELEVATIONS WITHOUT VERIFICATION OF BEARING HEIGHTS AND BRIDGE SEATS.



SECTION A

VTrans RECEIVED
CK'D BY JWC OK'D BY
JUN 03 2005
RESUBMIT APPROVED
BY DATE

ERECTOR NOTE: ALL BOLTS MUST BE LOCATED IN ACCORDANCE WITH THIS LIST OF FIELD CONNECTIONS. HIGH STEEL STRUCTURES WILL NOT BE RESPONSIBLE FOR FURNISHING ADDITIONAL BOLTS OR FOR ANY OTHER RELATED COSTS OR DAMAGES RESULTING FROM IMPROPER LOCATIONS OF BOLTS

LIST OF FIELD CONNECTIONS — ONE WASHER PER BOLT UNLESS NOTED OTHERWISE

LINE	ACTUAL NUMBER REQ'D	BOLT DIAM.	BOLT LENGTH	BOLTS PER CONN.	NO. OF CONN	GRIP	THICKNESS OF PIECES JOINED					PIECES CONNECTED AND REMARKS
1												ASTM A325 , TYPE 3
2	560	7/8	3 1/2	112	5	51.8	15.9	20	15.9			WEB SPLICE
3	144	7/8	6	72	2	120	34.9	45	34.9	5.0		TOP FLG. SPLICES @ G1, G2 W/2 WASHERS
4	144	7/8	7	72	2	140	34.9	65	34.9	5.0		BOTT. FLG. SPLICE @ G1, G2 W/2 WASHERS
5	32	7/8	4	32	1	66.2	20.6	25	20.6			TOP FLG. SPLICE @ G3
6	32	7/8	4 1/4	32	1	73.2	20.6	32	20.6			BOTT. FLG. SPLICE @ G3
7	96	7/8	3 1/4	24	4	50.6	14.3	22	14.3			TOP & BOTT. FLG. SPLICE @ G4, G5
8	42	7/8	3 1/4	14	3	50.8	34.9	15.9				END CROSSFRAME - BRG. STIFF. TO GUSSET PLATE @ G1, G2 IN UNPAINTED AREA
9	28	7/8	3	14	2	41.3	25.4	15.9				END CROSSFRAME - BRG. STIFF. TO GUSSET PLATE @ G3 IN UNPAINTED AREA
10	42	7/8	2 3/4	14	3	38.1	22.2	15.9				END CROSSFRAME - BRG. STIFF. TO GUSSET PLATE @ G4, G5 IN UNPAINTED AREA
11	1480	7/8	2 1/2	20	74	31.8	15.9	15.9				INTERMEDIATE CROSSFRAME - CONN. PLATE TO GUSSET PLATE IN UNPAINTED AREA
12												ASTM A325 , TYPE 1
13	42	7/8	3 1/4	14	3	50.8	34.9	15.9				END CROSSFRAME - BRG. STIFF. TO GUSSET PLATE @ G1, G2 IN PAINTED AREA
14	28	7/8	3	14	2	41.3	25.4	15.9				END CROSSFRAME - BRG. STIFF. TO GUSSET PLATE @ G3 IN PAINTED AREA
15	42	7/8	2 3/4	14	3	38.1	22.2	15.9				END CROSSFRAME - BRG. STIFF. TO GUSSET PLATE @ G4, G5 IN PAINTED AREA
16	120	7/8	2 1/2	20	6	31.8	15.9	15.9				INTERMEDIATE CROSSFRAME - CONN. PLATE TO GUSSET PLATE IN PAINTED AREA
17												

FIELD BOLT SUMMARY

(4% ADDITIONAL BOLTS ADDED + 3 EA. FOR TESTING)

ASTM A325 TYPE 3 BOLTS WITH HVY. HEX HEAD AND ASTM A563 GRADE DH3 HVY. HEX NUT

153 - ⅞"ø HIGH STRENGTH BOLTS x 0'-7
153 - ⅞"ø HIGH STRENGTH BOLTS x 0'-6
37 - ⅞"ø HIGH STRENGTH BOLTS x 0'-4¼
37 - ⅞"ø HIGH STRENGTH BOLTS x 0'-4
585 - ⅞"ø HIGH STRENGTH BOLTS x 0'-3½
147 - ⅞"ø HIGH STRENGTH BOLTS x 0'-3¼
33 - ⅞"ø HIGH STRENGTH BOLTS x 0'-3
47 - ⅞"ø HIGH STRENGTH BOLTS x 0'-2¾
1542 - ⅞"ø HIGH STRENGTH BOLTS x 0'-2½
} (RCT)

3034 HARD. FLAT F436 WEATHERING WASHERS FOR ⅞"ø H. S. BOLTS

ASTM A325 TYPE 1 BOLTS WITH HVY. HEX HEAD AND ASTM A563 GRADE DH HVY. HEX NUT

47 - ⅞"ø HIGH STRENGTH BOLTS x 0'-3¼
33 - ⅞"ø HIGH STRENGTH BOLTS x 0'-3
47 - ⅞"ø HIGH STRENGTH BOLTS x 0'-2¾
128 - ⅞"ø HIGH STRENGTH BOLTS x 0'-2½
} (RCT) MECH. GALV. TO B695 CLASS 50

255 HARD. FLAT F436 WASHERS FOR ⅞"ø H. S. BOLTS

(RCT) INDICATES ROTATIONAL CAPACITY TESTED BOLTS. DO NOT MIX NUTS, BOLTS AND WASHERS FROM DIFFERENT CONTAINERS UNLESS ALL NUTS, BOLTS AND WASHERS HAVE THE SAME LOT NUMBER.

NO.	REVISION	BY	DATE
1	CAMBER DESIGN CHANGE	MGK	4-25-05

HIGH STEEL STRUCTURES, INC.
1770 Hempstead Road
Lancaster, PA 17605-0008
Phone 717/299-5211
A Division of High Industries, Inc.

ERECTION FRAMING PLAN
U.S. RTE. 5 (BRIDGE #50) OVER LULLS BROOK
U.S. RTE. 5 STA. 3+080.77 TO STA. 3+123.110
TOWN OF HARTLAND
WINDSOR COUNTY, VERMONT
STATE OF VERMONT, AGENCY OF TRANSPORTATION

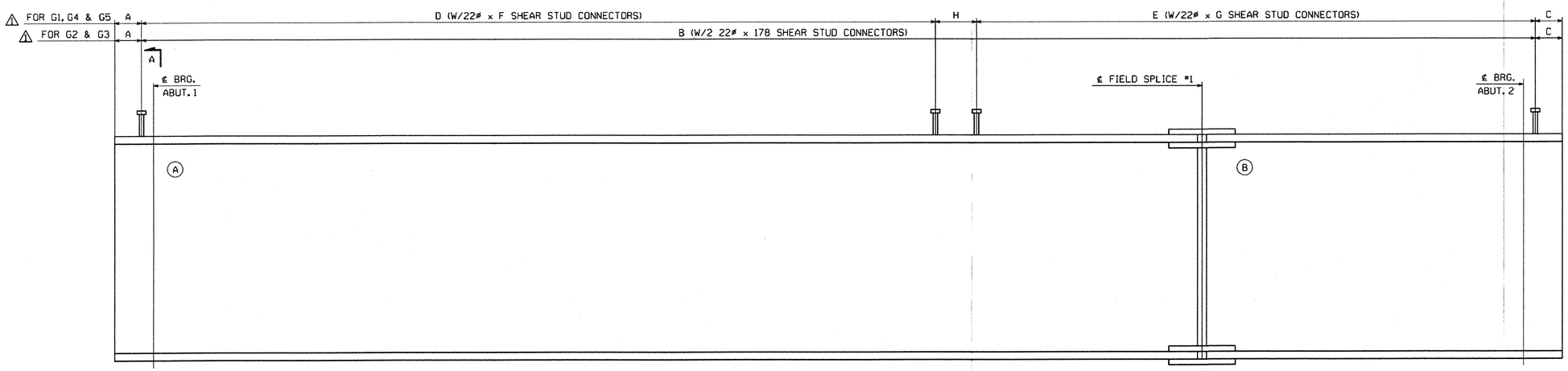
STATE CONTRACT OR REF. NO. PROJECT NO. BRS-0113(22)
CONTRACTOR MILLER CONSTRUCTION, INC.
IN CHARGE: GLIDDEN (IH) MADE BY: MGK CHK'D. BY: RC DATE: 4-18-05
CONTRACT NUMBER: VT-05017-1 DRAWING NUMBER: E1 OF E2

10655

PLOTTED: 4/28/2005 9:38:37 AM BY: mkreidel

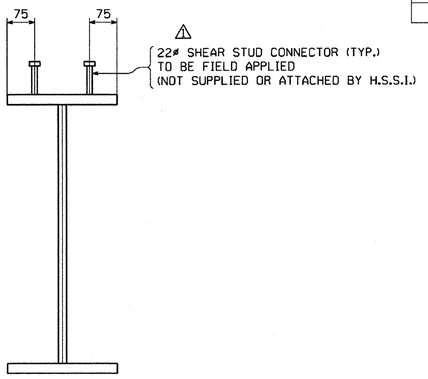
METRIC

METRIC	1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE NOTED. 2. ALL WEIGHTS ARE IN KILOGRAMS.	FED. ROAD DIV. NO.	STATE	FED. AID PROJ. NO.
			VT	



SHEAR STUD CONNECTOR LOCATION LAYOUT

GDR. LINE	A	B	C	D	E	F	G	H
G1	215	--	215	22 @ 355 = 7810	101 @ 355 = 35 855	225	178	355
G2	197	131 @ 330 = 43 230	197	--	--	--	--	--
G3	278	119 @ 355 = 42 245	277	--	--	--	--	--
G4	253	--	253	94 @ 432 = 40 608	1 @ 432 = 432	178	225	432
G5	242	--	242	82 @ 457 = 37 474	6 @ 457 = 2742	178	225	457
		⚠		⚠	⚠	⚠	⚠	⚠



SECTION A

☑ Reviewed
☐ Rejected
☐ Furnish as Corrected
☐ Revise and Resubmit
☐ Submit Specified Item

This review is only for general conformance with the design concept and the information given in the Construction Documents. Corrections or comments made on the shop drawings during this review do not relieve the contractor from compliance with the requirements of the plans and specifications. Review of a specific item shall not include review of an assembly of which the item is a component. The Contractor is responsible for: dimensions to be confirmed and correlated at the jobsite; information that pertains solely to the fabrication process or to the means, methods, techniques, sequences and procedures of construction; coordination of the Work with that of all other trades and performing all work in a safe and satisfactory manner.

McFarland-Johnson, Inc.
Date 4/28/05
By DRW

VTrans RECEIVED
CK'D BY JWC OK'D BY
JUN 03 2005
RESUBMIT APPROVED
BY DATE

NOTES:

FOR NOTES, SEE DRAWING E1.
WORK THIS DRAWING WITH DRAWING E1.
(A) INDICATES SUFFIX MARK OF SHIPPING PIECE.

NO.	REVISION	BY	DATE
1	DESIGN CHANGE	MGK	4-26-05

HIGH STEEL STRUCTURES, INC.
1770 Hempstead Road
Lancaster, PA 17605-0008
Phone 717/299-5211
A Division of High Industries, Inc.

ERECTION PLAN - STUD LAYOUTS
U.S. RTE. 5 (BRIDGE #60) OVER LULLS BROOK
U.S. RTE. 5 STA. 3+080.77 TO STA. 3+123.110
TOWN OF HARTLAND
WINDSOR COUNTY, VERMONT
STATE OF VERMONT, AGENCY OF TRANSPORTATION

STATE CONTRACT OR REF. NO. PROJECT NO. BRS-0113(22)
CONTRACTOR MILLER CONSTRUCTION, INC.
IN CHARGE: GLIDDEN (IH) MADE BY: MGK CHK'D BY: RC DATE: 4-18-05
CONTRACT NUMBER: VT-05017-1 DRAWING NUMBER: E2 OF E2

10755

PLOTTED: 4/28/2005 9:38:38 AM BY: mk-rudel

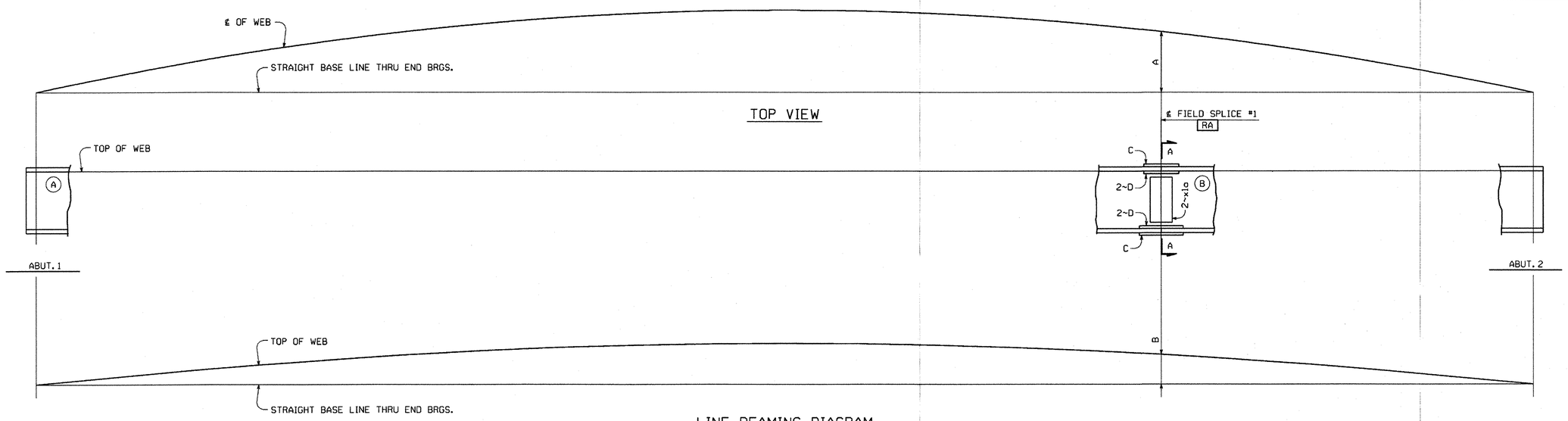
60

05017 X2 5/12/05 5/Resubmit For Approval TO:Miller Construction, Inc.

METRIC

METRIC 1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE NOTED.
2. ALL WEIGHTS ARE IN KILOGRAMS.

FED. ROAD DIV. NO.	STATE	FED. AID PROJ. NO.
	VT	



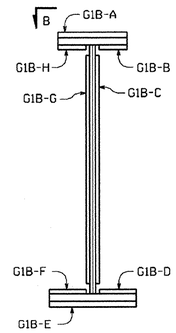
LINE REAMING DIAGRAM

GDR. LINE	A	B	C	D
G1	1721	125	x1b	x1c
G2	1622	103	x1b	x1c
G3	1517	83	x1d	x1f
G4	1406	68	x1g	x1h
G5	1288	55	x1g	x1h

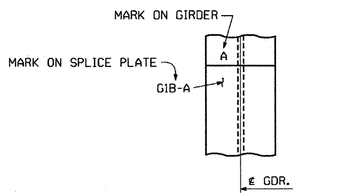
⚠

NOTES:

ALL SPLICE PLATES ARE MATCH MARKED AFTER REAMING AS SHOWN IN SECTION A-A.
THE MATCH MARKS ON THE SPLICE MATERIAL CONSIST OF THE MARK OF THE GIRDER THEY ARE SHIPPED WITH AND A SUFFIX. THE MARKINGS ARE LOCATED ON THE STEEL AT THE END OF THE SPLICE MATERIAL WHICH IS ON THE GIRDER IT IS SHIPPED WITH. MATCH MARKING MARKS WILL APPEAR ON EDGES OF PLATES. THE CORRESPONDING SUFFIX (A, B, C, ETC.) IS MARKED NEAR THE SPLICE PLATE ON THE GIRDER (SEE VIEW B.)
FOR GIRDER MARKS, SEE THE ERECTION FRAMING PLAN DRAWINGS.
HOLES MARKED [RA] ARE TO BE SUB-PUNCHED/SUB-DRILLED ¼"ø UNDER SIZE AND REAMED TO FULL SIZE OR DRILLED FROM SOLID WITH CONNECTING PARTS ASSEMBLED AND MATCH MARKED. HOLES TO BE $^{15}/_{16}$"ø.
(A) INDICATES SUFFIX MARK OF SHIPPING PIECE.



SECTION A-A FOR G1B
(G2B THRU G5B SIMILAR)



VIEW B
(ROTATE 180° WHERE REQUIRED)
(HOLES NOT SHOWN FOR CLARITY)

☑ Reviewed
☐ Rejected
☐ Furnish as Corrected
☐ Revise and Resubmit
☐ Submit Specified Item

This review is only for general conformance with the design concept and the information given in the Construction Documents. Corrections or comments made on the shop drawings during this review do not relieve the contractor from compliance with the requirements of the plans and specifications. Review of a specific item shall not include review of an assembly of which the item is a component. The Contractor is responsible for: dimensions to be confirmed and correlated at the jobsite; information that pertains solely to the fabrication process or to the means, methods, techniques, sequences and procedures of construction; coordination of the Work with that of all other trades and performing all work in a safe and satisfactory manner.

McFarland-Johnson, Inc.
Date 6/1/05
By EDS

VTrans
RECEIVED
CK'D BY JWC OK'D BY
JUN 0 3 2005
RESUBMIT APPROVED
BY DATE

NO.	REVISION	BY	DATE
1	CAMBER DESIGN CHANGE	MGK	4-26-05

HIGH STEEL STRUCTURES, INC.
1770 Hempstead Road
Lancaster, PA 17605-0008
Phone 717/299-5211
A Division of High Industries, Inc.

SHOP ASSEMBLY DIAGRAM
U.S. RTE. 5 (BRIDGE #60) OVER LULLS BROOK
U.S. RTE. 5 STA. 3+080.77 TO STA. 3+123.110
TOWN OF HARTLAND
WINDSOR COUNTY, VERMONT
STATE OF VERMONT, AGENCY OF TRANSPORTATION

STATE CONTRACT OR REF. NO. PROJECT NO. BRS-0113(22)
CONTRACTOR MILLER CONSTRUCTION, INC.
IN CHARGE: GLIDDEN (IH) MADE BY: MGK CHK'D. BY: RC DATE: 4-13-05
CONTRACT NUMBER: VT-05017-1 DRAWING NUMBER: SA1 OF SA1

10855

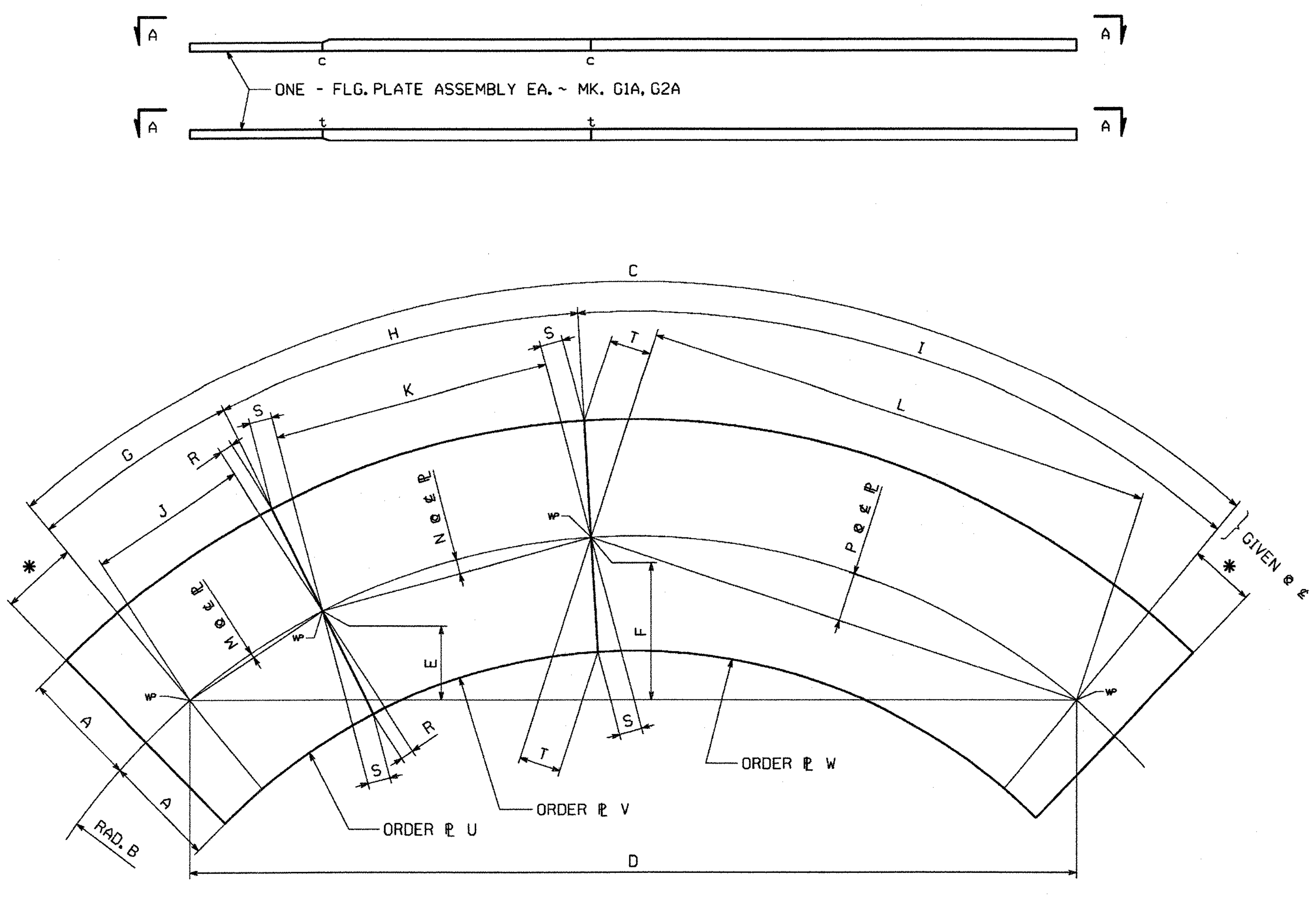
PLOTTED: 4/28/2005 9:38:59 AM BY: mkreidel

05017 X2 5/12/05 5/Resubmit For Approval TO:Miller Construction, Inc.

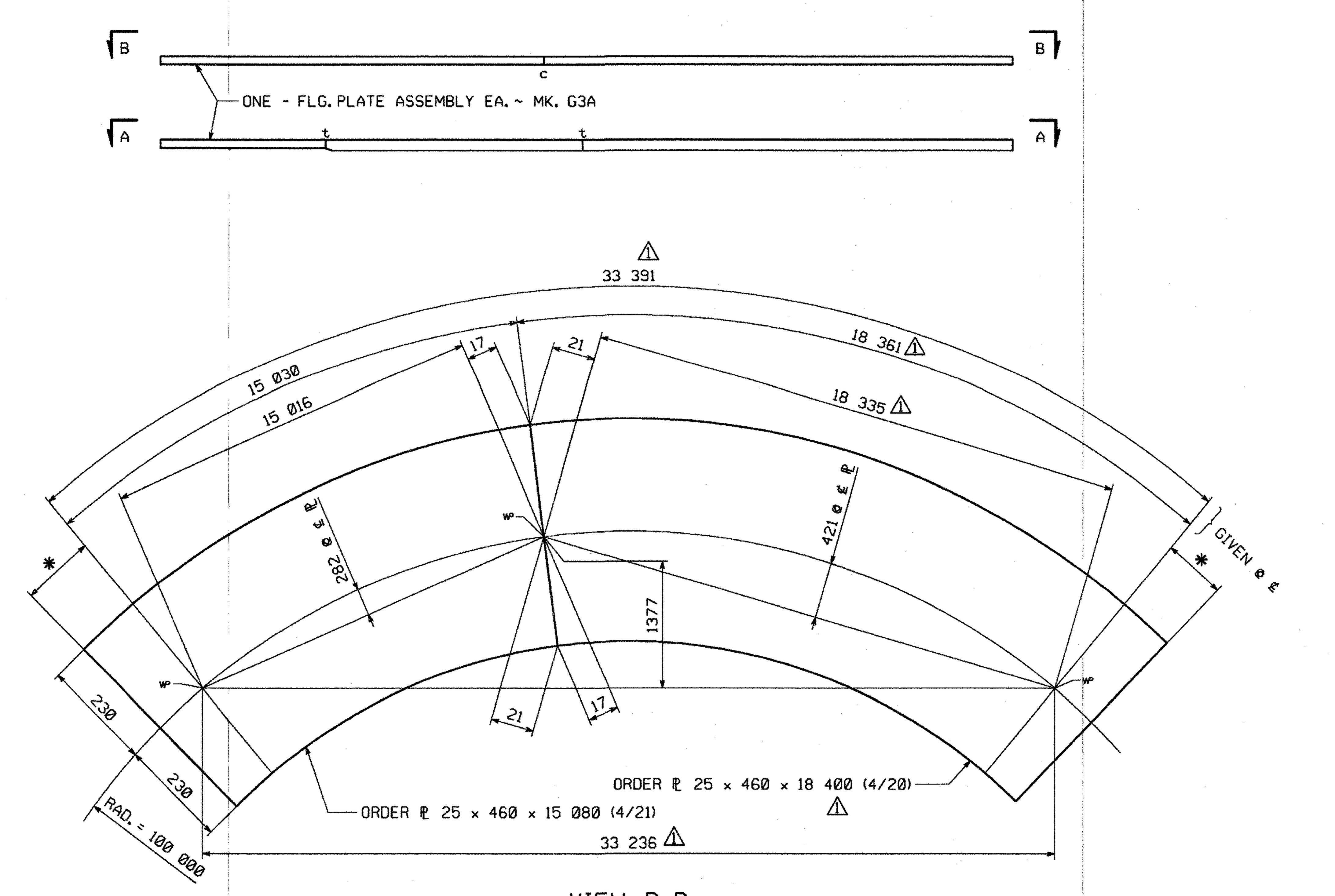
METRIC

1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE NOTED.
2. ALL WEIGHTS ARE IN KILOGRAMS.

FED. ROAD DIV. NO.	STATE	FED. AID PROJ. NO.
	VT	



VIEW A-A



VIEW B-B

MARK	FLANGE	A	B	C ⚠1	D ⚠1	E	F ⚠1	G	H	I ⚠1	J	K	L ⚠1	M	N	P	R	S	T
G1A	TOP	305	105 030	33 239	33 100	667	1300	4970	10 060	18 209	4970	10 056	18 186	29	120	394	7	15	26
G2A	TOP	305	102 515	33 313	33 166	767	1346	5716	10 064	17 533	5715	10 060	17 511	40	123	375	9	15	26
G1A	BOTT.	305	105 030	33 214	33 076	666	1298	4970	10 060	18 184	4970	10 056	18 161	29	120	393	7	15	26
G2A	BOTT.	305	102 515	33 293	33 147	766	1345	5716	10 064	17 513	5715	10 060	17 491	40	123	374	9	15	26
G3A	BOTT.	230	100 000	33 376	33 221	867	1389	6466	10 064	16 846	6465	10 060	16 826	52	127	355	7	12	19

MARK	FLANGE	U	V	W ⚠1
G1A	TOP	32 x 610 x 5020 (4/16)	45 x 610 x 10 120 [10 060] (4/7)	45 x 610 x 18 260 (4/5)
G2A	TOP	32 x 610 x 5760 (4/14)	45 x 610 x 10 120 [10 064] (4/7)	45 x 610 x 17 600 (4/6)
G1A	BOTT.	32 x 610 x 5020 (T) (4/15)	65 x 610 x 10 120 [10 060] (T) (4/3)	65 x 610 x 18 240 (T) (4/1)
G2A	BOTT.	32 x 610 x 5760 (T) (4/13)	65 x 610 x 10 120 [10 064] (T) (4/3)	65 x 610 x 17 580 (T) (4/2)
G3A	BOTT.	25 x 460 x 6500 (T) (4/23)	32 x 460 x 10 120 [10 064] (T) (4/18)	32 x 460 x 16 900 (T) (4/17)

☑ Reviewed ☐ Furnish as Corrected
☐ Rejected ☐ Revise and Resubmit
☐ Submit Specified Item

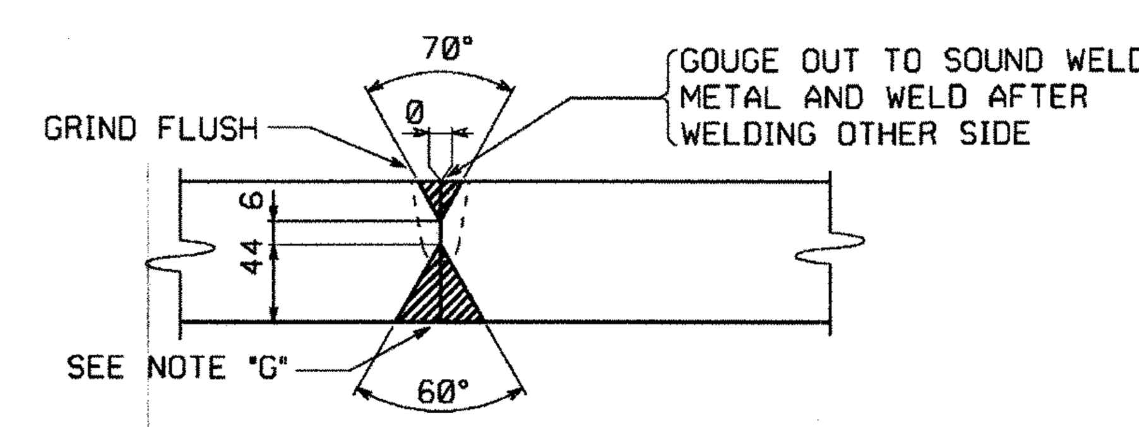
This review is only for general conformance with the design concept and the information given in the Construction Documents. Corrections or comments made on the shop drawings during this review do not relieve the contractor from compliance with the requirements of the plans and specifications. Review of a specific item shall not include review of an assembly of which the item is a component. The Contractor is responsible for: dimensions to be confirmed and correlated at the jobsite; information that pertains solely to the fabrication process or to the means, methods, techniques, sequences and procedures of construction; coordination of the Work with that of all other trades and performing all work in a safe and satisfactory manner

McFarland-Johnson, Inc.
Date 6/21/05
By EGW

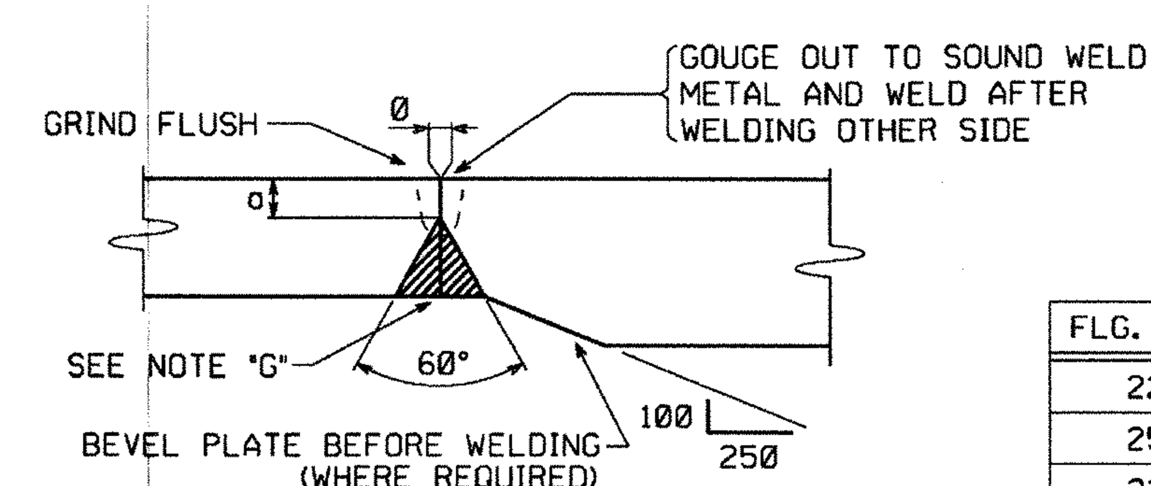
VTrans
RECEIVED
CK'D BY JWC OK'D BY
JUN 0 3 2005
RESUBMIT ____ APPROVED ____
BY DATE

NOTES:

FOR GENERAL SHOP NOTES, SEE DRAWING GN1.
(T) INDICATES PLATES THAT REQUIRE CHARPY V-NOTCH TEST.
DIMENSIONS SHOWN THUS: [10 060] ARE THE ACTUAL DIMENSIONS THAT WILL APPEAR ON THE GIRDER DETAIL DRAWINGS.
THE LETTERS "t" & "c" AT FLANGE SPLICES INDICATE TENSION AND COMPRESSION SPLICES RESPECTIVELY.
ALL SPLICES MARKED "t" TO BE RADIOGRAPHICALLY TESTED 100%.
ALL SPLICES MARKED "c" TO BE RADIOGRAPHICALLY TESTED 25%.
ARC DIMENSIONS ARE GIVEN TO ENDS OF PLATES AS DETAILED ON GIRDER DETAILS.
* INDICATES FLANGE OVER RUN THAT IS TO BE TRIMMED AFTER FLANGE IS WELDED TO WEB.
WORK THIS DRAWING WITH DRAWINGS FS2 & FS3.



TYPICAL FLANGE PLATE SPLICE
FOR FLANGE PLATES THICKER THAN 50 mm (B-U3c-S)



TYPICAL FLANGE PLATE SPLICE
FOR FLANGE PLATES 50 mm THICK AND UNDER (B-L2c-S)

FLG. THK.	a
22	7
25	7
32	10
45	13

NOTE "G"

ALL SPLICES MAY HAVE A MAXIMUM REINFORCEMENT OF 3 mm. GRIND SMOOTH AT SPLICES THAT ARE TO BE TESTED AND ALL BOTTOM FLANGE SPLICES.

CODE: 30

NO.	REVISION	BY	DATE
⚠			
⚠			
⚠1	CAMBER DESIGN CHANGE	MGK	4-26-05

HIGH STEEL STRUCTURES, INC.
1770 Hempstead Road
Lancaster, PA 17605-0008
Phone 717/299-5211
A Division of High Industries, Inc.

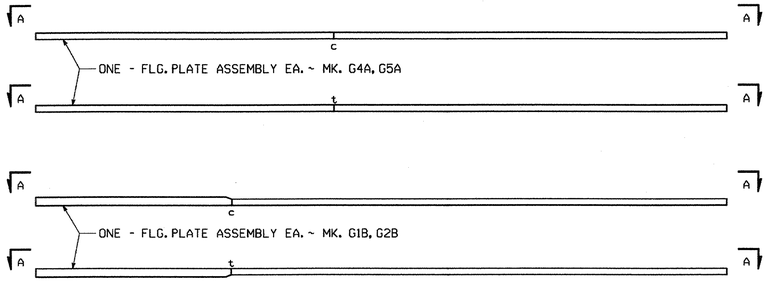
FLANGE SPLICE DETAILS
U.S. RTE. 5 (BRIDGE #60) OVER LULLS BROOK
U.S. RTE. 5 STA. 3+080.77 TO STA. 3+123.110
TOWN OF HARTLAND
WINDSOR COUNTY, VERMONT
STATE OF VERMONT, AGENCY OF TRANSPORTATION
STATE CONTRACT OR REF. NO. PROJECT NO. BRS-0113(22)
CONTRACTOR MILLER CONSTRUCTION, INC.
IN CHARGE: GLIDDEN (IH) MADE BY: DBM CHK'D. BY: MGK DATE: 4/15/05
CONTRACT NUMBER: VT-05017-1 DRAWING NUMBER: FS1 OF FS3

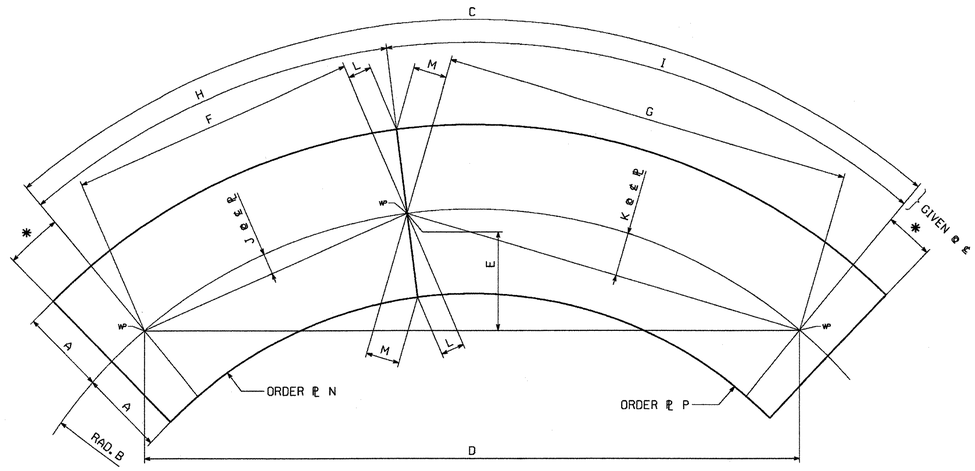
PLOTTED: 4/28/2005 9:38:40 AM
BY: mkreidel

10955

05017 X2 5/12/05 5/Resubmit For Approval TO:Miller Construction, Inc.

METRIC





VIEW A-A

MARK	FLANGE	A	B	⚠ C	⚠ D	⚠ E	⚠ F	⚠ G	⚠ H	⚠ I	J	K	L	M	N	P
G4A	TOP	205	97 485	33 471	33 307	1421	15 215	18 215	15 230	18 241	297	426	16	19	22 × 410 × 15 280 (4/32)	22 × 410 × 18 280 (4/28)
G5A	TOP	205	94 970	33 556	33 382	1466	15 214	18 298	15 230	18 326	305	442	16	20	22 × 410 × 15 280 (4/31)	22 × 410 × 18 360 (4/26)
G4A	BOTT.	205	97 485	33 460	33 296	1421	15 215	18 204	15 230	18 230	297	426	16	19	22 × 410 × 15 280 (T) (4/30)	22 × 410 × 18 280 (T) (4/27)
G5A	BOTT.	205	94 970	33 548	33 374	1465	15 214	18 290	15 230	18 318	305	441	16	20	22 × 410 × 15 280 (T) (4/29)	22 × 410 × 18 360 (T) (4/25)
G1B	TOP	305	105 030	11 230	11 225	126	3360	7868	3360	7870	13	74	5	11	45 × 610 × 3400 (4/8)	32 × 610 × 7920 (4/10)
G2B	TOP	305	102 515	10 326	10 322	113	3286	7039	3286	7040	13	60	5	10	45 × 610 × 3400 (4/8)	32 × 610 × 7080 (4/12)
G1B	BOTT.	305	105 030	11 211	11 206	125	3341	7868	3341	7870	13	74	5	11	65 × 610 × 3380 (T) (4/4)	32 × 610 × 7920 (T) (4/9)
G2B	BOTT.	305	102 515	10 309	10 305	112	3269	7039	3269	7040	13	60	5	10	65 × 610 × 3380 (T) (4/4)	32 × 610 × 7080 (T) (4/11)

METRIC	1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE NOTED. 2. ALL WEIGHTS ARE IN KILOGRAMS.	FED. ROAD DIV. NO.	STATE	FED. AID PROJ. NO.
			VT	

☑ Reviewed ☐ Furnish as Corrected
☐ Rejected ☐ Revise and Resubmit
☐ Submit Specified Item

This review is only for general conformance with the design concept and the information given in the Construction Documents. Corrections or comments made on the shop drawings during this review do not relieve the contractor from compliance with the requirements of the plans and specifications. Review of a specific item shall not include review of an assembly of which the item is a component. The Contractor is responsible for: dimensions to be confirmed and correlated at the jobsite; information that pertains solely to the fabrication process or to the means, methods, techniques, sequences and procedures of construction; coordination of the Work with that of all other trades and performing all work in a safe and satisfactory manner

McFarland-Johnson, Inc.
Date 6/21/05
By

VTrans
RECEIVED
CK'D BY JWC OK'D BY
JUN 03 2005
RESUBMIT APPROVED
BY DATE

NOTES:

FOR WELDING DETAILS, SEE DWG. FS1.
FOR OTHER NOTES, SEE DWG. FS1.

NO.	REVISION	BY	DATE
⚠			
⚠			
⚠1	CAMBER DESIGN CHANGE	MGK	4-26-05

HIGH STEEL STRUCTURES, INC.
1770 Hempstead Road
Lancaster, PA 17605-0008
Phone 717/299-5211
A Division of High Industries, Inc.

FLANGE SPLICE DETAILS
U.S. RTE. 5 (BRIDGE #60) OVER LULLS BROOK
U.S. RTE. 5 STA. 3+080.77 TO STA. 3+123.110
TOWN OF HARTLAND
WINDSOR COUNTY, VERMONT
STATE OF VERMONT, AGENCY OF TRANSPORTATION

STATE CONTRACT OR REF. NO. PROJECT NO. BRS-0113(22)
CONTRACTOR MILLER CONSTRUCTION, INC.
IN CHARGE: GLIDDEN (IH) MADE BY: DBM CHK'D. BY: MGK DATE: 4/15/05
CONTRACT NUMBER: VT-05017-1 DRAWING NUMBER: FS2 OF FS3

CODE: 30

1105S

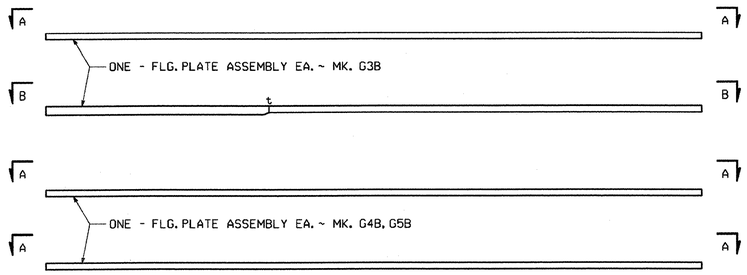
05017 X2 5/12/05 5/Resubmit For Approval TO:Miller Construction, Inc.

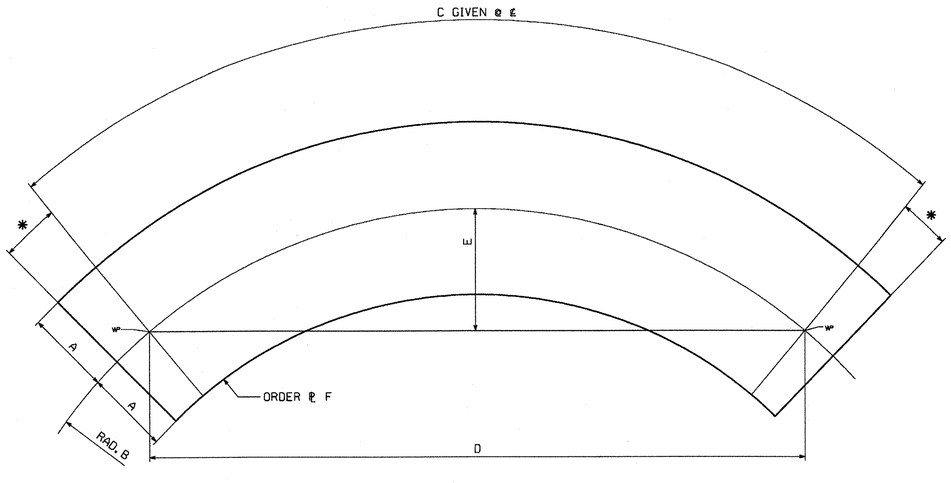
PLOTTED: 4/29/2005 9:38:41 AM BY: mkreidel

1-2

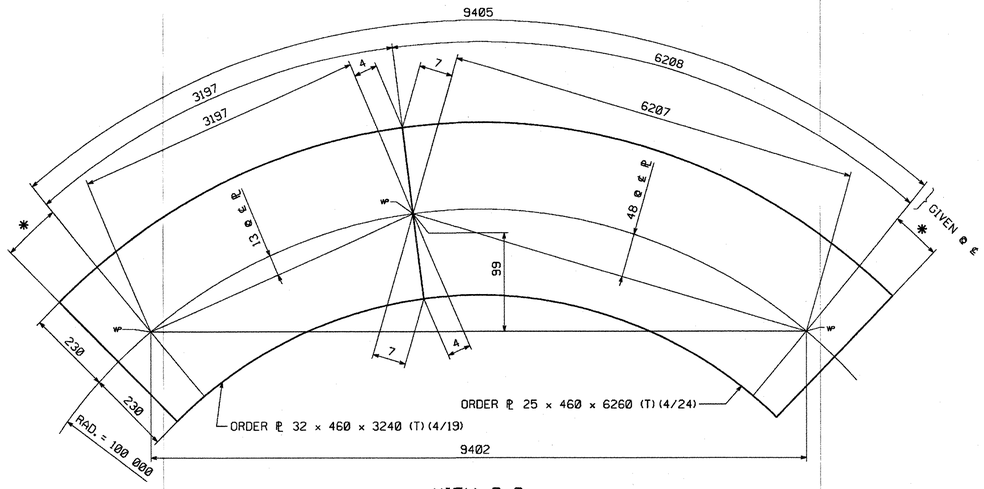
METRIC

METRIC	1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE NOTED. 2. ALL WEIGHTS ARE IN KILOGRAMS.	FED. ROAD DIV. NO.	STATE	FED. AID PROJ. NO.
			VT	





VIEW A-A



VIEW B-B

⚠ ⚠

MARK	FLANGE	A	B	C	D	E	F	
G3B	TOP	230	100 000	9420	9417	111	25 x 460 x 9460 (4/22)	
G4B	TOP	205	97 485	8513	8510	93	22 x 410 x 8560 (4/33)	
G5B	TOP	205	94 970	7606	7604	76	22 x 410 x 7660 (4/35)	⚠
G4B	BOTT.	205	97 485	8501	8498	93	22 x 410 x 8540 (T) (4/34)	
G5B	BOTT.	205	94 970	7595	7593	76	22 x 410 x 7640 (T) (4/36)	⚠

RECEIVED
OK'D BY JWC OK'D BY
JUN 03 2005
RESUBMIT APPROVED
BY DATE

NOTES:

FOR WELDING DETAILS, SEE DWG. FS1.
FOR OTHER NOTES, SEE DWG. FS1.

☑ Reviewed ☐ Furnish as Corrected
☐ Rejected ☐ Revise and Resubmit
☐ Submit Specified Item

This review is only for general conformance with the design concept and the information given in the Construction Documents. Corrections or comments made on the shop drawings during this review do not relieve the contractor from compliance with the requirements of the plans and specifications. Review of a specific item shall not include review of an assembly of which the item is a component. The Contractor is responsible for: dimensions to be confirmed and correlated at the jobsite; information that pertains solely to the fabrication process or to the means, methods, techniques, sequences and procedures of construction; coordination of the Work with that of all other trades and performing all work in a safe and satisfactory manner

McFarland-Johnson, Inc.
Date 5/31/05
By EW

CODE: 30

NO.	REVISION	BY	DATE
1	CAMBER DESIGN CHANGE	MGK	4-26-05

HIGH STEEL STRUCTURES, INC.
1770 Hempstead Road
Lancaster, PA 17605-0008
Phone 717/299-5211
A Division of High Industries, Inc.

FLANGE SPLICE DETAILS
U.S. RTE. 5 (BRIDGE #60) OVER LULLS BROOK
U.S. RTE. 5 STA. 3+080.77 TO STA. 3+123.110
TOWN OF HARTLAND
WINDSOR COUNTY, VERMONT
STATE OF VERMONT, AGENCY OF TRANSPORTATION

STATE CONTRACT OR REF. NO. PROJECT NO. BRS-0113(22)
CONTRACTOR MILLER CONSTRUCTION, INC.
IN CHARGE: GLIDDEN (IH) MADE BY: DBM CHK'D. BY: MGK DATE: 4/15/05
CONTRACT NUMBER: VT-05017-1 DRAWING NUMBER: FS3 OF FS3

111 SS

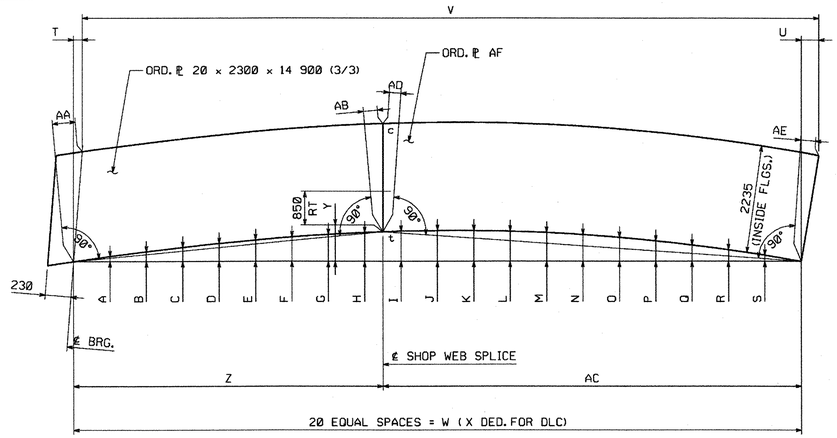
05017 X2 5/12/05 5/Resubmit For Approval TO:Miller Construction, Inc.

METRIC

METRIC

1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE NOTED.
2. ALL WEIGHTS ARE IN KILOGRAMS.

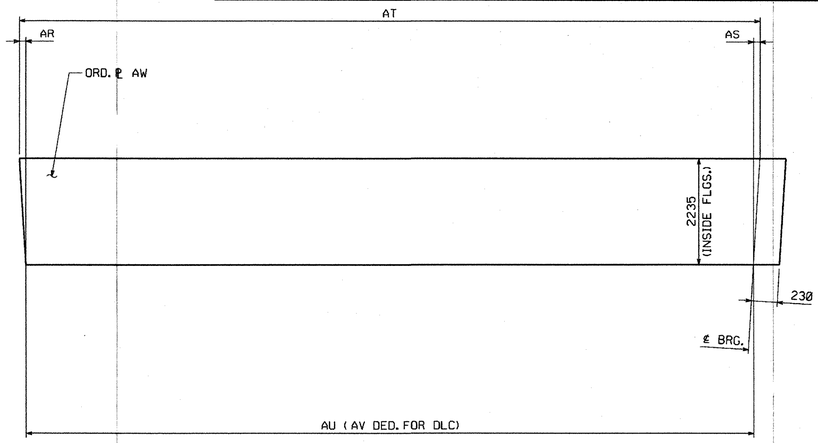
FED. ROAD DIV. NO.	STATE	FED. AID PROJ. NO.
	VT	



MARK	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE
G1A	16	31	45	57	68	78	86	92	96	98	98	96	92	85	76	65	52	37	19	2	27	33 008	32 983	18	95	14 592	17	15	18 391	11	15
G2A	15	29	41	52	62	71	78	84	88	90	90	88	84	78	70	60	47	33	17	4	24	33 082	33 062	15	87	14 593	17	13	18 469	11	13
G3A	12	24	35	46	56	64	70	76	79	81	82	80	77	71	63	54	42	30	16	7	22	33 160	33 145	12	79	14 594	19	12	18 551	9	13
G4A	11	22	33	42	51	58	64	69	72	73	73	72	69	63	56	48	38	27	14	9	20	33 241	33 230	10	71	14 595	20	11	18 635	8	11
G5A	11	22	31	40	47	53	58	62	64	65	65	63	60	55	49	42	34	24	12	9	17	33 326	33 318	9	64	14 596	19	10	18 722	7	9

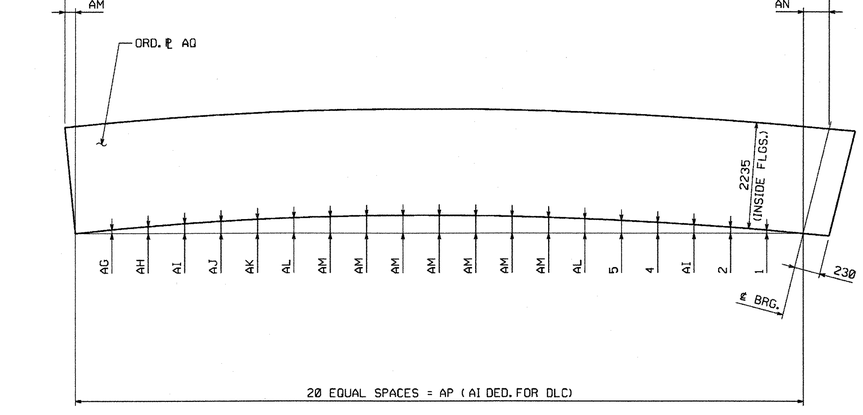
MARK	AF
G1A	20 x 2320 x 18 720 (3/2)
G2A	20 x 2320 x 18 720 (3/2)
G3A	20 x 2320 x 18 720 (3/2)
G4A	20 x 2320 x 18 720 (3/2)
G5A	20 x 2320 x 18 800 (3/1)

⚠



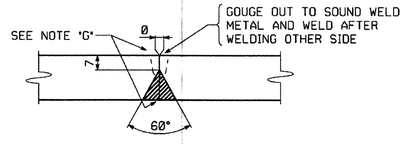
MARK	AR	AS	AT	AU	AV	AW
G3B	4	11	9190	9175	2	20 x 2260 x 9480 (3/6)
G4B	3	9	8283	8271	2	20 x 2260 x 8580 (3/7)
G5B	4	7	7376	7365	0	20 x 2260 x 7660 (3/8)

⚠



MARK	AG	AH	AI	AJ	AK	AL	AM	AN	AO	AP	AQ
G1B	2	3	4	5	6	6	7	12	11 000	10 981	20 x 2280 x 11 280 (3/4)
G2B	1	2	3	4	4	5	6	11	10 096	10 079	20 x 2280 x 10 380 (3/5)

⚠



TYPICAL WEB PLATE SPLICE

FOR WEB PLATES 13 mm TO 50 mm THICK (B-L2c-S)

NOTE "G"

ALL WELDS MAY HAVE A MAXIMUM REINFORCEMENT OF 3 mm. GRIND THE WELDS SMOOTH IN THE AREAS TO BE TESTED AND FOR THE FULL DEPTH OF WEB ON G1A (F.S.) AND G5A (N.S.).

☑ Reviewed ☐ Furnish as Corrected
☐ Rejected ☐ Revise and Resubmit
☐ Submit Specified Item

This review is only for general conformance with the design concept and the information given in the Construction Documents. Corrections or comments made on the shop drawings during this review do not relieve the contractor from compliance with the requirements of the plans and specifications. Review of a specific item shall not include review of an assembly of which the item is a component. The Contractor is responsible for dimensions to be confirmed and correlated at the jobsite, information that pertains solely to the fabrication process or to the means, methods, techniques, sequences and procedures of construction; coordination of the Work with that of all other trades and performing all work in a safe and satisfactory manner.

McFarland-Johnson, Inc.
Date 6/1/05
By EGO

VTrans
RECEIVED
CK'D BY JWC CK'D BY
JUN 0 3 2005
RESUBMIT APPROVED
BY DATE

NOTES:

FOR GENERAL SHOP NOTES, SEE DRAWING GN1.
ALL WEB PLATES REQUIRE CHARPY V-NOTCH TEST.
THE LETTERS 't' & 'c' AT WEB SPLICES INDICATE TENSION AND COMPRESSION EDGES AT SPLICES.
RT INDICATES RADIOGRAPHIC TESTING FOR 1/6 OF THE WEB DEPTH AT TENSION EDGE PLUS 25% OF THE REMAINDER.

NO.	REVISION	BY	DATE
1	CAMBER DESIGN CHANGE	WW	4-28-05

HIGH STEEL STRUCTURES, INC.
1770 Hempstead Road
Lancaster, PA 17605-0008
Phone 717/299-5211
A Division of High Industries, Inc.

WEB CAMBER DIAGRAMS
U.S. RTE. 5 (BRIDGE #60) OVER LULLS BROOK
U.S. RTE. 5 STA. 3+080.77 TO STA. 3+123.110
TOWN OF HARTLAND
WINDSOR COUNTY, VERMONT
STATE OF VERMONT, AGENCY OF TRANSPORTATION

STATE CONTRACT OR REF. NO. PROJECT NO. BRS-0113(22)
CONTRACTOR MILLER CONSTRUCTION, INC.
IN CHARGE: GLIDDEN (IH) MADE BY: KMA CHK'D BY: SJA DATE: 4-21-05
CONTRACT NUMBER: VT-05017-1 DRAWING NUMBER: WC1 OF WC1

CODE:30

1255

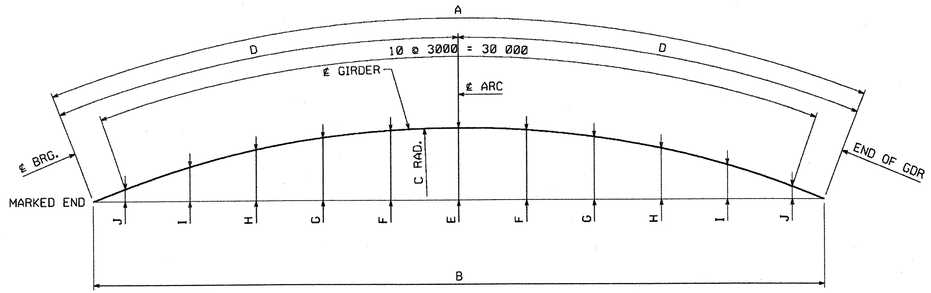
05017 X2 5/12/05 5/Resubmit For Approval TO:Miller Construction, Inc.

METRIC

METRIC

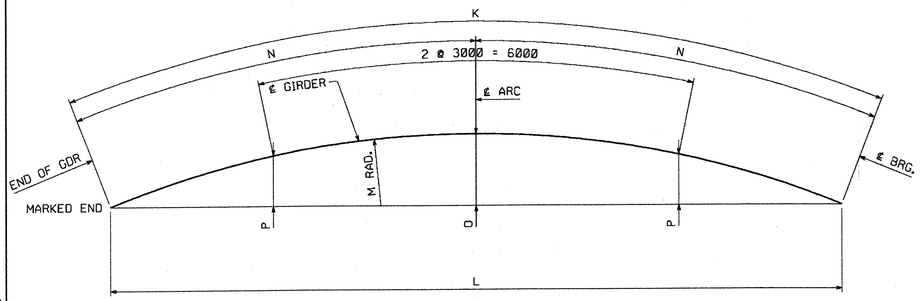
1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE NOTED.
2. ALL WEIGHTS ARE IN KILOGRAMS.

FED. ROAD DIV. NO.	STATE	FED. AID PROJ. NO.
	VT	



MARK	A	B	C	D	E	F	G	H	I	J
G1A	33 008	32 872	105 030	16 504	1294	1251	1123	909	609	225
G2A	33 082	32 939	102 515	16 541	1332	1288	1156	937	630	236
G3A	33 160	33 008	100 000	16 580	1371	1326	1191	967	652	248
G4A	33 241	33 080	97 485	16 621	1413	1367	1229	998	676	262
G5A	33 326	33 155	94 970	16 663	1458	1411	1269	1032	701	276

△1 △1 △1 △1 △1 △1 △1



MARK	K	L	M	N	O	P
G1B	11 000	10 995	105 030	5500	144	101
G2B	10 096	10 092	102 515	5048	124	80
G3B	9190	9187	100 000	4595	106	61
G4B	8283	8281	97 485	4142	88	42
G5B	7376	7374	94 970	3688	72	24

△1 △1 △1 △1 △1 △1

1
2

NOTES:

ALL DIMENSIONS APPLY AT THE TOP OF WEB PLATE OF THE GIRDERS.

☑ Reviewed
☐ Rejected
☐ Furnish as Corrected
☐ Revise and Resubmit
☐ Submit Specified Item

This review is only for general conformance with the design concept and the information given in the Construction Documents. Corrections or comments made on the shop drawings during this review do not relieve the contractor from compliance with the requirements of the plans and specifications. Review of a specific item shall not include review of an assembly of which the item is a component. The Contractor is responsible for: dimensions to be confirmed and correlated at the jobsite; information that pertains solely to the fabrication process or to the means, methods, techniques, sequences and procedures of construction; coordination of the Work with that of all other trades and performing all work in a safe and satisfactory manner

McFarland-Johnson, Inc.
Date 6/21/05
By RDJ

VTrans
RECEIVED
CK'D BY JWC CK'D BY
JUN 0 3 2005
RESUBMIT APPROVED
BY DATE

NO.	REVISION	BY	DATE
△			
△			
1	CAMBER DESIGN CHANGE	WW	4-28-05

HIGH STEEL STRUCTURES, INC.
1770 Hempstead Road
Lancaster, PA 17605-0008
Phone 717/299-5211
A Division of High Industries, Inc.

HORIZONTAL CURVE DIAGRAMS
U.S. RTE. 5 (BRIDGE #60) OVER LULLS BROOK
U.S. RTE. 5 STA. 3+080.77 TO STA. 3+123.110
TOWN OF HARTLAND
WINDSOR COUNTY, VERMONT
STATE OF VERMONT, AGENCY OF TRANSPORTATION

STATE CONTRACT OR REF. NO. PROJECT NO. BRS-0113(22)
CONTRACTOR MILLER CONSTRUCTION, INC.
IN CHARGE: GLIDDEN (IH) MADE BY: KMA CHK'D. BY: SJA DATE: 4-21-05
CONTRACT NUMBER: VT-05017-1 DRAWING NUMBER: HC1 OF HC1

CODE: 30

11355

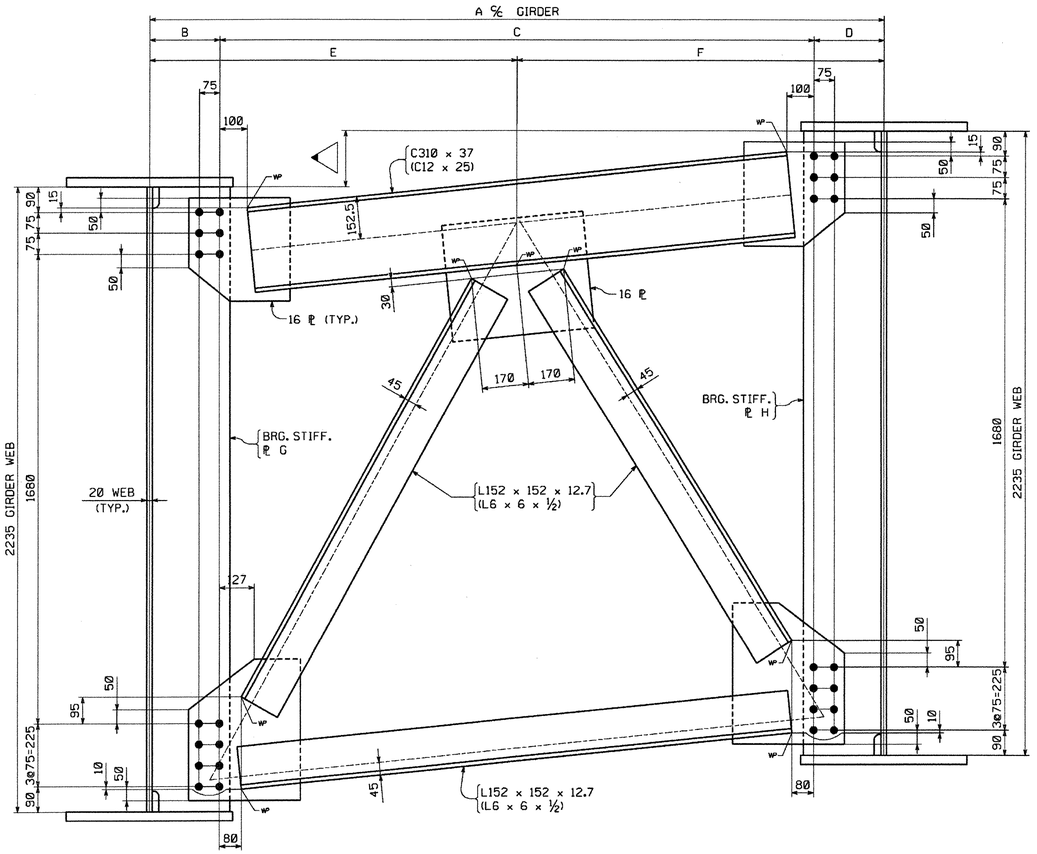
05017 X2 5/12/05 5/Resubmit For Approval TO:Miller Construction, Inc.

PLOTTED: 4/28/2005 9:38:46 AM BY: mk-esdol

60

METRIC

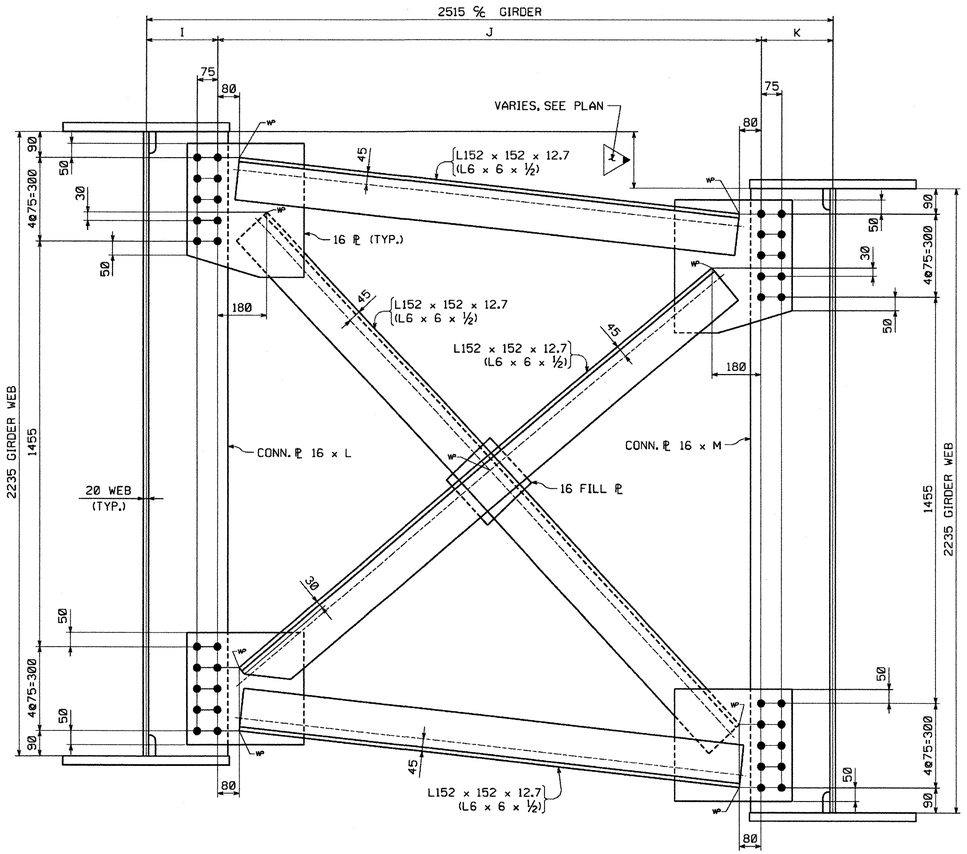
METRIC	1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE NOTED. 2. ALL WEIGHTS ARE IN KILOGRAMS.	FED. ROAD DIV. NO.	STATE	FED. AID PROJ. NO.
			VT	



END CROSSFRAME LAYOUT

(LOOKING TOWARD BACKWALL)

PT. TO PT.	◁	A	B	C	D	E	F	G	H
12 TO 11	165	2664	257	2150	257	1332	1332	32 x 290	32 x 290
13 TO 12	170	2672	183	2232	257	1336	1336	25 x 215	32 x 290
14 TO 13	190	2681	158	2340	183	1340	1341	22 x 190	25 x 215
15 TO 14	200	2691	158	2375	158	1345	1346	22 x 190	22 x 190
16 TO 17	(-)170	2597	258	2081	258	1298	1299	32 x 290	32 x 290
17 TO 18	(-)175	2601	258	2159	184	1300	1301	32 x 290	25 x 215
18 TO 19	(-)195	2606	184	2263	159	1303	1303	25 x 215	22 x 190
19 TO 20	(-)205	2611	159	2293	159	1305	1306	22 x 190	22 x 190



INTERMEDIATE CROSSFRAME LAYOUT

(LOOKING STATIONS AHEAD)

LOCATION	I	J	K	L	M
G1 - G2	262	1991	262	290	290
G2 - G3	262	2066	187	290	215
G3 - G4	187	2166	162	215	190
G4 - G5	162	2191	162	190	190

VTrans
RECEIVED
CK'D BY JWK CK'D BY
JUN 21 2005
RESUBMIT APPROVED
BY DATE

☑ Reviewed
☐ Rejected
☐ Furnish as Corrected
☐ Revise and Resubmit
☐ Submit Specified Item

This review is only for general conformance with the design concept and the information given in the Construction Documents. Corrections or comments made on the shop drawings during this review do not relieve the contractor from compliance with the requirements of the plans and specifications. Review of a specific item shall not include review of an assembly of which the item is a component. The Contractor is responsible for: dimensions to be confirmed and correlated at the jobsite; information that pertains solely to the fabrication process or to the means, methods, techniques, sequences and procedures of construction; coordination of the Work with that of all other trades and performing all work in a safe and satisfactory manner

McFarland-Johnson, Inc.
Date 6/21/05
By EGW

NOTES:

FOR NOTES, SEE DRAWING WS1.
WORK THIS DRAWING WITH DRAWING WS1.
ALL HOLES TO BE $^{15}/_{16}$" ℙ FOR $^{7}/_{8}$" H.S. BOLTS.

NOTE
THE PURPOSE OF THIS DRAWING IS TO COORDINATE GEOMETRIC CONTROL INFORMATION. THIS DRAWING IS SUBMITTED FOR INFORMATION ONLY AND IS NOT INTENDED FOR SHOP FABRICATION. THIS DRAWING IS FOR REFERENCE ONLY, APPROVAL IS NOT REQUIRED.

NO.	REVISION	BY	DATE
△			
△			
△			

HIGH STEEL STRUCTURES, INC.
1770 Hempstead Road
Lancaster, PA 17605-0008
Phone 717/299-5211
A Division of High Industries, Inc.

TYPICAL DETAIL - CROSSFRAME LAYOUTS
U.S. RTE. 5 (BRIDGE #60) OVER LULLS BROOK
U.S. RTE. 5 STA. 3+080.77 TO STA. 3+123.110
TOWN OF HARTLAND
WINDSOR COUNTY, VERMONT
STATE OF VERMONT, AGENCY OF TRANSPORTATION

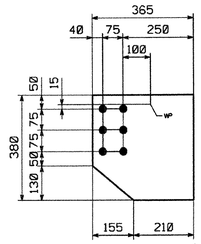
STATE CONTRACT OR REF. NO. PROJECT NO. BRS-0113(22)
CONTRACTOR MILLER CONSTRUCTION, INC.
IN CHARGE: GLIDDEN (IH) MADE BY: MGK CHK'D BY: RC DATE: 4-12-05
CONTRACT NUMBER: VT-05017-1 DRAWING NUMBER: TD1 OF TD1

11455

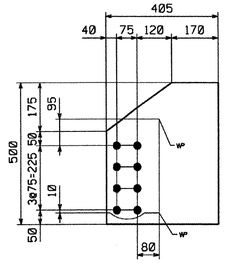
METRIC

METRIC 1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE NOTED.
2. ALL WEIGHTS ARE IN KILOGRAMS.

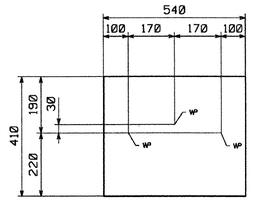
FED. ROAD DIV. NO.	STATE	FED. AID PROJ. NO.
	VT	



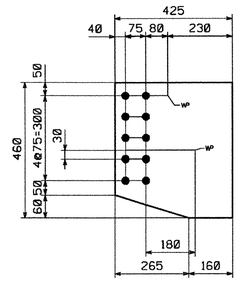
GUSSET PLATES ~ MK. m1a
GUSSET PLATES ~ MK. m1b (CG)



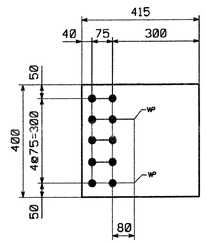
GUSSET PLATES ~ MK. m1c
GUSSET PLATES ~ MK. m1d (CG)



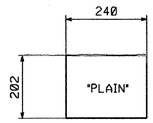
GUSSET PLATES ~ MK. m1f
GUSSET PLATES ~ MK. m1g (CG)



GUSSET PLATES ~ MK. m1h
GUSSET PLATES ~ MK. m1k (CG)



GUSSET PLATES ~ MK. m1m
GUSSET PLATES ~ MK. m1n (CG)



FILL PLATE ~ MK. m1p
FILL PLATE ~ MK. m1s (CG)

BILL OF MATERIAL

QTY	MARK	COMM.	DESCRIPTION	LENGTH	SPEC	GRADE	TEST	REMARKS	GRP.	ITEM	WEIGHT EA. (KG)
8	m1a	PL	16 x 365	380	M270M	345W	T		11	3	17.42
8	m1b	PL	16 x 365	380	M270M	345W	T		11	3	17.42
8	m1c	PL	16 x 405	500	M270M	345W	T		11	3	25.43
8	m1d	PL	16 x 405	500	M270M	345W	T		11	3	25.43
4	m1f	PL	16 x 410	540	M270M	345W	T		11	3	27.80
4	m1g	PL	16 x 410	540	M270M	345W	T		11	3	27.80
74	m1h	PL	16 x 425	460	M270M	345W	T		11	3	24.55
6	m1k	PL	16 x 425	460	M270M	345W	T		11	3	24.55
74	m1m	PL	16 x 400	415	M270M	345W	T		11	3	20.85
6	m1n	PL	16 x 400	415	M270M	345W	T		11	3	20.85
37	m1p	PL	16 x 202	240	M270M	345W	T	FILL	11	3	6.09
3	m1s	PL	16 x 202	240	M270M	345W	T	FILL	11	3	6.09

SHOP NOTE

HOLES: 15/16"ø
BOLTS: NONE
PAINT: NONE
FOR GENERAL SHOP NOTES, SEE DWG. GN1.

(CG) INDICATES CORNER GRINDING IS REQUIRED. CORNER GRINDING IS NOT REQUIRED FOR MATERIAL ON THIS DRAWING UNLESS NOTED (CG).

CODE:63

☑ Reviewed ☐ Furnish as Corrected
☐ Rejected ☐ Revise and Resubmit
☐ Submit Specified Item

This review is only for general conformance with the design concept and the information given in the Construction Documents. Corrections or comments made on the shop drawings during this review do not relieve the contractor from compliance with the requirements of the plans and specifications. Review of a specific item shall not include review of an assembly of which the item is a component. The Contractor is responsible for: dimensions to be confirmed and correlated at the jobsite; information that pertains solely to the fabrication process or to the means, methods, techniques, sequences and procedures of construction; coordination of the Work with that of all other trades and performing all work in a safe and satisfactory manner.

McFarland-Johnson, Inc.
Date 6/20/05
By RW

VTrans
RECEIVED
CK'D BY JWC CK'D BY
JUN 21 2005
RESUBMIT APPROVED
BY DATE

NO.	REVISION	BY	DATE
1			
2			
3			

HIGH STEEL STRUCTURES, INC.
1770 Hempstead Road
Lancaster, PA 17605-0008
Phone 717/299-5211
A Division of High Industries, Inc.

CROSSFRAME JOB STANDARDS
U.S. RTE. 5 (BRIDGE #60) OVER LULLS BROOK
U.S. RTE. 5 STA. 3+080.77 TO STA. 3+123.110
TOWN OF HARTLAND
WINDSOR COUNTY, VERMONT
STATE OF VERMONT, AGENCY OF TRANSPORTATION

STATE CONTRACT OR REF. NO. PROJECT NO. BRS-0113(22)
CONTRACTOR MILLER CONSTRUCTION, INC.
IN CHARGE: GLIDDEN (IH) MADE BY: KLW CHK'D BY: MGK DATE: 4/18/05
CONTRACT NUMBER: VT-05017-1 DRAWING NUMBER: M1 OF M1

11555

05017 X3 6/17/05 6/17/05For Your Use TO:Vermont Agency Of

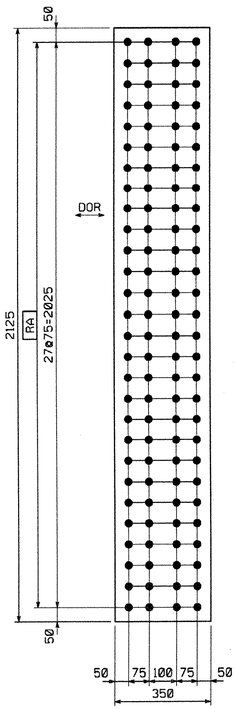
PLOTTED: 4/20/2005 6:44:49 AM BY: mk-raudel

METRIC

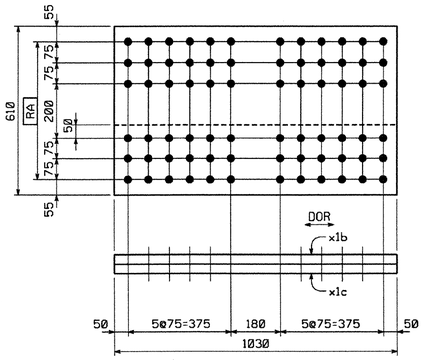
METRIC

1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE NOTED.
2. ALL WEIGHTS ARE IN KILOGRAMS.

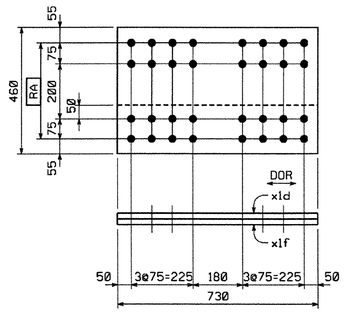
FED. ROAD DIV. NO.	STATE	FED. AID PROJ. NO.
	VT	



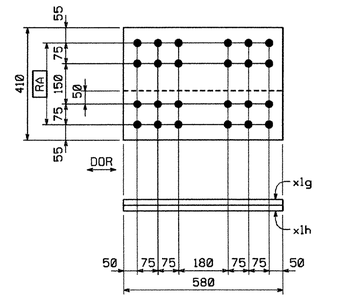
SPLICE PL MK. x1a (CG)



SPLICE PL MK. x1b (CG)
SPLICE PL MK. x1c (CG)

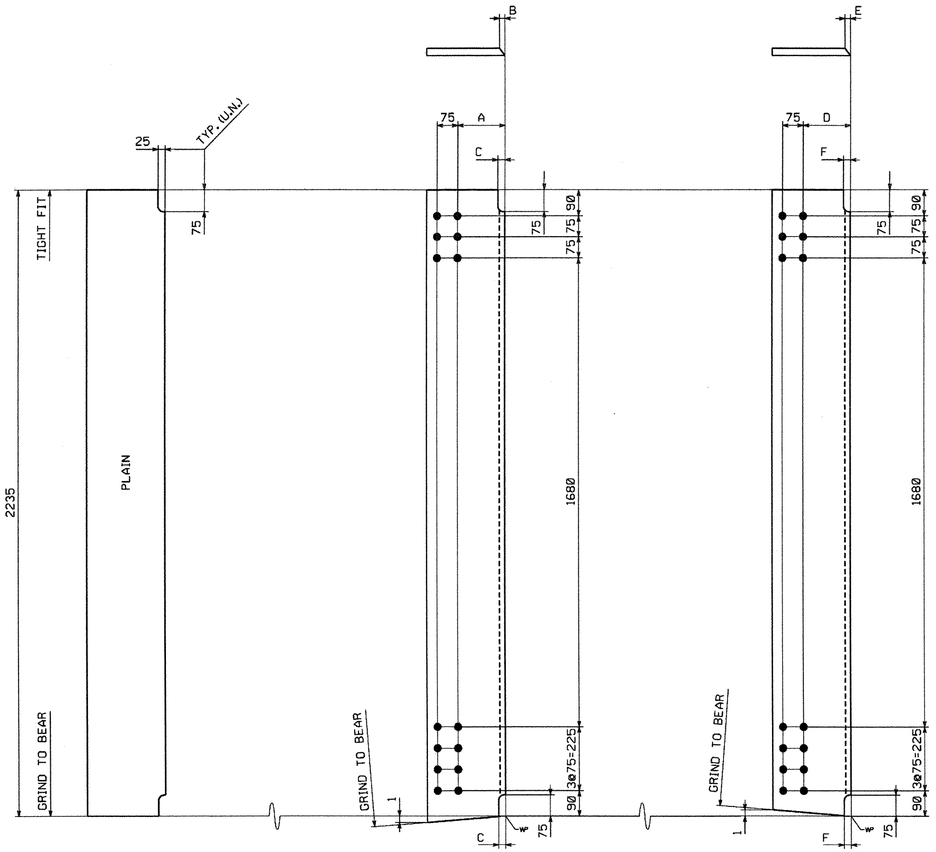


SPLICE PL MK. x1d (CG)
SPLICE PL MK. x1f (CG)



SPLICE PL MK. x1g (CG)
SPLICE PL MK. x1h (CG)

SHIP.	QTY	MARK	COMMODITY	DESCRIPTION	LENGTH	SPEC	GRADE	TEST	REMARKS	GRP.	ITEM	WEIGHT EA. (KG)
1	10	x1a	PL	16 x 2125	350	M270M	345W	(T)		6	1	93.40
1	4	x1b	PL	32 x 610	1 030	M270M	345W	(T)		6	2	157.81
1	8	x1c	PL	32 x 255	1 030	M270M	345W	(T)		6	3	65.97
1	2	x1d	PL	20 x 460	730	M270M	345W	(T)		6	4	52.71
1	4	x1f	PL	20 x 180	730	M270M	345W	(T)		6	5	20.63
1	4	x1g	PL	14 x 410	580	M270M	345W	(T)		6	6	26.13
1	8	x1h	PL	14 x 180	580	M270M	345W	(T)		6	7	11.47
1	1	x1k	PL	32 x 290	2 235	M270M	345W			7	1	162.80
1	1	x1m	PL	32 x 290	2 235	M270M	345W			7	1	162.80
1	1	x1n	PL	22 x 190	2 235	M270M	345W			7	3	73.33
1	1	x1p	PL	22 x 190	2 235	M270M	345W			7	3	73.33
1	2	x1s	PL	32 x 290	2 236	M270M	345W			7	1	162.87
1	1	x1t	PL	25 x 215	2 236	M270M	345W			7	2	94.33
1	1	x1w	PL	22 x 190	2 236	M270M	345W			7	3	73.36
1	1	x1y	PL	32 x 290	2 235	M270M	345W			7	1	162.80
1	1	x1aa	PL	25 x 215	2 235	M270M	345W			7	2	94.29
1	2	x1ab	PL	22 x 190	2 235	M270M	345W			7	3	73.33



BRG. STIFF.

MARK	REMARKS
x1k	--
x1m	(CG)
x1n	--
x1p	(CG)

BRG. STIFF.

MARK	A	B	C
x1s	177	12	40
x1t	102	9	36
x1w	77	8	36

BRG. STIFF.

MARK	D	E	F
x1y	177	12	40
x1aa	102	9	36
x1ab	77	8	36

SHOP NOTE

HOLES: 15/16" ø (U.N.)
BOLTS: NONE
PAINT: NONE
DOR INDICATES DIRECTION OF ROLLING
FOR GENERAL SHOP NOTES, SEE DWG. GN1.

☑ Reviewed
☐ Rejected
☐ Furnish as Corrected
☐ Revise and Resubmit
☐ Submit Specified Item

This review is only for general conformance with the design concept and the information given in the Construction Documents. Corrections or comments made on the shop drawings during this review do not relieve the contractor from compliance with the requirements of the plans and specifications. Review of a specific item shall not include review of an assembly of which the item is a component. The Contractor is responsible for: dimensions to be confirmed and correlated at the jobsite; information that pertains solely to the fabrication process or to the means, methods, techniques, sequences and procedures of construction; coordination of the Work with that of all other trades and performing all work in a safe and satisfactory manner.

McFarland-Johnson, Inc.
Date 6/20/05
By dbv

VTrans RECEIVED
JUN 21 2005
CK'D BY Jwc CK'D BY
RESUBMIT APPROVED
BY DATE

NOTE: (CG) INDICATES CORNER GRINDING IS REQUIRED.
CORNER GRINDING IS NOT REQUIRED FOR
MATERIAL ON THIS DRAWING UNLESS NOTED (CG).

NO.	REVISION	BY	DATE
1			
2			
3			

HIGH STEEL STRUCTURES, INC.
1770 Hempstead Road
Lancaster, PA 17605-0008
Phone 717/299-5211
A Division of High Industries, Inc.

GIRDER JOB STANDARDS
U.S. RTE. 5 (BRIDGE #60) OVER LULLS BROOK
U.S. RTE. 5 STA. 3+080.77 TO STA. 3+123.110
TOWN OF HARTLAND
WINDSOR COUNTY, VERMONT
STATE OF VERMONT, AGENCY OF TRANSPORTATION

STATE CONTRACT OR REF. NO. PROJECT NO. BRS-0113(22)
CONTRACTOR MILLER CONSTRUCTION, INC.
IN CHARGE: GLIDDEN (IH) MADE BY: MGK CHK'D. BY: RC DATE: 4-13-05
CONTRACT NUMBER: VT-05017-1 DRAWING NUMBER: X1 OF X2

CODE:30

PLOTTED: 4/20/2005 6:44:52 AM
BY: mkreidel

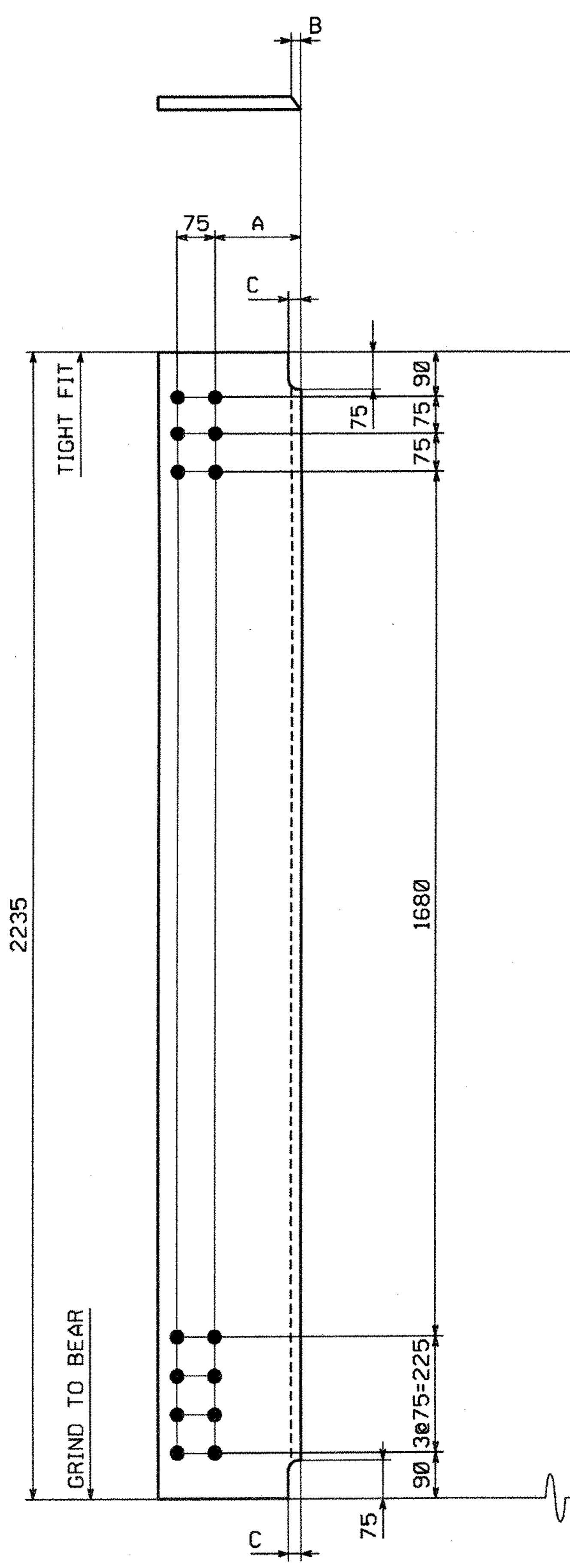
1655

05017 X3 6/17/05 6/17/05For Your Use TO:Vermont Agency Of

METRIC

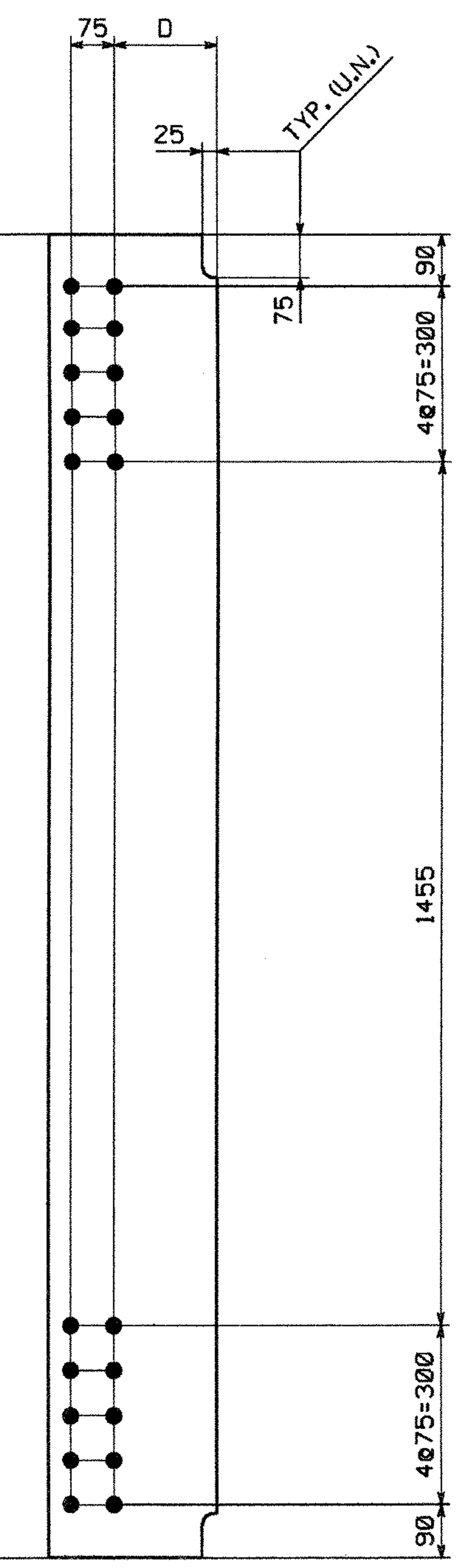
1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE NOTED.
2. ALL WEIGHTS ARE IN KILOGRAMS.

FED. ROAD DIV. NO.	STATE	FED. AID PROJ. NO.
	VT	



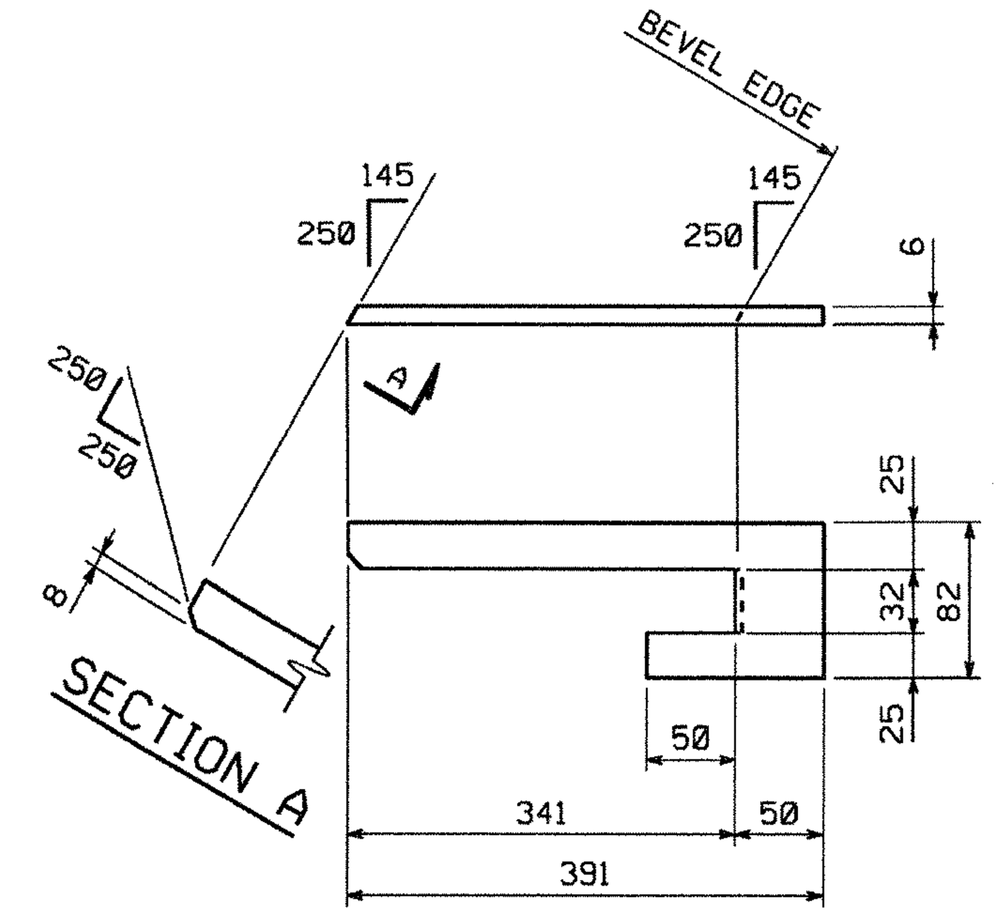
BRG. STIFF. (CG)

MARK	A	B	C
x2a	177	9	35
x2b	102	7	33
x2c	77	6	33

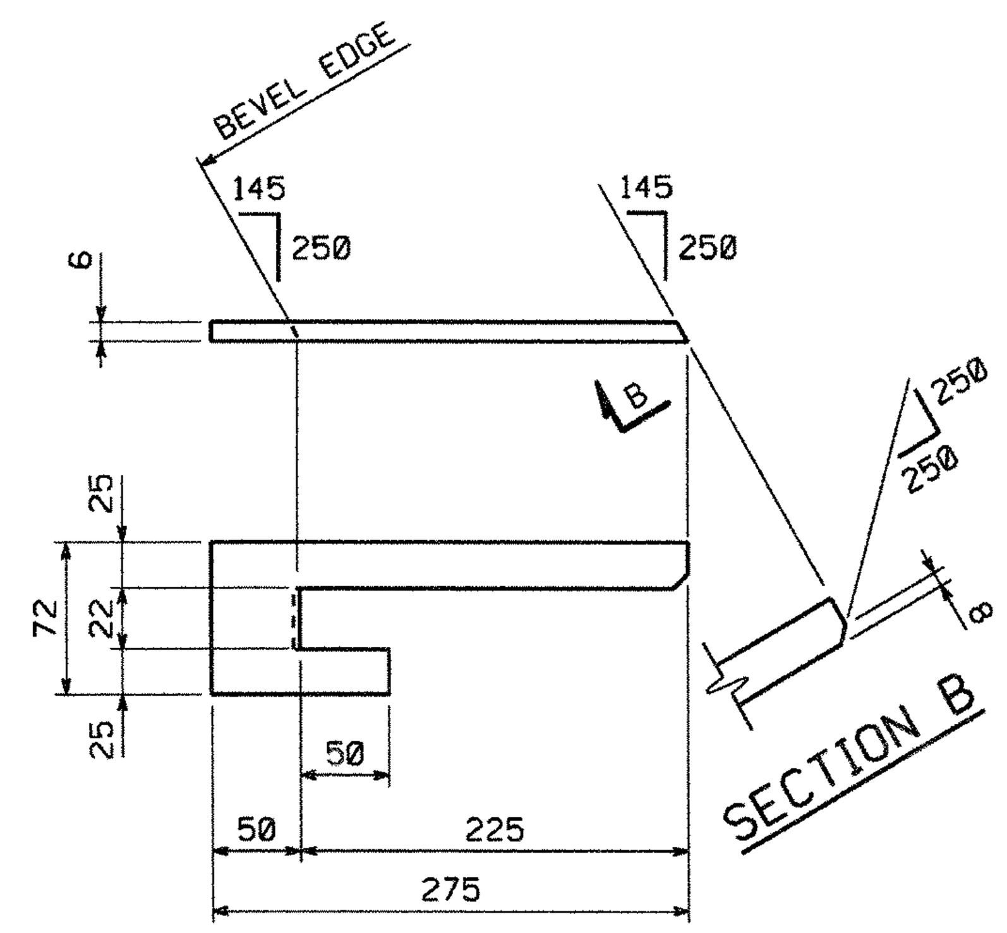


CONN. ℄

MARK	D	REMARKS
x2d	177	--
x2f	102	--
x2g	102	(CG)
x2h	77	--
x2k	77	(CG)



DRIP ℄ MK. x2m



DRIP ℄ MK. x2n

BILL OF MATERIAL

SHIP.	QTY	MARK	COMMODITY	DESCRIPTION	LENGTH	SPEC	GRADE	TEST	REMARKS	GRP.	ITEM	WEIGHT EA. (KG)
1	3	x2a	PL	32 x 290	2 235	M270M	345W			7	1	162.80
1	2	x2b	PL	25 x 215	2 235	M270M	345W			7	2	94.29
1	3	x2c	PL	22 x 190	2 235	M270M	345W			7	3	73.33
1	30	x2d	PL	16 x 290	2 235	M270M	345W			7	4	81.40
1	18	x2f	PL	16 x 215	2 235	M270M	345W			7	5	60.35
1	2	x2g	PL	16 x 215	2 235	M270M	345W			7	5	60.35
1	27	x2h	PL	16 x 190	2 235	M270M	345W			7	6	53.33
1	3	x2k	PL	16 x 190	2 235	M270M	345W			7	6	53.33
1	1	x2m	PL	6 x 82	391	M270M	345W			7	7	1.51
1	1	x2n	PL	6 x 72	275	M270M	345W			7	7	0.93

☑ Reviewed
☐ Rejected
☐ Furnish as Corrected
☐ Revise and Resubmit
☐ Submit Specified Item

This review is only for general conformance with the design concept and the information given in the Construction Documents. Corrections or comments made on the shop drawings during this review do not relieve the contractor from compliance with the requirements of the plans and specifications. Review of a specific item shall not include review of an assembly of which the item is a component. The Contractor is responsible for dimensions to be confirmed and correlated at the jobsite; information that pertains solely to the fabrication process or to the means, methods, techniques, sequences and procedures of construction; coordination of the Work with that of all other trades and performing all work in a safe and satisfactory manner.

McFarland-Johnson, Inc.
Date 6/21/05
By ECW

VTrans
RECEIVED
CK'D BY JWC OK'D BY
JUN 2 1 2005
RESUBMIT APPROVED
BY DATE

NOTE: (CG) INDICATES CORNER GRINDING IS REQUIRED. CORNER GRINDING IS NOT REQUIRED FOR MATERIAL ON THIS DRAWING UNLESS NOTED (CG).

SHOP NOTE

HOLES: 15/16"⌀
BOLTS: NONE
PAINT: NONE
FOR GENERAL SHOP NOTES, SEE DWG. GN1.

CODE:30

NO.	REVISION	BY	DATE
△			
△			
△			

HIGH STEEL STRUCTURES, INC.
1770 Hempstead Road
Lancaster, PA 17605-0008
Phone 717/299-5211
A Division of High Industries, Inc.

GIRDER JOB STANDARDS
U.S. RTE. 5 (BRIDGE #60) OVER LULLS BROOK
U.S. RTE. 5 STA. 3+080.77 TO STA. 3+123.110
TOWN OF HARTLAND
WINDSOR COUNTY, VERMONT
STATE OF VERMONT, AGENCY OF TRANSPORTATION

STATE CONTRACT OR REF. NO. PROJECT NO. BRS-0113(22)
CONTRACTOR MILLER CONSTRUCTION, INC.
IN CHARGE: GLIDDEN (IH) MADE BY: MGK CHK'D. BY: RC DATE: 4-13-05
CONTRACT NUMBER: VT-05017-1 DRAWING NUMBER: X2 OF X2

11755

PLOTTED: 4/20/2005 6:44:53 AM

METRIC

METRIC	1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE NOTED. 2. ALL WEIGHTS ARE IN KILOGRAMS.	FED. ROAD DIV. NO.	STATE	FED. AID PROJ. NO.
			VT	

GENERAL SHOP NOTES

SPECIFICATIONS:
ALL MATERIAL AND WORKMANSHIP TO BE IN ACCORDANCE WITH THE STATE OF VERMONT, AGENCY OF TRANSPORTATION, STANDARD SPECIFICATIONS FOR CONSTRUCTION DATED 2001, AND ITS LATEST REVISIONS, AND THE AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES, AND ITS LATEST REVISIONS.

MATERIAL:
UNLESS NOTED OTHERWISE, ALL STEEL TO BE AASHTO M270M GRADE 345W.
(T) INDICATES CHARPY V-NOTCH TESTING REQUIRED.

SHOP PROCEDURE:
ALL FLANGE AND WEB PLATE SPLICES TO BE MADE BEFORE FINAL FITTING AND WELDING INTO GIRDER.
CAMBER TOLERANCE: -0 mm TO +19 mm
ALL RE-ENTRANT CUTS TO HAVE 25 MIN. RADIUS.
BEARING AREA, AS NOTED ON GIRDER DETAILS, INDICATES AREA THAT MUST BE FLAT AND TRUE TO RECEIVE SOLE PLATE.
ONLY LOW STRESS DIE STAMPS MAY BE USED FOR MARKING IN AREAS NOT EXPOSED ON THE FINISHED STRUCTURE.
DOR INDICATES DIRECTION OF ROLLING.
(CG) INDICATES CORNER GRINDING.
CORNER GRINDING IS REQUIRED FOR ALL MAIN MEMBER GIRDER FLANGE PLATES AND SPLICE PLATES AND SECONDARY MEMBERS IN PAINTED AREAS, AS NOTED (CG) - NOTHING ELSE.

INSPECTION:
SHOP INSPECTION BY THE VERMONT AGENCY OF TRANSPORTATION

WELDING:
ALL WELDING IS TO CONFORM TO AWS D1.5-02.
WELDING METHODS, PROCEDURES, AND MATERIALS SHALL COMPLY WITH THE SPECIFIC PROCEDURE DESIGNATED IN THE WELD SYMBOL TAIL.
FOR WELDING STIFFENERS AND CONNECTION PLATES TO GIRDERS, SEE TYPICAL WELDING DETAIL.
FOR WELDING CROSSFRAMES, SEE SECONDARY MEMBER WELDING DETAIL.
IDENTIFICATION OF HOLE PLACEMENT:
UNLESS NOTED OTHERWISE, BOLT HOLES IN MATERIAL 16mm OR LESS IN THICKNESS MAY BE CNC (COMPUTER NUMERICALLY CONTROLLED) PUNCHED OR CNC DRILLED FULL SIZE UNASSEMBLED. ALL MATERIAL THICKER THAN 16mm IS TO BE DRILLED.

NON-DESTRUCTIVE TESTING:
FLANGE AND WEB PLATE SPLICES TO BE RADIOGRAPHICALLY TESTED, AS CALLED FOR ON DRAWINGS PREFIXED 'FS' AND 'WC', BY H.S.S.I.

MAGNETIC PARTICLE INSPECTION IS REQUIRED ON AT LEAST 300 mm OF EVERY 3000 mm LENGTH OF FILLET WELDS AND 300 mm OF SUCH WELDS LESS THAN 3000 mm IN LENGTH ON GIRDER WEB TO FLANGE AND CONNECTION PLATES TO WEB AND FLANGE WELDS.

MT IS ALSO REQUIRED ON CROSS FRAME WELDS ON CURVED GIRDERS

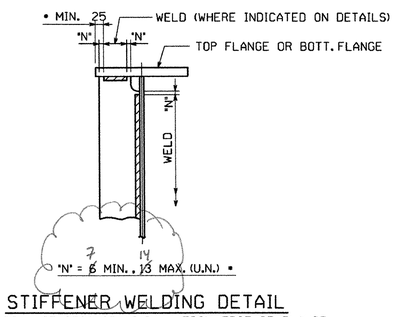
RA NOTE:
HOLES MARKED RA ON DETAIL DRAWINGS TO BE SUB-PUNCHED/SUB-DRILLED 6ø UNDER SIZE AND REAMED TO FULL SIZE OR DRILLED FROM SOLID WITH CONNECTING PARTS ASSEMBLED AND MATCH MARKED.

CLEANING:
ALL STEEL TO BE BLAST CLEANED TO SSPC-SP10 (NEAR WHITE), (ASTM D2200 GRADE SA 2-1/2).
BLAST CLEANING ANCHOR PROFILE TO BE FROM 38 TO 64 MICROMETERS DEEP.

PAINTING:
ALL STEEL TO BE PAINTED (UNLESS NOTED) WITHIN 2500mm FROM THE END OF THE GIRDERS AT ABUTMENT 2, WITH A 3 COAT PAINT SYSTEM AS FOLLOWS:
PRIME COAT: CARBOZINC 859 (ORGANIC ZINC) WITH 75 TO 150 MICROMETERS D.F.T.
INTER. COAT: CARBOGUARD 888 (EPOXY) WITH 75 TO 250 MICROMETERS D.F.T.
FINISH COAT: CARBOTHANE 133 HB (POLYURETHANE) WITH 75 TO 125 MICROMETERS D.F.T.
FINISH COLOR TO BE DARK BROWN, FEDERAL STANDARD 595, COLOR #20059.
PRIME COAT ONLY WITHIN 75mm OF OPEN HOLES.
PRIME COAT TO BE APPLIED WITHIN 8 HOURS AFTER BLAST CLEANING.
STRIPE COAT ALL EDGES OF PLATES, ANGLES OR OTHER SHAPES WITH SHARP EDGES PRIOR TO THE APPLICATION OF THE FULL PRIME COAT.
TOP FLANGE OF GIRDERS, AS SHOWN IN 'TYPICAL PAINT SECTION' SHALL RECEIVE A LIGHT RUST PREVENTIVE COAT OF PRIMER IN THE PAINTED AREAS, NOT TO EXCEED 38 MICROMETERS D.F.T.
INTERMEDIATE AND FINISH COATS SHALL BE STAGGERED A MINIMUM OF 12mm FROM THE FAYING SURFACES OF EACH OTHER.
PAINT MANUFACTURER: THE CARBOLINE CO. ST. LOUIS, MO.

DRAWING REFERENCE:

FLANGE SPLICES	-PREFIXED 'FS'
WEB CAMBERS	-PREFIXED 'WC'
GIRDER JOB STANDARDS	-PREFIXED 'X'
CROSSFRAME JOB STDS.	-PREFIXED 'M'
SHOP ASSEMBLY	-PREFIXED 'SA'
HORIZONTAL CURVE	-PREFIXED 'HC'
WELDING PROCEDURE	-PREFIXED 'WP'



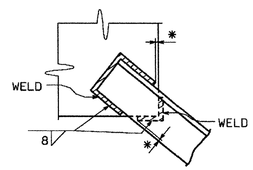
STIFFENER WELDING DETAIL
• WELDS MUST STOP 25 MINIMUM FROM EDGE OF FLANGE

☐ Reviewed
☐ Rejected
☑ Furnish as Corrected
☐ Revise and Resubmit
☐ Submit Specified Item

This review is only for general conformance with the design concept and the information given in the Construction Documents. Corrections or comments made on the shop drawings during this review do not relieve the contractor from compliance with the requirements of the plans and specifications. Review of a specific item shall not include review of an assembly of which the item is a component. The Contractor is responsible for: dimensions to be confirmed and correlated at the jobsite; information that pertains solely to the fabrication process or to the means, methods, techniques, sequences and procedures of construction; coordination of the Work with that of all other trades and performing all work in a safe and satisfactory manner.

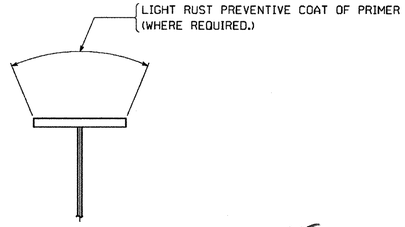
McFarland-Johnson, Inc.
Date 6/17/05
By CW

ALL CROSSFRAME WELDS ARE TO BE TERMINATED FROM EDGE OF GUSSET PLATES, FILL PLATES OR ANGLES AS INDICATED



* NO WELD FOR 7 MIN., 14 MAX.

SECONDARY MEMBER WELDING DETAIL



TYP. PAINT SECTION

VTrans
RECEIVED
CK'D BY Jwk CK'D BY
JUN 2 1 2005
RESUBMIT APPROVED
BY DATE

NO.	REVISION	BY	DATE
△			
△			
△			

HIGH STEEL STRUCTURES, INC.
1770 Hempstead Road
Lancaster, PA 17605-0008
Phone 717/299-5201
A Division of High Industries, Inc.

GENERAL SHOP NOTES
U.S. RTE. 5 (BRIDGE #60) OVER LULLS BROOK
U.S. RTE. 5 STA. 3+080.77 TO STA. 3+123.110
TOWN OF HARTLAND
WINDSOR COUNTY, VERMONT
STATE OF VERMONT, AGENCY OF TRANSPORTATION

STATE CONTRACT OR REF. NO. PROJECT NO. BRS-0113(22)
CONTRACTOR MILLER CONSTRUCTION, INC.
IN CHARGE: GLIDDEN (IH) MADE BY: Kma CHK'D BY: SJA DATE: 3/4/05
CONTRACT NUMBER: VT-05017-1 DRAWING NUMBER: GN1 OF GN1

11855

05017 X3 6/17/05 6/17/05For Your Use TO:Vermont Agency Of

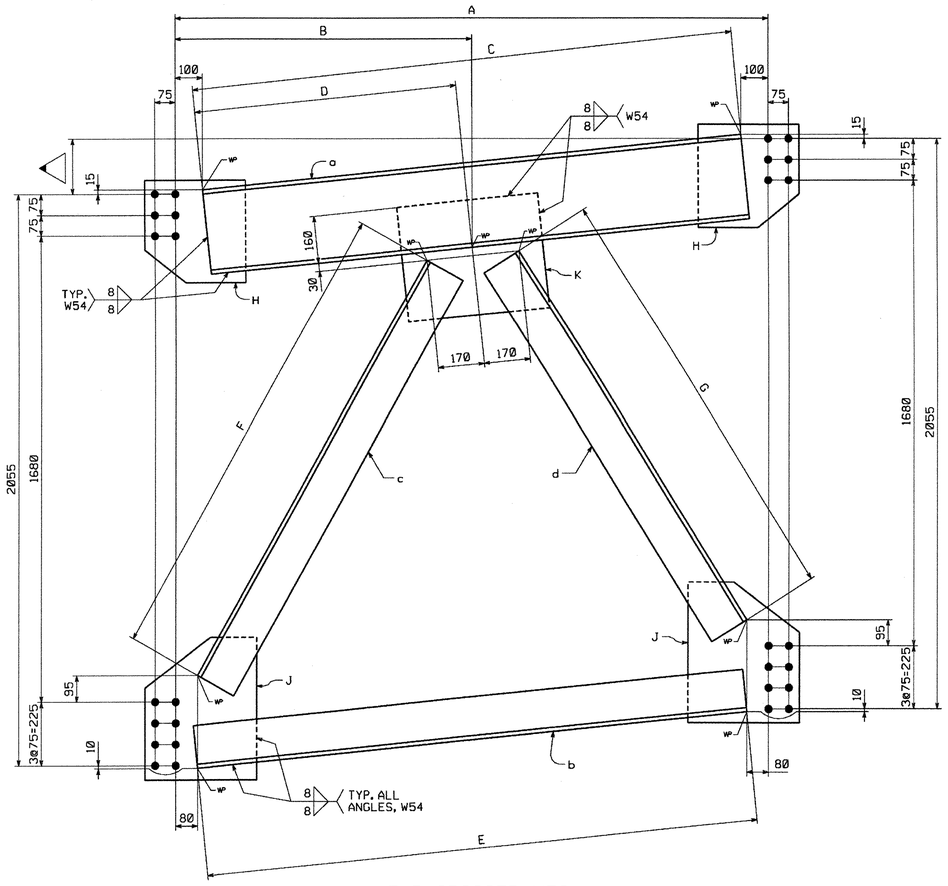
PLOTTED: 4/20/2005 6:44:56 AM BY: mkreidel

METRIC

METRIC

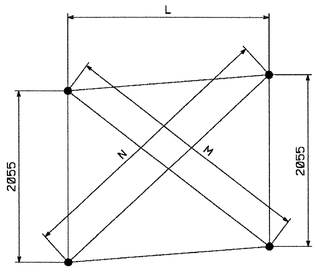
1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE NOTED.
2. ALL WEIGHTS ARE IN KILOGRAMS.

FED. ROAD DIV. NO.	STATE	FED. AID PROJ. NO.
	VT	



END CROSSFRAMES

MARK	◁	A	B	C	D	E	F	G	H	J	K	REMARKS
CF1	200	2375	1188	2184	1064	2224	1769	1626	m1a	m1c	m1f	NO PAINT
CF2	190	2340	1182	2148	1060	2188	1764	1613	m1a	m1c	m1f	NO PAINT
CF3	170	2232	1153	2039	1031	2079	1742	1580	m1a	m1c	m1f	NO PAINT
CF4	165	2150	1075	1957	953	1997	1698	1578	m1a	m1c	m1f	NO PAINT
CF5	(-)205	2293	1146	2103	1081	2143	1601	1749	m1b	m1d	m1g	PAINTED
CF6	(-)195	2263	1119	2072	1052	2112	1590	1745	m1b	m1d	m1g	PAINTED
CF7	(-)175	2159	1042	1967	973	2007	1560	1725	m1b	m1d	m1g	PAINTED
CF8	(-)170	2081	1040	1889	972	1929	1558	1683	m1b	m1d	m1g	PAINTED



CHECK DIMENSIONS

MARK	L	M	N
CF1	2375	3014	3275
CF2	2340	2992	3243
CF3	2232	2921	3152
CF4	2150	2863	3090
CF5	2293	3220	2946
CF6	2263	3191	2929
CF7	2159	3104	2863
CF8	2081	3047	2808

BILL OF MATERIAL

QTY EA.	MARK	COMM.	DESCRIPTION	LENGTH	SPEC	GRADE	TEST	REMARKS	GRP.	ITEM	SHIP WEIGHT EA.
ONE	CF6		CROSSFRAME								351.94
1	a	C	310 x 37	2 072	M270M	345W	T	(C12 x25)	11	1	76.66
1	b	L	152 x 152 x 12.7	2 112	M270M	345W	T	(L6 x6x1/2)	11	2	62.73
1	c	L	152 x 152 x 12.7	1 590	M270M	345W	T	(L6 x6x1/2)	11	2	47.22
1	d	L	152 x 152 x 12.7	1 745	M270M	345W	T	(L6 x6x1/2)	11	2	51.83
2	m1b	PL	16 x 365	380	M270M	345W	T		11	3	17.42
2	m1d	PL	16 x 405	500	M270M	345W	T		11	3	25.43
1	m1g	PL	16 x 410	540	M270M	345W	T		11	3	27.80
ONE	CF7		CROSSFRAME								343.45
1	a	C	310 x 37	1 967	M270M	345W	T	(C12 x25)	11	1	72.78
1	b	L	152 x 152 x 12.7	2 007	M270M	345W	T	(L6 x6x1/2)	11	2	59.61
1	c	L	152 x 152 x 12.7	1 560	M270M	345W	T	(L6 x6x1/2)	11	2	46.33
1	d	L	152 x 152 x 12.7	1 725	M270M	345W	T	(L6 x6x1/2)	11	2	51.23
2	m1b	PL	16 x 365	380	M270M	345W	T		11	3	17.42
2	m1d	PL	16 x 405	500	M270M	345W	T		11	3	25.43
1	m1g	PL	16 x 410	540	M270M	345W	T		11	3	27.80
ONE	CF8		CROSSFRAME								336.95
1	a	C	310 x 37	1 889	M270M	345W	T	(C12 x25)	11	1	69.89
1	b	L	152 x 152 x 12.7	1 929	M270M	345W	T	(L6 x6x1/2)	11	2	57.29
1	c	L	152 x 152 x 12.7	1 558	M270M	345W	T	(L6 x6x1/2)	11	2	46.27
1	d	L	152 x 152 x 12.7	1 683	M270M	345W	T	(L6 x6x1/2)	11	2	49.99
2	m1b	PL	16 x 365	380	M270M	345W	T		11	3	17.42
2	m1d	PL	16 x 405	500	M270M	345W	T		11	3	25.43
1	m1g	PL	16 x 410	540	M270M	345W	T		11	3	27.80

TOTAL WEIGHT THIS SHEET: 2798.13 kg

BILL OF MATERIAL

QTY EA.	MARK	COMM.	DESCRIPTION	LENGTH	SPEC	GRADE	TEST	REMARKS	GRP.	ITEM	SHIP WEIGHT EA.
ONE	CF1		CROSSFRAME								361.20
1	a	C	310 x 37	2 184	M270M	345W	T	(C12 x25)	11	1	80.81
1	b	L	152 x 152 x 12.7	2 224	M270M	345W	T	(L6 x6x1/2)	11	2	66.05
1	c	L	152 x 152 x 12.7	1 769	M270M	345W	T	(L6 x6x1/2)	11	2	52.54
1	d	L	152 x 152 x 12.7	1 626	M270M	345W	T	(L6 x6x1/2)	11	2	48.29
2	m1a	PL	16 x 365	380	M270M	345W	T		11	3	17.42
2	m1c	PL	16 x 405	500	M270M	345W	T		11	3	25.43
1	m1f	PL	16 x 410	540	M270M	345W	T		11	3	27.80
ONE	CF2		CROSSFRAME								358.26
1	a	C	310 x 37	2 148	M270M	345W	T	(C12 x25)	11	1	79.48
1	b	L	152 x 152 x 12.7	2 188	M270M	345W	T	(L6 x6x1/2)	11	2	64.98
1	c	L	152 x 152 x 12.7	1 764	M270M	345W	T	(L6 x6x1/2)	11	2	52.39
1	d	L	152 x 152 x 12.7	1 613	M270M	345W	T	(L6 x6x1/2)	11	2	47.91
2	m1a	PL	16 x 365	380	M270M	345W	T		11	3	17.42
2	m1c	PL	16 x 405	500	M270M	345W	T		11	3	25.43
1	m1f	PL	16 x 410	540	M270M	345W	T		11	3	27.80
ONE	CF3		CROSSFRAME								349.36
1	a	C	310 x 37	2 039	M270M	345W	T	(C12 x25)	11	1	75.44
1	b	L	152 x 152 x 12.7	2 079	M270M	345W	T	(L6 x6x1/2)	11	2	61.75
1	c	L	152 x 152 x 12.7	1 742	M270M	345W	T	(L6 x6x1/2)	11	2	51.74
1	d	L	152 x 152 x 12.7	1 580	M270M	345W	T	(L6 x6x1/2)	11	2	46.93
2	m1a	PL	16 x 365	380	M270M	345W	T		11	3	17.42
2	m1c	PL	16 x 405	500	M270M	345W	T		11	3	25.43
1	m1f	PL	16 x 410	540	M270M	345W	T		11	3	27.80
ONE	CF4		CROSSFRAME								342.52
1	a	C	310 x 37	1 957	M270M	345W	T	(C12 x25)	11	1	72.41
1	b	L	152 x 152 x 12.7	1 997	M270M	345W	T	(L6 x6x1/2)	11	2	59.31
1	c	L	152 x 152 x 12.7	1 698	M270M	345W	T	(L6 x6x1/2)	11	2	50.43
1	d	L	152 x 152 x 12.7	1 578	M270M	345W	T	(L6 x6x1/2)	11	2	46.87
2	m1a	PL	16 x 365	380	M270M	345W	T		11	3	17.42
2	m1c	PL	16 x 405	500	M270M	345W	T		11	3	25.43
1	m1f	PL	16 x 410	540	M270M	345W	T		11	3	27.80
ONE	CF5		CROSSFRAME								354.46
1	a	C	310 x 37	2 103	M270M	345W	T	(C12 x25)	11	1	77.81
1	b	L	152 x 152 x 12.7	2 143	M270M	345W	T	(L6 x6x1/2)	11	2	63.65
1	c	L	152 x 152 x 12.7	1 601	M270M	345W	T	(L6 x6x1/2)	11	2	47.55
1	d	L	152 x 152 x 12.7	1 749	M270M	345W	T	(L6 x6x1/2)	11	2	51.95
2	m1b	PL	16 x 365	380	M270M	345W	T		11	3	17.42
2	m1d	PL	16 x 405	500	M270M	345W	T		11	3	25.43
1	m1g	PL	16 x 410	540	M270M	345W	T		11	3	27.80

☑ Reviewed
☐ Rejected

☐ Furnish as Corrected
☐ Revise and Resubmit
☐ Submit Specified Item

This review is only for general conformance with the design concept and the information given in the Construction Documents. Corrections or comments made on the shop drawings during this review do not relieve the contractor from compliance with the requirements of the plans and specifications. Review of a specific item shall not include review of an assembly of which the item is a component. The Contractor is responsible for dimensions to be confirmed and correlated at the jobsite; information that pertains solely to the fabrication process or to the means, methods, techniques, sequences and procedures of construction; coordination of the Work with that of all other trades and performing all work in a safe and satisfactory manner.

McFarland-Johnson, Inc.
Date 6/21/05
By EJW

VTrans
RECEIVED
CK'D BY JWC CK'D BY
JUN 2 1 2005
RESUBMIT APPROVED
BY DATE

NO.	REVISION	BY	DATE
△			
△			
△			

HIGH STEEL STRUCTURES, INC.
1770 Hempstead Road
Lancaster, PA 17605-0008
Phone 717/299-5281
A Division of High Industries, Inc.

SHOP NOTE

HOLES: 15/16"ø
BOLTS: NONE
PAINT: SEE DWG. GN1 (U.N.)
FOR GENERAL SHOP NOTES, SEE DWG. GN1.

CODE:63

CROSSFRAMES CF1 THRU CF8
U.S. RTE. 5 (BRIDGE #60) OVER LULLS BROOK
U.S. RTE. 5 STA. 3+080.77 TO STA. 3+123.110
TOWN OF HARTLAND
WINDSOR COUNTY, VERMONT
STATE OF VERMONT, AGENCY OF TRANSPORTATION

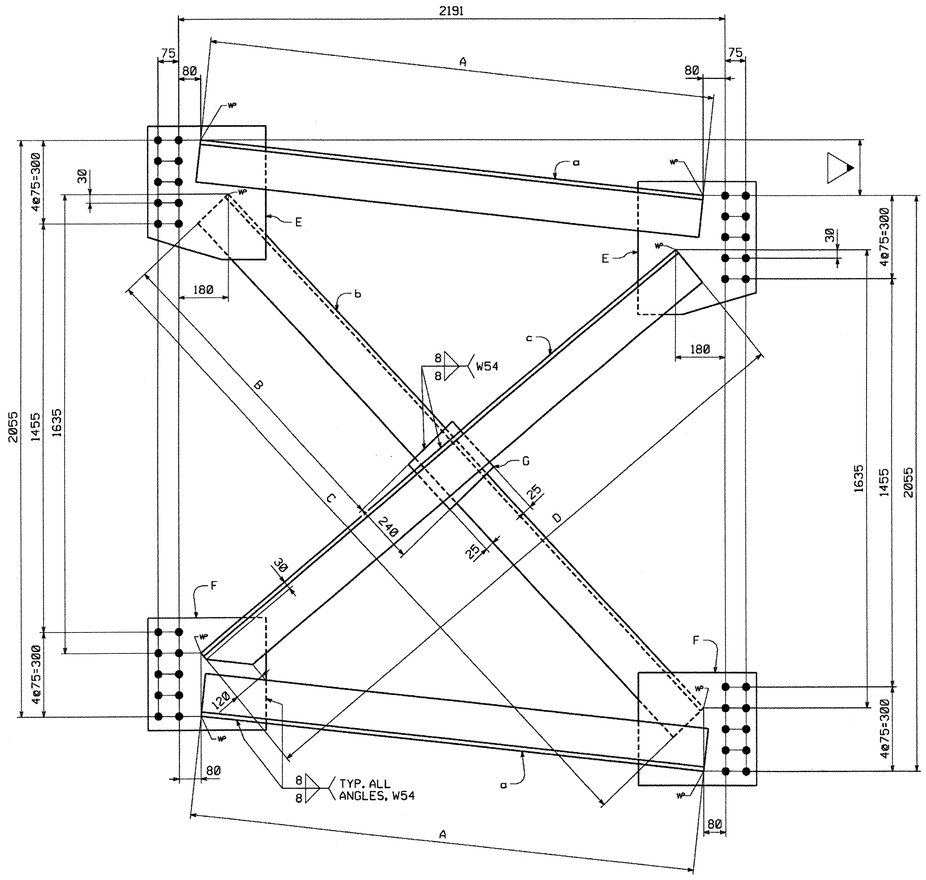
STATE CONTRACT OR REF. NO. PROJECT NO. BRS-0113(22)
CONTRACTOR MILLER CONSTRUCTION, INC.
IN CHARGE: GLIDDEN (IH) MADE BY: KLW CHK'D BY: MGK DATE: 4/18/05
CONTRACT NUMBER: VT-05017-1 DRAWING NUMBER: 1 OF 15

11955

05017 X3 6/17/05 6/17/05For Your Use TO:Vermont Agency Of

METRIC

METRIC	1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE NOTED. 2. ALL WEIGHTS ARE IN KILOGRAMS.	FED. ROAD DIV. NO.	STATE	FED. AID PROJ. NO.
			VT	



INTERMEDIATE CROSSFRAMES

MARK	▷	A	B	C	D	E	F	G	REMARKS
CF9	210	2042	1219	2671	2400	m1h	m1m	m1p	NO PAINT
CF10	205	2041	1217	2667	2403	m1h	m1m	m1p	NO PAINT
CF11						m1k	m1n	m1s	PAINTED
CF12	200	2041	1215	2664	2406	m1h	m1m	m1p	NO PAINT
CF13	195	2040	1213	2660	2409	m1h	m1m	m1p	NO PAINT
CF14	190	2040	1212	2657	2412	m1h	m1m	m1p	NO PAINT

BILL OF MATERIAL

QTY EA.	MARK	COMM.	DESCRIPTION	LENGTH	SPEC	GRADE	TEST	REMARKS	GRP.	ITEM	SHIP WEIGHT EA.
3	CF9		CROSSFRAMES								368.79
6	a	L	152 x 152 x 12.7	2 042	M270M	345W	T	(L6 x6x1/2)	11	2	60.65
3	b	L	152 x 152 x 12.7	2 671	M270M	345W	T	(L6 x6x1/2)	11	2	79.33
3	c	L	152 x 152 x 12.7	2 400	M270M	345W	T	(L6 x6x1/2)	11	2	71.28
6	m1h	PL	16 x 425	460	M270M	345W	T		11	3	24.55
6	m1m	PL	16 x 400	415	M270M	345W	T		11	3	20.85
3	m1p	PL	16 x 202	240	M270M	345W	T	FILL	11	3	6.09
2	CF10		CROSSFRAMES								368.70
4	a	L	152 x 152 x 12.7	2 041	M270M	345W	T	(L6 x6x1/2)	11	2	60.62
2	b	L	152 x 152 x 12.7	2 667	M270M	345W	T	(L6 x6x1/2)	11	2	79.21
2	c	L	152 x 152 x 12.7	2 403	M270M	345W	T	(L6 x6x1/2)	11	2	71.37
4	m1h	PL	16 x 425	460	M270M	345W	T		11	3	24.55
4	m1m	PL	16 x 400	415	M270M	345W	T		11	3	20.85
2	m1p	PL	16 x 202	240	M270M	345W	T	FILL	11	3	6.09
ONE	CF11		CROSSFRAME								368.70
2	a	L	152 x 152 x 12.7	2 041	M270M	345W	T	(L6 x6x1/2)	11	2	60.62
1	b	L	152 x 152 x 12.7	2 667	M270M	345W	T	(L6 x6x1/2)	11	2	79.21
1	c	L	152 x 152 x 12.7	2 403	M270M	345W	T	(L6 x6x1/2)	11	2	71.37
2	m1k	PL	16 x 425	460	M270M	345W	T		11	3	24.55
2	m1n	PL	16 x 400	415	M270M	345W	T		11	3	20.85
1	m1s	PL	16 x 202	240	M270M	345W	T	FILL	11	3	6.09
ONE	CF12		CROSSFRAME								368.70
2	a	L	152 x 152 x 12.7	2 041	M270M	345W	T	(L6 x6x1/2)	11	2	60.62
1	b	L	152 x 152 x 12.7	2 664	M270M	345W	T	(L6 x6x1/2)	11	2	79.12
1	c	L	152 x 152 x 12.7	2 406	M270M	345W	T	(L6 x6x1/2)	11	2	71.46
2	m1h	PL	16 x 425	460	M270M	345W	T		11	3	24.55
2	m1m	PL	16 x 400	415	M270M	345W	T		11	3	20.85
1	m1p	PL	16 x 202	240	M270M	345W	T	FILL	11	3	6.09
ONE	CF13		CROSSFRAME								368.61
2	a	L	152 x 152 x 12.7	2 040	M270M	345W	T	(L6 x6x1/2)	11	2	60.59
1	b	L	152 x 152 x 12.7	2 660	M270M	345W	T	(L6 x6x1/2)	11	2	79.00
1	c	L	152 x 152 x 12.7	2 409	M270M	345W	T	(L6 x6x1/2)	11	2	71.55
2	m1h	PL	16 x 425	460	M270M	345W	T		11	3	24.55
2	m1m	PL	16 x 400	415	M270M	345W	T		11	3	20.85
1	m1p	PL	16 x 202	240	M270M	345W	T	FILL	11	3	6.09
2	CF14		CROSSFRAMES								368.61
4	a	L	152 x 152 x 12.7	2 040	M270M	345W	T	(L6 x6x1/2)	11	2	60.59
2	b	L	152 x 152 x 12.7	2 657	M270M	345W	T	(L6 x6x1/2)	11	2	78.91
2	c	L	152 x 152 x 12.7	2 412	M270M	345W	T	(L6 x6x1/2)	11	2	71.64
4	m1h	PL	16 x 425	460	M270M	345W	T		11	3	24.55
4	m1m	PL	16 x 400	415	M270M	345W	T		11	3	20.85
2	m1p	PL	16 x 202	240	M270M	345W	T	FILL	11	3	6.09

TOTAL WEIGHT THIS SHEET: 3687.01 kg

VTrans RECEIVED
CK'D BY JWS CK'D BY
JUN 2 1 2005
RESUBMIT APPROVED
BY DATE

☑ Reviewed
☐ Rejected
☐ Furnish as Corrected
☐ Revise and Resubmit
☐ Submit Specified Item

This review is only for general conformance with the design concept and the information given in the Construction Documents. Corrections or comments made on this shop drawings during this review do not relieve the contractor from compliance with the requirements of the plans and specifications. Review of a specific item shall not include review of an assembly of which the item is a component. The Contractor is responsible for dimensions to be confirmed and correlated at the jobsite; information that pertains solely to the fabrication process or to the means, methods, techniques, sequences and procedures of construction; coordination of the Work with that of all other trades and performing all work in a safe and satisfactory manner.

McFarland-Johnson, Inc.
Date 6/20/05
By ERW

SHOP NOTE

HOLES: 15/16"ø
BOLTS: NONE
PAINT: SEE DWG. GN1 (U.N.)
FOR GENERAL SHOP NOTES, SEE DWG. GN1.

CODE:63

NO.	REVISION	BY	DATE
△			
△			
△			

HIGH STEEL STRUCTURES, INC.
1770 Hempstead Road
Lancaster, PA 17605-0008
Phone 717/299-5211
A Division of High Industries, Inc.

CROSSFRAMES CF9 THRU CF14
U.S. RTE. 5 (BRIDGE #60) OVER LULLS BROOK
U.S. RTE. 5 STA. 3+080.77 TO STA. 3+123.110
TOWN OF HARTLAND
WINDSOR COUNTY, VERMONT
STATE OF VERMONT, AGENCY OF TRANSPORTATION

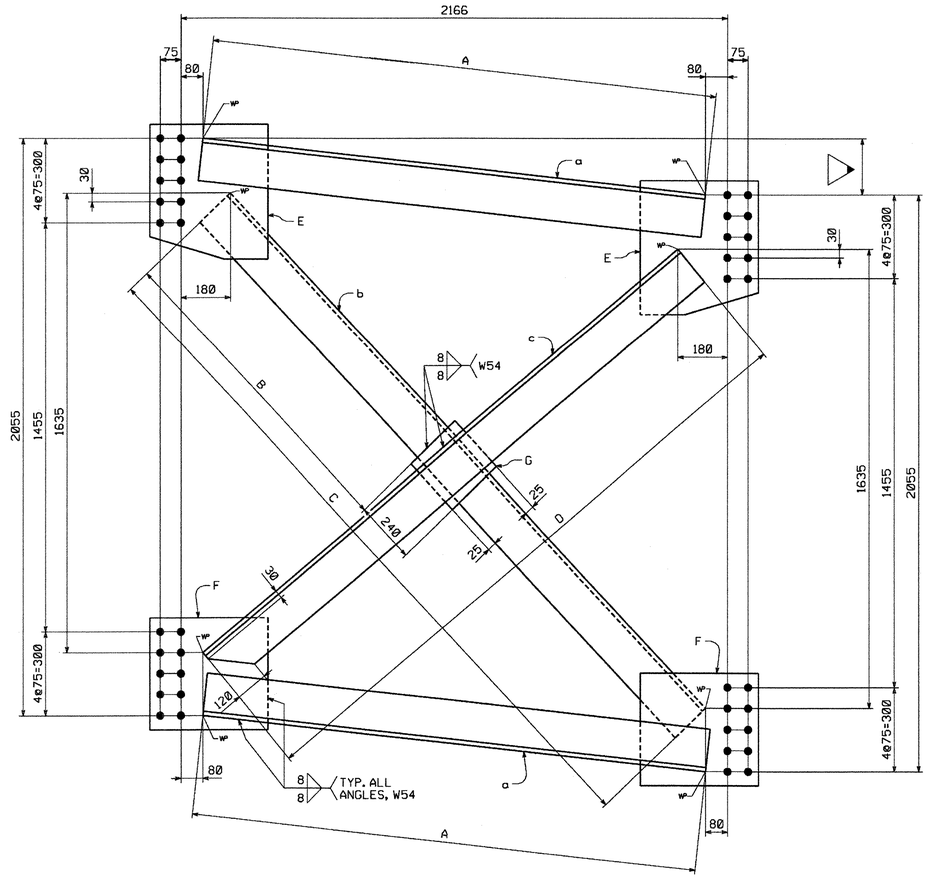
STATE CONTRACT OR REF. NO. PROJECT NO. BRS-0113(22)
CONTRACTOR MILLER CONSTRUCTION, INC.
IN CHARGE: GLIDDEN (IH) MADE BY: KLW CHK'D. BY: MGK DATE: 4/18/05
CONTRACT NUMBER: VT-05017-1 DRAWING NUMBER: 2 OF 15

12055

05017 X3 6/17/05 6/17/05For Your Use TO:Vermont Agency Of

PLOTTED: 4/20/2005 6:45:03 AM BY: mkreidel

METRIC



INTERMEDIATE CROSSFRAMES

MARK	▷	A	B	C	D	E	F	G	REMARKS
CF15	205	2016	1209	2649	2383	m1h	m1m	m1p	NO PAINT
CF16	200	2016	1207	2646	2386	m1h	m1m	m1p	NO PAINT
CF17	195	2015	1205	2642	2389	m1h	m1m	m1p	NO PAINT
CF18						m1k	m1n	m1s	PAINTED
CF19	190	2015	1203	2639	2392	m1h	m1m	m1p	NO PAINT
CF20	185	2015	1201	2635	2395	m1h	m1m	m1p	NO PAINT
CF21	180	2014	1199	2632	2398	m1h	m1m	m1p	NO PAINT

METRIC 1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE NOTED.
2. ALL WEIGHTS ARE IN KILOGRAMS.

FED. ROAD DIV. NO.	STATE	FED. AID PROJ. NO.
	VT	

BILL OF MATERIAL

QTY EA.	MARK	COMM.	DESCRIPTION	LENGTH	SPEC	GRADE	TEST	REMARKS	GRP.	ITEM	SHIP WEIGHT EA.
ONE	CF21		CROSSFRAME								365.91
2	a	L	152 x 152 x 12.7	2 014	M270M	345W	T	(L6 x6x1/2)	11	2	59.82
1	b	L	152 x 152 x 12.7	2 632	M270M	345W	T	(L6 x6x1/2)	11	2	78.17
1	c	L	152 x 152 x 12.7	2 398	M270M	345W	T	(L6 x6x1/2)	11	2	71.22
2	m1h	PL	16 x 425	460	M270M	345W	T		11	3	24.55
2	m1m	PL	16 x 400	415	M270M	345W	T		11	3	20.85
1	m1p	PL	16 x 202	240	M270M	345W	T	FILL	11	3	6.09

TOTAL WEIGHT THIS SHEET: 3660.31 kg

BILL OF MATERIAL

QTY EA.	MARK	COMM.	DESCRIPTION	LENGTH	SPEC	GRADE	TEST	REMARKS	GRP.	ITEM	SHIP WEIGHT EA.
3	CF15		CROSSFRAMES								366.09
6	a	L	152 x 152 x 12.7	2 016	M270M	345W	T	(L6 x6x1/2)	11	2	59.88
3	b	L	152 x 152 x 12.7	2 649	M270M	345W	T	(L6 x6x1/2)	11	2	78.68
3	c	L	152 x 152 x 12.7	2 383	M270M	345W	T	(L6 x6x1/2)	11	2	70.78
6	m1h	PL	16 x 425	460	M270M	345W	T		11	3	24.55
6	m1m	PL	16 x 400	415	M270M	345W	T		11	3	20.85
3	m1p	PL	16 x 202	240	M270M	345W	T	FILL	11	3	6.09
2	CF16		CROSSFRAMES								366.09
4	a	L	152 x 152 x 12.7	2 016	M270M	345W	T	(L6 x6x1/2)	11	2	59.88
2	b	L	152 x 152 x 12.7	2 646	M270M	345W	T	(L6 x6x1/2)	11	2	78.59
2	c	L	152 x 152 x 12.7	2 386	M270M	345W	T	(L6 x6x1/2)	11	2	70.86
4	m1h	PL	16 x 425	460	M270M	345W	T		11	3	24.55
4	m1m	PL	16 x 400	415	M270M	345W	T		11	3	20.85
2	m1p	PL	16 x 202	240	M270M	345W	T	FILL	11	3	6.09
ONE	CF17		CROSSFRAME								366.00
2	a	L	152 x 152 x 12.7	2 015	M270M	345W	T	(L6 x6x1/2)	11	2	59.85
1	b	L	152 x 152 x 12.7	2 642	M270M	345W	T	(L6 x6x1/2)	11	2	78.47
1	c	L	152 x 152 x 12.7	2 389	M270M	345W	T	(L6 x6x1/2)	11	2	70.95
2	m1h	PL	16 x 425	460	M270M	345W	T		11	3	24.55
2	m1m	PL	16 x 400	415	M270M	345W	T		11	3	20.85
1	m1p	PL	16 x 202	240	M270M	345W	T	FILL	11	3	6.09
ONE	CF18		CROSSFRAME								366.00
2	a	L	152 x 152 x 12.7	2 015	M270M	345W	T	(L6 x6x1/2)	11	2	59.85
1	b	L	152 x 152 x 12.7	2 642	M270M	345W	T	(L6 x6x1/2)	11	2	78.47
1	c	L	152 x 152 x 12.7	2 389	M270M	345W	T	(L6 x6x1/2)	11	2	70.95
2	m1k	PL	16 x 425	460	M270M	345W	T		11	3	24.55
2	m1n	PL	16 x 400	415	M270M	345W	T		11	3	20.85
1	m1s	PL	16 x 202	240	M270M	345W	T	FILL	11	3	6.09
ONE	CF19		CROSSFRAME								366.00
2	a	L	152 x 152 x 12.7	2 015	M270M	345W	T	(L6 x6x1/2)	11	2	59.85
1	b	L	152 x 152 x 12.7	2 639	M270M	345W	T	(L6 x6x1/2)	11	2	78.38
1	c	L	152 x 152 x 12.7	2 392	M270M	345W	T	(L6 x6x1/2)	11	2	71.04
2	m1h	PL	16 x 425	460	M270M	345W	T		11	3	24.55
2	m1m	PL	16 x 400	415	M270M	345W	T		11	3	20.85
1	m1p	PL	16 x 202	240	M270M	345W	T	FILL	11	3	6.09
ONE	CF20		CROSSFRAME								365.97
2	a	L	152 x 152 x 12.7	2 015	M270M	345W	T	(L6 x6x1/2)	11	2	59.85
1	b	L	152 x 152 x 12.7	2 635	M270M	345W	T	(L6 x6x1/2)	11	2	78.26
1	c	L	152 x 152 x 12.7	2 395	M270M	345W	T	(L6 x6x1/2)	11	2	71.13
2	m1h	PL	16 x 425	460	M270M	345W	T		11	3	24.55
2	m1m	PL	16 x 400	415	M270M	345W	T		11	3	20.85
1	m1p	PL	16 x 202	240	M270M	345W	T	FILL	11	3	6.09

VTrans RECEIVED
JUN 2 1 2005
CK'D BY: JWC CK'D BY:
RESUBMIT: APPROVED:
BY DATE

☑ Reviewed ☐ Furnish as Corrected
☐ Rejected ☐ Revise and Resubmit
☐ Submit Specified Item

This review is only for general conformance with the design concept and the information given in the Construction Documents. Corrections or comments made on the shop drawings during this review do not relieve the contractor from compliance with the requirements of the plans and specifications. Review of a specific item shall not include review of an assembly of which the item is a component. The Contractor is responsible for dimensions to be confirmed and correlated at the jobsite; information that pertains solely to the fabrication process or to the means, methods, techniques, sequences and procedures of construction; coordination of the Work with that of all other trades and performing all work in a safe and satisfactory manner.

McFarland-Johnson, Inc.
Date 6/16/05
By EW

SHOP NOTE

HOLES: 15/16"ø
BOLTS: NONE
PAINT: SEE DWG. GN1 (U.N.)
FOR GENERAL SHOP NOTES, SEE DWG. GN1.

CODE:63

NO.	REVISION	BY	DATE
△			
△			
△			

HIGH STEEL STRUCTURES, INC.
1170 Hempstead Road
Lancaster, PA 17605-0008
Phone 717/299-5211
A Division of High Industries, Inc.

CROSSFRAMES CF15 THRU CF21
U.S. RTE. 5 (BRIDGE #60) OVER LULLS BROOK
U.S. RTE. 5 STA. 3+080.77 TO STA. 3+123.110
TOWN OF HARTLAND
WINDSOR COUNTY, VERMONT
STATE OF VERMONT, AGENCY OF TRANSPORTATION

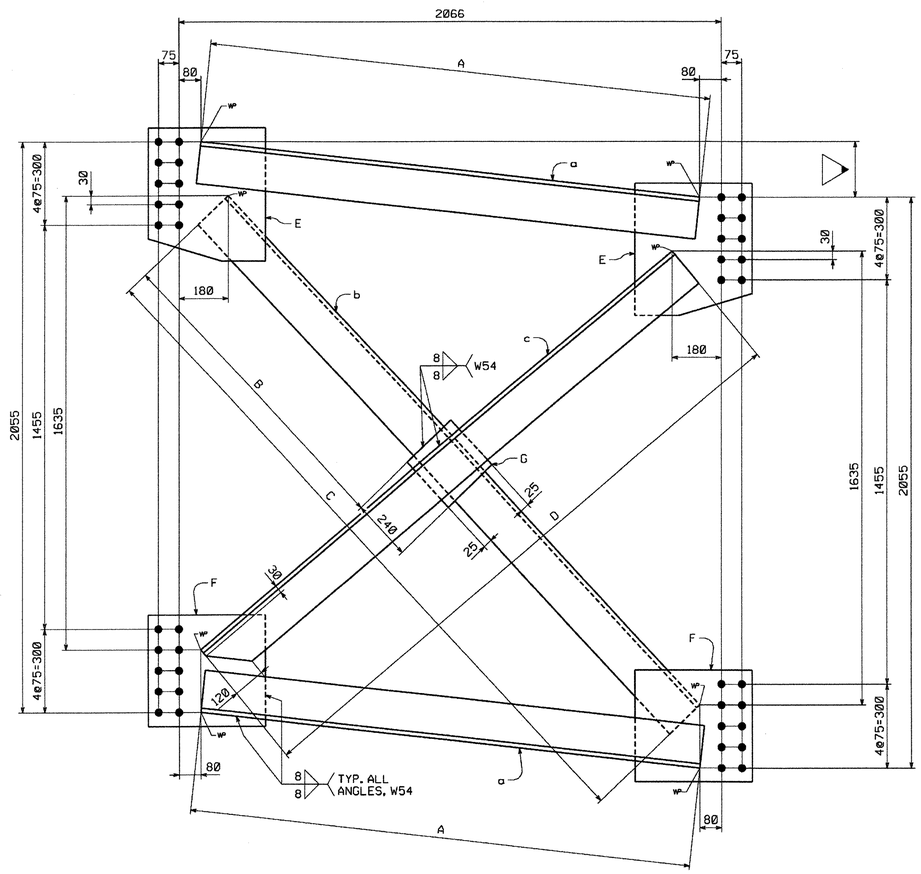
STATE CONTRACT OR REF. NO. PROJECT NO. BRS-0113(22)
CONTRACTOR MILLER CONSTRUCTION, INC.
IN CHARGE: GLIDDEN (IH) MADE BY: KLW CHK'D. BY: MGK DATE: 4/18/05
CONTRACT NUMBER: VT-05017-1 DRAWING NUMBER: 3 OF 15

12/55

PLOTTED: 4/20/2005 6:45:06 AM BY: mkreidel

05017 X3 6/17/05 6/17/05For Your Use TO:Vermont Agency Of

METRIC



INTERMEDIATE CROSSFRAMES

MARK	▷	A	B	C	D	E	F	G	REMARKS
CF22	185	1915	1167	2564	2316	m1h	m1m	m1p	NO PAINT
CF23	180	1914	1166	2560	2319	m1h	m1m	m1p	NO PAINT
CF24						m1k	m1n	m1s	PAINTED
CF25	175	1914	1164	2557	2322	m1h	m1m	m1p	NO PAINT
CF26	165	1913	1160	2550	2329	m1h	m1m	m1p	NO PAINT
CF27	160	1913	1158	2546	2332	m1h	m1m	m1p	NO PAINT

METRIC

1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE NOTED.
2. ALL WEIGHTS ARE IN KILOGRAMS.

FED. ROAD DIV. NO.	STATE	FED. AID PROJ. NO.
	VT	

BILL OF MATERIAL

QTY EA.	MARK	COMM.	DESCRIPTION	LENGTH	SPEC	GRADE	TEST	REMARKS	GRP.	ITEM	SHIP WEIGHT EA.
2	CF22		CROSSFRAMES								355.57
4	a	L	152 x 152 x 12.7	1 915	M270M	345W	T	(L6 x6x1/2)	11	2	56.88
2	b	L	152 x 152 x 12.7	2 564	M270M	345W	T	(L6 x6x1/2)	11	2	76.15
2	c	L	152 x 152 x 12.7	2 316	M270M	345W	T	(L6 x6x1/2)	11	2	68.79
4	m1h	PL	16 x 425	460	M270M	345W	T		11	3	24.55
4	m1m	PL	16 x 400	415	M270M	345W	T		11	3	20.85
2	m1p	PL	16 x 202	240	M270M	345W	T	FILL	11	3	6.09
3	CF23		CROSSFRAMES								355.48
6	a	L	152 x 152 x 12.7	1 914	M270M	345W	T	(L6 x6x1/2)	11	2	56.85
3	b	L	152 x 152 x 12.7	2 560	M270M	345W	T	(L6 x6x1/2)	11	2	76.03
3	c	L	152 x 152 x 12.7	2 319	M270M	345W	T	(L6 x6x1/2)	11	2	68.87
6	m1h	PL	16 x 425	460	M270M	345W	T		11	3	24.55
6	m1m	PL	16 x 400	415	M270M	345W	T		11	3	20.85
3	m1p	PL	16 x 202	240	M270M	345W	T	FILL	11	3	6.09
ONE	CF24		CROSSFRAME								355.48
2	a	L	152 x 152 x 12.7	1 914	M270M	345W	T	(L6 x6x1/2)	11	2	56.85
1	b	L	152 x 152 x 12.7	2 560	M270M	345W	T	(L6 x6x1/2)	11	2	76.03
1	c	L	152 x 152 x 12.7	2 319	M270M	345W	T	(L6 x6x1/2)	11	2	68.87
2	m1k	PL	16 x 425	460	M270M	345W	T		11	3	24.55
2	m1n	PL	16 x 400	415	M270M	345W	T		11	3	20.85
1	m1s	PL	16 x 202	240	M270M	345W	T	FILL	11	3	6.09
ONE	CF25		CROSSFRAME								355.48
2	a	L	152 x 152 x 12.7	1 914	M270M	345W	T	(L6 x6x1/2)	11	2	56.85
1	b	L	152 x 152 x 12.7	2 557	M270M	345W	T	(L6 x6x1/2)	11	2	75.94
1	c	L	152 x 152 x 12.7	2 322	M270M	345W	T	(L6 x6x1/2)	11	2	68.96
2	m1h	PL	16 x 425	460	M270M	345W	T		11	3	24.55
2	m1m	PL	16 x 400	415	M270M	345W	T		11	3	20.85
1	m1p	PL	16 x 202	240	M270M	345W	T	FILL	11	3	6.09
ONE	CF26		CROSSFRAME								355.42
2	a	L	152 x 152 x 12.7	1 913	M270M	345W	T	(L6 x6x1/2)	11	2	56.82
1	b	L	152 x 152 x 12.7	2 550	M270M	345W	T	(L6 x6x1/2)	11	2	75.74
1	c	L	152 x 152 x 12.7	2 329	M270M	345W	T	(L6 x6x1/2)	11	2	69.17
2	m1h	PL	16 x 425	460	M270M	345W	T		11	3	24.55
2	m1m	PL	16 x 400	415	M270M	345W	T		11	3	20.85
1	m1p	PL	16 x 202	240	M270M	345W	T	FILL	11	3	6.09
2	CF27		CROSSFRAMES								355.39
4	a	L	152 x 152 x 12.7	1 913	M270M	345W	T	(L6 x6x1/2)	11	2	56.82
2	b	L	152 x 152 x 12.7	2 546	M270M	345W	T	(L6 x6x1/2)	11	2	75.62
2	c	L	152 x 152 x 12.7	2 332	M270M	345W	T	(L6 x6x1/2)	11	2	69.26
4	m1h	PL	16 x 425	460	M270M	345W	T		11	3	24.55
4	m1m	PL	16 x 400	415	M270M	345W	T		11	3	20.85
2	m1p	PL	16 x 202	240	M270M	345W	T	FILL	11	3	6.09

TOTAL WEIGHT THIS SHEET: 3554.78 kg

VTrans
RECEIVED
CK'D BY JWC CK'D BY
JUN 2 1 2005
RESUBMIT APPROVED
BY DATE

☑ Reviewed
☐ Rejected
☐ Furnish as Corrected
☐ Revise and Resubmit
☐ Submit Specified Item

This review is only for general conformance with the design concept and the information given in the Construction Documents. Corrections or comments made on the shop drawings during this review do not relieve the contractor from compliance with the requirements of the plans and specifications. Review of a specific item shall not include review of an assembly of which the item is a component. The Contractor is responsible for dimensions to be confirmed and correlated at the jobsite; information that pertains solely to the fabrication process or to the means, methods, techniques, sequences and procedures of construction; coordination of the Work with that of all other trades and performing all work in a safe and satisfactory manner.

McFarland-Johnson, Inc.
Date 6/21/05
By CW

SHOP NOTE

HOLES: 15/16"ø
BOLTS: NONE
PAINT: SEE DWG. GN1 (U.N.)
FOR GENERAL SHOP NOTES, SEE DWG. GN1.

CODE:63

NO.	REVISION	BY	DATE
△			
△			
△			

HIGH STEEL STRUCTURES, INC.
1770 Hempstead Road
Lancaster, PA 17605-0008
Phone 717/299-5211
A Division of High Industries, Inc.

CROSSFRAMES CF22 THRU CF27
U.S. RTE. 5 (BRIDGE #60) OVER LULLS BROOK
U.S. RTE. 5 STA. 3+080.77 TO STA. 3+123.110
TOWN OF HARTLAND
WINDSOR COUNTY, VERMONT
STATE OF VERMONT, AGENCY OF TRANSPORTATION

STATE CONTRACT OR REF. NO. PROJECT NO. BRS-0113(22)
CONTRACTOR MILLER CONSTRUCTION, INC.
IN CHARGE: GLIDDEN (IH) MADE BY: KLW CHK'D. BY: MGK DATE: 4/18/05
CONTRACT NUMBER: VT-05017-1 DRAWING NUMBER: 4 OF 15

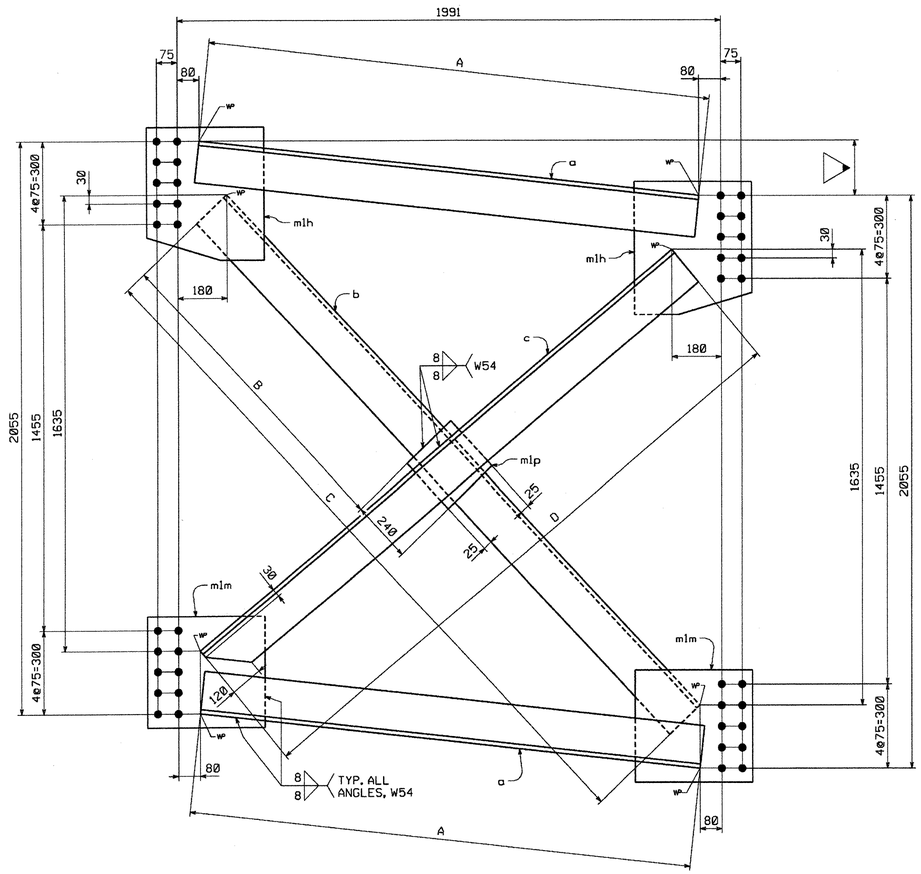
12255

PLOTTED: 4/28/2005 6:45:03 AM BY: mk-reidel

60

05017 X3 6/17/05 6/17/05For Your Use TO:Vermont Agency Of

METRIC



INTERMEDIATE CROSSFRAMES

MARK	▷	A	B	C	D
CF28	180	1840	1141	2508	2261
CF29	175	1839	1139	2504	2265
CF30	170	1839	1137	2501	2268
CF31	165	1838	1135	2497	2271
CF32	160	1838	1133	2494	2274
CF33	155	1838	1131	2490	2277

METRIC 1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE NOTED.
2. ALL WEIGHTS ARE IN KILOGRAMS.

FED. ROAD DIV. NO.	STATE	FED. AID PROJ. NO.
	VT	

BILL OF MATERIAL

QTY EA.	MARK	COMM.	DESCRIPTION	LENGTH	SPEC	GRADE	TEST	REMARKS	GRP.	ITEM	SHIP WEIGHT EA.
4	CF28		CROSSFRAMES								347.82
8	a	L	152 x 152 x 12.7	1 840	M270M	345W	T	(L6 x6x1/2)	11	2	54.65
4	b	L	152 x 152 x 12.7	2 508	M270M	345W	T	(L6 x6x1/2)	11	2	74.49
4	c	L	152 x 152 x 12.7	2 261	M270M	345W	T	(L6 x6x1/2)	11	2	67.15
8	m1h	PL	16 x 425	460	M270M	345W	T		11	3	24.55
8	m1m	PL	16 x 400	415	M270M	345W	T		11	3	20.85
4	m1p	PL	16 x 202	240	M270M	345W	T	FILL	11	3	6.09
2	CF29		CROSSFRAMES								347.76
4	a	L	152 x 152 x 12.7	1 839	M270M	345W	T	(L6 x6x1/2)	11	2	54.62
2	b	L	152 x 152 x 12.7	2 504	M270M	345W	T	(L6 x6x1/2)	11	2	74.37
2	c	L	152 x 152 x 12.7	2 265	M270M	345W	T	(L6 x6x1/2)	11	2	67.27
4	m1h	PL	16 x 425	460	M270M	345W	T		11	3	24.55
4	m1m	PL	16 x 400	415	M270M	345W	T		11	3	20.85
2	m1p	PL	16 x 202	240	M270M	345W	T	FILL	11	3	6.09
ONE	CF30		CROSSFRAME								347.76
2	a	L	152 x 152 x 12.7	1 839	M270M	345W	T	(L6 x6x1/2)	11	2	54.62
1	b	L	152 x 152 x 12.7	2 501	M270M	345W	T	(L6 x6x1/2)	11	2	74.28
1	c	L	152 x 152 x 12.7	2 268	M270M	345W	T	(L6 x6x1/2)	11	2	67.36
2	m1h	PL	16 x 425	460	M270M	345W	T		11	3	24.55
2	m1m	PL	16 x 400	415	M270M	345W	T		11	3	20.85
1	m1p	PL	16 x 202	240	M270M	345W	T	FILL	11	3	6.09
ONE	CF31		CROSSFRAME								347.67
2	a	L	152 x 152 x 12.7	1 838	M270M	345W	T	(L6 x6x1/2)	11	2	54.59
1	b	L	152 x 152 x 12.7	2 497	M270M	345W	T	(L6 x6x1/2)	11	2	74.16
1	c	L	152 x 152 x 12.7	2 271	M270M	345W	T	(L6 x6x1/2)	11	2	67.45
2	m1h	PL	16 x 425	460	M270M	345W	T		11	3	24.55
2	m1m	PL	16 x 400	415	M270M	345W	T		11	3	20.85
1	m1p	PL	16 x 202	240	M270M	345W	T	FILL	11	3	6.09
ONE	CF32		CROSSFRAME								347.67
2	a	L	152 x 152 x 12.7	1 838	M270M	345W	T	(L6 x6x1/2)	11	2	54.59
1	b	L	152 x 152 x 12.7	2 494	M270M	345W	T	(L6 x6x1/2)	11	2	74.07
1	c	L	152 x 152 x 12.7	2 274	M270M	345W	T	(L6 x6x1/2)	11	2	67.54
2	m1h	PL	16 x 425	460	M270M	345W	T		11	3	24.55
2	m1m	PL	16 x 400	415	M270M	345W	T		11	3	20.85
1	m1p	PL	16 x 202	240	M270M	345W	T	FILL	11	3	6.09
ONE	CF33		CROSSFRAME								347.64
2	a	L	152 x 152 x 12.7	1 838	M270M	345W	T	(L6 x6x1/2)	11	2	54.59
1	b	L	152 x 152 x 12.7	2 490	M270M	345W	T	(L6 x6x1/2)	11	2	73.95
1	c	L	152 x 152 x 12.7	2 277	M270M	345W	T	(L6 x6x1/2)	11	2	67.63
2	m1h	PL	16 x 425	460	M270M	345W	T		11	3	24.55
2	m1m	PL	16 x 400	415	M270M	345W	T		11	3	20.85
1	m1p	PL	16 x 202	240	M270M	345W	T	FILL	11	3	6.09

TOTAL WEIGHT THIS SHEET: 3477.56 kg

VTrans
RECEIVED
CK'D BY JWC CK'D BY _____
JUN 21 2005
RESUBMIT _____ APPROVED _____
BY DATE

☑ Reviewed
☐ Rejected
☐ Furnish as Corrected
☐ Revise and Resubmit
☐ Submit Specified Item

This review is only for general conformance with the design concept and the information given in the Construction Documents. Corrections or comments made on the shop drawings during this review do not relieve the contractor from compliance with the requirements of the plans and specifications. Review of a specific item shall not include review of an assembly of which this item is a component. The Contractor is responsible for dimensions to be confirmed and correlated at the jobsite, information that pertains solely to the fabrication process or to the means, methods, techniques, sequences and procedures of construction; coordination of the Work with that of all other trades and performing all work in a safe and satisfactory manner.

McFarland-Johnson, Inc.
Date 6/21/05
By EKW

SHOP NOTE

HOLES: 15/16"ø
BOLTS: NONE
PAINT: NONE
FOR GENERAL SHOP NOTES, SEE DWG. GN1.

CODE:63

NO.	REVISION	BY	DATE
△			
△			
△			

HIGH STEEL STRUCTURES, INC.
1770 Hempstead Road
Lancaster, PA 17605-0008
Phone 717/299-5211
A Division of High Industries, Inc.

CROSSFRAMES CF28 THRU CF33
U.S. RTE. 5 (BRIDGE #60) OVER LULLS BROOK
U.S. RTE. 5 STA. 3+080.77 TO STA. 3+123.110
TOWN OF HARTLAND
WINDSOR COUNTY, VERMONT
STATE OF VERMONT, AGENCY OF TRANSPORTATION

STATE CONTRACT OR REF. NO. PROJECT NO. BRS-0113(22)
CONTRACTOR MILLER CONSTRUCTION, INC.
IN CHARGE: GLIDDEN (IH) MADE BY: KLW CHK'D. BY: MGK DATE: 4/18/05
CONTRACT NUMBER: VT-05017-1 DRAWING NUMBER: 5 OF 15

PLOTTED: 4/20/2005 6:45:11 AM
BY: mkreidel

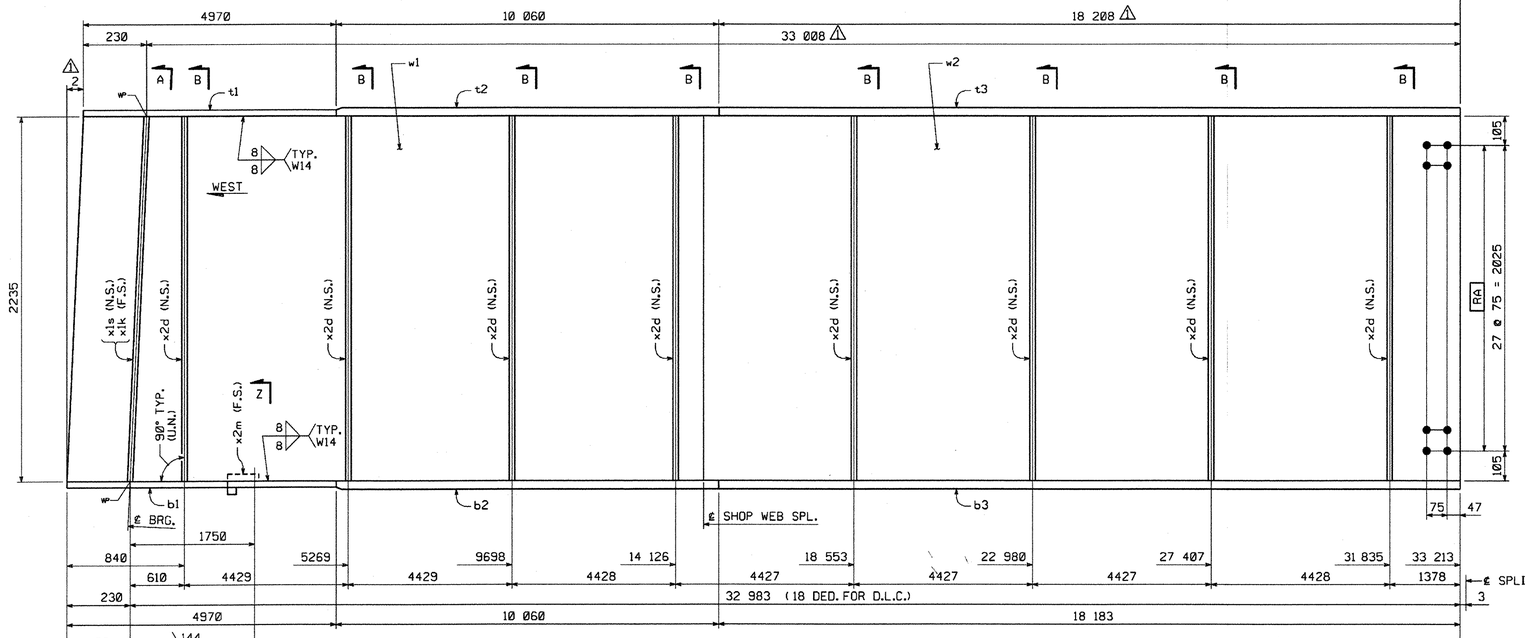
12355

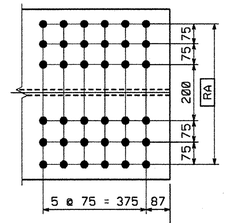
05017 X3 6/17/05 6/17/05For Your Use TO:Vermont Agency Of

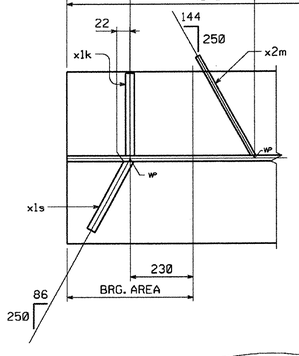
METRIC

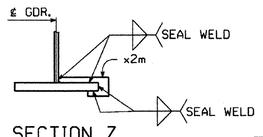
1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE NOTED.
2. ALL WEIGHTS ARE IN KILOGRAMS.

FED. ROAD DIV. NO.	STATE	FED. AID PROJ. NO.
	VT	



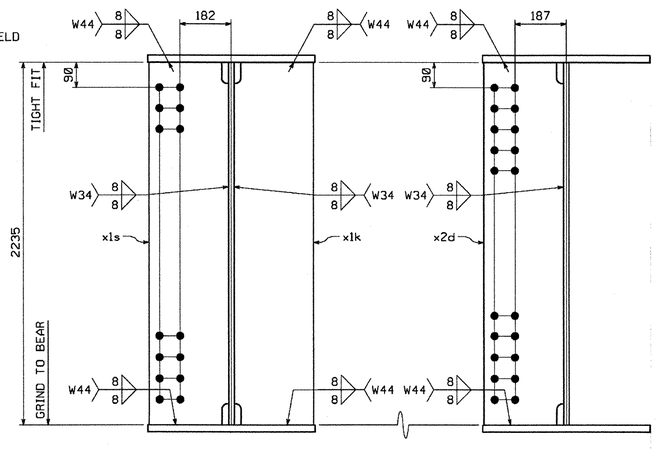






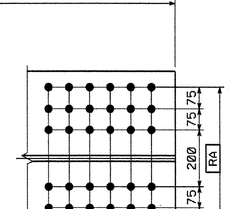
SECTION Z
(DEVELOPED)

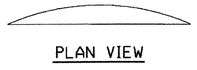
GIRDER MK. ~ G1A



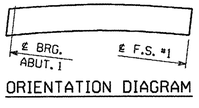
SECTION A
(DEVELOPED)

SECTION B





PLAN VIEW



ORIENTATION DIAGRAM

BILL OF MATERIAL

	SHIP.	QTY EA.	MARK	COMMODITY	DESCRIPTION	LENGTH	SPEC	GRADE	TEST	REMARKS	GRP.	ITEM	SHIP WEIGHT EA.
⚠	1	1	G1A	GIRDER									29049.59
⚠	1	1	w1	PL	20 x 2235	14 837	M270M	345W	T		3	3	5205.60
⚠	1	1	w2	PL	20 x 2235	18 418	M270M	345W	T		3	2	6462.00
	1	1	t1	PL	32 x 610	4 970	M270M	345W			4	16	761.47
	1	1	t2	PL	45 x 610	10 060	M270M	345W			4	7	2167.49
⚠	1	1	t3	PL	45 x 610	18 209	M270M	345W			4	5	3923.25
	1	1	b1	PL	32 x 610	4 970	M270M	345W	T		4	15	761.47
	1	1	b2	PL	65 x 610	10 060	M270M	345W	T		4	3	3130.82
	1	1	b3	PL	65 x 610	18 184	M270M	345W	T		4	1	5659.13
	1	1	x1k	PL	32 x 290	2 235	M270M	345W			7	1	162.80
	1	1	x1s	PL	32 x 290	2 236	M270M	345W			7	1	162.87
	1	8	x2d	PL	16 x 290	2 235	M270M	345W			7	4	81.40
	1	1	x2m	PL	6 x 82	391	M270M	345W			7	7	1.51

TOTAL WEIGHT THIS SHEET: 29049.59 kg

☑ Reviewed
☐ Rejected

☐ Furnish as Corrected
☐ Revise and Resubmit
☐ Submit Specified Item

This review is only for general conformance with the design concept and the information given in the Construction Documents. Corrections or comments made on the shop drawings during this review do not relieve the contractor from compliance with the requirements of the plans and specifications. Review of a specific item shall not include review of an assembly of which the item is a component. The Contractor is responsible for dimensions to be confirmed and correlated at the jobsite, information that pertains solely to the fabrication process or to the means, methods, techniques, sequences and procedures of construction, coordination of the Work with that of all other trades and performing all work in a safe and satisfactory manner.

McFarland-Johnson, Inc.
Date 6/10/05
By EEW

⚠

VTrans
RECEIVED
CK'D BY Jlw CK'D BY
JUN 9 3 2005
RESUBMIT APPROVED
BY DATE

SHOP NOTE

HOLES: 15/16"ø (U.N.)
BOLTS: NONE
PAINT: NONE
FOR GENERAL SHOP NOTES, SEE DWG. GN1.
FOR WEB CAMBER DIAGRAM, SEE DWG. WC1.
FOR HORIZ. CURVE DIAGRAM, SEE DWG. HC1.

CODE:30

NO.	REVISION	BY	DATE
1	CAMBER DESIGN CHANGE	MGK	4-26-05

HIGH STEEL STRUCTURES, INC.
1770 Hempstead Road
Lancaster, PA 17605-0008
Phone 717/299-5211
A Division of High Industries, Inc.

GIRDER G1A
U.S. RTE. 5 (BRIDGE #60) OVER LULLS BROOK
U.S. RTE. 5 STA. 3+080.77 TO STA. 3+123.110
TOWN OF HARTLAND
WINDSOR COUNTY, VERMONT
STATE OF VERMONT, AGENCY OF TRANSPORTATION

STATE CONTRACT OR REF. NO. PROJECT NO. BRS-0113(22)
CONTRACTOR MILLER CONSTRUCTION, INC.
IN CHARGE: GLIDDEN (IH) MADE BY: DBM CHK'D. BY: WBW DATE: 4/18/05
CONTRACT NUMBER: VT-05017-1 DRAWING NUMBER: 6 OF 15

PLOTTED: 4/26/2005 9:38:55 AM BY: mk-riddel

12455

05017 X2 5/12/05 5/Resubmit For Approval TO:Miller Construction, Inc.

METRIC

METRIC

1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE NOTED.
2. ALL WEIGHTS ARE IN KILOGRAMS.

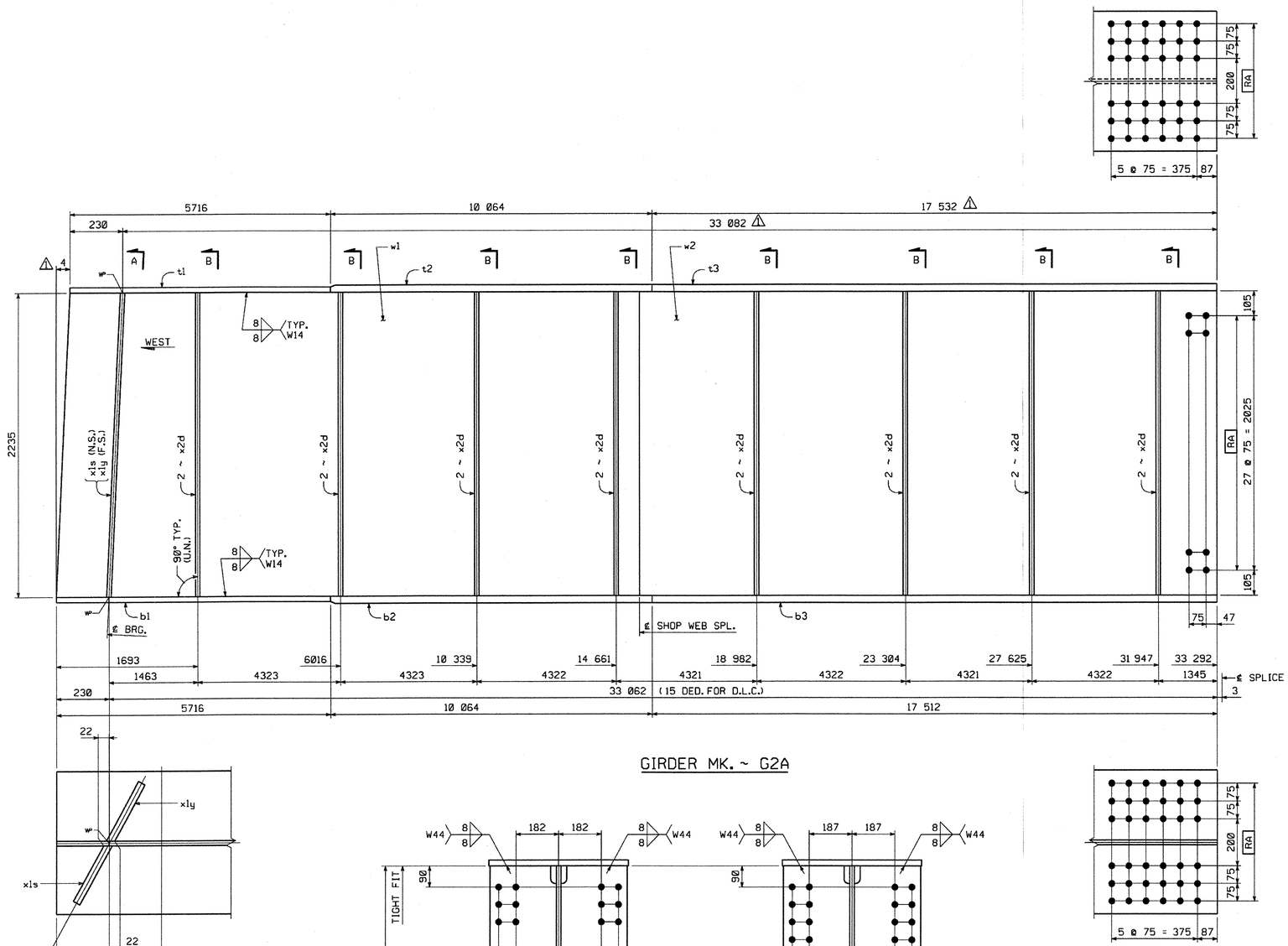
FED. ROAD DIV. NO.	STATE	FED. AID PROJ. NO.
	VT	

BILL OF MATERIAL

	SHIP.	QTY EA.	MARK	COMM.	DESCRIPTION	LENGTH	SPEC	GRADE	TEST	REMARKS	GRP.	ITEM	SHIP WEIGHT EA.
	1	1	G2A		GIRDER								29601.80
△	1	1	w1	PL	20 x 2235	14 836	M270M	345W	T		3	3	5205.25
△	1	1	w2	PL	20 x 2235	18 494	M270M	345W	T		3	2	6488.67
	1	1	t1	PL	32 x 610	5 716	M270M	345W			4	14	875.77
	1	1	t2	PL	45 x 610	10 064	M270M	345W			4	7	2168.35
△	1	1	t3	PL	45 x 610	17 533	M270M	345W			4	6	3777.60
	1	1	b1	PL	32 x 610	5 716	M270M	345W	T		4	13	875.77
	1	1	b2	PL	65 x 610	10 064	M270M	345W	T		4	3	3132.07
	1	1	b3	PL	65 x 610	17 513	M270M	345W	T		4	2	5450.31
	1	1	x1s	PL	32 x 290	2 236	M270M	345W			7	1	162.87
	1	1	x1y	PL	32 x 290	2 235	M270M	345W			7	1	162.80
	1	16	x2d	PL	16 x 290	2 235	M270M	345W			7	4	81.40

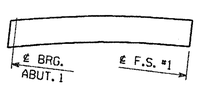
TOTAL WEIGHT THIS SHEET: 29601.80 kg

△

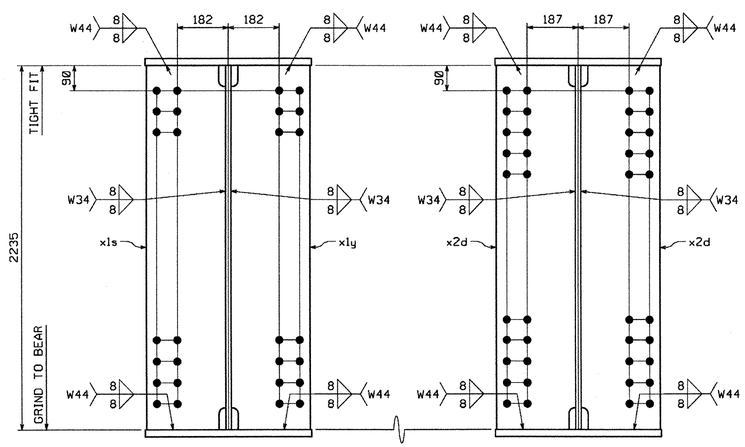


GIRDER MK. ~ G2A

PLAN VIEW



ORIENTATION DIAGRAM



SECTION A
(DEVELOPED)

SECTION B

SHOP NOTE

HOLES: 15/16" ø (U.N.)
BOLTS: NONE
PAINT: NONE
FOR GENERAL SHOP NOTES, SEE DWG. GN1.
FOR WEB CAMBER DIAGRAM, SEE DWG. WC1.
FOR HORIZ. CURVE DIAGRAM, SEE DWG. HC1.

CODE:30

☑ Reviewed ☐ Furnish as Corrected
☐ Rejected ☐ Revise and Resubmit
☐ Submit Specified Item

This review is only for general conformance with the design concept and the information given in the Construction Documents. Corrections or comments made on the shop drawings during this review do not relieve the contractor from compliance with the requirements of the plans and specifications. Review of a specific item shall not include review of an assembly of which the item is a component. The Contractor is responsible for dimensions to be confirmed and correlated at the jobsite, information that pertains solely to the fabrication process or to the means, methods, techniques, sequences and procedures of construction; coordination of the Work with that of all other trades and performing all work in a safe and satisfactory manner.

McFarland-Johnson, Inc.
Date 6/13/05
By CRW

VTrans
RECEIVED
CK'D BY JWC OK'D BY
JUN 03 2005
RESUBMIT APPROVED
BY DATE

NO.	REVISION	BY	DATE
△			
△			
1	CAMBER DESIGN CHANGE	MGK	4-26-05

HIGH STEEL STRUCTURES, INC.
1770 Hempstead Road
Lancaster, PA 17605-0008
Phone 717/299-5211
A Division of High Industries, Inc.

GIRDER G2A
U.S. RTE. 5 (BRIDGE #60) OVER LULLS BROOK
U.S. RTE. 5 STA. 3+080.77 TO STA. 3+123.110
TOWN OF HARTLAND
WINDSOR COUNTY, VERMONT
STATE OF VERMONT, AGENCY OF TRANSPORTATION

STATE CONTRACT OR REF. NO. PROJECT NO. BRS-0113(22)
CONTRACTOR MILLER CONSTRUCTION, INC.
IN CHARGE: GLIDDEN (IH) MADE BY: KLW CHK'D. BY: WBW DATE: 4/18/05
CONTRACT NUMBER: VT-05017-1 DRAWING NUMBER: 7 OF 15

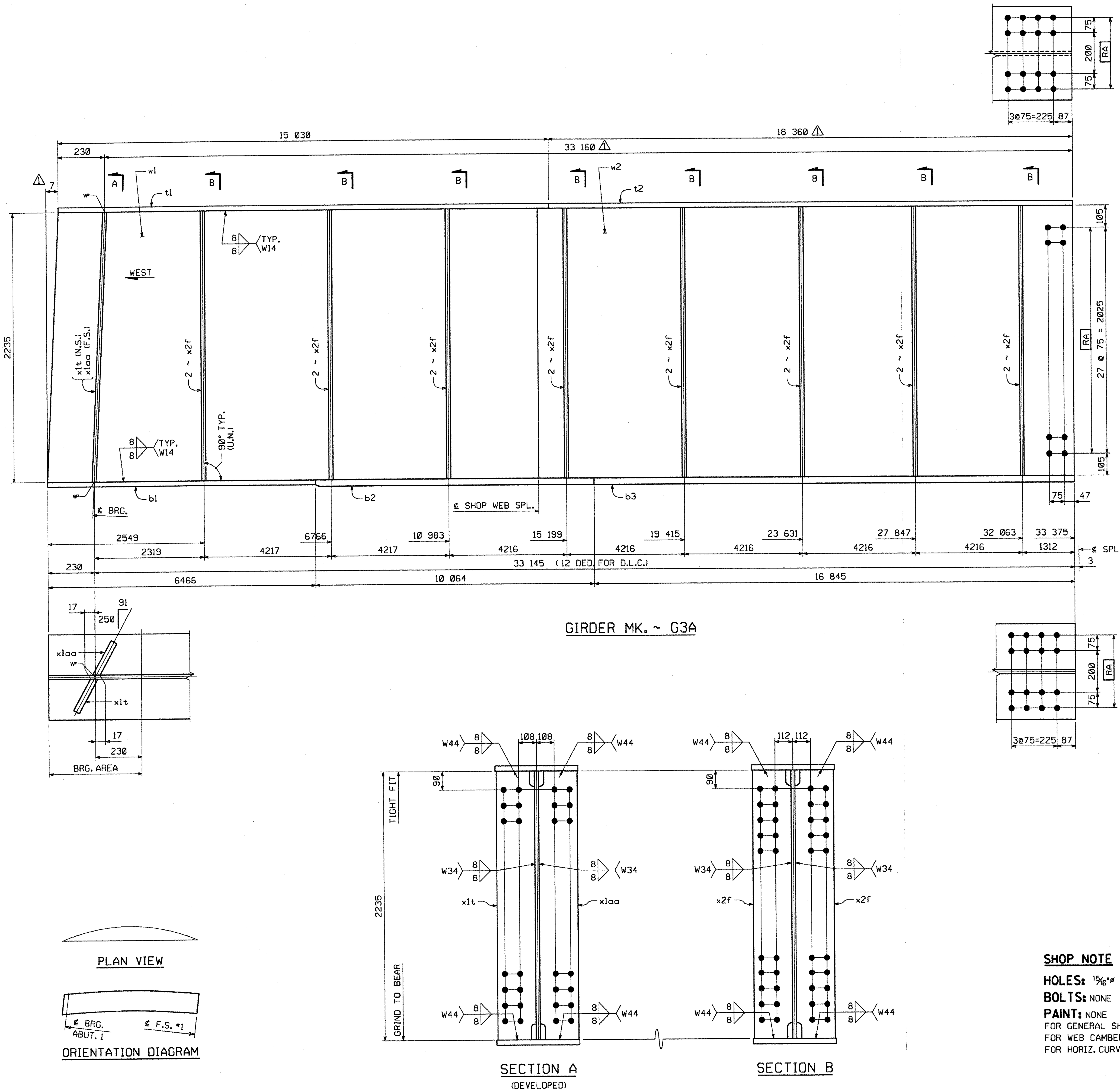
PLOTTED: 4/28/2005 9:38:59 AM BY: mkreidel

12535

05017 X2 5/12/05 5/Resubmit For Approval TO:Miller Construction, Inc.

METRIC 1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE NOTED.
2. ALL WEIGHTS ARE IN KILOGRAMS.

FED. ROAD DIV. NO.	STATE	FED. AID PROJ. NO.
	VT	



BILL OF MATERIAL

	SHIP.	QTY EA.	MARK	COMM.	DESCRIPTION	LENGTH	SPEC	GRADE	TEST	REMARKS	GRP.	ITEM	SHIP WEIGHT EA.
△1	1	1	G3A	GIRDER									19582.59
△1	1	1	w1	PL	20 x 2235	14 836	M270M	345W	T		3	3	5205.25
△1	1	1	w2	PL	20 x 2235	18 573	M270M	345W	T		3	2	6516.38
	1	1	t1	PL	25 x 460	15 030	M270M	345W			4	21	1356.67
△1	1	1	t2	PL	25 x 460	18 361	M270M	345W			4	20	1657.34
	1	1	b1	PL	25 x 460	6 466	M270M	345W	T		4	23	583.65
	1	1	b2	PL	32 x 460	10 064	M270M	345W	T		4	18	1162.77
	1	1	b3	PL	32 x 460	16 846	M270M	345W	T		4	17	1946.35
	1	1	x1t	PL	25 x 215	2 236	M270M	345W			7	2	94.33
	1	1	x1aa	PL	25 x 215	2 235	M270M	345W			7	2	94.29
	1	16	x2f	PL	16 x 215	2 235	M270M	345W			7	5	60.35

TOTAL WEIGHT THIS SHEET: 19582.59 kg

☑ Reviewed
☐ Rejected
☐ Furnish as Corrected
☐ Revise and Resubmit
☐ Submit Specified Item

This review is only for general conformance with the design concept and the information given in the Construction Documents. Corrections or comments made on the shop drawings during this review do not relieve the contractor from compliance with the requirements of the plans and specifications. Review of a specific item shall not include review of an assembly of which the item is a component. The Contractor is responsible for dimensions to be confirmed and correlated at the jobsite; information that pertains solely to the fabrication process or to the means, methods, techniques, sequences and procedures of construction; coordination of the work with that of all other trades and performing all work in a safe and satisfactory manner.

McFarland-Johnson, Inc.
Date 6/2/05
By ECW

VTrans
RECEIVED
CK'D BY JWC OK'D BY
JUN 0 3 2005
RESUBMIT ____ APPROVED ____
BY DATE

SHOP NOTE

HOLES: 15/16"ø (U.N.)
BOLTS: NONE
PAINT: NONE
FOR GENERAL SHOP NOTES, SEE DWG. GN1.
FOR WEB CAMBER DIAGRAM, SEE DWG. WC1.
FOR HORIZ. CURVE DIAGRAM, SEE DWG. HC1.

CODE:30

NO.	REVISION	BY	DATE
△			
△			
△1	CAMBER DESIGN CHANGE	MGK	4-26-05

HIGH STEEL STRUCTURES, INC.
1770 Hempstead Road
Lancaster, PA 17605-0008
Phone 717/299-5211
A Division of High Industries, Inc.

GIRDER G3A
U.S. RTE. 5 (BRIDGE #60) OVER LULLS BROOK
U.S. RTE. 5 STA. 3+080.77 TO STA. 3+123.110
TOWN OF HARTLAND
WINDSOR COUNTY, VERMONT
STATE OF VERMONT, AGENCY OF TRANSPORTATION
STATE CONTRACT OR REF. NO. PROJECT NO. BRS-0113(22)
CONTRACTOR MILLER CONSTRUCTION, INC.
IN CHARGE: GLIDDEN (IH) MADE BY: KLW CHK'D. BY: WBW DATE: 4/18/05
CONTRACT NUMBER: VT-05017-1 DRAWING NUMBER: 8 OF 15

12655

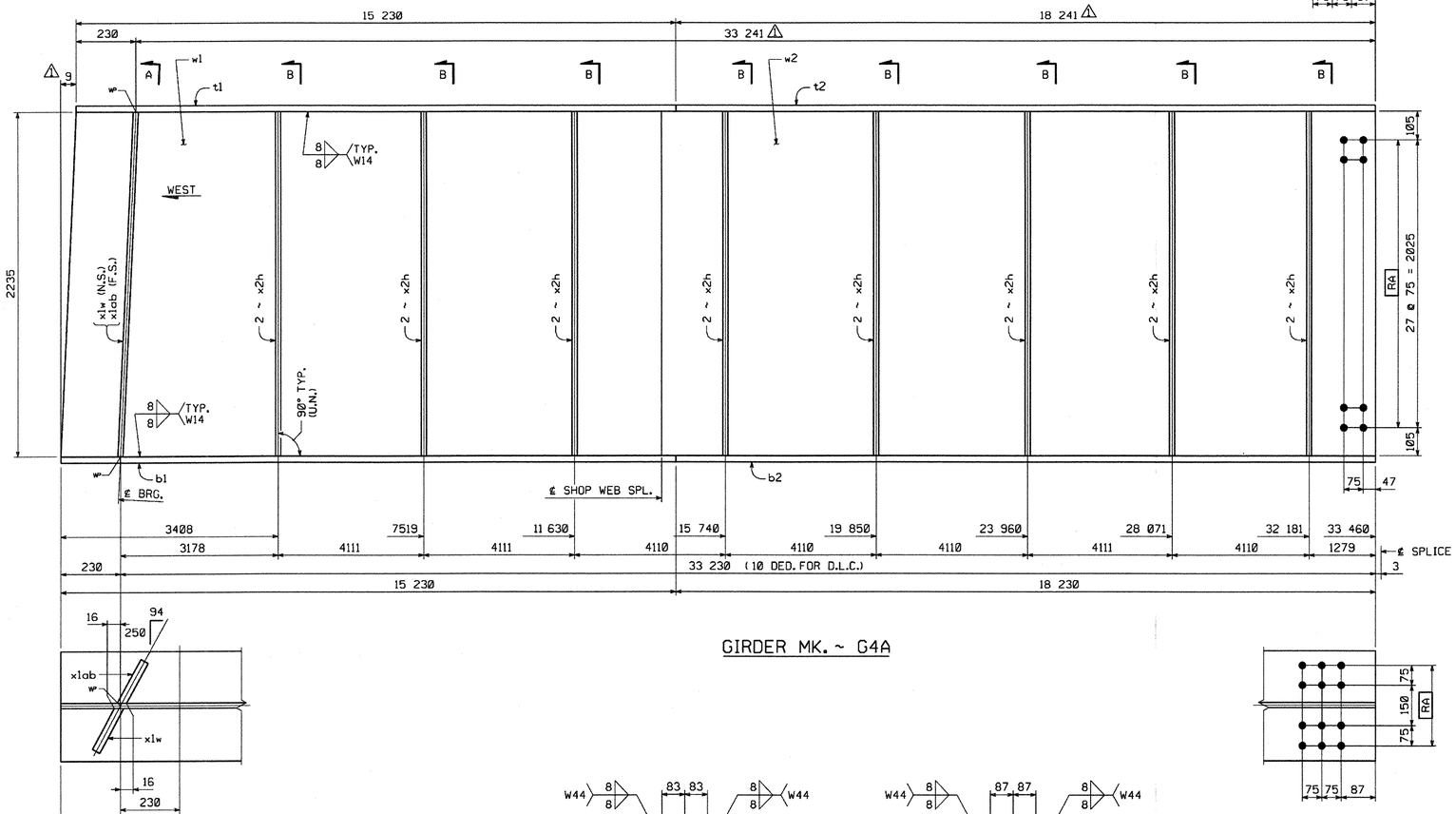
PLOTTED: 4/28/2005 9:39:02 AM BY: mkreidel

05017 X2 5/12/05 5/Resubmit For Approval TO:Miller Construction, Inc.

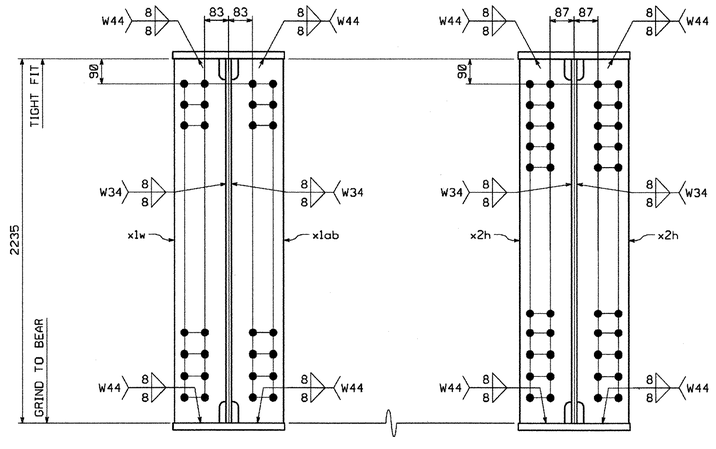
METRIC

1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE NOTED.
2. ALL WEIGHTS ARE IN KILOGRAMS.

FED. ROAD DIV. NO.	STATE	FED. AID PROJ. NO.
	VT	

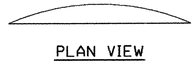


GIRDER MK. ~ G4A

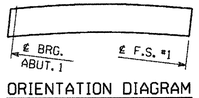


SECTION A
(DEVELOPED)

SECTION B



PLAN VIEW



ORIENTATION DIAGRAM

SHOP NOTE

HOLES: 15⁄16"ø (U.N.)
BOLTS: NONE
PAINT: NONE
FOR GENERAL SHOP NOTES, SEE DWG. GN1.
FOR WEB CAMBER DIAGRAM, SEE DWG. WC1.
FOR HORIZ. CURVE DIAGRAM, SEE DWG. HC1.

CODE:30

BILL OF MATERIAL

	SHIP.	QTY EA.	MARK	COMM.	DESCRIPTION	LENGTH	SPEC	GRADE	TEST	REMARKS	GRP.	ITEM	SHIP WEIGHT EA.
⚠	1	1	G4A		GIRDER								17488.97
⚠	1	1	w1	PL	20 x 2235	14 836	M270M	345W	T		3	3	5205.25
⚠	1	1	w2	PL	20 x 2235	18 655	M270M	345W	T		3	2	6545.15
	1	1	t1	PL	22 x 410	15 230	M270M	345W			4	32	1078.26
⚠	1	1	t2	PL	22 x 410	18 241	M270M	345W			4	28	1291.43
	1	1	b1	PL	22 x 410	15 230	M270M	345W	T		4	30	1078.26
⚠	1	1	b2	PL	22 x 410	18 230	M270M	345W	T		4	27	1290.66
	1	1	x1w	PL	22 x 190	2 236	M270M	345W			7	3	73.36
	1	1	x1ab	PL	22 x 190	2 235	M270M	345W			7	3	73.33
	1	16	x2h	PL	16 x 190	2 235	M270M	345W			7	6	53.33

TOTAL WEIGHT THIS SHEET: 17488.97 kg

☑ Reviewed
☐ Rejected

☐ Furnish as Corrected
☐ Revise and Resubmit
☐ Submit Specified Item

This review is only for general conformance with the design concept and the information given in the Construction Documents. Corrections or comments made on the shop drawings during this review do not relieve the contractor from compliance with the requirements of the plans and specifications. Review of a specific item shall not include review of an assembly of which the item is a component. The Contractor is responsible for: dimensions to be confirmed and correlated at the jobsite; information that pertains solely to the fabrication process or to the means, methods, techniques, sequences and procedures of construction; coordination of the Work with that of all other trades and performing all work in a safe and satisfactory manner.

McFarland-Johnson, Inc.
Date 6/9/05
By EW

⚠
VTrans
RECEIVED
CK'D BY JWC OK'D BY
JUN 03 2005
RESUBMIT APPROVED
BY DATE

NO.	REVISION	BY	DATE
⚠			
⚠			
1	CAMBER DESIGN CHANGE	MGK	4-26-05

HIGH STEEL STRUCTURES, INC.
1770 Hempstead Road
Lancaster, PA 17605-0008
Phone 717/299-5211
A Division of High Industries, Inc.

GIRDER G4A
U.S. RTE. 5 (BRIDGE #60) OVER LULLS BROOK
U.S. RTE. 5 STA. 3+080.77 TO STA. 3+123.110
TOWN OF HARTLAND
WINDSOR COUNTY, VERMONT
STATE OF VERMONT, AGENCY OF TRANSPORTATION

STATE CONTRACT OR REF. NO. PROJECT NO. BRS-0113(22)
CONTRACTOR MILLER CONSTRUCTION, INC.
IN CHARGE: GLIDDEN (IH) MADE BY: KLW CHK'D. BY: WBW DATE: 4/18/05
CONTRACT NUMBER: VT-05017-1 DRAWING NUMBER: 9 OF 15

17255

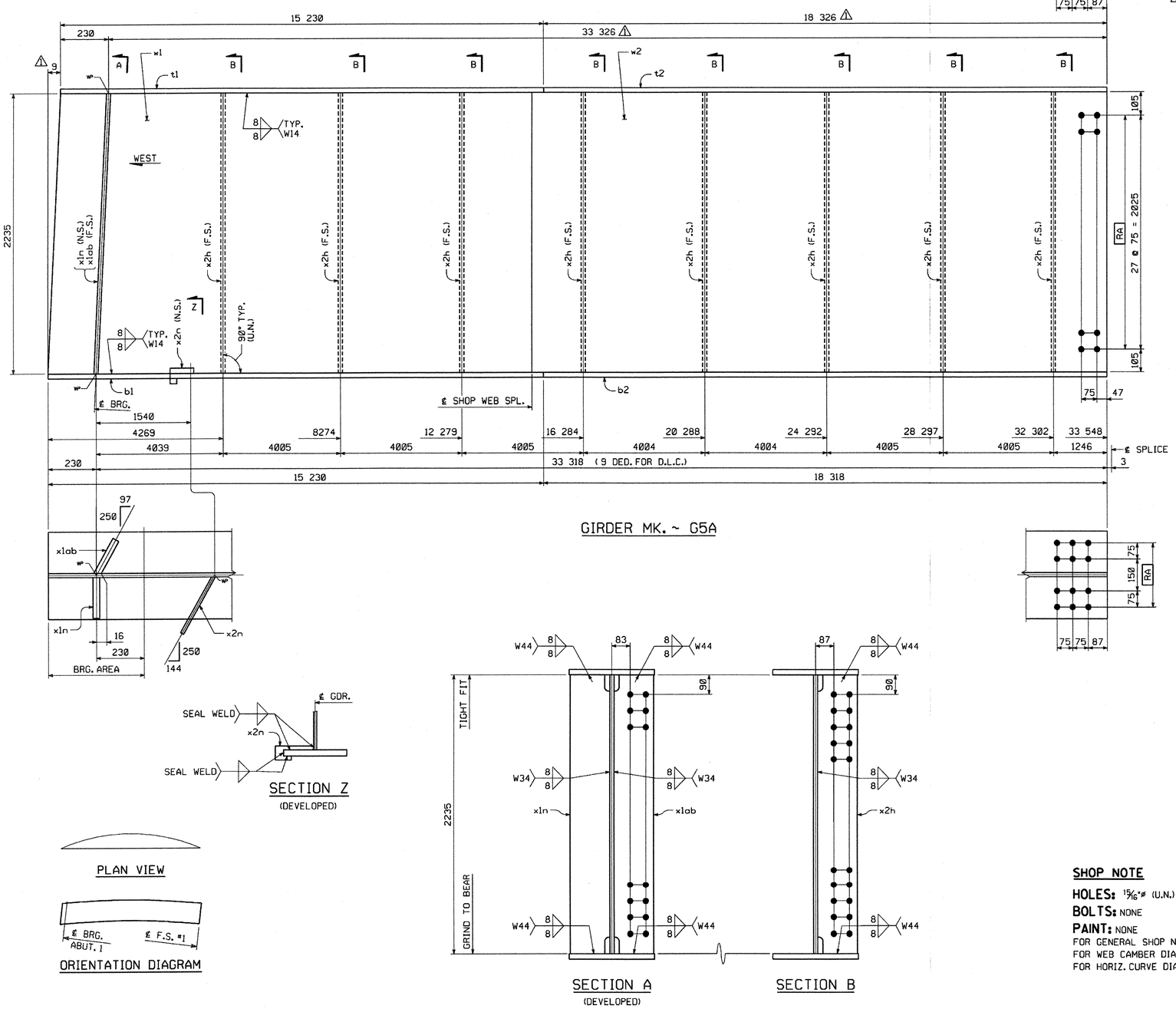
05017 X2 5/12/05 5/Resubmit For Approval TO:Miller Construction, Inc.

PLOTTED: 4/28/2005 9:39:05 AM BY: mkreidel

METRIC

1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE NOTED.
2. ALL WEIGHTS ARE IN KILOGRAMS.

FED. ROAD DIV. NO.	STATE	FED. AID PROJ. NO.
	VT	



GIRDER MK. ~ G5A

SECTION Z
(DEVELOPED)

PLAN VIEW

ORIENTATION DIAGRAM

SECTION A
(DEVELOPED)

SECTION B

BILL OF MATERIAL

	SHIP.	QTY EA.	MARK	COMMODITY	DESCRIPTION	LENGTH	SPEC	GRADE	TEST	REMARKS	GRP.	ITEM	SHIP WEIGHT EA.
⚠	1	1	G5A	GIRDER									17104.96
⚠	1	1	w1	PL	20 x 2235	14 836	M270M	345W	T		3	3	5205.25
⚠	1	1	w2	PL	20 x 2235	18 739	M270M	345W	T		3	1	6574.63
	1	1	t1	PL	22 x 410	15 230	M270M	345W			4	31	1078.26
⚠	1	1	t2	PL	22 x 410	18 326	M270M	345W			4	26	1297.45
	1	1	b1	PL	22 x 410	15 230	M270M	345W	T		4	29	1078.26
	1	1	b2	PL	22 x 410	18 318	M270M	345W	T		4	25	1296.89
	1	1	x1n	PL	22 x 190	2 235	M270M	345W			7	3	73.33
	1	1	x1ab	PL	22 x 190	2 235	M270M	345W			7	3	73.33
	1	8	x2h	PL	16 x 190	2 235	M270M	345W			7	6	53.33
	1	1	x2n	PL	6 x 72	275	M270M	345W			7	7	0.93

TOTAL WEIGHT THIS SHEET: 17104.96 kg

☑ Reviewed
☐ Rejected

☐ Furnish as Corrected
☐ Revise and Resubmit
☐ Submit Specified Items

This review is only for general conformance with the design concept and the information given in the Construction Documents. Corrections or comments made on the shop drawings during this review do not relieve the contractor from compliance with the requirements of the plans and specifications. Review of a specific item shall not include review of an assembly of which the item is a component. The Contractor is responsible for dimensions to be confirmed and correlated at the jobsite, information that pertains solely to the fabrication process or to the means, methods, techniques, sequences and procedures of construction; coordination of the Work with that of all other trades and performing all work in a safe and satisfactory manner.

McFarland-Johnson, Inc.
Date 6/9/05
By

⚠

VTrans
RECEIVED
CK'D BY JWC OK'D BY
JUN 03 2005
RESUBMIT APPROVED
BY DATE

SHOP NOTE

HOLES: 15/16"ø (U.N.)
BOLTS: NONE
PAINT: NONE
FOR GENERAL SHOP NOTES, SEE DWG. GN1.
FOR WEB CAMBER DIAGRAM, SEE DWG. WC1.
FOR HORIZ. CURVE DIAGRAM, SEE DWG. HC1.

CODE:30

NO.	REVISION	BY	DATE
1	CAMBER DESIGN CHANGE	MCK	4-26-05

HIGH STEEL STRUCTURES, INC.
1770 Hempstead Road
Lancaster, PA 17605-0008
Phone 717/299-5211
A Division of High Industries, Inc.

GIRDER G5A
U.S. RTE. 5 (BRIDGE #60) OVER LULLS BROOK
U.S. RTE. 5 STA. 3+080.77 TO STA. 3+123.110
TOWN OF HARTLAND
WINDSOR COUNTY, VERMONT
STATE OF VERMONT, AGENCY OF TRANSPORTATION

STATE CONTRACT OR REF. NO. PROJECT NO. BRS-0113(22)
CONTRACTOR MILLER CONSTRUCTION, INC.
IN CHARGE: GLIDDEN (IH) MADE BY: KLW CHK'D. BY: WBW DATE: 4/18/05
CONTRACT NUMBER: VT-05017-1 DRAWING NUMBER: 10 OF 15

PLOTTED: 4/28/2005 9:39:15 AM
BY: mkreudel

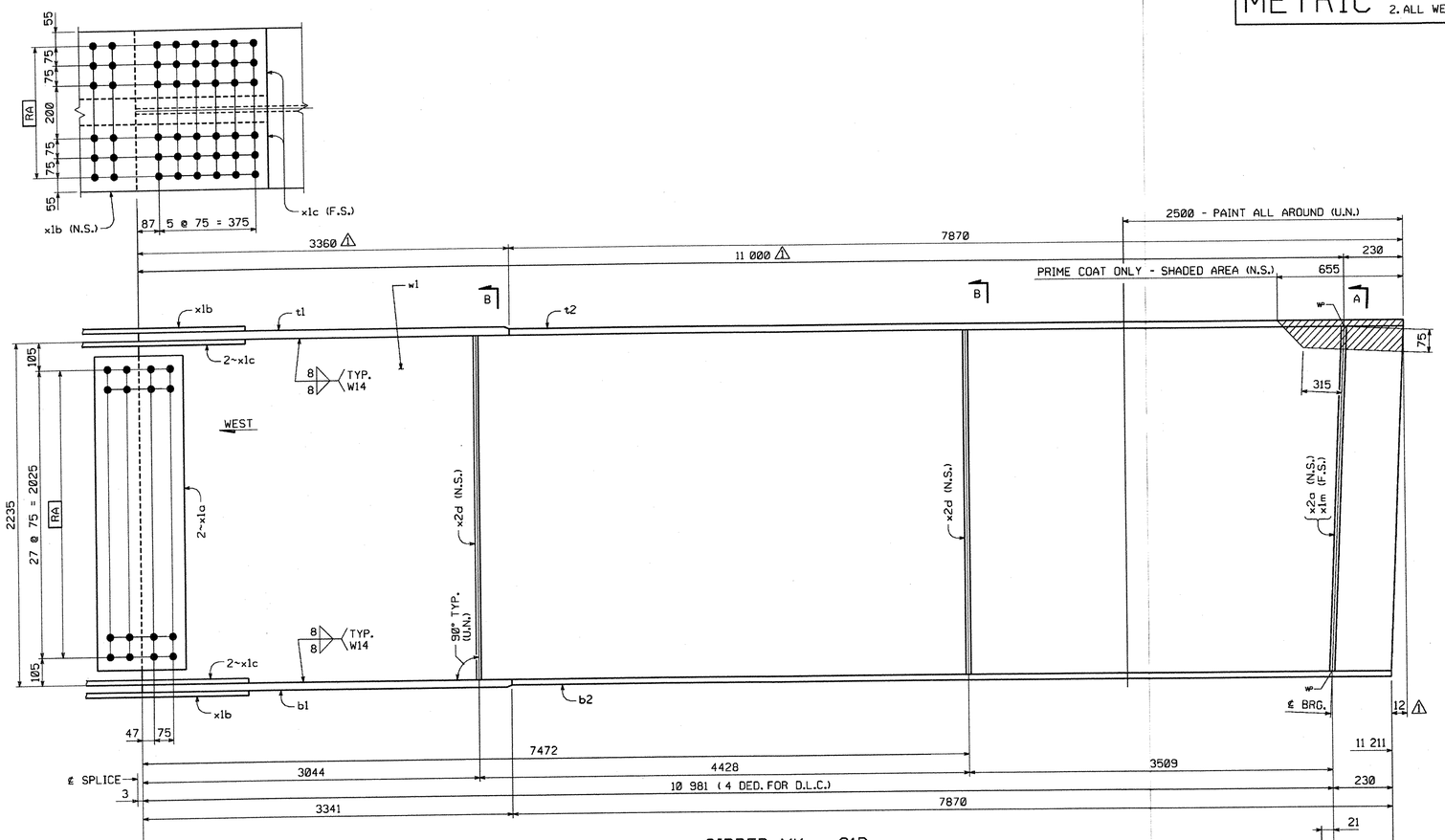
12855

05017 X2 5/12/05 5/Resubmit For Approval TO:Miller Construction, Inc.

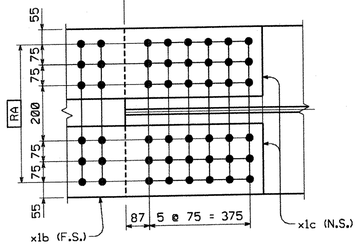
METRIC

1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE NOTED.
2. ALL WEIGHTS ARE IN KILOGRAMS.

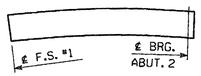
FED. ROAD DIV. NO.	STATE	FED. AID PROJ. NO.
	VT	



GIRDER MK. ~ G1B

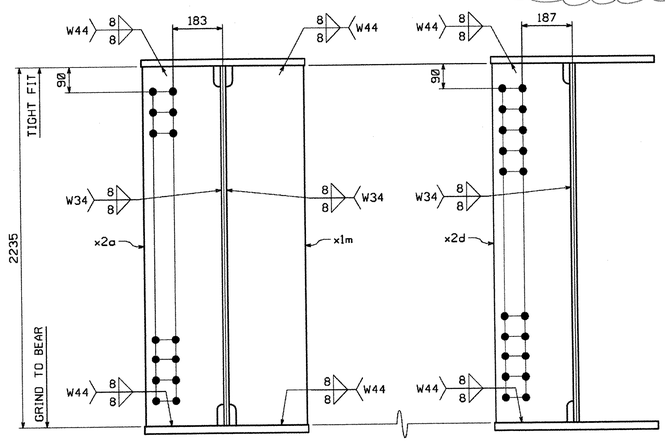


PLAN VIEW



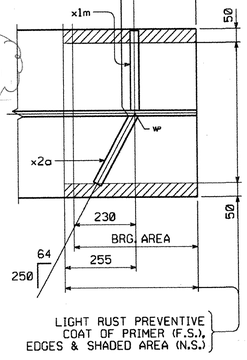
ORIENTATION DIAGRAM

PAINT THE TOP AREA OF THE BOTTOM FLANGE. PRIME THE SIDES AND BOTTOM OF THE BOTTOM FLANGE IN THE BEARING AREA.



SECTION A
(DEVELOPED)

SECTION B



SHOP NOTE

HOLES: 15/16"ø (U.N.)
BOLTS: NONE
PAINT: SEE DWG. GN1
FOR GENERAL SHOP NOTES, SEE DWG. GN1.
FOR WEB CAMBER DIAGRAM, SEE DWG. WC1.
FOR HORIZ. CURVE DIAGRAM, SEE DWG. HC1.

CODE:30

BILL OF MATERIAL

SHIP.	QTY EA.	MARK	COMM.	DESCRIPTION	LENGTH	SPEC	GRADE	TEST	REMARKS	GRP.	ITEM	SHIP WEIGHT EA.
⚠	1	1	G1B	GIRDER								9370.05
⚠	1	1	w1	PL 20 x 2235	11 230	M270M	345W	T		3	4	3940.07
⚠	1	1	t1	PL 45 x 610	3 360	M270M	345W			4	8	723.93
	1	1	t2	PL 32 x 610	7 870	M270M	345W			4	10	1205.79
	1	1	b1	PL 65 x 610	3 341	M270M	345W	T		4	4	1039.77
	1	1	b2	PL 32 x 610	7 870	M270M	345W	T		4	9	1205.79
	1	2	x1a	PL 16 x 2125	350	M270M	345W	T		6	1	93.40
	1	2	x1b	PL 32 x 610	1 030	M270M	345W	T		6	2	157.81
	1	4	x1c	PL 32 x 255	1 030	M270M	345W	T		6	3	65.97
	1	1	x1m	PL 32 x 290	2 235	M270M	345W			7	1	162.80
	1	1	x2a	PL 32 x 290	2 235	M270M	345W			7	1	162.80
	1	2	x2d	PL 16 x 290	2 235	M270M	345W			7	4	81.40

TOTAL WEIGHT THIS SHEET: 9370.05 kg

☑ Reviewed
☐ Rejected
☐ Furnish as Corrected
☐ Revise and Resubmit
☐ Submit Specified Item

This review is only for general conformance with the design concept and the information given in the Construction Documents. Corrections or comments made on the shop drawings during this review do not relieve the contractor from compliance with the requirements of the plans and specifications. Review of a specific item shall not include review of an assembly of which the item is a component. The Contractor is responsible for dimensions to be confirmed and correlated at the job site, information that pertains solely to the fabrication process or to the means, methods, techniques, sequences and procedures of construction, coordination of the work with that of all other trades and performing all work in a safe and satisfactory manner.

McFarland-Johnson, Inc.
Date 6/13/05
By EW

⚠

VTrans
RECEIVED
CK'D BY JWC OK'D BY
JUN 03 2005
RESUBMIT APPROVED
BY DATE

NO.	REVISION	BY	DATE
⚠			
⚠			
1	CAMBER DESIGN CHANGE	MGK	4-26-05

HIGH STEEL STRUCTURES, INC.
1770 Hempstead Road
Lancaster, PA 17605-0008
Phone 717/299-5211
A Division of High Industries Inc.

GIRDER G1B
U.S. RTE. 5 (BRIDGE #60) OVER LULLS BROOK
U.S. RTE. 5 STA. 3+080.77 TO STA. 3+123.110
TOWN OF HARTLAND
WINDSOR COUNTY, VERMONT
STATE OF VERMONT, AGENCY OF TRANSPORTATION

STATE CONTRACT OR REF. NO. PROJECT NO. BRS-0113(22)
CONTRACTOR MILLER CONSTRUCTION, INC.
IN CHARGE: GLIDDEN (IH) MADE BY: KLW CHK'D. BY: WBW DATE: 4/19/05
CONTRACT NUMBER: VT-05017-1 DRAWING NUMBER: 11 OF 15

12955

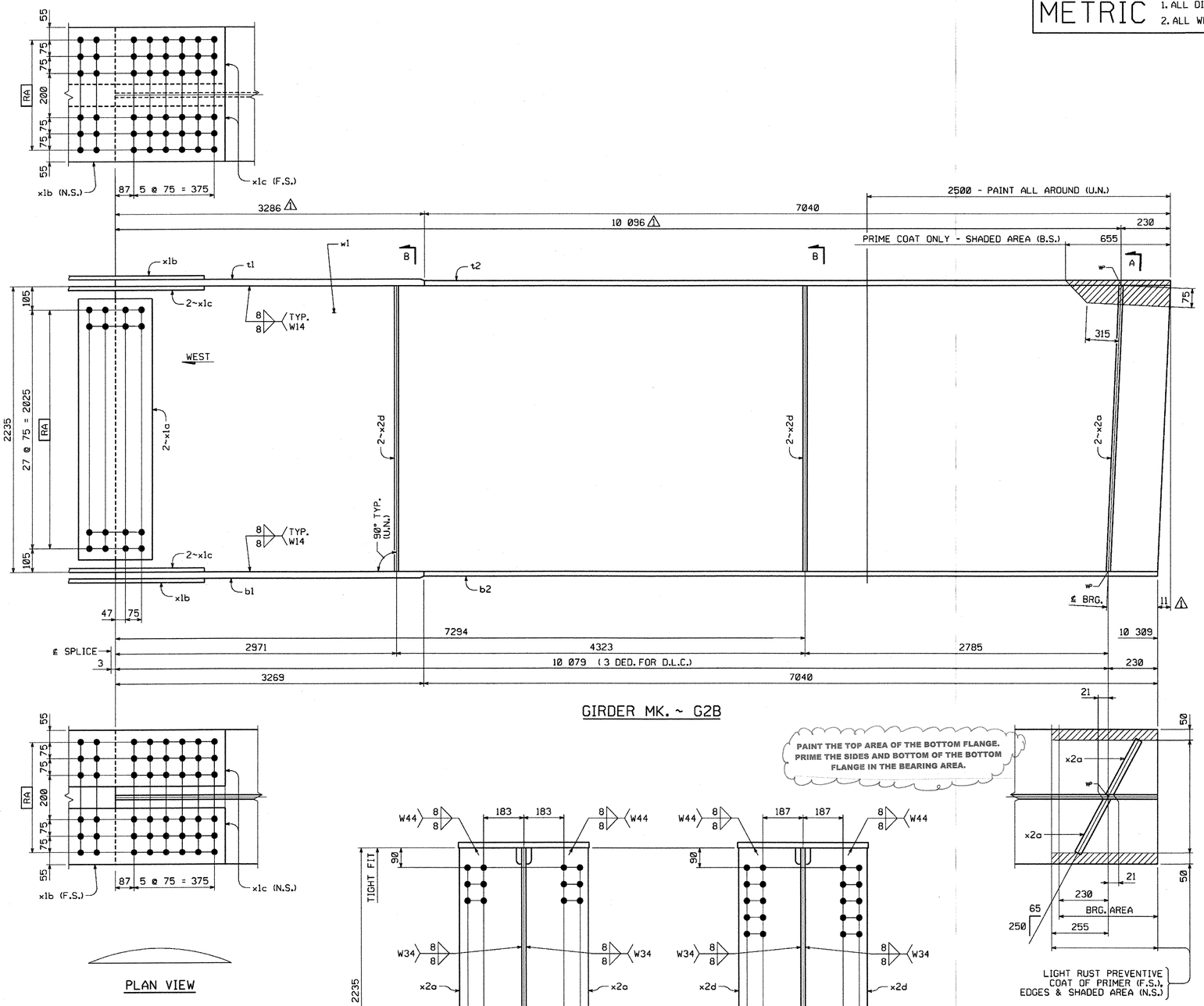
05017 X2 5/12/05 5/Resubmit For Approval TO:Miller Construction, Inc.

PLOTTED: 4/29/2005 9:39:18 AM BY: mkreidel

METRIC

METRIC 1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE NOTED.
2. ALL WEIGHTS ARE IN KILOGRAMS.

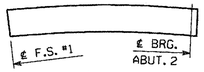
FED. ROAD DIV. NO.	STATE	FED. AID PROJ. NO.
	VT	



GIRDER MK. ~ G2B

PAINT THE TOP AREA OF THE BOTTOM FLANGE. PRIME THE SIDES AND BOTTOM OF THE BOTTOM FLANGE IN THE BEARING AREA.

PLAN VIEW



ORIENTATION DIAGRAM

SECTION A
(DEVELOPED)

SECTION B

BILL OF MATERIAL

	SHIP.	QTY EA.	MARK	COMM.	DESCRIPTION	LENGTH	SPEC	GRADE	TEST	REMARKS	GRP.	ITEM	SHIP WEIGHT EA.
⚠	1	1	G2B		GIRDER								8922.99
⚠	1	1	w1	PL	20 x 2235	10 326	M270M	345W	T		3	5	3622.90
⚠	1	1	t1	PL	45 x 610	3 286	M270M	345W			4	8	707.99
	1	1	t2	PL	32 x 610	7 040	M270M	345W			4	12	1078.62
	1	1	b1	PL	65 x 610	3 269	M270M	345W	T		4	4	1017.36
	1	1	b2	PL	32 x 610	7 040	M270M	345W	T		4	11	1078.62
	1	2	x1a	PL	16 x 2125	350	M270M	345W	T		6	1	93.40
	1	2	x1b	PL	32 x 610	1 030	M270M	345W	T		6	2	157.81
	1	4	x1c	PL	32 x 255	1 030	M270M	345W	T		6	3	65.97
	1	2	x2a	PL	32 x 290	2 235	M270M	345W			7	1	162.80
	1	4	x2d	PL	16 x 290	2 235	M270M	345W			7	4	81.40

TOTAL WEIGHT THIS SHEET: 8922.99 kg

☑ Reviewed ☐ Furnish as Corrected
☐ Rejected ☐ Revise and Resubmit
☐ Submit Specified Item

This review is only for general conformance with the design concept and the information given in the Construction Documents. Corrections or comments made on the shop drawings during this review do not relieve the contractor from compliance with the requirements of the plans and specifications. Review of a specific item shall not include review of an assembly of which the item is a component. The Contractor is responsible for dimensions to be confirmed and correlated at the jobsite; information that pertains solely to the fabrication process or to the means, methods, techniques, sequences and procedures of construction; coordination of the Work with that of all other trades and performing all work in a safe and satisfactory manner.

McFarland-Johnson, Inc.
Date 6/6/05
By ETW

⚠

VTrans RECEIVED
CK'D BY JWC CK'D BY
JUN 0 3 2005
RESUBMIT APPROVED
BY DATE

NO.	REVISION	BY	DATE
⚠			
⚠			
1	CAMBER DESIGN CHANGE	MGK	4-26-05

SHOP NOTE

HOLES: 15/16"ø (U.N.)
BOLTS: NONE
PAINT: SEE DWG. GN1
FOR GENERAL SHOP NOTES, SEE DWG. GN1.
FOR WEB CAMBER DIAGRAM, SEE DWG. WC1.
FOR HORIZ. CURVE DIAGRAM, SEE DWG. HC1.

CODE:30

HIGH STEEL STRUCTURES, INC.
1770 Hempstead Road
Lancaster, PA 17605-0008
Phone 717/299-5211
A Division of High Industries, Inc.

GIRDER	G2B
U.S. RTE. 5 (BRIDGE #60) OVER LULLS BROOK	
U.S. RTE. 5 STA. 3+080.77 TO STA. 3+123.110	
TOWN OF HARTLAND	
WINDSOR COUNTY, VERMONT	
STATE OF VERMONT, AGENCY OF TRANSPORTATION	
STATE CONTRACT OR REF. NO. PROJECT NO. BRS-0113(22)	
CONTRACTOR MILLER CONSTRUCTION, INC.	
IN CHARGE: GLIDDEN (IH) MADE BY: KLW CHK'D. BY: WBW DATE: 4/19/05	
CONTRACT NUMBER: VT-05017-1 DRAWING NUMBER: 12 OF 15	

13055

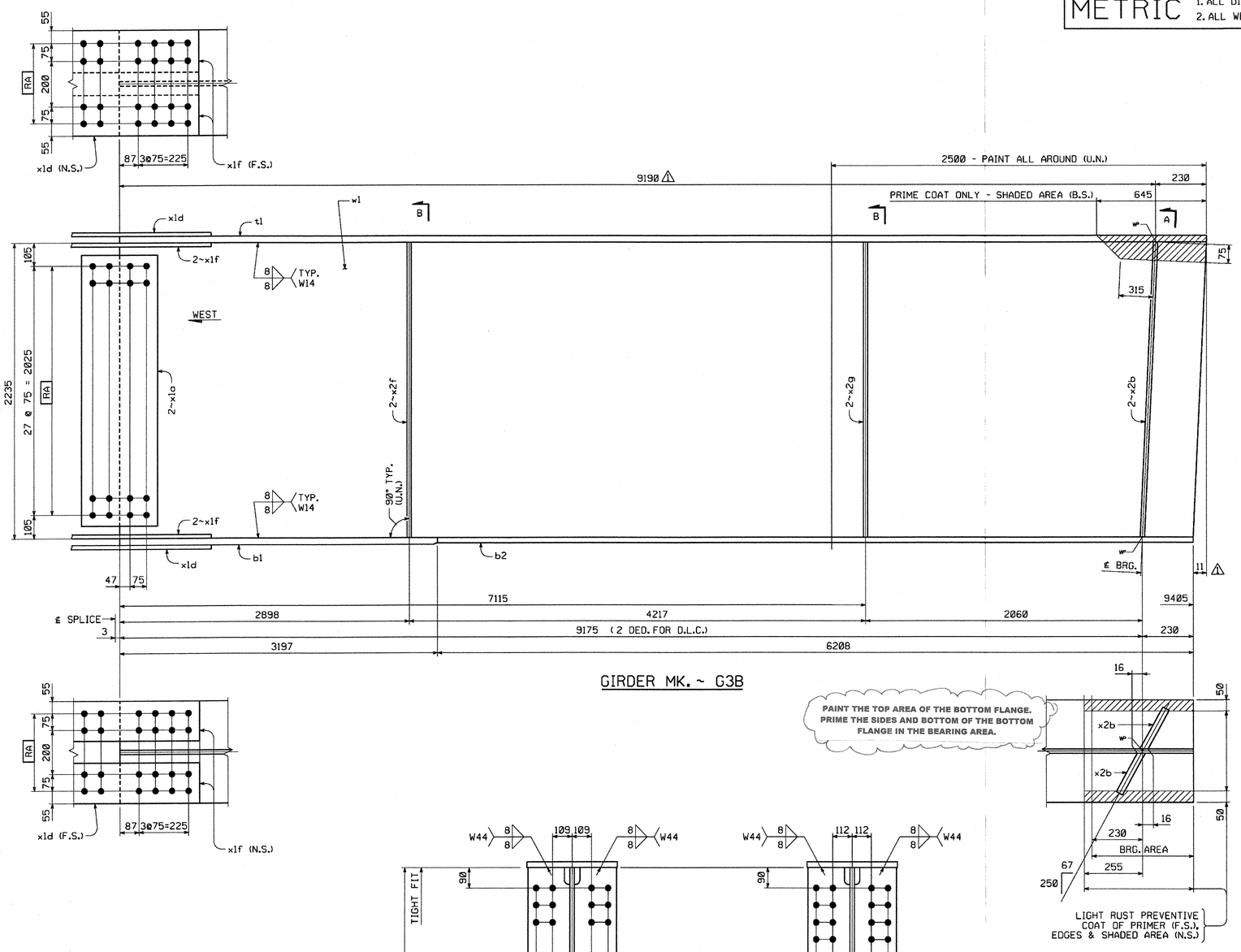
05017 X2 5/12/05 5/Resubmit For Approval TO:Miller Construction, Inc.

PLOTTED 4/28/2005 9:39:21 AM BY: mkreidel

METRIC

1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE NOTED.
2. ALL WEIGHTS ARE IN KILOGRAMS.

FED. ROAD DIV. NO.	STATE	FED. AID PROJ. NO.
	VT	



BILL OF MATERIAL

	SHIP.	QTY EA.	MARK	COMM.	DESCRIPTION	LENGTH	SPEC	GRADE	TEST	REMARKS	GRP.	ITEM	SHIP WEIGHT EA.
⚠	1	1	G3B		GIRDER								5889.77
⚠	1	1	w1	PL	20 x 2235	9 420	M270M	345W	T		3	6	3305.03
⚠	1	1	t1	PL	25 x 460	9 420	M270M	345W			4	22	850.29
	1	1	b1	PL	32 x 460	3 197	M270M	345W	T		4	19	369.38
	1	1	b2	PL	25 x 460	6 208	M270M	345W	T		4	24	560.36
	1	2	x1a	PL	16 x 2125	350	M270M	345W	T		6	1	93.40
	1	2	x1d	PL	20 x 460	730	M270M	345W	T		6	4	52.71
	1	4	x1f	PL	20 x 180	730	M270M	345W	T		6	5	20.63
	1	2	x2b	PL	25 x 215	2 235	M270M	345W			7	2	94.29
	1	2	x2f	PL	16 x 215	2 235	M270M	345W			7	5	60.35
	1	2	x2g	PL	16 x 215	2 235	M270M	345W			7	5	60.35

TOTAL WEIGHT THIS SHEET: 5889.77 kg

⚠

☑ Reviewed
☐ Rejected

☐ Furnish as Corrected
☐ Revise and Resubmit
☐ Submit Specified Item

This review is only for general conformance with the design concept and the information given in the Construction Documents. Corrections or comments made on the shop drawings during this review do not relieve the contractor from compliance with the requirements of the plans and specifications. Review of a specific item shall not include review of an assembly of which the item is a component. The Contractor is responsible for dimensions to be confirmed and correlated at the jobsite; information that pertains solely to the fabrication process or to the means, methods, techniques, sequences and procedures of construction; coordination of the Work with that of all other trades and performing all work in a safe and satisfactory manner.

McFarland-Johnson, Inc.
Date 6/9/05
By EW

VTrans
RECEIVED
OK'D BY JWC OK'D BY
JUN 03 2005
RESUBMIT APPROVED
BY DATE

NO.	REVISION	BY	DATE
⚠			
⚠			
1	CAMBER DESIGN CHANGE	MGK	4-26-05

HIGH STEEL STRUCTURES, INC.
1770 Hempstead Road
Lancaster, PA 17605-0008
Phone 717/299-5211
A Division of High Industries, Inc.

GIRDER G3B
U.S. RTE. 5 (BRIDGE #60) OVER LULLS BROOK
U.S. RTE. 5 STA. 3+080.77 TO STA. 3+123.110
TOWN OF HARTLAND
WINDSOR COUNTY, VERMONT
STATE OF VERMONT, AGENCY OF TRANSPORTATION

STATE CONTRACT OR REF. NO. PROJECT NO. BRS-0113(22)
CONTRACTOR MILLER CONSTRUCTION, INC.
IN CHARGE: GLIDDEN (IH) MADE BY: KLW CHK'D. BY: WBW DATE: 4/19/05
CONTRACT NUMBER: VT-05017-1 DRAWING NUMBER: 13 OF 15

SHOP NOTE

HOLES: $15/16$"ø (U.N.)
BOLTS: NONE
PAINT: SEE DWG. GN1
FOR GENERAL SHOP NOTES, SEE DWG. GN1.
FOR WEB CAMBER DIAGRAM, SEE DWG. WC1.
FOR HORIZ. CURVE DIAGRAM, SEE DWG. HC1.

CODE:30

13/55

05017 X2 5/12/05 5/Resubmit For Approval TO:Miller Construction, Inc.

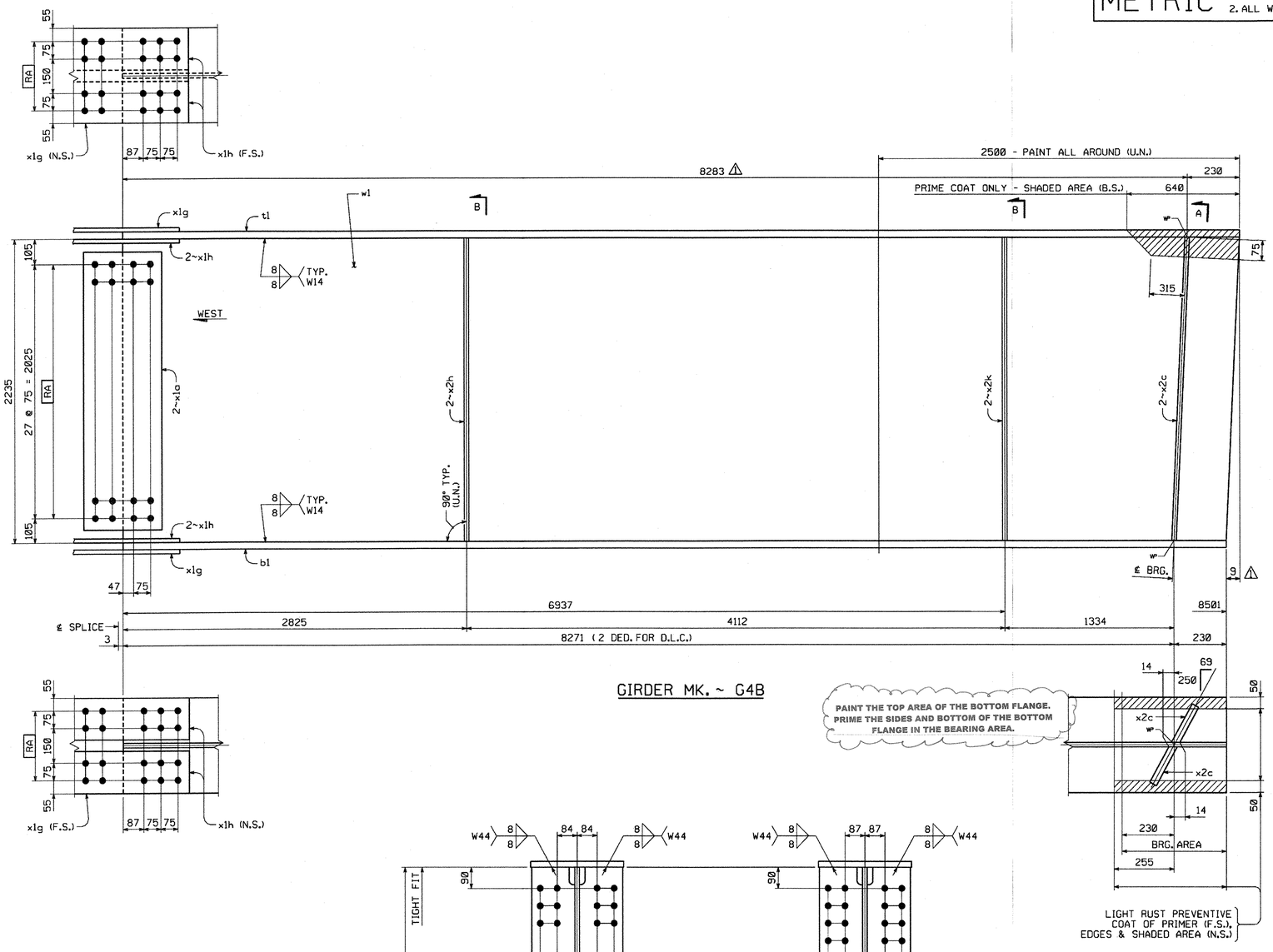
PLOTTED: 4/28/2005 9:39:24 AM BY: mk-reidel

METRIC

METRIC

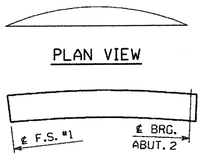
1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE NOTED.
2. ALL WEIGHTS ARE IN KILOGRAMS.

FED. ROAD DIV. NO.	STATE	FED. AID PROJ. NO.
	VT	



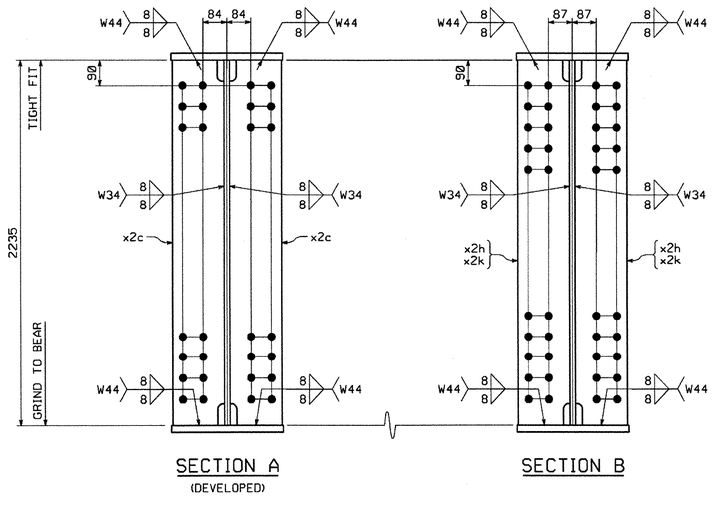
GIRDER MK. ~ G4B

PAINT THE TOP AREA OF THE BOTTOM FLANGE. PRIME THE SIDES AND BOTTOM OF THE BOTTOM FLANGE IN THE BEARING AREA.



PLAN VIEW

ORIENTATION DIAGRAM



SECTION A
(DEVELOPED)

SECTION B

BILL OF MATERIAL

	SHIP.	QTY EA.	MARK	COMM.	DESCRIPTION	LENGTH	SPEC	GRADE	TEST	REMARKS	GRP.	ITEM	SHIP WEIGHT EA.
⚠	1	1	G4B		GIRDER								4836.31
⚠	1	1	w1	PL	20 x 2235	8 513	M270M	345W	T		3	7	2986.81
⚠	1	1	t1	PL	22 x 410	8 513	M270M	345W			4	33	602.71
	1	1	b1	PL	22 x 410	8 501	M270M	345W	T		4	34	601.86
	1	2	x1a	PL	16 x 2125	350	M270M	345W	T		6	1	93.40
	1	2	x1g	PL	14 x 410	580	M270M	345W	T		6	6	26.13
	1	4	x1h	PL	14 x 180	580	M270M	345W	T		6	7	11.47
	1	2	x2c	PL	22 x 190	2 235	M270M	345W			7	3	73.33
	1	2	x2h	PL	16 x 190	2 235	M270M	345W			7	6	53.33
	1	2	x2k	PL	16 x 190	2 235	M270M	345W			7	6	53.33

TOTAL WEIGHT THIS SHEET: 4836.31 kg

SHOP NOTE

HOLES: 15/16"ø (U.N.)

BOLTS: NONE

PAINT: SEE DWG. GN1

FOR GENERAL SHOP NOTES, SEE DWG. GN1.
FOR WEB CAMBER DIAGRAM, SEE DWG. WC1.
FOR HORIZ. CURVE DIAGRAM, SEE DWG. HC1.

CODE:30

☑ Reviewed
☐ Rejected
☐ Furnish as Corrected
☐ Revise and Resubmit
☐ Submit Specified Item

This review is only for general conformance with the design concept and the information given in the Construction Documents. Corrections or comments made on the shop drawings during this review do not relieve the contractor from compliance with the requirements of the plans and specifications. Review of a specific item shall not include review of an assembly of which the item is a component. The Contractor is responsible for dimensions to be confirmed and correlated at the jobsite; information that pertains solely to the fabrication process or to the means, methods, techniques, sequences and procedures of construction; coordination of the Work with that of all other trades and performing all work in a safe and satisfactory manner.

McFarland-Johnson, Inc.
Date 6/13/05
By EEJ

⚠

VTrans
RECEIVED
CK'D BY JWC OK'D BY
JUN 03 2005
RESUBMIT ____ APPROVED ____
BY DATE

NO.	REVISION	BY	DATE
⚠			
⚠			
⚠	CAMBER DESIGN CHANGE	MGK	4-26-05

HIGH STEEL STRUCTURES, INC.
1770 Hempstead Road
Lancaster, PA 17605-0008
Phone 717/299-5211
A Division of High Industries, Inc.

GIRDER G4B
U.S. RTE. 5 (BRIDGE #60) OVER LULLS BROOK
U.S. RTE. 5 STA. 3+080.77 TO STA. 3+123.110
TOWN OF HARTLAND
WINDSOR COUNTY, VERMONT
STATE OF VERMONT, AGENCY OF TRANSPORTATION

STATE CONTRACT OR REF. NO. PROJECT NO. BRS-0113(22)
CONTRACTOR MILLER CONSTRUCTION, INC.
IN CHARGE: GLIDDEN (IH) MADE BY: KLW CHK'D. BY: WBW DATE: 4/19/05
CONTRACT NUMBER VT-05017-1 DRAWING NUMBER: 14 OF 15

PLOTTED: 4/28/2005 9:39:27 AM BY: mk-reidel

13255

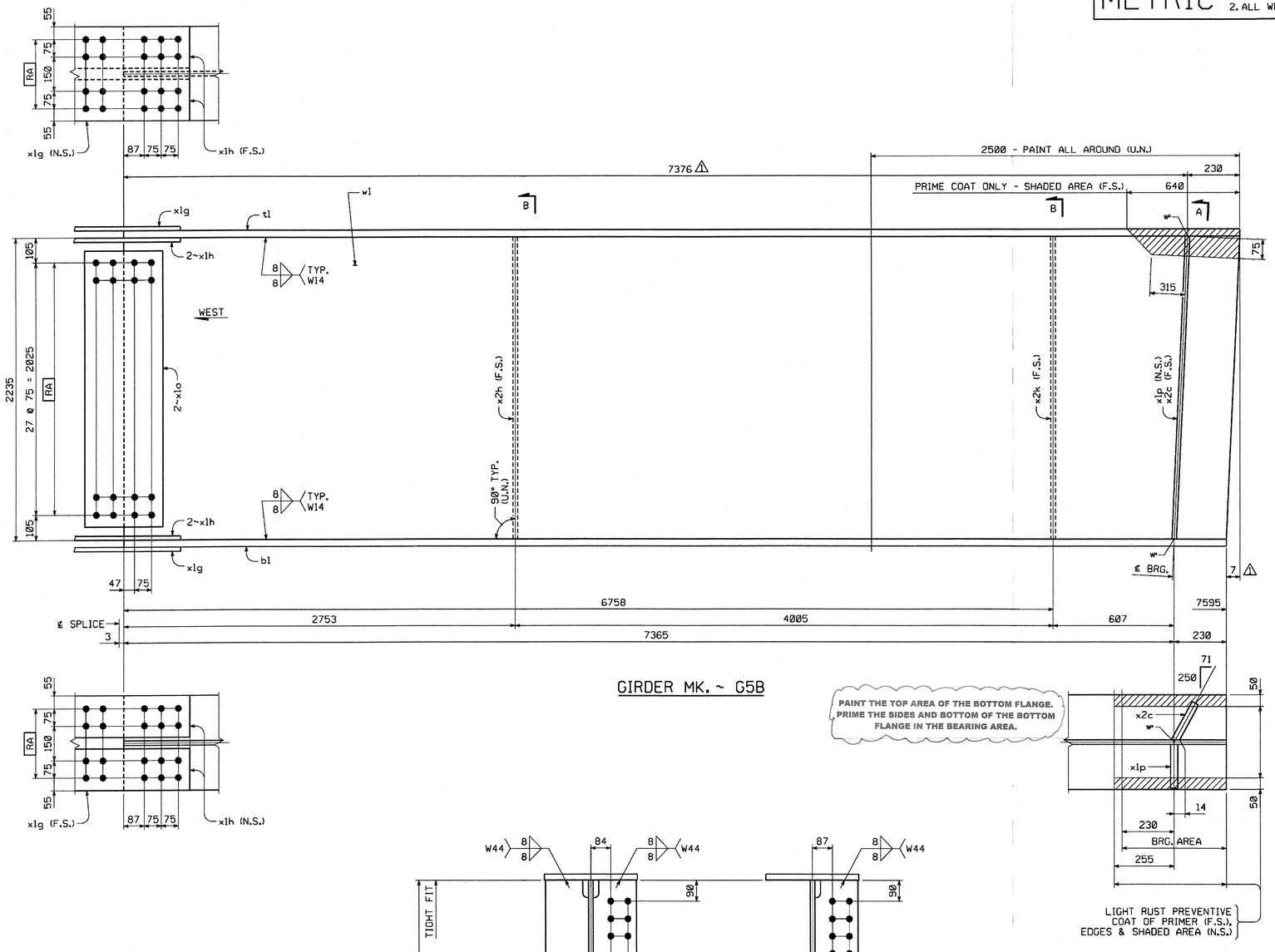
05017 X2 5/12/05 5/Resubmit For Approval TO:Miller Construction, Inc.

METRIC

METRIC

1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE NOTED.
2. ALL WEIGHTS ARE IN KILOGRAMS.

FED. ROAD DIV. NO.	STATE	FED. AID PROJ. NO.
	VT	



GIRDER MK. ~ G5B

BILL OF MATERIAL

	SHIP.	QTY EA.	MARK	COMM.	DESCRIPTION	LENGTH	SPEC	GRADE	TEST	REMARKS	GRP.	ITEM	SHIP WEIGHT EA.
⚠	1	1	G5B		GIRDER								4283.07
⚠	1	1	w1	PL	20 x 2235	7 606	M270M	345W	T		3	8	2668.58
⚠	1	1	t1	PL	22 x 410	7 606	M270M	345W			4	35	538.49
⚠	1	1	b1	PL	22 x 410	7 595	M270M	345W	T		4	36	537.71
	1	2	x1a	PL	16 x 2125	350	M270M	345W	T		6	1	93.40
	1	2	x1g	PL	14 x 410	580	M270M	345W	T		6	6	26.13
	1	4	x1h	PL	14 x 180	580	M270M	345W	T		6	7	11.47
	1	1	x1p	PL	22 x 190	2 235	M270M	345W			7	3	73.33
	1	1	x2c	PL	22 x 190	2 235	M270M	345W			7	3	73.33
	1	1	x2h	PL	16 x 190	2 235	M270M	345W			7	6	53.33
	1	1	x2k	PL	16 x 190	2 235	M270M	345W			7	6	53.33

TOTAL WEIGHT THIS SHEET: 4283.07 kg

TOTAL WEIGHT FOR BID ITEM #506.55: 164383.91 kg

SHOP NOTE

HOLES: 15/16"ø (U.N.)
BOLTS: NONE
PAINT: SEE DWG. GN1
FOR GENERAL SHOP NOTES, SEE DWG. GN1.
FOR WEB CAMBER DIAGRAM, SEE DWG. WC1.
FOR HORIZ. CURVE DIAGRAM, SEE DWG. HC1.

CODE:30

☑ Reviewed ☐ Furnish as Corrected
☐ Rejected ☐ Revise and Resubmit
☐ Submit Specified Item

This review is only for general conformance with the design concept and the information given in the Construction Documents. Corrections or comments made on the shop drawings during this review do not relieve the contractor from compliance with the requirements of the plans and specifications. Review of a specific item shall not include review of an assembly of which the item is a component. The Contractor is responsible for dimensions to be confirmed and correlated at the jobsite. Information that pertains solely to the fabrication process or to the means, methods, techniques, sequences and procedures of construction; coordination of the Work with that of all other trades and performing all work in a safe and satisfactory manner.

McFarland-Johnson, Inc.
Date 6/3/05
By EGO

⚠
VTrans
RECEIVED
CK'D BY JWK CK'D BY
JUN 03 2005
RESUBMIT APPROVED
BY DATE

NO.	REVISION	BY	DATE
⚠			
⚠			
1	CAMBER DESIGN CHANGE	MGK	4-26-05

HIGH STEEL STRUCTURES, INC.
1770 Hempstead Road
Lancaster, PA 17605-0008
Phone 717/299-5211
A Division of High Industries, Inc.

GIRDER	G5B
U.S. RTE. 5 (BRIDGE #60) OVER LULLS BROOK	
U.S. RTE. 5 STA. 3+080.77 TO STA. 3+123.110	
TOWN OF HARTLAND	
WINDSOR COUNTY, VERMONT	
STATE OF VERMONT, AGENCY OF TRANSPORTATION	
STATE CONTRACT OR REF. NO. PROJECT NO. BRS-0113(22)	
CONTRACTOR MILLER CONSTRUCTION, INC.	
IN CHARGE: GLIDDEN (IH) MADE BY: KLW CHK'D. BY: WBW DATE: 4/19/05	
CONTRACT NUMBER: VT-05017-1 DRAWING NUMBER: 15 OF 15	

PLOTTED: 4/28/2005 9:29:35 AM
BY: mk-reudel

13355

05017 X2 5/12/05 5/Resubmit For Approval TO:Miller Construction, Inc.

DSBROWN

Production Joint Welding Procedure Specification (D1.5-02)

Procedure No: A-FSB-11 Date Issued: 11-13-03 Revision No: 0 Rev. Date: _____

Contractor (Fabricator) D. S. Brown Company Prepared by: James R. Connor, Quality Assurance Manager

1. Non-Fracture Critical [X] Fracture Critical [ ] WPS Expiration Date: _____
2. Qualified in accordance with: AWS D1.5- 2002 (5.12.1)
   Referenced PQR No(s). PQR-FCAW-01-03 __ , __ , ____
   Referenced FWST No(s). PQR-FCAW-FWST-01(03) , PQR-FCAW-FWST-01A(03) , __ , __
3. Material specification(s) ASTM A709 Gr. 36, 50, 50W, A53 & 500C (pipe)
4. Material Thickness (es) Unlimited
5. Welding process FCAW
6. Manual [ ] , machine [ ] , or semiautomatic [X]
7. Position(s) of welding 1G, 2G,(1F,2F)
8. Filler metal specification AWS A5.20
9. Filler metal class and brand name E71T-1, E71T-9 Lincoln Outershield Elite)
10. Flux class & brand N/A , Type N/A
11. Shielding gas 100% CO2 Flow rate 45 CFH
12. Single pass [X] Or multiple pass [X]
13. Single arc [X] Or multiple arc [ ]
14. Welding Current DCEP
15. Polarity Reverse
16. Welding progression Stringers
17. Root treatment Clean to bright sound metal or per AWS D1.5 (3.2.1 & 3.11)
18. Postheat treatment N/A
19. Calculated Heat Input (KJ/In) Min 31.20 Kj/in Max 50.72 Kj/in
20. Electrode extension (electrical stickout) 3/4"

For DOT Approval

VTRANS RECEIVED JUN 2 6 2006

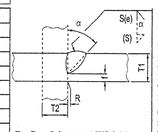
ORD BY: ORD BY: JWC

RESUBMIT APPROVED DATE 7-17-06

Weld size (T1)&(S)	Pass No(s).	Electrode Size (In)	Welding Process Variables AMPS/WFS*	VOLTS	Travel Speed (IPM)
*1/8"	1	1/16"	260-310	26-30	11-13
1/4"	1	1/16"	260-310	26-30	11-13
5/16"	1	1/16"	260-310	26-30	11-13
3/8"	2-3	1/16"	260-310	26-30	11-13
1/2"	3-4	1/16"	260-310	26-30	11-13
5/8"	4-6	1/16"	260-310	26-30	11-13
3/4"	5-7	1/16"	260-310	26-30	11-13
7/8"	6-8	1/16"	260-310	26-30	11-13

* To be used for non-structural applications only!

Joint Detail (TC-P4-GF)
Show all dimensions, weld sizes, passes, and AWS symbols



For Butt Joints see AWS 2.14

T1 = ¼" min.
T2 = Varies
(E) = S-1/8"
f = 1/8" min.
R = 0
α = 45°
S = size groove
(S) = size of reinforcing fillet(if required) not to exceed ¼" in corner & T jts.

* Wire feed speed may be used along with amperage (include chart)

Prepared By: James R. Connor DSB QA Manager

Project: _____

DSB Job: 14032-1042

Preheat and Interpass Temperature Chart

Base Metal Thickness range	Minimum Preheat (°F)	Max Preheat & Interpass (°F)
≤ 3/4"	50°F	450°F
>3/4" to ≤1.5"	70°F	450°F
>1.5" to ≤2.5"	150°F	450°F
>2.5"	225°F	450°F

Note: When this procedure is used for A709Gr50W materials, it shall be limited to 5/16" single pass or material be coated.

134 scwp

DSBROWN

Production Joint Welding Procedure Specification (D1.5-02)

Procedure No: **A-GSB-11** Date Issued: 12-21-04 Revision No: 0 Rev. Date: _____

Contractor (Fabricator) D. S. Brown Company Prepared by: James R. Connor, Quality Assurance Manager

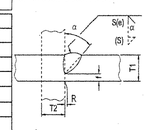
1. Non-Fracture Critical [X] Fracture Critical [ ] WPS Expiration Date: _____
2. Qualified in accordance with: AWS D1.5- 2002 (5.12.1)
   Referenced PQR No(s). PQR-GMAW-01(04) __ , __ , ____
   Referenced FWST No(s). PQR-GMAW-FWST-01A(03) , PQR-GMAW-FWST-01B(03) , __ , ____
3. Material specification(s) ASTM A709 Gr. 36, 50, 50W, A53 & 500B,C (pipe)
4. Material Thickness (es) Unlimited
5. Welding process GMAW
6. Manual [ ] , machine [ ] , or semiautomatic [X]
7. Position(s) of welding 1G,2G,1F, 2F
8. Filler metal specification AWS A5.18
9. Filler metal class and brand name ER70S-3 Lincoln SuperArc 50)
10. Flux class & brand N/A , Type N/A
11. Shielding gas 90% Ar / 10% CO2 Flow rate 45 CFH
12. Single pass [X] Or multiple pass [X]
13. Single arc [X] Or multiple arc [ ]
14. Welding Current DCEP
15. Polarity Reverse
16. Welding progression stringers
17. Root treatment Clean to bright sound metal or per AWS D1.5 (3.2.1 & 3.11)
18. Postheat treatment N/A
19. Calculated Heat Input (KJ/In) Min 15.3 Kj/in Max 24.9 Kj/in
20. Electrode extension (electrical stickout) 3/4"

For DOT Approval

VTRANS RECEIVED
CK'D BY _____ OK'D BY JWC
JUN 26 2006
RESUBMIT _____ APPROVED ✓
BY _____ DATE 7-11-06

Weld size (in)	Pass No(s).	Electrode Size (in)	Welding Process Variables AMPS/WFS*	VOLTS	Travel Speed (IPM)
**1/8"	1	.045"	170-215	24-27	14-16
**3/16"	1	.045"	170-215	24-27	14-16
1/4"	1	.045"	170-215	24-27	14-16
5/16"	1-2	.045"	170-215	24-27	14-16
3/8"	2-3	.045"	170-215	24-27	14-16
7/16"	3-5	.045"	170-215	24-27	14-16
1/2"	4-6	.045"	170-215	24-27	14-16
** Non-Structural weld					

Joint Detail (TC-P4-GF)
Show all dimensions, weld sizes, passes, and AWS symbols
For Butt Joints see AWS 2.14



T1 = ¼" min.
T2 = Varies
(E) = S-1/8"
f = 1/8" min.
R = 0
α = 45°
S = size groove
(S) = size of reinforcing fillet(if required) not to exceed ¼" in corner & T jts.

* Wire feed speed may be used along with amperage (include chart)

Prepared By: James R Connor DSB QA Manager

Project: _____

DSB Job: 14032-1042

Preheat and Interpass Temperature Chart

Base Metal Thickness range	Minimum Preheat (°F)	Max Preheat & Interpass (°F)
≤ 3/4"	50°F	450 °F
>3/4" to ≤1.5"	70°F	450 °F
>1.5" to ≤2.5"	150°F	450 °F
>2.5"	225°F	450 °F

Note: When this procedure is used for A709Gr50W materials, it shall be limited to 5/16" single pass or material be coated.

135SCUP

DSBROWN

Production Joint Welding Procedure Specification (D1.5-02)

Procedure No: **A-GF-01** Date Issued: 6-18-04 Revision No: 0 Rev. Date: _____

Contractor (Fabricator) D. S. Brown Company Prepared by: James R. Connor, Quality Assurance Manager

1. Non-Fracture Critical [X] Fracture Critical [ ] WPS Expiration Date: _____
2. Qualified in accordance with: AWS D1.5- 2002 (5.12.1)
   Referenced PQR No(s). PQR-GMAW-01(04) __ , __ , ____
   Referenced FWST No(s). PQR-GMAW-FWST-01A(03) , PQR-GMAW-FWST-01B(03) , __ , ____
3. Material specification(s) ASTM A709 Gr. 36, 50, 50W
4. Material Thickness (es) Unlimited
5. Welding process GMAW
6. Manual [ ] , machine [ ] , or semiautomatic [X]
7. Position(s) of welding 1F, 2F
8. Filler metal specification AWS A5.18
9. Filler metal class and brand name ER70S-3 Lincoln SuperArc 50)
10. Flux class & brand N/A , Type N/A
11. Shielding gas 90% Ar / 10% CO2 Flow rate 45 CFH
12. Single pass [X] Or multiple pass [X]
13. Single arc [X] Or multiple arc [ ]
14. Welding Current DCEP
15. Polarity Reverse
16. Welding progression stringers
17. Root treatment Clean to bright sound metal or per AWS D1.5 (3.2.1 & 3.11)
18. Postheat treatment N/A
19. Calculated Heat Input (KJ/In) Min 15.3 Kj/in Max 24.9 Kj/in
20. Electrode extension (electrical stickout) 3/4"

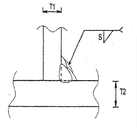
For DOT Approval

V-TRANS
RECEIVED
JUN 26 2006
DATE 7-17-06

C'D'D BY _____ OK'D BY JWK
RESUBMIT _____ APPROVED ✓
BY:

Weld size (in)	Pass No(s).	Electrode Size (in)	Welding Process Variables AMPS/WFS*	VOLTS	Travel Speed (IPM)
**1/4"	1	.045"	170-215	24-27	14-16
5/16"	1-2	.045"	170-215	24-27	14-16
3/8"	2-3	.045"	170-215	24-27	14-16
7/16"	3-5	.045"	170-215	24-27	14-16
1/2"	4-6	.045"	170-215	24-27	14-16
5/8"	5-7	.045"	170-215	24-27	14-16
3/4"	6-8	.045"	170-215	24-27	14-16

Joint Detail (Fillet)
Show all dimensions, weld sizes, passes, and AWS symbols



T1 = Varies
T2 = Varies
S = Weld Size

**** T1 & T2 equal to or less than 3/4" for 1/4" welds.**

* Wire feed speed may be used along with amperage (include chart)

Prepared By: James R. Connor DSB QA Manager

Project: _____

DSB Job: 14032-1042

Preheat and Interpass Temperature Chart

Base Metal Thickness range	Minimum Preheat (°F)	Max Preheat & Interpass (°F)
≤ 3/4"	50°F	450°F
>3/4" to ≤1.5"	70°F	450°F
>1.5" to ≤2.5"	150°F	450°F
>2.5"	225°F	450°F

Note: When this procedure is used for A709Gr50W materials, it shall be limited to 5/16" single pass or material be coated.

136 SCUP

Production Joint Welding Procedure Specification (D1.5-02)

Procedure No: **A-G-SEALWELD-01** Date Issued: 12-21-04 Revision No: 0 Rev. Date: _____

Contractor (Fabricator) D. S. Brown Company Prepared by: James R. Connor, Quality Assurance Manager

1. Non-Fracture Critical [X] Fracture Critical [ ] WPS Expiration Date: _____
2. Qualified in accordance with: AWS D1.5- 2002 (5.12.1)
   Referenced PQR No(s). PQR-GMAW-01(04) __ , __ , ____
   Referenced FWST No(s). PQR-GMAW-FWST-01A(03) , PQR-GMAW-FWST-01B(03) , __ , ____
3. Material specification(s) ASTM A709 Gr. 36, 50, 50W, A500B, A53
4. Material Thickness (es) Unlimited
5. Welding process GMAW
6. Manual [ ] , machine [ ] , or semiautomatic [X]
7. Position(s) of welding 1G, 2G, 1F, 2F
8. Filler metal specification AWS A5.18
9. Filler metal class and brand name ER70S-3 Lincoln SuperArc 50)
10. Flux class & brand N/A , Type N/A
11. Shielding gas 90% Ar / 10% CO2 Flow rate 45 CFH
12. Single pass [X] Or multiple pass [X]
13. Single arc [X] Or multiple arc [ ]
14. Welding Current DCEP
15. Polarity Reverse
16. Welding progression stringers
17. Root treatment Clean to bright sound metal or per AWS D1.5 (3.2.1 & 3.11)
18. Postheat treatment N/A
19. Calculated Heat Input (KJ/In) Min 15.3 Kj/in Max 24.9 Kj/in
20. Electrode extension (electrical stickout) 3/4"

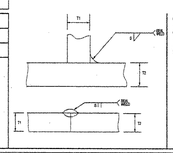
For DOT Approval

VTRANS RECEIVED
OK'D BY _____ OK'D BY JWK
JUN 26 2006
RESUBMIT _____ APPROVED ✓
BY _____ DATE 7-17-06

Weld size (In)	Pass No(s).	Electrode Size (In)	Welding Process Variables AMPS	Welding Process Variables VOLTS	Travel Speed (IPM)
**1/8"	1	.045"	170-215	24-27	14-16
**3/16"	1	.045"	170-215	24-27	14-16

NOTE:
THIS JOINT DETAIL TO BE USED FOR SEALING NON-STRUCTURAL GALVANIZED OR PAINTED APPLICATIONS WHERE FULL SIZED WELDMENTS ARE NOT DESIGNED, DETAILED OR ARE NOT PRACTICAL.

Joint Detail (Sealweld)
Show all dimensions, weld sizes, passes, and AWS symbols



T1 = Varies
T2 = Varies
S = Weld Size

Prepared By: James R. Connor DSB QA Manager

Project: _____

DSB Job: 14032-1042

Preheat and Interpass Temperature Chart

Base Metal Thickness range	Minimum Preheat (°F)	Max Preheat & Interpass (°F)
≤ 3/4"	50°F	450°F
>3/4" to ≤1.5"	70°F	450°F
>1.5" to ≤2.5"	150°F	450°F
>2.5"	225°F	450°F

Note: When this procedure is used for A709Gr50W materials, it shall be limited to 5/16" single pass or material be coated.

137SCWP

Production Joint Welding Procedure Specification (D1.5-02)

Procedure No: **A-F-SEALWELD-06** Date Issued: 11-14-03 Revision No: 0 Rev. Date: _____

Contractor (Fabricator) D. S. Brown Company Prepared by: James R. Connor, Quality Assurance Manager

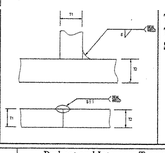
1. Non-Fracture Critical [X] Fracture Critical [ ] WPS Expiration Date: _____
2. Qualified in accordance with: AWS D1.5- 2002 (5.12.1)
   Referenced PQR No(s). PQR-FCAW-01-03 __ , __ , ___
   Referenced FWST No(s). PQR-FCAW-FWST-01(03) , PQR-FCAW-FWST-01A(03) , __ , ___
3. Material specification(s) ASTM A709 Gr. 36, 50, 50W, A53 & A500C (pipe), A500B (tube)
4. Material Thickness (es) Unlimited
5. Welding process FCAW
6. Manual [ ] , machine [ ] , or semiautomatic [X]
7. Position(s) of welding 1G,1F, 2F
8. Filler metal specification AWS A5.20
9. Filler metal class and brand name E71T-1, E71T-9 Lincoln Outershield Elite)
10. Flux class & brand N/A , Type N/A
11. Shielding gas 100% CO2 Flow rate 45 CFH
12. Single pass [X] Or multiple pass [ ]
13. Single arc [X] Or multiple arc [ ]
14. Welding Current DCEP
15. Polarity Reverse
16. Welding progression stringers
17. Root treatment Clean to bright sound metal or per AWS D1.5 (3.2.1 & 3.11)
18. Postheat treatment N/A
19. Calculated Heat Input (KJ/In) Min 31.20 Kj/in Max 50.72 Kj/in
20. Electrode extension (electrical stickout) 3/4"

For DOT Approval

VTRANS RECEIVED
OK'D BY _____ OK'D BY JWC
JUN 26 2006
RESUBMIT _____ APPROVED ✓
BY _____ DATE 7-17-06

Weld size (in)	Pass No(s)	Electrode Size (in)	Welding Process Variables AMPS/WFS*	VOLTS	Travel Speed (IPM)
**1/8"	1	1/16"	260-310	26-30	11-13
**3/16"	1	1/16"	260-310	26-30	11-13

Joint Detail (Fillet)
Show all dimensions, weld sizes, passes, and AWS symbols



T1 = Varies
T2 = Varies
S = Weld Size

NOTE:
THIS JOINT DETAIL TO BE USED FOR SEALING NON-STRUCTURAL GALVANIZED OR PAINTED APPLICATIONS WHERE FULL SIZED WELDMENTS ARE NOT DESIGNED, DETAILED OR ARE NOT PRACTICAL.

* Wire feed speed may be used along with amperage (include chart)

Prepared By: James R Connor DSB QA Manager

Project: _____

DSB Job: 14032-1042

Preheat and Interpass Temperature Chart

Base Metal Thickness range	Minimum Preheat (°F)	Max Preheat & Interpass (°F)
≤ 3/4"	50°F	450°F
>3/4" to ≤1.5"	70°F	450°F
>1.5" to ≤2.5"	150°F	450°F
>2.5"	225°F	450°F

Note: When this procedure is used for A709Gr50W materials, it shall be limited to 5/16" single pass or material be coated.

135 SCWP

DSBROWN

Production Joint Welding Procedure Specification (D1.5-02)

Procedure No: A-FF-05 Date Issued: 11-11-03 Revision No: 0 Rev. Date: _____

Contractor (Fabricator) D. S. Brown Company Prepared by: James R. Conner, Quality Assurance Manager

1. Non-Fracture Critical [X] Fracture Critical [ ] WPS Expiration Date: _____
2. Qualified in accordance with: AWS D1.5- 2002 (5.12.1)
   Referenced PQR No(s). PQR-FCAW-01-03 __ , __ , ____
   Referenced FWST No(s). PQR-FCAW-FWST-01(03) , PQR-FCAW-FWST-01A(03) , __ , ____
3. Material specification(s) ASTM A709 Gr. 36, 50, 50W, A53 & A500B,C(pipe)
4. Material Thickness (es) Unlimited
5. Welding process FCAW
6. Manual [ ] , machine [ ] , or semiautomatic [X]
7. Position(s) of welding 1F, 2F
8. Filler metal specification AWS A5.20
9. Filler metal class and brand name E71T-1, E71T-9 Lincoln Outershield Elite)
10. Flux class & brand N/A , Type N/A
11. Shielding gas 100% CO2 Flow rate 45 CFH
12. Single pass [X] Or multiple pass [X]
13. Single arc [X] Or multiple arc [ ]
14. Welding Current DCEP
15. Polarity Reverse
16. Welding progression stringers
17. Root treatment Clean to bright sound metal or per AWS D1.5 (3.2.1 & 3.11)
18. Postheat treatment N/A
19. Calculated Heat Input (KJ/In) Min 31.20 Kj/in Max 50.72 Kj/in
20. Electrode extension (electrical stickout) 3/4"

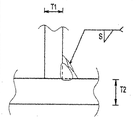
For DOT Approval

VTRANS
RECEIVED
CK'D BY _____ OK'D BY _____
JUN 26 2006
RESUBMIT _____ APPROVED
BY _____ DATE 7-17-06

Weld size (In)	Pass No(s).	Electrode Size (In)	Welding Process Variables AMPS/WFS*	VOLTS	Travel Speed (IPM)
*1/8"	1	1/16"	260-310	26-30	11-13
**1/4"	1	1/16"	260-310	26-30	11-13
5/16"	1	1/16"	260-310	26-30	11-13
3/8"	2-3	1/16"	260-310	26-30	11-13
7/16"	3-5	1/16"	260-310	26-30	11-13
1/2"	4-6	1/16"	260-310	26-30	11-13
5/8"	5-7	1/16"	260-310	26-30	11-13
3/4"	6-8	1/16"	260-310	26-30	11-13

* To be used for non-structural applications only!

Joint Detail (Fillet)
Show all dimensions, weld sizes, passes, and AWS symbols



T1 = Varies
T2 = Varies
S = Weld Size

**** T1 & T2 equal to or less than 3/4" for 1/4" welds.**

* Wire feed speed may be used along with amperage (include chart)

Prepared By: James R. Conner DSB QA Manager

Project: _____

DSB Job: 14032-1042

Preheat and Interpass Temperature Chart

Base Metal Thickness range	Minimum Preheat (°F)	Max Preheat & Interpass (°F)
≤ 3/4"	50°F	450°F
>3/4" to ≤1.5"	70°F	450°F
>1.5" to ≤2.5"	150°F	450°F
>2.5"	225°F	450°F

Note: **When this procedure is used for A709Gr50W materials, it shall be limited to 5/16" single pass or material be coated.

139508

DSBROWN

Production Joint Welding Procedure Specification (D1.5-02)

Procedure No: **A-GF-03** Date Issued: 11-15-04 Revision No: 0 Rev. Date: _____

Contractor (Fabricator) D. S. Brown Company Prepared by: James R. Connor, Quality Assurance Manager

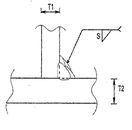
1. Non-Fracture Critical [X] Fracture Critical [ ] WPS Expiration Date: _____
2. Qualified in accordance with: AWS D1.5- 2002 (5.12.1)
   Referenced PQR No(s). PQR-GMAW-01(04) __ , __ , ____
   Referenced FWST No(s). PQR-GMAW-FWST-01A(04) , PQR-GMAW-FWST-01B(04) , __ , ____
3. Material specification(s) ASTM A709 Gr. 36, 50, 50W, A500B, A53
4. Material Thickness (es) Unlimited
5. Welding process GMAW
6. Manual [ ] , machine [ ] , or semiautomatic [X]
7. Position(s) of welding 1F, 2F
8. Filler metal specification AWS A5.18
9. Filler metal class and brand name ER70S-3 Lincoln SuperArc 50)
10. Flux class & brand N/A , Type N/A
11. Shielding gas 90% Ar / 10% CO2 Flow rate 45 CFH
12. Single pass [X] Or multiple pass [X]
13. Single arc [X] Or multiple arc [ ]
14. Welding Current DCEP
15. Polarity Reverse
16. Welding progression stringers
17. Root treatment Clean to bright sound metal or per AWS D1.5 (3.2.1 & 3.11)
18. Postheat treatment N/A
19. Calculated Heat Input (KJ/In) Min 15.3 Kj/in Max 24.9 Kj/in
20. Electrode extension (electrical stickout) 3/4"

For DOT Approval

VTRANS
RECEIVED
ORIG BY _____ ORIG BY JWC
JUN 2 6 2006
RESUBMIT _____ APPROVED √
BY _____ DATE 7-17-06

Weld size (in)	Pass No(s).	Electrode Size (in)	Welding Process Variables AMPS/WFS*	VOLTS	Travel Speed (IPM)
**1/4"	1	.045"	170-215	24-27	14-16
5/16"	1-2	.045"	170-215	24-27	14-16
3/8"	2-3	.045"	170-215	24-27	14-16
7/16"	3-5	.045"	170-215	24-27	14-16
1/2"	4-6	.045"	170-215	24-27	14-16
5/8"	5-7	.045"	170-215	24-27	14-16
3/4"	6-8	.045"	170-215	24-27	14-16

Joint Detail (Fillet)
Show all dimensions, weld sizes, passes, and AWS symbols



T1 = Varies
T2 = Varies
S = Weld Size

**** T1 & T2 equal to or less than 3/4" for 1/4" welds.**

* Wire feed speed may be used along with amperage (include chart)

Prepared By: James R Connor DSB QA Manager

Project: _____

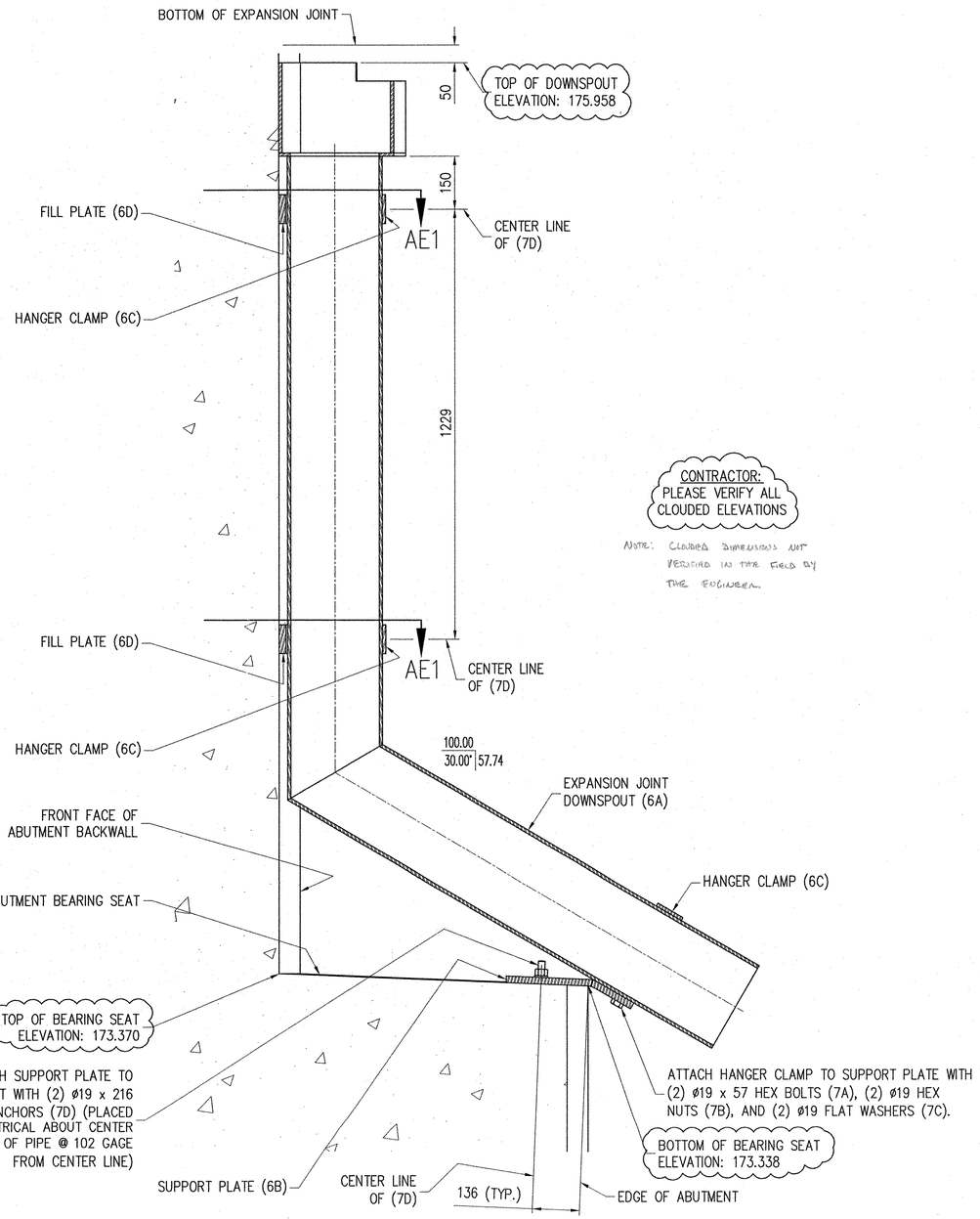
DSB Job: 14032-1042

Preheat and Interpass Temperature Chart

Base Metal Thickness range	Minimum Preheat (°F)	Max Preheat & Interpass (°F)
≤ 3/4"	50°F	450°F
>3/4" to ≤1.5"	70°F	450°F
>1.5" to ≤2.5"	150°F	450°F
>2.5"	225°F	450°F

Note: When this procedure is used for A709Gr50W materials, it shall be limited to 5/16" single pass or material be coated.

140 SCUP

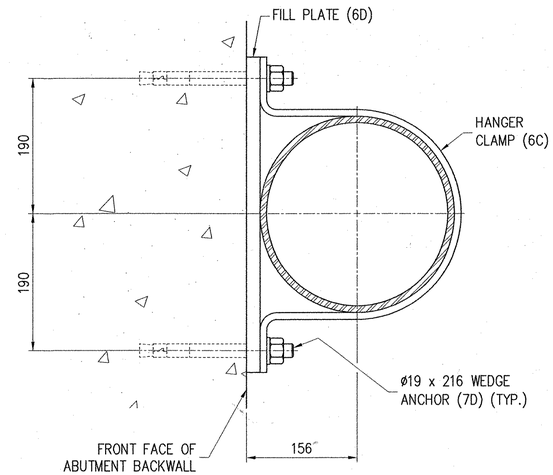


SECTION THROUGH ABUTMENT NO. 2 @ CENTER LINE OF EXPANSION JOINT DOWNSPOUT

(LOOKING SOUTH – 15° SOUTH FROM PERPENDICULAR TO ABUTMENT)
(EXPANSION JOINT, BRIDGE DECK, BRIDGE SUPERSTRUCTURE, BEARINGS NOT SHOWN FOR CLARITY)

CONTRACTOR:
PLEASE VERIFY ALL
CLOUDED ELEVATIONS

NOTE: CLOUDED DIMENSIONS NOT VERIFIED IN THE FIELD BY THE ENGINEER.



SECTION AE1
(ROTATED)
(SCALE: 2X)

RECEIVED
CK'D BY JL OK'D BY
JUN 26 2006
RESUBMIT APPROVED
BY DATE 7/7/06

VTrans - PDD
JUN 26 2006
Structures Design Section

STRUCTURES COPY

WORK THIS SHEET WITH SHEET NO. 6 AND 7.

REV.	DESCRIPTION	DATE	DET.	CK'D.

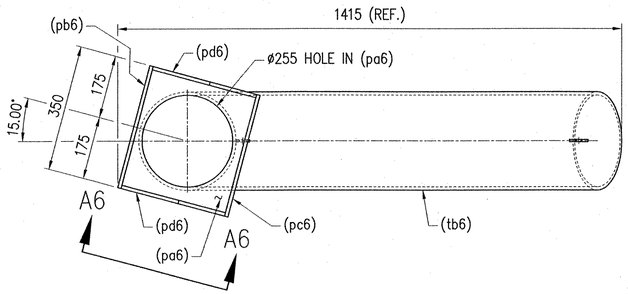
D.S. BROWN
300 E. CHERRY STREET
NORTH BALTIMORE, OHIO 45872
419.257.3561
FAX: 419.257.0332
4201 NOREX DRIVE
CHASKA, MINNESOTA 55318
952.368.3000
FAX: 952.448.7000
DSBROWN.COM

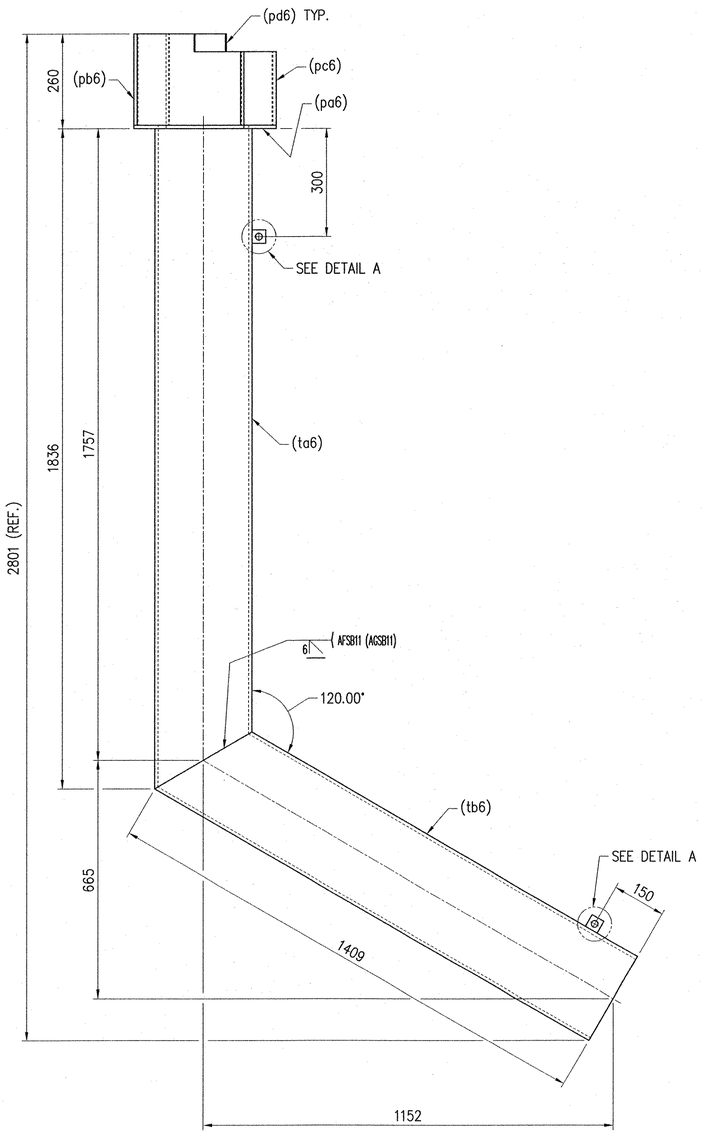
	ITEM	QUANTITY
LOCATION — U.S. ROUTE 5 OVER LULLS BROOK	–	–
BRIDGE — NO. 60	–	–
PROJECT — BRS 0113 (22)	–	–
TOWN — HARTLAND	–	–
P.O. NO. — 2004	–	–
DESIGNER — McFARLAND–JOHNSON, INC.	–	–
CUSTOMER — MILLER CONSTRUCTION, INC.	–	–
	–	–

DESCRIPTION: EXPANSION JOINT DRAINAGE ERECTION DETAILS
WINDSOR COUNTY, VT

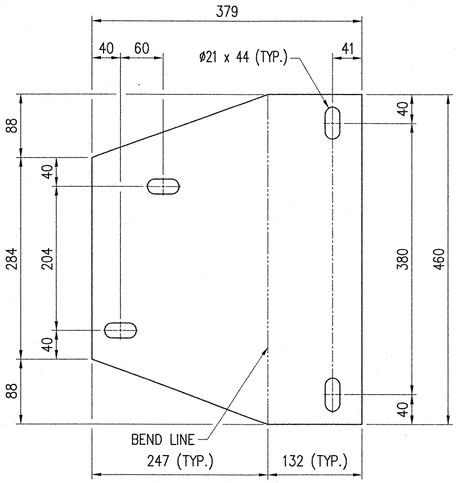
SCALE:	DRAWN BY:	CHECKED BY:	DATE:	
N.T.S.	JMB	JEB	5/30/06	–
PROJECT NUMBER: 14032	PRODUCT CODE: 1042	RELEASE: 2	SHEET: E1	

1415CWP

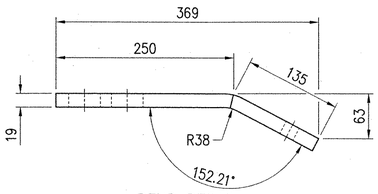




1 – EXPANSION JOINT DOWNSPOUT – 6A

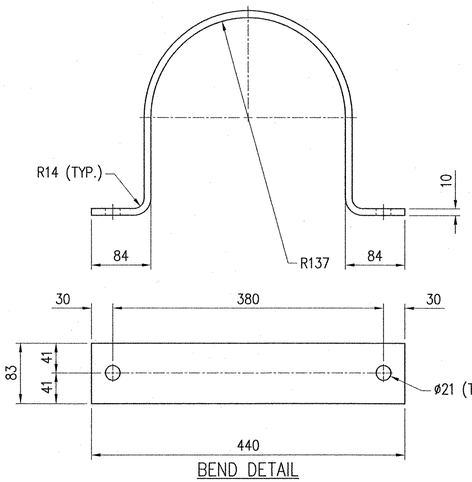


DEVELOPED DETAIL

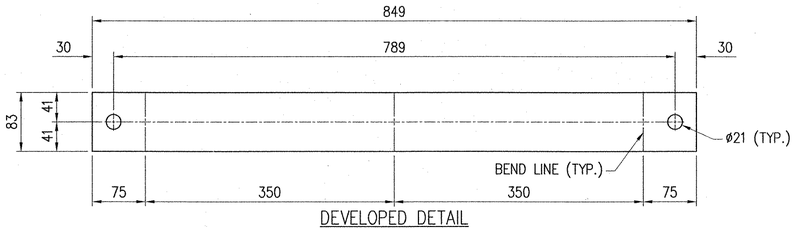


BEND DETAIL

1 – SUPPORT PLATE – 6B

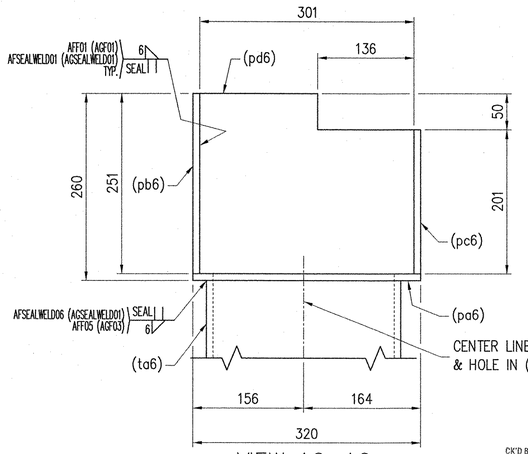


BEND DETAIL

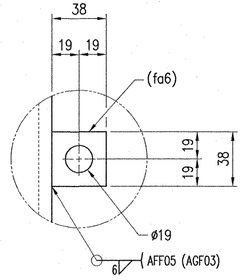


DEVELOPED DETAIL

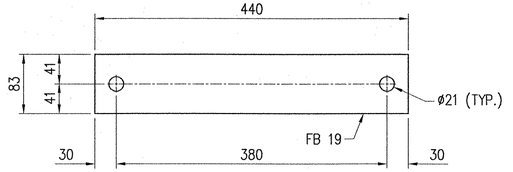
3 – HANGER CLAMPS – 6C



VIEW A6–A6
(ROTATED)
(SCALE: 2X)



DETAIL A
(TYP. @ ALL LOCATIONS)
(SCALE: 4X)



2 – FILL PLATES – 6D

SEE SHEET NO. 7 FOR DRAINAGE NOTES AND BILL OF MATERIALS.

REV.	DESCRIPTION	DATE	DET.	CKD.

RECEIVED
CK'D BY SL CK'D BY
JUN 26 2006
RESUBMIT APPROVED
BY DATE 7/7/06

VTrans - DD
JUN 26 2006
Structures Design Section

D.S. BROWN
300 E. CHERRY STREET
NORTH BALTIMORE, OHIO 45872
419.257.3561
FAX: 419.257.0332

4201 NOREX DRIVE
CHASKA, MINNESOTA 55318
952.368.3000
FAX: 952.448.7000

DSBROWN.COM

ITEM	QUANTITY
LOCATION — U.S. ROUTE 5 OVER LULLS BROOK	–
BRIDGE — NO. 60	–
PROJECT — BRS 0113 (22)	–
TOWN — HARTLAND	–
P.O. NO. — 2004	–
DESIGNER — McFARLAND–JOHNSON, INC.	–
CUSTOMER — MILLER CONSTRUCTION, INC.	–

DESCRIPTION: EXPANSION JOINT DRAINAGE DETAILS
WINDSOR COUNTY, VT

SCALE:	DRAWN BY:	CHECKED BY:	DATE:	
N.T.S.	JMB	JEB	5/30/06	–

PROJECT NUMBER	PRODUCT CODE	RELEASE	SHEET
14032	1042	2	6

14256P

Production Joint Welding Procedure Specification (D1.5-02)

DSBROWN

Procedure No: **A-FF-STUD-REP-01** Date Issued: 9-12-03 Revision No: 0 Rev. Date: ______

Contractor (Fabricator) D. S. Brown Company Prepared by: James R. Connor, Quality Assurance Manager

1. Non-Fracture Critical [X] Fracture Critical [ ] WPS Expiration Date: ______
2. Qualified in accordance with: AWS D1.5- 2002 (5.12.1)
   Referenced PQR No(s). PQR-FCAW-01-03 __ , __ , ____
   Referenced FWST No(s). PQR-FCAW-FWST-01(03) , PQR-FCAW-FWST-01A(03) , __ , ____
3. Material specification(s) ASTM A709 Gr. 36, 50, 50W, A500B to A108 Stud
4. Material Thickness (es) Unlimited
5. Welding process FCAW
6. Manual [ ] , machine [ ] , or semiautomatic [X]
7. Position(s) of welding 2F
8. Filler metal specification AWS A5.20
9. Filler metal class and brand name E71T-1, E71T-9 Lincoln Outershield Elite)
10. Flux class & brand N/A , Type N/A
11. Shielding gas 100% CO2 Flow rate 45 CFH
12. Single pass [X] Or multiple pass [X]
13. Single arc [X] Or multiple arc [ ]
14. Welding Current DCEP
15. Polarity Reverse
16. Welding progression stringers
17. Root treatment Clean to bright sound metal and per AWS D1.5 (3.2.1 & 3.11)
18. Postheat treatment N/A
19. Calculated Heat Input (KJ/In) Min 31.20 Kj/in Max 50.72 Kj/in
20. Electrode extension (electrical stickout) 3/4"

For DOT Approval

RECEIVED
CK'D BY ____ OK'D BY JWC
DEC 19 2005
RESUBMIT ____ APPROVED ✓
BY ____ DATE 1-04-06

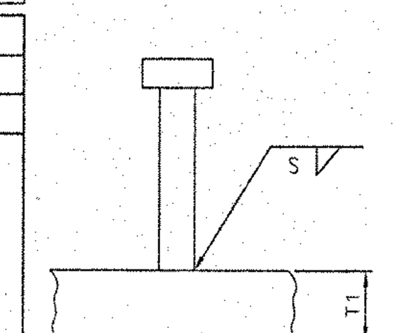
Weld size (In)	Pass No(s).	Electrode Size (In)	Welding Process Variables: AMPS	Welding Process Variables: VOLTS	Travel Speed (IPM)
**1/4"	1	1/16"	260-310	26-30	11-13
5/16"	1	1/16"	260-310	26-30	11-13
3/8"	2-3	1/16"	260-310	26-30	11-13

Table 7.2

STUD DIAMETER	MIN. SIZE FILLET
3/8""(13MM)	1/4(6MM)
½", 5/8,3/4,7/8(13,16,19,22MM)	5/16(8MM)
1"(25MM)	3/8(10MM)

PROCEDURE:
1) REPAIR WELDMENT SHALL BE OF THE SIZE LISTED BELOW AND EXTEND AT LEAST 3/8" (9MM) BEYOND THE END OF EACH DISCONTINUITY BEING REPAIRED.

Joint Detail (Fillet)
Show all dimensions, weld sizes, passes, and AWS symbols



T_1 =VARIES
S =VARIES PER TABLE 7.2 (AS SHOWN LEFT OF PAGE).

APPLICATION:
REPAIR OF STUD WELDMENTS, WHICH DO NOT EXHIBIT A FULL 360° FLASH

Prepared By: James R. Connor DSB QA Manager

Project: U.S. RTE. 5 OVER LULLS BROOK

DSB Job: 14032-1042

Preheat and Interpass Temperature Chart

Base Metal Thickness range	Minimum Preheat (°F)	Max Preheat & Interpass (°F)
≤ 3/4"	50°F	450°F
>3/4" to ≤1.5"	70°F	450°F
>1.5" to ≤2.5"	150°F	450°F
>2.5"	225°F	450°F

Note: When this procedure is used for A709Gr50W materials, it shall be limited to 5/16" single pass or material be coated.

DSBROWN

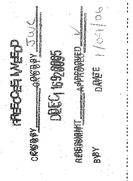
Production Joint Welding Procedure Specification (D1.5-02)

Procedure No: **A-(MC)GF-STUD-REP-01** Date Issued: 9-29-04 Revision No: 0 Rev. Date: _____

Contractor (Fabricator) D. S. Brown Company Prepared by: James R. Connor, Quality Assurance Manager

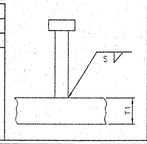
1. Non-Fracture Critical [X] Fracture Critical [ ] WPS Expiration Date: _____
2. Qualified in accordance with: AWS D1.5- 2002 (5.12.1)
   Referenced PQR No(s). PQR-(MC)GMAW-01(04) __ , __ , ____
   Referenced FWST No(s). PQR-(MC)GMAW-FWST-01A(04) , PQR-(MC)GMAW-FWST-01B(04) , __ , __
3. Material specification(s) ASTM A709 Gr. 36, 50, 50W
4. Material Thickness (es) Unlimited
5. Welding process GMAW
6. Manual [ ] , machine [ ] , or semiautomatic [X]
7. Position(s) of welding 1F, 2F
8. Filler metal specification AWS A5.18
9. Filler metal class and brand name E70C-6M Corex Metal-Core Maxim
10. Flux class & brand N/A , Type N/A
11. Shielding gas 75% Ar / 25% CO2 Flow rate 45 CFH
12. Single pass [X] Or multiple pass [X]
13. Single arc [X] Or multiple arc [ ]
14. Welding Current DCEP
15. Polarity Reverse
16. Welding progression stringers
17. Root treatment Clean to bright sound metal or per AWS D1.5 (3.2.1 & 3.11)
18. Postheat treatment N/A
19. Calculated Heat Input (KJ/In) Min 30.6 Kj/in Max 51.1 Kj/in
20. Electrode extension (electrical stickout) 3/4"

For DOT Approval



Weld size (In)	Pass No(s).	Electrode Size (In)	Welding Process Variables AMPS	VOLTS	Travel Speed (IPM)
1/4"	1	.052"	265-320	31-34.5	13-16
5/16"	1	.052"	265-320	31-34.5	13-16
3/8"	1-2	.052"	265-320	31-34.5	13-16

Joint Detail (Fillet)
Show all dimensions, weld sizes, passes, and AWS symbols



T_1 =VARIES
S =VARIES PER TABLE 7.2 (AS SHOWN LEFT OF PAGE).

APPLICATION:
REPAIR OF STUD WELDMENTS, WHICH DO NOT EXHIBIT A FULL 360° FLASH

Table 7.2

STUD DIAMETER	MIN. SIZE FILLET
3/8"(13MM)	1/4(6MM)
1/2", 5/8,3/4, 7/8(13,16,19,22MM)	5/16(8MM)
1"(25MM)	3/8(10MM)

PROCEDURE:
1) REPAIR WELDMENT SHALL BE OF THE SIZE LISTED ABOVE AND EXTEND AT LEAST 3/8" (9MM) BEYOND THE END OF EACH DISCONTINUITY BEING REPAIRED.

Preheat and Interpass Temperature Chart

Base Metal Thickness range	Minimum Preheat (°F)	Max Preheat & Interpass (°F)
≤ 3/4"	50°F	450+°F
>3/4" to ≤1.5"	70°F	450+°F
>1.5" to ≤2.5"	150°F	450+°F
>2.5"	225°F	450+°F

Prepared By: James R. Connor DSB QA Manager

Project: U.S. RTE. 5 OVER LULLS BROOK

DSB Job: 14032-1042

Note: When this procedure is used for A709Gr50W materials, it shall be limited to 5/16" single pass or material be coated.

Production Joint Welding Procedure Specification (D1.5-02)

DSBROWN

Procedure No: A-SM-STUD-REP-01 Date Issued: 8/6/04 Revision No: 0 Rev. Date: ______

Contractor (Fabricator) D. S. Brown Company Prepared by: James R. Connor, Quality Assurance Manager

1. Non-Fracture Critical [X] Fracture Critical [ ] WPS Expiration Date: N/A
2. Qualified in accordance with: AWS D1.5- 2002
   Referenced PQR No(s). N/A __ , __ , __
   Referenced FWST No(s). N/A , N/A , __ , __
3. Material specification(s) ASTM A709 Gr. 36, 50, 50W, A108 Stud
4. Material Thickness (es) Unlimited
5. Welding process SMAW
6. Manual [X] , machine [ ] , or semiautomatic [ ]
7. Position(s) of welding 1F, 2F
8. Filler metal specification AWS A5.1
9. Filler metal class and brand name LINCOLN JET LH-78-MR E7018
10. Flux class & brand N/A , Type N/A
11. Shielding gas N/A Flow rate N/A
12. Single pass [X] Or multiple pass [X]
13. Single arc [X] Or multiple arc [ ]
14. Welding Current DCEP
15. Polarity Reverse
16. Welding progression stringers
17. Root treatment Clean to bright sound metal or per AWS D1.5 (3.2.1 & 3.11)
18. Postheat treatment N/A
19. Calculated Heat Input (KJ/In) Min 20.28 Kj/In Max 30.6 Kj/In
20. Electrode extension (electrical stickout) Varies

For DOT Approval

RECEIVED
OK'D BY JWC
DEC 19 2005
APPROVED ✓
DATE 1/04/06
CK'D BY
RESUBMIT
BY

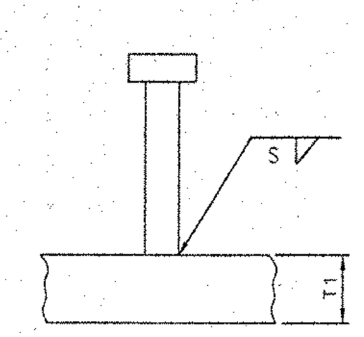
Weld size (In)	Pass No(s).	Electrode Size (In)	Welding Process Variables		Travel Speed (IPM)
			AMPS/WFS*	VOLTS	
1/4”	1	5/32”	130-170	26-30	10
5/16”	1	5/32”	130-170	26-30	10
3/8”	2-3	5/32”	130-170	26-30	10

As per AWS D1.5 Sec. 7 (Table 7.2)

Stud Diameter	Minimum Fillet
≤ 3/8”	1/4”
3/8” ≤ 1”	5/16”
> 1”	3/8”

Joint Detail (Fillet)

Show all dimensions, weld sizes, passes, and AWS symbols



T1 = Varies
Stud = Varies
S = Weld Size

Weld must cover and extend beyond missing flash at least 3/8” in each direction

(see AWS D1.5 Table 7.2 for required weld size)

Prepared By: James R. Connor DSB QA Manager

Project: U.S. RTE. 5 OVER LULLS BROOK

DSB Job: 14032-1042

Preheat and Interpass Temperature Chart		
Base Metal Thickness range	Minimum Preheat (°F)	Max Preheat & Interpass (°F)
≤ 3/4"	50°F	450°F
>3/4” to ≤1.5”	70°F	450°F
>1.5” to ≤2.5”	150°F	450°F
>2.5”	225°F	450°F

Note: When this procedure is used for A709Gr50W materials, it shall be limited to 5/16” single pass or material be coated.

DSBROWN

Production Joint Welding Procedure Specification (D1.5-02)

Procedure No: **A-FF-01** Date Issued: 8-12-03 Revision No: 0 Rev. Date: ______

Contractor (Fabricator) D. S. Brown Company Prepared by: James R. Connor, Quality Assurance Manager

1. Non-Fracture Critical [X] Fracture Critical [ ] WPS Expiration Date: ______
2. Qualified in accordance with: AWS D1.5- 2002 (5.12.1)
   Referenced PQR No(s). PQR-FCAW-01-03 __ , __ , ____
   Referenced FWST No(s). PQR-FCAW-FWST-01(03) , PQR-FCAW-FWST-01A(03) , __ , ____
3. Material specification(s) ASTM A709 Gr. 36, 50, 50W
4. Material Thickness (es) Unlimited
5. Welding process FCAW
6. Manual [ ] , machine [ ] , or semiautomatic [X]
7. Position(s) of welding 1F, 2F
8. Filler metal specification AWS A5.20
9. Filler metal class and brand name E71T-1, E71T-9 Lincoln Outershield Elite)
10. Flux class & brand N/A , Type N/A
11. Shielding gas 100% CO2 Flow rate 45 CFH
12. Single pass [X] Or multiple pass [X]
13. Single arc [X] Or multiple arc [ ]
14. Welding Current DCEP
15. Polarity Reverse
16. Welding progression stringers
17. Root treatment Clean to bright sound metal or per AWS D1.5 (3.2.1 & 3.11)
18. Postheat treatment N/A
19. Calculated Heat Input (KJ/In) Min 31.20 Kj/in Max 50.72 Kj/in
20. Electrode extension (electrical stickout) 3/4"

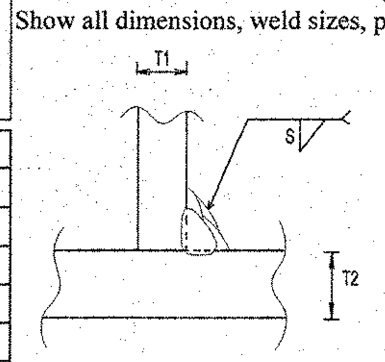
For DOT Approval

RECEIVED
CK'D BY ____ OK'D BY JWC
DEC 19 2005
RESUBMIT ____ APPROVED ✓
BY ____ DATE 01-04-06

Weld size (In)	Pass No(s).	Electrode Size (In)	Welding Process Variables: AMPS/WFS*	Welding Process Variables: VOLTS	Travel Speed (IPM)
**1/4"	1	1/16"	260-310	26-30	11-13
5/16"	1	1/16"	260-310	26-30	11-13
3/8"	2-3	1/16"	260-310	26-30	11-13
7/16"	3-5	1/16"	260-310	26-30	11-13
1/2"	4-6	1/16"	260-310	26-30	11-13
5/8"	5-7	1/16"	260-310	26-30	11-13
3/4"	6-8	1/16"	260-310	26-30	11-13

Joint Detail (Fillet)

Show all dimensions, weld sizes, passes, and AWS symbols



T1 = Varies
T2 = Varies
S = Weld Size

**** T1 & T2 equal to or less than 3/4" for 1/4" welds.**

* Wire feed speed may be used along with amperage (include chart)

Prepared By: ______ DSB QA Manager

Project: U.S. RTE. 5 OVER LULLS BROOK

DSB Job: 14032-1042

Preheat and Interpass Temperature Chart

Base Metal Thickness range	Minimum Preheat (°F)	Max Preheat & Interpass (°F)
≤ 3/4"	50°F	450°F
>3/4" to ≤1.5"	70°F	450°F
>1.5" to ≤2.5"	150°F	450°F
>2.5"	225°F	450°F

Note: When this procedure is used for A709Gr50W materials, it shall be limited to 5/16" single pass or material be coated.

DSBROWN

Production Joint Welding Procedure Specification (D1.5-02)

Procedure No: A-(MC)GF-01 Date Issued: 9-28-04 Revision No: 0 Rev. Date: _____

Contractor (Fabricator) D. S. Brown Company Prepared by: James R. Connor, Quality Assurance Manager

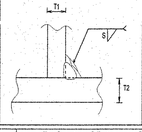
1. Non-Fracture Critical [X] Fracture Critical [ ] WPS Expiration Date: _____
2. Qualified in accordance with: AWS D1.5- 2002 (5.12.1)
   Referenced PQR No(s). PQR-(MC)GMAW-01(04) __ , __ , ____
   Referenced FWST No(s). PQR-(MC)GMAW-FWST-01A(04) , PQR-(MC)GMAW-FWST-01B(04) , __ , __
3. Material specification(s) ASTM A709 Gr. 36, 50, 50W
4. Material Thickness (es) Unlimited
5. Welding process GMAW
6. Manual [ ] , machine [X] , or semiautomatic [X]
7. Position(s) of welding 1F, 2F
8. Filler metal specification AWS A5.18
9. Filler metal class and brand name E70C-6M Corex Metal-Core Maxim
10. Flux class & brand N/A , Type N/A
11. Shielding gas 75% Ar / 25% CO2 Flow rate 45 CFH
12. Single pass [X] Or multiple pass [X]
13. Single arc [X] Or multiple arc [ ]
14. Welding Current DCEP
15. Polarity Reverse
16. Welding progression stringers
17. Root treatment Clean to bright sound metal or per AWS D1.5 (3.2.1 & 3.11)
18. Postheat treatment N/A
19. Calculated Heat Input (KJ/In) Min 30.6 Kj/in Max 51.1 Kj/in
20. Electrode extension (electrical stickout) 3/4"

For DOT Approval

RECEIVED
CK'D BY _____ OK'D BY JSK
DEC 19 2005
RESUBMIT _____ APPROVED _____
DATE 01-04-06
BY

Weld size (in)	Pass No(s).	Electrod e Size (in)	Welding Process Variables		Travel Speed (IPM)
			AMPS/WFS*	VOLTS	
**1/4"	1	.052"	265-320	31-34.5	13-16
5/16"	1	.052"	265-320	31-34.5	13-16
3/8"	1-3	.052"	265-320	31-34.5	13-16
7/16"	2-4	.052"	265-320	31-34.5	13-16
1/2"	4-6	.052"	265-320	31-34.5	13-16
5/8"	5-7	.052"	265-320	31-34.5	13-16
3/4"	6-8	.052"	265-320	31-34.5	13-16

Joint Detail (Fillet)
Show all dimensions, weld sizes, passes, and AWS symbols



T1 = Varies
T2 = Varies
S = Weld Size

**** T1 & T2 equal to or less than 3/4" for 1/4" welds.**

* Wire feed speed may be used along with amperage (include chart)

Prepared By: James R. Connor DSB QA Manager

Project: U.S. RTE. 5 OVER LULLS BROOK

DSB Job: 14032-1042

Preheat and Interpass Temperature Chart

Base Metal Thickness range	Minimum Preheat (°F)	Max Preheat & Interpass (°F)
≤ 3/4"	50°F	450°F
>3/4" to ≤1.5"	70°F	450°F
>1.5" to ≤2.5"	150°F	450°F
>2.5"	225°F	450°F

Note: When this procedure is used for A709Gr50W materials, it shall be limited to 5/16" single pass or material be coated.

DSBROWN

Production Joint Welding Procedure Specification (D1.5-02)

Procedure No: **A-F-SEALWELD-01** Date Issued: 9-11-03 Revision No: 0 Rev. Date: _____

Contractor (Fabricator) D. S. Brown Company Prepared by: James R. Connor, Quality Assurance Manager

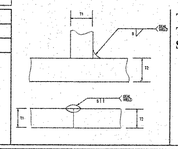
1. Non-Fracture Critical [X] Fracture Critical [ ] WPS Expiration Date: _____
2. Qualified in accordance with: AWS D1.5- 2002 (5.12.1)
   Referenced PQR No(s). PQR-FCAW-01-03 __ , __ , ____
   Referenced FWST No(s). PQR-FCAW-FWST-01(03) , PQR-FCAW-FWST-01A(03) , __ , ____
3. Material specification(s) ASTM A709 Gr. 36, 50, 50W
4. Material Thickness (es) Unlimited
5. Welding process FCAW
6. Manual [ ] , machine [ ] , or semiautomatic [X]
7. Position(s) of welding 1G,1F, 2F
8. Filler metal specification AWS A5.20
9. Filler metal class and brand name E71T-1, E71T-9 (Lincoln Outershield Elite)
10. Flux class & brand N/A , Type N/A
11. Shielding gas 100% CO2 Flow rate 45 CFH
12. Single pass [X] Or multiple pass [ ]
13. Single arc [X] Or multiple arc [ ]
14. Welding Current DCEP
15. Polarity Reverse
16. Welding progression stringers
17. Root treatment Clean to bright sound metal and per AWS D1.5 (3.2.1 & 3.11)
18. Postheat treatment N/A
19. Calculated Heat Input (KJ/In) Min 31.20 Kj/in Max 50.72 Kj/in
20. Electrode extension (electrical stickout) 3/4"

For DOT Approval

RECEIVED
CK'D BY _____
DEC 19 2005
CK'D BY JSW
RESUBMIT _____
APPROVED √
BY
DATE 01-04-06

Weld size (in)	Pass No(s)	Electrode Size (in)	Welding Process Variables AMPS	VOLTS	Travel Speed (IPM)
**1/8"	1	1/16"	260-310	26-30	11-13
**3/16"	1	1/16"	260-310	26-30	11-13

Joint Detail (Fillet)
Show all dimensions, weld sizes, passes, and AWS symbols



T1 = Varies
T2 = Varies
S = Weld Size

NOTE:
THIS JOINT DETAIL TO BE USED FOR SEALING NON-STRUCTURAL GALVANIZED OR PAINTED APPLICATIONS WHERE FULL SIZED WELDMENTS ARE NOT DESIGNED, DETAILED OR ARE NOT PRACTICAL.

Prepared By: James R. Connor DSB QA Manager

Project: U.S. RTE. 5 OVER LULLS BROOK

DSB Job: 14032-1042

Preheat and Interpass Temperature Chart

Base Metal Thickness range	Minimum Preheat (°F)	Max Preheat & Interpass (°F)
≤ 3/4"	50°F	450+F
>3/4" to ≤1.5"	70°F	450+F
>1.5" to ≤2.5"	150°F	450+F
>2.5"	225°F	450+F

Note: When this procedure is used for A709Gr50W materials, it shall be limited to 5/16" single pass or material be coated.

Production Joint Welding Procedure Specification (D1.5-02)

DSBROWN

Procedure No: A-(MC)G-SEALWELD-01 Date Issued: 9-29-04 Revision No: 0 Rev. Date: ______

Contractor (Fabricator) D. S. Brown Company Prepared by: James R. Connor, Quality Assurance Manager

1. Non-Fracture Critical [X] Fracture Critical [ ] WPS Expiration Date: ______
2. Qualified in accordance with: AWS D1.5- 2002 (5.12.1)
   Referenced PQR No(s). PQR-(MC)GMAW-01(04) __ , __ , ____
   Referenced FWST No(s). PQR-(MC)GMAW-FWST-01A(04) , PQR-(MC)GMAW-FWST-01B(04) , __ , __
3. Material specification(s) ASTM A709 Gr. 36, 50, 50W
4. Material Thickness (es) Unlimited
5. Welding process GMAW
6. Manual [ ] , machine [ ] , or semiautomatic [X]
7. Position(s) of welding 1G, 2G, 1F, 2F
8. Filler metal specification AWS A5.18
9. Filler metal class and brand name E70C-6M Corex Metal-Core Maxim
10. Flux class & brand N/A , Type N/A
11. Shielding gas 75% Ar / 25% CO2 Flow rate 45 CFH
12. Single pass [X] Or multiple pass [X]
13. Single arc [X] Or multiple arc [ ]
14. Welding Current DCEP
15. Polarity Reverse
16. Welding progression stringers
17. Root treatment Clean to bright sound metal or per AWS D1.5 (3.2.1 & 3.11)
18. Postheat treatment N/A
19. Calculated Heat Input (KJ/In) Min 30.6 Kj/in Max 51.1 Kj/in
20. Electrode extension (electrical stickout) 3/4"

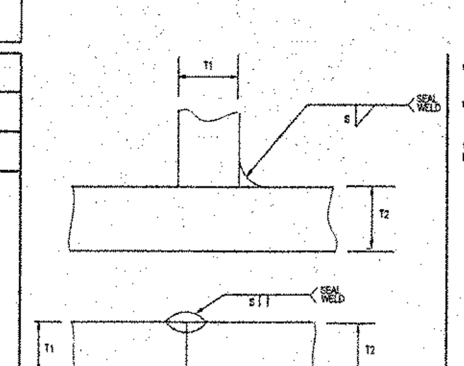
For DOT Approval

RECEIVED
CK'D BY ______ OK'D BY JWC
DEC 19 2005
RESUBMIT ______ APPROVED ✓
BY ______ DATE 01-04-06

Weld size (In)	Pass No(s).	Electrode Size (In)	Welding Process Variables		Travel Speed (IPM)
			AMPS	VOLTS	
**1/8"	1	.052"	265-320	31-34.5	13-16
**3/16"	1	.052"	265-320	31-34.5	13-16

NOTE:
THIS JOINT DETAIL TO BE ONLY USED FOR SEALING NON-STRUCTURAL APPLICATIONS WHERE FULL SIZED WELDMENTS ARE NOT DESIGNED, DETAILED OR ARE NOT PRACTICAL.

Joint Detail (Fillet)
Show all dimensions, weld sizes, passes, and AWS symbols



T1 = Varies
T2 = Varies
S = Weld Size

Prepared By: James R. Connor DSB QA Manager

Project: U.S. RTE. 5 OVER LULLS BROOK

DSB Job: 14032-1042

Preheat and Interpass Temperature Chart		
Base Metal Thickness range	Minimum Preheat (°F)	Max Preheat & Interpass (°F)
≤ 3/4"	50°F	450°F
>3/4" to ≤1.5"	70°F	450°F
>1.5" to ≤2.5"	150°F	450°F
>2.5"	225°F	450°F

Note: When this procedure is used for A709Gr50W materials, it shall be limited to 5/16" single pass or material be coated.

DSBROWN

Production Joint Welding Procedure Specification (D1.5-02)

Procedure No: **A-FSV-01** Date Issued: 8-12-03 Revision No: 0 Rev. Date: _____

Contractor (Fabricator) D. S. Brown Company Prepared by: James R. Connor, Quality Assurance Manager

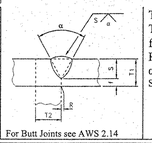
1. Non-Fracture Critical [X] Fracture Critical [ ] WPS Expiration Date: _____
2. Qualified in accordance with: AWS D1.5- 2002 (5.12.1)
   Referenced PQR No(s). PQR-FCAW-01-03 __ , __ , ____
   Referenced FWST No(s). N/A , __ , __ , ____
3. Material specification(s) ASTM A709 Gr. 36, 50, 50W
4. Material Thickness (es) Unlimited
5. Welding process FCAW
6. Manual [ ] , machine [ ] , or semiautomatic [X]
7. Position(s) of welding 1G
8. Filler metal specification AWS A5.20
9. Filler metal class and brand name E71T-1, E71T-9 (Lincoln Outershield Elite)
10. Flux class & brand N/A , Type N/A
11. Shielding gas 100% CO2 Flow rate 45 CFH
12. Single pass [X] Or multiple pass [X]
13. Single arc [X] Or multiple arc [ ]
14. Welding Current DCEP
15. Polarity Reverse
16. Welding progression Stringers
17. Root treatment Clean to bright sound metal and per AWS D1.5 (3.2.1 & 3.11)
18. Postheat treatment N/A
19. Calculated Heat Input (KJ/In) Min 31.20 Kj/in Max 50.72 Kj/in
20. Electrode extension (electrical stickout) 3/4"

For DOT Approval

RECEIVED
DEC 19 2005
ORG'D BY _____
RESUBMIT _____
APPROVED _____
BY _____
DATE 01-04-06

Weld size (In)	Pass No(s).	Electrode Size (In)	Welding Process Variables AMPS	Welding Process Variables VOLTS	Travel Speed (IPM)
1/4"	1	1/16"	260-310	26-30	11-13
5/16"	1-2	1/16"	260-310	26-30	11-13
3/8"	2-3	1/16"	260-310	26-30	11-13
1/2"	4-5	1/16"	260-310	26-30	11-13
5/8"	5-6	1/16"	260-310	26-30	11-13
3/4"	5-8	1/16"	260-310	26-30	11-13

Joint Detail (C-P2-GF)
Show all dimensions, weld sizes, passes, and AWS symbols



For Butt Joints see AWS 2.14

T1 = 1/4" min.
T2 = Unlimited
f = 1/8" min.
R = 0
α = 60°
S = Groove Prep Depth

Prepared By: James R. Connor DSB QA Manager

Project: U.S. RTE. 5 OVER LULLS BROOK

DSB Job: 14032-1042

Preheat and Interpass Temperature Chart

Base Metal Thickness range	Minimum Preheat (°F)	Max Preheat & Interpass (°F)
≤ 3/4"	50°F	450 °F
>3/4" to ≤1.5"	70°F	450 °F
>1.5" to ≤2.5"	150°F	450 °F
>2.5"	225°F	450 °F

Note: When this procedure is used for A709Gr50W materials, it shall be limited to 5/16" single pass or material be coated.

DSBROWN

Production Joint Welding Procedure Specification (D1.5-02)

Procedure No: A-(MC)GSV-01 Date Issued: 9-29-04 Revision No: 0 Rev. Date: _____

Contractor (Fabricator) D. S. Brown Company Prepared by: James R. Connor, Quality Assurance Manager

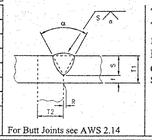
1. Non-Fracture Critical [X] Fracture Critical [ ] WPS Expiration Date: _____
2. Qualified in accordance with: AWS D1.5- 2002 (5.12.1)
   Referenced PQR No(s). PQR-(MC)GMAW-01(04) __ , __ , ____
   Referenced FWST No(s). _____ , _____ , __ , __
3. Material specification(s) ASTM A709 Gr. 36, 50, 50W
4. Material Thickness (es) Unlimited
5. Welding process GMAW
6. Manual [ ] , machine [ ] , or semiautomatic [X]
7. Position(s) of welding 1G, 2G
8. Filler metal specification AWS A5.18
9. Filler metal class and brand name E70C-6M Corex Metal-Core Maxim
10. Flux class & brand N/A , Type N/A
11. Shielding gas 75% Ar / 25% CO2 Flow rate 45 CFH
12. Single pass [X] Or multiple pass [X]
13. Single arc [X] Or multiple arc [ ]
14. Welding Current DCEP
15. Polarity Reverse
16. Welding progression stringers
17. Root treatment Clean to bright sound metal or per AWS D1.5 (3.2.1 & 3.11)
18. Postheat treatment N/A
19. Calculated Heat Input (KJ/In) Min 30.6 Kj/in Max 51.1 Kj/in
20. Electrode extension (electrical stickout) 3/4"

For DOT Approval

RECEIVED
DEC 19 2005
CK'D BY _____ CK'D BY _____
RESUBMIT _____ APPROVED _____
BY DATE 01-04-06

Weld size (in)	Pass No(s).	Electrode Size (in)	Welding Process Variables AMPS	VOLTS	Travel Speed (IPM)
1/4"	1	.052"	265-320	31-34.5	13-16
5/16"	1-2	.052"	265-320	31-34.5	13-16
3/8"	1-3	.052"	265-320	31-34.5	13-16
1/2"	3-4	.052"	265-320	31-34.5	13-16
5/8"	4-6	.052"	265-320	31-34.5	13-16
3/4"	5-8	.052"	265-320	31-34.5	13-16

Joint Detail (C-P2-GF)
Show all dimensions, weld sizes, passes, and AWS symbols



T1 = 1/4" min.
T2 = Unlimited
f = 1/8" min.
R = 0
α = 60°
S = Groove Prep Depth

For Butt Joints see AWS 2.14

Prepared By: James R. Connor DSB QA Manager

Project: U.S. RTE. 5 OVER LULLS BROOK

DSB Job: 14032-1042

Preheat and Interpass Temperature Chart

Base Metal Thickness range	Minimum Preheat (°F)	Max Preheat & Interpass (°F)
≤ 3/4"	50°F	450 °F
>3/4" to ≤1.5"	70°F	450 °F
>1.5" to ≤2.5"	150°F	450 °F
>2.5"	225°F	450 °F

Note: When this procedure is used for A709Gr50W materials, it shall be limited to 5/16" single pass or material be coated.

DRAINAGE NOTES

1.) MATERIAL AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH STATE OF VERMONT AGENCY OF TRANSPORTATION "STANDARD SPECIFICATIONS FOR CONSTRUCTION," 2001 EDITION, THE SUPPLEMENTAL SPECIFICATION, THE CONTRACT PLANS, AND THE SPECIAL PROVISIONS.

2.) ALL WELDING AND CORRESPONDING WELD INSPECTION SHALL CONFORM TO THE CURRENT EDITION OF THE AASHTO/AWS D-1.5 BRIDGE WELDING CODE.

3.) ALL FLAT BAR AND PLATE SHALL CONFORM TO AASHTO M270 (ASTM A709), GRADE 36. ALL PIPE SHALL BE IN ACCORDANCE WITH ASTM A53, GRADE B.

4.) ALL HARDWARE, EXCEPT WEDGE ANCHORS, SHALL BE HIGH STRENGTH. HIGH STRENGTH BOLTS, NUTS, AND WASHERS SHALL CONFORM TO AASHTO M164, M291, AND M293 (ASTM A325, A563 DH OR A194 2H, AND F436) RESPECTIVELY AND 506.19 AND 714.05 OF THE STANDARD SPECIFICATIONS.

5.) ALL STEEL SHALL HAVE SURFACE PREPARATION PERFORMED IN ACCORDANCE WITH SSPC-SP8 AND SECTION 506.14 OF THE STANDARD SPECIFICATIONS PRIOR TO GALVANIZING. ALL STEEL SHALL BE GALVANIZED IN ACCORDANCE WITH AASHTO M111 (ASTM A123). ALL HARDWARE SHALL BE GALVANIZED IN ACCORDANCE WITH AASHTO M232 (ASTM A153). REPAIR OF DAMAGED GALVANIZING SHALL BE PERFORMED IN ACCORDANCE WITH ASTM A780.

MK	QTY.	DESCRIPTION	MATERIAL	LENGTH	REMARKS	PART NO.
6A	1	EXPANSION JOINT DOWNSPOUT		2801	HDG	
fa6	2	FB 6 x 38	M270MGR250	38		16-27
pa6	1	PL 10 x 320	M270MGR250	350	SHAPE CUT	19-14
pb6	1	PL 10 x 251	M270MGR250	350		19-14
pc6	1	PL 10 x 201	M270MGR250	350		19-14
pd6	2	PL 10 x 251	M270MGR250	301	SHAPE CUT	19-14
ta6	1	PI ø254 SCH 40	A53MGRB	1836	SKEW CUT	21-14
tb6	1	PI ø254 SCH 40	A53MGRB	1409	SKEW CUT	21-14
6B	1	SUPPORT PLATE			HDG	
6B	1	PL 19 x 379	M270MGR250	460	SHAPE CUT/BEND	19-19
6C	3	HANGER CLAMPS			HDG	
6C	3	FB 10 x 83	M270MGR250	849	BEND	16-74
6D	2	FILL PLATES			HDG	
6D	2	FB 19 x 83	M270MGR250	440		16-124
		FIELD HARDWARE:				
7A	5	HB ø19 x 57	M164M HDG		(2) ROCAP	23-359
7B	5	HN ø19 HVY	M291M HDG		(2) ROCAP	25-24
7C	5	FW ø19	M293M HDG		(2) ROCAP	27-45
7D	10	MI ø19 x 216 WEDGE ANCHOR			(6) HDG/RED HEAD #WS-3484G OR EQUAL	
		ENGLISH B.O.M. (REF. ONLY)				
6A	1	EXPANSION JOINT DOWNSPOUT		9'-2 1/4"	HDG	
fa6	2	FB 1/4 x 1 1/2	M270GR36	0'-1 1/2"		16-27
pa6	1	PL 3/8 x 12 5/8	M270GR36	1'-1 3/4"	SHAPE CUT	19-14
pb6	1	PL 3/8 x 9 7/8	M270GR36	1'-1 3/4"		19-14
pc6	1	PL 3/8 x 7 15/16	M270GR36	1'-1 3/4"		19-14
pd6	2	PL 3/8 x 9 7/8	M270GR36	0'-11 7/8"	SHAPE CUT	19-14
ta6	1	PI ø10 SCH 40	A53GRB	6'-0 5/16"	SKEW CUT	21-14
tb6	1	PI ø10 SCH 40	A53GRB	4'-7 1/2"	SKEW CUT	21-14
6B	1	SUPPORT PLATE			HDG	
6B	1	PL 3/4 x 14 15/16	M270GR36	1'-6 1/8"	SHAPE CUT/BEND	19-19
6C	3	HANGER CLAMPS			HDG	
6C	3	FB 3/8 x 3 1/4	M270GR36	2'-9 7/16"	BEND	16-74
6D	2	FILL PLATES			HDG	
6D	2	FB 3/4 x 3 1/4	M270GR36	1'-5 5/16"		16-124
		FIELD HARDWARE:				
7A	5	HB ø3/4 x 2 1/4	M164 HDG		(2) ROCAP	23-359
7B	5	HN ø3/4 HVY	M291 HDG		(2) ROCAP	25-24
7C	5	FW ø3/4	M293 HDG		(2) ROCAP	27-45
7D	10	MI ø3/4 x 8 1/2 WEDGE ANCHOR			(6) HDG/RED HEAD #WS-3484G OR EQUAL	

SEE SHEET NO. 6 FOR DRAINAGE DETAILS.

REV.	DESCRIPTION	DATE	DET.	CKD.

RECEIVED
OK'D BY _____ OK'D BY _____
JUN 26 2006
RESUBMIT _____ APPROVED ✓
BY _____ DATE 7/7/06

VTrans - FDD
JUN 26 2006
Structures Design Section

D.S. BROWN
300 E. CHERRY STREET
NORTH BALTIMORE, OHIO 45872
419.257.3561
FAX: 419.257.0332

4201 NOREX DRIVE
CHASKA, MINNESOTA 55318
952.368.3000
FAX: 952.448.7000

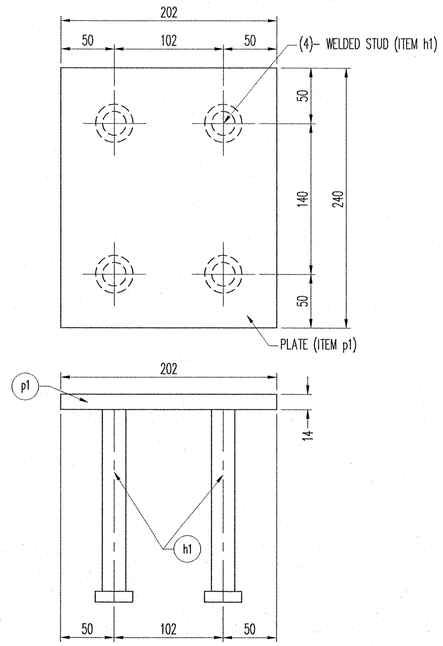
DSBROWN.COM

	ITEM	QUANTITY
LOCATION — U.S. ROUTE 5 OVER LULLS BROOK	–	–
BRIDGE — NO. 60	–	–
PROJECT — BRS 0113 (22)	–	–
TOWN — HARTLAND	–	–
P.O. NO. — 2004	–	–
DESIGNER — McFARLAND-JOHNSON, INC.	–	–
CUSTOMER — MILLER CONSTRUCTION, INC.	–	–
	–	–

DESCRIPTION: EXPANSION JOINT DRAINAGE DETAILS
WINDSOR COUNTY, VT

SCALE:	DRAWN BY:	CHECKED BY:	DATE:	
N.T.S.	JMB	JEB	5/30/06	–
PROJECT NUMBER	PRODUCT CODE	RELEASE	SHEET	
14032	1042	2	7	

143 sheets



EMBEDDED PLATE ASSEMBLY '1P1'

(10) REQ'D
(NO GALVANIZING REQ'D)

GENERAL NOTES:

ALL MATERIALS, CONSTRUCTION AND DESIGN SHALL CONFORM TO THE STATE OF VERMONT, AGENCY OF TRANSPORTATION STANDARD SPECIFICATION FOR HIGHWAY AND BRIDGE CONSTRUCTION (DATED 2001), LATEST REVISIONS, AND THE AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES, LATEST REVISION.

WELDING SHALL MEET THE REQUIREMENTS OF THE ANSI/AASHTO/AWS D1.5 BRIDGE WELDING CODE AS MODIFIED BY STANDARD SPECIFICATIONS.

STUD ANCHORS SHALL BE ASSHTO M169 (ASTM A108) AND AUTOMATIC END WELDED WITH COMPLETE FUSION. A-FF-STUD-01 / A-(MC)F-STUD-REP-01 OR SM-STUD-REP-01 WILL BE USED, AS REQUIRED, TO REPAIR STUDS.

MK	QTY.	DESCRIPTION	MATERIAL	LENGTH	REMARKS	PART NO.
MK		LOOSE ITEMS:				
1P1	10	EMBEDDED PLATE ASSEMBLY			B	
p1	10	PL 14 x 202	A36	240		19–18
h1	40	WS 22 x 178	A108			29–24

NOTE: ALL MATERIALS SPECIFICATION DESCRIPTIONS ARE ASTM, UNLESS OTHERWISE NOTED.

Note: THIS WAS Approved 9/26/2005 BUT NO COPY Found WDS 2/16/06

RECEIVED
OK'D BY_____ OK'D BY_____
FEB 15 2006
RESUBMIT_____ APPROVED_____
BY DATE

D.S. BROWN
300 E. CHERRY STREET
NORTH BALTIMORE, OHIO 45872
419.257.3561
FAX: 419.257.0332
4201 NOREX DRIVE
CHASKA, MINNESOTA 55318
952.368.3000
FAX: 952.448.7000
DSBROWN.COM

REV.	DESCRIPTION	DATE	DET.	CK'D.

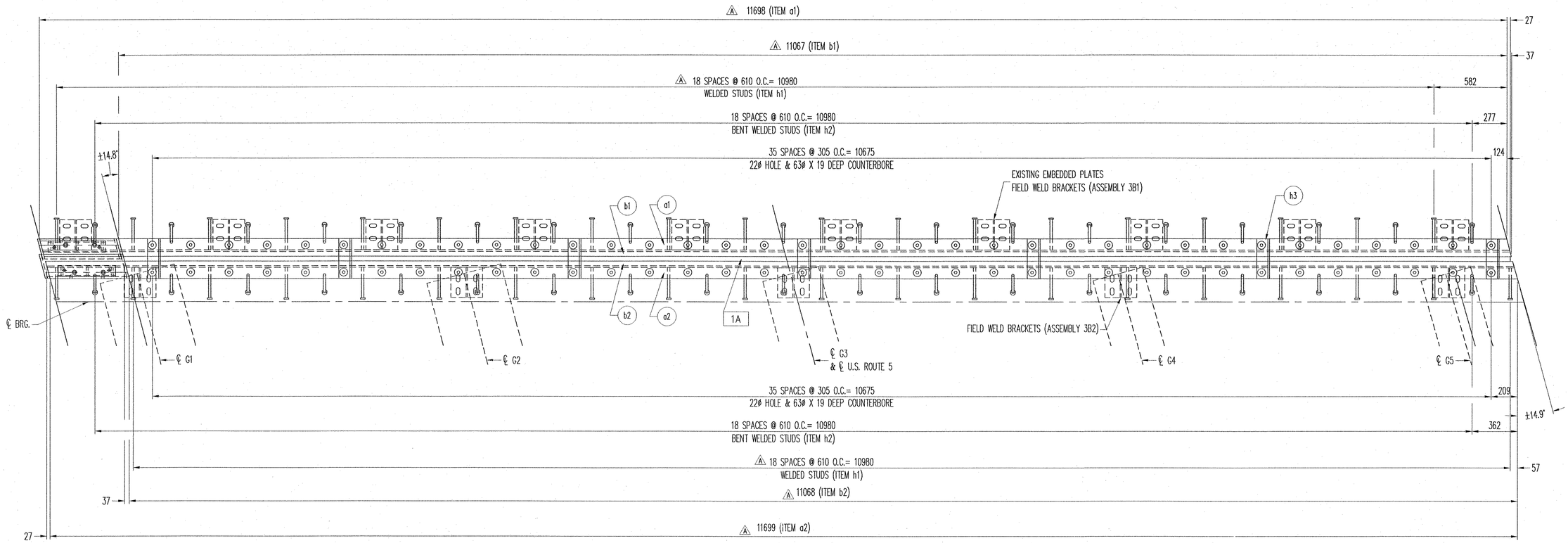
LOCATION — U.S. RTE. 5 OVER LULLS BROOK
BRIDGE — 60
PROJECT — BRS 0113 (22)
TOWN — HARTLAND
P.O. NO. — 2004
DESIGNER — MCFARLAND–JOHNSON, INC.
CUSTOMER — MILLER CONSTRUCTION

ITEM	QUANTITY

DESCRIPTION: EMBEDDED PLATE ASSEMBLY
WINDSOR COUNTY, VERMONT

SCALE:	DRAWN BY:	CHECKED BY:	DATE:	SHEET
N.T.S.	T.BOWERS	T.ELLER	9-7-05	1 of 5
PROJECT NUMBER:		PRODUCT CODE	RELEASE	SHEET
14032		1042		1

144 SCUP



MK	QTY.	DESCRIPTION	MATERIAL	LENGTH	REMARKS	PART NO.
1A	1	EXP. JOINT ASSEMBLY		11783 ⚠	HDG	
a1	1	L203 x 102 x 13	A36	11725 ⚠		15-100
a2	1	L203 x 102 x 13	A36	11726 ⚠		15-100
b1	1	FB 32 x 140	A36	11104 ⚠		16-179
b2	1	FB 32 x 140	A36	11105 ⚠		16-179
⚠ h1	38	WS 19 x 255	A108			29-19
h2	38	WS 19 x 255	A108		BEND 45° @ 76	29-19
h3	7	L 102 x 102 x 13	A36 B	317		15-62
h4	58	HB 19 x 57	A325 MG			23-118
h5	14	HB 19 x 89	A325 MG			23-133
h6	72	FW 19	F436 MG			27-8
h7	72	MI 19 FERRULE LOOP INSERT	ZP		DAYTON/RICHMOND F-42	35-9
f1	1	EP 5 x 634		11810	3 PLY. FABRIC TROUGH	
db1	1	EP 5 x 13		225	3 PLY. DRIP BEAD	
m1	2	MI 3 x 38 BUTYL RUBBER TAPE	MCMASTER CARR #7638S15	15.24M ROLL		
m2	1	MI ANTI SEIZE GREASE				
ps1	1	PL 16 x 313	A36	1139		19-18
pf1	1	PL 16 x 269	A36	1070		19-18
pa1	1	PL 16 x 202	A36	1053		19-18
pa2	1	PL 16 x 196	A36	1000		19-18
pv1	1	PL 16 x 242	A36	600		19-18
pv2	1	PL 16 x 222	A36	566		19-18
st1	6	PL 16 x 76	A36	76		19-18
ac1	2	L 102 x 89 x 10	A36	457		15-57
h30	8	MB 19 x 57	A325 HDG			24-219
h31	8	HB 19 x 50	A325 HDG			23-116
h32	16	HN 19	A563DH HDG			25-9
h33	16	MI 19 PLASTIC END CAP			MCMASTER CARR #9567K14	31-141
h20	10	WS 22 x 178	A108			29-24

NOTE: ALL MATERIALS SPECIFICATION DESCRIPTIONS ARE ASTM, UNLESS OTHERWISE NOTED.

SHOP NOTES:
COAT BOLTS AND INSERTS WITH NEVER SEIZE GREASE PRIOR TO ASSEMBLY.
WRENCH TIGHTEN BOLTS AFTER ASSEMBLY UNIT.
SEAL ALL ACCESSIBLE JOINTS FOR GALVANIZING.

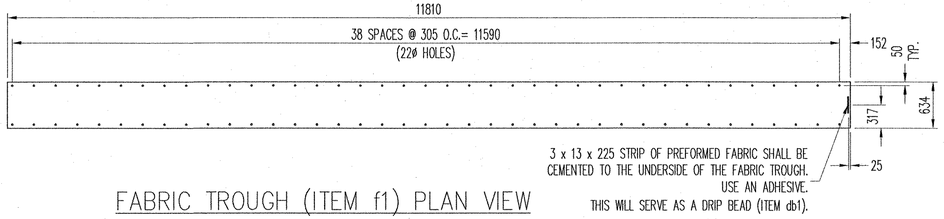
CONTRACTOR NOTES:
REMOVE SHIPPING ANGLES AND REPLACE BOLTS WITH 19ø x 57 BOLTS (ITEM 2h4).
REUSE EXISTING FLAT WASHERS.
COAT BOLT THREADS WITH ANTI SEIZE GREASE PRIOR TO ASSEMBLY.
IN THE EVENT THAT A BRACKET ASSEMBLY ALIGNS WITH A STUD, REMOVE STUD.

MK	QTY.	DESCRIPTION	MATERIAL	LENGTH	REMARKS	PART NO.
		LOOSE ITEMS				
3B1	10	BRACKET TEE ASSEMBLY			HDG	
t1	10	PL 10 x 140	A36	240		19-14
t2	10	PL 16 x 240	A36	254		19-18
3B2	5	BRACKET TEE ASSEMBLY			HDG	
t3	5	PL 10 x 140	A36	240		19-14
t4	5	PL 16 x 240	A36	254		19-18
2h4	16	HB 19 x 57	A325 MG		(14)	
3h10	44	RB 25 CONT. THREAD	A36	159	(40) HDG	18-27
3h11	24	RB 25 CONT. THREAD	A36	241	(20) HDG	18-27
3h12	136	HN 25 HVY	A563DH		(120) HDG	25-15
3h13	136	FB 10 x 76	A36	76	(120) HDG	16-73

NOTE: ALL MATERIALS SPECIFICATION DESCRIPTIONS ARE ASTM, UNLESS OTHERWISE NOTED.

PLAN VIEW NO. 1

U.S. ROUTE 5 OVER LULLS BROOK
BRIDGE NO. 60
ABUTMENT 2
VERMONT EXPANSION JOINT
ITEM NO. 516.10
(1) JOINT TOTAL



FABRIC TROUGH (ITEM f1) PLAN VIEW

CONTRACTOR SHALL TRIM IF NEEDED.

RECEIVED
OK'D BY _____ OK'D BY _____
FEB 15 2006
RESUBMIT _____ APPROVED ✓
BY _____ DATE 2/14/06

D.S. BROWN
300 E. CHERRY STREET
NORTH BALTIMORE, OHIO 45872
419.257.3561
FAX: 419.257.0332
4201 NOREX DRIVE
CHASKA, MINNESOTA 55318
952.368.3000
FAX: 952.448.7000
DSBROWN.COM

REV.	DESCRIPTION	DATE	DET.	CH'D.
⚠	REVISED LENGTH	1-31-06	TMB	TLJ

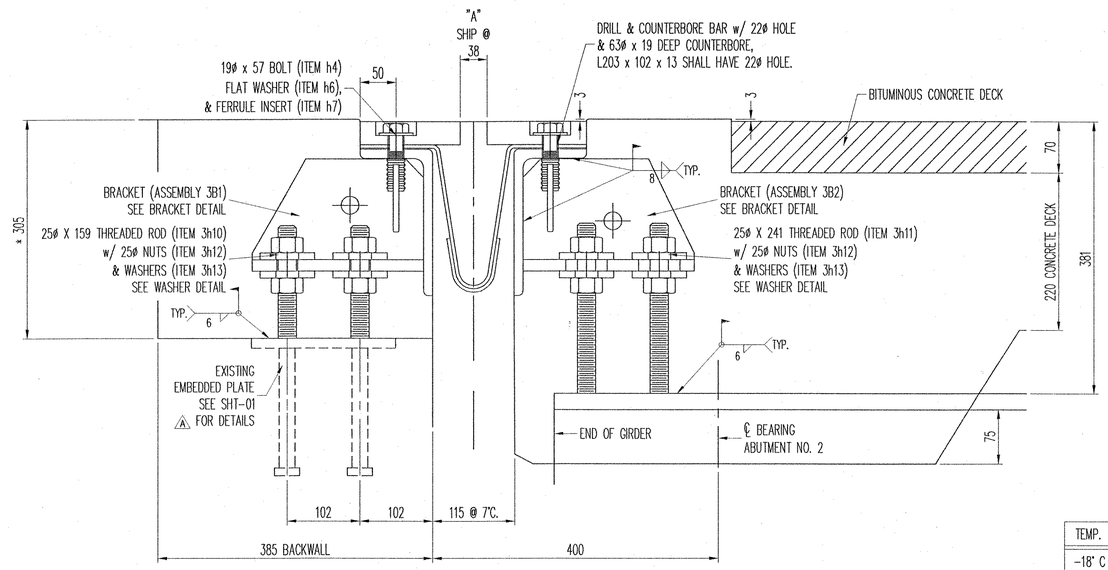
LOCATION — U.S. RTE. 5 OVER LULLS BROOK
BRIDGE — 60
PROJECT — BRS 0113 (22)
TOWN — HARTLAND
P.O. NO. — 2004
DESIGNER — MCFARLAND-JOHNSON, INC.
CUSTOMER — MILLER CONSTRUCTION

ITEM	QUANTITY

DESCRIPTION: EXPANSION JOINT PLAN VIEW
WINDSOR COUNTY, VERMONT

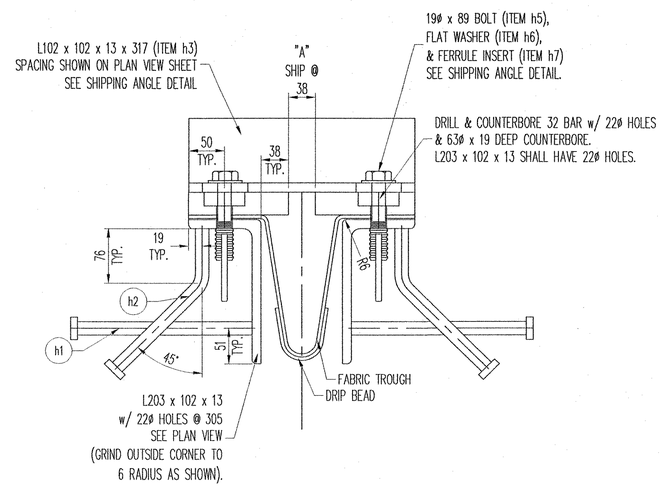
SCALE:	DRAWN BY:	CHECKED BY:	DATE:	SHEET
N.T.S.	T.BOWERS	T.JOHNSON	10-7-05	2 OF 5
PROJECT NUMBER	PRODUCT CODE	RELEASE	SHEET	
14032	1042		2	

145 SCUP



SECTION THRU JOINT AT GIRDER

* DIMENSION IS THEORETICAL AND MAY CHANGE DEPENDING UPON THE OUTCOME OF THE BEAM PROFILES.



SECTION THRU JOINT

TEMP.	"A" DIST.
-18° C	51
-9° C	47
-1° C	42
7° C	38
16° C	34
24° C	30
32° C	25
41° C	21

GENERAL NOTES

ALL MATERIALS AND CONSTRUCTION SHALL CONFORM TO THE STATE OF VERMONT AGENCY OF TRANSPORTATION STANDARD SPECIFICATIONS FOR HIGHWAY AND BRIDGE CONSTRUCTION (DATED 2001), AND IT'S LATEST REVISIONS, AND THE AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES, AND IT'S LATEST REVISIONS.
GENERAL SHOP PRACTICES, STRUCTURAL FABRICATION, WELDING AND ASSEMBLY SHALL BE GOVERNED BY ANSI/AASHTO/AWS/ D1.5 BRIDGE WELDING CODE.

ADDITIONAL SHOP SPLICES SHALL BE PERMITTED IN EACH ASSEMBLY, PROVIDED THAT NO PIECE IS LESS THAN 610mm IN LENGTH.

STUD ANCHORS SHALL BE AASHTO M169 (ASTM-A108) AND AUTOMATIC END WELDED WITH COMPLETE FUSION.
A-FF-STUD-REP-01 / A-(MC)GF-STUD-REP-01 OR
A-SM-STUD-REP-01 WILL BE USED, AS REQUIRED, TO REPAIR STUDS.

ANY TIGHTLY ADHERENT WELD SPATTER NEED NOT BE REMOVED IN COATING AREAS TO BE CAST IN CONCRETE.

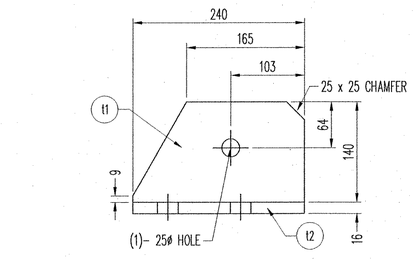
ALL STEEL COMPONENTS SHALL BE AASHTO M270 GRADE 36 GALVANIZED OR METALIZING, ALL CORNERS AND EDGES OF STEEL PLATES, SHAPES, ETC., SHALL BE GROUND TO A 2mm RADIUS. (U.N.O.)

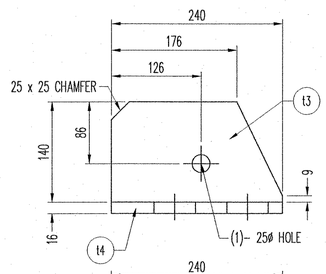
PREFORMED FABRIC MATERIAL SHALL BE CONTINUOUS AND SHALL CONFORM TO SUBSECTION 707.07.

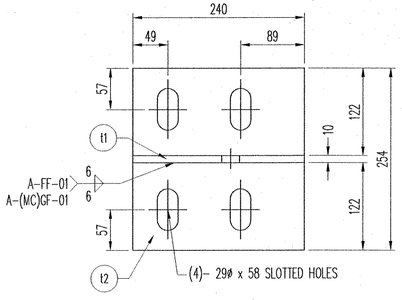
BUTYL RUBBER TAPE SHALL CONFORM TO AASHTO SPECIFICATIONS M-198, TYPE II.

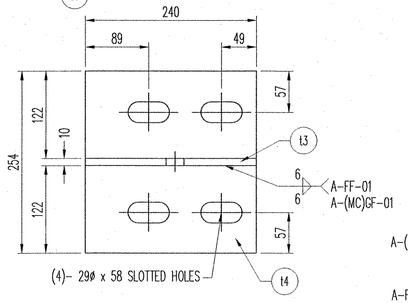
FABRIC TROUGH SHALL BE THOROUGHLY CLEANED AND FLUSHED AFTER PAVING OPERATION.

THE EXPANSION JOINT SHALL BE SHOP ASSEMBLED AND SHIPPED AS ONE UNIT.



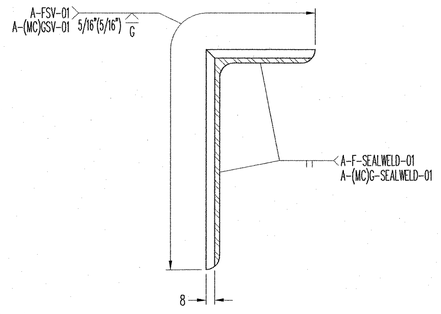




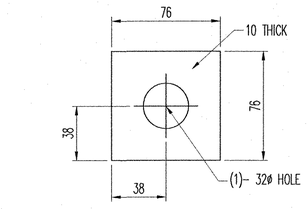


BRACKET TEE "3B1" ASSEMBLY

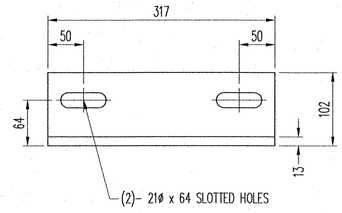
BRACKET TEE "3B2" ASSEMBLY



ANGLE SHOP SPLICE DETAIL



WASHER DETAIL (ITEM 3h13)



SHIPPING ANGLE DETAIL (ITEM h3)

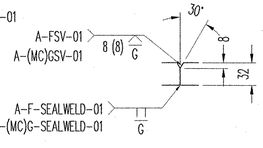
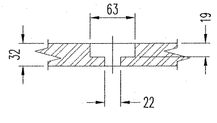


PLATE SHOP SPLICE DETAIL



COUNTER BORE DETAIL

RECEIVED
CK'D BY _____ OK'D BY _____
FEB 15 2006
RESUBMIT _____ APPROVED ✓
BY _____ DATE 2/16/06

REV.	DESCRIPTION	DATE	DET.	CK'D.
⚠	ADDED EMBEDDED PLATE NOTE	1-31-06	TMB	TLJ

D.S. BROWN
300 E. CHERRY STREET
NORTH BALTIMORE, OHIO 45872
419.257.3561
FAX: 419.257.0332
4201 NOREX DRIVE
CHASKA, MINNESOTA 55318
952.368.3000
FAX: 952.448.7000
DSBROWN.COM

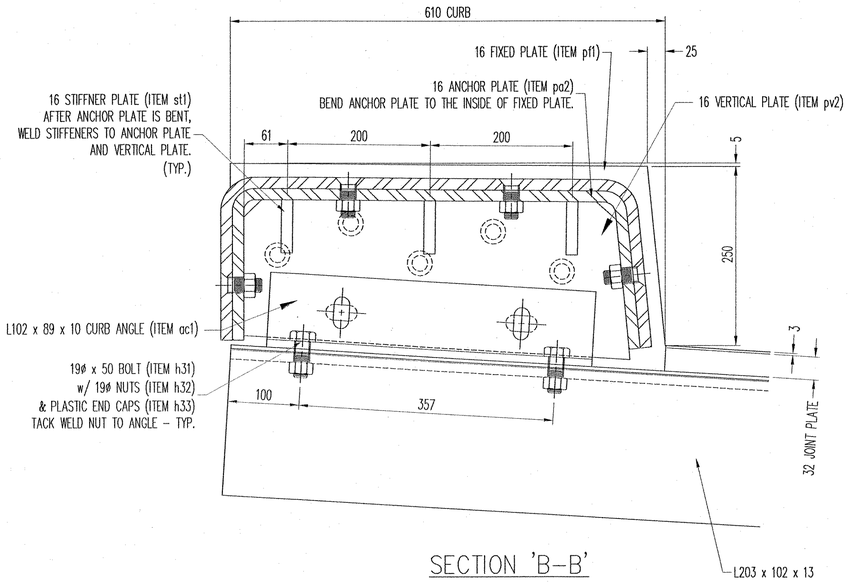
LOCATION — U.S. RTE. 5 OVER LULLS BROOK
BRIDGE — 60
PROJECT — BRS 0113 (22)
TOWN — HARTLAND
P.O. NO. — 2004
DESIGNER — MCFARLAND-JOHNSON, INC.
CUSTOMER — MILLER CONSTRUCTION

ITEM	QUANTITY

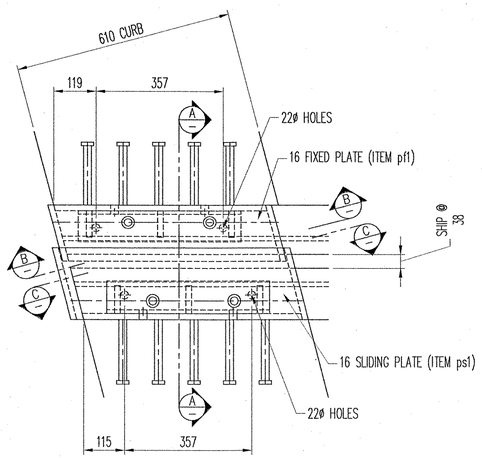
DESCRIPTION:
EXPANSION JOINT DETAILS
WINDSOR COUNTY, VERMONT

SCALE:	DRAWN BY:	CHECKED BY:	DATE:	SHEET
N.T.S.	T.BOWERS	T.JOHNSON	9-7-05	3 OF 5
PROJECT NUMBER	PRODUCT CODE	RELEASE	SHEET	
14032	1042		3	

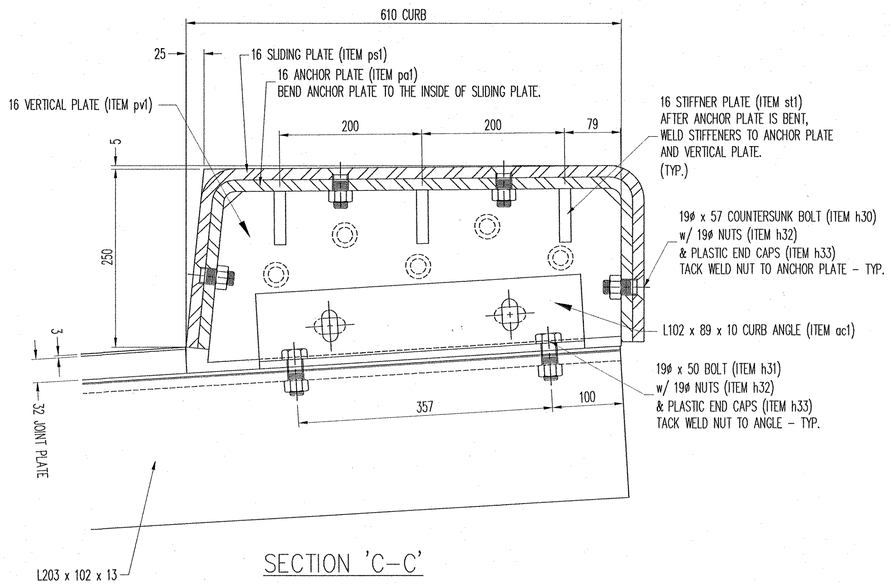
146 sovp



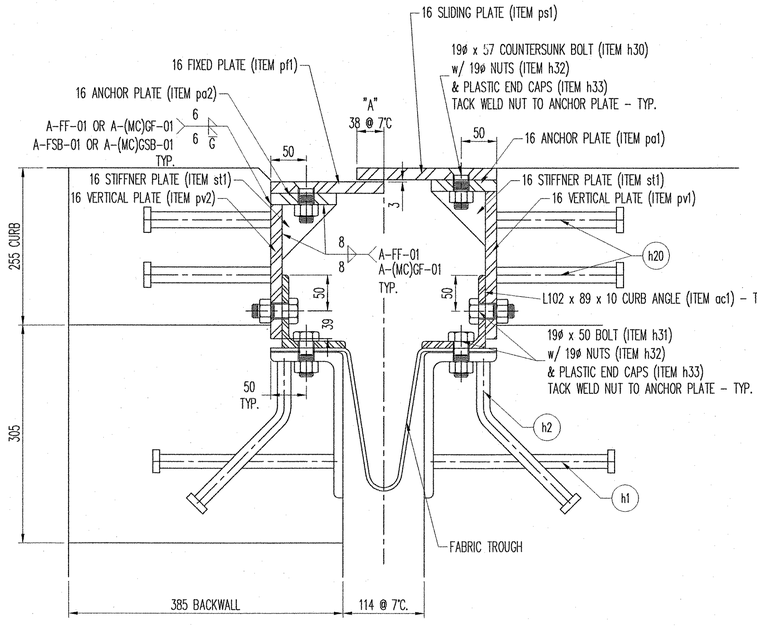
SECTION 'B–B'



CURB COVER PLATE PLAN VIEW



SECTION 'C–C'



SECTION 'A–A'

☐ Reviewed
☐ Rejected
☐ Furnish as Corrected
☑ Revise and Resubmit
☐ Submit Specified Item

This review is only for general conformance with the design concept and the information given in the Construction Documents. Corrections or comments made on the shop drawings during this review do not relieve the contractor from compliance with the requirements of the plans and specifications. Review of a specific item shall not include review of an assembly of which the item is a component. The Contractor is responsible for dimensions to be confirmed and correlated at the jobsite, information that pertains solely to the fabrication process or to the means, methods, techniques, sequences and procedures of construction, coordination of the Work with that of all other trades and performing all Work in a safe and satisfactory manner.

McFarland-Johnson, Inc.
Date 1/16/06
By RWC

REV.	DESCRIPTION	DATE	DET.	CKD.

D.S. BROWN
300 E. CHERRY STREET
NORTH BALTIMORE, OHIO 45872
419.257.3561
FAX: 419.257.0332

4201 NOREX DRIVE
CHASKA, MINNESOTA 55318
952.368.3000
FAX: 952.448.7000

DSBROWN.COM

LOCATION — U.S. RTE. 5 OVER LULLS BROOK
BRIDGE — 60
PROJECT — BRS 0113 (22)
TOWN — HARTLAND
P.O. NO. — 2004
DESIGNER — MCFARLAND–JOHNSON, INC.
CUSTOMER — MILLER CONSTRUCTION

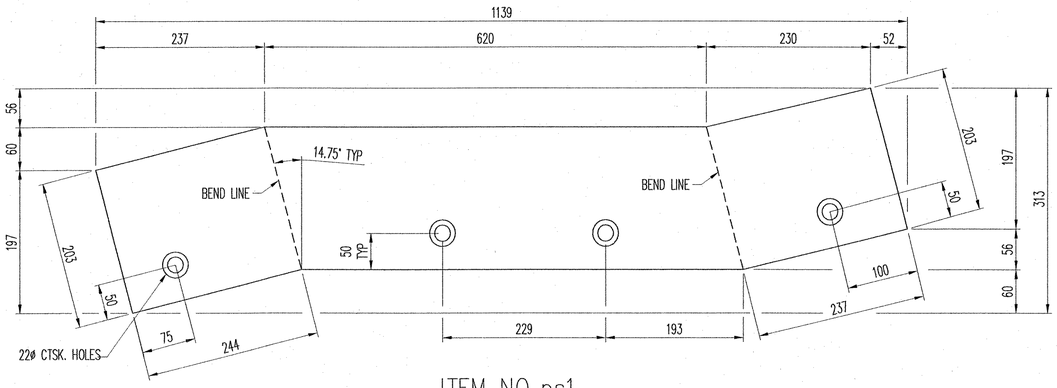
RECEIVED DEC 19 2005 CK'D BY TMS
RESUBMIT ____ APPROVED ____ DATE 1/24/06 BY TMS

ITEM	QUANTITY

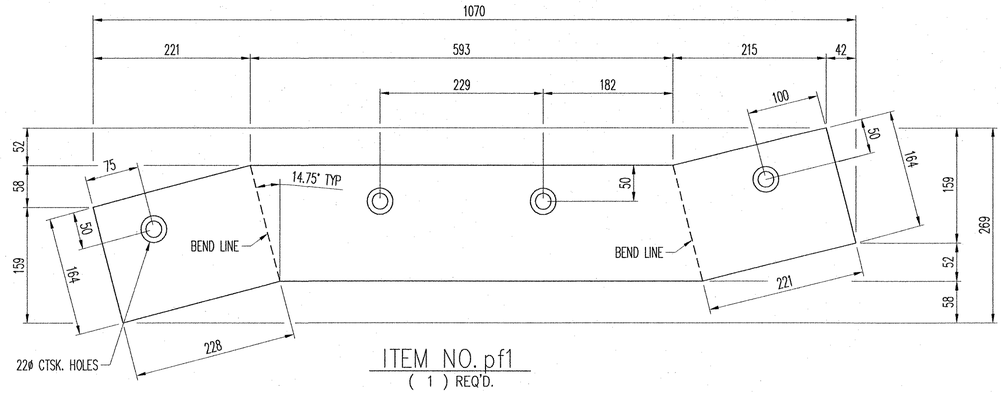
DESCRIPTION:
COVER PLATE DETAILS
WINDSOR COUNTY, VERMONT

SCALE:	DRAWN BY:	CHECKED BY:	DATE:	SHEET
N.T.S.	T.BOWERS	T.JOHNSON	10-7-05	3 OF 4
PROJECT NUMBER	PRODUCT CODE	RELEASE	SHEET	
14032	1042		4	

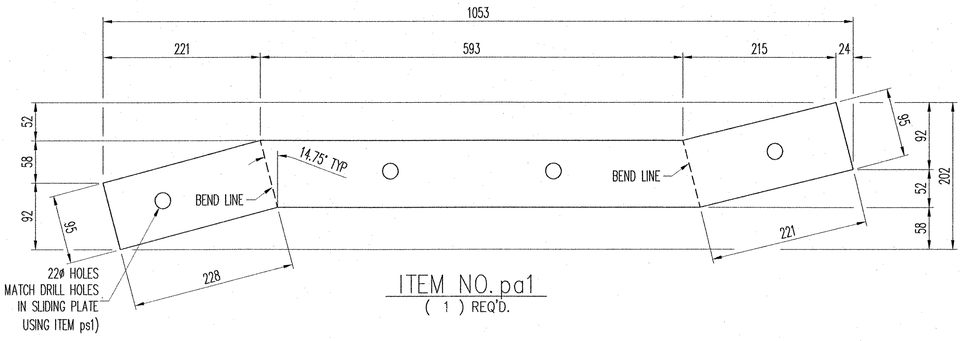
147 SCNP



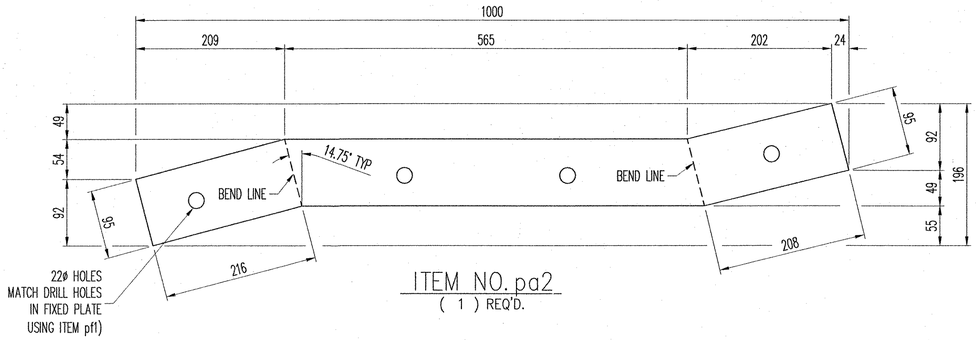
ITEM NO. ps1
(1) REQ'D.



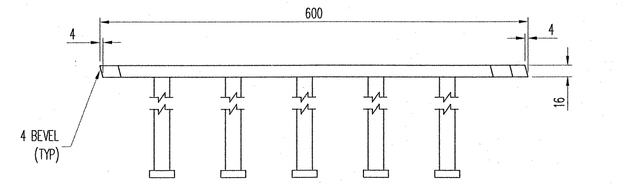
ITEM NO. pf1
(1) REQ'D.

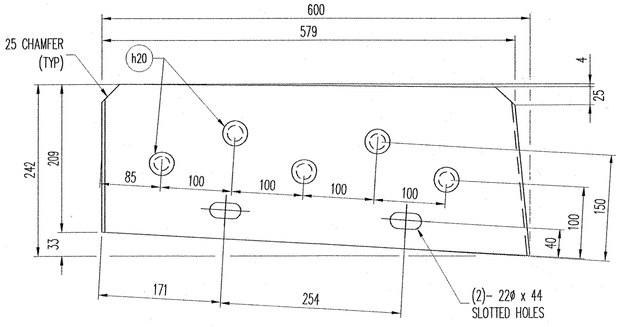


ITEM NO. pa1
(1) REQ'D.

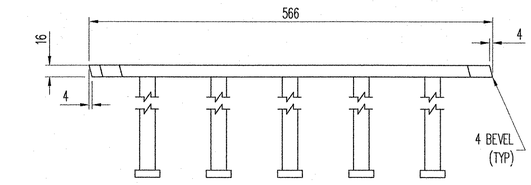


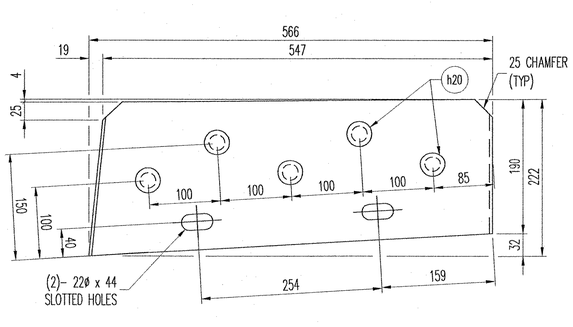
ITEM NO. pa2
(1) REQ'D.



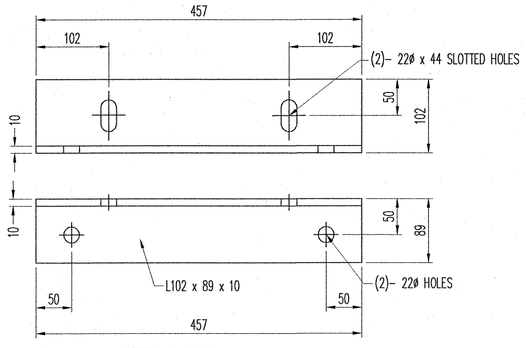


ITEM NO. pv1
(1) REQ'D.

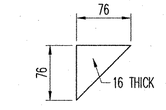




ITEM NO. pv2
(1) REQ'D.



ITEM NO. ac1
(2) REQ'D.



ITEM NO. st1
(6) REQ'D.

☑ Reviewed
☐ Rejected
☐ Furnish as Corrected
☐ Revise and Resubmit
☐ Submit Specified Item

This review is only for general conformance with the design concept and the information given in the Construction Documents. Corrections or comments made on the shop drawings during this review do not relieve the contractor from compliance with the requirements of the plans and specifications. Review of a specific item shall not include review of an assembly of which the item is a component. The Contractor is responsible for dimensions to be confirmed and correlated at the jobsite; information that pertains solely to the fabrication process or to the means, methods, techniques, sequences and procedures of construction; coordination of the Work with that of all other trades and performing all Work in a safe and satisfactory manner.

McFarland-Johnson, Inc.
Date 1/26/06
By RMR

REV.	DESCRIPTION	DATE	DET.	CKD.

D.S. BROWN
300 E. CHERRY STREET
NORTH BALTIMORE, OHIO 45872
419.257.3561
FAX: 419.257.0332

4201 NOREX DRIVE
CHASKA, MINNESOTA 55318
952.368.3000
FAX: 952.448.7000

DSBROWN.COM

LOCATION — U.S. RTE. 5 OVER LULLS BROOK
BRIDGE — 60
PROJECT — BRS 0113 (22)
TOWN — HARTLAND
P.O. NO. — 2004
DESIGNER — MCFARLAND-JOHNSON, INC.
CUSTOMER — MILLER CONSTRUCTION

RECEIVED
DEC 19 2005
CKD BY TAS
RESUBMIT
APPROVED
DATE 1/26/06
BY TAS

ITEM	QUANTITY

DESCRIPTION:
COVER PLATE DETAILS
WINDSOR COUNTY, VERMONT

SCALE:	DRAWN BY:	CHECKED BY:	DATE:	SHEET
N.T.S.	T.BOWERS	T.JOHNSON	10-7-05	4 OF 4
PROJECT NUMBER		PRODUCT CODE	RELEASE	SHEET
14032		1042		5

1485cvr

SECTION A-A

TYPICAL ANCHOR BOLT SETTING

2 270 ~ REQ'D ANCHOR BOLTS AB1

RIVET 'rv1' DETAIL #19420

2 54 ~ REQ'D OFFSET BLOCK 'OB' H-SECTION DETAIL

2 54 ~ REQ'D ANCHOR PLATE AP1 #31286

2 54 ~ REQ'D FABRIC PADS 'FP1'

13 (1/2")ø x 38 (1 1/2") LG. SS HEX HD. BOLT #31563 w/ NUT, AND WASHER TNI, FWI #19404 & #5560 (6) REQ'D 14 (9/16")ø HOLES FOR

2 54 ~ REQ'D FABRICATED RAIL POSTS 'P1' (REFLECTOR UNITS TO BE SUPPLIED & PLACED BY OTHERS)

#19387 OFFSET BLOCK H-SECTION 140 x 184 x 889 LG. 'OB'

12 PER POST 13 (1/2")ø x 25 (1") LG. SS HEX HD. BOLT #32080 w/ 27 (1 1/16")ID x 12 (17/32")OD x 2 (3/32") THK ALUM WASHER #19404 (2 WASHERS FOR H.R.) (1 WASHER FOR BJR.)

HANDRAIL #19464

2 REQ'D PER POST CLAMP BAR CB-01-B #28506

BARRIER RAIL #19465

REFLECTOR UNIT (NOT BY L.B.FOSTER)

BARRIER RAIL #19466

REV.	DESCRIPTION	BY	DATE
2	REVISED PER ERROR ON ARC LENGTH LB2 SOUTH	Dd	07 12 05
1	REVISED PER VTDOT CHGS IN BRIDGE LENGTH	CMS	01 30 06

GENERAL NOTES

ALL MATERIAL AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH VERMONT AGENCY OF TRANSPORTATION STANDARD SPECIFICATIONS FOR CONSTRUCTION DATED 2001.

DESCRIPTION	ASTM	ALLOY/GR.	REMARKS
RAILS, POSTS, BASES, SPLICES, CLAMP BARS, PINS,	B221	6061-T6 OR 6351-T5	MIN. YIELD STRENGTH Fy = 240 MPa (35,000 psi.)
RIVETS	B316	6061-T6	BUTTON HD., CONE PT., COLD DRIVEN
OFFSET BLOCKS (H-SECT.)	B308/B221	6061-T6	
STAINLESS STEEL BOLTS	A193	GRADE B8	
STAINLESS STEEL HEX NUTS	A194	GRADE 8M	
STAINLESS WASHERS	A240	TYPE 304	
ANCHOR BODS	A449		GALV. A153
STEEL HEX NUTS	A563	GRADE DH	GALV. A153
STEEL WASHERS	F436		GALV. A153
ANCHOR PLATES	A569/A36		COMMERCIAL QUALITY (PLAIN)
ALUMINUM WASHERS	B209	2024-T3	
PREFORMED PADS			SECTION 731.01 OR 731.02
SHIDE-UP PLATES	A36		GALV. A123
ELECTRODES FOR WELDING		AWS A5.10 ER5356	

POSTS TO BE NORMAL TO GRADE AND RAILS SHALL BE PARALLEL TO GRADE.

RAILS TO BE ATTACHED TO A MINIMUM OF THREE POSTS WHEN POSSIBLE.

ALL RAILS AND WELDS TO BE FREE FROM ALL BURRS AND ROUGH EDGES. ENDS OF TUBE SECTIONS SHALL BE SAWED OR MILLED. GRIND ALL CUT EDGES SMOOTH.

ALL THREADS TO BE UNC CLASS 2A/2B.

ALL EXTRUSION TOLERANCES NOT SHOWN SHALL BE IN ACCORDANCE WITH ASTM B221.

IF CUT THREADS ARE USED, BOLT DIAMETER SHALL NOT BE LESS THAN NOMINAL DIAMETER. IF ROLLED THREADS ARE USED, BOLT DIAMETER SHALL NOT BE LESS THAN THE ROOT DIAMETER OF THREADS

THE RAIL SPLICE AT THE BRIDGE EXPANSION JOINT SHALL BE FASTENED ON BOTH SIDES OF THE RAIL SPLICE USING THE PARTIALLY THREADED WASHER-FACED BOLT OR THE PARTIALLY THREADED BOLT WITH A WELDED WASHER, TIGHTENED SECURELY TO THE END OF THREADS, AND LEAVING A 3 (1/8") GAP. THIS ALLOWS EXPANSION ON BOTH SIDES OF THE JOINT.

ALL NUTS SHALL COMPLY WITH AMERICAN HEXAGON ANSI SPECIFICATIONS B18.2

FASTENERS & HOLES WILL BE SUPPLIED IN STANDARD US EQUIVALENT UNITS FOR THE METRIC DESIGNATIONS.

ANODIZED

- ALL ALUM. COMPONENTS SHALL BE ANODIZED TO A BLACK (HARD SATIN FINISH) COLOR, FED. STD. COLOR No. 27038. THE ANODIC COATING SHALL BE ARCHITECTURAL CLASS I WITH A MIN. THICKNESS OF 0.7 mils AND A MIN. WEIGHT OF 35 mg/sq in
- ALL VISIBLE STN. STL. HARDWARE SHALL BE FIELD PAINTED BLACK TO MATCH THE ANODIZED RAIL. TOUCH UP PAINT SHALL BE PROVIDED.
- SAMPLES SHALL BE SUBMITTED FOR THE ENGINEER'S APPROVAL.

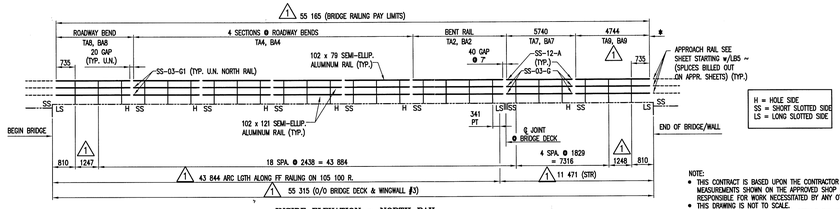
BRIDGE No. 60
PROJ. No: BRS 0113 (22) ITEM 525.22

APPROVED: _____ REC'D APPROVAL _____ DRAWING _____

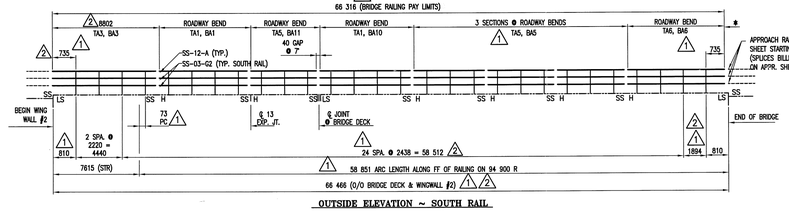
L.B. FOSTER COMPANY
1015 GREENTREE ROAD
PITTSBURGH, PENNSYLVANIA 15220

FOR: A. D. ROSSI CORPORATION
VERMONT AGENCY OF TRANSPORTATION
TOWN OF HARTLAND, COUNY OF WINDSOR
3-LINE SEMI-ELLIP. ALUMINUM BRIDGE RAIL FOR U.S. RTE. 5 OVER LULLS BROOK - GENERAL NOTES AND TYPICAL DETAILS

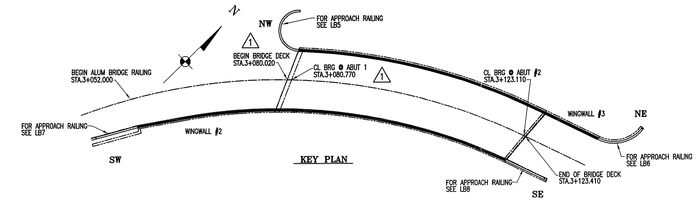
MADE CMS DATE 05/25/05 JOB No. AR0200 CUST. No.
CHECK Dd DATE 11/7/05 DRAWING LB1 REV. No. 2



INSIDE ELEVATION ~ NORTH RAIL



OUTSIDE ELEVATION ~ SOUTH RAIL



NOTE:
- THIS CONTRACT IS BASED UPON THE CONTRACTOR SETTING AND SPACING THE ANCHOR BOLTS TO THE MEASUREMENTS SHOWN ON THE APPROVED SHOP DRAWINGS. THE L.B. FOSTER CO. WILL NOT BE RESPONSIBLE FOR WORK NECESSITATED BY ANY OTHER SETTING AND SPACING.
- THIS DRAWING IS NOT TO SCALE.
- FOR GENERAL NOTES AND TYPICAL DETAILS SEE DRAWING LB1.
- LENGTH OF RAILING ON THIS SHEET IS 121.5 M (398.56 LF) PAY LENGTH 1
- POST SPACING IS MEASURED ALONG THE FRONT FACE OF RAILING.
- SPLICE GAP AT SLEEVE = 20 (3/4") TYP. U.N.
- RAIL LENGTHS DO NOT INCLUDE SPLICE GAPS.
- COMPENSATION FOR VERTICAL CURVE IS NOT NECESSARY.

ANODIZED
(SEE LB1 FOR SPECIFICATIONS)

BRIDGE No. 60
PROJ. No: BRS 0113 (22) ITEM 525.22

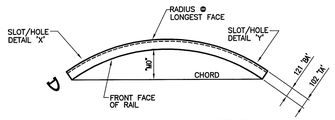
APPROVED: _____ REC'D APPROVAL _____ DRAWING _____

L.B. FOSTER COMPANY
1016 GREENTREE ROAD
PITTSBURGH, PENNSYLVANIA 15220

FOR: A. D. ROSSI CORPORATION
VERMONT AGENCY OF TRANSPORTATION
TOWN OF HARTLAND, COUNY OF WINDSOR
3-LINE SEMI-ELLIP. ALUMINUM BRIDGE RAIL FOR U.S. RTE. 5
OVER LULLS BROOK – ELEVATION & RAIL DETAILS

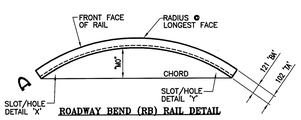
REV.	DESCRIPTION	BY	DATE
2	REVISED PER ERROR ON ARC LENGTH SOUTH RAIL	Dd	07 13 06
1	REVISED PER VTDOT CHGS IN BRIDGE LENGTH	CMS	01 31 06

MADE CMS DATE 06/06/05 JOB No. AR0200 CUST. No.
CHECK Dd DATE 11/7/05 DRAWING LB2 REV. No. 2



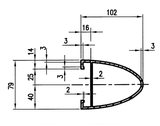
ROADWAY BEND (RB) RAIL DETAIL

RAIL MK.	QTY.	LENGTH ALONG BF RAILING	RADIUS @ BF RAIL	MO	CHORD	SLOT/HOLE DETAIL 'X'	SLOT/HOLE DETAIL 'Y'
TA4	4	7302	105 221	63	7294		
BA4	8	7302	105 221	63	7292	DET. A	DET. B
TA8	1	5635	105 221	38	5629	——	——
BA8	2	5635	105 221	38	5628	DET. C	DET. B

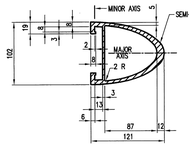


ROADWAY BEND (RB) RAIL DETAIL

RAIL MK.	QTY.	LENGTH ALONG FF RAILING	RADIUS @ FF RAIL	MO	CHORD	SLOT/HOLE DETAIL 'X'	SLOT/HOLE DETAIL 'Y'
TA1	2	9732	94 881	125	9717	——	——
BA1	2	9732	94 900	125	9717	DET. B	DET. A
BA10	2	9732	94 900	125	9717	DET. C	DET. A
TA5	4	7293	94 881	70	7283	——	——
BA5	6	7293	94 900	70	7283	DET. B	DET. A
BA11	2	7293	94 900	70	7283	DET. B	DET. D
TA6	1	**8714**	94 881	**100**	**8701**	——	——
BA6	2	**8714**	94 900	**100**	**8701**	DET. B	DET. C

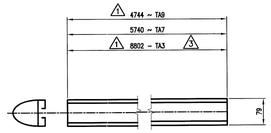


TYPICAL SECTION (HANDRAIL) #19464

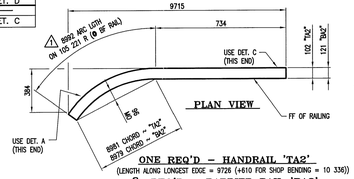


TYPICAL SECTION (BARRIER RAIL) #19466

2 REQ'D – BARRIER RAIL 'BA7'
(BACK ELEVATION VIEW)



1 ONE REQ'D – HANDRAIL 'TA3'
(BACK ELEVATION VIEW)
ONE REQ'D – HANDRAIL 'TA7'
(BACK ELEVATION VIEW)
1 ONE REQ'D – HANDRAIL 'TA9'
(BACK ELEVATION VIEW)



PLAN VIEW

ONE REQ'D – HANDRAIL 'TA2'
(LENGTH ALONG LONGEST EDGE = 9726 (+610 FOR SHOP BENDING = 10 336))
2 REQ'D – BARRIER RAIL 'BA2'
(LENGTH ALONG LONGEST EDGE = 9726 (+610 FOR SHOP BENDING = 10 336))

SLOT DETAIL A (SS)
(BACK ELEVATION VIEW)

HOLE DETAIL B (H)
(BACK ELEVATION VIEW)

SLOT DETAIL D (SS @ EXP)
(BACK ELEVATION VIEW)

SLOT DETAIL C (LS @ EXP)
(BACK ELEVATION VIEW)

1 2 REQ'D – BARRIER RAIL 'BA3'
(BACK ELEVATION VIEW)
1 2 REQ'D – BARRIER RAIL 'BA9'
(BACK ELEVATION VIEW)

ANODIZED
(SEE LB1 FOR SPECIFICATIONS)

REV.	DESCRIPTION	BY	DATE
1	REVISED PER ERROR ON ARC LENGTH LB2 SOUTH	Dd	07 13 06
2	REVISED DIMENSIONS OF TA1, BA1 & BA10 PER ENG ERROR	CMS	05 22 06
1	REVISED PER VTDOT CHGS IN BRIDGE LENGTHS	CMS	01 31 06

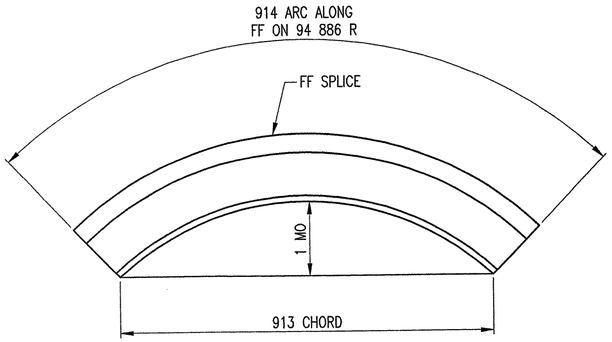
BRIDGE No. 60
PROJ. No: BRS 0113 (22) ITEM 525.22

APPROVED: _____ REC'D APPROVAL _____ DRAWING _____

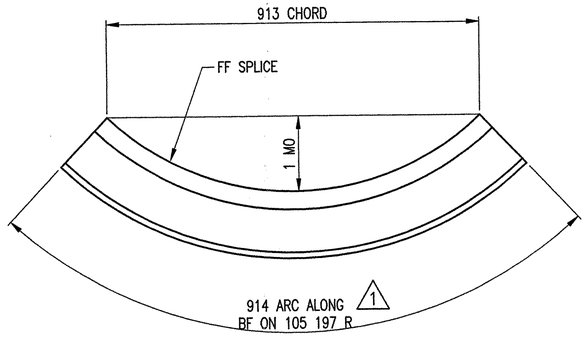
L.B. FOSTER COMPANY
1018 GREENTREE ROAD
PITTSBURGH, PENNSYLVANIA 15220

FOR: A. D. ROSSI CORPORATION
VERMONT AGENCY OF TRANSPORTATION
TOWN OF HARTLAND, COUNY OF WINDSOR
3-LINE SEMI-ELLIP. ALUMINUM BRIDGE RAIL FOR U.S. RTE. 5
OVER LULLS BROOK – RAIL DETAILS

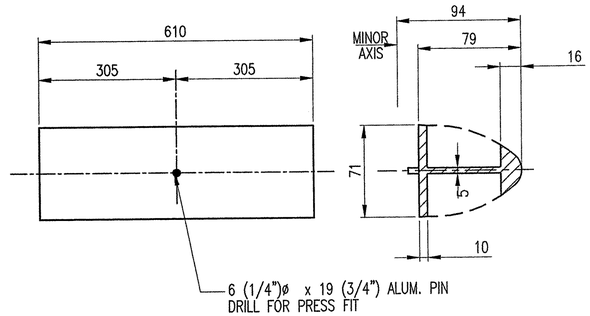
MADE CMS DATE 06/06/05 JOB No. AR0200 CUST. No.
CHECK Dd DATE 11/7/05 DRAWING LB3 REV. No. 3



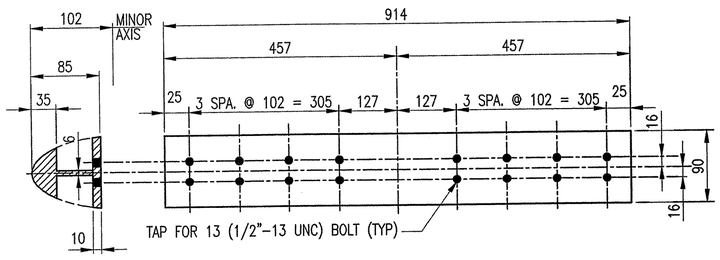
PLAN VIEW



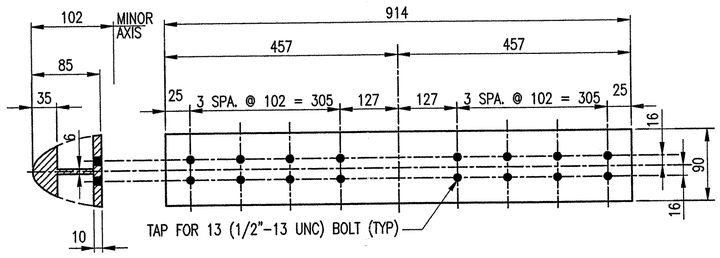
PLAN VIEW



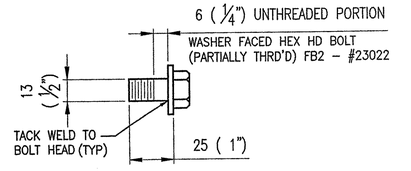
14 ~ REQ'D SPLICE SLEEVES SS-12-A
(HANDRAIL) #19497 EXTR., #14940 PIN



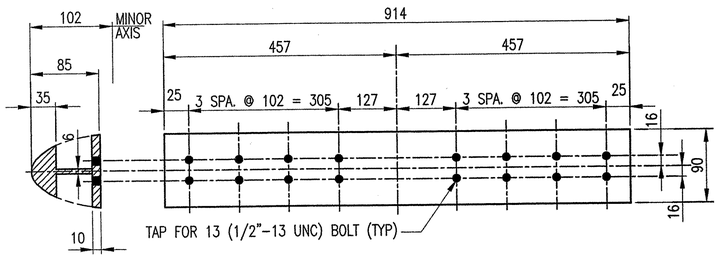
14 ~ REQ'D BENT SPLICE SLEEVES SS-03-G2
#19501 EXTR.



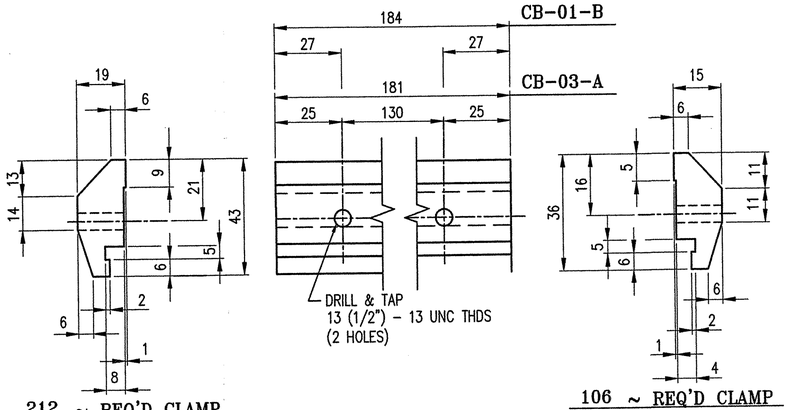
10 ~ REQ'D BENT SPLICE SLEEVES SS-03-G1
(FOR BARRIER RAIL - BACK ELEV. VIEW) #19501 EXTR.



SPLICE BOLT DETAILS



4 ~ REQ'D SPLICE SLEEVES SS-03-G
#19501 EXTR.



212 ~ REQ'D CLAMP
BAR CB-03-A
(BARRIER RAIL) #19447

106 ~ REQ'D CLAMP
BAR CB-01-B
(HANDRAIL) #28596

ANODIZED
(SEE LB1 FOR SPECIFICATIONS)

RECEIVED
CK'D BY ____ CK'D BY ____
FEB 2 3 2006
RESUBMIT ____ APPROVED ✓
BY Wy S/S DATE 2/24/06

REV.	DESCRIPTION	BY	DATE
1	REVISED PER VTDOT CHGS IN BRIDGE LENGTHS	CMS	01 31 06

BRIDGE No. 60
PROJ. No: BRS 0113 (22)
ITEM 525.22

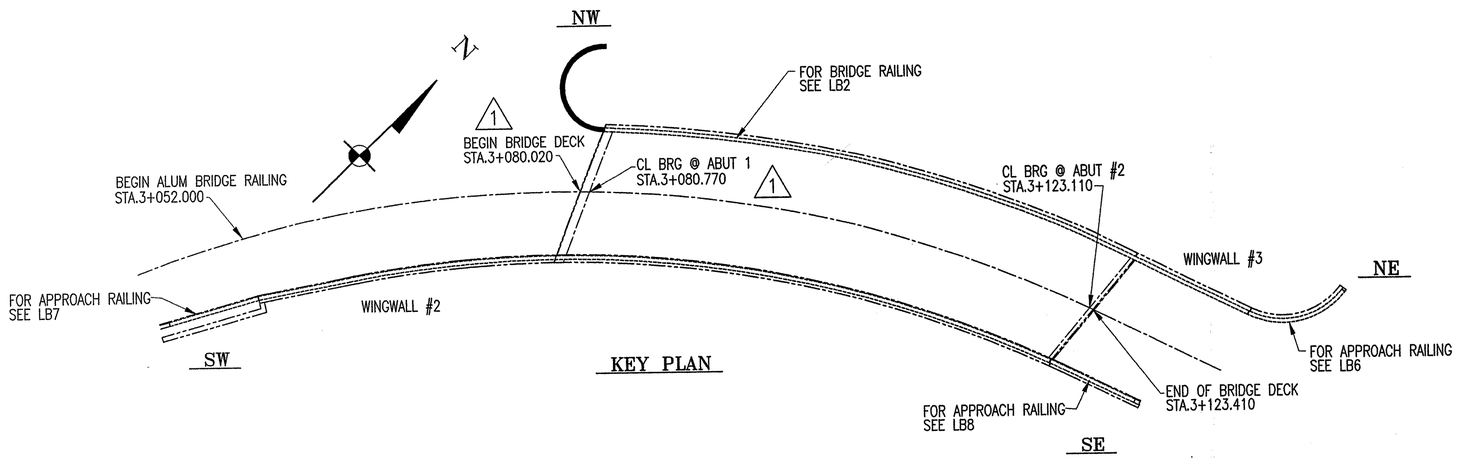
APPROVED: ____ REC'D APPROVAL ____ DRAWING ____

L.B. FOSTER COMPANY
1016 GREENTREE ROAD
PITTSBURGH, PENNSYLVANIA 15220

FOR: A. D. ROSSI CORPORATION
VERMONT AGENCY OF TRANSPORTATION
TOWN OF HARTLAND, COUNY OF WINDSOR
3-LINE SEMI-ELLIP. ALUMINUM BRIDGE RAIL FOR U.S. RTE. 5
OVER LULLS BROOK - SPLICE & MISC DETAILS

MADE CMS DATE 06/13/03 JOB No. AR0200 CUST. No.
CHECK Dd DATE 11/7/05 DRAWING LB4 REV. No. ONE

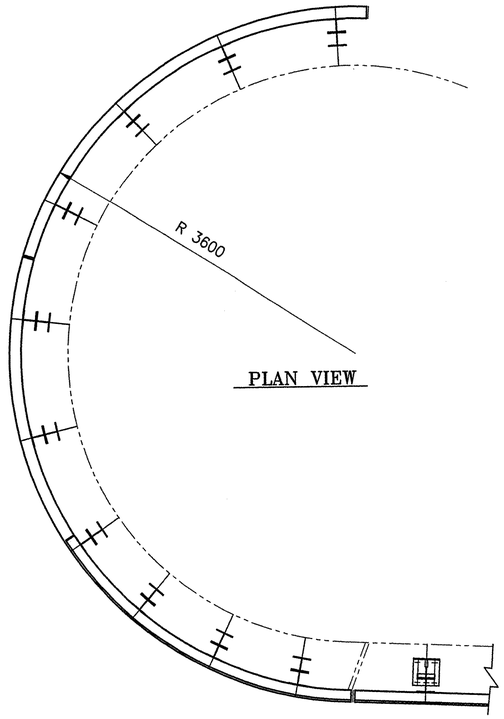
152bR



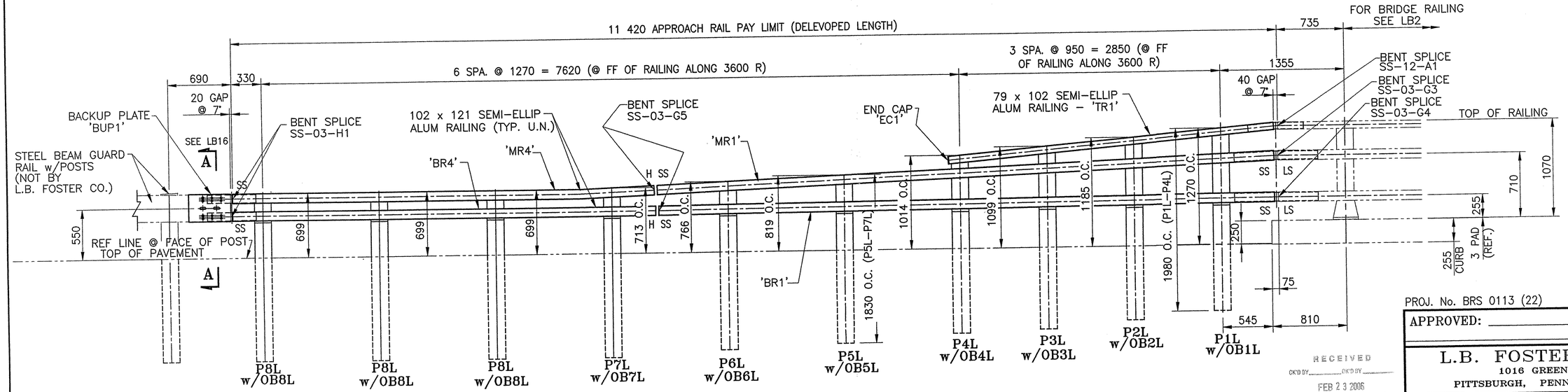
KEY PLAN

NOTE:
- RAIL LENGTHS DO NOT INCLUDE END CAPS AND/OR GAPS.
- LENGTH OF APPROACH RAILING ON THIS SHEET IS 11.43 M (37.5 LF) PAY LENGTH.
- METRIC DIMENSIONS ARE IN MILLIMETERS (mm), UNLESS NOTED.

SS = SHORT SLOTTED SIDE
LS = LONG SLOTTED SIDE



PLAN VIEW



INSIDE ELEVATION OF NW APPROACH RAIL

ANODIZED
(SEE LB1 FOR SPECIFICATIONS)

RECEIVED
CK'D BY ____ CK'D BY ____
FEB 23 2006
RESUBMIT ____ APPROVED ✓
BY ____ DATE 2/23/06

REV.	DESCRIPTION	BY	DATE
1	REVISED PER VTDOT CHGS IN BRIDGE LENGTHS	CMS	01 31 06

PROJ. No. BRS 0113 (22) ITEM No: 621.74

APPROVED: ____ REC'D APPROVAL ____ DRAWING ____

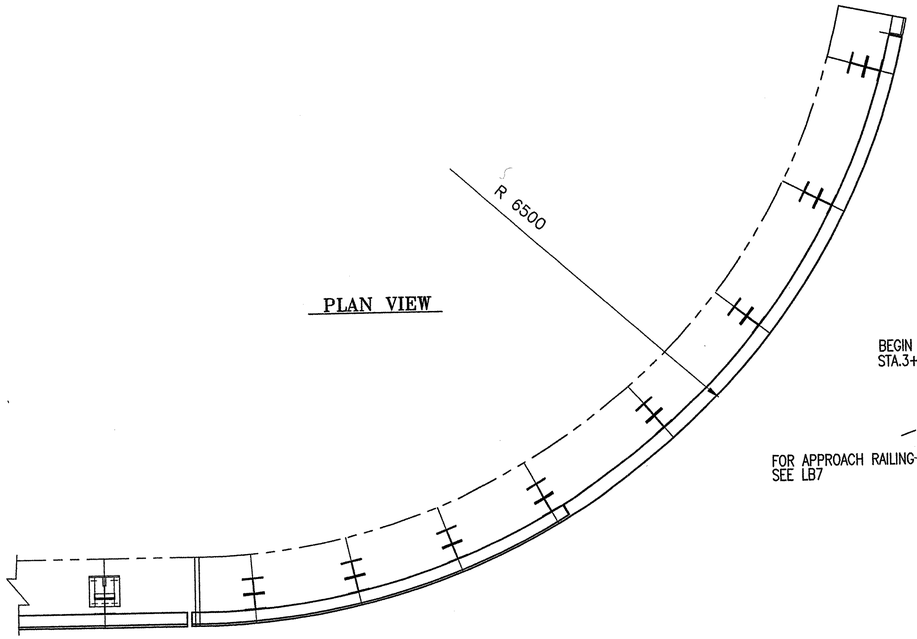
L.B. FOSTER COMPANY
1016 GREENTREE ROAD
PITTSBURGH, PENNSYLVANIA 15220

FOR: A. D. ROSSI CORPORATION
VERMONT AGENCY OF TRANSPORTATION
TOWN OF HARTLAND, COUNTY OF WINDSOR
BRIDGE #60 - US RTE 5 OVER LULLS BROOK
3L ALUMINUM APPROACH RAIL ELEVATIONS

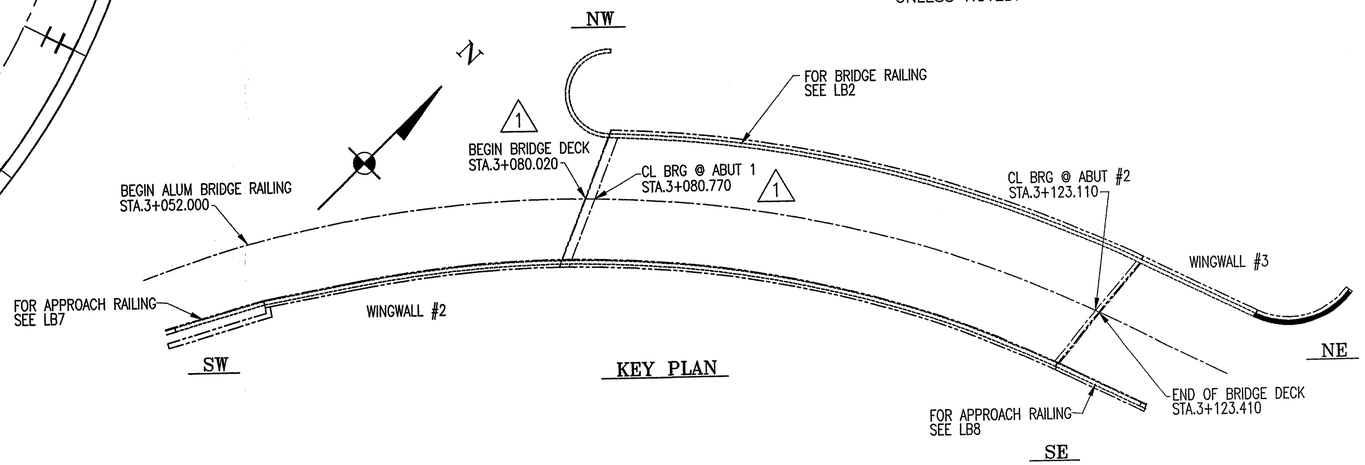
MADE CMS DATE 05/25/05 JOB No. AR0200 CUST. No.
CHECK Dd DATE 11/7/05 DRAWING LB5 REV. No. ONE

1536R

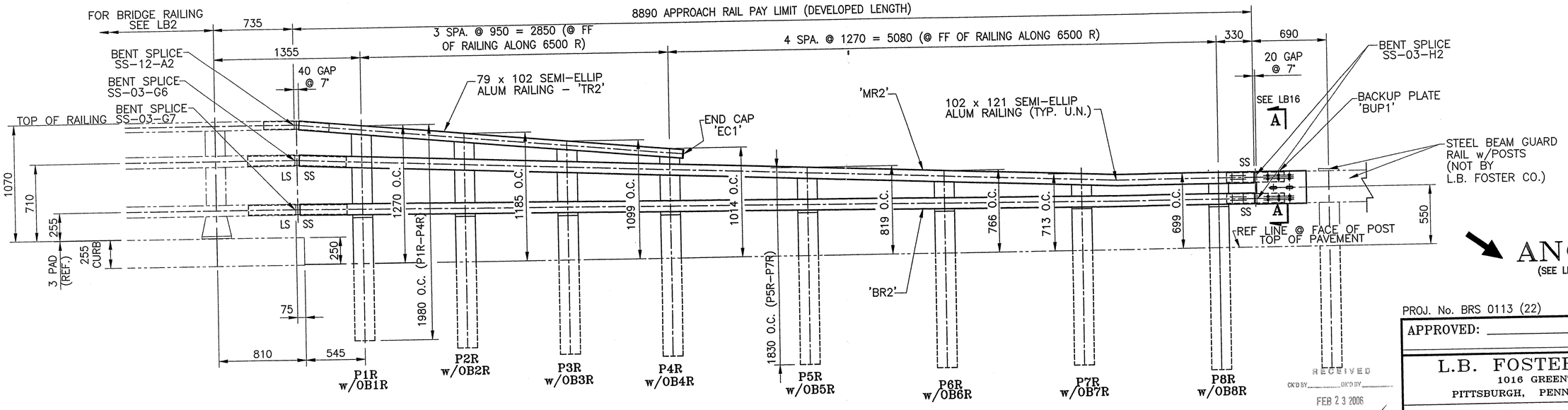
NOTE:
- RAIL LENGTHS DO NOT INCLUDE END CAPS AND/OR GAPS.
- LENGTH OF APPROACH RAILING ON THIS SHEET IS 8.89 M (29.16 LF) PAY LENGTH.
- METRIC DIMENSIONS ARE IN MILLIMETERS (mm), UNLESS NOTED.



PLAN VIEW



KEY PLAN



INSIDE ELEVATION OF NE APPROACH RAIL

ANODIZED
(SEE LB1 FOR SPECIFICATIONS)

SS = SHORT SLOTTED SIDE
LS = LONG SLOTTED SIDE

RECEIVED
FEB 2 3 2006

REV.	DESCRIPTION	BY	DATE
1	REVISED PER VTDOT CHGS TO BRIDGE LENGTHS	CMS	01 31 06

PROJ. No. BRS 0113 (22) ITEM No: 621.74

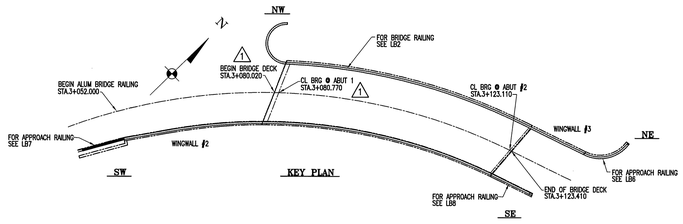
APPROVED: _____ REC'D APPROVAL _____ DRAWING _____

L.B. FOSTER COMPANY
1016 GREENTREE ROAD
PITTSBURGH, PENNSYLVANIA 15220

FOR: A. D. ROSSI CORPORATION
VERMONT AGENCY OF TRANSPORTATION
TOWN OF HARTLAND, COUNTY OF WINDSOR
BRIDGE #60 - US RTE 5 OVER LULLS BROOK
3L ALUMINUM APPROACH RAIL ELEVATIONS

MADE CMS DATE 05/25/05 JOB No. AR0200 CUST. No.
CHECK Dd DATE 11/7/05 DRAWING LB6 REV. No. ONE

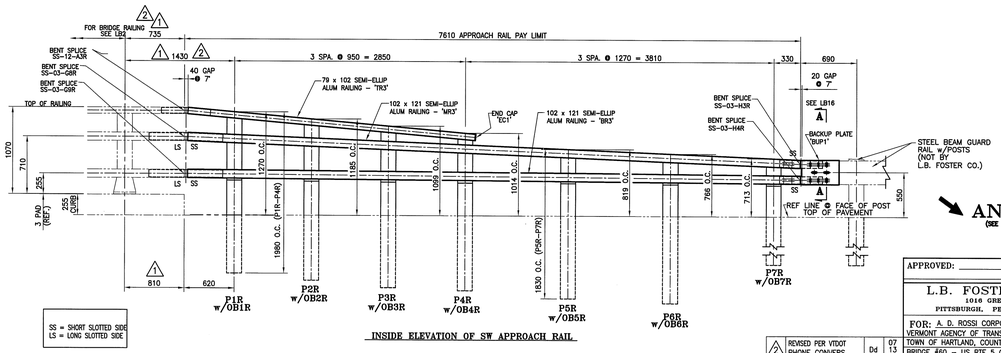
1546r



KEY PLAN

PLAN VIEW

NOTE:
- RAIL LENGTHS DO NOT INCLUDE END CAPS AND/OR GAPS.
- LENGTH OF APPROACH RAILING ON THIS SHEET IS 7.6 M (25 LF) PAY LENGTH.
- METRIC DIMENSIONS ARE IN MILLIMETERS (mm), UNLESS NOTED.



SS = SHORT SLOTTED SIDE
LS = LONG SLOTTED SIDE

INSIDE ELEVATION OF SW APPROACH RAIL

ANODIZED
(SEE LB1 FOR SPECIFICATIONS)

ITEM No: 621.74
PROJ. No. BRS 0113 (22)

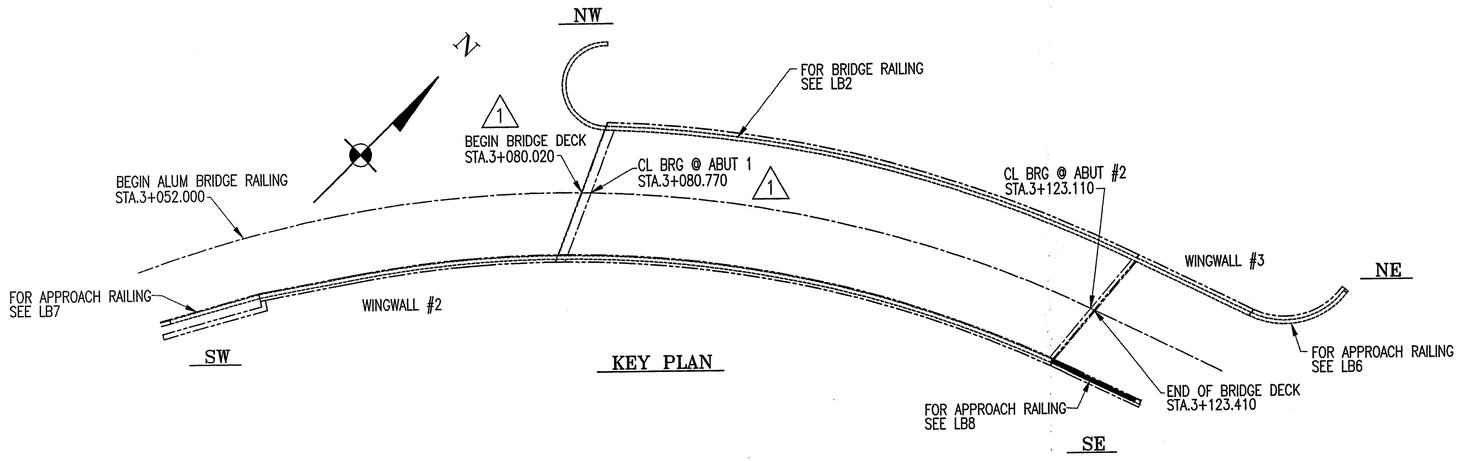
APPROVED: _____ REC'D APPROVAL _____ DRAWING _____

L.B. FOSTER COMPANY
1016 GREENTREE ROAD
PITTSBURGH, PENNSYLVANIA 15220

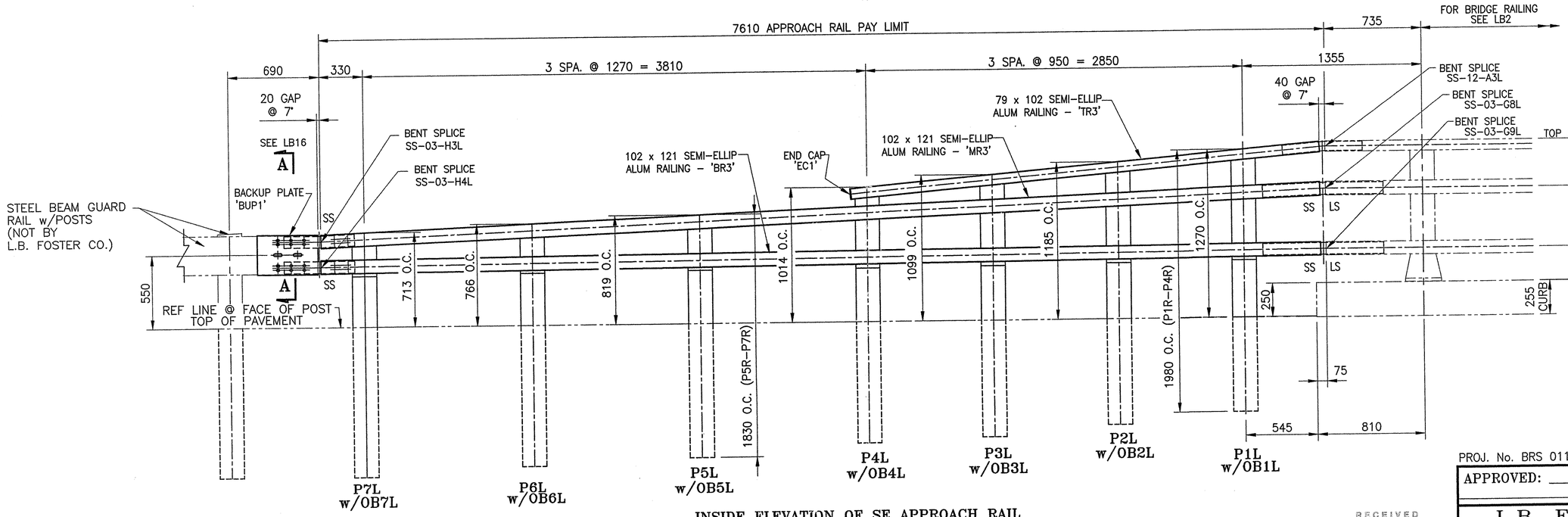
FOR: A. D. ROSSI CORPORATION
VERMONT AGENCY OF TRANSPORTATION
TOWN OF HARTLAND, COUNTY OF WINDSOR
BRIDGE #60 – US RTE 5 OVER LULLS BROOK
AL ALUMINUM APPROACH RAIL ELEVATIONS

MADE CMS DATE 05/25/05 JOB No. AR0200 CUST. No.
CHECK Dd DATE 11/7/05 DRAWING LB7 REV. No. 2

REV.	DESCRIPTION	BY	DATE
2	REVISED PER VTDOT PHONE CONVERS.	Dd	07 13 06
1	REVISED PER VTDOT CHGS IN BRIDGE LENGTHS	CMS	07 11 06



NOTE:
- RAIL LENGTHS DO NOT INCLUDE END CAPS AND/OR GAPS.
- LENGTH OF APPROACH RAILING ON THIS SHEET IS 7.6 M (25 LF) PAY LENGTH.
- METRIC DIMENSIONS ARE IN MILLIMETERS (mm), UNLESS NOTED.



INSIDE ELEVATION OF SE APPROACH RAIL

SS = SHORT SLOTTED SIDE
LS = LONG SLOTTED SIDE

ANODIZED
(SEE LB1 FOR SPECIFICATIONS)

RECEIVED
OK'D BY _____ OK'D BY _____
FEB 23 2006
RESUBMIT _____ APPROVED ✓
BY Wy Sp DATE 2/23/06

REV.	DESCRIPTION	BY	DATE
1	REVISED PER VTDOT CHGS TO BRIDGE LENGTHS	CMS	01 31 06

PROJ. No. BRS 0113 (22) ITEM No: 621.74

APPROVED: _____ REC'D APPROVAL _____ DRAWING _____

L.B. FOSTER COMPANY
1016 GREENTREE ROAD
PITTSBURGH, PENNSYLVANIA 15220

FOR: A. D. ROSSI CORPORATION
VERMONT AGENCY OF TRANSPORTATION
TOWN OF HARTLAND, COUNTY OF WINDSOR
BRIDGE #60 - US RTE 5 OVER LULLS BROOK
3L ALUMINUM APPROACH RAIL ELEVATIONS

MADE CMS DATE 05/25/05 JOB No. AR0200 CUST. No.
CHECK Dd DATE 11/7/05 DRAWING LB8 REV. No. ONE

1566R

POST DETAIL CHART FOR NW & SE APPROACHES CURB CONDITION

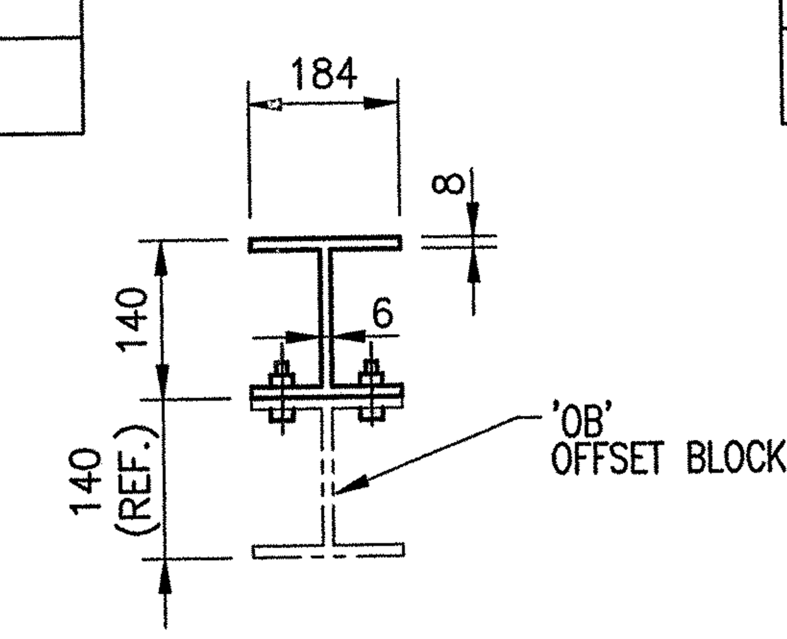
		OFFSET BLOCK MTG. DIMENSIONS							BEV
POST No.	QTY.	A	B	C	D	E	F (O.C.)	G (O.C.)	X
P1L	2	48	340	774	17	32	1270	1980	9
P2L	2	48	294	696	17	32	1185	1980	9
P3L	2	48	248	617	17	32	1099	1980	9
P4L	2	48	203	539	17	32	1014	1980	9
P5L	2	56	348		8	48	819	1830	4
P6L	2	56	305		8	48	766	1830	4
P7L	2	56	262		8	48	713	1830	4
P8L	3	52	246		0	52	699	1830	SQ

POST DETAIL CHART FOR NE & SW APPROACHES CURB CONDITION

		OFFSET BLOCK MTG. DIMENSIONS							BEV
POST No.	QTY.	A	B	C	D	E	F (O.C.)	G (O.C.)	X
P1R	2	48	340	774	17	32	1270	1980	9
P2R	2	48	294	696	17	32	1185	1980	9
P3R	2	48	248	617	17	32	1099	1980	9
P4R	2	48	203	539	17	32	1014	1980	9
P5R	2	56	348		8	48	819	1830	4
P6R	2	56	305		8	48	766	1830	4
P7R	2	56	262		8	48	713	1830	4
P8R	1	52	246		0	52	699	1830	SQ

NOTE:
2 CLAMPING BARS CB-01-B (#28596) PER POSTS P1-P4
4 CLAMPING BARS CB-03-A (#19447) PER POSTS P1-P4 w/ 1/2"ø-13 UNC S.S. BOLT x 1" LG. 'FB1', 1 1/16" O.D. x 17/32" I.D. x 3/32" THK. ALUM WASHER 'FW1' (#22935 & # 19404) (16 PER POST)

NOTE:
4 CLAMPING BARS CB-03-A (#19447) PER POSTS P5-P7 w/ 13 (1/2"ø-13 UNC) S.S. BOLT x 25 (1") LG. 'FB1', 27 (1 1/16") O.D. x 13 (17/32") I.D. x 2 (3/32") THK. ALUM WASHER 'FW1' (#22935 & # 19404) (8 PER POST)



TYP. SECT. POST & OFFSET BLOCK

ANODIZED
(SEE LB1 FOR SPECIFICATIONS)

RECEIVED
FEB 2 3 2006
CK'D BY / OK'D BY / RESUBMIT / APPROVED ✓ / BY / DATE 2/25/06

REV.	DESCRIPTION	BY	DATE

PROJ. No. BRS 0113 (22) ITEM No: 621.74

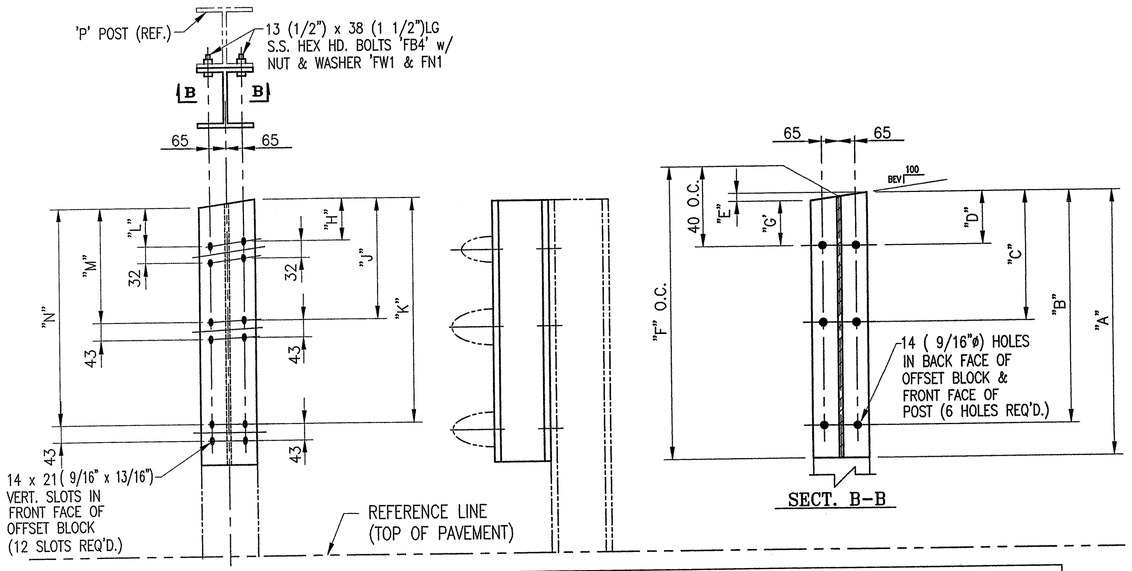
APPROVED: ______ REC'D APPROVAL DRAWING ______

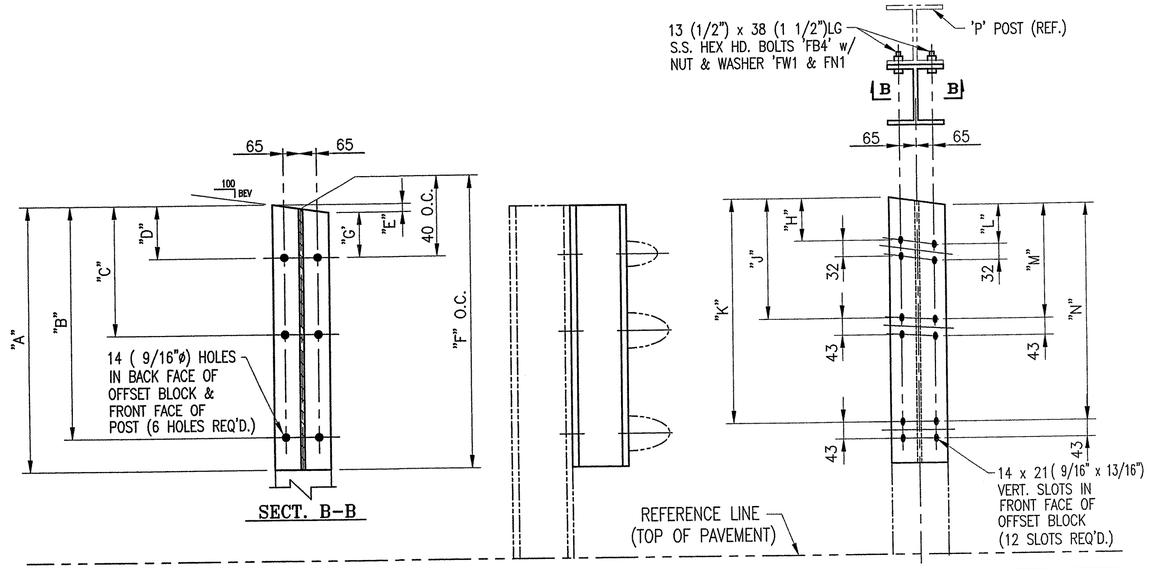
L.B. FOSTER COMPANY
1016 GREENTREE ROAD
PITTSBURGH, PENNSYLVANIA 15220

FOR: A. D. ROSSI CORPORATION
VERMONT AGENCY OF TRANSPORTATION
TOWN OF HARTLAND, COUNTY OF WINDSOR
BRIDGE #60 - US RTE 5 OVER LULLS BROOK
3L ALUMINUM APPROACH RAIL POST DETAILS

MADE CMS DATE 09/01/05 JOB No. AR0200 CUST. No.
CHECK Dd DATE 11/7/05 DRAWING LB9 REV. No.

1576R





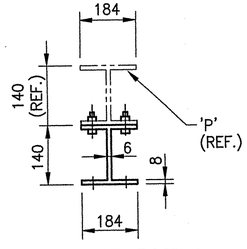
OFFSET BLOCK CHART FOR (NW) & (SE) APPROACHES CURB CONDITION – POSTS P1L – P4L

POST No.	OFFSET BLOCK	QTY.	OFFSET BLOCK ~ POST MTG. DIMENSIONS A	B	C	D	E	F (0.C.)	G	BEV X
P1L	OB1L	2	850	774	340	49	17	841	32	9
P2L	OB2L	2	774	696	294	49	17	765	32	
P3L	OB3L	2	697	617	248	49	17	689	32	
P4L	OB4L	2	621	539	203	49	17	613	32	

POST No.	OFFSET BLOCK	OFFSET BLOCK ~ RAIL MTG. DIMENSIONS H	J	K	L	M	N
P1L	OB1L	27	316	752	22	305	737
P2L	OB2L	27	270	674	22	259	658
P3L	OB3L	27	224	595	22	213	580
P4L	OB4L	27	178	517	22	167	205

NOTE:
2 CLAMPING BARS CB–01–B (#28596) PER POSTS P1–P4
4 CLAMPING BARS CB–03–A (#19447) PER POSTS P1–P4 w/ 1/2"ø–13 UNC S.S. BOLT x 1" LG. 'FB1', 1 1/16" O.D. x 17/32" I.D. x 3/32" THK. ALUM WASHER 'FW1' (#22935 & # 19404) (16 PER POST)

NOTE:
4 CLAMPING BARS CB–03–A (#19447) PER POSTS P5–P7 w/ 13 (1/2"ø–13 UNC) S.S. BOLT x 25 (1") LG. 'FB1', 27 (1 1/16") O.D. x 13 (17/32") I.D. x 2 (3/32") THK. ALUM WASHER 'FW1' (#22935 & # 19404) (8 PER POST)



TYP. SECT. POST & OFFSET BLOCK

OFFSET BLOCK CHART FOR (NE) & (SW) APPROACHES CURB CONDITION – POSTS P1R – P4R

POST No.	OFFSET BLOCK	QTY.	OFFSET BLOCK ~ POST MTG. DIMENSIONS A	B	C	D	E	F (0.C.)	G	BEV X
P1R	OB1R	2	850	774	340	49	17	841	32	9
P2R	OB2R	2	774	696	294	49	17	765	32	
P3R	OB3R	2	697	617	248	49	17	689	32	
P4R	OB4R	2	621	539	203	49	17	613	32	

POST No.	OFFSET BLOCK	OFFSET BLOCK ~ RAIL MTG. DIMENSIONS H	J	K	L	M	N
P1R	OB1R	27	316	752	22	305	737
P2R	OB2R	27	270	674	22	259	658
P3R	OB3R	27	224	595	22	213	580
P4R	OB4R	27	178	517	22	167	205

ANODIZED
(SEE LB1 FOR SPECIFICATIONS)

RECEIVED
OK'D BY _____ OK'D BY _____
FEB 23 2006
RESUBMIT _____ APPROVED ✓
BY WH DATE 2/23/06

REV.	DESCRIPTION	BY	DATE

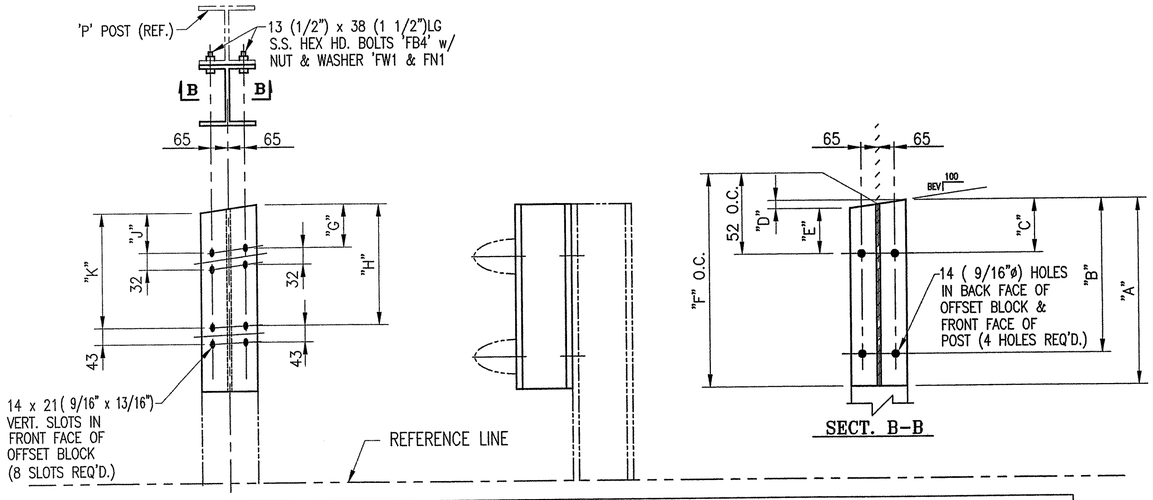
PROJ. No. BRS 0113 (22) ITEM No: 621.74
APPROVED: _____ REC'D APPROVAL _____ DRAWING _____

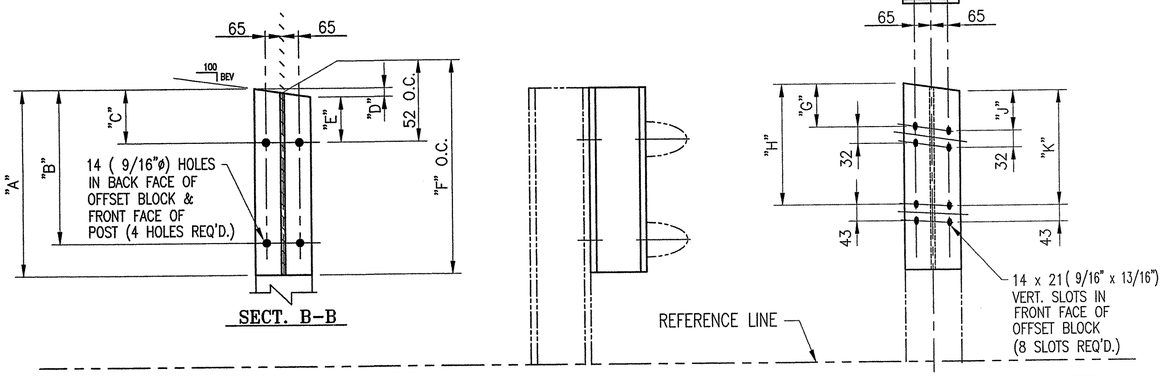
L.B. FOSTER COMPANY
1016 GREENTREE ROAD
PITTSBURGH, PENNSYLVANIA 15220

FOR: A. D. ROSSI CORPORATION
VERMONT AGENCY OF TRANSPORTATION
TOWN OF HARTLAND, COUNTY OF WINDSOR
3L APPROACH RAIL FOR BRIDGE #60 – US RTE 5 OVER LULLS BROOK
OFFSET BOX DETAILS – NW, NE, SW & SE APPROACHES

MADE CMS DATE 05/24/05 JOB No. AR0200 CUST. No.
CHECK Dd DATE 11/7/05 DRAWING LB10 REV. No.

1586R

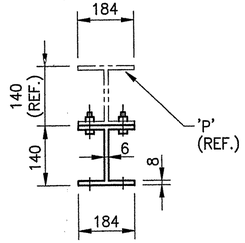




OFFSET BLOCK CHART FOR (NW) & (SE) APPROACHES
CURB CONDITION – POSTS P5L – P7L

POST No.	OFFSET BLOCK	QTY.	OFFSET BLOCK ~ POST MTG. DIMENSIONS A	B	C	D	E	F (O.C.)	BEV X
P5L	OB5L	2	423	348	56	8	48	419	4
P6L	OB6L	2	380	305	56	8	48	376	
P7L	OB7L	2	337	262	56	8	48	332	
P8L	OB8L	3	332	246	52	0	52	332	SQ

OFFSET BLOCK ~ RAIL MTG. DIMENSIONS					
POST No.	OFFSET BLOCK	G	H	J	K
P5L	OB5L	32	327	29	320
P6L	OB6L	32	283	29	276
P7L	OB7L	32	240	29	233
P8L	OB8L	31	224	31	224



TYP. SECT. POST &
OFFSET BLOCK

NOTE:
2 CLAMPING BARS CB–01–B
(#28596) PER POSTS P1–P4
4 CLAMPING BARS CB–03–A
(#19447) PER POSTS P1–P4
w/ 1/2"ø–13 UNC
S.S. BOLT x 1" LG. 'FB1',
1 1/16" O.D. x 17/32"
I.D. x 3/32" THK. ALUM
WASHER 'FW1'
(#22935 & # 19404)
(16 PER POST)

NOTE:
4 CLAMPING BARS CB–03–A
(#19447) PER POSTS P5–P7
w/ 13 (1/2"ø–13 UNC)
S.S. BOLT x 25 (1") LG. 'FB1',
27 (1 1/16") O.D. x 13 (17/32")
I.D. x 2 (3/32") THK. ALUM
WASHER 'FW1'
(#22935 & # 19404)
(8 PER POST)

OFFSET BLOCK CHART FOR (NE) & (SW) APPROACHES
CURB CONDITION – POSTS P5R – P8R

POST No.	OFFSET BLOCK	QTY.	OFFSET BLOCK ~ POST MTG. DIMENSIONS A	B	C	D	E	F (O.C.)	BEV X
P5R	OB5R	2	423	348	56	8	48	419	4
P6R	OB6R	2	380	305	56	8	48	376	
P7R	OB7R	2	337	262	56	8	48	332	
P8R	OB8R	1	332	246	52	0	52	332	SQ

OFFSET BLOCK ~ RAIL MTG. DIMENSIONS					
POST No.	OFFSET BLOCK	G	H	J	K
P5R	OB5R	32	327	29	320
P6R	OB6R	32	283	29	276
P7R	OB7R	32	240	29	233
P8R	OB8R	31	224	31	224

ANODIZED
(SEE LB1 FOR SPECIFICATIONS)

RECEIVED
FEB 23 2006

REV.	DESCRIPTION	BY	DATE

PROJ. No. BRS 0113 (22) ITEM No: 621.74

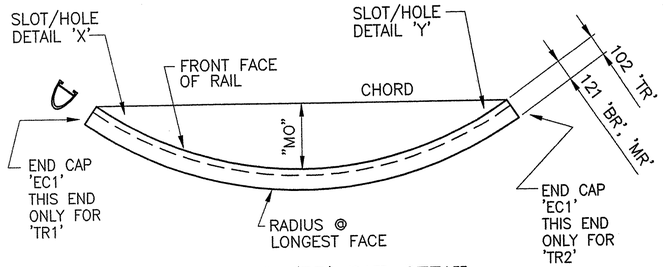
APPROVED: _____ REC'D APPROVAL _____ DRAWING _____

L.B. FOSTER COMPANY
1016 GREENTREE ROAD
PITTSBURGH, PENNSYLVANIA 15220

FOR: A. D. ROSSI CORPORATION
VERMONT AGENCY OF TRANSPORTATION
TOWN OF HARTLAND, COUNTY OF WINDSOR
3L APPROACH RAILING FOR BRIDGE #60 – US RTE 5 OVER LULLS BROOK
OFFSET BOX DETAILS – NW, NE, SW & SE APPROACHES

MADE CMS DATE 05/24/05 JOB No. AR0200 CUST. No.
CHECK Dd DATE 11/7/05 DRAWING LB11 REV. No.

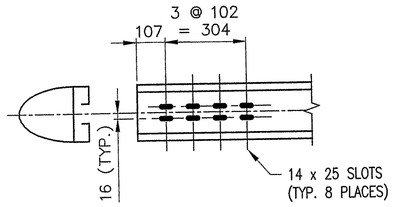
1596R



ROADWAY BEND (RB) RAIL DETAIL

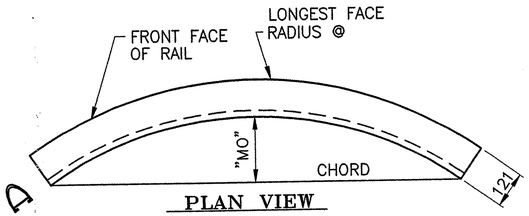
(PLAN VIEW)

RAIL MK.	QTY.	LENGTH ALONG FF RAILING	RADIUS @ FF RAIL	MO	CHORD	SLOT/HOLE DETAIL 'X'	SLOT/HOLE DETAIL 'Y'	LOCATION
TR1	1	3529	3581	414	3292	—	—	NW
MR1	1	6604	3600	1364	5525	DET. A	DET. A	NW
BR1	1	6604	3600	1364	5525	DET. A	DET. A	NW
TR2	1	3577	6481	242	3479	—	—	NE

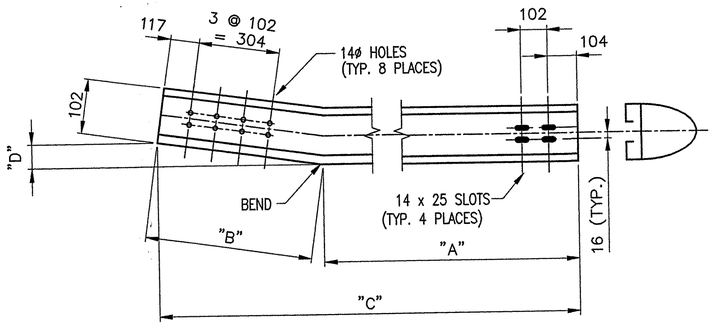


SLOT DETAIL A

(BACK ELEVATION VIEW)



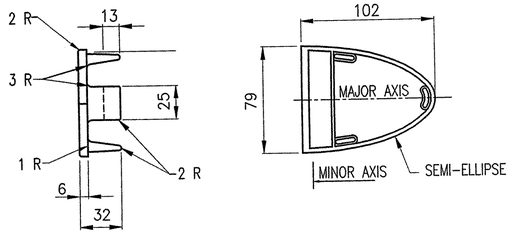
PLAN VIEW



COMPOUND BENT RAIL DETAIL

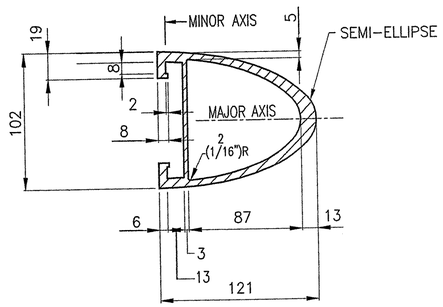
(BACK ELEVATION VIEW)

RAIL MK.	QTY.	LENGTH ALONG FF RAILING	RADIUS @ FF RAIL	MO	CHORD	"A"	"B"	"C"	"D"	LOCATION
MR4	1	4756	3600	732	4269	3801	956	4756	40	NW
BR4	1	4756	3600	732	4269	3800	956	4756	7	NW



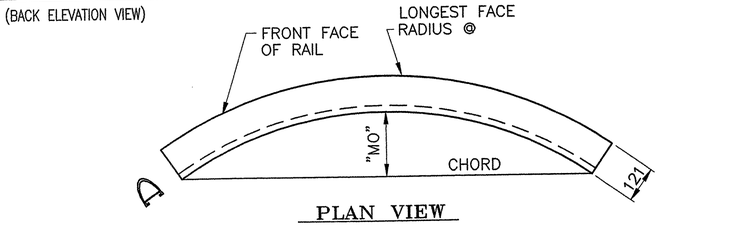
4 ~ END CAPS 79 x 102 - EC1

#19344

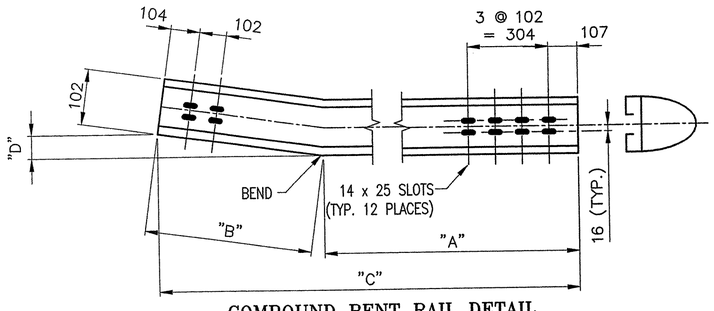


TYP. BARRIER RAIL SECTION

#19466



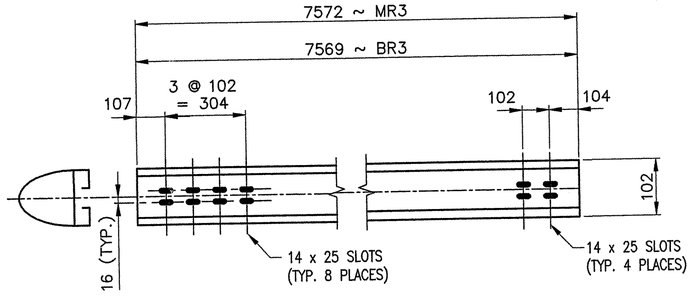
PLAN VIEW



COMPOUND BENT RAIL DETAIL

(BACK ELEVATION VIEW)

RAIL MK.	QTY.	LENGTH ALONG FF RAILING	RADIUS @ FF RAIL	MO	CHORD	"A"	"B"	"C"	"D"	LOCATION
MR2	1	8880	6500	1432	8054	7585	1261	8845	52	NE
BR2	1	8880	6500	1432	8054	7580	1260	8840	9	NE

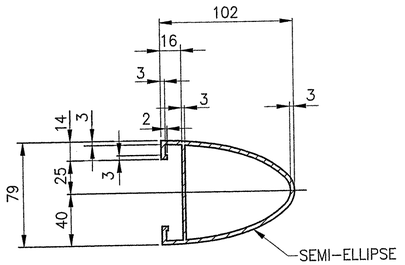


2 REQ'D - BARRIER RAIL 'MR3'

(BACK ELEVATION VIEW)(SE, SW)

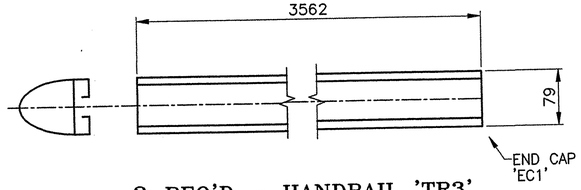
2 REQ'D - BARRIER RAIL 'BR3'

(BACK ELEVATION VIEW)(SE, SW)



TYP. HAND RAIL SECTION

#19464



2 REQ'D - HANDRAIL 'TR3'

(BACK ELEVATION VIEW)(SE & SW)

ANODIZED

(SEE LB1 FOR SPECIFICATIONS)

RECEIVED

CK'D BY _____ CK'D BY _____

FEB 23 2006

RESUBMIT _____ APPROVED ✓

BY WJ SF DATE 2/23/06

REV.	DESCRIPTION	BY	DATE

PROJ. No. BRS 0113 (22) ITEM No: 621.74

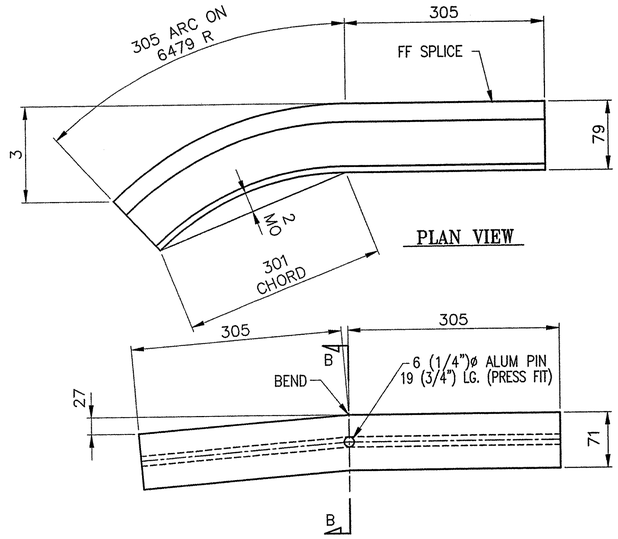
APPROVED: _____ REC'D APPROVAL _____ DRAWING _____

L.B. FOSTER COMPANY
1016 GREENTREE ROAD
PITTSBURGH, PENNSYLVANIA 15220

FOR: A. D. ROSSI CORPORATION
VERMONT AGENCY OF TRANSPORTATION
TOWN OF HARTLAND, COUNTY OF WINDSOR
BRIDGE #60 - US RTE 5 OVER LULLS BROOK
3L ALUMINUM APPROACH RAIL - RAIL DETAILS

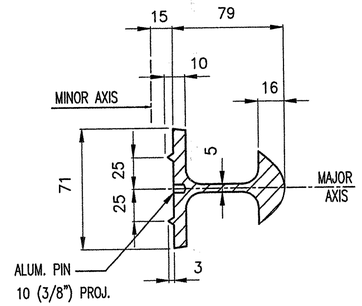
MADE CMS DATE 06/02/05 JOB No. AR0200 CUST. No.
CHECK Dd DATE 11/8/05 DRAWING LB12 REV. No.

160BR

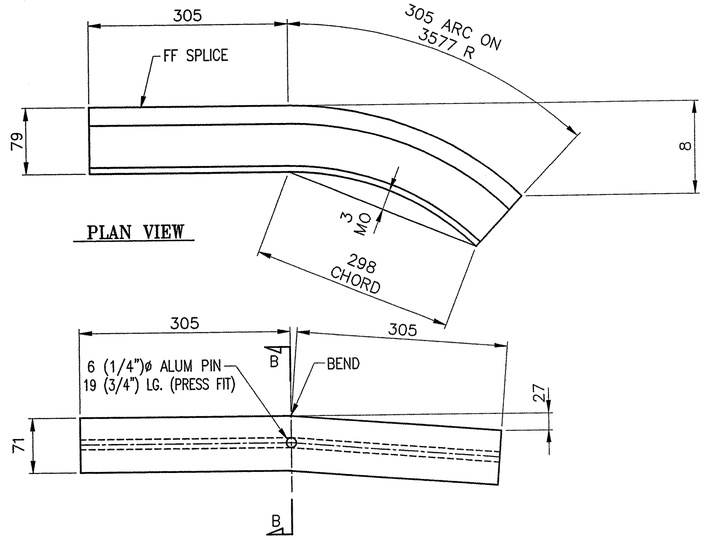


ONE REQ'D ~ HANDRAIL SPLICES 'SS-12-A2' (NE)

w/ ALUM. PIN x 19 (BACK ELEVATION VIEW)
#19497 EXTR., #14940 PIN

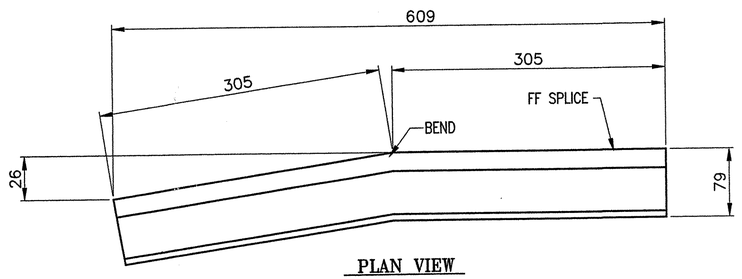


SECTION B-B



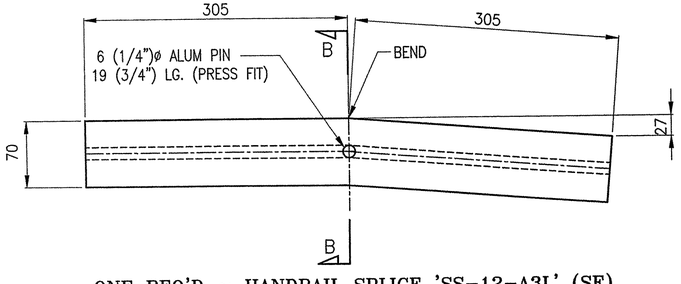
ONE REQ'D ~ HANDRAIL SPLICES 'SS-12-A1' (NW)

w/ ALUM. PIN x 19 (BACK ELEVATION VIEW)
#19497 EXTR., #14940 PIN



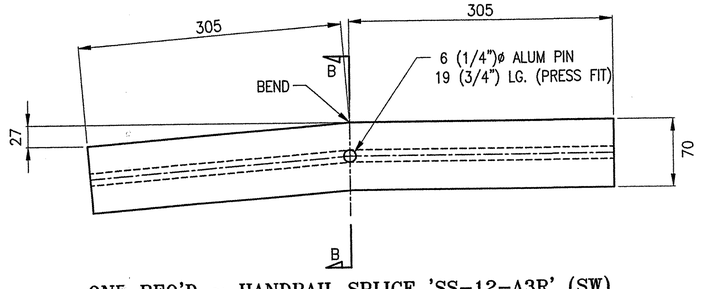
PLAN VIEW

ANODIZED
(SEE LB1 FOR SPECIFICATIONS)



ONE REQ'D ~ HANDRAIL SPLICE 'SS-12-A3L' (SE)

w/ ALUM. PIN x 19 (BACK ELEVATION VIEW)
#19497 EXTR., #14940 PIN



ONE REQ'D ~ HANDRAIL SPLICE 'SS-12-A3R' (SW)

w/ ALUM. PIN x 19 (BACK ELEVATION VIEW)
#19497 EXTR., #14940 PIN

RECEIVED
CK'D BY_____ CK'D BY_____
FEB 2 3 2006
RESUBMIT_____ APPROVED_____
BY_____ DATE 2/23/06

REV.	DESCRIPTION	BY	DATE

PROJ. No. BRS 0113 (22) ITEM No: 621.74

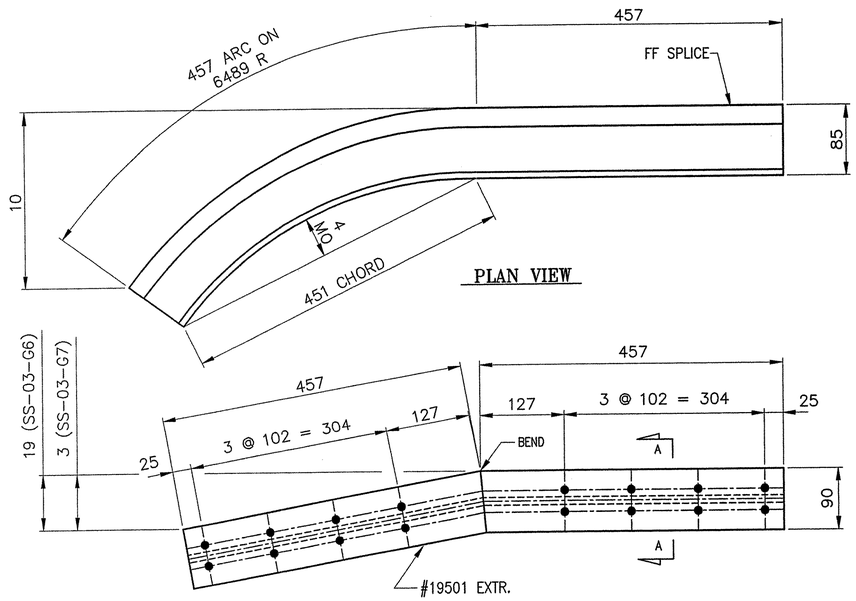
APPROVED: _____ REC'D APPROVAL _____ DRAWING _____

L.B. FOSTER COMPANY
1016 GREENTREE ROAD
PITTSBURGH, PENNSYLVANIA 15220

FOR: A. D. ROSSI CORPORATION
VERMONT AGENCY OF TRANSPORTATION
TOWN OF HARTLAND, COUNTY OF WINDSOR
BRIDGE #60 - US RTE 5 OVER LULLS BROOK
3L ALUMINUM APPROACH ~ SPLICE DETAILS

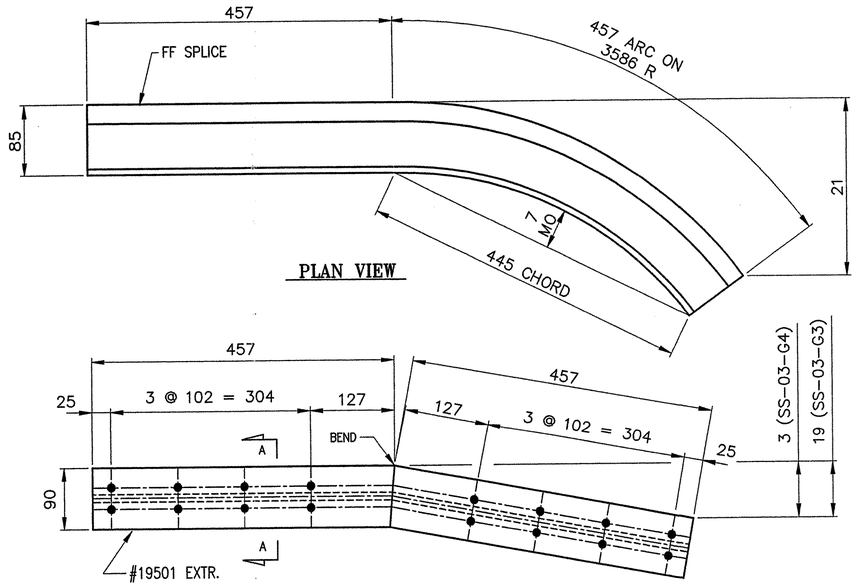
MADE CMS DATE 06/02/05 JOB No. AR0200 CUST. No.
CHECK Dd DATE 11/8/05 DRAWING LB13 REV. No.

161BR



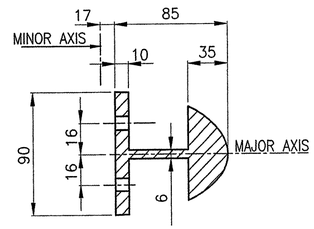
ONE ~ REQ'D BENT SPLICE SLEEVES SS-03-G6 (NE)
(BARRIER RAIL - BACK ELEV VIEW)

ONE ~ REQ'D BENT SPLICE SLEEVES SS-03-G7 (NE)
(BARRIER RAIL - BACK ELEV VIEW)

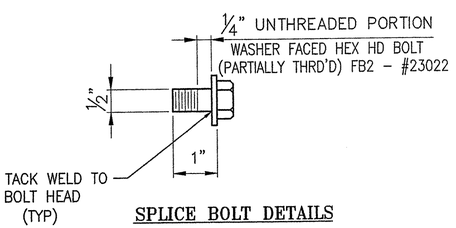


ONE ~ REQ'D BENT SPLICE SLEEVES SS-03-G3 (NW)
(BARRIER RAIL - BACK ELEV VIEW)

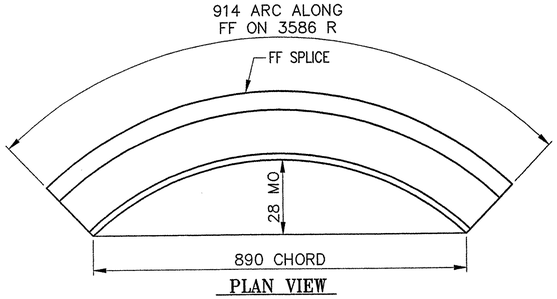
ONE ~ REQ'D BENT SPLICE SLEEVES SS-03-G4 (NW)
(BARRIER RAIL - BACK ELEV VIEW)



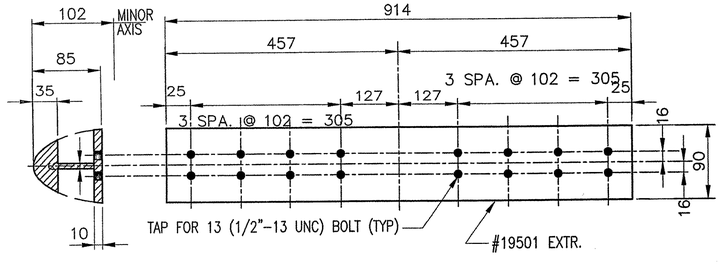
SECTION A-A



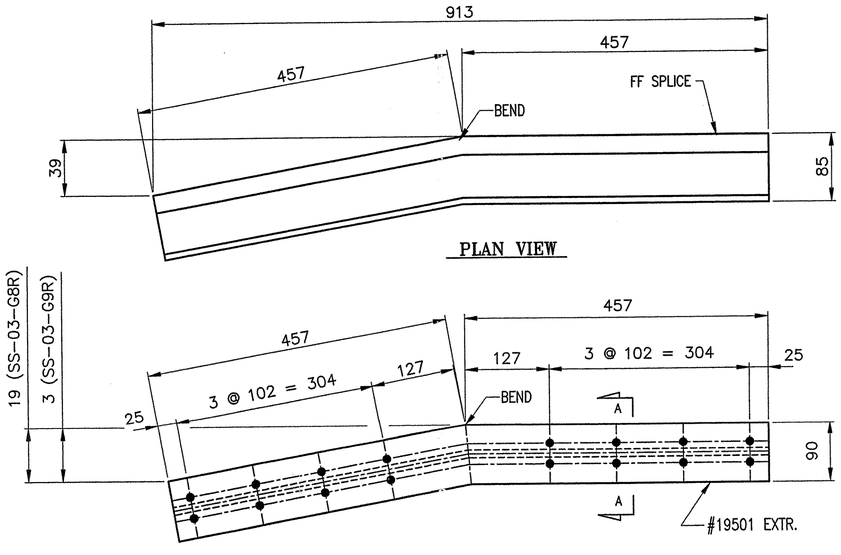
SPLICE BOLT DETAILS



PLAN VIEW

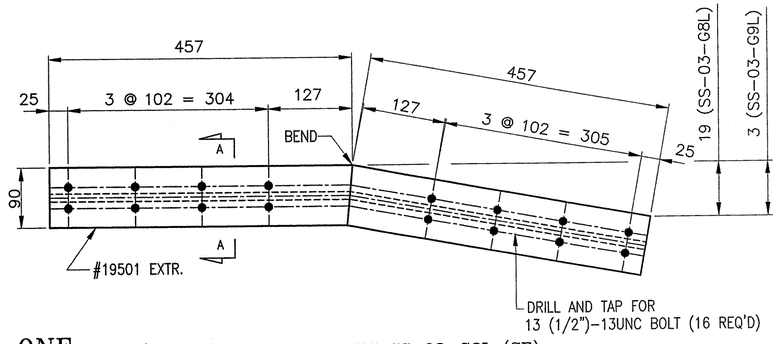


2 ~ REQ'D BENT SPLICE SLEEVES SS-03-G5 (NW)
(BARRIER RAIL - BACK ELEV VIEW)



ONE ~ REQ'D BENT SPLICE SLEEVES SS-03-G8R (SW)
(BARRIER RAIL - BACK ELEV VIEW)

ONE ~ REQ'D BENT SPLICE SLEEVES SS-03-G9R (SW)
(BARRIER RAIL - BACK ELEV VIEW)



ONE ~ REQ'D BENT SPLICE SLEEVES SS-03-G8L (SE)
(BARRIER RAIL - BACK ELEV VIEW)

ONE ~ REQ'D BENT SPLICE SLEEVES SS-03-G9L (SE)
(BARRIER RAIL - BACK ELEV VIEW)

ANODIZED
(SEE LB1 FOR SPECIFICATIONS)

RECEIVED
CK'D BY _____ CK'D BY _____
FEB 23 2006
RESUBMIT _____ APPROVED _____
BY _____ DATE 2/24/06

PROJ. No. BRS 0113 (22) ITEM No: 621.74

APPROVED: _____ REC'D APPROVAL _____ DRAWING _____

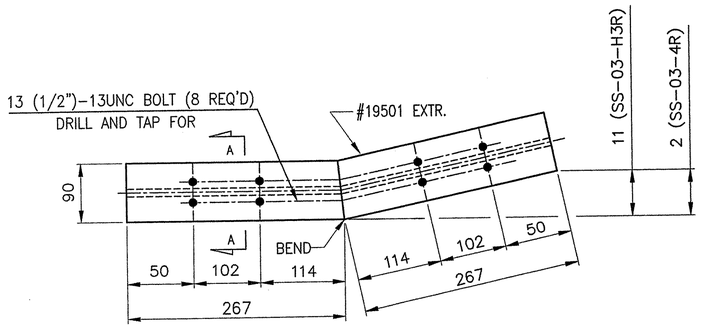
L.B. FOSTER COMPANY
1016 GREENTREE ROAD
PITTSBURGH, PENNSYLVANIA 15220

FOR: A. D. ROSSI CORPORATION
VERMONT AGENCY OF TRANSPORTATION
TOWN OF HARTLAND, COUNTY OF WINDSOR
BRIDGE #60 - US RTE 5 OVER LULLS BROOK
3L ALUMINUM APPROACH ~ SPLICE DETAILS

MADE CMS DATE 06/06/05 JOB No. AR0200 CUST. No.
CHECK Dd DATE 11/8/05 DRAWING LB14 REV. No.

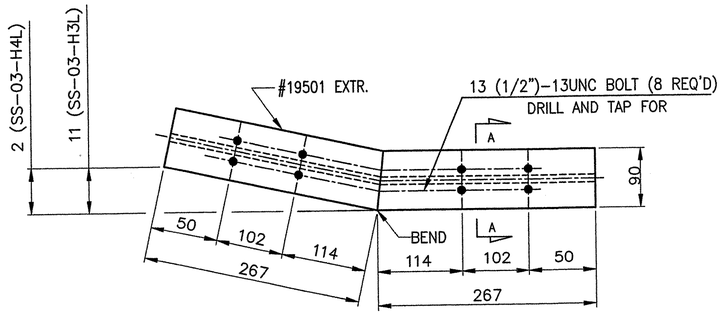
REV.	DESCRIPTION	BY	DATE

1/26/06



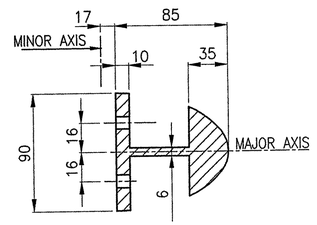
ONE ~ REQ'D ALUM. SPLICE SLEEVE SS-03-H3R (SW)
(REAR ELEVATION VIEW)

ONE ~ REQ'D ALUM. SPLICE SLEEVE SS-03-H4R (SW)
(REAR ELEVATION VIEW)



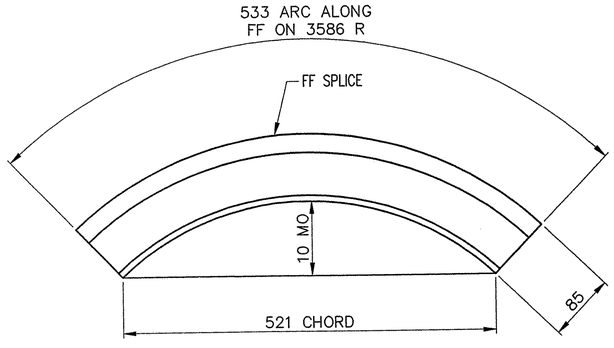
ONE ~ REQ'D ALUM. SPLICE SLEEVE SS-03-H3L (SE)
(REAR ELEVATION VIEW)

ONE ~ REQ'D ALUM. SPLICE SLEEVE SS-03-H4L (SE)
(REAR ELEVATION VIEW)

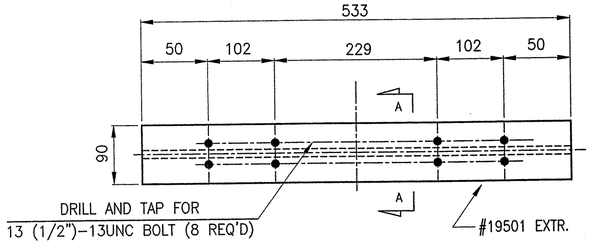


SECTION A-A

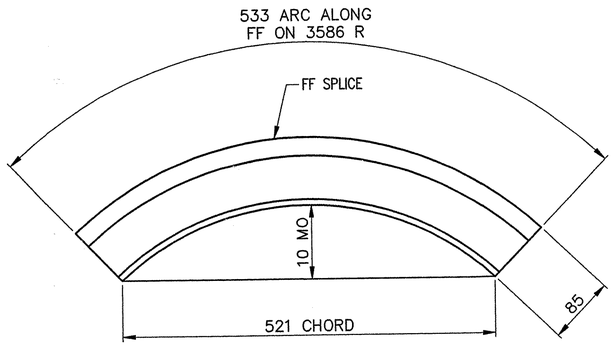
ANODIZED
(SEE LB1 FOR SPECIFICATIONS)



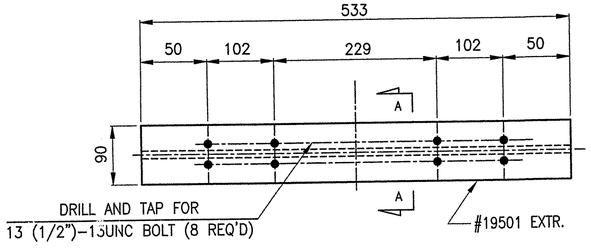
PLAN VIEW



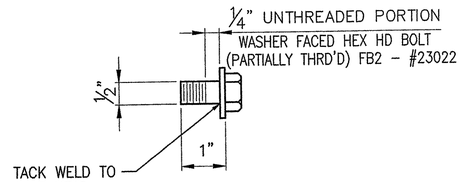
2 ~ REQ'D ALUM. SPLICE SLEEVE SS-03-H1 (NW)
(REAR ELEVATION VIEW)



PLAN VIEW



2 ~ REQ'D ALUM. SPLICE SLEEVE SS-03-H2 (NE)
(REAR ELEVATION VIEW)



SPLICE BOLT DETAILS

RECEIVED
CK'D BY ____ CK'D BY ____
FEB 23 2006
RESUBMIT ____ APPROVED ✓
BY W/ S/V DATE 2/23/06

REV.	DESCRIPTION	BY	DATE

PROJ. No. BRS 0113 (22) ITEM No: 621.74

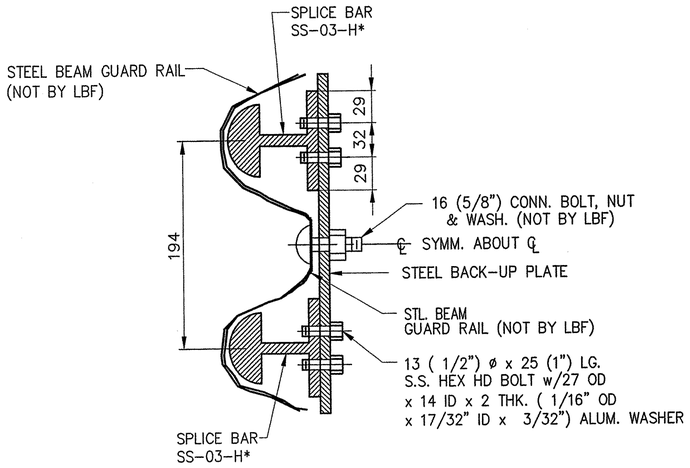
APPROVED: _____ REC'D APPROVAL ____ DRAWING ____

L.B. FOSTER COMPANY
1016 GREENTREE ROAD
PITTSBURGH, PENNSYLVANIA 15220

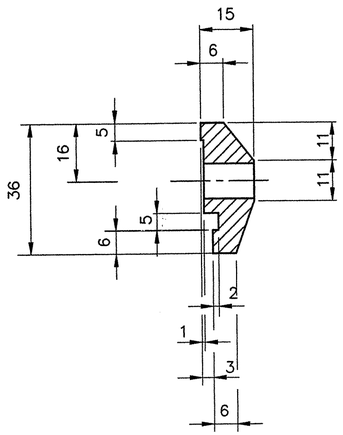
FOR: A. D. ROSSI CORPORATION
VERMONT AGENCY OF TRANSPORTATION
TOWN OF HARTLAND, COUNTY OF WINDSOR
BRIDGE #60 - US RTE 5 OVER LULLS BROOK
3L ALUMINUM APPROACH ~ SPLICE DETAILS

MADE CMS DATE 06/02/05 JOB No. AR0200 CUST. No.
CHECK Dd DATE 11/8/05 DRAWING LB15 REV. No.

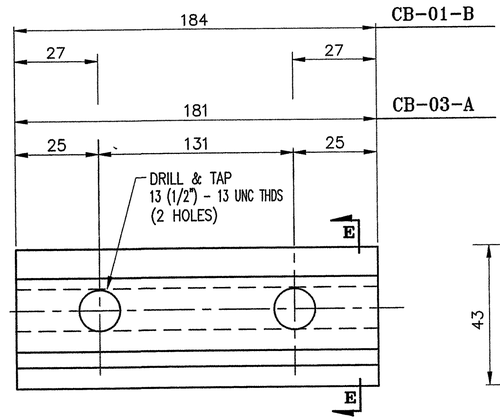
1636R



SECTION A-A
(SEE LB5, LB6 or LB7)

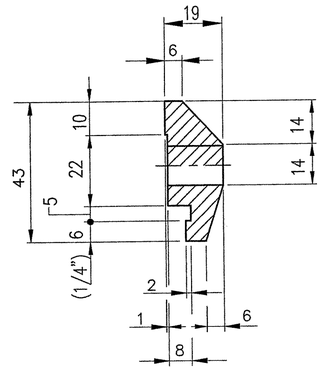


SECT. E-E
CB-01-B (HANDRAIL)
#28596

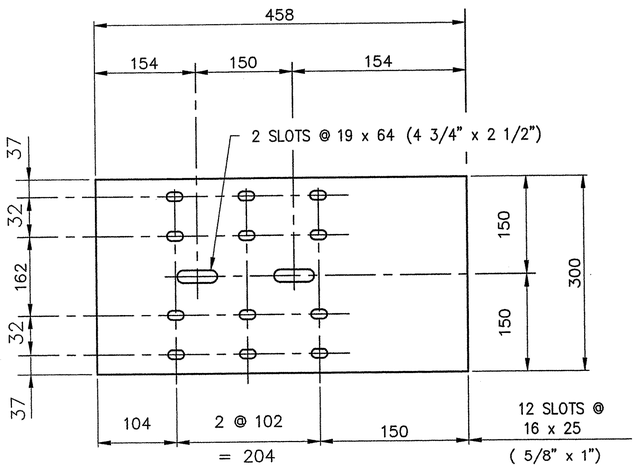


128 ~ REQ'D CLAMP BARS CB-03-A
(BARRIER #19447)

32 ~ REQ'D CLAMP BARS CB-01-B
(HANDRAIL #28596)



SECT. E-E
CB-03-A (BARRIER)
#19447



4 REQ'D. ~ BACK-UP PLATE BUP1
(6 THK. PLATE ~ A36 - GALV.)
#14560

ANODIZED
(SEE LB1 FOR SPECIFICATIONS)

RECEIVED
CK'D BY _____ CK'D BY _____
FEB 23 2006
RESUBMIT _____ APPROVED ✓
BY WJ DATE 2/22/06

REV.	DESCRIPTION	BY	DATE

PROJ. No. BRS 0113 (22) ITEM No: 621.74

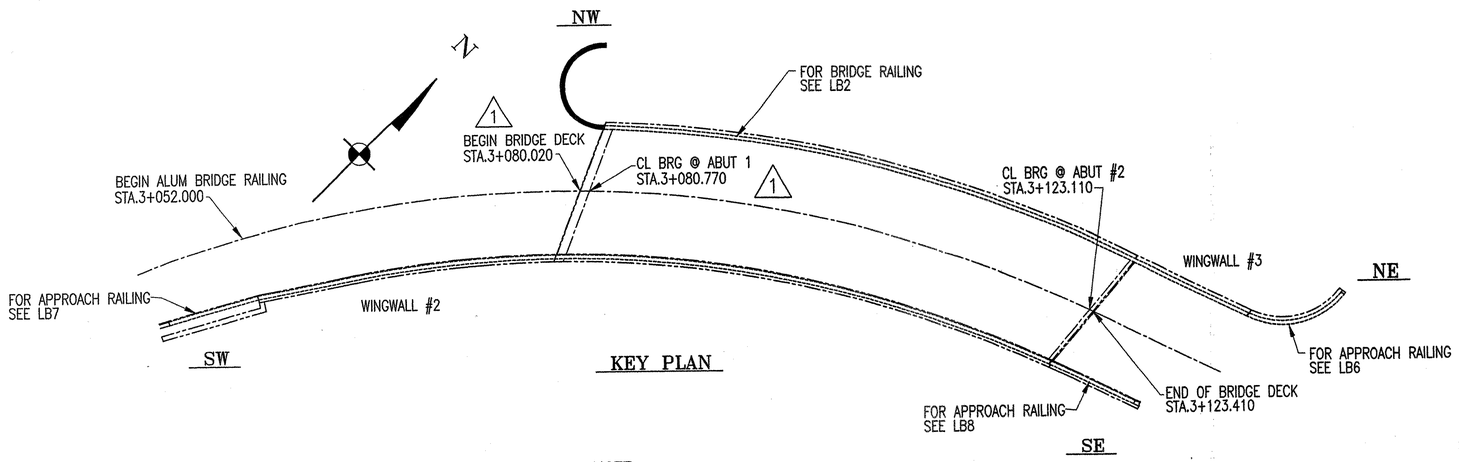
APPROVED: _____ REC'D APPROVAL _____ DRAWING _____

L.B. FOSTER COMPANY
1016 GREENTREE ROAD
PITTSBURGH, PENNSYLVANIA 15220

FOR: A. D. ROSSI CORPORATION
VERMONT AGENCY OF TRANSPORTATION
TOWN OF HARTLAND, COUNTY OF WINDSOR
BRIDGE #60 - US RTE 5 OVER LULLS BROOK
3L ALUMINUM APPROACH RAIL ~ MISC DETAILS

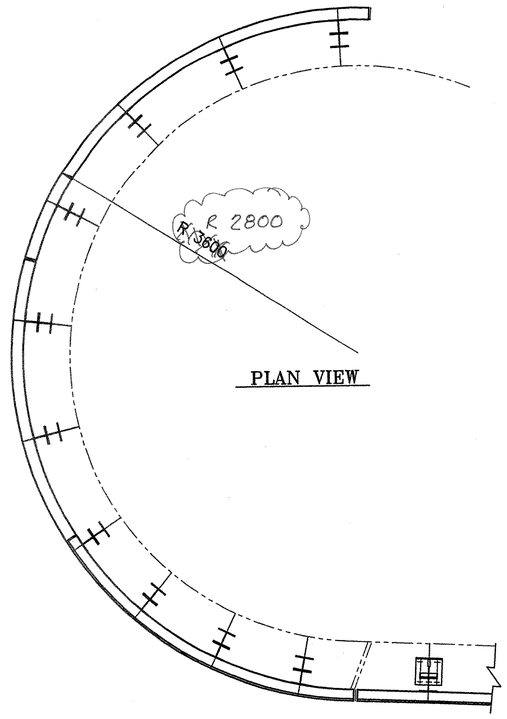
MADE CMS DATE 06/06/05 JOB No. AR0200 CUST. No.
CHECK Dd DATE 11/8/05 DRAWING LB16 (LAST) REV. No.

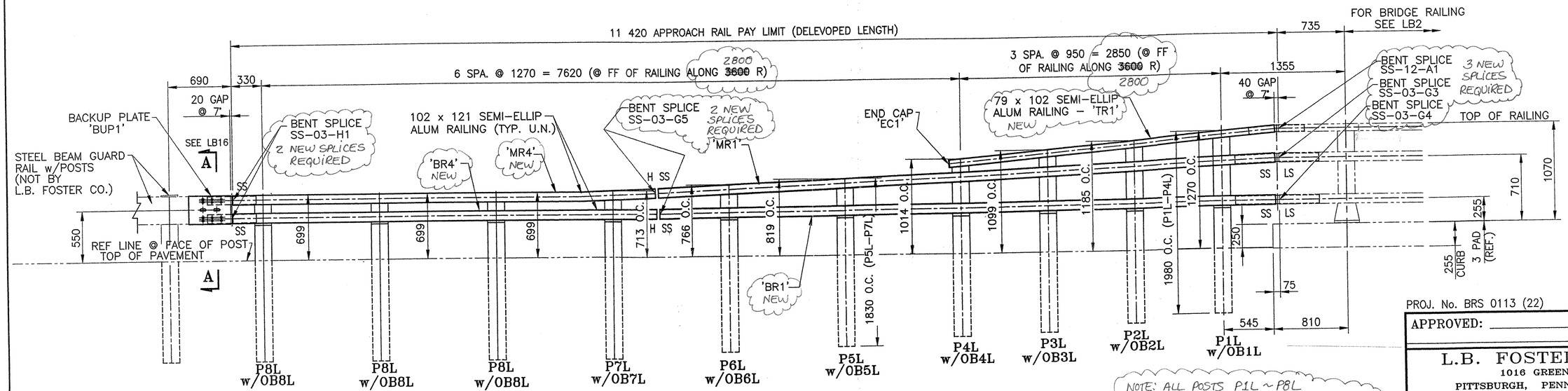
1696R



NOTE:
- RAIL LENGTHS DO NOT INCLUDE END CAPS AND/OR GAPS.
- LENGTH OF APPROACH RAILING ON THIS SHEET IS 11.43 M (37.5 LF) PAY LENGTH.
- METRIC DIMENSIONS ARE IN MILLIMETERS (mm), UNLESS NOTED.

SS = SHORT SLOTTED SIDE
LS = LONG SLOTTED SIDE





INSIDE ELEVATION OF NW APPROACH RAIL

NOTE: ALL POSTS P1L ~ P8L AND ALL OFFSET BLOCKS 0B1L ~ 0B8L WILL BE SALVAGED AND USED ON THE PROPOSED 2800 RADIUS

ANODIZED
(SEE LB1 FOR SPECIFICATIONS)

REV.	DESCRIPTION	BY	DATE
1	REVISED PER VTDOT CHGS IN BRIDGE LENGTHS	CMS	01 31 06

PROJ. No. BRS 0113 (22) ITEM No: 621.74

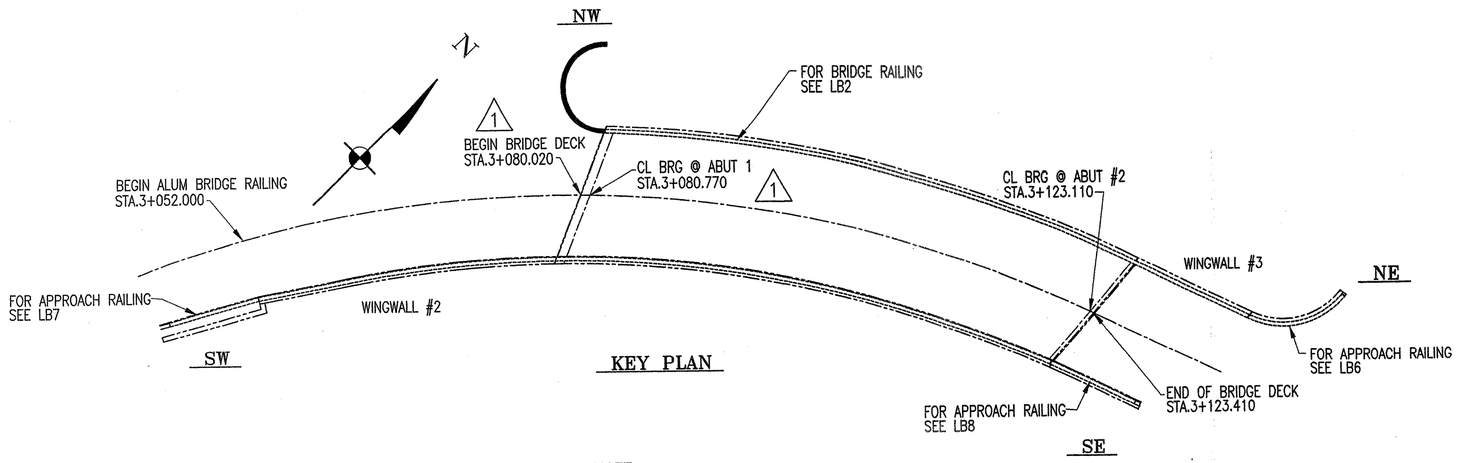
APPROVED: _____ REC'D APPROVAL _____ DRAWING _____

L.B. FOSTER COMPANY
1016 GREENTREE ROAD
PITTSBURGH, PENNSYLVANIA 15220

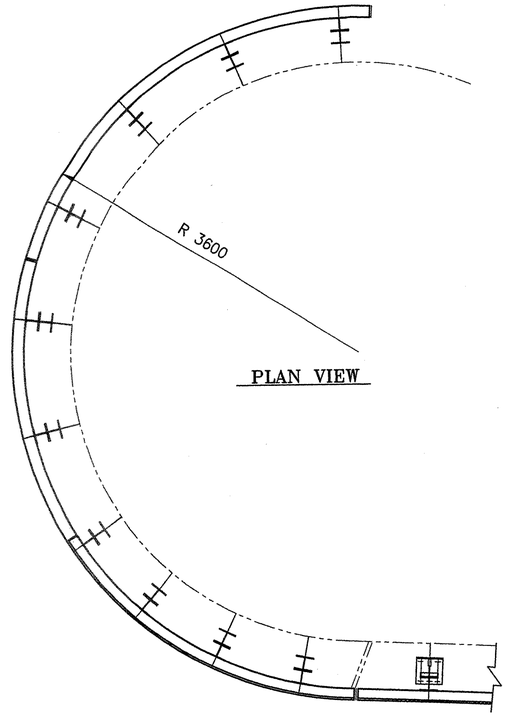
FOR: A. D. ROSSI CORPORATION
VERMONT AGENCY OF TRANSPORTATION
TOWN OF HARTLAND, COUNTY OF WINDSOR
BRIDGE #60 - US RTE 5 OVER LULLS BROOK
3L ALUMINUM APPROACH RAIL ELEVATIONS

MADE CMS DATE 05/25/05 JOB No. AR0200 CUST. No.
CHECK Dd DATE 11/7/05 DRAWING LB5 REV. No. ONE

1656R



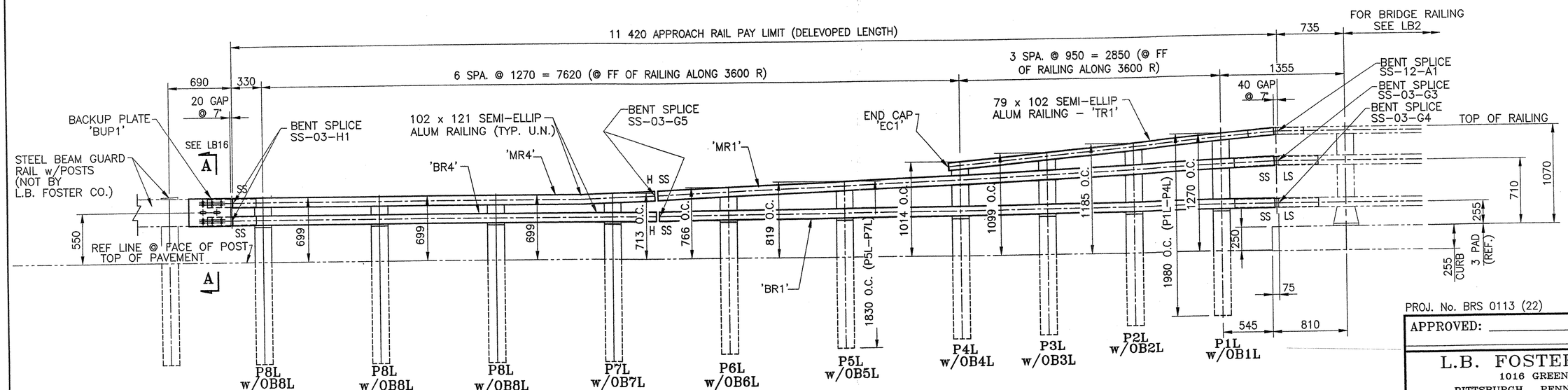
KEY PLAN



PLAN VIEW

NOTE:
- RAIL LENGTHS DO NOT INCLUDE END CAPS AND/OR GAPS.
- LENGTH OF APPROACH RAILING ON THIS SHEET IS 11.43 M (37.5 LF) PAY LENGTH.
- METRIC DIMENSIONS ARE IN MILLIMETERS (mm), UNLESS NOTED.

SS = SHORT SLOTTED SIDE
LS = LONG SLOTTED SIDE



INSIDE ELEVATION OF NW APPROACH RAIL

ANODIZED
(SEE LB1 FOR SPECIFICATIONS)

REV.	DESCRIPTION	BY	DATE
1	REVISED PER VTDOT CHGS IN BRIDGE LENGTHS	CMS	01 31 06

PROJ. No. BRS 0113 (22) ITEM No: 621.74

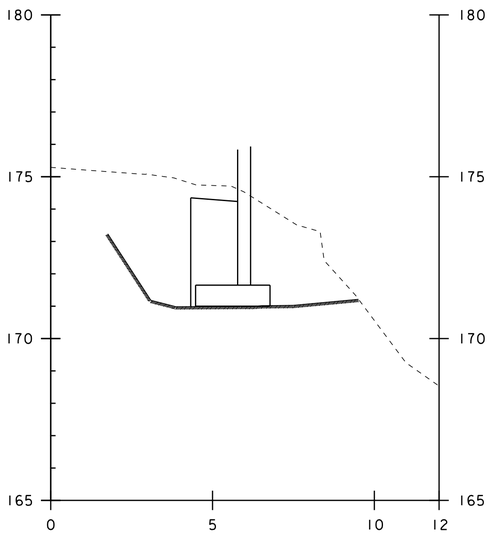
APPROVED: _____ REC'D APPROVAL _____ DRAWING _____

L.B. FOSTER COMPANY
1016 GREENTREE ROAD
PITTSBURGH, PENNSYLVANIA 15220

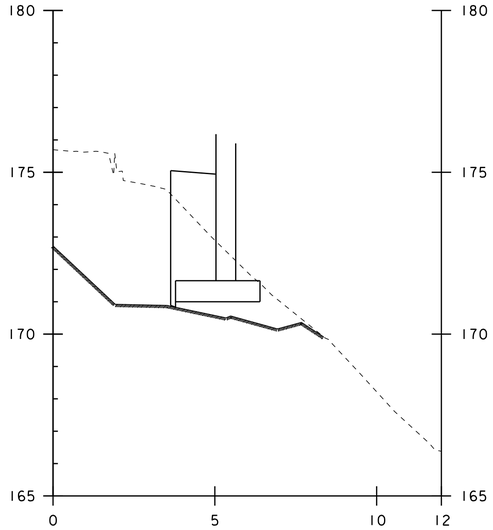
FOR: A. D. ROSSI CORPORATION
VERMONT AGENCY OF TRANSPORTATION
TOWN OF HARTLAND, COUNTY OF WINDSOR
BRIDGE #60 - US RTE 5 OVER LULLS BROOK
3L ALUMINUM APPROACH RAIL ELEVATIONS

MADE CMS DATE 05/25/05 JOB No. AR0200 CUST. No.
CHECK Dd DATE 11/7/05 DRAWING LB5 REV. No. ONE

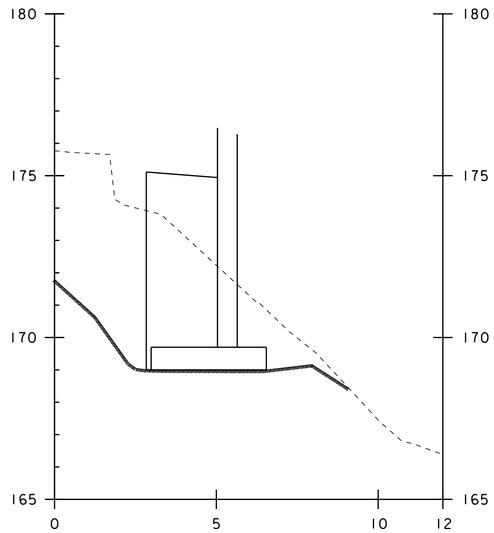
1666R



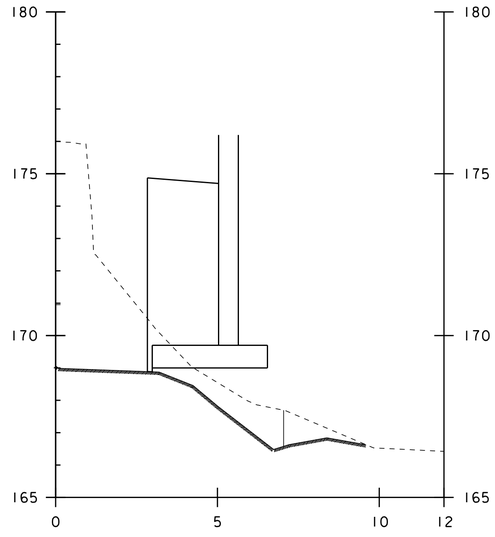
3+051.80



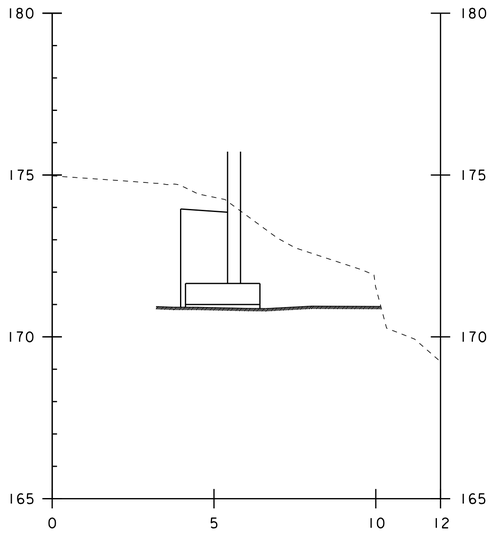
3+067.80



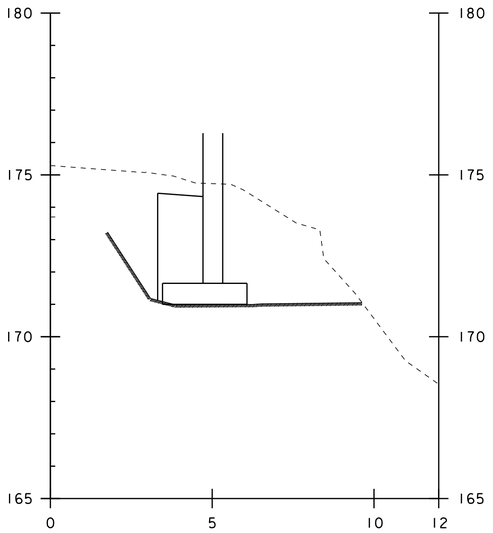
3+070.50



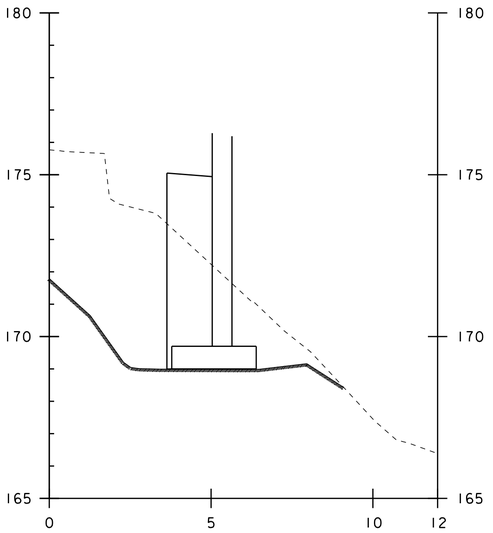
3+078.50



3+042.50

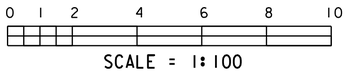


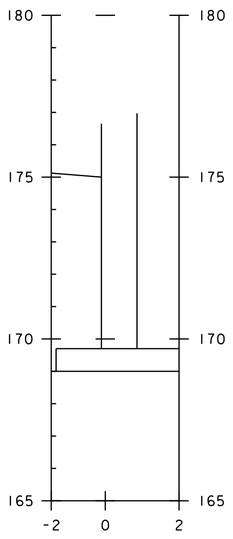
3+051.80



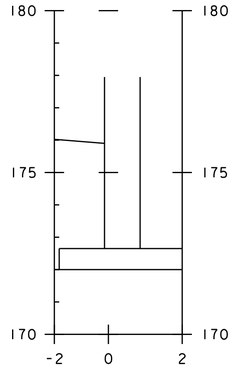
3+070.50

WINGWALL TWO
GRANULAR BACKFILL FOR STRUCTURES

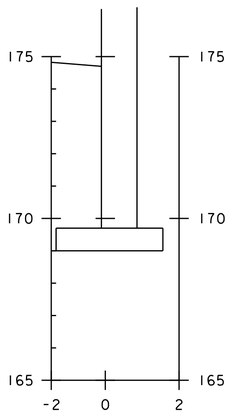




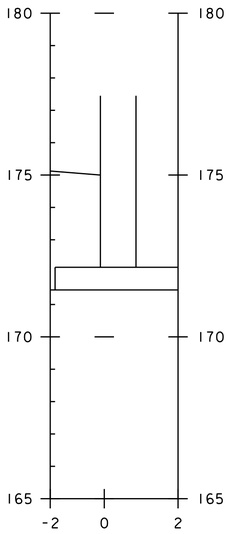
1+002.00



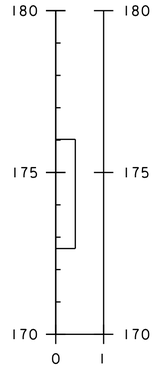
1+012.03



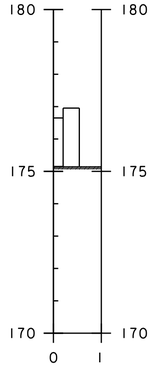
1+000.00



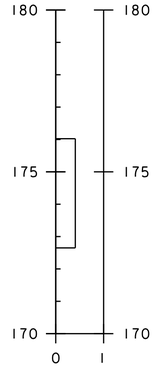
1+002.00



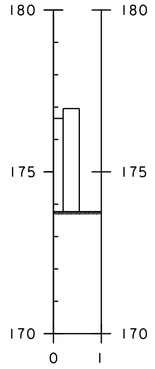
1+012.03



1+014.03

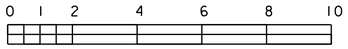


1+009.83

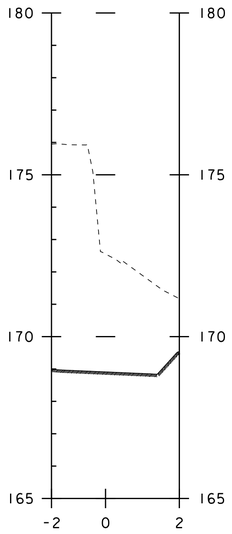


1+012.03

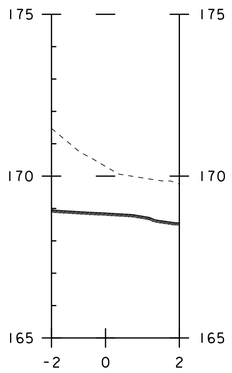
ABUTMENT ONE
GRANULAR BACKFILL FOR STRUCTURES



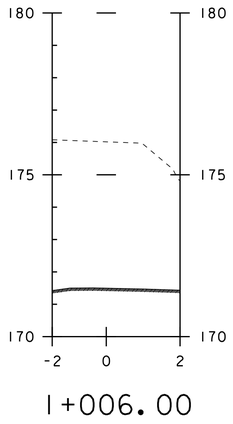
SCALE = 1:100



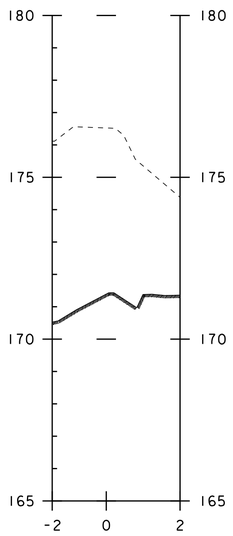
1+000.00



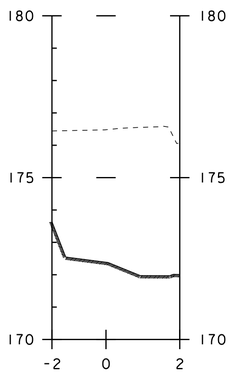
1+002.00



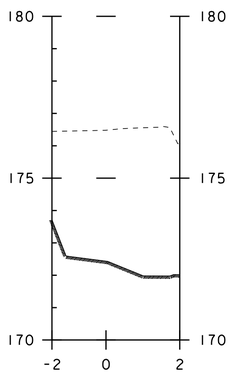
1+006.00



1+004.00

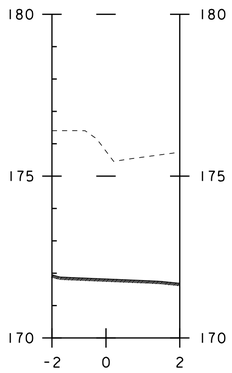


1+008.00

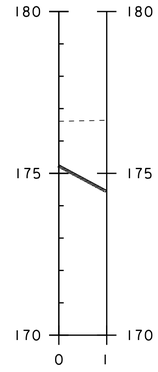


1+012.03

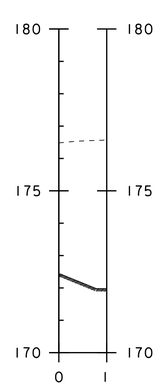
1+012.00



1+010.00

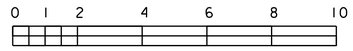


1+014.03



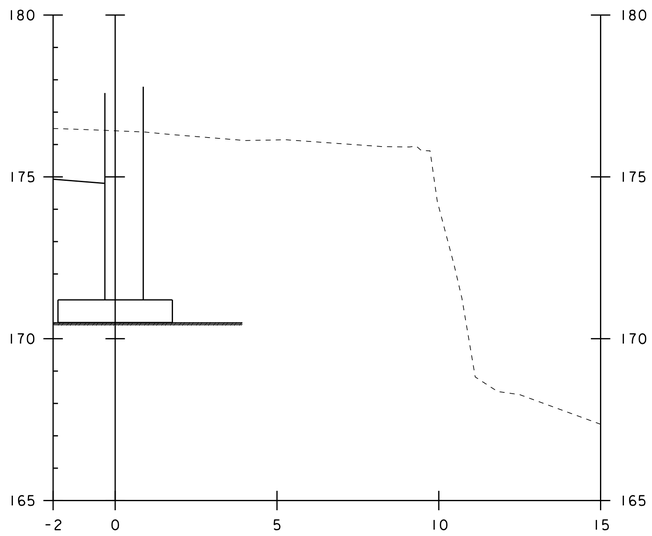
1+012.03

ABUTMENT ONE
STRUCTURE EXCAVATION

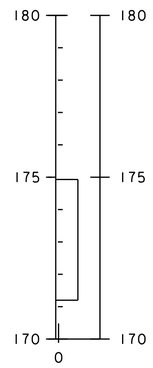


SCALE = 1:100

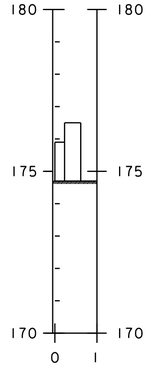
STA. 1+000 TO STA. 1+012



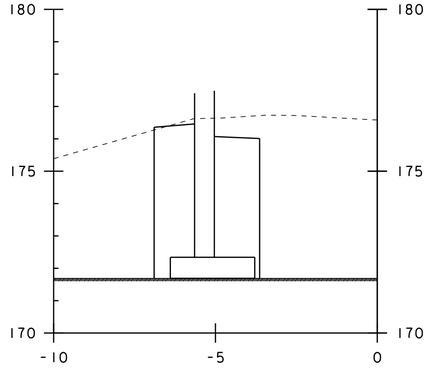
2+011.36



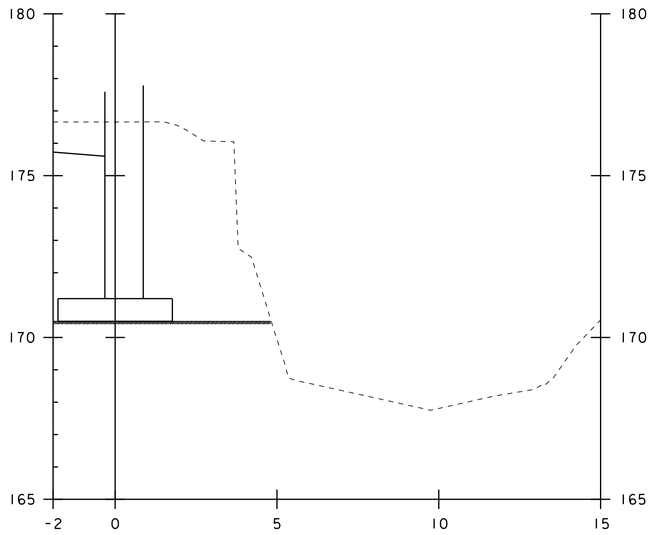
2+011.36



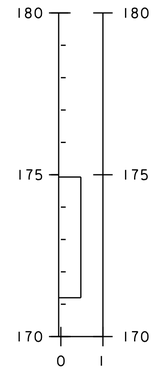
2+014.36



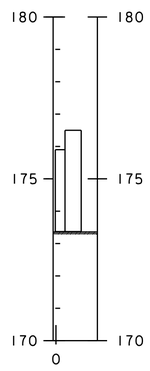
3+135.65



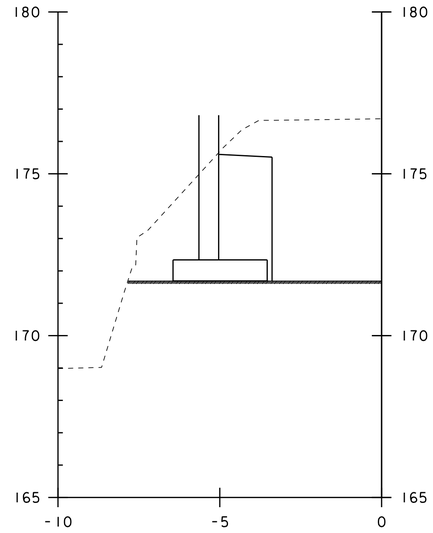
2+000.00



2+009.66

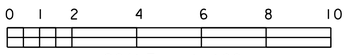


2+011.36

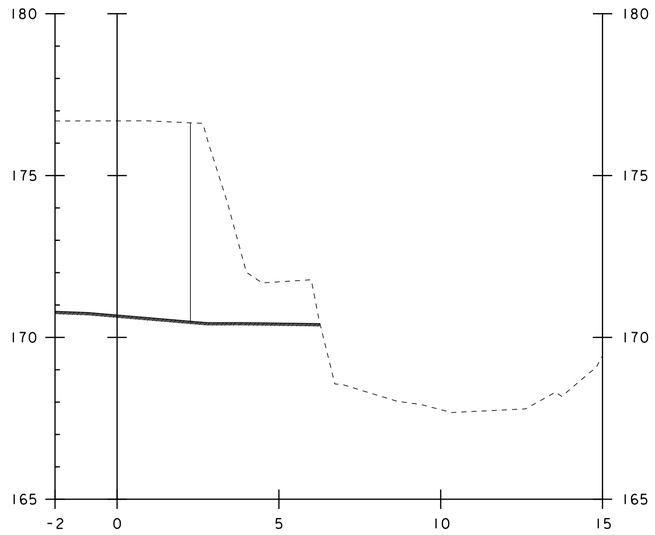


3+124.65

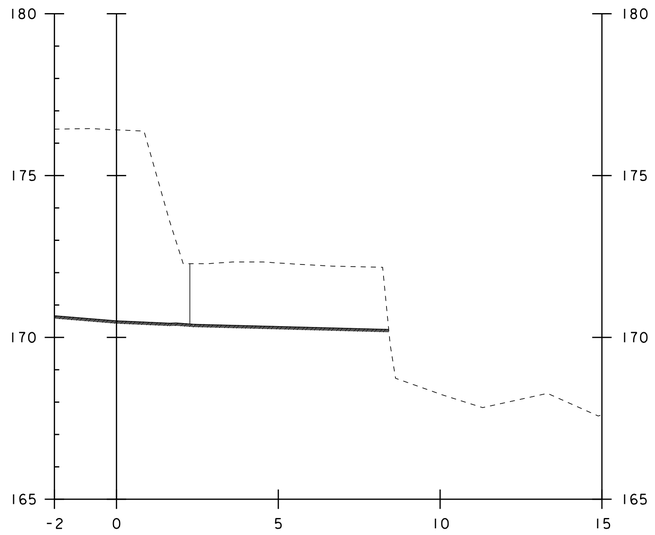
ABUTMENT TWO
GRANULAR BACKFILL FOR STRUCTURES



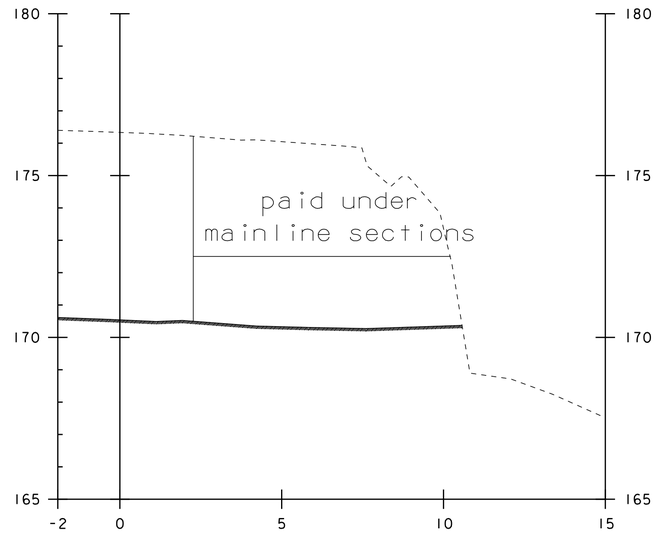
SCALE = 1:100



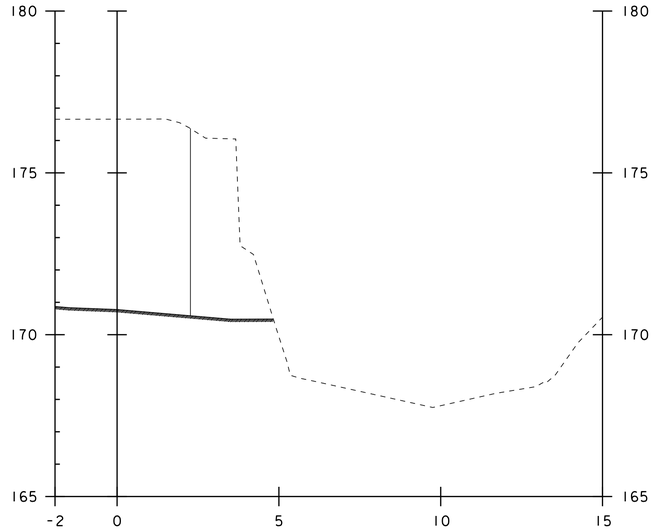
2+002.00



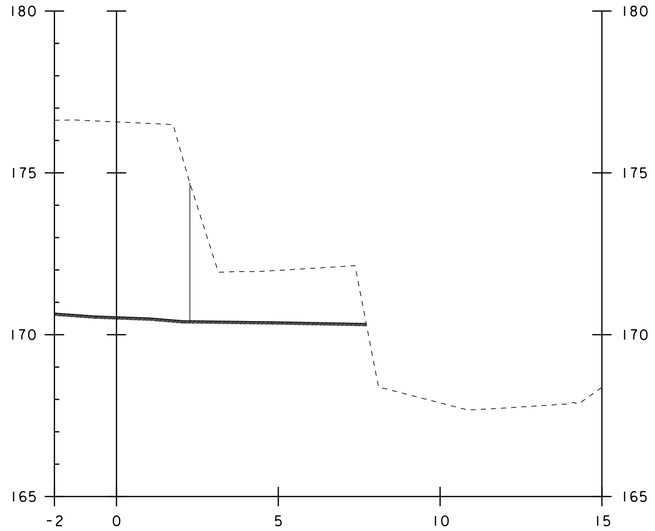
2+006.00



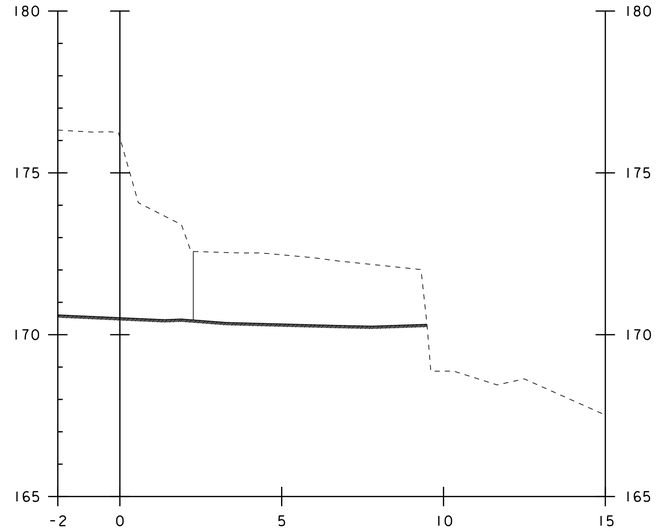
2+010.00



2+000.00

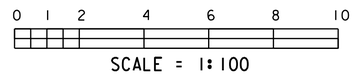


2+004.00

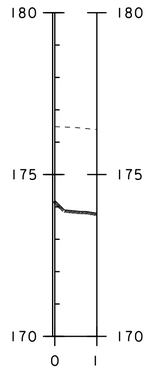


2+008.00

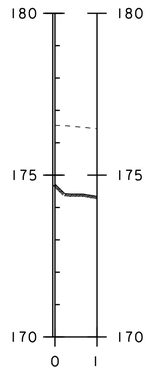
ABUTMENT TWO
STRUCTURE EXCAVATION
UNCLASSIFIED CHANNEL EXCAVATION



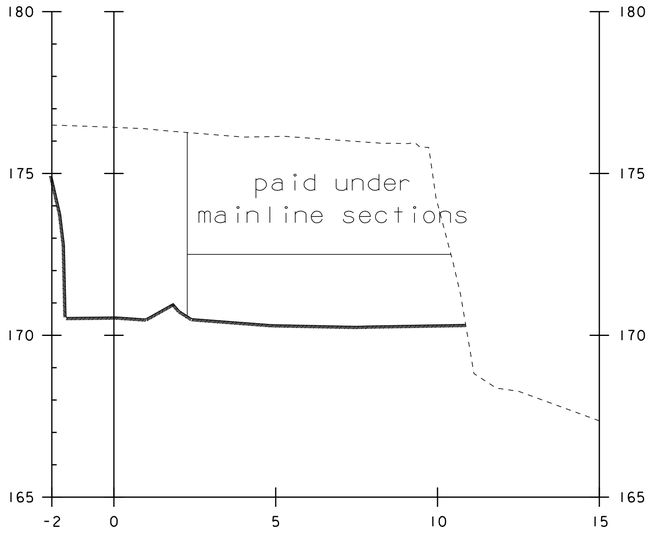
STA. 2+000 TO STA. 2+010



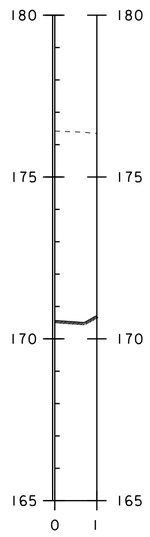
2+012.36



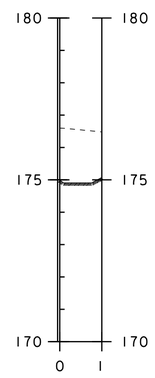
2+013.36



2+011.36



2+011.36



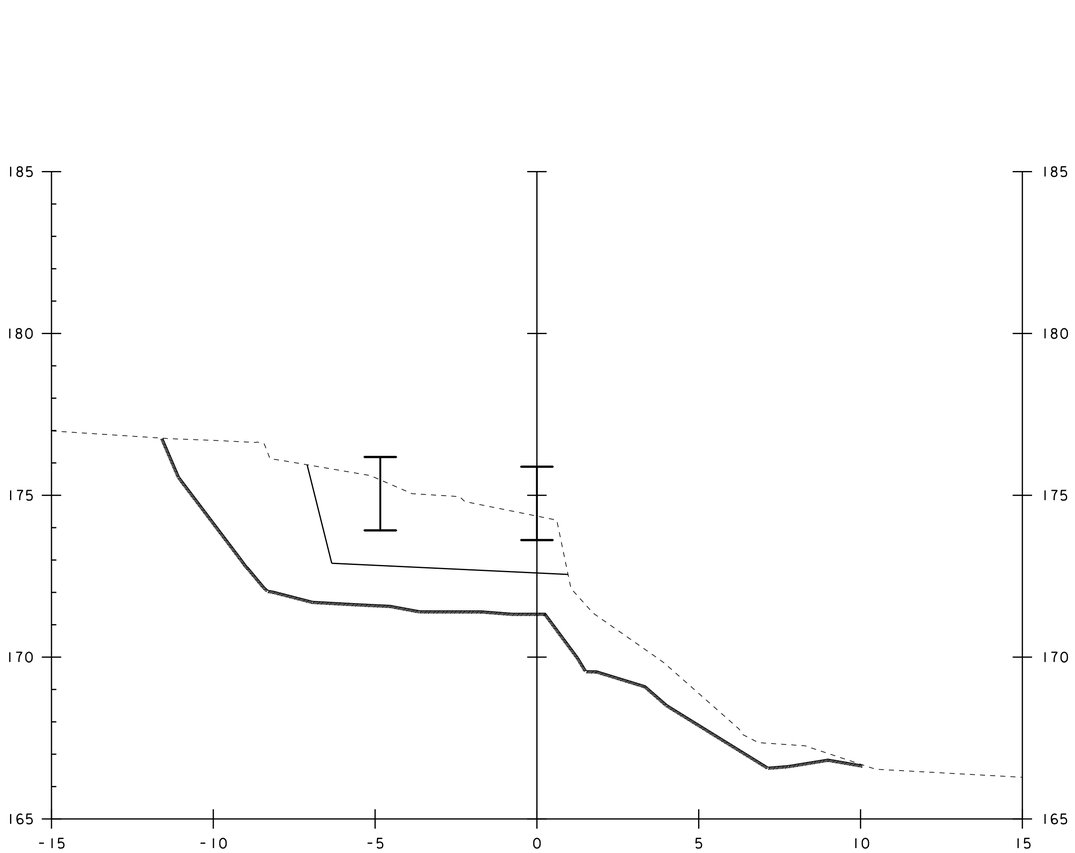
2+014.36

ABUTMENT TWO
STRUCTURE EXCAVATION
UNCLASSIFIED CHANNEL EXCAVATION

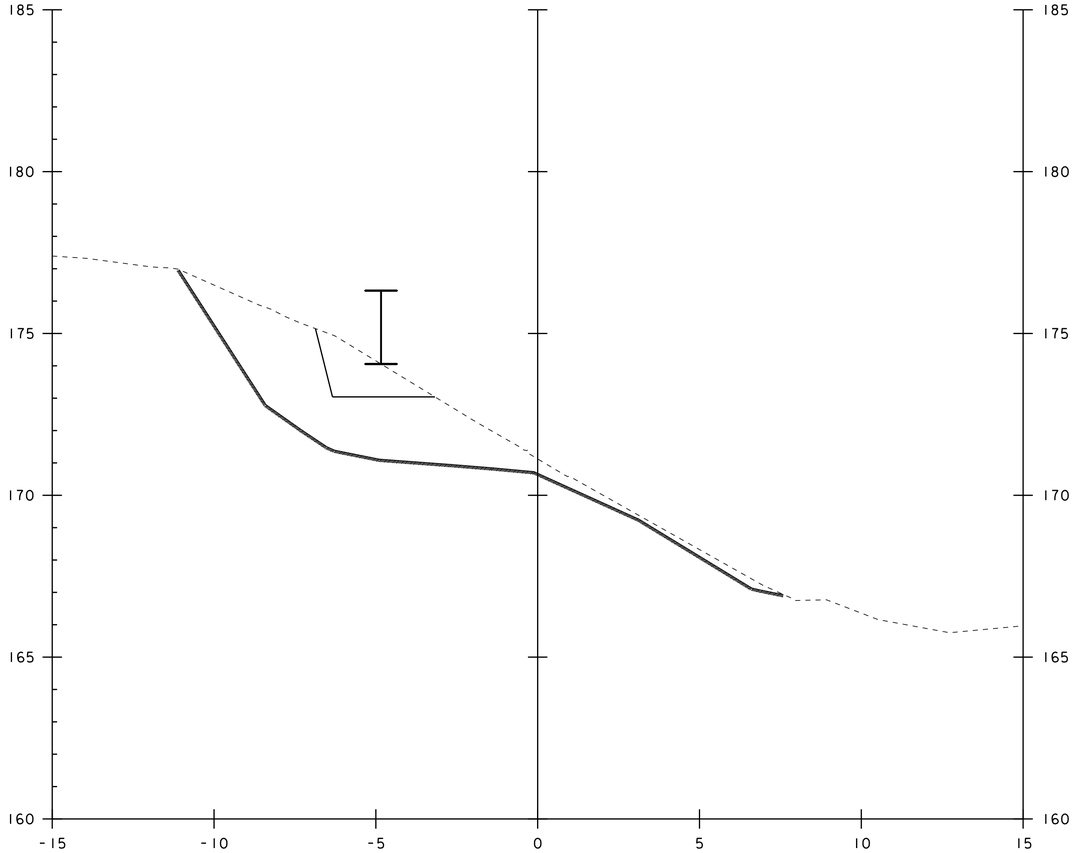
0 1 2 4 6 8 10

SCALE = 1:100

STA. 2+011 TO STA. 2+011



3+082.60



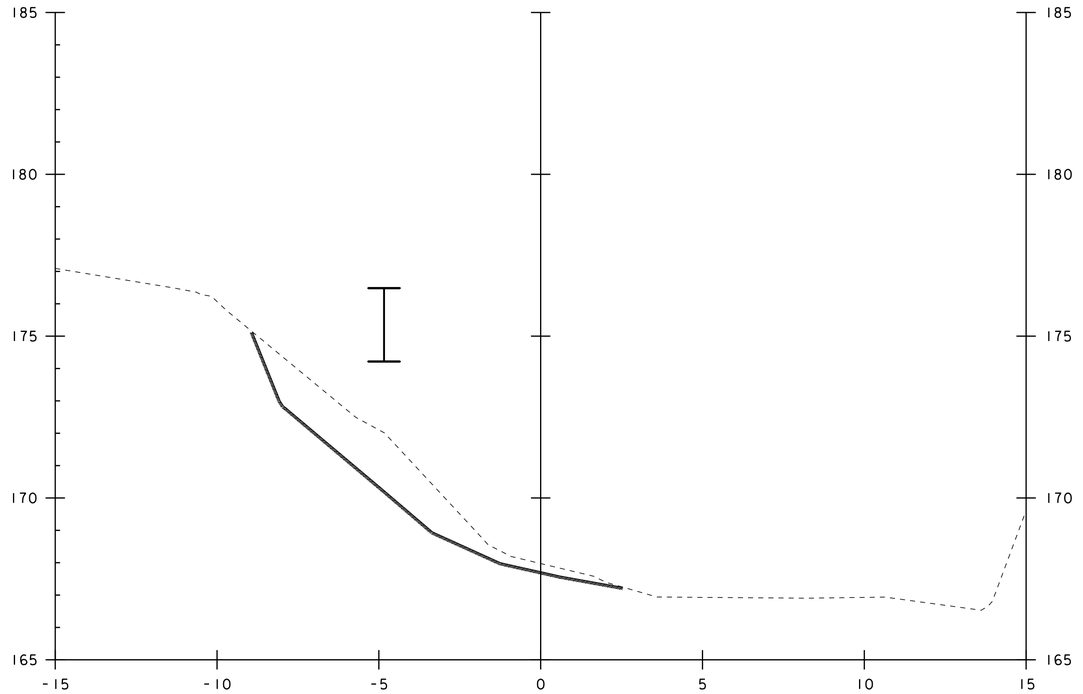
3+087.60

GIRDER 1 CLEARANCE
UNCLASSIFIED CHANNEL EXCAVATION

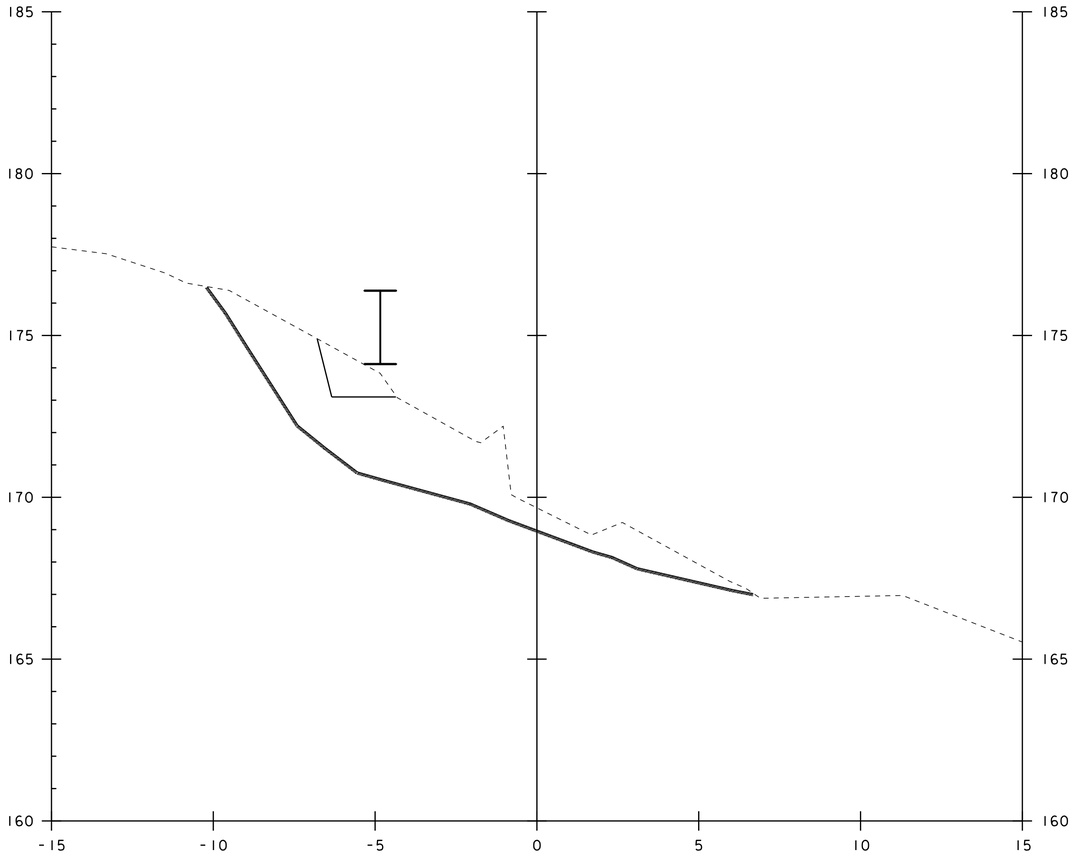
0 1 2 4 6 8 10

SCALE = 1:100

STA. 3+083 TO STA. 3+088



3+102.60



3+092.60

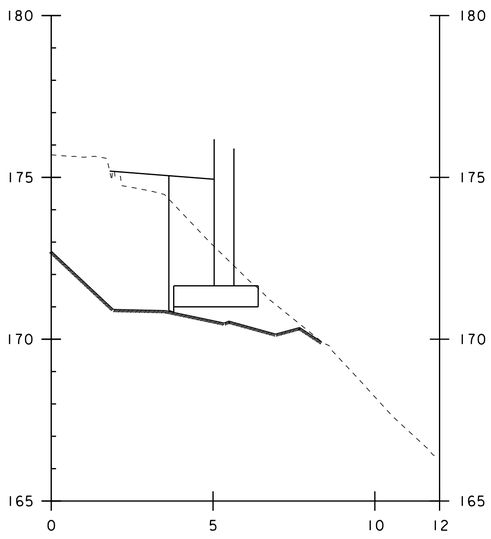
3+097.60

GIRDER I CLEARANCE
UNCLASSIFIED CHANNEL EXCAVATION

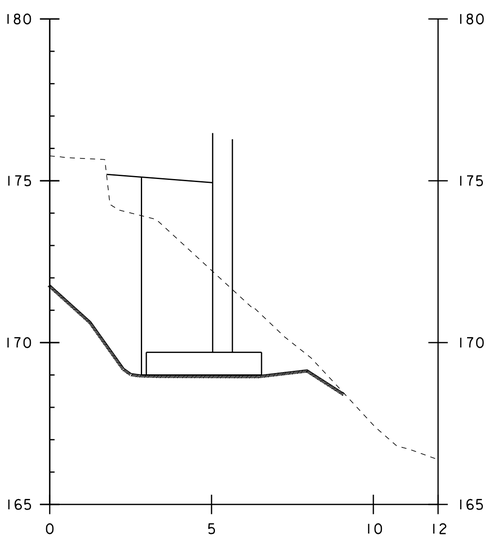
0 1 2 4 6 8 10

SCALE = 1:100

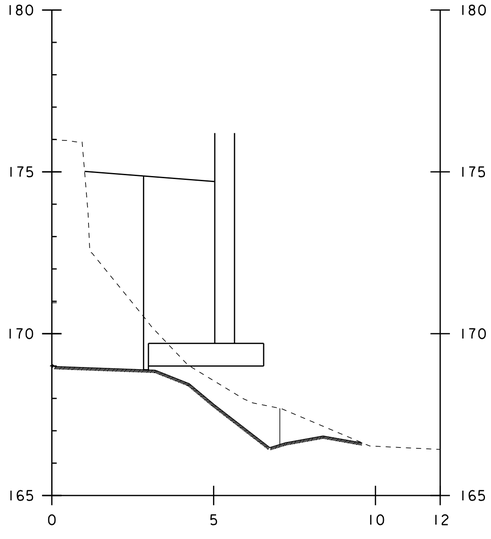
STA. 3+093 TO STA. 3+103



3+067.80

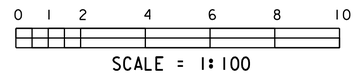


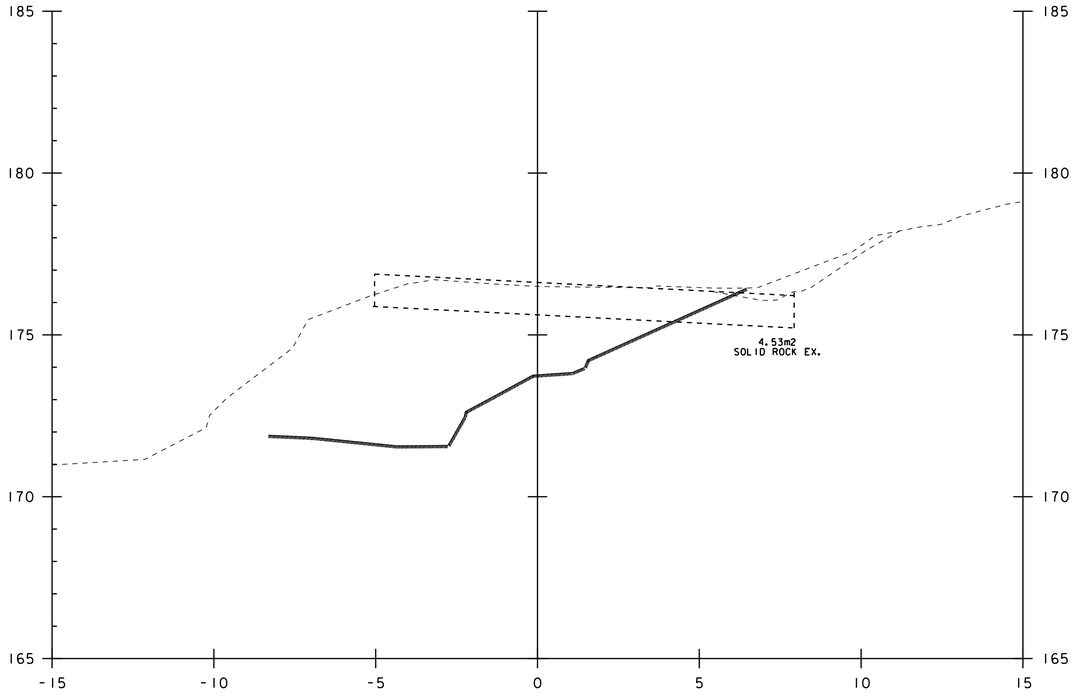
3+070.50



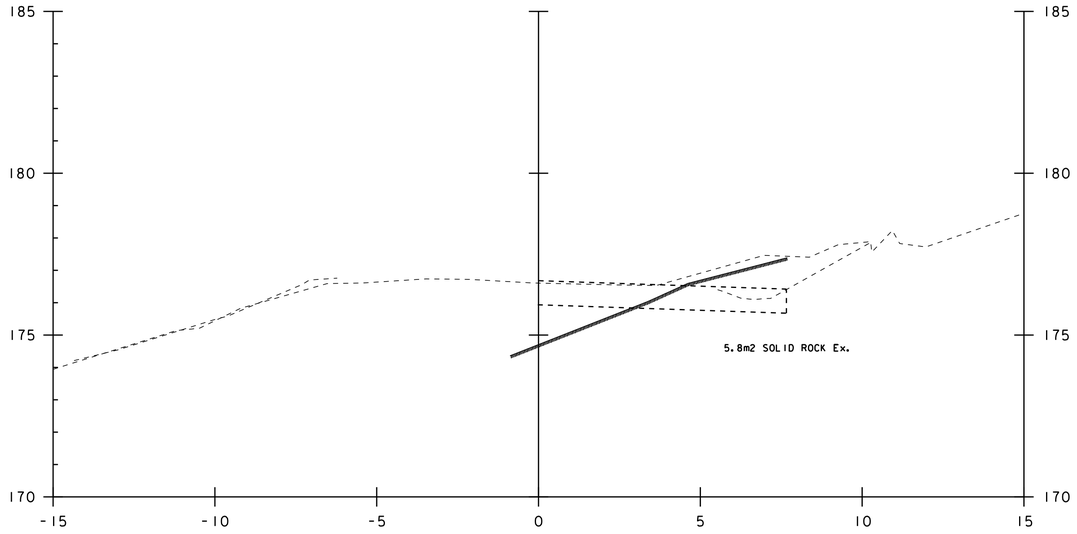
3+078.50

RT5 MAINLINE
GRANULAR BORROW



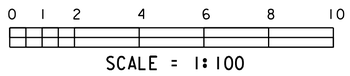


3+124.00

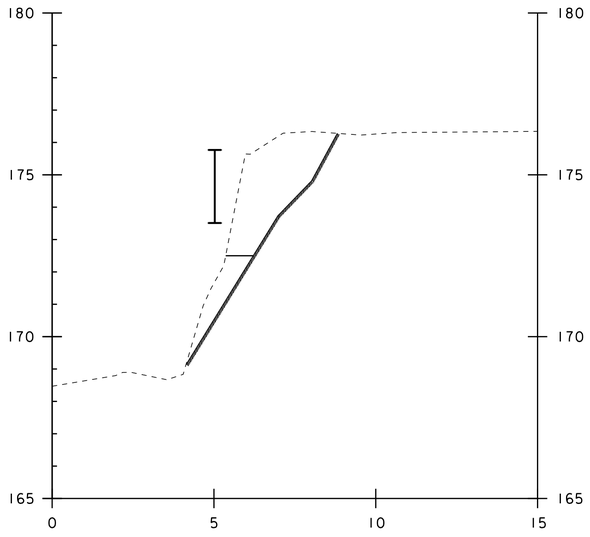


3+139.00

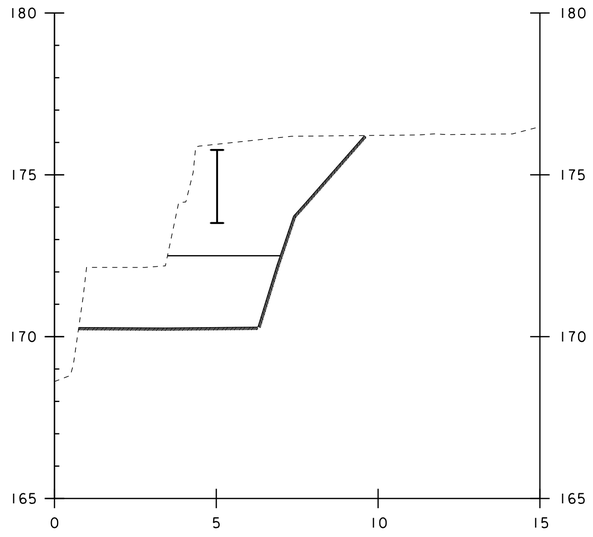
RT5 MAINLINE
SOLID ROCK EXCAVATION



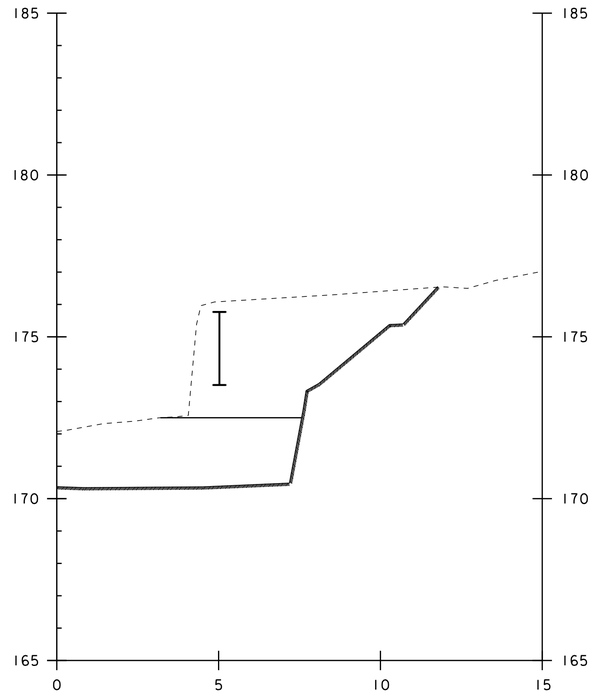
SCALE = 1:100



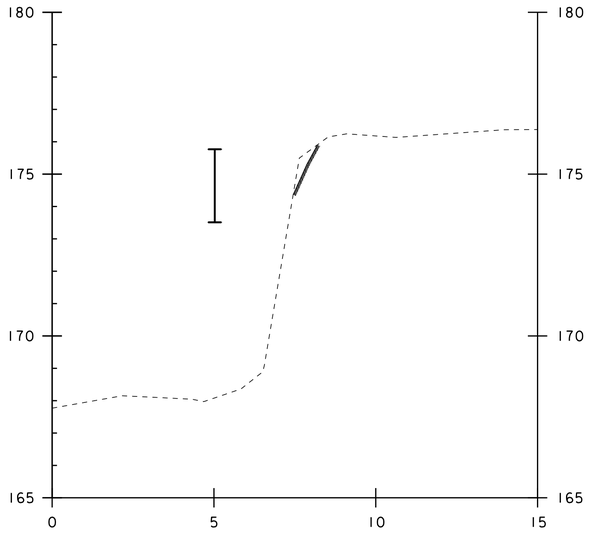
3+110.30



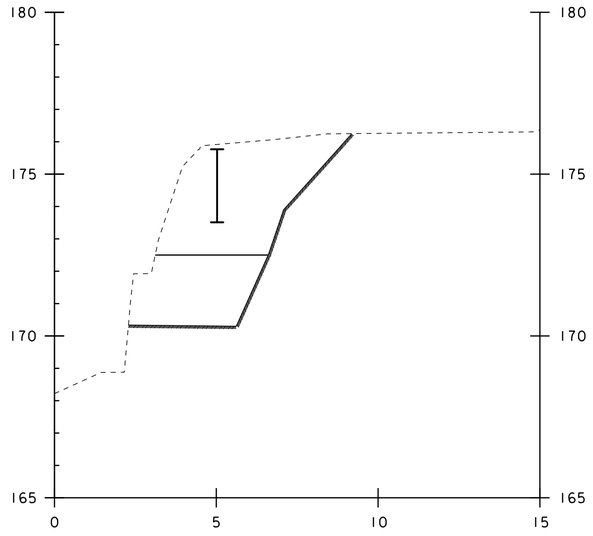
3+114.30



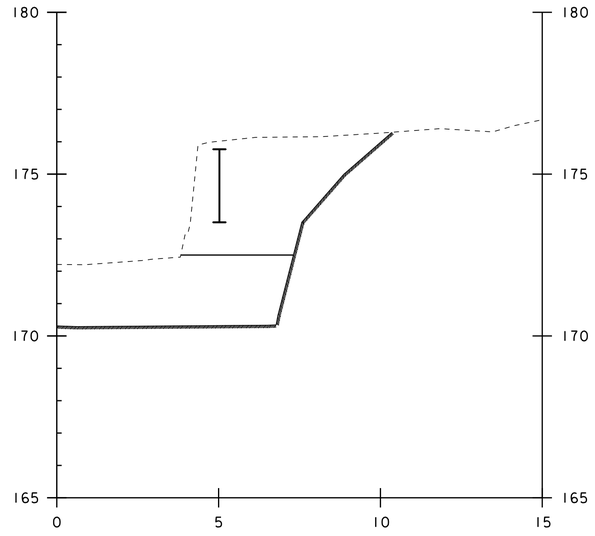
3+118.30



3+108.30

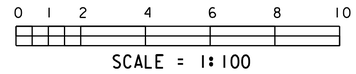


3+112.30

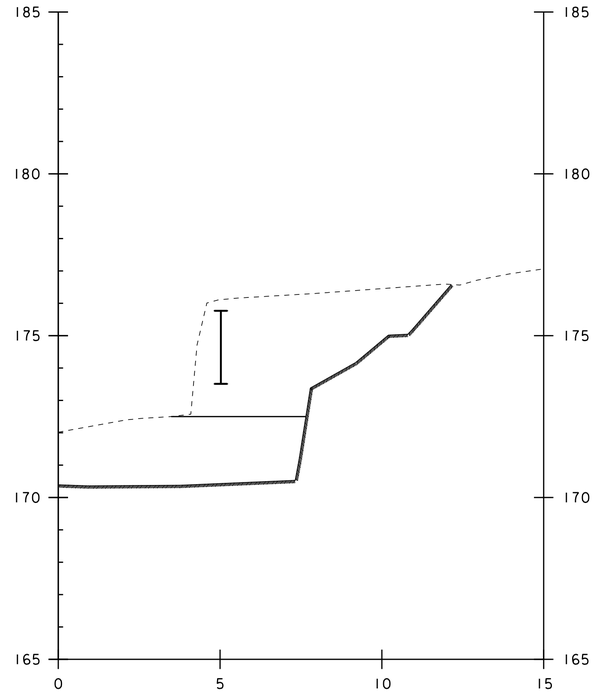


3+116.30

GIRDER 5 CLEARANCE
UNCLASSIFIED CHANNEL EXCAVATION



STA. 3+108 TO STA. 3+118



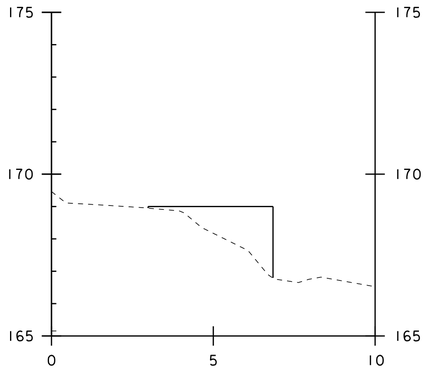
3+119.00

GIRDER 5 CLEARANCE
UNCLASSIFIED CHANNEL EXCAVATION

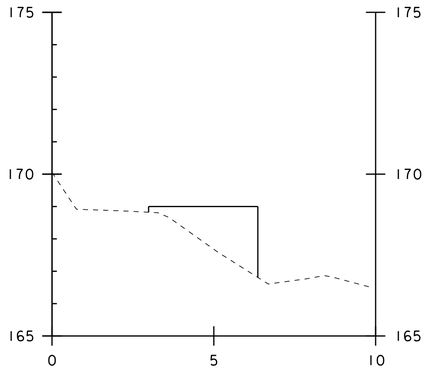
0 1 2 4 6 8 10

SCALE = 1:100

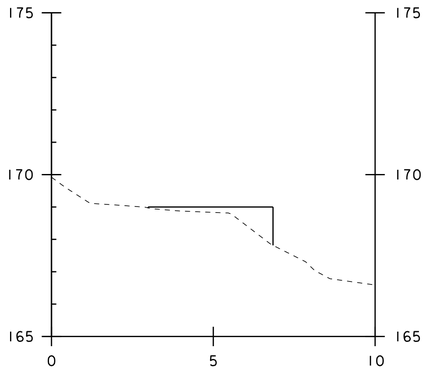
STA. 3+119 TOSTA. 3+119



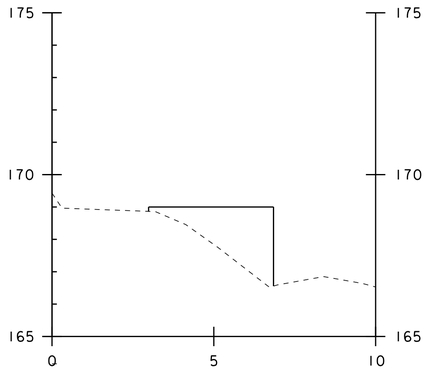
3+077.00



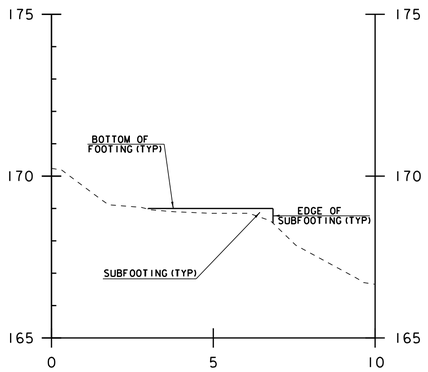
3+080.00



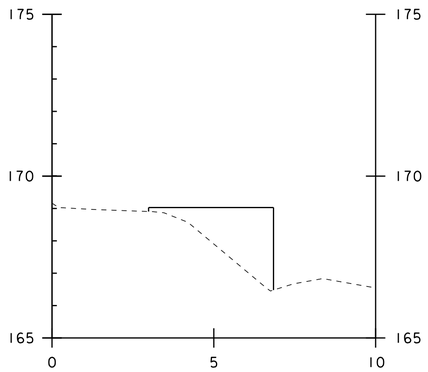
3+076.00



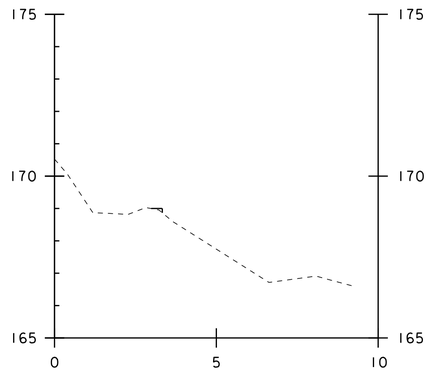
3+079.00



3+075.00

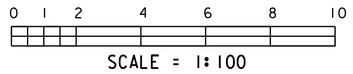


3+078.00



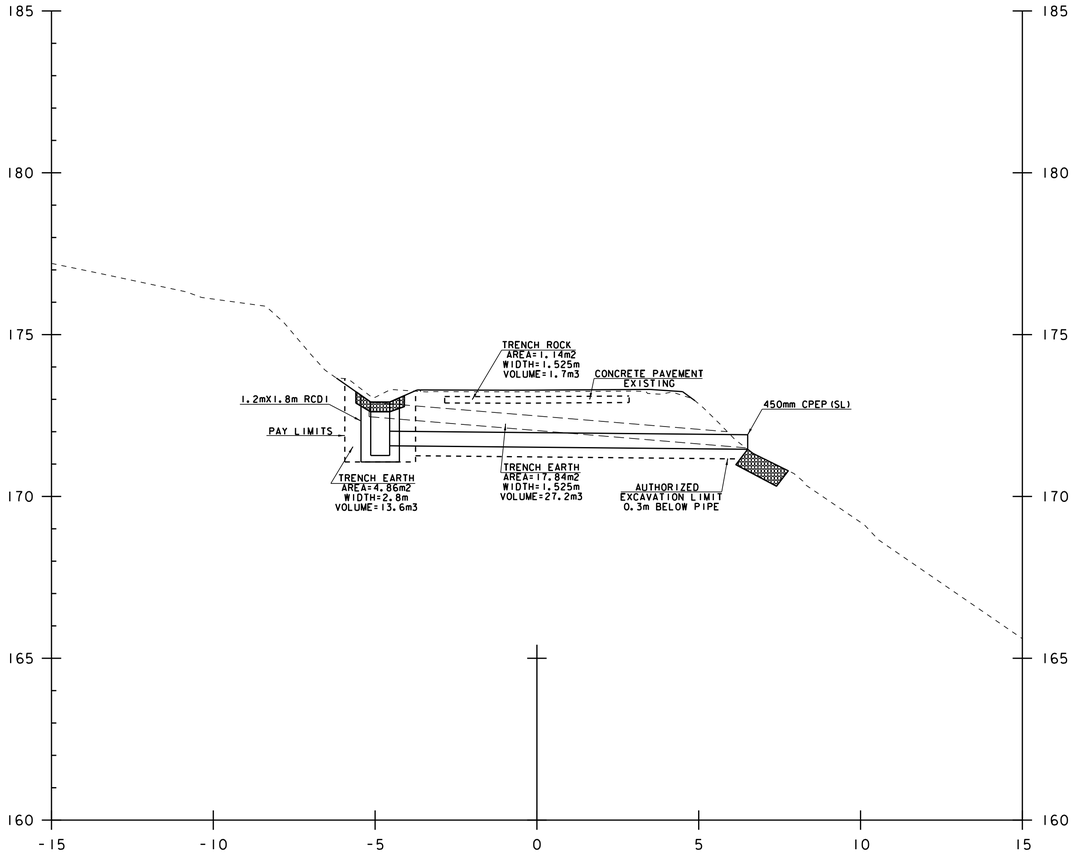
3+081.00

ABUTMENT ONE
SUBFOOTING CONCRETE

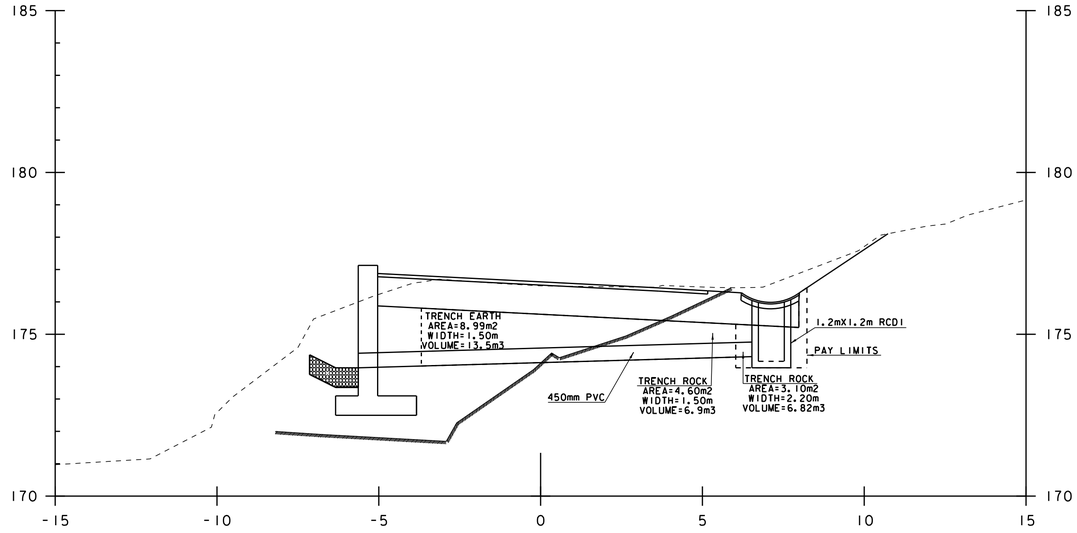


SCALE = 1:100

STA. 3+075 TO STA. 3+081

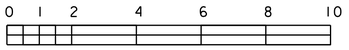


3+011.00



3+134.00

TRENCH EXCAVATION OF EARTH
TRENCH EXCAVATION OF ROCK

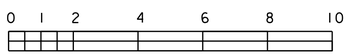


SCALE = 1:100

STA. 3+011 TOSTA. 3+011

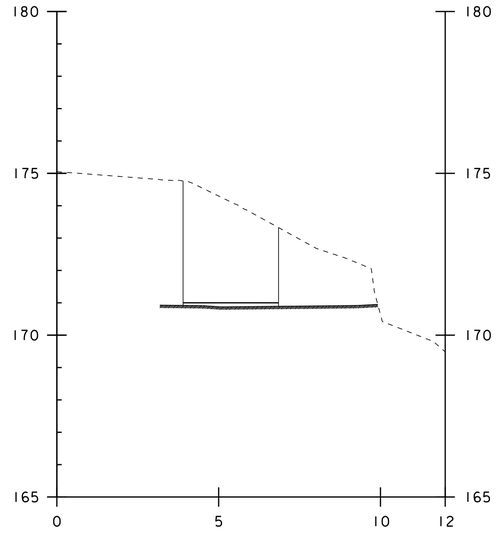
3+041.40

TRENCH EXCAVATION OF EARTH

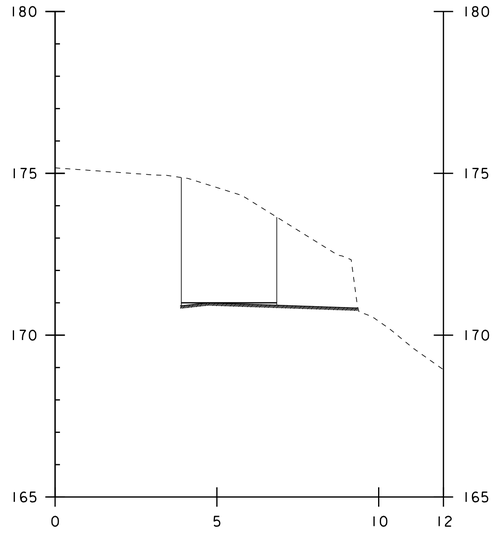


SCALE = 1:100

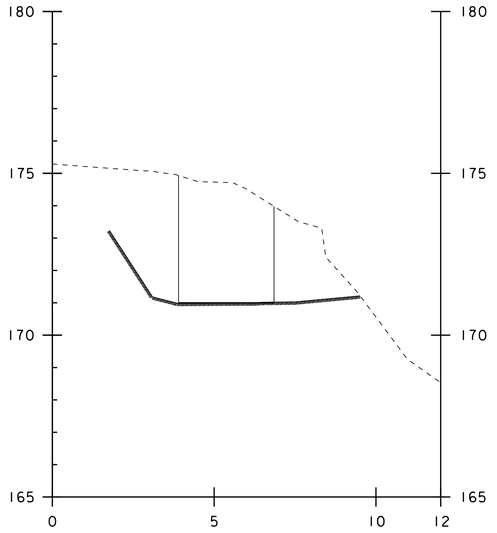
STA. 3+041 TOSTA. 3+041



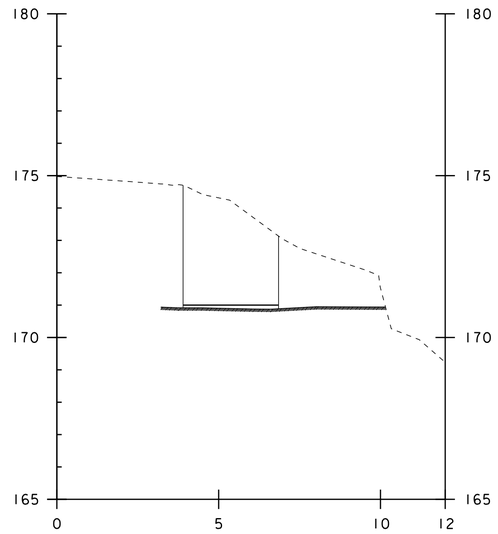
3+044.50



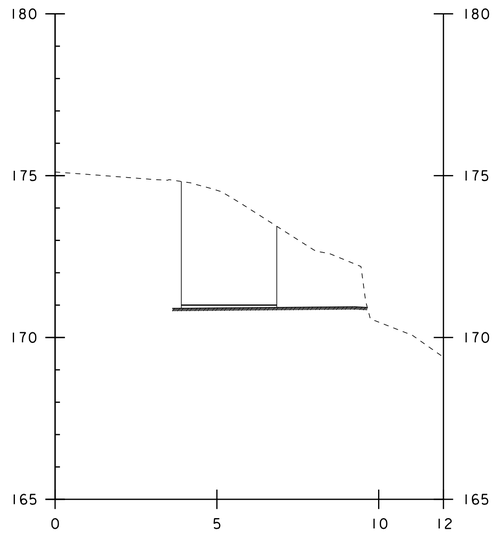
3+048.50



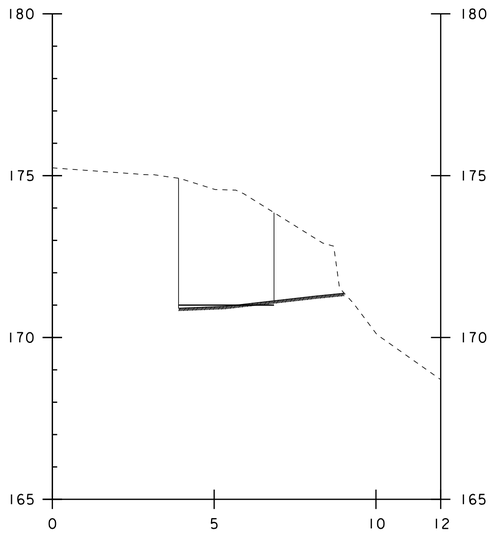
3+051.80



3+042.50

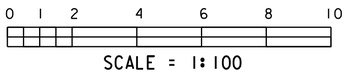


3+046.50



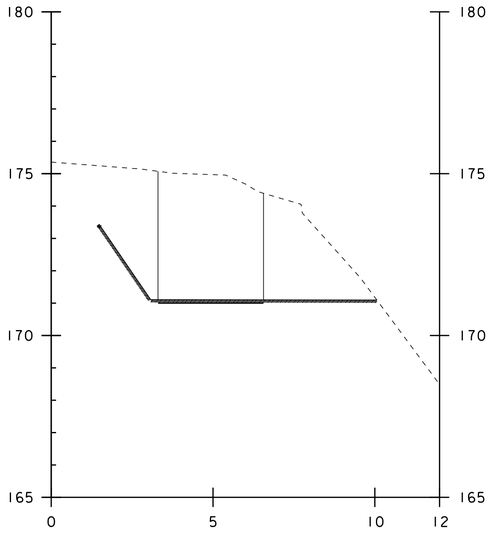
3+050.50

WINGWALL TWO
STRUCTURE EXCAVATION
UNCLASSIFIED CHANNEL EXCAVATION

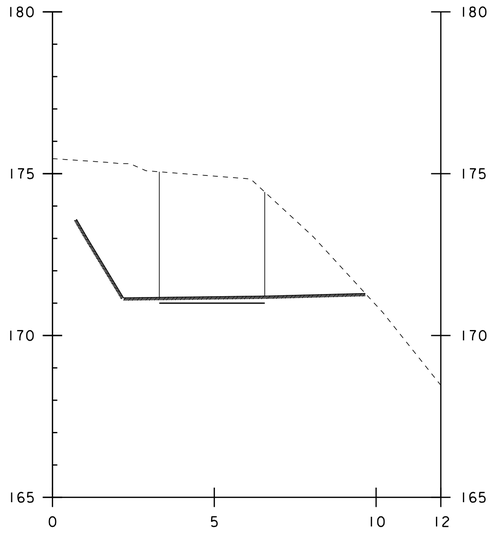


SCALE = 1:100

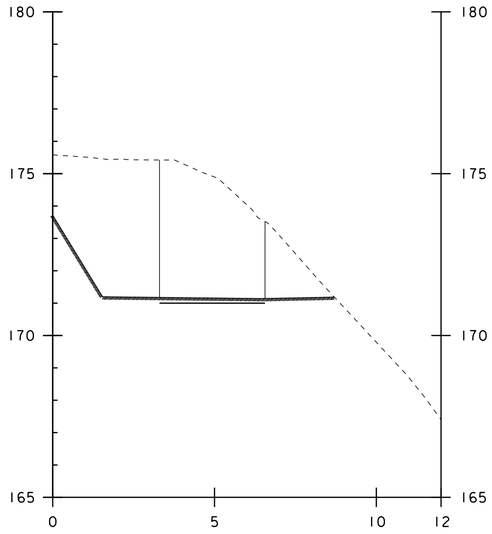
STA. 3+043 TO STA. 3+052



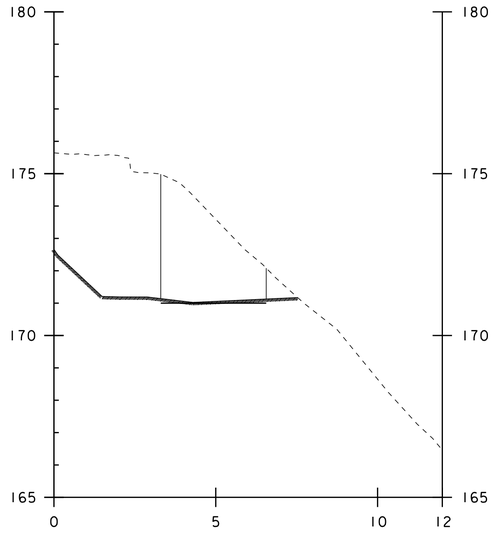
3+053.80



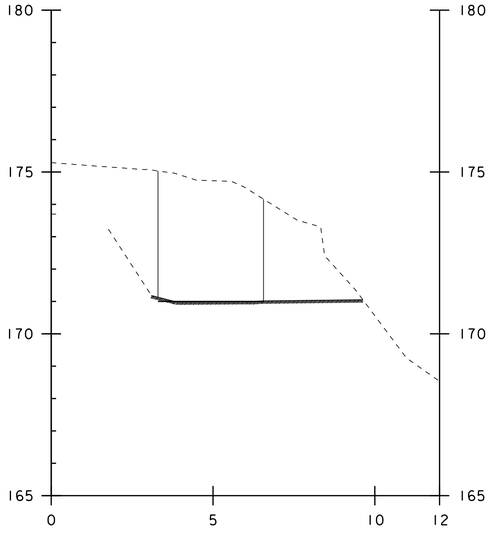
3+057.80



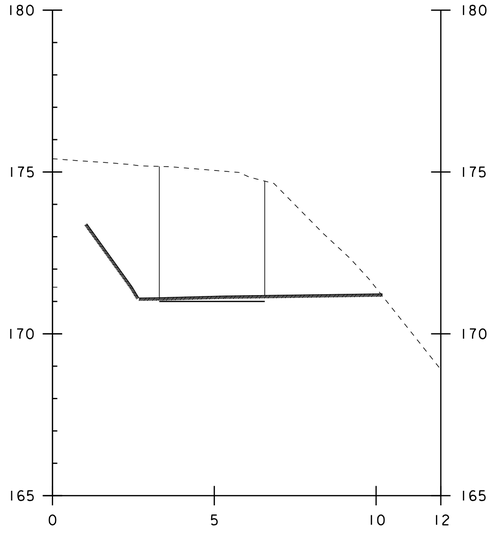
3+061.80



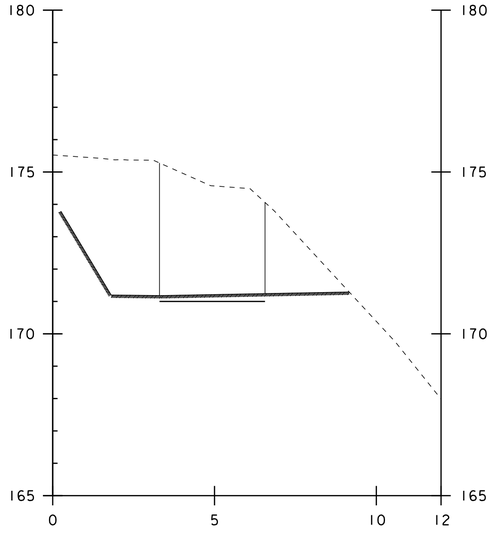
3+065.80



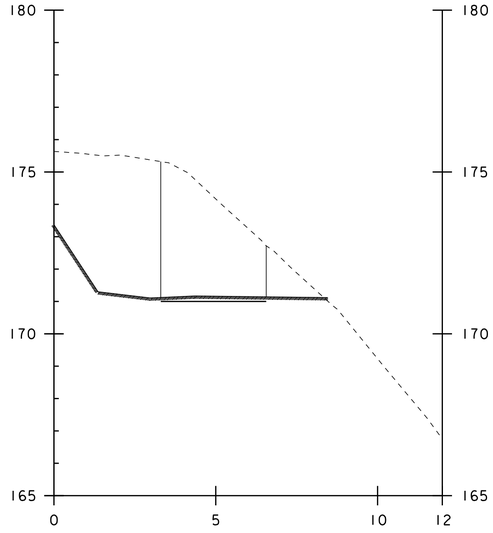
3+051.80



3+055.80

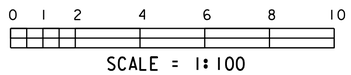


3+059.80



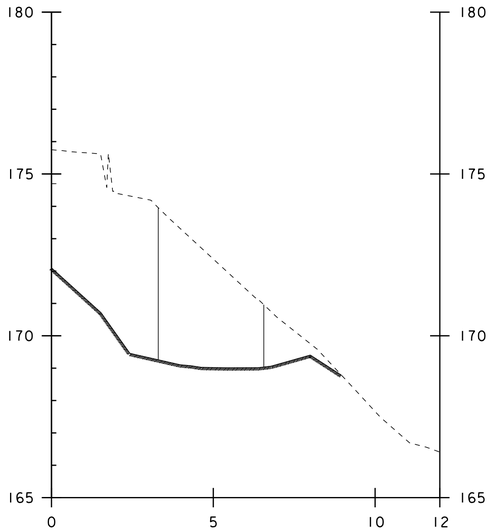
3+063.80

WINGWALL TWO
STRUCTURE EXCAVATION
UNCLASSIFIED CHANNEL EXCAVATION

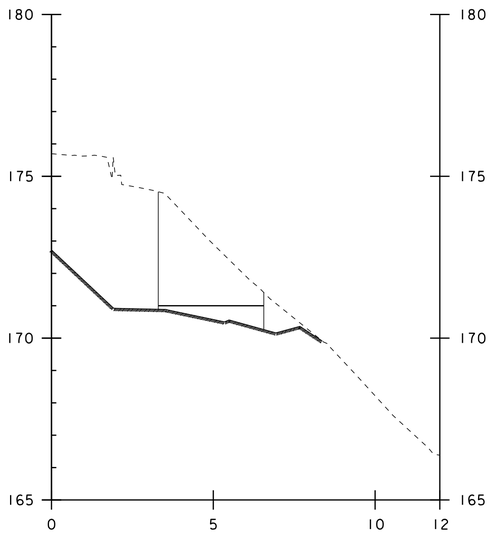


SCALE = 1:100

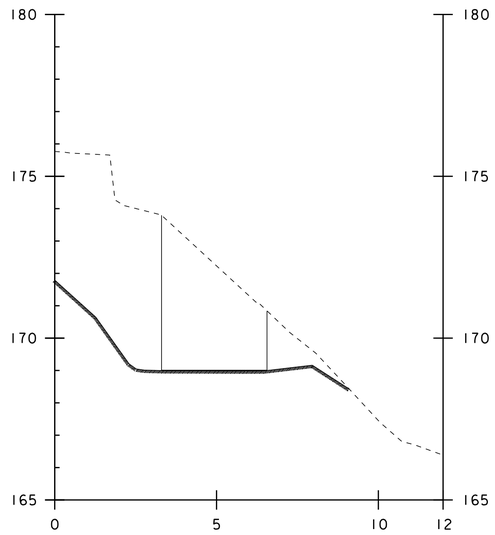
STA. 3+052 TO STA. 3+066



3+069.80

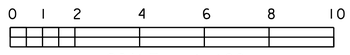


3+067.80



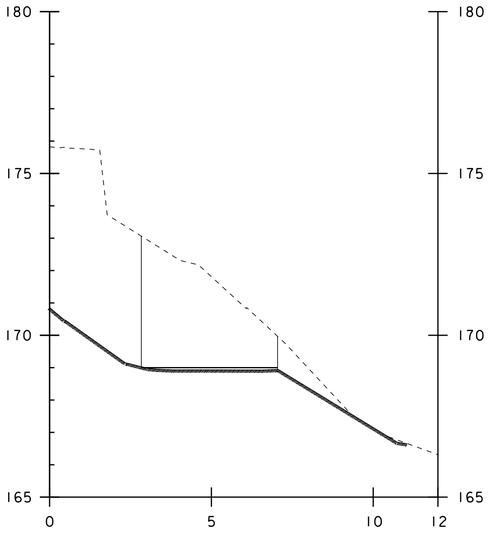
3+070.50

WINGWALL TWO
STRUCTURE EXCAVATION
UNCLASSIFIED CHANNEL EXCAVATION

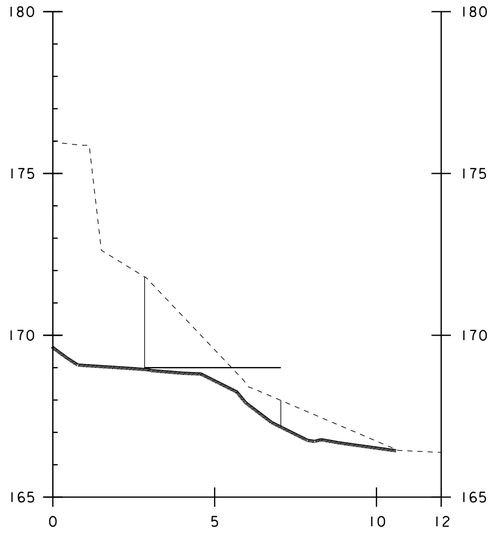


SCALE = 1:100

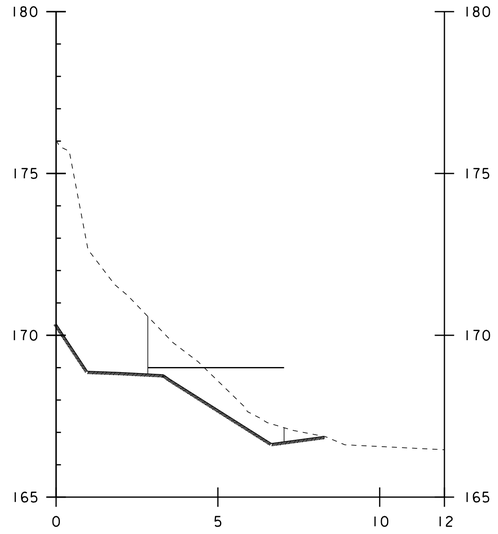
STA. 3+068 TO STA. 3+070



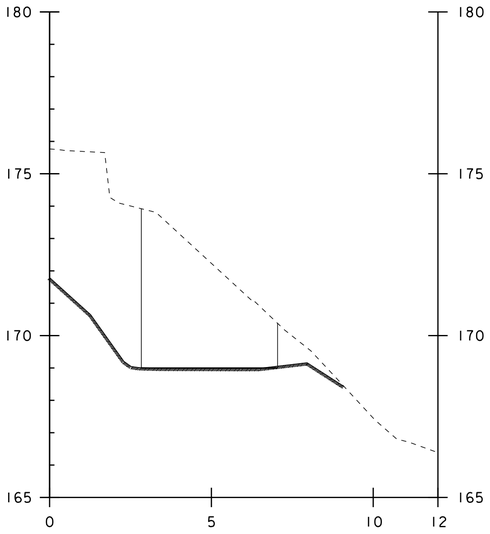
3+072.50



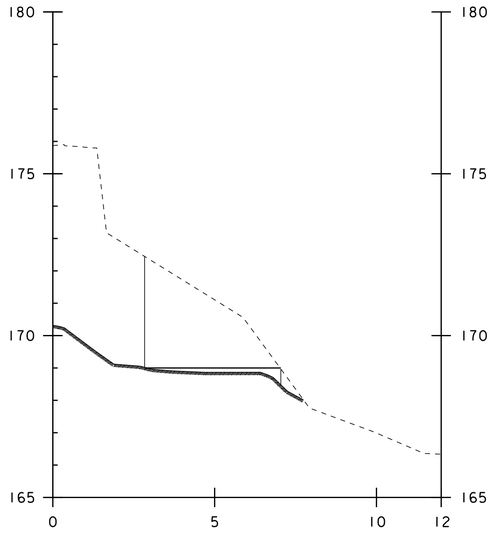
3+076.50



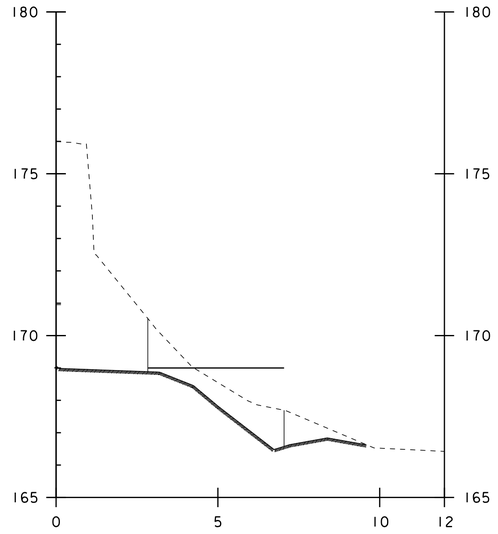
3+080.50



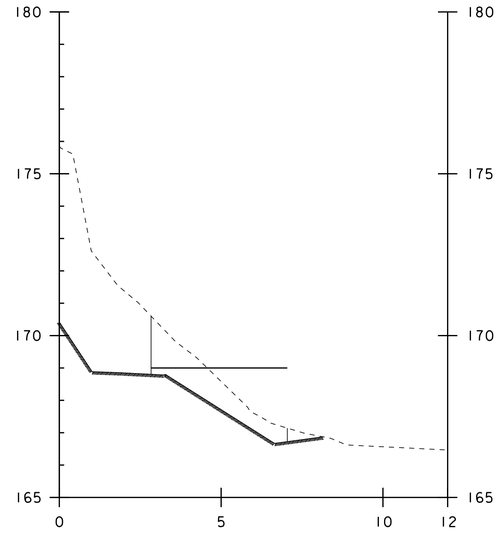
3+070.50



3+074.50

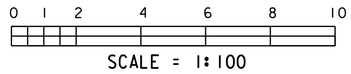


3+078.50

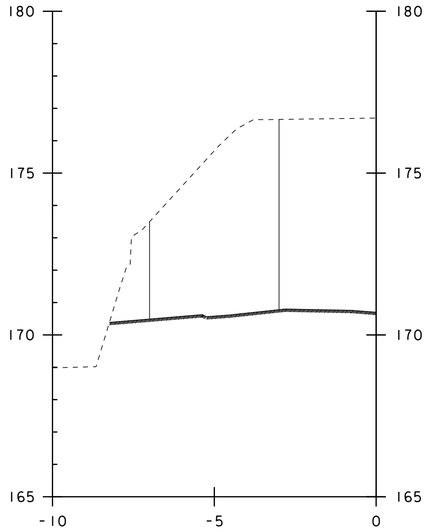


3+080.60

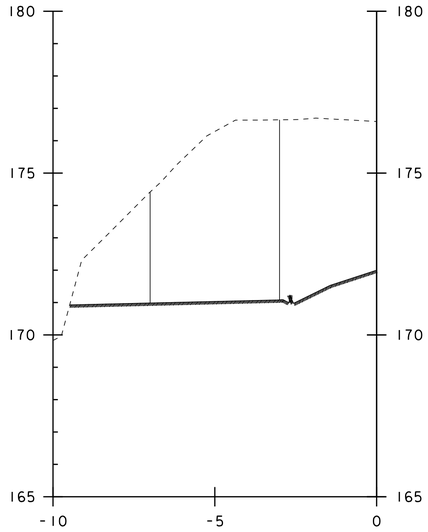
WINGWALL TWO
STRUCTURE EXCAVATION
UNCLASSIFIED CHANNEL EXCAVATION



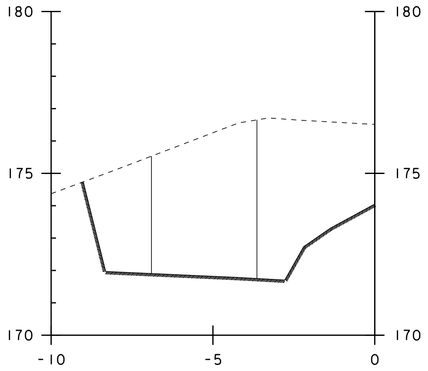
STA. 3+071 TO STA. 3+081



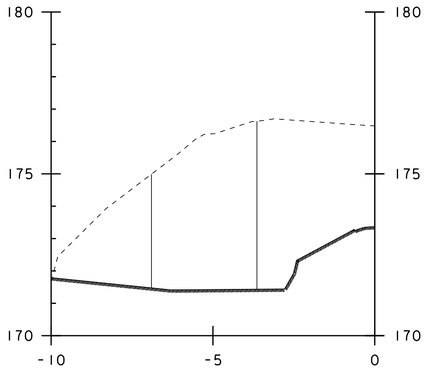
3+124.65



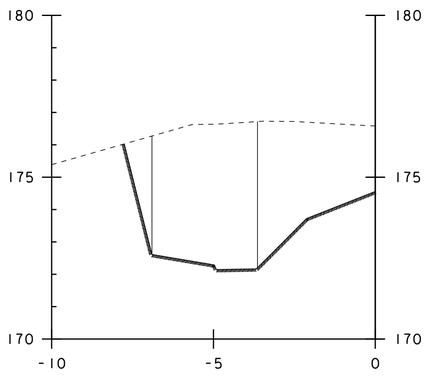
3+127.00



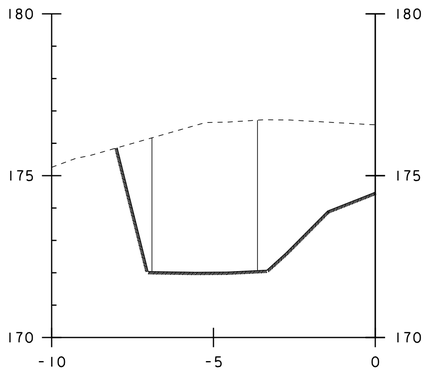
3+131.00



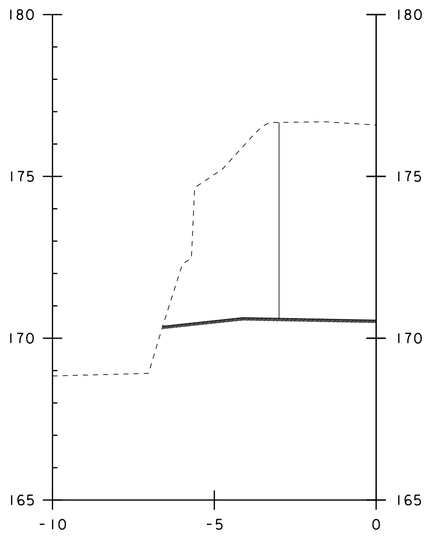
3+129.00



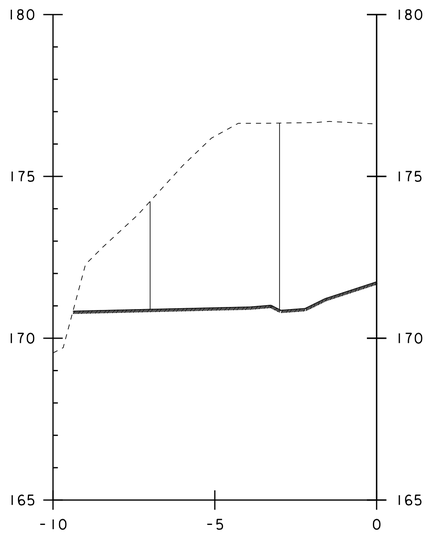
3+135.65



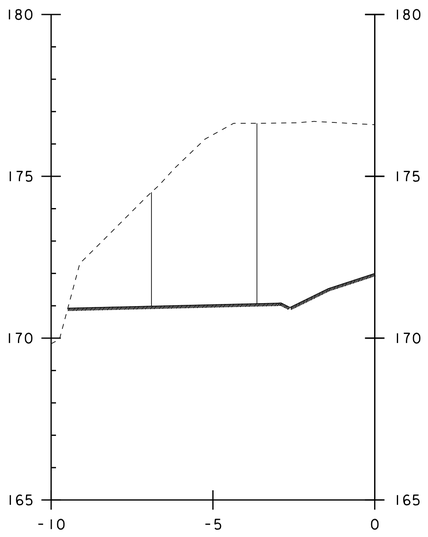
3+135.00



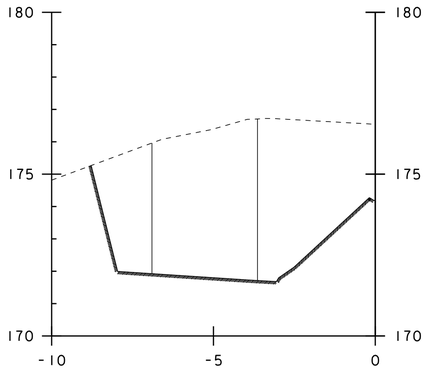
3+122.65



3+126.65

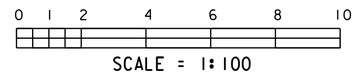


3+127.00

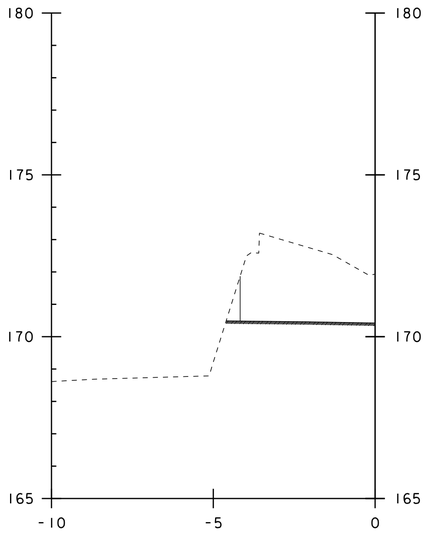


3+133.00

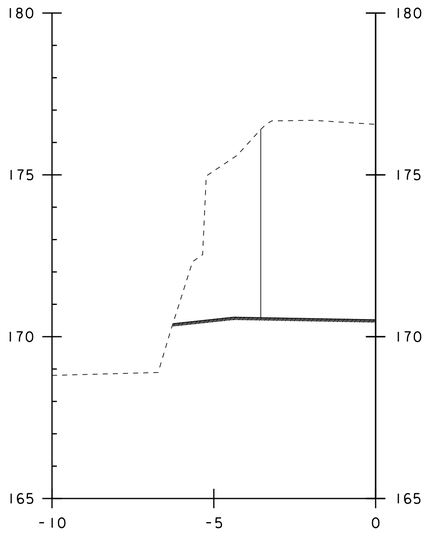
WINGWALL THREE
STRUCTURE EXCAVATION
UNCLASSIFIED CHANNEL EXCAVATION



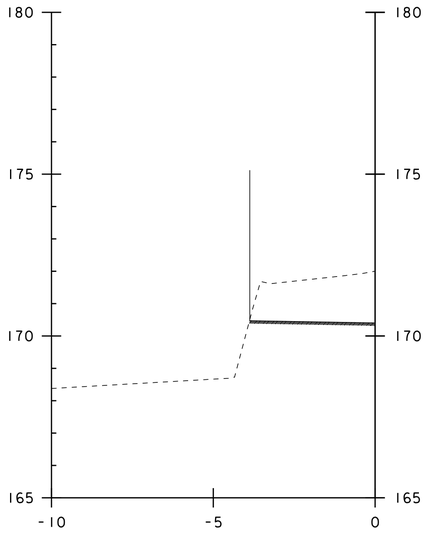
STA. 3+127 TO STA. 3+136



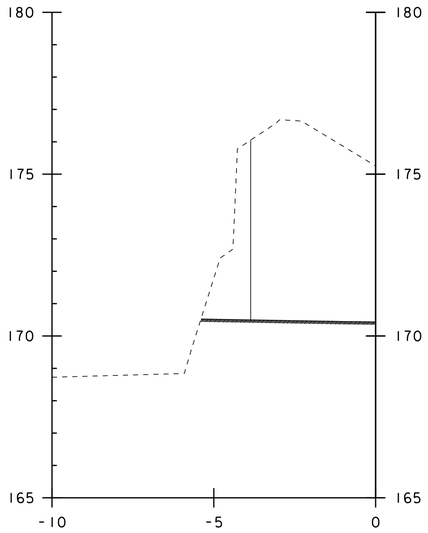
3+120.27



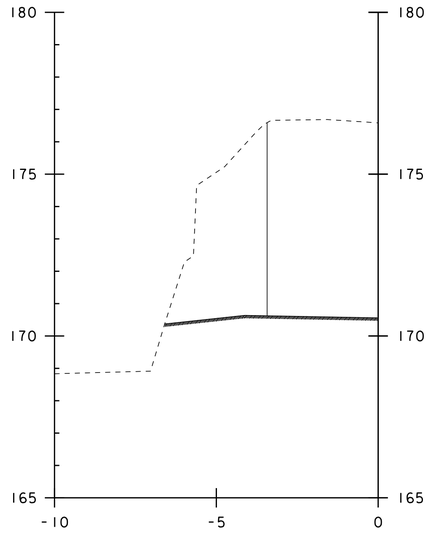
3+122.27



3+119.27



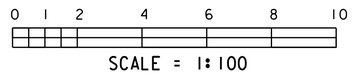
3+121.27



3+122.65

WINGWALL THREE
STRUCTURE EXCAVATION
UNCLASSIFIED CHANNEL EXCAVATION

STA. 3+119 TO STA. 3+123



SCALE = 1:100