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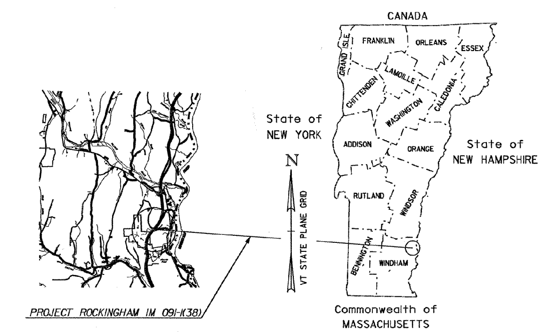
STATE OF VERMONT
AGENCY OF TRANSPORTATION

PROPOSED IMPROVEMENT
BRIDGE PROJECT

BEGINNING AT A POINT APPROXIMATELY 2.29 MILES NORTH OF THE WESTMINSTER-ROCKINGHAM TOWN LINE AND EXTENDING NORTH 0.09 MILES

WORK TO BE PERFORMED ON THIS PROJECT INCLUDES REPLACEMENT OF BRIDGE 21-3 (84" DIA.CORRUGATED GALVANIZED METAL PLATE PIPE) WITH A NEW PRECAST CONCRETE BOX AND ALL RELATED CHANNEL AND ROADWAY WORK. ALSO INCLUDED IS THE DECK JOINT REPLACEMENT FOR BRIDGES 22-N & 22-S OVER TH 46.



TRAFFIC DATA

2001 ADT = 13600
DHV = 2000
FUNCTIONAL CLASSIFICATION :INTERSTATE

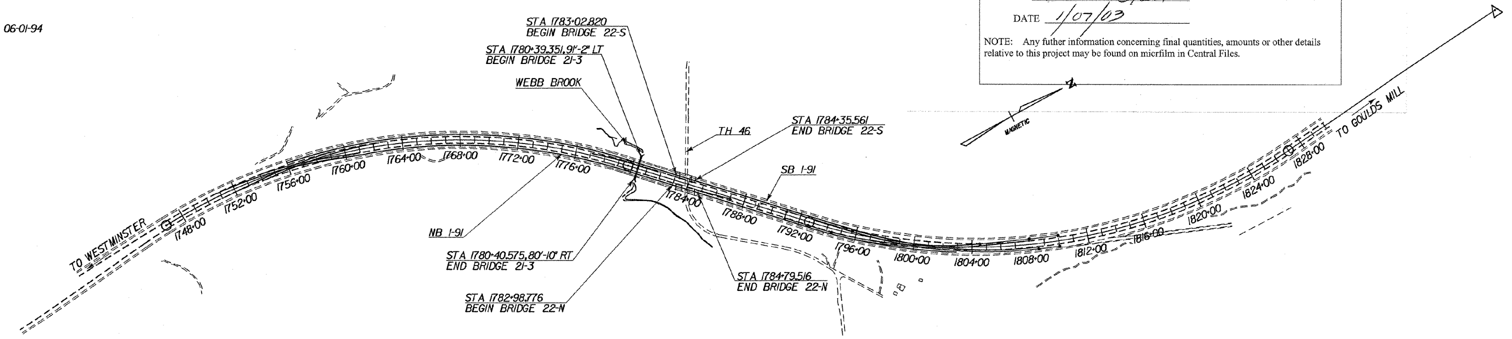
RECORD PLANS

CONTRACTOR: BAZIN BROS. TRUCKING – WESTMINSTER, VT
RESIDENT ENGINEER: D. W. BREER
CONSTRUCTION BEGAN: MAY 15, 2001
CONSTRUCTION COMPLETE: OCTOBER 22, 2001
RECORD PLANS BY: D. BREER

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

BY D. W Breer RESIDENT ENGINEER
DATE 1/07/03

NOTE: Any futher information concerning final quantities, amounts or other details relative to this project may be found on micrfilm in Central Files.



0 400 800
SCALE IN FEET

CONVENTIONAL SYMBOLS

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

SURVEYED BY : VTRANS SURVEY CREW
SURVEYED DATE : MARCH 29, 2000

DATUM
VERTICAL BASED ON LOCAL SURVEY
HORIZONTAL BASED ON LOCAL SURVEY

STATE OF VERMONT
CHARLES F. WOIDT, JR.
#6398
REGISTERED
PROFESSIONAL ENGINEER
Charles F. Woidt Jr.
9/15/00

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

CONSTRUCTION IS TO BE CARRIED ON IN ACCORDANCE WITH THESE PLANS AND THE STANDARD SPECIFICATIONS FOR CONSTRUCTION DATED 1990, AS APPROVED BY THE FEDERAL HIGHWAY ADMINISTRATION ON MARCH 15, 1990 FOR USE ON THIS PROJECT, INCLUDING ALL SUBSEQUENT REVISIONS AND SUCH REVISED SPECIFICATIONS AND SPECIAL PROVISIONS AS ARE INCORPORATED IN THESE PLANS.

DEPARTMENT OF TRANSPORTATION
for FEDERAL HIGHWAY ADMINISTRATOR
APPROVED Mark D. Richter DATE 11-16-00

DIRECTOR OF PROJECT DEVELOPMENT
APPROVED [signature] DATE 10/4/00

PROJECT MANAGER : DAVID HOYNE

PROJECT NAME : BR 21-3, BR 22-N AND BR 22-S
PROJECT NUMBER : ROCKINGHAM IM 091-1 (38)

SHEET 1 OF 23 SHEETS

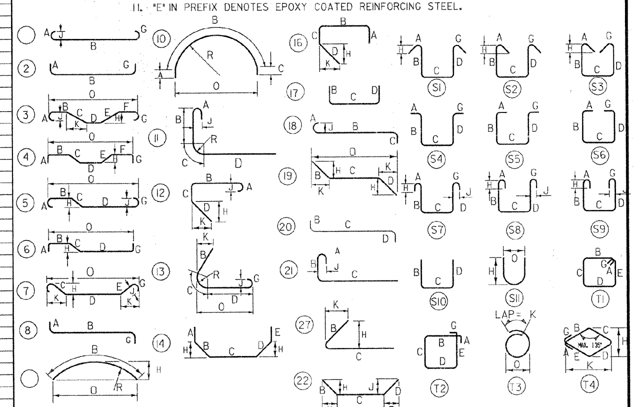
QUANTITY SHEET

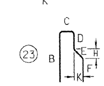
NO.	ITEM	UNIT	QUANTITY BREAKDOWN							GRAND TOTAL
			PRECAST BOX	INLET STRUCT.	OUTLET STRUCT.	SB I-91	NB I-91	BR. 22-N	BR. 22-S	
203.16	SOLID ROCK EXCAVATION	CY	175	75						250
203.28	EXCAVATION OF SURFACES & PAVEMENTS	CY				760	1100			1860
203.31	SAND BORROW	CY				180	205			385
204.25	STRUCTURE EXCAVATION (MODIFIED)	CY	4730	125	215					5070
204.30	GRANULAR BACKFILL FOR STRUCTURES	CY	2630	95	80					2805
210.10	COLD PLANING	SY				3900	4250			8150
213.10	MILLED RUMBLE STRIPS	LF				8400	9400			17800
301.35	SUBBASE OF DENSE GRADED CRUSHED STONE	CY				525	570			1095
404.45	TAR EMULSION	GAL	58							58
404.65	EMULSIFIED ASPHALT	CWT				9.8	10.2			20
406.25	BITUMINOUS CONCRETE PAVEMENT (PG-58-28)	TON				1020	980			2000
501.25	CONCRETE, CLASS B	CY		41	34					75
507.15	REINFORCING STEEL	LB		4050	3550					7600
514.10	WATER REPELLENT	GAL		1	1			13	11	26
516.10	BRIDGE EXPANSION JOINT (ASPHALTIC PLUG TYPE)	LF						160	80	240
519.20	SHEET MEMBRANE WATERPROOFING	SY	300							300
540.10	PRECAST CONCRETE BOX (8' x 6' X 180')	LS	1							1
580.11	REPAIR OF CONCRETE SUPERSTRUCTURE	SY						10	5	15
	SURFACE, CLASS II									
580.13	REPAIR OF CONCRETE SUBSTRUCTURE	SY						10	5	15
	SURFACE. CLASS I									
580.14	REPAIR OF CONCRETE SUBSTRUCTURE	SY						10	5	15
	SURFACE, CLASS II									
605.10	6" UNDERDRAIN	LF	430							430
608.10	BULLDOZER RENTAL TYPE I	HR				10	10			20
608.25	ALL PURPOSE EXCAVATOR TYPE I	HR				10	10			20
613.10	STONE FILL, TYPE I	CY				50	50			100
613.12	STONE FILL, TYPE III	CY		78						78
613.13	STONE FILL, TYPE IV	CY			135					135
620.50	REMOVING AND RESETTING FENCE	LF				125	125			250
621.57	ENERGY ABSORPTION ATTENUATOR (SAND	EACH				1	1			2
	FILLED BARREL)									
621.75	REMOVAL & RESET GUARD RAIL	LF				206	120			326
621.90	TEMPORARY TRAFFIC BARRIER	LF				4600	4900			9500
630.10	UNIFORMED TRAFFIC OFFICERS	HR				50	50			100
630.15	FLAGGERS	HR				50	50			100
631.10	FIELD OFFICE - ENGINEERS	EA	1							1
631.16	TESTING EQUIPMENT - CONCRETE	LS		0.5	0.5					1
631.17	TESTING EQUIPMENT - BITUMINOUS	LS				0.5	0.5			1
631.25	FIELD OFFICE TELEPHONE (NABI)	LU	1							1
634.10	EMPLOYEE TRAINEESHIP	HR	520							520
635.10	MOBILIZATION	LS	1							1
641.10	TRAFFIC CONTROL	LS	1							1
641.15	PORTABLE CHANGEABLE MESSAGE BOARD	EA				1	1			2
646.414	DURABLE 6" WHITE LINE	LF				273	256			529
646.415	DURABLE 6" YELLOW LINE	LF				218	205			423
646.614	TEMPORARY 6" WHITE LINE (TAPE, TYPE II)	LF				14200	15000			29200
646.615	TEMPORARY 6" YELLOW LINE (TAPE, TYPE II)	LF				11300	10600			21900
646.80	RAISED PAVEMENT MARKERS TYPE I	EA				1573	1475			3048
646.86	BLACK PAVEMENT MARKING MASKING TAPE	SF				6000	6500			12500
649.31	GEOTEXTILE UNDER STONE FILL	SY	87	67	100					254
649.41	GEOTEXTILE FOR UNDER DRAIN TRENCH LINING	SY	100							100
649.51	GEOTEXTILE FOR SILT FENCE	SY				565	565			1130
651.15	SEED	LB	20							20
651.17	SEED - WINTER RYE	LB				20	20			40
651.18	FERTILIZER	LB	100							100
651.20	AGRICULTURAL LIMESTONE	TON	1							1
651.25	HAY MULCH	TON	1							1
651.26	HAY BALES FOR EROSION CONTROL	EA				85	85			170
651.35	TOPSOIL	CY	60							60
651.40	GRUBBING MATERIAL	SY				50	50			100
654.10	EROSION MATTING	SY				200	200			400

ITEM	NO. PIECES	SIZE	LENGTH	MARK	TYPE	A	B	C	D	E	F	G
1												
2							INLET HEADWALL					
3												
4												
5△	36	5	6 - 4	H501	STR							
6	15	5	15 - 6	H502	STR							
7	15	5	11 - 6	H503	STR							
8	15	5	14 - 6	H504	STR							
9	48	5	8 - 4	H505	STR							
10	24	5	4 - 0	H506	17		1 - 6	1 - 0	1 - 6			
11	22	5	13 - 11	H507	STR							
12	22	5	9 - 11	H508	STR							
13	10	5	11 - 3	H509	STR							
14	11	5	2 - 8	H510	17		0 - 10	1 - 0	0 - 10			
15	2	5	14 - 4	H511	STR							
16	2	5	10 - 4	H512	STR							
17△	44	7	8 - 6	H701	STR							
18△	38	8	10 - 10	H801	17		4 - 0	6 - 10	0			
19												
20												
21												
22							OUTLET HEADWALL					
23												
24△	30	5	6 - 4	H501	STR							
25	30	5	11 - 6	H503	STR							
26	15	5	14 - 6	H504	STR							
27	20	5	4 - 0	H506	17		1 - 6	1 - 0	1 - 6			
28	44	5	9 - 11	H508	STR							
29	10	5	11 - 3	H509	STR							
30	11	5	2 - 8	H510	17		0 - 10	1 - 0	0 - 10			
31	4	5	10 - 4	H512	STR							
32	40	5	8 - 3	H513	STR							
33△	40	7	8 - 6	H701	STR							
34△	34	8	10 - 10	H801	17		4 - 0	6 - 10	0			

~ NOTES ~

1. UNLESS OTHERWISE DESIGNATED, ALL BAR REINFORCEMENT FOR CONCRETE IN SIZES UP TO AND INCLUDING NO. 18 SHALL CONFORM TO THE REQUIREMENTS OF THE "SPECIFICATIONS FOR DEFORMED BILLET-STEEL BARS FOR CONCRETE REINFORCEMENT", AASHTO M 31(ASTM A 615-SI). ALL BARS SHALL BE GRADE 60, UNLESS OTHERWISE DESIGNATED.
2. FOR TYPICAL BENDING DETAILS, RECOMMENDED PIN DIAMETER "D" OF BENDS AND HOOKS, AND OTHER STANDARD PRACTICE, SEE CURRENT CONCRETE REINFORCING STEEL INSTITUTE "MANUAL OF STANDARD PRACTICE".
3. BARS WHICH REQUIRE MORE ACCURATE BENDING THAN STANDARD PRACTICES SHOULD HAVE LIMITS INDICATED.
4. ALL DIMENSIONS ARE OUT TO OUT OF BAR EXCEPT "A" AND "G" ON STANDARD 180 DEGREE AND 135 DEGREE HOOKS.
5. "J" DIMENSION ON 180 DEGREE HOOKS TO BE SHOWN ONLY WHERE NECESSARY TO RESTRICT HOOK SIZE. OTHERWISE, STANDARD HOOKS ARE TO BE USED.
6. "H" DIMENSION ON STIRRUPS TO BE SHOWN ONLY WHEN NECESSARY TO MAINTAIN CLEARANCES.
7. WHERE SLOPE DIFFERS FROM 45 DEGREES, DIMENSIONS "H" AND "K" MUST BE SHOWN.
8. ▲ DENOTES BARS TO BE CUT IN FIELD.
9. ✳ DENOTES ONE EXTRA BAR ADDED FOR TESTING PURPOSES.
10. △ DENOTES TWO EXTRA BARS ADDED FOR TESTING PURPOSES.
11. "E" IN PREFIX DENOTES EPOXY COATED REINFORCING STEEL.





ASTM STANDARD REINFORCING BARS

BAR SIZE DESIGNATION	WEIGHT POUNDS PER FOOT	NOMINAL DIMENSIONS ROUND SECTION		
		DIAMETER INCHES	CROSS SECTIONAL AREA SQ. INCHES	PERIMETER INCHES
#3	.376	.375	.11	1.178
#4	.668	.500	.20	1.571
#5	1.043	.625	.31	1.963
#6	1.502	.750	.44	2.356
#7	2.044	.875	.60	2.749
#8	2.670	1.000	.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

STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of ROCKINGHAM	Bridge Nos. 21-3, 22-N, 22-S
	Log Sta.
Highway No. I-91	Surv. Sta.

I-91 NB & SB OVER WEBB BROOK & TH 46

QUANTITIES AND REINFORCING SCHEDULE

Designed By L.Wixson	Drawn By L.Wixson
Checked By Date	Bridge Design Supervisor J.Mleczkowski Date
PROJECT BR 21-3, BR 22-N AND BR 22-S	PROJECT NO. ROCKINGHAM IM 091-1(38)

I.G.C. Info. G:\Structures\STR6_Bridge Management\Projects\Rockingham\plans rocking\zf0

Bridge Sheet No. Sheet 2 of 23

SV=

14-NOV-2000

GENERAL NOTES

1. ALL MATERIALS AND CONSTRUCTION SHALL CONFORM TO STATE OF VERMONT AGENCY OF TRANSPORTATION STANDARD SPECIFICATIONS FOR CONSTRUCTION, DATED 1990 AND ITS LATEST REVISIONS AND THE AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES DATED,1998 AND ITS LATEST REVISIONS.

2. ALL DIMENSIONS ARE HORIZONTAL OR VERTICAL AND ARE GIVEN AT 68° F.

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

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

5. REINFORCING PLACEMENT TOLERANCES SHALL BE:
   SPACING ±1"
   CLEARANCE ±1/4"

6. ALL EXPOSED EDGES OF CONCRETE SHALL BE CHAMFERED 1" X 1".

7. MINIMUM COVER FOR REINFORCING STEEL SHALL BE THREE (3) INCHES EXCEPT AS SHOWN OTHERWISE ON THE PLANS.

8. WATER REPELLENT SHALL BE APPLIED TO ALL EXPOSED CAST-IN-PLACE CONCRETE SURFACES.

9. THE PRECAST SECTION SHOWN IS APPROXIMATE. THE ACTUAL SHAPE WILL BE DEPENDANT UPON THE FABRICATOR. MINOR DIFFERENCES FROM THE SHAPE SHOWN ARE ACCEPTABLE. ALL OF THE UNITS SHALL HAVE THE SAME SHAPE. INDIVIDUAL UNITS LENGTHS DEPICTED ON DRAWINGS ARE 8'. OTHER UNIT LENGTHS MAY BE USED BUT A MIN LENGTH OF 4' MUST BE ADHERED TO. THE OVERALL LENGTH MEASURED ALONG THE SURVEY CENTERLINE IS 180'. THE LENGTH SHALL BE VERIFIED BY CONTRACTOR PRIOR TO BEGINNING FABRICATION. THE END SECTIONS SHALL BE FABRICATED SO THE HEADWALL IS PLUMB WHEN INSTALLED. THE PLANNED INVERT GRADE IS 0.944%. THIS GRADE SHALL BE FIELD VERIFIED BY THE CONTRACTOR BEFORE THE FABRICATION OF THE END SECTIONS. THE LUMP SUM BID FOR THE BOX SHALL BE FOR THE ACTUAL LENGTH REQUIRED.

10. SEE SPECIAL PROVISIONS FOR ADDITONAL SPECIFICATIONS ON THE PRECAST UNITS.

11. THE HEADWALLS, WINGWALLS AND FOOTINGS SHALL BE CAST-IN-PLACE CONCRETE, CLASS B. ALLOWABLE STRESS FOR CAST-IN-PLACE CONCRETE, CLASS B: = f'c = 3500 PSI

12. THE SIDES AND TOP OF THE INLET AND OUTLET END SECTIONS SHALL BE PROVIDED WITH INSERTS FOR THE INSTALLATION OF *5 DOWEL BARS. DOWELS AND INSERTS SHALL BE PROVIDED BY THE FABRICATOR OF THE PRECAST UNITS WITH COSTS SUBSIDIARY TO THE BOX ITEM.

13. THE EXTERIOR (SIDES AND TOP) & INTERIOR (BOTTOM ONLY) OF ALL CONCRETE BOX JOINTS SHALL BE FILLED WITH MORTAR, TYPE IV AFTER BEING SET IN THEIR FINAL POSITION. ALL LIFTING HOLES AND ANY OTHER HOLES OR IMPERFECTIONS SHALL ALSO BE FILLED AND ALL MORTAR SHALL BE WET CURED A MIN. OF 24 HOURS, PRIOR TO THE WATERPROOFING DESCRIBED BELOW. COSTS FOR ALL MORTAR, TYPE IV USED SHALL BR CONSIDERED SUBSIDIARY TO ITEM 540.10, PRECAST CONCRETE BOX.

14. A TWO FOOT WIDE STRIP OF SHEET MEMBRANE WATERPROOFING SHALL BE CENTERED AND APPLIED AT EACH SIDE JOINT OF BOX FOR FULL HEIGHT. THE ENTIRE TOP SHALL THEN BE COVERED WITH SHEET MEMBRANE WATERPROOFING. THE SHEETS SHALL OVERLAP THE EDGES BY ONE FOOT ON EACH SIDE. AFTER MEMBRANE PLACEMENT, THE REMAINDER OF THE EXPOSED SIDES SHALL BE COATED WITH TAR EMULSION APPLIED AS PER SECTION 404.06(a). PAYMENT FOR THE SHEET MEMBRANE WATERPROOFING AND TAR EMULSION SHALL BE BY THEIR RESPECTIVE ITEMS, 519.20 & 404.45.

15. OMIT WEEP HOLES IN ALL PRECAST BOX SECTIONS.

16. ALL TEMPORARY WATER DIVERSION REQUIREMENTS DURING CONSTRUCTION SHALL BE THE CONTRACTORS RESPONSIBLITY. ALL COSTS ARE SUBSIDIARY TO THE PRECAST BOX CULVERT.

17. DUE TO DEPTH OF EXCAVATION AT THIS SITE, SHORING MAY BE REQUIRED ADJACENT TO THE TRAVEL WAY. COSTS FOR ALL WORK AND MATERIALS ASSOCIATED WITH THIS SHORING SHALL BE CONSIDERED SUBSIDIARY TO THE STRUCTURE EXCAVATION ITEM.

18. ITEM 204.25, STRUCTURE EXCAVATION (MODIFIED) SHALL INCLUDE THE REMOVAL & DISPOSAL OF THE EXISTING 84" x 212' CGMPP. QUANTITY FOR ITEM 204.25 DOES NOT INCLUDE THE VOLUME OF MATERIAL OF THE EXISTING PIPE.

19. FOR FOOTINGS IN ROCK ALL OVER BREAKAGE WIDER THAN THE WIDTH OF THE FOOTING SHALL BE REPLACED WITH CONCRETE, CLASS 'B'. A MAXIMUM OF 6" AVERAGE WIDTH SHALL BE PAID FOR AS "STRUCTURE EXCAVATION" AND CONCRETE, CLASS 'B'. ANY ADDITIONAL CONCRETE BEYOND THE LIMITS SPECIFIED SHALL BE PLACED AT NO COST TO THE STATE.

20. ALL OVER BREAKAGE BELOW THE INDICATED BOTTOM OF FOOTING SHALL BE REPLACED WITH "CONCRETE, CLASS B". A MAXIMUM OF 6" AVERAGE DEPTH SHALL BE PAID FOR AS "STRUCTURE EXCAVATION" AND "CONCRETE, CLASS B". ANY ADDITIONAL CONCRETE REQUIRED BEYOND THE LIMIT SPECIFIED SHALL BE PLACED AT NO COST TO THE STATE.

21. DESIGN CRITERIA:

A. MINIMUM WATERWAY AREA = 48 SF

B. SOIL DATA:
- UNIT WEIGHT 140 PCF
- EARTH COVER 0' MIN., 24' MAX.
- K_a (ACTIVE SOIL PRESSURE COEFFICIENT) 0.286

C. MATERIALS:
- STEEL REINFORCEMENT AASHTO M - 31, GRADE 60 (ASTM A-615-S1)
- CONCRETE f'c = 5000 PSI

D. DESIGN:

SERVICE LOAD OR LOAD FACTOR DESIGN

LOAD FACTOR: CAPACITY REDUCTION FACTORS
SHEAR - Ø = 0.85
BENDING - Ø = 0.90

γ AND β FACTORS: (GROUP I LOADING)
DEAD LOAD γ = 1.3, β_E = 1.0 VERTICAL &
LIVE LOAD γ = 1.3, β = 1.67 LATERAL

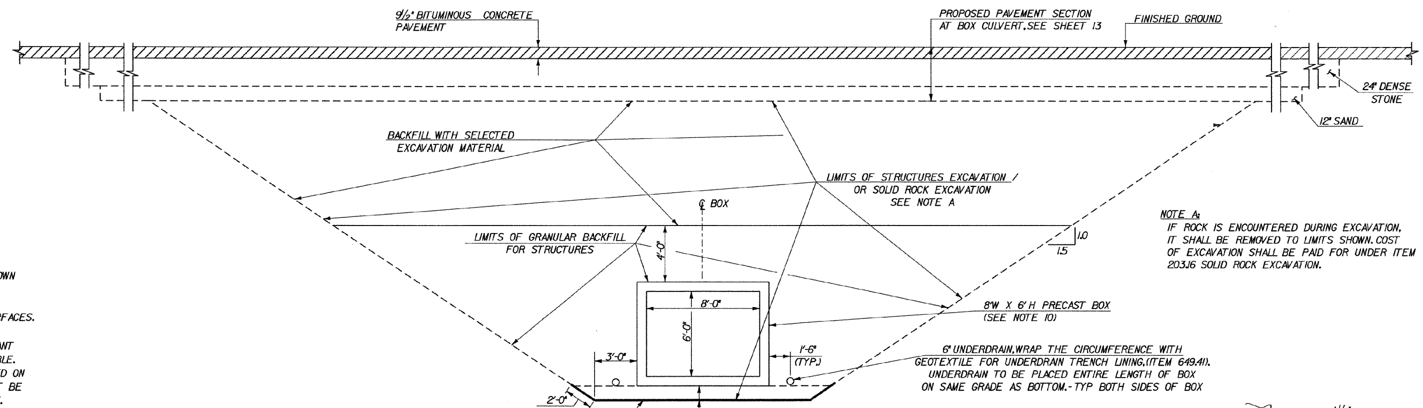
IMPACT - AASHTO 3.8 AND 6.4

SERVICE LOAD AND FACTORS: (GROUP I LOADING)
DEAD LOAD γ = 1.0, β_E = 1.0 VERTICAL
1.0 LATERAL
LIVE LOAD γ = 1.0, β = 1.0

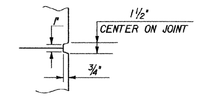
E. MISCELLANEOUS: DESIGN LIVE LOAD AASHTO HS-25-44

F. SPREAD FOOTINGS: ALLOWABLE BEARING PRESSURE = SOIL 4 KSF
ROCK LEDGE 10 KSF

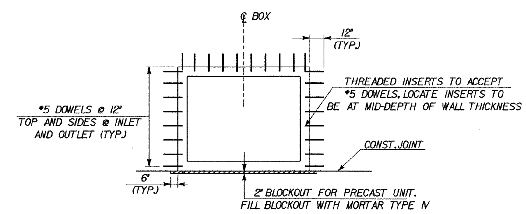
22. FOLLOWING THE COMPLETION OF EXCAVATION FOR THE BOX CULVERT THE SOILS AND FOUNDATION ENGINEER / ENGINEERING GEOLOGIST FROM VTRANS WILL BE REQUIRED TO INSPECT THE FOUNDATION AREA & EMBANKMENT SLOPE TO DETERMINE THE COMPETENCY OF EXISTING EMBANKMENT / ROCK TO SUPPORT THE DESIGN BEARING PRESSURES SHOWN ON THE PLANS.



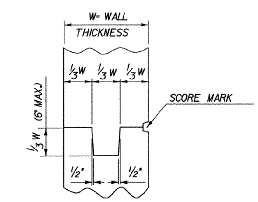
TYPICAL BOX CULVERT SECTION
SCALE: 1/4" = 1'-0"



SCORE MARK DETAIL
NOT TO SCALE



HEADWALL-BOX CONNECTION DETAIL
SCALE: 1/4" = 1'-0"



TYPICAL CONCRETE CONSTRUCTION JOINT
NOT TO SCALE

STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of ROCKINGHAM | Bridge Nos. 21-3, 22-N, 22-S
Highway No. I-91 | Log Sta. | Surv. Sta.

I-91 NB & SB OVER WEBB BROOK & TH 46

BR21-3 TYPICAL SECTION AND GENERAL NOTES

Designed By | Drawn By
Checked By | Date | Bridge Design Supervisor J. Mleczkowski | Date

PROJECT BR 21-3, BR 22-N AND BR 22-S | PROJECT NO. ROCKINGHAM IM 091-1(38)

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Bridge Sheet No. | Sheet 3 of 23

SV=

13-NOV-2000

SOIL CLASSIFICATION

AASHTO

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

UNIFIED SOIL SYSTEM

GW/GP	Clean Gravels (Few Fines)
GM/GC	Gravels (Appreciable Fines)
SW/SP	Clean Sands (Few Fines)
SM/SC	Sand (Appreciable Fines)
ML/CL	Low Plastic Silts & Clays
OL	Low Plastic Organic Silt
MH/CH	High Plastic Silts & Clays
OH	High Plastic Organic Silt
Pt	Highly Organic Soils

MOISTURE

DESCRIPTIVE TERM	OBSERVED IN FIELD	% ± BY ANALYSIS
Dry	No Visible Water	<10
Moist	Damp	10-20
Moist to Wet	Moist to Wet	21-50
Wet	Visible Water	51-70
Saturated		>70

ROCK QUALITY DESIGNATION

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

SHEAR STRENGTH

UNDRAINED SHEAR STRENGTH IN P.S.F.	CONSISTENCY
<250	Very Soft
250-500	Soft
500-1000	Med. Stiff
1000-2000	Stiff
2000-4000	Very Stiff
>4000	Hard

CORRELATION GUIDE OF "N" TO DENSITY/CONSISTENCY

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

COMMONLY USED SYMBOLS

▼	Water Elevation
⊕	Standard Penetration Boring
⊕	Auger Boring
⊙	Rod Sounding
S	Sample
N	Standard Penetration Test Blow Count Per Foot For: 2" O.D. Sampler 1 3/8" I.D. Sampler Hammer Weight Of 140 Lbs. Hammer Fall Of 30"
VS	Field Vane Shear Test
US	Undisturbed Soil Sample
B	Blast
DC	Diamond Core
MD	Mud Drill
WA	Wash Ahead
HSA	Hollow Stem Auger
AX	Core Size 1 1/8"
BX	Core Size 1 5/8"
NX	Core Size 2 1/8"
M	Double Tube Core Barrel Used
LL	Liquid Limit
PL	Plastic Limit
PI	Plasticity Index
NP	Non Plastic
w	Moisture Content (Dry Wgt. Basis)
D	Dry
M	Moist
MTW	Moist To Wet
W	Wet
Sat	Saturated
Bo	Boulder
Gr	Gravel
Sa	Sand
Si	Silt
Cl	Clay
HP	Hardpan
Le	Ledge
NLTD	No Ledge To Depth
CNPF	Can Not Penetrate Further
TLOB	To Ledge Or Boulder
NR	No Recovery
Rec.	Recovery
%Rec.	Percent Recovery
RQD	Rock Quality Designation
CBR	California Bearing Ratio
<	Less Than
>	Greater Than

COLOR

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

DEFINITIONS (AASHTO)

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

BOULDER - A rock fragment with an average dimension > 12 inches.

COBBLE - Rock fragments with an average dimension between 3 and 12 inches.

GRAVEL - Rounded particles of rock < 3" and > 0.0787" (#10 sieve).

SAND - Particles of rock < 0.0787" (#10 sieve) and > 0.0029" (#200 sieve).

SILT - Soil < 0.0029" (#200 sieve), non or slightly plastic and exhibits no strength when air-dried.

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

VARVED - Alternate layers of silt and clay.

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

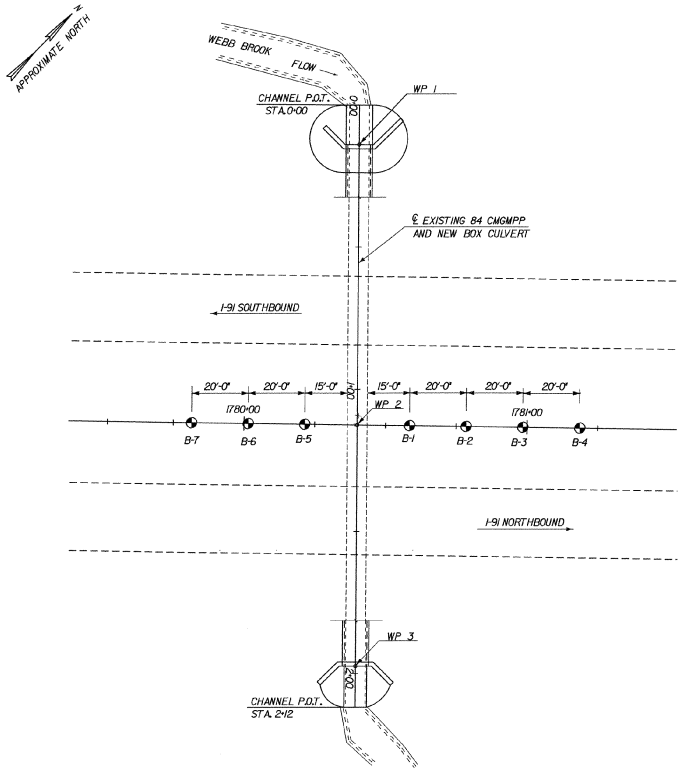
MUCK - Soft organic soil (containing > 10% organic material.

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

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

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

DIP - Inclination of bed with a horizontal plane.



BORING LAYOUT

SCALE: 1" = 20'

GENERAL NOTES

1. The subsurface explorations shown herein were made 07-24-00 by the Agency.
2. Soil and rock classifications, properties and descriptions are based on engineering interpretation from available subsurface information by the Agency and may not necessarily reflect actual variations in subsurface conditions that may be encountered between individual boring or sample locations.
3. Observed water levels and/or conditions indicated are as recorded at the time of exploration and may vary according to the prevailing rainfall, methods of exploration and other factors.
4. Engineering Judgement was exercised in preparing the subsurface information presented herein. Analysis and interpretation of subsurface data was performed and interpreted for Agency design and estimating purposes. Presentation of the information in the Contract is intended to provide the Contractor access to the same data available to the Agency. The subsurface information is presented in good faith and is not intended as a substitute for personal investigation, independent interpretation, independent analysis or judgement by the Contractor.
5. Pictorial structure details shown on the boring plan layout or soils profile are for illustrative purposes only and may not accurately portray final contract details.

STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of ROCKINGHAM	Bridge No. 21-3, 22-N, 22-S
	Log Sta.
Highway No. I-91	Surv. Sta.

I-91 NB & SB OVER WEBB BROOK & TH 46

BR21-3 BORING INFORMATION I

Designed By LKW1xson	Drawn By LKW1xson
Checked By Date	Bridge Design Supervisor J.Wieczkowski Date
PROJECT BR 21-3, BR 22-N AND BR 22-S	PROJECT NO. ROCKINGHAM IM 091-1(1)

I.G.C. Info. G:\Structures\STRS_Bridge Management\Projects\Rockingham\plans rockingh21-3.dgn

Bridge Sheet No. Sheet 4 of 23

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13-NOV-2000

BORING INFORMATION

HOLE NO.		OFFSET	DEPTH	SOIL DESCRIPTION FIELD SOIL TYPE	COLOR	MOISTURE	LAB. CLASS.	GAS DET. PID READING (PPM)
B-1	(SEE DRAWING)		0.0' - 5.0'	SaSi	BRN	MOIST		
			5.0' - 19.0'	SaSi	BRN/GRY	MOIST		
			19.0' - 24.0'	(PROBABLE LEDGE FILL)	GRAY	MOIST		
			CNPF	(POSSIBLE LEDGE FILL)				

HOLE NO.	STATION	OFFSET	DEPTH	SOIL DESCRIPTION FIELD SOIL TYPE	COLOR	MOISTURE	LAB. CLASS.	GAS DET. PID READING (PPM)
B-2	(SEE DRAWING)		0.0' - 3.0'	SaSi	BRN	MOIST		
			3.0' - 5.0'	SaGr	BRN	DRY		
			5.0' - 12.0'	SaSi	BRN	DRY		
			12' - 15.0'	SaSi	BRN/GRY	DRY		
			15' - 17.0'	(PROBABLE LEDGE FILL)	GRAY	DRY		
			CNPF	(POSSIBLE LEDGE FILL)				

HOLE NO.	STATION	OFFSET	DEPTH	SOIL DESCRIPTION FIELD SOIL TYPE	COLOR	MOISTURE	LAB. CLASS.	GAS DET. PID READING (PPM)
B-3	(SEE DRAWING)		0.0' - 4.0'	SaSi	BRN	MOIST		
			4.0' - 9.0'	SaSi	BRN	MOIST		
			9.0' - 17.0'	(PROBABLE LEDGE FILL)	GRAY	DRY		
			CNPF	(POSSIBLE LEDGE FILL)				

HOLE NO.	STATION	OFFSET	DEPTH	SOIL DESCRIPTION FIELD SOIL TYPE	COLOR	MOISTURE	LAB. CLASS.	GAS DET. PID READING (PPM)
B-4	(SEE DRAWING)		0.0' - 4.5'	SaSi	BRN	MOIST		
			4.5' - 12.0'	SaGr	BRN	MOIST		
			12.0' - 14.0'	SaSi	BRN/GRY	MOIST		
			14.0' - 17.5'	(PROBABLE LEDGE FILL)	GRAY	MOIST		
			CNPF - IN	(POSSIBLE LEDGE FILL)				

HOLE NO.	STATION	OFFSET	DEPTH	SOIL DESCRIPTION FIELD SOIL TYPE	COLOR	MOISTURE	LAB. CLASS.	GAS DET. PID READING (PPM)
B-5	(SEE DRAWING)		0.0' - 7.0'	SaSi & BOULDERS	BRN	MOIST		
			7.0' - 11.0'	SaSi	BRN	MOIST		
			11.0' - 12.5'	SaSi	BRN/GRY	MOIST		
			12.5' - 18.0'	(PROBABLE LEDGE FILL)	GRAY	DRY		
			CNPF - IN	(POSSIBLE LEDGE FILL)				

HOLE NO.	STATION	OFFSET	DEPTH	SOIL DESCRIPTION FIELD SOIL TYPE	COLOR	MOISTURE	LAB. CLASS.	GAS DET. PID READING (PPM)
B-6	(SEE DRAWING)		0.0' - 5.0'	SaSi & STONES	BRN	MOIST		
			5.0' - 20.0'	SaSi	BRN	MOIST		
			20.0' - 23.5'	(PROBABLE LEDGE FILL)	GRAY	DRY		
			CNPF					

HOLE NO.	STATION	OFFSET	DEPTH	SOIL DESCRIPTION FIELD SOIL TYPE	COLOR	MOISTURE	LAB. CLASS.	GAS DET. PID READING (PPM)
B-7	(SEE DRAWING)		0.0' - 6.5'	SaSi & STONES	BRN	DRY		
			6.5' - 9.0'	SaSi & BOULDERS	BRN	DRY		
			CNPF	(POSSIBLE LEDGE OR				
				LEDGE FILL)				

STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of ROCKINGHAM | Bridge Nos. 21-3,22-N,22-S
Log Sta.
Highway No. I-91 | Surv. Sta.

I-91 NB & SB OVER WEBB BROOK & TH 46

BR21-3 BORING INFORMATION II

Designed By LKWixson | Drawn By LKWixson
Checked By Date | Bridge Design Supervisor J.Mieczkowski Date

PROJECT BR 21-3, BR 22-N AND BR 22-S | PROJECT NO. ROCKINGHAM IM 091-1(38)

I.G.C. Info. m:\563000 VAOT Webb Brook Cu\Bridge\3Final\zf078bor.dgn

Bridge Sheet No. Sheet 5 of 23

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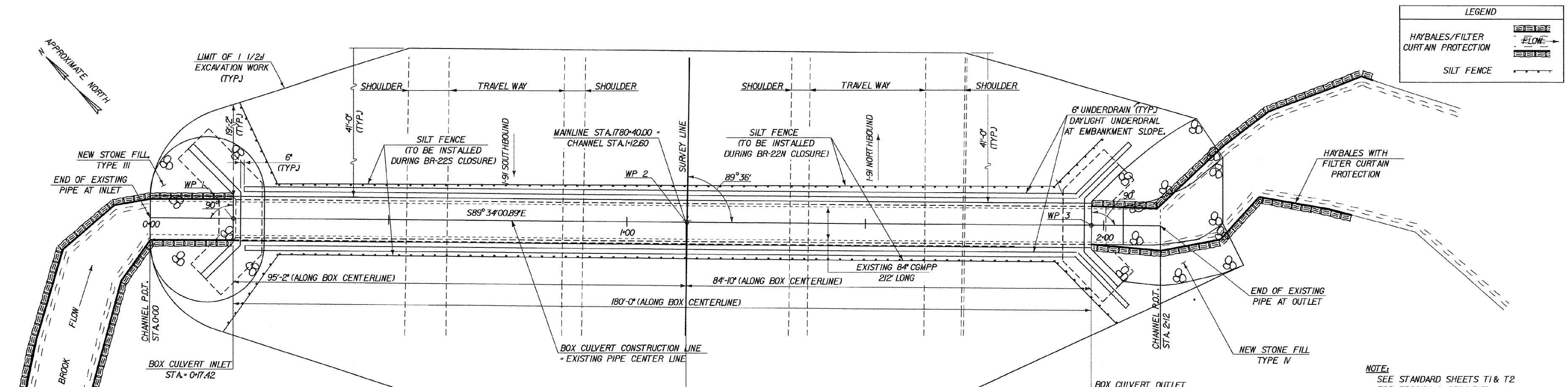
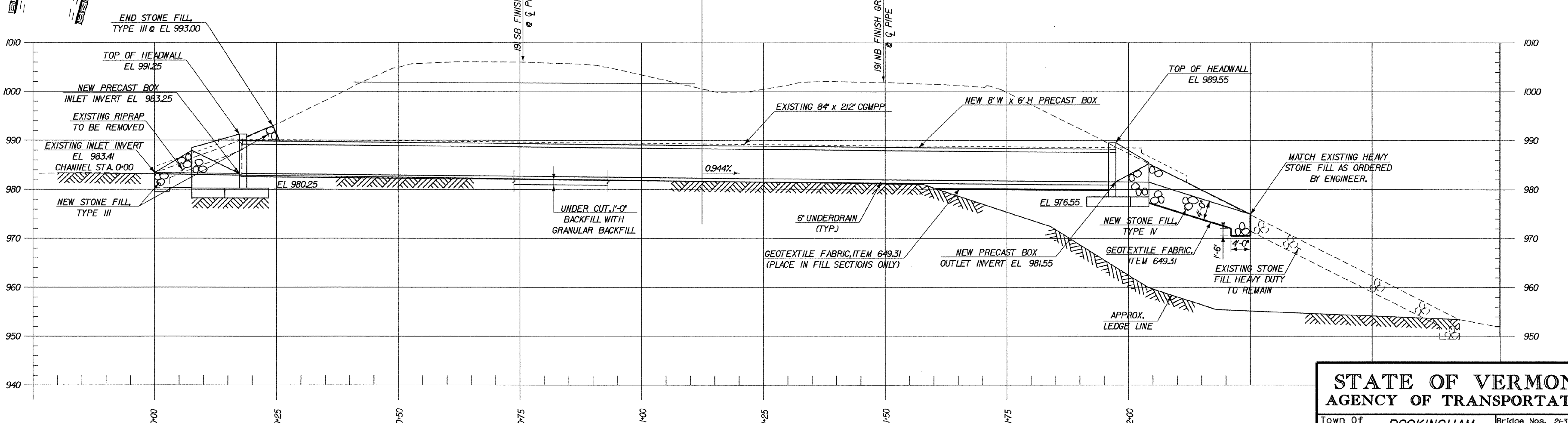
14-SEP-2000


LEGEND
HAYBALES/FILTER CURTAIN PROTECTION
FLOW
SILT FENCE
APPROXIMATE NORTH
N
LIMIT OF 1 1/2:1 EXCAVATION WORK (TYP.)
SHOULDER
TRAVEL WAY
SHOULDER
SHOULDER
TRAVEL WAY
SHOULDER
19'-2" (TYP.)
41'-0" (TYP.)
6" (TYP.)
SILT FENCE (TO BE INSTALLED DURING BR-22S CLOSURE)
I-91 SOUTHBOUND
MAINLINE STA.1780+40.00 = CHANNEL STA.1+12.60
SURVEY LINE
SILT FENCE (TO BE INSTALLED DURING BR-22N CLOSURE)
I-91 NORTHBOUND
41'-0" (TYP.)
6" UNDERDRAIN (TYP.) DAYLIGHT UNDERDRAIL AT EMBANKMENT SLOPE.
NEW STONE FILL, TYPE III
END OF EXISTING PIPE AT INLET
WP 1
90°
0+00
WP 2
89°36'
S89° 34'00.89"E
1+00
WP 3
90°
2+00
EXISTING 84" CGMPP 212' LONG
95'-2" (ALONG BOX CENTERLINE)
84'-10" (ALONG BOX CENTERLINE)
180'-0" (ALONG BOX CENTERLINE)
CHANNEL P.O.T. STA.0+00
BOX CULVERT INLET STA.= 0+17.42
BOX CULVERT CONSTRUCTION LINE = EXISTING PIPE CENTER LINE
CHANNEL P.O.T. STA. 2+12
BOX CULVERT OUTLET CHANNEL STA.= 1+97.42
HAYBALES WITH FILTER CURTAIN PROTECTION
END OF EXISTING PIPE AT OUTLET
NEW STONE FILL TYPE IV
FLOW
WEBB BROOK
HAYBALES WITH FILTER CURTAIN PROTECTION
NOTE:
SEE STANDARD SHEETS T1 & T2 FOR EROSION & SEDIMENT CONTROL DETAILS

PLAN

SCALE: 1" = 10'


END STONE FILL, TYPE III @ EL 993.00
I91 SB FINISH GRADE @ ℄ PIPE
I91 NB FINISH GRADE @ ℄ PIPE
TOP OF HEADWALL EL 991.25
NEW PRECAST BOX INLET INVERT EL 983.25
EXISTING RIPRAP TO BE REMOVED
EXISTING INLET INVERT EL 983.41 CHANNEL STA. 0+00
NEW STONE FILL, TYPE III
EL 980.25
UNDER CUT, 1'-0" BACKFILL WITH GRANULAR BACKFILL
0.944%
EXISTING 84" x 212' CGMPP
NEW 8' W x 6' H PRECAST BOX
6" UNDERDRAIN (TYP.)
GEOTEXTILE FABRIC, ITEM 649.31 (PLACE IN FILL SECTIONS ONLY)
NEW PRECAST BOX OUTLET INVERT EL 981.55
EL 976.55
TOP OF HEADWALL EL 989.55
MATCH EXISTING HEAVY STONE FILL AS ORDERED BY ENGINEER.
NEW STONE FILL, TYPE IV
GEOTEXTILE FABRIC, ITEM 649.31
4'-0"
1'-6"
4'-0"
EXISTING STONE FILL HEAVY DUTY TO REMAIN
APPROX. LEDGE LINE
1010
1000
990
980
970
960
950
940
0+00
0+25
0+50
0+75
1+00
1+25
1+50
1+75
2+00

ELEVATION

SCALE: 1" = 10'

HYDRAULIC DATA

DRAINAGE AREA = 1.5 SQ.MI.
DESIGN FLOW = Q 50 OUTLET VELOCITY = 15.07 FPS
DESIGN TAILWATER DEPTH = 3.29 FT
ORDINARY HIGH WATER DEPTH = 1.4 FT

Q 10 FLOW	210 CFS	HW ELEV.987.51
Q 25 FLOW	280 CFS	HW ELEV.988.43
Q 50 FLOW	335 CFS	HW ELEV.989.13
Q 100 FLOW	410 CFS	HW ELEV.990.13

WORKING POINTS

LOCATION	NORTHING	EASTING
WP 1	9725.9247	49968.1606
WP 2	9725.2052	50063.3386
WP 3	9724.5640	50148.1721

NOTES:

1. NORTHING AND EASTINGS ARE BASED UPON THE LOCAL SURVEY OF THIS PROJECT, NOT THE VERMONT GRID SYSTEM.

STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of ROCKINGHAM	Bridge Nos. 21-3, 22-N, 22-S
	Log Sta.
Highway No. I-91	Surv. Sta.
I-91 NB & SB OVER WEBB BROOK & TH 46	
BR21-3 PLAN AND ELEVATION	
Designed By L.Wixson	Drawn By L.Wixson
Checked By Date	Bridge Design Supervisor J.Mleczkowski Date
PROJECT BR 21-3, BR 22-N AND BR 22-S	PROJECT NO. ROCKINGHAM IM 091-1(38)
I.G.C. Info. G:\Structures\STR6_Bridge Management\Projects\Rockingham\plans rocking\zf0	
Bridge Sheet No.	Sheet 6 of 23

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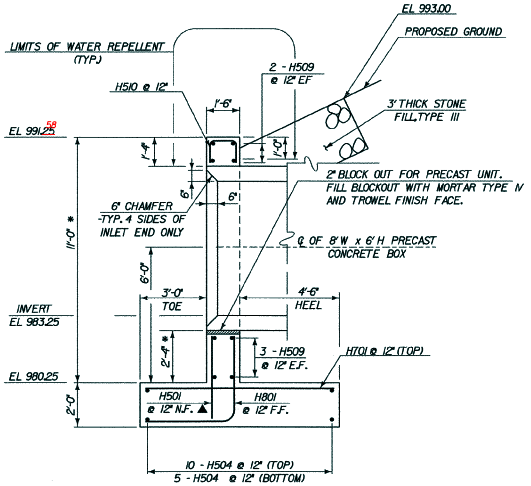
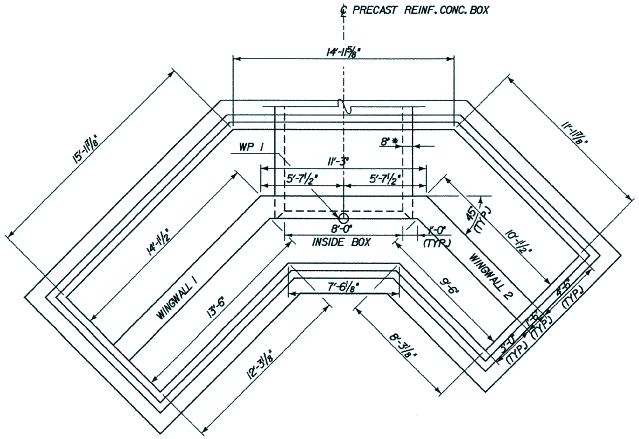
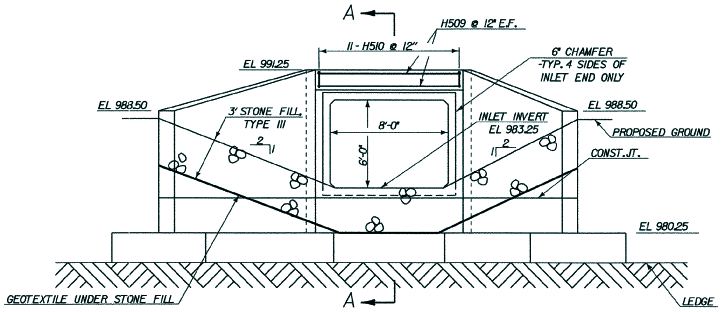
13-NOV-2000



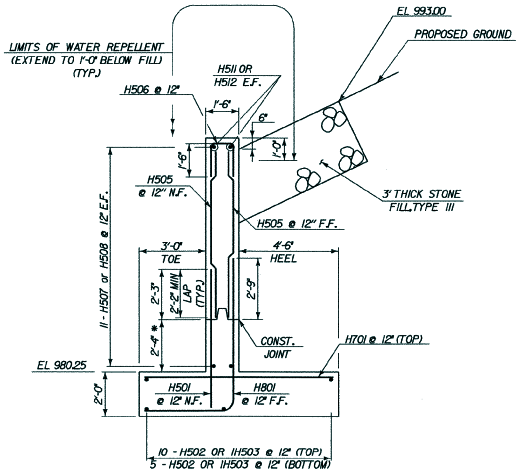
SECTION A-A
SCALE: 3/8" = 1'-0"



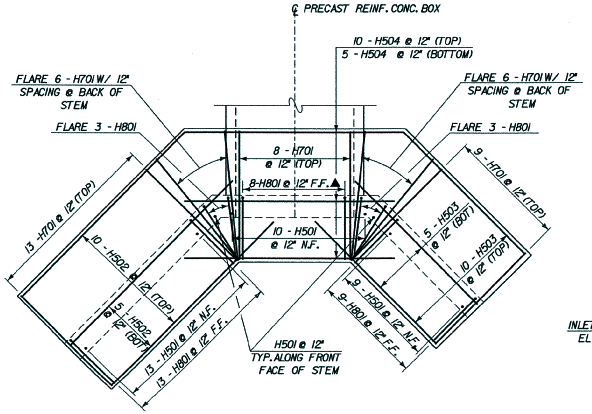
INLET HEADWALL PLAN
SCALE: 1/4" = 1'-0"



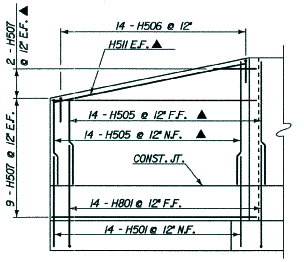
INLET HEADWALL ELEVATION
SCALE: 1/4" = 1'-0"



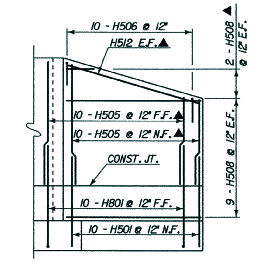
TYPICAL WINGWALL SECTION
SCALE: 3/8" = 1'-0"



FOOTING REINFORCEMENT PLAN
SCALE: 1/4" = 1'-0"



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

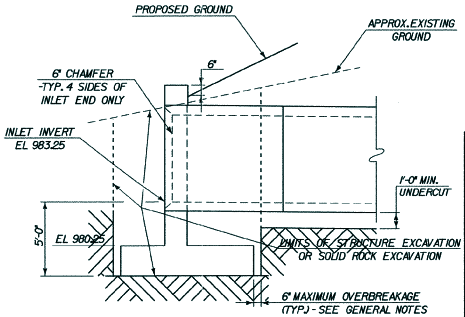


WINGWALL 2 REINFORCEMENT
SCALE: 1/4" = 1'-0"

LEGEND

N.F. = NEAR FACE
F.F. = FAR FACE
E.F. = EACH FACE
▲ = CUT TO FIT IN FIELD
3" CLR. UNLESS OTHERWISE SPECIFIED ON THE PLANS.

* DIMENSIONS SHOWN ARE FOR AN ASSUMED RC BOX WALL THICKNESS OF 8". ACTUAL DIMENSIONS MAY VARY.



INLET EXCAVATION DETAILS
SCALE: 1/4" = 1'-0"

STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of ROCKINGHAM	Bridge Nos. 21-3, 22-N, 22-S
Highway No. I-91	Log Sta. / Surv. Sta.

I-91 NB & SB OVER WEBB BROOK & TH 46

BR21-3 INLET HEADWALL DETAILS

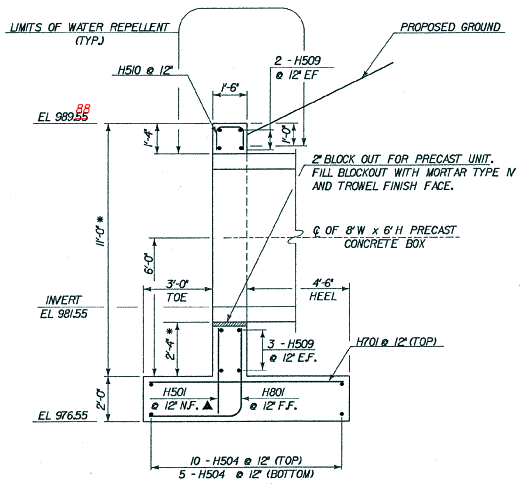
Designed By L.Wixson	Drawn By L.Wixson
Checked By Date	Bridge Design Supervisor J.Wieczkowski Date
PROJECT BR 21-3, BR 22-N AND BR 22-S	PROJECT NO. ROCKINGHAM IM 091-1(38)

I.G.C. Info. G:\Structures\STR6_Bridge Management\Projects\Rockingham\plans rockingham\zf01

Bridge Sheet No. Sheet 7 of 23

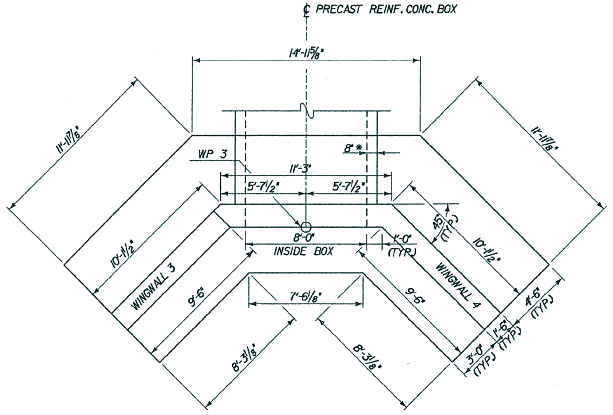
SV=

13-NOV-2000



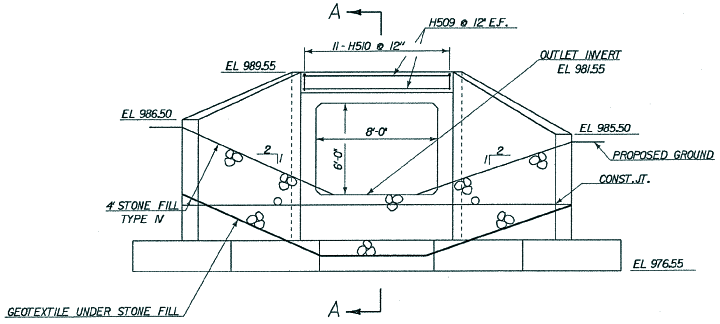
SECTION A-A

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



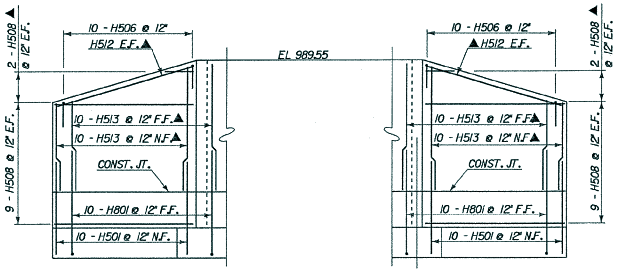
OUTLET HEADWALL PLAN

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



OUTLET HEADWALL ELEVATION

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

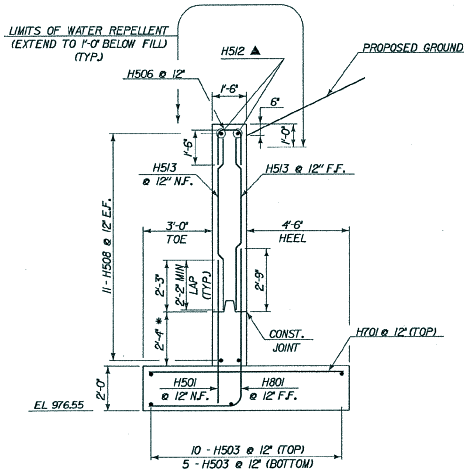


WINGWALL 3 REINFORCEMENT

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

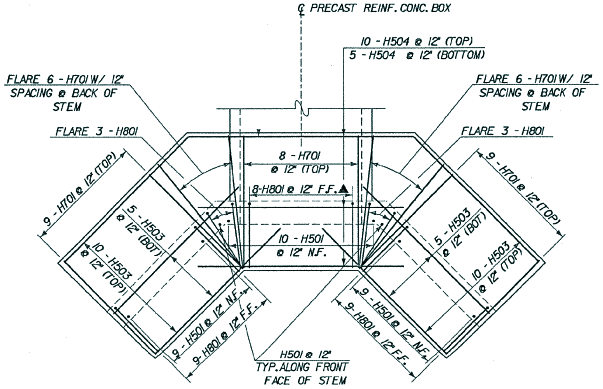
WINGWALL 4 REINFORCEMENT

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



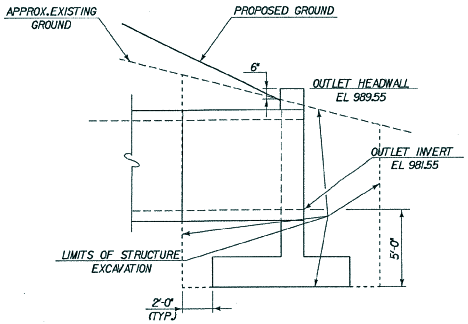
TYPICAL WINGWALL SECTION

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



FOOTING REINFORCEMENT PLAN

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



OUTLET EXCAVATION DETAILS

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

LEGEND:

N.F. - NEAR FACE
F.F. - FAR FACE
E.F. - EACH FACE
▲ - CUT TO FIT IN FIELD
3" CLR. UNLESS OTHERWISE SPECIFIED ON THE PLANS.

* DIMENSIONS SHOWN ARE FOR AN ASSUMED RC BOX WALL THICKNESS OF 8". ACTUAL DIMENSIONS MAY VARY.

STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of ROCKINGHAM	Bridge Nos. 21-3, 22-N, 22-S
Highway No. I-91	Log Sta. / Surv. Sta.

I-91 NB & SB OVER WEBB BROOK & TH 46

BR21-3 OUTLET HEADWALL DETAILS

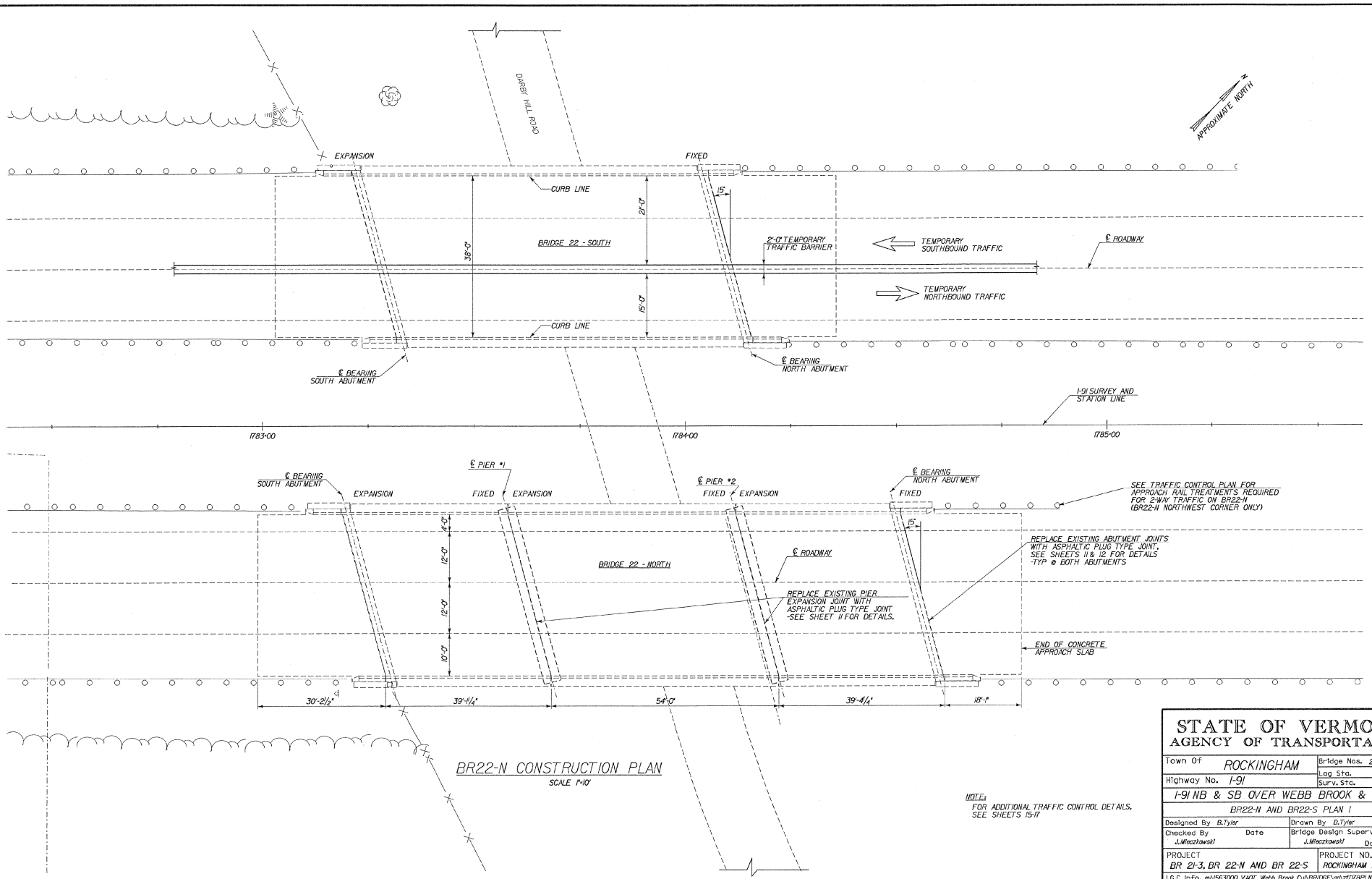
Designed By L.Wixson	Drawn By L.Wixson
Checked By Date	Bridge Design Supervisor J.Mieczkowski Date
PROJECT BR 21-3, BR 22-N AND BR 22-S	PROJECT NO. ROCKINGHAM IM 091-1(38)

I.G.C. Info. mV563000 VAOT Webb Brook Cul\Bridge\3Final\21078out.dgn

Bridge Sheet No. Sheet 8 of 23

SV=

14-SEP-2000



BR22-N CONSTRUCTION PLAN

SCALE 1"=10'

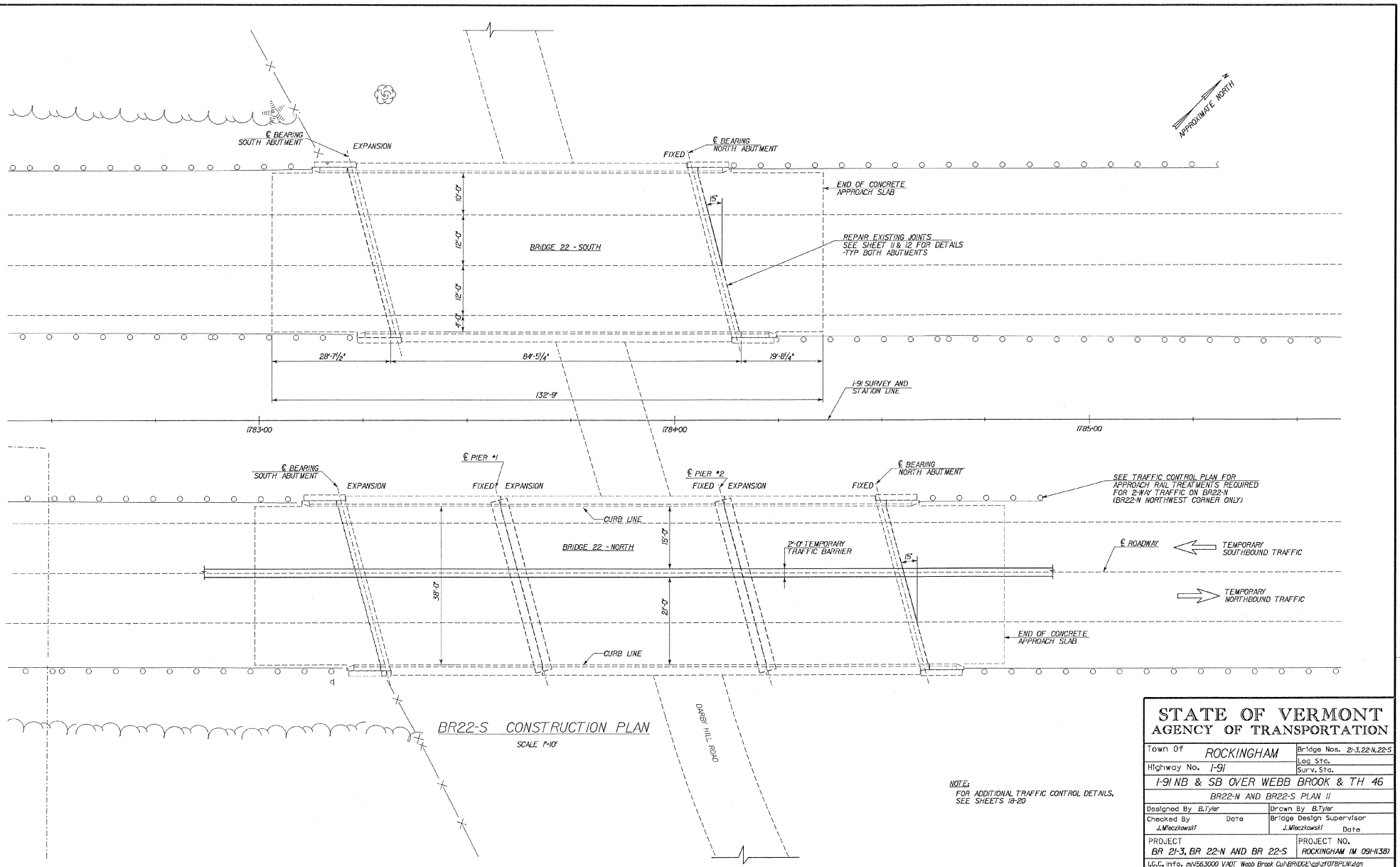
NOTE:
FOR ADDITIONAL TRAFFIC CONTROL DETAILS, SEE SHEETS 15-17

STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of ROCKINGHAM	Bridge Nos. 21-3, 22-N, 22-S
Highway No. I-91	Log Sta. / Surv. Sta.
I-91 NB & SB OVER WEBB BROOK & TH 46	
BR22-N AND BR22-S PLAN 1	
Designed By B.Tyler	Drawn By B.Tyler
Checked By J.Mleczkowski Date	Bridge Design Supervisor J.Mleczkowski Date
PROJECT BR 21-3, BR 22-N AND BR 22-S	PROJECT NO. ROCKINGHAM IM 091-1(38)
I.G.C. Info. m\1563000 V-AOT Webb Brook Cul\BRIDGE\gp\zt078PLN.dgn	
Bridge Sheet No.	Sheet 9 of 23

SV=

14-SEP-2000



BR22-S CONSTRUCTION PLAN

SCALE 1"=10'

NOTE:
FOR ADDITIONAL TRAFFIC CONTROL DETAILS, SEE SHEETS 18-20

STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of ROCKINGHAM	Bridge Nos. 21-3, 22-N, 22-S
	Log Sta.
Highway No. I-91	Surv. Sta.
I-91 NB & SB OVER WEBB BROOK & TH 46	
BR22-N AND BR22-S PLAN II	
Designed By B.Tyler	Drawn By B.Tyler
Checked By J.Mleczkowski Date	Bridge Design Supervisor J.Mleczkowski Date
PROJECT BR 21-3, BR 22-N AND BR 22-S	PROJECT NO. ROCKINGHAM IM 091-1(38)
I.G.C. info. mN563000 VAOT Webb Brook Cul\BRIDGE\gpl\zf078PLN1.dgn	
Bridge Sheet No.	Sheet 10 of 23

SV=

14-SEP-2000

GENERAL NOTES:- BRIDGES 22-N AND 22-S

1. NO SURVEY WAS TAKEN FOR BR22N & BR22S. INFORMATION INCLUDED IN THE PLANS WERE TAKEN FROM ORIGINAL PLANS AND ARE FOR INFORMATION ONLY. THE CONTRACTOR IS RESPONSIBLE FOR FIELD CHECKING ANY AND ALL DIMENSIONS APPLICABLE TO THIS WORK.

2. ALL MATERIALS & CONSTRUCTION SHALL CONFORM TO THE AGENCY OF TRANSPORTATION'S STANDARD SPECIFICATIONS FOR CONSTRUCTION, DATED 1990, AND ITS LATEST REVISIONS, AND THE AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES, FOURTEENTH EDITION, AND ITS LATEST REVISIONS.

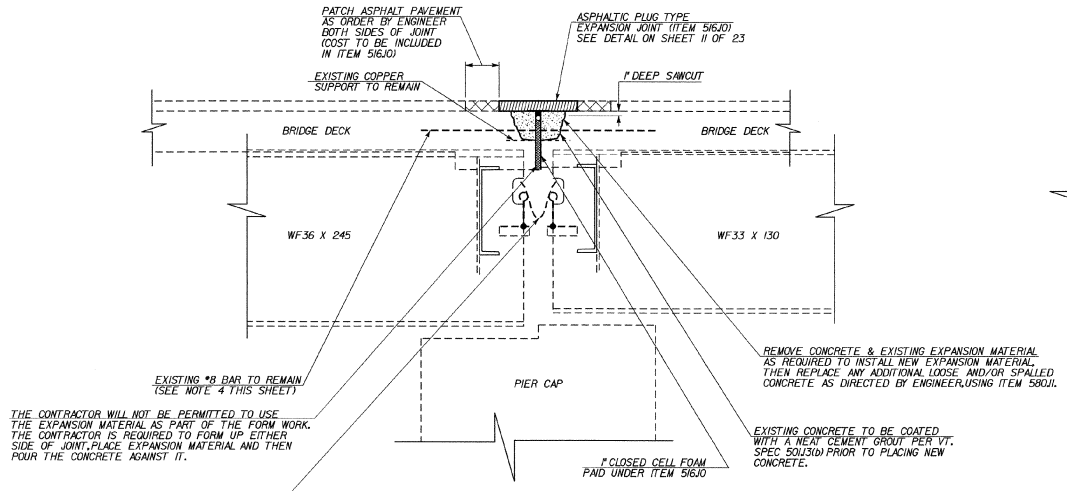
3. NO WORK ON THE BRIDGE JOINTS CAN BEGIN UNTIL THE TRAFFIC CONTROL PLAN DETAILED ON SHEETS 15-20 HAS BEEN PUT INTO PLACE FOR THE CLOSURE OF EITHER BR22N OR BR22S AND TRAFFIC HAS BEEN SHIFTED.

4. THE SLAB TO BE REPAIRED AND EXPOSED STEEL WHICH WILL HAVE CONCRETE PLACED AGAINST IT OR AROUND IT SHALL BE SAND BLASTED A MAXIMUM OF 24 HOURS, PRIOR TO PLACING THE NEW CONCRETE. THE AREA SHALL BE VACUUMED OR FLUSHED WITH HIGH PRESSURE AIR OR WATER TO REMOVE ALL LOOSE PARTICLES, DEBRIS, OR DUST. IF THE AREA THAT HAS BEEN SAND BLASTED GETS WET, WHETHER FROM RAIN OR FROM WASHING, THE CONCRETE MUST REMAIN WET UNTIL THE PLACING OF NEAT CEMENT PASTE AND CONCRETE. IF THE CONCRETE IS ALLOWED TO DRY, THEN THE CONCRETE MUST BE VACUUMED OR FLUSHED AGAIN. THIS WORK SHALL BE INCLUDED IN THE BID PRICE FOR ITEM 580J1

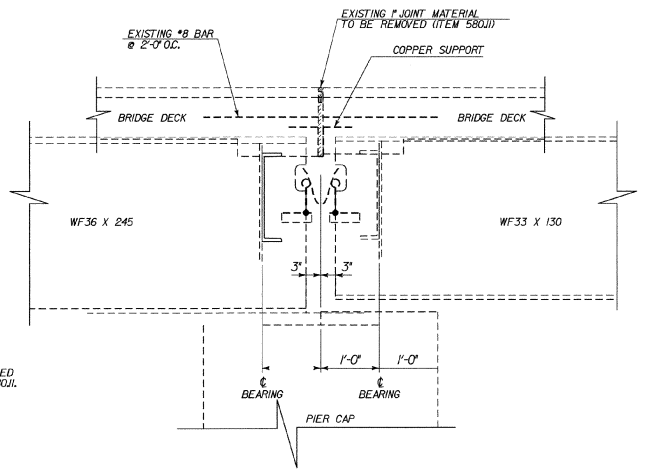
5. THE EXISTING SUBSTRUCTURE CONCRETE SHALL BE REPAIRED AS ORDERED BY THE ENGINEER. THE COST FOR THE WORK PERFORMED SHALL BE PAID FOR UNDER ITEM 580J3 REPAIR OF CONCRETE SUBSTRUCTURE SURFACE, CLASS I AND ITEM 580J4 REPAIR OF CONCRETE SUBSTRUCTURE SURFACE, CLASS II.

ASSUMED SUBSTRUCTURE REPAIR AREAS		
	580J3 CLASS I	580J4 CLASS II
BR 22-N	20%	20%
BR 22-S	20%	20%

6. WATER REPELLENT SHALL BE APPLIED TO ALL EXPOSED SUPERSTRUCTURE AND SUBSTRUCTURE CONCRETE SURFACES, OR AS ORDERED BY THE ENGINEER. ALL SURFACES ON WHICH THE WATER REPELLENT IS TO BE APPLIED SHALL BE CLEAN AND THOROUGHLY DRY. DIRT, GREASE, ASPHALT, TAR, STAINS, OR RESINOUS MATERIAL SHALL BE REMOVED FROM THE SURFACES, BY APPROVED METHODS, PRIOR TO APPLICATION OF THE WATER REPELLENT.



PROPOSED JOINT DETAIL



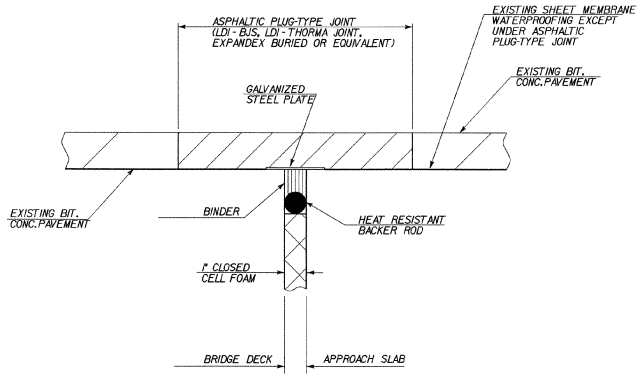
EXISTING JOINT DETAIL

NOTE,
BR22 - N NORTH PIER SHOWN
SOUTH PIER SIMILAR

JOINT REPLACEMENT DETAILS AT PIER

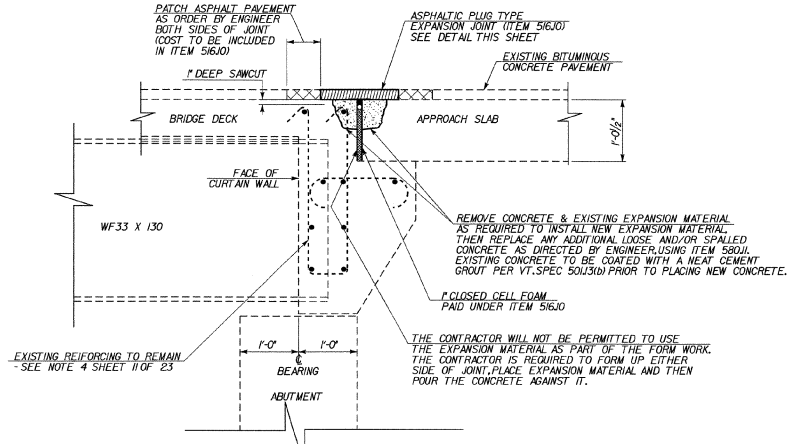
SCALE 1" = 1'-0"

STATE OF VERMONT AGENCY OF TRANSPORTATION	
Town Of ROCKINGHAM	Bridge Nos. 21-3, 22-N, 22-S
Highway No. I-91	Log Sta. / Surv. Sta.
I-91 NB & SB OVER WEBB BROOK & TH 46	
BR22-N AND BR22-S JOINT REPAIR DETAILS I	
Designed By	Drawn By
Checked By Date	Bridge Design Supervisor J.Meczkowski Date
PROJECT BR 21-3, BR 22-N AND BR 22-S	PROJECT NO. ROCKINGHAM IM 091-H(38)
L.G.C. Info. G:\Structures\STRS_Bridge Management\Projects\Rockingham\21078Jdt.dgn	
Bridge Sheet No.	Sheet 11 of 23



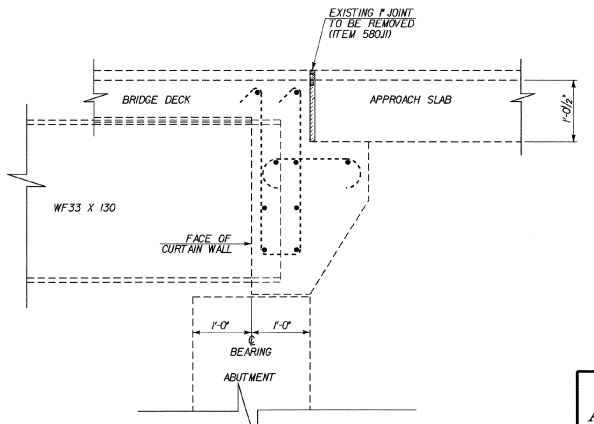
ASPHALTIC PLUG-TYPE JOINT DETAIL

NTS



PROPOSED JOINT DETAIL

NOTE:
SOUTH ABUTMENT - BR22-N SHOWN
NORTH ABUTMENT - BR22-N SIMILAR
NORTH & SOUTH ABUTMENT - BR22-S SIMILAR



EXISTING JOINT DETAIL

JOINT REPLACEMENT DETAILS AT ABUTMENTS

SCALE 1" = 1'-0"

STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of ROCKINGHAM	Bridge Nos. 21-3, 22-N, 22-S
Highway No. I-91	Log Sta.
	Surv. Sta.

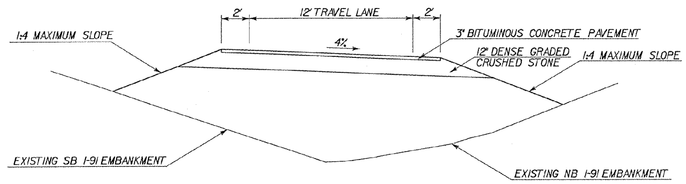
I-91 NB & SB OVER WEBB BROOK & TH 46

BR22-N AND BR22-S JOINT REPAIR DETAILS II

Designed By B.Tyler	Drawn By B.Tyler
Checked By J.Mleczkowski Date	Bridge Design Supervisor J.Mleczkowski Date
PROJECT BR 21-3, BR 22-N AND BR 22-S	PROJECT NO. ROCKINGHAM IM 091-1(38)

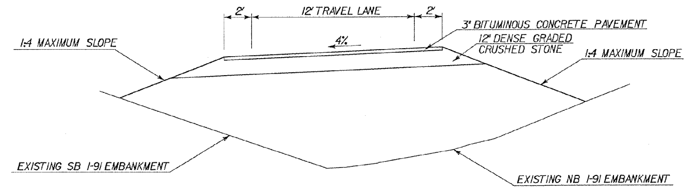
L.G.C. Info. G:\Structures\STR6_Bridge Management\Projects\Rockingham\zf078jdf.dgn

Bridge Sheet No. Sheet 12 of 23



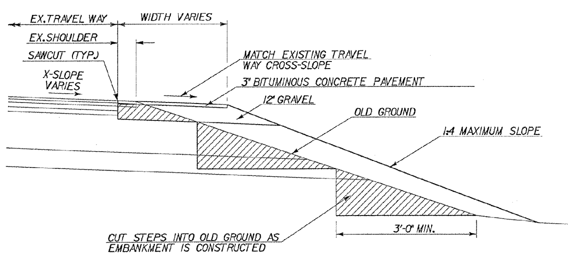
CROSSOVER TYPICAL BANKED RIGHT

NOT TO SCALE



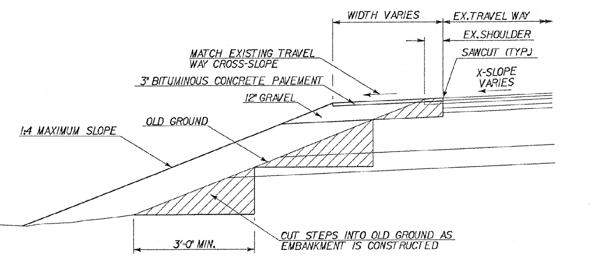
CROSSOVER TYPICAL BANKED LEFT

NOT TO SCALE



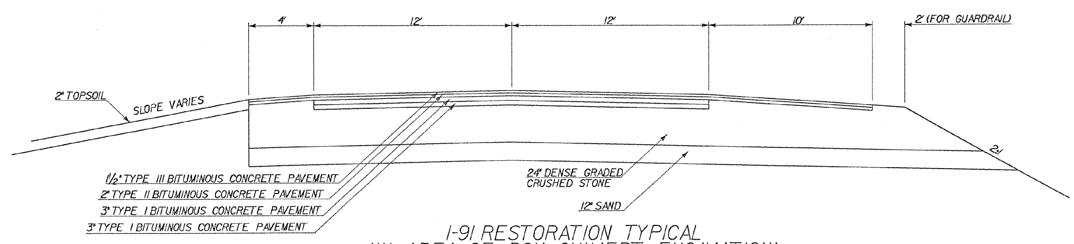
SB I-91 PAVEMENT WIDENING FOR CROSSOVER DETAIL

NOT TO SCALE



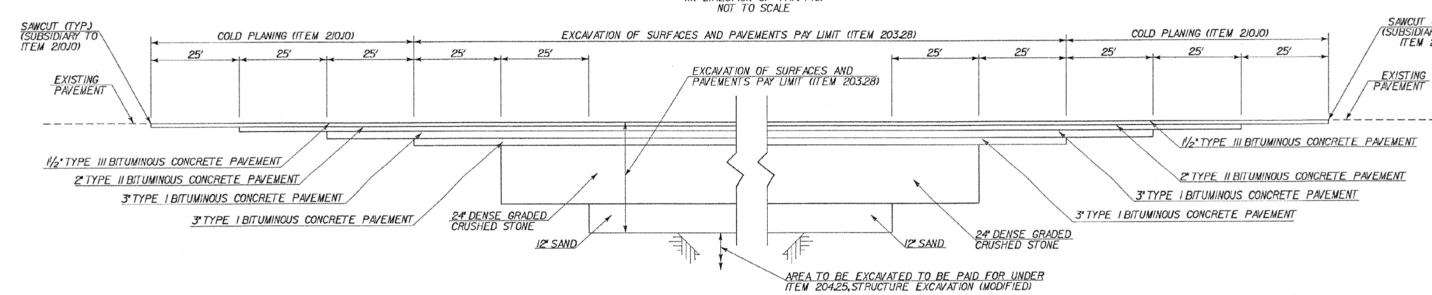
NB I-91 PAVEMENT WIDENING FOR CROSSOVER DETAIL

NOT TO SCALE



I-91 RESTORATION TYPICAL
(IN AREA OF BOX CULVERT EXCAVATION)

(IN DIRECTION OF TRAFFIC)
NOT TO SCALE



I-91 PAVEMENT AND BASE COURSE TRANSITION
AT WEBB BROOK BOX CULVERT REPLACEMENT

NOT TO SCALE

NOTES

1. THE PAVEMENT WEARING COURSE FOR I-91 PAVEMENT SHALL BE TYPE III BITUMINOUS CONCRETE PAVEMENT. ASPHALT CEMENT USED IN THE BITUMINOUS CONCRETE PAVEMENT SHALL BE PG 58-28. MIX DESIGN APPROVAL AND TESTING FACILITIES ARE NOT REQUIRED FOR THIS PAVEMENT.
2. COLD PLANING TO BE COMPLETED ACCORDING TO TYPICAL OR AS NOTED OTHERWISE ON THE PLANS. ALL COLD PLANED AREAS SHALL BE TACKED WITH EMULSIFIED ASPHALT.
3. EMULSIFIED ASPHALT TO BE APPLIED ON EXISTING PAVEMENT, BETWEEN ALL COURSES OF PAVEMENT AND ON COLD PLANED AREAS AT THE RATE OF 0.012 G/SY OR AS DIRECTED BY THE ENGINEER.
4. SLOPE ROUNDING - ALL CUT SLOPE ROUNDINGS TO BE ROUNDED IN ACCORDANCE WITH STANDARD SHEET B-5.
5. MILEMARKERS DISTURBED BY CONSTRUCTION SHALL BE RESET AT THE DIRECTION OF THE ENGINEER WITH PAYMENT TO BE SUBSIDIARY TO OTHER ITEMS OF WORK.
6. ALL CROSS OVER AREAS SHALL BE RESTORED TO ORIGINAL CONDITION. THIS WORK IS CONSIDERED PART OF "TRAFFIC CONTROL". ALL I-91 SLOPES SHALL BE RE-ESTABLISHED FOLLOWING DETOUR REMOVAL.

FOR RE-ESTABLISHING I-91 SLOPES FOLLOWING DETOUR REMOVAL:
RURAL AREAS - SEED MIXTURE

% WT	lb/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 RYE GRASS	95	85
100.0	60.0			

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.

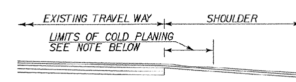
FERTILIZER:
FORMULA 10-20-10, TO BE USED WITH SEED, APPLIED AT THE RATE OF 500 LBS/ACRE. (HYDRO SEEDERS MAY USE 19-19-19 FORMULA)

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 AS INDICATED ON THE PLANS, OR AS DIRECTED BY THE ENGINEER.

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



SHOULDER COLD PLANING/OVERLAY

NOT TO SCALE

NOTE:

COLD PLANE A WIDTH OF 2.5' FROM MEDIAN SHOULDERS THROUGHOUT THE CROSSOVER/BI-DIRECTIONAL TRAFFIC AREA. COLD PLANE A WIDTH OF 4' FROM OUTSIDE SHOULDERS FOR LENGTH OF BI-DIRECTIONAL TRAFFIC. COLD PLANING DEPTH IS ½". PLACE ½" TYPE IV BITUMINOUS CONCRETE PAVEMENT AFTER COLD PLANING IS COMPLETED.

STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of ROCKINGHAM	Bridge Nos. 21-3, 22-N, 22-S Log Sta. Surv. Sta.
Highway No. I-91	
I-91 NB & SB OVER WEBB BROOK & TH 46	
PAVEMENT TRANSITION DETAILS	
Designed By C.Moby	Drawn By C.Moby
Checked By J.McDuffee Date 9/00	Bridge Design Supervisor J.Mleczkowski Date
PROJECT BR 21-3, BR 22-N AND BR 22-S	PROJECT NO. ROCKINGHAM IM 091-1(38)
I.G.C. Info. m:\563000 VAOT Webb Brook Cul\HWY\DRAW\DETAILS\zf078ptd.dgn	
Bridge Sheet No.	Sheet 13 of 23

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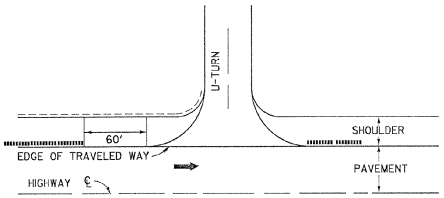
MILLED RUMBLE STRIPS
U TURN DETAIL SHEET



LEGEND

DIRECTION OF TRAFFIC FLOW

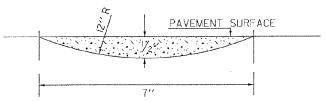
MILLED RUMBLE STRIPS

NOT TO SCALE

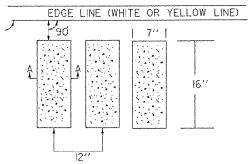
THIS DETAIL MAYBE MODIFIED AT THE RESIDENT ENGINEER DISCRETION
IF ACTUAL FIELD CONDITIONS NECESSITATE SUCH ACTIONS.

TYPICAL RUMBLE STRIP MILLING DETAIL

SECTION A-A



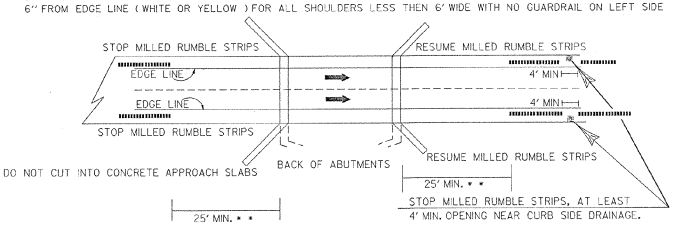
30" FROM EDGE LINE (WHITE OR YELLOW) FOR ALL SHOULDERS 6' OR WIDER
6" FROM EDGE LINES (WHITE OR YELLOW) FOR ALL SHOULDERS LESS
THAN 6' WIDE WITH NO GUARDRAIL.



NOTE: STOP MILLED RUMBLE STRIPS WHEN GUARDRAIL IS WITHIN 4' OF TRAVEL WAY

RUMBLE STRIP BRIDGE & DRAINAGE DETAIL

30" FROM EDGE LINE (WHITE OR YELLOW)FOR ALL SHOULDERS 6' OR WIDER
6" FROM EDGE LINE (WHITE OR YELLOW) FOR ALL SHOULDERS LESS THEN 6' WIDE WITH NO GUARDRAIL ON LEFT SIDE



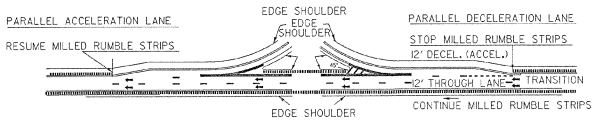
* * NOTE: 4' OFFSET TO APPROACH RAIL WILL DETERMINE MINIMUM DISTANCE IN SOME CASES.

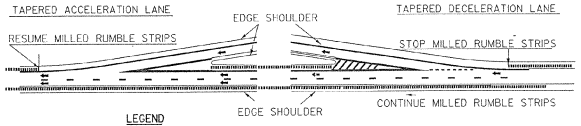
LEGEND

DIRECTION OF TRAFFIC FLOW

MILLED RUMBLE STRIPS
NOT TO SCALE

TYPICAL RUMBLE STRIP MILLING AT INTERCHANGES & REST AREAS





LEGEND

DIRECTION OF TRAFFIC FLOW

MILLED RUMBLE STRIPS
NOT TO SCALE

LOCATION OF STRIPS WILL VARY DEPENDING ON GUARDRAIL AND BRIDGE PRESENCE.
THIS TYPICAL MAYBE MODIFIED AT THE RESIDENT ENGINEER DISCRETION
IF ACTUAL FIELD CONDITIONS NECESSITATE SUCH ACTIONS.

1. MILLED RUMBLE STRIPS ARE TO BE INSTALLED AS DETAILED ON THIS SHEET UNLESS OTHERWISE APPROVED BY THE VTRANS PROJECT ENGINEER AND/OR VTRANS CONSULTANT PROJECT MANAGER.

2. IF MILLED RUMBLE STRIPS ARE ALREADY INPLACE WHERE A CROSS-OVER IS TO BE CONSTRUCTED BETWEEN TWO LANES, THEN FOLLOWING APPLIES:
   A. THE EXISTING MILLED RUMBLE STRIPS ARE NOT TO BE REMOVED OR FILLED IN MORE THEN TWO WEEKS BEFORE THE ACTUAL CROSS-OVER IS TO BE PLACED IN USE.
   B. ONCE THE CROSSOVER FOR THE PHASE IT IS DESIGN FOR IS TAKEN OUT OF USE THE CONTRACTOR HAS A MAXIMUM OF THIRTY DAYS (30) TO CUT NEW MILLED RUMBLE STRIPS INTO THE MEDIAN SHOULDER.
   C. MILLED RUMBLE STRIPS SHOULD BE STOPPED AT THE BEGINNING OF A CROSSOVER AS DETAILED FOR TAPERED DECELERATION LANE.

STATE OF VERMONT
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Town Of ROCKINGHAM	Bridge Nos. 21-3, 22-N, 22-S
Highway No. I-91	Log Sta.
	Surv. Sta.

I-91 NB & SB OVER WEBB BROOK & TH 46

RUMBLESTRIP DETAILS

Designed By C.MABY	Drawn By C.MABY
Checked By J.McDUFFEE Date 9/00	Bridge Design Supervisor J.MIECZKOWSKI Date 9/00
PROJECT BR 21-3, BR 22-N AND BR 22-S	PROJECT NO. ROCKINGHAM IM 091-1(38)

I.G.C. Info. as\563000 VAOT Webb Brook Cu\HWY\DRAW\DETAILS\rumblestrips.dgn

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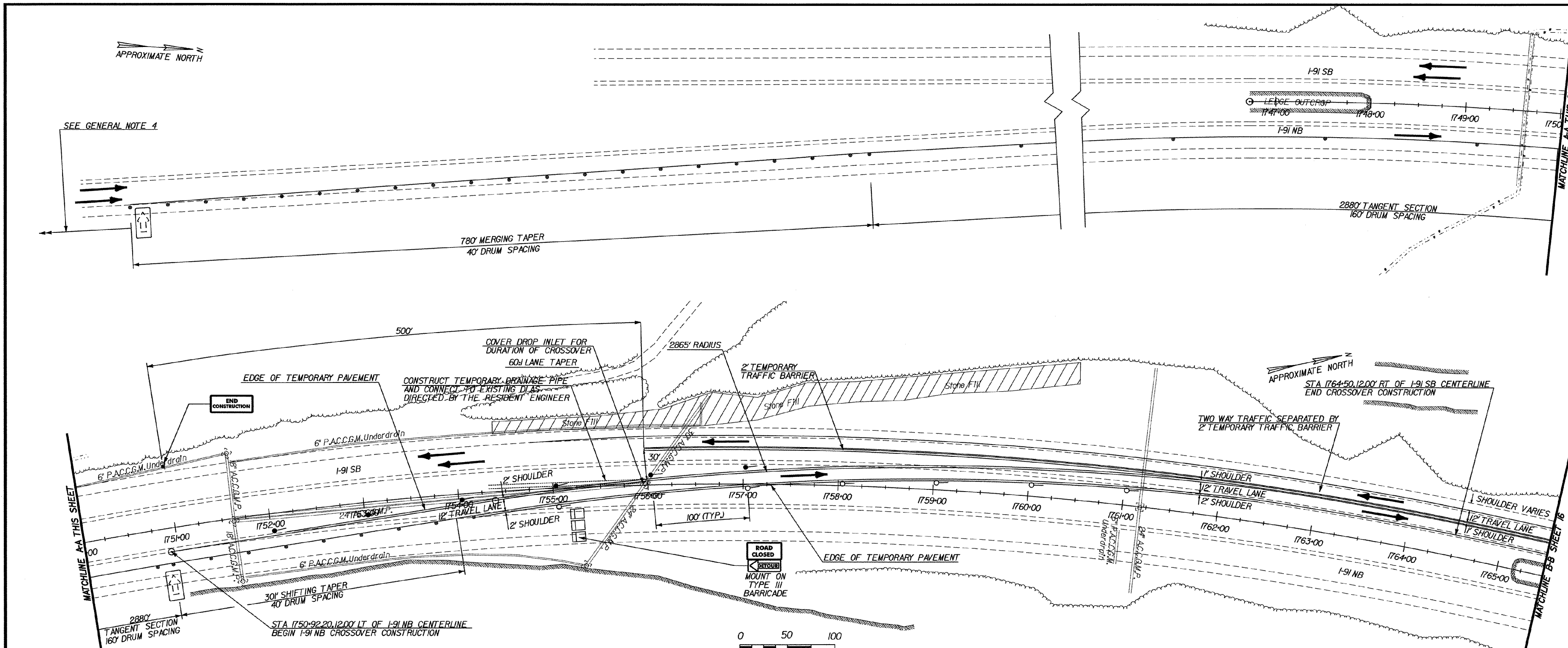

TRAFFIC CONTROL NOTES:

1. TRAFFIC SHALL BE CONTROLLED AND MAINTAINED AT ALL TIMES AS SPECIFIED IN THE TRAFFIC CONTROL PLANS. A MINIMUM OF ONE LANE OF TRAFFIC IN EACH DIRECTION SHALL BE MAINTAINED AT ALL TIMES DURING CONSTRUCTION. THE NB PORTION OF BRIDGE 21-3 SHALL BE CLOSED AND REHABILITATED BEFORE THE SB PORTION OF BRIDGE 21-3.
2. TRAFFIC CONTROL MEASURES WILL NOT BE PERMITTED BETWEEN NOVEMBER 1 AND APRIL 15, UNLESS OTHERWISE APPROVED BY THE ENGINEER. IN ADDITION, ONCE TRAFFIC CONTROL DEVICES HAVE BEEN INSTALLED (PARTICULARLY CROSSOVERS), THE CONTRACTOR SHALL BEGIN ASSOCIATED CONSTRUCTION WORK IMMEDIATELY, AND PROCEED WITHOUT DELAYS THROUGH COMPLETION IN ORDER TO MINIMIZE INCONVENIENCE TO THE TRAVELING PUBLIC.
3. ALL PRIVATE VEHICLES BELONGING TO THE CONTRACTOR'S WORK CREWS SHALL NOT BE PARKED ON THE INTERSTATE RIGHT-OF-WAY NOR ON THE TRAVELLED WAY OF ANY OTHER ROAD.
4. SIGNS, BARRICADES, AND OTHER TRAFFIC CONTROL DEVICES SHALL BE CLEANED WEEKLY. ALSO, ALL EXISTING SIGNS WHICH CONTRADICT TEMPORARY TRAFFIC CONTROL SIGNS MUST BE COVERED, OR REMOVED AND THEN REPLACED AFTER CONSTRUCTION COMPLETION. COST FOR THIS WORK SHALL BE INCLUDED IN THE BID PRICE FOR ITEM 641.10, "TRAFFIC CONTROL".
5. PAYMENT FOR TRAFFIC CONTROL SIGNS, PLASTIC DRUMS, FLASHING ARROW PANELS, DELINEATORS, FLEXIBLE TUBULAR MARKERS AND TYPE III BARRICADES SHALL BE UNDER 641.10, "TRAFFIC CONTROL". PAYMENT SHALL INCLUDE ALL NECESSARY MAINTENANCE AND REPAIRS TO THESE TRAFFIC CONTROL DEVICES ON A REGULAR BASIS. THE ENGINEER MAY ADD TRAFFIC CONTROL SIGNS AS NECESSARY. ADDITIONAL SIGNS, INCLUDING POSTS AND FOUNDATIONS, SHALL BE PAID FOR AS EXTRA WORK, IN ACCORDANCE WITH SECTION 109.06
6. TEMPORARY SPEED LIMIT THROUGH THE CONSTRUCTION ZONE SHALL BE 50 MPH.
7. THE EXISTING SHOULDERS WILL BE COLD PLANED AND OVERLAYED (1/2") TO ELIMINATE EXISTING RUMBLE STRIPS THROUGHOUT THE CROSSOVER/BI-DIRECTIONAL TRAFFIC AREA. SEE COLD PLANING DETAIL ON SHEET 13 AND RUMBLE STRIP DETAILS ON SHEET 14. THE COST OF THE COLD PLANING IS TO BE INCLUDED IN ITEM 210.10. THE OVERLAY WILL BE PAID AS ITEM 406.25, BITUMINOUS CONCRETE PAVEMENT, TYPE III.
8. ENERGY ABSORPTION ATTENUATORS WILL BE REQUIRED AT LOCATIONS INDICATED IN THE TRAFFIC CONTROL PLANS AND AS ORDERED BY THE ENGINEER. ATTENUATORS SHOWN IN THE PLANS ARE SYMBOLIC ONLY AND DO NOT REPRESENT THE ACTUAL CONFIGURATION OF THE ATTENUATORS TO BE USED. THE ATTENUATORS SHALL MEET THE REQUIREMENTS OF THE LATEST VERSION OF THE AASHTO "GUIDE FOR SELECTING, LOCATING AND DESIGNING TRAFFIC BARRIERS" AND THE AASHTO "ROADSIDE DESIGN GUIDE". ATTENUATORS SHALL BE DESIGNED FOR 65 MPH AND A 4500 LB. VEHICLE. ATTENUATORS SHALL BE APPROVED BY THE ENGINEER AND PAID FOR UNDER ITEM 621.57. IF ATTENUATORS ARE DAMAGED BY AN ERRANT VEHICLE, COSTS TO THE CONTRACTOR FOR REPLACEMENT OF ANY PART OR ALL OF THE ATTENUATOR SHALL BE PAID AS "EXTRA WORK" PER SECTION 109.06. THE CONTRACTOR SHALL PROVIDE A SPARE FOR EACH TYPE OF ATTENUATOR USED ON THIS PROJECT, FOR THE PURPOSE OF IMMEDIATE REPLACEMENT OF DAMAGED ATTENUATORS. THE COST OF ON-SITE STORAGE OF EXTRA ATTENUATORS SHALL BE PAID AS SPECIFIED IN THE SPECIAL PROVISIONS.
9. ANY REMOVAL AND REINSTALLATION OF GUARD RAIL, BRIDGE APPROACH RAIL OR BRIDGE RAIL WHICH IS REQUIRED TO COMPLETE WORK SHOWN IN THE TRAFFIC CONTROL PLANS SHALL BE SUBSIDIARY TO ITEM 641.10, "TRAFFIC CONTROL" UNLESS OTHERWISE NOTED.
10. ALL PAVEMENT MARKINGS TO BE REMOVED AS SHOWN IN STANDARD SHEETS E-103, E-104, AND E-104A, SHALL BE COVERED USING ITEM 646.86, "BLACK PAVEMENT MARKING MASKING TAPE. TEMPORARY PAVEMENT MARKINGS THROUGHOUT THE TRAFFIC CONTROL PACKAGE SHALL BE PAID AS ITEM 646.614, "TEMPORARY 6" WHITE LINE" (TAPE, TYPE II) AND ITEM 646.615, "TEMPORARY 6" YELLOW LINE" (TAPE, TYPE II).
11. AT THE APPROACHES TO THE BRIDGES, PRIOR TO BEGINNING COLD PLANING OF THE ROADWAY SURFACE, THE CONTRACTOR SHALL INSTALL THE ADVANCE WARNING SIGN PACKAGE SHOWN IN STANDARD SHEET E-106. THE COST SHALL BE INCLUDED UNDER 641.10, "TRAFFIC CONTROL".
12. THE CONTRACTOR SHALL PERFORM FIELD SURVEY SUFFICIENT TO VERIFY THE CROSSOVER PROFILES, SUPERELEVATION TRANSITIONS, AND DRAINAGE. CROSSOVER DESIGN COMPUTATIONS AND PLANS SHALL BE SUBMITTED BY THE CONTRACTOR TO THE RESIDENT ENGINEER FOR APPROVAL. FILL MATERIAL SHALL NOT CONTAIN EXCESSIVE AMOUNTS OF MOISTURE, SILT OR ORGANIC SUBSTANCES. EXISTING EMBANKMENT SLOPES WHICH CROSSOVER FILL IS TO BE PLACED AGAINST SHALL BE BENCHED AS ORDERED BY THE RESIDENT ENGINEER. SUBBASE MATERIAL SHALL BE APPROVED BY THE RESIDENT ENGINEER AND SHALL BE PLACED WITH A MINIMUM 12" THICKNESS. PAVING OF CROSSOVER DETOURS SHALL BE PAID FOR AS "BITUMINOUS CONCRETE PAVEMENT", ITEM 406.25, AND SHALL BE PLACED IN A SINGLE COURSE 3" THICK. MIX DESIGN APPROVAL AND TESTING FACILITIES ARE NOT REQUIRED FOR THE CROSSOVER PAVEMENT. THE COST OF ALL LABOR, EQUIPMENT, MATERIALS, AND WORK REQUIRED FOR THE DESIGN, CONSTRUCTION, AND REMOVAL OF CROSSOVERS SHALL BE INCLUDED UNDER ITEM 641.10, "TRAFFIC CONTROL".

GENERAL NOTES:

1. DESIGN SPEED 55 MPH.
2. LAYOUT BASED ON VAOT STANDARD E-104.
3. THIS TRAFFIC CONTROL SHEET IS TO BE USED IN CONJUNCTION WITH VAOT STANDARD SHEETS E-103, E-104, E-104A AND E-107A.
4. SEE VAOT STANDARD SHEET E-103 FOR ADVANCE SIGN PACKAGE. SIGN PACKAGE LAYOUT EXTENDS BACK FROM THE BEGINNING OF THE 780' MERGING TAPER.
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6. PORTABLE CHANGEABLE MESSAGE SIGNS WILL BE PLACED AT EACH APPROACH TO THE CONSTRUCTION AREA AS ORDERED BY THE ENGINEER, AND WILL BE PAID UNDER ITEM 641.15.
7. ALL CROSS OVER AREAS SHALL BE RESTORED TO ORIGINAL CONDITION. THIS WORK IS CONSIDERED PART OF ITEM 646.10, "TRAFFIC CONTROL". ALL I-91 SLOPES SHALL BE RE-ESTABLISHED FOLLOWING DETOUR REMOVAL.

LEGEND

- CONSTRUCTION AREA
- DIRECTION OF TRAFFIC FLOW
- 2' TEMPORARY TRAFFIC BARRIER
- FLASHING ARROW PANEL
- TYPE I DELINEATOR (YELLOW)
- TYPE I DELINEATOR (WHITE)
- REFLECTORIZED DRUM
- TYPE III BARRICADE
- ENERGY ABSORPTION ATTENUATOR

STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of ROCKINGHAM	Bridge Nos. 21-3, 22-N, 22-S
	Log Sta.
Highway No. I-91	Surv. Sta.
I-91 NB & SB OVER WEBB BROOK & TH 46	
TRAFFIC CONTROL - BR. 22-N CLOSED (1 OF 3)	
Designed By C. Maby	Drawn By C. Maby
Checked By J. McDuffee Date 9/00	Bridge Design Supervisor J. Mleczkowski Date
PROJECT BR 21-3, BR 22-N AND BR 22-S	PROJECT NO. ROCKINGHAM IM 091-1(38)
I.G.C. Info. G:\Structures\STR6_Bridge Management\Projects\Rockingham\plans rocking\zf0	
Bridge Sheet No.	Sheet 15 of 23

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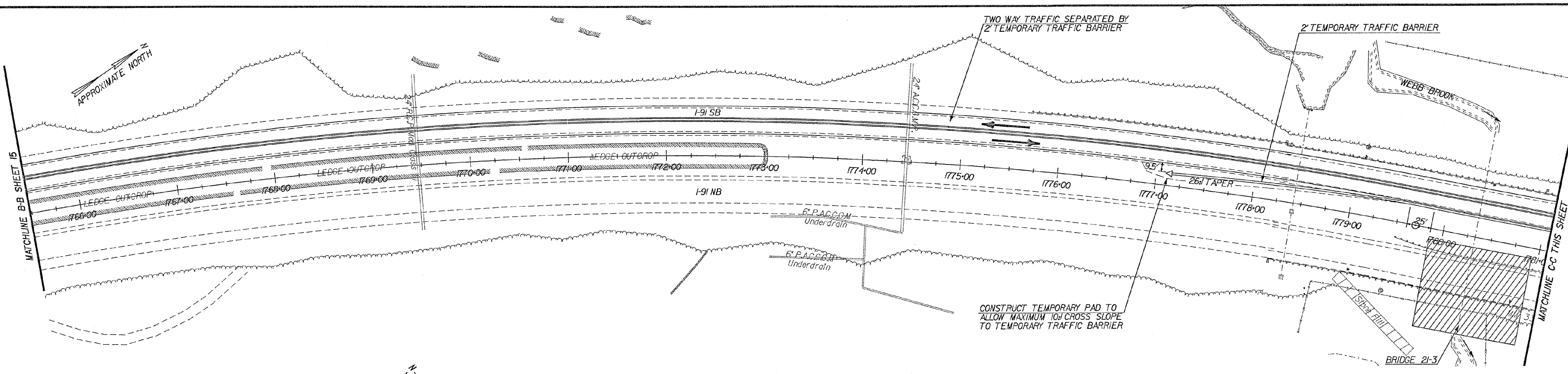

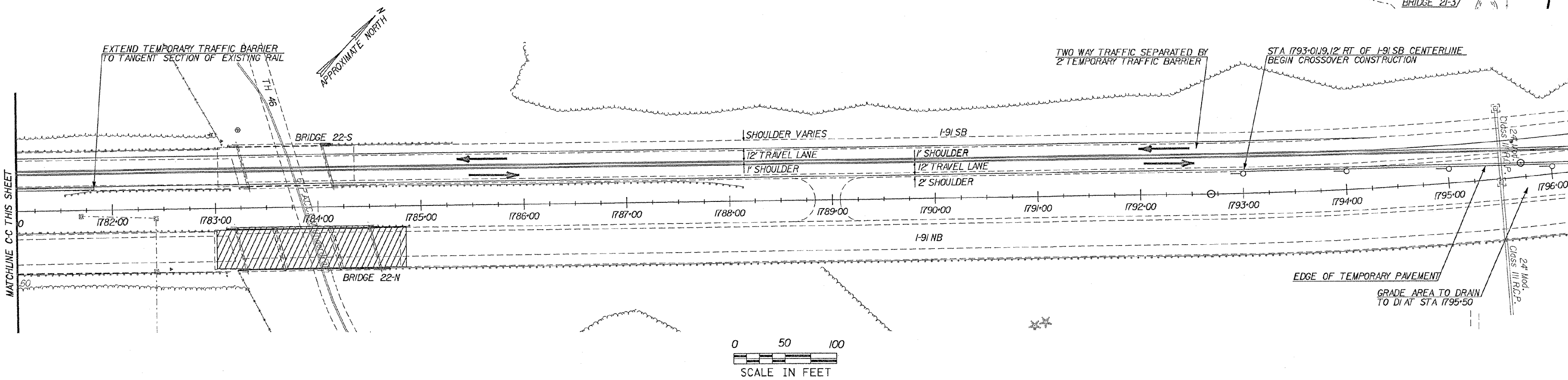

GENERAL NOTES:

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- CONSTRUCTION AREA
- DIRECTION OF TRAFFIC FLOW
- 2' TEMPORARY TRAFFIC BARRIER
- FLASHING ARROW PANEL
- TYPE I DELINEATOR (YELLOW)
- TYPE I DELINEATOR (WHITE)
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- TYPE III BARRICADE
- ENERGY ABSORPTION ATTENUATOR

STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of ROCKINGHAM	Bridge Nos. 21-3, 22-N, 22-S
	Log Sta.
Highway No. I-91	Surv. Sta.
I-91 NB & SB OVER WEBB BROOK & TH 46	
TRAFFIC CONTROL - BR. 22-N CLOSED (2 OF 3)	
Designed By C.Maby	Drawn By C.Maby
Checked By J.McDuffee Date 9/00	Bridge Design Supervisor J.Mleczkowski Date
PROJECT BR 21-3, BR 22-N AND BR 22-S	PROJECT NO. ROCKINGHAM IM 091-1(38)
I.G.C. Info. m:\563000 VAOT Webb Brook Cu\HWY\DRAW\TCPPLN\zf078nb_bdr.dgr	
Bridge Sheet No.	Sheet 16 of 23

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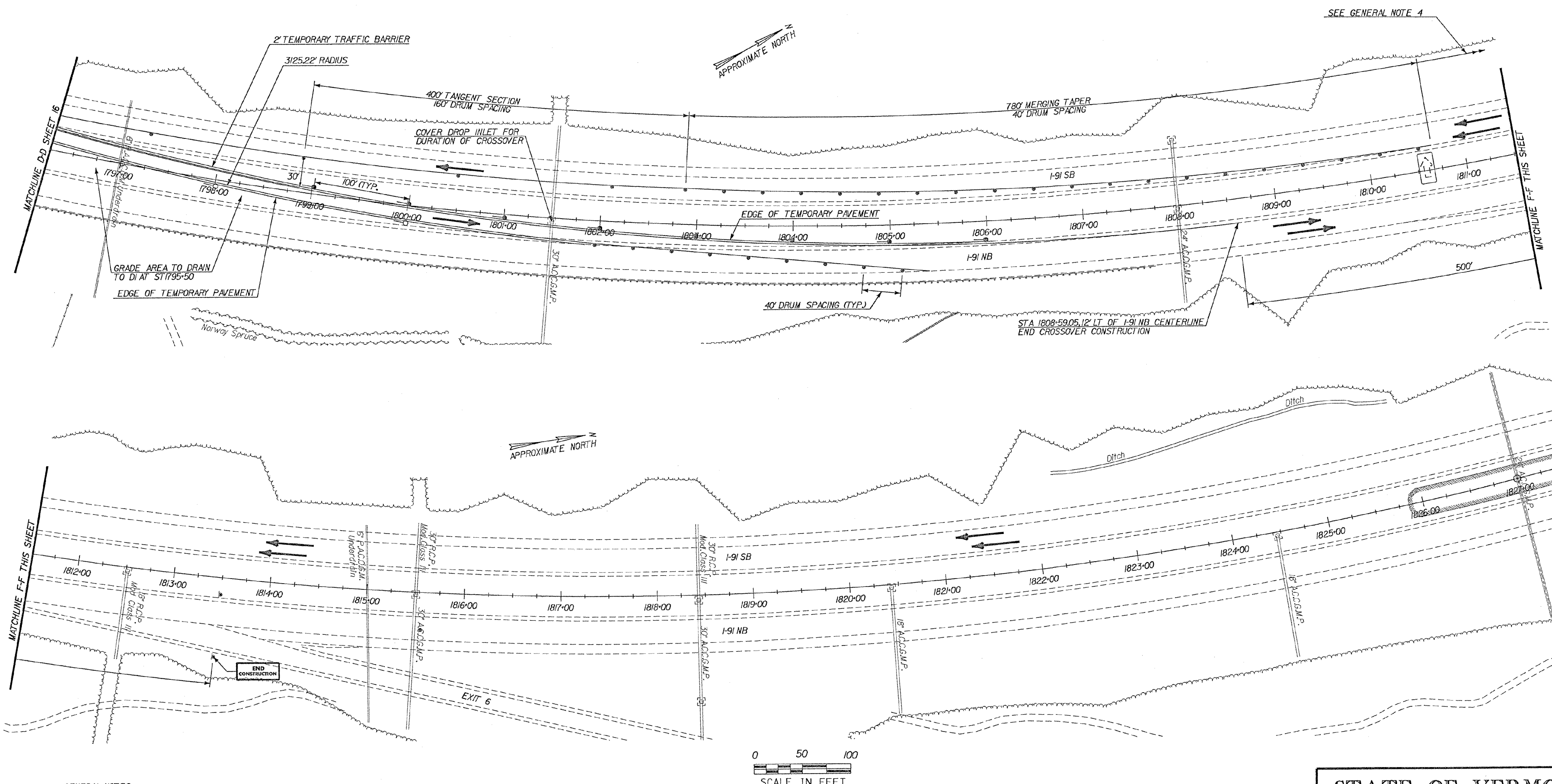

GENERAL NOTES:

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LEGEND

- CONSTRUCTION AREA
- DIRECTION OF TRAFFIC FLOW
- 2' TEMPORARY TRAFFIC BARRIER
- FLASHING ARROW PANEL
- TYPE I DELINEATOR (YELLOW)
- TYPE I DELINEATOR (WHITE)
- REFLECTORIZED DRUM
- TYPE III BARRICADE
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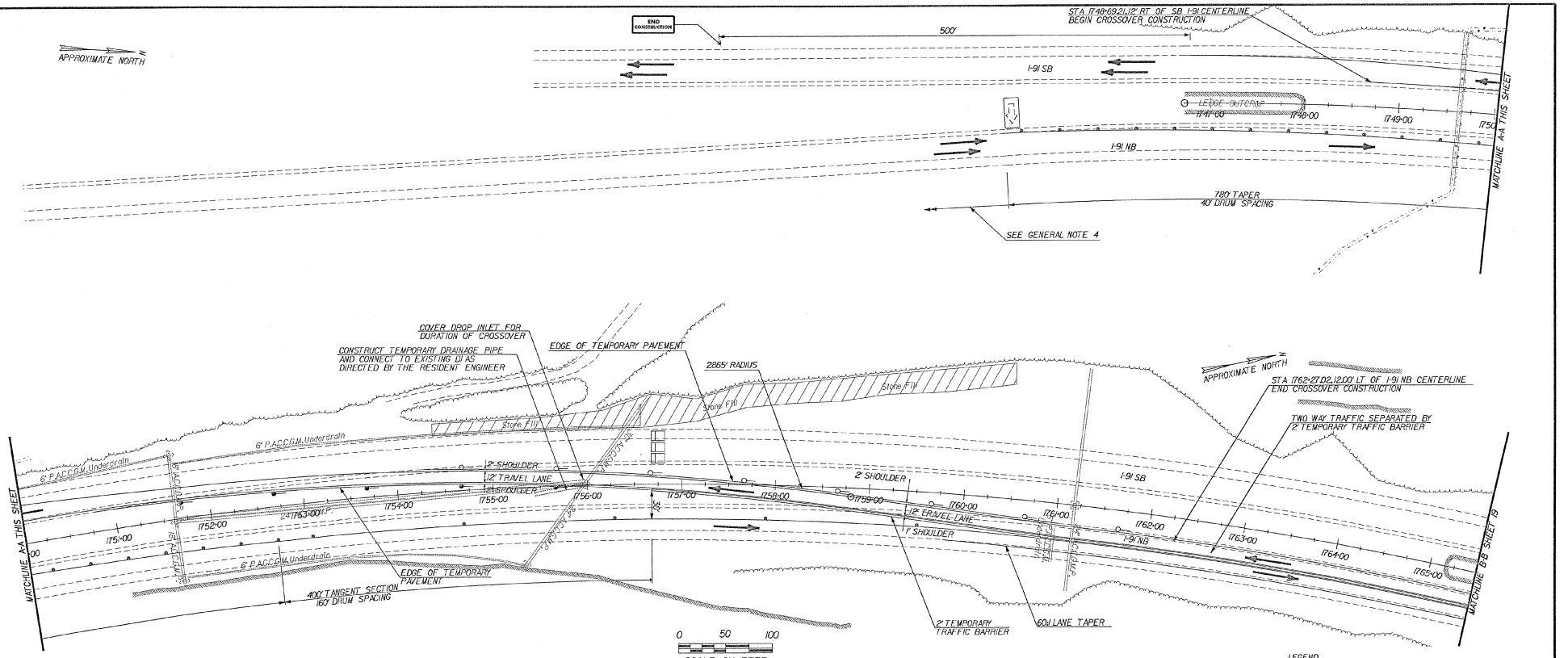
STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of ROCKINGHAM	Bridge Nos. 21-3, 22-N, 22-S
	Log Sta.
Highway No. I-91	Surv. Sta.
I-91 NB & SB OVER WEBB BROOK & TH 46	
TRAFFIC CONTROL - BR. 22-N CLOSED (3 OF 3)	
Designed By C.Maby	Drawn By C.Maby
Checked By J.McDuffee Date 9/00	Bridge Design Supervisor J.Mleczkowski Date
PROJECT BR 21-3, BR 22-N AND BR 22-S	PROJECT NO. ROCKINGHAM IM 091-1(38)
I.G.C. Info. m:\563000 VAOT Webb Brook Cu\NHWY\DRAW\TCPPLN\zf078nb_bdr.dgn	
Bridge Sheet No.	Sheet 17 of 23

SV=TRAF03 14-SEP-2000



TRAFFIC CONTROL NOTES:

1. TRAFFIC SHALL BE CONTROLLED AND MAINTAINED AT ALL TIMES AS SPECIFIED IN THE TRAFFIC CONTROL PLANS. A MINIMUM OF ONE LANE OF TRAFFIC IN EACH DIRECTION SHALL BE MAINTAINED AT ALL TIMES DURING CONSTRUCTION. THE NB PORTION OF BRIDGE 21-3 SHALL BE CLOSED AND REHABILITATED BEFORE THE SB PORTION OF BRIDGE 21-3.
2. TRAFFIC CONTROL MEASURES WILL NOT BE PERMITTED BETWEEN NOVEMBER 1 AND APRIL 15, UNLESS OTHERWISE APPROVED BY THE ENGINEER. IN ADDITION, ONCE TRAFFIC CONTROL DEVICES HAVE BEEN INSTALLED (PARTICULARLY CROSSOVERS), THE CONTRACTOR SHALL BEGIN ASSOCIATED CONSTRUCTION WORK IMMEDIATELY, AND PROCEED WITHOUT DELAYS THROUGH COMPLETION IN ORDER TO MINIMIZE INCONVENIENCE TO THE TRAVELING PUBLIC.
3. ALL PRIVATE VEHICLES BELONGING TO THE CONTRACTOR'S WORK CREWS SHALL NOT BE PARKED ON THE INTERSTATE RIGHT-OF-WAY NOR ON THE TRAVELLED WAY OF ANY OTHER ROAD.
4. SIGNS, BARRICADES, AND OTHER TRAFFIC CONTROL DEVICES SHALL BE CLEANED WEEKLY. ALSO, ALL EXISTING SIGNS WHICH CONTRADICT TEMPORARY TRAFFIC CONTROL SIGNS MUST BE COVERED, OR REMOVED AND THEN REPLACED AFTER CONSTRUCTION COMPLETION. COST FOR THIS WORK SHALL BE INCLUDED IN THE BID PRICE FOR ITEM 641.10, "TRAFFIC CONTROL".
5. PAYMENT FOR TRAFFIC CONTROL SIGNS, PLASTIC DRUMS, FLASHING ARROW PANELS, DELINEATORS, FLEXIBLE TUBULAR MARKERS AND TYPE III BARRICADES SHALL BE UNDER 641.10, "TRAFFIC CONTROL". PAYMENT SHALL INCLUDE ALL NECESSARY MAINTENANCE AND REPAIRS TO THESE TRAFFIC CONTROL DEVICES ON A REGULAR BASIS. THE ENGINEER MAY ADD TRAFFIC CONTROL SIGNS AS NECESSARY. ADDITIONAL SIGNS, INCLUDING POSTS AND FOUNDATIONS, SHALL BE PAID FOR AS EXTRA WORK, IN ACCORDANCE WITH SECTION 109.06
6. TEMPORARY SPEED LIMIT THROUGH THE CONSTRUCTION ZONE SHALL BE 50 MPH.
7. THE EXISTING SHOULDERS WILL BE COLD PLANED AND OVERLAYED (1/2") TO ELIMINATE EXISTING RUMBLE STRIPS THROUGHOUT THE CROSSOVER/BI-DIRECTIONAL TRAFFIC AREA. SEE COLD PLANING DETAIL ON SHEET 13 AND RUMBLE STRIP DETAILS ON SHEET 14. THE COST OF THE COLD PLANING IS TO BE INCLUDED IN ITEM 210.10. THE OVERLAY WILL BE PAID AS ITEM 406.25, BITUMINOUS CONCRETE PAVEMENT, TYPE III.
8. ENERGY ABSORPTION ATTENUATORS WILL BE REQUIRED AT LOCATIONS INDICATED IN THE TRAFFIC CONTROL PLANS AND AS ORDERED BY THE ENGINEER. ATTENUATORS SHOWN IN THE PLANS ARE SYMBOLIC ONLY AND DO NOT REPRESENT THE ACTUAL CONFIGURATION OF THE ATTENUATORS TO BE USED. THE ATTENUATORS SHALL MEET THE REQUIREMENTS OF THE LATEST VERSION OF THE AASHTO "GUIDE FOR SELECTING, LOCATING AND DESIGNING TRAFFIC BARRIERS" AND THE AASHTO "ROADSIDE DESIGN GUIDE". ATTENUATORS SHALL BE DESIGNED FOR 65 MPH AND A 4500 LB. VEHICLE. ATTENUATORS SHALL BE APPROVED BY THE ENGINEER AND PAID FOR UNDER ITEM 621.57. IF ATTENUATORS ARE DAMAGED BY AN ERRANT VEHICLE, COSTS TO THE CONTRACTOR FOR REPLACEMENT OF ANY PART OR ALL OF THE ATTENUATOR SHALL BE PAID AS "EXTRA WORK" PER SECTION 109.06. THE CONTRACTOR SHALL PROVIDE A SPARE FOR EACH TYPE OF ATTENUATOR USED ON THIS PROJECT, FOR THE PURPOSE OF IMMEDIATE REPLACEMENT OF DAMAGED ATTENUATORS. THE COST OF ON-SITE STORAGE OF EXTRA ATTENUATORS SHALL BE PAID AS SPECIFIED IN THE SPECIAL PROVISIONS.
9. ANY REMOVAL AND REINSTALLATION OF GUARD RAIL, BRIDGE APPROACH RAIL OR BRIDGE RAIL WHICH IS REQUIRED TO COMPLETE WORK SHOWN IN THE TRAFFIC CONTROL PLANS SHALL BE SUBSIDIARY TO ITEM 641.10, "TRAFFIC CONTROL" UNLESS OTHERWISE NOTED.
10. ALL PAVEMENT MARKINGS TO BE REMOVED AS SHOWN IN STANDARD SHEETS E-103, E-104, AND E-104A, SHALL BE MASKED USING ITEM 646.86, "BLACK PAVEMENT MARKING MASKING TAPE". TEMPORARY PAVEMENT MARKINGS THROUGHOUT THE TRAFFIC CONTROL PACKAGE SHALL BE PAID AS ITEM 646.64, "TEMPORARY 6" WHITE LINE" (TAPE, TYPE II), AND ITEM 646.15, "TEMPORARY 6" YELLOW LINE (TAPE, TYPE II).
11. AT THE APPROACHES TO THE BRIDGES, PRIOR TO BEGINNING COLD PLANING OF THE ROADWAY SURFACE, THE CONTRACTOR SHALL INSTALL THE ADVANCE WARNING SIGN PACKAGE SHOWN IN STANDARD SHEET E-106. THE COST SHALL BE INCLUDED UNDER 641.10, "TRAFFIC CONTROL".
12. THE CONTRACTOR SHALL PERFORM FIELD SURVEY SUFFICIENT TO VERIFY THE CROSSOVER PROFILES, SUPERELEVATION TRANSITIONS, AND DRAINAGE. CROSSOVER DESIGN COMPUTATIONS AND PLANS SHALL BE SUBMITTED BY THE CONTRACTOR TO THE RESIDENT ENGINEER FOR APPROVAL. FILL MATERIAL SHALL NOT CONTAIN EXCESSIVE AMOUNTS OF MOISTURE, SILT OR ORGANIC SUBSTANCES. EXISTING EMBANKMENT SLOPES WHICH CROSSOVER FILL IS TO BE PLACED AGAINST SHALL BE BENCHED AS ORDERED BY THE RESIDENT ENGINEER. SUBBASE MATERIAL SHALL BE APPROVED BY THE RESIDENT ENGINEER AND SHALL BE PLACED WITH A MINIMUM 12" THICKNESS. PAVING OF CROSSOVER DETOURS SHALL BE PAID FOR AS "BITUMINOUS CONCRETE PAVEMENT", ITEM 406.25, AND SHALL BE PLACED IN A SINGLE COURSE 3" THICK. MIX DESIGN APPROVAL AND TESTING FACILITIES ARE NOT REQUIRED FOR THE CROSSOVER PAVEMENT. THE COST OF ALL LABOR, EQUIPMENT, MATERIALS, AND WORK REQUIRED FOR THE DESIGN, CONSTRUCTION, AND REMOVAL OF CROSSOVERS SHALL BE INCLUDED UNDER ITEM 641.10, "TRAFFIC CONTROL".

GENERAL NOTES:

1. DESIGN SPEED 55 MPH.
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LEGEND

- CONSTRUCTION AREA
- DIRECTION OF TRAFFIC FLOW
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- TYPE III BARRICADE
- ENERGY ABSORPTION ATTENUATOR

STATE OF VERMONT
AGENCY OF TRANSPORTATION

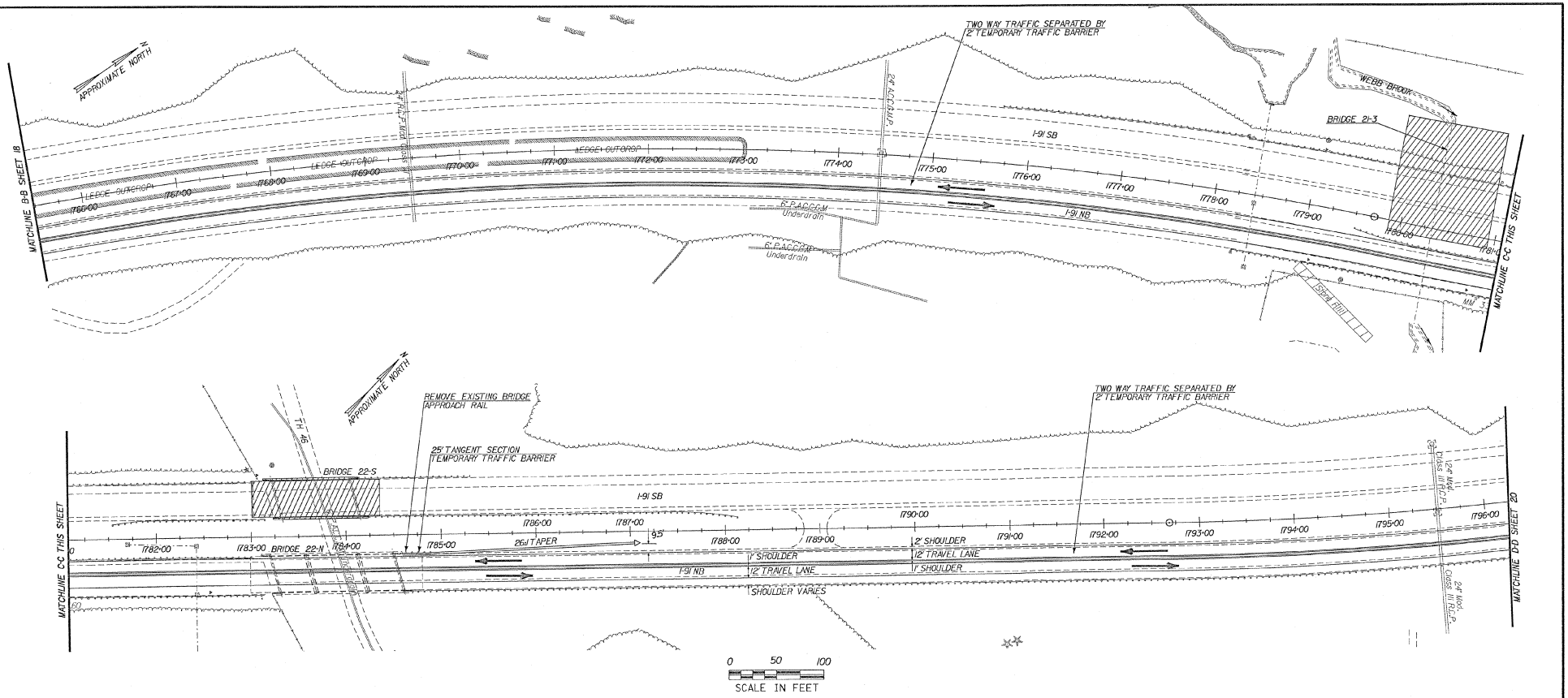
Town Of ROCKINGHAM	Bridge Nos. 21-3, 22-N, 22-S
Highway No. I-91	Log Sta. / Surv. Sta.

I-91 NB & SB OVER WEBB BROOK & TH 46

TRAFFIC CONTROL - BR. 22-S CLOSED (1 OF 3)

Designed By C. Maly	Drawn By C. Maly
Checked By J. McDuffee Date 9/00	Bridge Design Supervisor J. Mloczkowski Date
PROJECT BR 21-3, BR 22-N AND BR 22-S	PROJECT NO. ROCKINGHAM IM 091-1(38)
L.G.C. Info. mN1563000 VAOT Webb Brook CuNHWY\DRAW\TCPPLN\zf078sb..bdr.dgn	
Bridge Sheet No.	Sheet 18 of 23

SYSTRAF04 14-SEP-2000



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LEGEND

CONSTRUCTION AREA	
DIRECTION OF TRAFFIC FLOW	
2' TEMPORARY TRAFFIC BARRIER	
FLASHING ARROW PANEL	
TYPE I DELINEATOR (YELLOW)	
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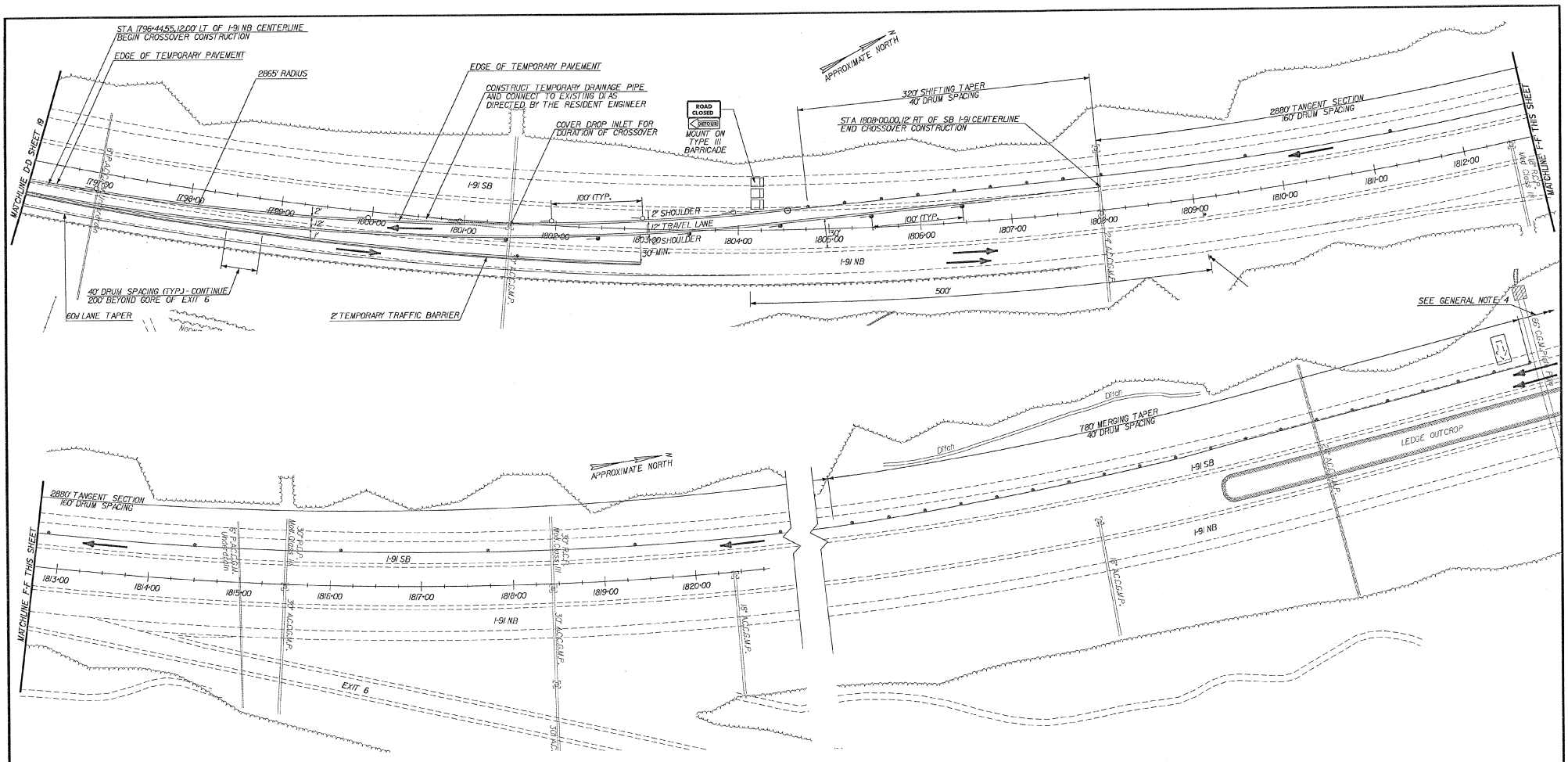
STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of ROCKINGHAM	Bridge Nos. 21-3, 22-N, 22-S
Highway No. I-91	Log Sta. / Surv. Sta.
I-91 NB & SB OVER WEBB BROOK & TH 46	
TRAFFIC CONTROL - BR. 22-S CLOSED (2 OF 3)	
Designed By C.Maby	Drawn By C.Maby
Checked By J.McDuffee Date 9/00	Bridge Design Supervisor J.Wieczkowski Date
PROJECT BR 21-3, BR 22-N AND BR 22-S	PROJECT NO. ROCKINGHAM IM 091-1(38)
I.G.C. Info. mv1563000 VAOT Webb Brook Cul\HWY\DRAWT\CPPLN\cf078sb_bdr.dgn	
Bridge Sheet No.	Sheet 19 of 23

14-SEP-2000



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STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of ROCKINGHAM	Bridge Nos. 21-3, 22-N, 22-S
Highway No. I-91	Log Sta. / Surv. Sta.

I-91 NB & SB OVER WEBB BROOK & TH 46

TRAFFIC CONTROL - BR. 22-S CLOSED (3 OF 3)

Designed By C.Maby	Drawn By C.Maby
Checked By J.McDuffee Date 9/00	Bridge Design Supervisor J.Mleczkowski Date
PROJECT BR 21-3, BR 22-N AND BR 22-S	PROJECT NO. ROCKINGHAM IM 091-1(38)

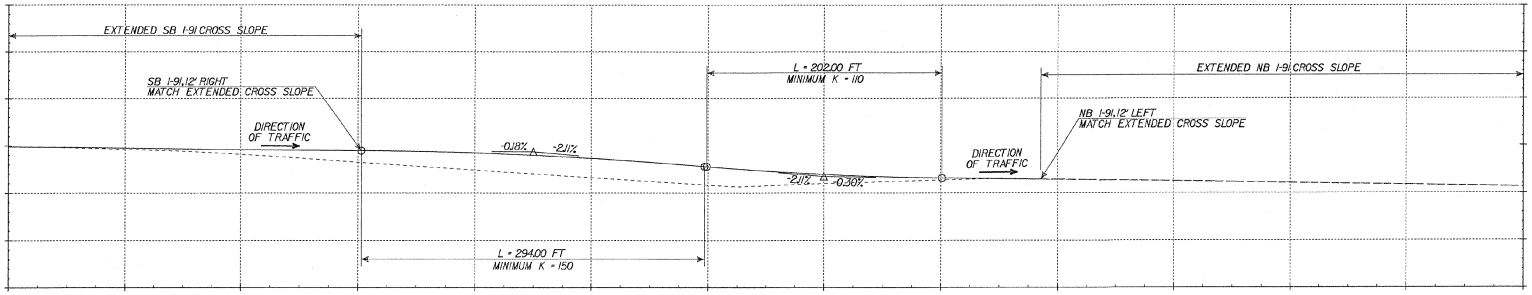
I.G.C. Info. mN563000 VAOT Webb Brook CuNHWA\DRAW\TCPPLN\zf0f8sb..bdr.dgn

Bridge Sheet No. Sheet 20 of 23

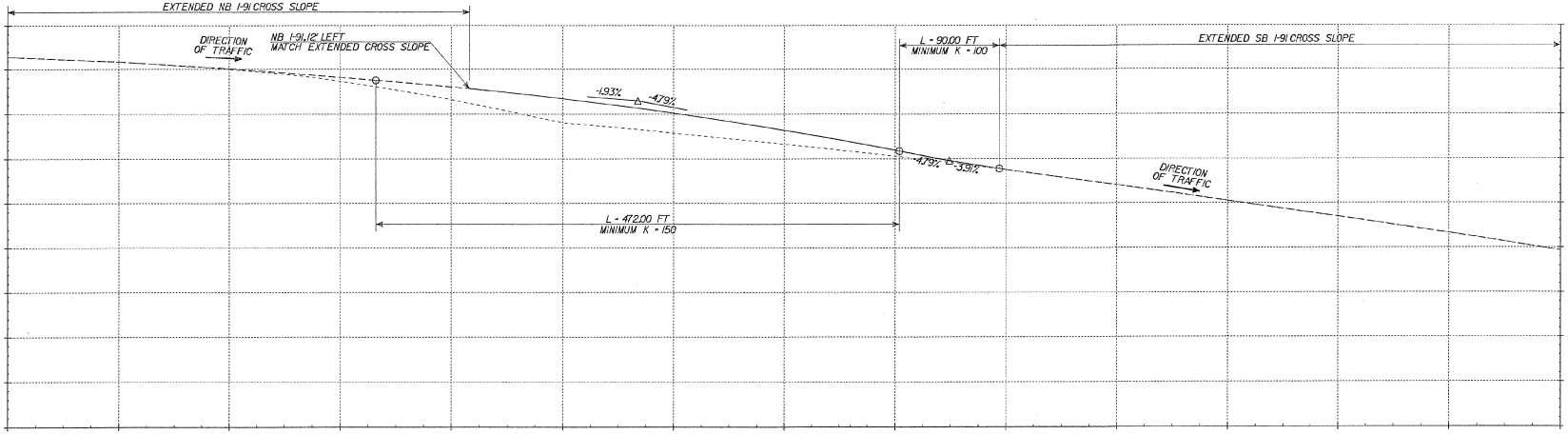
SV=TRAF06

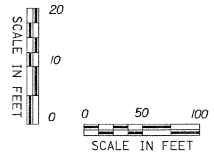
14-SEP-2000

Phase I - NB I-91 Northern Cross-over



Phase I - NB I-91 Southern Cross-over





STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of ROCKINGHAM	Bridge Nos. 21-3, 22-N, 22-S
Highway No. I-91	Log Sta. / Surv. Sta.

I-91 NB & SB OVER WEBB BROOK & TH 46

NB I-91 CROSS-OVER PROFILES

Designed By C.Moby	Drawn By C.Moby
Checked By J.McDuffee Date 9/00	Bridge Design Supervisor J.Mlaczkowski Date
PROJECT BR 21-3, BR 22-N AND BR 22-S	PROJECT NO. ROCKINGHAM IM 091-1(38)
I.G.C. Info. mv1563000 V:\OT Webb Brook Cul\HWY\DRAW\PROFILES\zf078proadgn	
Bridge Sheet No.	Sheet 21 of 23

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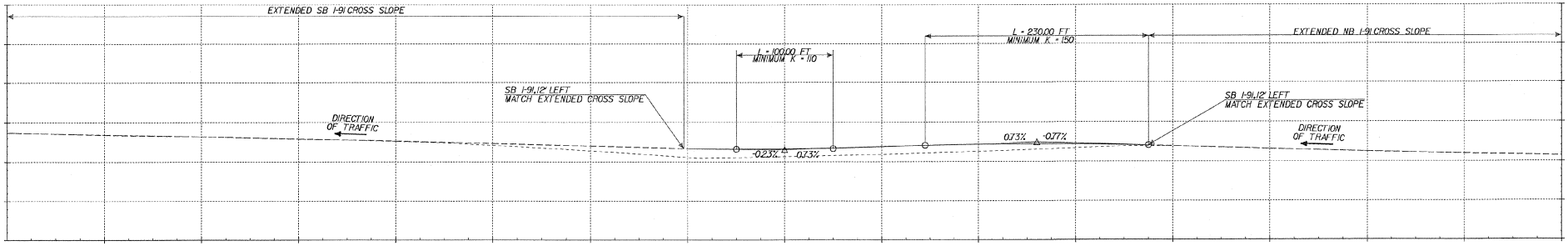
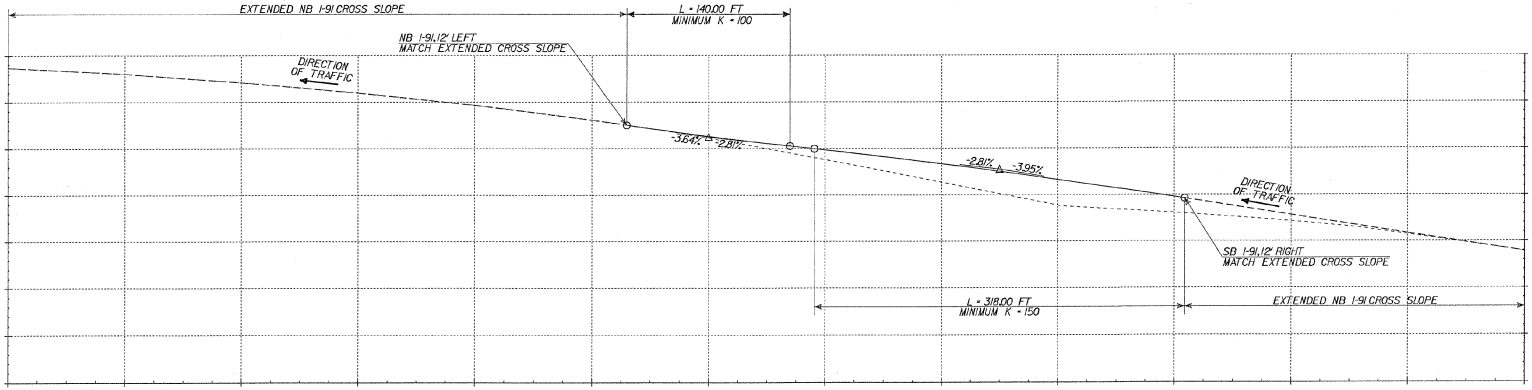
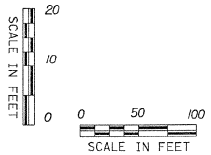
14-SEP-2000

Phase II - SB I-91 Northern Cross-over



Phase II - SB I-91 Southern Cross-over





STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of ROCKINGHAM	Bridge Nos. 21-3, 22-N, 22-S
	Log Sta.
Highway No. I-91	Surv. Sta.

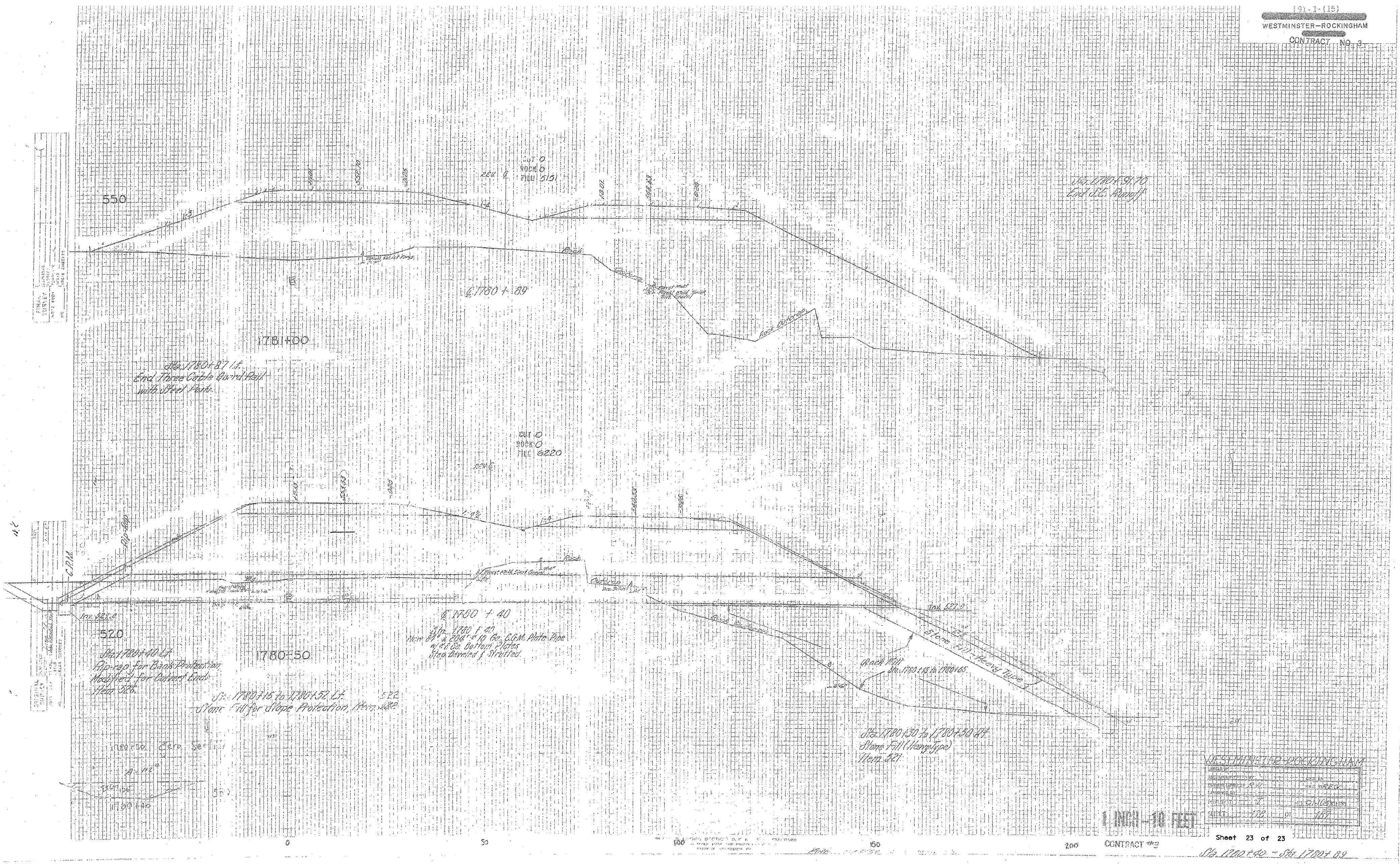
I-91 NB & SB OVER WEBB BROOK & TH 46

SB I-91 CROSS-OVER PROFILES

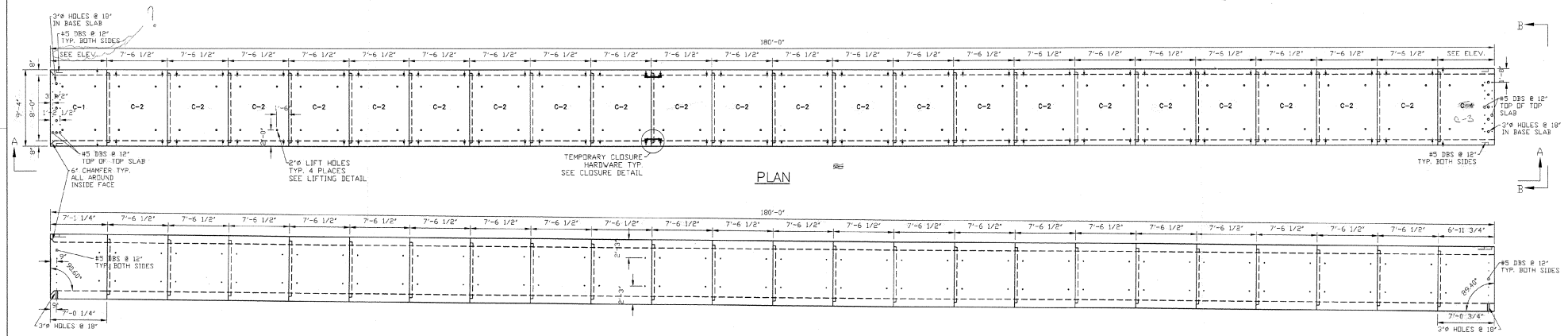
Designed By C.Maby	Drawn By C.Maby
Checked By J.McDuffee Date 9/00	Bridge Design Supervisor J.Mleczkowski Date
PROJECT BR 21-3, BR 22-N AND BR 22-S	PROJECT NO. ROCKINGHAM IM 091-1(38)
I.G.C. Info. mN563000 VAOT Webb Brook CuN:\HW\DRAW\PROFILES\zf078proadgn	
Bridge Sheet No.	Sheet 22 of 23

SV=SBPRO

14-SEP-2000



WESTMINSTER-ROCKINGHAM
CONTRACT NO. 3
550
CUT 0
ROCK 0
FILL 5151
Sta. 1780+91.70
End S.E. Runoff
℄ 1780 + 89
1781+00
Sta. 1780+87 Lt.
End Three Cable Guard Rail
with Steel Posts
CUT 0
ROCK 0
FILL 6220
Rip-rap
℄ 1780 + 40
Sta. 1780 + 40
New 84" x 204' ± 10 Ga. C.G.M. Plate Pipe
w/ 8 Ga. Bottom Plates
Step Beveled & Strutted
520
Sta. 1780+40 Lt.
Rip-rap for Bank Protection
Modified for Culvert Ends
Item 526
1780+50
Sta. 1780+15 to 1780+52 Lt.
Stone Fill for Slope Protection, Item 522
Stone Fill - Heavy Type
Rock Fill
Sta. 1780+30 to 1780+50 Rt.
Stone Fill (Heavy Type)
Item 521
0
50
100
150
200
WESTMINSTER-ROCKINGHAM
Sheet 23 of 23
CONTRACT #3
Sta. 1780+40 - Sta. 1780+89



GENERAL NOTES:

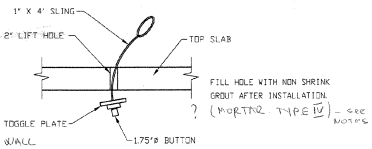
1. Structure designed and built in accordance with AASHTO "Standard Specifications for Highway Bridges", ASTM C850 and ASTM C789
2. Design Parameters
   - Live load: AASHTO HS-25-44
   - Earth Cover: 0' to 24'
   - Concrete: Design strength f'c = 5000 psi
     Unit weight = 150 pcf
   - Reinforcing: ASTM A185 (wwf) fy = 60,000 psi
   - Soil: Unit weight = 140 pcf
   - Minimum lateral pressure coefficient .25
   - Maximum lateral pressure coefficient .50
   - Cover to reinforcing: 2" Top of top slab
     1¼" Elsewhere
3. Culvert length includes a joint gap. Actual culvert piece length is ½" shorter (i.e. C-2 = 7'-6").
4. NO dampproofing supplied. Membrane waterproofing to be supplied and installed by others. Tar emulsion to be supplied and installed by others.
5. NO weepholes.
6. All DBS are supplied with 18" long dowel-ins by CSI.
7. Headwalls, Wingwalls and Toewalls to be C.I.P. by others.
8. Notify engineer 3 days prior to first pour.
9. Do not strip forms until 4000psi has been achieved.

AVER. LENGTH OF C-1 SHALL BE 7.06'

PIECE SCHEDULE				
MARK	QTY	LENGTH	YDS	WEIGHT
C-1	1	7.02	7.17	14.51 TONS
C-2	22	7.5	7.66	15.51 TONS
C-3	1	7.02	7.17	14.51 TONS

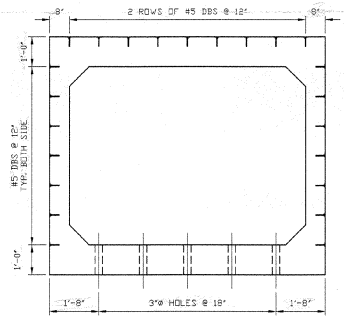
good

MARK ON THE PLAN IS C-4, SHALL BE C-3



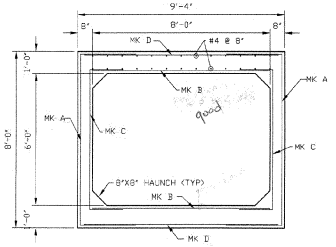
LIFTING DETAIL

NOTE
FILL EXTERIOR TOP & WALL JOINTS, LIFTING HOLES AND INTERIOR BASE JOINT WITH MORTAR TYPE IV AFTER BEING SET IN THEIR FINAL POSITION (SEE GENERAL NOTES 13)



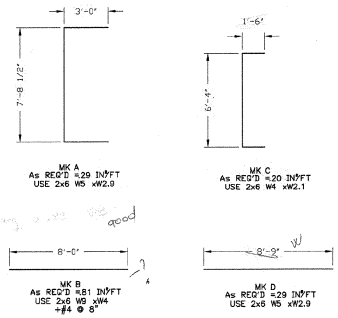
ELEVATION B-B

OFFICE COPY



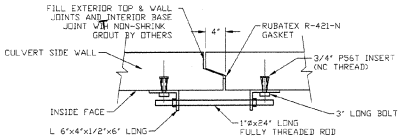
COVER TO REINFORCING:
2" TOP OF TOP SLAB
1¼" ELSEWHERE

SECTION



good
good

BENDING SCHEDULE



CLOSURE HARDWARE IS TEMPORARY AND IS TO BE REMOVED AFTER INSTALLATION

CLOSURE DETAIL

RECEIVED
GK'D BY MG OK'D BY
APR 06 2001
RESUBMIT APPROVED AS NOTED
BY DATE 5/4/01

CONTRACTOR IS TO VERIFY THAT ALL INFORMATION SHOWN ON DRAWINGS HAS BEEN THOROUGHLY CHECKED, COMPLIES WITH THE CONTRACT DOCUMENTS AND IS ADEQUATE TO MEET THE FIELD CONDITIONS. SOME DIMENSIONS AND DETAILS MAY DIFFER SLIGHTLY FROM CONTRACT DRAWINGS TO ACCOMMODATE THE MANUFACTURING OR DESIGN PROCESS. APPROVAL OF THIS DRAWING INDICATES THAT ANY DEVIATION FROM THE CONTRACT DOCUMENTS HAS BEEN REVIEWED AND FOUND TO BE ACCEPTABLE.

PRODUCTION WILL NOT COMMENCE UNTIL RECEIPT OF SIGNED, APPROVED SHOP DRAWINGS.

STATE AGENCY
STATE OF VERMONT AOT

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14 Park Avenue, Hudson, NH 03051
Phone 1-603-889-4163
Fax 1-603-883-2417

BAZIN BROTHERS TRUCKING
I-91 NB & SB OVER WEBB BROOK & TH 46
ROCKINGHAM, VT

BOX CULVERT LAYOUT

Drawn by	Date
E. HAUSER	2/12/01
Checked by	Date
CV	
Approved by	Date

Project No.	Drawing No.	REV
ROCKINGHAM IM 091-1(38)	C14868-L01	0

CSI JOB #: C14868 SHEET 1 OF 1