SEE SHEET 2 FOR INDEX AND LIST OF STANDARDS

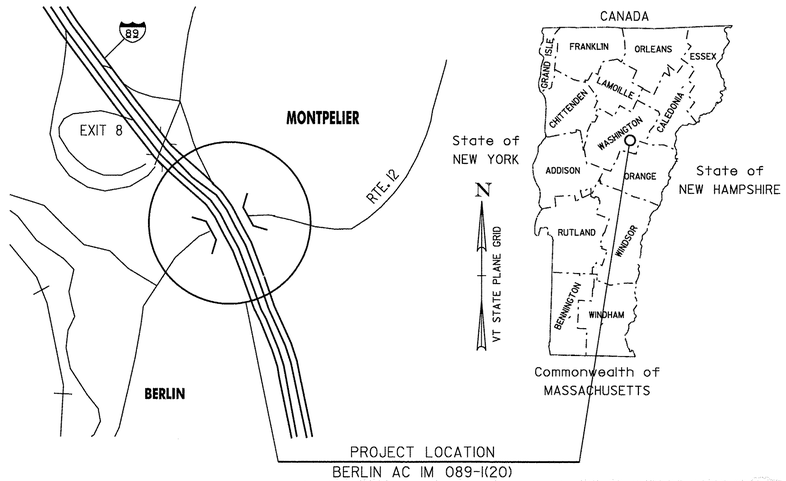
STATE OF VERMONT
AGENCY OF TRANSPORTATION

PROPOSED IMPROVEMENT
BRIDGE PROJECT

TOWN OF BERLIN
COUNTY OF WASHINGTON
ROUTE NO.: INTERSTATE 89, BRIDGE 40 N & 40 S

PROJECT LOCATION: IN BERLIN ON INTERSTATE 89 NEAR MILE MARKER 52.5

PROJECT DESCRIPTION: REMOVAL AND REPLACEMENT OF THE BRIDGE DECK AND PORTIONS OF THE SUBSTRUCTURE. PAINT THE STRUCTURAL STEEL.

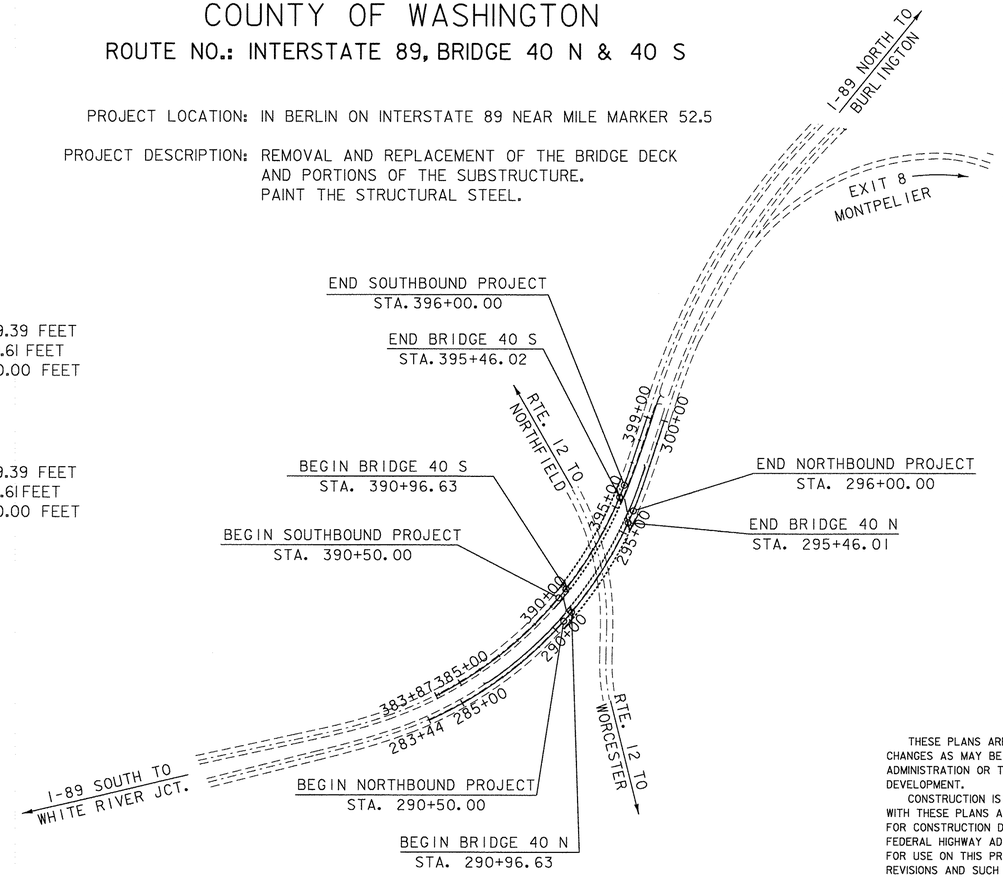


BRIDGE 40S:

LENGTH OF STRUCTURE = 449.39 FEET
LENGTH OF ROADWAY = 100.61 FEET
LENGTH OF PROJECT = 550.00 FEET

BRIDGE 40N:

LENGTH OF STRUCTURE = 449.39 FEET
LENGTH OF ROADWAY = 100.61 FEET
LENGTH OF PROJECT = 550.00 FEET



SCALE 1" = 300'-0
300 0 300

RECORD PLANS

CONTRACTOR:	BECK & BELLUCCI INC. – FRANKLIN, NH
RESIDENT ENGINEER:	RICK HALE
CONSTRUCTION BEGAN:	APRIL 11, 2008
CONSTRUCTION COMPLETE:	APRIL 15, 2010
RECORD PLANS BY:	RICK HALE & AMOS KEMPTON

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

BY Rick Hale RESIDENT ENGINEER

DATE 11/3/11

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
R.O.W. TAKING LINE
SLOPE RIGHTS
TOP OF CUT
TOE OF SLOPE

SURVEYED BY :	R. GILMAN
SURVEYED DATE :	12-02-2001
DATUM	
VERTICAL	NAVD 88
HORIZONTAL	NAD - 83 (96)

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

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

PLOTTED 04-DEC-2007

DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATOR
APPROVED Ted Kimball DATE 12-21-07

DIRECTOR OF PROGRAM DEVELOPMENT
APPROVED Richard Tetreau DATE 12/4/07

PROJECT MANAGER : C.P. WILLIAMS

PROJECT NAME : BERLIN
PROJECT NUMBER : AC IM 089 - 1(20)

SHEET 1 OF 104 SHEETS

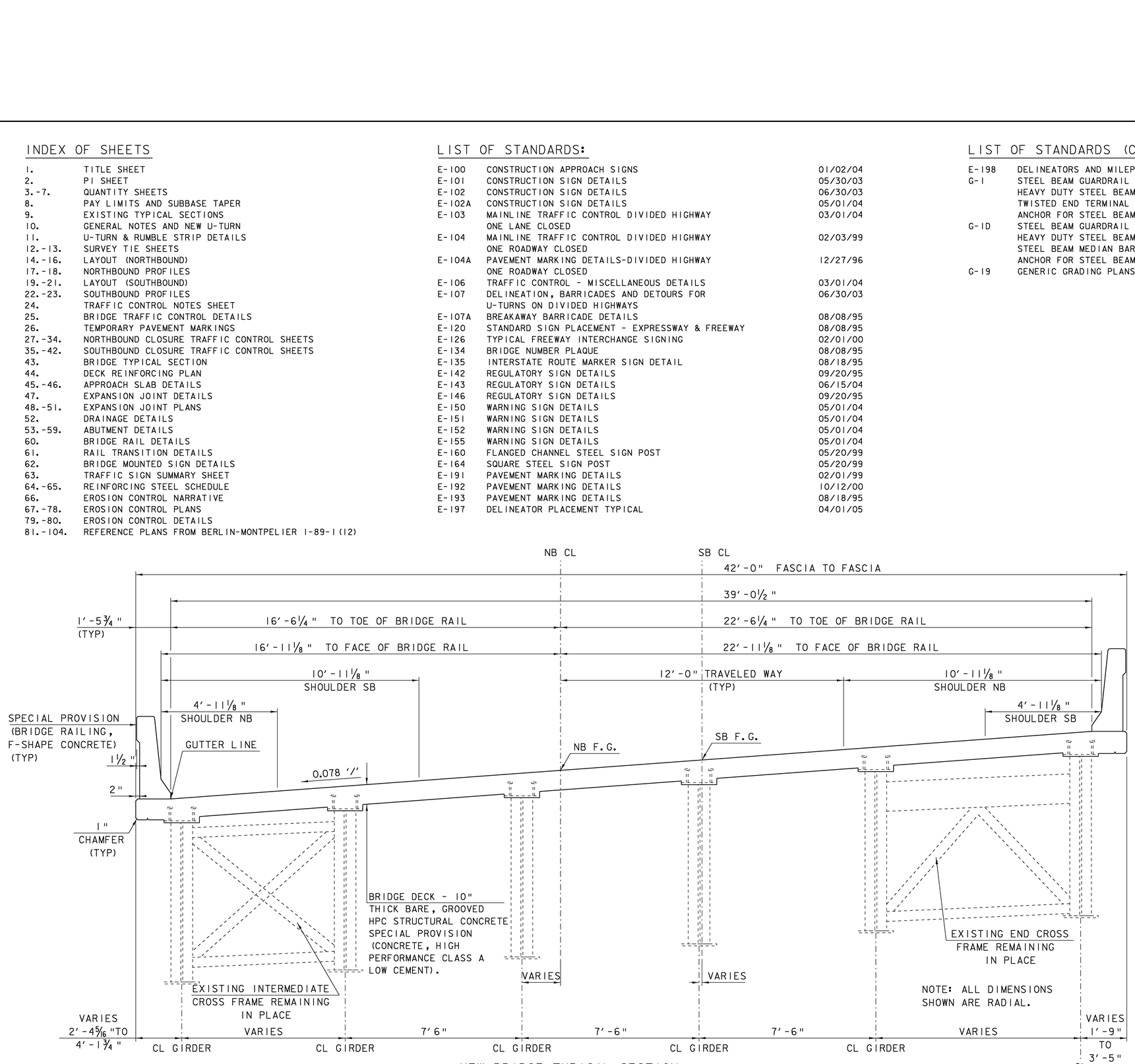
INDEX OF SHEETS

LIST OF STANDARDS:

E-100	CONSTRUCTION APPROACH SIGNS	01/02/04
E-101	CONSTRUCTION SIGN DETAILS	05/30/03
E-102	CONSTRUCTION SIGN DETAILS	06/30/03
E-102A	CONSTRUCTION SIGN DETAILS	05/01/04
E-103	MAINLINE TRAFFIC CONTROL DIVIDED HIGHWAY ONE LANE CLOSED	03/01/04
E-104	MAINLINE TRAFFIC CONTROL DIVIDED HIGHWAY ONE ROADWAY CLOSED	02/03/99
E-104A	PAVEMENT MARKING DETAILS-DIVIDED HIGHWAY ONE ROADWAY CLOSED	12/27/96
E-106	TRAFFIC CONTROL - MISCELLANEOUS DETAILS	03/01/04
E-107	DELINEATION, BARRICADES AND DETOURS FOR U-TURNS ON DIVIDED HIGHWAYS	06/30/03
E-107A	BREAKAWAY BARRICADE DETAILS	08/08/95
E-120	STANDARD SIGN PLACEMENT - EXPRESSWAY & FREEWAY	08/08/95
E-126	TYPICAL FREEWAY INTERCHANGE SIGNING	02/01/00
E-134	BRIDGE NUMBER PLAQUE	08/08/95
E-135	INTERSTATE ROUTE MARKER SIGN DETAIL	08/18/95
E-142	REGULATORY SIGN DETAILS	09/20/95
E-143	REGULATORY SIGN DETAILS	06/15/04
E-146	REGULATORY SIGN DETAILS	09/20/95
E-150	WARNING SIGN DETAILS	05/01/04
E-151	WARNING SIGN DETAILS	05/01/04
E-152	WARNING SIGN DETAILS	05/01/04
E-155	WARNING SIGN DETAILS	05/01/04
E-160	FLANGED CHANNEL STEEL SIGN POST	05/20/99
E-164	SQUARE STEEL SIGN POST	05/20/99
E-191	PAVEMENT MARKING DETAILS	02/01/99
E-192	PAVEMENT MARKING DETAILS	10/12/00
E-193	PAVEMENT MARKING DETAILS	08/18/95
E-197	DELINEATOR PLACEMENT TYPICAL	04/01/05

LIST OF STANDARDS (CONTINUED):

E-198	DELINEATORS AND MILEPOSTS	04/01/05
G-1	STEEL BEAM GUARDRAIL (50 MPH & OVER) HEAVY DUTY STEEL BEAM RAIL TWISTED END TERMINAL ANCHOR FOR STEEL BEAM RAIL	01/03/00
G-1D	STEEL BEAM GUARDRAIL (40 MPH & LESS) HEAVY DUTY STEEL BEAM RAIL STEEL BEAM MEDIAN BARRIER ANCHOR FOR STEEL BEAM RAIL	01/03/00
G-19	GENERIC GRADING PLANS FOR GUARDRAIL END TERMINALS	11/15/02



NEW BRIDGE TYPICAL SECTION

SCALE ½" = 1'-0
1 0 1 2

DESIGN CRITERIA:

1. DESIGN LIVE LOAD AASHTO HS-25
2. DESIGN SPAN N/A - ℄ TO ℄ GIRDER SPACING IS 7'-6"
3. ALLOWABLE LOAD FOR SPREAD FOOTINGS ON SOIL N/A
   ON LEDGE N/A
4. ALLOWABLE LOAD FOR PILING N/A
   TYPE N/A
   ESTIMATED LENGTH N/A
5. STRUCTURAL STEEL N/A
6. REINFORCING STEEL GRADE 60
7. SPECIAL PROVISION (CONCRETE, f'c 4000 psi
   HIGH PERFORMANCE CLASS A LOW CEMENT)
   CONCRETE, HIGH PERFORMANCE CLASS B f'c 3500 psi

TRAFFIC MAINTENANCE:

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

LFD LOAD RATING (TONS)

LOADING LEVELS	TRUCK						
	H	HS	3S2	6 AXLE	3A. STR.	4A. STR.	5A. SEMI
INVENTORY	45	81					
POSTED	63	114	124		109	110	119
OPERATING		136	148	161	130	131	
COMMENTS:							

$$\text{STRENGTH RF} = \frac{\emptyset M_N - 1.3\, M_{DL}}{A \times M_{LL+I}} \qquad \text{SERVICEABILITY RF} = B\left[\frac{.95\, F_Y S_{LL+I} - M_{DL}\frac{S_{LL+I}}{S_{DL}} - M_{SDL}\frac{S_{LL+I}}{S_{SDL}}}{1.67\, M_{LL+I}}\right]$$

TRAFFIC DATA

YEAR	ADT	DHV	% D	% T	ADTT
2008 NE	11100	1300	0	13	1700
2028 NE	14700	1800	0	22	4000

20 year ESAL for flexible pavement N/A
40 year ESAL for flexible pavement N/A
Design speed: 70 mph

PROJECT: BERLIN	PROJECT NO.: IM 089-1(20)
DESIGN FILE NAME: 99a270\structures\s99a270pi.dgn	
IPARM FILE NAME: s99a270pi.i	PLOT DATE: 05-DEC-2007
DESIGNED BY: G.SPILAK	DRAWN BY: E.L.RUSTAY
SQUAD LEADER: C.P.WILLIAMS	CHECKED BY: R.S.YOUNG
PRELIMINARY INFORMATION SHEET	SHEET: 2 OF 104

STATE OF VERMONT
AGENCY OF TRANSPORTATION

QUANTITY SHEET 1

SUMMARY OF ESTIMATED QUANTITIES

ROADWAY	TRAINING	EROSION CONTROL	BRIDGE 40 N	BRIDGE 40 S	ALTERNATE A (BRIDGE 40 N)	ALTERNATE B (BRIDGE 40 N)	ALTERNATE A (BRIDGE 40 S)	ALTERNATE B (BRIDGE 40 S)	FULL C.E. ITEMS
1060									
			65	70					
			65	70					
965									
1480									
840									
985									
			181	180					
			2	2					
			2	2					
			720						
			8600	8270					
			142.5	145					
			172518	174958					
			0.5	0.5					
			0.5	0.5					
			0.5	0.5					
			670	670					
			110	110					
			108	108					
			1875	1885					
			2	2					
			1	1					
80									
2									
3									
		20							
			20	30					
200									
200									
1075									
3									
2									
1270									
6020									
250									
1600									
									1
									1
									1

TOTALS

GRAND TOTAL	FINAL
1060	
135	
135	
965	
1480	
840	
985	
361	
4	
4	
720	
16870	
287.5	
347476	
1	
1	
1	
1340	
220	
216	
3760	
4	
2	
80	
2	
3	
20	
50	
200	
200	
1075	
3	
2	
1270	
6020	
250	
1600	
1	
1	
1	

DESCRIPTIONS

UNIT	ITEMS	ITEM NUMBER	ROUND
CY	COMMON EXCAVATION	203.15	
CY	STRUCTURE EXCAVATION	204.25	
CY	GRANULAR BACKFILL FOR STRUCTURES	204.30	
SY	COLD PLANING, BITUMINOUS PAVEMENT	210.10	
LF	MILLED RUMBLE STRIPS	213.10	
CY	SUBBASE OF DENSE GRADED CRUSHED STONE	301.35	
TON	BITUMINOUS CONCRETE PAVEMENT (PG 58-34)	406.25	
CY	CONCRETE, HIGH PERFORMANCE CLASS B	501.34	
EACH	SHORING SUPERSTRUCTURE BEARINGS (ABUTMENT)	502.11	
EACH	SHORING SUPERSTRUCTURE BEARINGS (PIER)	502.11	
LB	STRUCTURAL STEEL	506.60	
LB	REINFORCING STEEL	507.15	
LF	DRILLING AND GROUTING DOWELS	507.16	
LB	EPOXY COATED REINFORCING STEEL	507.17	
LS	STRUCTURAL PAINTING, FIELD APPLIED (960 TONS)	513.30	
LS	CONTAINMENT & ENVIRONMENTAL PROTECTION, FIELD	513.36	
LS	SURFACE PREPARATION, FIELD (960 TONS)	513.41	
GAL	WATER REPELLENT, SILANE	514.10	
LF	BRIDGE EXPANSION JOINT, ASPHALTIC PLUG	516.10	
LF	BRIDGE EXPANSION JOINT, VERMONT	516.11	
SY	REMOVAL OF BRIDGE PAVEMENT	529.10	
EACH	PARTIAL REMOVAL OF STRUCTURE (ABUTMENT)	529.20	
EACH	PARTIAL REMOVAL OF STRUCTURE (DECK)	529.20	
LF	18" CPEP(SL)	601.2615	
EACH	18" CPEPES	601.7015	
EACH	CHANGING ELEVATION OF DROP INLETS, CATCH BASINS, OR MANHOLES	604.40	
HR	ALL PURPOSE EXCAVATOR RENTAL, TYPE I	608.25	
CY	STONE FILL, TYPE II	613.11	
LF	WOVEN WIRE FENCE WITH STEEL POSTS	620.25	
LF	REMOVAL OF EXISTING FENCE	620.55	
LF	HD STEEL BEAM GUARDRAIL, GALVANIZED	621.21	
EACH	MANUFACTURED TERMINAL SECTION, FLARED	621.50	
EACH	ANCHOR FOR STEEL BEAM RAIL	621.60	
LF	REMOVAL AND DISPOSAL OF GUARDRAIL	621.80	
LF	TEMPORARY TRAFFIC BARRIER	621.90	
HR	UNIFORMED TRAFFIC OFFICERS	630.10	
HR	FLAGGERS	630.15	
LS	FIELD OFFICE, ENGINEERS	631.10	
LS	TESTING EQUIPMENT, CONCRETE	631.16	
LS	TESTING EQUIPMENT, BITUMINOUS	631.17	

DETAILED SUMMARY OF QUANTITIES

QUANTITIES	UNIT	ITEMS
		BITUMINOUS CONCRETE PAVEMENT (PG58-34)
206	T	BRIDGE 40 N
214	T	BRIDGE 40 S
175	T	CROSSOVER FOR BRIDGE 40 N
190	T	CROSSOVER FOR BRIDGE 40 S
200	T	NEW U-TURN
985	T	TOTAL

PROJECT NAME: BERLIN
PROJECT NUMBER: IM 089-1(20)

FILE NAME: sa99a270qty.xls
PROJECT MANAGER: C.P.WILLIAMS
DESIGNED BY: G. SPILAK
QUANTITY SHEET #1

PLOT DATE: 12/17/2007
DRAWN BY: D.D.BEARD
CHECKED BY: R.YOUNG
SHEET 3 OF 104

STATE OF VERMONT
AGENCY OF TRANSPORTATION

QUANTITY SHEET 2

SUMMARY OF ESTIMATED QUANTITIES									TOTALS		DESCRIPTIONS				DETAILED SUMMARY OF QUANTITIES		
ROADWAY	TRAINING	EROSION CONTROL	BRIDGE 40 N	BRIDGE 40 S	ALTERNATE A (BRIDGE 40 N)	ALTERNATE B (BRIDGE 40 N)	ALTERNATE A (BRIDGE 40 S)	ALTERNATE B (BRIDGE 40 S)	FULL C.E. ITEMS	GRAND TOTAL	FINAL	UNIT	ITEMS	ITEM NUMBER	ROUND	QUANTITIES	UNIT	ITEMS
									1	1		LS	TESTING EQUIPMENT, PROTECTIVE COATINGS	631.18				
									1	1		LU	FIELD OFFICE TELEPHONE (N.A.B.I.)	631.25				
	1560									1560		HR	EMPLOYEE TRAINEESHIP	634.10				
1										1		LS	MOBILIZATION/DEMOBILIZATION	635.11				
			0.5	0.5						1		LS	TRAFFIC CONTROL	641.10				
2										2		EACH	PORTABLE CHANGEABLE MESSAGE SIGN	641.15				
2										2		EACH	PORTABLE ARROW BOARD	641.16				
2600										2600		LF	DURABLE 6 INCH WHITE LINE, THERMOPLASTIC	646.422				
1300										1300		LF	DURABLE 6 INCH YELLOW LINE, THERMOPLASTIC	646.432				
14920										14920		LF	TEMPORARY 6 INCH WHITE LINE, TYPE II TAPE	646.621				
24890										24890		LF	TEMPORARY 6 INCH YELLOW LINE, TYPE II TAPE	646.631				
1999										1999		EACH	RAISED PAVEMENT MARKERS, TYPE II	646.75				
7080										7080		SF	PAVEMENT MARKING MASK	646.86				
		130								130		SY	GEOTEXTILE UNDER STONE FILL	649.31				
		130								130		SY	GEOTEXTILE FOR SILT FENCE	649.51				
		180								180		LB	SEED	651.15				
		180								180		LB	SEED, WINTER RYE	651.17				
		1500								1500		LB	FERTILIZER	651.18				
		6								6		TON	AGRICULTURAL LIMESTONE	651.20				
		13								13		TON	HAYMULCH	651.25				
85										85		CY	TOPSOIL	651.35				
		1								1		LS	EPSC PLAN	652.10				
		150								150		HR	MONITORING EPSC PLAN	652.20				
		1								1		LU	MAINTENANCE OF EPSC PLAN (N.A.B.I.)	652.30				
		1070								1070		SY	TEMPORARY EROSION MATTING	653.20				
		10								10		CY	TEMPORARY STONE CHECK DAM, TYPE I	653.25				
		80								80		CY	VEHICLE TRACKING PAD	653.35				
		9								9		EACH	INLET PROTECTION DEVICE, TYPE I	653.40				
		6200								6200		LF	PROJECT DEMARCATION FENCE	653.55				
88.7										88.7		SF	TRAFFIC SIGNS, TYPE A	675.20				
13										13		LF	FLANGED CHANNEL SIGN POST	675.301				
190										190		LF	SQUARE TUBE SIGN POST AND ANCHOR	675.341				
9										9		EACH	REMOVING SIGNS	675.50				
2										2		EACH	ERECTING SALVAGED SIGNS	675.60				
1										1		EACH	DELINEATOR WITH STEEL POST	676.10				
													BEGIN ALTERNATE ZA					
					607		607			1214		CY	SPECIAL PROVISION (HP CONCRETE, CLASS A LOW CEMENT) (FPQ)	900.608				
						607		607		1214		CY	SPECIAL PROVISION (HP CONCRETE, CLASS A LOW CEMENT) (SIPCMF) (FPQ)	900.608				
													END ALTERNATE ZA					
8										8		EACH	SPECIAL PROVISION (GR APPROACH SECTION TO F-SHAPE CONCRETE RAIL)	900.620				

PROJECT NAME: BERLIN
PROJECT NUMBER: IM 089-1(20)

FILE NAME: sa99a270qty.xls
PROJECT MANAGER: C.P.WILLIAMS
DESIGNED BY: G. SPILAK
QUANTITY SHEET #2

PLOT DATE: 12/17/2007
DRAWN BY: D.D.BEARD
CHECKED BY: R.YOUNG
SHEET 4 OF 104

STATE OF VERMONT
AGENCY OF TRANSPORTATION

QUANTITY SHEET 3

SUMMARY OF ESTIMATED QUANTITIES										TOTALS		DESCRIPTIONS				DETAILED SUMMARY OF QUANTITIES		
ROADWAY	TRAINING	EROSION CONTROL	BRIDGE 40 N	BRIDGE 40 S	ALTERNATE A (BRIDGE 40 N)	ALTERNATE B (BRIDGE 40 N)	ALTERNATE A (BRIDGE 40 S)	ALTERNATE B (BRIDGE 40 S)	FULL C.E. ITEMS	GRAND TOTAL	FINAL	UNIT	ITEMS	ITEM NUMBER	ROUND	QUANTITIES	UNIT	ITEMS
			1000	1000						2000		EACH	SPECIAL PROVISION (REMOVE AND REPLACE EXISTING SHEAR CONNECTORS)	900.620				
			136	137						273		LF	SPECIAL PROVISION (BRIDGE FIBERGLASS DRAIN SYSTEM)	900.640				
			993	991						1984		LF	SPECIAL PROVISION (BRIDGE RAILING, F-SHAPE CONCRETE)	900.640				
			0.5	0.5						1		LS	SPECIAL PROVISION (PUBLIC PROTECTION FOR BRIDGE PROJECTS)	900.645				
			1946	1953						3899		SY	SPECIAL PROVISION (LONGITUDINAL DECK GROOVING)	900.675				

PROJECT NAME: BERLIN
PROJECT NUMBER: IM 089-1(20)

FILE NAME: sa99a270qty.xls
PROJECT MANAGER: C.P.WILLIAMS
DESIGNED BY: G. SPILAK
QUANTITY SHEET #3

PLOT DATE: 12/17/2007
DRAWN BY: D.D.BEARD
CHECKED BY: R.YOUNG
SHEET 5 OF 104

STATE OF VERMONT
AGENCY OF TRANSPORTATION

QUANTITY SHEET 4

SUMMARY OF BRIDGE QUANTITIES

BRIDGE 40 N	BRIDGE 40 S	SUPER STRUCTURE BR 40S	ABUTMENT #1	ABUTMENT #2	PIER #1	PIER #2	APPROACH SLAB #1	APPROACH SLAB #2	BRIDGE TOTAL	UNIT	ITEMS	ITEM NUMBER
			32	38					70	CY	STRUCTURE EXCAVATION	204.25
			32	38					70	CY	GRANULAR BACKFILL FOR STRUCTURES	204.30
	1		37	44			48	50	180	CY	CONCRETE, HIGH PERFORMANCE CLASS B	501.34
			1	1					2	EACH	SHORING SUPERSTRUCTURE BEARINGS (ABUTMENT)	502.11
					1	1			2	EACH	SHORING SUPERSTRUCTURE BEARINGS (PIER)	502.11
			3782	4488					8270	LB	REINFORCING STEEL	507.15
			65	80					145	LF	DRILLING AND GROUTING DOWELS	507.16
		161177	906	1014			5898	5963	174958	LB	EPOXY COATED REINFORCING STEEL	507.17
	0.5								0.5	LS	STRUCTURAL PAINTING, FIELD APPLIED (960 TONS)	513.30
	0.5								0.5	LS	CONTAINMENT & ENVIRONMENTAL PROTECTION, FIELD	513.36
	0.5								0.5	LS	SURFACE PREPARATION, FIELD (960 TONS)	513.41
		597	8	9	28	28			670	GAL	WATER REPELLENT, SILANE	514.10
		110							110	LF	BRIDGE EXPANSION JOINT, ASPHALTIC PLUG	516.10
		108							108	LF	BRIDGE EXPANSION JOINT, VERMONT	516.11
		1885							1885	SY	REMOVAL OF BRIDGE PAVEMENT	529.10
			1	1					2	EACH	PARTIAL REMOVAL OF STRUCTURE (ABUTMENT)	529.20
		1							1	EACH	PARTIAL REMOVAL OF STRUCTURE (DECK)	529.20
					20	10			30	CY	STONE FILL, TYPE II	613.11
	0.5								0.5	LS	TRAFFIC CONTROL	641.10
	1000								1000	EACH	SPECIAL PROVISION (REMOVE AND REPLACE EXISTING SHEAR CONNECTORS)	900.620
					68.5	68.5			137	LF	SPECIAL PROVISION (BRIDGE FIBERGLASS DRAIN SYSTEM)	900.640
	991								991	LF	SPECIAL PROVISION (BRIDGE RAILING, F-SHAPE CONCRETE)	900.640
	0.5								0.5	LS	SPECIAL PROVISION (PUBLIC PROTECTION FOR BRIDGE PROJECTS)	900.645
		1953							1953	SY	SPECIAL PROVISION (LONGITUDINAL DECK GROOVING)	900.675

TOTALS

DESCRIPTIONS

DETAILED SUMMARY OF QUANTITIES

QUANTITIES	UNIT	ITEMS

PROJECT NAME: BERLIN **BRIDGE 40 S**
PROJECT NUMBER: IM 089-1(20)

FILE NAME: sa99a270qty.xls
PROJECT MANAGER: C.P.WILLIAMS
DESIGNED BY: G. SPILAK
QUANTITY SHEET #4

PLOT DATE: 12/17/2007
DRAWN BY: D.D.BEARD
CHECKED BY: R.YOUNG
SHEET 6 OF 104

STATE OF VERMONT
AGENCY OF TRANSPORTATION

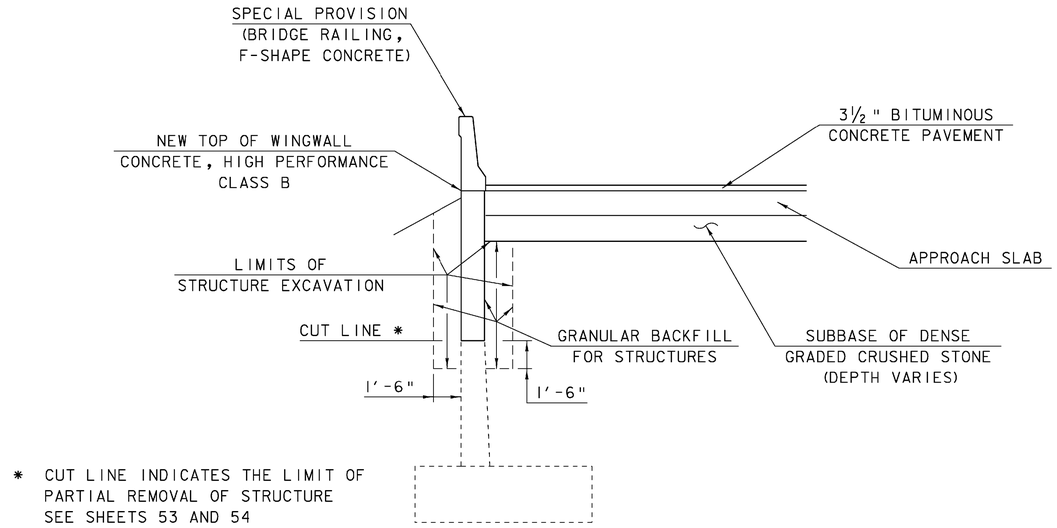
QUANTITY SHEET 5

SUMMARY OF BRIDGE QUANTITIES									TOTALS	DESCRIPTIONS			DETAILED SUMMARY OF QUANTITIES		
BRIDGE 40 N	BRIDGE 40 S	SUPER STRUCTURE BR 40N	ABUTMENT #3	ABUTMENT #4	PIER #3	PIER #4	APPROACH SLAB #3	APPROACH SLAB #4	BRIDGE TOTAL	UNIT	ITEMS	ITEM NUMBER	QUANTITIES	UNIT	ITEMS
			30	35					65	CY	STRUCTURE EXCAVATION	204.25			
			30	35					65	CY	GRANULAR BACKFILL FOR STRUCTURES	204.30			
1			38	43			49	50	181	CY	CONCRETE, HIGH PERFORMANCE CLASS B	501.34			
			1	1					2	EACH	SHORING SUPERSTRUCTURE BEARINGS (ABUTMENT)	502.11			
					1	1			2	EACH	SHORING SUPERSTRUCTURE BEARINGS (PIER)	502.11			
		720							720	LB	STRUCTURAL STEEL	506.60			
			3967	4633					8600	LB	REINFORCING STEEL	507.15			
					62.5	80			142.5	LF	DRILLING AND GROUTING DOWELS	507.16			
		158755	956	1015			5871	5921	172518	LB	EPOXY COATED REINFORCING STEEL	507.17			
0.5									0.5	LS	STRUCTURAL PAINTING, FIELD APPLIED (960 TONS)	513.30			
0.5									0.5	LS	CONTAINMENT & ENVIRONMENTAL PROTECTION, FIELD	513.36			
0.5									0.5	LS	SURFACE PREPARATION, FIELD (960 TONS)	513.41			
		597	8	9	28	28			670	GAL	WATER REPELLENT, SILANE	514.10			
		110							110	LF	BRIDGE EXPANSION JOINT, ASPHALTIC PLUG	516.10			
		108							108	LF	BRIDGE EXPANSION JOINT, VERMONT	516.11			
		1875							1875	SY	REMOVAL OF BRIDGE PAVEMENT	529.10			
			1	1					2	EACH	PARTIAL REMOVAL OF STRUCTURE (ABUTMENT)	529.20			
		1							1	EACH	PARTIAL REMOVAL OF STRUCTURE (DECK)	529.20			
					10	10			20	CY	STONE FILL, TYPE II	613.11			
0.5									0.5	LS	TRAFFIC CONTROL	641.10			
1000									1000	EACH	SPECIAL PROVISION (REMOVE AND REPLACE EXISTING SHEAR CONNECTORS)	900.620			
					68	68			136	LF	SPECIAL PROVISION (BRIDGE FIBERGLASS DRAIN SYSTEM)	900.640			
993									993	LF	SPECIAL PROVISION (BRIDGE RAILING, F-SHAPE CONCRETE)	900.640			
0.5									0.5	LS	SPECIAL PROVISION (PUBLIC PROTECTION FOR BRIDGE PROJECTS)	900.645			
		1946							1946	SY	SPECIAL PROVISION (LONGITUDINAL DECK GROOVING)	900.675			

PROJECT NAME: BERLIN
PROJECT NUMBER: IM 089-1(20)

FILE NAME: sa99a270qty.xls
PROJECT MANAGER: C.P.WILLIAMS
DESIGNED BY: G. SPILAK
QUANTITY SHEET #5

PLOT DATE: 12/17/2007
DRAWN BY: D.D.BEARD
CHECKED BY: R.YOUNG
SHEET 7 OF 104

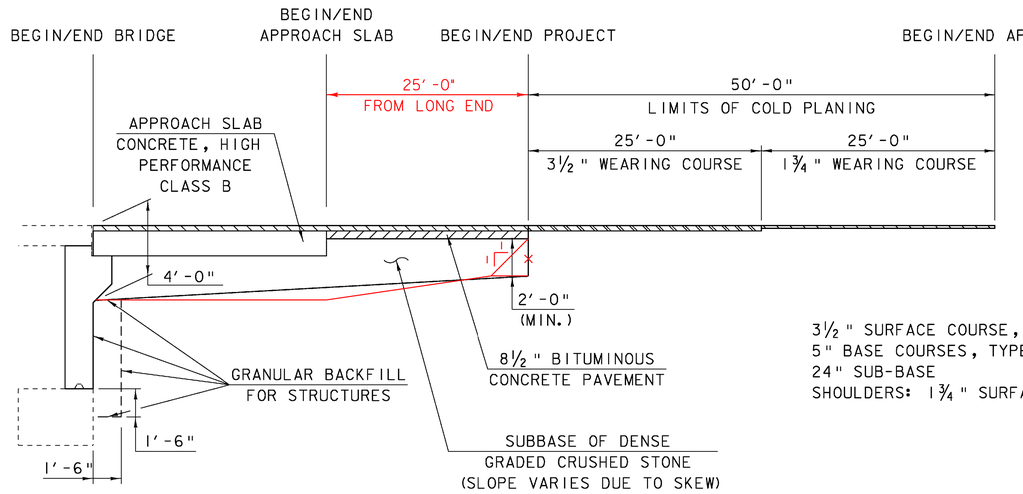


* CUT LINE INDICATES THE LIMIT OF PARTIAL REMOVAL OF STRUCTURE
SEE SHEETS 53 AND 54

WINGWALL TYPICAL EXCAVATION & FILL LIMITS

SCALE ¼" = 1'-0"

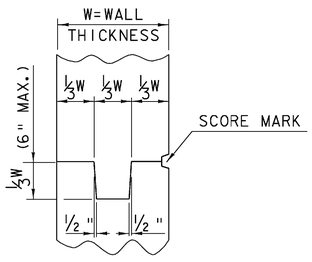
1 0 2 4 6



3½" SURFACE COURSE, TYPE III
5" BASE COURSES, TYPE I OR II
24" SUB-BASE
SHOULDERS: 1¾" SURFACE COURSE, TYPE III

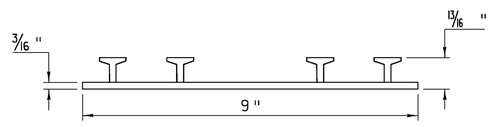
SUBBASE TAPER AND BACKWALL FILL LIMITS

N.T.S.



TYPICAL CONCRETE CONSTRUCTION JOINT

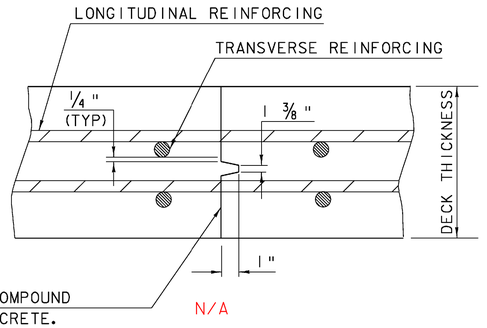
N.T.S.



P.V.C. WATERSTOP FOR CONSTRUCTION JOINTS

N.T.S.

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



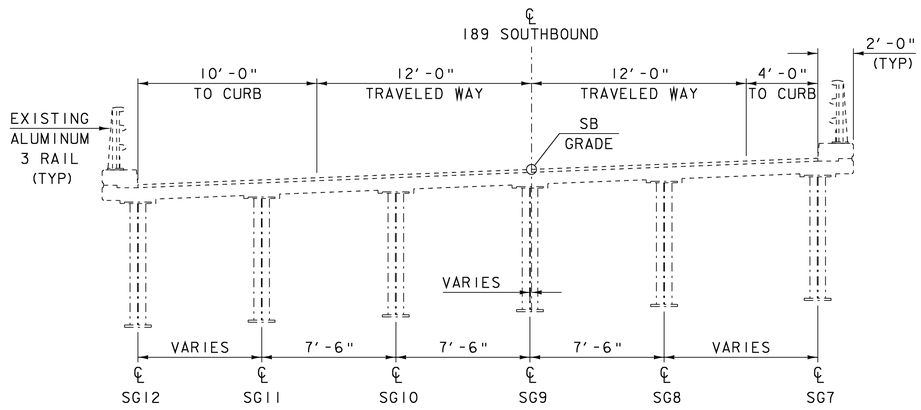
APPLY EPOXY BONDING COMPOUND
BEFORE PLACING NEW CONCRETE.
INCLUDE WITH COST BID FOR ITEM 501.34
CONCRETE, HIGH PERFORMANCE CLASS B.

N/A

TRANSVERSE BRIDGE DECK CONSTRUCTION JOINT DETAILS

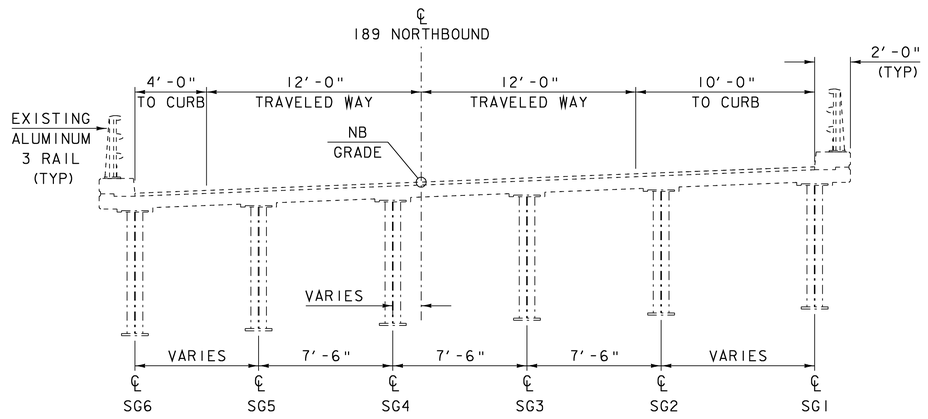
N.T.S.

PROJECT: BERLIN	PROJECT NO.: IM 089-1(20)
DESIGN FILE NAME: 99a270\structures\s99a270miscdet.dgn	
IPARM FILE NAME: s00a270paylimits.i	PLOT DATE: 05-DEC-2007
DESIGNED BY: G.SPILAK	DRAWN BY: C.MOONEY
SQUAD LEADER: C.P.WILLIAMS	CHECKED BY: R.S.YOUNG
PAYLIMITS AND SUBBASE TAPER	SHEET: 8 OF 104



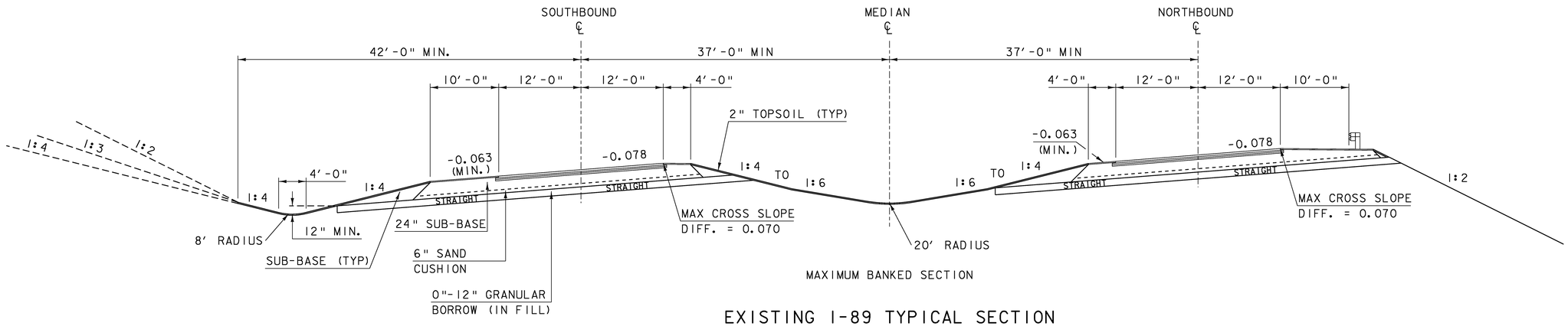
SOUTH BOUND EXISTING BRIDGE TYPICAL

SCALE 1/4" = 1′-0



NORTH BOUND EXISTING BRIDGE TYPICAL

SCALE 1/4" = 1′-0



MAXIMUM BANKED SECTION

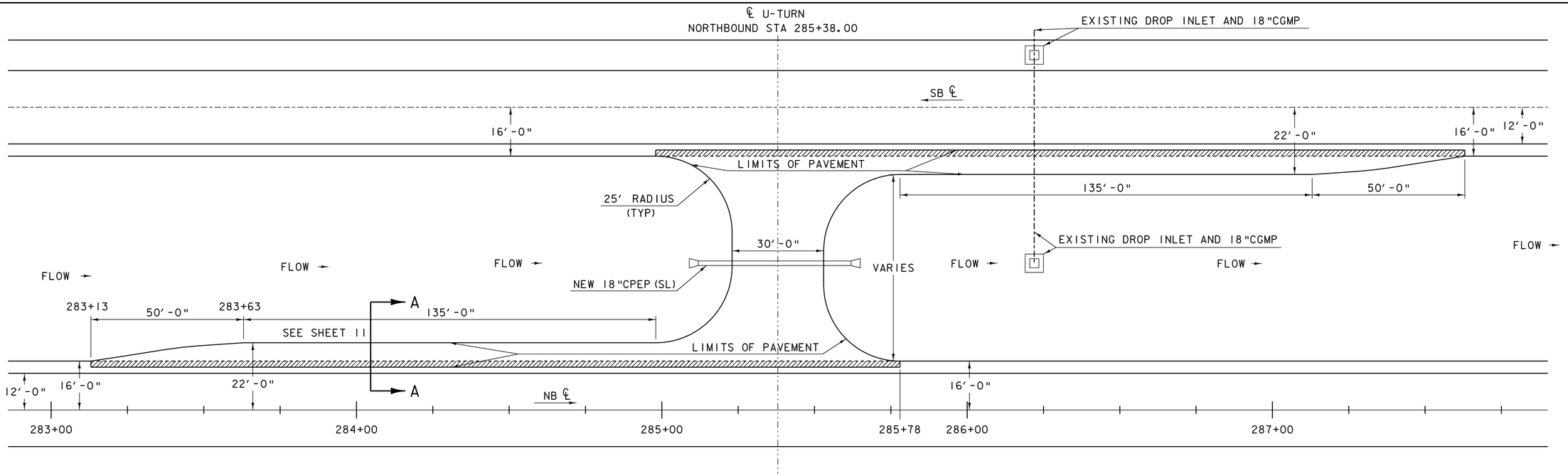
EXISTING I-89 TYPICAL SECTION

SCALE 1/8" = 1′-0

SCALE 1/4" = 1′-0
1 0 2 4 6

SCALE 1/8" = 1′-0
1 0 2 4 6 8

PROJECT: BERLIN	PROJECT NO.: IM 089-1(20)
DESIGN FILE NAME: 99a270\structures\s99a270typ.dgn	
IPARM FILE NAME: s00a270typ.i	PLOT DATE: 05-DEC-2007
DESIGNED BY: G.SPILAK	DRAWN BY: R.PELLETT
SQUAD LEADER: C.P.WILLIAMS	CHECKED BY: R.S.YOUNG
EXISTING TYPICAL SECTIONS	SHEET: 9 OF 104



NEW U-TURN PLAN
NORTHBOUND STA 285+38.00
N.T.S.

NOTE: SEE SHEET 11 FOR U-TURN SECTIONS AND SECTION A-A

2′-0" COLD PLANING - EXISTING SHOULDER

GENERAL NOTES

1. ALL MATERIALS AND CONSTRUCTION SHALL CONFORM TO THE STATE OF VERMONT AGENCY OF TRANSPORTATION "STANDARD SPECIFICATIONS FOR CONSTRUCTION", DATED 2006 AND ITS LATEST REVISIONS, AND THE AASHTO "STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES", SEVENTEENTH EDITION, AND ITS LATEST REVISIONS.

2. ALL DIMENSIONS SHOWN IN THE PLANS ARE HORIZONTAL OR VERTICAL AND ARE GIVEN AT 68 DEGREES FAHRENHEIT, UNLESS NOTED OTHERWISE.

3. ITEM 529.20, "PARTIAL REMOVAL OF STRUCTURE (DECK)" WILL BE FULL COMPENSATION FOR ALL MATERIAL; LABOR; EQUIPMENT AND INCIDENTALS TO COMPLETELY REMOVE FEATURES OF THE EXISTING DECKS DOWN TO THE TOP FLANGE OF THE EXISTING GIRDERS. SOME OF THE FEATURES INCLUDE, BUT ARE NOT LIMITED TO THE FOLLOWING: METAL BRIDGE RAILING; STEEL BRIDGE JOINTS; GRANITE CURB; AND REINFORCED CONCRETE DECK SLAB.

4. THE EXISTING SHEAR STUDS SHALL REMAIN ON THE GIRDERS. THE CONTRACTOR SHALL TAKE EXTRA CARE NOT TO DAMAGE THE SHEAR STUDS DURING DECK REMOVAL. DAMAGED STUDS SHALL BE REMOVED AND A NEW STUD SHALL BE REPLACED IN KIND TO THE SATISFACTION OF THE ENGINEER. EXISTING AND NEW SHEAR STUDS SHALL BE TESTED ACCORDING TO SECTION 508. REMOVAL AND REPLACEMENT OF SHEAR STUDS THAT ARE DAMAGED SHALL BE PAID FOR UNDER ITEM 900.620 SPECIAL PROVISION (REMOVE AND REPLACE, EXISTING SHEAR CONNECTORS).

5. ITEM 529.20, "PARTIAL REMOVAL OF STRUCTURE (ABUTMENT)" WILL BE FULL COMPENSATION FOR ALL MATERIALS, LABOR, EQUIPMENT AND INCIDENTALS TO COMPLETELY REMOVE THE APPROACH SLAB AND PORTIONS OF THE WING WALLS AND ABUTMENT AS DETAILED ON THE PLANS.

6. AN ESTIMATED QUANTITY FOR ITEM 502.11, "SHORING SUPERSTRUCTURE BEARINGS (ABUTMENT)" AND "SHORING SUPERSTRUCTURE BEARINGS (PIER)" HAS BEEN INCLUDED IN THIS PROJECT BASED ON THE ASSUMPTION THAT ONE BEARING MAY NEED TO BE RESET AT EACH BRIDGE FOUNDATION LOCATION. AFTER THE EXISTING DECK HAS BEEN REMOVED AND BEFORE THE NEW DECK IS CONSTRUCTED THE CONTRACTOR SHALL PROVIDE ACCESS FOR THE ENGINEER TO INSPECT THE BEARINGS. THE ENGINEER WILL DECIDE WHICH, IF ANY, OF THE BEARINGS WILL BE SHORED AND RESET. PAYMENT FOR PROVIDING ACCESS SHALL BE INCIDENTAL TO ITEM 502.11.

7. ALL WORK ASSOCIATED WITH THE PREPARATION AND PAINTING OF THE STRUCTURAL STEEL, 513.30, 513.36 AND 513.41, SHALL BE STARTED ONLY AFTER TRAFFIC IS ALLOWED ON THE REHABILITATED BRIDGE.

8. SUBSTRUCTURE CONCRETE AND APPROACH SLABS SHALL BE HIGH PERFORMANCE CLASS B. THE DECK CONCRETE SHALL BE ACCORDING TO ITEM 900.608, "SPECIAL PROVISION (HIGH PERFORMANCE CONCRETE, CLASS A LOW CEMENT)."

9. THE DECK SHALL RECEIVE A TURF DRAG FINISH ACCORDING TO ITEM 900.608, "SPECIAL PROVISION (HIGH PERFORMANCE CONCRETE, CLASS A LOW CEMENT)." THE DECK SHALL BE GROOVED ACCORDING TO ITEM 900.675, "SPECIAL PROVISION (LONGITUDINAL DECK GROOVING)."

10. WATER REPELLENT, SILANE, SHALL BE APPLIED TO ALL EXPOSED CONCRETE SURFACES, NEW OR EXISTING, INCLUDING CONCRETE PIERS. THE DECK SURFACE SHALL BE PRESSURE WASHED AFTER GROOVING OPERATIONS, PRIOR TO TREATMENT. THE DECK UNDERSIDE NEED NOT BE TREATED BETWEEN DRIP NOTCHES.

11. ALL EXPOSED EDGES OF CONCRETE SHALL BE CHAMFERED 1 INCH X 1 INCH, EXCEPT FOR THE TOP OF BRIDGE RAIL.

12. JOINTS AND SCORE MARKS IN CONCRETE SHALL BE CONSTRUCTED AS SHOWN IN THE PLANS OR AS DIRECTED BY THE RESIDENT ENGINEER.

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

14. ALL DECK REINFORCING STEEL SHALL BE EPOXY COATED AND PAID FOR UNDER ITEM 507.17, "EPOXY COATED REINFORCING STEEL".

15. MINIMUM COVER FOR REINFORCING STEEL SHALL BE AS INDICATED IN THE PLANS.

16. REINFORCING STEEL PLACEMENT TOLERANCES SHALL BE:
    SPACING: +/- 1 INCH
    CLEARANCE: +/- 1/4 INCH
    SEE SPECIAL PROVISIONS FOR F-SHAPE RAIL REINFORCING TOLERANCES

17. A NEW U-TURN SHALL BE INSTALLED AS SHOWN ABOVE AT NORTHBOUND STATION 285+38.00. THE EXISTING U-TURN AT MILE MARKER 52.68 SHALL BE REMOVED. PAYMENT FOR THE NEW U-TURN SHALL BE UNDER THE APPROPRIATE CONTRACT ITEMS. PAYMENT FOR REMOVAL OF THE EXISTING U-TURN SHALL BE INCIDENTAL TO THE TRAFFIC CONTROL ITEMS.

18. ACCESS TO EITHER THE NEW OR EXISTING U-TURN SHALL BE PROVIDED BETWEEN NOVEMBER 15 AND APRIL 15.

19. WOVEN WIRE FENCE SHALL BE USED AS NEEDED NEAR THE PIERS WHERE THE EXISTING FENCE INTERFERES WITH CONSTRUCTION AND WHERE THE CONTRACTOR HAS REMOVED EXISTING FENCE FOR ACCESS INSIDE THE R.O.W. PAYMENT FOR NEW FENCE SHALL BE PAID UNDER ITEM 620.25 "WOVEN WIRE FENCE WITH STEEL POSTS."

20. "GROOVED BRIDGE AHEAD" SIGNS SHALL BE PLACED AT MILE MARKERS 52.09 NORTHBOUND AND 52.81 SOUTHBOUND. SIGN DETAILS ARE ON SHEET 24.

21. THE SURFACE PREPARATION OF THE EXISTING STEEL SHALL INCLUDE 100% REMOVAL OF THE EXISTING PAINT SYSTEM IN THE AREA 7 FEET FROM THE END OF ALL GIRDERS INCLUDING BEARINGS. 100% REMOVAL WILL ALSO BE REQUIRED FOR THE ENTIRE BOTTOM FLANGE OF ALL GIRDERS. **THE APPROXIMATE AMOUNT OF 100% REMOVAL FOR THE REMAINING SURFACES IS 40%. AREAS OUTSIDE OF 100% REMOVAL SHALL BE PREPARED ACCORDING TO SPECIFICATION 513.04(e), SECOND AND FOURTH PARAGRAPHS.** ⚠

22. ALL STEEL SURFACES SHALL RECEIVE A FIELD APPLIED PAINT SYSTEM PER SPECIFICATION 513. THE COLOR OF THE FINAL COAT OF PAINT SHALL BE GREEN AND CONFORM TO FEDERAL STANDARD NO. 595, COLOR CHIP #14062.

23. THE GIRDER ENDS AND BEARINGS SHALL BE GREASED ACCORDING TO SPECIFICATION 513.

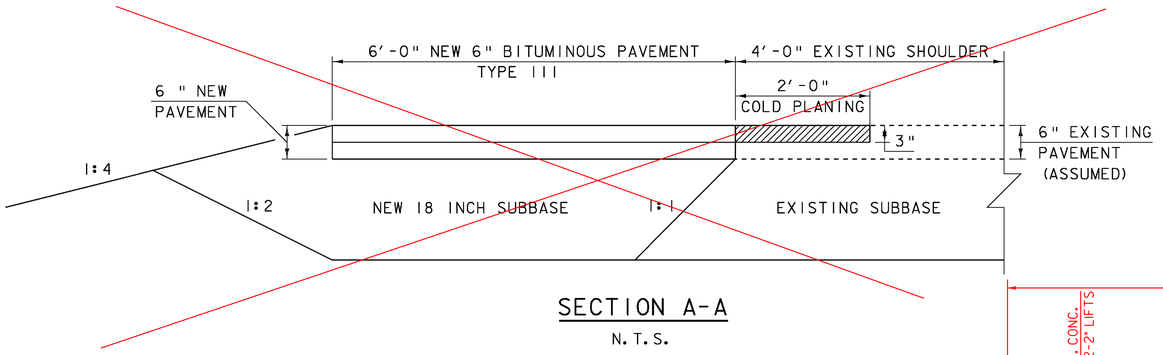
24. THE EXISTING BRIDGE PLAQUE LOCATED AT WINGWALL #3 SHALL BE REMOVED AND REPLACED ONTO NEW CONCRETE. PAYMENT SHALL BE INCIDENTAL TO ITEM 501.34 ,"CONCRETE, HIGH PERFORMANCE CLASS B."

25. THE CONTRACTOR SHALL HAVE TWO FULLY OPERATIONAL CONCRETE PUMP TRUCKS CAPABLE OF THE WORK REQUIRED ON SITE DURING THE DECK POUR OPERATIONS. PAYMENT FOR COSTS ASSOCIATED WITH SUPPLYING CONCRETE PUMP TRUCKS SHALL NOT BE PAID SEPARATELY, BUT SHALL BE INCIDENTAL TO ITEM 900.608, "SPECIAL PROVISION (HIGH PERFORMANCE CONCRETE, CLASS A LOW CEMENT) (FPQ)."

⚠ REVISED 01/22/08

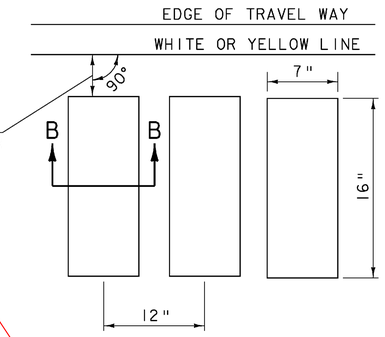
PROJECT:	PROJECT NO.:
BERLIN	IM 089-1(20)

DESIGN FILE NAME: 99a270\structures\s99a270gen.dgn
IPARM FILE NAME: s99a270gennotes.i PLOT DATE: 23-JAN-2008
DESIGNED BY: G.SPILAK DRAWN BY: C.MOONEY
SQUAD LEADER: C.P.WILLIAMS CHECKED BY: R.S.YOUNG
GENERAL NOTES & NEW U-TURN SHEET: 10 OF 104



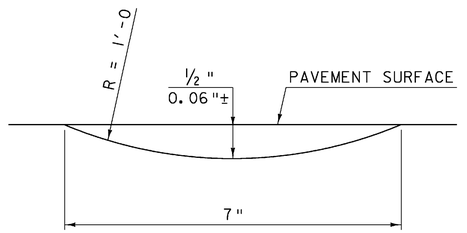
SECTION A-A

N. T. S.



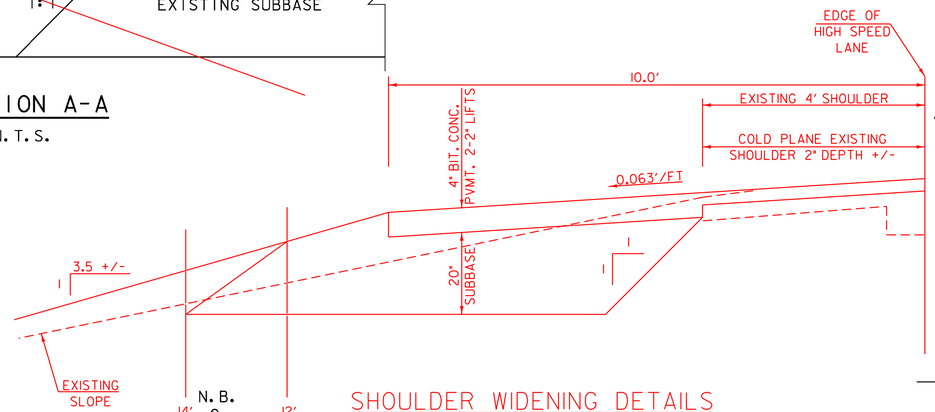
TYPICAL MILLING DETAIL

N. T. S.



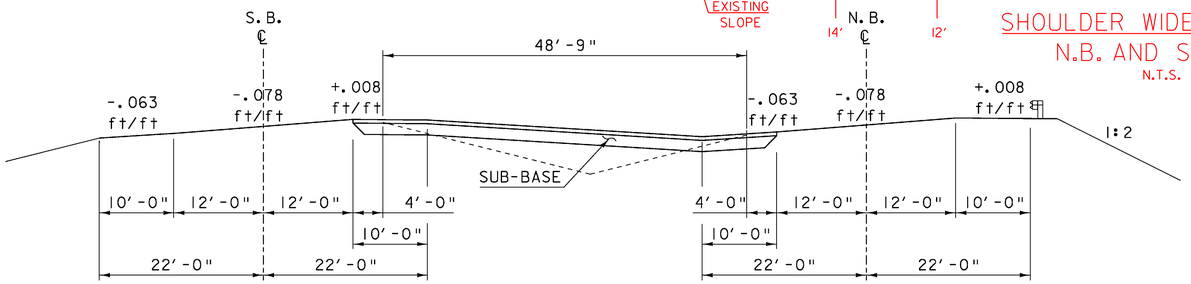
SECTION B-B

N. T. S.



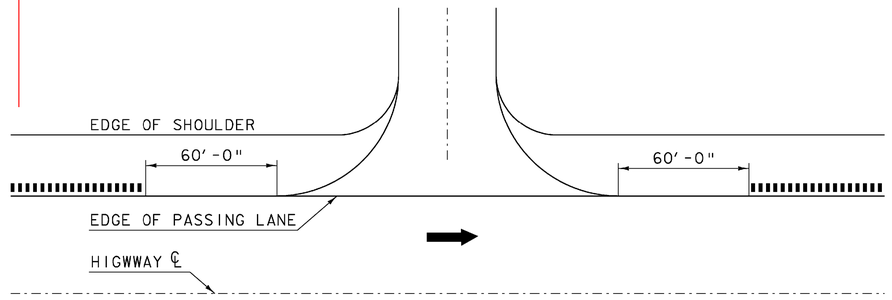
SHOULDER WIDENING DETAILS
N.B. AND S.B LANES

N.T.S.



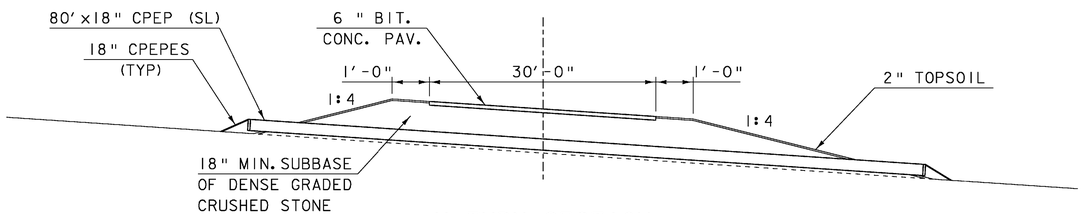
U-TURN @ NORTHBOUND ℄
STA 285+38.00

SCALE 1"=10′-0"



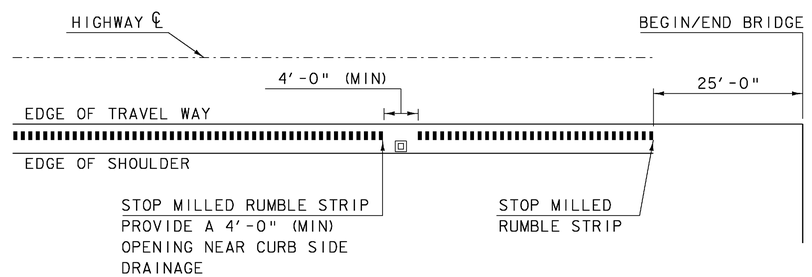
U-TURN DETAIL

N. T. S.



U-TURN SECTION
ALONG ℄ NEW PIPE

SCALE 1"=10′-0"



DRAINAGE DETAIL

N. T. S.

NOTE:
THERE IS NO SURVEY FOR THIS SECTION OF THE PROJECT. AS SUCH NO ELEVATIONS ARE KNOWN AND THE EXISTING GROUND MAY DIFFER FROM THESE SECTIONS

SCALE 1" = 10′-0
10 0 10

PROJECT: BERLIN	PROJECT NO.: IM 089-1(20)
DESIGN FILE NAME: 99a270\structures\s99a270gen.dgn	
IPARM FILE NAME: s99a270uturn.i	PLOT DATE: 05-DEC-2007
DESIGNED BY: G.SPILAK	DRAWN BY: C.MOONEY
SQUAD LEADER: C.P.WILLIAMS	CHECKED BY: R.S.YOUNG
U-TURN & RUMBLE STRIP DETAILS	SHEET: 11 OF 104

GPS CONTROL POINTS

HVCTRL #1

STANDARD DISC STAMPED

JORDAN

** N = 34440.2370

E = 15507.9300

ELEV. = 522.4400

GENERAL LOCATION, BERLIN, VT .TO REACH FROM THE INTERSECTION OF US ROUTE 2 (MEMORIAL DRIVE) AND VT ROUTE 12 (NORTHFIELD STREET) IN MONTPELIER GO SOUTH ALONG VT ROUTE 12 FOR 1. 0 MI (1.6 KM) TO THE I -89 BRIDGES OVERHEAD .CONTINUE STRAIGHT AHEAD AND GO SOUTH ALONG VT ROUTE 12 FOR O .6 MI (1. O KM) TO THE INTERSECTION OF A GRAVEL DRIVE RIGHT LEADING TO A PUMP STATION AND THE SITE OF THE MARK ON THE RIGHT, NORTH OF THE DRIVE .IT IS ABOUT OPPOSITE THE NORTH SIDE OF THE WHEELS TRANSPORTATION BUILDING ON THE LEFT. THE MARK IS SET 20 CM BELOW GROUND SURFACE IN THE TOP OF A CAST ALUMINUM MONUMENT .IT IS 7.5 M (24.6 FT) WEST OF AND ABOUT 0.4 M (1.3 FT) LOWER THAN THE CENTERLINE OF VT ROUTE 12, 5.8 M (19.0 FT) NORTH OF THE CENTERLINE OF THE GRAVEL DRIVE, 27.5 M (90.2 FT) SOUTH OF POLE NO 60S, 26.5 M (86.9 FT) NORTHEAST OF THE NORTHEAST CORNER OF A SMALL WOOD PUMP STATION BUILDING, AND 0.4 M (1.3 FT) NORTH OF A FIBERGLASS WITNESS POST.

HVCTRL #2

STANDARD DISC STAMPED

JORDAN AZ

** N = 35850.4340

E = 15655.2000

ELEV. = 527.7500

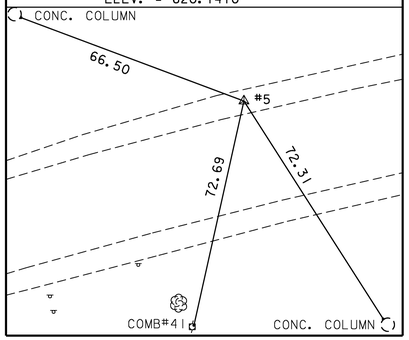
GENERAL LOCATION, BERLIN, VT. OWNERSHIP, KEN WESTON, 6261 ROUTE 12, BERLIN, VT 05602. TO REACH FROM THE INTERSECTION OF US ROUTE 2 (MEMORIAL DRIVE) AND VT ROUTE 12 (NORTHFIELD STREET) IN MONTPELIER GO SOUTH ALONG VT ROUTE 12 FOR 1.0 MI (1.6 KM) TO THE I-89 BRIDGES OVERHEAD. CONTINUE STRAIGHT AHEAD AND GO SOUTH ALONG VT ROUTE 12 FOR 0.3 MI (O .5 KM) TO THE INTERSECTION OF DOG RIVER ROAD RIGHT. TURN RIGHT AND GO NORTHWEST ALONG DOG RIVER ROAD FOR ABOUT 65 M (213.3 FT) TO THE SITE OF THE MARK ON THE LEFT, UNDER A POWERLINE .THE MARK IS SET IN THE TOP OF THE NORTHWEST END OF A MASSIVE ROCK OUTCROP WHICH PROJECTS ABOUT 1 M (3.3 FT) ABOVE GROUND SURFACE. IT IS 66.1 M (216.9 FT) NORTHWEST OF AND ABOUT LEVEL WITH THE CENTERLINE OF VT ROUTE 12, 68.4 M (224.4 FT) SOUTHWEST OF THE CENTERLINE OF DOG RIVER ROAD, 57.5 M (188.6 FT) SOUTH OF POLE NO 105, 54.2 M (177.8 FT) NORTH NORTHWEST OF POLE NO 368, 1.7 M (5.6 FT) NORTHEAST OF THE SOUTHWEST END OF THE OUTCROP, AND 1.4 M (4.6 FT) NORTHWEST OF A FIBERGLASS WITNESS POST.

** TO ALLOW THE AGENCY DESIGN PLANE COORDINATES TO FIT THE STATE PLANE COORDINATES, ADD 600000 TO THE NORTHING & ADD 1600000 TO THE EASTINGS, TO THE ABOVE AND BELOW VALUES.
* DESCRIPTION PROVIDED BY VERMONT AGENCY OF TRANSPORTATION GEODETIC SURVEY UNIT

TRAVERSE TIES

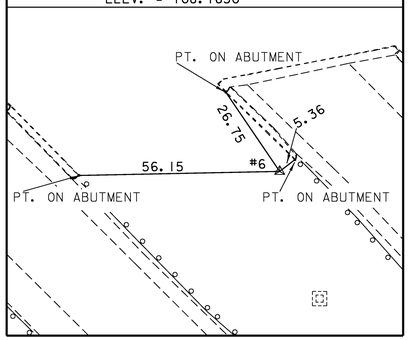
HVCTRL #5

NORTH = 36843.6614
EAST = 17052.6247
ELEV. = 620.1410



HVCTRL #6

NORTH = 36679.2527
EAST = 17324.3760
ELEV. = 708.1650



NORTH =
EAST =
ELEV. =

NORTH =
EAST =
ELEV. =

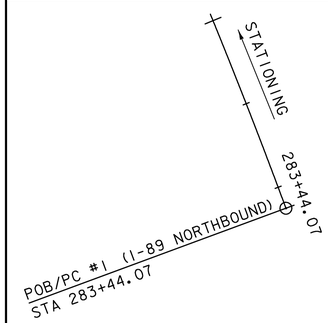
* MAIN TRAVERSE COMPLETED: DECEMBER 2, 2001 BY R.GILMAN, P.WINTERS, & D.BREER

ALIGNMENT TIES

I-89 NORTHBOUND

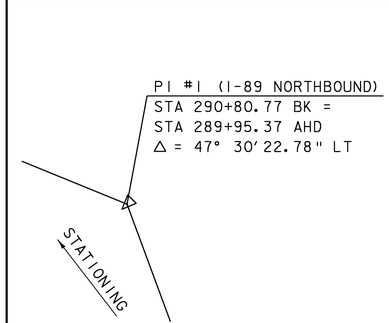
PC #1 STA 283+44.07 (I-89 NORTHBOUND)

NORTH = 36080.9819
EAST = 17740.1408



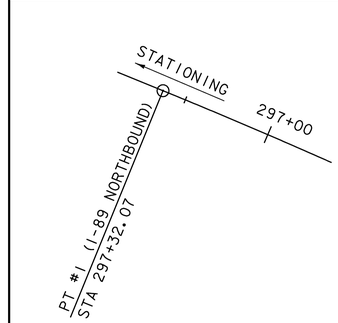
PI #1 STA 290+80.77 (I-89 NORTHBOUND)

NORTH = 36771.7697
EAST = 17484.1441



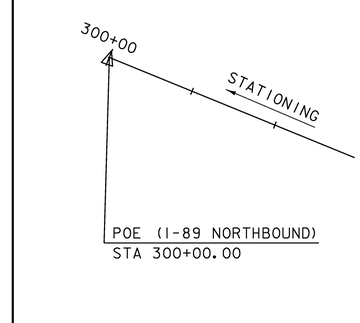
PT #1 STA 297+32.07 (I-89 NORTHBOUND)

NORTH = 37049.6434
EAST = 16801.8624



POE #1 STA 300+00.00 (I-89 NORTHBOUND)

NORTH = 37150.7035
EAST = 16553.7227



* ALIGMENT STAKED

DATUM

VERTICAL NAVD 88
HORIZONTAL NAD-83 (96)
ADJUSTMENT COMPASS

PROJECT NAME: BERLIN
PROJECT NUMBER: IM 089-1(20)

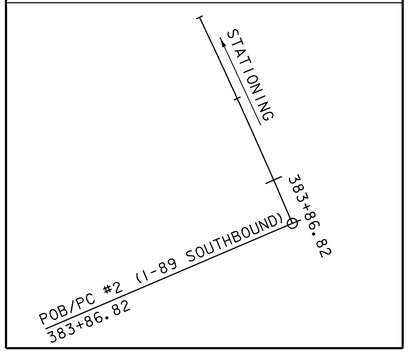
FILE NAME: 99a270/xa270t1.dgn
PROJECT LEADER: S.FARNSWORTH
DESIGNED BY: G.SPILAK
SURVEY & NORTHBOUND ALIGNMENT TIES

PLOT DATE: 05-DEC-2007
DRAWN BY: J. HULETT
CHECKED BY: P. HODGE
SHEET 12 OF 104

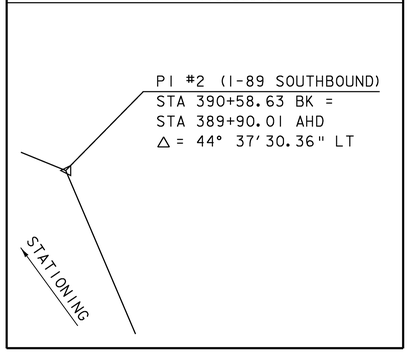
ALIGNMENT TIES

I-89 SOUTHBOUND

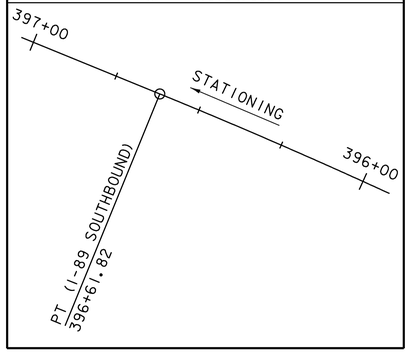
PC #2 STA 383+86.82 (I-89 SOUTHBOUND)
NORTH = 36117.5242
EAST = 17640.0299



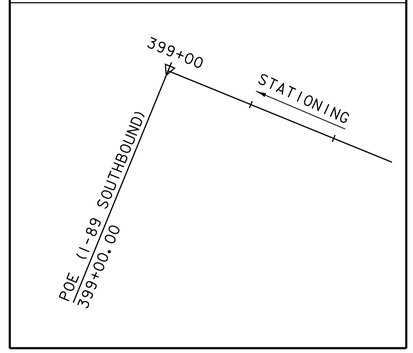
PI #2 STA 390+58.63 (I-89 SOUTHBOUND)
NORTH = 36735.2520
EAST = 17375.9468



PT #2 STA 396+61.82 (I-89 SOUTHBOUND)
NORTH = 36989.3915
EAST = 16754.0621



POE #2 STA 399+00.00 (I-89 SOUTHBOUND)
NORTH = 37079.4915
EAST = 16533.5856



DATUM

VERTICAL NAVD 88

HORIZONTAL NAD-83 (96)

ADJUSTMENT COMPASS

PROJECT NAME: BERLIN

PROJECT NUMBER: IM 089-1(20)

FILE NAME: 99a270/s99a270t1.dgn
PROJECT LEADER: C.P. WILLIAMS
DESIGNED BY: G. SPILAK
SOUTHBOUND ALIGNMENT TIES

PLOT DATE: 05-DEC-2007
DRAWN BY: J. HULETT
CHECKED BY: P. HODGE
SHEET 13 OF 104

REMOVAL AND DISPOSAL OF GUARDRAIL
STA 288+34.60 - STA 290+00.00 LT

HD STEEL BEAM GUARDRAIL, GALVANIZED
STA 286+60.30 - STA 290+00.00 LT

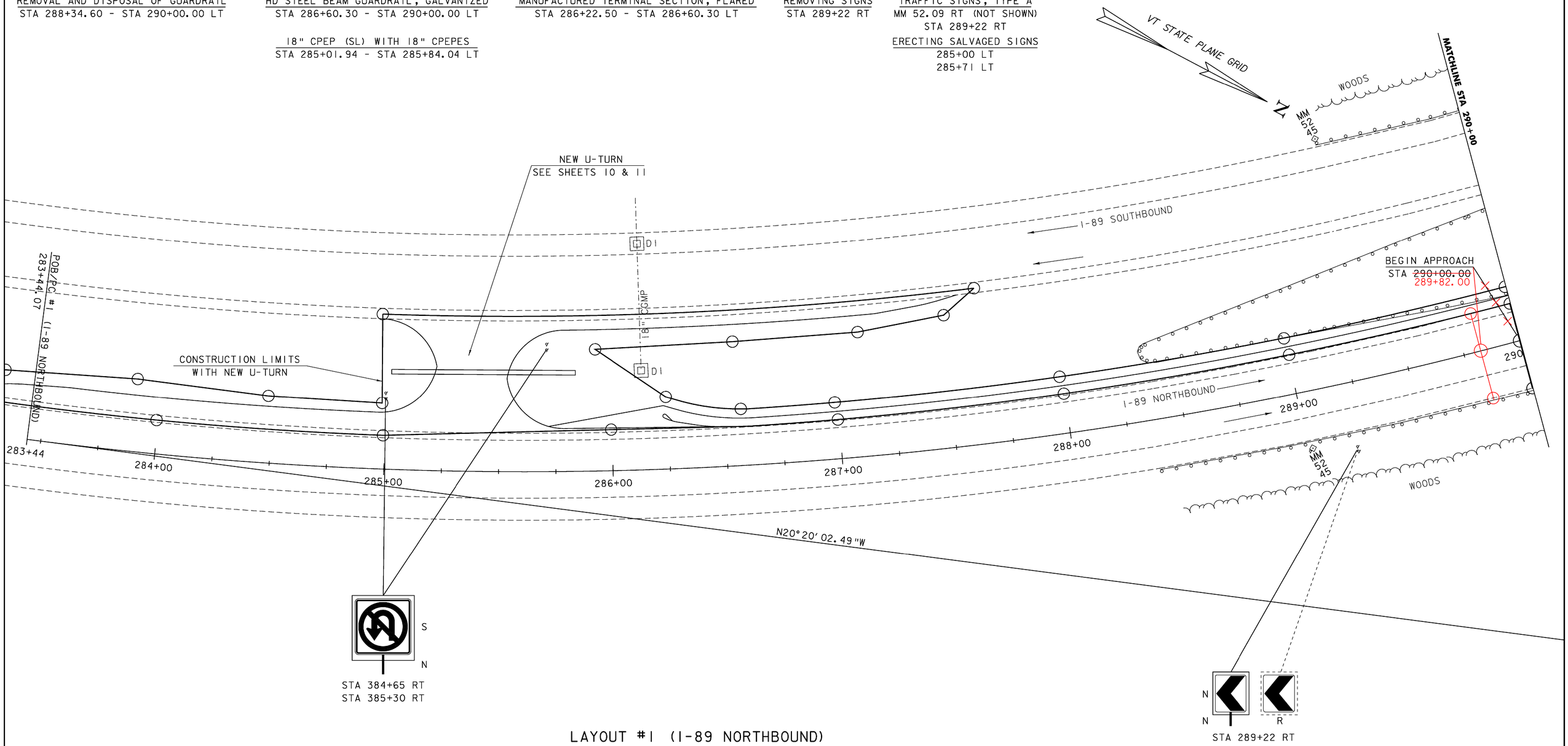
18" CPEP (SL) WITH 18" CPEPES
STA 285+01.94 - STA 285+84.04 LT

MANUFACTURED TERMINAL SECTION, FLARED
STA 286+22.50 - STA 286+60.30 LT

REMOVING SIGNS
STA 289+22 RT

TRAFFIC SIGNS, TYPE A
MM 52.09 RT (NOT SHOWN)
STA 289+22 RT

ERECTING SALVAGED SIGNS
285+00 LT
285+71 LT



LAYOUT #1 (I-89 NORTHBOUND)

SCALE 1" = 20'-0
20 0 20

SIGN LEGEND
N - NEW SIGN & POST
R - REMOVE EXISTING SIGN AND POST

PROJECT:	PROJECT NO.:
BERLIN	IM 089-1(20)
DESIGN FILE NAME: 99a270\structures\s99a270bdr.dgn	
IPARM FILE NAME: s99a270lal nb.i	PLOT DATE: 05-DEC-2007
DESIGNED BY: K.M.HIGGINS	DRAWN BY: D.D.BEARD
SQUAD LEADER: C.P.WILLIAMS	CHECKED BY: R.S.YOUNG
LAYOUT NORTHBOUND 1	SHEET: 14 OF 104

MILLED RUMBLE STRIPS
STA 290+00.00 - STA 290+55.00 RT
STA 295+55.00 - STA 296+25.00 RT

DURABLE 6" WHITE LINE, THERMOPLASTIC
STA 290+00.00 - STA 296+25.00 RT
STA 290+00.00 - STA 296+25.00 DASHED ℄

DURABLE 6" YELLOW LINE, THERMOPLASTIC
STA 290+00.00 - STA 296+25.00 LT

REMOVAL AND DISPOSAL OF GUARDRAIL
STA 290+00.00 - STA 290+82.70 LT
STA 290+27.21 - STA 290+57.44 RT
STA 295+39.15 - STA 296+50.00 RT
STA 295+91.74 - STA 298+90.08 LT

ANCHOR FOR STEEL BEAM RAIL
STA 295+86.00 RT

CHANGING ELEVATION OF DROP INLET, CATCH BASINS, OR MANHOLES
STA 296+11.60 LT

SPECIAL PROVISION
(GUARDRAIL APPROACH SECTION, TO F-SHAPE CONCRETE RAIL)
STA 290+51.75 - STA 290+82.70 LT
STA 290+27.20 - STA 290+57.45 RT
STA 295+91.75 - STA 296+22.70 LT
STA 295+39.15 - STA 295+69.35 RT

SPECIAL PROVISION
(BRIDGE RAILING, F-SHAPE CONCRETE).
STA 290+82.70 - STA 295+91.75 LT
STA 290+57.45 - STA 295+39.15 RT

HD STEEL BEAM GUARDRAIL, GALVANIZED
STA 290+00.00 - STA 290+51.75 LT
STA 295+69.35 - STA 295+95.65 RT
STA 296+22.70 - STA 296+25.00 LT

REMOVING SIGNS
STA 290+49 RT
STA 291+67 RT
STA 292+93 RT
STA 294+11 RT

TRAFFIC SIGNS, TYPE A
STA 290+49 RT
STA 291+67 RT
STA 294+11 RT

MATCHLINE STA 290+00

MATCHLINE STA 296+25

WOODS

CONSTRUCTION LIMITS

MM 52 50

I-89 SOUTHBOUND

I-89 NORTHBOUND

BEGIN APPROACH
STA ~~290+00.00~~ 289+82.00

BEGIN PROJECT
STA 290+50.00
32.00

BEGIN BRIDGE 40N
STA 290+96.63

℄ BRG ABUTMENT #3
STA 291+00.00

℄ PIER #3
STA 292+46.67

END APPROACH SLAB #4
STA 295+71.02

END BRIDGE 40N
STA 295+46.01

℄ PIER #4
STA 293+95.00

℄ BRG ABUTMENT #4
STA 295+41.67

END PROJECT
STA 296+~~00.00~~ 17.00

BEGIN APPROACH SLAB #3
STA 290+71.63

BRIDGE 40-N I-89 — R — STA 290+49 RT

BRIDGE 40-N I-89 — N — N

N — STA 291+67 RT

R (2) — STA 291+67 RT, STA 292+93 RT

N R — STA 294+11 RT

BRIDGE 72-A VT 12

BERLIN | MONTPELIER
0120 1203 0669
0120 1211 0000

SPEED LIMIT 30

SPEED LIMIT 50

INFORMATION

WARNING UNDERGROUND CABLE

VT RTE 12 TO NORTHFIELD

VT RTE 12 TO MONTPELIER

BERLIN MONTPELIER

HVCTRL #5

HVCTRL #6

ROW FENCE

EL 40

18" CMP

12" CGMP

24" CGMP

N67°50'25.27"W

VT STATE PLANE GRID

PI #1 (I-89 NORTHBOUND)
STA 290+80.77 BK =
STA 289+95.37 AHD
△ = 47° 30' 22.68" LT

CURVE #1 (I-89 NORTHBOUND) DATA

Degree of Curvature:	3°25'22"
Radius:	1674.02'
Tangent:	736.70'
Length:	1388.00'
External:	154.93'

SCALE 1" = 20'-0
20 0 20

LAYOUT #2 (I-89 NORTHBOUND)

SIGN LEGEND
N - NEW SIGN & POST
R - REMOVE EXISTING SIGN AND POST

PROJECT: BERLIN	PROJECT NO.: IM 089-1(20)
DESIGN FILE NAME: 99a270\structures\s99a270bdr.dgn	
IPARM FILE NAME: s99a270la2 nb.i	PLOT DATE: 05-DEC-2007
DESIGNED BY: K.M.HIGGINS	DRAWN BY: D.D.BEARD
SQUAD LEADER: C.P.WILLIAMS	CHECKED BY: R.S.YOUNG
LAYOUT NORTHBOUND 2	SHEET: 15 OF 104

REMOVAL AND DISPOSAL OF GUARDRAIL
STA 296+25.00 - STA 298+80.00 LT

HD STEEL GUARDRAIL, GALVANIZED
STA 296+25.00 - STA ~~297+62.50~~ 296+50.00 LT

MANUFACTURED TERMINAL SECTION, FLARED
~~STA 297+62.50 - STA 298+00.00~~ LT

REMOVAL OF SIGNS
STA 297+29.00 RT
STA 300+37 LT
STA 301+02 LT

TRAFFIC SIGN, TYPE A
STA 297+29.00 RT

ERECTING SALVAGED SIGNS
PLACE SALVAGED SIGN FROM STA 297+29 RT AS SHOWN ON DETOUR SHEET 32, PRIOR TO DETOURING TRAFFIC. ONCE NORTHBOUND CONSTRUCTION IS COMPLETED, PLACE AT MM 52.85 RT

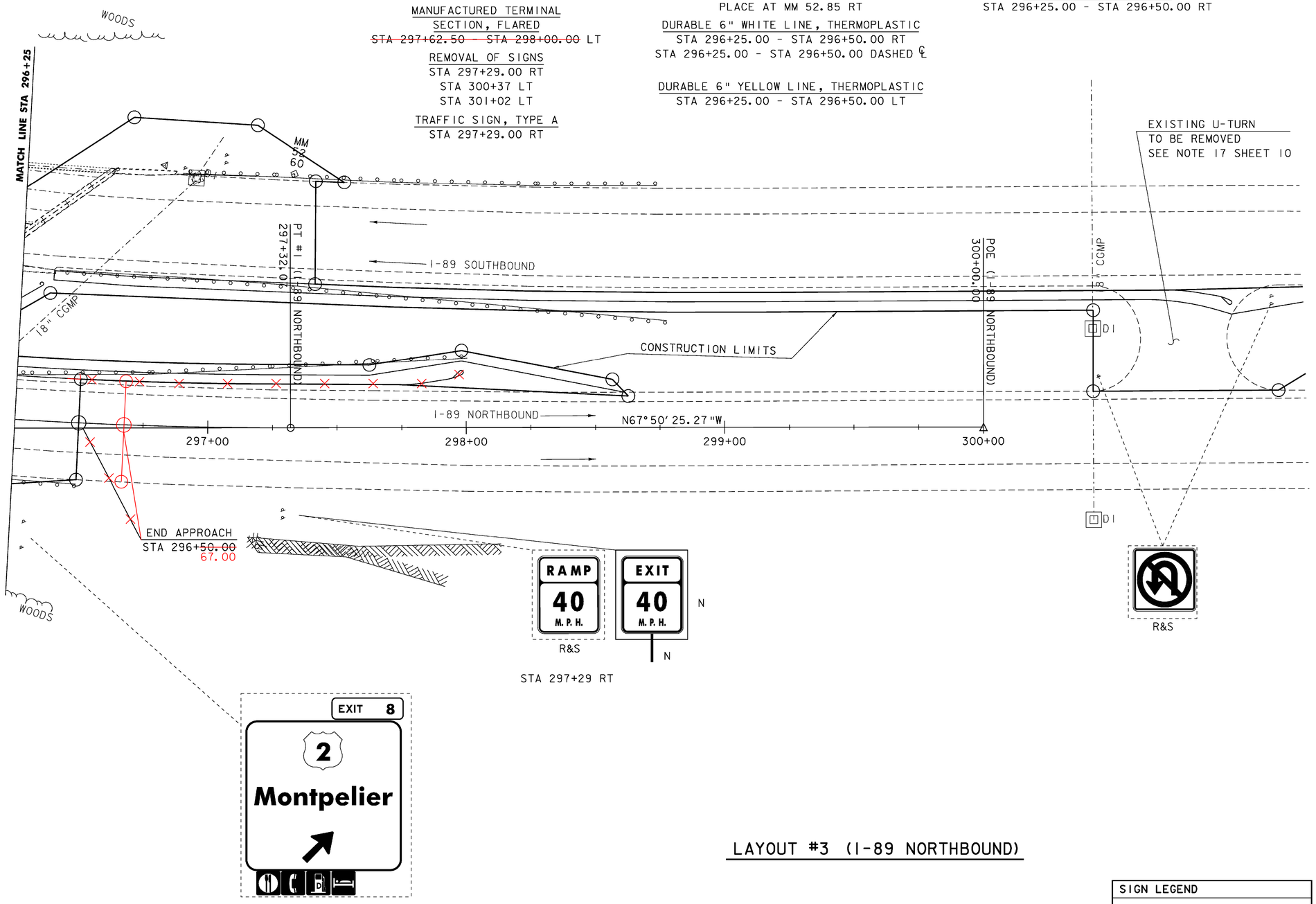
DURABLE 6" WHITE LINE, THERMOPLASTIC
STA 296+25.00 - STA 296+50.00 RT
STA 296+25.00 - STA 296+50.00 DASHED ℄

DURABLE 6" YELLOW LINE, THERMOPLASTIC
STA 296+25.00 - STA 296+50.00 LT

ROW LINE

MILLED RUMBLE STRIPS
STA 296+25.00 - STA 296+50.00 RT

ANCHOR FOR STEEL BEAM RAIL
296+50.00 LT



LAYOUT #3 (I-89 NORTHBOUND)

SCALE 1" = 20'-0
20 0 20

SIGN LEGEND
N - NEW
R - REMOVE
RET - RETAIN
R&S - REMOVE & SALVAGE
S - ERECTING SALVAGED SIGNS

PROJECT:	PROJECT NO.:
BERLIN	IM 089-1(20)

DESIGN FILE NAME: 99a270\structures\s99a270bdr.dgn
IPARM FILE NAME: s99a270la3 nb.i — PLOT DATE: 05-DEC-2007
DESIGNED BY: K.M.HIGGINS — DRAWN BY: D.D.BEARD
SQUAD LEADER: C.P.WILLIAMS — CHECKED BY: R.S.YOUNG
LAYOUT NORTHBOUND 3 — SHEET: 16 OF 104

BEGIN PROJECT
(189 NORTHBOUND)
STA 290+50.00

BEGIN BRIDGE 40N
STA 290+96.63
ELEV = 709.58

℄ BRG ABUTMENT #3
STA 291+00.00

℄ PIER #3
STA 292+46.67

℄ PIER #4
STA 293+95.00

END BRIDGE 40N
STA 295+46.01
ELEV = 688.19

℄ BRG ABUTMENT #4
STA 295+41.67

END PROJECT
(189 NORTHBOUND)
STA 296+00.00

FIXED

-4.76|8%

EXP. EXP.

FIXED EXP.

FIXED

EXISTING
GROUND

℄
VT RTE 12

290+00	290+25	290+50	290+75	291+00	291+25	291+50	291+75	292+00	292+25	292+50	292+75	293+00	293+25	293+50	293+75	294+00	294+25	294+50	294+75	295+00	295+25	295+50	295+75	296+00	296+25
713.9	712.9	711.8	710.6	700.1	690.6	680.1	669.6	659.1	648.5	637.8	629.3	628.0	627.8	626.4	628.8	635.5	643.5	651.2	658.8	666.6	674.2	688.0	686.7	685.5	684.3
714.19	713.00	711.81	710.61	709.43	708.23	707.04	705.85	704.66	703.47	702.28	701.09	699.90	698.71	697.52	696.33	695.14	693.95	692.76	691.57	690.38	689.19	688.00	686.81	685.62	684.42

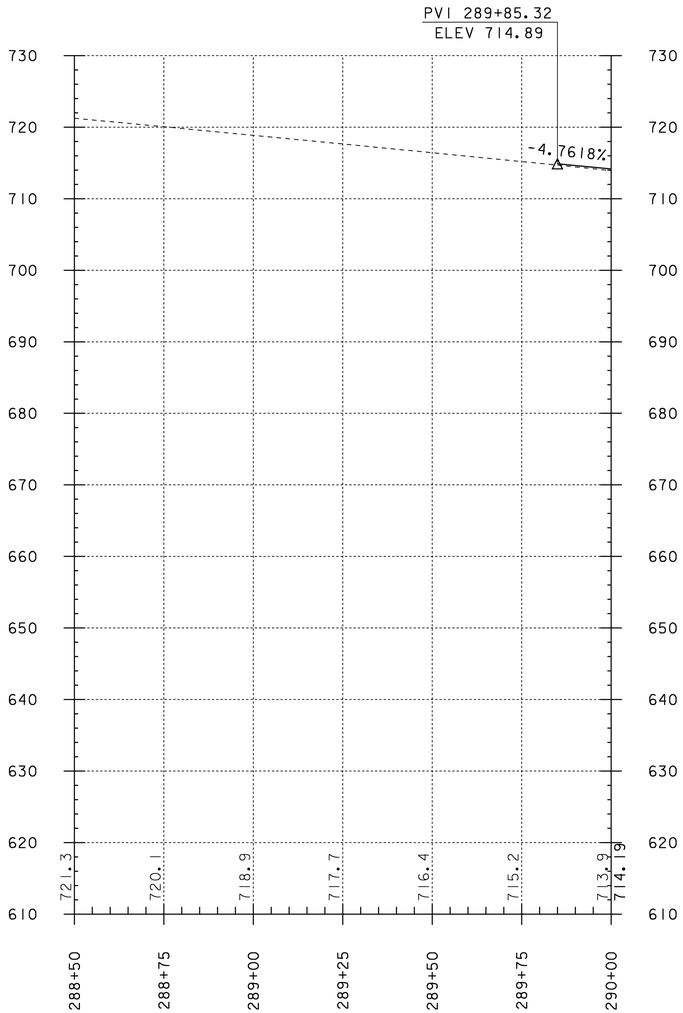
730 720 710 700 690 680 670 660 650 640 630 620 610

VERTICAL 0 10 20 30
HORIZONTAL 0 20 40 60
SCALE IN FEET

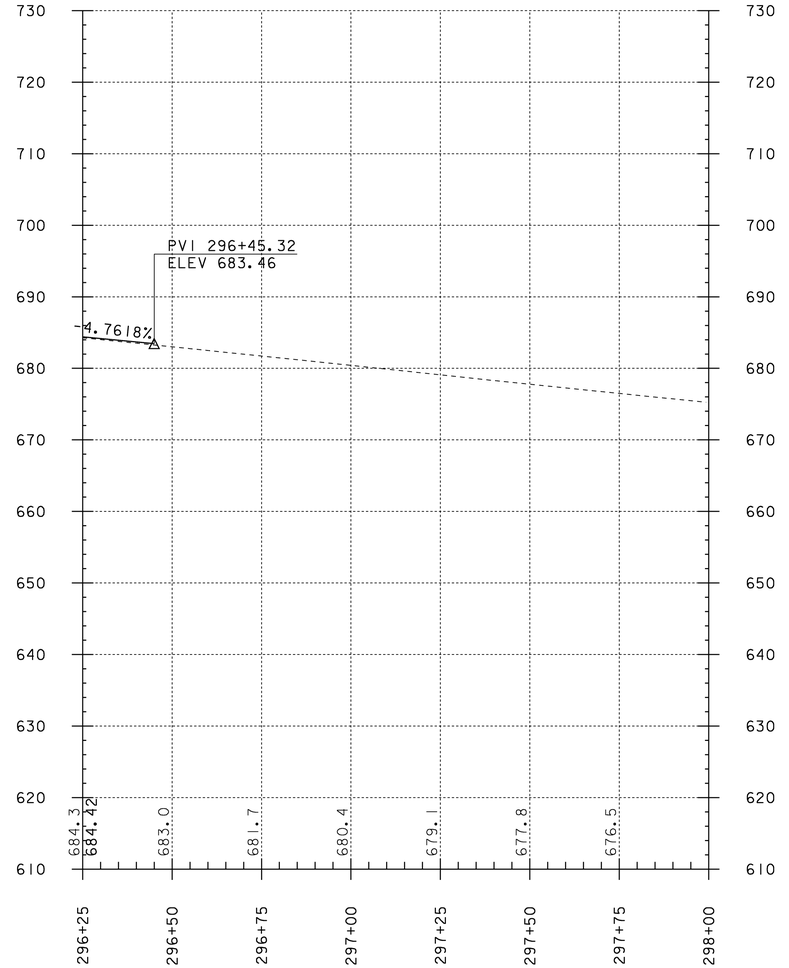
PROFILE #2 (LAYOUT I-89 NORTHBOUND)

PROJECT:	PROJECT NO.:
BERLIN	IM 089-1(20)

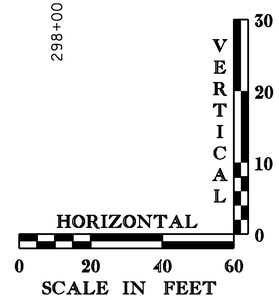
DESIGN FILE NAME: 99a270\structures\s99a270pro.dgn
IPARM FILE NAME: s99a270prol nb — PLOT DATE: 05-DEC-2007
DESIGNED BY: K.M.HIGGINS — DRAWN BY: D.D.BEARD
SQUAD LEADER: C.P.WILLIAMS — CHECKED BY: R.S.YOUNG
NORTHBOUND PROFILE 1 — SHEET: 17 OF 104



PROFILE #1 (LAYOUT I-89 NORTHBOUND)

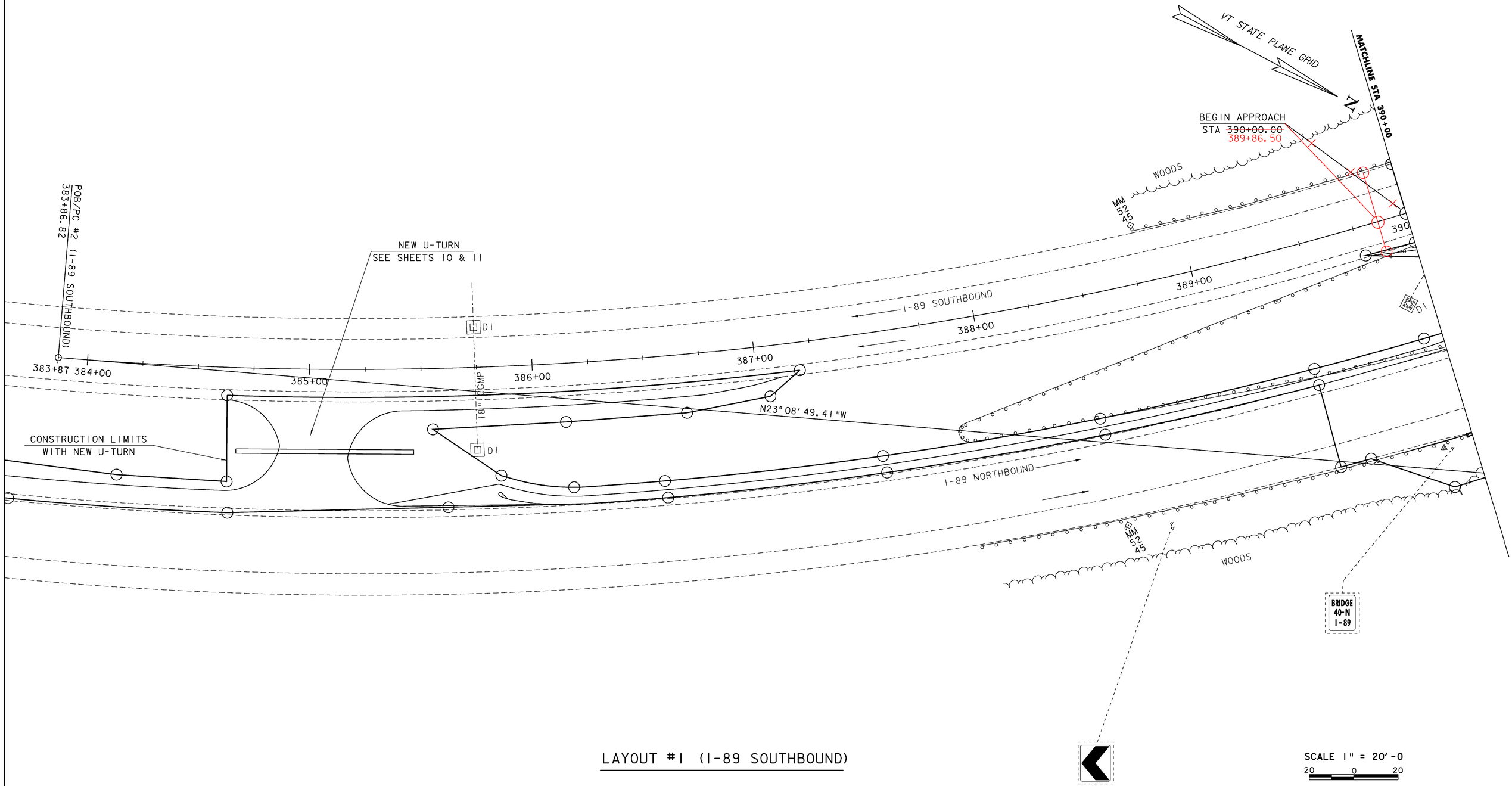


PROFILE #3 (LAYOUT I-89 NORTHBOUND)



PROJECT:	PROJECT NO.:
BERLIN	IM 089-1(20)

DESIGN FILE NAME: 99a270\structures\s99a270pro.dgn
IPARM FILE NAME: s99a270pro2 nb
PLOT DATE: 05-DEC-2007
DESIGNED BY: K.M.HIGGINS
DRAWN BY: D.D.BEARD
SQUAD LEADER: C.P.WILLIAMS
CHECKED BY: R.S.YOUNG
NORTHBOUND PROFILE 2
SHEET: 18 OF 104



LAYOUT #1 (I-89 SOUTHBOUND)

SCALE 1" = 20'-0

20 0 20

PROJECT:	PROJECT NO.:
BERLIN	IM 089-1(20)

DESIGN FILE NAME: 99a270\structures\s99a270bdr.dgn
IPARM FILE NAME: s99a270lal sb.i
PLOT DATE: 05-DEC-2007
DESIGNED BY: K.M.HIGGINS
DRAWN BY: D.D.BEARD
SQUAD LEADER: C.P.WILLIAMS
CHECKED BY: R.S.YOUNG
LAYOUT SOUTHBOUND 1
SHEET: 19 OF 104

CHANGING ELEVATION OF DROP INLET, CATCH BASINS, OR MANHOLES
STA 390+54.67 LT

REMOVAL AND DISPOSAL OF GUARDRAIL
STA 390+00.00 - STA 390+60.66 RT
STA 390+61.40 - STA 390+92.47 LT
STA 395+95.61 - STA 396+00.00 LT
STA 395+50.09 - STA 396+00.00 RT

SPECIAL PROVISION
(BRIDGE RAILING, F-SHAPE CONCRETE)
STA 390+92.45 - STA 395+95.60 LT
STA 390+60.65 - STA 395+50.10 RT

ANCHOR FOR STEEL BEAM RAIL
STA 390+13.00 RT

HD STEEL BEAM GUARDRAIL, GALVANIZED
STA 390+03.80 - STA 390+30.30 RT
STA 395+80.45 - STA 396+00.00 RT
STA 390+28.50 - STA 390+59.50 RT
STA 395+03.15 - STA 395+46.30 RT

SPECIAL PROVISION
(GUARDRAIL APPROACH SECTION TO F-SHAPE CONCRETE RAIL)
STA 390+61.40 - STA 390+92.45 LT
STA 390+30.30 - STA 390+60.65 RT
STA 395+95.60 - STA 396+00.00 LT
STA 395+50.10 - STA 395+80.45 RT

MILLED RUMBLE STRIPS
STA 390+00.00 - STA 390+55.00 LT
STA 395+60.00 - STA 396+00.00 LT

DURABLE 6" WHITE LINE, THERMOPLASTIC
STA 390+00.00 - STA 396+00.00 LT
STA 390+00.00 - STA 396+00.00 DASHED ℄

DURABLE 6" YELLOW LINE, THERMOPLASTIC
STA 390+00.00 - STA 396+00.00 RT

REMOVING SIGNS
STA 395+99 LT

TRAFFIC SIGNS, TYPE A
STA 395+99 LT

MATCHLINE STA 390+00

BEGIN APPROACH
STA ~~390+00.00~~
389+86.50

BEGIN PROJECT
STA ~~390+50.00~~
390+36.50

BEGIN BRIDGE 40S
STA 390+96.63

℄ PIER #1
STA 392+46.67

CONSTRUCTION LIMITS

END BRIDGE 40S
STA 395+46.02

END PROJECT
STA ~~396+00.00~~

MATCH LINE STA 396+00

STA 395+99 LT
BRIDGE 40-S I-89 (N)
BRIDGE 40-S I-89 (R)

WOODS

I-89 SOUTHBOUND

I-89 NORTHBOUND

VT RTE 12 TO NORTHFIELD

VT RTE 12 TO MONTPELIER

VT STATE PLANE GRID

N67° 46' 19.63"W

℄ BRG ABUTMENT #1
STA 391+00.00

BEGIN APPROACH SLAB #1
STA 390+71.63

℄ BRG ABUTMENT #2
STA 395+41.67

℄ PIER #2
STA 393+95.00

END APPROACH SLAB #2
STA 395+71.02

HVCTRL #5
HVCTRL #6

ROW FENCE

EL 40

COMB 41

12" CGMP

18" CGMP

24" CGMP

DI

MM 52 50

MM 52 55

390+00
391+00
392+00
393+00
394+00
395+00
396

PI #2 (I-89 SOUTHBOUND)
STA 390+58.63 BK =
STA 389+90.01 AHD
△ = 44° 37' 30.36" LT

CURVE #1 (I-89 SOUTHBOUND) DATA

Degree of Curvature:	3°30'00"
Radius:	1637.02'
Tangent:	671.81'
Length:	1275.00'
External:	132.49'

SCALE 1" = 20'-0
20 0 20

BERLIN
MONTPELIER

LAYOUT #2 (I-89 SOUTHBOUND)

SIGN LEGEND
N - NEW SIGN & POST
R - REMOVE EXISTING SIGN AND POST

PROJECT:	PROJECT NO.:
BERLIN	IM 089-1(20)

DESIGN FILE NAME: 99a270\structures\s99a270bdr.dgn
IPARM FILE NAME: s99a270la2 sb.i
PLOT DATE: 05-DEC-2007
DESIGNED BY: K.M.HIGGINS
DRAWN BY: D.D.BEARD
SQUAD LEADER: C.P.WILLIAMS
CHECKED BY: R.S.YOUNG
LAYOUT SOUTHBOUND 2
SHEET: 20 OF 104

REMOVAL AND DISPOSAL OF GUARDRAIL
STA 396+00.00 - STA 396+26.70 LT
STA 396+00.00 - STA 397+85.93 RT

SPECIAL PROVISION
(GUARDRAIL APPROACH SECTION,
TO F-SHAPE CONCRETE RAIL)
STA 396+00.00 - STA 396+26.70 LT

HD STEEL BEAM GUARDRAIL, GALVANIZED
STA 396+00.00 - STA 399+67.00 RT

CHANGING ELEVATION OF DROP INLET,
CATCH BASIN, OR MANHOLES
STA 396+06.09

MANUFACTURED TERMINAL
SECTION, FLARED
STA 399+67.00 - STA 400+04.30 RT

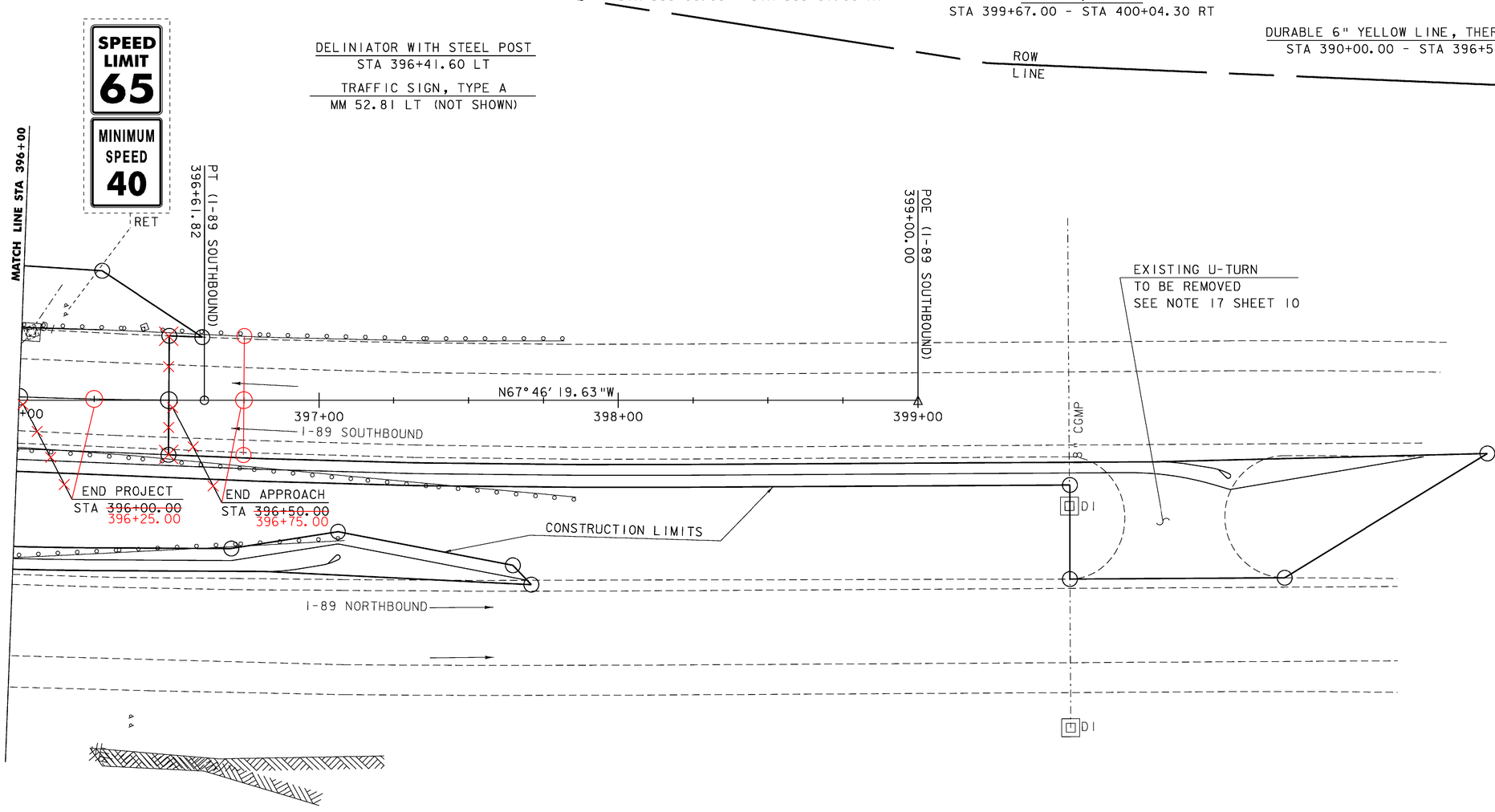
MILLED RUMBLE STRIP
STA 396+00.00 - STA 396+50.00 LT

DURABLE 6" WHITE LINE, THERMOPLASTIC
STA 390+00.00 - STA 396+50.00 LT
STA 390+00.00 - STA 396+50.00 DASHED ℄

DURABLE 6" YELLOW LINE, THERMOPLASTIC
STA 390+00.00 - STA 396+50.00 RT

DELINIATOR WITH STEEL POST
STA 396+41.60 LT

TRAFFIC SIGN, TYPE A
MM 52.81 LT (NOT SHOWN)



SCALE 1" = 20'-0

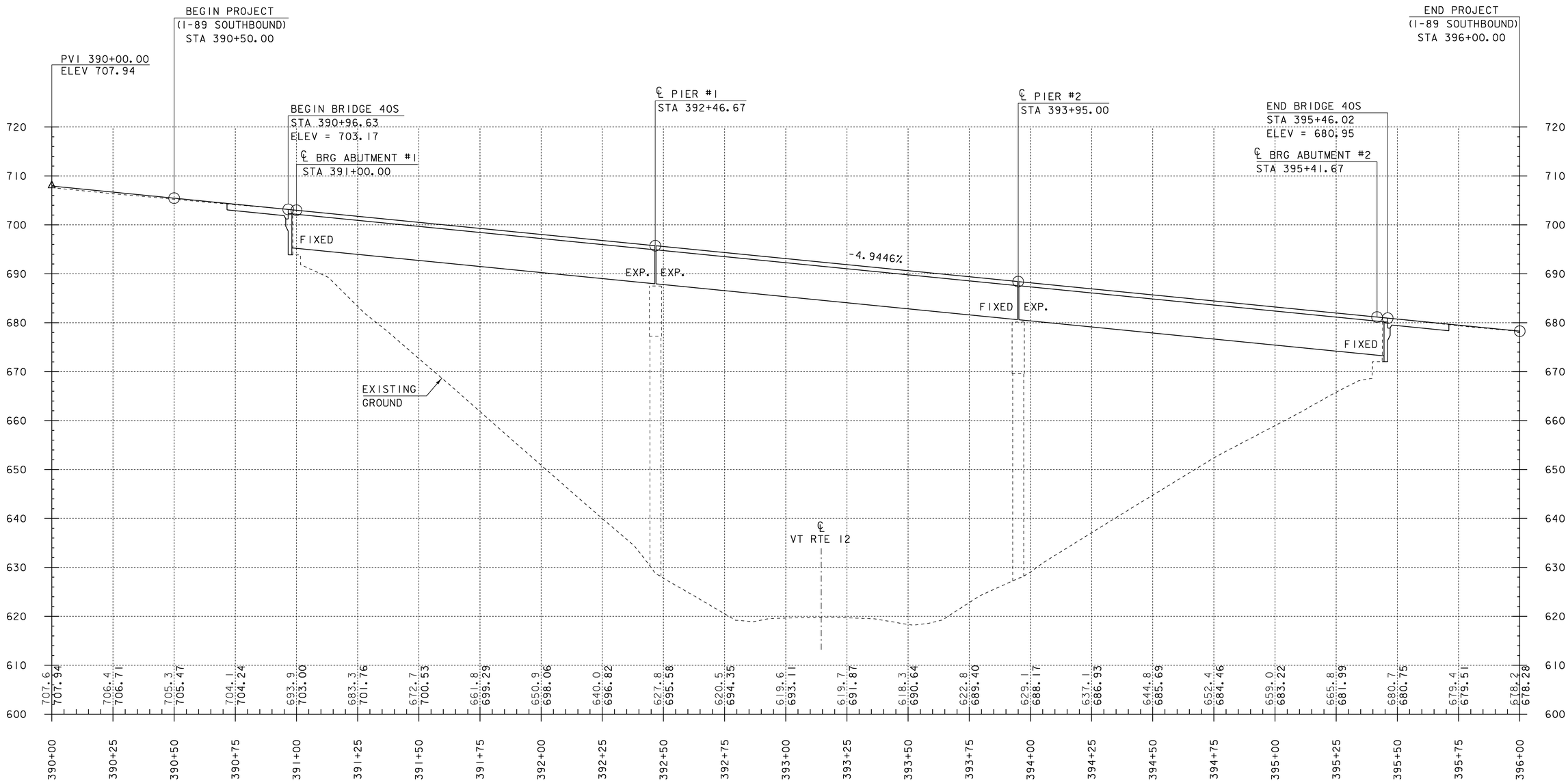
20 0 20

LAYOUT #3 (I-89 SOUTHBOUND)

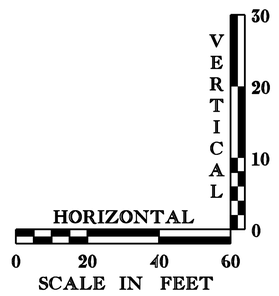
SIGN LEGEND
N - NEW
R - REMOVE
RET - RETAIN
R&S - REMOVE & SALVAGE
S - ERECTING SALVAGED SIGNS

PROJECT:	PROJECT NO.:
BERLIN	IM 089-1(20)

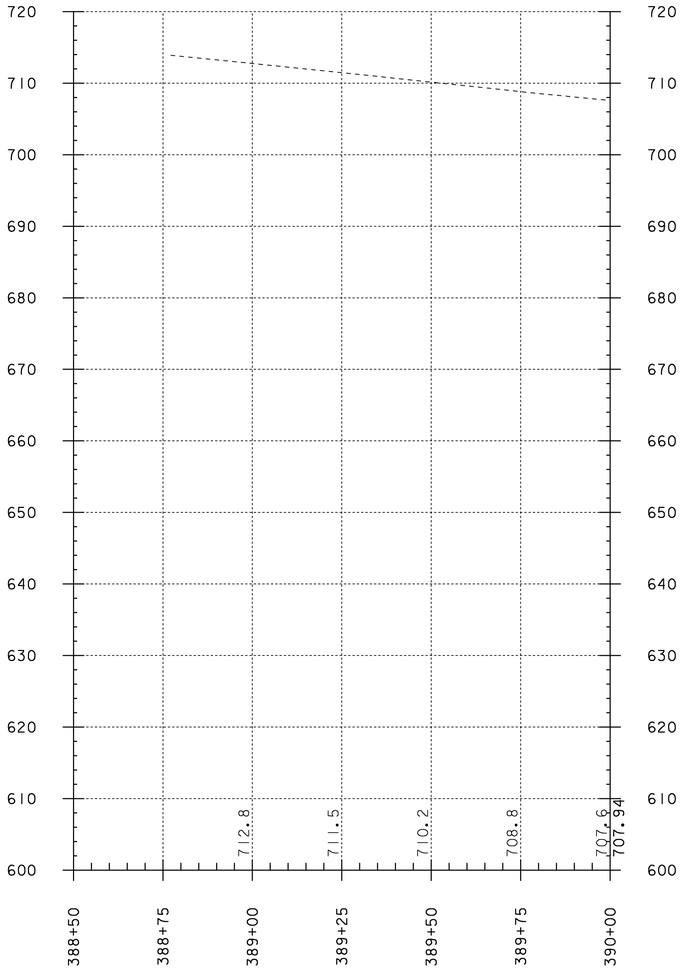
DESIGN FILE NAME: 99a270\structures\s99a270bdr.dgn
IPARM FILE NAME: s99a2701a3 sb.i — PLOT DATE: 05-DEC-2007
DESIGNED BY: K.M.HIGGINS — DRAWN BY: D.D.BEARD
SQUAD LEADER: C.P.WILLIAMS — CHECKED BY: R.S.YOUNG
LAYOUT SOUTHBOUND 3 — SHEET: 21 OF 104



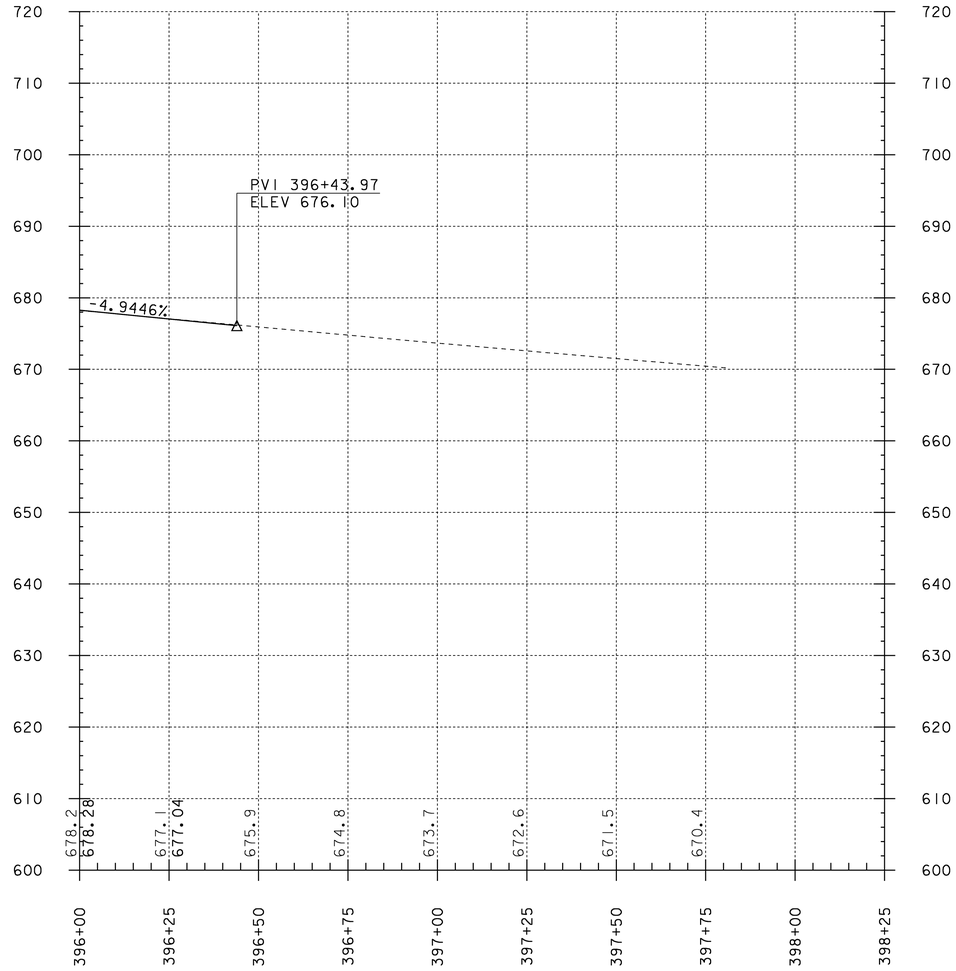
PROFILE #2 (LAYOUT I-89 SOUTHBOUND)



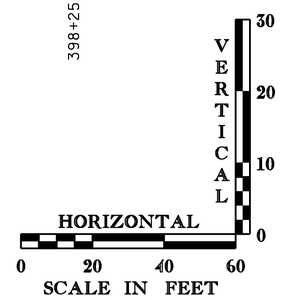
PROJECT: BERLIN	PROJECT NO.: IM 089-1(20)
DESIGN FILE NAME: 99a270\structures\s99a270pro.dgn	
IPARM FILE NAME: s99a270prol sb	PLOT DATE: 05-DEC-2007
DESIGNED BY: K.M.HIGGINS	DRAWN BY: D.D.BEARD
SQUAD LEADER: C.P.WILLIAMS	CHECKED BY: R.S.YOUNG
SOUTHBOUND PROFILE 1	SHEET: 22 OF 104



PROFILE #1 (LAYOUT I-89 SOUTHBOUND)



PROFILE #3 (LAYOUT I-89 SOUTHBOUND)



PROJECT: BERLIN	PROJECT NO.: IM 089-1(20)
DESIGN FILE NAME: 99a270\structures\s99a270pro.dgn	
IPARM FILE NAME: s99a270pro2 sb	PLOT DATE: 05-DEC-2007
DESIGNED BY: K.M.HIGGINS	DRAWN BY: D.D.BEARD
SQUAD LEADER: C.P.WILLIAMS	CHECKED BY: R.S.YOUNG
SOUTHBOUND PROFILE 2	SHEET: 23 OF 104

STATE OF VERMONT
AGENCY OF TRANSPORTATION

TRAFFIC CONTROL NOTES

1. ALL TRAFFIC CONTROL DEVICES AND PLANS SHALL CONFORM TO THE AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS (AASHTO) "GREEN BOOK", THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) AND VERMONT AGENCY OF TRANSPORTATION (VAOT) STANDARD SPECIFICATIONS FOR CONSTRUCTION 2006. THE RESIDENT ENGINEER SHALL HAVE THE AUTHORITY TO ALTER ALL TRAFFIC CONTROL PLANS IN THE FIELD AS NECESSARY.

2. THE TRAFFIC CONTROL PLANS HAVE BEEN SHOWN ON THE ORIGINAL 1960 SURVEY DATUM.

3. TRAFFIC CONTROL MEASURES WILL NOT BE PERMITTED BETWEEN THE DATES OF NOVEMBER 15 AND APRIL 15 UNLESS OTHERWISE APPROVED BY THE RESIDENT ENGINEER.

4. THE CONTRACTOR SHALL SUBMIT TRAFFIC CONTROL PLANS AND SCHEDULES FOR ALL WORK ASSOCIATED WITH THIS PROJECT TO THE RESIDENT ENGINEER FOR APPROVAL PRIOR TO ANY CONSTRUCTION ACTIVITY.

5. THE NUMBER AND LOCATION OF REFLECTORIZED PLASTIC DRUMS, TYPE III BARRICADES AND DELINEATORS SHOWN ON THESE PLANS ARE FOR ILLUSTRATIVE PURPOSES ONLY. THE CONTRACTOR SHALL FIELD VERIFY ALL LOCATIONS IN ACCORDANCE WITH THE APPLICABLE STANDARDS PRIOR TO PLACEMENT.

6. MILE MARKERS REFERENCED IN THE DRAWINGS SHALL BE USED FOR LAYOUT PURPOSES; THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING ALL MILE MARKERS NECESSARY TO DESIGN AND CONSTRUCT ALL TRAFFIC CONTROL RELATED ITEMS.

7. ALL EXISTING PAVEMENT MARKINGS IN CONFLICT WITH TEMPORARY PAVEMENT MARKINGS AS SHOWN IN THE STANDARD E-103, E-104 AND E-104A, SHALL BE COVERED WITH ITEM 646.86 "PAVEMENT MARKING MASK". WHEN APPLIED, THE BLACK PAVEMENT MARKING MASKING TAPE SHALL BE CUT AT 100' INTERVALS TO PREVENT UNRAVELING.

8. PAYMENT FOR PORTABLE CHANGEABLE MESSAGE SIGNS SHALL BE UNDER ITEM 641.15 "PORTABLE CHANGEABLE MESSAGE SIGN" AND PAYMENT FOR FLASHING ARROW PANELS SHALL BE UNDER ITEM 641.16 "PORTABLE ARROW BOARD." PAYMENT FOR TRAFFIC CONTROL SIGNS, PLASTIC DRUMS, DELINEATORS, AND TYPE III (MOD.) BARRICADE SHALL BE UNDER ITEM 641.10 "TRAFFIC CONTROL". PAYMENT SHALL INCLUDE ALL NECESSARY MAINTENANCE AND REPAIRS TO THESE TRAFFIC CONTROL DEVICES ON A DAILY BASIS.

9. THE CONTRACTOR SHALL KEEP AN EXTRA PORTABLE CHANGEABLE MESSAGE SIGN AND A PORTABLE ARROW BOARD ON SITE **AT ALL TIMES** TO BE USED AS A "BACK-UP" IN THE EVENT THAT A PORTABLE CHANGEABLE MESSAGE SIGN OR A PORTABLE ARROW BOARD IS RENDERED INOPERATIVE.

10. NOT ALL EXISTING SIGNS ARE SHOWN ON THE PLANS, CONTRACTOR SHALL VERIFY LOCATION OF ALL EXISTING SIGNS IN THE FIELD. PLACEMENT OF CONSTRUCTION SIGNS SHALL BE DIRECTED BY THE RESIDENT ENGINEER WHERE CONFLICTS WITH EXISTING SIGNS OCCUR.

11. THE CONTRACTOR SHALL COVER OR REMOVE ANY SIGNS THAT CONTRADICT TEMPORARY TRAFFIC CONTROL SIGNS. ALL SIGNS REMOVED OR COVERED BY THE CONTRACTOR SHALL BE REPLACED OR UNCOVERED BY THE CONTRACTOR WHEN THE TRAFFIC CONTROL PLAN IS DISASSEMBLED. PAYMENT FOR REMOVAL AND REPLACEMENT, COVERING AND UNCOVERING OF SIGNS AND PLACEMENT AND REMOVAL OF TEMPORARY OVERLAYS SHALL BE INCIDENTAL TO ITEM 641.10, "TRAFFIC CONTROL". ANY DAMAGE TO EXISTING SIGNS BY THE CONTRACTOR SHALL BE REPLACED BY THE CONTRACTOR WITH NO EXTRA COMPENSATION.

12. WHERE CROSSOVERS ARE TO BE PLACED, EXISTING SLOPES SHALL BE STRIPPED OF TOPSOIL AND BENCHED AS DIRECTED BY THE ENGINEER. FILL MATERIAL SHALL BE APPROVED BY THE ENGINEER PRIOR TO PLACEMENT AND SHALL BE FREE OF EXCESSIVE AMOUNTS OF MOISTURE, ORGANICS, AND SILTS. SUBBASE MATERIAL SHALL BE APPROVED BY THE ENGINEER PRIOR TO PLACEMENT AND SHALL BE PLACED TO A MAXIMUM DEPTH OF 12 INCHES. PAVING OF CROSSOVER DETOURS SHALL BE PAID FOR AS ITEM 406.25, "BITUMINOUS CONCRETE PAVEMENT (PG 58-34)". THE PAVEMENT SHALL BE PLACED IN A SINGLE COURSE OF TYPE III MIX, AT A DEPTH OF 3". THE COST OF ALL OTHER MATERIALS AND WORK REQUIRED FOR THE DESIGN, CONSTRUCTION, AND REMOVAL OF CROSSOVERS SHALL BE INCLUDED IN THE UNIT PRICE BID FOR ITEM 641.10 "TRAFFIC CONTROL".

13. THE CONTRACTOR SHALL BE RESPONSIBLE FOR INSTALLING, MAINTAINING AND REMOVING TEMPORARY DRAINAGE STRUCTURES AS NECESSARY TO MAINTAIN POSITIVE DRAINAGE TO EXISTING DRAINAGE STRUCTURES (IE: CATCH BASINS, CULVERTS) WHICH COULD BECOME BLOCKED FROM INSTALLATION OF THE CROSSOVERS. THE CONTRACTOR SHALL VERIFY THE LOCATION OF EXISTING DRAINAGE STRUCTURES AND SUBMIT A TEMPORARY DRAINAGE PLAN FOR EACH CROSS OVER TO THE RESIDENT ENGINEER FOR APPROVAL. PAYMENT FOR DEVELOPMENT OF THIS PLAN AND ALL CONSTRUCTION ACTIVITIES ASSOCIATED WITH TEMPORARY DRAINAGE SHALL BE CONSIDERED INCIDENTAL TO ITEM 641.10, "TRAFFIC CONTROL". ALL TEMPORARY CULVERTS SHALL BE INCIDENTAL TO 641.10 "TRAFFIC CONTROL".

14. ALL GUARDRAIL, BRIDGE APPROACH RAIL OR BRIDGE RAIL THAT IS LAPPED IN THE OPPOSITE DIRECTION OF TRAVEL SHALL BE TEMPORARILY RESET TO PROVIDE LAPS IN THE DIRECTION OF TRAVEL. ANY WORK REQUIRED TO CHANGE DIRECTION OF THE LAPS DURING CONSTRUCTION AND RESTORE OR RESET RAILING TO ORIGINAL CONDITION AFTER CONSTRUCTION SHALL BE INCIDENTAL TO ITEM 641.10 "TRAFFIC CONTROL".

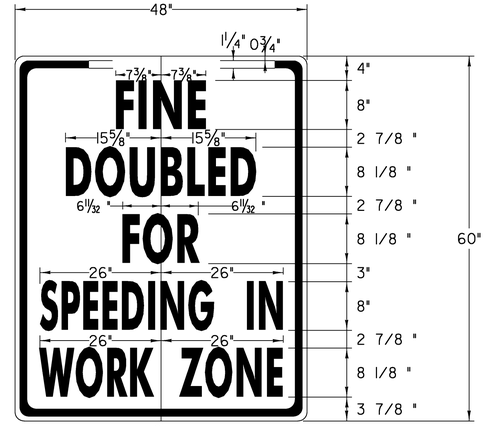
15. EXISTING RUMBLE STRIPS WITHIN THE TRAVELED WAY OF THE TRAFFIC DETOUR SHALL BE FILLED BY A METHOD APPROVED BY THE ENGINEER. ALL LABOR, MATERIALS, AND EQUIPMENT NECESSARY TO DO THE WORK SHALL BE INCIDENTAL TO ITEM 641.10 "TRAFFIC CONTROL." NEW RUMBLE STRIPS SHALL BE INSTALLED ACCORDING TO THE DETAILS ON SHEET 11 AND PAID FOR UNDER ITEM 213.10 "MILLED RUMBLE STRIPS."

16. THE CONTRACTOR SHALL REPLACE ALL DELINEATOR POSTS, DELINEATORS, GUARDRAIL, APPROACH RAIL AND BRIDGE RAIL THAT IS DAMAGED OR DESTROYED BY THE CONTRACTOR WITH NO ADDITIONAL COMPENSATION.

17. THE STATE WILL ONLY PAY FOR THE INSTALLATION OF THE FINAL MEDIAN RAILING COMPONENTS ONCE. SHOULD THE CONTRACTOR CHOOSE TO INSTALL, THEN MODIFY THIS RAILING DUE TO CHOICE OF CONSTRUCTION METHODS, THE CONTRACTOR SHALL RETURN IT TO THE THE FINAL PROJECT POSITION IN A LIKE NEW CONDITION AT THE CONTRACTOR'S COST.

18. DURING PAINTING OPERATIONS, TWO LANES SHALL REMAIN OPEN TO TRAFFIC AT ALL TIMES.

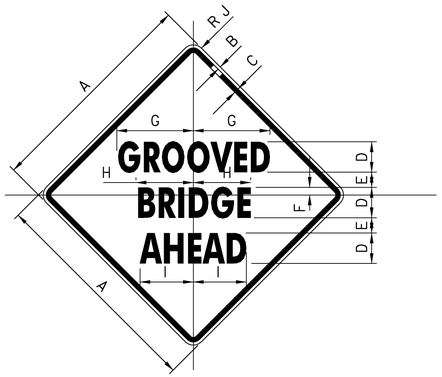
19. AN ADDITIONAL ROAD WORK AHEAD SIGN NOT SHOWN ON THE PLANS SHALL BE PLACED ON THE EXIT 7 ON-RAMP AT A LOCATION AS DIRECTED BY THE RESIDENT ENGINEER.



VR-355

EXPWY FWY 26'• REDUCE SPACING BY 12%
EXPWY FWY 26'•• REDUCE SPACEIACING BY 7.7%

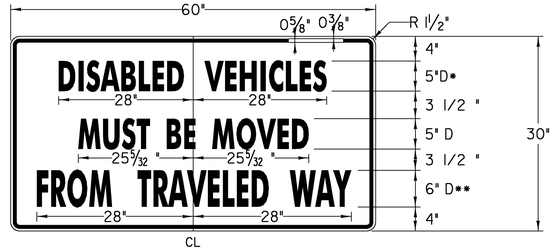
COLORS: BLACK TEXT AND BORDER
WITH WHITE REFLECTORIZED BACKGROUND



VW8-14

SIGN	DIMENSIONS (INCHES)									
	A	B	C	D	E	F	G	H	I	J
MIN.	24	5/16	1/2	3 3/16C	1 1/16	1/16	8 1/4	6 5/16	5 7/8	1 1/4
STD.	30	7/16	5/8	4 1/4C	2 1/16	1 1/16	10 5/16	7 7/8	7 5/16	1 9/16
EXPWY.	36	1/2	3/4	5C	2 1/2	1 1/4	12 3/8	9 7/16	8 9/16	1 7/8
FREEWY.	48	1 1/16	1	6 3/4C	3 5/16	1 11/16	16 5/16	12 5/16	11 1/16	2 1/2

COLORS: BLACK TEXT AND BORDERS
ON YELLOW REFLECTORIZED BACKGROUND

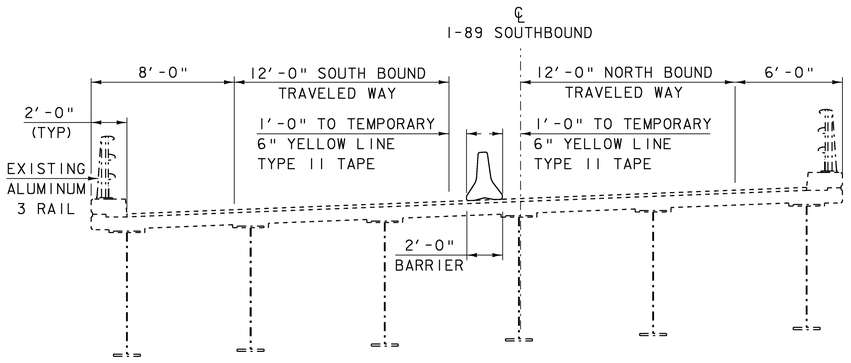


VR-355

• REDUCE SPACING BY 5%
•• REDUCE SPACING BY 13%

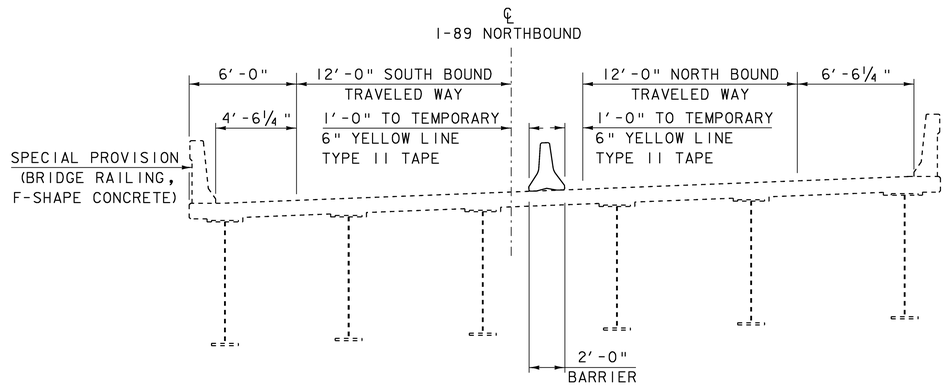
COLORS: BLACK TEXT AND BORDER
WITH REFLECTORIZED ORANGE BACKGROUND

PROJECT NAME:	BERLIN		
PROJECT NUMBER:	IM 089-1(20)		
FILE NAME:	s99a270trafnote.xls	PLOT DATE:	
PROJECT LEADER:	C.P.WILLIAMS	DRAWN BY:	SHANE MORIN
DESIGNED BY:	G. SPILAK	CHECKED BY:	R.S.YOUNG
TRAFFIC CONTROL NOTES SHEET		SHEET	24 OF 104



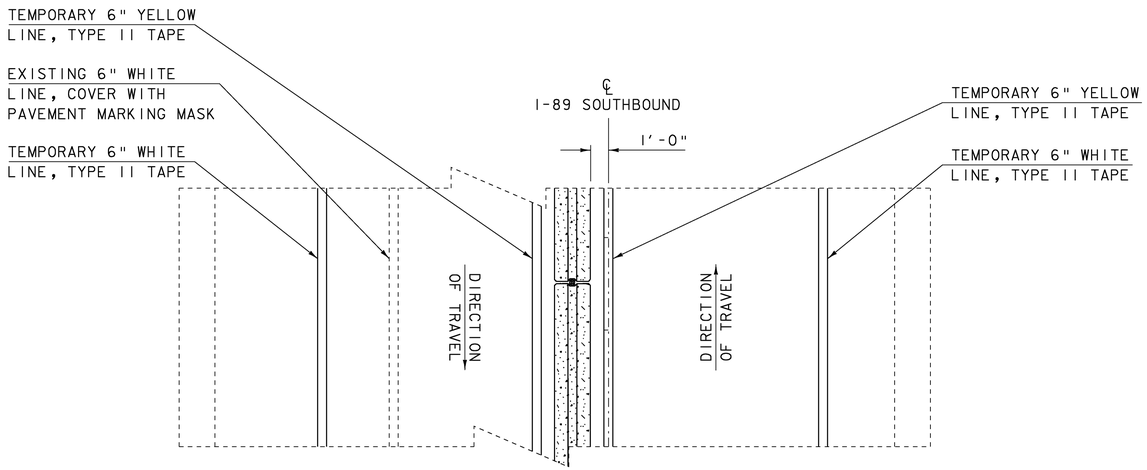
PHASE I TYPICAL SECTION
I-89 BRIDGE 40 SB (NORTHBOUND CLOSED)

SCALE 1/4" = 1′-0



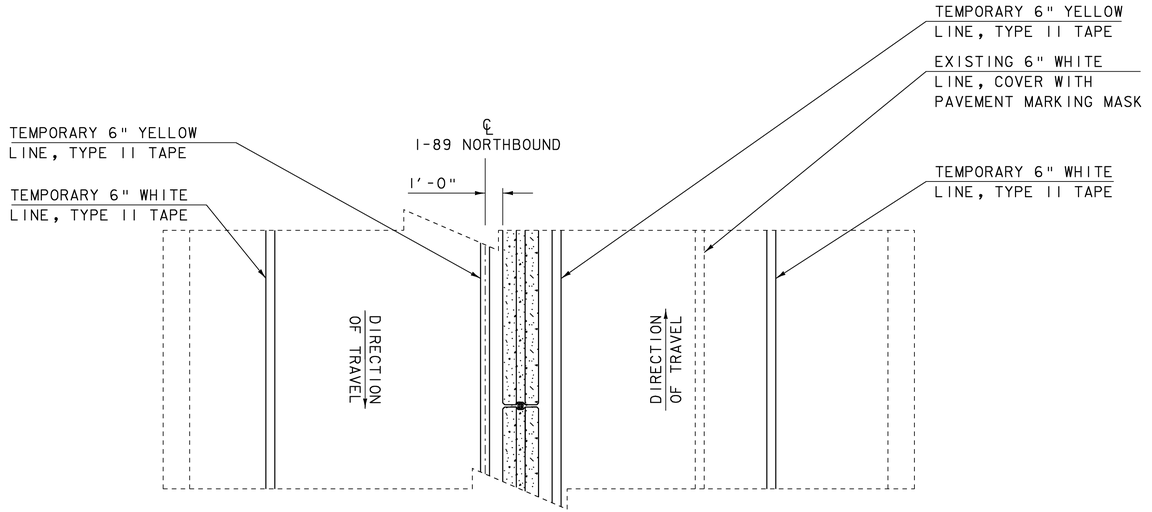
PHASE II TYPICAL SECTION
I-89 BRIDGE 40 NB (SOUTHBOUND CLOSED)

SCALE 1/4" = 1′-0



PHASE I PLAN
I-89 BRIDGE 40 SB (NORTHBOUND CLOSED)

SCALE 1/4" = 1′-0



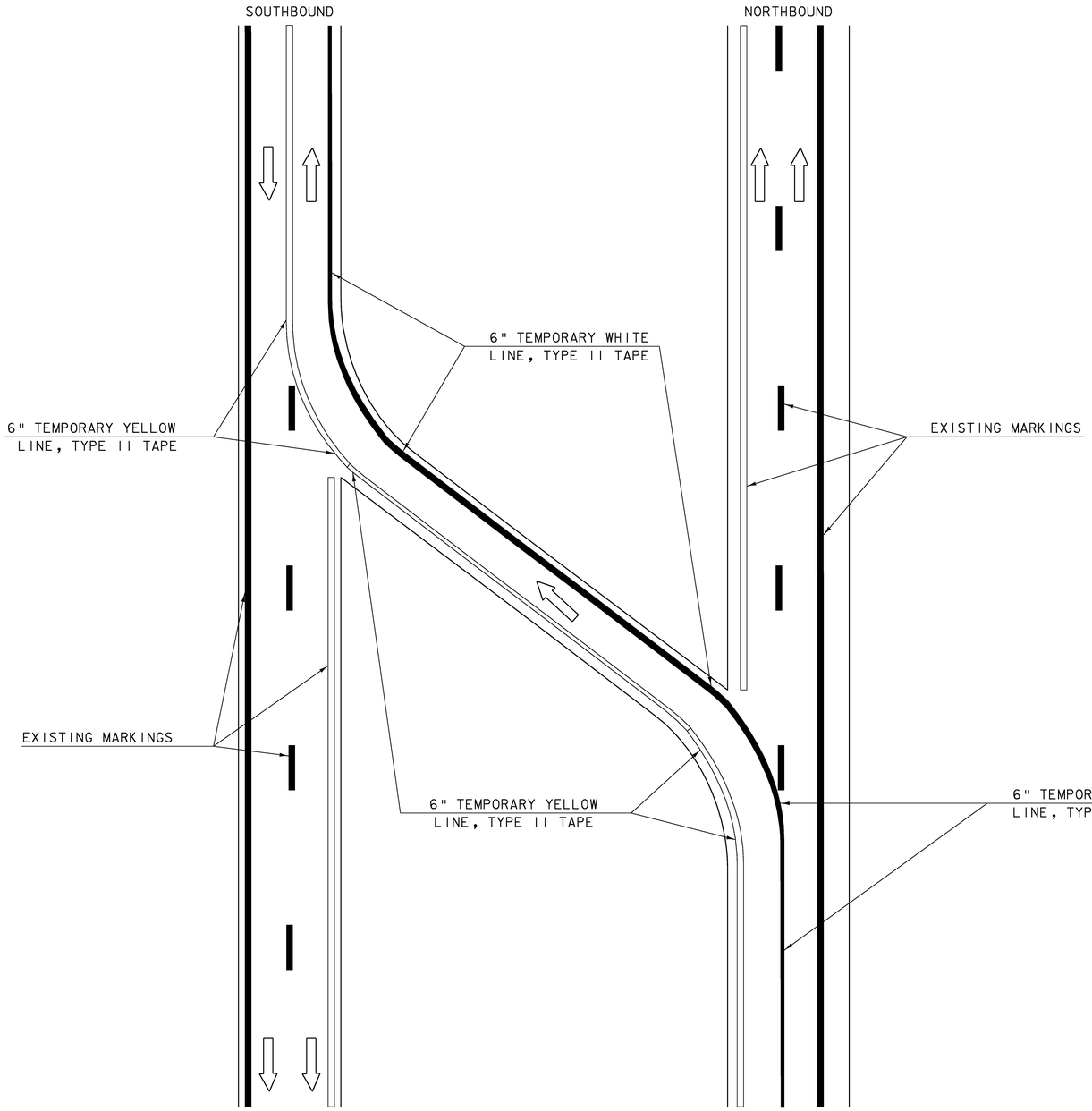
PHASE II PLAN
I-89 BRIDGE 40 NB (SOUTHBOUND CLOSED)

SCALE 1/4" = 1′-0

KEY
---- EXISTING
—— NEW

SCALE 1/4" = 1′-0
1 0 2 4 6

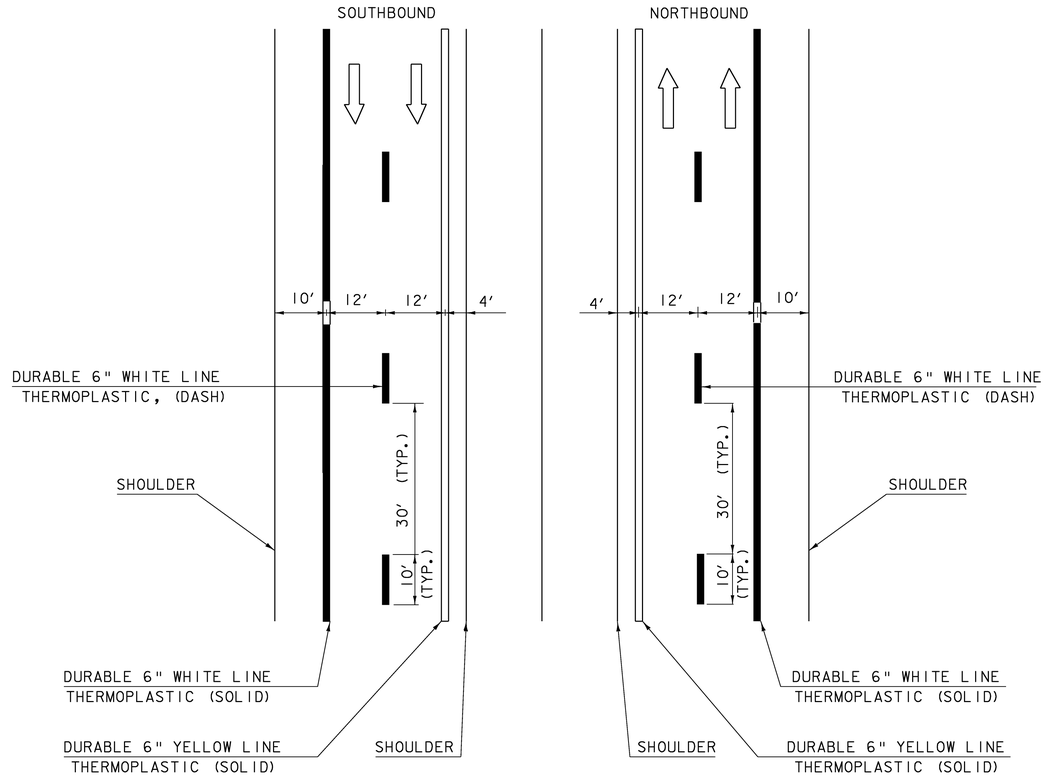
PROJECT: BERLIN	PROJECT NO.: IM 089-1(20)
DESIGN FILE NAME: 99a270\structures\s99a270trafnote.dgn	
IPARM FILE NAME: s99a270traf typ.i	PLOT DATE: 05-DEC-2007
DESIGNED BY: K.M.HIGGINS	DRAWN BY: D.D.BEARD
SQUAD LEADER: C.P.WILLIAMS	CHECKED BY: R.S.YOUNG
BRIDGE TRAFFIC CONTROL DETAILS	SHEET: 25 OF 104



TYPICAL MEDIAN CROSS OVER MARKINGS

(NORTHBOUND SHOWN, SOUTHBOUND SIMILAR)
NTS

DURABLE MARKINGS



TYPICAL MAINLINE MARKING PLAN

NTS

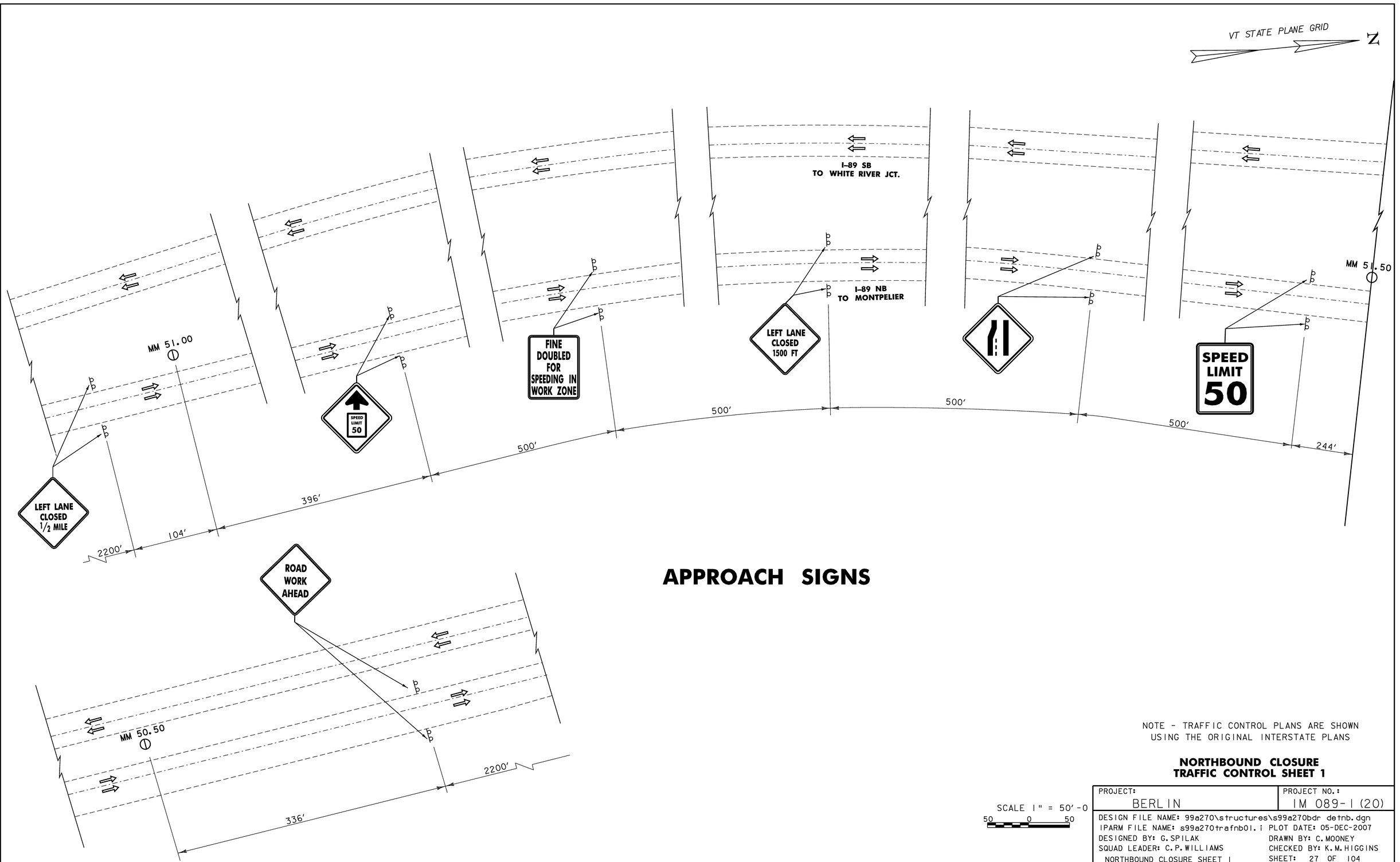
LEGEND

6'' TEMPORARY/PERMANENT WHITE LINES

6'' TEMPORARY/PERMANENT YELLOW LINES

DIRECTION OF TRAFFIC FLOW

PROJECT: BERLIN	PROJECT NO.: IM 089-1(20)
DESIGN FILE NAME: 99a270\structures\s99a270trafnote.dgn	
IPARM FILE NAME: s99a270pvmt mrk.i	PLOT DATE: 05-DEC-2007
DESIGNED BY: G.SPILAK	DRAWN BY: C.MOONEY
SQUAD LEADER: C.P.WILLIAMS	CHECKED BY: R.S.YOUNG
PAVEMENT MARKINGS	SHEET: 26 OF 104



APPROACH SIGNS

NOTE - TRAFFIC CONTROL PLANS ARE SHOWN USING THE ORIGINAL INTERSTATE PLANS

NORTHBOUND CLOSURE
TRAFFIC CONTROL SHEET 1

SCALE 1" = 50'-0
50 0 50

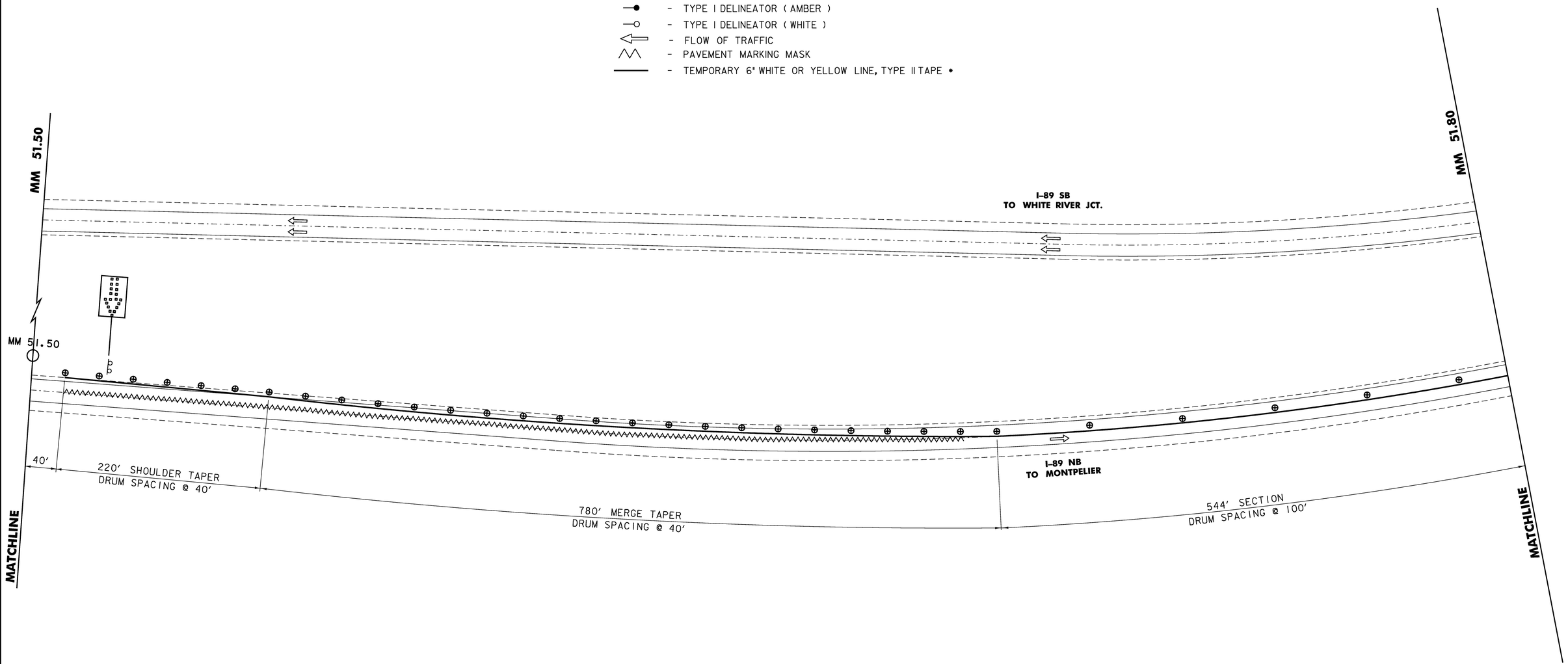
PROJECT:	PROJECT NO.:
BERLIN	IM 089-1(20)
DESIGN FILE NAME: 99a270\structures\s99a270bdr detnb.dgn	
IPARM FILE NAME: s99a270trafnb01.i	PLOT DATE: 05-DEC-2007
DESIGNED BY: G.SPILAK	DRAWN BY: C.MOONEY
SQUAD LEADER: C.P.WILLIAMS	CHECKED BY: K.M.HIGGINS
NORTHBOUND CLOSURE SHEET 1	SHEET: 27 OF 104

LEGEND

- TYPE III BARRICADES.
- PORTABLE ARROW BOARD
- TEMPORARY TRAFFIC BARRIER
- REMOVAL OF EXISTING PAVEMENT MARKING
- REFLECTORIZED PLASTIC DRUM
- TYPE I DELINEATOR (AMBER)
- TYPE I DELINEATOR (WHITE)
- FLOW OF TRAFFIC
- PAVEMENT MARKING MASK
- TEMPORARY 6" WHITE OR YELLOW LINE, TYPE II TAPE *

* WHITE ON RIGHT, YELLOW ON LEFT WITH FLOW OF TRAFFIC

VT STATE PLANE GRID N



NOTE - TRAFFIC CONTROL PLANS ARE SHOWN USING THE ORIGINAL INTERSTATE PLANS

NORTHBOUND CLOSURE TRAFFIC CONTROL SHEET 2

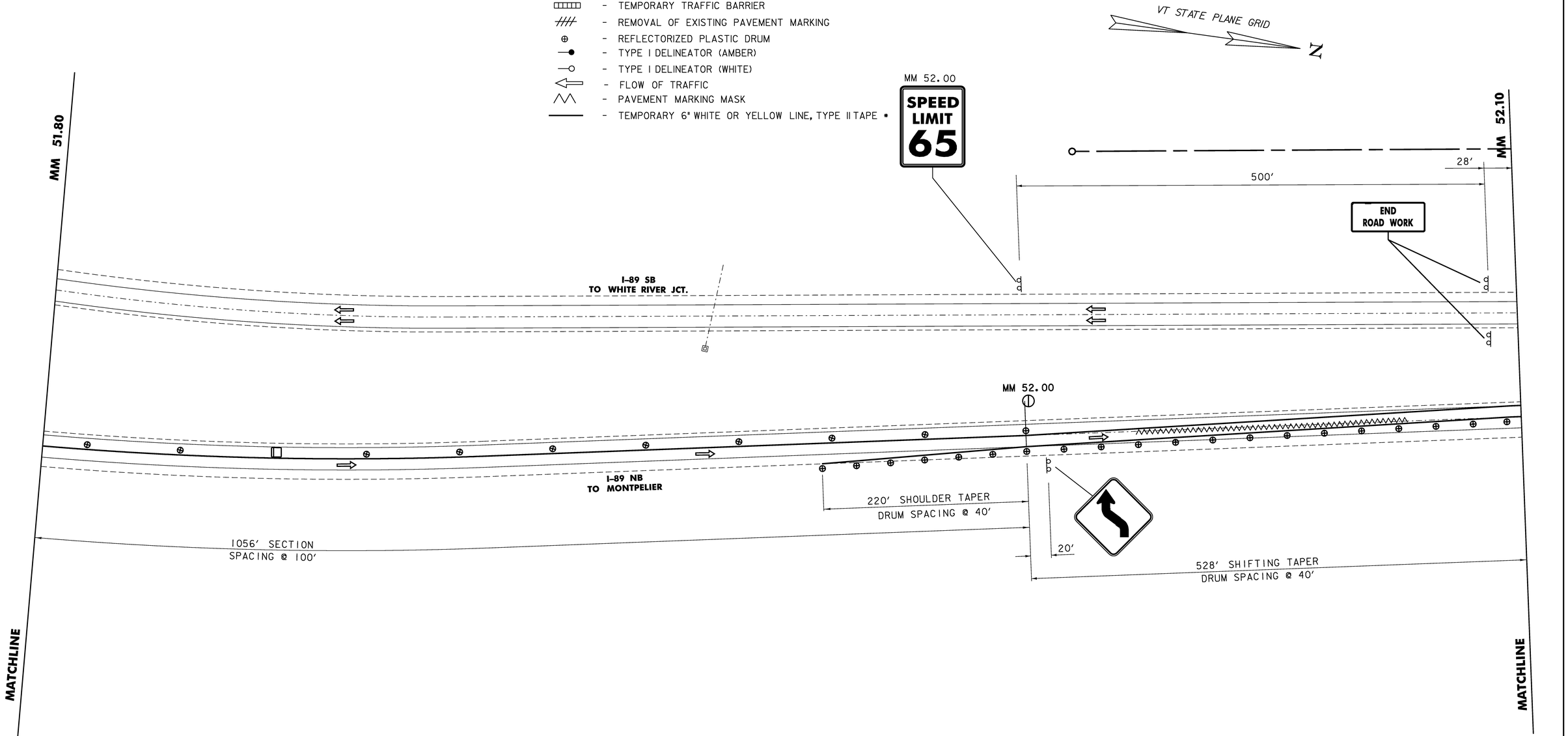
SCALE 1" = 50'-0
50 0 50

PROJECT:	PROJECT NO.:
BERLIN	IM 089-1(20)
DESIGN FILE NAME: 99a270\structures\s99a270bdr detnb.dgn	
IPARM FILE NAME: s99a270trafnb02.i	PLOT DATE: 05-DEC-2007
DESIGNED BY: G.SPILAK	DRAWN BY: C.MOONEY
SQUAD LEADER: C.P.WILLIAMS	CHECKED BY: K.M.HIGGINS
NORTHBOUND CLOSURE SHEET 2	SHEET: 28 OF 104

LEGEND

- TYPE III BARRICADES.
- PORTABLE ARROW BOARD
- TEMPORARY TRAFFIC BARRIER
- REMOVAL OF EXISTING PAVEMENT MARKING
- REFLECTORIZED PLASTIC DRUM
- TYPE I DELINEATOR (AMBER)
- TYPE I DELINEATOR (WHITE)
- FLOW OF TRAFFIC
- PAVEMENT MARKING MASK
- TEMPORARY 6" WHITE OR YELLOW LINE, TYPE II TAPE *

* WHITE ON RIGHT, YELLOW ON LEFT WITH FLOW OF TRAFFIC



NOTE - TRAFFIC CONTROL PLANS ARE SHOWN USING THE ORIGINAL INTERSTATE PLANS

NORTHBOUND CLOSURE
TRAFFIC CONTROL SHEET 3

SCALE 1" = 50′-0
50 0 50

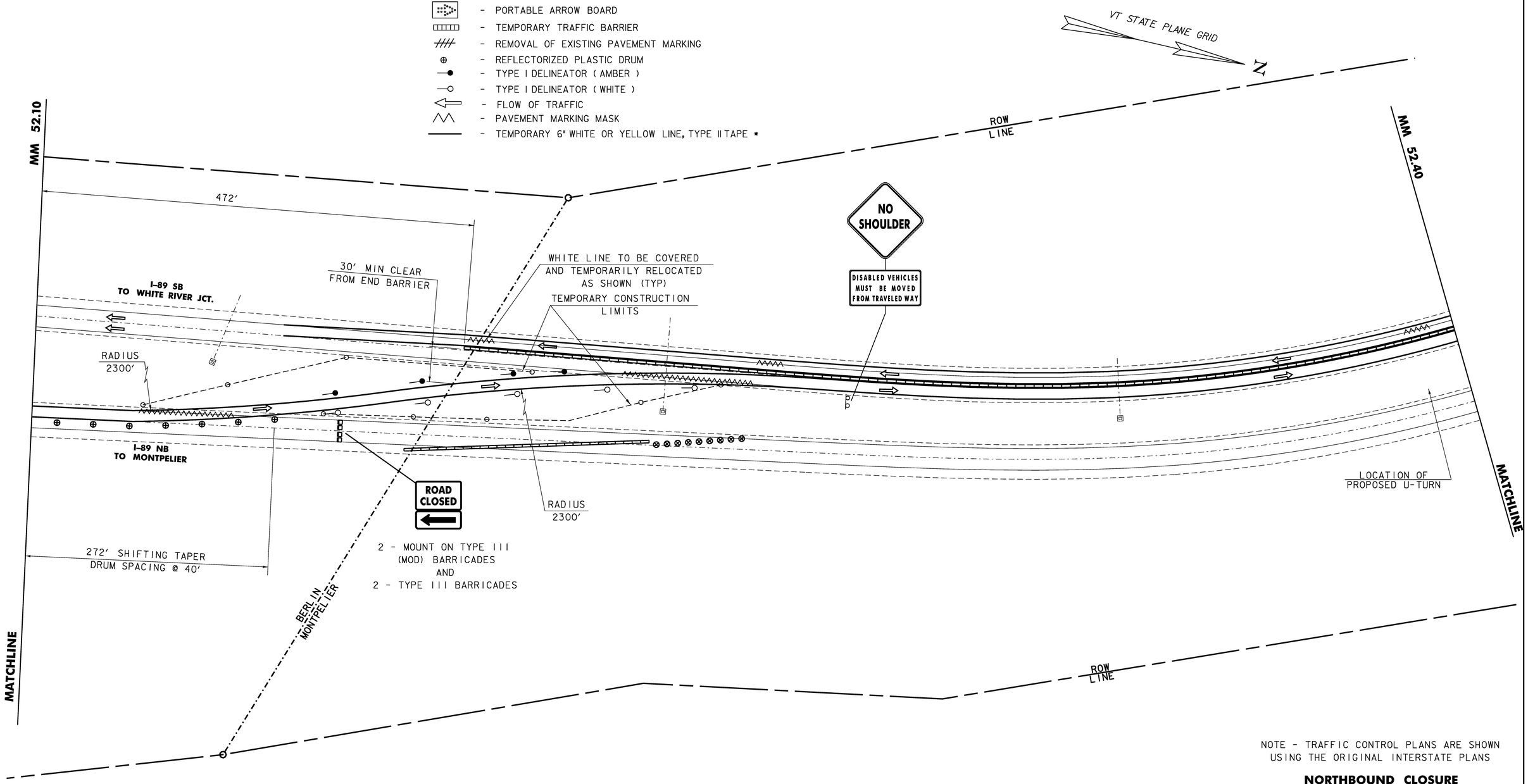
PROJECT:	PROJECT NO.:
BERLIN	IM 089-1(20)

DESIGN FILE NAME: 99a270\structures\s99a270bdr detnb.dgn
IPARM FILE NAME: s99a270trafnb03.i PLOT DATE: 05-DEC-2007
DESIGNED BY: G.SPILAK DRAWN BY: C.MOONEY
SQUAD LEADER: C.P.WILLIAMS CHECKED BY: K.M.HIGGINS
NORTHBOUND CLOSURE SHEET 3 SHEET: 29 OF 104

LEGEND

- TYPE III BARRICADES.
- PORTABLE ARROW BOARD
- TEMPORARY TRAFFIC BARRIER
- REMOVAL OF EXISTING PAVEMENT MARKING
- REFLECTORIZED PLASTIC DRUM
- TYPE I DELINEATOR (AMBER)
- TYPE I DELINEATOR (WHITE)
- FLOW OF TRAFFIC
- PAVEMENT MARKING MASK
- TEMPORARY 6" WHITE OR YELLOW LINE, TYPE II TAPE *

* WHITE ON RIGHT, YELLOW ON LEFT WITH FLOW OF TRAFFIC



NOTE - TRAFFIC CONTROL PLANS ARE SHOWN USING THE ORIGINAL INTERSTATE PLANS

NORTHBOUND CLOSURE
TRAFFIC CONTROL SHEET 4

SCALE 1" = 50'-0
50 0 50

PROJECT:	PROJECT NO.:
BERLIN	IM 089-1(20)
DESIGN FILE NAME: 99a270\structures\s99a270bdr detnb.dgn	
IPARM FILE NAME: s99a270trafnb04.i	PLOT DATE: 05-DEC-2007
DESIGNED BY: G.SPILAK	DRAWN BY: C. MOONEY
SQUAD LEADER: C.P. WILLIAMS	CHECKED BY: K.M. HIGGINS
NORTHBOUND CLOSURE SHEET 4	SHEET: 30 OF 104

LEGEND

- TYPE III BARRICADES.
- PORTABLE ARROW BOARD
- TEMPORARY TRAFFIC BARRIER
- REMOVAL OF EXISTING PAVEMENT MARKING
- REFLECTORIZED PLASTIC DRUM
- TYPE I DELINEATOR (AMBER)
- TYPE I DELINEATOR (WHITE)
- FLOW OF TRAFFIC
- PAVEMENT MARKING MASK
- TEMPORARY 6" WHITE OR YELLOW LINE, TYPE II TAPE *

* WHITE ON RIGHT, YELLOW ON LEFT WITH FLOW OF TRAFFIC

VT STATE PLANE GRID

N

BERLIN
MONTPELIER

WHITE LINE TO BE COVERED
AND TEMPORARILY RELOCATED
AS SHOWN (TYP)

MM 52.40

ROW
LINE

VT 12
TO NORTHFIELD

MM 52.60

I-89 SB
TO WHITE RIVER JCT.

MM 52.50

I-89 NB
TO MONTPELIER

300'

MATCHLINE

MATCHLINE

VT 12
TO MONTPELIER

BERLIN
MONTPELIER

ROW
LINE

SCALE 1" = 50'-0

50 0 50

NOTE - TRAFFIC CONTROL PLANS ARE SHOWN
USING THE ORIGINAL INTERSTATE PLANS

NORTHBOUND CLOSURE
TRAFFIC CONTROL SHEET 5

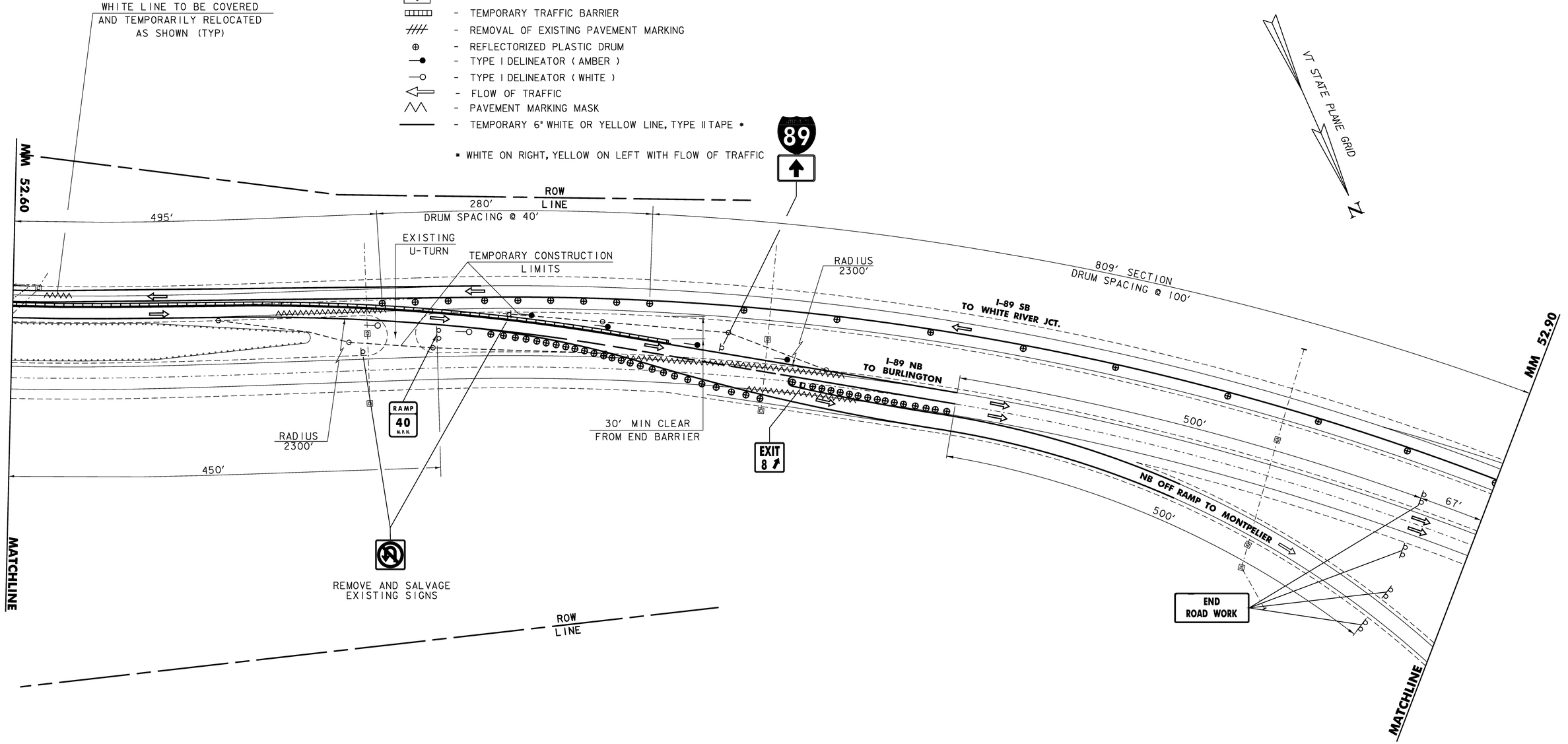
PROJECT:	PROJECT NO.:
BERLIN	IM 089-1(20)

DESIGN FILE NAME: 99a270\structures\s99a270bdr_detnb.dgn
IPARM FILE NAME: s99a270trafnb05.i PLOT DATE: 05-DEC-2007
DESIGNED BY: G.SPILAK DRAWN BY: C.MOONEY
SQUAD LEADER: C.P.WILLIAMS CHECKED BY: K.M.HIGGINS
NORTHBOUND CLOSURE SHEET 5 SHEET: 31 OF 104

LEGEND

- TYPE III BARRICADES.
- PORTABLE ARROW BOARD
- TEMPORARY TRAFFIC BARRIER
- REMOVAL OF EXISTING PAVEMENT MARKING
- REFLECTORIZED PLASTIC DRUM
- TYPE I DELINEATOR (AMBER)
- TYPE I DELINEATOR (WHITE)
- FLOW OF TRAFFIC
- PAVEMENT MARKING MASK
- TEMPORARY 6" WHITE OR YELLOW LINE, TYPE II TAPE *

* WHITE ON RIGHT, YELLOW ON LEFT WITH FLOW OF TRAFFIC



NORTHBOUND CLOSURE TRAFFIC CONTROL SHEET 6

NOTE - TRAFFIC CONTROL PLANS ARE SHOWN USING THE ORIGINAL INTERSTATE PLANS

SCALE 1" = 50'-0

50 0 50

PROJECT: BERLIN	PROJECT NO.: IM 089-1(20)
DESIGN FILE NAME: 99a270\structures\s99a270bdr detnb.dgn	
IPARM FILE NAME: s99a270trafnb06.i	PLOT DATE: 05-DEC-2007
DESIGNED BY: G.SPILAK	DRAWN BY: C.MOONEY
SQUAD LEADER: C.P.WILLIAMS	CHECKED BY: K.M.HIGGINS
NORTHBOUND CLOSURE SHEET 6	SHEET: 32 OF 104

LEGEND

- TYPE III BARRICADES.
- PORTABLE ARROW BOARD
- TEMPORARY TRAFFIC BARRIER
- REMOVAL OF EXISTING PAVEMENT MARKING
- REFLECTORIZED PLASTIC DRUM
- TYPE I DELINEATOR (AMBER)
- TYPE I DELINEATOR (WHITE)
- FLOW OF TRAFFIC
- PAVEMENT MARKING MASK
- TEMPORARY 6" WHITE OR YELLOW LINE, TYPE II TAPE *

* WHITE ON RIGHT, YELLOW ON LEFT WITH FLOW OF TRAFFIC

VT STATE PLANE GRID

N

500' (MIN) VARIED FOR SIGHT DISTANCE

500' (MIN)

ON RAMP TO I89 SB

SB OFF RAMP TO MONTPELIER

END ROAD WORK

MM 53.20

YIELD

ROAD WORK AHEAD

584' SECTION
DRUM SPACING @ 100'

780' MERGING TAPER
DRUM SPACING @ 40'

220' SHOULDER TAPER
DRUM SPACING @ 40'

MM 52.90

MM 53.00

483'

I-89 SB
TO WHITE RIVER JCT.

I-89 NB
TO BURLINGTON

SPEED LIMIT 65

RADIUS
2300'

ON RAMP TO I89 NB

SB OFF RAMP TO MONTPELIER

ON RAMP TO I89 SB

NB OFF RAMP TO MONTPELIER

MATCHLINE

MATCHLINE

NOTE - TRAFFIC CONTROL PLANS ARE SHOWN
USING THE ORIGINAL INTERSTATE PLANS

NORTHBOUND CLOSURE
TRAFFIC CONTROL SHEET 7

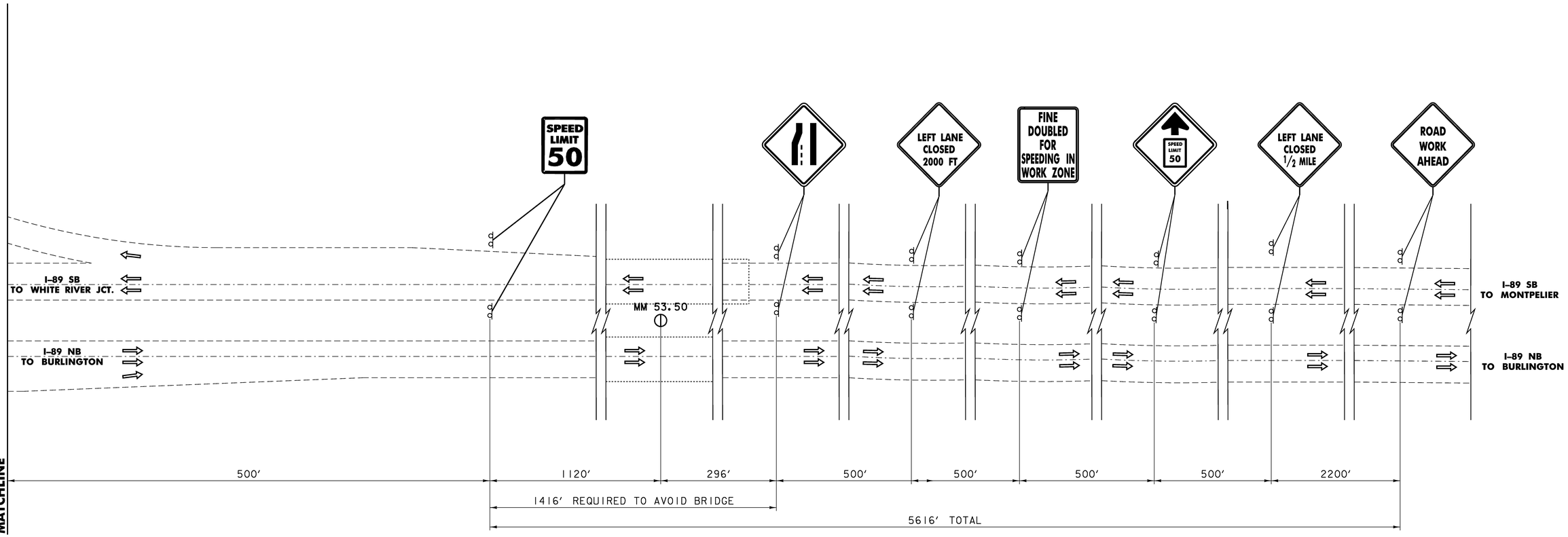
SCALE 1" = 50'-0
50 0 50

PROJECT:	PROJECT NO.:
BERLIN	IM 089-1(20)

DESIGN FILE NAME: 99a270\structures\s99a270bdr detnb.dgn
IPARM FILE NAME: s99a270trafnb07.i PLOT DATE: 05-DEC-2007
DESIGNED BY: G.SPILAK DRAWN BY: C.MOONEY
SQUAD LEADER: C.P.WILLIAMS CHECKED BY: K.M.HIGGINS
NORTHBOUND CLOSURE SHEET 7 SHEET: 33 OF 104

LEGEND

⇦ - FLOW OF TRAFFIC



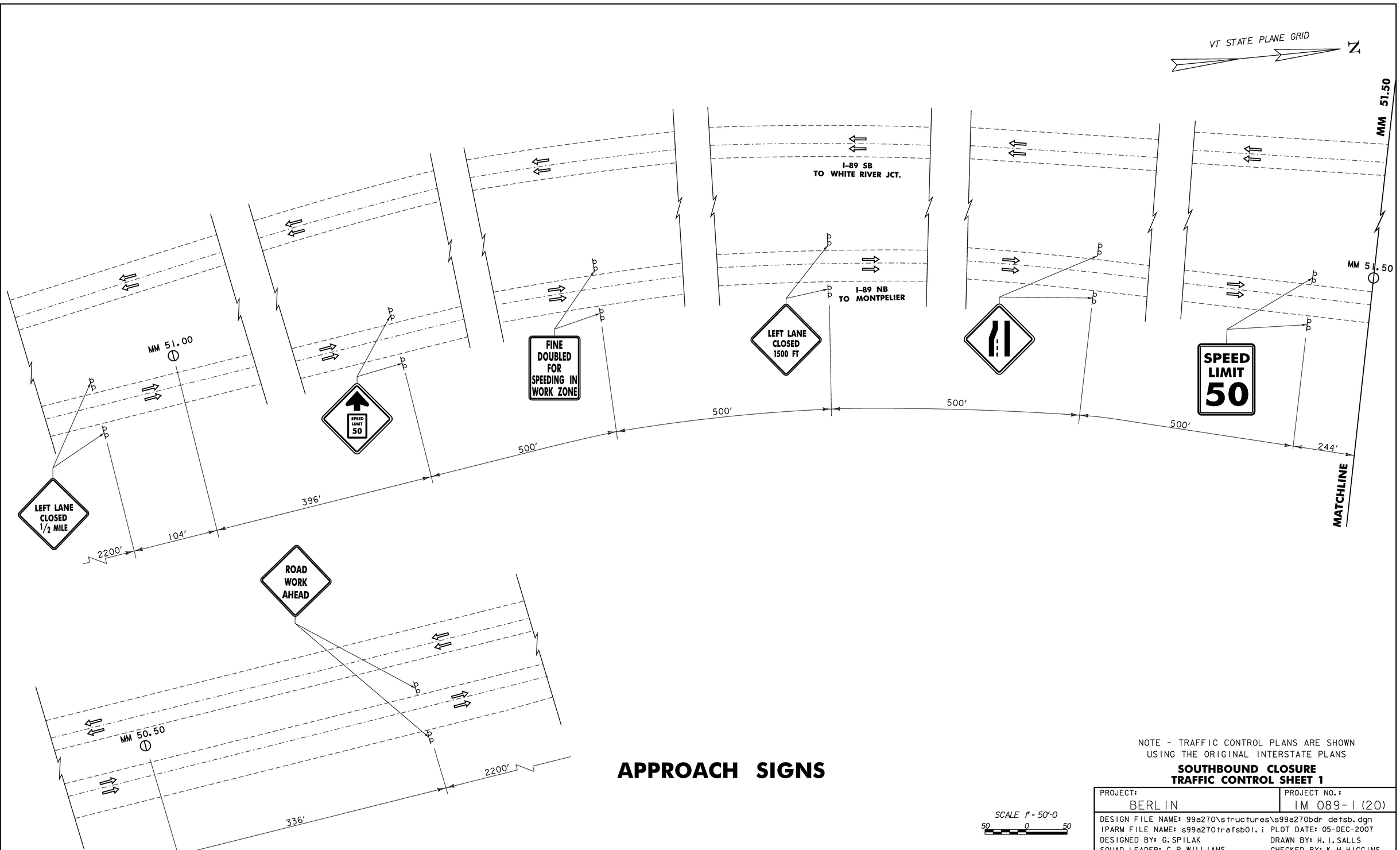
NOTE - TRAFFIC CONTROL PLANS ARE SHOWN USING THE ORIGINAL INTERSTATE PLANS

SCALE 1" = 50'-0
50 0 50

APPROACH SIGNS

NORTHBOUND CLOSURE
TRAFFIC CONTROL SHEET 8

PROJECT:	PROJECT NO.:
BERLIN	IM 089-1(20)
DESIGN FILE NAME: 99a270\structures\s99a270bdr detnb.dgn	
IPARM FILE NAME: s99a270trafnb08.i	PLOT DATE: 05-DEC-2007
DESIGNED BY: G.SPILAK	DRAWN BY: C.MOONEY
SQUAD LEADER: C.P.WILLIAMS	CHECKED BY: K.M.HIGGINS
NORTHBOUND CLOSURE SHEET 8	SHEET: 34 OF 104



APPROACH SIGNS

SCALE 1" = 50'-0

50 0 50

NOTE - TRAFFIC CONTROL PLANS ARE SHOWN USING THE ORIGINAL INTERSTATE PLANS

SOUTHBOUND CLOSURE
TRAFFIC CONTROL SHEET 1

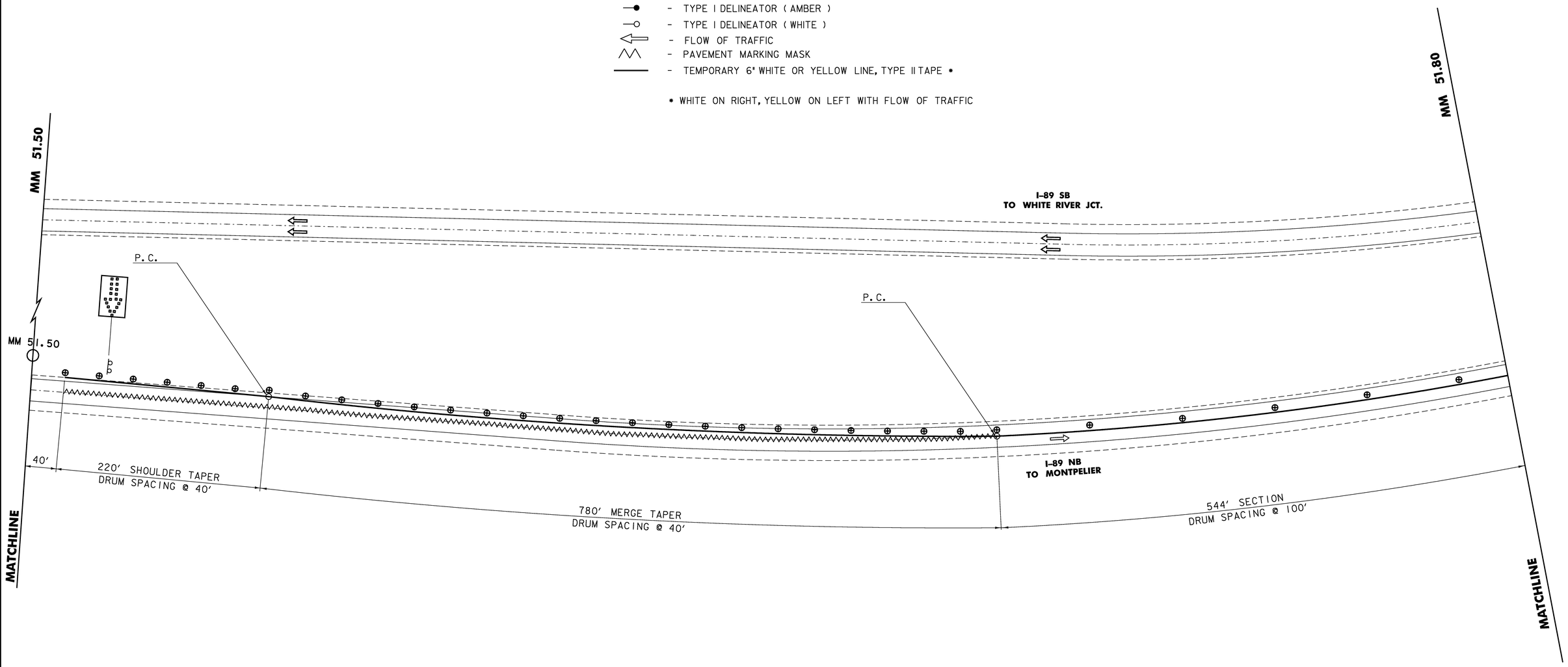
PROJECT:	PROJECT NO.:
BERLIN	IM 089-1(20)
DESIGN FILE NAME: 99a270\structures\s99a270bdr detsb.dgn	
IPARM FILE NAME: s99a270trafsb01.i	PLOT DATE: 05-DEC-2007
DESIGNED BY: G.SPILAK	DRAWN BY: H.I.SALLS
SQUAD LEADER: C.P.WILLIAMS	CHECKED BY: K.M.HIGGINS
SOUTHBOUND CLOSURE SHEET 1	SHEET: 35 OF 104

LEGEND

- TYPE III BARRICADES.
- PORTABLE ARROW BOARD
- TEMPORARY TRAFFIC BARRIER
- REMOVAL OF EXISTING PAVEMENT MARKING
- REFLECTORIZED PLASTIC DRUM
- TYPE I DELINEATOR (AMBER)
- TYPE I DELINEATOR (WHITE)
- FLOW OF TRAFFIC
- PAVEMENT MARKING MASK
- TEMPORARY 6" WHITE OR YELLOW LINE, TYPE II TAPE *

* WHITE ON RIGHT, YELLOW ON LEFT WITH FLOW OF TRAFFIC

VT STATE PLANE GRID N



NOTE - TRAFFIC CONTROL PLANS ARE SHOWN USING THE ORIGINAL INTERSTATE PLANS

SOUTHBOUND CLOSURE TRAFFIC CONTROL SHEET 2

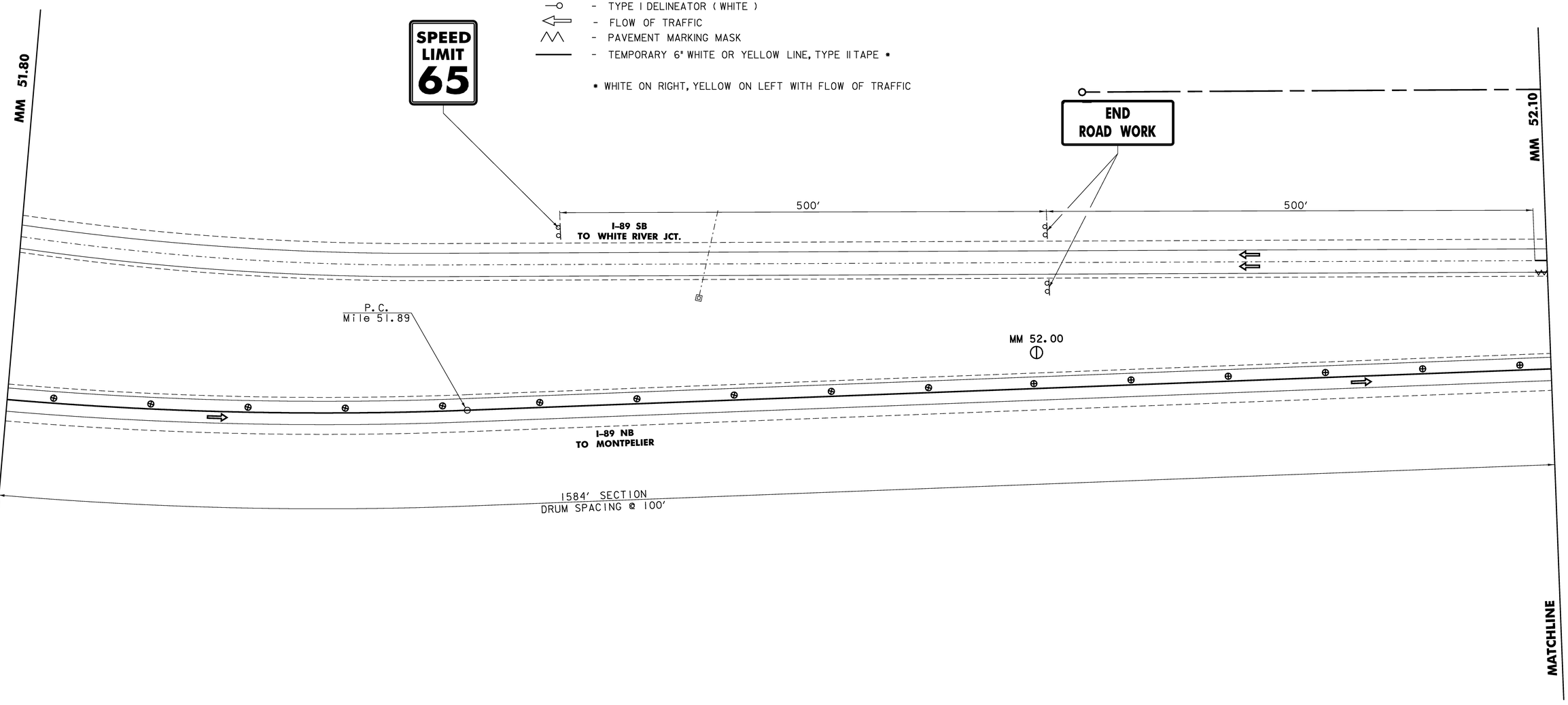
SCALE 1" = 50'-0
50 0 50

PROJECT:	PROJECT NO.:
BERLIN	IM 089-1(20)
DESIGN FILE NAME: 99a270\structures\s99a270bdr detsb.dgn	
IPARM FILE NAME: s99a270trafsb02.i	PLOT DATE: 05-DEC-2007
DESIGNED BY: G.SPILAK	DRAWN BY: H.I.SALLS
SQUAD LEADER: C.P.WILLIAMS	CHECKED BY: K.M.HIGGINS
SOUTHBOUND CLOSURE SHEET 2	SHEET: 36 OF 104

LEGEND

- TYPE III BARRICADES.
- PORTABLE ARROW BOARD
- TEMPORARY TRAFFIC BARRIER
- REMOVAL OF EXISTING PAVEMENT MARKING
- REFLECTORIZED PLASTIC DRUM
- TYPE I DELINEATOR (AMBER)
- TYPE I DELINEATOR (WHITE)
- FLOW OF TRAFFIC
- PAVEMENT MARKING MASK
- TEMPORARY 6" WHITE OR YELLOW LINE, TYPE II TAPE *

* WHITE ON RIGHT, YELLOW ON LEFT WITH FLOW OF TRAFFIC



NOTE - TRAFFIC CONTROL PLANS ARE SHOWN USING THE ORIGINAL INTERSTATE PLANS

SOUTHBOUND CLOSURE
TRAFFIC CONTROL SHEET 3

SCALE 1" = 50'-0
50 0 50

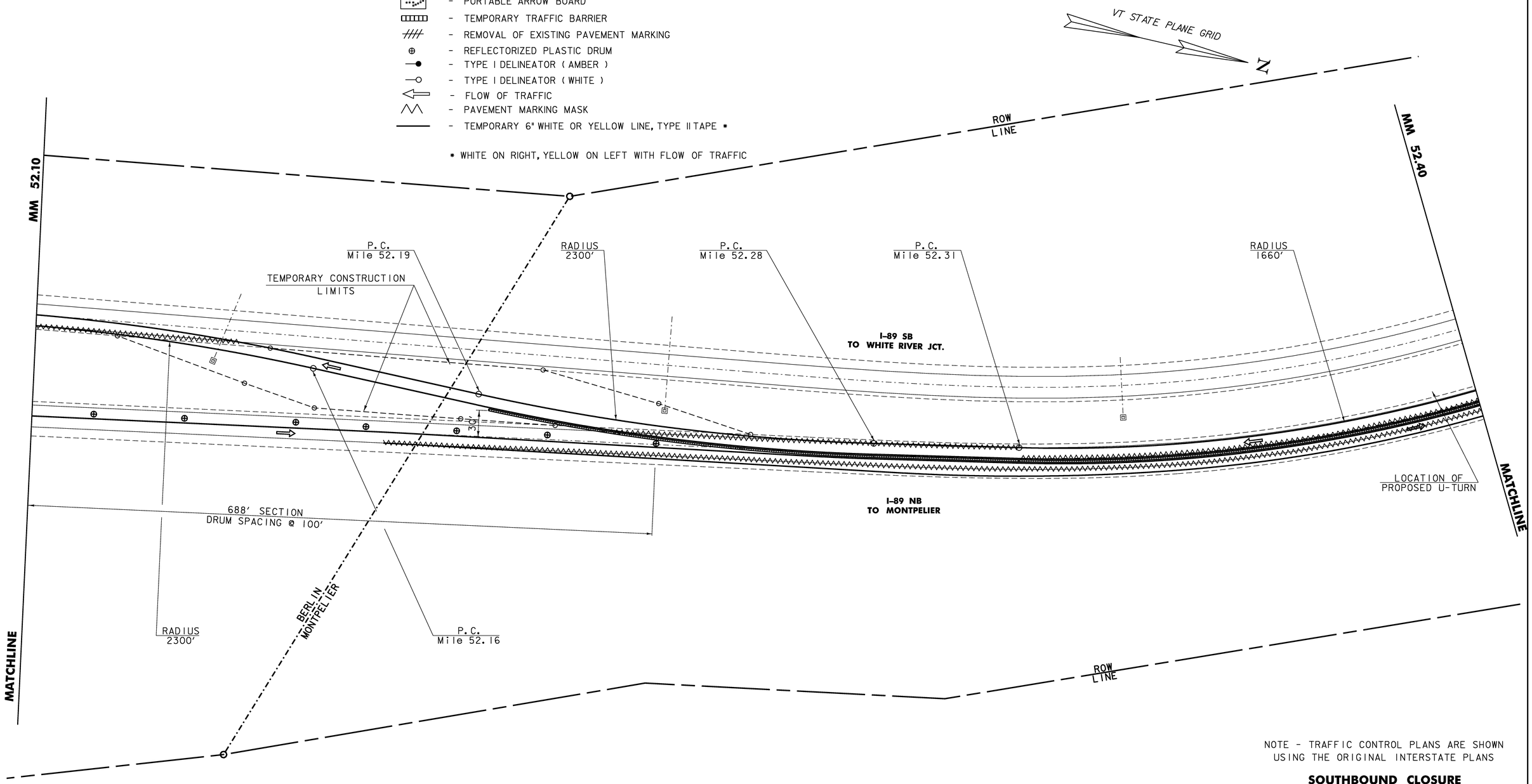
PROJECT:	PROJECT NO.:
BERLIN	IM 089-1(20)

DESIGN FILE NAME: 99a270\structures\s99a270bdr detsb.dgn
IPARM FILE NAME: s99a270trafsb03.i PLOT DATE: 05-DEC-2007
DESIGNED BY: G.SPILAK DRAWN BY: H.I.SALLS
SQUAD LEADER: C.P.WILLIAMS CHECKED BY: K.M.HIGGINS
SOUTHBOUND CLOSURE SHEET 3 SHEET: 37 OF 104

LEGEND

- TYPE III BARRICADES.
- PORTABLE ARROW BOARD
- TEMPORARY TRAFFIC BARRIER
- REMOVAL OF EXISTING PAVEMENT MARKING
- REFLECTORIZED PLASTIC DRUM
- TYPE I DELINEATOR (AMBER)
- TYPE I DELINEATOR (WHITE)
- FLOW OF TRAFFIC
- PAVEMENT MARKING MASK
- TEMPORARY 6" WHITE OR YELLOW LINE, TYPE II TAPE *

* WHITE ON RIGHT, YELLOW ON LEFT WITH FLOW OF TRAFFIC



NOTE - TRAFFIC CONTROL PLANS ARE SHOWN USING THE ORIGINAL INTERSTATE PLANS

SOUTHBOUND CLOSURE TRAFFIC CONTROL SHEET 4

SCALE 1" = 50'-0
50 0 50

PROJECT:	PROJECT NO.:
BERLIN	IM 089-1(20)
DESIGN FILE NAME: 99a270\structures\s99a270bdr detsb.dgn	
IPARM FILE NAME: s99a270trafsb04.i	PLOT DATE: 05-DEC-2007
DESIGNED BY: G.SPILAK	DRAWN BY: H.I.SALLS
SQUAD LEADER: C.P.WILLIAMS	CHECKED BY: K.M.HIGGINS
SOUTHBOUND CLOSURE SHEET 4	SHEET: 38 OF 104

LEGEND

- TYPE III BARRICADES.
- PORTABLE ARROW BOARD
- TEMPORARY TRAFFIC BARRIER
- REMOVAL OF EXISTING PAVEMENT MARKING
- REFLECTORIZED PLASTIC DRUM
- TYPE I DELINEATOR (AMBER)
- TYPE I DELINEATOR (WHITE)
- FLOW OF TRAFFIC
- PAVEMENT MARKING MASK
- TEMPORARY 6" WHITE OR YELLOW LINE, TYPE II TAPE *

* WHITE ON RIGHT, YELLOW ON LEFT WITH FLOW OF TRAFFIC

VT STATE PLANE GRID

N

BERLIN
MONTPELIER

MM 52.40

ROW
LINE

MM 52.60

RADIUS
1660'

I-89 SB
TO WHITE RIVER JCT.

MM 52.50

I-89 NB
TO MONTPELIER

475'
TO AVOID BRIDGE

MATCHLINE

MATCHLINE

BERLIN
MONTPELIER

ROW
LINE

SCALE 1" = 50'-0
50 0 50

NOTE - TRAFFIC CONTROL PLANS ARE SHOWN
USING THE ORIGINAL INTERSTATE PLANS

SOUTHBOUND CLOSURE
TRAFFIC CONTROL SHEET 5

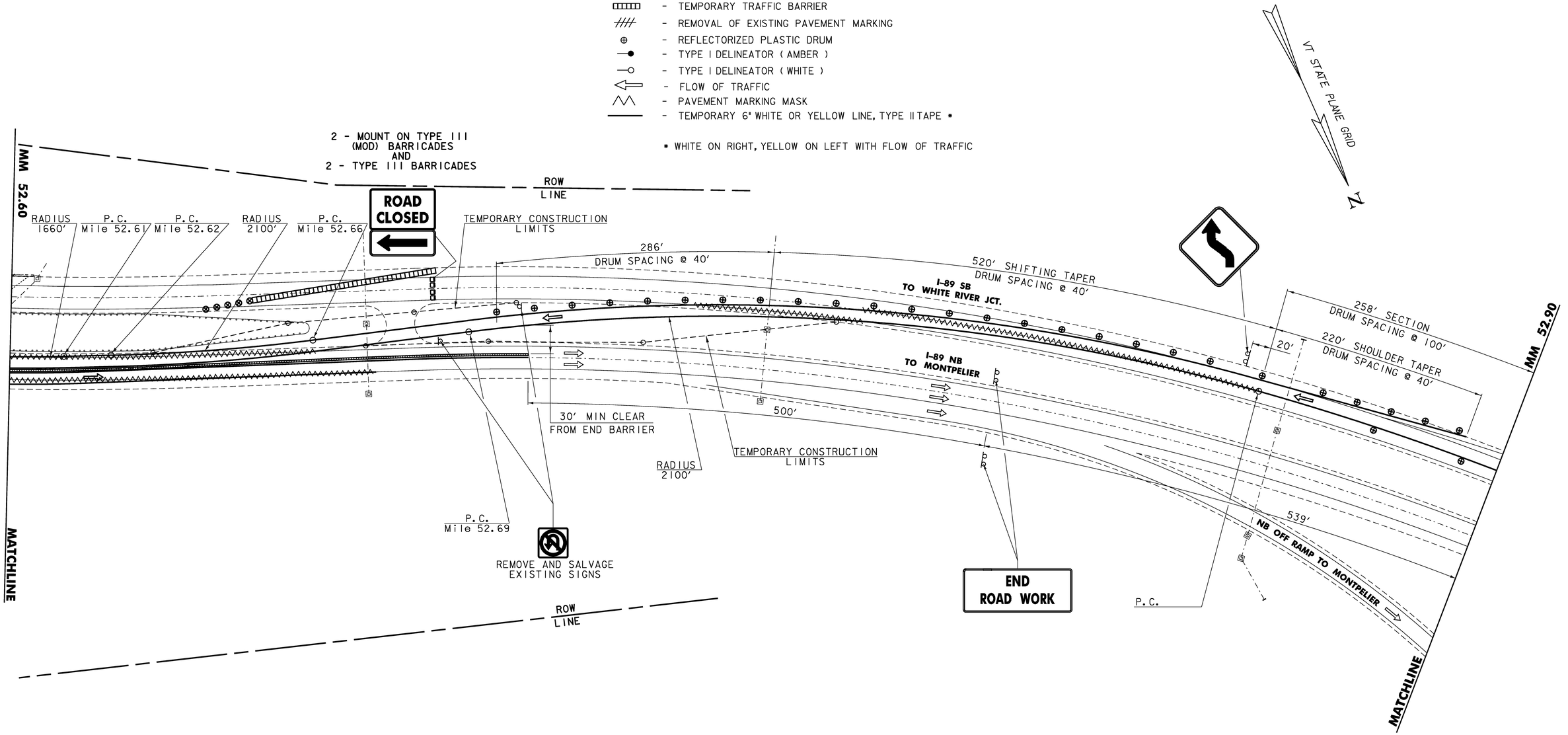
PROJECT:	PROJECT NO.:
BERLIN	IM 089-1(20)

DESIGN FILE NAME: 99a270\structures\s99a270bdr detsb.dgn
IPARM FILE NAME: s99a270trafsb05.i PLOT DATE: 05-DEC-2007
DESIGNED BY: G.SPILAK DRAWN BY: H.I.SALLS
SQUAD LEADER: C.P.WILLIAMS CHECKED BY: K.M.HIGGINS
SOUTHBOUND CLOSURE SHEET 5 SHEET: 39 OF 104

LEGEND

- TYPE III BARRICADES.
- PORTABLE ARROW BOARD
- TEMPORARY TRAFFIC BARRIER
- REMOVAL OF EXISTING PAVEMENT MARKING
- REFLECTORIZED PLASTIC DRUM
- TYPE I DELINEATOR (AMBER)
- TYPE I DELINEATOR (WHITE)
- FLOW OF TRAFFIC
- PAVEMENT MARKING MASK
- TEMPORARY 6" WHITE OR YELLOW LINE, TYPE II TAPE *

* WHITE ON RIGHT, YELLOW ON LEFT WITH FLOW OF TRAFFIC



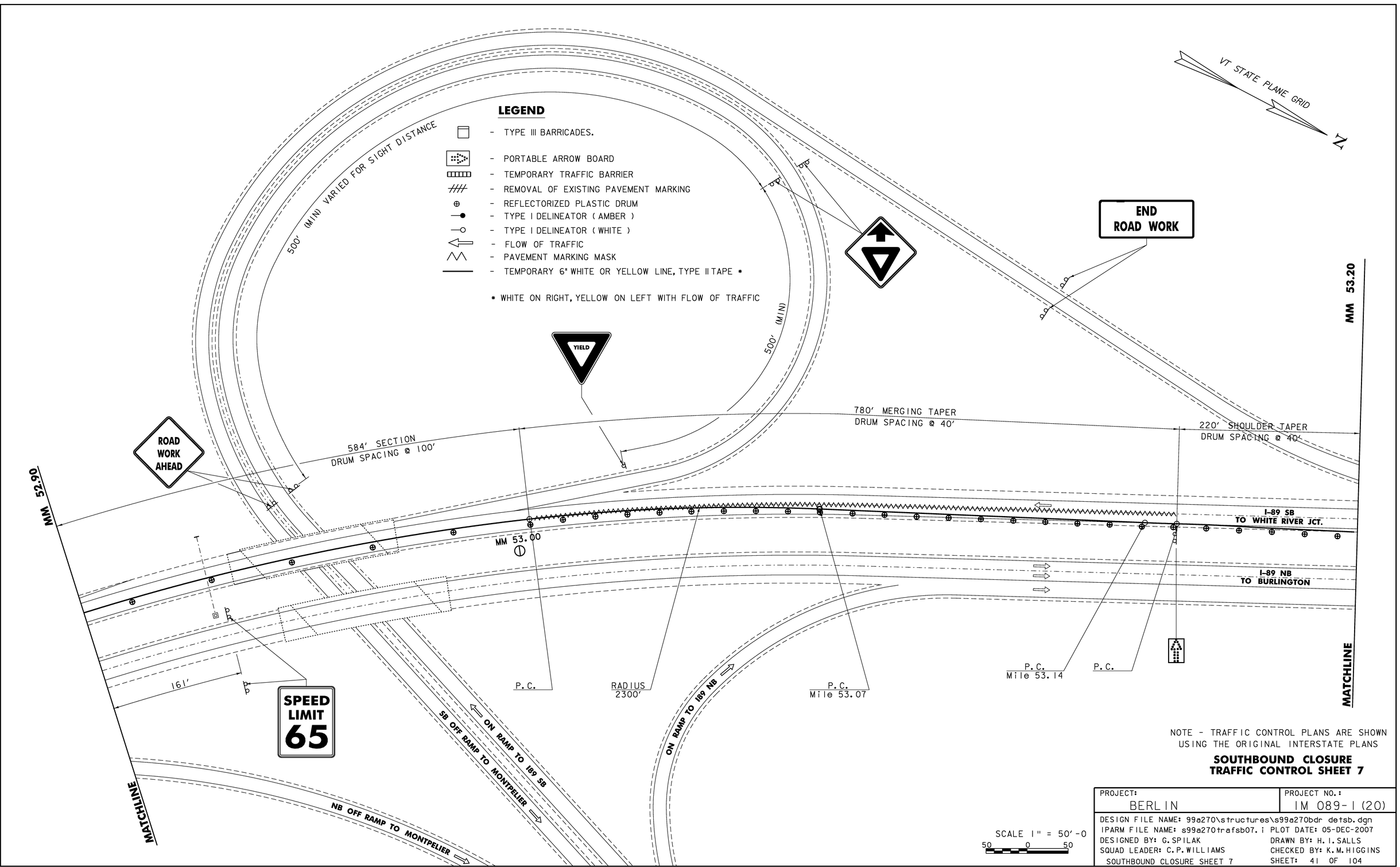
SOUTHBOUND CLOSURE TRAFFIC CONTROL SHEET 6

NOTE - TRAFFIC CONTROL PLANS ARE SHOWN USING THE ORIGINAL INTERSTATE PLANS

SCALE 1" = 50'-0

50 0 50

PROJECT: BERLIN	PROJECT NO.: IM 089-1(20)
DESIGN FILE NAME: 99a270\structures\s99a270bdr detsb.dgn	
IPARM FILE NAME: s99a270trafsb06.i	PLOT DATE: 05-DEC-2007
DESIGNED BY: G.SPILAK	DRAWN BY: H.I.SALLS
SQUAD LEADER: C.P.WILLIAMS	CHECKED BY: K.M.HIGGINS
SOUTHBOUND CLOSURE SHEET 6	SHEET: 40 OF 104



NOTE - TRAFFIC CONTROL PLANS ARE SHOWN USING THE ORIGINAL INTERSTATE PLANS

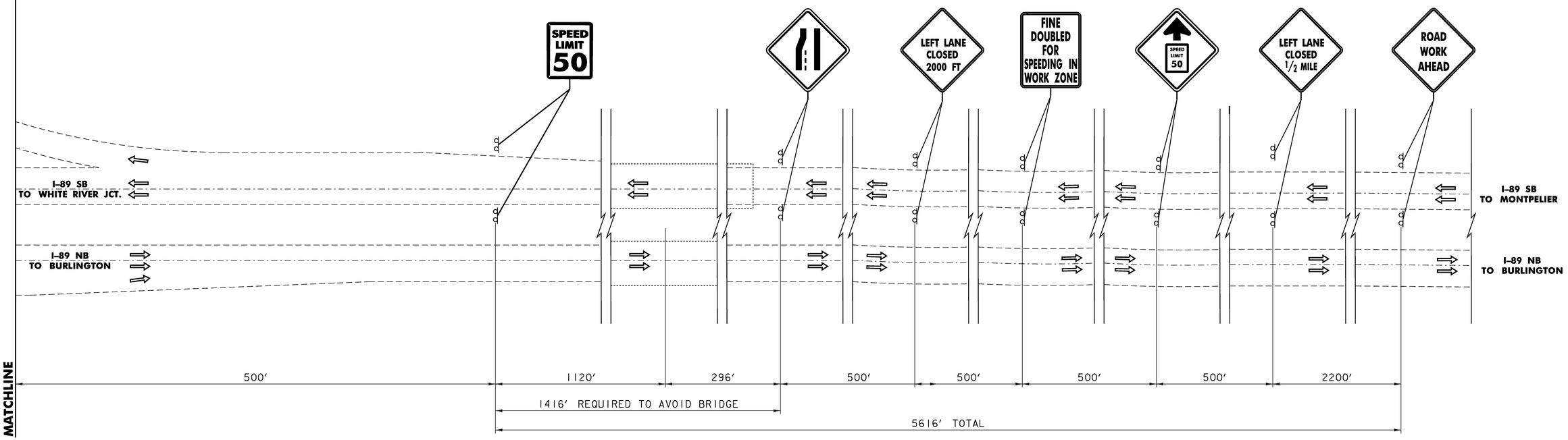
SOUTHBOUND CLOSURE
TRAFFIC CONTROL SHEET 7

PROJECT:	PROJECT NO.:
BERLIN	IM 089-1(20)
DESIGN FILE NAME: 99a270\structures\s99a270bdr detsb.dgn	
IPARM FILE NAME: s99a270trafsb07.i	PLOT DATE: 05-DEC-2007
DESIGNED BY: G.SPILAK	DRAWN BY: H.I.SALLS
SQUAD LEADER: C.P.WILLIAMS	CHECKED BY: K.M.HIGGINS
SOUTHBOUND CLOSURE SHEET 7	SHEET: 41 OF 104

LEGEND

⇦ - FLOW OF TRAFFIC

MM 53.20



APPROACH SIGNS

SOUTHBOUND CLOSURE
TRAFFIC CONTROL SHEET 8

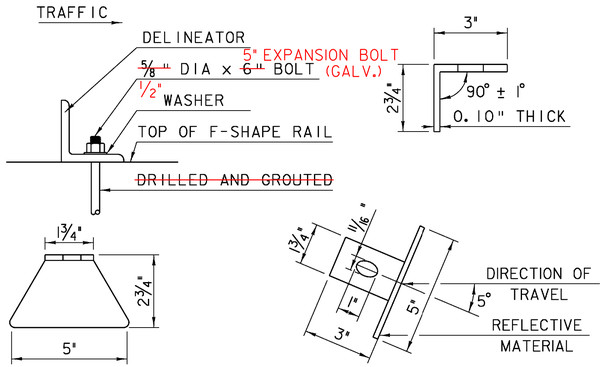
SCALE 1" = 50'-0

50 0 50

NOTE - TRAFFIC CONTROL PLANS ARE SHOWN USING THE ORIGINAL INTERSTATE PLANS

PROJECT:	PROJECT NO.:
BERLIN	IM 089-1(20)

DESIGN FILE NAME: 99a270\structures\s99a270bdr detsb.dgn
IPARM FILE NAME: s99a270trafsb08.i PLOT DATE: 05-DEC-2007
DESIGNED BY: G.SPILAK DRAWN BY: H.I.SALLS
SQUAD LEADER: C.P.WILLIAMS CHECKED BY: K.M.HIGGINS
SOUTHBOUND CLOSURE SHEET 8 SHEET: 42 OF 104



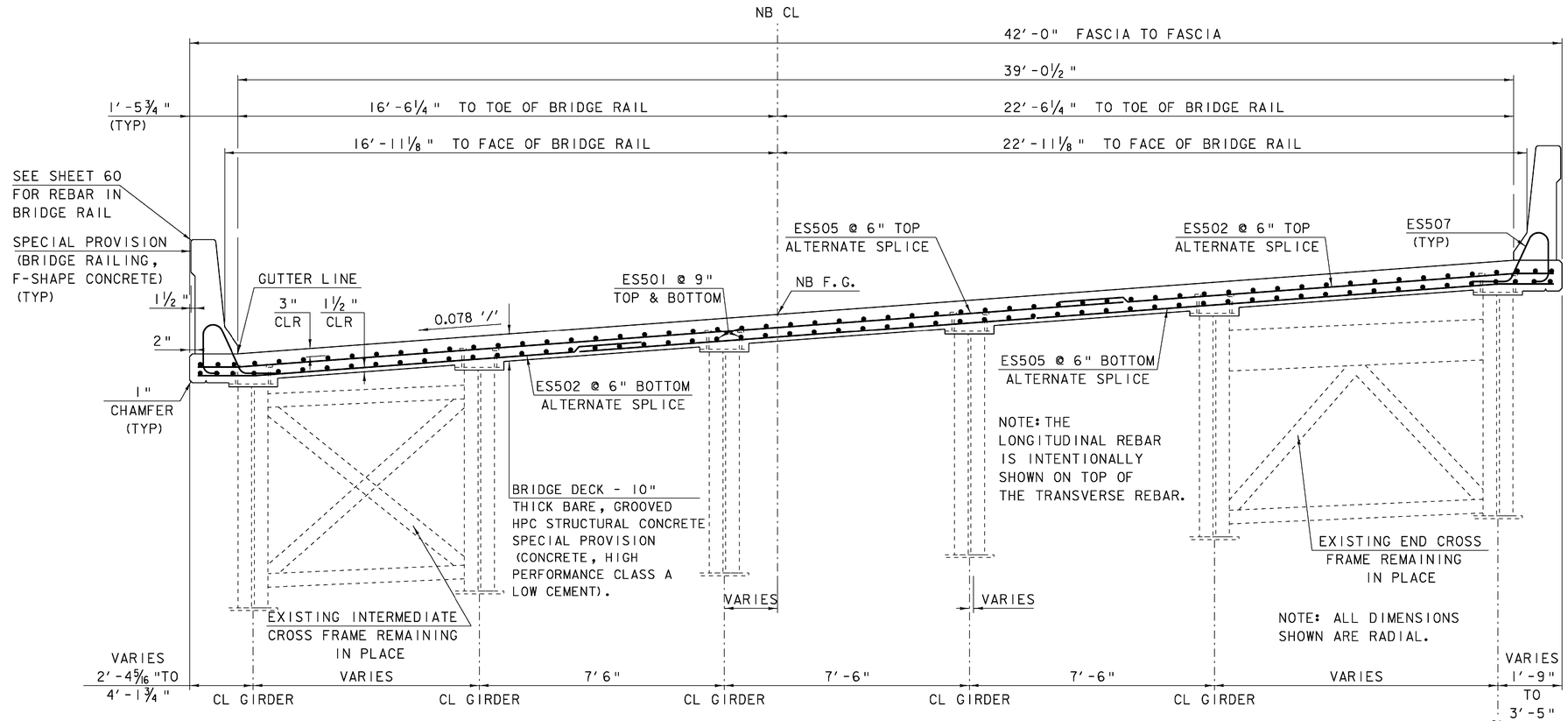
DELINEATOR NOTES

NTS

1. PAYMENT FOR DELINEATORS SHALL BE INCLUDED IN THE UNIT PRICE BID FOR ITEM #900.640 SPECIAL PROVISION, (BRIDGE RAILING, F-SHAPE CONCRETE).

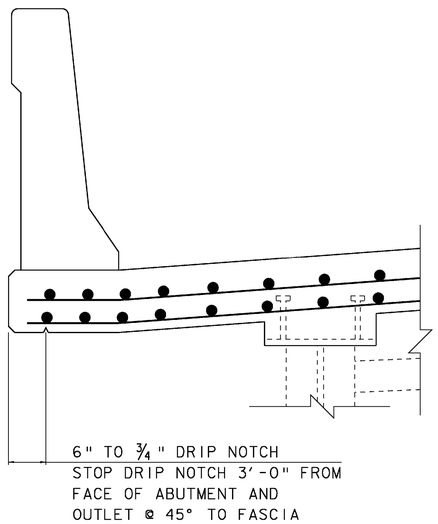
2. DELINEATORS SHALL BE EVENLY SPACED ACROSS THE ENTIRE LENGTH OF BRIDGE RAILING BUT NOT WITHIN 2' OF ANY JOINT OPENING NOR A SPACING OF MORE THAN 30'.

3. DELINEATORS SHALL BE AMBER OR WHITE WITH AMBER ON THE MEDIAN SIDE.



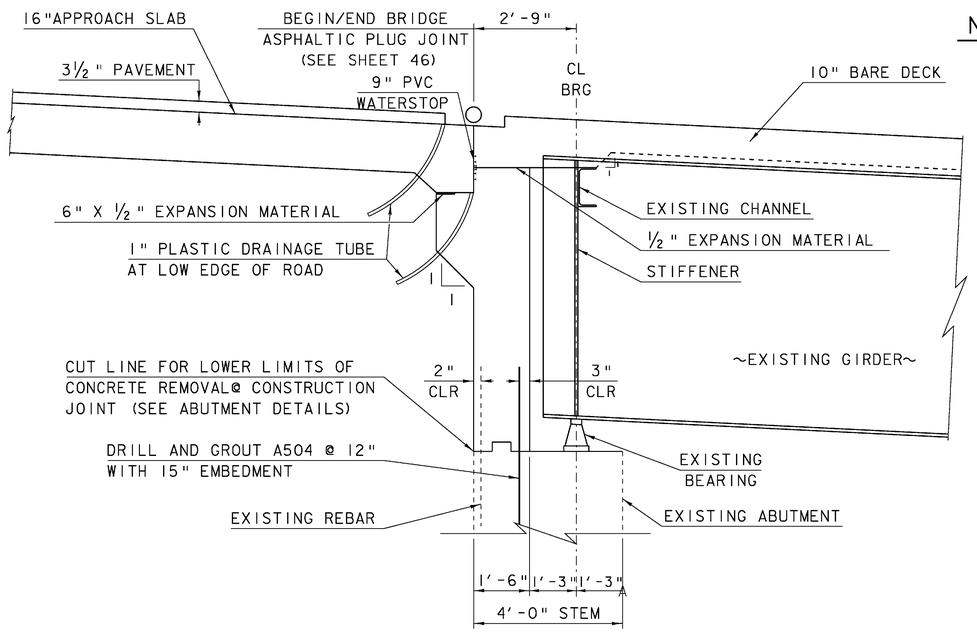
NB BRIDGE TYPICAL

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



DRIP NOTCH DETAIL

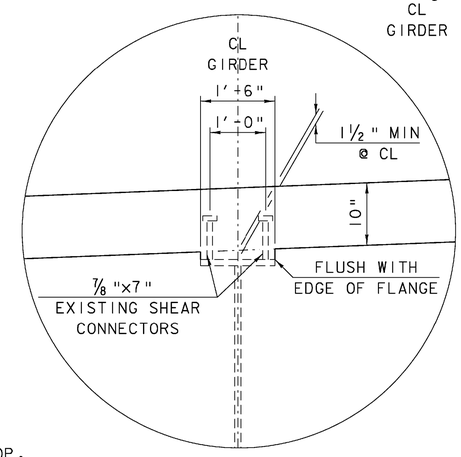
SCALE: 1"=2'-0"



END OF BRIDGE DETAIL

SCALE: 1"=2'-0"

NOTE:
1/2" EXPANSION MATERIAL, PVC WATERSTOP, PLASTIC DRAINAGE TUBE, AND BOND BREAKER SHALL BE INCIDENTAL TO ITEM #501.34 "CONCRETE, HIGH PERFORMANCE CLASS B".



HAUNCH DETAIL

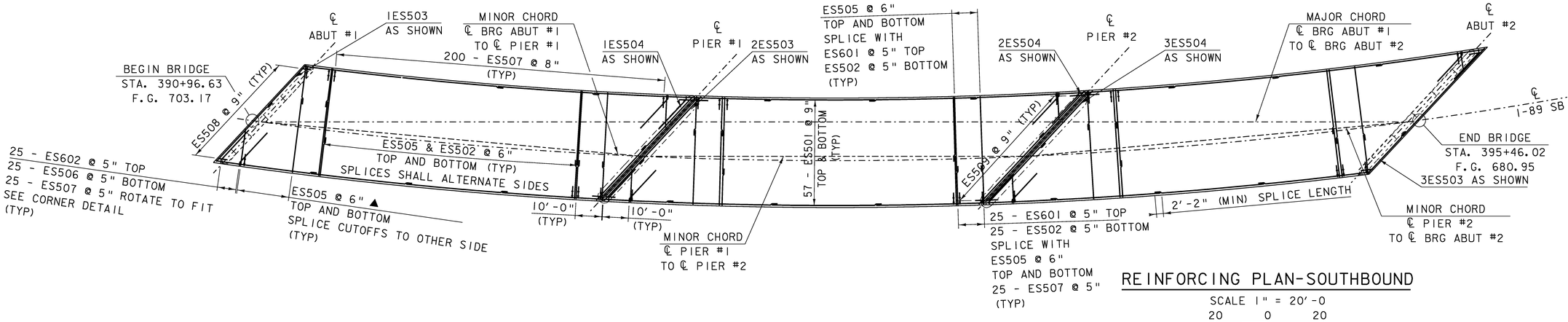
NTS

SEE NOTE 4 ON SHEET 10

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

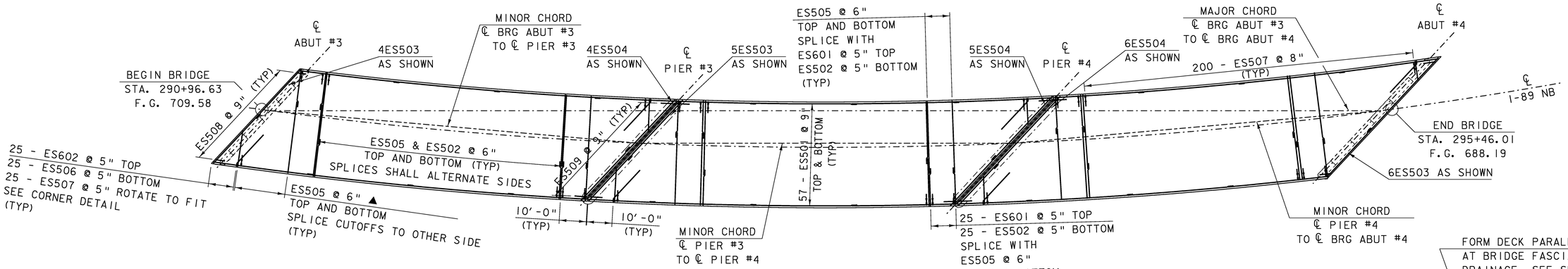
SCALE 1" = 2'-0"
1 9 6 3 0 1 2

PROJECT: BERLIN	PROJECT NO.: IM 089-1(20)
DESIGN FILE NAME: 99a270\structures\s99a270typ.dgn	
IPARM FILE NAME: s00a270bridgetyp.i	PLOT DATE: 05-DEC-2007
DESIGNED BY: G.SPILAK	DRAWN BY: R.PELLETT
SQUAD LEADER: C.P.WILLIAMS	CHECKED BY: R.S.YOUNG
BRIDGE TYPICAL SECTION	SHEET: 43 OF 104



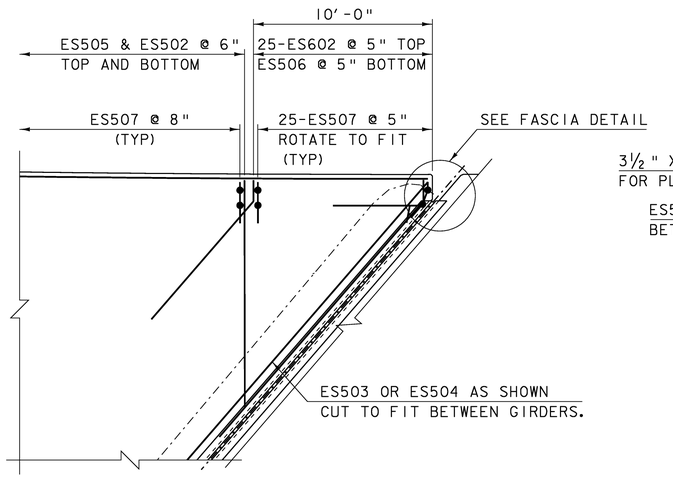
REINFORCING PLAN-SOUTHBOUND

SCALE 1" = 20'-0
20 0 20



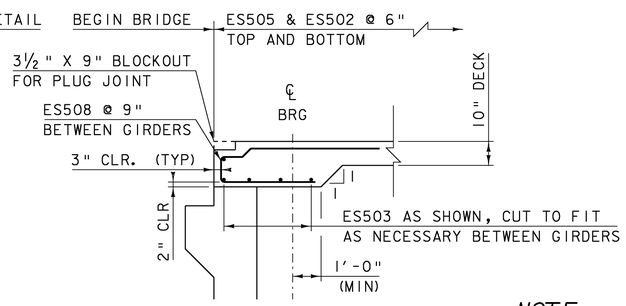
REINFORCING PLAN-NORTHBOUND

SCALE 1" = 20'-0
20 0 20



ACUTE CORNER DETAIL

N.T.S.

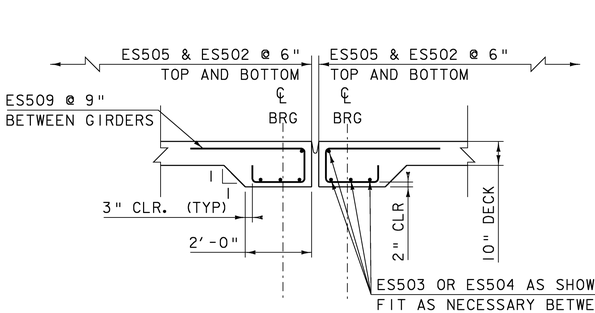


ABUTMENT HAUNCH TYPICAL SECTION

N.T.S.

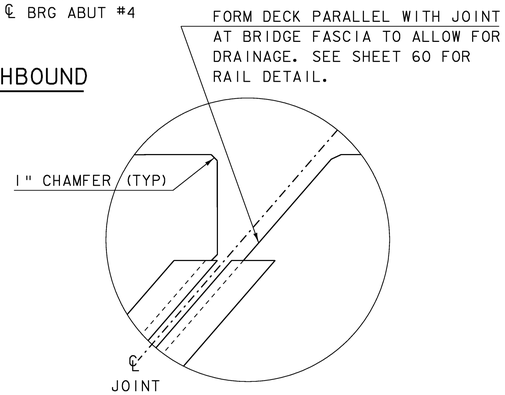
NOTE:

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



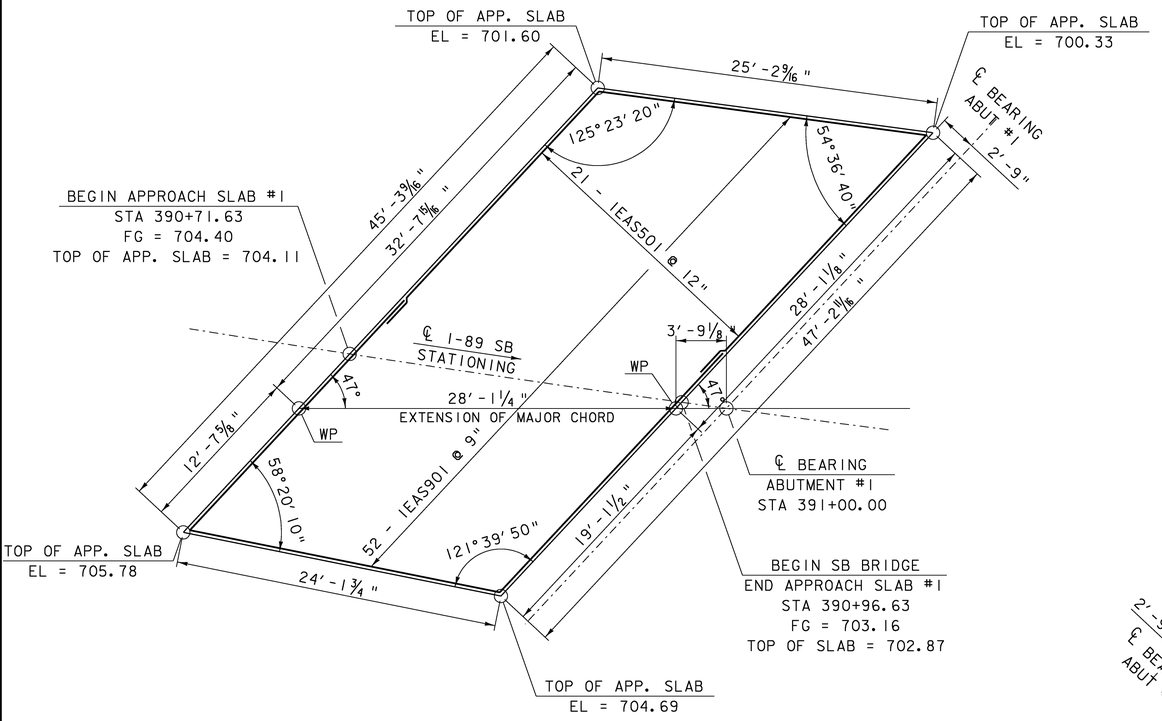
PIER HAUNCH TYPICAL SECTION

N.T.S.
SEE ALSO EXPANSION JOINT DETAIL, SHEET 47



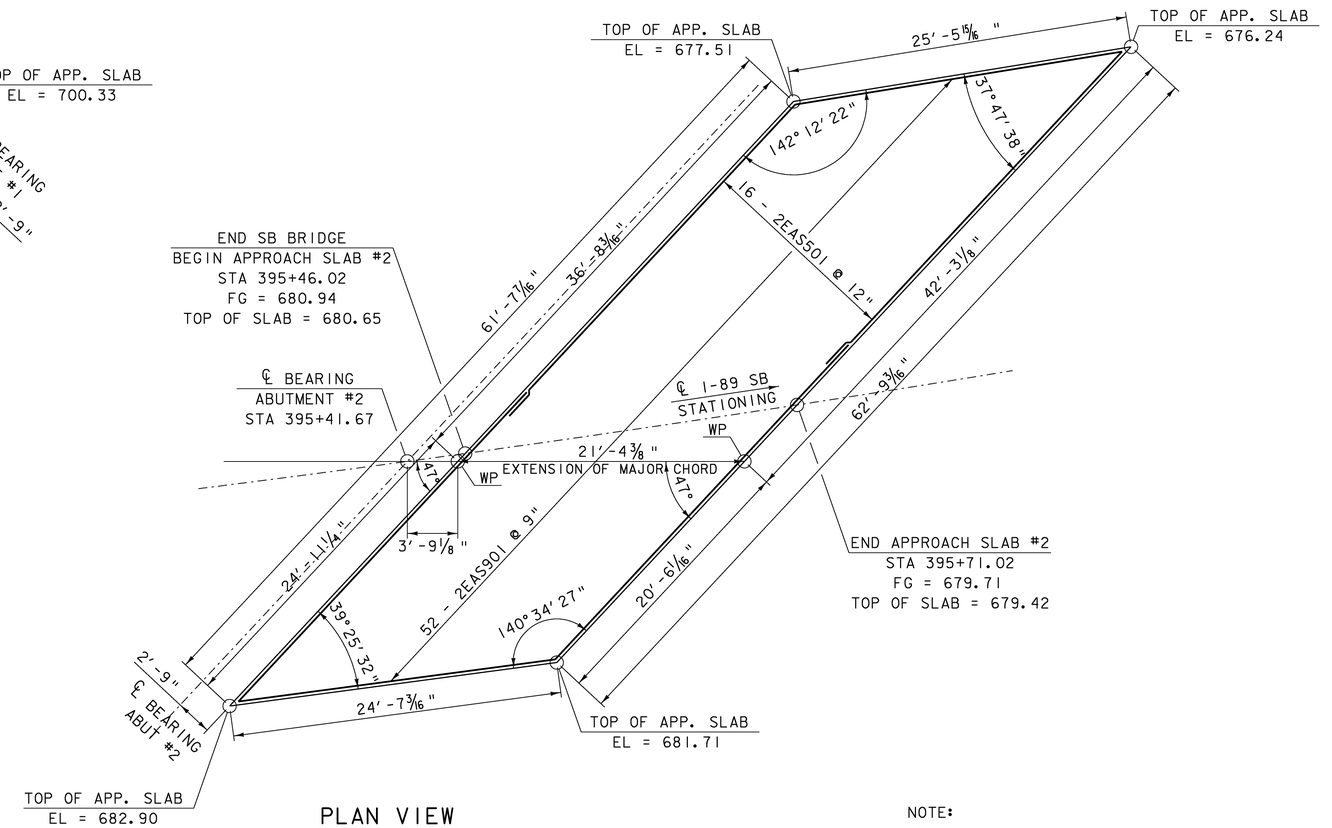
FASCIA DETAIL

PROJECT: BERLIN	PROJECT NO.: IM 089-1(20)
DESIGN FILE NAME: 99a270/structures/99a270deck.dgn	
IPARM FILE NAME: 99a270deck.i	PLOT DATE: 05-DEC-2007
DESIGNED BY: G.SPILAK	DRAWN BY: C.MOONEY
SQUAD LEADER: C.P.WILLIAMS	CHECKED BY: R.S.YOUNG
DECK REINFORCING PLAN	SHEET: 44 OF 104



PLAN VIEW
APPROACH SLAB #1

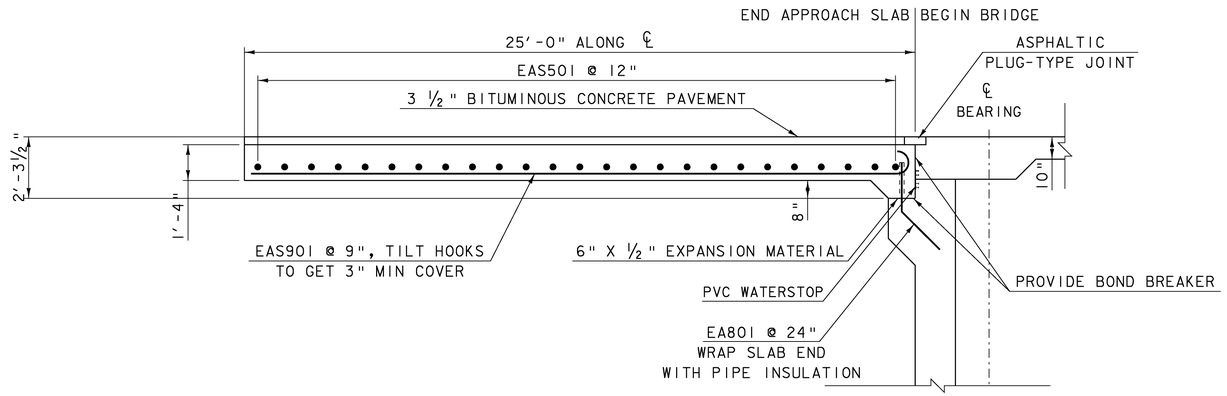
SCALE ³⁄₁₆" = 1′-0"



PLAN VIEW
APPROACH SLAB #2

SCALE ³⁄₁₆" = 1′-0"

NOTE:
½" EXPANSION MATERIAL, PVC WATERSTOP, PLASTIC DRAINAGE TUBE, AND BOND BREAKER SHALL BE INCIDENTAL TO ITEM #501.34 "CONCRETE, HIGH PERFORMANCE CLASS B".



APPROACH SLAB TYPICAL SECTION

SCALE ⅜" = 1′-0"

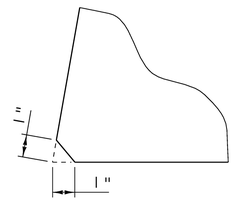
NOTES:

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

3" CLR. UNLESS OTHERWISE SPECIFIED ON THE PLANS

ALL LAPS ARE MIN. 2′-2" UNLESS OTHERWISE NOTED ON PLANS.

ES901 BARS SHALL BE PLACED PARALLEL TO THE LONGEST SIDE



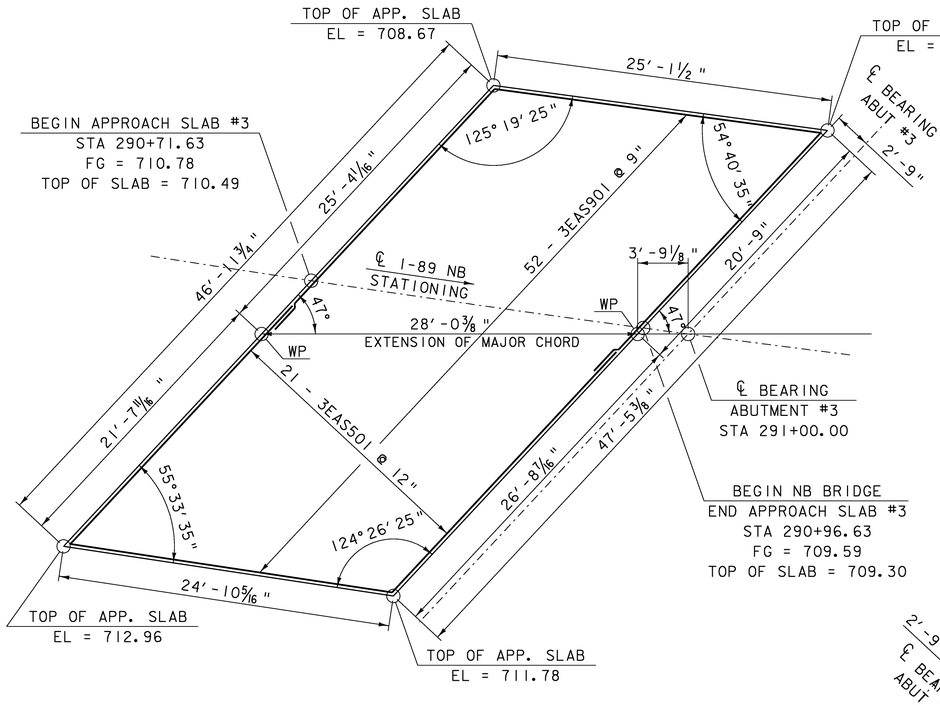
ACUTE CORNER DETAIL

N.T.S.

SCALE ⅜" = 1′-0
1 0 1 2 3 4

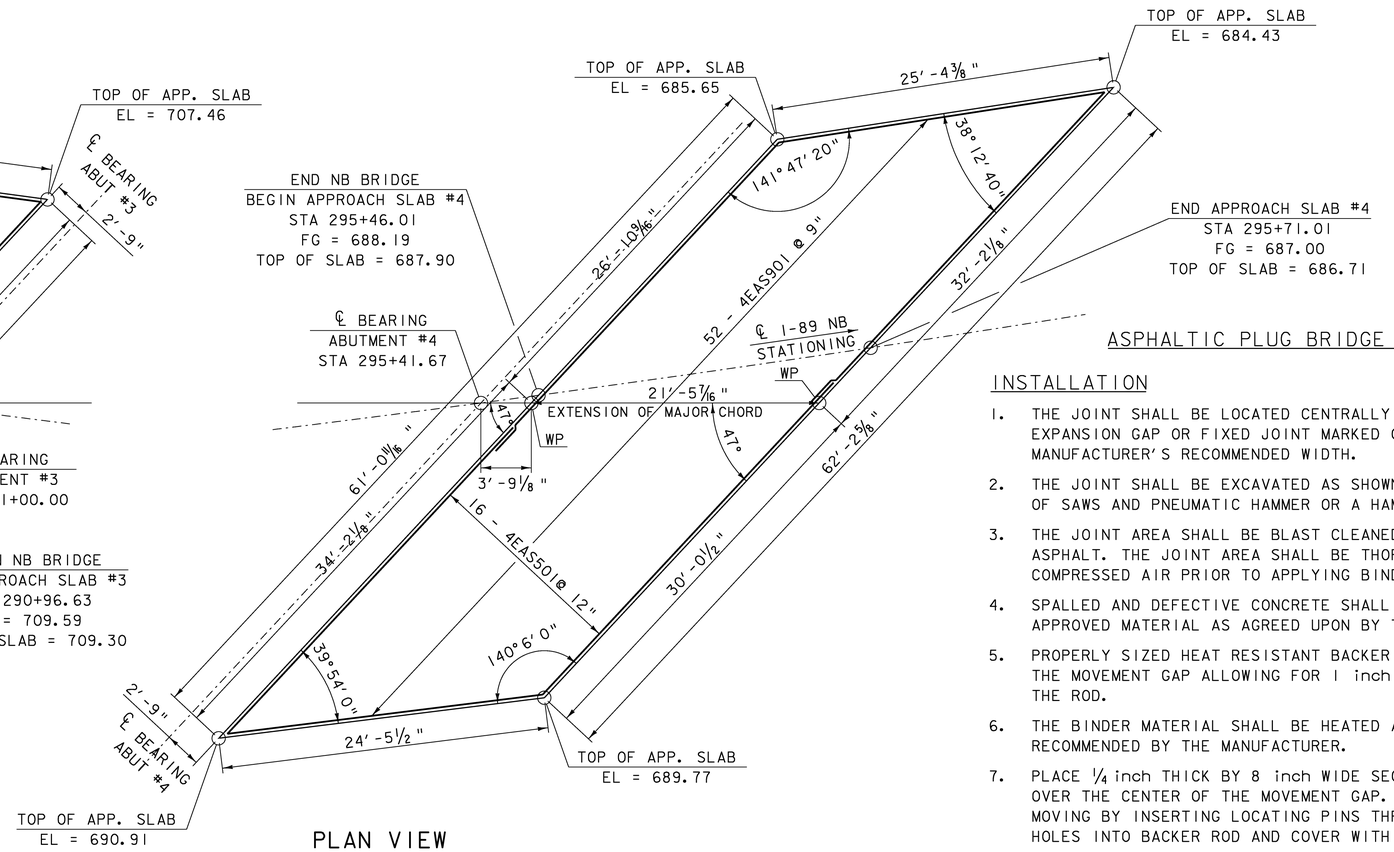
SCALE ³⁄₁₆" = 1′-0
1 0 2 4 6 8

PROJECT:	PROJECT NO.:
BERLIN	IM 089-1(20)
DESIGN FILE NAME: 99a270/structures/99a270aps.dgn	
IPARM FILE NAME: 99a270apsSB.i	PLOT DATE: 05-DEC-2007
DESIGNED BY: E.L.RUSTAY	DRAWN BY: E.L.RUSTAY
SQUAD LEADER: C.P.WILLIAMS	CHECKED BY: R.S.YOUNG
APPROACH SLAB #1 & #2 DETAILS	SHEET: 45 OF 104



PLAN VIEW
APPROACH SLAB #3

SCALE 3⁄16 " = 1'-0"



PLAN VIEW
APPROACH SLAB #4

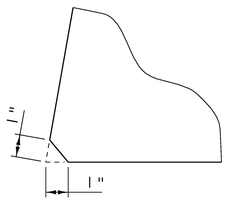
SCALE 3⁄16 " = 1'-0"

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

3" CLR. UNLESS OTHERWISE SPECIFIED ON THE PLANS

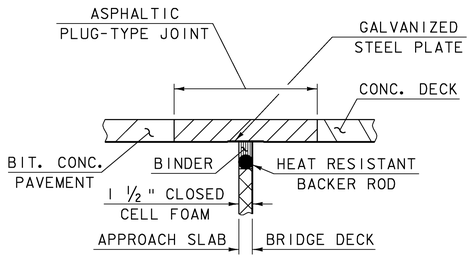
ALL LAPS ARE 2'-2" UNLESS OTHERWISE NOTED ON PLANS.

ES901 BARS SHALL BE PLACED PARALLEL TO THE LONGEST SIDE



ACUTE CORNER DETAIL

N.T.S.



ASPHALTIC PLUG-TYPE JOINT DETAIL

N.T.S.

ASPHALTIC PLUG BRIDGE JOINT

INSTALLATION

1. THE JOINT SHALL BE LOCATED CENTRALLY OVER THE DECK EXPANSION GAP OR FIXED JOINT MARKED OUT TO THE MANUFACTURER'S RECOMMENDED WIDTH.
2. THE JOINT SHALL BE EXCAVATED AS SHOWN ON THE PLANS BY USE OF SAWS AND PNEUMATIC HAMMER OR A HAMMER AND CHISEL.
3. THE JOINT AREA SHALL BE BLAST CLEANED OF DEBRIS AND ASPHALT. THE JOINT AREA SHALL BE THOROUGHLY DRIED USING HOT COMPRESSED AIR PRIOR TO APPLYING BINDER MATERIAL.
4. SPALLED AND DEFECTIVE CONCRETE SHALL BE REPAIRED WITH AN APPROVED MATERIAL AS AGREED UPON BY THE ENGINEER.
5. PROPERLY SIZED HEAT RESISTANT BACKER ROD SHALL BE PLACED IN THE MOVEMENT GAP ALLOWING FOR 1 inch +/- OF BINDER ABOVE THE ROD.
6. THE BINDER MATERIAL SHALL BE HEATED AND PLACED AS RECOMMENDED BY THE MANUFACTURER.
7. PLACE ¼ inch THICK BY 8 inch WIDE SECTIONS OF STEEL PLATE OVER THE CENTER OF THE MOVEMENT GAP. SECURE PLATES FROM MOVING BY INSERTING LOCATING PINS THROUGH THE PRE-STAMPED HOLES INTO BACKER ROD AND COVER WITH HOT BINDER.
   a. THE STEEL PLATES MAY BE OMITTED WHERE THE APPROACH SLAB IS COVERED WITH A STONE BASE OR BITUMINOUS PAVEMENT AND VERTICAL MOVEMENT OF THE PLATES MIGHT OCCUR.
8. THE BINDER MATERIAL AND AGGREGATE SHALL BE HEATED AND MIXED AS RECOMMENDED BY THE MANUFACTURER.
9. THE INSTALLATION OF MATERIAL, COMPACTION, AND TOPCOATING SHALL BE AS RECOMMENDED BY THE MANUFACTURER.
10. IMMEDIATELY AFTER TOPCOATING, AN ANTI-SKID MATERIAL SHALL BE CAST OVER THE JOINT TO REDUCE THE RISK OF TRACKING.
11. JOINT SHALL BE PROTECTED FROM TRAFFIC UNTIL THE MATERIAL HAS COOLED TO 125°F +/-.

WEATHER LIMITATIONS.

BINDER MATERIAL SHALL BE APPLIED ONLY WHEN THE FOLLOWING CONDITIONS PREVAIL:

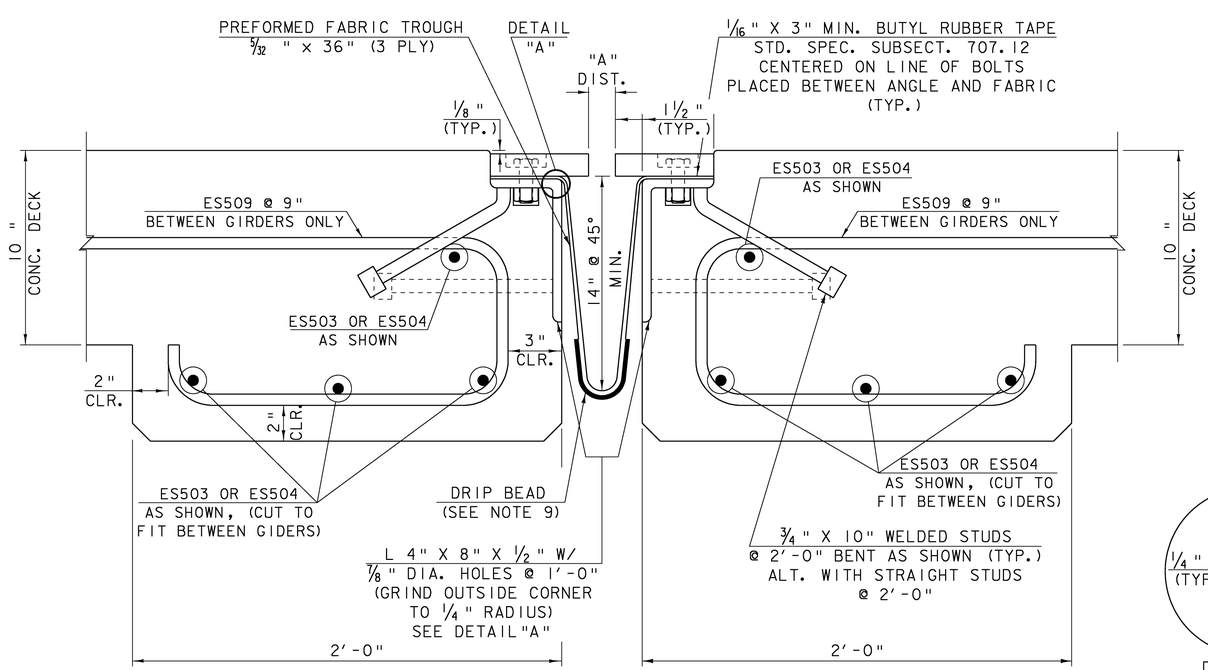
(a) THE AMBIENT AIR TEMPERATURE IS AT LEAST 50°F AND RISING.

(b) THE ROAD SURFACE IS SUFFICIENTLY DRY.

(c) WEATHER CONDITIONS OR OTHER CONDITIONS ARE FAVORABLE AND ARE EXPECTED TO REMAIN SO FOR THE PERFORMANCE OF SATISFACTORY WORK.

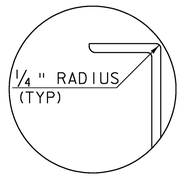
SCALE 3⁄16 " = 1'-0
1 0 2 4 6 8

PROJECT: BERLIN	PROJECT NO.: IM 089-1(20)
DESIGN FILE NAME: 99a270/structures/99a270aps.dgn	
IPARM FILE NAME: 99a270apsNB.i	PLOT DATE: 05-DEC-2007
DESIGNED BY: E.L.RUSTAY	DRAWN BY: E.L.RUSTAY
SQUAD LEADER: C.P.WILLIAMS	CHECKED BY: R.S.YOUNG
APPROACH SLAB #3 & #4 DETAILS	SHEET: 46 OF 104

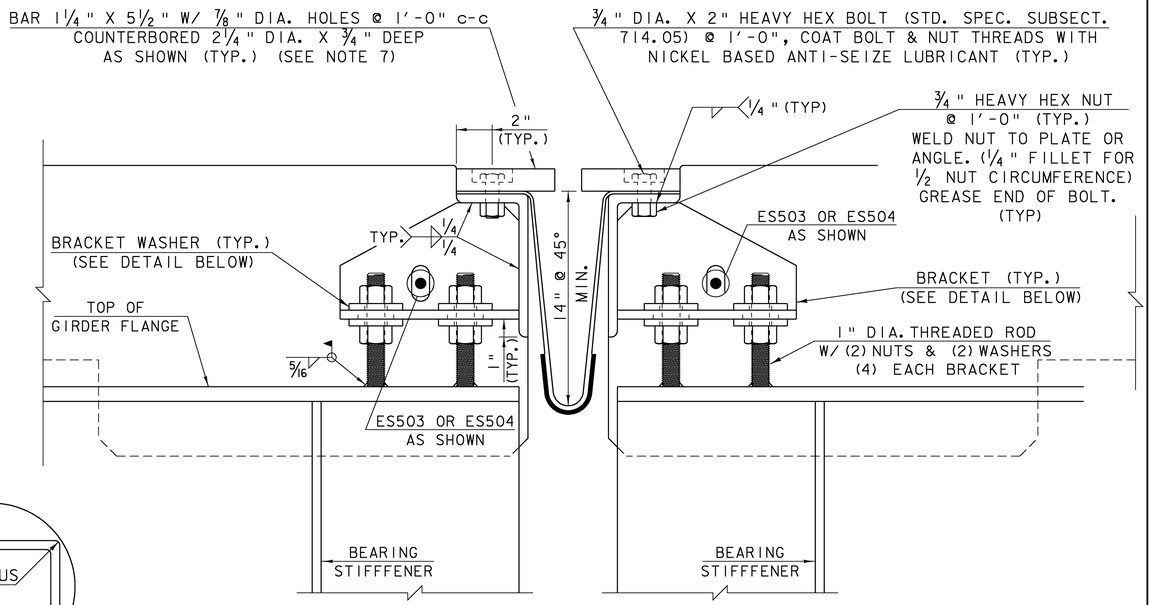


TYPICAL SECTION BETWEEN GIRDERS

(NORMAL TO ℄ BEARING)
N. T. S.



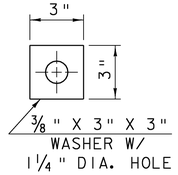
DETAIL "A"
NTS



TYPICAL SECTION AT GIRDERS

(NORMAL TO ℄ BEARING)
N. T. S.

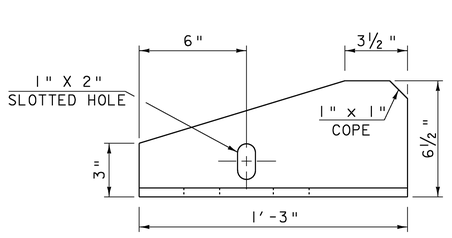
1. DETAILS ON THIS SHEET ARE FOR ITEM 516.11 "BRIDGE EXPANSION JOINT (VERMONT)".
2. PREFORMED FABRIC MATERIAL SHALL BE CONTINUOUS FOR THE FULL LENGTH OF THE JOINT.
3. THE FINAL FINISH OF THE EXPANSION DEVICE SHALL BE COVERED DURING THE PLACING OF BRIDGE DECK CONCRETE.
4. ALL STEEL COMPONENTS SHALL BE GALVANIZED OR METALIZED AND MEET THE REQUIREMENTS OF SUBSECTION 516.02. THREADED RODS SHALL CONFORM TO THE REQUIREMENTS OF 714.04. THE 1/2 "x9"x6" PLATE AND WELDED STUD ASSEMBLY MAY BE SUPPLIED WITHOUT GALVANIZING OR METALIZING.
5. THE ITEM "BRIDGE EXPANSION JOINT (VERMONT)" 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.
6. THE 4" X 8" X 1/2 " ANGLES SHALL BE FURNISHED AS ONE CONTINUOUS PIECE. THE 1 1/4 " X 5 1/2 " BARS EACH SIDE OF THE JOINT SHALL BE PROVIDED IN TWO EQUAL LENGTHS.
7. FILL COUNTERBORED HOLES WITH HOT POURED JOINT SEALER (STD. SPEC. 707.04) AFTER BOLT INSTALLATION. PAYMENT FOR THE WORK SHALL BE INCIDENTAL TO ITEM 516.11 "BRIDGE EXPANSION JOINT, VERMONT".
8. THE EXPANSION JOINT SHALL BE SHOP ASSEMBLED AND SHIPPED AS ONE UNIT.
9. A DRIP BEAD OF 1/4 " X 7" STRIP OF PREFORMED FABRIC MATERIAL SHALL BE CEMENTED TO THE BOTTOM OF THE FABRIC TROUGH USING AN ADHESIVE APPROVED BY THE MANUFACTURER. THE DRIP BEAD SHALL BE APPLIED 1" FROM THE DOWNSPOUT END OF THE TROUGH.
10. FABRIC TROUGH SHALL BE THOROUGHLY CLEANED AND FLUSHED AFTER PAVING OPERATION.
11. PRIOR TO GALVANIZING OR METALIZING, ALL CORNERS AND EDGES OF STEEL PLATES, SHAPES, ETC., SHALL BE GROUND TO A 1/16 INCH RADIUS.
12. TEMPORARY SHIPPING ATTACHMENTS SHALL BE ATTACHED BY BOLTING; WELDING WILL NOT BE PERMITTED.
13. PROJECTING THREADS OF THE 3/4 " BOLTS IN THE JOINT SHALL BE GREASED BY THE CONTRACTOR PRIOR TO PLACING ADJACENT CONCRETE. THIS WILL FACILITATE BOLT REMOVAL IF REQUIRED IN THE FUTURE.
14. SEE "EXPANSION JOINT AT PIER", SHEETS 48-51, FOR "A" DISTANCE



WASHER FOR BRACKET

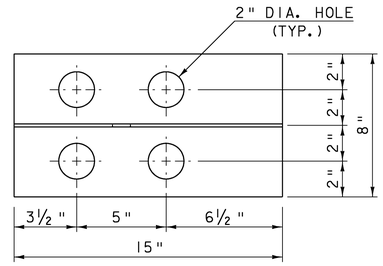
SCALE: 3" = 1'-0"

ALL PLATES 1/2 "



BRACKET ELEVATION

SCALE: 3" = 1'-0"



BRACKET PLAN

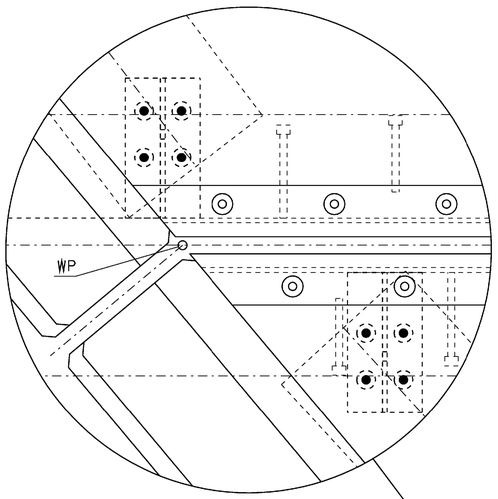
SCALE: 3" = 1'-0"

0.5 0.25 0 0.25 0.5

SCALE: 3" = 1'-0"

EXPANSION JOINT DETAILS

PROJECT: BERLIN	PROJECT NO.: IM 089-1(20)
DESIGN FILE NAME: 99a270\Structures\s99a270vtjoint.dgn	
IPARM FILE NAME: S99a270vtjoint.i	PLOT DATE: 05-DEC-2007
DESIGNED BY: VAOT	DRAWN BY: M. FESSEL
SQUAD LEADER: C. P. WILLIAMS	CHECKED BY: R. S. YOUNG
EXPANSION JOINT DETAILS	SHEET: 47 OF 104



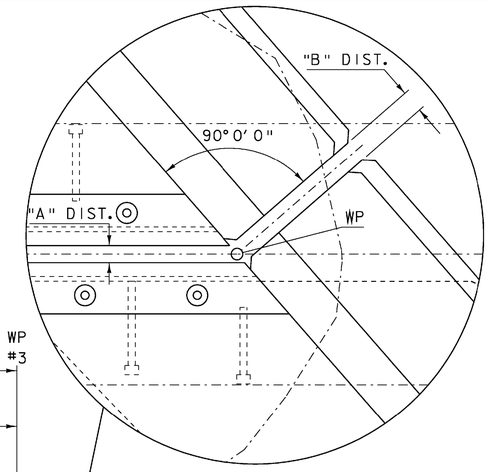
TYPICAL BRACKET DETAIL

SCALE 1 ½" = 1'-0

JOINT WORK POINTS						
WORK PT.	PIER	STATION	ELEV.	OFFSET	COORDINATES N	COORDINATES E
#1	1	392+32.80	697.71	RT. 16'-6¼"	36790.35	17135.53
#2	1	392+46.67	695.74	0	36785.55	17114.45
#3	1	392+66.21	693.01	LT. 22'-6¼"	36778.95	17085.47

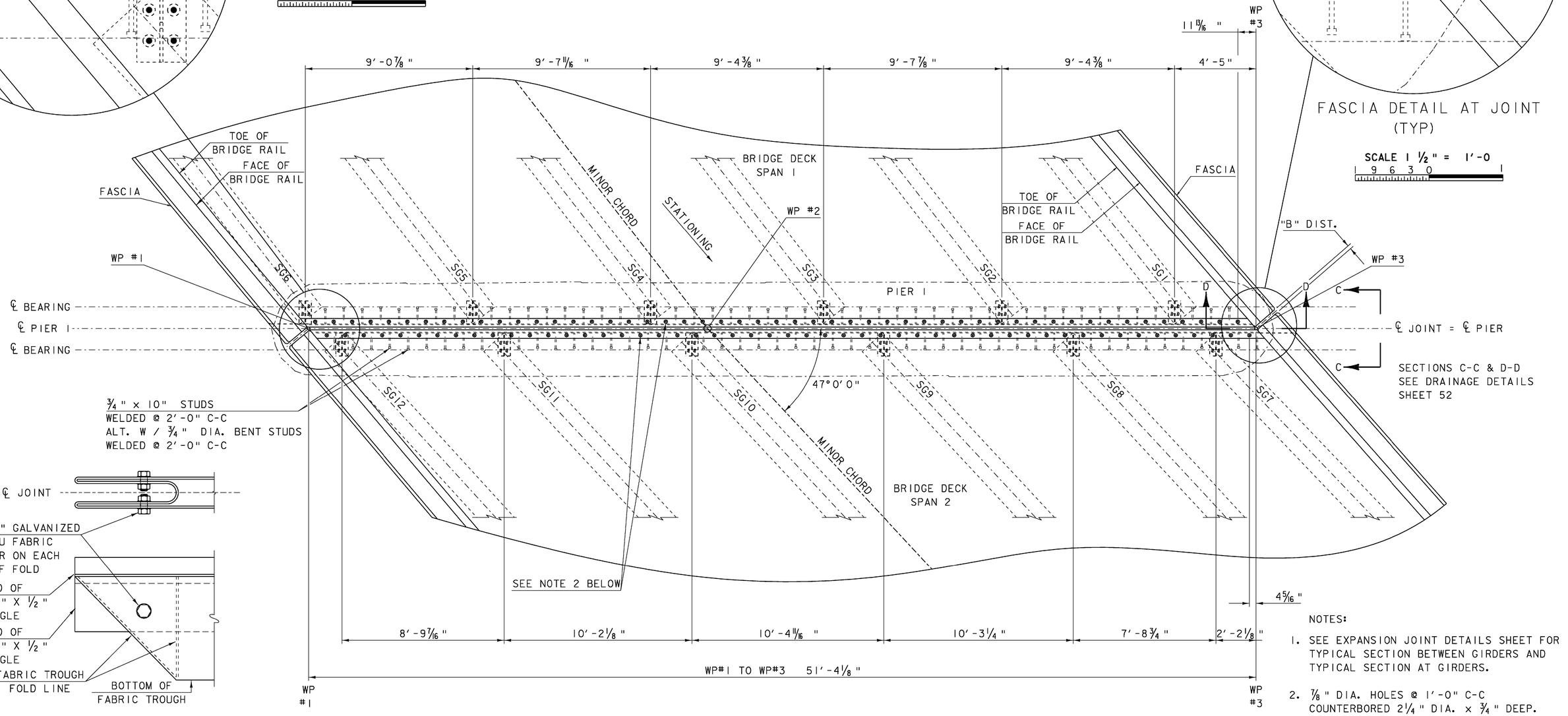
TEMP	"A" DIST.	"B" DIST.
105°F	½"	11/16"
90°F	¾"	1"
75°F	1"	1 5/16" ~~3/8~~
60°F	1 5/16"	1 ¾" ~~11/16~~
45°F	1 9/16"	2 1/16"
30°F	1 13/16"	2 3/8"
15°F	2 1/16"	2 ¾"
0°F	2 3/8"	3 1/8" ~~1/16~~
-15°F	2 5/8"	3 ½" ~~7/16~~

"A" IS THE SETTING AFTER DEAD LOADS ARE PUT IN PLACE.



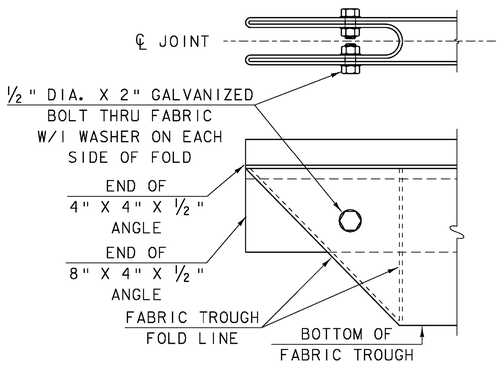
FASCIA DETAIL AT JOINT (TYP)

SCALE 1 ½" = 1'-0



NOTES:

1. SEE EXPANSION JOINT DETAILS SHEET FOR TYPICAL SECTION BETWEEN GIRDERS AND TYPICAL SECTION AT GIRDERS.
2. ⅞" DIA. HOLES @ 1'-0" C-C COUNTERBORED 2¼" DIA. x ¾" DEEP.



FOLDED TROUGH END DETAILS

NOT TO SCALE

NOTE: TROUGH FOLDED ON HIGH SIDE OF BRIDGE ONLY

EXPANSION JOINT @ PIER 1

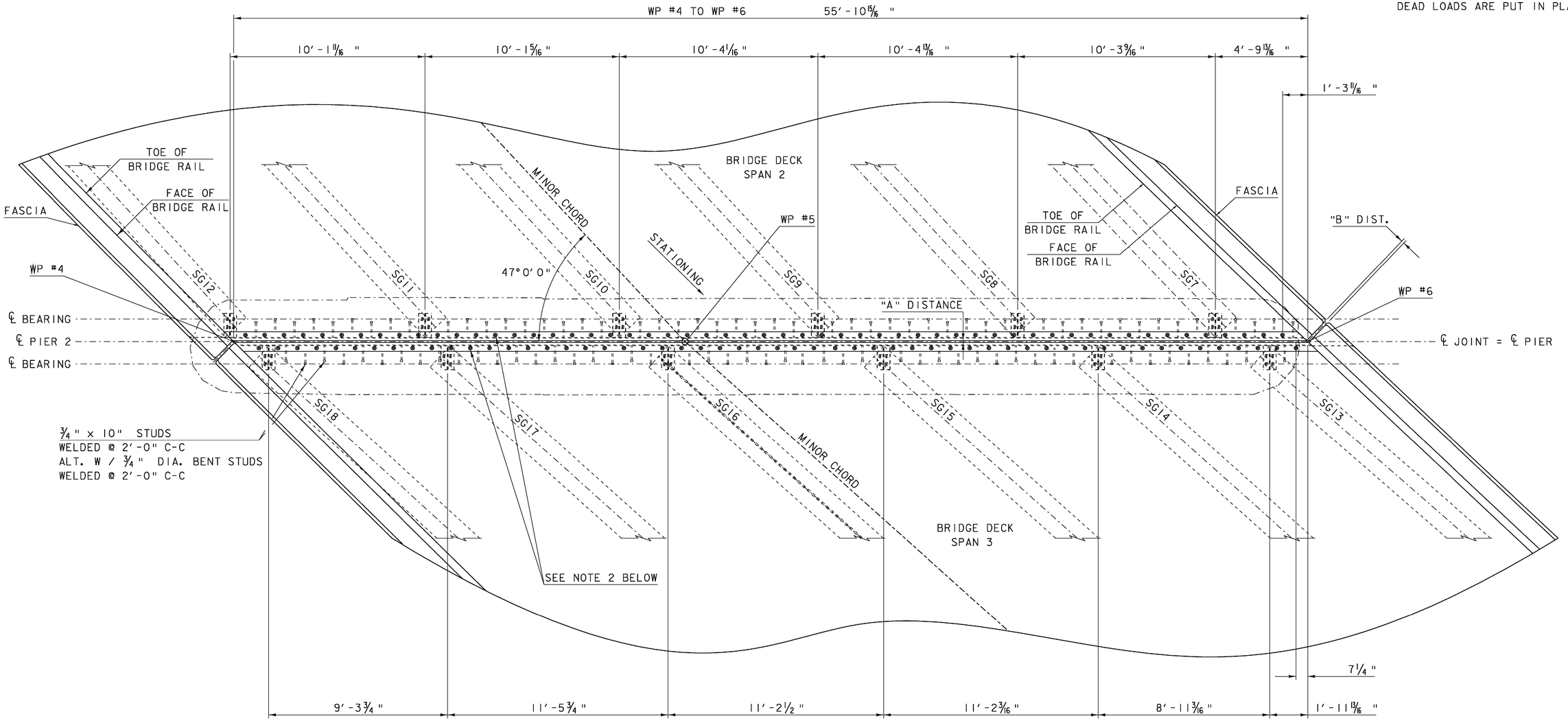
SCALE ⅜" = 1'-0

PROJECT: BERLIN	PROJECT NO.: IM 089-1(20)
DESIGN FILE NAME: 99a270\Structures\s99a270vtjoint.dgn	
IPARM FILE NAME: S99a270vtjoint1.i	PLOT DATE: 05-DEC-2007
DESIGNED BY: VAOT	DRAWN BY: M. FESSEL
SQUAD LEADER: C.P. WILLIAMS	CHECKED BY: R.S. YOUNG
EXPANSION JOINT @ PIER 1	SHEET: 48 OF 104

JOINT WORK POINTS						
WORK PT.	PIER	STATION	ELEV.	OFFSET	COORDINATES	
					N	E
#4	2	393+78.39	690.51	RT. 16'-6 1/4"	36874.04	17014.66
#5	2	393+95.00	688.41	0	36868.82	16991.76
#6	2	394+18.49	685.48	LT. 22'-6 1/4"	36861.61	16960.15

TEMP	"A" DIST.	"B" DIST.
105°F	1/2"	11/16" 3/4
90°F	5/8"	+" 7/8
75°F	3/4"	+" 1 1/16
60°F	7/8"	+3/16" 1 1/4
45°F	15/16"	1 1/4" 7/16
30°F	1 1/16"	1 7/16" 9/16
15°F	1 3/16"	1 9/16" 3/4
0°F	1 5/16"	1 3/4" 15/16
-15°F	1 7/16"	+15/16" 2 1/8

"A" IS THE SETTING AFTER DEAD LOADS ARE PUT IN PLACE.



NOTES:

1. SEE EXPANSION JOINT DETAILS SHEET FOR TYPICAL SECTION BETWEEN GIRDERS AND TYPICAL SECTION AT GIRDERS.
2. 7/8" DIA. HOLES @ 1'-0" C-C COUNTERBORED 2 1/4" DIA. x 3/4" DEEP.

EXPANSION JOINT @ PIER 2

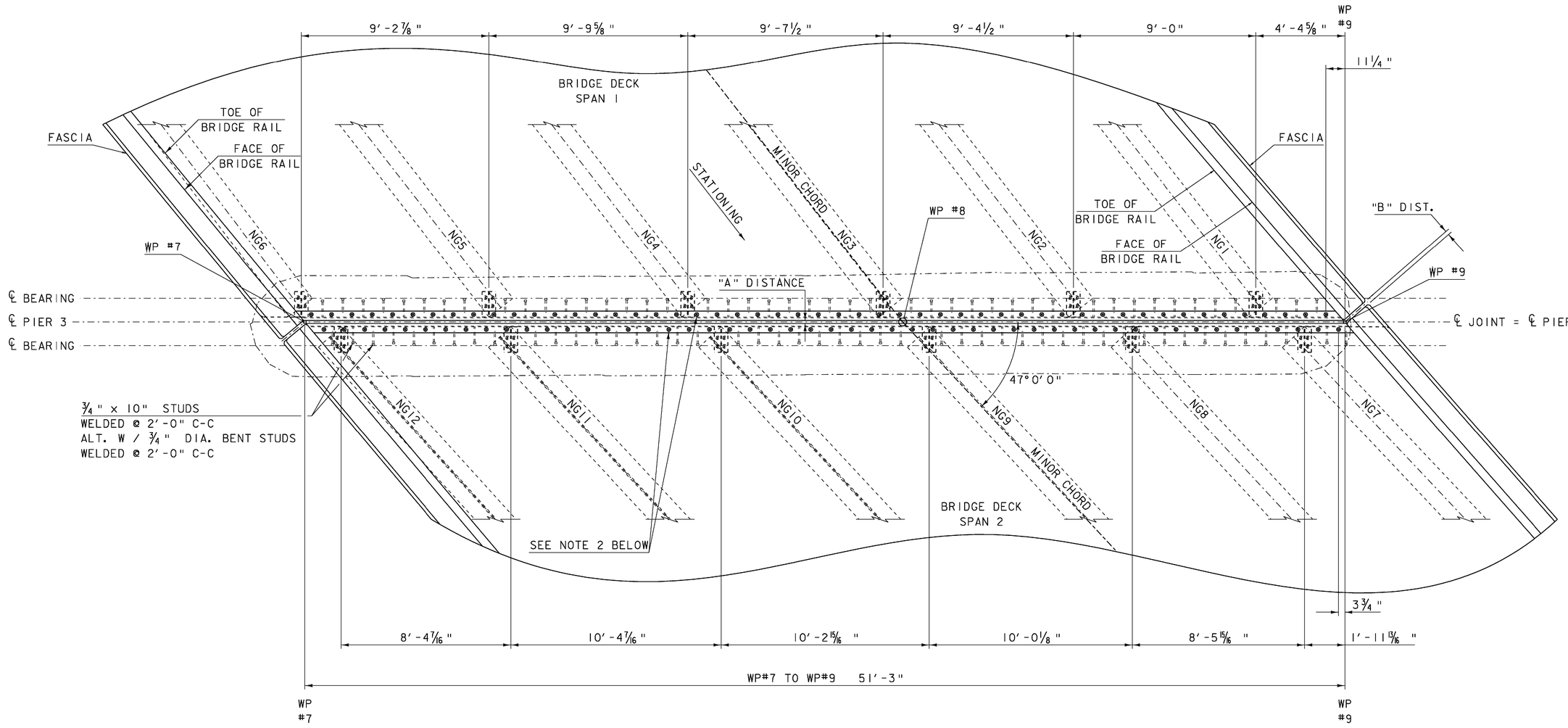
SCALE 3/8" = 1'-0
1 0 1 2 3 4

PROJECT:	PROJECT NO.:
BERLIN	IM 089-1(20)
DESIGN FILE NAME: 99a270\Structures\s99a270vtjoint.dgn	
IPARM FILE NAME: s99A270vtjoint2.i	PLOT DATE: 05-DEC-2007
DESIGNED BY: VAOT	DRAWN BY: M. FESSEL
SQUAD LEADER: C. P. WILLIAMS	CHECKED BY: R. S. YOUNG
EXPANSION JOINT @ PIER 2	SHEET: 49 OF 104

JOINT WORK POINTS						
WORK PT.	PIER	STATION	ELEV.	OFFSET	COORDINATES N	COORDINATES E
#7	3	292+27.81	705.09	RT. 22'-6¼"	36809.89	17247.72
#8	3	292+46.67	702.44	0	36804.39	17218.78
#9	3	292+60.95	700.46	LT. 16'-6¼"	36800.32	17197.37

TEMP	"A" DIST.	"B" DIST.
105°F	½"	11/16"
90°F	¾"	1"
75°F	1"	1 5/16" 3/8
60°F	1 5/16"	1 ¾" 11/16
45°F	1 5/16"	2 1/16"
30°F	1 13/16"	2 3/8"
15°F	2 1/16"	2 ¾"
0°F	2 3/8"	3 1/8" 1/16
-15°F	2 5/8"	3 ½" 7/16

"A" IS THE SETTING AFTER DEAD LOADS ARE PUT IN PLACE.



NOTES:

1. SEE EXPANSION JOINT DETAILS SHEET FOR TYPICAL SECTION BETWEEN GIRDERS AND TYPICAL SECTION AT GIRDERS.
2. ⅞" DIA. HOLES @ 1'-0" C-C COUNTERBORED 2¼" DIA. x¾" DEEP.

EXPANSION JOINT @ PIER 3

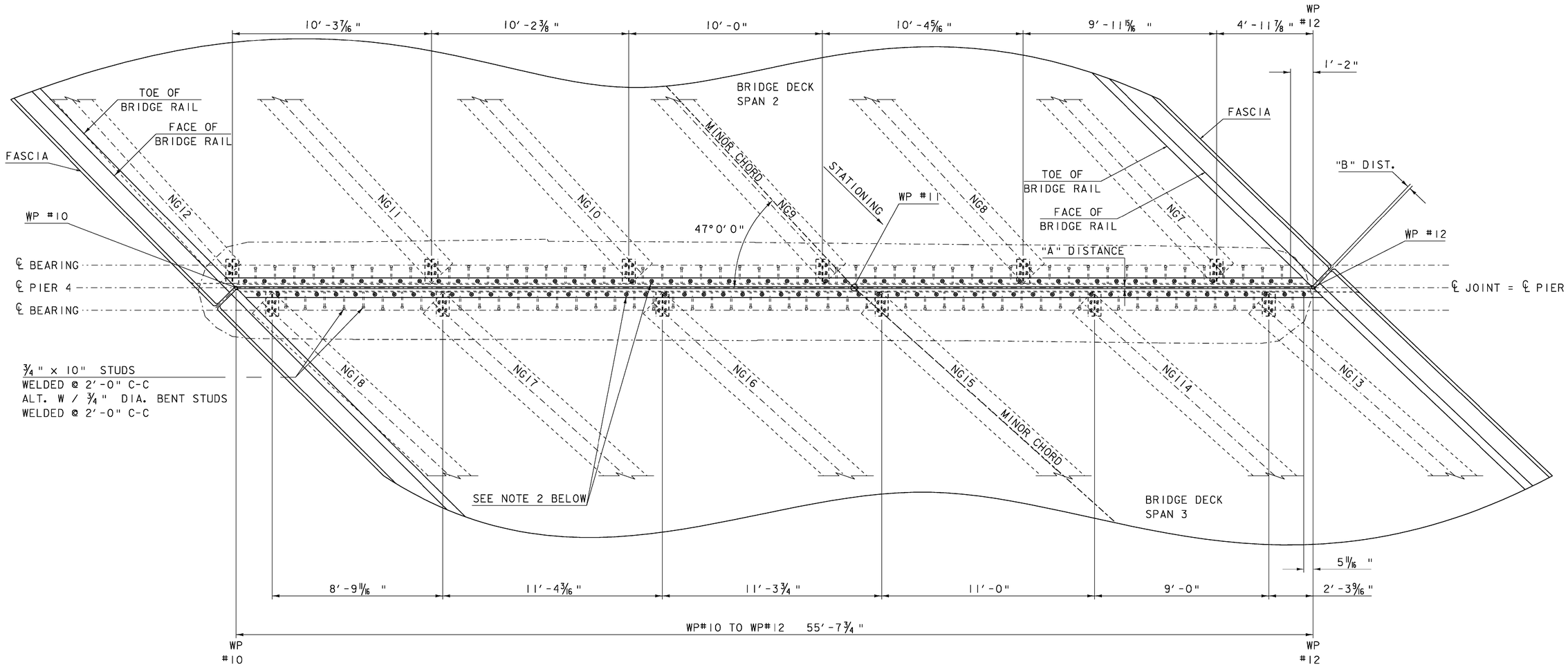
SCALE ⅜" = 1'-0

PROJECT: BERLIN	PROJECT NO.: IM 089-1(20)
DESIGN FILE NAME: 99a270\Structures\s99a270vtjoint.dgn	
IPARM FILE NAME: s99a270vtjoint3.i	PLOT DATE: 05-DEC-2007
DESIGNED BY: VAOT	DRAWN BY: M. FESSEL
SQUAD LEADER: C. P. WILLIAMS	CHECKED BY: R. S. YOUNG
EXPANSION JOINT @ PIER 3	SHEET: 50 OF 104

JOINT WORK POINTS						
WORK PT.	PIER	STATION	ELEV.	OFFSET	COORDINATES N	COORDINATES E
#10	4	293+72.51	698.20	RT. 22'-6 1/4"	36898.00	17130.55
#11	4	293+95.00	695.38	0	36892.04	17099.17
#12	4	294+12.09	693.27	LT. 16'-6 1/4"	36887.61	17075.88

TEMP	"A" DIST.	"B" DIST.
105°F	1/2"	~~11/16~~ " 3/4
90°F	5/8"	+ " 7/8
75°F	3/4"	+ " 1 1/16
60°F	7/8"	~~+3/16~~ " 1 1/4
45°F	15/16"	1 1/4 " 7/16
30°F	1 1/16"	1 7/16 " 9/16
15°F	1 3/16"	1 9/16 " 3/4
0°F	1 5/16"	1 3/4 " 15/16
-15°F	1 7/16"	~~+15/16~~ " 2 1/8

"A" IS THE SETTING AFTER DEAD LOADS ARE PUT IN PLACE.



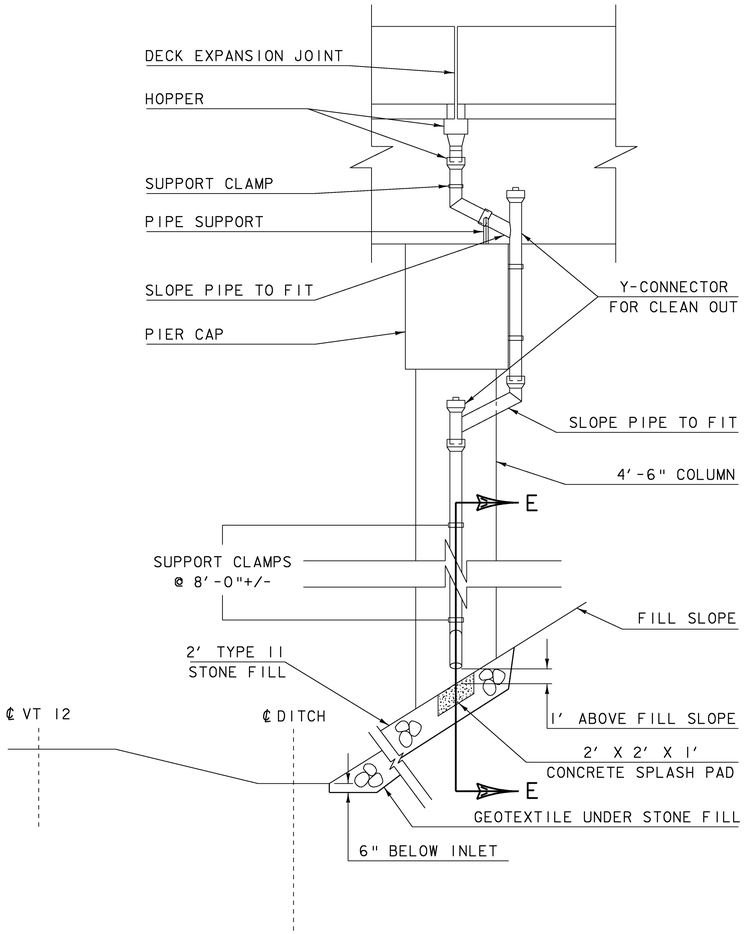
NOTES:

1. SEE EXPANSION JOINT DETAILS SHEET FOR TYPICAL SECTION BETWEEN GIRDERS AND TYPICAL SECTION AT GIRDERS.
2. 7/8" DIA. HOLES @ 1'-0" C-C COUNTERBORED 2 1/4" DIA. x 3/4" DEEP.

EXPANSION JOINT @ PIER 4

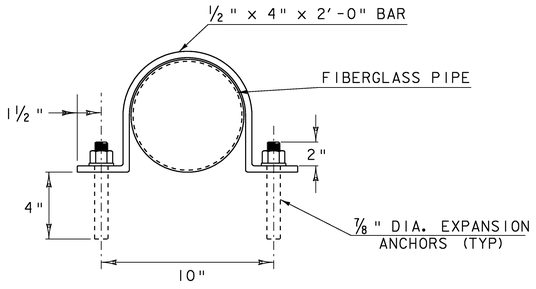
SCALE 3/8" = 1'-0

PROJECT: BERLIN	PROJECT NO.: IM 089-1(20)
DESIGN FILE NAME: 99a270\Structures\s99a270vtjoint.dgn	
IPARM FILE NAME: s99a270vtjoint4.i	PLOT DATE: 05-DEC-2007
DESIGNED BY: VAOT	DRAWN BY: M. FESSEL
SQUAD LEADER: C. P. WILLIAMS	CHECKED BY: R. S. YOUNG
EXPANSION JOINT @ PIER 4	SHEET: 51 OF 104



SECTION C-C W/ DRAINAGE SYSTEM
(SEE PIER #1 EXPANSION JOINT DETAIL ,SHEET 48)

N. T. S.



DETAILS FOR ATTACHING DOWNSPOUT TO PIER

DRAINAGE SYSTEM NOTES

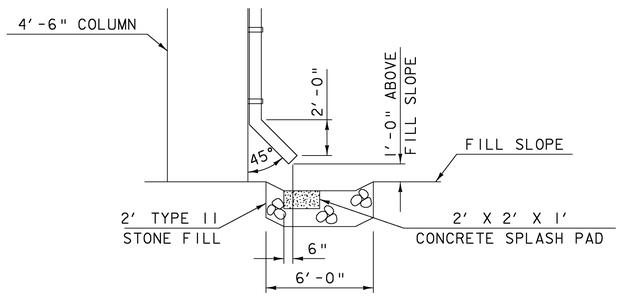
1. ALL PLATES, BARS, OR ANGLES USED FOR DOWNSPOUT ATTACHMENT SHALL CONFORM TO AASHTO M 270M/M 270, GRADE 36 AND SHALL BE GALVANIZED PER AASHTO M 111M/M 111.

2. ALL BOLTS AND RELATED HARDWARE SHALL BE ASTM A307 AND SHALL BE GALVANIZED IN ACCORDANCE WITH AASHTO M 232M/M 232.

3. REMOVAL AND REPLACEMENT OF THE DRAINAGE SYSTEM SHALL BE PAID FOR UNDER ITEM 900.640 "SPECIAL PROVISION (BRIDGE FIBERGLASS DRAIN SYSTEM)." SEE SPECIAL PROVISIONS FOR MORE INFORMATION.

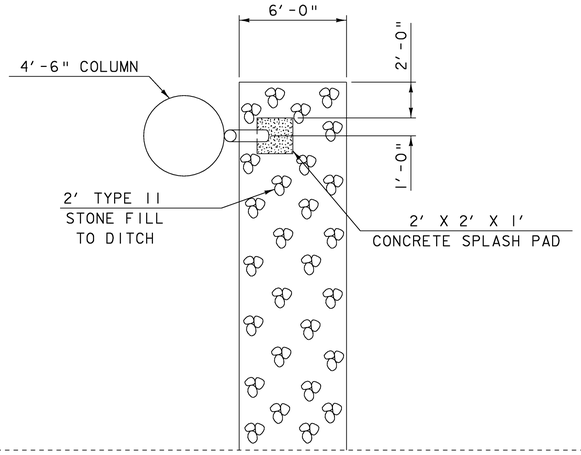
4. THE STONE FILL CHANNEL SHALL BE CONSTRUCTED LIKE RIPRAP OUTLET PROTECTION EXAMPLE (SEE EPSC DETAIL SHEET 2). PAYMENT FOR THE STONE FILL SHALL BE UNDER THE ITEM 613.11, "STONE FILL, TYPE II." PAYMENT FOR THE CONCRETE PAD SHALL BE UNDER ITEM 501.34, "CONCRETE, HIGH PERFORMANCE CLASS B". PAYMENT FOR GEOTEXTILE SHALL BE UNDER ITEM 649.31, "GEOTEXTILE UNDER STONE FILL". PAYMENT FOR EXCAVATION SHALL BE INCLUDED UNDER ITEM 203.15 "COMMON EXCAVATION".

5. THE INSTALLATION OF THE FIBERGLASS PIPE SHALL OCCUR AFTER THE EXPANSION JOINT HAS BEEN SET, AND ANCHORED IN PLACE.



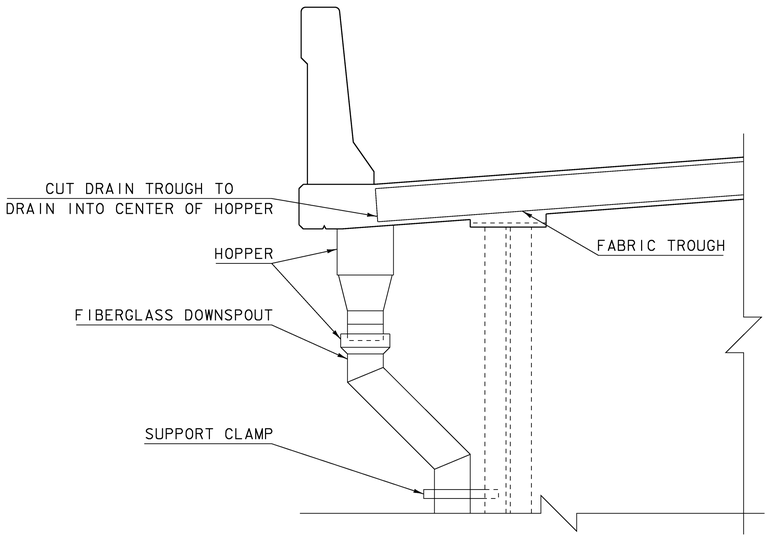
SECTION E-E

N. T. S.



PLAN OF PIER DRAINAGE

N. T. S.



SECTION D-D W/ DRAINAGE SYSTEM
(SEE PIER #1 EXPANSION JOINT DETAIL ,SHEET 48)

N. T. S.

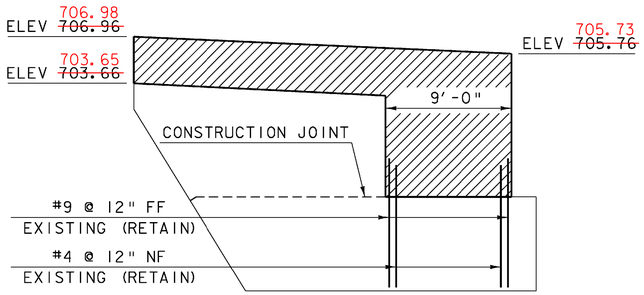
PROJECT: BERLIN	PROJECT NO.: IM 089-1(20)
DESIGN FILE NAME: 99a270\structures\s99a270drain.dgn	
IPARM FILE NAME: s00a270drain.i	PLOT DATE: 17-DEC-2007
DESIGNED BY: G. SPILAK	DRAWN BY: C. MOONEY
SQUAD LEADER: C. P. WILLIAMS	CHECKED BY: R. S. YOUNG
DRAINAGE DETAILS	SHEET: 52 OF 104

REVISED: JULY 3, 2008

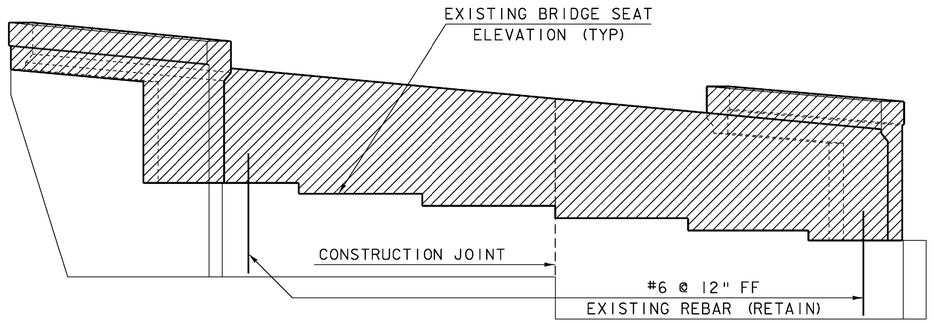
AS BUILT

TITLE	FIBERGLASS DRAINAGE PIPE
PROJECT	BERLIN, VT AC IM 089-1 (20)
SCALE	1/4" = 1'-0"
DATE	JUNE 30, 2008
	BECK & BELLUCCI, INC. FRANKLIN, NEW HAMPSHIRE

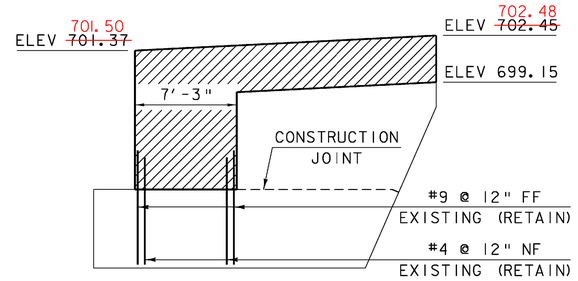
SHEET 1 of 1



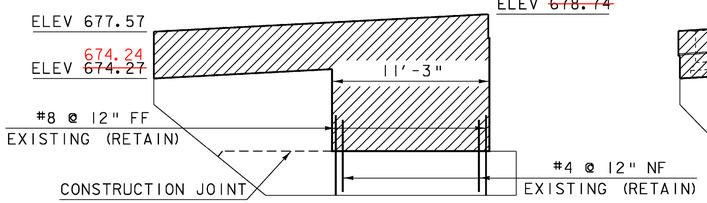
WINGWALL #2 CONCRETE REMOVAL LIMITS
ELEVATION VIEW



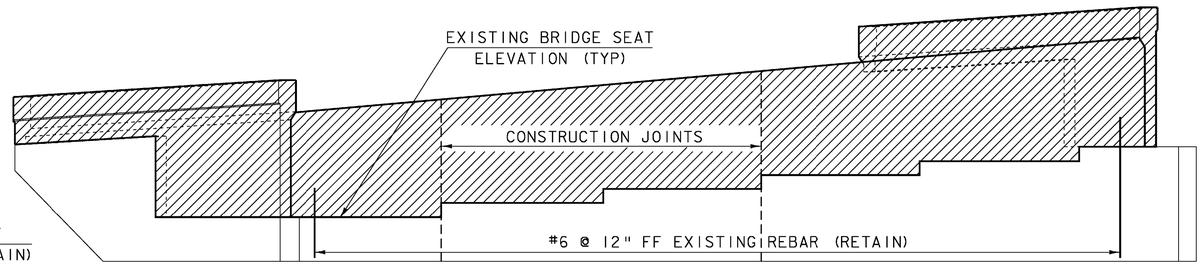
ABUTMENT #1 CONCRETE REMOVAL LIMITS
ELEVATION VIEW



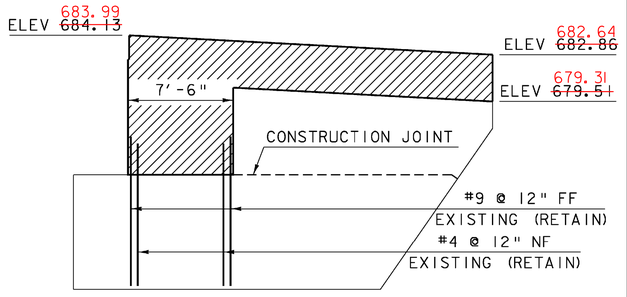
WINGWALL #1 CONCRETE REMOVAL LIMITS
ELEVATION VIEW



WINGWALL #3 CONCRETE REMOVAL LIMITS
ELEVATION VIEW



ABUTMENT #2 CONCRETE REMOVAL LIMITS
ELEVATION VIEW



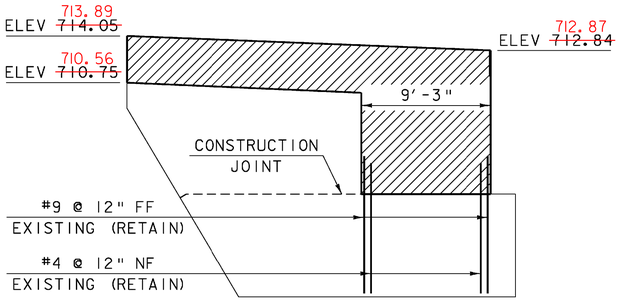
WINGWALL #4 CONCRETE REMOVAL LIMITS
ELEVATION VIEW

NOTE:
ALL EXISTING CONCRETE SHALL BE REMOVED BY MEANS OF SAWCUTTING.

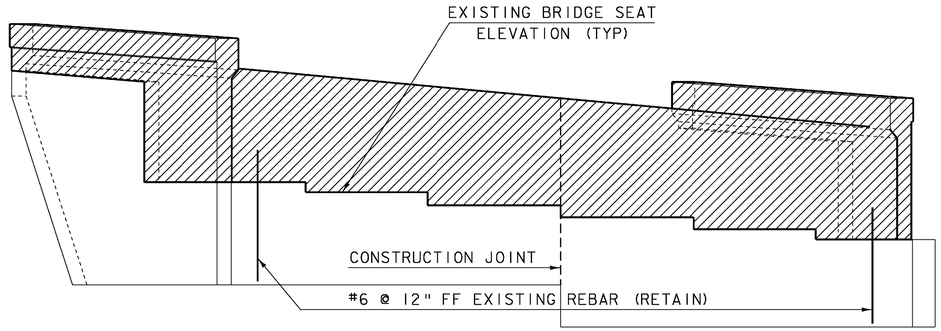
SEE SHEET 55 FOR SECTION DETAILS

PROJECT:	PROJECT NO.:
BERLIN	IM 089-1(20)

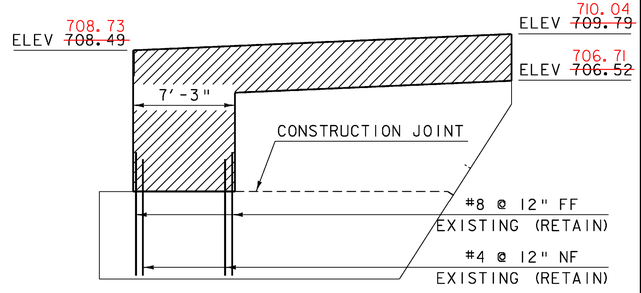
DESIGN FILE NAME: 99a270\structures\s99a270abut.dgn
IPARM FILE NAME: s99a270abut12rem.i PLOT DATE: 05-DEC-2007
DESIGNED BY: G.SPILAK DRAWN BY: WEEBER
SQUAD LEADER: C.P.WILLIAMS CHECKED BY: R.S.YOUNG
ABUTMENTS 1&2 REMOVAL LIMITS SHEET: 53 OF 104



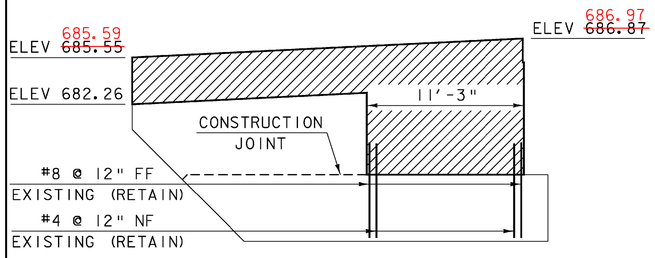
WINGWALL #6 CONCRETE REMOVAL LIMITS
ELEVATION VIEW



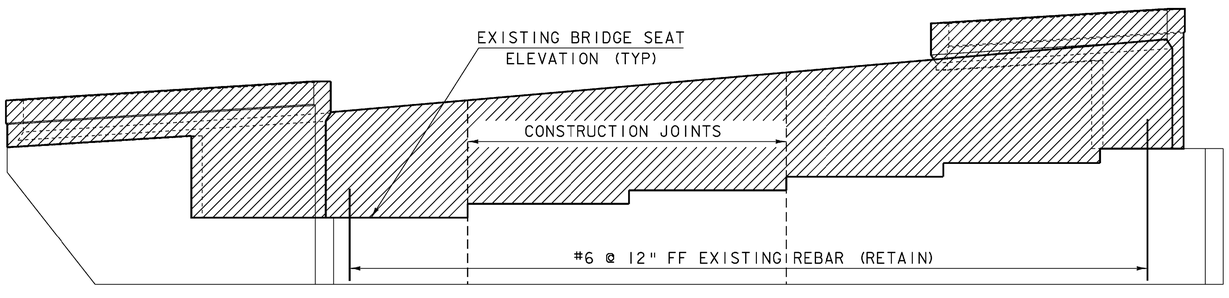
ABUTMENT #3 CONCRETE REMOVAL LIMITS
ELEVATION VIEW



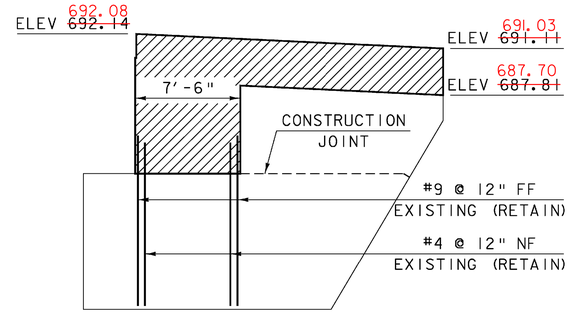
WINGWALL #5 CONCRETE REMOVAL LIMITS
ELEVATION VIEW



WINGWALL #7 CONCRETE REMOVAL LIMITS
ELEVATION VIEW



ABUTMENT #4 CONCRETE REMOVAL LIMITS
ELEVATION VIEW



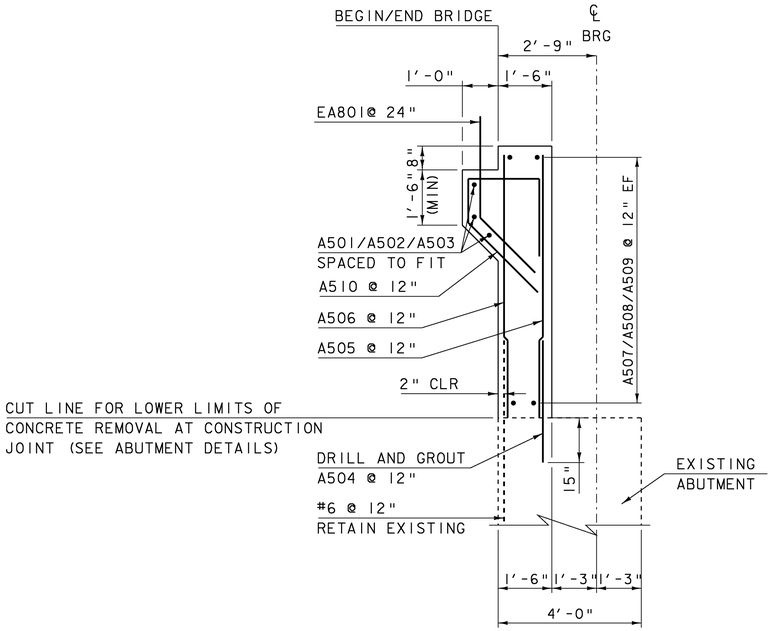
WINGWALL #8 CONCRETE REMOVAL LIMITS
ELEVATION VIEW

NOTE:
ALL EXISTING CONCRETE SHALL BE REMOVED BY MEANS OF SAWCUTTING.

SEE SHEET 55 FOR SECTION DETAILS

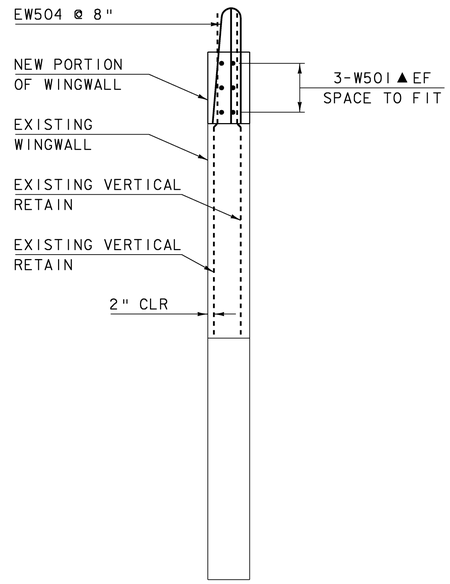
PROJECT:	PROJECT NO.:
BERLIN	IM 089-1(20)

DESIGN FILE NAME: 99a270\structures\s99a270abut.dgn
IPARM FILE NAME: s99a270abut34rem.i PLOT DATE: 05-DEC-2007
DESIGNED BY: G.SPILAK DRAWN BY: WEEBER
SQUAD LEADER: C.P.WILLIAMS CHECKED BY: R.S.YOUNG
ABUTMENTS 3&4 REMOVAL LIMITS SHEET: 54 OF 104



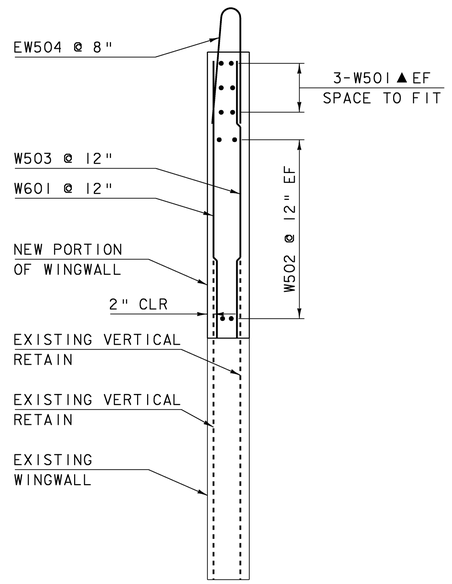
ABUTMENT TYPICAL SECTION

SCALE ½" = 1'-0"



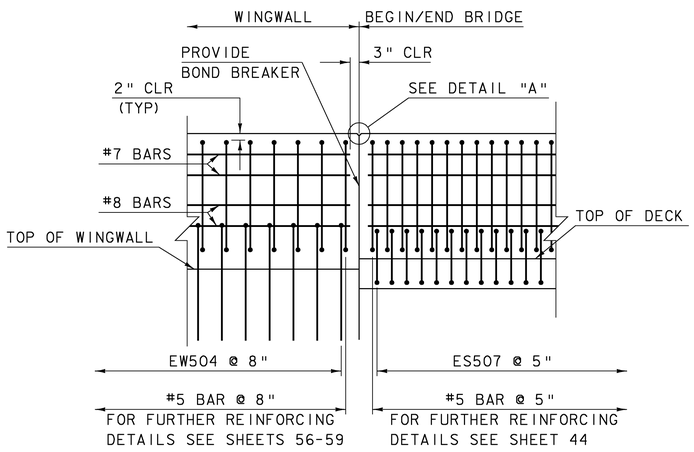
END WINGWALL TYPICAL SECTION

SCALE ½" = 1'-0"



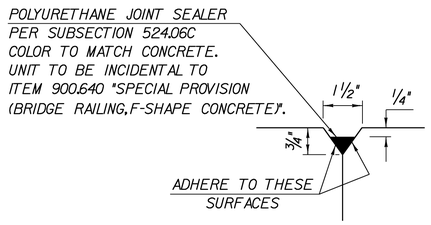
WINGWALL TYPICAL SECTION NEAR BACKWALL

SCALE ½" = 1'-0"



F-SHAPE CONCRETE RAIL JOINT ELEVATION

SCALE ½" = 1'-0"



DETAIL "A"

NOTES:

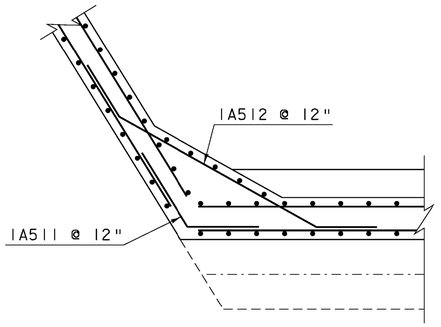
NF = NEAR FACE
FF = FAR FACE
EF = EACH FACE
▲ = CUT TO FIT

3" CLEAR UNLESS OTHERWISE SPECIFIED ON PLANS.

ALL LAPS 2'-2" UNLESS OTHERWISE SPECIFIED ON PLANS.

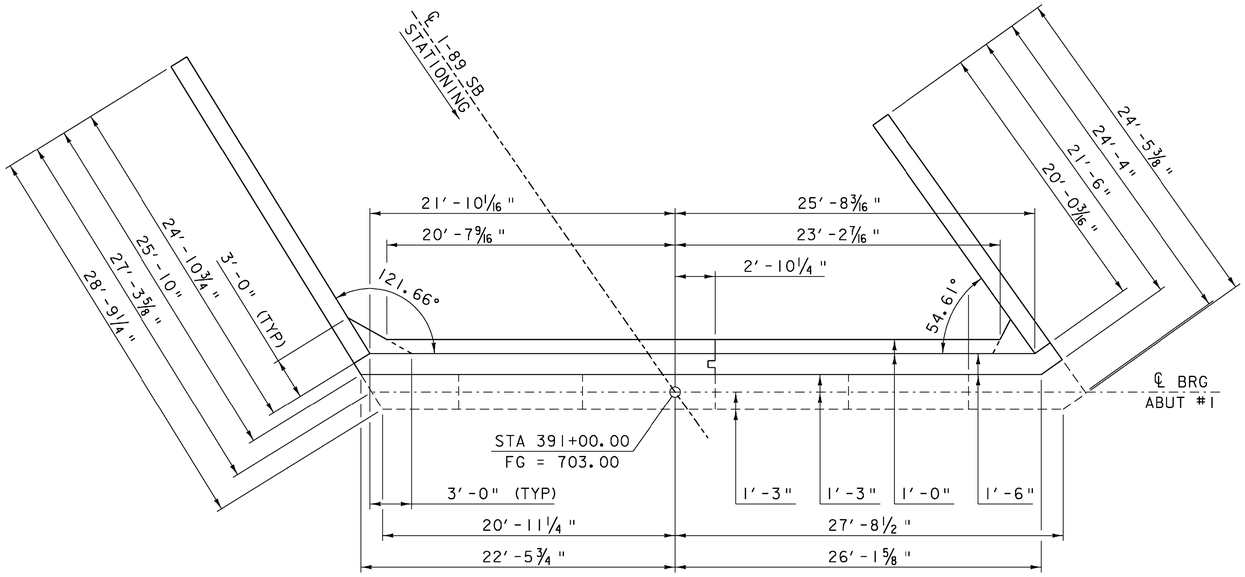
SCALE ½" = 1'-0
1 0 1 2

PROJECT: BERLIN	PROJECT NO.: IM 089-1(20)
DESIGN FILE NAME: 99a270\structures\s99a270abut.dgn	
IPARM FILE NAME: s99a270abut typ.i	PLOT DATE: 05-DEC-2007
DESIGNED BY: G.SPILAK	DRAWN BY: WEEBER
SQUAD LEADER: C.P.WILLIAMS	CHECKED BY: R.S.YOUNG
ABUTMENT & WINGWALL TYP.SECTIONS	SHEET: 55 OF 104



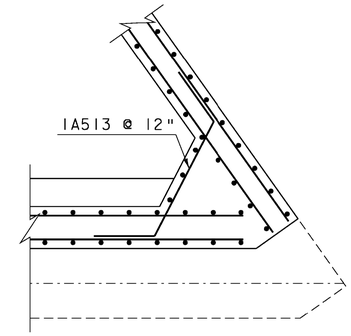
WINGWALL #2 CORNER DETAIL

SCALE 3/8" = 1'-0"



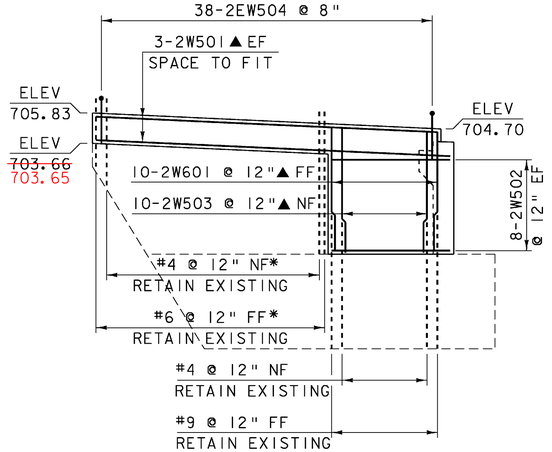
ABUTMENT #1 PLAN VIEW

SCALE 3/16" = 1'-0"



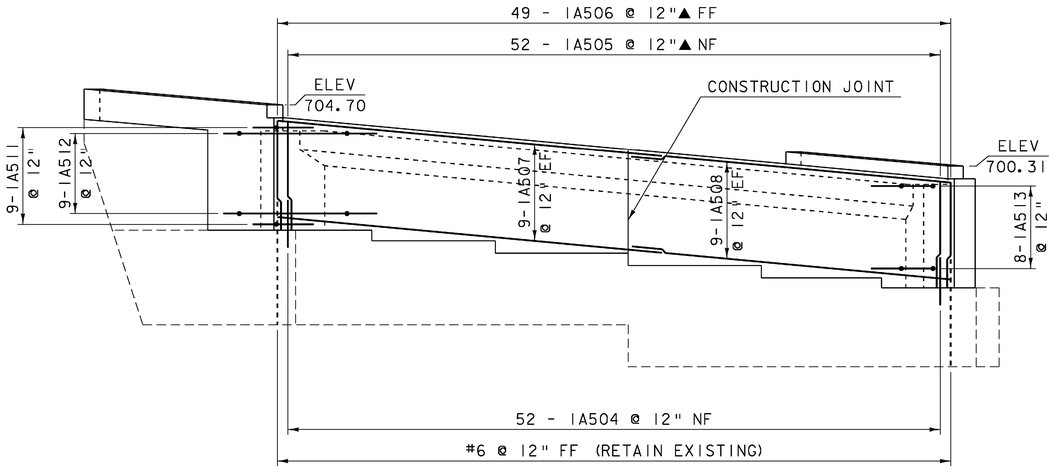
WINGWALL #1 CORNER DETAIL

SCALE 3/8" = 1'-0"



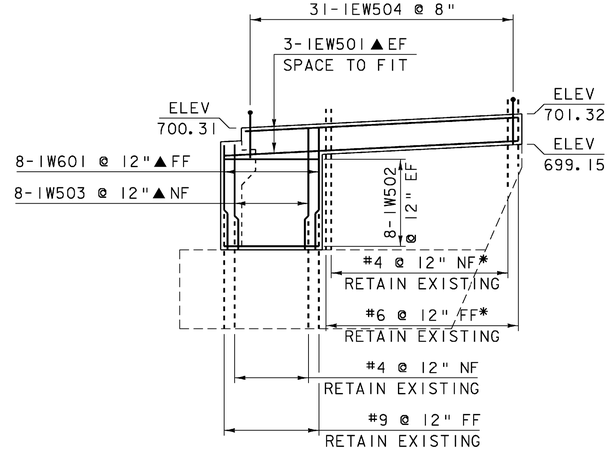
WINGWALL #2 ELEVATION VIEW

SCALE 3/16" = 1'-0"



ABUTMENT #1 ELEVATION VIEW

SCALE 3/16" = 1'-0"



WINGWALL #1 ELEVATION VIEW

SCALE 3/16" = 1'-0"

NOTES:

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

3" CLEAR UNLESS OTHERWISE SPECIFIED ON PLANS.

ALL LAPS 2'-2" UNLESS OTHERWISE SPECIFIED ON PLANS.

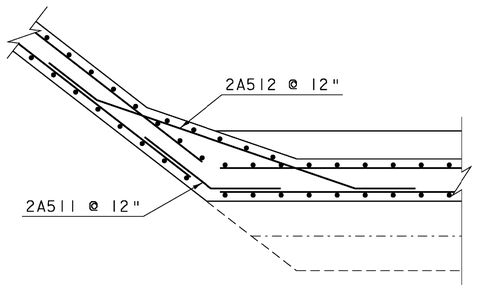
SEE SHEET 55 FOR SECTION DETAILS

* IF EXISTING REINFORCING STEEL INTERFERES WITH NEW RAIL CONCRETE, BAR MAY BE BENT TO ACCOMMODATE NEW CONCRETE CLEARANCE REQUIREMENTS.

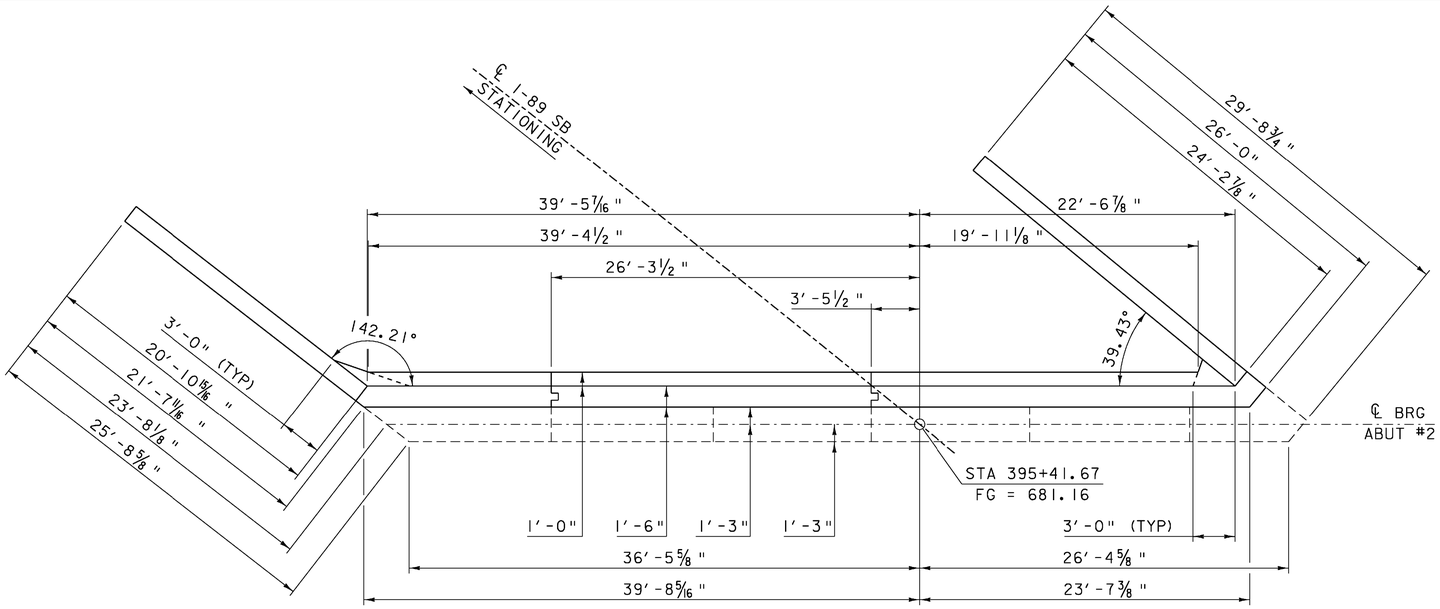
SCALE 3/8"=1'-0"
1 0 1 2 3 4

SCALE 3/16"=1'-0"
1 0 2 4 6 8

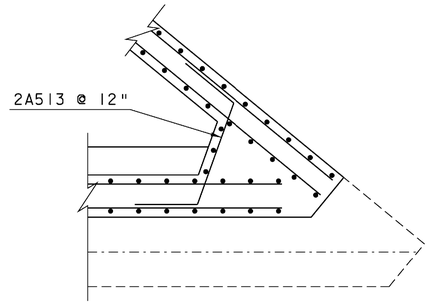
PROJECT: BERLIN	PROJECT NO.: IM 089-1(20)
DESIGN FILE NAME: 99a270\structures\s99a270abut.dgn	
IPARM FILE NAME: s99a270abut1.i	PLOT DATE: 05-DEC-2007
DESIGNED BY: G.SPILAK	DRAWN BY: WEEBER
SQUAD LEADER: C.P.WILLIAMS	CHECKED BY: R.S.YOUNG
ABUTMENT #1 DETAILS	SHEET: 56 OF 104



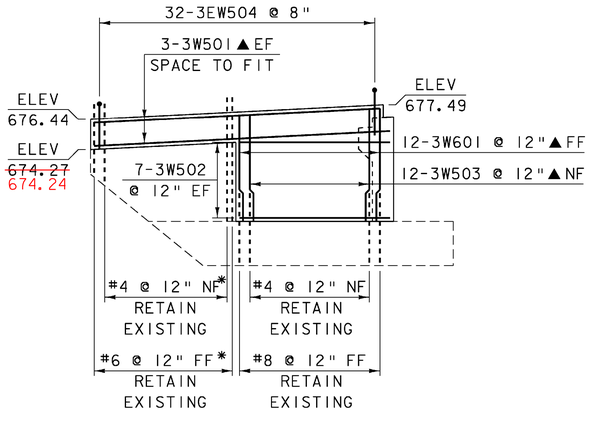
WINGWALL #3
CORNER DETAIL
SCALE 3/8" = 1'-0"



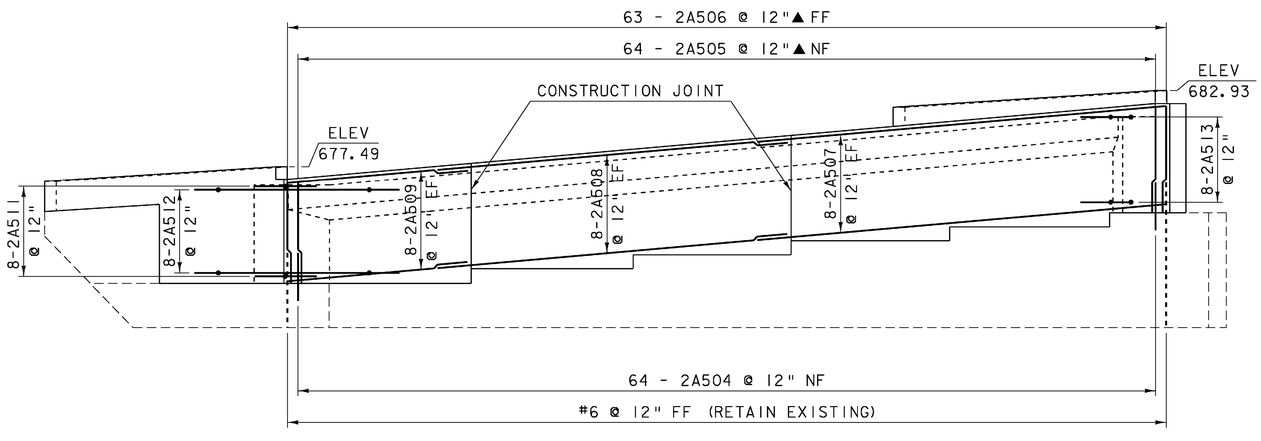
ABUTMENT #2
PLAN VIEW
SCALE 3/16" = 1'-0"



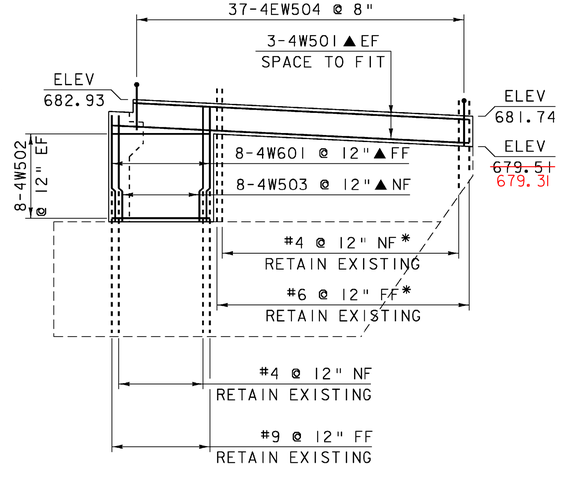
WINGWALL #4
CORNER DETAIL
SCALE 3/8" = 1'-0"



WINGWALL #3
ELEVATION VIEW
SCALE 3/16" = 1'-0"



ABUTMENT #2
ELEVATION VIEW
SCALE 3/16" = 1'-0"



WINGWALL #4
ELEVATION VIEW
SCALE 3/16" = 1'-0"

NOTES:

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

3" CLEAR UNLESS OTHERWISE SPECIFIED ON PLANS.

ALL LAPS 2'-2" UNLESS OTHERWISE SPECIFIED ON PLANS.

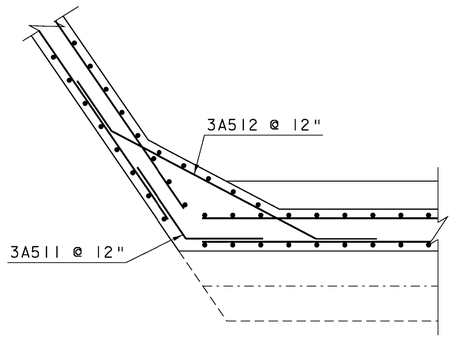
SEE SHEET 55 FOR SECTION DETAILS

* IF EXISTING REINFORCING STEEL INTERFERES WITH NEW RAIL CONCRETE, BAR MAY BE BENT TO ACCOMMODATE NEW CONCRETE CLEARANCE REQUIREMENTS.

SCALE 3/8"=1'-0"
1 0 1 2 3 4

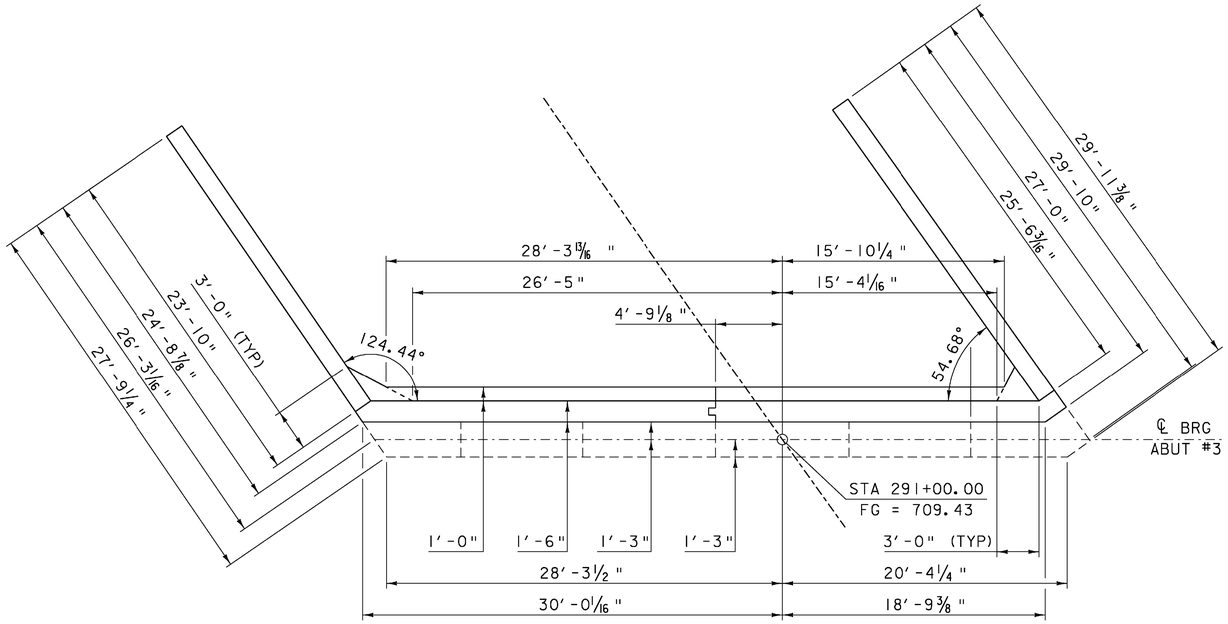
SCALE 3/16"=1'-0"
1 0 2 4 6 8

PROJECT: BERLIN	PROJECT NO.: IM 089-1(20)
DESIGN FILE NAME: 99a270\structures\s99a270abut.dgn	
IPARM FILE NAME: s99a270abut2.i	PLOT DATE: 05-DEC-2007
DESIGNED BY: G.SPILAK	DRAWN BY: WEEBER
SQUAD LEADER: C.P.WILLIAMS	CHECKED BY: R.S.YOUNG
ABUTMENT #2 DETAILS	SHEET: 57 OF 104



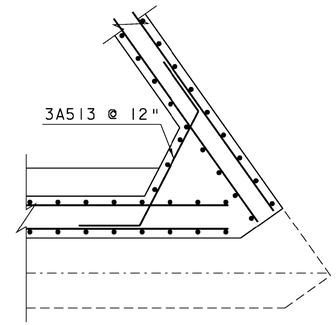
WINGWALL #6 CORNER DETAIL

SCALE 3/8" = 1'-0"



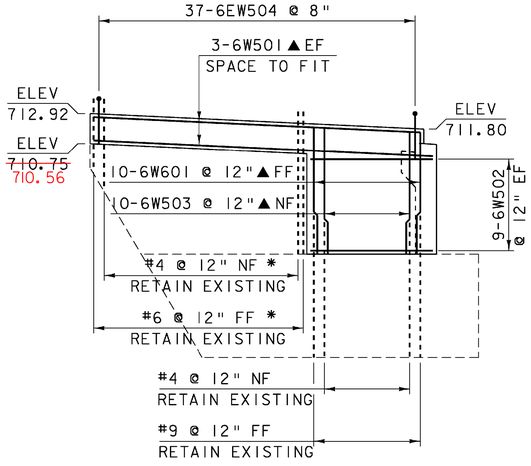
ABUTMENT #3 PLAN VIEW

SCALE 3/16" = 1'-0"



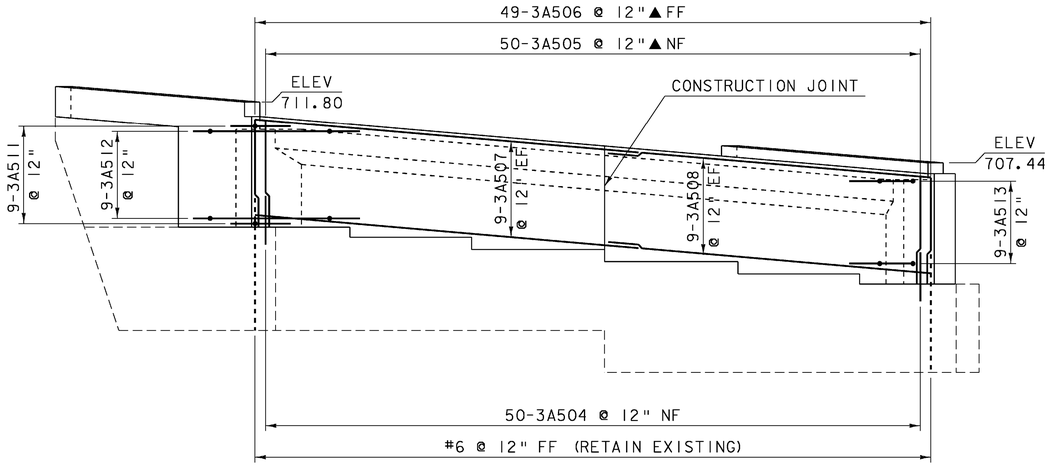
WINGWALL #5 CORNER DETAIL

SCALE 3/8" = 1'-0"



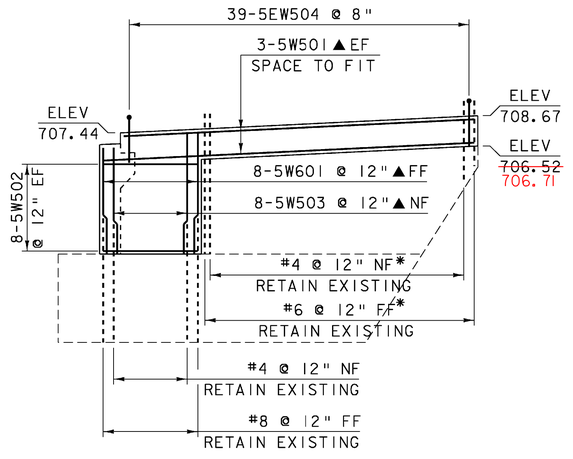
WINGWALL #6 ELEVATION VIEW

SCALE 3/16" = 1'-0"



ABUTMENT #3 ELEVATION VIEW

SCALE 3/16" = 1'-0"



WINGWALL #5 ELEVATION VIEW

SCALE 3/16" = 1'-0"

NOTES:

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

3" CLEAR UNLESS OTHERWISE SPECIFIED ON PLANS.

ALL LAPS 2'-2" UNLESS OTHERWISE SPECIFIED ON PLANS.

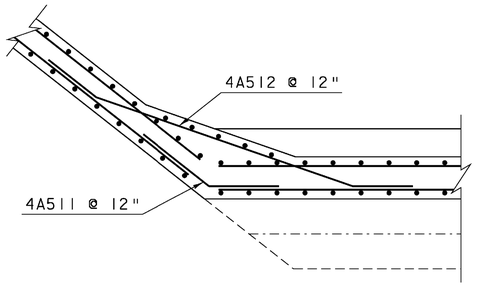
SEE SHEET 55 FOR SECTION DETAILS

* IF EXISTING REINFORCING STEEL INTERFERES WITH NEW RAIL CONCRETE, BAR MAY BE BENT TO ACCOMMODATE NEW CONCRETE CLEARANCE REQUIREMENTS.

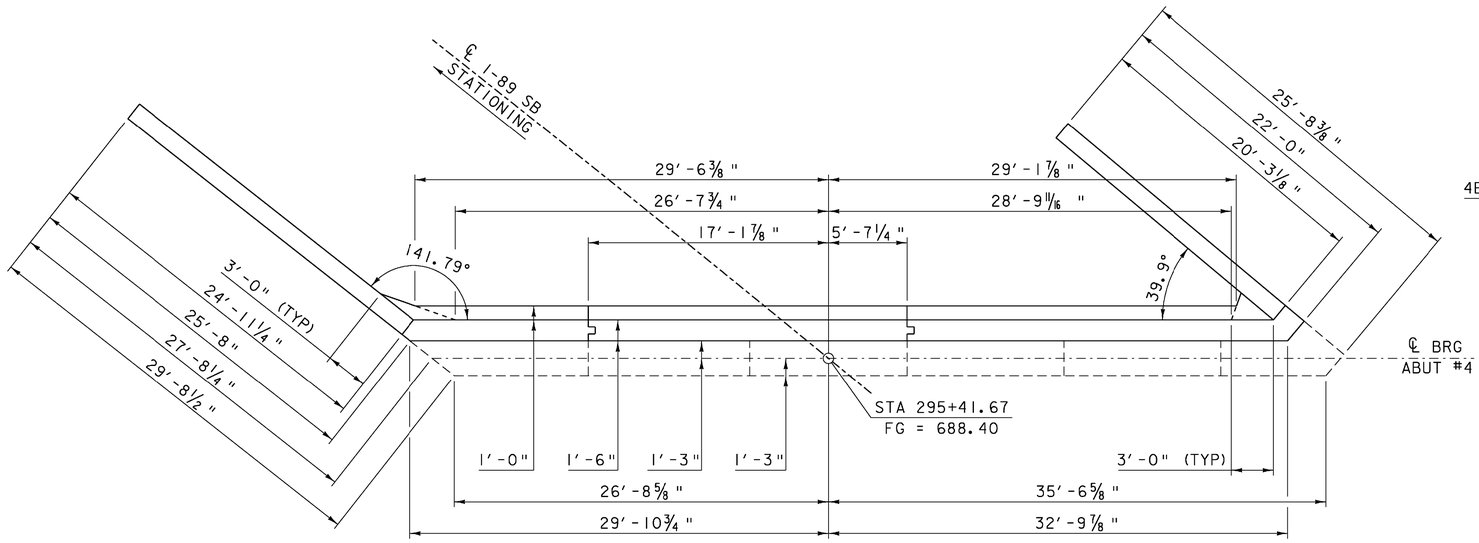
SCALE 3/8" = 1'-0"
1 0 1 2 3 4

SCALE 3/16" = 1'-0"
1 0 2 4 6 8

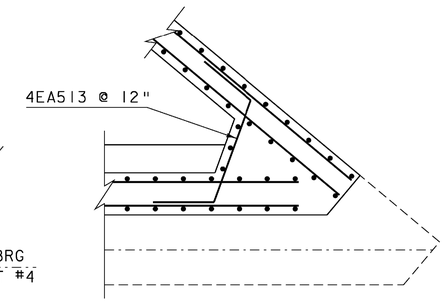
PROJECT: BERLIN	PROJECT NO.: IM 089-1(20)
DESIGN FILE NAME: 99a270\structures\s99a270abut.dgn	
IPARM FILE NAME: s99a270abut3.i	PLOT DATE: 05-DEC-2007
DESIGNED BY: G.SPILAK	DRAWN BY: WEEBER
SQUAD LEADER: C.P.WILLIAMS	CHECKED BY: R.S.YOUNG
ABUTMENT #3 DETAILS	SHEET: 58 OF 104



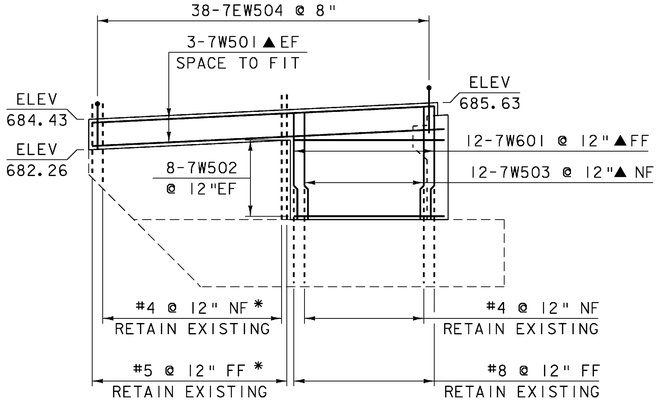
WINGWALL #7
CORNER DETAIL
SCALE 3/8" = 1'-0"



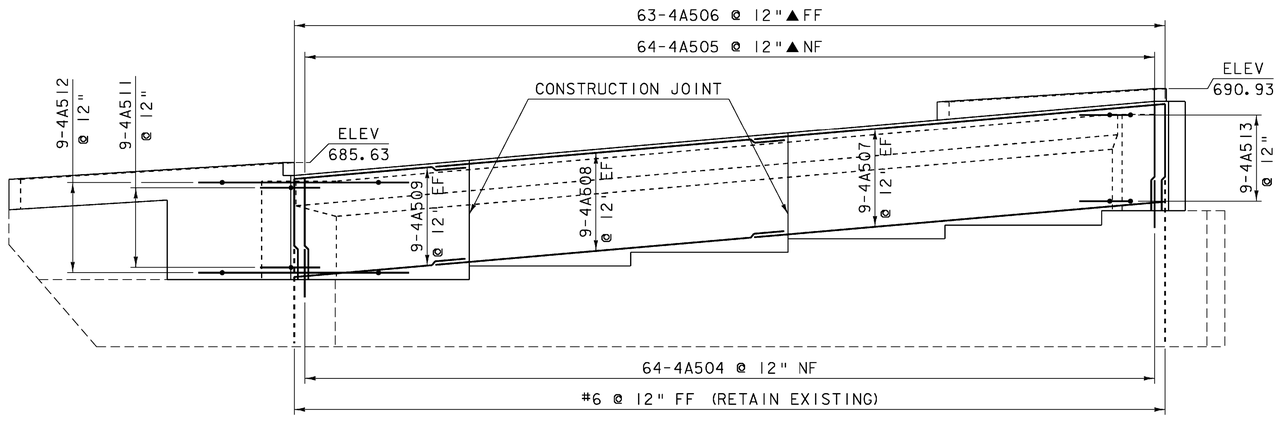
ABUTMENT #4
PLAN VIEW
SCALE 3/16" = 1'-0"



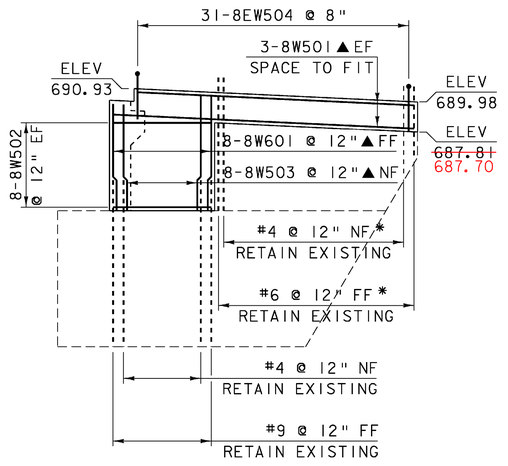
WINGWALL #8
CORNER DETAIL
SCALE 3/8" = 1'-0"



WINGWALL #7
ELEVATION VIEW
SCALE 3/16" = 1'-0"



ABUTMENT #4
ELEVATION VIEW
SCALE 3/16" = 1'-0"



WINGWALL #8
ELEVATION VIEW
SCALE 3/16" = 1'-0"

NOTES:

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

3" CLEAR UNLESS OTHERWISE SPECIFIED ON PLANS.

ALL LAPS 2'-2" UNLESS OTHERWISE SPECIFIED ON PLANS.

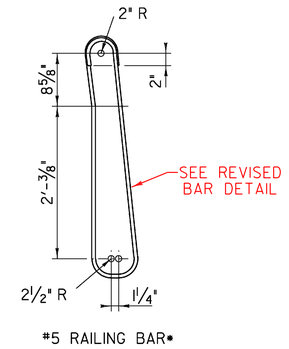
SEE SHEET 55 FOR SECTION DETAILS

* IF EXISTING REINFORCING STEEL INTERFERES WITH NEW RAIL CONCRETE, BAR MAY BE BENT TO ACCOMMODATE NEW CONCRETE CLEARANCE REQUIREMENTS.

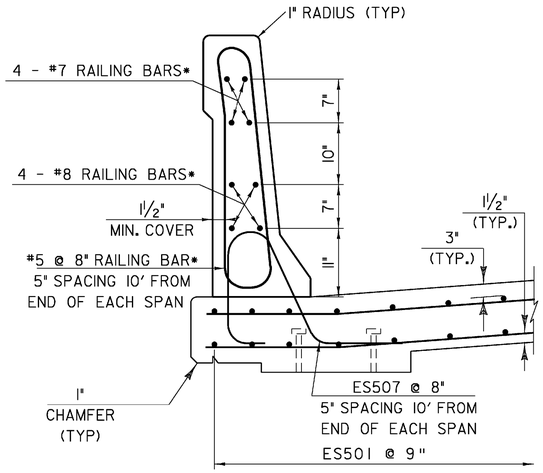
SCALE 3/8"=1'-0"
1 0 1 2 3 4

SCALE 3/16"=1'-0"
1 0 2 4 6 8

PROJECT:	PROJECT NO.:
BERLIN	IM 089-1(20)
DESIGN FILE NAME: 99a270\structures\s99a270abut.dgn	
IPARM FILE NAME: s99a270abut4.i	PLOT DATE: 05-DEC-2007
DESIGNED BY: G.SPILAK	DRAWN BY: WEEBER
SQUAD LEADER: C.P.WILLIAMS	CHECKED BY: R.S.YOUNG
ABUTMENT #4 DETAILS	SHEET: 59 OF 104

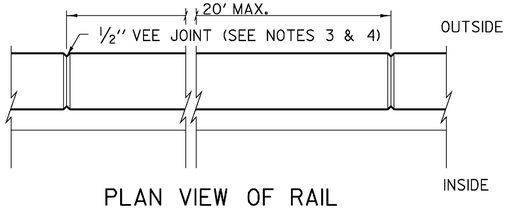


BAR BENDING DETAIL

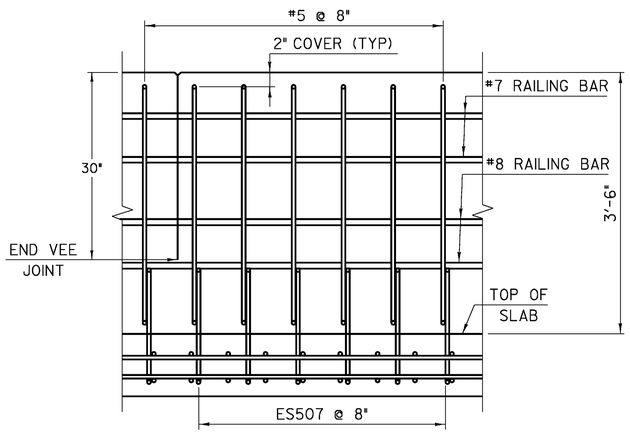


3'-6" HIGH F-SHAPE RAIL
(SHOWING RAIL REINFORCEMENT)

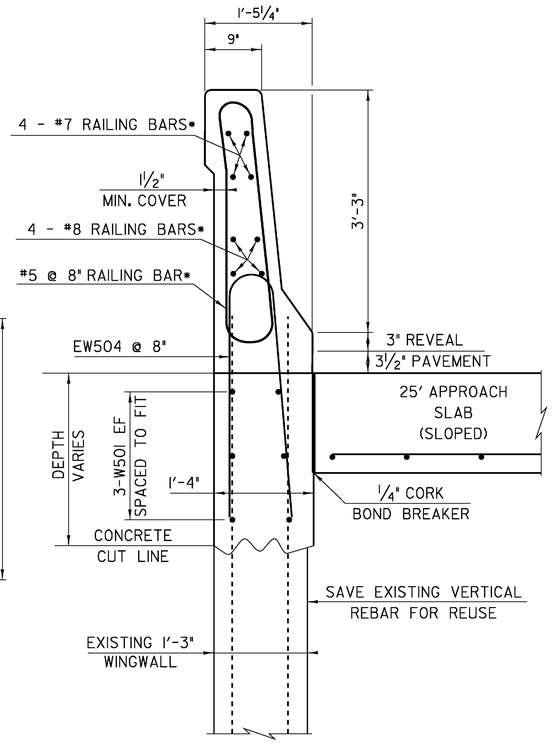
*THE RAILING BARS SHALL BE INCLUDED IN THE UNIT BID PRICE OF 900.640 SPECIAL PROVISION (BRIDGE RAILING, F-SHAPE CONCRETE).



PLAN VIEW OF RAIL



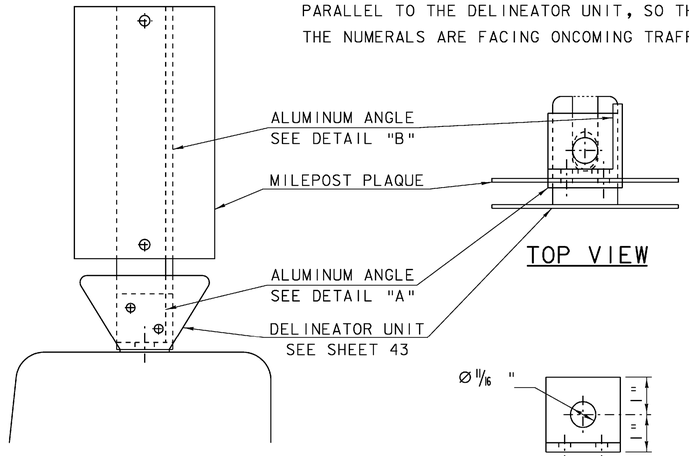
ELEVATION
(SHOWING RAIL & DECK REINFORCEMENT)



3'-9 1/2" HIGH F-SHAPE RAIL
(@ WINGWALLS)

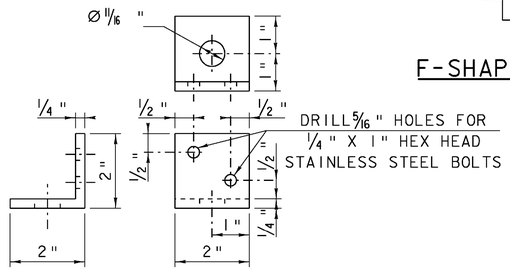
SEE NEW RAIL DETAIL ON SHEET 61 FOR CONCRETE DIMENSIONS

MILEPOST PLAQUE SHALL BE INSTALLED PARALLEL TO THE DELINEATOR UNIT, SO THAT THE NUMERALS ARE FACING ONCOMING TRAFFIC



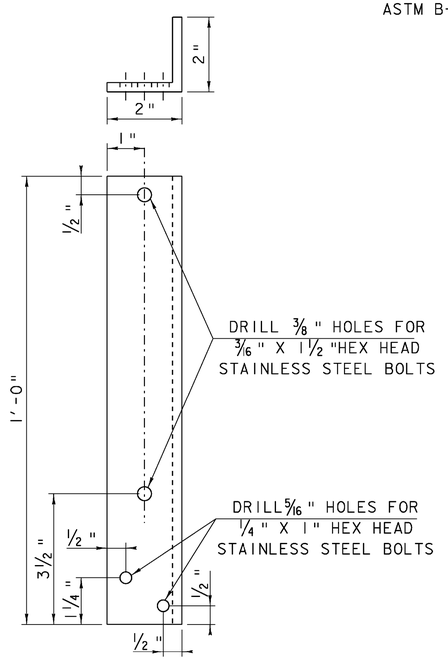
TOP VIEW

MILEPOST PLAQUE MOUNTED ON RAIL SECTION



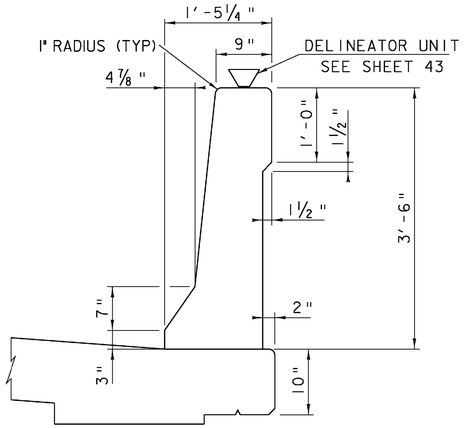
DETAIL "A"
ALUMINUM ANGLE

ASTM B-308 ALLOY 6061 T6



DETAIL "B"
ALUMINUM ANGLE

ASTM B-308 ALLOY 6061- T6



F-SHAPE RAIL DETAIL ON BRIDGE

MM	NORTHBOUND STATION	SOUTHBOUND STATION
52 50	291+70.26	391+43.27
52 55	294+41.51	394+06.89

BRIDGE RAIL NOTES:

1. RAIL MEETS TEST LEVEL 5 REQUIREMENTS OF NCHRP REPORT 350.
2. MATERIAL REQUIREMENTS FOR BRIDGE RAIL ONLY:
   - -REINFORCING STEEL SHALL BE EPOXY COATED, GRADE 60, CONFORMING TO SUBSECTIONS 713.01 AND 713.07(b).
   - -CONCRETE SHALL BE PER SPECIFICATION 900.640 SPECIAL PROVISION (BRIDGE RAILING, F-SHAPE CONCRETE).
3. 1/2" VEE JOINTS SHALL BE PROVIDED IN EACH FACE OF THE CONCRETE RAIL AT INTERVALS NOT TO EXCEED 20 FEET.
4. THE 1/2" VEE JOINT SHALL END 30" FROM THE TOP OF THE CONCRETE RAIL.
5. THE BAR BENDING DETAILS FOR THE REINFORCING STEEL FOR THE CONCRETE RAIL HAS BEEN SHOWN ON THIS SHEET. THE #7 AND #8 RAILING BARS SHALL BE CONTINUOUS THROUGH THE VEE JOINT FOR THE LENGTH OF EACH BRIDGE SPAN.
6. A CONSTRUCTION JOINT SHALL BE FORMED AT BEGIN/END BRIDGE LOCATIONS.
7. ALL PERMANENTLY EXPOSED CONCRETE SHALL BE TREATED WITH SILANE IN ACCORDANCE WITH SECTION #514.
8. ALUMINUM ANGLES SHALL BE INCIDENTAL TO THE ITEM 900.640 "SPECIAL PROVISION (F-SHAPE CONCRETE RAIL)."

ALL DETAILS NOT TO SCALE

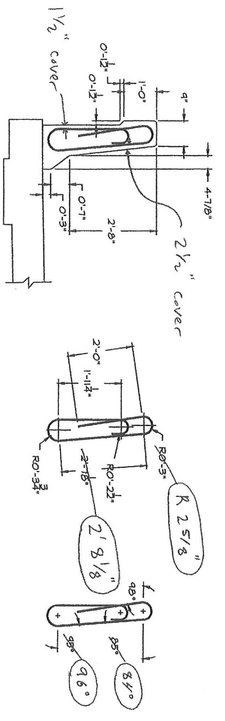
PROJECT:	PROJECT NO.:
BERLIN	IM 089-1(20)

DESIGN FILE NAME: 99a270\structures\s99a270rail.dgn
IPARM FILE NAME: s99a270raildet.i
PLOT DATE: 05-DEC-2007
DESIGNED BY: G.SPILAK
DRAWN BY: S.MORIN
SQUAD LEADER: C.P.WILLIAMS
CHECKED BY: R.S.YOUNG
BRIDGE RAIL DETAILS
SHEET: 60 OF 104

BARKER STEEL LLC
a HarrisRebar Company
CANAAN

DATE	REV. NO.	DESCRIPTION	DATE	SENT FOR
			08/18/08	APPROVAL

GRADE OF STEEL
LAP CHART
CLASS ___ DIA'S
#3 = #8 =
#4 = #9 =
#5 = #10 =
#6 = #11 =
#7 =



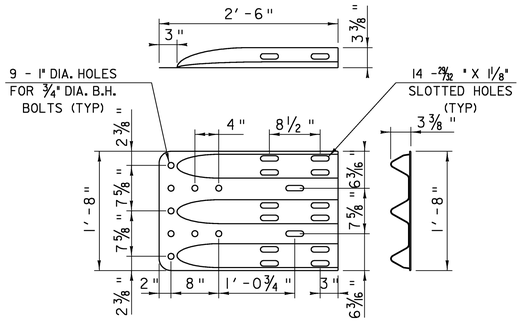
Revised Bar Detail

Note: All dimensions are to outside of bar.

Rev. 8-19-08 Beck & Bellucci

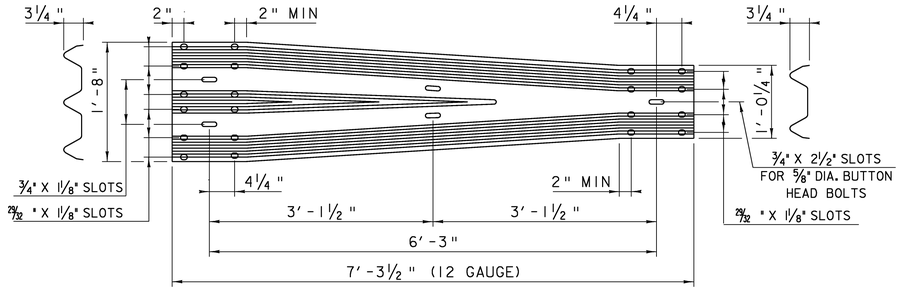
DRAWING COVERS: BRIDGE RAILS REINFORCEMENT	PROJECT: VT BRIDGE RAILS PROJECT IM 089-1 (20)	CUSTOMER		
ARCHITECT	LOCATION: BERLIN VT	DRAWN BY: CPS	APPR. DATE:	JOB NO. VT RAIL
ENGINEER	REFERENCE DWGS:	REVIEWED BY:	DATE SUB. 08/14/08	DWG. NO. R01

Rev.# 1 8/18/08



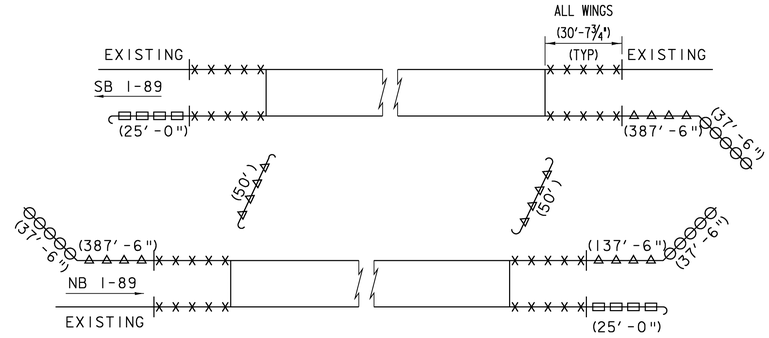
THRIE-BEAM TERMINAL CONNECTOR BOLT TO CONCRETE BARRIER & THRIE-BEAM

SCALE 1" = 1′-0"



THRIE-BEAM TO HDSB TRANSITION SECTION

SCALE 1" = 1′-0"

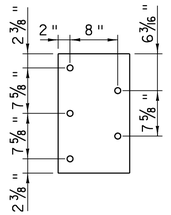


RAIL PAY ITEMS

NTS

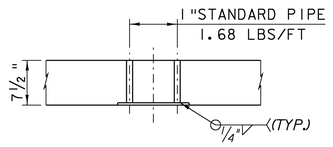
— SEE APPROACH SECTION BELOW
— MANUFACTURED TERMINAL SECTION, FLARED
— HD STEEL BEAM GUARD RAIL, GALVANIZED, TRAILING END TERMINAL. SEE STANDARD G-Id
— HD STEEL BEAM GUARD RAIL, GALVANIZED. SEE STANDARD G-I

NOTE: THRIE-BEAM TERMINAL CONNECTOR SHALL BE INCLUDED UNDER ITEM 900.620, SPECIAL PROVISION (GUARDRAIL APPROACH SECTION TO F-SHAPE CONCRETE RAIL. THRIE-BEAM CONNECTION PLATE SHALL BE INCIDENTAL TO ITEM 900.640, SPECIAL PROVISION (BRIDGE RAILING, F-SHAPE CONCRETE)



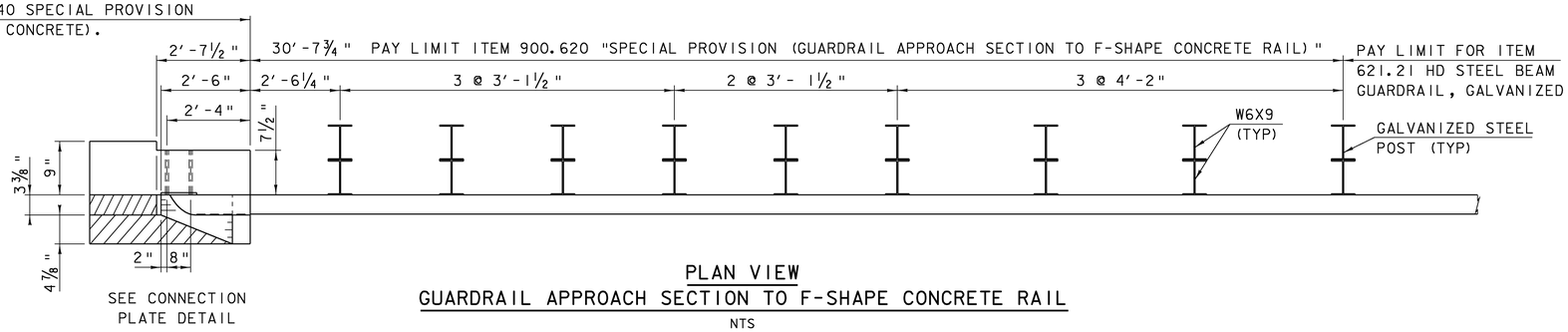
ELEVATION THRIE-BEAM CONNECTION PLATE DETAIL

SCALE 1" = 1′-0"



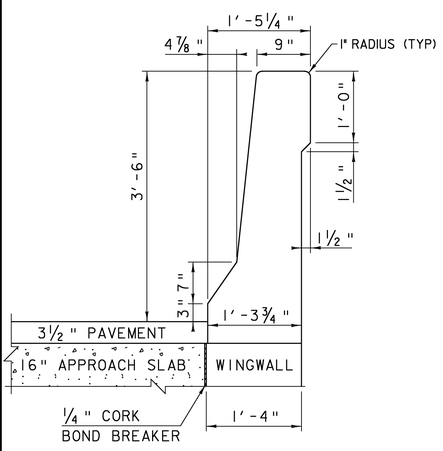
PLAN THRIE-BEAM CONNECTION PLATE DETAIL

SCALE 1" = 1′-0"



PLAN VIEW GUARDRAIL APPROACH SECTION TO F-SHAPE CONCRETE RAIL

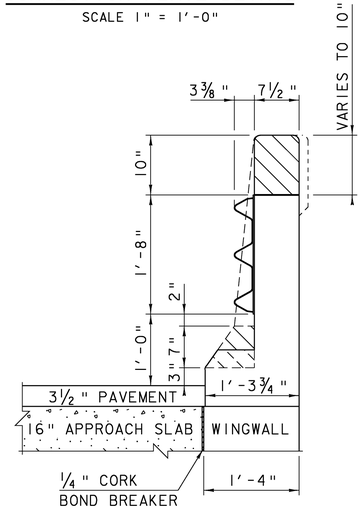
NTS



MATCH TO EXISTING WING WALL

SECTION G-G NEW RAIL DETAIL

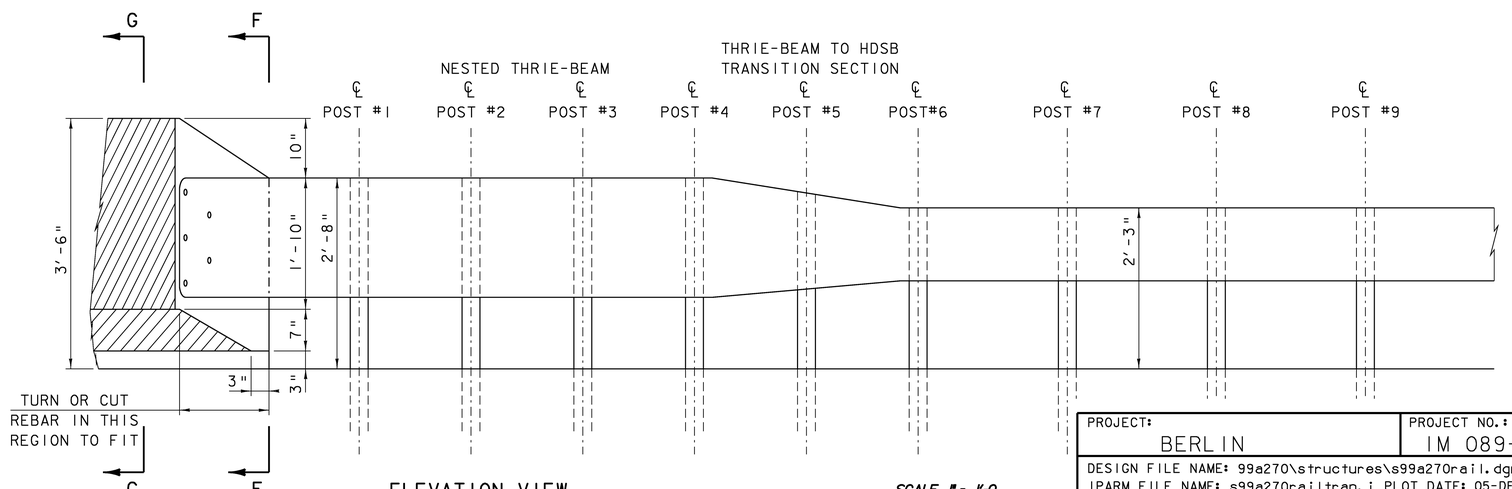
SCALE 1" = 1′-0"



MATCH TO EXISTING WING WALL

SECTION F-F

SCALE 1" = 1′-0"

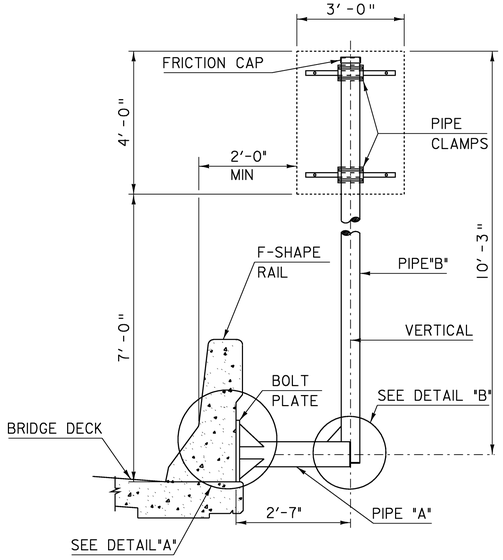


ELEVATION VIEW GUARDRAIL APPROACH SECTION TO F-SHAPE CONCRETE RAIL

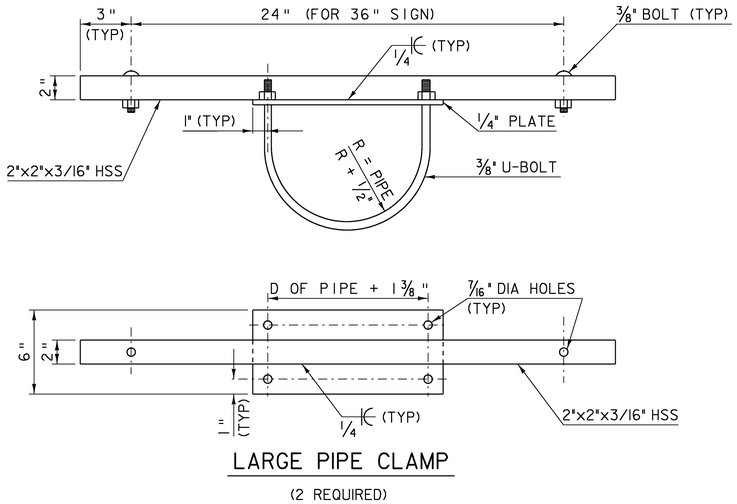
NTS

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

PROJECT: BERLIN	PROJECT NO.: IM 089-1(20)
DESIGN FILE NAME: 99a270\structures\s99a270rail.dgn	
IPARM FILE NAME: s99a270railtran.i	PLOT DATE: 05-DEC-2007
DESIGNED BY: G.SPILAK	DRAWN BY: S.MORIN
SQUAD LEADER: C.P.WILLIAMS	CHECKED BY: R.S.YOUNG
RAIL TRANSITION DETAILS	SHEET: 61 OF 104

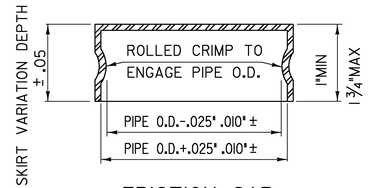


BRIDGE MOUNTED SIGNS



LARGE PIPE CLAMP

(2 REQUIRED)



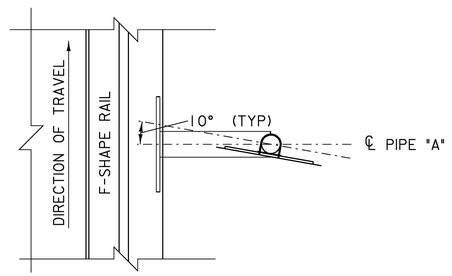
FRICTION CAP

NOTE:
FRICTION CAPS-MANUFACTURED FROM HOT OR COLD ROLLED STEEL SHEETS. SIZED FOR DRIVE FRICTION FIT, AND SO FORMED AS TO HAVE NO TENDENCY TO ROCK WHEN SEATED. THEY SHALL BE FREE OF SHARP INDENTATIONS AND EVIDENCE OF METAL FRACTURE, WITH RIMS REASONABLY STRAIGHT AND SMOOTH.

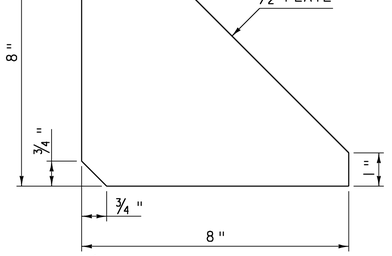
PIPE SIZES		
SIGN AREA S.F.	PIPE "A" SIZE	PIPE "B" SIZE
12	8.625"O.D.x 0.332"W.T.	4.500"O.D.x 0.337"W.T.

NOTES:

1. FABRICATE SIGN MOUNTS SO SIGN SUPPORT PIPE IS VERTICAL.
2. SIGN PANELS SHALL BE ATTACHED TO THE 2" HSS PIPE CLAMPS AND 4½" DIA. PIPE ARM AS SHOWN.
3. LOCK NUTS WITH NON-REVERSIBLE HIGH TENSILE STRENGTH STAINLESS STEEL LOCKING PINS SHALL BE USED ON BOLTS.
4. THE BOLTS SHALL BE A307, AND SHALL NOT BE LESS THAN 4½" IN LENGTH.
5. PIPE AND STRUCTURAL TUBING FOR THE SIGN SUPPORT SHALL BE ASTM A500, GRADE B. PLATES SHALL BE ASTM A572, GRADE 50.
6. SIGN SUPPORTS SHALL BE GALVANIZED AFTER FABRICATION ACCORDING TO SUBSECTION 516.04.
7. TOOLS, LABOR, AND MATERIALS OR ANY OTHER INCIDENTALS NECESSARY TO EFFECT THE INSTALLATION OF THE SIGN SUPPORT TO THE CONCRETE BRIDGE RAIL SHALL BE PAID FOR UNDER THE ITEM 506.60, "STRUCTURAL STEEL".



BRIDGE MOUNTED SIGN FACING

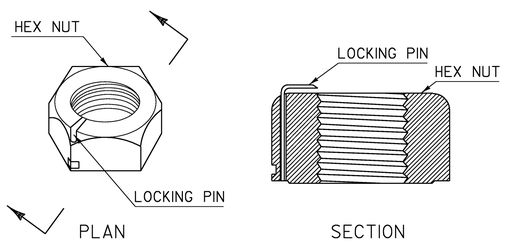


3/8" PLATE STIFFENER

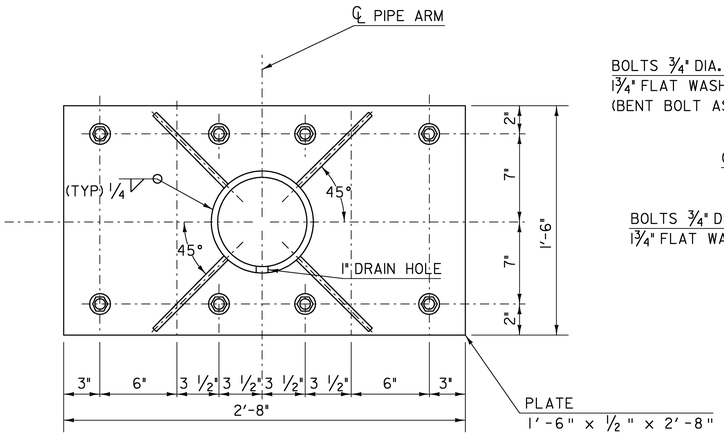
(1 REQUIRED)

1/2" PLATE STIFFENER

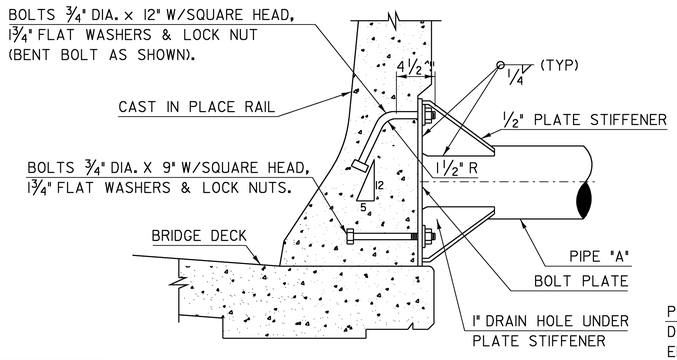
(4 REQUIRED)



LOCK NUT DETAIL

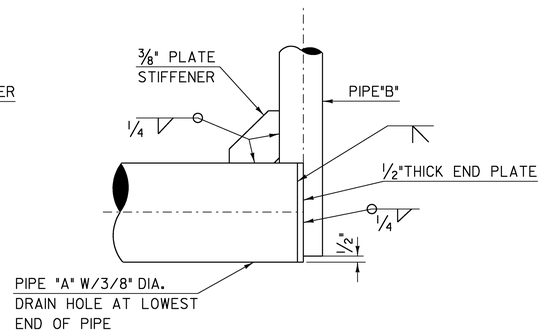


BOLT PLATE



DETAIL "A"

(SHOWING CAST IN PLACE RAIL)



DETAIL "B"

SIGN SUPPORT DETAILS

(FOR W-1-8 CHEVRON SIGNS)
(2 SIGN SUPPORTS REQUIRED)

NOTE: SEE LAYOUT NORTHBOUND 2 SHEET 15 FOR LOCATIONS
ALL DIMENSIONS NTS

PROJECT:	PROJECT NO.:
BERLIN	IM 089-1(20)

DESIGN FILE NAME: 99a270\Structures\s99a270sign post rail.dgn
IPARM FILE NAME: s99a270fsign.i — PLOT DATE: 05-DEC-2007
DESIGNED BY: R. S. YOUNG — DRAWN BY: M. FESSEL
SQUAD LEADER: C.P. WILLIAMS — CHECKED BY: R.S. YOUNG
BRIDGE MOUNTED SIGN DETAILS — SHEET: 62 OF 104

STATE OF VERMONT
AGENCY OF TRANSPORTATION

TRAFFIC SIGN SUMMARY SHEET

MILEMARKER, STATION, OR SIGN NUMBER	SIGN LEGEND	SIGN DIMENSIONS			NEW & SALVAGED SIGNS				EXIST POST		NEW SIGN POSTS																						REMARKS	SIGN DETAIL	
		EA	WIDTH (in)	HEIGHT (in)	"A"	"B"	SALV SIGN	SALV TIS	RETAIN	SALVAGE	NO. OF POSTS	FLANGED CHANNEL			SQUARE STEEL (in)			ANCHOR	SLEEVE	TUBULAR ALUMINUM Ø (in)			FOUNDATION	TUBULAR STEEL Ø (in)				W-SHAPE STEEL				SIGN FRAME REQUIRED		DETAIL ON SHEET NUMBER	STD. SHEET NUMBER
															1.75	2.0	2.5			3.0	4.0	4.0 MOD		3.0	3.5	4.0	5.0	'G. SIZE 24"	30"	WEIGHT	POST SIZE				
												lb/'			lb/'					lb/'				lb/'											
												1.12	2.0	3.0	1.88	2.16	3.35			1.3	1.7	1.7		7.6	9.0	10.8	14.6								
												OPTION ITEMS																							
STA 289+22 RT I-89 NB		1	36	48	12						2						40.00	2															W 1-8 (ASTM TYPE IX SHEETING)		E-150 E-160
STA 290+49 RT I-89 NB		1	6	8	0.33						1	6.50																					VD-701		E-134 E-160
STA 291+67 RT I-89 NB		1	36	48	12						0																						W 1-8 SEE MOUNTING DETAILS SHEET 62 (ASTM TYPE IX SHEETING)		E-150
STA 294+11 RT I-89 NB		1	36	48	12						0																						W 1-8 SEE MOUNTING DETAILS SHEET 62 (ASTM TYPE IX SHEETING)		E-150
STA 294+11 RT I-89 NB		1	36	36			1				1						15.875	1															R 3-4		E-143 E-151
STA 294+11 RT I-89 NB		1	36	36			1				1						15.875	1															R 3-4		E-143 E-151
STA 297+29 RT I-89 NB		1	48	60	20						2						36.00	2															W13-2		E-150
STA 395+99 LT I-89 SB		1	6	8	0.33						1	6.50																					VD-701		E-134 E-160
MM 52.09 I-89 NB		1	48	48	16						2						37.75	2															VW8-14, SEE GENERAL NOTE 20 (SHEET 10)	SHEET 24	
MM 52.81 I-89 SB		1	48	48	16						2						42.16	2															VW8-14, SEE GENERAL NOTE 20 (SHEET 10)	SHEET 24	
												' 13.00	'	'	'	'	' 187.66	▨	EA	LB	LB	LB		LB	LB	LB	LB								
TOTALS					SF 88.7	SF	EA. 2	SF	▨			' 13.00			' 187.66					LB			EA.	LB				EA.	EA.	LB					

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

PROJECT: BERLIN	PROJECT NO.: IM 089-1(20)
DESIGN FILE NAME: s99a270/structures/s99a270trafnote.dgn	
IPARM FILE NAME: s99a270tss.1	PLOT DATE: 17-DEC-2007
SURVEYED BY: R.GILMAN	SURVEY DATE: 12/2001
SQUAD LEADER: C.P.WILLIAMS	DRAWN BY: D.D.BEARD
TRAFFIC SIGN SUMMARY SHEET	SHEET: 63 OF 104

STATE OF VERMONT
AGENCY OF TRANSPORTATION

REINFORCING STEEL SCHEDULE

ITEM	EACH	SIZE	LENGTH	MARK	TYPE	A	B	C	D	E	F	G	H	J	K	R	O
APPROACH SLAB NO. 1																	
△	44	5	24'- 6"	1EAS501	STR												
△ ▲	54	9	26'- 0"	1EAS901	1	1'- 3"	24'- 9"					---					
APPROACH SLAB NO. 2																	
△	34	5	32'- 3"	2EAS501	STR												
△ ▲	54	9	26'- 3"	2EAS901	1	1'- 3"	25'- 0"					---					
APPROACH SLAB NO. 3																	
△	44	5	24'- 7"	3EAS501	STR												
△ ▲	54	9	25'- 10"	3EAS901	1	1'- 3"	24'- 7"					---					
APPROACH SLAB NO. 4																	
△	34	5	31'- 11"	4EAS501	STR												
△ ▲	54	9	26'- 1"	4EAS901	1	1'- 3"	24'- 10"					---					
DECK SLAB #1																	
⁺	457	5	39'- 0"	1ES501	STR												
⁺	449	5	16'- 3"	1ES502	22		1'- 3"	15'- 0"	---				0'- 1"		1'- 3"		
▲	10	5	25'- 8"	1ES503	22		1'- 7"	24'- 1"	---				0'- 1"		1'- 7"		
▲	8	5	28'- 2"	1ES504	22		1'- 9"	26'- 6"	---				0'- 1"		1'- 9"		
▲	650	5	28'- 8"	1ES505	22		1'- 3"	26'- 2"	---				0'- 1"		1'- 3"		
	50	5	16'- 9"	1ES506	22		1'- 3"	15'- 6"	---				0'- 11"		0'- 10"		
	500	5	5'- 2"	1ES507	A	SEE BAR BENDING DETAILS											
	68	5	10'- 3"	1ES508	23		3'- 3"	0'- 10"	0'- 9"	0'- 5"	5'- 0"						
	73	5	7'- 10"	1ES509	S5	3'- 0"	0'- 9"	1'- 6"	0'- 5"			2'- 2"					
⁺	51	6	16'- 9"	1ES601	22		1'- 3"	15'- 6"	---				0'- 1"		1'- 3"		
⁺	51	6	16'- 9"	1ES602	22		1'- 3"	15'- 6"	---				0'- 9"		1'- 0"		
DECK SLAB #2																	
⁺	457	5	39'- 0"	2ES501	STR												
⁺	421	5	16'- 3"	2ES502	22		1'- 3"	15'- 0"	---				0'- 1"		1'- 3"		
▲	8	5	28'- 3"	2ES503	22		1'- 9"	26'- 6"	---				0'- 1"		1'- 9"		
▲	8	5	30'- 10"	2ES504	22		1'- 9"	29'- 1"	---				0'- 1"		1'- 9"		
▲	664	5	28'- 8"	2ES505	22		1'- 3"	26'- 2"	---				0'- 1"		1'- 3"		
	50	5	16'- 9"	2ES506	22		1'- 3"	15'- 6"	---				0'- 11"		1'- 0"		
	500	5	5'- 2"	2ES507	A	SEE BAR BENDING DETAILS											
	152	5	7'- 10"	2ES509	S5	3'- 0"	0'- 9"	1'- 6"	0'- 5"			2'- 2"					
⁺	51	6	16'- 9"	2ES601	22		1'- 3"	15'- 6"	---				0'- 1"		1'- 3"		
⁺	51	6	16'- 9"	2ES602	22		1'- 3"	15'- 6"	---				0'- 11"		1'- 0"		
DECK SLAB #3																	
⁺	457	5	39'- 3"	3ES501	STR												
⁺	395	5	16'- 3"	3ES502	22		1'- 3"	15'- 0"	---				0'- 1"		1'- 3"		
▲	10	5	33'- 11"	3ES503	22		2'- 0"	31'- 11"	---				0'- 1"		2'- 0"		
▲	8	5	30'- 10"	3ES504	22		1'- 9"	29'- 1"	---				0'- 1"		1'- 9"		
▲	712	5	27'- 5"	3ES505	22		1'- 3"	26'- 2"	---				0'- 1"		1'- 3"		
	50	5	16'- 6"	3ES506	22		1'- 3"	15'- 3"	---				0'- 11"		0'- 10"		
	514	5	5'- 2"	3ES507	A	SEE BAR BENDING DETAILS											
	86	5	10'- 3"	3ES508	23		3'- 3"	0'- 10"	0'- 9"	0'- 5"	5'- 0"						
	79	5	7'- 10"	3ES509	S5	3'- 0"	0'- 9"	1'- 6"	0'- 5"			2'- 2"					
⁺	51	6	16'- 9"	3ES601	22		1'- 3"	15'- 6"	---				0'- 1"		1'- 3"		
⁺	51	6	16'- 9"	3ES602	22		1'- 3"	15'- 6"	---				0'- 11"		0'- 10"		
DECK SLAB #4																	
⁺	457	5	39'- 0"	4ES501	STR												
⁺	445	5	16'- 3"	4ES502	22		1'- 3"	15'- 0"	---				0'- 1"		1'- 3"		
▲	10	5	26'- 5"	4ES503	22		1'- 7"	24'- 10"	---				0'- 1"		1'- 7"		
▲	8	5	28'- 4"	4ES504	22		1'- 7"	26'- 9"	---				0'- 1"		1'- 7"		
▲	644	5	27'- 5"	4ES505	22		1'- 3"	26'- 2"	---				0'- 1"		1'- 3"		
	50	5	16'- 6"	4ES506	22		1'- 3"	15'- 3"	---				0'- 11"		0'- 10"		
	500	5	5'- 2"	4ES507	A	SEE BAR BENDING DETAILS											
	68	5	10'- 3"	4ES508	23		3'- 3"	0'- 10"	0'- 9"	0'- 5"	5'- 0"						
	73	5	7'- 10"	4ES509	S5	3'- 0"	0'- 9"	1'- 6"	0'- 5"			2'- 2"					
⁺	51	6	16'- 9"	4ES601	22		1'- 3"	15'- 6"	---				0'- 1"		1'- 3"		
⁺	51	6	16'- 9"	4ES602	22		1'- 3"	15'- 6"	---				0'- 1"		1'- 3"		

ITEM	EACH	SIZE	LENGTH	MARK	TYPE	A	B	C	D	E	F	G	H	J	K	R	O
DECK SLAB #5																	
⁺	457	5	39'- 0"	5ES501	STR												
⁺	419	5	16'- 3"	5ES502	22		1'- 3"	15'- 0"	---				0'- 1"		1'- 3"		
▲	8	5	28'- 4"	5ES503	22		1'- 7"	26'- 9"	---				0'- 1"		1'- 7"		
▲	8	5	30'- 11"	5ES504	22		2'- 0"	28'- 11"	---				0'- 1"		2'- 0"		
▲	658	5	27'- 5"	5ES505	22		1'- 3"	26'- 2"	---				0'- 1"		1'- 3"		
	50	5	16'- 6"	5ES506	22		1'- 3"	15'- 3"	---				0'- 11"		1'- 0"		
	500	5	5'- 2"	5ES507	A	SEE BAR BENDING DETAILS											
	153	5	7'- 10"	5ES509	S5	3'- 0"	0'- 9"	1'- 6"	0'- 5"			2'- 2"					
⁺	51	6	16'- 9"	5ES601	22		1'- 3"	15'- 6"	---				0'- 1"		1'- 3"		
⁺	51	6	16'- 9"	5ES602	22		1'- 3"	15'- 6"	---				0'- 11"		0'- 10"		
DECK SLAB #6																	
⁺	457	5	39'- 3"	6ES501	STR												
⁺	393	5	16'- 3"	6ES502	22		1'- 3"	15'- 0"	---				0'- 1"		1'- 3"		
▲	10	5	33'- 8"	6ES503	22		2'- 0"	31'- 8"	---				0'- 1"		2'- 0"		
▲	8	5	30'- 11"	6ES504	22		2'- 0"	28'- 11"	---				0'- 1"		2'- 0"		
▲	704	5	27'- 5"	6ES505	22		1'- 3"	26'- 2"	---				0'- 1"		1'- 3"		
	50	5	16'- 6"	6ES506	22		1'- 3"	15'- 3"	---				0'- 11"		0'- 10"		
	510	5	5'- 2"	6ES507	A	SEE BAR BENDING DETAILS											
	88	5	10'- 3"	6ES508	23		3'- 3"	0'- 10"	0'- 9"	0'- 5"	5'- 0"						
	80	5	7'- 10"	6ES509	S5	3'- 0"	0'- 9"	1'- 6"	0'- 5"			2'- 2"					
⁺	51	6	16'- 9"	6ES601	22		1'- 3"	15'- 6"	---				0'- 1"		1'- 3"		
⁺	51	6	16'- 9"	6ES602	22		1'- 3"	15'- 6"	---				0'- 11"		0'- 10"		
WINGWALL #1																	
▲	6	5	21'- 0"	1W501	STR												
⁺	17	5	6'- 9"	1W502	STR												
⁺ ▲	9	5	8'- 11"	1W503	STR												
	31	5	6'- 10"	1EW504	B		SEE BAR BENDING DETAILS										
△ ▲	10	6	8'- 11"	1W601	STR												
WINGWALL #2																	
▲	6	5	25'- 4"	2W501	STR												
⁺	17	5	8'- 6"	2W502	STR												
⁺ ▲	11	5	9'- 0"	2W503	STR												
	38	5	6'- 10"	2EW504	B		SEE BAR BENDING DETAILS										
△ ▲	12	6	9'- 0"	2W601	STR												
WINGWALL #3																	
▲	6	5	21'- 2"	3W501	STR												
⁺	15	5	10'- 9"	3W502	STR												
⁺ ▲	13	5	8'- 2"	3W503	STR												
	32	5	6'- 10"	3EW504	B		SEE BAR BENDING DETAILS										
△ ▲	14	6	8'- 2"	3W601	STR												
WINGWALL #4																	
▲	6	5	25'- 6"	4W501	STR												
⁺	17	5	7'- 0"	4W502	STR												
⁺ ▲	9	5	8'- 4"	4W503	STR												
	37	5	6'- 10"	4EW504	B		SEE BAR BENDING DETAILS										
△ ▲	10	6	8'- 4"	4W601	STR												
WINGWALL #5																	
▲	6	5	26'- 6"	5W501	STR												
⁺	17	5	6'- 9"	5W502	STR												
⁺ ▲	9	5	8'- 8"	5W503	STR												
	39	5	6'- 10"	5EW504	B		SEE BAR BENDING DETAILS										
△ ▲	10	6	8'- 8"	5W601	STR												
WINGWALL #6																	
▲	6	5	24'- 3"	6W501	STR												
⁺	19	5	8'- 9"	6W502	STR												
⁺ ▲	11	5	9'- 4"	6W503	STR												
	37	5	6'- 10"	6EW504	B		SEE BAR BENDING DETAILS										
△ ▲	12	6	9'- 4"	6W601	STR												
WINGWALL #7																	
▲	6	5	25'- 2"	7W501	STR												
⁺	17	5	10'- 9"	7W502	STR												
⁺ ▲	13	5	8'- 3"	7W503	STR												
	38	5	6'- 10"	7EW504	B		SEE BAR BENDING DETAILS										
△ ▲	14	6	8'- 3"	7W601	STR												

~ NOTES ~

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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.
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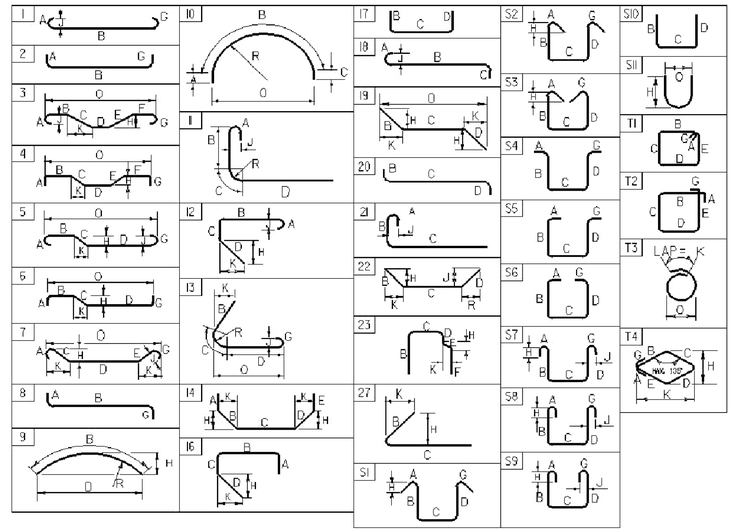
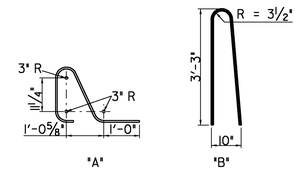
7. WHERE SLOPE DIFFERS FROM 45 DEGREES, DIMENSIONS "H" AND "K" MUST BE SHOWN.
8. ▲ DENOTES BARS TO BE CUT IN FIELD.
9. ⁺ DENOTES ONE EXTRA BAR ADDED FOR TESTING PURPOSES.
10. △ DENOTES TWO EXTRA BARS ADDED FOR TESTING PURPOSES.
11. E IN BAR MARK PREFIX DENOTES EPOXY COATED REINFORCING STEEL.



ASTM STANDARD REINFORCING BARS

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



BAR BENDING DETAILS

PROJECT NAME:	BERLIN
PROJECT NUMBER:	IM 089-1(20)
FILE NAME: s99a270rein.dgn	PLOT DATE: 12/5/2007
PROJECT MANAGER: SHERWARD FARNSWORTH	DRAWN BY: C.MOONEY
DESIGNED BY: G. SPILAK	CHECKED BY: C.WEEBER
REINFORCING STEEL SCHEDULE SHEET #1	SHEET 64 OF 104

STATE OF VERMONT
AGENCY OF TRANSPORTATION

REINFORCING STEEL SCHEDULE

ITEM	EACH	SIZE	LENGTH	MARK	TYPE	A	B	C	D	E	F	G	H	J	K	R	O
	WINGWALL #8																
▲	6	5	21'- 6"	8W501	STR												
✳	17	5	7'- 0"	8W502	STR												
✳ ▲	9	5	8'- 8"	8W503	STR												
	31	5	6'- 10"	8EW504	B		SEE BAR BENDING DETAILS										
△ ▲	10	6	8'- 8"	8W601	STR												
	ABUTMENT #1																
	3	5	26'- 10"	1A501	STR												
	3	5	22'- 7"	1A502	STR												
	52	5	3'- 5"	1A504	STR												
✳ ▲	53	5	7'- 8"	1A505	STR												
✳ ▲	50	5	7'- 8"	1A506	STR												
	18	5	27'- 3"	1A507	STR												
	18	5	22'- 9"	1A508	STR												
	49	5	8'- 5"	1A510	16	2'- 2"	2'- 1"	1'- 3"	2'- 11"								
	9	5	5'- 11"	1A511	19		3'- 3"	2'- 8"	---				2'- 9"		1'- 9"		
	9	5	12'- 10"	1A512	22		2'- 2"	8'- 6"	2'- 2"				1'- 1"	1'- 1"	1'- 11"	1'- 11"	
	8	5	9'- 3"	1A513	22		2'- 2"	4'- 11"	2'- 2"				1'- 11"	1'- 11"	1'- 0"	1'- 0"	
△	27	8	5'- 9"	1EA801	22		3'- 3"	2'- 6"	---								
	ABUTMENT #2																
	3	5	28'- 0"	2A501	STR												
	3	5	25'- 0"	2A502	STR												
	3	5	13'- 0"	2A503	STR												
	64	5	3'- 5"	2A504	STR												
✳ ▲	65	5	8'- 1"	2A505	STR												
✳ ▲	64	5	8'- 1"	2A506	STR												
	16	5	29'- 0"	2A507	STR												
	16	5	25'- 0"	2A508	STR												
	16	5	13'- 2"	2A509	STR												
	63	5	8'- 5"	2A510	16	2'- 2"	2'- 1"	1'- 3"	2'- 11"								
	8	5	5'- 0"	2A511	19		2'- 9"	2'- 3"	---				1'- 8"	2'- 2"			
	8	5	14'- 10"	2A512	22		2'- 2"	10'- 6"	2'- 2"				0'- 8"	0'- 8"	2'- 1"	2'- 1"	
	8	5	8'- 6"	2A513	22		2'- 2"	4'- 2"	2'- 2"				2'- 0"	2'- 0"	0'- 9"	0'- 9"	
△	34	8	5'- 9"	2EA801	22		3'- 3"	2'- 6"	---								
	ABUTMENT #3																
	3	5	26'- 7"	3A501	STR												
	3	5	22'- 11"	3A502	STR												
	50	5	3'- 5"	3A504	STR												
✳ ▲	51	5	7'- 9"	3A505	STR												
✳ ▲	50	5	7'- 9"	3A506	STR												
	18	5	27'- 2"	3A507	STR												
	18	5	23'- 4"	3A508	STR												
	49	5	8'- 5"	3A510	16	2'- 2"	2'- 1"	1'- 3"	2'- 11"								
	9	5	5'- 1"	3A511	19		2'- 2"	2'- 11"	---				1'- 9"		1'- 3"		
	9	5	13'- 1"	3A512	22		2'- 2"	8'- 9"	2'- 2"				1'- 0"	1'- 0"	1'- 11"	1'- 11"	
	9	5	9'- 3"	3A513	22		2'- 2"	4'- 11"	2'- 2"				1'- 11"	1'- 11"	1'- 0"	1'- 0"	
△	27	8	5'- 9"	3EA801	22		3'- 3"	2'- 6"	---								
	ABUTMENT #4																
	3	5	28'- 2"	4A501	STR												
	3	5	25'- 0"	4A502	STR												
	3	5	12'- 3"	4A503	STR												
	64	5	3'- 5"	4A504	STR												
✳ ▲	65	5	7'- 9"	4A505	STR												
✳ ▲	64	5	7'- 9"	4A506	STR												
	18	5	29'- 2"	4A507	STR												
	18	5	25'- 0"	4A508	STR												
	18	5	12'- 3"	4A509	STR												
	63	5	8'- 5"	4A510	16	2'- 2"	2'- 1"	1'- 3"	2'- 11"								
	9	5	4'- 11"	4A511	19		2'- 2"	2'- 9"	---				1'- 4"		1'- 9"		
	9	5	14'- 9"	4A512	22		2'- 2"	10'- 5"	2'- 2"				0'- 9"	0'- 9"	2'- 1"	2'- 1"	
	9	5	8'- 6"	4A513	22		2'- 2"	4'- 2"	2'- 2"				2'- 0"	2'- 0"	0'- 9"	0'- 9"	
△	34	8	5'- 9"	4EA801	22		3'- 3"	2'- 6"	---								

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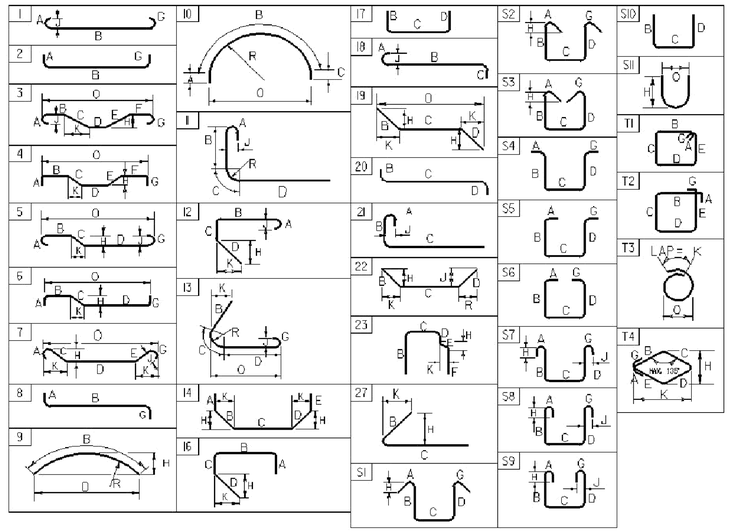

ASTM STANDARD REINFORCING BARS

BAR SIZE DESIGNATION	WEIGHT POUNDS PER FOOT	NOMINAL DIMENSIONS ROUND SECTION		
		DIAMETER INCHES	AREA INCHES ^{2}	PERIMETER INCHES
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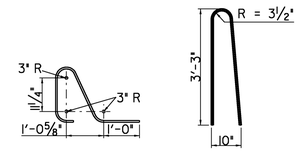


BAR BENDING DETAILS

PROJECT NAME:	BERLIN
PROJECT NUMBER:	IM 089-1(20)
FILE NAME: s99a270rein.dgn	PLOT DATE: 12/5/2007
PROJECT MANAGER: SHERWARD FARNSWORTH	DRAWN BY: C.MOONEY
DESIGNED BY: G. SPILAK	CHECKED BY: C.WEEBER
REINFORCING STEEL SCHEDULE SHEET #2	SHEET 65 OF 104

EROSION PREVENTION AND SEDIMENT CONTROL NARRATIVE

PROJECT DESCRIPTION

The project is located on Interstate 89 over Vermont Route 12 in Berlin Vermont. The project involves the rehabilitation of Bridges 40N and 40S with minor approach work. The horizontal and vertical alignments are the same as what currently exists. Crossovers will be constructed to maintain traffic while each bridge is being rehabilitated.

It is anticipated that this project will last three construction seasons. The anticipated scheduling is as follows:

Year One – Develop staging area and field offices, installation of construction signs, construction of northbound crossover, and rehabilitation of Bridge 40N. The rehabilitation Includes removal of the bridge deck and construction of a new concrete deck with concrete railing. Reopen the northbound lane and seed and mulch disturbed areas

Year Two – Construction of southbound crossover and Rehabilitation of Bridge 40S. The rehabilitation Includes removal of the bridge deck and construction of a new concrete deck with concrete railing. Construct new U-turn as shown on the plans. Reopen the southbound lanes and seed and mulch disturbed areas.

Year Three – Paint girders on both bridges. No crossovers will be necessary during this activity. Traffic will be shifted as required to allow Work to be completed. Remove all construction signs and clean site. Seed and mulch all disturbed areas requiring revegetation.

Note: Area of disturbance shall include limits of earth disturbance within the project area including any waste, staging, and borrow areas within or directly adjacent to the project limits.

The area of disturbance is approximately 4.31 acres.

SITE INVENTORY AND ANALYSIS

OFF SITE DRAINAGE CHARACTERISTICS
The area surrounding the project is rural. There are no homes located in the immediate vicinity of this project as it on the interstate. However, there are condominiums along Vermont Route 12 fairly close to the interstate overpass. The vegetation along the interstate is mostly grass with a scattering of native trees. There is a well established grass swale in the median of the interstate that feeds several drop inlets and culvert pipes. These pipes outlet on the exterior boundary of the north and southbound lanes. The proposed staging area for the project is east of the northbound lane and is located at the bottom of the interstate side slope. This area will be accessed from Vermont Route 12 just east of the I-89 overpass. The area is primarily flat and consists of grass and some pine trees. This staging area is within the state right of way and may require some tree removal.

DRAINAGE, WATERWAYS, BODIES OF WATER:
There are no bodies of water within or near the project area. The Dog river is the closest body of water and is approximately 4000 feet from the project area.

TOPOGRAPHY, EXISTING ROADS, BUILDINGS, UTILITIES:
The topography of the project site is rolling hills and mostly grasslands. The approach to the bridges is steep at nearly 5 percent and curves significantly to the left. There is a Grange and a Gravel Pit located west the bridge overpass on route 12 towards Berlin. Vermont Route 12 is below the bridge will remain virtually unaffected by this project. However, there are aerial utilities along Vermont Route 12 that will need to be avoided.

VEGETATION:
The interstate median has ledge outcrop which changes to grass at approximately mile marker 52. The median remains grass throughout the remainder of the project. The exterior edge of both north and southbound lanes are steep slopes (I on 2) vegetated with grass and shrubs. However, there is ledge outcrop located on the right hand side of the northbound lane just beyond the exit 8 interchange. The staging area has grass and scrub pine as vegetation.

SOILS:
According to a soil survey completed by the United States Department of Agricultural Soil Conservation there are three types of soil at this location. In the area of the approach from the south, including the staging area, the soil is classified as Buxton Silt Loam which has a K value of 0.32. In the vicinity of the bridges the soil is classified as Colton Gravelly Loamy Sand which has a K value of 0.49. The soil north of the bridges is classified as Tunbridge Lyman Complex which has a K value of 0.24.

Generally, K-values indicate the following: 0.00 – 0.23 = low erodibility; 0.24 – 0.36 = moderate erodibility; 0.37 and higher = higher erodibility

SENSITIVE RESOURCE AREAS:
No 'Threatened & Endangered Species', wetlands, historical sites, or prime agricultural land have been identified within the project limits.

PROXIMITY TO NATURAL OR MAN-MADE FEATURES:
Disturbance of soils near natural or man-made waterways consists of the work necessary to replace portions of four bridge abutments and applicable roadway approaches as well as the removal of the existing u-turn. Temporary crossovers will also be constructed and removed.

RISK EVALUATION:
This project has been determined to be low risk under construction general permit 3-9020(2006). And as such the low risk project handbook must be complied with and be on site at all times. The risk evaluation score for this project is 0. See appendix A (attachment to CGP-3-9020). Overall scores of less than 1 qualify the project as low risk. Any modifications to the project shall result in a re-evaluation of the risk and the contractor shall be responsible for re-filing should the risk change.

EROSION PREVENTION & SEDIMENT CONTROL

Refer to the low risk site handbook and appropriate detail sheets for each practice required on the project to include but not limited to:

Mark site boundaries with "Project Demarcation Fencing" denoted -PDF- on the plans, will be used to delineate the limits the contractor can access with construction equipment. This measure limits the area that can be disturbed and exposed to erosion.

Limit Disturbance Area by phasing earth disturbing activities through out the duration of the project.

Vehicle Tracking Pads to the project site, staging areas, as well as to waste and borrow areas shall be established. The minimum size of a vehicle tracking pad is 12'X50' (3700X15, 000). All surface water flowing to or diverted toward a vehicle tracking pad shall be piped under the stone. Pipes shall be appropriately sized for the contributing area, however, no pipe smaller then 6" (150) diameter shall be used. See EPSC Detail Sheet for materials and construction method to be utilized when constructing a vehicle tracking pad.

Install silt fence per the Erosion Control Detail Sheet. Silt fence shall be installed prior to any upslope earthwork.

Divert upland runoff using temporary swales as required.

Reduce flow velocities in temporary or permanent swales and ditches using stone check dams. Check dams will be installed per Erosion Control Detail Sheet. The check dams may be removed once the stone lining of the ditch is complete and the surrounding area stabilized.

Permanent Erosion Control measures include: Seeding and mulching exposed slopes. Use of erosion matting where required.

Stabilize exposed soils (temporary and final grade) by Seeding, mulching, and biodegradable erosion control matting or an equivalent product will be utilized on all slopes greater than 1:3 that are not lined with stone fill. Geo-textile fabric is also required under all stone fill. These slopes shall be stabilized within 48 hours of reaching final grade or during intermittent phases of construction activity. Seeding and mulching shall also be applied immediately to all lawns disturbed beyond the work area delineated on these plans. Tracking of all exposed slopes, combined with temporary mulching, will also be utilized on a regular basis. Any slopes to be exposed for 48 hours prior to final grading shall be tracked and mulched. The forecast of rainfall events shall also trigger protection of exposed slopes. If rainfall is predicted the Contractor must stabilize the site accordingly prior to the forecasted event.

Winter Stabilization as required per Low Risk Handbook.

Temporary sediment settling basins will not be used on this project as there are no cofferdams requiring dewatering

Site Inspection shall be based on Permit authorization requirements.

GENERAL EROSION & SEDIMENT CONTROL GUIDELINES

The Erosion Control Plans are meant as a guideline for preventing erosion and controlling sediment transportation. The work outlined in this narrative consists of applying measures throughout the life of the project to control erosion and minimize the sediment into receiving waters. The measures include stabilization and structural practices, storm water controls and other pollution prevention controls. This document serves as a guide for the Contractor to make an Erosion Prevention and Sediment Control Plan which shall be submitted to the Construction Environmental Engineer for approval.

Coordinate the installation, use, and removal of erosion and sediment control measures with construction activities to ensure economical, effective and continuous erosion and sediment control. Employ temporary stabilization practices in incremental stages as construction proceeds. The contractor will use additional erosion control measures as necessitated by the sequence of construction and as directed be the engineer. See section 105.23 of the Vermont AOT Standard Specifications for Construction, dated 2006.

Install all erosion and sediment control measures as shown in the Erosion Control Plan or as directed by the engineer. Do not modify the type, size or location of any control or practice without approval of the engineer. All changes shall be approved by the Construction Environmental Engineer and also be noted on the plans, in the weekly inspection report, and reported to the appropriate authority in a timely manner.

Inspect all control measures weekly and after each rainfall event. Repair measures shall be taken as needed.

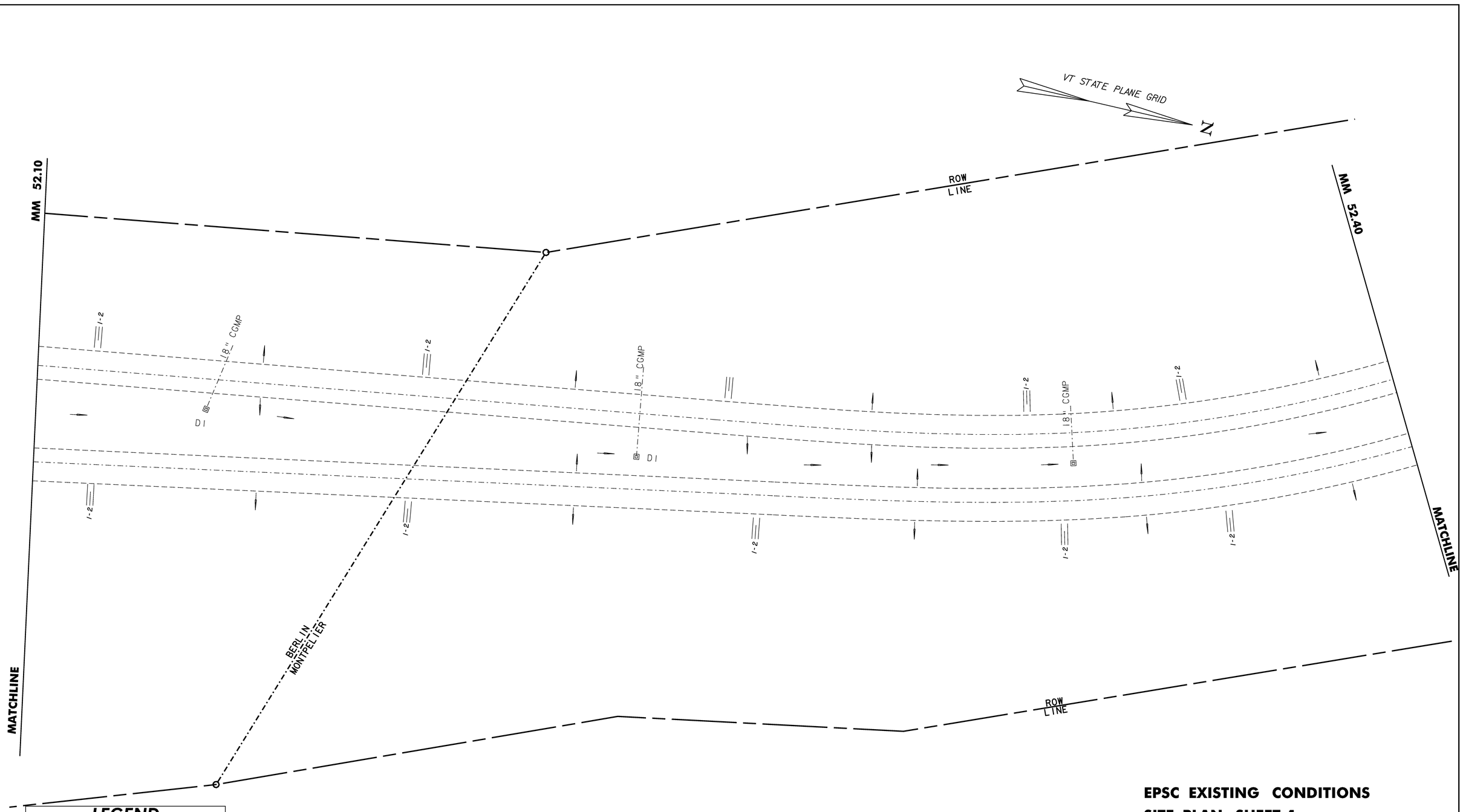
Preventing initial soil erosion is much more effective than treating eroded sediment. Therefore, stabilize all disturbed areas promptly after construction activity has temporarily or permanently ceased. Also, attempt to time all grading to minimize soil exposure. Temporary vegetation shall be established as noted in the plans and approved by the Construction Environmental Engineer. Perimeter control measures shall be installed following clearing, but prior to the start of any grubbing or grading activity, install other temporary controls in incremental stages as construction proceeds. These perimeter controls shall be maintained until the site is permanently stabilized to the satisfaction of the Engineer and on-site coordinator.

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

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

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

PROJECT: BERLIN	PROJECT NO.: IM 089-1(20)
DESIGN FILE NAME: 99a270\structures\s99a270excel.dgn	
IPARM FILE NAME: s99a270ecnar.i	PLOT DATE: 05-DEC-2007
DESIGNED BY: K.M.HIGGINS	DRAWN BY: M.FESSEL
SQUAD LEADER: C.P.WILLIAMS	CHECKED BY: K.M.HIGGINS
EROSION CONTROL NARRATIVE	SHEET: 66 OF 104



LEGEND

- RUNOFF FLOW DIRECTION
- SOIL BOUNDARY
- I-4 SLOPE GRADE
- EXISTING GUARD RAIL

SCALE 1" = 50'-0
50 0 50

EPSC EXISTING CONDITIONS
SITE PLAN SHEET 1

PROJECT:	PROJECT NO.:
BERLIN	IM 089-1(20)
DESIGN FILE NAME: 99a270\structures\s99a270bdr ero.dgn	
IPARM FILE NAME: s99a270exconl.i	PLOT DATE: 05-DEC-2007
DESIGNED BY: G.SPILAK	DRAWN BY: M.FESSEL
SQUAD LEADER: C.P.WILLIAMS	CHECKED BY: K.M.HIGGINS
EPSC EXISTING CONDTIONS - 1	SHEET: 67 OF 104

BERLIN
MONTPELIER

VT STATE PLANE GRID

N

MM 52.40

MM 52.60

ROW
LINE

BUXTON SILT LOAM,
25% TO 45% SLOPES
"K" FACTOR – 0.32

COLTON GRAVELLY LOAMY SAND,
25% TO 60% SLOPES
"K" FACTOR – 0.49

18" CGMP

DI

I-2

BRIDGE 3405

BRIDGE 3406

24" CGMP

MATCHLINE

TUNBRIDGE LYMAN COMPLEX,
15% TO 35% SLOPES,
VERY ROCKY
"K" FACTOR – 0.24

COLTON GRAVELLY
LOAMY SAND,
25% TO 60% SLOPES
"K" FACTOR – 0.49

BUXTON SILT LOAM,
15% TO 25% SLOPES
"K" FACTOR – 0.32

SALMON ADAMANT COMPLEX,
8% TO 15% SLOPES,
VERY ROCKY
"K" FACTOR – 0.32

LEGEND

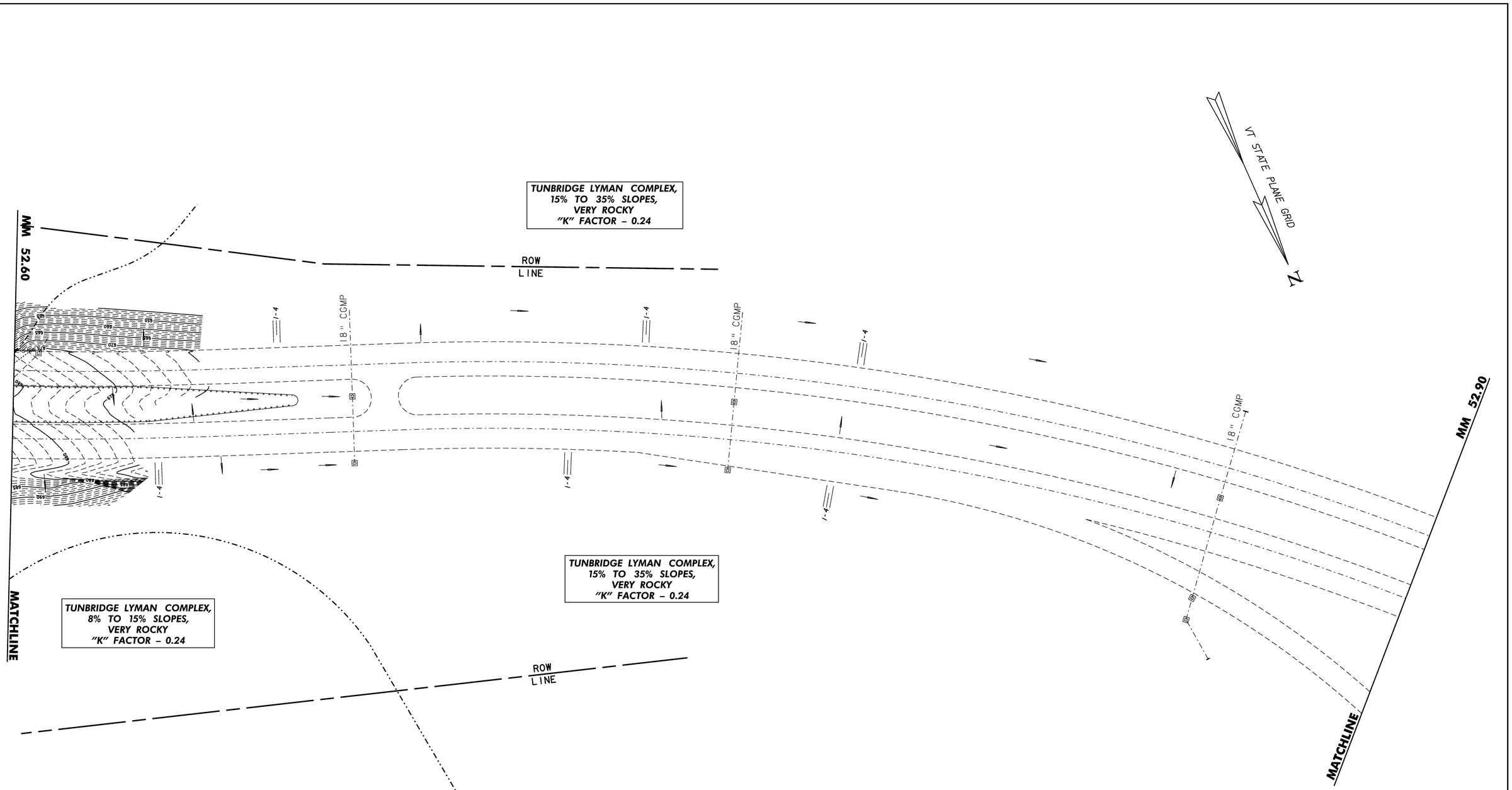
- RUNOFF FLOW DIRECTION
- SOIL BOUNDARY
- I-4 SLOPE GRADE
- EXISTING GUARD RAIL

SCALE 1" = 50'-0
50 0 50

EPSC EXISTING CONDITIONS SITE PLAN SHEET 2

PROJECT:	PROJECT NO.:
BERLIN	IM 089-1(20)

DESIGN FILE NAME: 99a270\structures\s99a270bdr ero.dgn
IPARM FILE NAME: s99a270excon2.i
PLOT DATE: 05-DEC-2007
DESIGNED BY: G.SPILAK
DRAWN BY: M.FESSEL
SQUAD LEADER: C.P.WILLIAMS
CHECKED BY: K.M.HIGGINS
EPSC EXISTING CONDTIONS - 2
SHEET: 68 OF 104



LEGEND

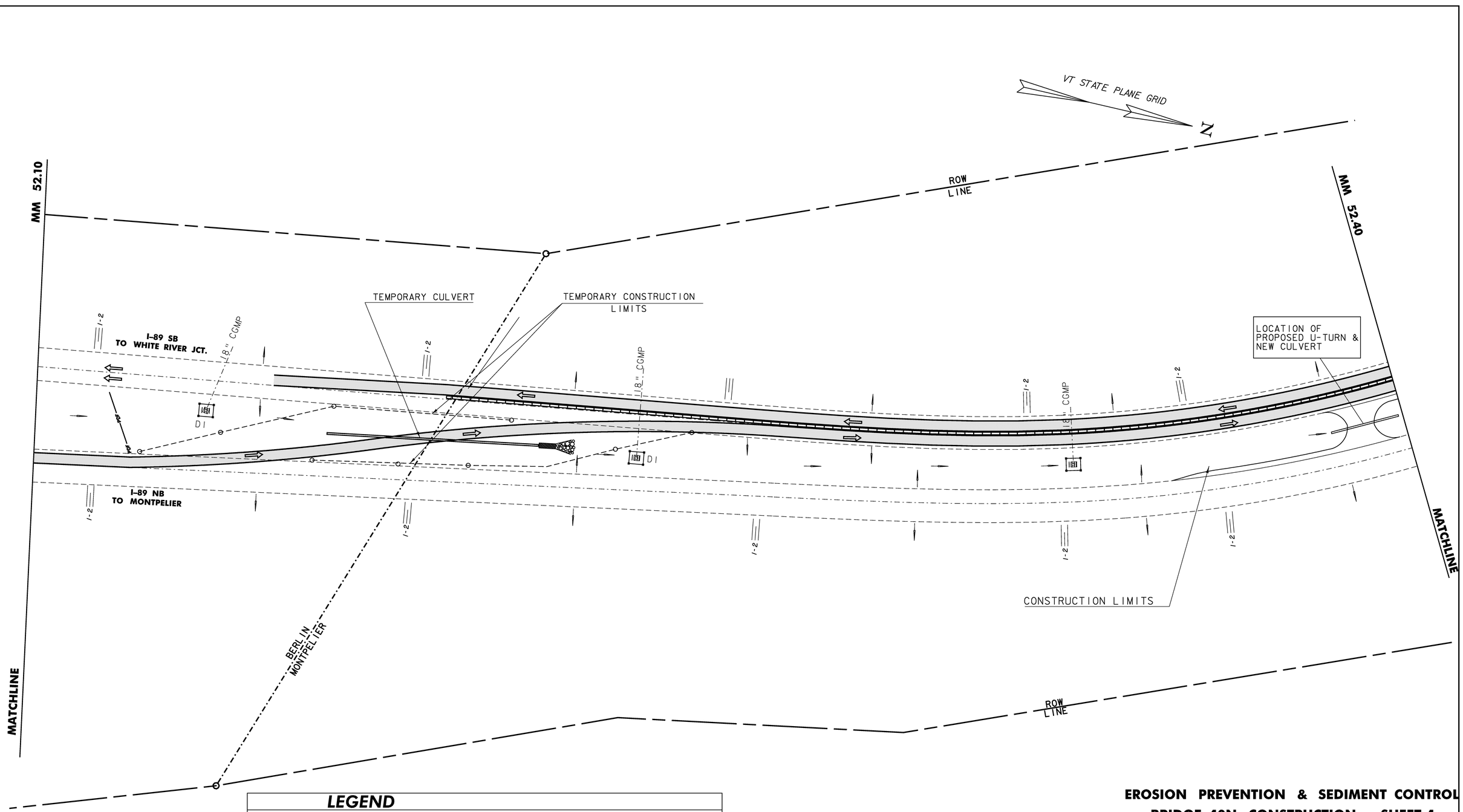
- RUNOFF FLOW DIRECTION
- SOIL BOUNDARY
- I-4 SLOPE GRADE
- EXISTING GUARD RAIL

SCALE 1" = 50'-0
50 0 50

EPSC EXISTING CONDITIONS SITE PLAN SHEET 3

PROJECT:	PROJECT NO.:
BERLIN	IM 089-1(20)

DESIGN FILE NAME: 99a270\structures\s99a270bdr ero.dgn
IPARM FILE NAME: s99a270excon3.i PLOT DATE: 05-DEC-2007
DESIGNED BY: G.SPILAK DRAWN BY: M.FESSEL
SQUAD LEADER: C.P.WILLIAMS CHECKED BY: K.M.HIGGINS
EPSC EXISTING CONDTIONS - 3 SHEET: 69 OF 104



LEGEND

- DETOUR
- EROSION MATTING
- INLET PROTECTION DEVICE
- TRAFFIC DIRECTION
- PDF——PDF— PROJECT DEMARCATION FENCE
- RUNOFF FLOW DIRECTION
- TEMPORARY TRAFFIC BARRIER
- RIPRAP OUTLET PROTECTION

SCALE 1" = 50'-0
50 0 50

EROSION PREVENTION & SEDIMENT CONTROL
BRIDGE 40N CONSTRUCTION – SHEET 1

PROJECT:	PROJECT NO.:
BERLIN	IM 089-1(20)

DESIGN FILE NAME: 99a270\structures\s99a270bdr ero.dgn
IPARM FILE NAME: s99a270epscnb1.i
PLOT DATE: 05-DEC-2007
DESIGNED BY: G.SPILAK
DRAWN BY: M.FESSEL
SQUAD LEADER: C.P.WILLIAMS
CHECKED BY: K.M.HIGGINS
EPSC PLAN NORTHBOUND - 1
SHEET: 70 OF 104

LEGEND

- DETOUR
- VEHICLE TRACKING PAD
- INLET PROTECTION DEVICE,TYPE I
- TRAFFIC DIRECTION
- PDF——PDF- PROJECT DEMARCATION FENCE
- RUNOFF FLOW DIRECTION
- RIPRAP OUTLET PROTECTION
- GEOTEXTILE FOR SILT FENCE
- TEMPORARY TRAFFIC BARRIER

VT STATE PLANE GRID

N

BERLIN
MONTPELIER

MM 52.40

MM 52.60

ROW
LINE

VT 12
TO NORTHFIELD

CONSTRUCTION LIMITS

I-89 SB
TO WHITE RIVER JCT.

I-89 NB
TO MONTPELIER

BRIDGE 40S

BRIDGE 40N

MM 52.50

ROW
FENCE

18" CGMP

12" CGMP

24" CGMP

DI

I-2

PDF

MATCHLINE

STAGING AREA

TEMPORARY
CULVERT

VT 12
TO MONTPELIER

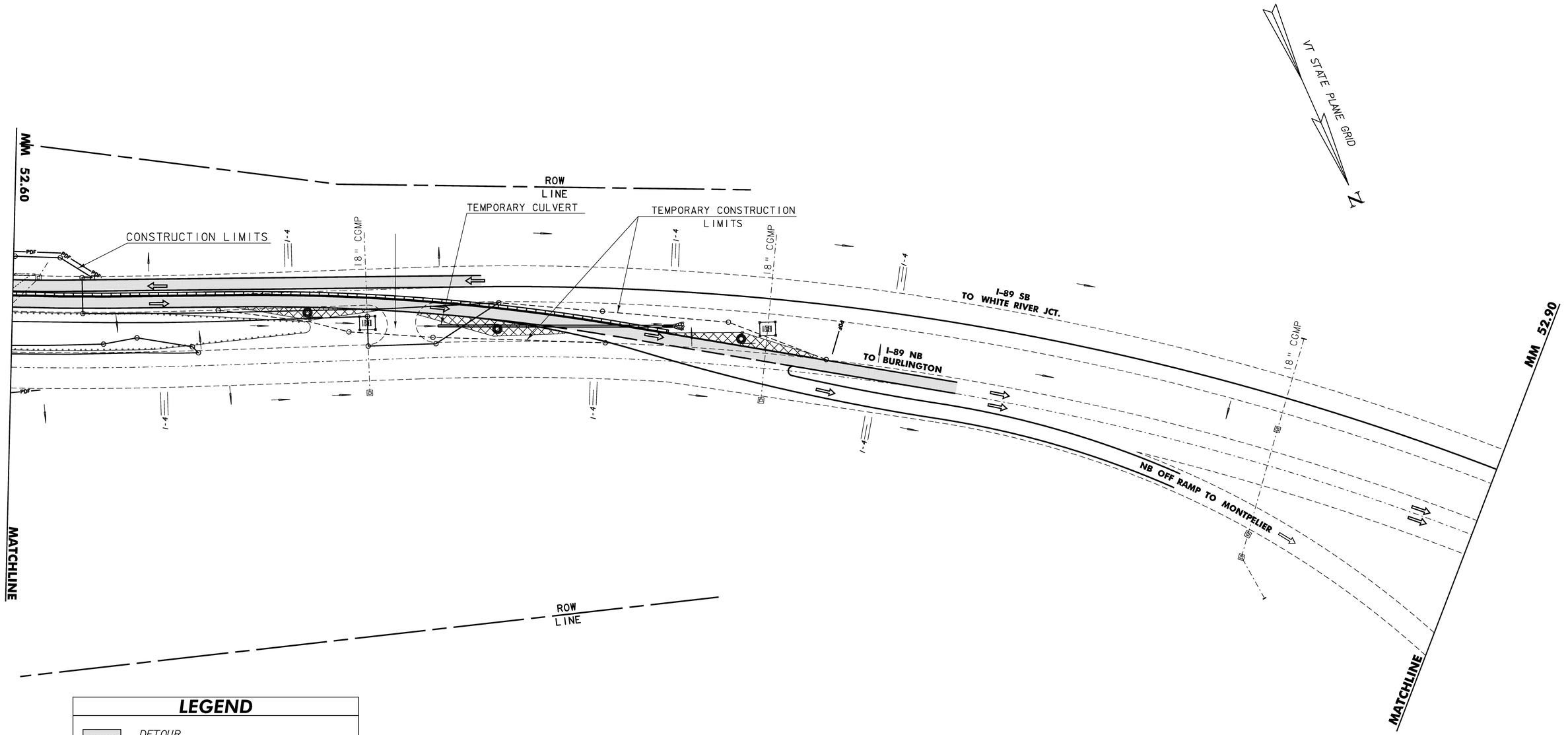
CONTRACTORS
& VTRANS FIELD
OFFICE SITE

SCALE 1" = 50'-0
50 0 50

EROSION PREVENTION & SEDIMENT CONTROL
BRIDGE 40N CONSTRUCTION – SHEET 2

PROJECT:	PROJECT NO.:
BERLIN	IM 089-1(20)

DESIGN FILE NAME: 99a270\structures\s99a270bdr_ero.dgn
IPARM FILE NAME: s99a270epscnb2.i
PLOT DATE: 05-DEC-2007
DESIGNED BY: G.SPILAK
DRAWN BY: M.FESSEL
SQUAD LEADER: C.P.WILLIAMS
CHECKED BY: K.M.HIGGINS
EPSC PLAN NORTHBOUND - 2
SHEET: 71 OF 104



LEGEND

- DETOUR
- EROSION MATTING
- INLET PROTECTION DEVICE,TYPE I
- TRAFFIC DIRECTION
- PDF —— PROJECT DEMARCATION FENCE
- RUNOFF FLOW DIRECTION
- RIPRAP OUTLET PROTECTION
- TEMPORARY TRAFFIC BARRIER

SCALE 1" = 50'-0
50 0 50

EROSION PREVENTION & SEDIMENT CONTROL
BRIDGE 40N CONSTRUCTION – SHEET 3

PROJECT:	PROJECT NO.:
BERLIN	IM 089-1(20)

DESIGN FILE NAME: 99a270\structures\s99a270bdr ero.dgn
IPARM FILE NAME: s99a270epscnb3.i
PLOT DATE: 05-DEC-2007
DESIGNED BY: G.SPILAK
DRAWN BY: M.FESSEL
SQUAD LEADER: C.P.WILLIAMS
CHECKED BY: K.M.HIGGINS
EPSC PLAN NORTHBOUND - 3
SHEET: 72 OF 104

VT STATE PLANE GRID

N

MM 52.10

MM 52.40

ROW LINE

TEMPORARY CULVERT

TEMPORARY CONSTRUCTION LIMITS

LOCATION OF PROPOSED U-TURN & NEW CULVERT

I-2

18" CGMP

D1

I-89 SB
TO WHITE RIVER JCT.

I-89 NB
TO MONTPELIER

CONSTRUCTION LIMITS

MATCHLINE

MATCHLINE

BERLIN
MONTPELIER

ROW LINE

LEGEND

- DETOUR
- EROSION MATTING
- INLET PROTECTION DEVICE
- TRAFFIC DIRECTION
- PDF——PDF— PROJECT DEMARCATION FENCE
- RUNOFF FLOW DIRECTION
- TEMPORARY TRAFFIC BARRIER
- RIPRAP OUTLET PROTECTION

SCALE 1" = 50'-0

50 0 50

EROSION PREVENTION & SEDIMENT CONTROL
BRIDGE 40S CONSTRUCTION – SHEET 1

PROJECT:	PROJECT NO.:
BERLIN	IM 089-1(20)

DESIGN FILE NAME: 99a270\structures\s99a270bdr ero.dgn
IPARM FILE NAME: s99a270epscsb1.i
PLOT DATE: 05-DEC-2007
DESIGNED BY: G.SPILAK
DRAWN BY: M.FESSEL
SQUAD LEADER: C.P.WILLIAMS
CHECKED BY: K.M.HIGGINS
EPSC PLAN SOUTHBOUND - 1
SHEET: 73 OF 104

LEGEND

- DETOUR
- VEHICLE TRACKING PAD
- INLET PROTECTION DEVICE,TYPE I
- TRAFFIC DIRECTION
- PDF——PDF- PROJECT DEMARCATION FENCE
- RUNOFF FLOW DIRECTION
- RIPRAP OUTLET PROTECTION
- GEOTEXTILE FOR SILT FENCE
- TEMPORARY TRAFFIC BARRIER

VT STATE PLANE GRID

N

BERLIN
MONTPELIER

MM 52.40

MM 52.60

ROW
LINE

VT 12
TO NORTHFIELD

TEMPORARY
CULVERT

CONSTRUCTION LIMITS

18" CGMP

12" CGMP

24" CGMP

DI

BRIDGE 40S

BRIDGE 40N

MM 52.50

ROW FENCE

CONSTRUCTION LIMITS

MATCHLINE

MATCHLINE

STAGING AREA

TEMPORARY
CULVERT

VT 12
TO MONTPELIER

BERLIN
MONTPELIER

ROW
LINE

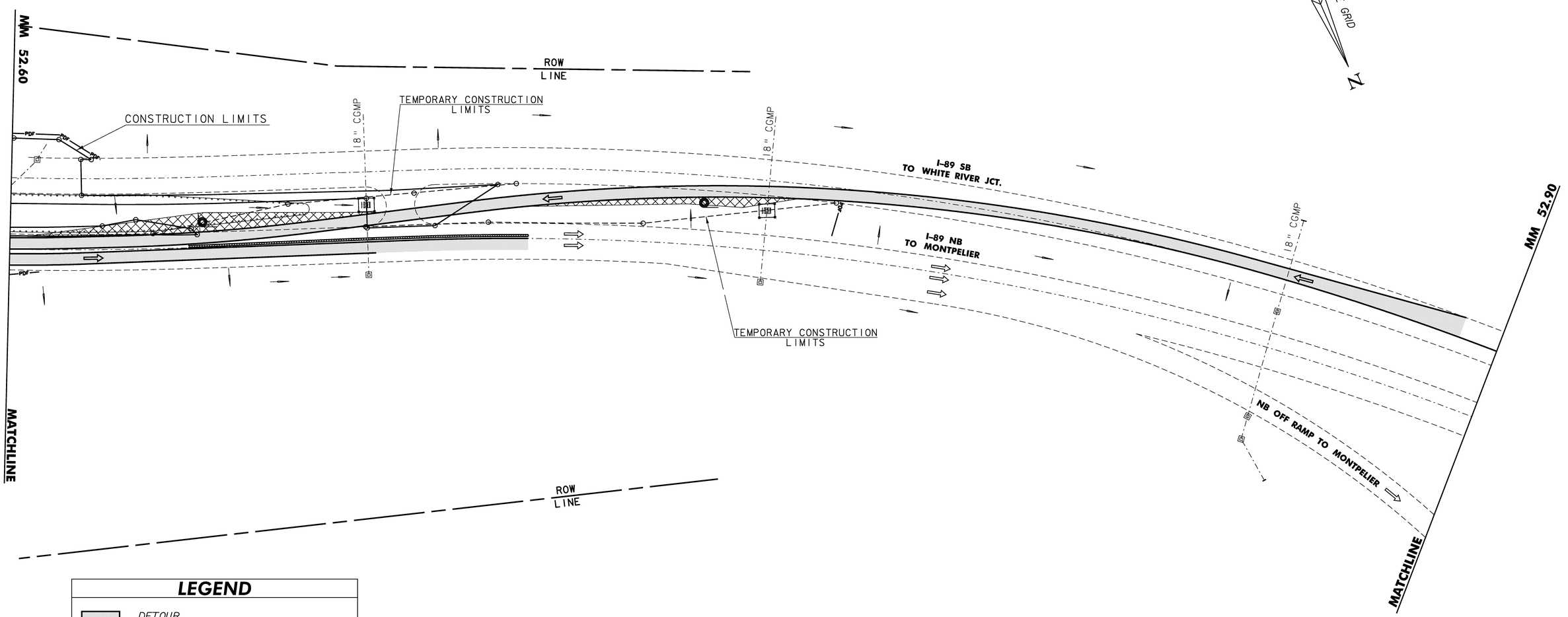
CONTRACTORS
& VTRANS FIELD
OFFICE SITE

SCALE 1" = 50'-0
50 0 50

EROSION PREVENTION & SEDIMENT CONTROL
BRIDGE 40S CONSTRUCTION – SHEET 2

PROJECT:	PROJECT NO.:
BERLIN	IM 089-1(20)

DESIGN FILE NAME: 99a270\structures\s99a270bdr_ero.dgn
IPARM FILE NAME: s99a270epscsb2.i
PLOT DATE: 05-DEC-2007
DESIGNED BY: G.SPILAK
DRAWN BY: M.FESSEL
SQUAD LEADER: C.P.WILLIAMS
CHECKED BY: K.M.HIGGINS
EPSC PLAN SOUTHBOUND - 2
SHEET: 74 OF 104



LEGEND

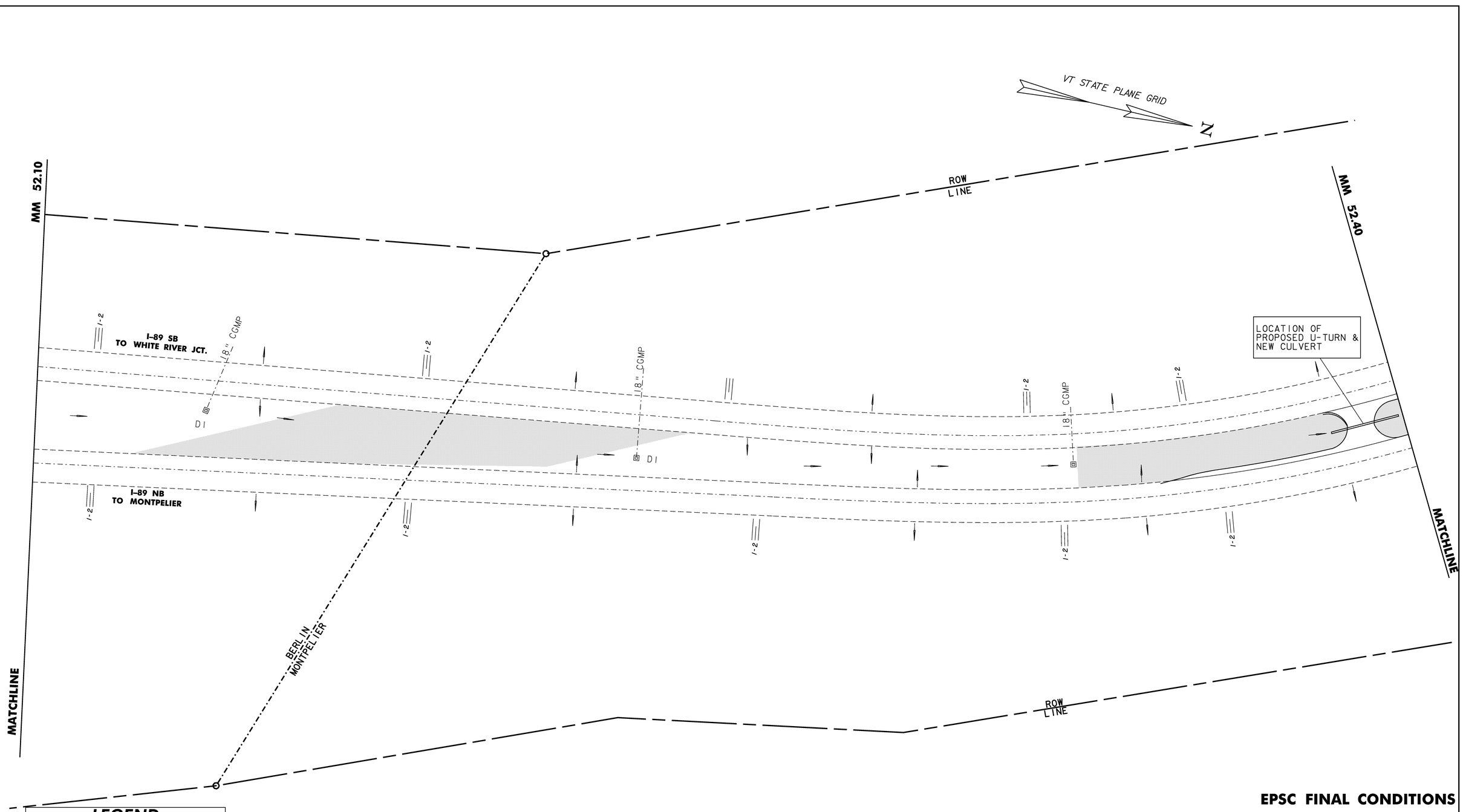
- DETOUR
- EROSION MATTING
- INLET PROTECTION DEVICE,TYPE I
- TRAFFIC DIRECTION
- PDF —— PROJECT DEMARCATION FENCE
- RUNOFF FLOW DIRECTION
- RIPRAP OUTLET PROTECTION
- TEMPORARY TRAFFIC BARRIER

SCALE 1" = 50'-0
50 0 50

EROSION PREVENTION & SEDIMENT CONTROL
BRIDGE 40S CONSTRUCTION – SHEET 3

PROJECT:	PROJECT NO.:
BERLIN	IM 089-1(20)

DESIGN FILE NAME: 99a270\structures\s99a270bdr ero.dgn
IPARM FILE NAME: s99a270epscsb3.i
PLOT DATE: 05-DEC-2007
DESIGNED BY: G.SPILAK
DRAWN BY: M.FESSEL
SQUAD LEADER: C.P.WILLIAMS
CHECKED BY: K.M.HIGGINS
EPSC PLAN SOUTHBOUND - 3
SHEET: 75 OF 104



LEGEND

- RUNOFF FLOW DIRECTION
- I-4 SLOPE GRADE
- SEED AND MULCH

SCALE 1" = 50'-0
50 0 50

EPSC FINAL CONDITIONS
SITE PLAN SHEET 1

PROJECT:	PROJECT NO.:
BERLIN	IM 089-1(20)
DESIGN FILE NAME: 99a270\structures\s99a270bdr ero.dgn	
IPARM FILE NAME: s99a270finconl.i	PLOT DATE: 05-DEC-2007
DESIGNED BY: G.SPILAK	DRAWN BY: M.FESSEL
SQUAD LEADER: C.P.WILLIAMS	CHECKED BY: K.M.HIGGINS
EPSC FINAL CONDITIONS - 1	SHEET: 76 OF 104

VT STATE PLANE GRID

N

BERLIN
MONTPELIER

ROW
LINE

MM 52.40

MM 52.60

VT 12
TO NORTHFIELD

I-89 SB
TO WHITE RIVER JCT.

I-89 NB
TO MONTPELIER

MATCHLINE

MATCHLINE

VT 12
TO MONTPELIER

BERLIN
MONTPELIER

ROW
LINE

LEGEND

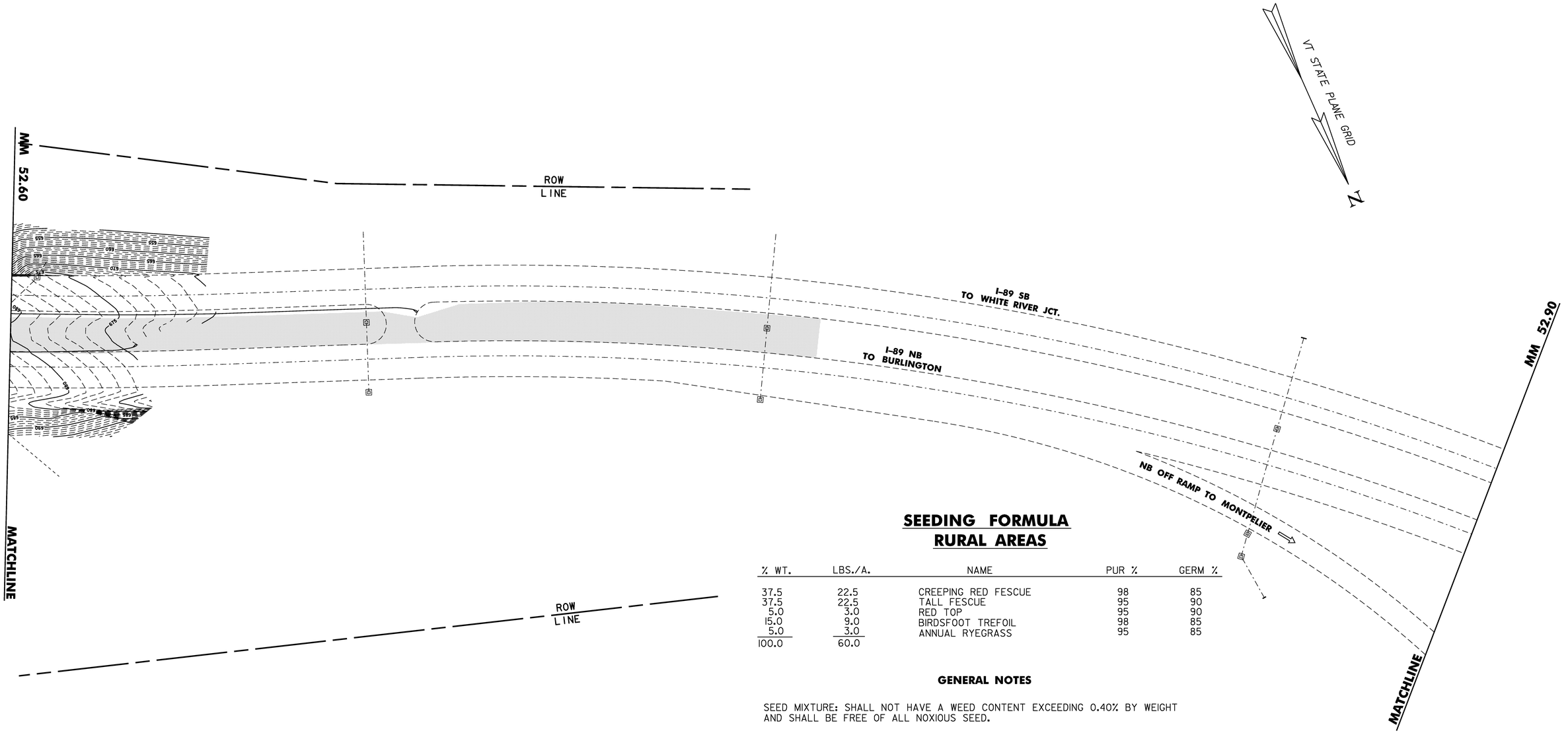
- RUNOFF FLOW DIRECTION
- 1-4 SLOPE GRADE
- NEW GUARD RAIL
- SEED AND MULCH

SCALE 1" = 50'-0
50 0 50

EPSC FINAL CONDITIONS
SITE PLAN SHEET 2

PROJECT:	PROJECT NO.:
BERLIN	IM 089-1(20)

DESIGN FILE NAME: 99a270\structures\s99a270bdr ero.dgn
IPARM FILE NAME: s99a270fincon2.i
PLOT DATE: 05-DEC-2007
DESIGNED BY: G.SPILAK
DRAWN BY: M.FESSEL
SQUAD LEADER: C.P.WILLIAMS
CHECKED BY: K.M.HIGGINS
EPSC FINAL CONDITIONS - 2
SHEET: 77 OF 104



SEEDING FORMULA
RURAL AREAS

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

GENERAL NOTES

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

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

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

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

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

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

SCALE 1" = 50'-0
50 0 50

LEGEND

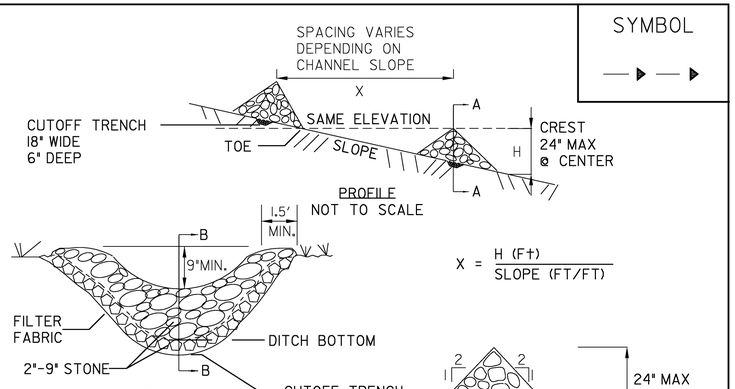
- RUNOFF FLOW DIRECTION
- 1-4 SLOPE GRADE
- NEW GUARD RAIL
- SEED AND MULCH

EPSC FINAL CONDITIONS SITE PLAN SHEET 3

PROJECT:	PROJECT NO.:
BERLIN	IM 089-1(20)

DESIGN FILE NAME: 99a270\structures\s99a270bdr ero.dgn
IPARM FILE NAME: s99a270fincon3.i
PLOT DATE: 05-DEC-2007
DESIGNED BY: G. SPILAK
DRAWN BY: M. FESSEL
SQUAD LEADER: C.P. WILLIAMS
CHECKED BY: K.M. HIGGINS
EPSC FINAL CONDITIONS - 3
SHEET: 78 OF 104

SYMBOL



CONSTRUCTION SPECIFICATIONS

1. STONE WILL BE PLACED ON A FILTER FABRIC FOUNDATION.
2. SET SPACING OF CHECK DAMS SO THAT THE ELEVATION OF THE CREST OF THE DOWNSTREAM DAM IS AT THE SAME ELEVATION AS THE TOE OF THE UPSTREAM DAM.
3. EXTEND THE STONE A MINIMUM OF 1.5 FEET BEYOND THE DITCH BANKS TO PREVENT CUTTING AROUND THE DAM.
4. PROTECT THE CHANNEL DOWNSTREAM OF THE LOWEST CHECK DAM FROM SCOUR AND EROSION WITH STONE OR LINER AS APPROPRIATE.
5. ENSURE THAT CHANNEL APPURTENANCES SUCH AS CULVERT ENTRANCES BELOW CHECK DAMS ARE NOT SUBJECT TO DAMAGE OR BLOCKAGE FROM DISPLACED STONE.

MAXIMUM DRAINAGE AREA 2 ACRES.

ADAPTED FROM DETAILS PROVIDED BY: NEW YORK STATE DECORIGINALLY DEVELOPED BY USDA-NRCSVERMONT DEPARTMENT OF ENVIRONMENTAL CONSERVATION

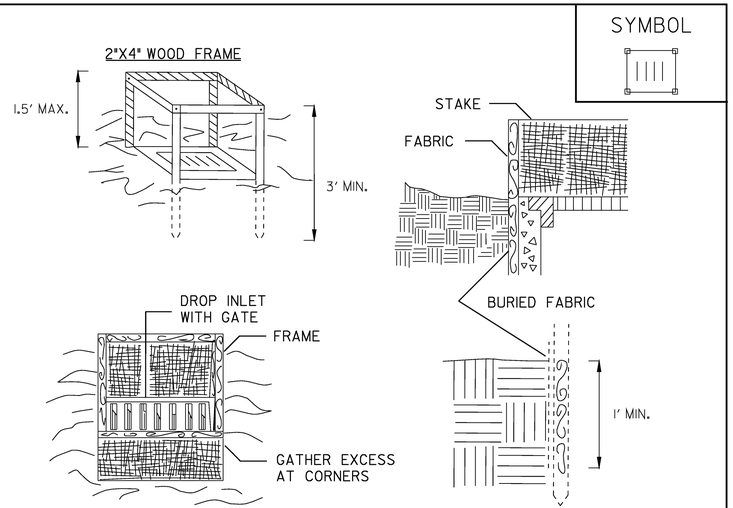
CHECK DAM

NOTES:
REFER TO "THE VERMONT STANDARDS & SPECIFICATIONS FOR EROSION PREVENTION & SEDIMENT CONTROL -2006- " FROM THE VT AGENCY OF NATURAL RESOURCES FOR ADDITIONAL GUIDANCE.

THIS ITEM SHALL BE PAID FOR UNDER ITEM
653.25 TEMPORARY STONE CHECK DAM, TYPE I

REVISIONS	
MARCH 8, 2007	JMF

SYMBOL



CONSTRUCTION SPECIFICATIONS

1. FILTER FABRIC SHALL HAVE AN EOS OF 40-85. BURLAP MAY BE USED FOR SHORT TERM APPLICATIONS.
2. CUT FABRIC FROM A CONTINUOUS ROLL TO ELIMINATE JOINTS. IF JOINTS ARE NEEDED THEY WILL BE OVERLAPPED TO THE NEXT STAKE.
3. STAKE MATERIALS WILL BE STANDARD 2" x 4" WOOD OR EQUIVALENT METAL WITH A MINIMUM LENGTH OF 3 FEET.
4. SPACE STAKES EVENLY AROUND INLET 3 FEET APART AND DRIVE A MINIMUM 18 INCHES DEEP. SPANS GREATER THAN 3 FEET MAY BE BRIDGED WITH THE USE OF WIRE MESH BEHIND THE FILTER FABRIC FOR SUPPORT.
5. FABRIC SHALL BE EMBEDDED 1FOOT MINIMUM BELOW GROUND AND BACKFILLED. IT SHALL BE SECURELY FASTENED TO THE STAKES AND FRAME.
6. A 2" x 4" WOOD FRAME SHALL BE COMPLETED AROUND THE CREST OF THE FABRIC FOR OVER FLOW STABILITY.

MAXIMUM DRAINAGE AREA 1 ACRE

ADAPTED FROM DETAILS PROVIDED BY: NEW YORK STATE DEC
ORIGINALLY DEVELOPED BY USDA-NRCS
VERMONT DEPARTMENT OF ENVIRONMENTAL CONSERVATION

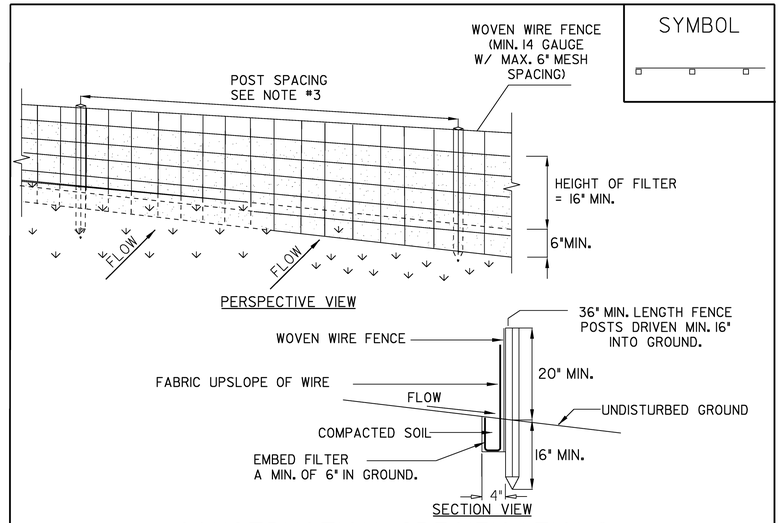
FILTER FABRIC DROP INLET PROTECTION

NOTES:
REFER TO "THE VERMONT STANDARDS & SPECIFICATIONS FOR EROSION PREVENTION & SEDIMENT CONTROL -2006- " FROM THE VT AGENCY OF NATURAL RESOURCES FOR ADDITIONAL GUIDANCE.

THIS ITEM SHALL BE PAID FOR UNDER ITEM
653.40 INLET PROTECTION DEVICE, TYPE I

REVISIONS	
MARCH 8, 2007	JMF

SYMBOL



CONSTRUCTION SPECIFICATIONS

1. WOVEN WIRE FENCE REINFORCEMENT IS ONLY REQUIRED WITHIN 100 FT UPSLOPE OF RECEIVING WATERS.
2. WHERE REQUIRED FENCE SHALL BE WOVEN WIRE, MIN. 14 GAUGE WITH A 6" MAXIMUM MESH OPENING. FILTER CLOTH SHALL BE EITHER FILTER X, MIRAFI100X, STABILINKA T140N OR APPROVED EQUIVALENT.
3. POST SPACING FOR WIRE-BACKED FENCE SHALL BE 10' MAXIMUM. FOR FILTER-CLOTH FENCE, WHEN ELONGATION IS >50%, POST SPACING SHALL NOT EXCEED 4', FOR FILTER-CLOTH FENCE, WHEN ELONGATION IS <50%, POST SPACING SHALL NOT EXCEED 6'.
4. WOVEN WIRE FENCE IS TO BE FASTENED SECURELY TO FENCE POSTS WITH WIRE TIES. FILTER CLOTH IS TO BE FASTENED SECURELY TO WOVEN WIRE FENCE WITH TIES SPACED EVERY 24" AT TOP AND MID SECTION.
5. WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER THEY SHALL BE OVER-LAPPED BY SIX INCHES AND FOLDED.
6. PREFABRICATED UNITS SHALL BE GEOFAB, ENVIROFENCE, OR APPROVED EQUIVALENT.
7. MAINTENANCE SHALL BE PERFORMED AS NEEDED AND MATERIAL REMOVED WHEN SEDIMENT REACHES HALF OF FABRIC HEIGHT.

ADAPTED FROM DETAILS PROVIDED BY: NEW YORK STATE DEC
ORIGINALLY DEVELOPED BY USDA-NRCS
VERMONT DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SILT FENCE

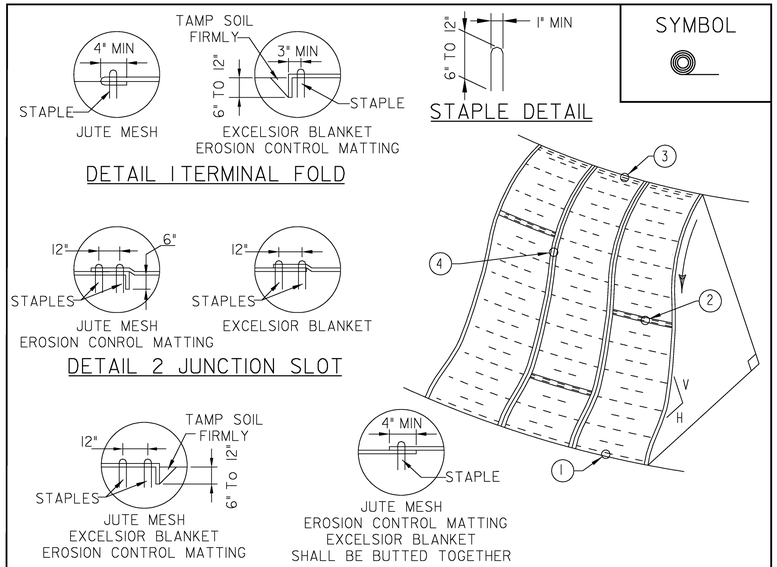
NOTES:
REFER TO "THE VERMONT STANDARDS & SPECIFICATIONS FOR EROSION PREVENTION & SEDIMENT CONTROL -2006- " FROM THE VT AGENCY OF NATURAL RESOURCES FOR ADDITIONAL GUIDANCE.

THIS ITEM SHALL BE PAID FOR UNDER ITEM
STANDARD SPECIFICIATION 649.51 GEOTEXTILE FOR SILT FENCE OR
SPECIAL PROVISION 900.675 (GEOTEXTILE FOR SILT FENCE, WOVEN WIRE REINFORCED)

EPSC DETAIL SHEETS

NTS

PROJECT:	PROJECT NO.:
BERLIN	IM 089-1(20)
DESIGN FILE NAME: 99a270\Structures\s99a270EPSCdetails.dgn	
IPARM FILE NAME: 99a270epscdet1.i	PLOT DATE: 05-DEC-2007
DESIGNED BY: CONST. ENV. SECTION	DRAWN BY: CONST. ENV. SECT.
SQUAD LEADER: C.P. WILLIAMS	CHECKED BY: A. CABRAL
EPSC DETAIL SHEET - 1	SHEET: 79 OF 104



SYMBOL

CONSTRUCTION SPECIFICATIONS

1. APPLY TO SLOPES GREATER THAN 3H:1V OR WHERE NECESSARY TO AID IN ESTABLISHING VEGETATION.
2. APPLY FERTILIZER, LIME AND SEED PRIOR TO PLACING MATTING.
3. STAPLES ARE TO BE PLACED ALTERNATELY, IN COLUMNS APPROXIMATELY 2' APART AND IN ROWS APPROXIMATELY 3' APART. APPROXIMATELY 175 STAPLES ARE REQUIRED PER 4'X225' ROLL OF MATERIAL AND 125 STAPLES ARE REQUIRED PER 4'X150' ROLL OF MATERIAL.
4. DISTURBED AREAS SHALL BE SMOOTHLY GRADED. EROSION CONTROL MATERIAL SHALL BE PLACED LOOSELY OVER GROUND SURFACE. DO NOT STRETCH.
5. ALL TERMINAL ENDS AND TRANSVERSE LAPS SHALL BE STAPLED AT APPROXIMATELY 12" INTERVALS.

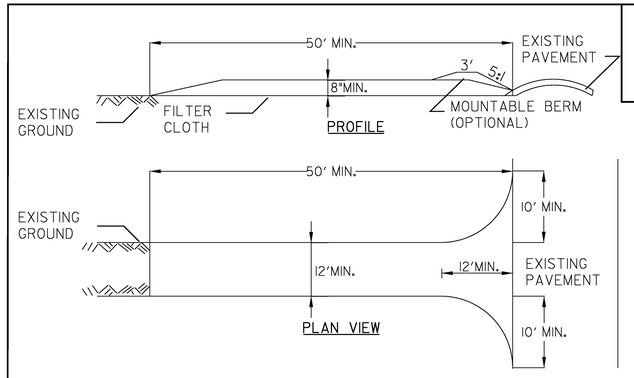
ADAPTED FROM DETAILS PROVIDED BY: ILLINOIS USDA-NRCS
ORIGINALLY DEVELOPED BY USDA-NRCS
VERMONT DEPARTMENT OF ENVIRONMENTAL CONSERVATION

ROLLED EROSION CONTROL PRODUCT (RECP) SIDE SLOPE

NOTES:
REFER TO "THE VERMONT STANDARDS & SPECIFICATIONS FOR EROSION PREVENTION & SEDIMENT CONTROL -2006- " FROM THE VT AGENCY OF NATURAL RESOURCES FOR ADDITIONAL GUIDANCE.

THIS ITEM SHALL BE PAID FOR UNDER ITEM
653.20 TEMPORARY EROSION MATTING OR
653.21 PERMANENT EROSION MATTING

NEW	
APRIL 16, 2007	WHF
REVISIONS	



SYMBOL

CONSTRUCTION SPECIFICATIONS

1. STONE SIZE - USE 1-4" STONE, OR RECLAIMED OR RECYCLED CONCRETE EQUIVALENT.
2. LENGTH - NOT LESS THAN 50 FEET (EXCEPT ON A SINGLE RESIDENCE LOT WHERE A 30 FOOT MINIMUM LENGTH APPLIES).
3. THICKNESS - NOT LESS THAN EIGHT (8) INCHES.
4. WIDTH - TWELVE (12) FOOT MINIMUM, BUT NOT LESS THAN THE FULL WIDTH AT POINTS WHERE INGRESS OR EGRESS OCCURS. TWENTY-FOUR (24) FOOT IF SINGLE ENTRANCE TO SITE.
5. GEOTEXTILE MUST BE PLACED OVER THE ENTIRE AREA PRIOR TO PLACING STONE.
6. SURFACE WATER - ALL SURFACE WATER FLOWING OR DIVERTED TOWARD CONSTRUCTION ENTRANCES SHALL BE PIPED BENEATH THE ENTRANCE. IF PIPING IS IMPRACTICAL, A MOUNTABLE BERM WITH 5:1 SLOPES WILL BE PERMITTED.
7. 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.
8. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH STONE AND WHICH DRAINS INTO AN APPROVED SEDIMENT TRAPPING DEVICE.
9. PERIODIC INSPECTION AND NEEDED MAINTENANCE SHALL BE PROVIDED ACCORDING TO PERMIT REQUIREMENTS.

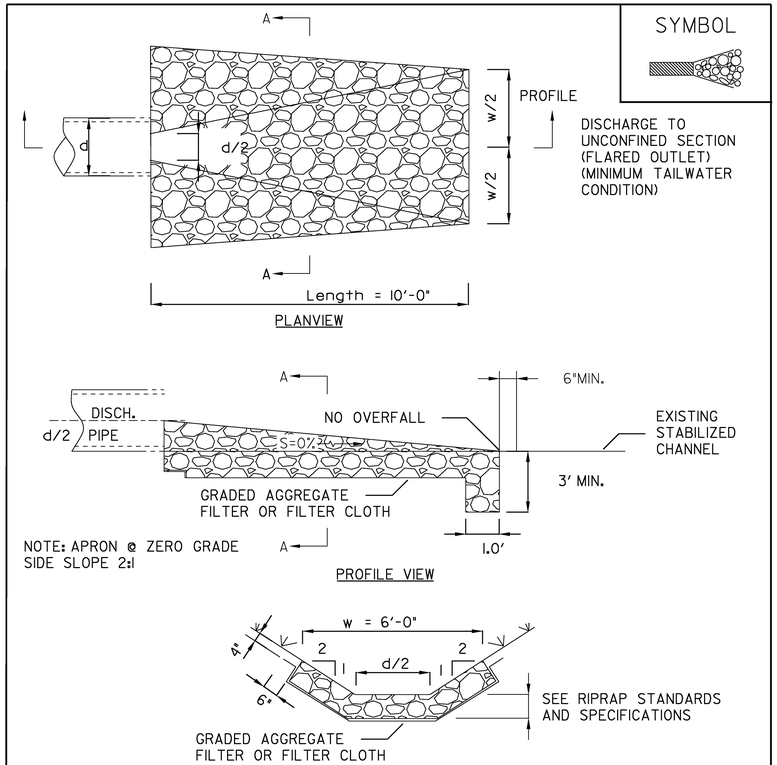
ADAPTED FROM DETAILS PROVIDED BY: NEW YORK STATE DEC
ORIGINALLY DEVELOPED BY USDA-NRCS
VERMONT DEPARTMENT OF ENVIRONMENTAL CONSERVATION

STABILIZED CONSTRUCTION ENTRANCE

NOTES:
REFER TO "THE VERMONT STANDARDS & SPECIFICATIONS FOR EROSION PREVENTION & SEDIMENT CONTROL -2006- " FROM THE VT AGENCY OF NATURAL RESOURCES FOR ADDITIONAL GUIDANCE.

THIS ITEM SHALL BE PAID FOR UNDER ITEM
653.35 VEHICLE TRACKING PAD

REVISIONS	
FEBRUARY 9, 2007	WHF
MARCH 8, 2007	JMF



NOTE:
SEE RIPRAP STANDARDS AND SPECIFICATIONS
MINIMUM TAILWATER CONDITIONS

ADAPTED FROM DETAILS PROVIDED BY: NEW YORK STATE DEC
ORIGINALLY DEVELOPED BY USDA-NRCS
VERMONT DEPARTMENT OF ENVIRONMENTAL CONSERVATION

RIPRAP OUTLET PROTECTION EXAMPLE

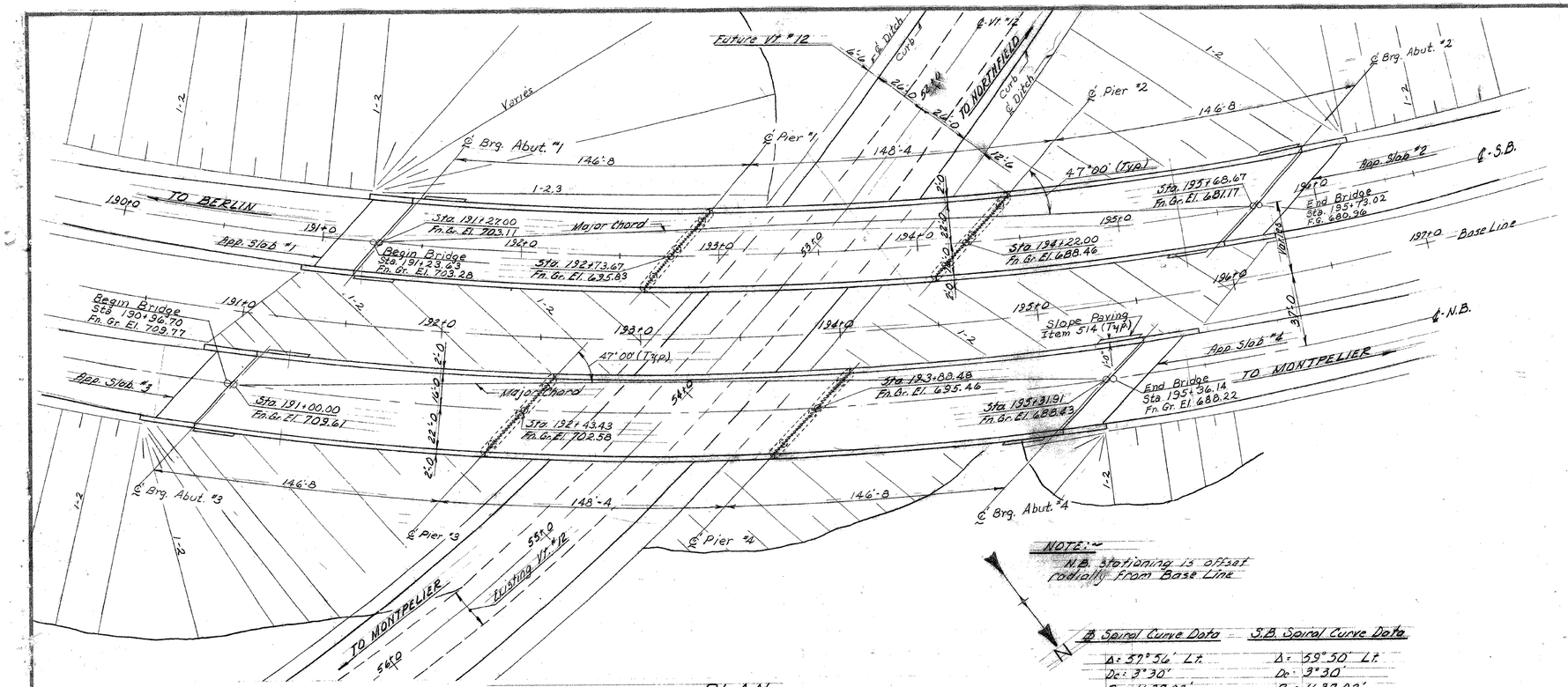
NOTES:
REFER TO "THE VERMONT STANDARDS & SPECIFICATIONS FOR EROSION PREVENTION & SEDIMENT CONTROL -2006- " FROM THE VT AGENCY OF NATURAL RESOURCES FOR ADDITIONAL GUIDANCE.

THIS ITEM SHALL BE PAID FOR UNDER ITEM
653.25 TEMPORARY STONE CHECK DAM, TYPE I

EPSC DETAIL SHEETS

NTS

PROJECT:	PROJECT NO.:
BERLIN	IM 089-1(20)
DESIGN FILE NAME: 99a270\Structures\s99a270EPSCdetails.dgn	
IPARM FILE NAME: 99a270epscdet2.i	PLOT DATE: 05-DEC-2007
DESIGNED BY: CONST. ENV. SECTION	DRAWN BY: CONST. ENV. SECT.
SQUAD LEADER: C.P. WILLIAMS	CHECKED BY: A. CABRAL
EPSC DETAIL SHEET - 2	SHEET: 80 OF 104

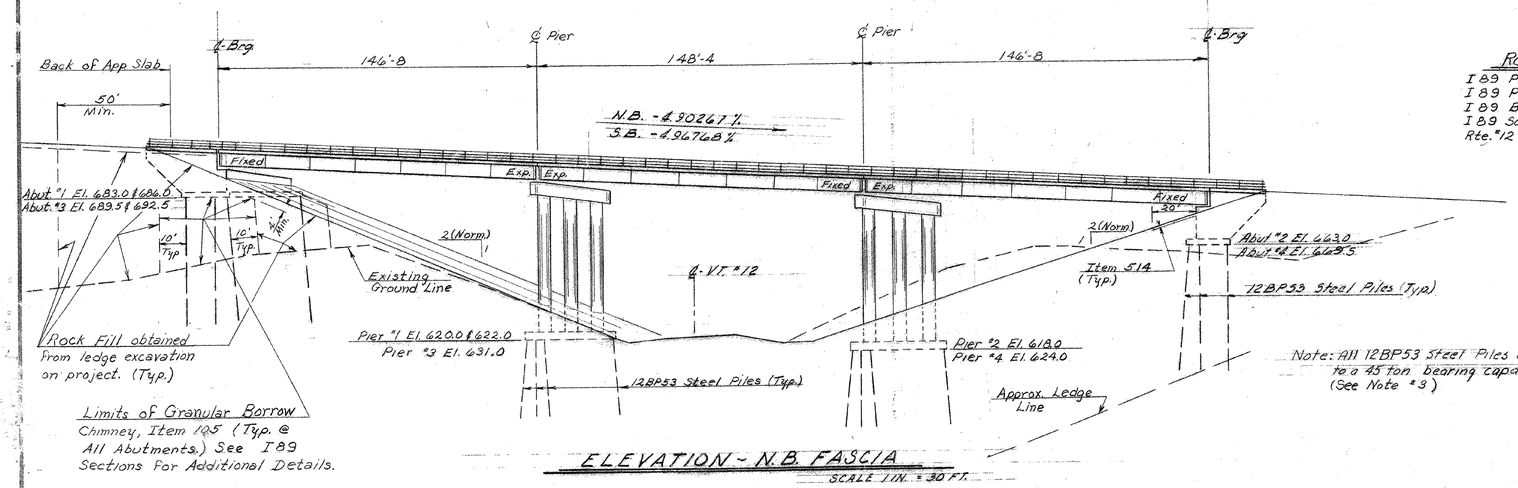


PLAN

SCALE 1 IN. = 30 FT.

NOTE:- N.B. stationing is offset radially from Base Line

℄ Spiral Curve Data	S.B. Spiral Curve Data
Δ: 37°56' Lt.	Δ: 39°50' Lt.
Dc: 3°30'	Dc: 3°30'
Rc: 1637.02'	Rc: 1637.02'
Θs: 7°00'	Θs: 7°00'
Δc: 23°56'	Δc: 25°50'
Es: 238.12	Es: 256.36'
Bank: 1 5/16"/Ft.	Bank: 1 7/16"/Ft.



ELEVATION - N.B. FASCIA

SCALE 1 IN. = 30 FT.

Note: All 12 BP 53 Steel Piles are to be driven to a 45 ton bearing capacity. (See Note #3)

General Notes

1. For additional General Notes see Std. Sh. SCB-D1-67.
2. Elevation Datum is sea level based on nearest U.S. Government vertical control.
3. All Piling shall be steel 12 BP 53. Piling for Abut. #2 shall be driven to point bearing on ledge. Piling for all other substructure units shall be driven to such depth as is determined by Pile Loading Tests to be required to develop bearing of 45 tons per pile, except that all Piles shall penetrate 10 Ft. minimum into existing ground regardless of bearing capacity.
4. Where bottom of footing elevation is above old ground, Fill is to be placed 0.5 feet above bottom of footing elevation before Piles are driven. Excavation of this material to bottom of footing elevation after piles are driven shall be paid for as Structure Excavation, Item 109.
5. Superstructure and Pier Column and Cap concrete shall be Class AA, Mod. All other concrete shall be Class B, Mod.
6. Bridge railing is to be as detailed on Std. Sheet SB-R1-64, Sh. 1 & 2 of 2, or SB-R2-65. Post spacing shall not exceed maximum shown on Standards.
7. Wing Wall sections are not to be placed above adjacent bridge seat elevation until beams have been profiled and final grade determined by the Engineer.
8. Water Repellent, Item 440, shall be used as follows:
   Abutments & Wings - All exposed surfaces not otherwise treated.
   Piers - Columns above grade; sides, ends, and bottoms of Pier Caps
   Superstructure - Top of concrete curb, Fascia, and bottom of deck from Fascia to exterior beam.
9. For details of construction joints see Std. SCB-D6-67, Det. B.
10. Scuppers are to be placed as detailed on BR. 413.
11. All bridge geometry at Abutments #2 and #4 bridge ends is based on an extension of the S.B. and Base Line curves beyond the C.S. rather than on the true spiral ℄.

List of Bridge Sheets

Roadway Reference Sheets

I 89 Profile Sheet	Sta. 185+0 - 201+0
I 89 Plan Sheet	Sta. 185+0 - 201+0
I 89 Base Line Sections	Sta. 190+50 - 196+0
I 89 Southbound Sections	Sta. 190+50 - 196+0
Rte. #12 Sections	Sta. 49+50 - 56+50

Standard Sheets

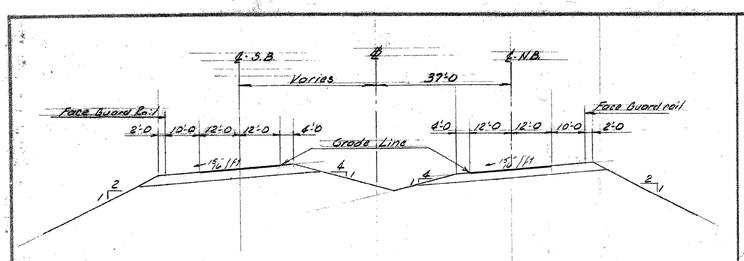
SCB-D1-67	1-24-68
SCB-D6-67, Det. A, B, & F	1-24-68
SB-R1-64 Sh. 1 of 2	1-31-68 R
SB-R1-64 Sh. 2 of 2	11-8-66 R
SB-R2-65	11-8-66 R

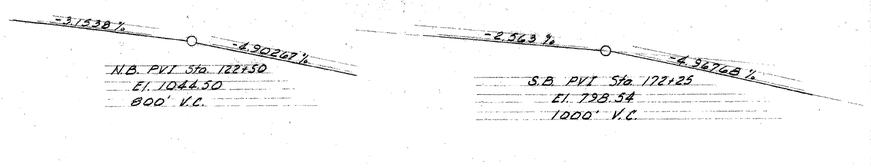
THIS SHEET FOR REFERANCE ONLY
BERLIN IM 089-1(20)
BRIDGES 40 N&S

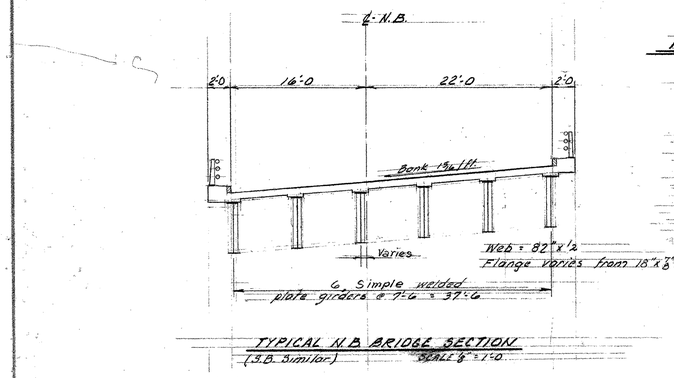
SHEET 81 OF 104

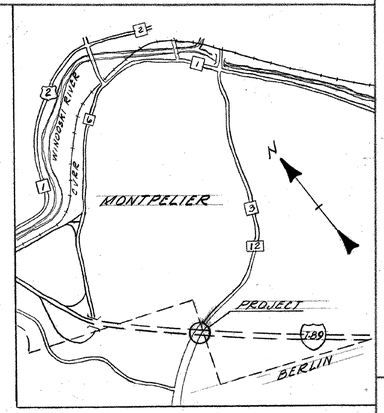
STATE OF VERMONT
DEPARTMENT OF HIGHWAYS

PROJECT:- BERLIN-MONTPELIER
TOWNS OF BERLIN & MONTPELIER
ROUTE NO. I 89 STA 193+50
I-89 OVER VT. RTE. 12
PLAN AND ELEVATION
SCALE As Shown
IN CHARGE W. Smith
DRAWN BY P. Oatley & W. Tripp CHECKED BY T. Gilman & W. Lane 5-67
PROJECT NO. I 89-1(12)
SHEET 151 OF 497 BR. 400









NEW HIGHWAY SECT. STA. *190+0* TO STA. *197+0*

SCALE *1 IN = 20 FT.*

NEW HIGHWAY PROFILE ALONG *N.B. & S.B. LANES*

TYPICAL N.B. BRIDGE SECTION

(S.B. Similar) *SCALE 1/8" = 1'-0*

NOTES:~

1- *For General Notes and allowable design stresses see SCB-D1-67*

2- *For additional details of superstructure see BR. 406.*

3- *For details of railing see SB-R1-64 & SB-R2-65*

PROJECT LOCATION

FUTURE TYPICAL SECTION · VT. RTE. 12

SCALE 3/32" = 1'-0

ESTIMATED PILE LENGTHS (12 BP 53)

Abut. No. 1	50'
Abut. No. 2	45'
Abut. No. 3	55'
Abut. No. 4	40'
Pier No. 1	35'
Pier No. 2	25'
Pier No. 3	30'
Pier No. 4	30'

PROFILE OF EXISTING VT. RTE. # 12

HORIZONTAL SCALE 1 IN = 40 FT.

VERTICAL SCALE 1 IN = 20 FT.

HIGHWAY NO. *I-89* NAME OF HIGHWAY *Interstate*

STRUCTURE NO. ______ COUNTY *Washington* TOWNS *Berlin & Montpelier*

PROJECT NO. *I-89-1(12)* LOCATION *I-89 over VT. RTE. 12*

EXISTING STRUCTURE

~~1 RATED LOADING OF EXISTING STRUCTURE~~
~~2 TYPE OF EXISTING STRUCTURE~~
~~3 UNDERCLEARANCE ELEVATION OF EXISTING STRUCTURE~~
~~4 WHAT DISPOSITION SHOULD BE MADE OF EXISTING STRUCTURE? COST OF REMOVAL~~
~~5 SHOULD EXISTING STRUCTURE BE USED TO MAINTAIN TRAFFIC DURING CONSTRUCTION OF NEW STRUCTURE?~~
~~6 SHOULD NEW TEMPORARY STRUCTURE BE BUILT?~~
~~7 ORDINARY HIGH WATER SURFACE ELEV. AT EXISTING STRUCTURE WATERWAY TO ORDINARY H.W.~~
~~8 EXTREME HIGH WATER AT EXISTING STRUCTURE~~
~~9 SPAN OF EXISTING BRIDGE UPSTREAM WATERWAY TO EXTREME H.W.~~
~~SPAN OF EXISTING BRIDGE DOWNSTREAM WATERWAY TO EXTREME H.W.~~
~~10 TYPE OF FOUNDATION UNDER EXISTING ABUTMENTS~~
~~11 DOES ALL WATER AT FLOOD ELEVATION PASS THROUGH EXISTING STRUCTURE?~~
~~12 IF NOT AT WHAT ELEVATION IS RELIEF AFFORDED?~~
~~13 ADDITIONAL WATERWAY AREA PROVIDED~~

NEW STRUCTURE

1 RECOMMENDED TYPE OF STRUCTURE *Simple Composite ℙ Girders*
2 RECOMMENDED CLEAR SPAN OR SPANS *145'-145'-145' c.c. Bearings*
MEASURED PARALLEL TO ℄ NEW HIGHWAY
~~MEASURED AT RIGHT ANGLES TO ℄ STREAM~~
~~3 ARE THERE OBJECTIONS TO A PIER IN THE STREAM? ANSWER YES OR NO~~
~~4 ORDINARY HIGH WATER ELEVATION AT NEW STRUCTURE~~
~~5 EXTREME HIGH WATER ELEVATION AT NEW STRUCTURE SOURCE OF INFORMATION~~
~~6 IS ALL WATER INTENDED TO PASS THROUGH NEW STRUCTURE?~~
~~7 DOES STREAM REACH ITS MAXIMUM HIGH WATER ELEVATION RAPIDLY? IS ORDINARY RISE RAPID?~~
~~8 LOW WATER ELEVATION AT NEW STRUCTURE~~
~~9 DRAINAGE AREA IN ACRES ABOVE STRUCTURE CHARACTER OF TERRAIN~~
~~10 IS STREAM EVER DRY~~
~~11 VELOCITY OF STREAM AT HIGH WATER STAGE ESTIMATED DISCHARGE~~
~~12 AREA FULL OPENING AREA BELOW ORDINARY H.W.~~
~~13 CHARACTER OF SCOUR DRIFT ICE~~
~~14 ESTIMATED DRAINAGE AREA ABOVE NATURAL OR ARTIFICIAL STORAGE~~
~~15 VERTICAL CLEARANCE ABOVE FLOOD ELEVATION~~
16 ARE SIDEWALKS REQUIRED? IF SO ON WHAT SIDE? *No* BOTH SIDES
17 RECOMMENDED TYPE OF PAVEMENT *8" Reinforced concrete with 2" bituminous surface*
18 TRAFFIC TO BE MAINTAINED UNDER ITEM NO. *111* ONE OR TWO WAYS *2* PROBABLE COST —
19 PROBABLE COST OF CLEARING AND GRUBBING STREAM CHANNEL AT STRUCTURE SITE
20 SHOULD PROVISIONS BE MADE FOR PUBLIC UTILITIES? *No*
21 ESTIMATED ALLOWABLE LOAD ON FOUNDATIONS *45 Tons/Pile* SHOULD PILES BE USED? *Yes* EST. LGTH. *See Table*

FOUNDATION INFORMATION

OBTAINED FOR DESIGN PURPOSES ONLY, AND THE STATE ASSUMES NO RESPONSIBILITY WHATSOEVER FOR THE SUFFICIENCY OR ACCURACY OF THE INFORMATION SHOWN. BOULDERS MAY BE ENCOUNTERED AT ANY PIER OR ABUTMENT LOCATION.

THIS SHEET FOR REFERANCE ONLY
BERLIN IM 089-1(20)
BRIDGES 40 N&S

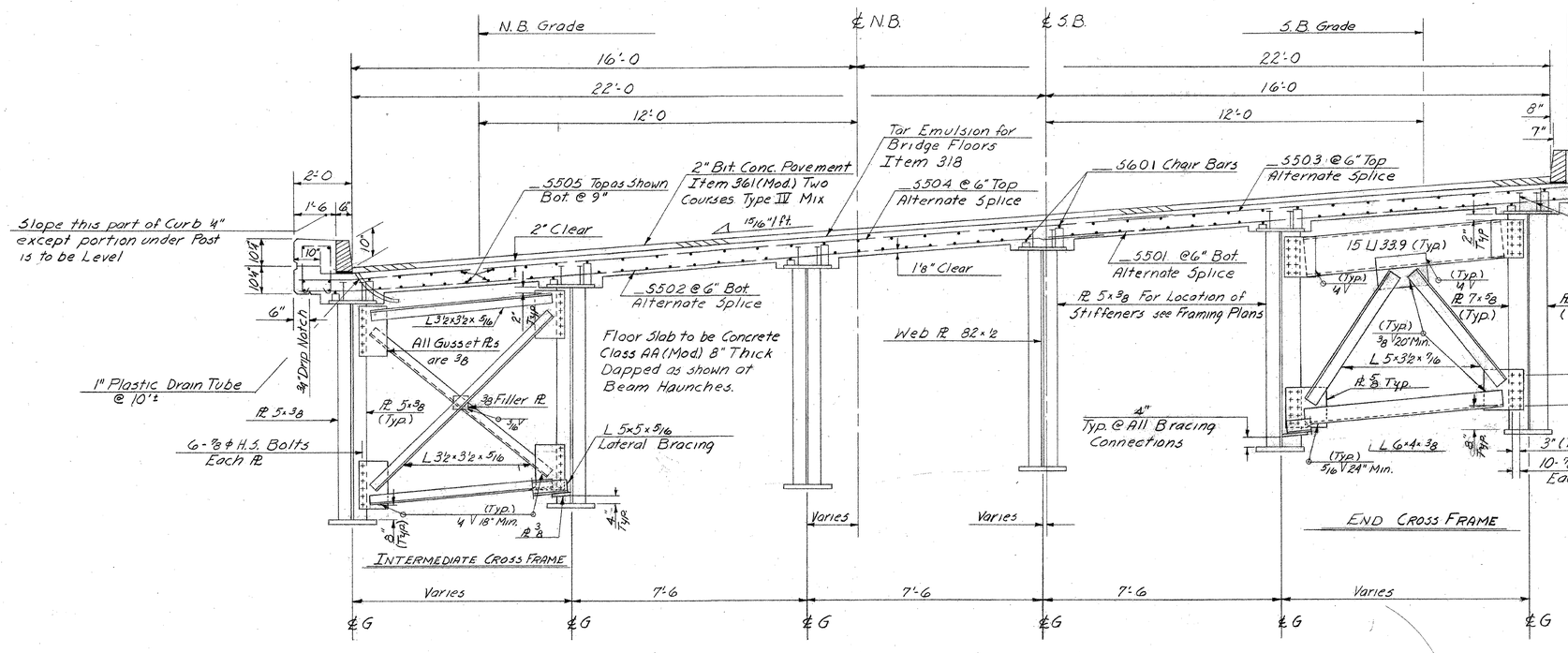
SHEET 82 OF 104

RECOMMENDED FOR APPROVAL *R J Funk* CONST. ENGINEER *6/6/67* DATE
RECOMMENDED FOR APPROVAL BRIDGE ENGINEER *6/5/67* DATE
RECOMMENDED FOR APPROVAL *E. W. Stickney* ASST. CHIEF ENGINEER *6/5/67* DATE
APPROVED BY: *R. W. Arnold* CHIEF ENGINEER *6/6/67* DATE

STATE OF VERMONT
DEPARTMENT OF HIGHWAYS
INTERSTATE IN THE TOWNS OF
BERLIN & MONTPELIER
ROUTE NO. *I-89* STA. *193+50*
I-89 OVER VT. RTE. 12
PRELIMINARY INFORMATION

SURVEYED BY DRAWN BY *R. Oatley*	CHECKED BY *F. Gilman* IN CHARGE *W. Smith*	SCALE *As shown* DATE *Dec. 1966*
PROJECT NO. *I-89-1(12)*	SHEET *153* OF *497*	

BR. 402

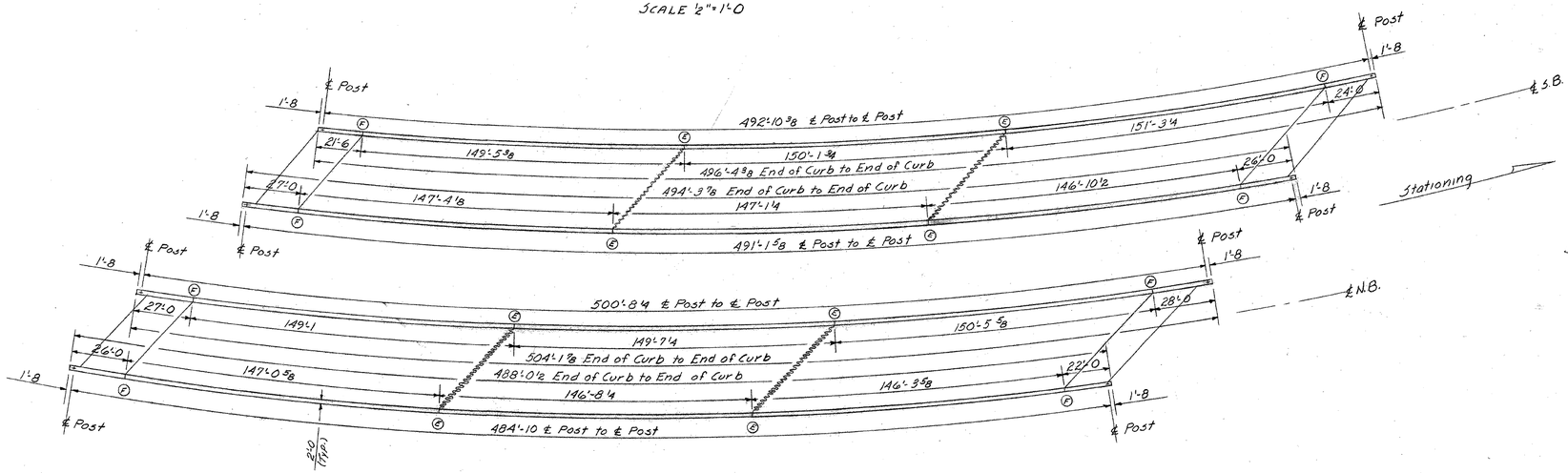


INTERMEDIATE CROSS FRAME

END CROSS FRAME

SHEAR CONNECTOR AND HAUNCH DETAILS
SCALE 1"=1'-0

TYPICAL SECTION
SCALE ½"=1'-0



CURB AND RAILING PLAN
SCALE 1"=30'-0

All Dimensions are Arc Dimensions
Ⓔ Provide 3" expansion in railing across this joint
Ⓕ Provide ¾" expansion in railing across this joint

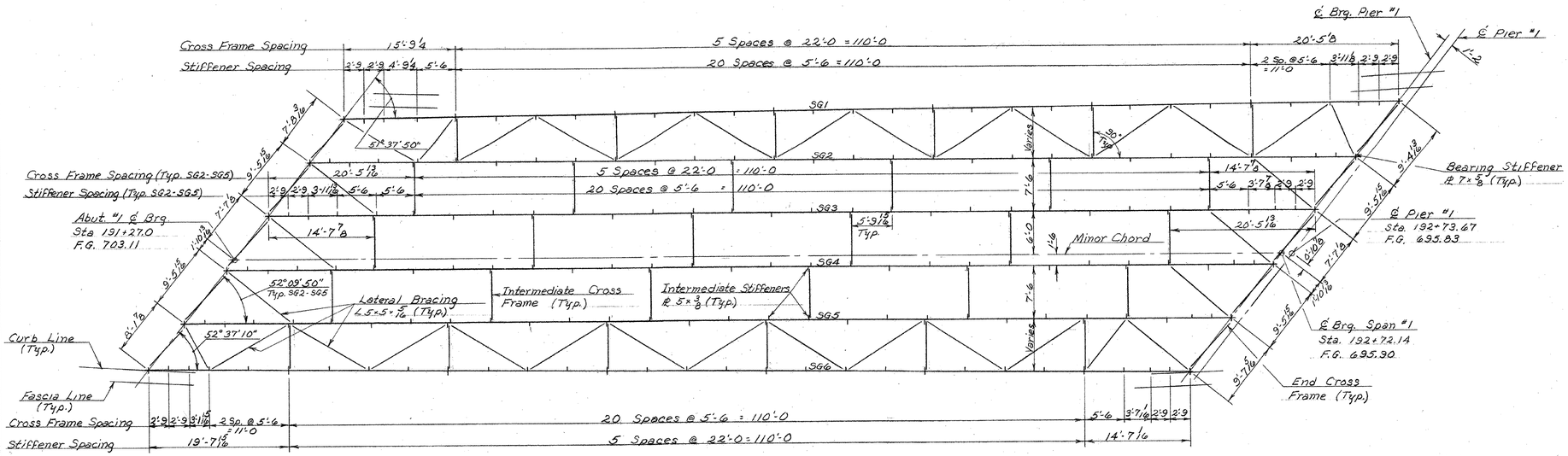
See BR. 400 for General Notes

THIS SHEET FOR REFERANCE ONLY
BERLIN IM 089-1(20)
BRIDGES 40 N&S

SHEET 83 OF 104

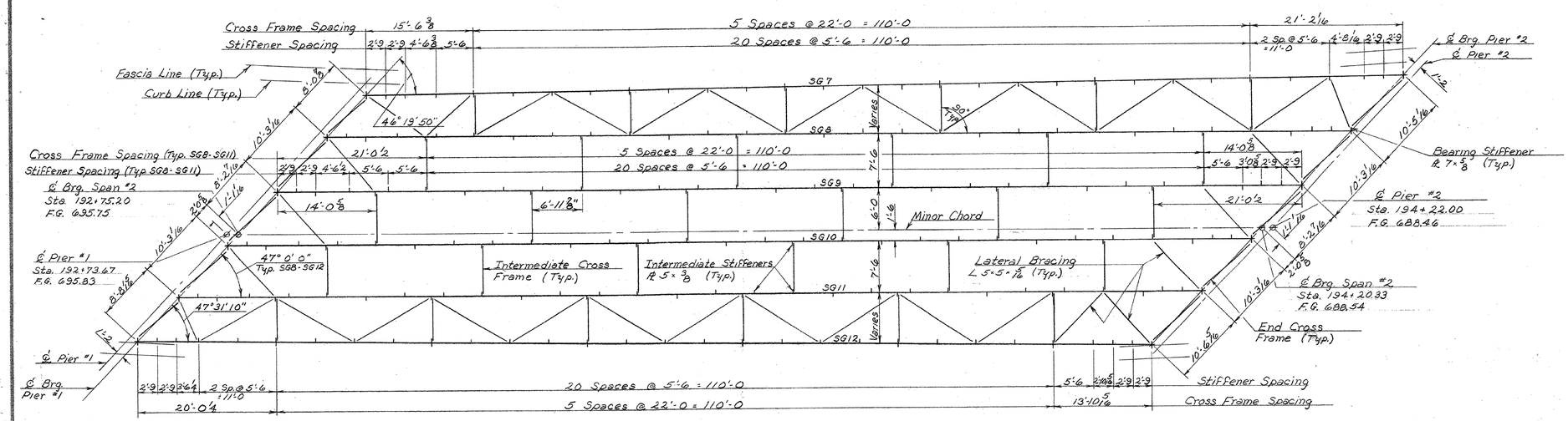
STATE OF VERMONT
DEPARTMENT OF HIGHWAYS

PROJECT BERLIN-MONTPELIER
TOWNS OF BERLIN & MONTPELIER
ROUTE NO. I-89 STA. 193+50±
I-89 OVER VT. RTE. #12
TYPICAL SECTION AND CURB & RAILING PLAN
SCALE AS SHOWN
IN CHARGE W. SMITH
DRAWN BY E. GILMAN CHECKED BY W. TRIPP 11-67
PROJECT NO. I-89-1(12)
SHEET 157 OF 492 BR. 406



S.B. SPAN #1 FRAMING PLAN

SCALE: ⅛" = 1'-0



S.B. SPAN #2 FRAMING PLAN

SCALE: ⅛" = 1'-0

NOTES

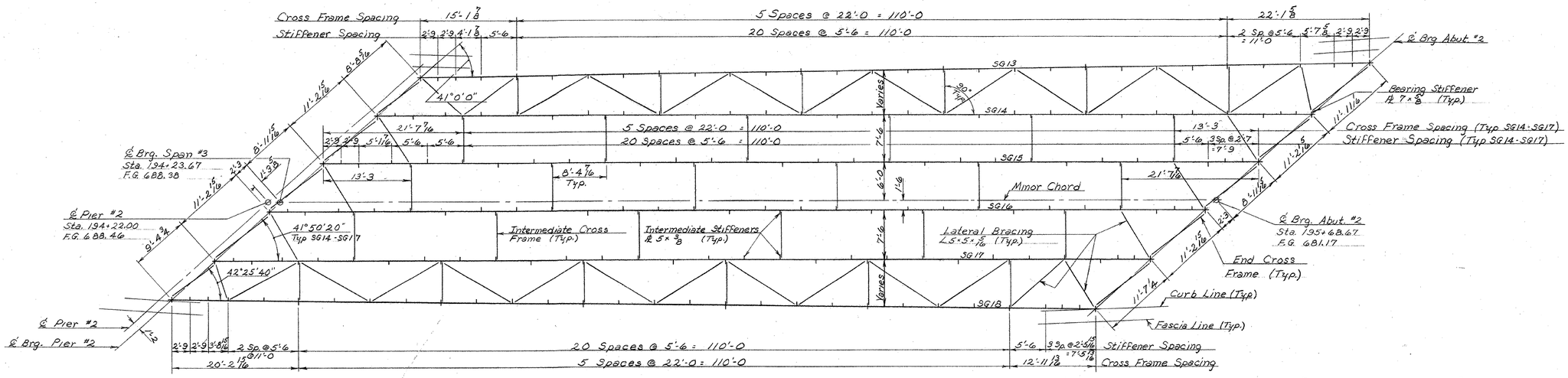
1. See Br. 400 for General Notes.
2. See Br. 408 for S.B. Girder Elevation.
3. See Br. 411 for Framing Details.
4. See Br. 406 for Intermediate and End Cross Frame details.

THIS SHEET FOR REFERANCE ONLY
BERLIN IM 089-1(20)
BRIDGES 40 N&S

SHEET 84 OF 104

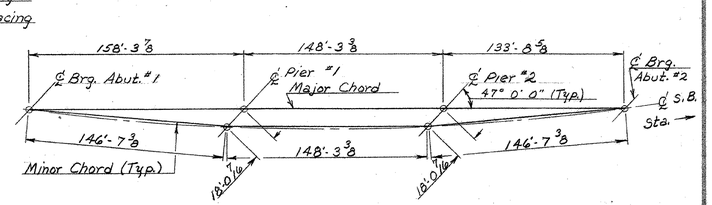
STATE OF VERMONT
DEPARTMENT OF HIGHWAYS

PROJECT BERLIN - MONTPELIER
TOWNS OF BERLIN & MONTPELIER
ROUTE NO. I 89 STA. 193+50±
I 89 OVER VT. 12
S.B. SPAN #1 & #2 FRAMING PLAN
SCALE AS NOTED
IN CHARGE W. SMITH
DRAWN BY W. TRIPP CHECKED BY R. LADD 11-67
PROJECT NO. I 89-1(12)
SHEET 158 OF 497 BR. 407



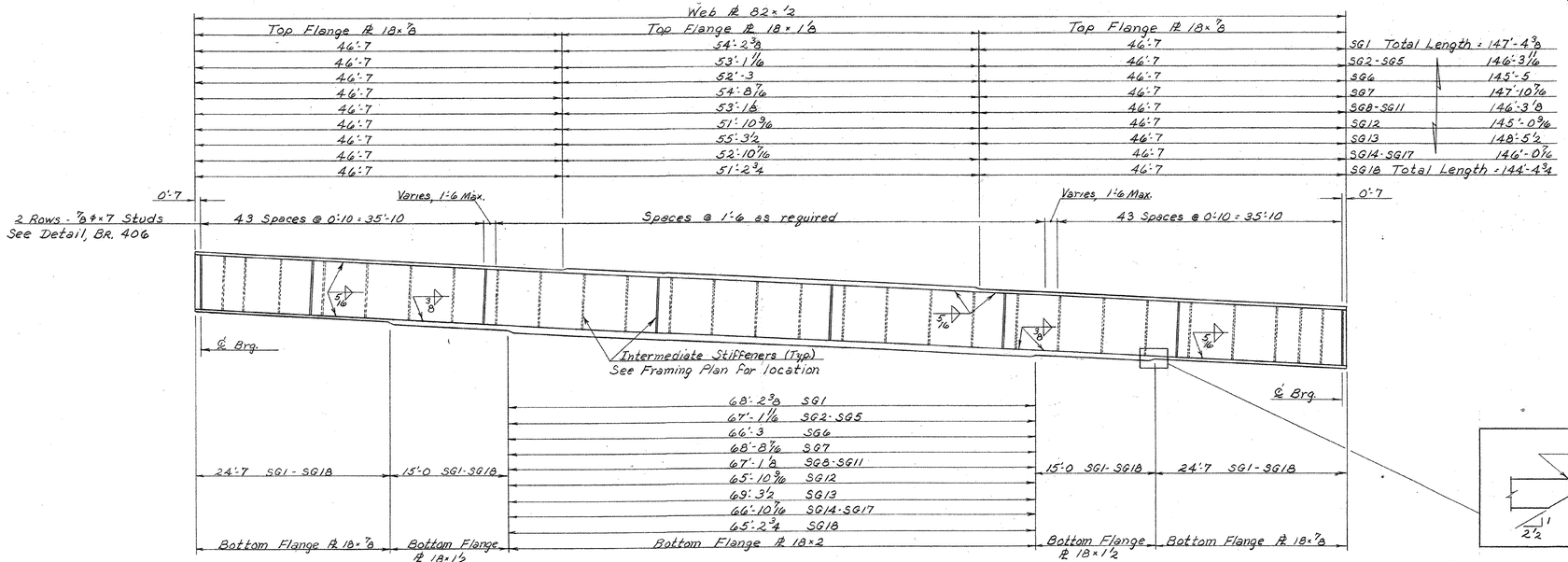
S.B. Span #3 Framing Plan

Scale: 1/8" = 1'-0



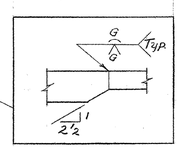
S.B. Chord Layout

N.T.S.



Typical Southbound Girder Elevation

Scale: 1/8" = 1'-0



Typical Flange Butt Weld

N.T.S.

Notes

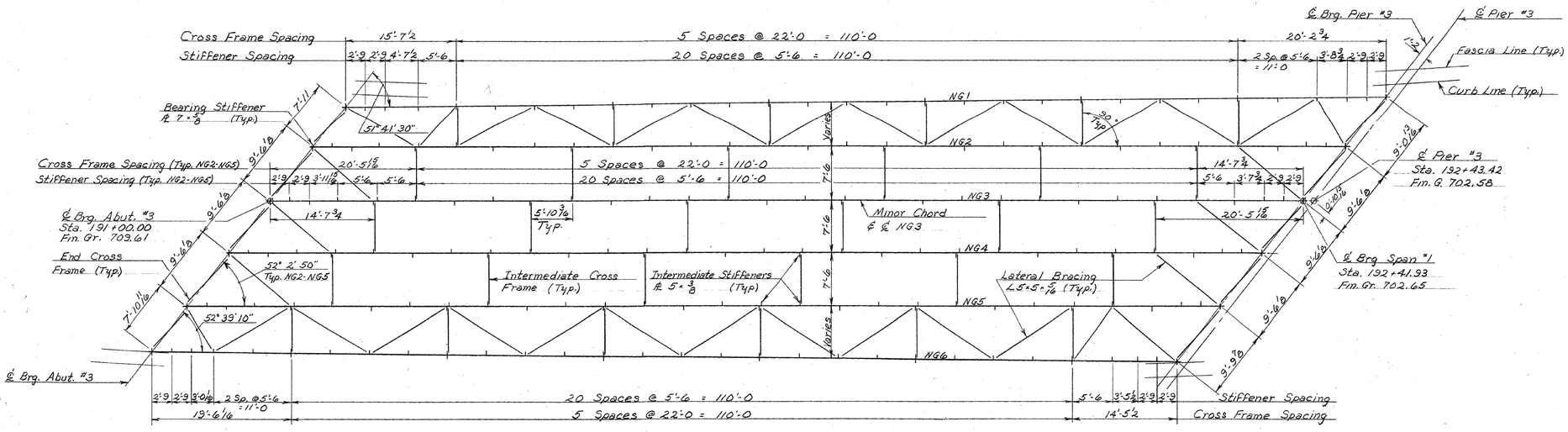
1. See Br. 400 for General Notes.
2. See Br. 411 for Framing Details
3. See Br. 406 for Intermediate and End Cross Frame Details.

THIS SHEET FOR REFERANCE ONLY
BERLIN IM 089-1(20)
BRIDGES 40 N&S

SHEET 85 OF 104

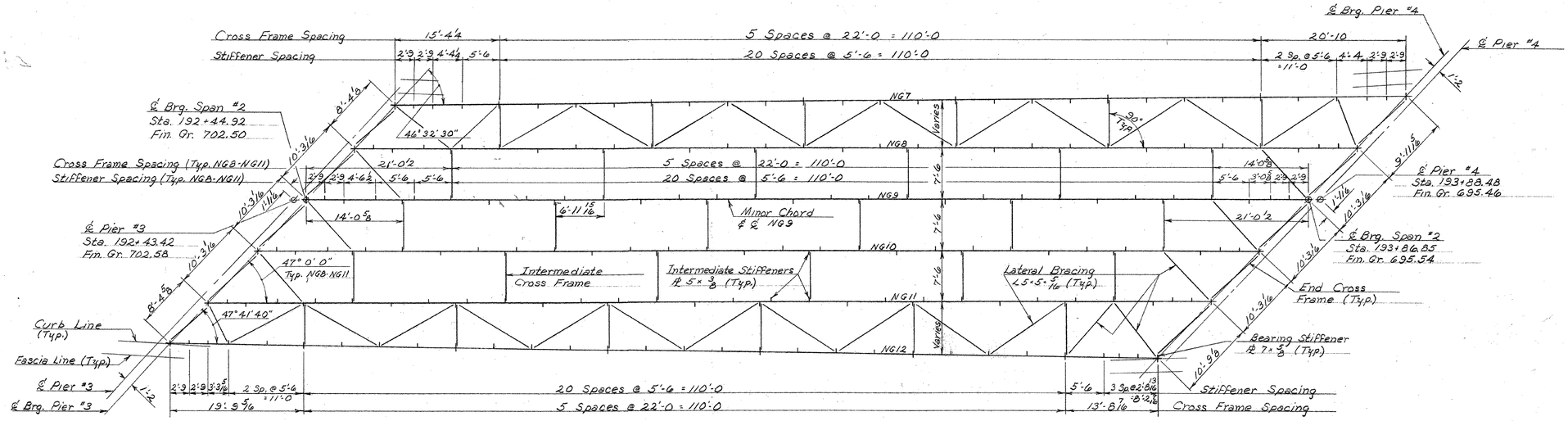
STATE OF VERMONT
DEPARTMENT OF HIGHWAYS

PROJECT BERLIN-MONTPELIER
TOWNS OF BERLIN & MONTPELIER
ROUTE NO. I89 STA. 193+50±
I 89 OVER VT. 12
S.B. SPAN #3 FRAMING PLAN & GIRDER ELEV.
SCALE AS NOTED
IN CHARGE W. SMITH
DRAWN BY W. TRIPP CHECKED BY R. LADD 11-67
PROJECT NO. I 89-1(12)
SHEET 139 OF 187 BR. 408



N.B. SPAN #1 FRAMING PLAN

SCALE: ⅛" = 1'-0



N.B. SPAN #2 FRAMING PLAN

SCALE: ⅛" = 1'-0

NOTES

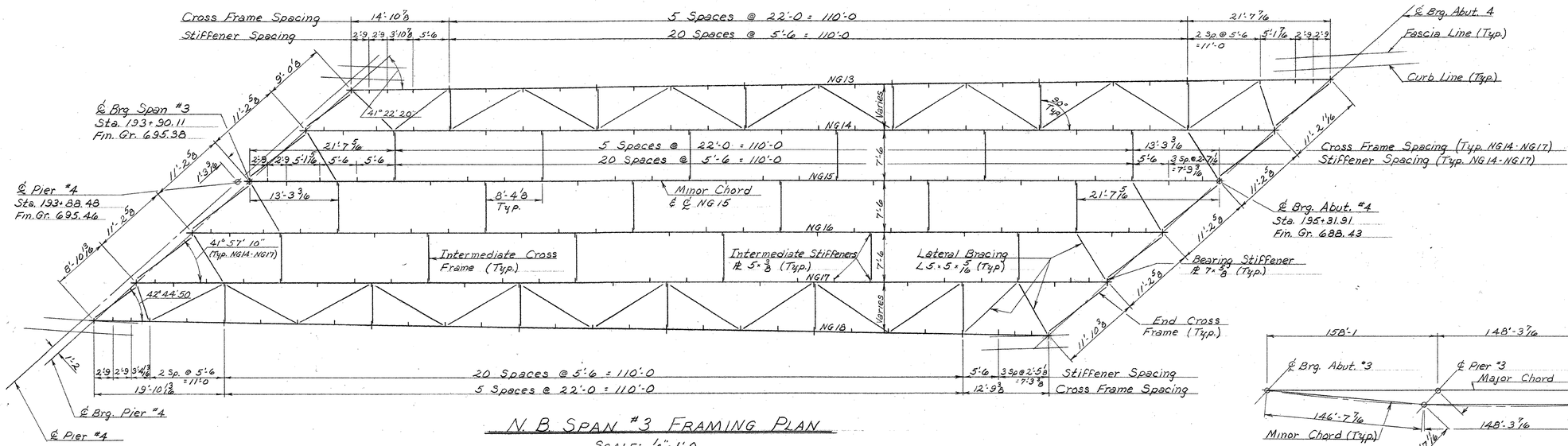
1. See BR. 400 For General Notes.
2. See BR. 410 For N.B. Girder Elevation.
3. See BR. 411. For Framing Details.
4. See BR. 406 For Intermediate and End Cross Frame Details.

THIS SHEET FOR REFERANCE ONLY
BERLIN IM 089-1(20)
BRIDGES 40 N&S

SHEET 86 OF 104

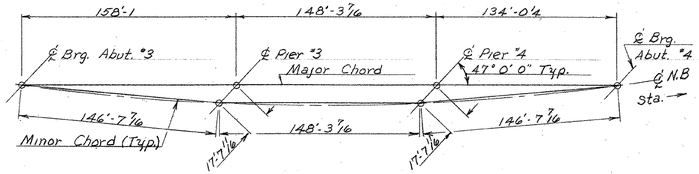
STATE OF VERMONT
DEPARTMENT OF HIGHWAYS

PROJECT BERLIN - MONTPELIER
TOWNS OF BERLIN & MONTPELIER
ROUTE NO. I 89 STA. 193+50±
I 89 OVER VT 12
N.B. SPANS #1 & #2 FRAMING PLAN
SCALE AS NOTED
IN CHARGE W. SMITH
DRAWN BY W. TRIPP CHECKED BY P. LADD 11-67
PROJECT NO. I 89-1(12)
SHEET 160 OF 497 BR. 409



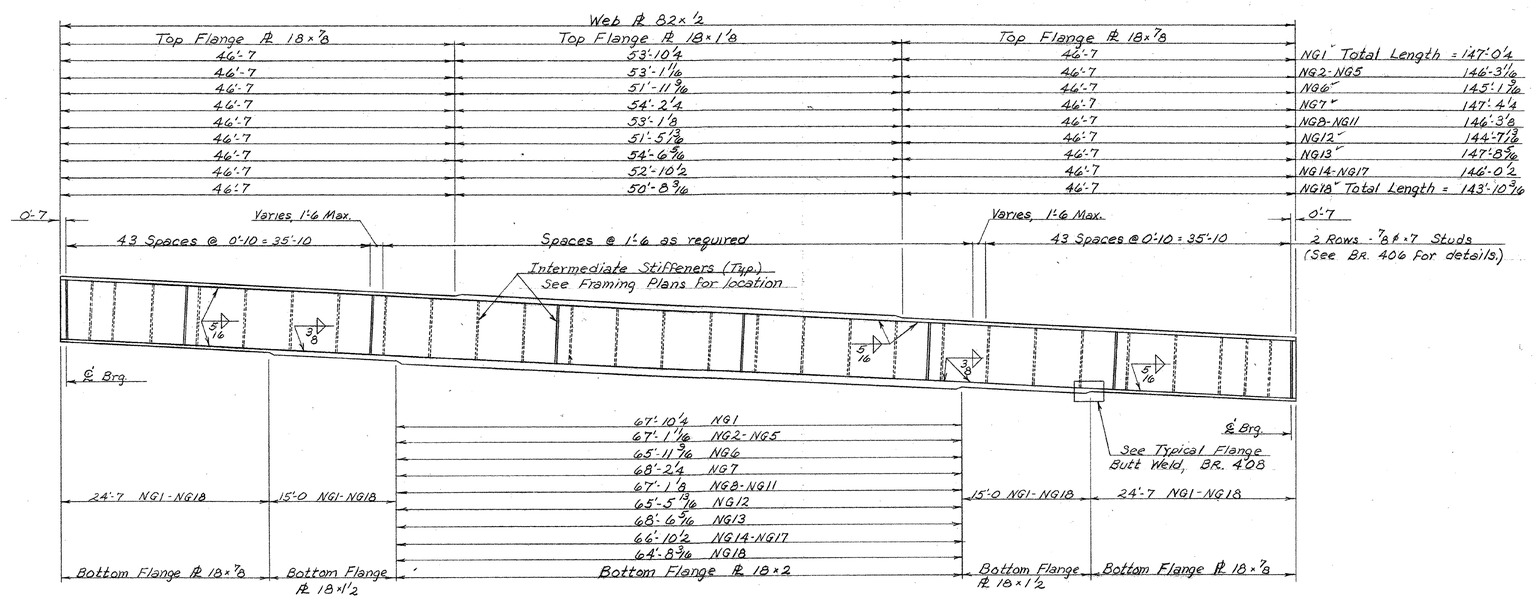
N. B. Span #3 Framing Plan

Scale: 1/8" = 1'-0



N. B. Chord Layout

N. T. S.



Typical Northbound Girder Elevation

Scale: 1/8" = 1'-0

Notes

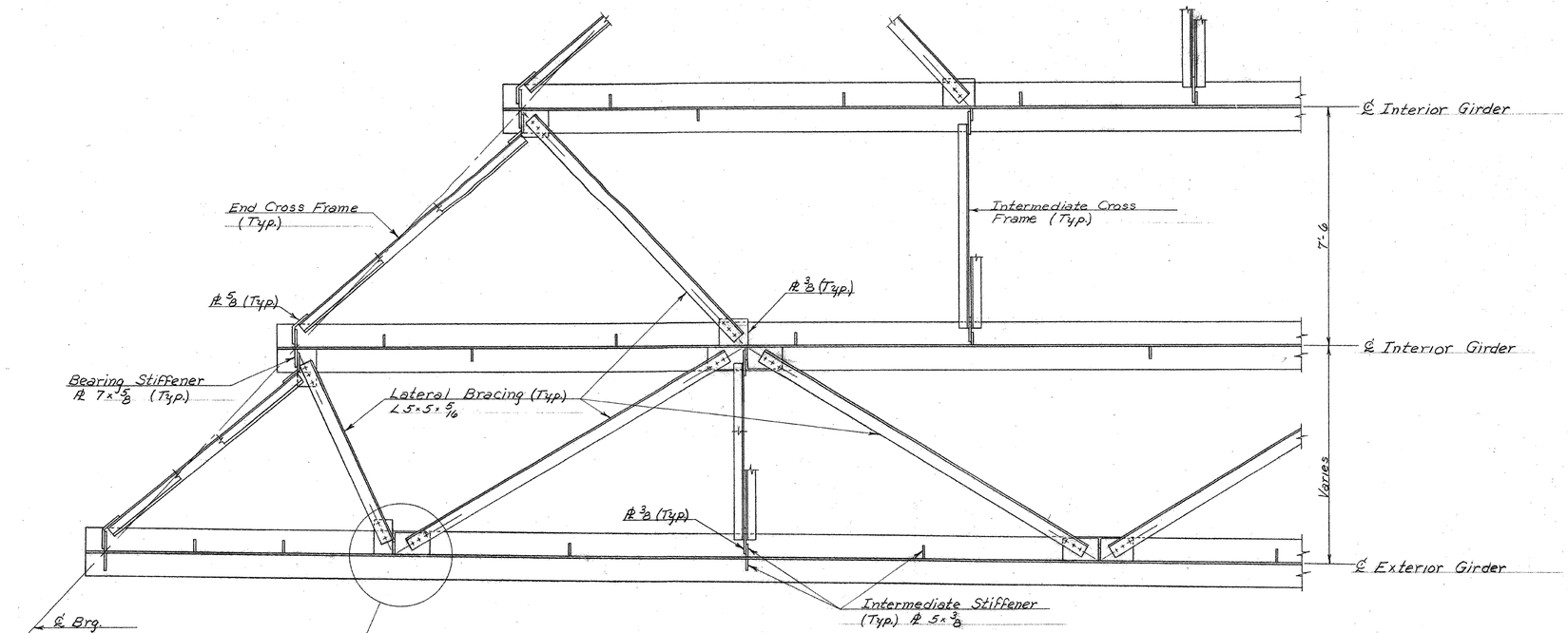
1. See BR. 400 for General Notes.
2. See BR. 411 for Framing Details.
3. See BR. 406 For Intermediate and End Cross Frame Details.

THIS SHEET FOR REFERANCE ONLY
BERLIN IM 089-1(20)
BRIDGES 40 N&S

SHEET 87 OF 104

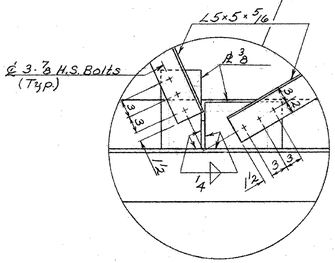
STATE OF VERMONT
DEPARTMENT OF HIGHWAYS

PROJECT BERLIN-MONTPELIER
TOWNS OF BERLIN & MONTPELIER
ROUTE NO. I 89 STA. 193+50±
I 89 OVER VT. 12
N.B. SPAN #3 FRAMING PLAN & GIRDER ELEV.
SCALE AS NOTED
IN CHARGE W. SMITH
DRAWN BY W. TRIPP CHECKED BY R. LADD 11-67
PROJECT NO. I 89-1(12)
SHEET 161 OF 497 BR. 410



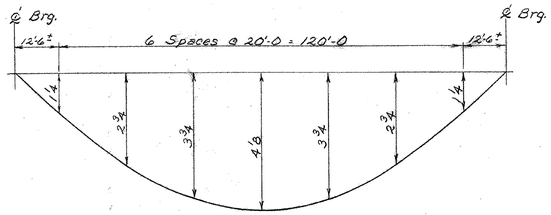
FRAMING PLAN DETAILS

SCALE: 1/2" = 1'-0



LATERAL BRACING CONNECTION DETAIL

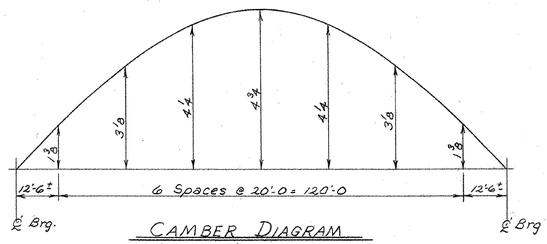
SCALE: 1" = 1'-0



DEAD LOAD DEFLECTION DIAGRAM

(DUE TO WEIGHT OF GIRDER, BRACING, SLAB, CURBS, RAILING, & PAVEMENT)

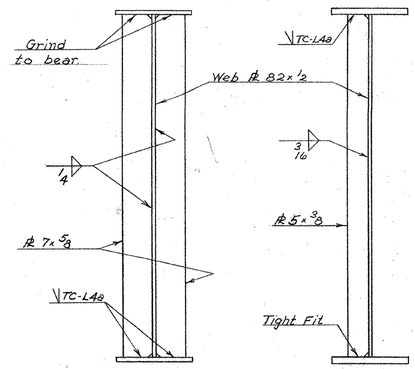
NOT TO SCALE



CAMBER DIAGRAM

(SIMILAR ALL GIRDERS)

NOT TO SCALE



BEARING INTERMEDIATE STIFFENER DETAILS

SCALE: 3/4" = 1'-0

NOTES

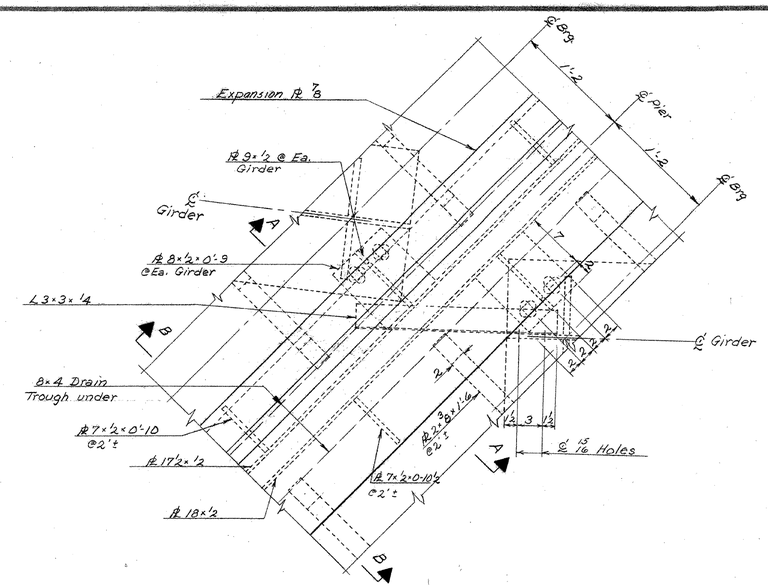
1. See BR 400 For General Notes.
2. See BR. 406 for additional details of Bracing and Cross Frames.

THIS SHEET FOR REFERANCE ONLY
BERLIN IM 089-1(20)
BRIDGES 40 N&S

SHEET 88 OF 104

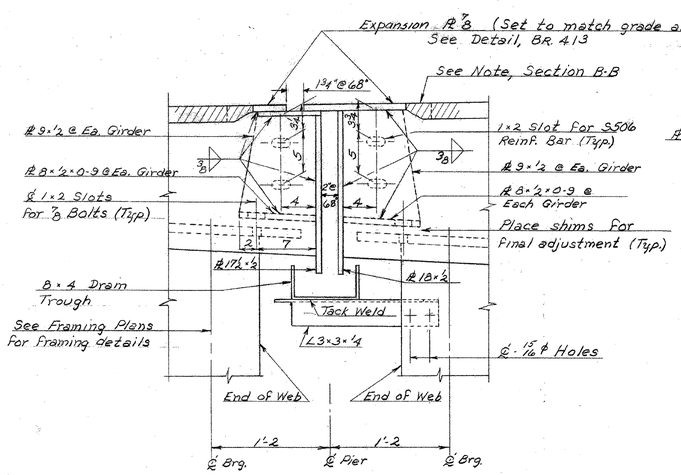
STATE OF VERMONT
DEPARTMENT OF HIGHWAYS

PROJECT BERLIN-MONTPELIER
TOWNS OF BERLIN & MONTPELIER
ROUTE NO I 89 STA. 193+50±
I 89 OVER VT. 12
GIRDER & BRACING DETAILS
SCALE As Noted
IN CHARGE W. SMITH
DRAWN BY W. TRIPP CHECKED BY R LADD 11-67
PROJECT NO. I 89-1(12)
SHEET 162 OF 497 BR. 411.



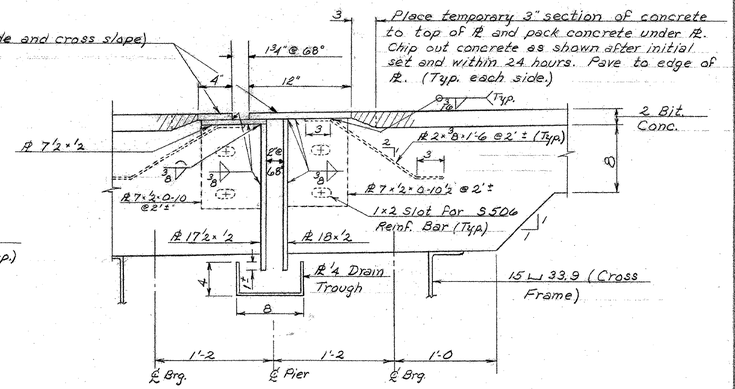
PLAN AT INTERIOR GIRDERS (TYPICAL)

SCALE: 1/2" = 1'-0



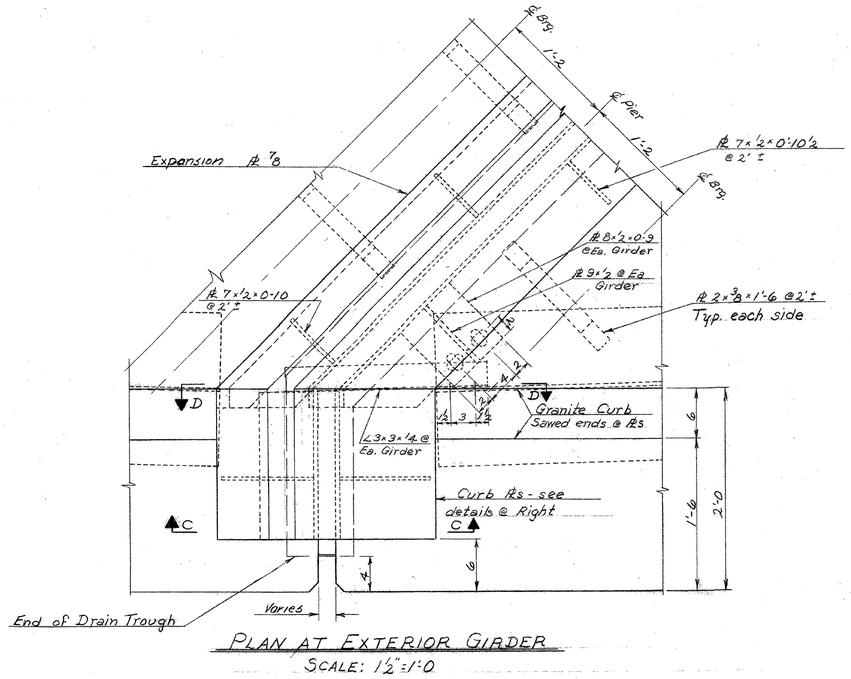
SECTION A-A

SCALE: 1/2" = 1'-0



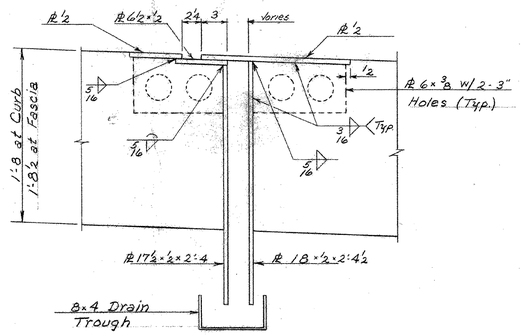
SECTION B-B

SCALE: 1/2" = 1'-0



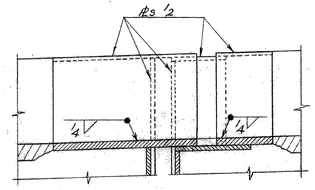
PLAN AT EXTERIOR GIRDER

SCALE: 1/2" = 1'-0



SECTION C-C

SCALE: 1/2" = 1'-0



ELEVATION D-D

NOT TO SCALE

NOTES

1. See BR. 400 For General Notes.
2. See BR. 413 for additional Expansion Dam details.
3. All steel completely embedded in concrete may be ASTM A-36. Except as otherwise noted all other steel shall be ASTM A-242 with a composition suitable for use as a corrosion-resistant metal.

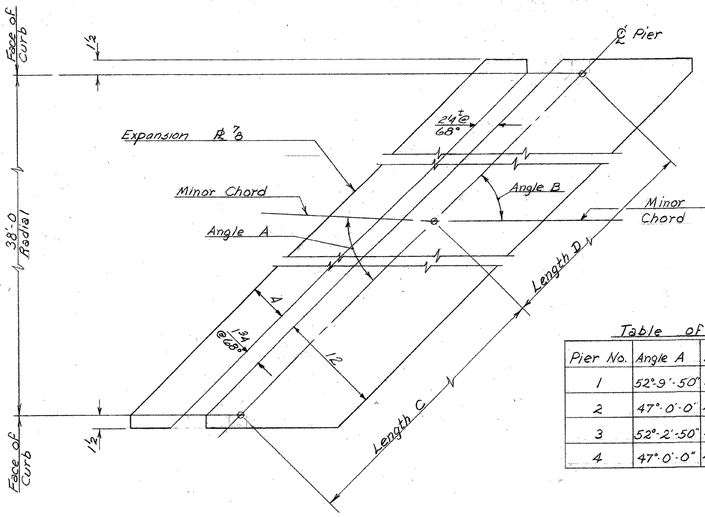
THIS SHEET FOR REFERANCE ONLY
BERLIN IM 089-1(20)
BRIDGES 40 N&S

SHEET 89 OF 104

STATE OF VERMONT
DEPARTMENT OF HIGHWAYS

PROJECT BERLIN - MONTPELIER
TOWNS OF BERLIN & MONTPELIER
ROUTE NO. I 89 STA. 193+50±
I 89 OVER VT. 12
EXPANSION DAM PLAN AND DETAILS
SCALE AS NOTED
IN CHARGE W. SMITH
DRAWN BY W. TRIPP CHECKED BY R. LADD 11-67
PROJECT NO. I 89-1[illegible] (30)
SHEET 163 OF [illegible] BR. 412

62 761

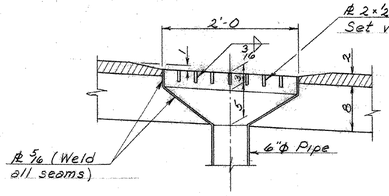


TYPICAL EXPANSION ℞ DETAIL

SCALE: 1½" = 1'-0

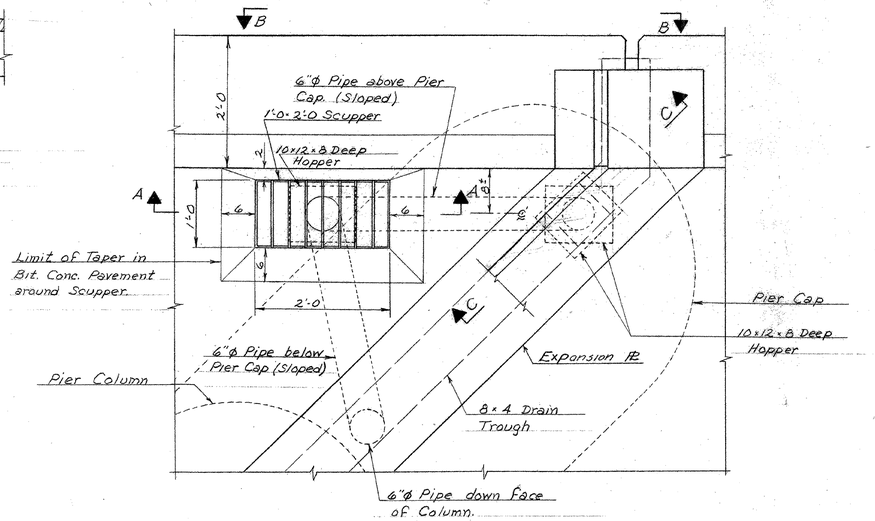
Table of Dimensions

Pier No.	Angle A	Angle B	Length C	Length D
1	52°-9'-50"	47°-0'-0"	20'-11¼	29'-0 7/16
2	47°-0'-0"	41°-50'-20"	22'-9	31'-8
3	52°-2'-50"	47°-0'-0"	28'-9 3/8	21'-1¼
4	47°-0'-0"	41°-57'-10"	31'-2 7/16	22'-11½



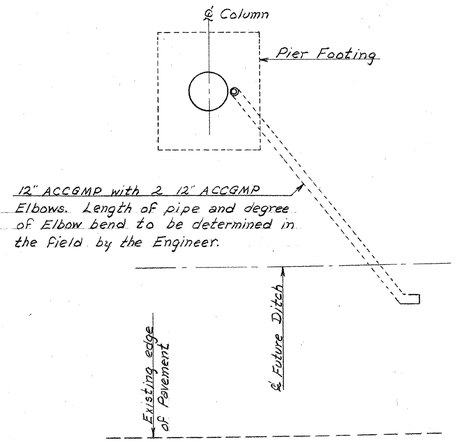
SECTION A-A

SCALE: 1" = 1'-0



TYPICAL PLAN OF EXP. PLATE & SCUPPER AT LOW END OF PIER JOINT

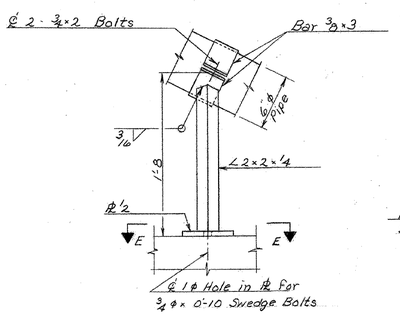
SCALE: 1" = 1'-0



SECTION F-F

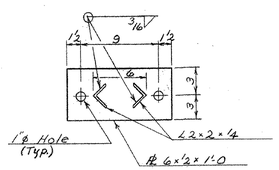
SCALE: ⅛" = 1'-0

(SECTION IS SHOWN FOR PIERS #1 & #3; DETAILS ARE SIMILAR FOR PIERS #2 & #4.)



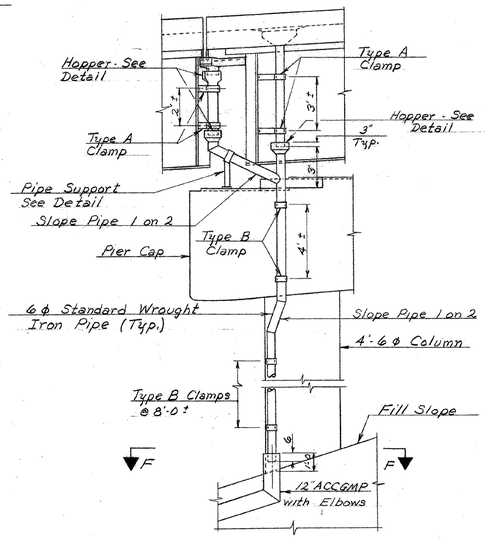
PIPE SUPPORT DETAIL

SCALE: 1½" = 1'-0



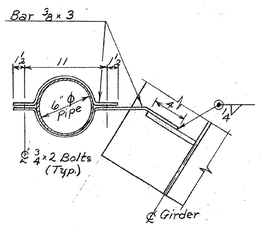
SECTION E-E

SCALE: 1½" = 1'-0



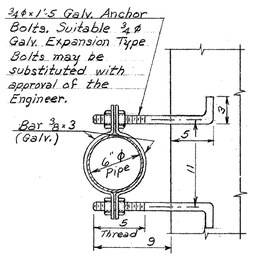
ELEVATION B-B

SCALE: ¼" = 1'-0



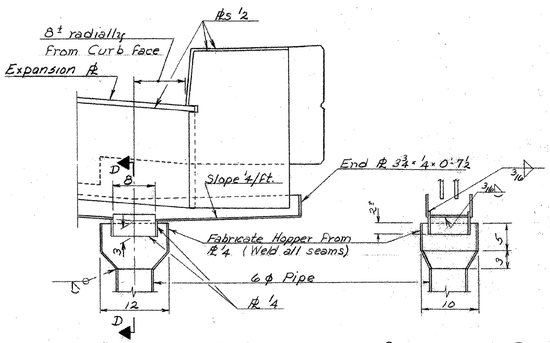
CLAMP DETAIL - TYPE A

SCALE: 1½" = 1'-0



CLAMP DETAIL - TYPE B

SCALE: 1½" = 1'-0



SECTION C-C

SCALE: 1" = 1'-0

SECTION D-D

SCALE: 1" = 1'-0

NOTE: HOPPER DETAILS SHOWN ABOVE ARE TYPICAL FOR ALL HOPPERS

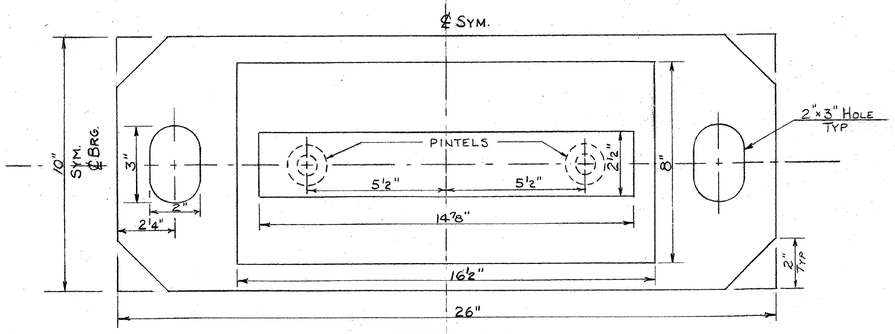
NOTE: SEE BR. 412 FOR NOTES

THIS SHEET FOR REFERANCE ONLY
BERLIN IM 089-1(20)
BRIDGES 40 N&S

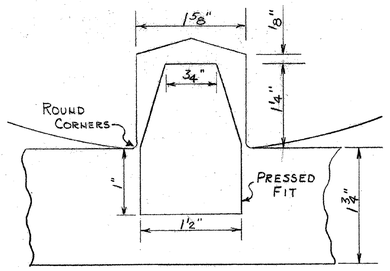
SHEET 90 OF 104

STATE OF VERMONT
DEPARTMENT OF HIGHWAYS

PROJECT BERLIN - MONTPELIER
TOWNS OF BERLIN & MONTPELIER
ROUTE NO. I 89 STA. 193 + 50±
I 89 OVER VT. 12
FINGER ℞ AND DRAINAGE DETAILS
SCALE AS NOTED
IN CHARGE W. SMITH
DRAWN BY W. TRIPP CHECKED BY R. LADD 11-67
PROJECT NO. I 89-1[redacted](30)
SHEET 104 OF [redacted] BR. 413

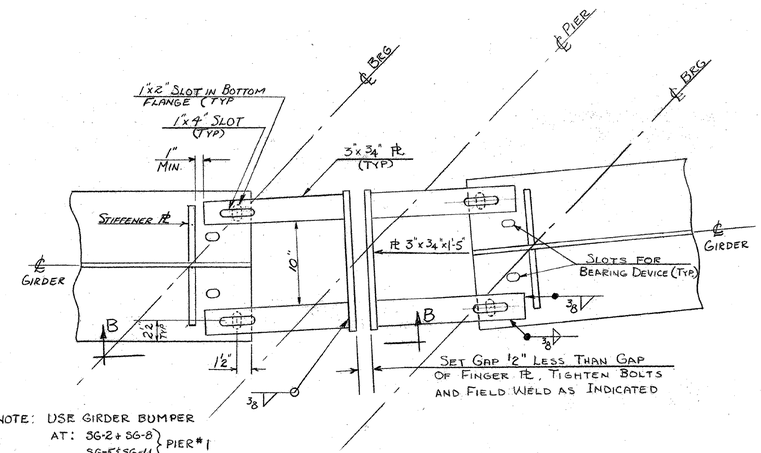


SECTION A-A



PINTEL DETAIL

N.T.S.

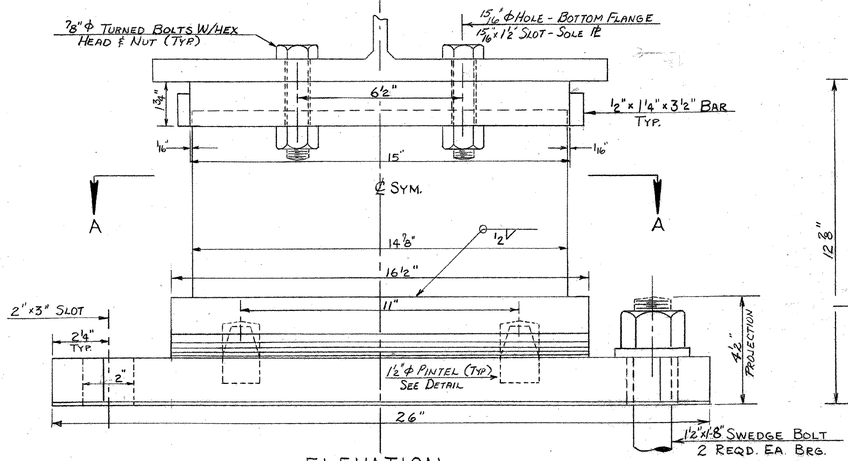


GIRDER BUMPER DETAIL

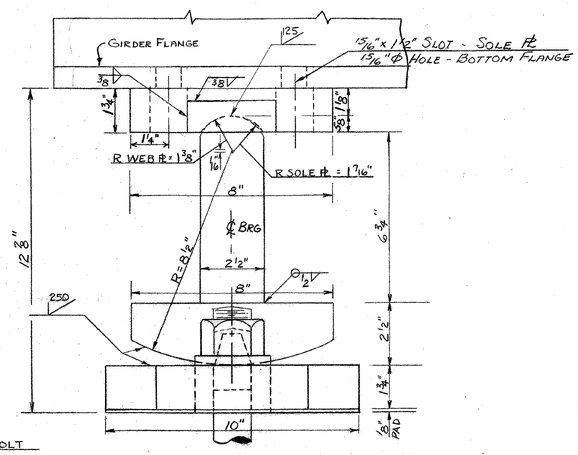
SCALE: 1½"=1'-0"

NOTE: USE GIRDER BUMPER AT:

SG-2 & SG-8	PIER #1
SG-5 & SG-11	
SG-8 & SG-14	PIER #2
SG-11 & SG-17	
NG-2 & NG-8	PIER #3
NG-5 & NG-11	
NG-8 & NG-14	PIER #4
NG-11 & NG-17	

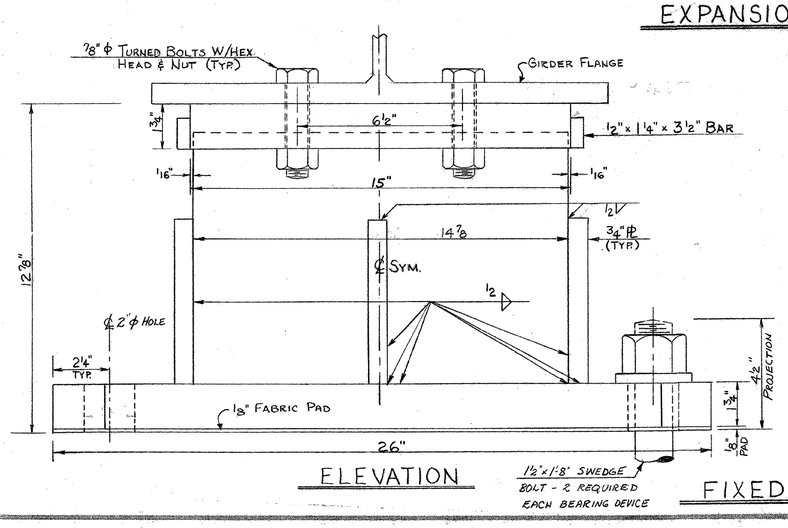


ELEVATION



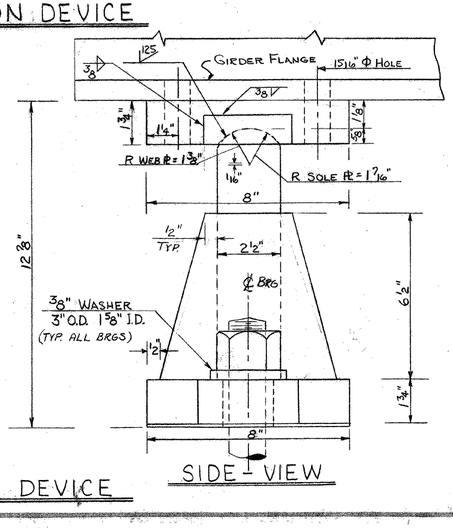
SIDE-VIEW

EXPANSION DEVICE



ELEVATION

1½"x1'-8" SWEDGE BOLT - 2 REQUIRED EACH BEARING DEVICE



SIDE-VIEW

FIXED DEVICE

SECTION B-B

N.T.S.

NOTES:

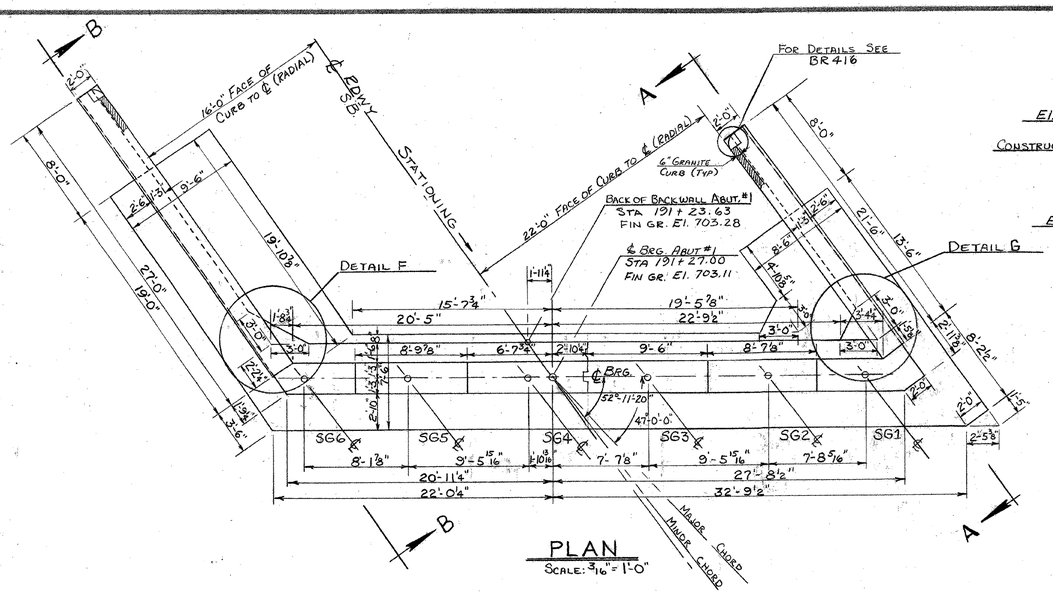
1. PREFORMED FABRIC PADS, ⅛" THICK, EQUAL IN SIZE TO THE BEARING PLATES, AND CONFORMING TO SPECIFICATION 404.02 (23) SHALL BE USED UNDER EACH BEARING
2. ALIGN DEVICES SO THAT ALL ROCKER ARM SHAFTS WILL BE VERTICAL @ 45°F.
3. CONTACT SURFACES OF ROCKERS ARE TO BE GIVEN ONE SHOP COAT OF WHITE LEAD AND TALLOW. PINTEL HOLES ARE TO BE FILLED WITH GRAPHITE AND GREASE AT TIME OF PLACEMENT. REMAINDER OF BEARING DEVICE IS TO BE GIVEN (3) THREE COATS OF PAINT IN ACCORDANCE WITH SPECIFICATION 404.03
4. FOR GENERAL NOTES SEE BR-400

THIS SHEET FOR REFERANCE ONLY
BERLIN IM 089-1(20)
BRIDGES 40 N&S

SHEET 91 OF 104

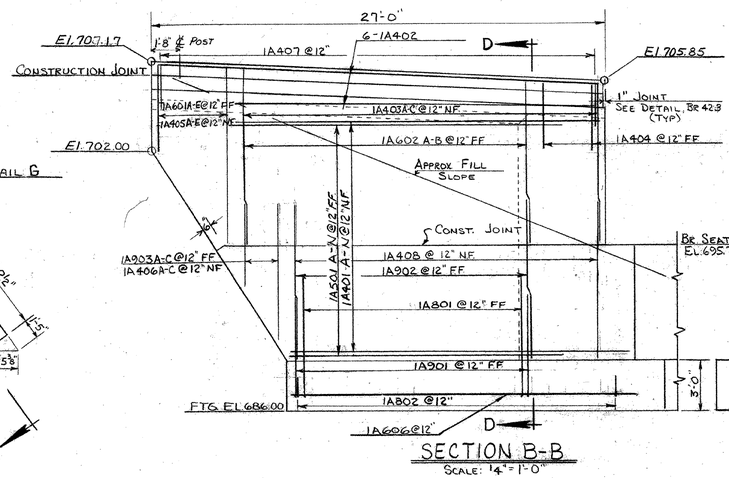
STATE OF VERMONT
DEPARTMENT OF HIGHWAYS

PROJECT BERLIN-MONTPELIER
TOWNS OF BERLIN & MONTPELIER
ROUTE NO. 189 STA.
189 OVER VT. RTE 12
BEARING DEVICE & BUMPER DETAILS
SCALE 3/8"=1" OR AS NOTED
IN CHARGE W. SMITH
DRAWN BY R LADD CHECKED BY W. TRIPP 11-67
PROJECT NO. 189-1(12)
SHEET 165 OF 197 BR-414



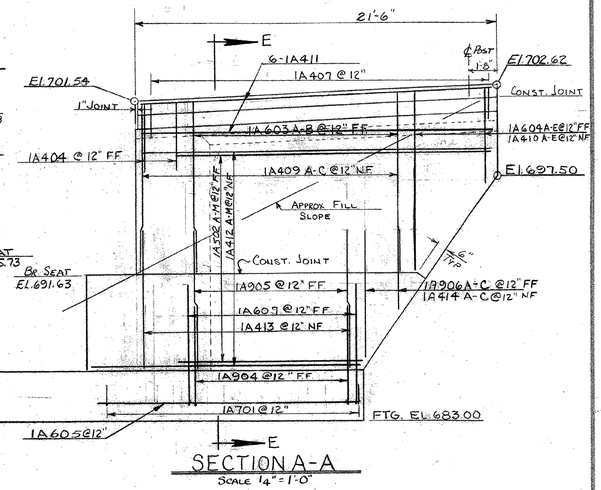
PLAN

SCALE: 3/16" = 1'-0"



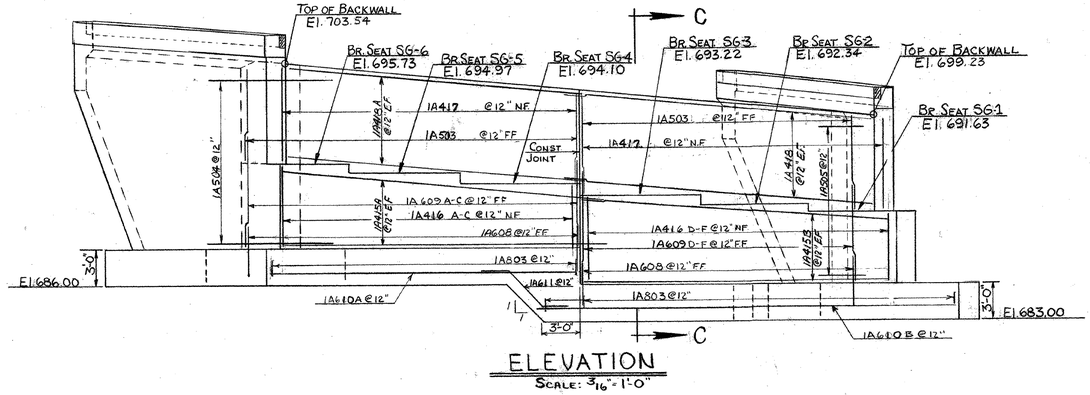
SECTION B-B

SCALE: 1/4" = 1'-0"



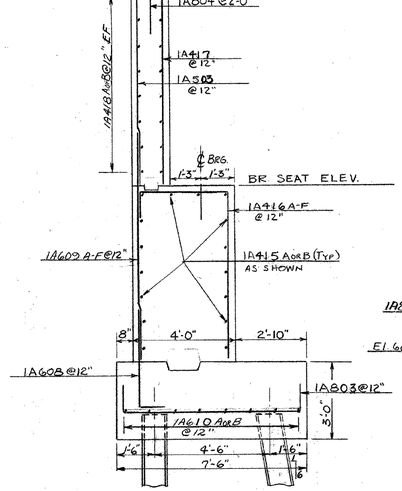
SECTION A-A

SCALE 1/4" = 1'-0"



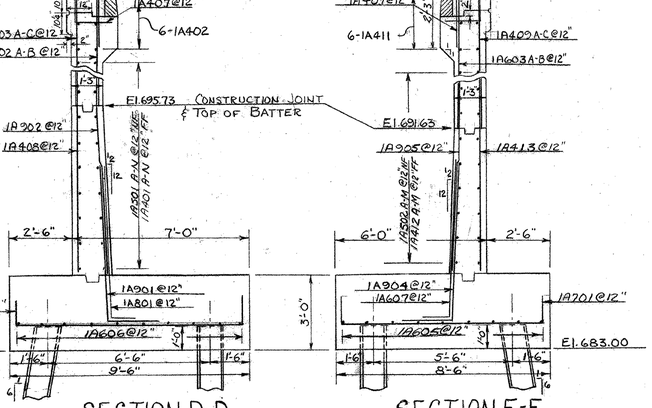
ELEVATION

SCALE: 3/16" = 1'-0"



SECTION C-C

SCALE: 3/8" = 1'-0"



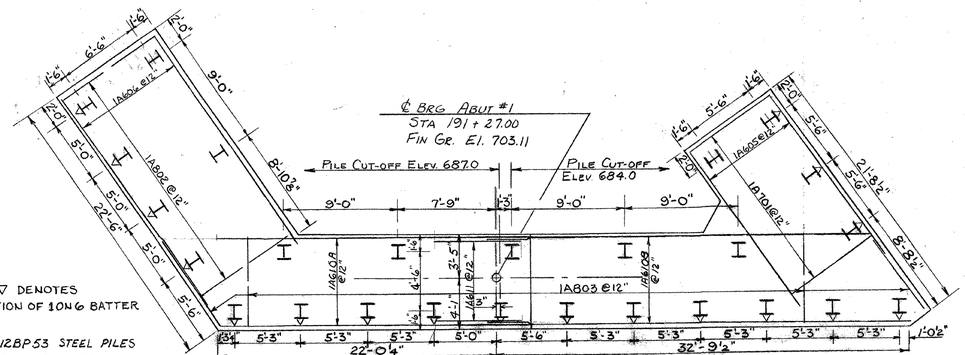
SECTION D-D

SCALE: 3/8" = 1'-0"

SECTION E-E

SCALE: 3/8" = 1'-0"

FOR ABUT. NOTES SEE BR-416

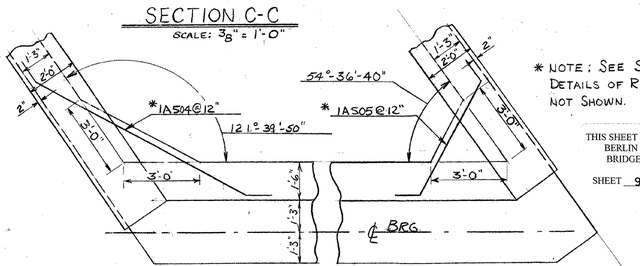


NOTE: ▽ DENOTES DIRECTION OF 10N6 BATTER

26-12BP53 STEEL PILES
MAX. LOAD = 45 TONS
EST. LENGTH = 50'

FOOTING REINFORCEMENT & PILING LAYOUT

SCALE: 3/16" = 1'-0"



DETAIL F

NTS.

DETAIL G

NTS

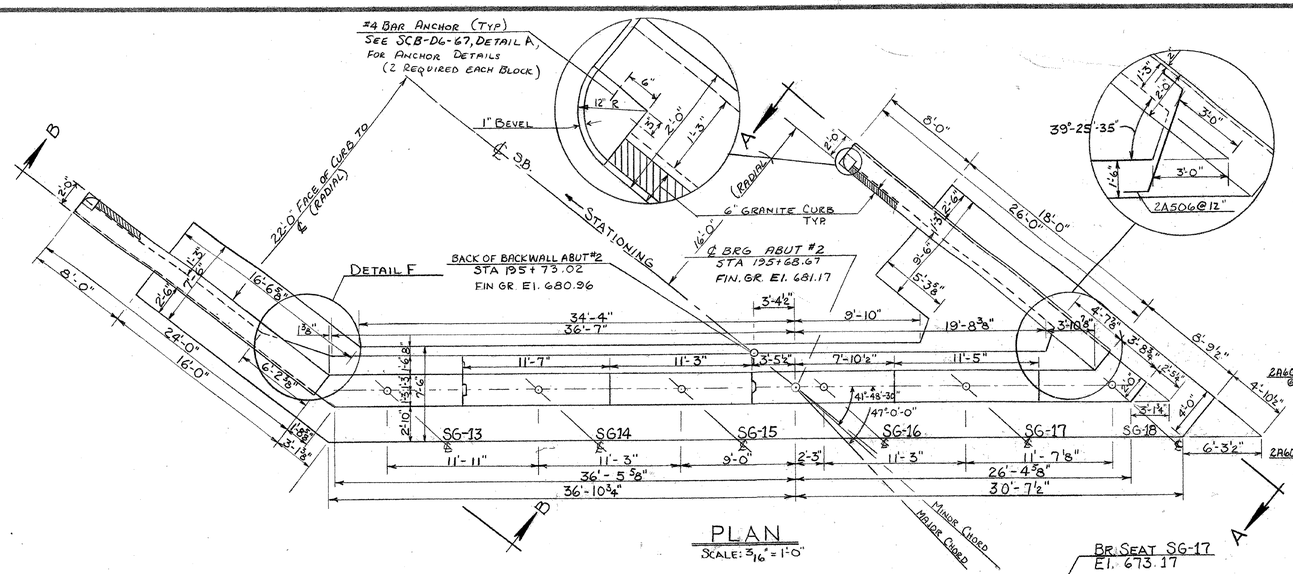
* NOTE: SEE SECTIONS FOR DETAILS OF REINFORCING NOT SHOWN.

THIS SHEET FOR REFERANCE ONLY
BERLIN IM 089-1(20)
BRIDGES 40 N&S

SHEET 92 OF 104

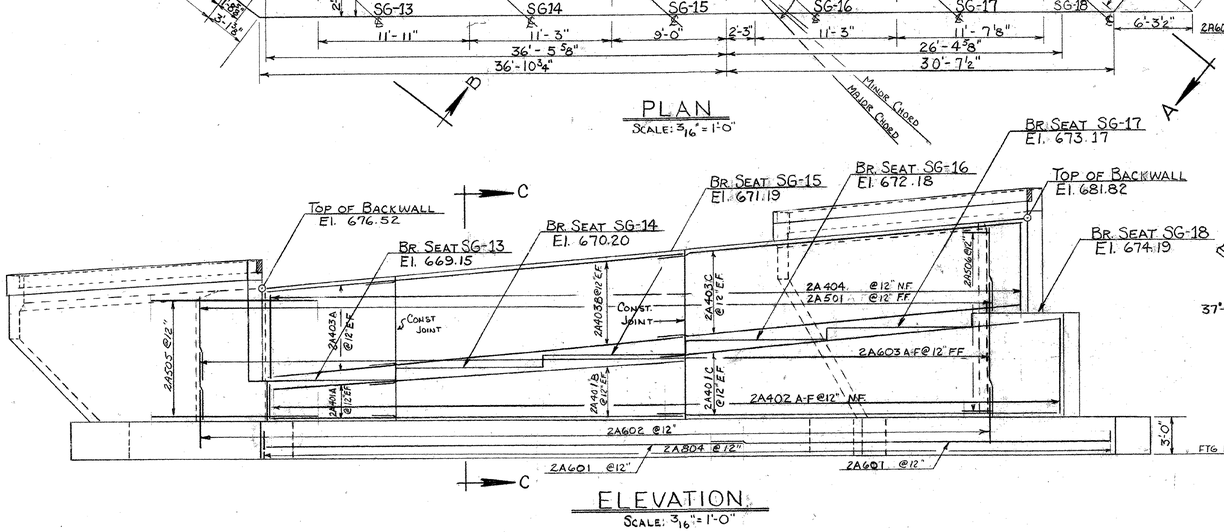
STATE OF VERMONT
DEPARTMENT OF HIGHWAYS

PROJECT BERLIN - MONTPELIER
TOWNS OF BERLIN & MONTPELIER
ROUTE NO. 189 STA. 193+50±
189 OVER VT RTE 12
ABUTMENT #1
SCALE AS NOTED
IN CHARGE W. SMITH
DRAWN BY P. LADD CHECKED BY W. TRIPP 11/67
PROJECT NO. 189-1(12)
SHEET 166 OF 427 BR 415



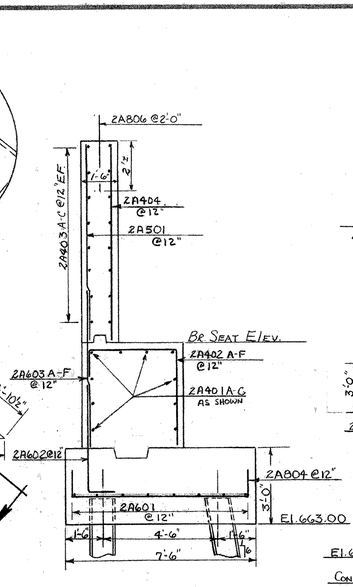
PLAN

SCALE: 3/16" = 1'-0"



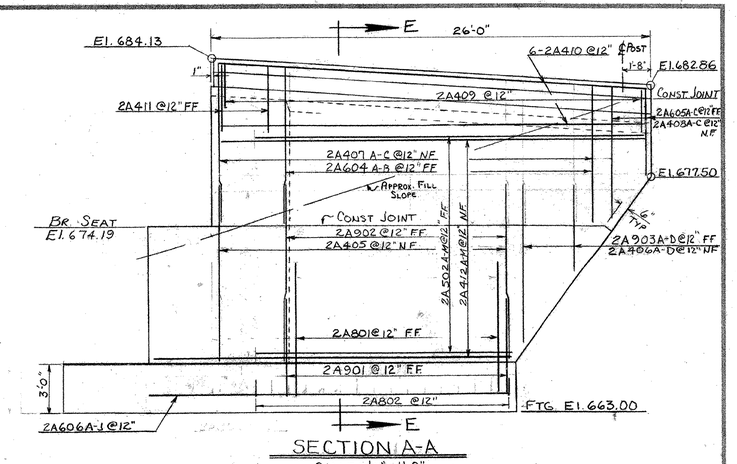
ELEVATION

SCALE: 3/16" = 1'-0"



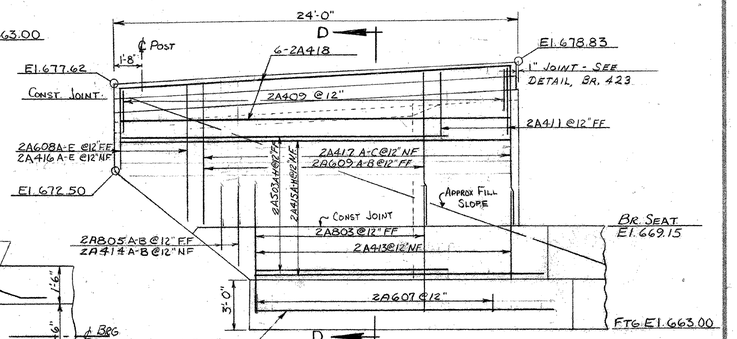
SECTION C-C

SCALE: 3/8" = 1'-0"



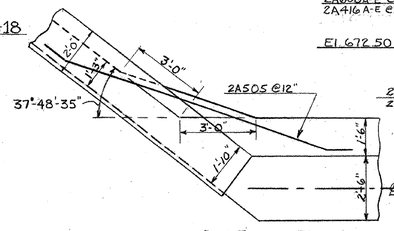
SECTION A-A

SCALE: 1/4" = 1'-0"



SECTION B-B

SCALE: 1/4" = 1'-0"

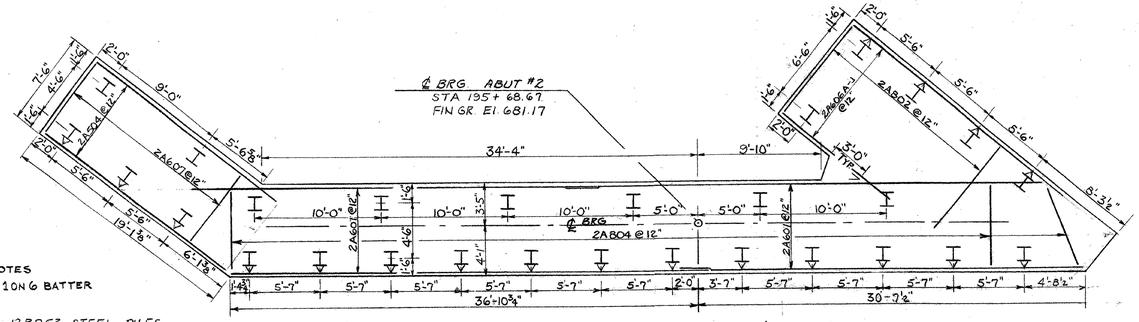


DETAIL F

NTS.

NOTES:

1. FOR PILING TABLE SEE BR 421.
2. FOR GENERAL NOTES SEE BR 401.
3. FRONT FACE OF BACKWALLS ARE TO BE PAINTED WITH PAINT WATERPROOFING, ITEM 410.
4. WING WALLS ARE TO BE SET STRAIGHT, GRANITE CURB IS TO BE SET ON ARC.

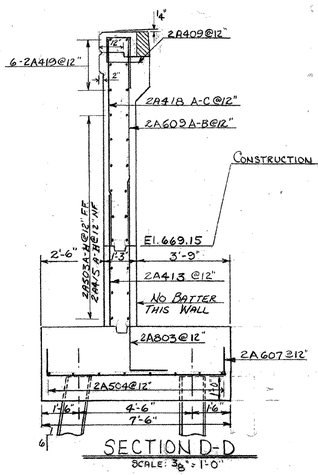


NOTE: ▽ DENOTES DIRECTION OF 10N6 BATTER

28-12BP53 STEEL PILES
MAX LOAD = 45 TONS
EST LENGTH = 45'

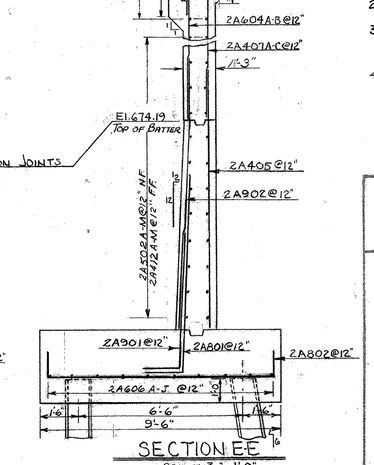
FOOTING REINFORCEMENT & PILING LAYOUT

SCALE: 3/16" = 1'-0"



SECTION D-D

SCALE: 3/8" = 1'-0"



SECTION E-E

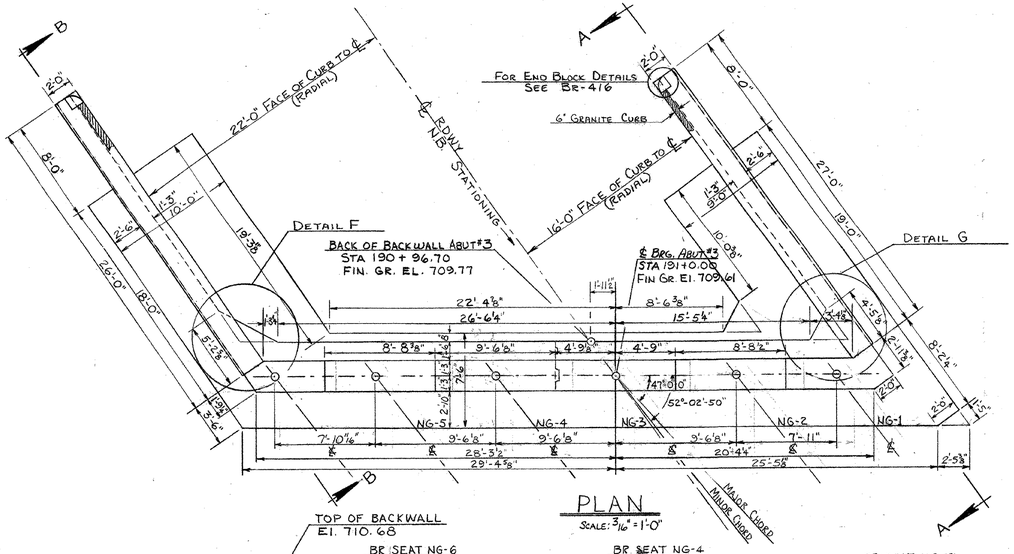
SCALE: 3/8" = 1'-0"

THIS SHEET FOR REFERANCE ONLY
BERLIN IM 089-1(20)
BRIDGES 40 N&S

SHEET 93 OF 104

STATE OF VERMONT
DEPARTMENT OF HIGHWAYS

PROJECT BERLIN-MONTPELIER
TOWNS OF BERLIN & MONTPELIER
ROUTE NO. 189 STA. 193+50±
189 OVER VT RTE 12
ABUTMENT #2
SCALE AS NOTED
IN CHARGE W. SMITH
DRAWN BY R.LADD CHECKED BY W. TRIPP 11/67
PROJECT NO. 189-1(12)
SHEET 167 OF 492 BR-4/6



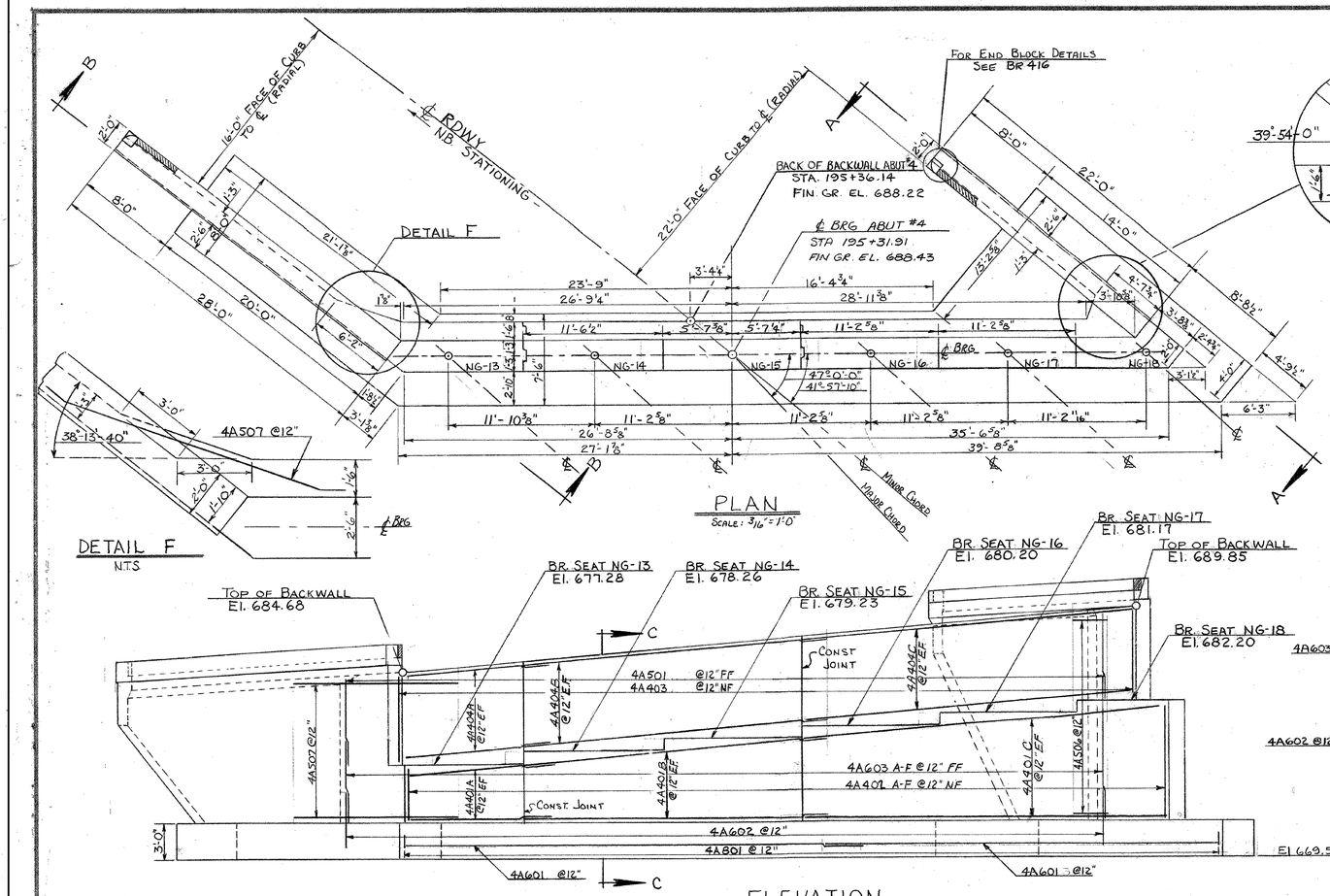
THIS SHEET FOR REFERANCE ONLY
BERLIN IM 089-1(20)
BRIDGES 40 N&S

SHEET 94 OF 104

FOR ABUT. NOTES SEE BR-416

STATE OF VERMONT
DEPARTMENT OF HIGHWAYS

PROJECT BERLIN - MONTPELIER
TOWNS OF BERLIN & MONTPELIER
ROUTE NO. I89 STA. 193+50±
I89 OVER VT RTE 12
ABUTMENT #3
SCALE AS NOTED
IN CHARGE W. SMITH
DRAWN BY R.LADD CHECKED BY W. TRIPP 11/67
PROJECT NO. I89-1(12)
SHEET 168 OF 492 BR-417



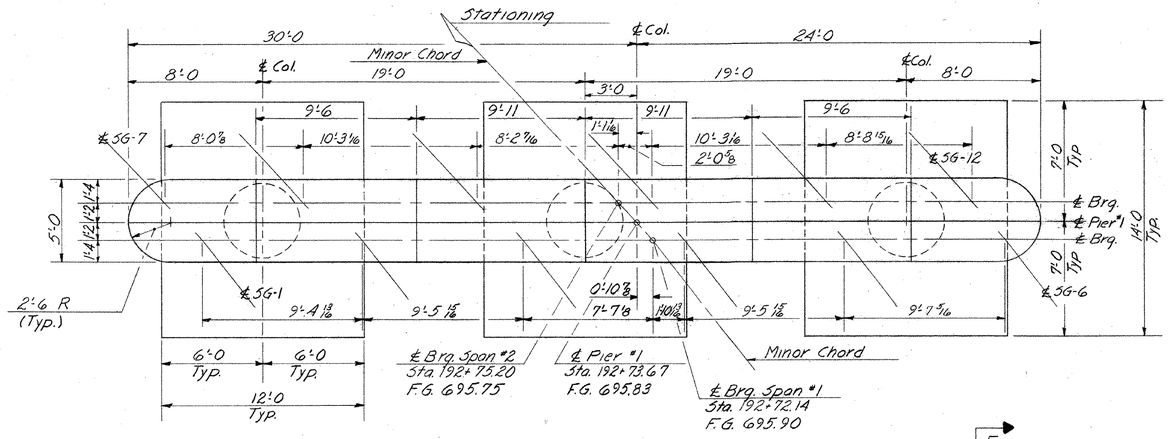
THIS SHEET FOR REFERANCE ONLY
BERLIN IM 089-1(20)
BRIDGES 40 N&S

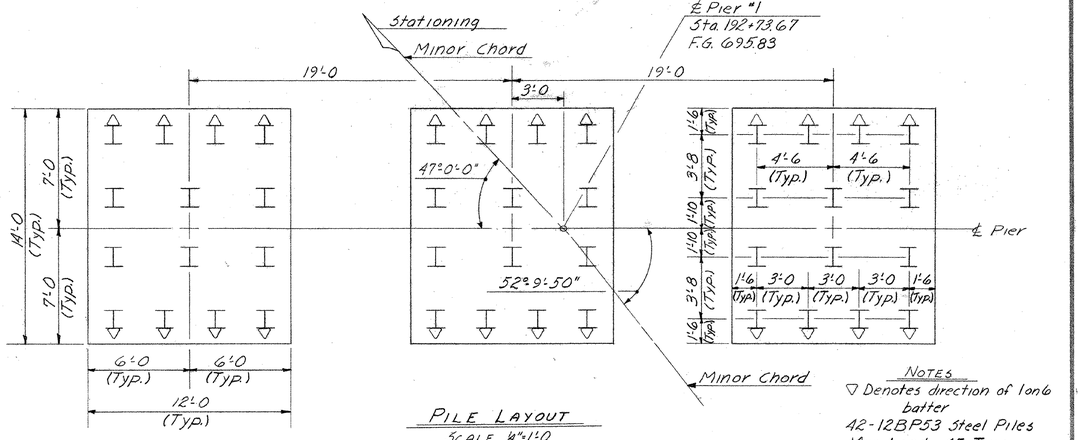
SHEET 95 OF 104

FOR ABUT. NOTES SEE BR-416

STATE OF VERMONT
DEPARTMENT OF HIGHWAYS

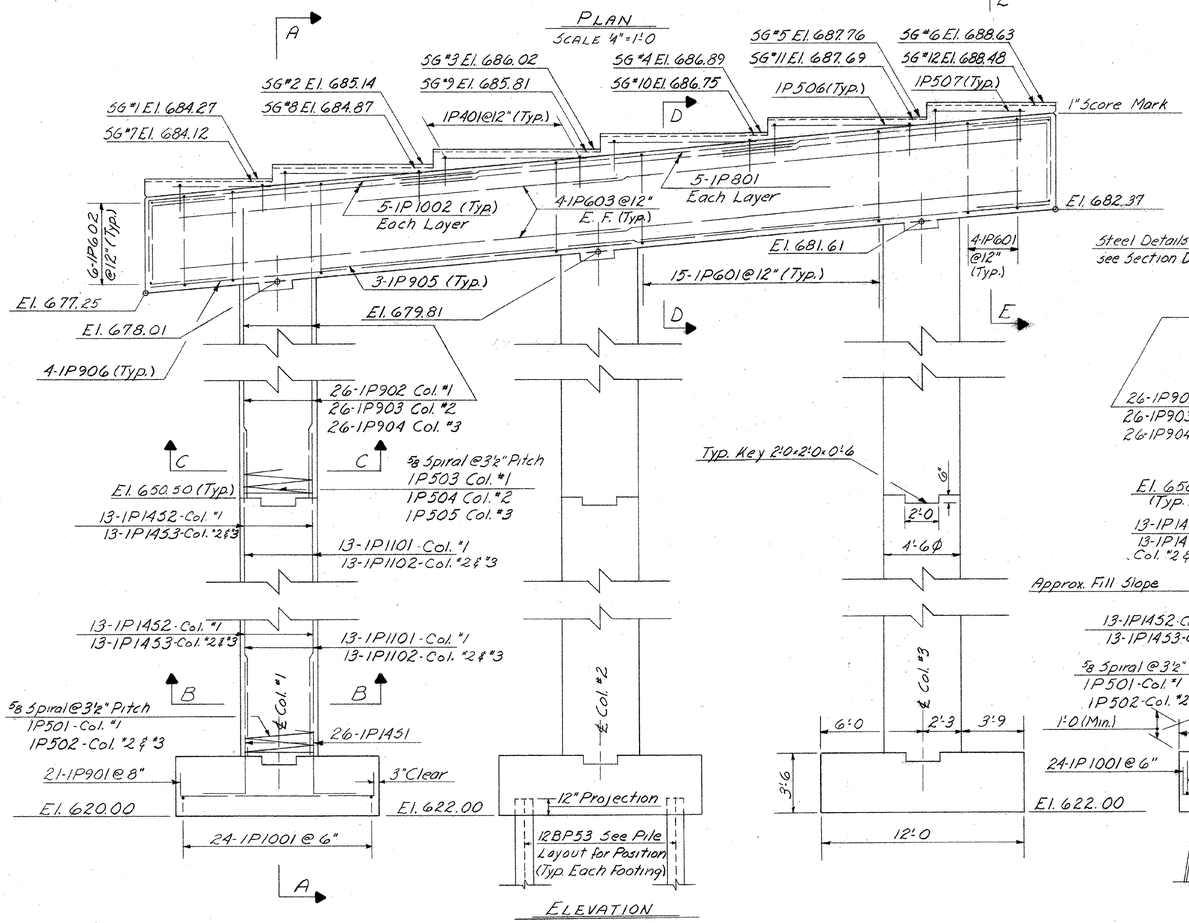
PROJECT BERLIN-MONTPELIER
TOWNS OF BERLIN & MONTPELIER
ROUTE NO. I89 STA. 193+50±
I89 OVER VT RTE 12
ABUTMENT #4
SCALE AS NOTED
IN CHARGE W. SMITH
DRAWN BY R. LADD CHECKED BY W. TRIPP 11/67
PROJECT NO. I89-1(12)
SHEET 162 OF 427 BR-418

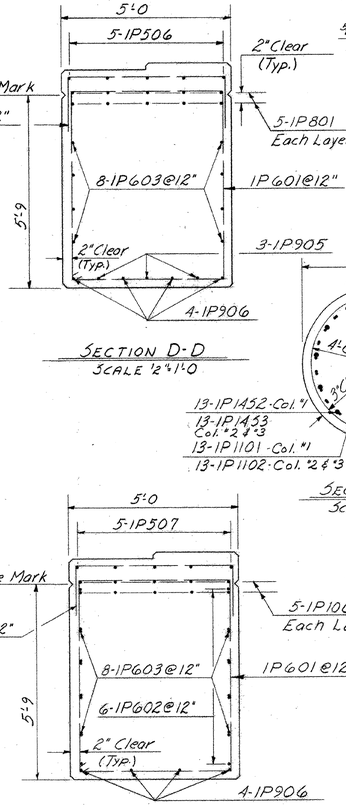




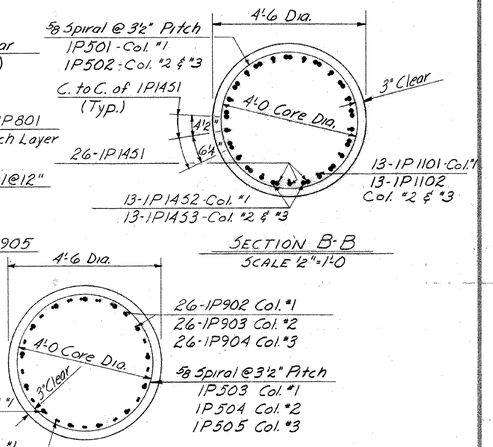
PILE LAYOUT
SCALE 4"=1'-0

NOTES
▽ Denotes direction of long batter
42-12BP53 Steel Piles
Max. Load = 45 Tons
Est. Length = 35 Feet





SECTION E-E
SCALE 2"=1'-0



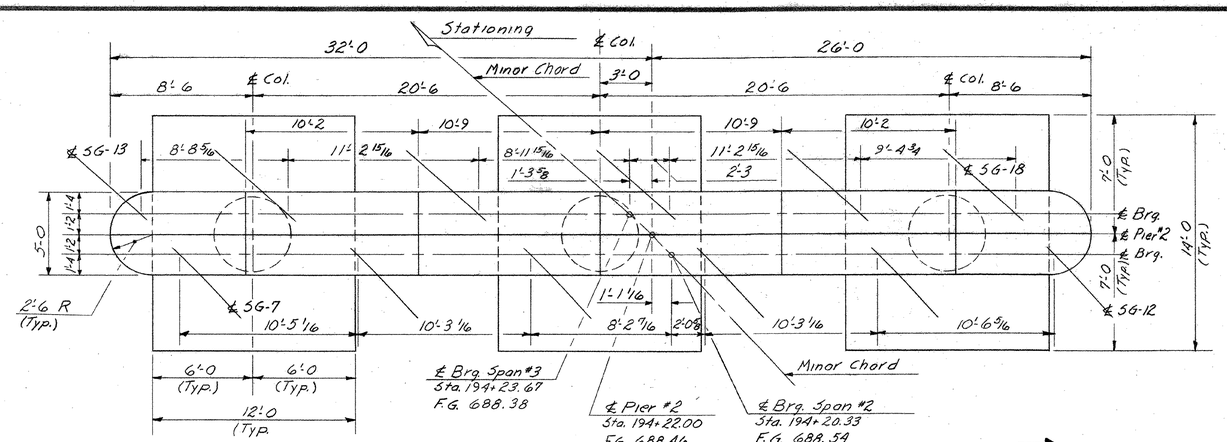
NOTES
1. For Piling Table see BR. 421
2. For General Notes see BR. 400
3. Pier Footings are to be Concrete Class B.(mod); Columns and Caps are to be Concrete Class AA(mod.)

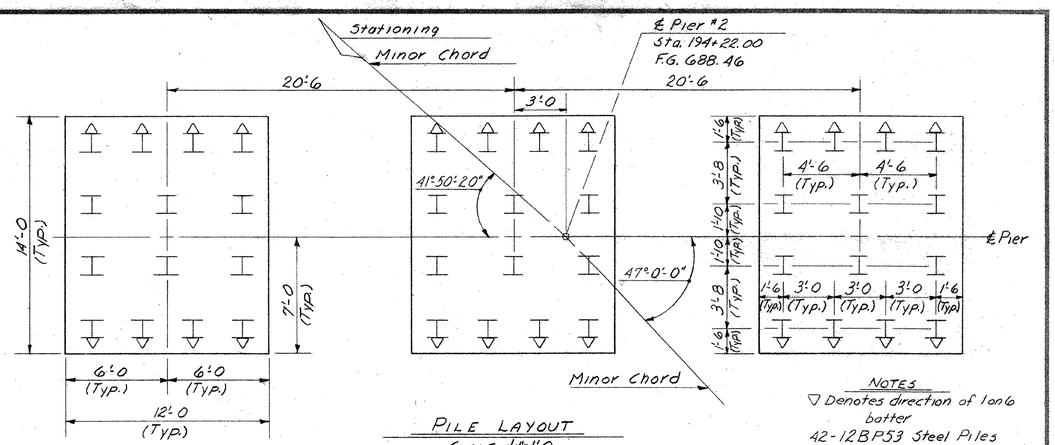
THIS SHEET FOR REFERANCE ONLY
BERLIN IM 089-1(20)
BRIDGES 40 N&S

SHEET 96 OF 104

STATE OF VERMONT
DEPARTMENT OF HIGHWAYS

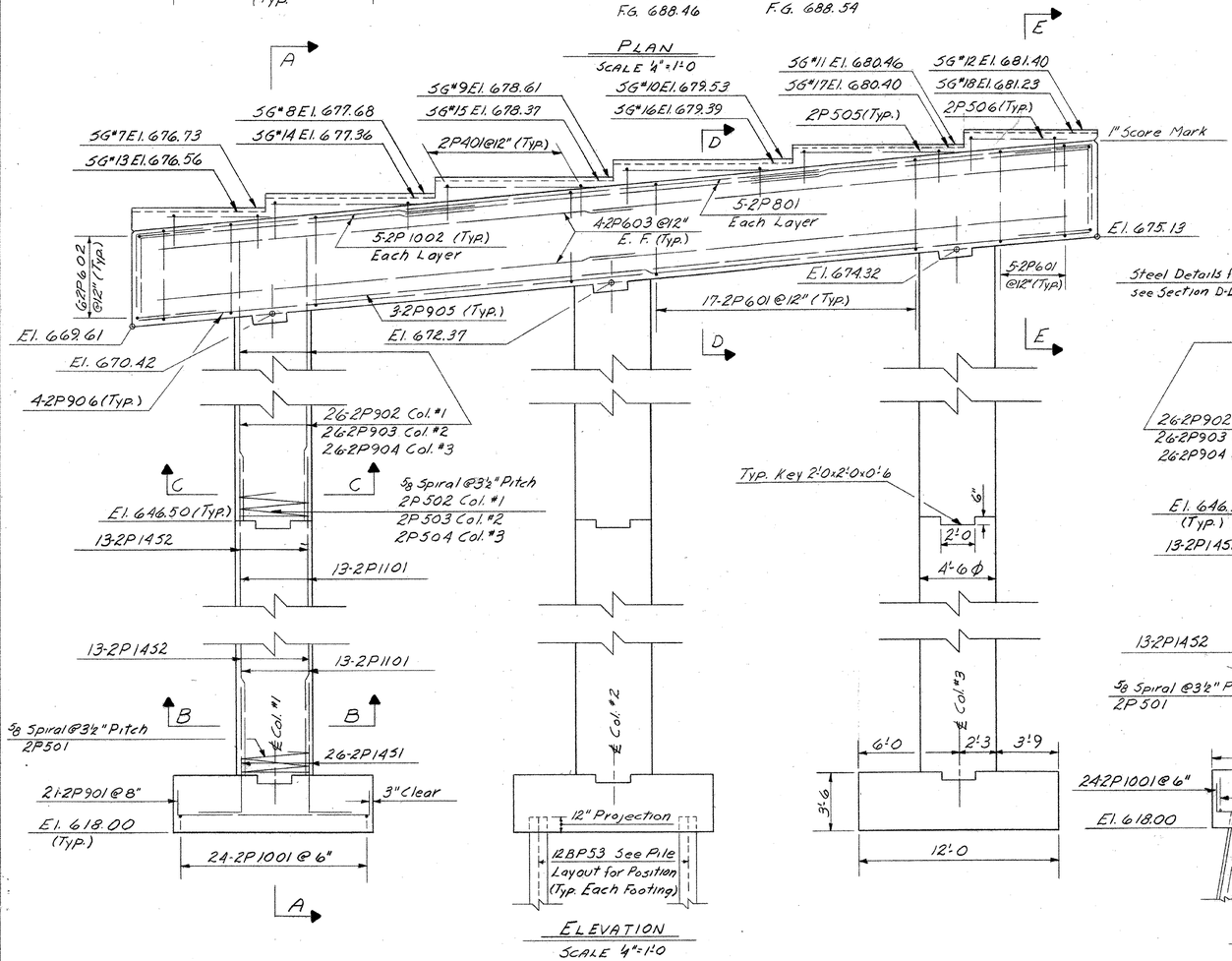
PROJECT BERLIN-MONTPELIER
TOWNS OF BERLIN & MONTPELIER
ROUTE NO. I-89 STA. 193+50±
I-89 OVER VT. #12
PIER #1
SCALE: AS SHOWN
IN CHARGE W. SMITH
DRAWN BY F. GILMAN CHECKED BY W. TRIPP 11-67
PROJECT NO. I-89-1(12)
SHEET 170 OF 427 BR 419



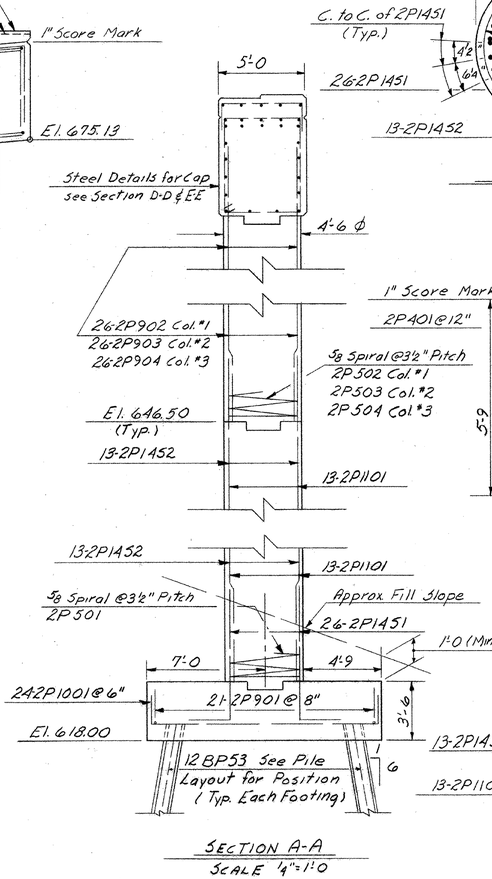


PILE LAYOUT
SCALE ¼"=1'-0

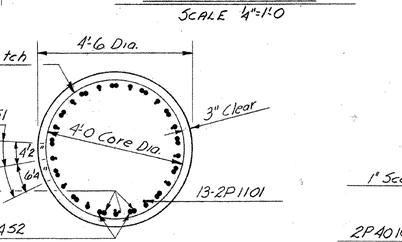
NOTES
▽ Denotes direction of 1on6 batter
42-12BP53 Steel Piles
Max. Load = 45 Tons
Est. Length = 25 Feet



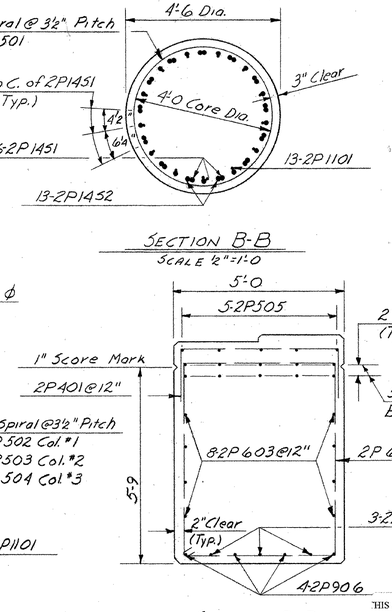
ELEVATION
SCALE 4"=1'-0



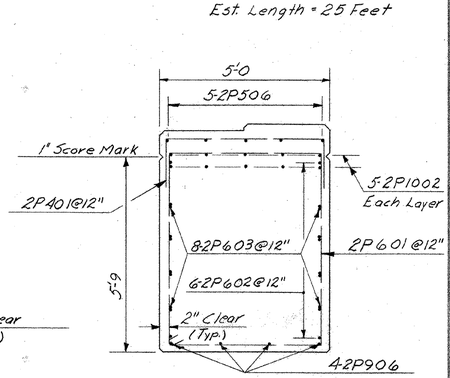
SECTION A-A
SCALE 1"=1'-0



SECTION B-B
SCALE ½"=1'-0

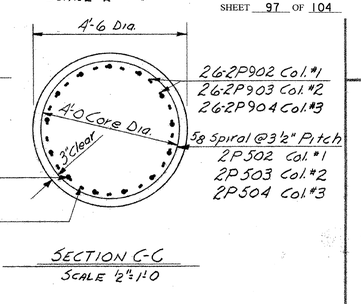


SECTION D-D
SCALE ½"=1'-0



SECTION E-E
SCALE ½"=1'-0

For Pier Notes see BR. 419
For Piling Table see BR. 421



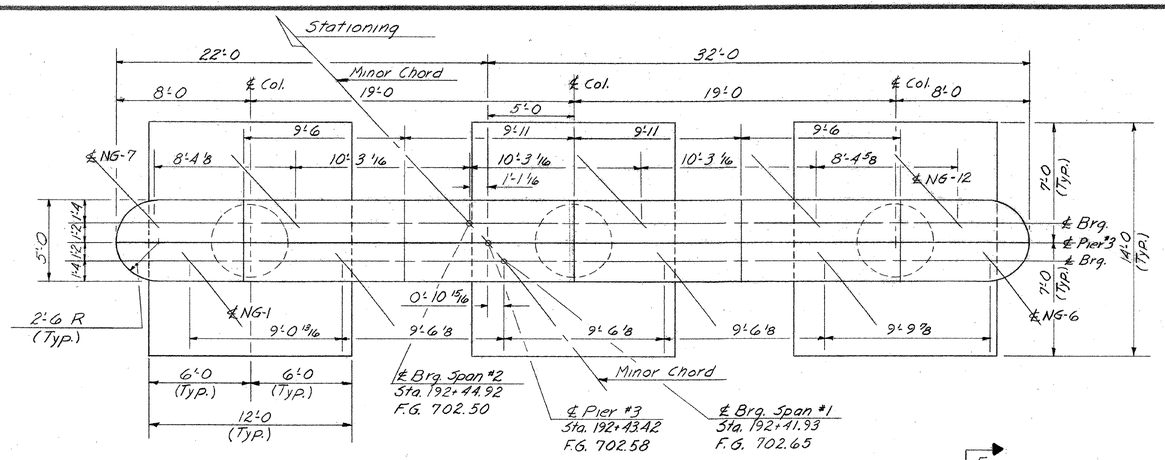
SECTION C-C
SCALE ½"=1'-0

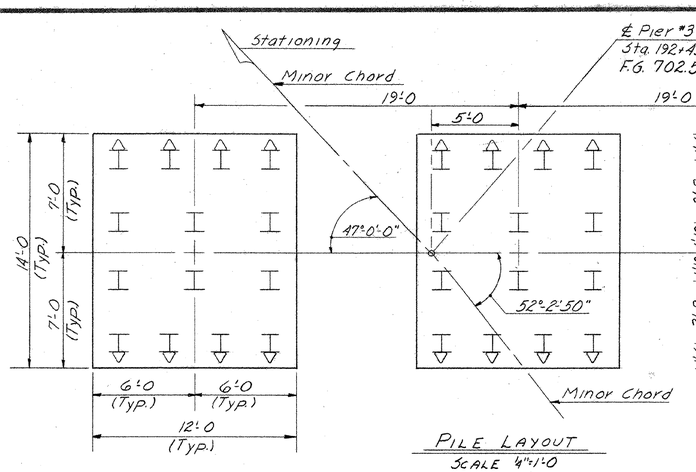
THIS SHEET FOR REFERANCE ONLY
BERLIN IM 089-1(20)
BRIDGES 40 N&S

SHEET 97 OF 104

STATE OF VERMONT
DEPARTMENT OF HIGHWAYS

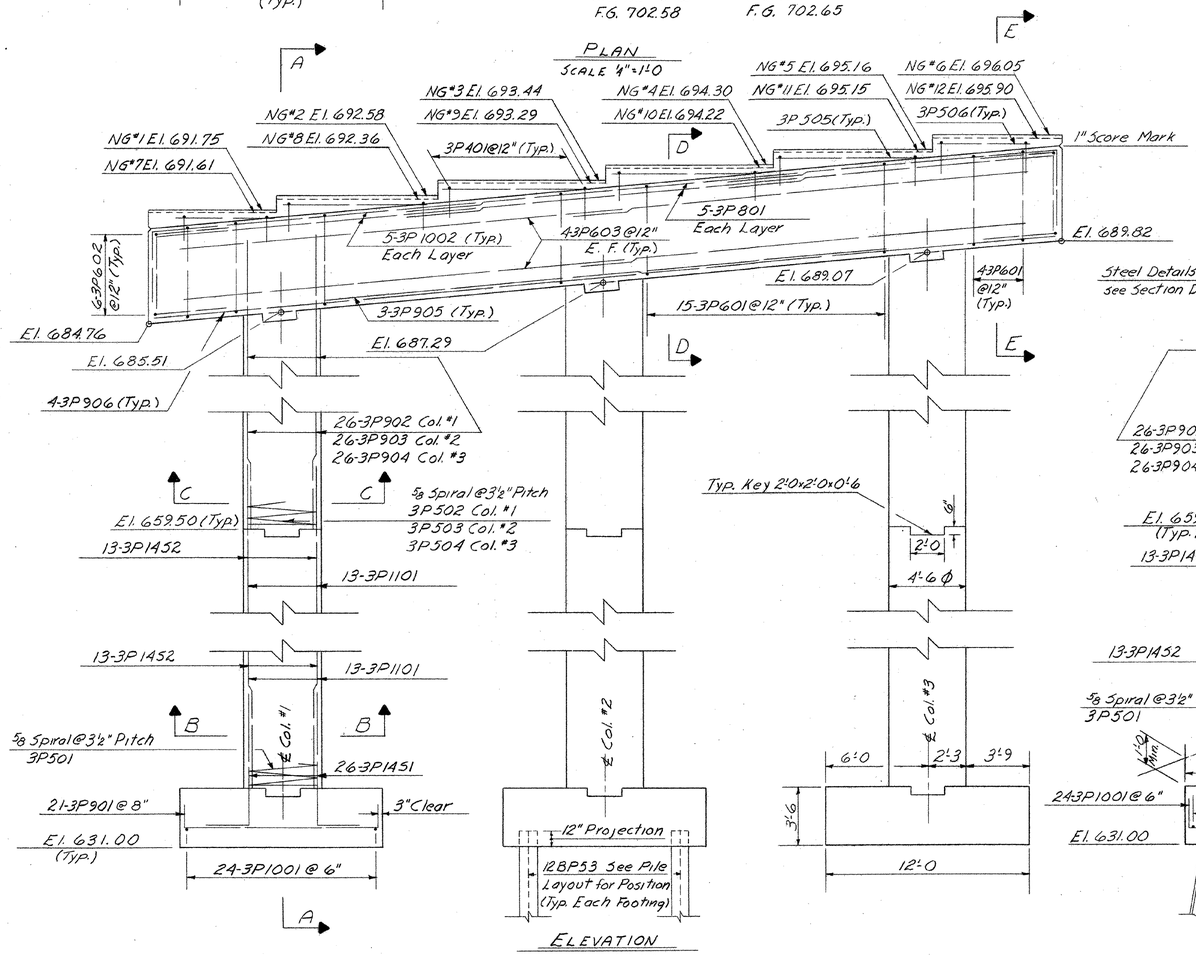
PROJECT BERLIN-MONTPELIER
TOWNS OF BERLIN & MONTPELIER
ROUTE NO. I-89 STA. 193+50±
I-89 over VT. #12
PIER #2
SCALE AS SHOWN
IN CHARGE W. SMITH
DRAWN BY E. GILMAN CHECKED BY W. TRIPP 11-67
PROJECT NO. I-89-1(12)
SHEET 121 OF 197 BR 420

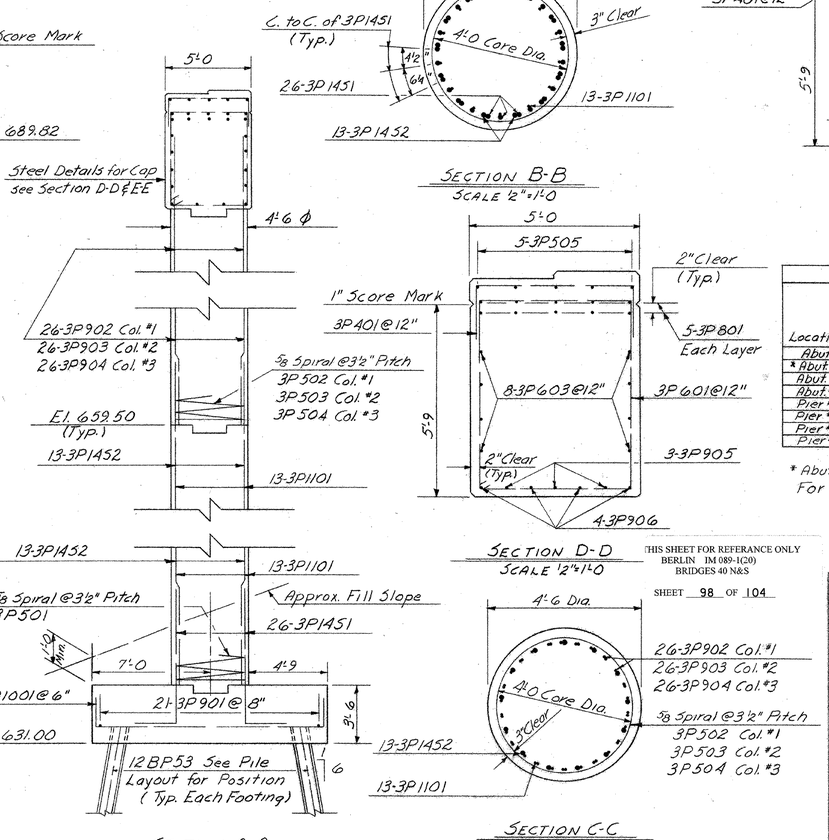




PILE LAYOUT
SCALE 4"=1'-0

NOTES
▽ Denotes direction of long batter
42-12BP53 Steel Piles
Max. Load = 45 Tons
Est. Length = 30 Feet





PILING TABLE

Location	No. of Piles	Est. Lgth. of Piles	Splice Allowed for Piles Not Exceeding Plan Length (to be paid for only if used)	Splices Estimated for Piles Exceeding Plan Length (to be paid for only if used)
Abut #1	26	30'	0	5
* Abut #2	28	45'	0	6
Abut #3	28	35'	0	6
Abut #4	30	40'	0	6
Pier #1	42	35'	0	9
Pier #2	42	25'	0	9
Pier #3	42	30'	0	9
Pier #4	42	30'	0	9

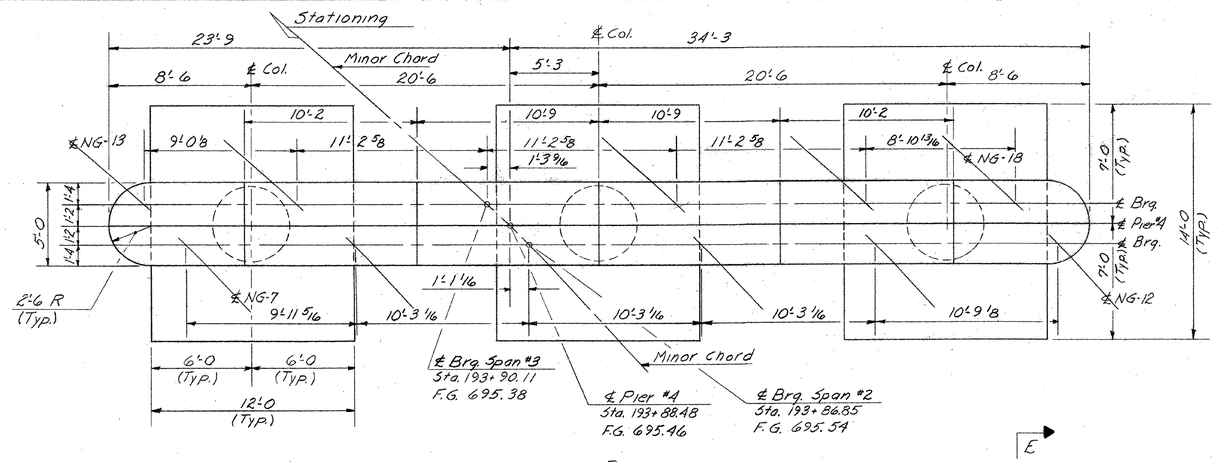
* Abut #2 Estimated Ledge Elevation 626.0±
For Pier Notes see BR. 419.

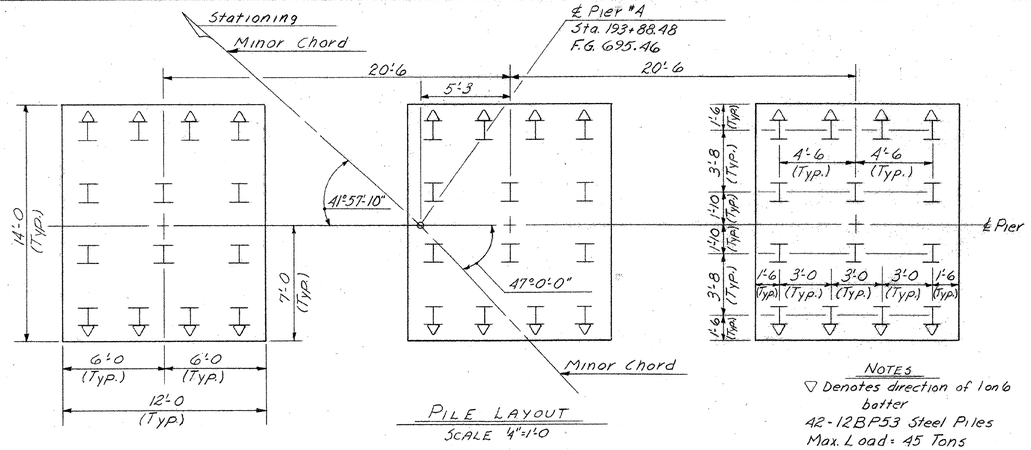
THIS SHEET FOR REFERANCE ONLY
BERLIN IM 089-1(20)
BRIDGES 40 N&S

SHEET 98 OF 104

STATE OF VERMONT
DEPARTMENT OF HIGHWAYS

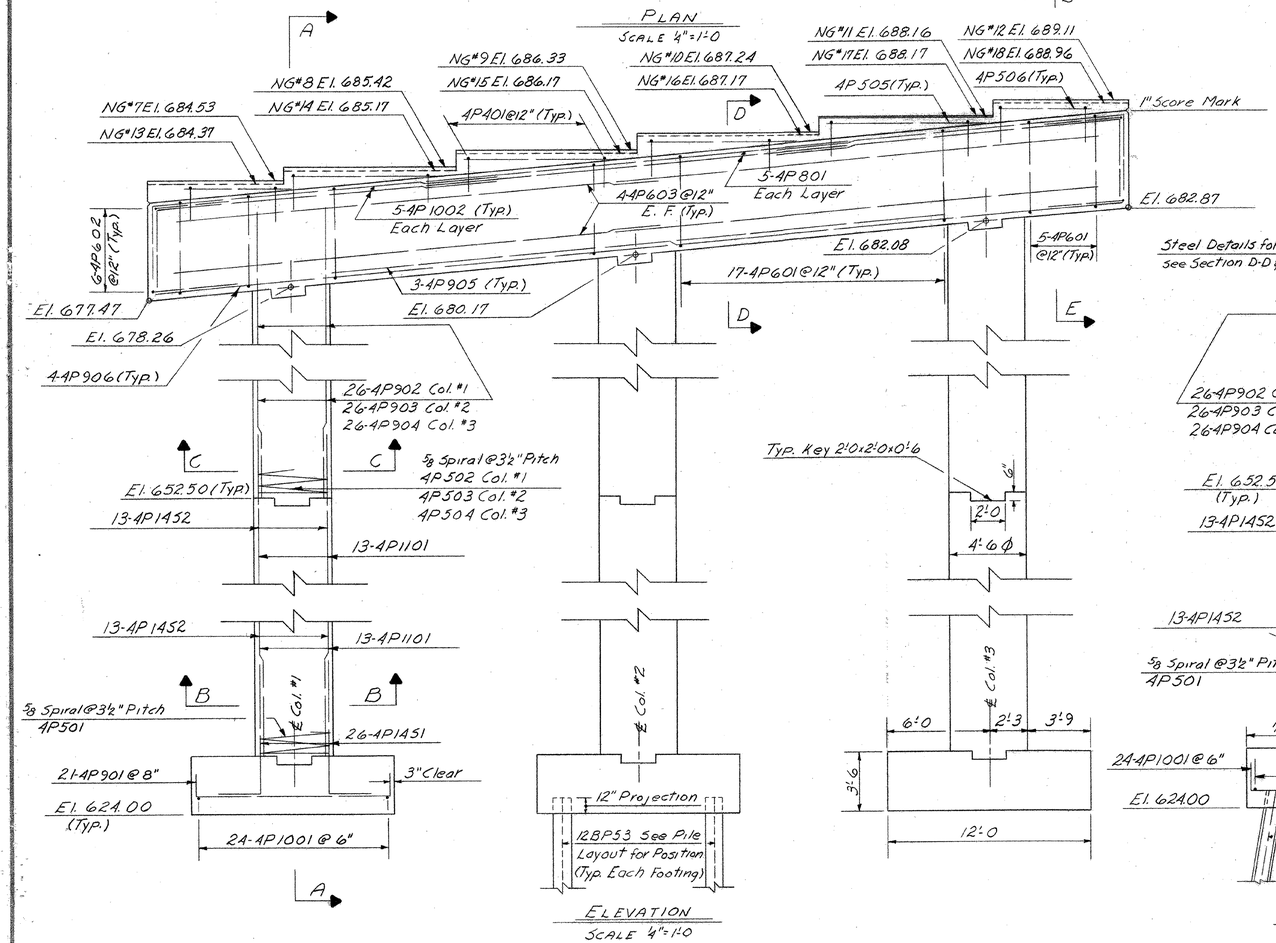
PROJECT BERLIN-MONTPELIER
TOWNS OF BERLIN & MONTPELIER
ROUTE NO. I-89 STA. 193+50±
I-89 over VT #12
PIER #3
SCALE AS SHOWN
IN CHARGE W. SMITH
DRAWN BY E. GILMAN CHECKED BY W. TRIPP 11-67
PROJECT NO. F 89-1(12)
SHEET 178 OF 497 BR 421



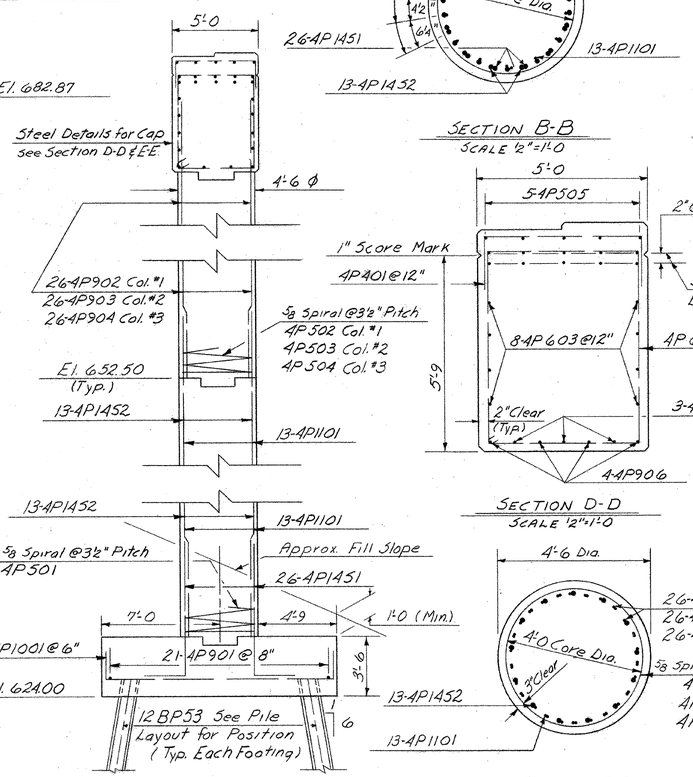


PILE LAYOUT
SCALE 4"=1'-0

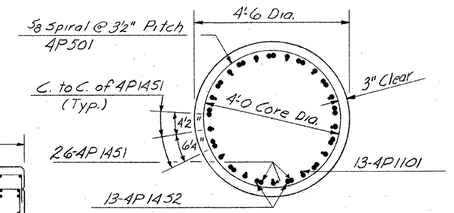
NOTES
▽ Denotes direction of 1on6 batter
42-12BP53 Steel Piles
Max. Load = 45 Tons
Est. Length = 30 Feet



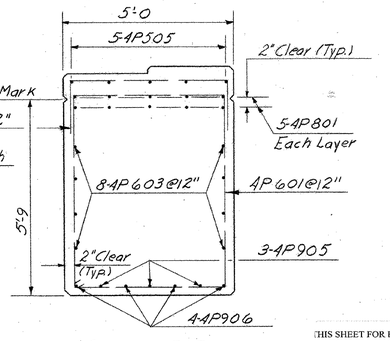
ELEVATION
SCALE 4"=1'-0



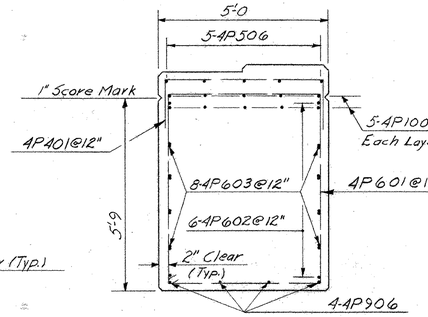
SECTION A-A
SCALE 1/4"=1'-0



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



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



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

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

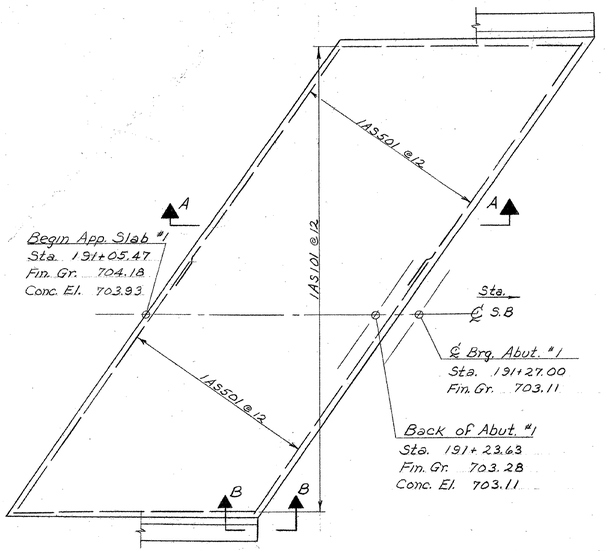
For Pier Notes see BR. 419
For Piling Table see BR. 421

THIS SHEET FOR REFERANCE ONLY
BERLIN IM 089-1(20)
BRIDGES 40 N&S

SHEET 99 OF 104

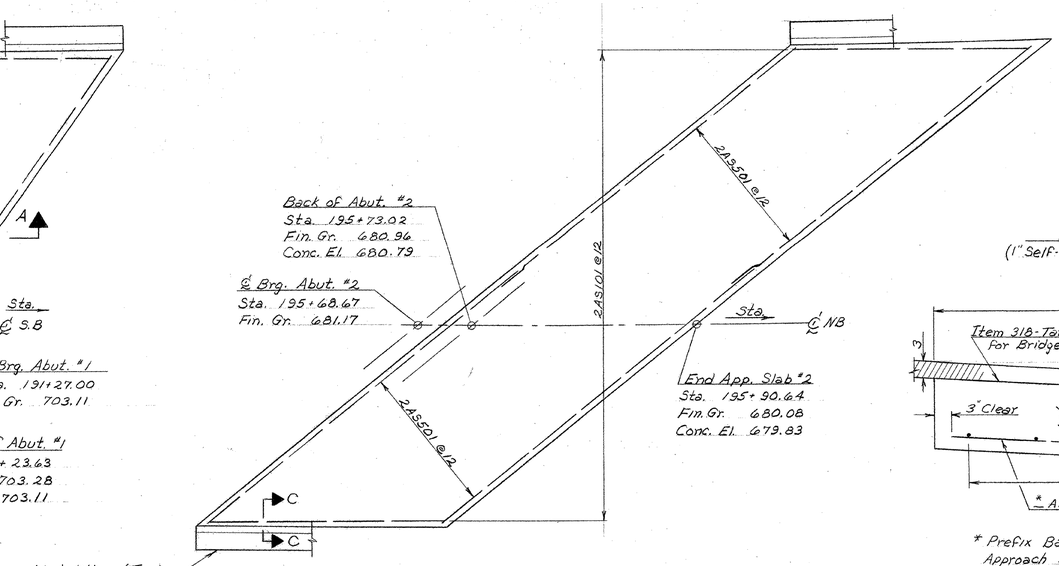
STATE OF VERMONT
DEPARTMENT OF HIGHWAYS

PROJECT BERLIN-MONTPELIER
TOWNS OF BERLIN & MONTPELIER
ROUTE NO. I-89 STA. 193+50±
I-89 over VT #12
PIER #4
SCALE AS SHOWN
IN CHARGE W. SMITH
DRAWN BY EGILMAN CHECKED BY W. TRIPP 11-67
PROJECT NO. I-89-1(12)
SHEET 173 OF 497 BR 422



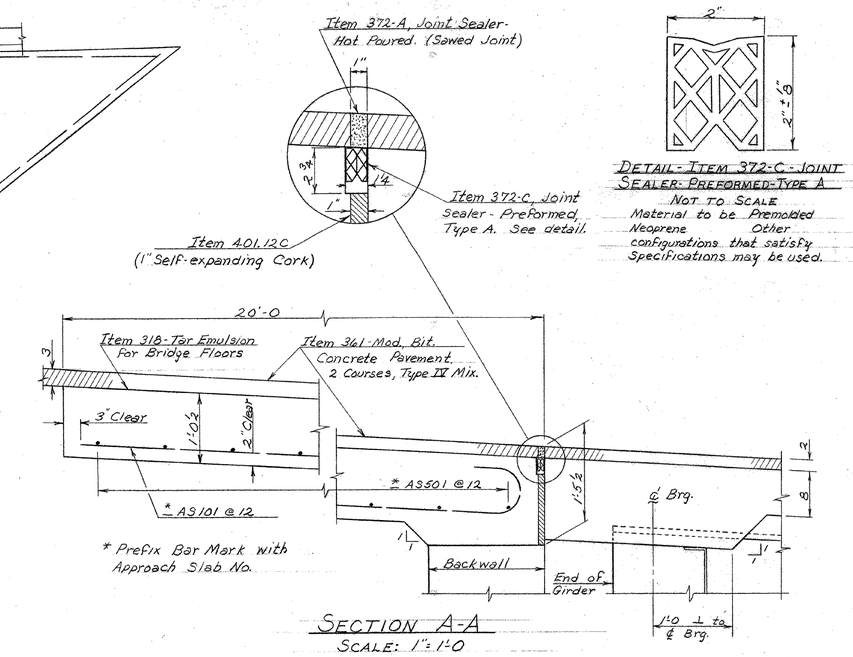
PLAN - APPROACH SLAB #1

SCALE: 3/16 = 1'-0



PLAN - APPROACH SLAB #2

SCALE: 3/16 = 1'-0



DETAIL - ITEM 372-C - JOINT SEALER: PREFORMED-TYPE A

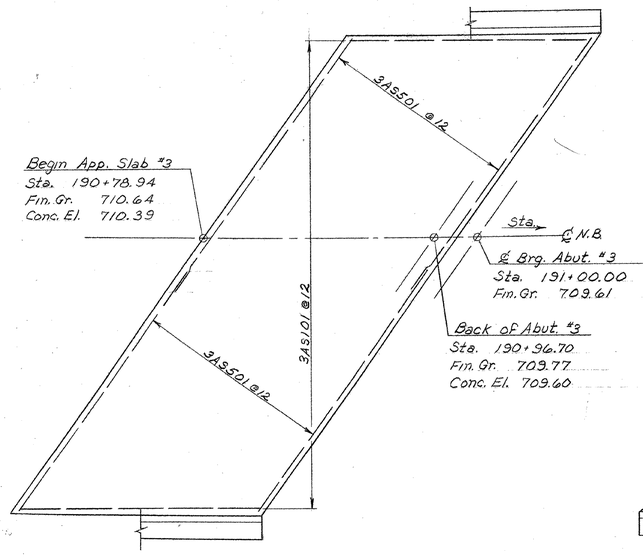
NOT TO SCALE

Material to be Premolded Neoprene Other configurations that satisfy Specifications may be used.

SECTION A-A

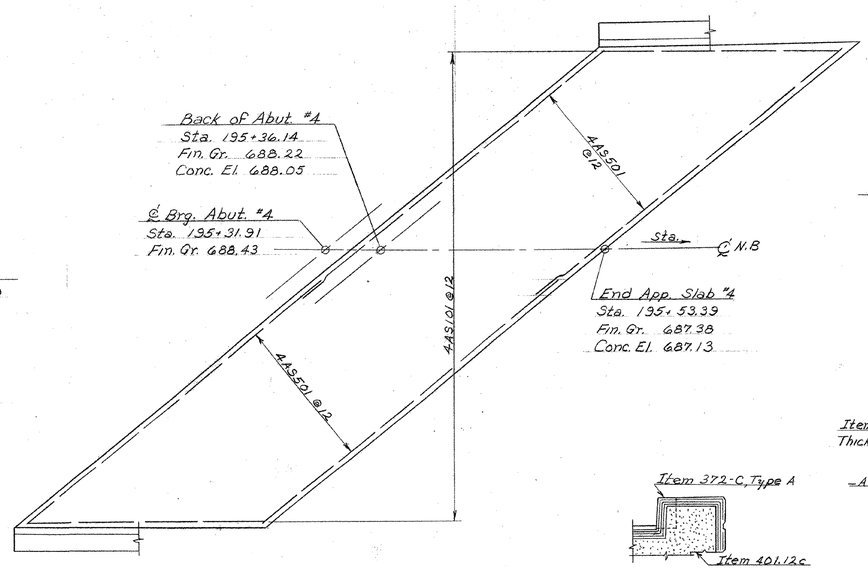
SCALE: 1" = 1'-0

* Prefix Bar Mark with Approach Slab No.



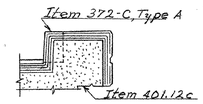
PLAN - APPROACH SLAB #3

SCALE: 3/16 = 1'-0



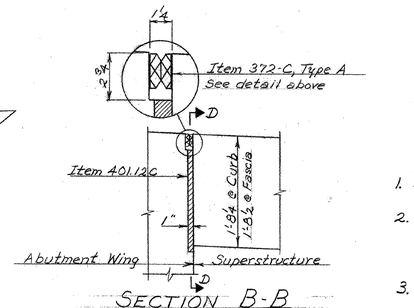
PLAN - APPROACH SLAB #4

SCALE: 3/16 = 1'-0



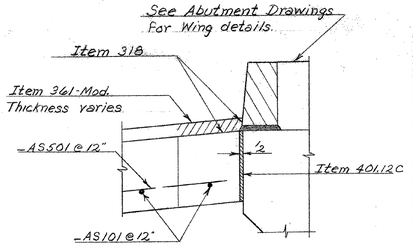
SECTION D-D

N.T.S.



SECTION B-B

SCALE: 1" = 1'-0



SECTION C-C

SCALE: 1" = 1'-0

THIS SHEET FOR REFERANCE ONLY
BERLIN IM 089-1(20)
BRIDGES 40 N&S

SHEET 100 OF 104

NOTES

1. See Br. 400 for General Notes.
2. Slope Approach Slabs to provide for 3" of Bit. Conc. at Roadway end and 2" at Bridge end.
3. Premolded Joint Sealer is to be continuous across roadway and curb from fascia to fascia.
4. Cross slopes of Approach Slabs to be same as for Bridge.

STATE OF VERMONT
DEPARTMENT OF HIGHWAYS

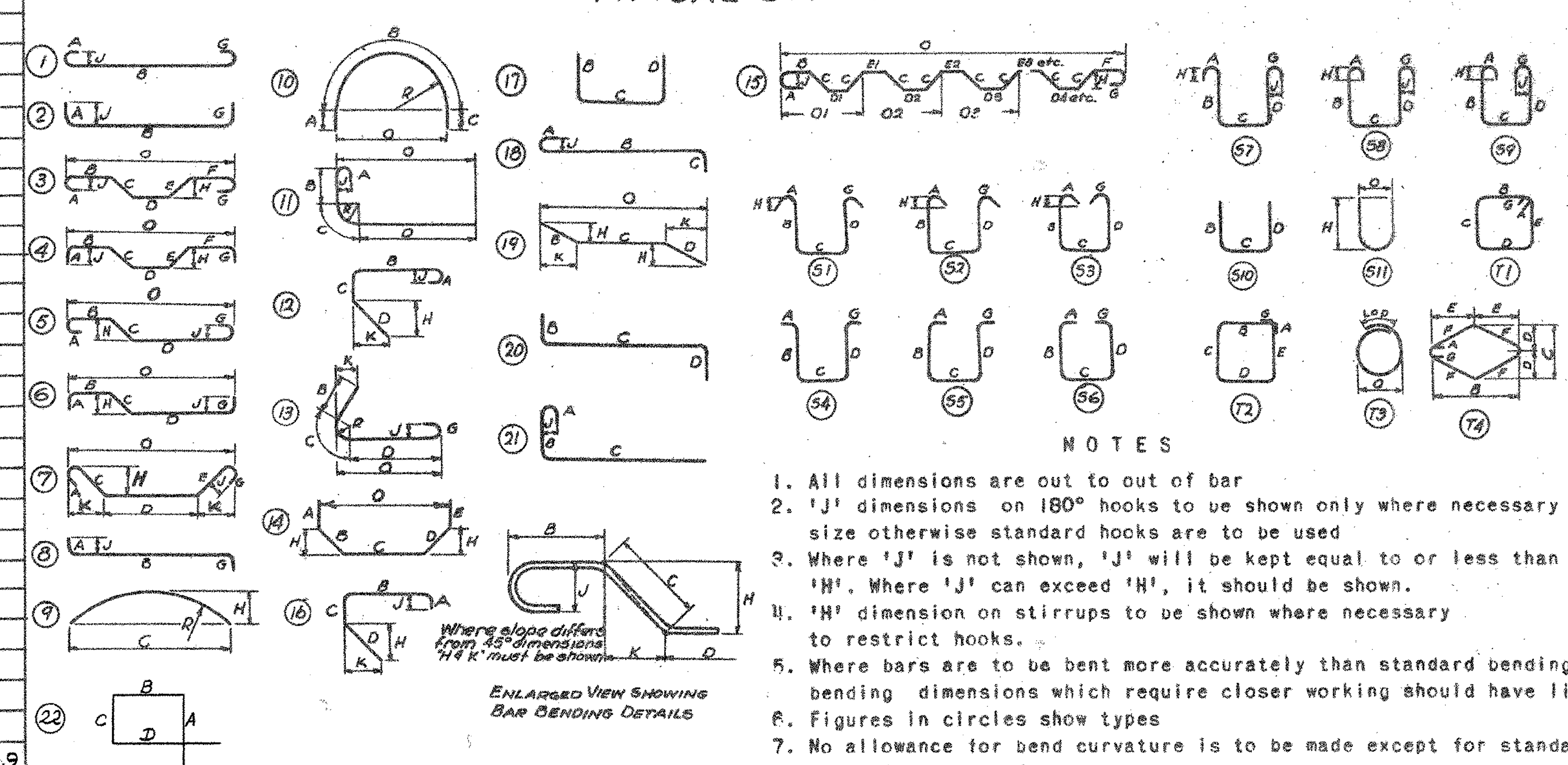
PROJECT BERLIN - MONTPELIER
TOWNS OF BERLIN & MONTPELIER
ROUTE NO. I 89 STA 193+50±
I 89 over VT. 12
APPROACH SLAB PLANS AND DETAILS
SCALE As NOTED
IN CHARGE W. SMITH
DRAWN BY W. TRIPP CHECKED BY R LADD 11-67
PROJECT NO. I 89-1(20) (60)
SHEET 174 OF 492 BR. 423

64 161

Item	No. Pieces	Size	Length	Mark	Type	A	B	C	D	E	F	G	H	J	K	R	O
						ABUTMENT No. 1											
1						FOOTING											
2	9	6	15-0	1A605	Str.												
3	10	6	20-0	1A606	Str.												
4	8	6	24-6	1A610A	Str.												
5	8	6	30-6	1A610B	Str.												
6																	
7	11	6	6-8	1A607	17		0-11	5-9									
8	*49	6	5-5	1A608	17		0-11	4-6									
9	8	6	10-3	1A611	19		3-0	4-3	3-0				2-2		2-2		8-7
10																	
11	*16	7	10-2	1A701	17		1-1	8-0	1-1								
12																	
13	*15	8	7-7	1A801	17		1-3	6-4									
14	20	8	11-6	1A802	17		1-3	9-0	1-3								
15	62	8	9-6	1A803	17		1-3	7-0	1-3								
16																	
17	15	9	7-3	1A901	17		1-5	5-10									
18	10	9	7-3	1A904	17		1-5	5-10									
19																	
20						STEM & WINGS											
21	1	4	20-3	1A401A	Str												
22	↕	↕	to	thru	↕		1 each, vary in 6 increments of 0-7										
23	1	4	23-9	1A401G	Str												
24	1	4	23-0	1A401H	Str												
25	↕	↕	to	thru	↕		1 each, vary in 5 increments of 0-7										
26	1	4	25-11	1A401M	Str												
27	2	4	26-6	1A401N	Str												
28	6	4	26-6	1A402	Str												
29	7	4	9-10	1A403A	Str												
30	7	4	10-2	1A403B	Str												
31	8	4	10-7	1A403C	Str												
32	*8	4	4-0	1A404	Str												
33	1	4	4-11	1A405A	Str												
34	↕	↕	to	thru	↕		1 each, vary in 4 increments of 1-6										
35	1	4	10-11	1A405E	Str												
36	1	4	4-6	1A406A	Str												
37	1	4	6-0	1A406B	Str												
38	1	4	7-6	1A406C	Str												
39	19	4	8-9	1A408	Str												
40	6	4	9-8	1A409A	Str												
41	5	4	9-11	1A409B	Str												
42	5	4	10-2	1A409C	Str												
43	1	4	10-5	1A410A	Str												
44	↕	↕	to	thru	↕		1 each, vary in 4 increments of 1-4										
45	1	4	5-1	1A410E	Str												
46	6	4	21-0	1A411	Str												
47	1	4	16-0	1A412A	Str.												
48	↕	↕	to	thru	↕		1 each, vary in 5 increments of 0-8										
49	1	4	19-4	1A412F	Str												
50	1	4	17-0	1A412G	Str												
51	↕	↕	to	thru	↕		1 each, vary in 5 increments of 0-8										
52	1	4	20-4	1A412L	Str												
53	2	4	21-0	1A412M	Str												
54	13	4	7-8	1A413	Str												
55	1	4	7-0	1A414A	Str												
56	1	4	5-8	1A414B	Str												
57	1	4	4-3	1A414C	Str												
58	14	4	25-6	1A415A	Str												
59	16	4	24-10	1A415B	Str												
60	49	4	7-1	1A417	Str												
61	16	4	25-3	1A418A	Str												
62	16	4	23-1	1A418B	Str												
63																	
64	1	5	16-3	1A501A	Str												
65	↕	↕	to	thru	↕		1 each, vary in 12 increments of 0-7										
66	1	5	23-3	1A501M	Str												
67	2.	5	24-3	1A501N	Str												
68	1	5	11-0	1A502A	Str												
69	↕	↕	to	thru	↕		1 each, vary in 11 increments of 0-8										
70	1	5	18-4	1A502L	Str												
71	2	5	18-9	1A502M	Str												
72	48	5	7-1	1A503	Str												
73																	
74	1	6	4-11	1A601A	Str												
75	↕	↕	to	thru	↕		1 each, vary in 4 increments of 1-6										
76	1	6	10-11	1A601E	Str												
77	9	6	10-1	1A602A	Str												
78	9	6	10-6	1A602B	Str												
79	7	6	9-10	1A603A	Str												
80	6	6	10-2	1A603B	Str												
81																	

Item	No. Pieces	Size	Length	Mark	Type	A	B	C	D	E	F	G	H	J	K	R	O
82	1	6	10-5	1A604A	Str												
83	↕	↕	to	thru	↕		1 each, vary in 4 increments of 1-4										
84	1	6	5-1	1A604E	Str												
85	8	6	8-9	1A609A	Str												
86	9	6	7-9	1A609B	Str												
87	10	6	7-1	1A609C	Str												
88	9	6	9-3	1A609D	Str												
89	9	6	8-5	1A609E	Str												
90	5	6	7-8	1A609F	Str												
91																	
92	23	8	3-0	1A804	Str												
93																	
94	15	9	9-3	1A902	Str												
95	1	9	5-0	1A903A	Str												
96	1	9	6-6	1A903B	Str												
97	1	9	8-0	1A903C	Str												
98	10	9	8-2	1A905	Str												
99	1	9	7-6	1A906A	Str												
100	1	9	6-2	1A906B	Str												
101	*2	9	4-9	1A906C	Str												
102																	
103	49	4	6-4	1A407	22	2-9	1-1	1-0	1-6								
104	6	4	10-10	1A416A	17		6-6	3-8	0-8								
105	9	4	10-1	1A416B	17		5-9	3-8	0-8								
106	9	4	9-3	1A416C	17		4-11	3-8	0-8								
107	9	4	11-4	1A416D	17		7-0	3-8	0-8								
108	9	4	10-6	1A416E	17		6-2	3-8	0-8								
109	7	4	9-9	1A416F	17		5-5	3-8	0-8								
110																	
111	14	5	11-6	1A504	14		1-0	9-6	1-0				0-6				11-9
112	*14	5	7-2	1A505	14		1-0	5-2	1-0				0-11				6-2
113																	
114																	
115																	
116																	
117																	
118																	
119																	
120																	
121																	
122																	
123																	
124																	
125																	
126																	
127																	
128																	
129																	
130						ABUTMENT No. 2											
131							FOOTING										
132	8	5	18-0	2A504	Str												
133																	
134	16	6	35-0	2A601	Str												
135	1	6	8-0	2A606A	Str												
136	↕	↕	to	thru	↕		1 each, vary in 9 increments of 0-11										
137	1	6	16-3	2A606J	Str												
138																	
139	63	6	5-5	2A602	17		0-11	4-6									
140	15	6	8-10	2A607	17		0-11	7-0	0-11								
141																	
142	13	8	7-11	2A801	17		1-3	6-8									
143	16	8	11-6	2A802	17		1-3	9-0	1-3								
144	11	8	8-11	2A803	17		1-3	7-8									
145	68	8	9-6	2A804	17		1-3	7-0	1-3								
146																	
147	14	9	7-3	2A901	17		1-5	5-10									
148																	
149							STEM & WINGS										
150	8	4	12-0	2A401A	Str												
151	12	4	24-10	2A401B	Str												
152	16	4	31-10	2A401C	Str												
153	16	4	12-0	2A403A	Str												
154	16	4	24-10	2A403B	Str												
155	16	4	29-0	2A403C	Str												
156	60	4	7-0	2A404	Str												
157	18	4	10-2	2A405	Str												
158	1	4	9-0	2A406A	Str												
159	1	4	7-8	2A406B	Str												
160	1	4	6-4	2A406C	Str												
161	1	4	5-0	2A406D	Str												
162	8	4	8-7	2A407A	Str												

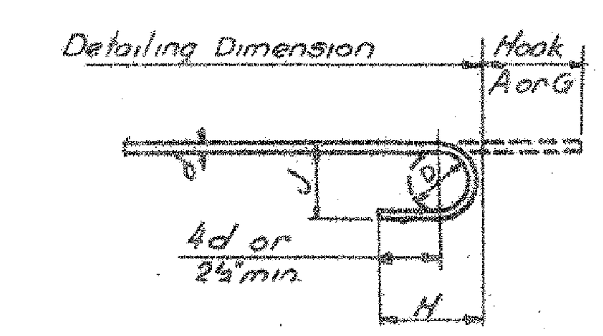
TYPICAL BAR BENDS



NOTES

1. All dimensions are out to out of bar
2. 'J' dimensions on 180° hooks to be shown only where necessary to restrict hook size otherwise standard hooks are to be used
3. Where 'J' is not shown, 'J' will be kept equal to or less than 'H'. Where 'J' can exceed 'H', it should be shown.
4. 'H' dimension on stirrups to be shown where necessary to restrict hooks.
5. Where bars are to be bent more accurately than standard bending tolerances bending dimensions which require closer working should have limits indicated
6. Figures in circles show types
7. No allowance for bend curvature is to be made except for standard hook & radii in excess of same.

Item	No. Pieces	Size	Length	Mark	Type	A	B	C	D	E	F	G	H	J	K	R	O
163	8	4	8-11	2A407B	Str												
164	7	4	9-4	2A407C	Str												
165	1	4	8-6	2A408A	Str												
166	1	4	6-9	2A408B	Str												
167	1	4	5-0	2A408C	Str												
168	6	4	25-6	2A410	Str												
169	9	4	4-0	2A411	Str												
170	1	4	21-8	2A412A	Str												
171	↕	↕	to	thru	↕		1 each, vary in 7 increments of 0-8										
172	1	4	26-4	2A412H	Str												
173	1	4	23-4	2A412I	Str												
174	↕	↕	to	thru	↕		1 each, vary in 3 increments of 0-8										
175	1	4	25-4	2A412L	Str												
176	2	4	25-6	2A412M	Str												
177	16	4	5-2	2A413	Str												
178	1	4	3-6	2A414A	Str												
179	1	4	4-3	2A414B	Str												
180	1	4	17-2	2A415A	Str												
181	1	4	18-5	2A415B	Str												
182	1	4	19-8	2A415C	Str												
183	1	4	19-3	2A415D	Str												
184	↕	↕	to	thru	↕		1 each, vary in 3 increments of 1-3										
185	1	4	23-0	2A415G	Str												
186	2	4	23-6	2A415H	Str												
187	1	4	8-0	2A416A	Str												
188	↕	↕	to	thru	↕		1 each, vary in 4 increments of 0-9										
189	1	4	5-0	2A416E	Str												
190				(ABUTMENT No. 2 CONTINUED ON BR. 425)													



STANDARD HOOK DETAIL

BAR SIZES

Equivalent Size	Present Number	Weight per. ft.
1/4"φ	2	.167
3/8"φ	3	.376
1/2"φ	4	.668
5/8"φ	5	1.043
3/4"φ	6	1.502
7/8"φ	7	2.044
1"φ	8	2.670
1"□	9	3.400
1 1/8"□	10	4.303
1 1/4"□	11	5.313
1 1/2"□	14 S	7.650
2"□	18 S	13.600

GENERAL NOTES

(1) Unless otherwise designated all standard reinforcement shall be deformed bars conforming with the requirements of the "Standard Specification for Billet-Steel Bars for Concrete Reinforcement"(Intermediate Grade) AASHO Designation M31-60 or its latest revision.

(2) Unless otherwise designated all special large size reinforcement shall be deformed bars conforming with the requirements of the "Standard Specification for Special Large size Deformed Billet-Steel Bars for Concrete Reinforcement"(Intermediate Grade) AASHO Designation M-174-60 or its latest revision.

(3) * Denotes one extra bar added for testing purposes.

(4) Stirrups and tie bars shall be bent around a pin having a diameter not less than two times the minimum thickness of the bar. Bends for other bars shall be made around a pin having a diameter not less than six times the minimum

(4) (continued) thickness except for bars larger than 1 inch, in which case the bends shall be made around a pin of eight bar diameters.

ESTIMATED QUANTITIES

LOCATION	PLAN (LBS)	FINAL (LBS)
ABUTMENT 1		

THIS SHEET FOR REFERANCE ONLY
BERLIN IM 089-1(20)
BRIDGES 40 N&S
SHEET 101 OF 104

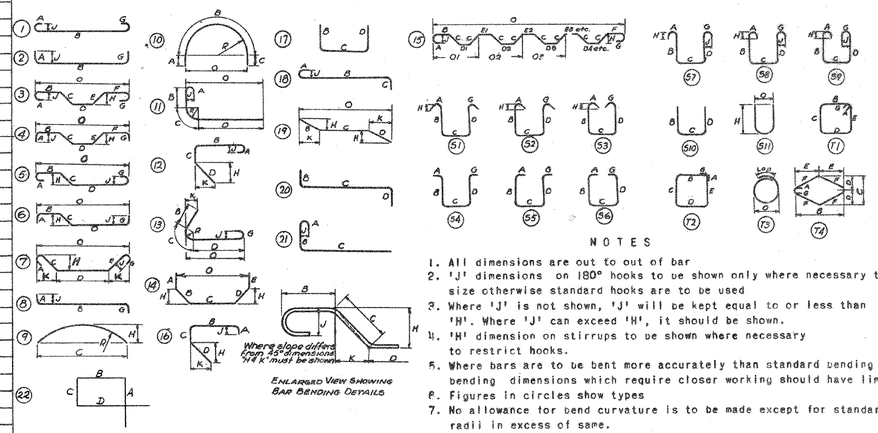
STATE OF VERMONT
DEPARTMENT OF HIGHWAYS

PROJECT BERLIN-MONTPELIER
TOWNS OF BERLIN & MONTPELIER
ROUTE NO. I 89 STA 193+50±
I 89 OVER VT. 12
REINFORCING - ABUTMENTS 1 & 2
IN CHARGE W. SMITH
DRAWN BY W. TRIPP CHECKED BY F. GILMAN R. LADD 11-67
PROJECT I NO. 89-1(12)
SHEET 175 OF 497 BR. 424

Item	No. Pieces	Size	Length	Mark	Type	A	B	C	D	E	F	G	H	J	K	R	θ
				ABUTMENT No. 2 (CONTINUED)													
1	6	4	8-6	2A417A	Str												
2	6	4	8-9	2A417B	Str												
3	7	4	9-1	2A417C	Str												
4	6	4	23-6	2A418	Str												
5																	
6	63	5	7-0	2A501	Str												
7	1	5	15-5	2A502A	Str												
8	↕	↕	to	thru	↕	1 each, vary in 11 increments of 0-8											
9	1	5	22-9	2A502L	Str												
10	2	5	23-4	2A502M	Str												
11	1	5	12-0	2A503A	Str												
12	↕	↕	to	thru	↕	1 each, vary in 6 increments of 1-3											
13	1	5	19-6	2A503G	Str												
14	2	5	20-0	2A503H	Str												
15																	
16	16	6	5-2	2A603A	Str												
17	11	6	6-2	2A603B	Str												
18	12	6	7-2	2A603C	Str												
19	11	6	8-2	2A603D	Str												
20	11	6	9-2	2A603E	Str												
21	2	6	10-2	2A603F	Str												
22	10	6	8-7	2A604A	Str												
23	9	6	9-0	2A604B	Str												
24	1	6	8-6	2A605A	Str												
25	1	6	6-9	2A605B	Str												
26	1	6	5-0	2A605C	Str												
27	1	6	8-0	2A608A	Str												
28	↕	↕	to	thru	↕	1 each, vary in 4 increments of 0-9											
29	1	6	5-0	2A608E	Str												
30	7	6	8-6	2A609A	Str												
31	7	6	8-10	2A609B	Str												
32																	
33	1	8	4-0	2A805A	Str												
34	1	8	4-9	2A805B	Str												
35	30	8	3-0	2A806	Str												
36																	
37	14	9	10-8	2A902	Str												
38	1	9	9-6	2A903A	Str												
39	↕	↕	to	thru	↕	1 each, vary in 3 increments of 1-4											
40	1	9	5-6	2A903D	Str												
41																	
42	11	4	7-3	2A402A	17		2-11	3-8	0-8								
43	11	4	8-3	2A402B	17		3-11	3-8	0-8								
44	12	4	9-3	2A402C	17		4-11	3-8	0-8								
45	11	4	10-3	2A402D	17		5-11	3-8	0-8								
46	11	4	11-3	2A402E	17		6-11	3-8	0-8								
47	7	4	12-3	2A402F	17		7-11	3-8	0-8								
48	50	4	6-4	2A409	22	2-9	1-1	1-0	1-6								
49																	
50	10	5	13-0	2A505	14		1-0	11-0	1-0			0-4				12-10	
51	15	5	6-3	2A506	14		1-0	4-3	1-0			0-11				4-11	
52																	
53																	
54																	
55																	
56																	
57																	
58																	
59				ABUTMENT No. 3													
60				FOOTING													
61	8	6	24-6	3A601A	Str												
62	8	6	30-0	3A601B	Str												
63	10	6	20-0	3A604	Str												
64	9	6	20-6	3A610	Str												
65																	
66	49	6	5-5	3A602	17		0-11	4-6									
67	8	6	10-3	3A607	19		3-0	4-3	3-0			2-2		2-2		8-7	
68																	
69	*16	7	7-1	3A701	17		1-1	6-0									
70	19	7	10-8	3A702	17		1-1	8-6	1-1								
71																	
72	59	8	9-6	3A801	17		1-3	7-0	1-3								
73	16	8	6-7	3A802	17		1-3	5-4									
74	20	8	12-0	3A804	17		1-3	9-6	1-3								
75																	
76	14	9	7-3	3A901	17		1-5	5-10									
77	13	9	9-5	3A902	17		1-5	8-0									
78																	
79				STEM & WINGS													
80	16	4	25-6	3A401A	Str												
81	16	4	25-1	3A401B	Str												

Item	No. Pieces	Size	Length	Mark	Type	A	B	C	D	E	F	G	H	J	K	R	θ
82	16	4	25-6	3A403A	Str												
83	16	4	23-6	3A403B	Str												
84	48	4	7-1	3A404	Str												
85	1	4	21-8	3A405A	Str												
86	↕	↕	to	thru	↕	1 each, vary in 5 increments of 0-8											
87	1	4	25-0	3A405F	Str												
88	1	4	22-4	3A405G	Str												
89	↕	↕	to	thru	↕	1 each, vary in 6 increments of 0-8											
90	1	4	26-4	3A405M	Str												
91	1	4	26-6	3A405N	Str												
92	19	4	8-4	3A406	Str												
93	8	4	9-10	3A407A	Str												
94	7	4	10-2	3A407B	Str												
95	7	4	10-6	3A407C	Str												
96	6	4	26-6	3A408	Str												
97	1	4	10-8	3A410A	Str												
98	↕	↕	to	thru	↕	1 each, vary in 4 increments of 1-5											
99	1	4	5-0	3A410E	Str												
100	1	4	7-0	3A411A	Str												
101	1	4	5-6	3A411B	Str												
102	1	4	4-0	3A411C	Str												
103	7	4	4-0	3A412	Str												
104	1	4	19-3	3A413A	Str												
105	↕	↕	to	thru	↕	1 each, vary in 6 increments of 0-7											
106	1	4	22-9	3A413G	Str												
107	1	4	21-10	3A413H	Str												
108	↕	↕	to	thru	↕	1 each, vary in 5 increments of 0-7											
109	1	4	24-9	3A413M	Str												
110	2	4	25-6	3A413N	Str												
111	7	4	10-6	3A415A	Str												
112	7	4	10-2	3A415B	Str												
113	7	4	9-10	3A415C	Str												
114	6	4	25-6	3A416	Str												
115	1	4	4-3	3A417A	Str												
116	1	4	6-0	3A417B	Str												
117	1	4	7-9	3A417C	Str												
118	1	4	4-10	3A418A	Str												
119	↕	↕	to	thru	↕	1 each, vary in 4 increments of 1-6											
120	1	4	10-10	3A418E	Str												
121	18	4	9-4	3A414	Str												
122	49	5	7-1	3A501	Str												
123	1	5	16-4	3A502A	Str												
124	↕	↕	to	thru	↕	1 each, vary in 12 increments of 0-8											
125	1	5	24-4	3A502M	Str												
126	1	5	24-7	3A502M	Str												
127	1	5	14-8	3A505A	Str												
128	↕	↕	to	thru	↕	1 each, vary in 12 increments of 0-7											
129	1	5	21-8	3A505M	Str												
130	2	5	22-9	3A505N	Str												
131																	
132	8	6	9-5	3A603A	Str												
133	9	6	8-9	3A603B	Str												
134	10	6	7-10	3A603C	Str												
135	9	6	10-0	3A603D	Str												
136	9	6	9-1	3A603E	Str												
137	4	6	8-5	3A603F	Str												
138	6	6	10-1	3A605A	Str												
139	6	6	10-4	3A605B	Str												
140	5	6	10-7	3A605C	Str												
141	1	6	4-10	3A606A	Str												
142	↕	↕	to	thru	↕	1 each, vary in 4 increments of 1-6											
143	1	6	10-10	3A606E	Str												
144	7	6	9-10	3A608A	Str												
145	6	6	10-2	3A608B	Str												
146	6	6	10-6	3A608C	Str												
147	1	6	10-8	3A609A	Str												
148	↕	↕	to	thru	↕	1 each, vary in 4 increments of 1-5											
149	1	6	5-0	3A609E	Str												
150																	
151	16	8	8-10	3A803	Str												
152	1	8	7-6	3A805A	Str												
153	1	8	6-0	3A805B	Str												
154	*2	8	4-6	3A805C	Str												
155	23	8	3-0	3A806	Str												
156																	
157	14	9	9-10	3A903	Str												
158	1	9	4-9	3A904A	Str												
159	1	9	6-6	3A904B	Str												
160	1	9	8-3	3A904C	Str												
161																	
162																	

TYPICAL BAR BENDS



NOTES

1. All dimensions are out to out of bar
2. 'J' dimensions on 180° hooks to be shown only where necessary to restrict hook size otherwise standard hooks are to be used
3. Where 'J' is not shown, 'J' will be kept equal to or less than ¼H. Where 'J' can exceed 'H', it should be shown.
4. 'H' dimension on stirrups to be shown where necessary to restrict hooks.
5. Where bars are to be bent more accurately than standard bending tolerances bending dimensions which require closer working should have limits indicated
6. Figures in circles show types
7. No allowance for bend curvature is to be made except for standard hook & radii in excess of same.

Item	No. Pieces	Size	Length	Mark	Type	A	B	C	D	E	F	G	H	J	K	R	O
163	6	4	11-5	3A402A	17		0-8	3-8	7-1								
164	8	4	10-9	3A402B	17		0-8	3-8	6-5								
165	10	4	9-10	3A402C	17		0-8	3-8	5-6								
166	9	4	12-6	3A402D	17		0-8	3-8	7-8								
167	9	4	11-1	3A402E	17		0-8	3-8	6-9								
168	7	4	10-5	3A402F	17		0-8	3-8	6-1								
169	53	4	6-4	3A409	22	2-9	1-1	1-0	1-6								
170																	
171	15	5	11-7	3A503	14		1-0	9-7	1-0				0-5			11-5	
172	14	5	7-2	3A504	14		1-0	5-2	1-0				0-11			6-0	
173																	
174																	
175																	
176																	
177																	
178																	
179																	
180																	
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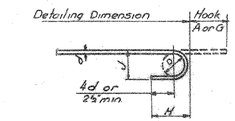
190																	



STANDARD HOOK DETAIL

BAR SIZES

Equivalent Size	Present Number	Weight per ft.
⅜ϕ	2	.167
⅜ϕ	3	.376
½ϕ	4	.668
⅝ϕ	5	1.043
¾ϕ	6	1.502
⅞ϕ	7	2.044
1ϕ	8	2.670
1ϕ	9	3.400
1⅛ϕ	10	4.303
1¼ϕ	11	5.313
1⅜ϕ	14S	7.650
2ϕ	18S	13.600

THIS SHEET FOR REFERANCE ONLY
BERLIN IM 089-1(20)
BRIDGES 40 N&S

GENERAL NOTES

(1) Unless otherwise designated all standard reinforcement shall be deformed bars conforming with the requirements of the "Standard Specification for Billet-Steel Bars for Concrete Reinforcement"(Intermediate Grade) AASHO Designation M31-60 or its latest revision.

(2) Unless otherwise designated all special large size reinforcement shall be deformed bars conforming with the requirements of the "Standard Specification for Special Large size Deformed Billet-Steel Bars for Concrete Reinforcement"(Intermediate Grade) AASHO Designation M-174-60 or its latest revision.

(3) * Denotes one extra bar added for testing purposes.

(4) Stirrups and tie bars shall be bent around a pin having a diameter not less than two times the minimum thickness of the bar. Bends for other bars shall be made around a pin having a diameter not less than six times the minimum thickness except for bars larger than 1 inch, in which case the bends shall be made around a pin of eight bar diameters.

SHEET 102 OF 104

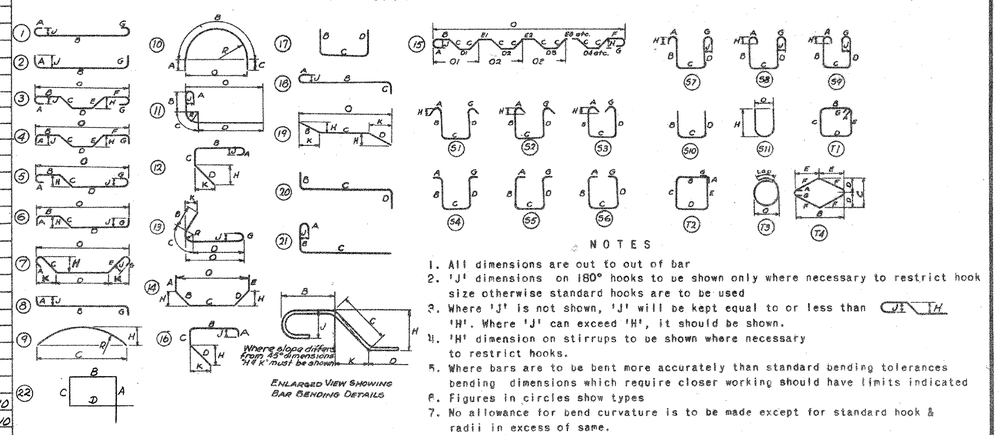
ESTIMATED QUANTITIES

LOCATION	PLAN (LBS)	FINAL (LBS)
ABUTMENT 2		
ABUTMENT 3		

STATE OF VERMONT
DEPARTMENT OF HIGHWAYS
PROJECT BERLIN-MONTPELIER
TOWNS OF BERLIN & MONTPELIER
ROUTE NO I 89 STA 193+50±
I 89 OVER VT. 12
REINFORCING - ABUTMENTS 2 & 3
IN CHARGE W. SMITH
DRAWN BY W. TRIPP CHECKED BY F. GILMAN R. LADD 11-67
PROJECT I NO. 89-1(12)
SHEET 176 OF 497 BR 425

Item	No. Pieces	Size	Length	Mark	Type	A	B	C	D	E	F	G	H	J	K	R	O
				ABUTMENT NO. 4													
1				FOOTING													
2	16	6	35-0	4A601	Str												
3	10	6	13-6	4A604	Str												
4	8	6	21-0	4A605	Str												
5																	
6	63	6	5-5	4A602	17		0-11	4-6									
7	22	6	9-4	4A606	17		0-11	7-6	0-11								
8																	
9	69	8	3-6	4AB01	17		1-3	7-0	1-3								
10	14	8	12-0	4AB02	17		1-3	9-6	1-3								
11	15	8	6-7	4AB03	17		1-3	5-4									
12																	
13	11	9	7-3	4A901	17		1-5	5-10									
14	10	9	9-5	4A902	17		1-5	8-0									
15																	
16				STEM & WINGS													
17	12	4	13-6	4A401A	Str												
18	16	4	24-9	4A401B	Str												
19	20	4	29-9	4A401C	Str												
20	61	4	7-1	4A403	Str												
21	16	4	12-6	4A404A	Str												
22	16	4	24-9	4A404B	Str												
23	16	4	27-2	4A404C	Str												
24	1	4	17-3	4A405A	Str												
25	↓	↓	to	thru	↓	1 each, vary in 9 increments of 0-7											
26	1	4	22-6	4A405J	Str												
27	1	4	19-6	4A405K	Str												
28	1	4	20-1	4A405L	Str												
29	1	4	20-8	4A405M	Str												
30	3	4	21-6	4A405N	Str												
31	14	4	11-8	4A406	Str												
32	1	4	10-3	4A407A	Str												
33	↓	↓	to	thru	↓	1 each, vary in 3 increments of 1-9											
34	1	4	5-0	4A407D	Str												
35	6	4	8-10	4A408A	Str												
36	6	4	9-1	4A408B	Str												
37	6	4	9-4	4A408C	Str												
38	1	4	8-10	4A409A	Str												
39	↓	↓	to	thru	↓	1 each, vary in 3 increments of 1-3											
40	1	4	5-1	4A409D	Str												
41	6	4	21-6	4A411	Str												
42	8	4	4-0	4A412	Str												
43	20	4	6-9	4A413	Str												
44	1	4	3-11	4A414A	Str												
45	1	4	4-10	4A414B	Str												
46	1	4	5-9	4A414C	Str												
47	8	4	8-4	4A415A	Str												
48	8	4	8-9	4A415B	Str												
49	8	4	9-2	4A415C	Str												
50	1	4	4-11	4A416A	Str												
51	↓	↓	to	thru	↓	1 each, vary in 4 increments of 0-10											
52	1	4	8-3	4A416E	Str												
53	1	4	21-6	4A417A	Str												
54	↓	↓	to	thru	↓	1 each, vary in 4 increments of 1-0											
55	1	4	25-6	4A417E	Str												
56	1	4	24-9	4A417F	Str												
57	1	4	25-9	4A417G	Str												
58	1	4	26-9	4A417H	Str												
59	3	4	27-6	4A417I	Str												
60	6	4	27-6	4A418	Str												
61																	
62	63	5	7-1	4A501	Str												
63	1	5	11-3	4A502A	Str												
64	↓	↓	to	thru	↓	1 each, vary in 12 increments of 0-7											
65	1	5	18-3	4A502M	Str												
66	3	5	19-0	4A502N	Str												
67	6	5	8-4	4A503A	Str												
68	6	5	8-7	4A503B	Str												
69	6	5	8-11	4A503C	Str												
70	1	5	4-11	4A504A	Str												
71	↓	↓	to	thru	↓	1 each, vary in 4 increments of 0-10											
72	1	5	8-3	4A504E	Str												
73	1	5	16-0	4A505A	Str												
74	↓	↓	to	thru	↓	1 each, vary in 7 increments of 1-0											
75	1	5	23-0	4A505H	Str												
76	3	5	24-0	4A505I	Str												
77																	
78	15	6	6-10	4A603A	Str												
79	11	6	7-10	4A603B	Str												
80	12	6	8-10	4A603C	Str												
81	11	6	9-9	4A603D	Str												
82	11	6	10-9	4A603E	Str												
83	3	6	11-9	4A603F	Str												
84	5	6	8-10	4A607A	Str												
85	5	6	9-1	4A607B	Str												
86	5	6	9-4	4A607C	Str												
87	1	6	8-9	4A608A	Str												
88	↓	↓	to	thru	↓	1 each, vary in 3 increments of 1-3											
89	1	6	5-0	4A608D	Str												
90																	
91	15	8	6-10	4AB04	Str												
92	1	8	3-11	4AB05A	Str												
93	1	8	4-10	4AB05B	Str												
94	1	8	5-9	4AB05C	Str												
95	30	8	2-8	4AB06	Str												
96																	
97	11	9	12-2	4A903	Str												
98	1	9	10-9	4A904A	Str												
99	↓	↓	to	thru	↓	1 each, vary in 3 increments of 1-9											
100	1	9	5-6	4A904D	Str												
101																	
102	10	4	8-10	4A402A	17		0-8	3-8	4-6								
103	11	4	9-10	4A402B	17		0-8	3-8	5-6								
104	12	4	10-10	4A402C	17		0-8	3-8	6-6								
105	11	4	11-9	4A402D	17		0-8	3-8	7-5								
106	11	4	12-9	4A402E	17		0-8	3-8	8-5								
107	8	4	13-9	4A402F	17		0-8	3-8	9-5								
108	50	4	6-4	4A410	22	2-9	1-1	1-0	1-6								
109																	
110	17	5	6-2	4A506	14		1-0	4-2	1-0				0-11				4-10
111	12	5	13-0	4A507	14		1-0	11-0	1-0				0-4				12-10
112																	
113																	
114				PIER NO. 1													
115				FOOTING													
116																	
117	*64	9	14-4	1P901	2	1-5	11-6					1-5					
118	*73	10	16-8	1P1001	2	1-7	13-6					1-7					
119	*79	14S	10-3	1P1451	2	2-1	8-2										
120																	
121				COLUMN													
122	26	9	31-4	1P902	Str												
123	26	9	33-2	1P903	Str												
124	26	9	34-11	1P904	Str												
125	13	14S	32-8	1P1432	Str												
126	26	14S	30-8	1P1453	Str												
127																	
128	13	11	30-10	1P1101	3		5-8	2-0	23-2				0-2			30-10	
129	*27	11	28-10	1P1102	3		5-8	2-0	21-2				0-2			28-10	
130					Spiral	Core	Pitch	Turns	Spacers								
131	1	5	26-10	1P501	4-0	3½	95	4									
132	2	5	24-9½	1P502	4-0	3½	88	4									
133	1	5	27-5	1P503	4-0	3½	97	4									
134	1	5	29-2	1P504	4-0	3½	103	4									
135	1	5	31-2½	1P505	4-0	3½	110	4									
136																	
137				CAP													
138	20	5	8-6	1P506	Str												
139	10	5	5-6	1P507	Str												
140	16	6	25-9	1P603	Str												
141	10	8	22-4	1P801	Str												
142	6	9	15-0	1P905	Str												
143	8	9	28-5	1P906	Str												
144																	
145	*49	4	8-6	1P401	17		2-0	4-6	2-0								
146	38	6	21-6	1P601	T1	0-7	4-6	5-8	4-6	5-8		0-7					
147	*13	6	12-4	1P602	10	2-6	7-4	2-6								2-4	4-8
148	20	10	23-8	1P1002	17		5-0	18-8									
149																	
150																	
151																	
152				PIER NO. 2													
153				FOOTING													
154	63	9	14-4	2P901	2	1-5	11-6					1-5					
155	72	10	16-8	2P1001	2	1-7	13-6					1-7					
156	78	14S	10-3	2P1451	2	2-1	8-2										
157																	
158				COLUMN													
159	26	9	27-9	2P902	Str												
160	26	9	29-9	2P903	Str												
161	26	9	31-8	2P904	Str												
162	39	14S	30-8	2P1452	Str												

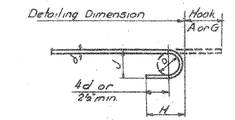
TYPICAL BAR BENDS



NOTES

1. All dimensions are out to out of bar
2. 'J' dimensions on 180° hooks to be shown only where necessary to restrict hook size otherwise standard hooks are to be used
3. Where 'J' is not shown, 'J' will be kept equal to or less than ½H. Where 'J' can exceed 'H', it should be shown.
4. 'H' dimension on stirrups to be shown where necessary to restrict hooks.
5. Where bars are to be bent more accurately than standard bending tolerances bending dimensions which require closer working should have limits indicated
6. Figures in circles show types
7. No allowance for bend curvature is to be made except for standard hook & radii in excess of same.

Item	No. Pieces	Size	Length	Mark	Type	A	B	C	D	E	F	G	H	J	K	R	O
163																	
164	39	11	28-10	2P1101	3		5-8	2-0	21-2				0-2				28-10
165																	
166				Spiral	Core	Pitch	Turns	Spacers									
167	3	5	24-9½	2P501	4-0	3½	88	4									
168	1	5	23-11	2P502	4-0	3½	85	4									
169	1	5	25-11½	2P503	4-0	3½	92	4									
170	1	5	28-0	2P504	4-0	3½	99	4									
171																	
172				CAP													
173	20	5	8-6	2P505	Str												
174	10	5	5-6	2P506	Str												
175	16	6	27-9	2P603	Str												
176	10	8	23-10	2P801	Str												
177	6	9	16-6	2P905	Str												
178	8	9	30-5	2P906	Str												
179																	
180	48	4	8-6	2P401	17		2-0	4-6	2-0								
181	44	6	21-6	2P601	T1	0-7	4-6	5-8	4-6	5-8		0-7					
182	12	6	12-4	2P602	10	2-6	7-4	2-6								2-4	4-8
183	20	10	24-11	2P1002	17		5-0	19-11									
184																	
185																	
186																	
187																	
188																	
189																	
190																	



STANDARD HOOK DETAIL

BAR SIZES

Equivalent Size	Present Number	Weight per ft.
¼" ø	2	.167
⅜" ø	3	.376
½" ø	4	.668
⅝" ø	5	1.043
¾" ø	6	1.502
⅞" ø	7	2.044
1" ø	8	2.670
1⅛" ø	9	3.400
1¼" ø	10	4.303
1⅜" ø	11	5.313
1½" ø	14S	7.650
2" ø	18S	13.600

THIS SHEET FOR REFERANCE ONLY
BERLIN IM 089-1(20)
BRIDGES 40 N&S

GENERAL NOTES

(1) Unless otherwise designated all standard reinforcement shall be deformed bars conforming with the requirements of the "Standard Specification for Billet-Steel Bars for Concrete Reinforcement"(Intermediate Grade) AASHO Designation M31-60 or its latest revision.

(2) Unless otherwise designated all special large size reinforcement shall be deformed bars conforming with the requirements of the "Standard Specification for Special Large size Deformed Billet-Steel Bars for Concrete Reinforcement"(Intermediate Grade) AASHO Designation M-174-60 or its latest revision.

(3) * Denotes one extra bar added for testing purposes.

(4) Stirrups and tie bars shall be bent around a pin having a diameter not less than two times the minimum thickness of the bar. Bends for other bars shall be made around a pin having a diameter not less than six times the minimum thickness except for bars larger than 1 inch, in which case the bends shall be made around a pin of eight bar diameters.

(5) All Spiral ReinForcement shall conform to AASHO designation M32-60, Cold Drawn Steel Wire For Concrete Reinforcement.

ESTIMATED QUANTITIES

LOCATION	PLAN (LBS)	FINAL (LBS)
ABUTMENT 4		
PIER 1		
PIER 2		

STATE OF VERMONT
DEPARTMENT OF HIGHWAYS

PROJECT BERLIN - MONTPELIER
TOWNS OF BERLIN & MONTPELIER
ROUTE NO I 89 STA 193+50±
I 89 OVER VT. 12
REINFORCING - ABUTMENT 4 & PIERS 1 & 2
IN CHARGE W. SMITH
DRAWN BY W. TRIPP CHECKED BY E. GILMAN R. LADD 11-67
PROJECT I NO. 89-1(12)
SHEET 127 OF 497 BR. 426

SHEET 103 OF 104

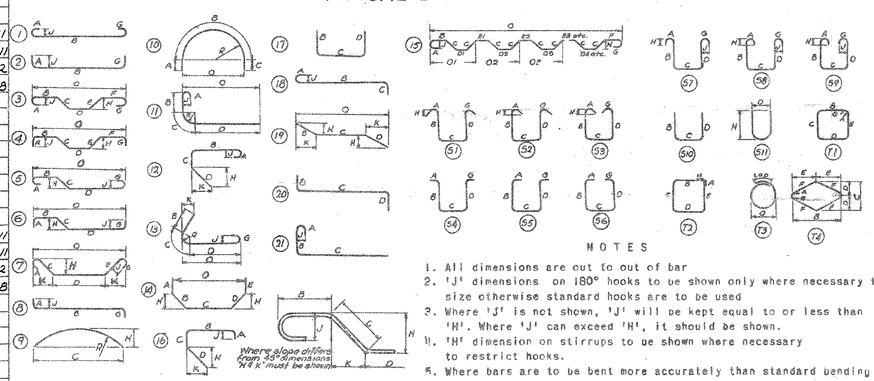
PIER NO. 3

Item	No. Pieces	Size	Length	Mark	Type	A	B	C	D	E	F	G	H	J	K	R	Q
						FOOTING											
2	63	9	14-4	3P901	2	1-5	11-6					1-5					
3	72	10	16-8	3P1001	2	1-7	13-6					1-7					
4	*79	14S	10-3	3P1451	2	2-1	8-2										
5																	
6						COLUMN											
7	26	9	29-10	3P902	Str												
8	26	9	31-7	3P903	Str												
9	26	9	33-5	3P904	Str												
10	39	14S	30-8	3P1452	Str												
11																	
12	*40	11	28-10	3P1101	3		5-8	2-0	21-2			0-2				28-10	
13																	
14				Spiral	Core	Pitch	Turns	Spacers									
15	3	5	24-9½	3P501	4-0	3½	88	4									
16	1	5	25-11½	3P502	4-0	3½	92	4									
17	1	5	27-8½	3P503	4-0	3½	98	4									
18	1	5	29-9	3P504	4-0	3½	105	4									
19																	
20						CAP											
21	20	5	8-6	3P505	Str												
22	10	5	5-6	3P506	Str												
23	16	6	25-9	3P603	Str												
24	10	8	22-4	3P801	Str												
25	6	9	15-0	3P905	Str												
26	8	9	28-5	3P906	Str												
27																	
28	48	4	8-6	3P401	17		2-0	4-6	2-0								
29	38	6	21-6	3P601	T1	0-7	4-6	5-8	4-6	5-8		0-7					
30	12	6	12-4	3P602	10	2-6	7-4	2-6								2-4	4-8
31	20	10	23-8	3P1002	17		5-0	18-8									
32																	
33																	
34																	
35																	
36																	
37						PIER NO. 4											
38																	
39	63	9	14-4	4P901	2	1-5	11-6					1-5					
40	72	10	16-8	4P1001	2	1-7	13-6					1-7					
41	78	14S	10-3	4P1451	2	2-1	8-2										
42																	
43						COLUMN											
44	26	9	29-7	4P902	Str												
45	26	9	31-6	4P903	Str												
46	26	9	33-5	4P904	Str												
47	39	14S	30-8	4P1452	Str												
48																	
49	39	11	28-10	4P1101	3		5-8	2-0	21-2			0-2				28-10	
50																	
51				Spiral	Core	Pitch	Turns	Spacers									
52	3	5	24-9½	4P501	4-0	3½	88	4									
53	1	5	25-8	4P502	4-0	3½	91	4									
54	1	5	27-8½	4P503	4-0	3½	98	4									
55	1	5	29-9	4P504	4-0	3½	105	4									
56																	
57						CAP											
58	20	5	8-6	4P505	Str												
59	10	5	5-6	4P506	Str												
60	16	6	27-9	4P603	Str												
61	10	8	23-10	4P801	Str												
62	6	9	16-6	4P905	Str												
63	8	9	30-5	4P906	Str												
64																	
65	48	4	8-6	4P401	17		2-0	4-6	2-0								
66	44	6	21-6	4P601	T1	0-7	4-6	5-8	4-6	5-8		0-7					
67	12	6	12-4	4P602	10	2-6	7-4	2-6								2-4	4-8
68	20	10	24-11	4P1002	17		5-0	19-11									
69																	
70																	
71																	
72																	
73																	
74																	
75																	
76																	
77																	
78																	
79																	
80																	
81																	

SOUTHBOUND SUPERSTRUCTURE

Item	No. Pieces	Size	Length	Mark	Type	A	B	C	D	E	F	G	H	J	K	R	Q
82						SPAN NO. 1											
83	415	5	31-6	1SS505	Str												
84	8	5	26-1	1SS506	Str												
85	60	6	31-10	1SS601	Str												
86																	
87	199	4	4-6	1SS401	S3	0-5	1-4	1-0	1-4			0-5					
88	300	5	18-11	1SS501	19		1-10	17-1						0-2		1-10	18-11
89	300	5	24-11	1SS502	19		1-10	23-1						0-2		1-10	24-11
90	*301	5	15-2	1SS503	19		1-10	13-4						0-2		1-10	15-2
91	300	5	28-8	1SS504	19		1-10	26-10						0-2		1-10	28-8
92																	
93																	
94						SPAN NO. 2											
95	415	5	31-6	2SS505	Str												
96	8	5	28-3	2SS506	Str												
97	60	6	31-10	2SS601	Str												
98																	
99	199	4	4-6	2SS401	S3	0-5	1-4	1-0	1-4			0-5					
100	300	5	18-11	2SS501	19		1-10	17-1						0-2		1-10	18-11
101	300	5	24-11	2SS502	19		1-10	23-1						0-2		1-10	24-11
102	300	5	15-2	2SS503	19		1-10	13-4						0-2		1-10	15-2
103	300	5	28-8	2SS504	19		1-10	26-10						0-2		1-10	28-8
104																	
105																	
106						SPAN NO. 3											
107	415	5	31-6	3SS505	Str												
108	8	5	31-2	3SS506	Str												
109	60	6	31-10	3SS601	Str												
110																	
111	199	4	4-6	3SS401	S3	0-5	1-4	1-0	1-4			0-5					
112	300	5	18-11	3SS501	19		1-10	17-1						0-2		1-10	18-11
113	300	5	24-11	3SS502	19		1-10	23-1						0-2		1-10	24-11
114	300	5	15-2	3SS503	19		1-10	13-4						0-2		1-10	15-2
115	300	5	28-8	3SS504	19		1-10	26-10						0-2		1-10	28-8
116																	
117																	
118																	
119																	
120						NORTHBOUND SUPERSTRUCTURE												
121						SPAN NO. 1											
122	415	5	31-6	1NS505	Str												
123	8	5	26-1	1NS506	Str												
124	60	6	31-10	1NS601	Str												
125																	
126	199	4	4-6	1NS401	S3	0-5	1-4	1-0	1-4			0-5					
127	300	5	18-11	1NS501	19		1-10	17-1						0-2		1-10	18-11
128	300	5	24-11	1NS502	19		1-10	23-1						0-2		1-10	24-11
129	*301	5	15-2	1NS503	19		1-10	13-4						0-2		1-10	15-2
130	300	5	28-8	1NS504	19		1-10	26-10						0-2		1-10	28-8
131																	
132																	
133						SPAN NO. 2											
134	415	5	31-6	2NS505	Str												
135	8	5	28-3	2NS506	Str												
136	60	6	31-10	2NS601	Str												
137																	
138	199	4	4-6	2NS401	S3	0-5	1-4	1-0	1-4			0-5					
139	300	5	18-11	2NS501	19		1-10	17-1						0-2		1-10	18-11
140	300	5	24-11	2NS502	19		1-10	23-1						0-2		1-10	24-11
141	300	5	15-2	2NS503	19		1-10	13-4						0-2		1-10	15-2
142	300	5	28-8	2NS504	19		1-10	26-10						0-2		1-10	28-8
143																	
144																	
145						SPAN NO. 3											
146	415	5	31-6	3NS505	Str												
147	8	5	31-2	3NS506	Str												
148	60	6	31-10	3NS601	Str												
149																	
150	199	4	4-6	3NS401	S3	0-5	1-4	1-0	1-4			0-5					
151	300	5	18-11	3NS501	19		1-10	17-1						0-2		1-10	18-11
152	300	5	24-11	3NS502	19		1-10	23-1						0-2		1-10	24-11
153	300	5	15-2	3NS503	19		1-10	13-4						0-2		1-10	15-2
154	300	5	28-8	3NS504	19		1-10	26-10						0-2		1-10	28-8
155																	
156																	
157																	
158																	
159																	
160																	
161																	
162																	

TYPICAL BAR BENDS

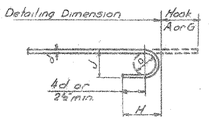


ENLARGED VIEW SHOWING BAR BENDING DETAILS

NOTES

1. All dimensions are out to out of bar
2. 'J' dimensions on 180° hooks to be shown only where necessary to restrict hook size otherwise standard hooks are to be used
3. Where 'J' is not shown, 'J' will be kept equal to or less than 'H'. Where 'J' can exceed 'H', it should be shown.
4. 'H' dimension on stirrups to be shown where necessary to restrict hooks.
5. Where bars are to be bent more accurately than standard bending tolerances bending dimensions which require closer working should have limits indicated
6. Figures in circles show types
7. No allowance for bend curvature is to be made except for standard hook & radii in excess of same.

Item	No. Pieces	Size	Length	Mark	Type	A	B	C	D	E	F	G	H	J	K	R	Q
163						APPROACH SLAB NO. 1											
164	34	5	24-4	1AS501	Str												
165	*39	10	20-7	1AS101	1	1-1	19-6							0-9			
166																	
167																	
168																	
169						APPROACH SLAB NO. 2											
170	26	5	31-6	2AS501	Str												
171	38	10	20-7	2AS101	1	1-1	19-6							0-9			
172																	
173																	
174																	
175						APPROACH SLAB NO. 3											
176	34	5	24-4	3AS501	Str												
177	38	10	20-7	3AS101	1	1-1	19-6							0-9			
178																	
179																	
180																	
181						APPROACH SLAB NO. 4											
182	26	5	31-2	4AS501	Str												
183	38	10	20-7	4AS101	1	1-1	19-6							0-9			
184																	
185																	
186																	
187																	
188																	
189																	
190																	



STANDARD HOOK DETAIL

BAR SIZES

Equivalent Size	Present Number	Weight per Ft.
⅜"	2	.167
⅜"	3	.376
½"	4	.668
⅝"	5	1.043
¾"	6	1.502
⅞"	7	2.044
1"	8	2.670
1"	9	3.400
1⅛"	10	4.303
1¼"	11	5.313
1⅜"	14S	7.650
2"	18S	13.600

THIS SHEET FOR REFERANCE ONLY
BERLIN IM 089-1(20)
BRIDGES 40 N&S

SHEET 104 OF 104

GENERAL NOTES

(1) Unless otherwise designated all standard reinforcement shall be deformed bars conforming with the requirements of the "Standard Specification for Billet-Steel Bars for Concrete Reinforcement"(Intermediate Grade) AASHO Designation M31-60 or its latest revision.

(2) Unless otherwise designated all special large size reinforcement shall be deformed bars conforming with the requirements of the "Standard Specification for Special Large size Deformed Billet-Steel Bars for Concrete Reinforcement"(Intermediate Grade) AASHO Designation M-171-60 or its latest revision.

(3) * Denotes one extra bar added for testing purposes.

(4) Stirrups and tie bars shall be bent around a pin having a diameter not less than two times the minimum thickness of the bar. Bends for other bars shall be made around a pin having a diameter not less than six times the minimum thickness except for bars larger than 1 inch, in which case the bends shall be made around a pin of eight bar diameters.

(5) All Spiral Reinforcement shall conform to AASHO designation M32-60, Cold Drawn Steel Wire for Concrete Reinforcement.

ESTIMATED QUANTITIES

LOCATION	PLAN (LBS)	FINAL (LBS)
PIER 3		
PIER 4		
S.B. SUPERSTRUCTURE		
N.B. SUPERSTRUCTURE		
APPROACH SLAB 1		
APPROACH SLAB 2		
APPROACH SLAB 3		
APPROACH SLAB 4		

STATE OF VERMONT
DEPARTMENT OF HIGHWAYS

PROJECT BERLIN - MONTPELIER
TOWNS OF BERLIN & MONTPELIER
ROUTE NO I89 STA 193+50±
I89 OVER VT. 12
REINFORCING - PIERS 3 & 4, SUPERS, & APP. SLABS
IN CHARGE W. SMITH
DRAWN BY W. TRIPP CHECKED BY F. GILMAN R. LADD 1147
PROJECT I NO. 89-1(12)
SHEET 178 OF 497 BR. 427

NBR Niagara Bridge & Rail

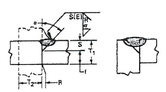
Parts and Service to meet your specific project needs

WELDROCEDURE SPECIFICATION

Per WPQR # GMAW-01

MATERIAL SPECIFICATION:	A36, A572, A709 Grade 36 & 50
WELDING PROCESS:	GMAW
MANUAL OR MACHINE:	Semi-Automatic
POSITION OF WELDING:	Flat & Horizontal
FILLER METAL SPECIFICATION:	A5.18
FILLER METAL CLASSIFICATION:	ER70S-6
FILLER METAL MANUFACTURER:	Hobart
SHIELDING GAS: AR 92% C02 8%	**DEW POINT:** -40°F **FLOW RATE:** 32 – 43 CFH
SINGLE OR MULTIPLE PASS:	Single or Multiple
SINGLE OR MULTIPLE ARC:	Single **ELECTRODE STICKOUT:** ¾ + ¼"
WELDING CURRENT:	DC+
POLARITY:	Reverse
WELDING PROGRESSION:	Forward (Stringer Bead)
ROOT TREATMENT:	Free of dirt, rust and oil
PREHEAT AND INTERPASS TEMP.	≤ ¾" = 50°F ≤ 1½" = 70°F ≤ 2½" = 150°F (Minimum)
POSTHEAT TREATMENT:	N/A

WELDING PROCEDURE

Weld Size	Electrode Size	Welding Current Amps	Welding Current Volts	Travel Speed "/Min	Joint Detail TC-P4-GF
All	.045	247 - 302	27 - 31	9 - 11	
All	1/16	247 – 302	27 - 31	9 – 11	

Dimensions per approved drawings

THIS PROCEDURE MAY VARY DUE TO THE FABRICATION SEQUENCE, FIT-UP, PASS SIZE, ETC., WITHIN THE LIMITATIONS OF VARIABLES GIVEN IN TABLE 5.3 OF AWS D1.5-2002 BRIDGE WELDING CODE.

PROCEDURE NO: GM - TC-P4-GF MANUFACTURER: Niagara Bridge and Rail

REVISION NO: 0 AUTHORIZED BY: Thomas F Wright

VTRANS RECEIVED JWC MAY 2 2008 ✓ DATE 5/12/08

MAR 2 7 20..

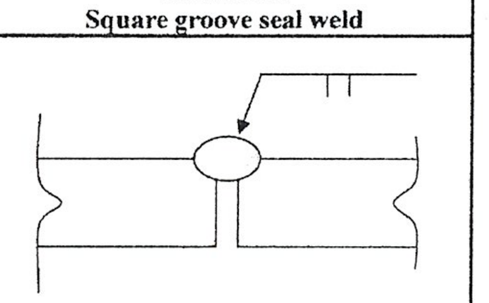
Niagara Bridge & Rail — Parts and Service to meet your specific project needs

WELD PROCEDURE SPECIFICATION

Per WPQR # GMAW-01

MATERIAL SPECIFICATION:	A709, A36, A572 Grade 36 & 50
WELDING PROCESS:	GMAW
MANUAL OR MACHINE:	Semi-Automatic
POSITION OF WELDING:	Horizontal
FILLER METAL SPECIFICATION:	A5.18
FILLER METAL CLASSIFICATION:	ER70S-6
FILLER METAL MANUFACTURER:	Hobart
SHIELDING GAS: AR 92% C02 8%	**DEW POINT:** -60°F **FLOW RATE:** 35 CFH
SINGLE OR MULTIPLE PASS:	Single
SINGLE OR MULTIPLE ARC:	Single **ELECTRODE STICKOUT:** ¾ max
WELDING CURRENT:	DC+
POLARITY:	Reverse
WELDING PROGRESSION:	Forward (Stringer Bead)
ROOT TREATMENT:	Free of dirt, rust and oil
PREHEAT AND INTERPASS TEMP.	≤ ¾" = 50°F ≤ 1½" = 70°F ≤ 2½" = 150°F (Minimums)
POSTHEAT TREATMENT:	N/A

WELDING PROCEDURE

Weld Size	Electrode Size	Welding Current		Travel Speed "/Min	Joint Detail Square groove seal weld
		Amps	Volts		
All	1/16	247 – 302	27 - 31	9 – 11	 Material thickness and shape per approved drawings. Seal weld on one side only

THIS PROCEDURE MAY VARY DUE TO THE FABRICATION SEQUENCE, FIT-UP, PASS SIZE, ETC., WITHIN THE LIMITATIONS OF VARIABLES GIVEN IN TABLE 5.3 OF AWS D1.5-2002 BRIDGE WELDING CODE.

PROCEDURE NO: Seal Weld **MANUFACTURER:** Niagara Bridge and Rail

REVISION NO: 0 **AUTHORIZED BY:** Thomas F. Wright

VTRANS
RECEIVED
CK'D BY ______ OK'D BY JWC
MAR 2 7 2008
RESUBMIT ______ APPROVED ✓
BY ______ DATE 5/12/08

NBR Niagara Bridge & Rail

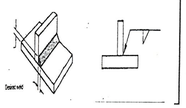
Parts and Service to meet your specific project needs

WELD PROCEDURE SPECIFICATION

Per WPQR # GMAW-01

MATERIAL SPECIFICATION:	A709, A36, A572 Grade 36 & 50
WELDING PROCESS:	GMAW
MANUAL OR MACHINE:	Semi-Automatic
POSITION OF WELDING:	Horizontal
FILLER METAL SPECIFICATION:	A5.18
FILLER METAL CLASSIFICATION:	ER70S-6
FILLER METAL MANUFACTURER:	Hobart
SHIELDING GAS: AR 92% C02 8%	**DEW POINT:** -60°F **FLOW RATE:** 35 CFH
SINGLE OR MULTIPLE PASS:	Single
SINGLE OR MULTIPLE ARC:	Single **ELECTRODE STICKOUT:** 3/4
WELDING CURRENT:	DC+
POLARITY:	Reverse
WELDING PROGRESSION:	Forward (Stringer Bead)
ROOT TREATMENT:	N/A
PREHEAT AND INTERPASS TEMP.	≤ ¾" = 50°F ≤ 1½" = 70°F ≤ 2½" = 150°F (Minimums)
POSTHEAT TREATMENT:	N/A

WELDING PROCEDURE

Weld Size	Electrode Size	Welding Current		Travel Speed "/Min	Joint Detail Fillet
		Amps	Volts		
All	1/16	247 – 302	27 - 31	9 – 11	

THIS PROCEDURE MAY VARY DUE TO THE FABRICATION SEQUENCE. FIT-UP, PASS SIZE, ETC., WITHIN THE LIMITATIONS OF VARIABLES GIVEN IN TABLE 5.3 OF AWS D1.5-2002 BRIDGE WELDING CODE.

PROCEDURE NO: GMAW 01 Fillet **MANUFACTURER:** Niagara Bridge and Rail

REVISION NO: 0 **AUTHORIZED BY:** Thomas F. Wright

VTRANS
RECEIVED
BY: JWC
MAY 2 - 2008
BY: 5/12/08

NBR Niagara Bridge & Rail

Parts and Service to meet your specific project needs

WELD PROCEDURE SPECIFICATION

MATERIAL SPECIFICATION:	ASTM A108 anchor stud to a horizontal (planar) Carbon Steel surface
WELDING PROCESS:	Automatic timed stud weld
MANUAL OR MACHINE:	Machine (hand held stud gun)
POSITION OF WELDING:	Down hand (Flat)
STUD METAL SPECIFICATION:	ASTM A-108
STUD METAL CLASSIFICATION:	Type A or B
STUD MANUFACTURE:	Tru-Weld
SHIELDING GAS: N/A	**DEW POINT:** _____ **FLOW RATE:** _____
FERRULE OR FLUX DESCRIPTION:	Ceramic part #F 009-694
SINGLE OR MULTIPLE ARC:	Single **ELECTRODE STICKOUT:** N/A
WELDING CURRENT:	DC
POLARITY:	Straight
ROOT TREATMENT:	Clean of oil, dirt, rust, rust pits, moisture and scale
PREHEAT AND INTERPASS TEMP.	40F min
POSTHEAT TREATMENT:	None
WELDING MACHINE:	Pro-Weld model ARC 1800
STUD WELDING GUN:	Nelson model # 751-347-000 1800amp

WELDING PROCEDURE

Stud Diameter	Weld Current (Amps)	Lift & Plunge		Weld Time (sec.)	Joint Detail (Stud weld)
		Lift	Plunge		
¾"	1600 ± 5%	.093"	.187"	.700 ± 5%	

THIS PROCEDURE MAY VARY DUE TO THE FABRICATION SEQUENCE, FIT-UP, ETC., WITHIN THE LIMITATIONS OF VARIABLES GIVEN IN SECTION 7 OF AWS D1.5 BRIDGE WELDING CODE.

THIS PROCEDURE IS CONSIDERED PREQUALIFIED IN ACCORDANCE WITH AWS D1.5 SECTION 7.6.1 AND IS PERFORMED WITHIN THE STUD MANUFACTURES RECOMMENDATIONS.

PROCEDURE NO: Carbon Stud weld MANUFACTURER: Niagara Bridge and Rail

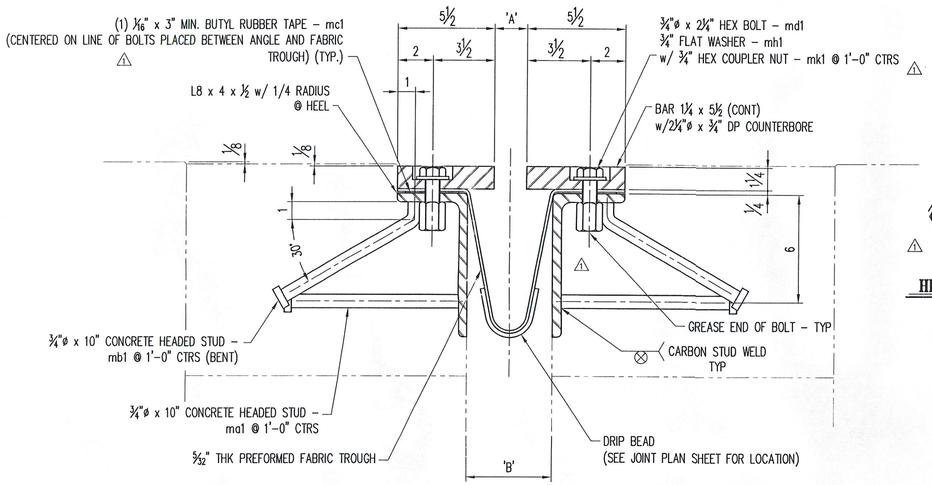
REVISION NO: 0 AUTHORIZED BY:

KRANS

RECEIVED

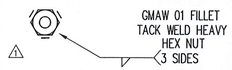
MAY 14 2008

5/14/08

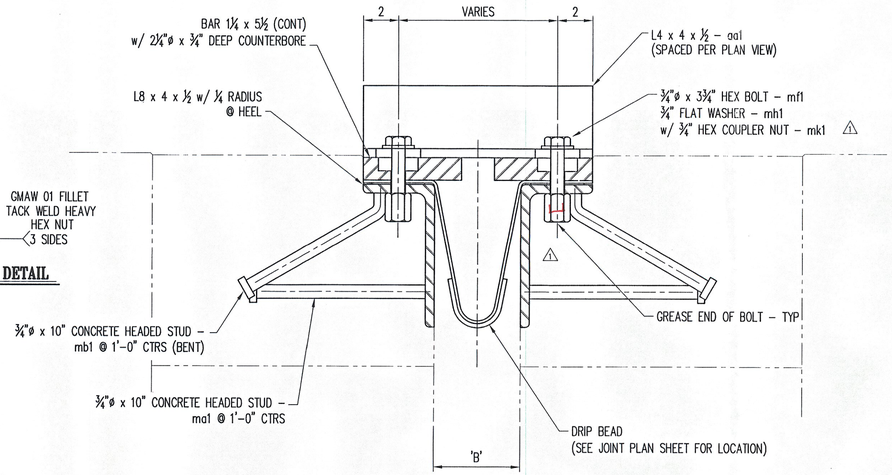


STANDARD SECTION VIEW: A–A

REFER TO JOINT PLAN SHEET FOR DIMENSIONS 'A' and/or 'B'



HEX NUT WELD DETAIL



SHIPPING ANGLE SECTION: C–C

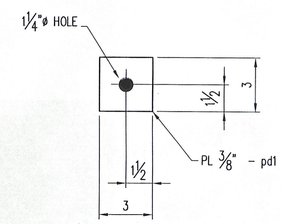
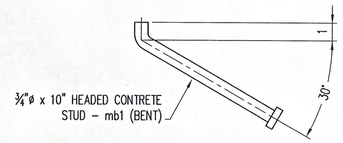
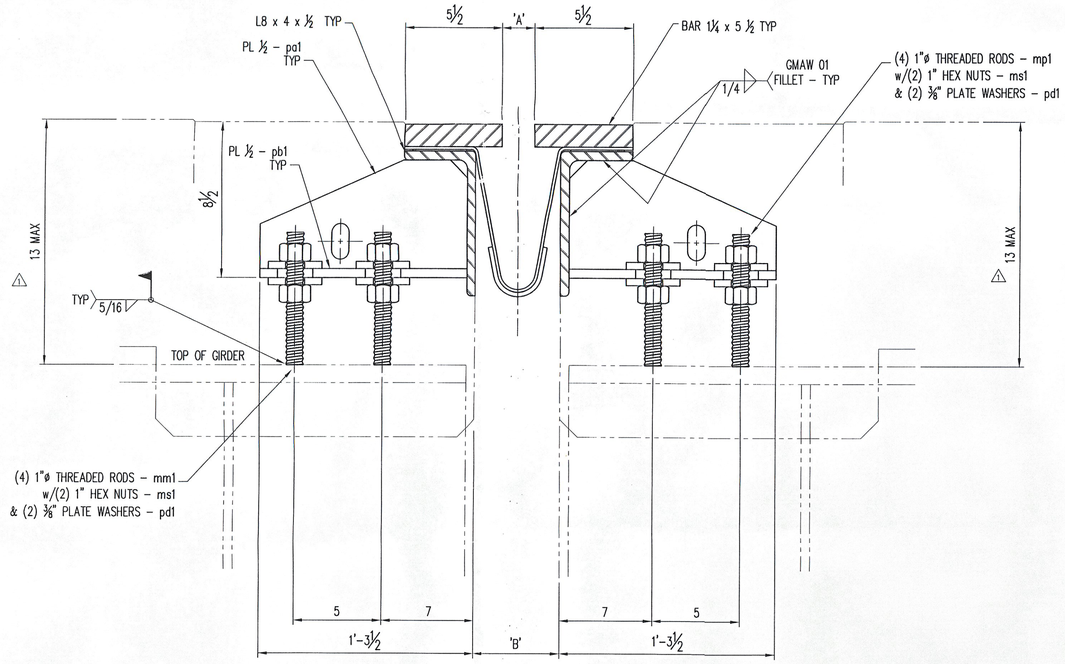


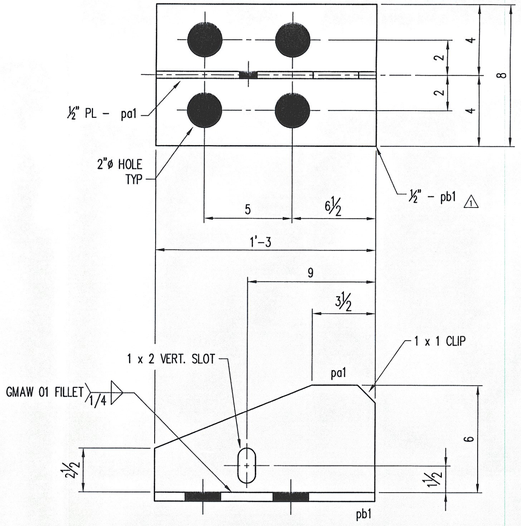
PLATE WASHER DETAIL



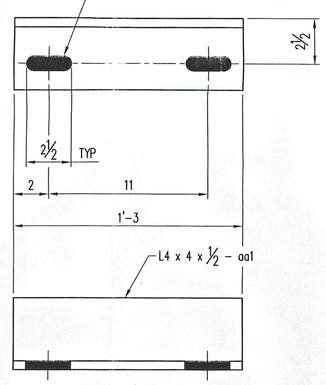
BENT STUD DETAIL



GIRDER SECTION VIEW: B–B



BRACKET DETAIL



SHIPPING ANGLE DETAIL

GENERAL NOTES:

1. ALL MATERIALS, CONSTRUCTION AND DESIGN SHALL CONFORM TO THE STATE OF VERMONT, AGENCY OF TRANSPORTATION STANDARD SPECIFICATION FOR CONSTRUCTION, DATED 2006, AND IT'S LATEST REVISIONS, AND ⚠ THE AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES, 17th EDITION DATED 2002, AND IT'S REVISIONS.
2. WELDING SHALL MEET THE REQUIREMENTS OF THE ANSI/AASHTO/AWS D1.5 BRIDGE WELDING CODE AS MODIFIED BY THE STANDARD SPECIFICATIONS.
3. HEADED CONCRETE STUDS SHALL BE ASTM A108 AND AUTOMATIC END WELDED WITH COMPLETE FUSION.
4. ANY TIGHTLY ADHERENT WELD SPLATTER NEED NOT BE REMOVED IN COATING AREAS TO BE CAST IN CONCRETE.
5. ALL STEEL COMPONENTS SHALL BE AASHTO M270 (GRADE 36) AND GALVANIZED OR METALIZED AS PER SUBSECTION 516.16 (UON). PRIOR TO GALVANIZING OR METALIZING, ALL CORNERS AND EDGES OF STEEL PLATES, SHAPES, ETC., SHALL BE GROUND TO A ⚠ 1/16" +/– RADIUS.
6. PREFORMED FABRIC MATERIAL SHALL BE CONTINUOUS AND SHALL CONFORM TO SUBSECTION 707.07.
7. BUTYL RUBBER TAPE SHALL CONFORM TO AASHTO SPECIFICATION M–198, TYPE II.
8. FABRIC TROUGH SHALL BE THOROUGHLY CLEANED AND FLUSHED AFTER PAVING OPERATION.
9. THE EXPANSION JOINT SHALL BE SHOP ASSEMBLED AND SHIPPED AS 2 UNITS. ⚠
10. THE 8 x 4 x 1/2 ANGLES SHALL BE FURNISHED AS 2 PIECES. THE 1 1/4 x 5 1/2 BARS ON EACH SIDE OF THE JOINT SHALL BE PROVIDED IN 2 EQUAL LENGTHS. ⚠

STRUCTURES COPY

RECEIVED
OK'D BY LJS OK'D BY RSY
MAY – 7 2008
RESUBMIT ____ APPROVED As Noted
BY CRW DATE 5/8/08

No.	Description	Date	By	Approved
⚠	REVISIONS PER APPROVAL DRAWINGS	4/28/08	SB	

REVISIONS

Niagara Bridge and Rail
4817 Henry Avenue, Niagara Falls, N.Y. 14304
Phone: (716) 283–4710 Fax: (716) 283–5137

Project Information:	
STATE:	VERMONT
COUNTY:	.
CITY / TOWNSHIP:	BERLIN
LOCATION:	I–89 (NB & SB) OVER VT ROUTE 12
PROJECT NO.:	1M 089–1 (20)
OWNER:	VT–AOT
CONTRACTOR:	.

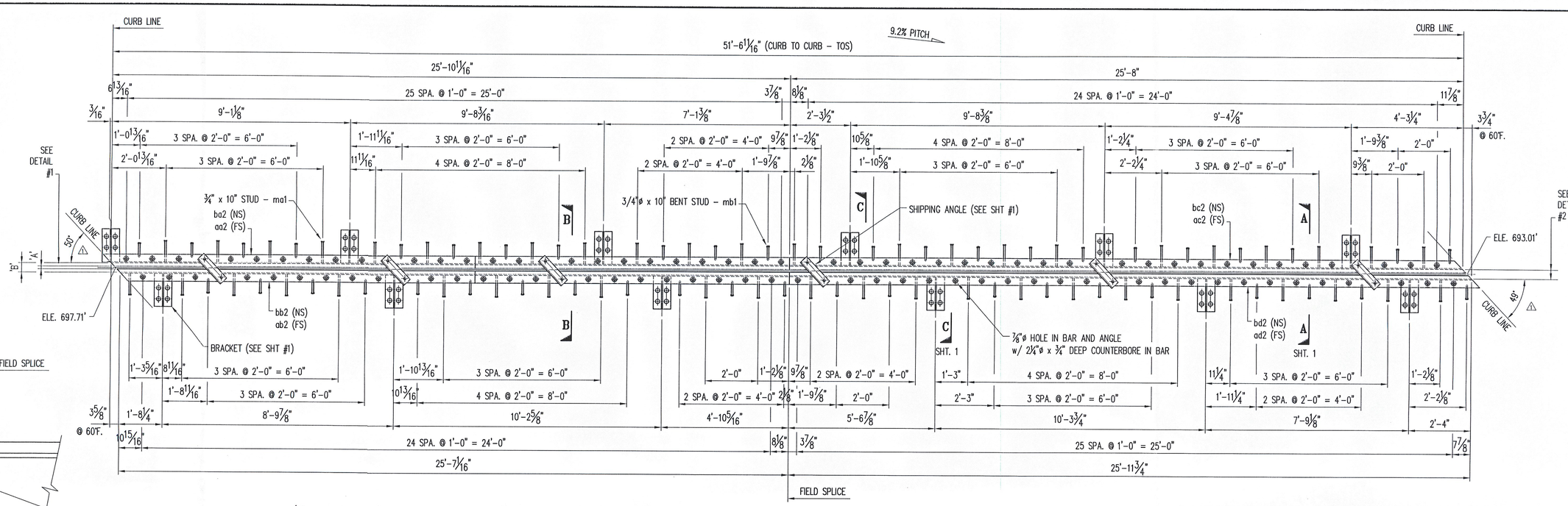
Drawn By:	Date:	Checked By:	Date:
JJB	3/23/08	TFW	3/30/08

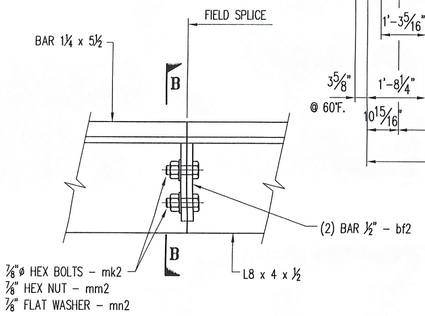
Description: VERMONT – EXPANSION JOINT DETAIL STANDARD DETAILS

Sheet No.: 1 of 5 | Scale: NONE

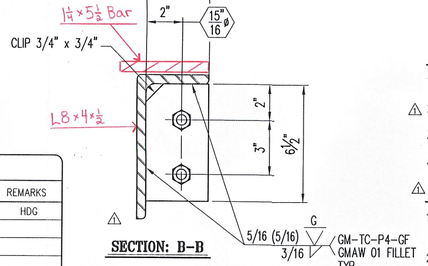
Drawing No.: 10064–01 | Rev No.: 1

JOINT OPENING		
TEMP	'A'	'B'
105° F.	½"	3½"
90° F.	¾"	3¾"
75° F.	1"	4"
60° F.	1 5/16"	4 5/16"
45° F.	1 9/16"	4 9/16"
30° F.	1 13/16"	4 13/16"
15° F.	2 1/16"	5 1/16"
0° F.	2 3/8"	5 3/8"
−15° F.	2 5/8"	5 5/8"





⚠ **BOLTED FIELD SPLICE DETAIL**



⚠ **SECTION: B-B**

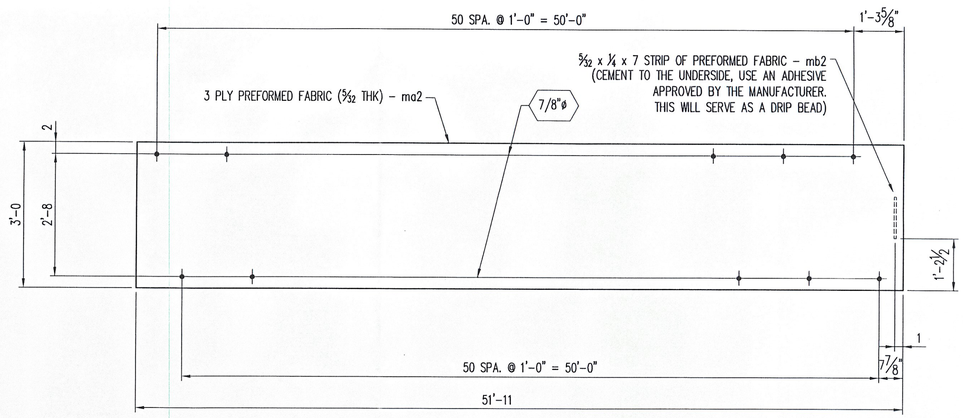
⚠ **ONE - EXPANSION JOINT - 2EJ1**
PIER #1

SHOP NOTES:

1. WORK THIS SHEET ALONG WITH STANDARD SHEET #1.
⚠ 2. COAT ALL BOLTS AND NUTS WITH NEVER SEIZE GREASE PRIOR TO ASSEMBLY.
3. WRENCH TIGHTEN BOLTS AFTER ASSEMBLY OF THE EXPANSION JOINT.
4. SEAL ALL ACCESSIBLE JOINTS PRIOR TO GALVANIZING.

⚠ CONTRACTOR NOTES:

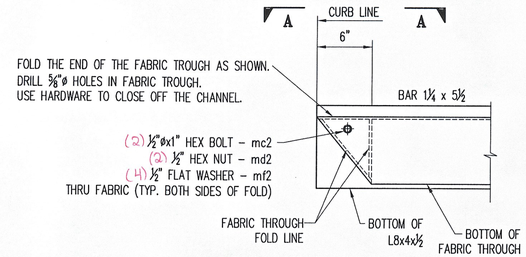
1. REMOVE SHIPPING ANGLES AND REPLACE WITH 3/4"ø x 2 1/4" HEX BOLTS. REUSE EXISTING FLAT WASHERS. COAT BOLT TREADS WITH NEVER SEIZE PRIOR TO ASSEMBLY.
2. FILL ALL COUNTERBORED HOLES WITH HOT POURED JOINT SEALER AFTER THE BOLT INSTALLATION. WORK AND MATERIALS ARE TO BE DONE BY OTHERS.



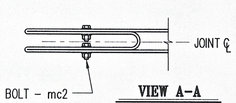
⚠ **TROUGH DETAIL**

BILL OF MATERIALS

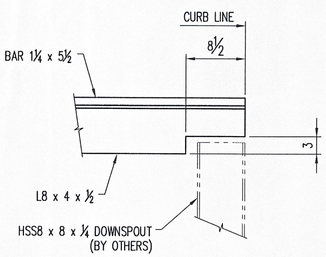
#	MARK No.	QTY	DESCRIPTION	MATERIAL	REMARKS	
1			ONE - EXPANSION JOINT - 2EJ1		HDG	
2	aa1	6	L4 x 4 x 1/2 x 1'-3	A36		
3						
4	ma1	47	3/4"ø x 10 CONCRETE HEADED STUD	A108		
5	mb1	45	3/4"ø x 10 CONCRETE HEADED STUD	A108	BENT	
6	mc1	5	1/16" x 1 1/2 (MIN) BUTYL RUBBER TAPE (50FT ROLL)	AASHTO M-198	#75385A15	
7	md1	102	3/4"ø x 2 1/4 HEX BOLT	A325	M/G	
8	mf1	12	3/4"ø x 3 3/4 HEX BOLT	A325	M/G	
9	mh1	102	3/4" FLAT WASHER	F436	M/G	
10	mk1	102	3/4"ø HEX COUPLER NUT	A563	M/G	⚠
11	mm1	48	1"ø x 6" THREADED ROD	A36	HDG	
12	ms1	96	1" HEAVY HEX NUT	A563	HDG	
13	pa1	12	PL 1/2 x 6 x 1'-3	~~A36~~ AASHTO M270		
14	pb1	12	PL 1/2 x 8 x 1'-3	~~A36~~		
15	pd1	96	PL 3/8 x 3 x 3	~~A36~~	HDG	
16	aa2	ONE	L8 x 4 x 1/2 x 26'-2 1/16	~~A36~~		⚠
17	ab2	ONE	L8 x 4 x 1/2 x 25'-7 1/16	~~A36~~		⚠
18	ac2	ONE	L8 x 4 x 1/2 x 25'-8	~~A36~~		⚠
19	ad2	ONE	L8 x 4 x 1/2 x 26'-3 1/4	~~A36~~		⚠
20	ba2	ONE	BAR 1 1/4 x 5 1/2 x 26'-2 1/16	~~A36~~		⚠
21	bb2	ONE	BAR 1 1/4 x 5 1/2 x 25'-8 5/16	~~A36~~		⚠
22	bc2	ONE	BAR 1 1/4 x 5 1/2 x 25'-9 5/16	~~A36~~		⚠
23	bd2	ONE	BAR 1 1/4 x 5 1/2 x 26'-3 1/4	~~A36~~		⚠
24	bf2	4	BAR 1/2 x 3 1/2 x 6 1/2	~~A36~~		⚠
25	ma2	ONE	3 PLY FABRIC TROUGH 5/32 x 36 x 51'-11	PER SPEC		⚠
26	mb2	ONE	3 PLY FABRIC DRIP 5/32 x 1/4 x 7	PER SPEC		
27	mc2	~~8~~ ONE	1/2ø x ~~2~~ 1 HEX BOLT	A307	M/G	
28	md2	~~2~~ ONE	1/2" HEX NUT	A563	M/G	
29	mf2	~~4~~ 2	1/2" FLAT WASHER	F436	M/G	
30	mh2	ONE	ANTI SEIZE GREASE	-		
31	mk2	4	7/8ø x 2 HEX BOLT	A325	M/G	⚠
32	mm2	4	7/8" HEX NUT	A563	M/G	⚠
33	mn2	4	7/8" FLAT WASHER	F436	M/G	⚠



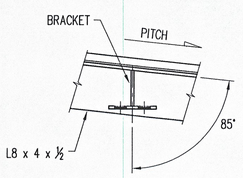
DETAIL #1
FOLDED THROUGH END DETAILS



VIEW A-A



DETAIL #2



BRACKET ATTACHMENT

RECEIVED
OK'D BY LJS OK'D BY RSV
MAY - 7 2008
RESUBMIT ____ APPROVED As Noted
BY CPW DATE 5/8/08

No.	Description	Date	By	Approved
⚠	REVISIONS PER APPROVAL DRAWINGS	4/29/08	SB	
	REVISIONS			

Niagara Bridge and Rail
4817 Henry Avenue, Niagara Falls, N.Y. 14304
Phone: (716) 283-4710 Fax: (716) 283-5137

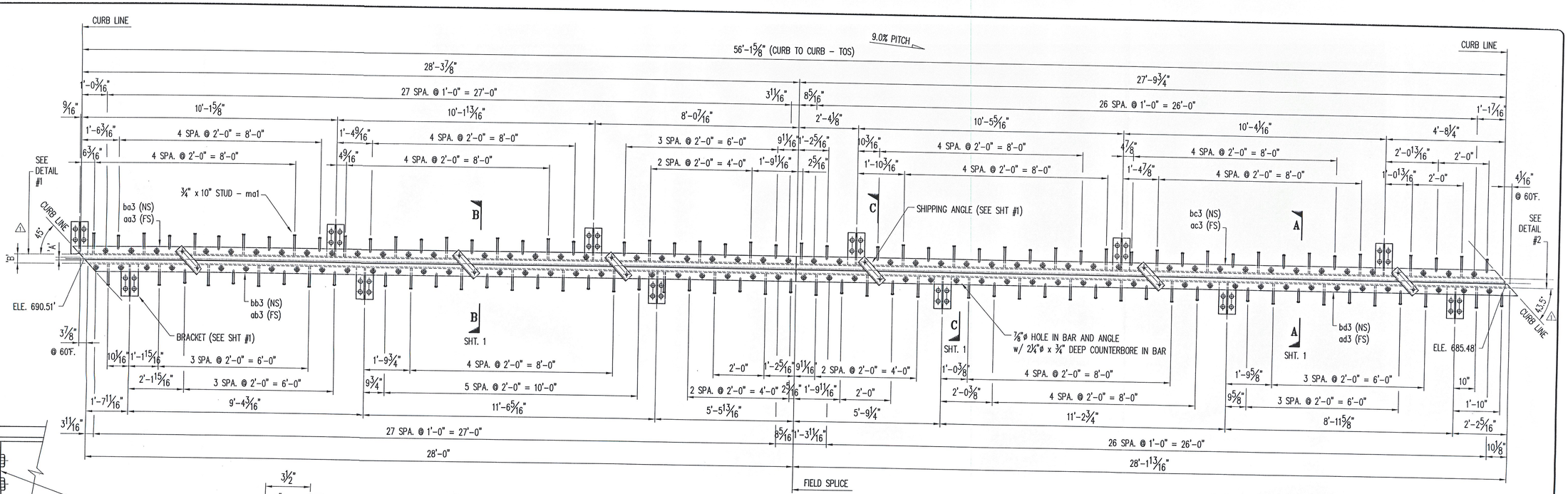
Project Information:
STATE: VERMONT
COUNTY: .
CITY / TOWNSHIP: BERLIN
LOCATION: I-89 (NB & SB) OVER VT ROUTE 12
PROJECT NO.: 1M 089-1 (20)
OWNER: VT-AOT
CONTRACTOR: .

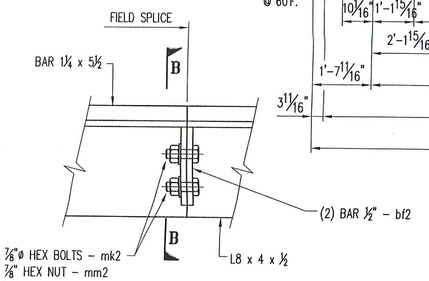
Drawn By:	Date:	Checked By:	Date:
JJB	3/28/08	TFW	3/30/08

Description: VERMONT - EXPANSION JOINT DETAIL
EXPANSION JOINT @ PIER 1

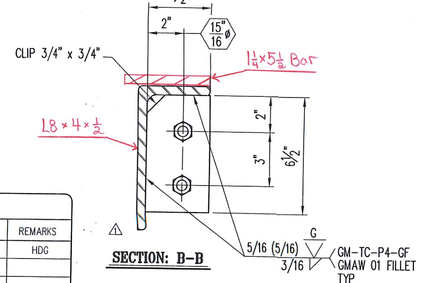
Sheet No.: 2 of 5 | Scale: NONE
Drawing No.: 10064-01 | Rev No.: 1

JOINT OPENING		
TEMP	'A'	'B'
105° F.	½"	3½"
90° F.	5/8"	3 5/8"
75° F.	¾"	3¾"
60° F.	7/8"	3 7/8"
45° F.	15/16"	3 15/16"
30° F.	1 1/16"	4 1/16"
15° F.	1 3/16"	4 3/16"
0° F.	1 5/16"	4 5/16"
-15° F.	1 7/16"	4 7/16"





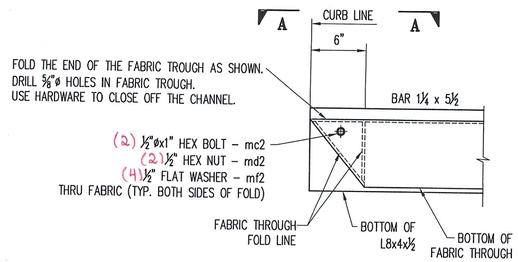
⚠ **BOLTED FIELD SPLICE DETAIL**



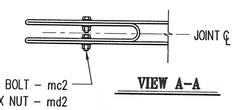
⚠ **SECTION: B-B**

BILL OF MATERIALS

#	MARK No.	QTY	DESCRIPTION	MATERIAL	REMARKS	
1			ONE - EXPANSION JOINT - 3EJ1		HDG	
2	aa1	6	L4 x 4 x 1/2 x 1'-3	A36		
3	ma1	52	3/4"ø x 10 CONCRETE HEADED STUD	A108		
4	mb1	51	3/4"ø x 10 CONCRETE HEADED STUD	A108	BENT	
5	mc1	4	1/16" x 1 1/2 (MIN) BUTYL RUBBER TAPE (50FT ROLL)	AASHTO M-198	#75385A15	
6	md1	111	3/4"ø x 2 1/4 HEX BOLT	A325	M/G	
7	mf1	12	3/4"ø x 3 3/4 HEX BOLT	A325	M/G	
8	mh1	111	3/4" FLAT WASHER	F436	M/G	
9	mk1	111	3/4"ø HEX COUPLER NUT	A563	M/G	⚠
10	mm1	48	1"ø x ~~8'~~ 7 THREADED ROD	A36	HDG	
11	ms1	96	1" HEAVY HEX NUT	A563	HDG	
12	pa1	12	PL 1/2 x 6 x 1'-3	~~A36~~ AASHTO M270		
13	pb1	12	PL 1/2 x 8 x 1'-3	~~A36~~		
14	pd1	96	PL 3/8 x 3 x 3	~~A36~~	HDG	
15	aa3	ONE	L8 x 4 x 1/2 x 28'-7 7/8	~~A36~~		⚠
16	ab3	ONE	L8 x 4 x 1/2 x 28'-0	~~A36~~		⚠
17	ac3	ONE	L8 x 4 x 1/2 x 27'-9 3/4	~~A36~~		⚠
18	ad3	ONE	L8 x 4 x 1/2 x 28'-6	~~A36~~		⚠
19	ba3	ONE	BAR 1 1/4 x 5 1/2 x 28'-7 7/8	~~A36~~		⚠
20	bb3	ONE	BAR 1 1/4 x 5 1/2 x 28'-1 1/2	~~A36~~		⚠
21	bc3	ONE	BAR 1 1/4 x 5 1/2 x 27'-11 5/16	~~A36~~		⚠
22	bd3	ONE	BAR 1 1/4 x 5 1/2 x 28'-6	~~A36~~		
23	bf2	4	BAR 1/2 x 3 1/2 x 6 1/2	~~A36~~		⚠
24	ma3	ONE	3 PLY FABRIC TROUGH 5/32 x 36 x 56'-6	PER SPEC		⚠
25	mb2	ONE	3 PLY FABRIC DRIP 5/32 x 1/4 x 7	PER SPEC		
26	mc2	~~2~~ ONE	1/2ø x ~~1~~ HEX BOLT	A307	M/G	
27	md2	~~2~~ ONE	1/2" HEX NUT	A563	M/G	
28	mf2	~~4~~ 2	1/2" FLAT WASHER	F436	M/G	
29	mh2	ONE	ANTI SEIZE GREASE	-		
30	mk2	4	7/8ø x 2 HEX BOLT	A325	M/G	⚠
31	mm2	4	7/8" HEX NUT	A563	M/G	⚠
32	mn2	4	7/8" FLAT WASHER	F436	M/G	⚠
33						



DETAIL #1
FOLDED THROUGH END DETAILS



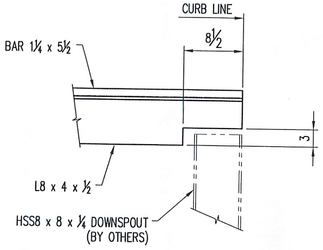
VIEW A-A

SHOP NOTES:

1. WORK THIS SHEET ALONG WITH STANDARD SHEET #1.
⚠ 2. COAT ALL BOLTS AND NUTS WITH NEVER SEIZE GREASE PRIOR TO ASSEMBLY.
3. WRENCH TIGHTEN BOLTS AFTER ASSEMBLY OF THE EXPANSION JOINT.
4. SEAL ALL ACCESSIBLE JOINTS PRIOR TO GALVANIZING.

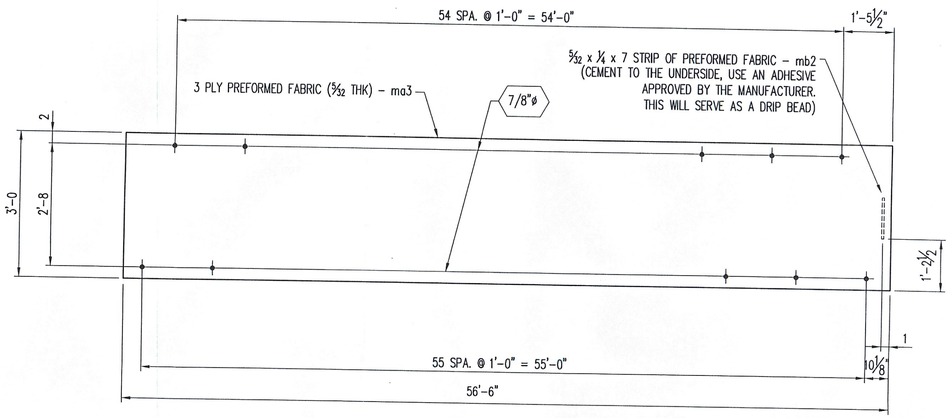
⚠ CONTRACTOR NOTES:

1. REMOVE SHIPPING ANGLES AND REPLACE WITH 3/4"ø x 2 1/4" HEX BOLTS. REUSE EXISTING FLAT WASHERS. COAT BOLT TREADS WITH NEVER SEIZE PRIOR TO ASSEMBLY.
2. FILL ALL COUNTERBORED HOLES WITH HOT POURED JOINT SEALER AFTER THE BOLT INSTALLATION. WORK AND MATERIALS ARE TO BE DONE BY OTHERS.

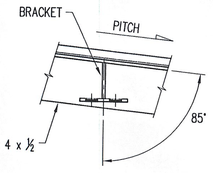


DETAIL #2

⚠ **ONE - EXPANSION JOINT - 3EJ1**
PIER #2



⚠ **TROUGH DETAIL**



BRACKET ATTACHMENT

RECEIVED
OK'D BY LJS OK'D BY RSF
MAY - 7 2008
RESUBMIT ____ APPROVED As Noted
BY CPW DATE 5/8/08

⚠	REVISIONS PER APPROVAL DWGS	4/29/08	SB	
No.	Description	Date	By	Approved
REVISIONS				

Niagara Bridge and Rail
4817 Henry Avenue, Niagara Falls, N.Y. 14304
Phone: (716) 283-4710 Fax: (716) 283-5137

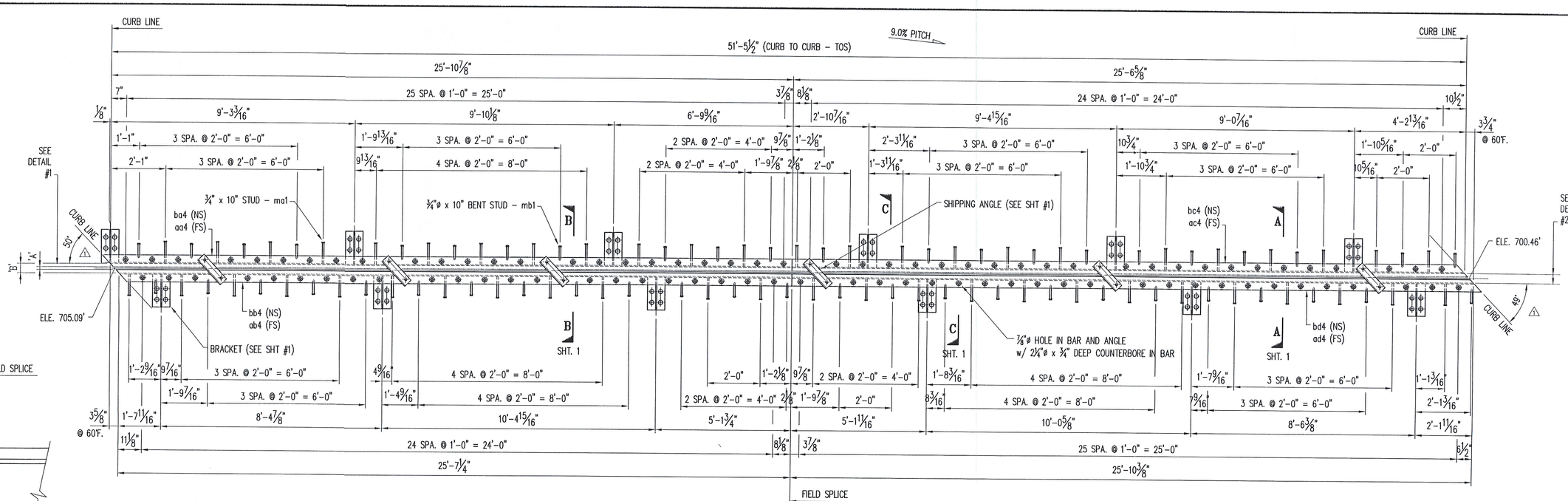
Project Information:
STATE: VERMONT
COUNTY: .
CITY / TOWNSHIP: BERLIN
LOCATION: I-89 (NB & SB) OVER VT ROUTE 12
PROJECT NO.: 1M 089-1 (20)
OWNER: VT-AOT
CONTRACTOR: .

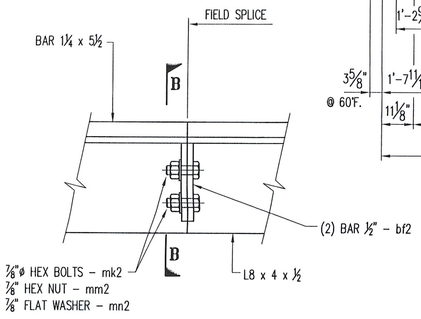
Drawn By:	Date:	Checked By:	Date:
JJB	3/28/08	TFW	3/30/08

Description: VERMONT - EXPANSION JOINT DETAIL
EXPANSION JOINT @ PIER 2

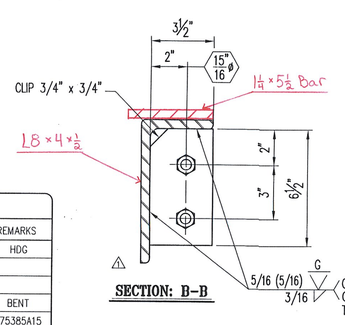
Sheet No.: 3 of 5 | Scale: NONE
Drawing No.: 10064-01 | Rev No.: 1

JOINT OPENING		
TEMP	'A'	'B'
105° F.	½"	3½"
90° F.	¾"	3¾"
75° F.	1"	4"
60° F.	1 5/16"	4 5/16"
45° F.	1 9/16"	4 9/16"
30° F.	1 13/16"	4 13/16"
15° F.	2 1/16"	5 1/16"
0° F.	2 3/8"	5 3/8"
−15° F.	2 5/8"	5 5/8"





⚠ **BOLTED FIELD SPLICE DETAIL**



⚠ **SECTION: B–B**

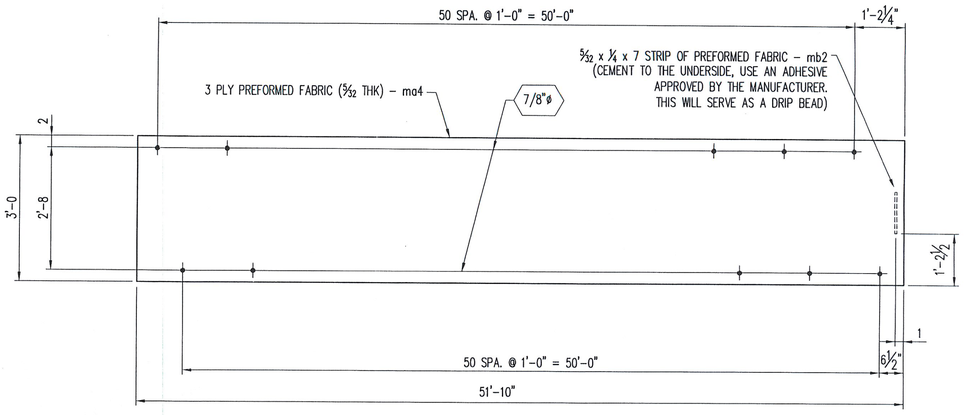
⚠ **ONE – EXPANSION JOINT – 4EJ1**
PIER #3

SHOP NOTES:

1. WORK THIS SHEET ALONG WITH STANDARD SHEET #1.
⚠ 2. COAT ALL BOLTS AND NUTS WITH NEVER SEIZE GREASE PRIOR TO ASSEMBLY.
3. WRENCH TIGHTEN BOLTS AFTER ASSEMBLY OF THE EXPANSION JOINT.
4. SEAL ALL ACCESSIBLE JOINTS PRIOR TO GALVANIZING.

⚠ **CONTRACTOR NOTES:**

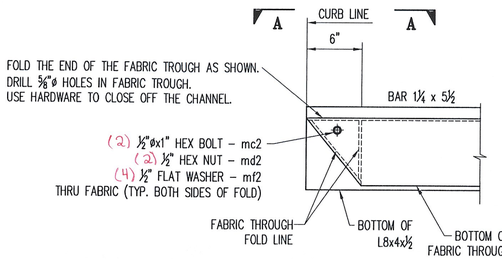
1. REMOVE SHIPPING ANGLES AND REPLACE WITH 3/4"ø x 2 1/4" HEX BOLTS. REUSE EXISTING FLAT WASHERS. COAT BOLT TREADS WITH NEVER SEIZE PRIOR TO ASSEMBLY.
2. FILL ALL COUNTERBORED HOLES WITH HOT POURED JOINT SEALER AFTER THE BOLT INSTALLATION. WORK AND MATERIALS ARE TO BE DONE BY OTHERS.



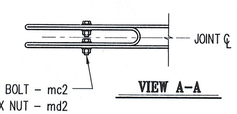
⚠ **TROUGH DETAIL**

BILL OF MATERIALS

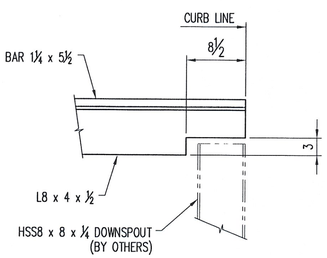
#	MARK No.	QTY	DESCRIPTION	MATERIAL	REMARKS	
1			ONE – EXPANSION JOINT – 4EJ1		HDG	
2	aa1	6	L4 x 4 x 1/2 x 1'-3	A36		
3	ma1	48	3/4"ø x 10 CONCRETE HEADED STUD	A108		
4	mb1	46	3/4"ø x 10 CONCRETE HEADED STUD	A108	BENT	
5	mc1	4	1/16" x 1 1/2 (MIN) BUTYL RUBBER TAPE (50FT ROLL)	AASHTO M-198	#75385A15	
6	md1	102	3/4"ø x 2 1/4 HEX BOLT	A325	M/G	
7	mf1	12	3/4"ø x 3 3/4 HEX BOLT	A325	M/G	
8	mh1	102	3/4" FLAT WASHER	F436	M/G	
9	mk1	102	3/4"ø HEX COUPLER NUT	A563	M/G	⚠
10	mm1	48	1"ø x ~~87~~ THREADED ROD	A36	HDG	
11	ms1	96	1" HEAVY HEX NUT	A563	HDG	
12	pa1	12	PL 1/2 x 6 x 1'-3	~~A36~~ AASHTO M270		
13	pb1	12	PL 1/2 x 8 x 1'-3	~~A36~~		
14	pd1	96	PL 3/8 x 3 x 3	~~A36~~	HDG	
15	aa4	ONE	L8 x 4 x 1/2 x 26'-2 1/4	~~A36~~		⚠
16	ab4	ONE	L8 x 4 x 1/2 x 25'-7 1/4	~~A36~~		⚠
17	ac4	ONE	L8 x 4 x 1/2 x 25'-6 5/8	~~A36~~		⚠
18	ad4	ONE	L8 x 4 x 1/2 x 26'-1 7/8	~~A36~~		⚠
19	ba4	ONE	BAR 1 1/4 x 5 1/2 x 26'-2 1/4	~~A36~~		⚠
20	bb4	ONE	BAR 1 1/4 x 5 1/2 x 25'-8 1/4	~~A36~~		⚠
21	bc4	ONE	BAR 1 1/4 x 5 1/2 x 25'-7 15/16	~~A36~~		⚠
22	bd4	ONE	BAR 1 1/4 x 5 1/2 x 26'-1 7/8	~~A36~~		⚠
23	bf2	4	BAR 1/2 x 3 1/2 x 6 1/2	~~A36~~		⚠
24	ma4	ONE	3 PLY FABRIC TROUGH 5/32 x 36 x 51'–10	PER SPEC		⚠
25	mb2	ONE	3 PLY FABRIC DRIP 5/32 x 1/4 x 7	PER SPEC		
26	mc2	~~2~~ ONE	1/2ø x ~~2~~ 2½ HEX BOLT	A307	M/G	
27	md2	~~2~~ ONE	1/2" HEX NUT	A563	M/G	
28	mf2	~~4~~ 2	1/2" FLAT WASHER	F436	M/G	
29	mh2	ONE	ANTI SEIZE GREASE	–		
30	mk2	4	7/8ø x 2 HEX BOLT	A325	M/G	⚠
31	mm2	4	7/8" HEX NUT	A563	M/G	⚠
32	mn2	4	7/8" FLAT WASHER	F436	M/G	⚠
33						



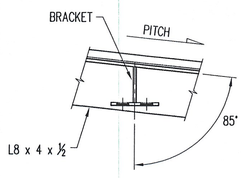
DETAIL #1
FOLDED THROUGH END DETAILS



VIEW A–A



DETAIL #2



BRACKET ATTACHMENT

RECEIVED
CK'D BY LJS OK'D BY KSY
MAY - 7 2008
RESUBMIT ____ APPROVED As Noted
BY CPW DATE 5/8/08

⚠	REVISIONS PER APPROVAL DWGS	4/30/08	SB	
No.	Description	Date	By	Approved
REVISIONS				

Niagara Bridge and Rail
4817 Henry Avenue, Niagara Falls, N.Y. 14304
Phone: (716) 283-4710 Fax: (716) 283-5137

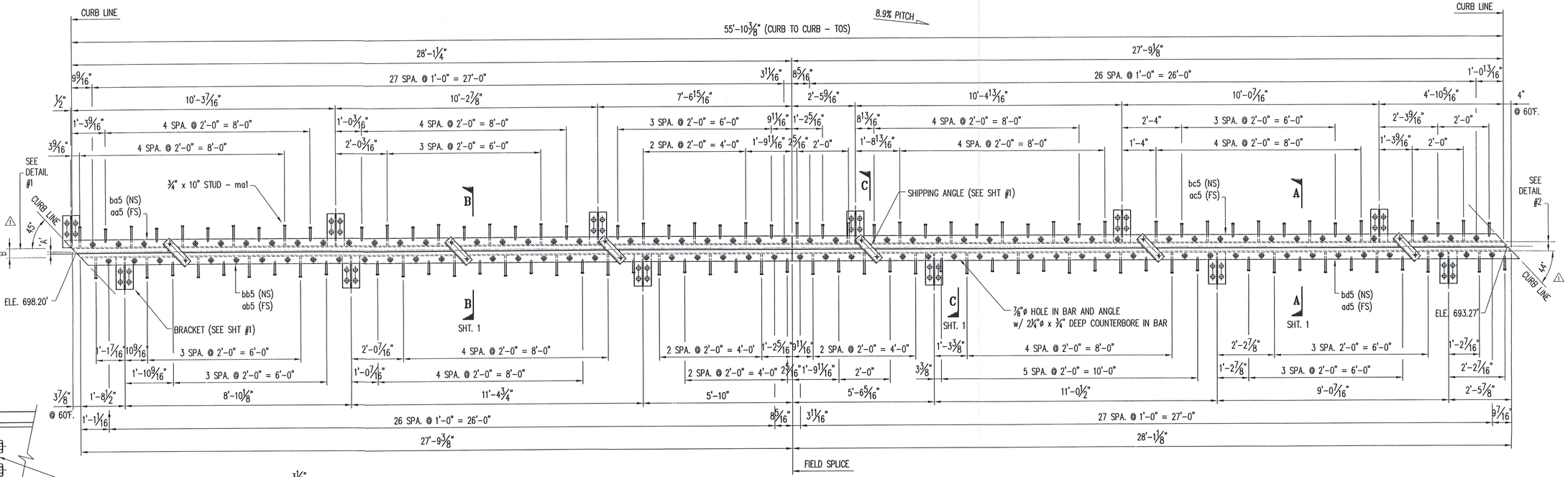
Project Information:	
STATE:	VERMONT
COUNTY:	.
CITY / TOWNSHIP:	BERLIN
LOCATION:	I-89 (NB & SB) OVER VT ROUTE 12
PROJECT NO.:	1M 089-1 (20)
OWNER:	VT-AOT
CONTRACTOR:	.

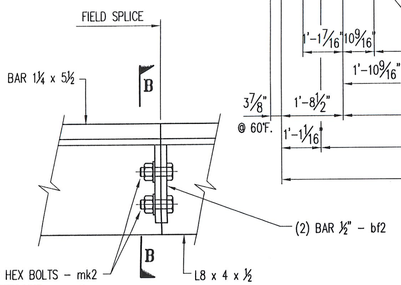
Drawn By:	Date:	Checked By:	Date:
JJB	3/28/08	TFW	3/30/08

Description: VERMONT – EXPANSION JOINT DETAIL
EXPANSION JOINT @ PIER 3

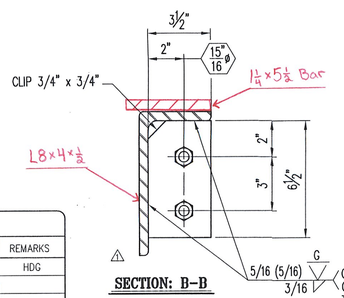
Sheet No.: 4 of 5 | Scale: NONE
Drawing No.: 10064-01 | Rev No.: 1

JOINT OPENING		
TEMP	'A'	'B'
105° F.	½"	3½"
90° F.	⅝"	3⅝"
75° F.	¾"	3¾"
60° F.	⅞"	3⅞"
45° F.	15/16"	3 15/16"
30° F.	1 1/16"	4 1/16"
15° F.	1 3/16"	4 3/16"
0° F.	1 5/16"	4 5/16"
-15° F.	1 7/16"	4 7/16"





⚠ **BOLTED FIELD SPLICE DETAIL**



⚠ **SECTION: B-B**

SHOP NOTES:

1. WORK THIS SHEET ALONG WITH STANDARD SHEET #1.
⚠ 2. COAT ALL BOLTS AND NUTS WITH NEVER SEIZE GREASE PRIOR TO ASSEMBLY.
3. WRENCH TIGHTEN BOLTS AFTER ASSEMBLY OF THE EXPANSION JOINT.
4. SEAL ALL ACCESSIBLE JOINTS PRIOR TO GALVANIZING.

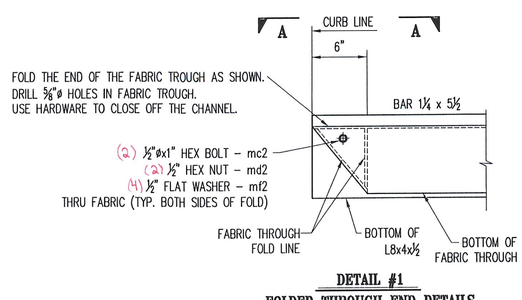
⚠ CONTRACTOR NOTES:

1. REMOVE SHIPPING ANGLES AND REPLACE WITH 3/4"ø x 2 1/4" HEX BOLTS. REUSE EXISTING FLAT WASHERS. COAT BOLT TREADS WITH NEVER SEIZE PRIOR TO ASSEMBLY.
2. FILL ALL COUNTERBORED HOLES WITH HOT POURED JOINT SEALER AFTER THE BOLT INSTALLATION. WORK AND MATERIALS ARE TO BE DONE BY OTHERS.

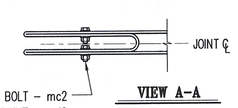
⚠ **ONE - EXPANSION JOINT - 5EJ1**
PIER #4

BILL OF MATERIALS

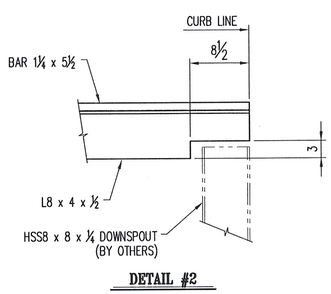
#	MARK No.	QTY	DESCRIPTION	MATERIAL	REMARKS	
1			ONE - EXPANSION JOINT - 3EJ1		HDG	
2	aa1	6	L4 x 4 x 1/2 x 1'-3	A36		
3	ma1	49	3/4"ø x 10 CONCRETE HEADED STUD	A108		
4	mb1	51	3/4"ø x 10 CONCRETE HEADED STUD	A108	BENT	
5	mc1	4	1/16" x 1 1/2 (MIN) BUTYL RUBBER TAPE (50FT ROLL)	AASHTO M-198	#75385A15	
6	md1	110	3/4"ø x 2 1/4 HEX BOLT	A325	M/G	
7	mf1	12	3/4"ø x 3 3/4 HEX BOLT	A325	M/G	
8	mh1	110	3/4" FLAT WASHER	F436	M/G	
9	mk1	110	3/4"ø HEX COUPLER NUT	A563	M/G	⚠
10	mm1	48	1"ø x 8" THREADED ROD	A36	HDG	
11	ms1	96	1" HEAVY HEX NUT	A563	HDG	
12	pa1	12	PL 1/2 x 6 x 1'-3	~~A36~~ AASHTO M270		
13	pb1	12	PL 1/2 x 8 x 1'-3	~~A36~~		
14	pd1	96	PL 3/8 x 3 x 3	~~A36~~	HDG	
15	aa5	ONE	L8 x 4 x 1/2 x 28'-5 1/4	~~A36~~		⚠
16	ab5	ONE	L8 x 4 x 1/2 x 27'-9 3/8	~~A36~~		⚠
17	ac5	ONE	L8 x 4 x 1/2 x 27'-9 1/8	~~A36~~		⚠
18	ad5	ONE	L8 x 4 x 1/2 x 28'-5 1/4	~~A36~~		⚠
19	ba5	ONE	BAR 1 1/4 x 5 1/2 x 28'-5 1/4	~~A36~~		⚠
20	bb5	ONE	BAR 1 1/4 x 5 1/2 x 27'-10 7/8	~~A36~~		⚠
21	bc5	ONE	BAR 1 1/4 x 5 1/2 x 27'-10 11/16	~~A36~~		⚠
22	bd5	ONE	BAR 1 1/4 x 5 1/2 x 28'-5 1/4	~~A36~~		⚠
23	bf2	4	BAR 1/2 x 3 1/2 x 6 1/2	~~A36~~		⚠
24	ma5	ONE	3 PLY FABRIC TROUGH 5/32 x 36 x 56'-3	PER SPEC		⚠
25	mb2	ONE	3 PLY FABRIC DRIP 5/32 x 1/4 x 7	PER SPEC		
26	mc2	~~2~~ ONE	1/2ø x ~~2~~ HEX BOLT	A307	M/G	
27	md2	~~2~~ ONE	1/2" HEX NUT	A563	M/G	
28	mf2	~~4~~ 2	1/2" FLAT WASHER	F436	M/G	
29	mh2	ONE	ANTI SEIZE GREASE	-		
30	mk2	4	7/8ø x 2 HEX BOLT	A325	M/G	⚠
31	mm2	4	7/8" HEX NUT	A563	M/G	⚠
32	mn2	4	7/8" FLAT WASHER	F436	M/G	⚠
33						



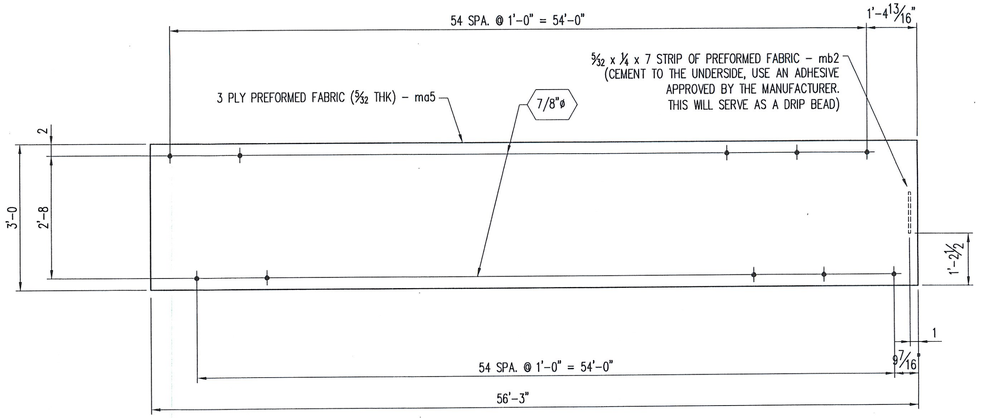
DETAIL #1
FOLDED THROUGH END DETAILS



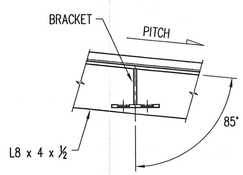
VIEW A-A



DETAIL #2



⚠ **TROUGH DETAIL**



BRACKET ATTACHMENT

RECEIVED
CK'D BY LJS OK'D BY RCV
MAY - 7 2008
RESUBMIT ____ APPROVED As Noted
BY GPW DATE 5/8/08

No.	Description	Date	By	Approved
⚠	REVISIONS PER APPROVAL DWGS	4/30/08	SB	

REVISIONS

Niagara Bridge and Rail
4817 Henry Avenue, Niagara Falls, N.Y. 14304
Phone: (716) 283-4710 Fax: (716) 283-5137

Project Information:
STATE: VERMONT
COUNTY: .
CITY / TOWNSHIP: BERLIN
LOCATION: I-89 (NB & SB) OVER VT ROUTE 12
PROJECT NO.: 1M 089-1 (20)
OWNER: VT-AOT
CONTRACTOR: .

Drawn By:	Date:	Checked By:	Date:
JJB	3/28/08	TFW	3/30/08

Description: VERMONT - EXPANSION JOINT DETAIL EXPANSION JOINT @ PIER 4

Sheet No.: 5 of 5 | Scale: NONE
Drawing No.: 10064-01 | Rev No.: 1

PROJECT NAME

QUALIFIED JOINT WELDING PROCEDURE PROJECT NUMBER
PROCEDURE SPECIFICATION

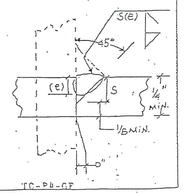
Material specification A36;A572;6598
Welding process FCAW
Manual or machine SEMI-AUTOMATIC
Position of welding FLAT for groove welds' Horizontal for filler welds 1G; 2F
Filler metal specification AWS 5.20
Filler metal classification ALLOY RODS THAT SHIELD 71 71 WILTRA (E71T-1)
Flux N/A
Shielding gas CO_2 Flow rate 35 CFH
Single or multiple pass SINGLE AND MULTIPLE
Single or multiple arc SINGLE ELECTRICAL STICK-OUT 3/8"-3/4"
Welding current DC
Polarity REVERSE
Welding progression N/A
Root treatment NONE
Preheat and interpass temperature 50° to 3/8" INCL ; 70° to 1" INCL ; 150° to 2" INCL
Posiheat treatment NONE
Supported by: PQR 007 and 008

VIRAMS
RECEIVED
AUG 19 2008
BY JWC

WELDING PROCEDURE

Pass no.	Electrode size	Welding current Amperes	Welding current Volts	Travel speed I P M	Weld Size (e)
		GROOVE WELDS			
1	.045	220-240	26-28	16-18	3/16"
1	.045	220-240	26-28	10-12	1/4"
all	.045	220-240	26-28	14-16	5/16"
		FILLET WELDS			
FILLET WELDS SHALL EQUAL 1/4 OF t BUT NOT MORE THAN 3/8" SEE PROCEDURE DS-16 FOR PARAMETERS OF FILLET WELDS					

RESUBMIT ____ APPROVED ✓
Joint detail BY
DATE 9/4/08



TC-PB-GF

This procedure may vary due to fabrication sequence, fit-up, pass size, etc., within the limitation of variables given in Section 5.

Procedure no. DS-13
Revision no.

Contractor Merrimack Sheet Metal, Inc.
Authorized by Stadt Blanchette
Date 1/26/01

Form E-2

PROJECT NAME _____

PREQUALIFIED JOINT WELDING PROCEDURE
PROCEDURE SPECIFICATION

PROJECT NUMBER _____

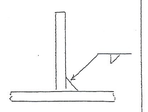
Material specification A36:A572-A588
Welding process FCAW
Manual or machine SEMI-AUTOMATIC
Position of welding FLAT OR HORIZONTAL
Filler metal specification AWS 5.20
Filler metal classification ALLOY RODS DUAL SHIELD TT 71 ULTRA (E71T-1)
Flux N/A
Shielding gas CO_2 Flow rate 35 CFH
Single or multiple pass SINGLE AND MULTIPLE
Single or multiple arc SINGLE ELECTRICAL STICK-OUT 3/8"-3/4"
Welding current DC
Polarity REVERSE
Welding progression N/A
Root treatment NONE
Preheat and interpass temperature 50° TO 3/8"INCL. 70° to 1"INCL. 150° to 2" INCL
Postheat treatment NONE
Supported by WPS 007 and 008

TRANS
RECEIVED
CK'D BY _____ OK'D BY JLR
AUG 19 2008

WELDING PROCEDURE

Pass no.	Electrode size	Welding current: Amperes	Welding current: Volts	Travel speed (T.P.M.)	Weld Size (in.)
1	.045	220-240	26-28	16-18	3/16"
1	.045	220-240	26-28	12-13	1/4"
All	.045	210-230	25-27	9-10	5/16"
1	.045	220-240	26-28	16-18	3/8" (3 passes)
2	.045	220-240	26-28	16-18	
3	.045	220-240	26-28	16-18	
1	.045	210-230	25-27	9-11	7/16" (3 passes)
2	.045	210-230	25-27	9-11	
3	.045	210-230	25-27	9-11	

Joint detail REQUIRED _____ APPROVED ✓
BY _____ DATE 9/4/08



This procedure may vary due to fabrication sequence, fit-up, pass size, etc., within the limitation of variables given in Section 5.

Procedure no. DS-16
Revision

Contractor Merrimack Sheet Metal, Inc.
Authorized by Scott Blanchette
Date 1/22/07

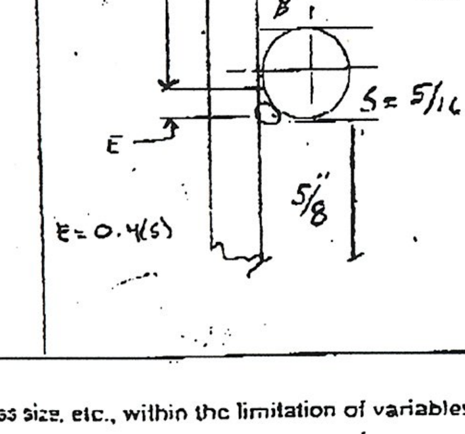
PROJECT NAME BERLIN

PROJECT NUMBER IM089-1(20)

PREQUALIFIED JOINT WELDING PROCEDURE
PROCEDURE SPECIFICATION

Material specification A36; A572; A588 SINGLE PASS ONLY TO A-615 (rebar)
Welding process FCAW
Manual or machine SEMI AUTOMATIC
Position of welding FLAT OR HORIZONTAL
Filler metal specification AWS 5.20
Filler metal classification ALLOY RODS DUAL SHIELD II 71 ULTRA (E71T-1)
Flux N/A
Shielding gas CO_2 Flow rate 27- 37.5 CFM
Single or multiple pass SINGLE
Single or multiple arc SINGLE ELECTRICAL STICK-OUT 3/8"-3/4"
Welding current DC
Polarity REVERSE
Welding progression N/A
Root treatment NONE
Preheat and interpass temperature : .55 ≤ CE .65 100°F, .65 < CE ≤ .75 200°F, CE .75 500°F
Postheat treatment NONE
Supported by WPS________

WELDING PROCEDURE

Pass no.	Electrode size	Welding current		Travel speed (I.P.M.)	Weld Size (E)	Groove Depth S	Joint detail
		Amperes	Volts				
1	.045	220-240	26-28	10-12	1/8"	5/16"	

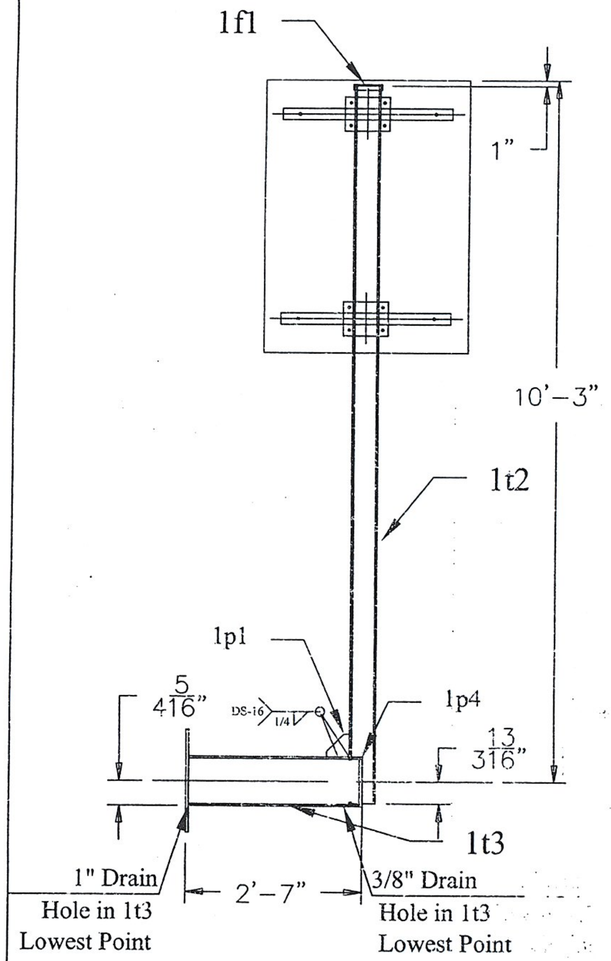
VTRANS
RECEIVED
CK'D BY ____ OK'D BY JWC
SEP 04 2008
RESUBMIT ____ APPROVED ✓
BY DATE 9/4/08

This procedure may vary due to fabrication sequence, fit-up, pass size, etc., within the limitation of variables given in Section 5.

Procedure no. DS-18
Revision no. ____

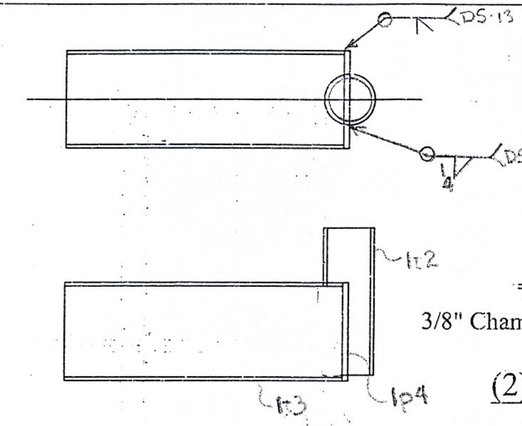
Contractor Merrimack Sheet Metal, Inc.
Authorized by Scott Blanchette
Date 1/26/01

Form E-2

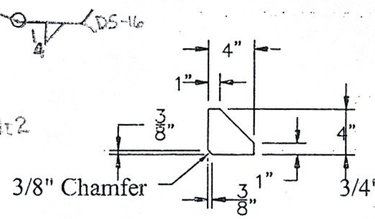


SIDE VIEW

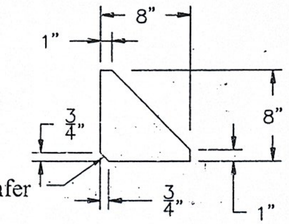
(2) - 1M1 BRIDGE MOUNTED SIGN STRUCTURE



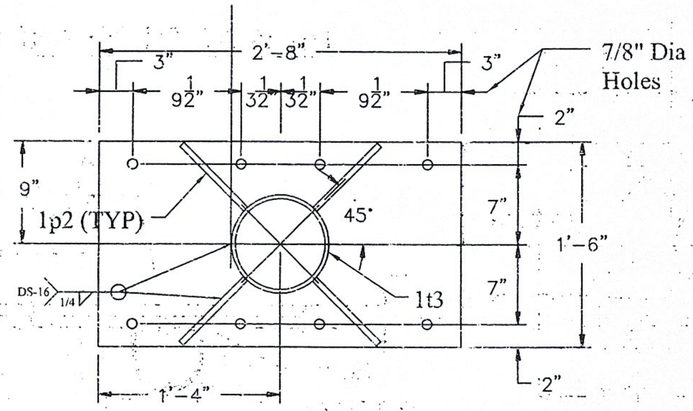
VIEW OF 1t3, 1t2 & 1p4



(2) - 1p1 STIFFENER

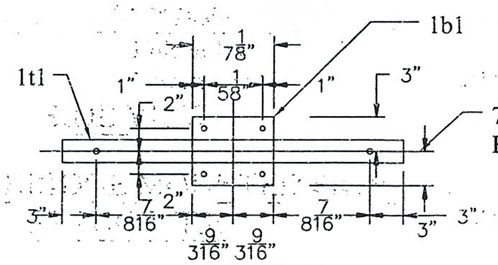


(8) - 1p2 STIFFENER

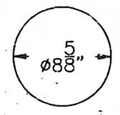


(2) - 1p3 BOLT PLATE

TOP VIEW



(4) - 1C1 PIPE CLAMP



(2) - 1p4 END CAP

STRUCTURES COPY

BILL OF MATERIALS

QTY	MARK	SHAPE	LENGTH	REMARKS
4	1C1	PIPE CLAMP ASSEMBLY		
4	1b1	Bar 1/4 x 6	0'-7 1/8"	
4	1t1	Tube 2 x 2 x 3/16	2'-6"	
8		U-Bolt 3/8" x 5 1/8" with 2 Nuts & 2 Washers		
8		3/8" Bolts ButtonHead x 3" with Nut & Washer		
2	1S1	SIGN SUPPORT ASSEMBLY		
2	1f1	Friction Cap 4" Pipe		
2	1p1	Plate 3/8 x 4	0'-4"	
8	1p2	Plate 1/2 x 8	0'-8"	
2	1p3	Plate 1/2 x 1'-6	2'-8"	
2	1p4	Plate 1/2 x 8 5/8	0'-8 5/8"	
2	1t2	Pipe 4" x Sched 80	10'-5 7/8"	
2	1t3	Pipe 8" x Sched 40	2'-6"	
8		Bolts 3/4" Squarehead x 9" 1 3/4" Flat Washer & Lock Nut		
8		Bolts 3/4" Squarehead x 12" Bent 1 3/4" Flat Washer & Lock Nut		

NOTES:

1. Fabricate sign mounts so sign support is vertical.
2. Bolts shall be A307.
3. Pipe and structural tubing shall be ASTM A500, Grade B. Plates shall be ASTM A572, Grade 50.
4. Sign support shall be galvanized after fabrication.
5. VIBR & ANTI-SEIZE PASTE TO GALV.

RECEIVED
OK'D BY _____ OK'D BY RSY
AUG 19 2008
RESUBMIT _____ APPROVED As Noted
BY: CPW DATE 9/4/08

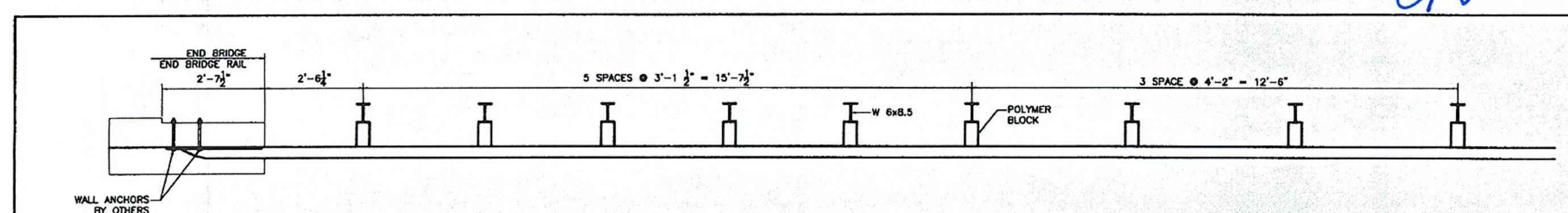
		DATE SUBMITTED
1	8-1-2008	REVISED PER APPROVAL COMMENTS
0	3-14-2008	SUBMITTED FOR APPROVAL
REV NO.	DATE	DESCRIPTION
HOLES AS NOTED		
MATERIAL: ASTM A572, GRADE 50 GALV		

DRAWING COVERS
BRIDGE MOUNTED SIGN STRUCTURE

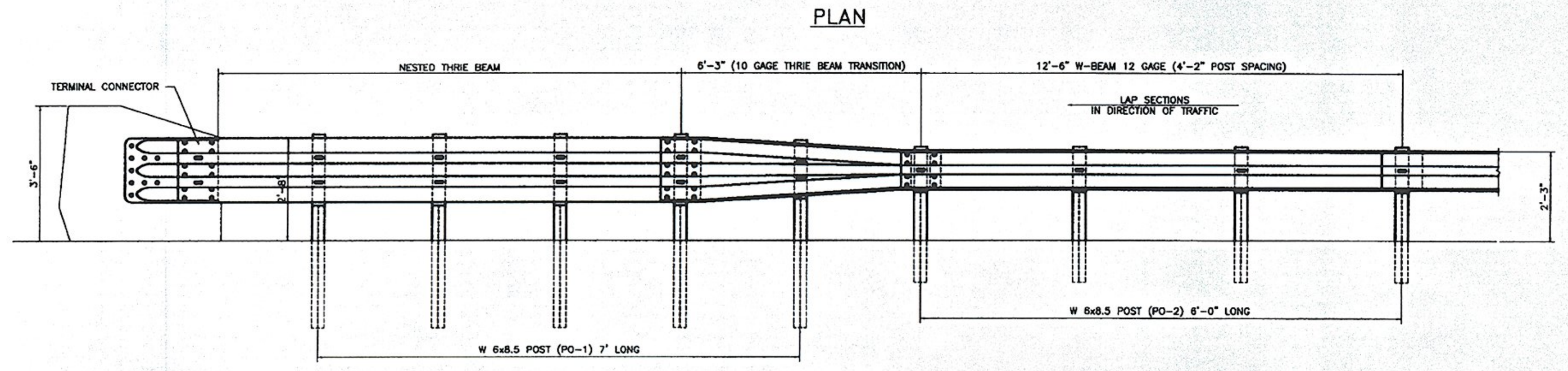
PROJECT	BERLIN IM 089-1(20)
LOCATION	I-89
ENGINEER	VERMONT AGENCY OF TRANSPORTATION
CUSTOMER	BECK & BELUCCI, INC.

MERRIMACK SHEET METAL
119 HALL STREET
CONCORD NH 03301
Tel. 603.224.7766
Fax 603.224.7925

DRAWN BY: RL
CHECKED BY: JD
JOB NO: #2004
DWG: F1

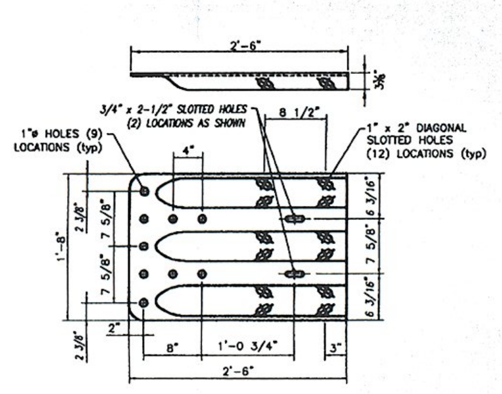


PLAN

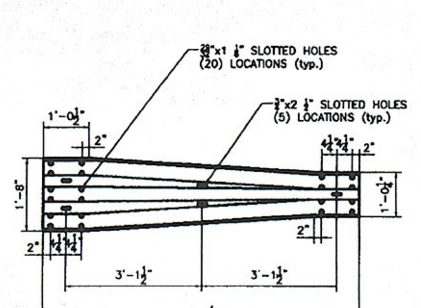


ELEVATION

BILL OF MATERIAL (4 APPROACHES)					
MK.	Qty.	Description	Size/Shape	Length Qty.	Material
PO-1	20	STEEL POST	W6 x 8.5	7'-0"	A572 Gr. 36
PO-2	16	STEEL POST	W6 x 8.5	6'-0"	A572 Gr. 36
B1	20	POLYMER BLOCK	4" x 8"	1'-9 1/2"	Routed Polymer
B2	16	POLYMER BLOCK	4" x 8"	1'-2"	Routed Polymer
	4	TERMINAL CONNECTOR	10 Ga.	2'-6"	M180
	4	THRIE TRANSITION PANEL	10 Ga.	7'-3 1/2"	M180 A2
	4	THRIE BEAM	12 Ga.	12'-6"	M180 A2
	4	W-BEAM	12 Ga.	12'-6"	M180 A2
	56	0.625"ø x 10" LG. POST BOLT W/DBL RECESSED NUT, PLATE & ROUND WASHER			A307
	160	0.625"ø x 1.25" LG. PANEL SPLICE BOLT W/DBL RECESSED NUT			A307



TERMINAL CONNECTOR
10 GAUGE (AASHTO M180 B2)



THRIE TRANSITION PANEL
10 GAUGE (AASHTO M180 A2)

REVISIONS		
No.	Remarks	Date
0	Initial submittal	

HIGHWAY SAFETY CORP.
GLASTONBURY, CT

BRIDGE APPROACH CONNECTION
BERLIN, VERMONT
PROJECT NO. AC IM089-1 (20)

DRAWN	MHM
CHECKED	P Radin
DATE	8/27/08
SCALE	N.T.S.
REFERENCE NO.	1669
SIZE	D
REVISION	0
GENERAL CONTRACTOR	
SUB CONTRACTOR	F.R. LAFAYETTE
SHEET NO.	1 of 1

Vermont Agency of Transportation
Materials & Research Laboratory

Approved products listing

Date printed: 4/16/2008
Last revision: 4/15/2008

Material Spec. No.: 728.01(d), Guard Rail Posts and Post Accessories - Alternate Blockouts **Certfication required:** None **Const. section nos.:** 621

Product	Manufacturer	Distributor	Jurisdiction	Comments
Polymer Offset Blocks	Mondo Polymer Tech., Inc. P.O. Box 250, State Rt 7 Reno, OH 45773-0250 Tel: (888) 607-4790 FAX: (740) 376-9960	Mondo Polymer Tech., Inc. P.O. Box 250 Reno, OH 45773 Tel: (888)607-4790 FAX: (740)376-9960	Main: Research & Develop. (802)828-2561 Alt.: N/A	Recycled Polyethylene. Acceptable for use on steel post guard rail systems installed on the National Highway System per FHWA letter of 03/27/2002.

RECEIVED
CK'D BY JSS OK'D BY KW
SEP 16 2008
RESUBMIT ____ APPROVED ✓
BY CPW DATE 9/16/08

Please notify the Research and Development Unit prior to the use of any product that is "conditionally approved for 2008" at (802) 828-2561.

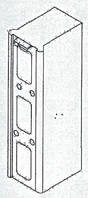
MONDO POLYMER TECHNOLOGIES

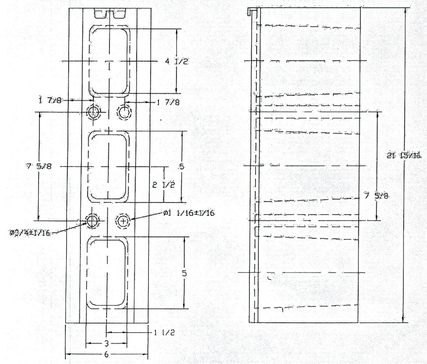
RECYCLED POLYMER OFFSET BLOCK

STEEL POST THRI BEAM MODEL TB21SH

P.O. BOX 250 RENO, OH 45773

DOCUMENT # 600.008





RECEIVED
CK'D BY JSS CK'D BY KW
SEP 16 2008
RESUBMIT ____ APPROVED ✓
BY CPW DATE 9/16/08

All tolerances +/- 1/4" unless otherwise noted