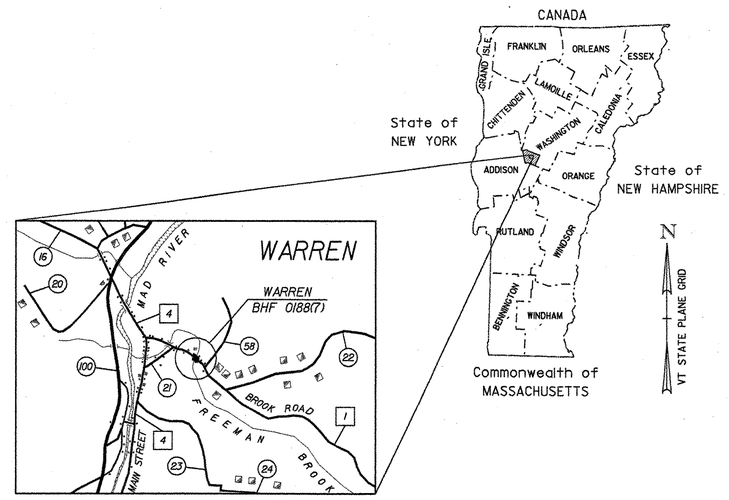
STANDARD SHEETS

B-5	SLOPE GRADING, EMBANKMENTS, MUCK	06/01/94
B-71	RESIDENTIAL AND COMMERCIAL DRIVES	07/08/05
D-2	C.P.M. HEADWALLS, UNDERDRAIN C.P.M. HEADWALLS & RETAINING WALLS RIPRAP LIGHT TYPE SLOPE HEADWALL REINFORCED CONCRETE HEADWALL UNDERDRAIN & CARRIER PIPE CONSTRUCTION DETAILS	06/01/94
D-4	FLUSHING BASINS, END SECTION, ELBOWS TYPICAL WATERFALL FOR CULVERTS UP TO AND INCLUDING 48" DIA EXTENSION SERVICE BOX AND CURB STOP CORRUGATED PIPE ELBOW GRANULAR BORROW AT CULVERT LOCATIONS UNDERDRAIN FLUSHING BASIN CORRUGATED STEEL PIPE END SECTION CORRUGATED STEEL PIPE ARCH END SECTION	06/01/94
E-100	CONSTRUCTION APPROACH SIGNS	01/02/04
E-100A	SIDE ROAD 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-106	TRAFFIC CONTROL - MISCELLANEOUS DETAILS	03/01/04
E-107	DELINEATION, BARRICADES AND DETOURS FOR CONSTRUCTION AREAS	06/30/03
E-107A	BREAKAWAY BARRICADE DETAILS	08/08/95
E-108	CONSTRUCTION ZONE LONGITUDINAL DROP OFFS	08/18/95
E-121	STANDARD SIGN PLACEMENT - CONVENTIONAL ROAD	08/08/95
E-123	GUIDE SIGN PLACEMENT - MISCELLANEOUS DETAILS	03/16/04
E-143B	REGULATORY SIGN DETAILS	03/15/05
E-153	WARNING SIGN DETAILS	05/01/04
E-160	FLANGED CHANNEL STEEL SIGN POST	05/20/99
E-191	PAVEMENT MARKING DETAILS	02/01/99
E-193	PAVEMENT MARKING DETAILS	08/18/95
G-1	STEEL BEAM GUARD RAIL (50 MPH & OVER) HEAVY DUTY STEEL BEAM GUARD RAIL TWISTED END TERMINAL ANCHOR FOR STEEL BEAM RAIL	01/03/00
G-1D	STEEL BEAM GUARD RAIL (40 MPH & LESS) HEAVY DUTY STEEL BEAM GUARD RAIL STEEL BEAM MEDIAN BARRIER ANCHOR FOR STEEL BEAM RAIL	01/03/00
G-18	PRECAST CONCRETE TEMPORARY TRAFFIC BARRIER	06/01/94
SB-R6-82	BRIDGE RAILING - HEAVY DUTY STEEL BEAM	01/06/95

STATE OF VERMONT
AGENCY OF TRANSPORTATION

PROPOSED IMPROVEMENT
BRIDGE PROJECT

TOWN OF WARREN
COUNTY OF WASHINGTON
BROOK ROAD (T.H. 1, CLASS 2), BRIDGE NO. 7

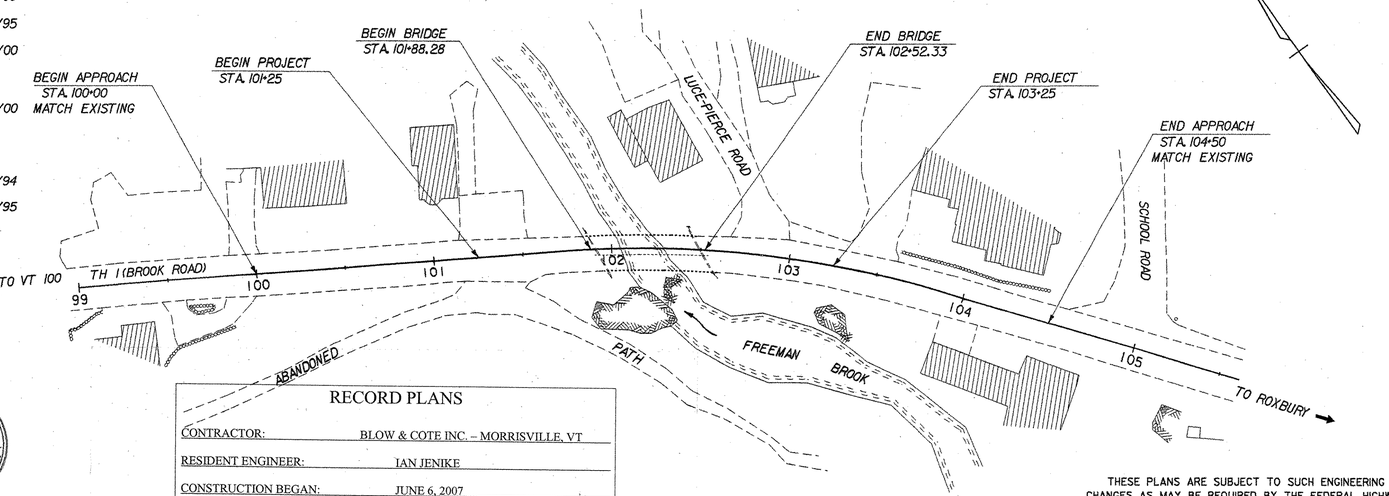


LOCATION MAP
NOT TO SCALE

PROJECT LOCATION: BEGINNING APPROXIMATELY 0.20 MILES EAST OF THE INTERSECTION OF T.H. 4 (MAIN STREET) AND T.H. 1 (BROOK ROAD) AND PROCEEDING EASTERLY 0.038 MILES.

PROJECT DESCRIPTION: REMOVAL OF EXISTING SUPERSTRUCTURE, CONSTRUCTION OF NEW STEEL BEAM SUPERSTRUCTURE, EXTENDING ABUTMENT WINGWALLS, AND RELATED ROADWAY AND CHANNEL WORK.

LENGTH OF STRUCTURE:	64.05	FEET	= 0.012 MILES
LENGTH OF ROADWAY:	135.95	FEET	= 0.026 MILES
LENGTH OF PROJECT:	200.00	FEET	= 0.038 MILES



INDEX OF SHEETS

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33-35 ROADWAY CROSS SECTIONS
36 CHANNEL CROSS SECTIONS

CONVENTIONAL SYMBOLS

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

STATE OF VERMONT DARREN M. BENOIT No. 7824 REGISTERED PROFESSIONAL ENGINEER

TRAFFIC DATA : SEE SHEET 2

SURVEYED BY : VTRANS
SURVEYED DATE : OCTOBER 2000

DATUM
VERTICAL NAVD88
HORIZONTAL NAD83 (96)

RECORD PLANS

CONTRACTOR: BLOW & COTE INC. – MORRISVILLE, VT
RESIDENT ENGINEER: IAN JENIKE
CONSTRUCTION BEGAN: JUNE 6, 2007
CONSTRUCTION COMPLETE: JUNE 3, 2008
RECORD PLANS BY: IAN JENIKE & C. PIERCE

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

BY _____ RESIDENT ENGINEER

DATE MARCH 24, 2009

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.

SCALE 1" = 40'-0
40 0 40

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

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

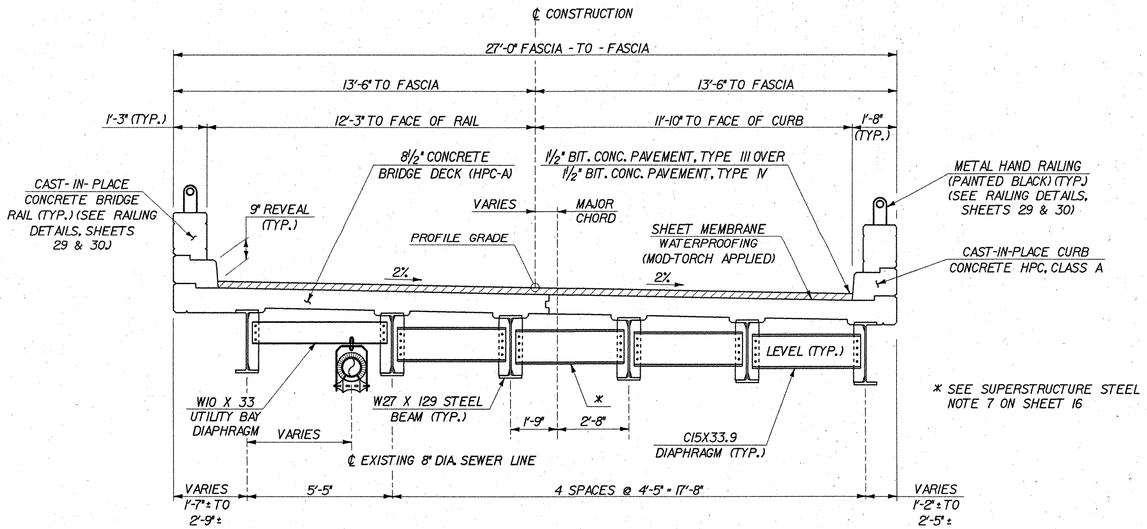
McFarland-Johnson, Inc.

DIRECTOR OF PROGRAM DEVELOPMENT
APPROVED Richard Tetreault DATE 2-20-07

PROJECT MANAGER : WARREN B. TRIPP

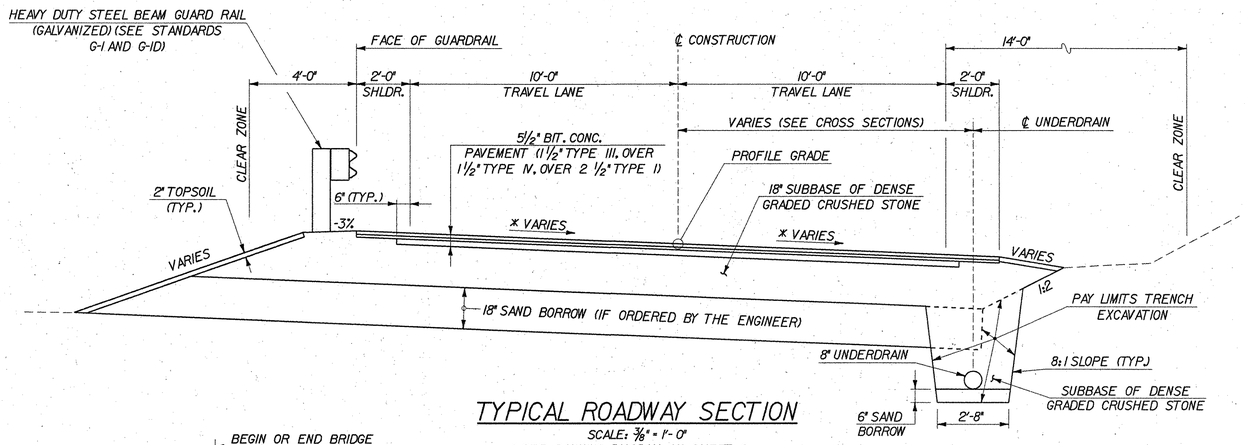
PROJECT NAME : WARREN
PROJECT NUMBER : BHF 0188 (7) (RE-ADVERTISED)

SHEET 1 OF 36 SHEETS



TYPICAL BRIDGE SECTION

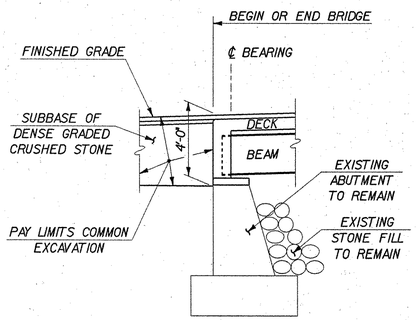
SCALE: 3/8" = 1'-0"



TYPICAL ROADWAY SECTION

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

* SEE BANKING DIAGRAM ON SHEET 6.

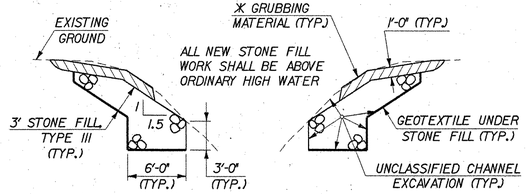


TYPICAL ABUTMENT SECTION

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

MATERIAL TOLERANCES

MATERIAL ITEM	TOLERANCE
PAVEMENT	± ¼" TOTAL THICKNESS
SUBBASE	± 1"
SAND BORROW	± 1"



TYPICAL STONE FILL SECTION

NOT TO SCALE

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

PLOTTED 19-FEB-2007

FINAL HYDRAULICS REPORT

HYDROLOGIC DATA

DRAINAGE AREA = 6.3 SQUARE MILES
CHARACTER OF TERRAIN: MOUNTAINOUS, PREDOMINANTLY RURAL
CHARACTER & TYPE OF STREAM: PERENNIAL, NON-ALLUVIAL, SINUOUS, NOT BRAIDED AND INCISED

NATURE OF STREAMBED: GRAVEL TO BEDROCK

Q2.33 = 350 cfs Q50 = 1350 cfs
Q10 = 800 cfs Q100 = 1600 cfs
Q25 = 1075 cfs Q500 = 2050 cfs

DATE OF FLOOD OF RECORD: NOVEMBER 1927
WATER SURFACE ELEV.: UNKNOWN ESTIMATED DISCHARGE: UNKNOWN
NATURAL STREAM VELOCITY @ Q25 = 10.6 fps
ICE CONDITIONS: MODERATE DEBRIS: MODERATE
DOES THE STREAM REACH MAXIMUM HIGHWATER ELEVATION RAPIDLY? YES
IS ORDINARY RISE RAPID? YES
IS STAGE AFFECTED BY UPSTREAM OR DOWNSTREAM CONDITIONS? NO
IF YES, DESCRIBE.

WATERSHED STORAGE 1% HEADWATERS ___ UNIFORM THROUGHOUT WATERSHED X
IMMEDIATELY ABOVE SITE ___

EXISTING STRUCTURE

STRUCTURE TYPE: SINGLE SPAN STEEL BEAM WITH CONCRETE DECK YEAR BUILT: 1947
CLEAR SPAN (NORMAL TO STREAM): 47 FEET
VERTICAL CLEARANCE ABOVE STREAMBED: 7.0 FEET
WATERWAY OF FULL OPENING: 165 SQUARE FEET
DISPOSITION OF STRUCTURE: SUPERSTRUCTURE TO BE REPLACED

TYPE OF MATERIAL UNDER SUBSTRUCTURE: UNKNOWN

WATER SURFACE ELEV. @ Q2.33 = 912.4 FEET VELOCITY= 8.4 fps
Q10 = 914.0 FEET " 12.5 fps
Q25 = 914.8 FEET " 13.6 fps
Q50 = 916.2 FEET " 11.4 fps
Q100 = 916.5 FEET " 11.7 fps

LONG TERM STREAM BED CHANGES: NONE NOTED

IS THE ROADWAY OVERTOPPED BELOW THE Q100? YES FREQUENCY: 40 YEAR EVENT *
RELIEF ELEVATION: 915.5 FT DISCHARGE OVER ROAD @ Q100: 35 cfs

UPSTREAM STRUCTURE: TOWN: WARREN DISTANCE: 6500 FEET
HIGHWAY NO.: TH-25 STRUCTURE NO.: 17
STRUCTURE TYPE: SINGLE SPAN - CONCRETE SLAB BRIDGE
CLEAR SPAN: 14 FEET CLEAR HEIGHT: 13 FEET
YEAR BUILT: 1961 FULL WATERWAY: UNKNOWN

DOWNSTREAM STRUCTURE: TOWN: WARREN DISTANCE: 1000 FEET
HIGHWAY NO.: TH-1 STRUCTURE NO.: 5
STRUCTURE TYPE: SINGLE SPAN - CONCRETE SLAB BRIDGE
CLEAR SPAN: 19 FEET CLEAR HEIGHT: 10 FEET
YEAR BUILT: 1963 FULL WATERWAY: 190 SQUARE FEET

* OVERTOPS DITCH AT SOUTHWEST CORNER OF BRIDGE

PROPOSED STRUCTURE

STRUCTURE TYPE: SINGLE- SPAN COMPOSITE STEEL BEAM WITH CONCRETE DECK
CLEAR SPAN (NORMAL TO STREAM): 47 FEET
VERTICAL CLEARANCE ABOVE STREAMBED: 7 FEET
WATERWAY OF FULL OPENING: 165 SQUARE FEET

WATER SURFACE ELEV. @ Q2.33 = 912.4 FEET VELOCITY= 8.4 fps
Q10 = 914.1 FEET " 13.0 fps
Q25 = 914.9 FEET " 14.1 fps
Q50 = 916.2 FEET " 11.4 fps
Q100 = 916.5 FEET " 11.7 fps

IS THE ROADWAY OVERTOPPED BELOW THE Q100? YES FREQUENCY: 40 YEAR STORM
RELIEF ELEVATION: 915.5 FT DISCHARGE OVER ROAD @ Q100: 35 cfs

AVERAGE LOW ELEVATION OF SUPERSTRUCTURE: 914.7 FEET
VERTICAL CLEARANCE @ Q10 = 0.7 FEET

SCOUR: NO CONTRACTION SCOUR - PER USGS 1993 LEVEL II SCOUR STUDY
REQUIRED CHANNEL PROTECTION: STONE FILL, TYPE III

PERMIT INFORMATION

STRUCTURE TYPE: YEAR BUILT:

AVERAGE DAILY FLOW: 13 cfs
ORDINARY LOW WATER: 6 cfs DEPTH: 0.5 FEET
ORDINARY HIGH WATER: 150 cfs DEPTH: 2.5 FEET

ADDITIONAL COMMENTS

TRAFFIC DATA

YEAR	ADT	DHV	% D	% T	ADTT
2003	1200	170	57	4	80
2023	1600	230	57	3	90

18 kip ESAL for flexible pavement from 2003 to 2023: 596,000
18 kip ESAL for flexible pavement from 2003 to 2043: 1,497,000
Design speed: 25 MPH

DESIGN CRITERIA:
1. DESIGN LIVE LOAD AASHTO HS-25
2. DESIGN SPAN 61.70 FEET
3. ALLOWABLE LOAD FOR SPREAD FOOTINGS ON SOIL UNKNOWN ON LEDGE N/A
4. ALLOWABLE LOAD FOR PILING N/A TYPE N/A ESTIMATED LENGTH N/A
5. STRUCTURAL STEEL AASHTO GRADE M270 GR50 (PAINTED)
6. REINFORCING STEEL GRADE 60
7. CONCRETE HPC, CLASS A f'_c: 4000 PSI
   CONCRETE HPC, 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 N/A
   * PHASED CONSTRUCTION
2. TEMPORARY BRIDGE REQUIREMENTS: ONE OR TWO WAY N/A TRAFFIC CONTROL SIGNALS REQUIRED NO
   ARE SIDEWALKS REQUIRED? NO IF SO, ON WHAT SIDE? N/A

LOAD FACTOR LOAD RATING (TONS)

LOADING LEVELS (LOAD FACTOR)	TRUCK H	HS	3S2	6 AXLE	3A. STR.	4A. STR.	5A. SEMI
INVENTORY A=2.17; B=1.00	* 37	* 47					
POSTED A=1.55; B=1.40	* 52	* 65	* 84		* 58	* 60	* 74
OPERATING A=1.30; B=1.67		* 78	* 100	* 118	* 69	* 71	

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

McFarland-Johnson, Inc.

STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of WARREN Bridge No. 7
Highway No. TH 1 Log Sta. Surv. Sta.

BROOK ROAD OVER FREEMAN BROOK
PRELIMINARY INFORMATION SHEET

Designed By S. DEUA / VTRANS Drawn By S. MERKWAN
Checked By R. JOY Date 02/07 Bridge Design Supervisor R. ROONEY Date 02/07

PROJECT WARREN PROJECT NO. BHF 0188(7)

I.G.C. Info. mN\549107-Warren\BRIDGE\Final\z1276pl.dgn
Bridge Sheet No. Sheet 2 of 36

STATE OF VERMONT
AGENCY OF TRANSPORTATION

QUANTITY SHEET

SUMMARY OF ESTIMATED QUANTITIES

CHANNEL	SUPER-STRUCT.	ABUT. NO. 1	ABUT. NO. 2	ROADWAY	EROSION CONTROL	E & C	BRIDGE QUANTITY
				1			
				850			
50							50
				185			
				32	10		
				2			
		40	40				80
		20	20				40
				260			
				650	50		
				8			
	28			270			28
	65						65
		14	11				25
	54000						54000
		1260	800				2060
		78	80				158
	15820	180	190				16190
	250						250
	1						1
	1						1
	1						1
	1						1
	15	6	5				26
	60						60
	175						175
	123						123
				65			
	129						129
				1			
	140						140
	1						1
	12						12
		3	3				6
		2	2				4
		0.5	0.5				1
				2			
				85			
				1			
					1		
					1		
					5		
					3		
					5		
140							140
					310		
					150		
				211			
	4						4
				4			
				130			
				200			
	1						1
				64			
				240			
						1	
						1	
						1	
						1	
						1	
				1			
				1			
				900			
				12			
				24			
120					75		120
					160		
					10		
					10		
					100		
					1		
					1		
					10		
					30		
					50		
					1		
					40		
					1		
					20		
				18			
				48			
				6			
				1			

TOTALS

ROUND	GRAND TOTAL	FINAL
	1	
	850	
	50	
	185	
	42	
	2	
	80	
	40	
	260	
	700	
	8	
	298	
	65	
	25	
	54000	
	2060	
	158	
	16190	
	250	
	1	
	1	
	1	
	1	
	1	
	26	
	60	
	175	
	123	
	65	
	129	
	1	
	140	
	1	
	12	
	6	
	4	
	1	
	2	
	85	
	1	
	1	
	1	
	5	
	3	
	5	
	140	
	310	
	150	
	211	
	4	
	4	
	130	
	200	
	1	
	64	
	240	
	1	
	1	
	1	
	1	
	1	
	1	
	1	
	900	
	12	
	24	
	195	
	160	
	10	
	10	
	100	
	1	
	1	
	10	
	30	
	50	
	1	
	40	
	1	
	20	
	18	
	48	
	6	
	1	

DESCRIPTIONS

UNIT	ITEMS	ITEM NUMBER
LS	CLEARING AND GRUBBING (INCL. INDV. TREES & STUMPS)	201.10
CY	COMMON EXCAVATION	203.15
CY	UNCLASSIFIED CHANNEL EXCAVATION	203.27
CY	SAND BORROW	203.31
CY	TRENCH EXCAVATION OF EARTH	204.20
CY	TRENCH EXCAVATION OF ROCK	204.21
CY	STRUCTURE EXCAVATION	204.25
CY	GRANULAR BACKFILL FOR STRUCTURES	204.30
SY	COLD PLANING-BITUMINOUS PAVEMENT	210.10
CY	SUBBASE OF DENSE GRADED CRUSHED STONE	301.35
CWT	EMULSIFIED ASPHALT	404.65
TON	MEDIUM DUTY BITUMINOUS CONCRETE PAVEMENT (PG 58-34)	406.27
CY	CONCRETE, HIGH PERFORMANCE CLASS A	501.33
CY	CONCRETE, HIGH PERFORMANCE CLASS B	501.34
LB	STRUCTURAL STEEL (ROLLED BEAM)	506.50
LB	REINFORCING STEEL	507.15
LF	DRILLING AND GROUTING DOWELS (MOD.)	507.16
LB	EPOXY COATED REINFORCING STEEL	507.17
EACH	MECHANICAL BAR CONNECTOR (EPOXY COATED)	507.19
LS	SHEAR CONNECTORS (744 - 7/8" X 7")	508.15
LS	STRUCTURAL PAINTING,SHOP APPLIED (26 TONS)	513.25
LS	CONTAINMENT & ENVIRONMENTAL PROTECTION,SHOP	513.35
LS	SURFACE PREPARATION,SHOP (26 TONS)	513.40
GAL	WATER REPELLENT (MOD. - SILANE)	514.10
LF	BRIDGE EXPANSION JOINT (ASPHALTIC PLUG)	516.10
SY	SHEET MEMBRANE WATERPROOFING (MOD. - TORCH APPLIED)	519.20
LF	METAL HAND RAILING (PAINTED BLACK)	525.15
LF	BRIDGE RAILING, HD STEEL BEAM / CURB MOUNTED (MOD.)	525.40
LF	CAST-IN-PLACE CONCRETE BRIDGE RAIL	525.50
LS	MAINTENANCE OF TRAFFIC FOR BRIDGE PROJECTS (MOD.)	527.10
SY	REMOVAL OF BRIDGE PAVEMENT	529.10
EACH	PARTIAL REMOVAL OF STRUCTURE	529.20
EACH	BEARING DEVICE ASSEMBLY (FABRIC)	531.10
SY	REPAIR OF CONCRETE SUBSTRUCTURE SURFACE CLASS I	580.13
SY	REPAIR OF CONCRETE SUBSTRUCTURE SURFACE CLASS II	580.14
CY	REPAIR OF CONCRETE SUBSTRUCTURE SURFACE CLASS III	580.15
EACH	CHANGING ELEVATION OF SEWER MANHOLES	604.42
LF	8" UNDERDRAIN	605.11
EACH	UNDERDRAIN FLUSHING BASIN	605.95
HR	BULLDOZER RENTAL, TYPE I	608.10
HR	ALL PURPOSE EXCAVATOR RENTAL, TYPE I	608.25
CY	STONE FILL, TYPE I	613.10
CY	STONE FILL, TYPE I (MOD. - CONSTRUCTION ENTRANCE)	613.10
CY	STONE FILL, TYPE I (MOD. - CHECK DAM)	613.10
CY	STONE FILL, TYPE III	613.12
LF	SNOW FENCE (MOD. - PDF)	620.70
LF	SNOW FENCE (MOD. - ARCH.)	620.70
LF	HEAVY DUTY STEEL BEAM GUARD RAIL (GALVANIZED)	621.21
EACH	TERMINAL CONNECTOR FOR STEEL BEAM GUARDRAIL	621.53
EACH	ANCHOR FOR STEEL BEAM RAIL	621.60
LF	REMOVAL AND DISPOSAL OF GUARD RAIL	621.80
LF	TEMPORARY TRAFFIC BARRIER	621.90
LS	SEWER MAIN ON BRIDGE (8")	628.60
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
LS	TESTING EQUIPMENT - PROTECTIVE COATINGS	631.18
LU	FIELD OFFICE - TELEPHONE (N.A.B.I.)	631.25
LS	MOBILIZATION / DEMOBILIZATION	635.11
LS	TRAFFIC CONTROL	641.10
LF	4" YELLOW LINE	646.21
EACH	LETTER OR SYMBOL	646.30
LF	TEMPORARY 24 INCH STOP BAR	646.66
SY	GEOTEXTILE UNDER STONE FILL	649.31
SY	GEOTEXTILE FOR SILT FENCE	649.51
LB	SEED	651.15
LB	SEED-WINTER RYE	651.17
LB	FERTILIZER	651.18
TON	AGRICULTURAL LIMESTONE	651.20
TON	HAY MULCH	651.25
EACH	HAY BALES FOR EROSION CONTROL	651.26
CY	TOPSOIL	651.35
SY	GRUBBING MATERIAL	651.40
LS	EROSION PREVENTION & SEDIMENT CONTROL PLAN	652.10
HR	MONITORING EROSION PREVENTION & SEDIMENT CONTROL PLAN	652.20
LU	MAINTENANCE OF EROSION PREVENTION & SEDIMENT CONTROL PLAN (N.A.B.I.)	652.30
SY	EROSION MATTING	654.10
SF	TRAFFIC SIGNS, TYPE A	675.20
LF	FLANGED CHANNEL SIGN POST	675.301
EACH	REMOVING SIGNS	675.50
EACH	ERECTING SALVAGED SIGNS	675.60

DETAILED SUMMARY OF QUANTITIES

QUANTITIES	UNIT	ITEMS

PROJECT NAME: **WARREN**

PROJECT NUMBER: **BHF 0188(7) (RE-ADVERTISED)**

FILE NAME: **zj276qty.xls** PLOT DATE: **02/07**

PROJECT MANAGER: **WARREN TRIPP** DRAWN BY: **S. DELIA**

DESIGNED BY: **S. DELIA** CHECKED BY: **R. JOY**

BRIDGE & ROADWAY QUANTITY SHEET SHEET **3** OF **36**

GPS CONTROL POINTS

HVCTRL # 2

STANDARD DISK STAMPED

A-4-9

* N = 588945.6760
* E = 1546907.5030
ELEV. = 894.2570

GENERAL LOCATION, WARREN, VT. OWNERSHIP, JOHN ROTH, P.O. BOX 22, WARREN VT. TO REACH FROM THE INTERSECTION OF VT ROUTES 100 AND 17 IN WAITSFIELD GO SOUTH ALONG VT ROUTE 100 FOR 4.8 MI (7.7 KM) TO THE SKEWED FOUR WAY INTERSECTION OF WEST HILL ROAD (RIGHT) AND MAIN STREET LEFT. TURN LEFT AND GO SOUTH-SOUTHEAST ALONG MAIN ST FOR 0.3 MI TO WARREN VILLAGE AND THE INTERSECTION OF BROOK ROAD LEFT AND THE MARK ON THE RIGHT, OPPOSITE THE INTERSECTION. IT IS ABOUT 0.05 MI NORTH OF THE WARREN COUNTRY STORE. THE MARK IS A US DEPARTMENT OF AGRICULTURE DISK SET IN THE NORTH END (NOT THE HIGHEST POINT) OF A MASSIVE 9.8 FT X 39.4 FT ROCK OUTCROP WHICH PROJECTS ABOUT 3 M (9.8 FT) ABOVE GROUND SURFACE. NOTE, MARK MAY BE COVERED BY A CREEPING JUNIPER. IT IS 8.9 M (29.2 FT) WEST OF AND ABOUT 0.8 M (2.6FT) HIGHER THAN THE CENTERLINE OF MAIN STREET, 36.1 FT SOUTH OF THE SOUTHEAST CORNER OF A 1+1/2 STORY HOUSE, 11.1 M (36.4 FT) NORTH OF POLE NO.40K/56, AND 1.5 M (4.9 FT) SOUTH OF THE NORTH END OF THE OUTCROP

HCTRL # 1A

STANDARD DISK STAMPED

MAY SNOW

* N = 585506.1977
* E = 1545897.2560
ELEV. =

GENERAL LOCATION, WARREN, VERMONT. TO REACH FROM THE INTERSECTION OF VERMONT ROUTES 100 AND 17 IN WAITSFIELD GO SOUTH ALONG ROUTE 100 FOR 5.7 MI (9.2 KM) TO THE SOUTHERN INTERSECTION OF MAIN STREET LEFT AND THE MARK ON THE LEFT. THE MARK IS SET FLUSH IN A STEP OF A LARGE LEDGE CUT. IT IS 12.8 M (42.0 FT) EAST OF AND ABOUT 2.0 M (6.6 FT) HIGHER THAN THE CENTERLINE ROUTE 100, 17.6 M (57.7 FT) SOUTH OF THE CENTERLINE OF MAIN STREET, 27.5 M (90.2 FT) SOUTHWEST OF POLE NO.86, AND 3.7 M (12.1 FT) SOUTH OF A FIBERGLASS WITNESS POST.

* TO ALLOW THE STATE PLANE COORDINATES TO FIT THE AGENCY DESIGN PLANE, SUBTRACT 500,000 FROM THE NORTHING AND SUBTRACT 1,500,000 FROM THE EASTING.
* DESCRIPTION PROVIDED BY VERMONT AGENCY OF TRANSPORTATION GEODETIC SURVEY UNIT

VAOT **FEET**

*HVCTRL 5

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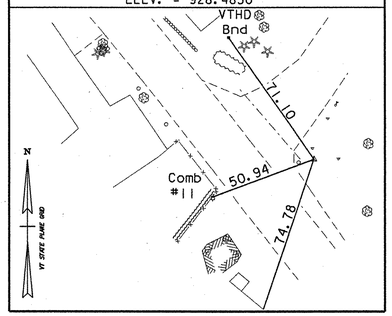

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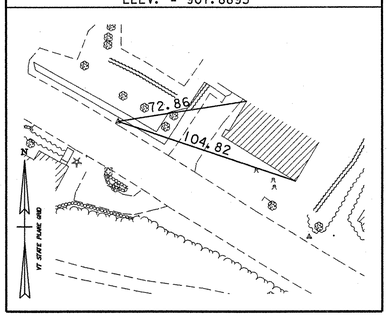

TRAVERSE TIES

*HVCTRL 1

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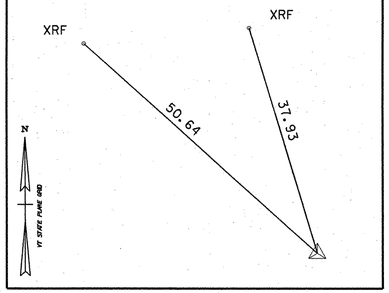

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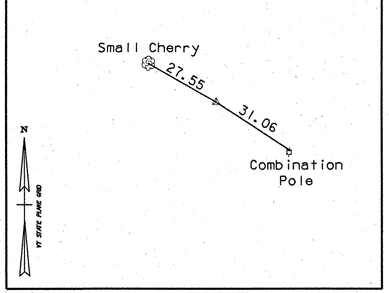

*HVCTRL 4

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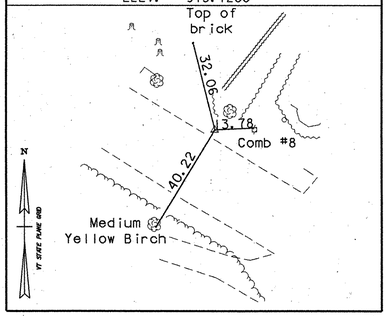

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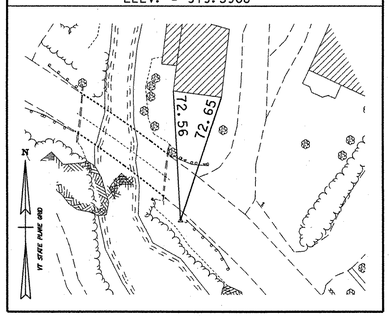

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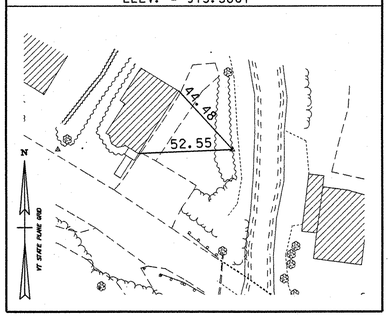


* MAIN TRAVERSE COMPLETED OCTOBER 26, 2000 BY L. ORVIS AND J. HULETT

** CONTROLS PROVIDED FOR REFERENCE.

ALIGNMENT TIES

POB 100+00.00

N = 88549.1564
E = 47791.0945

PC 101+71.98

N = 88460.7094
E = 47938.5917

PT 103+81.90

N = 88322.6366
E = 48095.1621

POE 104+50.00

N = 88269.0723
E = 48137.2127

DATUM

VERTICAL	NAVD 88
HORIZONTAL	NAD 83(96)
ADJUSTMENT	NONE

ALIGNMENT STAKED BY:

NOTES

1. ALIGNMENT TIES TO BE PROVIDED BY VTRANS.

STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of WARREN	Bridge No. 7
Highway No. TH 1	Log Sta. / Surv. Sta.
BROOK ROAD OVER FREEMAN BROOK	
TIE SHEET	
Designed By VTRANS	Drawn By R. BULLOCK / S. DELIA
Checked By R. JOY Date 02/07	Bridge Design Supervisor R. ROONEY Date 02/07
PROJECT WARREN	PROJECT NO. BHF 0188(7)
I.G.C. Info. m\V549107-Warren\BRIDGE\Final\z1276tie.dgn	
Bridge Sheet No.	Sheet 4 of 36

McFarland-Johnson, Inc.

RELOCATE OVERHEAD AERIAL ELECTRIC & TELEPHONE LINES (TEMPORARY)

(A1) SET TEMPORARY POLE AT STA. 101+71, 33' LT OF CENTERLINE.

(A2) RELOCATE LINE FROM POLE AT STA. 100+85 LT. TO POLE AT STA. 103+27 RT.

(A3) RELOCATE LINE THAT CROSSES BROOK ROAD FROM POLE AT STA. 101+71 LT. TO POLE AT STA. 103+27 LT.

EXISTING STRUCTURE

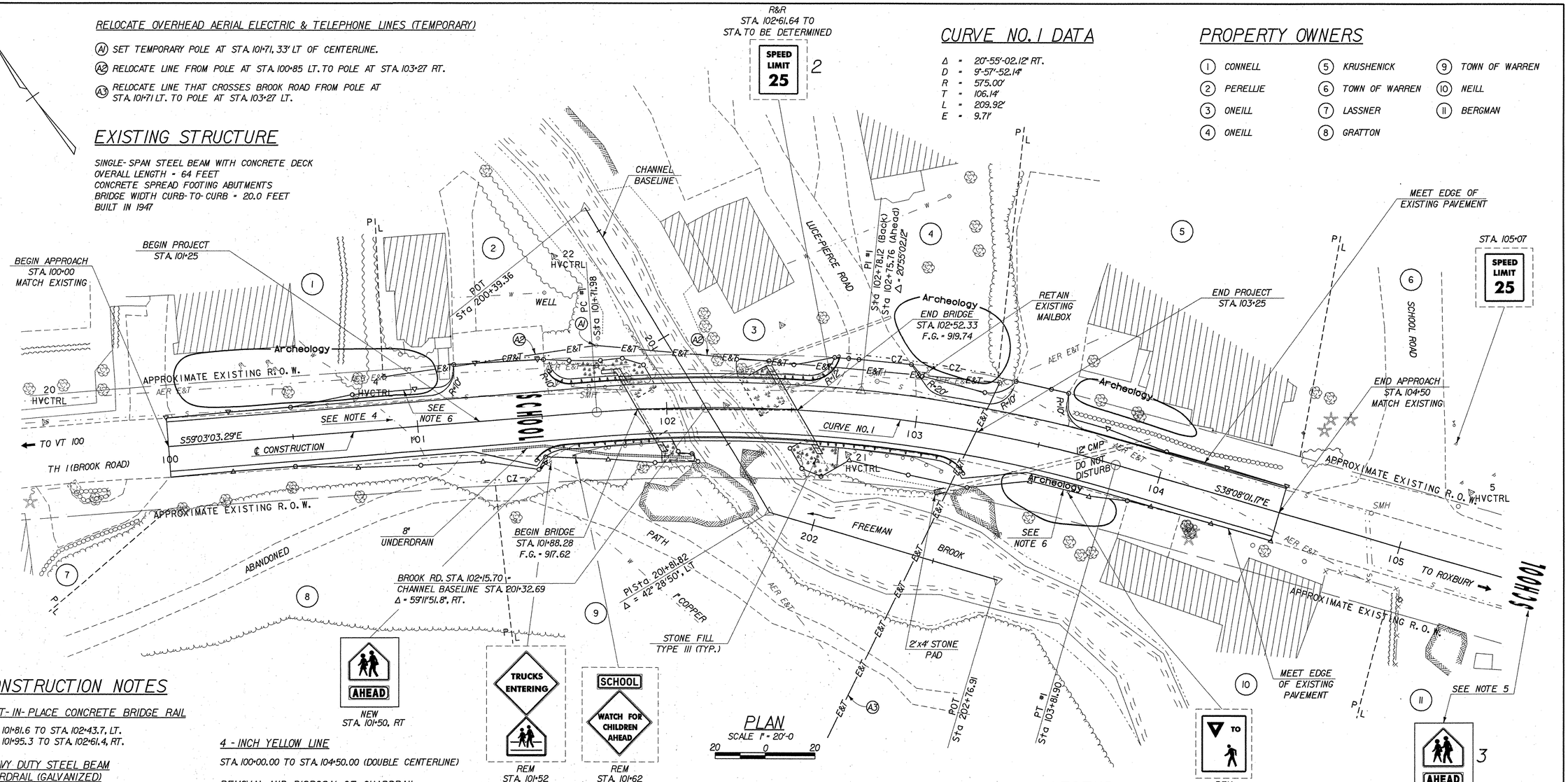
SINGLE-SPAN STEEL BEAM WITH CONCRETE DECK
OVERALL LENGTH = 64 FEET
CONCRETE SPREAD FOOTING ABUTMENTS
BRIDGE WIDTH CURB-TO-CURB = 20.0 FEET
BUILT IN 1947

CURVE NO. 1 DATA

Δ = 20°-55'-02.12" RT.
D = 9°-57'-52.14"
R = 575.00'
T = 106.14'
L = 209.92'
E = 9.71'

PROPERTY OWNERS

1. CONNELL
2. PERELLIE
3. ONEILL
4. ONEILL
5. KRUSHENICK
6. TOWN OF WARREN
7. LASSNER
8. GRATTON
9. TOWN OF WARREN
10. NEILL
11. BERGMAN



PLAN

SCALE 1" = 20'-0
20 0 20

CONSTRUCTION NOTES

CAST-IN-PLACE CONCRETE BRIDGE RAIL

STA. 101+81.6 TO STA. 102+43.7, LT.
STA. 101+95.3 TO STA. 102+61.4, RT.

HEAVY DUTY STEEL BEAM GUARDRAIL (GALVANIZED)

STA. 101+54.0, 17' LT. TO STA. 101+83.2, 12' LT.
STA. 102+43.5, 12' LT. TO STA. 102+67.5, 22' LT.
STA. 101+46.4, 17' RT. TO STA. 101+95.6, 12' RT.
STA. 102+59.6, 12' RT. TO STA. 103+22.2, 17' RT.

ANCHOR FOR STEEL BEAM RAIL

STA. 101+61, LT.
STA. 102+64, LT.
STA. 101+54, RT.
STA. 103+17, RT.

CONSTRUCT PAVED DRIVE

STA. 101+34, LT.
STA. 102+82, LT.
STA. 103+46, LT.

LETTER OR SYMBOL

STA. 101+50, (SCHOOL)
STA. TBD, (SCHOOL, (SEE NOTE 5)

4-INCH YELLOW LINE

STA. 100+00.00 TO STA. 104+50.00 (DOUBLE CENTERLINE)

REMOVAL AND DISPOSAL OF GUARDRAIL

STA. 101+62 TO STA. 101+84 LT.
STA. 101+61 TO STA. 101+95 RT.
STA. 102+47 TO STA. 102+66 LT.
STA. 102+62 TO STA. 103+14 RT.

COLD PLANING BITUMINOUS PAVEMENT

STA. 100+00.00 TO STA. 100+50.00.
STA. 104+00.00 TO STA. 104+50.00

STONE FILL, TYPE III

STA. 101+62.6 LT. TO STA. 201+15.3 RT.
STA. 101+97.4 RT. TO STA. 201+32.7 RT.
STA. 201+30.6 LT. TO STA. 201+46.9 LT.
STA. 201+64.2 LT. TO STA. 102+70.0 RT.

8-INCH UNDERDRAIN

STA. 101+25 TO STA. 102+10, RT.

UNDERDRAIN FLUSHING BASIN

STA. 101+25, RT.

CHANGING ELEVATION OF SEWER MANHOLES

STA. 101+69.60, LT.
STA. 102+82.82, LT.

NOTES

1. THE PROPERTY LINES (P/L) SHOWN ARE APPROXIMATE.
2. ALL TREES WITHIN THE R.O.W. BETWEEN STA. 101+50 LT. TO STA. 102+70 LT. SHALL BE REMOVED. COST SHALL BE INCLUDED IN ITEM 201.10.
3. THE EXISTING SEWER LINE SHALL BE RETAINED.
4. THE LOCATION OF EXISTING WATER LINE WAS BASED ON LIMITED INFORMATION OBTAINED FROM THE TOWN. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DETERMINING THE EXACT LOCATION AND DEPTH OF THE WATER LINE PRIOR TO CONSTRUCTION AND INSURE THAT IT IS NOT DAMAGED DURING CONSTRUCTION. COST SHALL BE INCLUDED IN ITEM 204.20.
5. THE CONTRACTOR SHALL PLACE A "SCHOOL AHEAD" SIGN ASSEMBLY AND ASSOCIATED "SCHOOL" PAVEMENT MARKINGS BETWEEN 150 FEET AND 700 FEET BEYOND STA. 105+00, LT., AS DIRECTED BY THE RESIDENT ENGINEER.
6. WORK WITHIN ARCHEOLOGY AREAS SHALL CONSIST OF A BOX CUT AT THE EDGE OF NEW PAVEMENT. MINOR REGRADING AND TOPSOIL PLACEMENT. NO ADDITIONAL DISTURBANCE OF THESE AREAS SHALL BE PERMITTED. SEE ROADWAY CROSS SECTIONS.

LEGEND

	EXISTING SIGN	REM — REMOVE EXISTING SIGNS & POST'S (SALVAGE TO TOWN)
	NEW SIGN	R&R — REMOVE AND RESET SALVAGED SIGNS
		SMH — SEWER MANHOLE
		—E&T— TEMPORARY ELECTRIC & TELEPHONE
		— CZ — CLEAR ZONE
		AER E&T — EXISTING OVERHEAD ELECTRIC & TELEPHONE
		—W— EXISTING WATER LINE
		—S— EXISTING SEWER LINE

McFarland-Johnson, Inc.

STATE OF VERMONT
AGENCY OF TRANSPORTATION

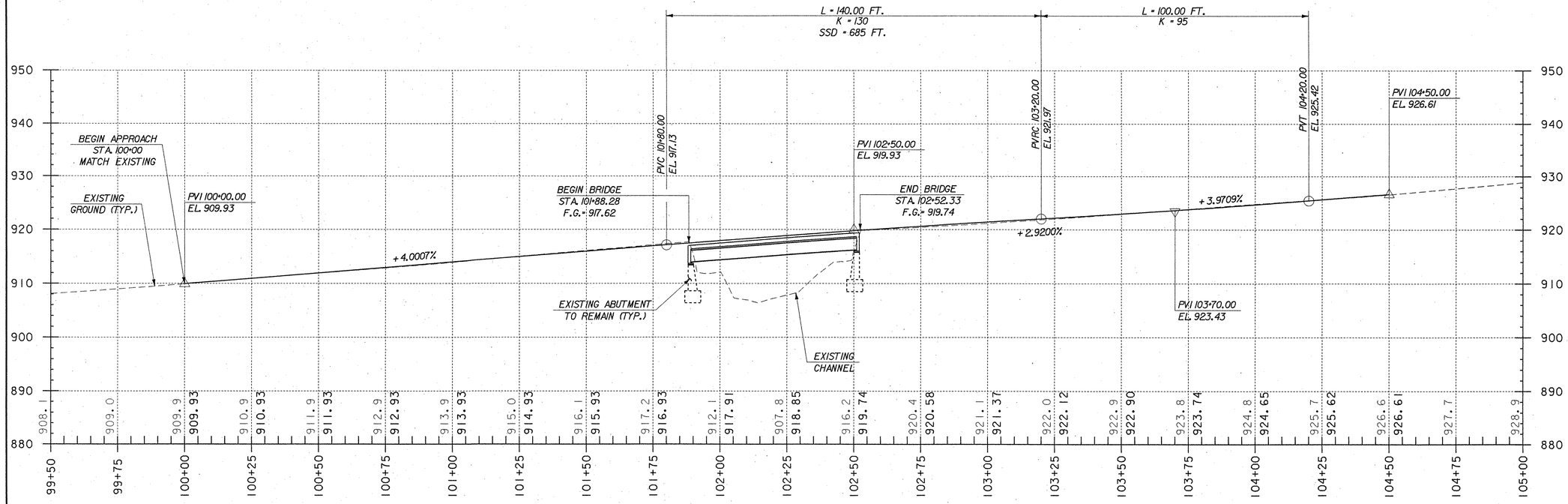
Town Of WARREN	Bridge No. 7
Highway No. TH 1	Log Sta.
	Surv. Sta.

BROOK ROAD OVER FREEMAN BROOK

PLAN SHEET

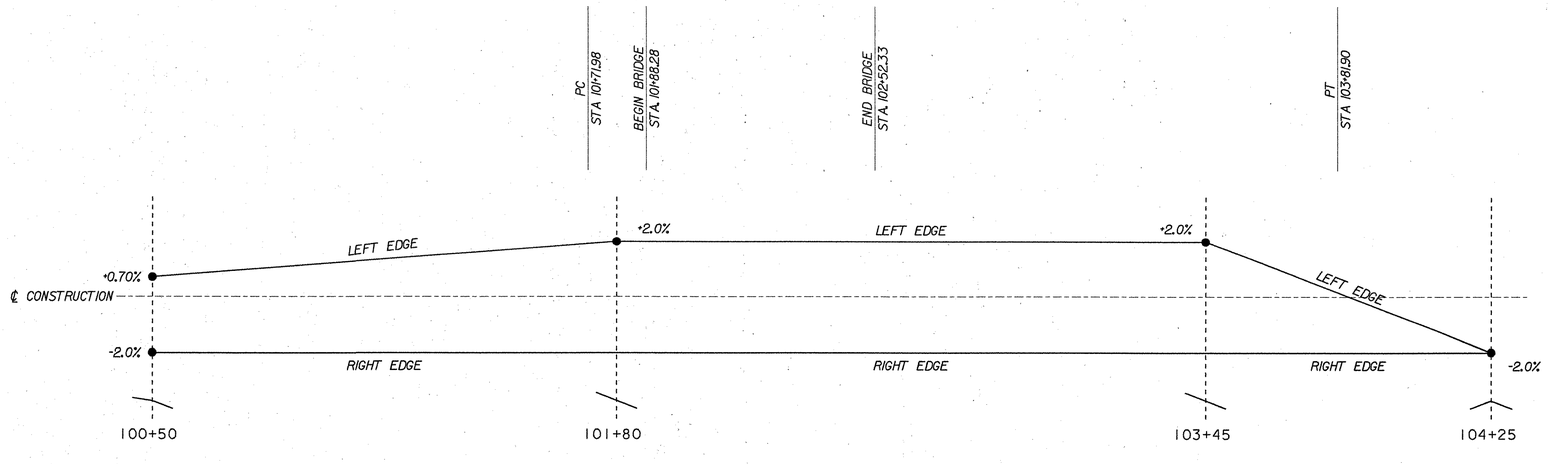
Designed By L.WIXSON / S.DELIA	Drawn By S.MERKWAN
Checked By R.JOY Date 02/07	Bridge Design Supervisor R.ROONEY Date 02/07
PROJECT WARREN	PROJECT NO. BHF 0188(7)
I.G.C. Info. m\549107-Warren\BRIDGE\Final\z1276pln.dgn	
Bridge Sheet No.	Sheet 5 of 36

PLOTTED 19-FEB-2007

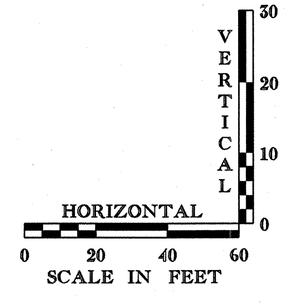


PROFILE - BROOK ROAD

NOTE: GRADES SHOWN TO NEAREST TENTH REPRESENT EXISTING GROUND ELEVATION ALONG THE CENTERLINE CONSTRUCTION. GRADES SHOWN TO NEAREST HUNDRETH REPRESENT FINISH GRADE ELEVATION ALONG THE CENTERLINE CONSTRUCTION.



BANKING DIAGRAM



STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of WARREN	Bridge No. 7
Highway No. TH 1	Log Sta. / Surv. Sta.
BROOK ROAD OVER FREEMAN BROOK	
PROFILE & BANKING DIAGRAM	
Designed By L. WIXSON	Drawn By S. MERKWAN
Checked By R. JOY Date 02/07	Bridge Design Supervisor R. ROONEY Date 02/07
PROJECT WARREN	PROJECT NO. BHF 0188(7)
I.G.C. Info. m:\549107-Warren\BRIDGE\Final\zf276prodgn	
Bridge Sheet No.	Sheet 6 of 36

McFarland-Johnson, Inc.

PLOTTED 19-FEB-2007

PROJECT DESCRIPTION

THIS PROJECT INVOLVES THE RECONSTRUCTION OF A BRIDGE OVER THE FREEMAN BROOK. THE PROJECT IS ON TOWN HIGHWAY 1, BROOK ROAD, WHICH IS A PAVED ROAD IN THE TOWN OF WARREN. THE EXISTING SUPERSTRUCTURE WILL BE REMOVED AND THE EXISTING ABUTMENTS WILL BE EXTENDED. A NEW SUPERSTRUCTURE WILL BE CONSTRUCTED ON THE MODIFIED ABUTMENTS. THE BRIDGE WILL BE CONSTRUCTED IN STAGES, AND ONE LANE OF TRAFFIC WILL BE MAINTAINED. TOTAL ROADWAY WORK, INCLUDING BOTH APPROACHES, IS APPROXIMATELY 450 FEET. NATURAL RESOURCES WITHIN THE PROJECT AREA HAVE BEEN CLEARLY IDENTIFIED AND SHOWN ON THE EXISTING CONDITIONS SITE PLAN SHEET.

IT IS ANTICIPATED THAT THIS PROJECT WILL BE COMPLETED IN ONE CONSTRUCTION SEASON WITH NO WORK BEING DONE OUTSIDE THE PLANTING SEASON.

TOTAL DISTURBED AREA (EXCLUDING OFF-SITE WASTE, BORROW, AND STAGING AREAS): 0.65 ACRES. SHOULD THIS CHANGE AND RESULT IN ONE OR MORE ACRES OF EARTH DISTURBANCE, OR SHOULD THE PROJECT BECOME PART OF A COMMON PLAN OF DEVELOPMENT, THEN THE CONTRACTOR WILL BE RESPONSIBLE FOR ADDITIONAL PERMITTING WITH THE AGENCY OF NATURAL RESOURCES.

SITE INVENTORY & ANALYSIS

OFF SITE DRAINAGE CHARACTERISTICS:

THE PROPERTY SURROUNDING THE PROJECT SITE CONSISTS OF RESIDENTIAL PROPERTY EXCEPT FOR A PORTION OF WOODS LOCATED TO THE SOUTHWEST. THE RESIDENTIAL AREAS ARE GENERALLY FLAT WHILE THE WOODED AREA SLOPES DOWN TO THE BROOK. THERE ARE SCATTERED SMALL TREES LOCATED ON THE RESIDENTIAL PROPERTIES. ADJACENT TO THE BROOK ARE MEDIUM SIZE TREES LOCATED ALONG THE BANKS OF THE BROOK.

DRAINAGE,WATERWAYS,BODIES OF WATER:

THE FREEMAN BROOK IS LOCATED IN THE PROJECT AREA. THE FREEMAN BROOK IS A RURAL MEANDERING WATERWAY THAT FLOWS IN AN OVERALL EAST TO WEST DIRECTION FROM ITS HEADWATERS AT THE WARREN-ROXBURY TOWN LINE TO ITS OUTLET AT THE MAD RIVER IN WARREN, APPROXIMATELY 0.3 MILES DOWNSTREAM FROM THE BRIDGE SITE. THE FREEMAN BROOK IS A SMALL, SINUOUS, RURAL STREAM WITH PERENNIAL, FLASHY FLOW. THE BED MATERIAL CONSISTS OF GRAVEL, COBBLES, BOULDERS AND LEDGE. THE VALLEY SETTING PROVIDES MODERATE RELIEF WITH LITTLE OR NO NATURAL LEVEES AND FLOOD PLAINS. THE STREAM IS PROBABLY INCISED AND HAS NON-ALLUVIAL CHANNEL BOUNDARIES. TREES GENERALLY COVER 50 TO 90 PERCENT OF THE BANK, AND THE STREAM IS NOT BRAIDED OR ANABRANCHED WITHIN IMMEDIATE REACHES. THE CONTRIBUTING DRAINAGE REACH AT THE BRIDGE CROSSING IS 6.3 SQUARE MILES. NO WETLANDS OCCUR WITHIN THE PROJECT LIMITS. HOWEVER, SMALL FRINGES OF WETLAND VEGETATION THAT OCCUR ALONG THE BROOK ARE BELOW THE OHW LINE AND THEREFORE ARE CONSIDERED PART OF THE WATER BODY. THERE ARE NO OTHER PRIMARY WATER BODIES OR WETLANDS WITHIN THE PROJECT AREA. ARCHAEOLOGICAL AND HISTORICAL AREAS ARE LOCATED WITHIN THE AREA AND ARE SHOWN ON THE EXISTING CONDITIONS SITE PLAN.

TOPOGRAPHY,EXISTING ROADS,BUILDINGS,UTILITIES:

THE TOPOGRAPHY OF THE RESIDENTIAL PROPERTIES IS GENERALLY FLAT WITH THE GROUND SLOPING STEEPLY ADJACENT TO THE BROOK. THE WOODED AREA SLOPES STEEPLY DOWN TO THE BROOK AS WELL. T.H. 1 IS A CLASS 2 TOWN HIGHWAY WITH A PAVED SURFACE. THERE ARE RESIDENTIAL HOMES LOCATED ADJACENT TO THE PROJECT AREA WHICH CAN BE SEEN ON THE EXISTING CONDITIONS PLAN. AN OVERHEAD UTILITY LINE EXISTS ALONG THE DOWNSTREAM SIDE OF THE BRIDGE. AN EXISTING SEWER LINE THAT RUNS UNDER THE CURRENT BRIDGE WILL BE RETAINED.

VEGETATION:

THE VEGETATION ALONG T.H. 1 IS A MIX OF GRASS AND SMALL TREES. THE MAJORITY OF VEGETATION ON THE RESIDENTIAL PROPERTIES IS GRASS WITH THE TREES BEING LOCATED CLOSE TO THE BROOK AND ALONG THE HILLSIDE LOCATED TO THE SOUTHWEST.

FOLLOWING CONSTRUCTION OF THE NEW BRIDGE, ANY DISTURBED CHANNEL SLOPES WILL BE STABILIZED WITH STONE FILL. ANY DISTURBED AREAS ADJACENT TO THE ROADWAY WILL BE REESTABLISHED USING STANDARD SEED AND MULCH PRACTICES. STEEP SLOPES SURROUNDING THE PROPOSED WINGWALLS WILL BE STABILIZED USING STONE FILL.

SOILS:

THE SOILS IN THE AREA CONSIST OF A STETSON LOAM. THIS TYPE OF SOIL IS CONSIDERED TO HAVE LOW ERODABILITY POTENTIAL.

SENSITIVE RESOURCE AREAS:

HISTORICAL AND ARCHEOLOGICAL AREAS ARE LOCATED ADJACENT TO THE PROJECT AREA. EACH OF THESE AREAS IS CLEARLY MARKED ON THE PLANS. TEMPORARY EROSION CONTROL MEASURES WILL BE USED TO ENSURE THAT CONSTRUCTION ACTIVITIES WILL NOT ADVERSELY AFFECT ANY SENSITIVE RESOURCE AREAS.

THERE HAVE BEEN NO THREATENED AND ENDANGERED SPECIES IDENTIFIED WITHIN THE PROJECT LIMITS.

PROXIMITY TO NATURAL OR MAN-MADE WATER FEATURES:

THE DISTURBANCE OF SOIL WILL BE NECESSARY TO CONSTRUCT THE NEW FOOTING EXTENSIONS AND WINGWALLS ADJACENT TO THE EXISTING ABUTMENT. THE DISTURBED AREAS WILL BE STABILIZED WITH STONE FILL ONCE THE CONSTRUCTION IS COMPLETE.

TEMPORARY EROSION PREVENTION & SEDIMENT CONTROL

TEMPORARY EROSION PREVENTION MEASURES TO BE UTILIZED INCLUDE:

PROJECT DEMARCATION FENCING (PDF), DENOTED -X-X-X ON THE PLANS, TO DELINEATE THE LIMITS THE CONTRACTOR CAN ACCESS WITH CONSTRUCTION EQUIPMENT. THIS MEASURE LIMITS THE AREA THAT CAN BE DISTURBED AND EXPOSED TO EROSION. PDF MAY BE LOCATED IN CLOSE PROXIMITY TO THE LIMITS OF THE PROPOSED TOE OF SLOPES IN ORDER TO KEEP ALL WORK WITHIN THE EXISTING RIGHT-OF-WAY LIMITS.

MULCHING WILL BE UTILIZED ON A REGULAR BASIS. ANY SLOPES TO BE EXPOSED FOR SEVERAL DAYS PRIOR TO FINAL GRADING SHALL BE MULCHED. SLOPES SHALL BE STABILIZED WITHIN 48 HOURS PRIOR TO FORECASTED RAIN.

SEEDING AND MULCHING SHALL BE USED TO STABILIZE SLOPES FLATTER THAN 1:3. THESE SLOPES SHALL BE STABILIZED WITHIN 48 HOURS OF REACHING FINAL GRADE OR DURING INTERMITTENT PHASES OF CONSTRUCTION.

SILT FENCE WILL BE INSTALLED AT THE TOE OF FILL SLOPES TO PREVENT SEDIMENT TRANSPORT TO DOWN GRADIENT AREAS. EACH LINE OF SILT FENCE WILL BE PLACED ALONG THE CONTOUR WITH THE LOWER EDGE BURIED 6" TO PREVENT UNDERFLOW AND ENDS TURNED SLIGHTLY UP GRADE TO CREATE A PONDING EFFECT. SILT FENCE SHALL BE INSTALLED PRIOR TO ANY UPSLOPE EARTHWORK.

ROCK CHECK DAMS WILL BE INSTALLED IN DITCH LINES TO FORCE STORMWATER TO POND AND LIMIT SEDIMENT TRANSPORT. ROCK CHECK DAMS WILL BE PLACED AS SHOWN ON THE EROSION CONTROL PLAN AND PER THE DETAIL SHOWN IN THE PLANS.

AT LOCATIONS WHERE CONSTRUCTION VEHICLES WILL BE ENTERING OR LEAVING THE CONSTRUCTION SITE/STAGING AREAS, A STABILIZED CONSTRUCTION ENTRANCE SHALL BE CONSTRUCTED TO LIMIT THE AMOUNT OF SEDIMENT THAT IS TRANSPORTED OFF OF THE SITE BY CONSTRUCTION VEHICLES. STONE WILL BE USED TO REMOVE SEDIMENT FROM THE TIRES OF CONSTRUCTION VEHICLES. IF SEDIMENT IS STILL BEING TRACKED ONTO PUBLIC ROADS, THE LENGTH OF THE PAD SHALL BE EXTENDED OR VEHICLES SHALL BE RINSED WITH A HOSE PRIOR TO LEAVING THE SITE.

TEMPORARY EROSION CONTROL MEASURES SHALL BE REGULARLY INSPECTED AND MAINTAINED FOR SEDIMENT BUILD-UP. SEDIMENT SHALL BE REMOVED WHEN THE LEVEL OF THE SEDIMENT REACHES ONE-HALF THE HEIGHT OF THE CONTROL MEASURE. SEDIMENT SHALL BE DISPOSED OF AT AN APPROVED SITE SUCH THAT IT WILL NOT BE SUBJECT TO EROSION.

THE CONTRACTOR SHALL DELINEATE HIS/HER PROPOSED STAGING AREA AND SUBMIT TO THE RESIDENT ENGINEER FOR APPROVAL AT THE PRECONSTRUCTION CONFERENCE. ALL STAGING AREAS SHALL BE SURROUNDED BY SILT FENCE AND PDF.

PERMANENT EROSION CONTROL MEASURES

PERMANENT EROSION CONTROL MEASURES TO BE UTILIZED INCLUDE:

ALL DISTURBED SOIL WILL BE STABILIZED WITH SEED AND MULCH IN AREAS FLATTER THAN 1:3. AREAS STEEPER THAN 1:3 WILL BE STABILIZED WITH STONE FILL, TYPE III.

GENERAL EROSION & SEDIMENT CONTROL GUIDELINES

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

COORDINATE THE INSTALLATION, USE, AND REMOVAL OF EROSION AND SEDIMENT CONTROL MEASURES WITH CONSTRUCTION ACTIVITIES TO ENSURE ECONOMICAL, EFFECTIVE, AND CONTINUOUS EROSION AND SEDIMENT CONTROL. EMPLOY TEMPORARY STABILIZATION PRACTICES IN INCREMENTAL STAGES AS CONSTRUCTION PROCEEDS. THE CONTRACTOR SHALL USE ADDITIONAL EROSION CONTROL MEASURES AS NECESSITATED BY THE SEQUENCE OF CONSTRUCTION AND AS DIRECTED BY THE ENGINEER OR ONSITE COORDINATOR. SEE SUBSECTION 105.23 OF THE VERMONT AOT STANDARD SPECIFICATIONS FOR CONSTRUCTION, DATED 2001.

IF ANY EARTHWORK IS TO BE PERFORMED OUTSIDE THE CONSTRUCTION SEASON DELINEATED IN THE SPECIFICATION, A WINTER EROSION AND SEDIMENT CONTROL PLAN DESCRIBING ALTERNATIVE STABILIZATION METHODS SHALL BE SUBMITTED TO THE RESIDENT ENGINEER PRIOR TO AUGUST 15 FOR APPROVAL.

THE CONTRACTOR SHALL STOCKPILE MATERIAL WITHIN THE STAGING AREA ONLY. STOCKPILES SHALL BE STABILIZED WITHIN 48 HOURS PRIOR TO FORECASTED RAIN.

FUELING AND MAINTENANCE OF CONSTRUCTION VEHICLES SHALL BE LIMITED TO THE STAGING AREAS AND SHALL BE DONE BY QUALIFIED PERSONNEL.

INSTALL EROSION AND SEDIMENT CONTROL MEASURES AS SHOWN IN THE EROSION CONTROL PLAN OR AS DIRECTED BY THE ENGINEER OR ONSITE COORDINATOR. DO NOT MODIFY THE TYPE, SIZE, OR LOCATION OF ANY CONTROL OR PRACTICE WITHOUT APPROVAL OF THE ENGINEER OR ONSITE COORDINATOR. ANY CHANGES SHALL BE NOTED ON THE PLANS, IN THE WEEKLY INSPECTION REPORT, AND REPORTED TO THE APPROPRIATE AUTHORITY IN A TIMELY MANNER. INSPECT ALL CONTROL MEASURES WEEKLY AND AFTER EACH RAINFALL EVENT THAT PRODUCES RUNOFF FROM THE PROJECT SITE. REPAIR MEASURES PROMPTLY ONCE DAMAGE IS DISCOVERED.

PREVENTING INITIAL SOIL EROSION IS MUCH MORE EFFECTIVE THAN TREATING ERODED SEDIMENT. THEREFORE, STABILIZE ALL DISTURBED AREAS PROMPTLY AFTER CONSTRUCTION ACTIVITY HAS TEMPORARILY OR PERMANENTLY CEASED. TEMPORARY VEGETATION SHALL BE ESTABLISHED IF THE AREA IS TO BE WITHOUT CONSTRUCTION ACTIVITY FOR A PERIOD OF 14 DAYS. PERIMETER CONTROL MEASURES SHALL BE INSTALLED PRIOR TO ANY CONSTRUCTION ACTIVITY. INSTALL OTHER TEMPORARY CONTROLS IN INCREMENTAL STAGES AS CONSTRUCTION PROCEEDS.

MAINTAINING VEGETATED BUFFERS ALONG THE STREAM BANKS OR OTHER SENSITIVE AREAS IS A CRUCIAL EROSION AND SEDIMENT CONTROL MEASURE THAT SHOULD BE EMPLOYED WHENEVER POSSIBLE.

CONTROL ONLY SEDIMENT LADEN STORMWATER RUNOFF GENERATED BY THE PROJECT SITE. COLLECT AND ROUTE CLEAN STORMWATER AROUND THE PROJECT SITE WHENEVER POSSIBLE USING DIVERSION BERMS, CHANNELS, CULVERTS, OR TEMPORARY PIPES.

DO NOT ALLOW CONSTRUCTION EQUIPMENT TO OPERATE OUTSIDE OF PERIMETER CONTROL MEASURES.

PLOTTED 05-APR-2007

McFarland-Johnson, Inc.

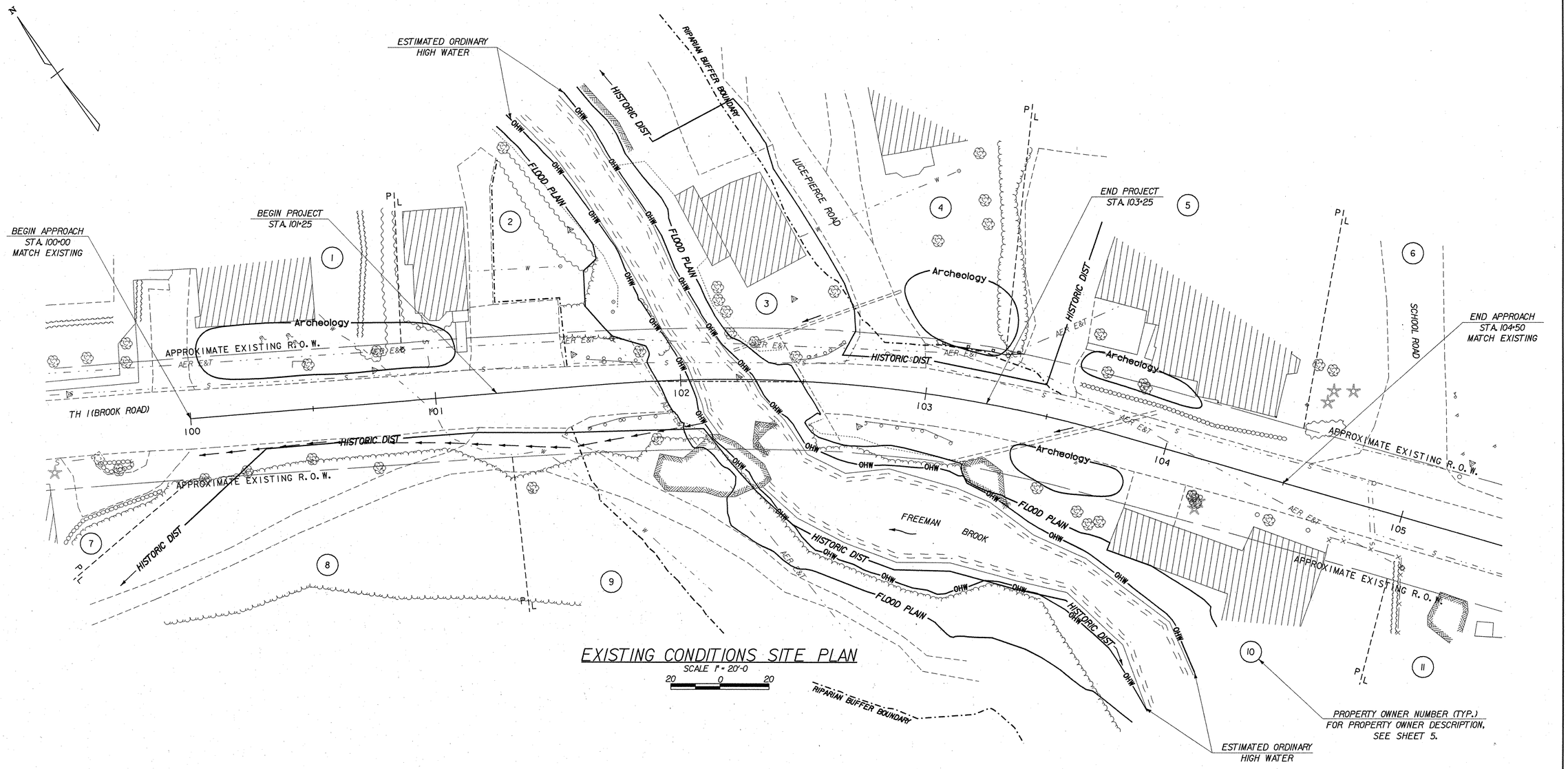
STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of WARREN	Bridge No. 7
Highway No. TH 1	Log Sta. / Surv. Sta.

BROOK ROAD OVER FREEMAN BROOK

EROSION CONTROL NARRATIVE

Designed By B. COLBURN	Drawn By B. COLBURN
Checked By R. JOY Date 02/07	Bridge Design Supervisor R. ROONEY Date 02/07
PROJECT WARREN	PROJECT NO. BHF 0188(7)
I.G.C. Info. mN549107-WarrenNBRIDGEVF1naNz1276er2.dgn	
Bridge Sheet No.	Sheet 7 of 36



EXISTING CONDITIONS SITE PLAN

SCALE 1" = 20'-0

20 0 20

RIPARIAN BUFFER BOUNDARY

ESTIMATED ORDINARY HIGH WATER

LEGEND

—OHW— ORDINARY HIGH WATER

←— —→ EXISTING DRAINAGE

McFarland-Johnson, Inc.

STATE OF VERMONT
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Town Of WARREN	Bridge No. 7
Highway No. TH 1	Log Sta.
	Surv. Sta.

BROOK ROAD OVER FREEMAN BROOK

EXISTING CONDITIONS SITE PLAN

Designed By B. COLBURN	Drawn By B. COLBURN
Checked By R. JOY Date 02/07	Bridge Design Supervisor R. ROONEY Date 02/07
PROJECT WARREN	PROJECT NO. BHF 0188(7)
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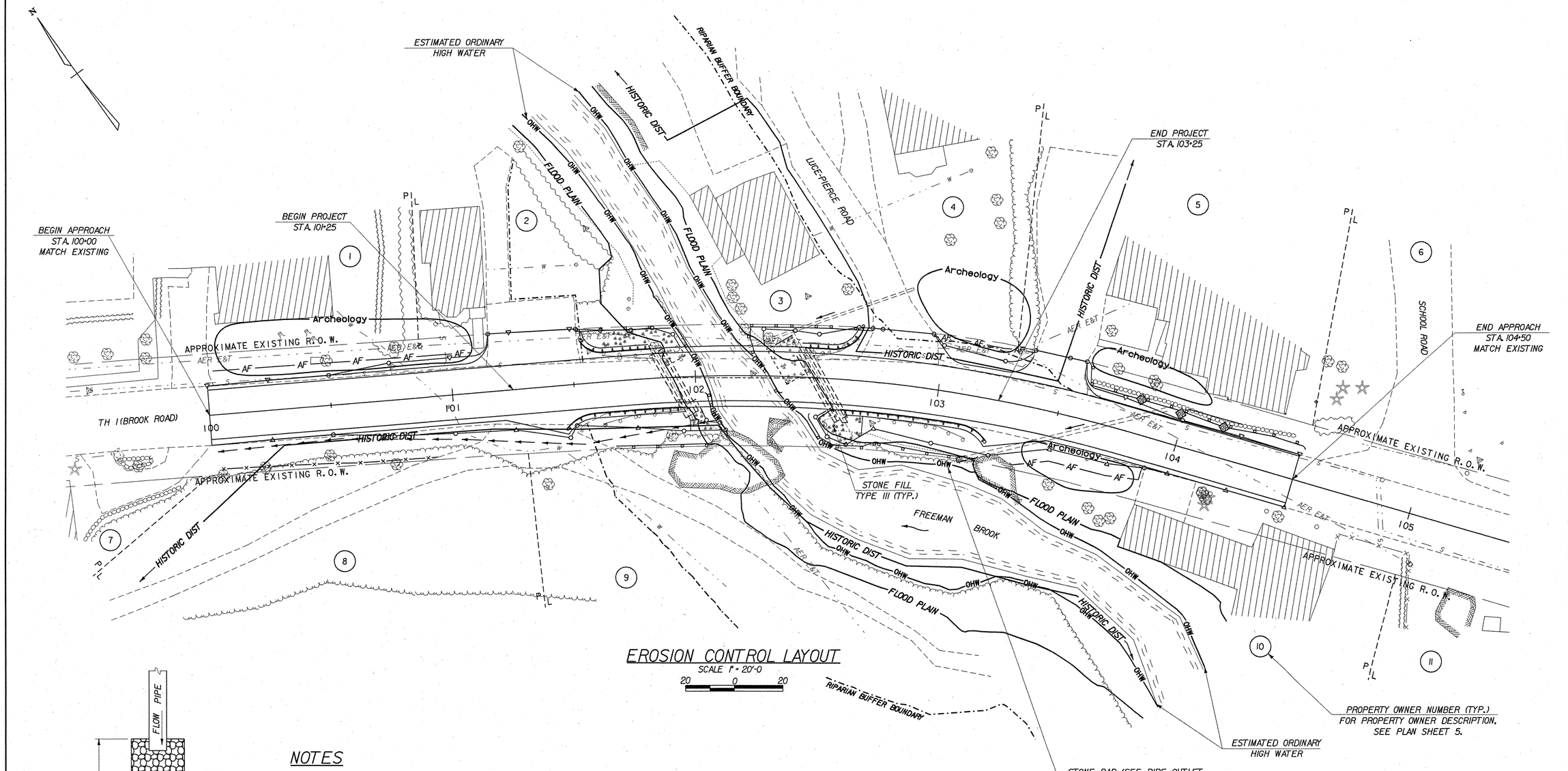
Bridge Sheet No.	Sheet 8 of 36

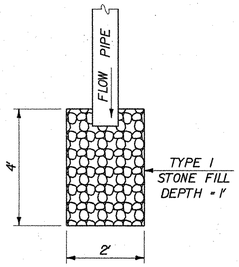
PLOTTED 19-FEB-2007



EROSION CONTROL LAYOUT

SCALE 1" = 20'-0

20 0 20



NOTES

1. ALL PADS TO BE SIZED AS DESCRIBED ABOVE
2. GEOTEXTILE UNDER STONE FILL SHALL BE PLACED UNDER THE STONE PADS.

PIPE OUTLET TREATMENT

NOT TO SCALE

NOTES

1. THE EROSION CONTROL MEASURES SHOWN ON THIS SHEET ARE FOR ILLUSTRATIVE PURPOSES ONLY. THE ACTUAL EROSION CONTROL PLAN SHALL BE BASED ON EXISTING FIELD CONDITIONS AND SUBMITTED BY THE CONTRACTOR TO THE RESIDENT ENGINEER FOR APPROVAL. PAYMENT FOR THE DEVELOPMENT OF THE EROSION CONTROL PLAN SHALL BE INCLUDED IN ITEM 652.10, EROSION PREVENTION AND SEDIMENT CONTROL PLAN.
2. THE CONTRACTOR'S ATTENTION IS DIRECTED TO THE FACT THAT THERE WILL BE AREAS WHERE THE LOCATION OF THE SILT FENCE WILL BE IN CLOSE PROXIMITY TO THE LIMITS OF THE PROPOSED TOES OF SLOPE IN ORDER TO KEEP ALL WORK WITHIN THE EXISTING RIGHT-OF-WAY LIMITS. THE CONTRACTOR SHALL TAKE SPECIAL PRECAUTIONS TO HIGHLIGHT THE LOCATION OF THE SILT FENCE AND TO AVOID DAMAGING IT. SPECIAL DETAILS FOR SILT FENCE MAY BE REQUIRED IN THESE AREAS AND SHALL BE INCLUDED WITH THE SUBMITTAL OF THE EROSION PREVENTION AND SEDIMENT CONTROL PLAN.
3. MONITORING AND MAINTAINING THE EROSION AND SEDIMENT CONTROL PLAN SHALL BE PER ITEM 652.20, MONITORING EROSION PREVENTION AND SEDIMENT CONTROL PLAN AND ITEM 652.30, FIELD MAINTENANCE OF EROSION PREVENTION AND SEDIMENT CONTROL PLAN.
4. PROJECT DEMARCATION FENCING (PDF) AND ARCHEOLOGY FENCING (AF) SHALL BE PLACED TO LIMITS DELINEATED BY THE RESIDENT ENGINEER. PDF AND AF SHALL BE PLACED WITHIN EXISTING RIGHT-OF-WAY.
5. FOR CLARITY, AREAS TO BE SEEDED AND MULCHED HAVE NOT BEEN INDICATED. ALL DISTURBED AREAS SHALL BE SEEDED AND MULCHED AS APPLICABLE
6. STAGING AREAS SHALL BE DEVELOPED BY THE CONTRACTOR, LOCATED WITHIN THE EXISTING RIGHT-OF-WAY ALONG THE EXISTING ROADWAY (OR IN A LOCATION APPROVED BY THE RESIDENT ENGINEER) AND APPROVED BY THE RESIDENT ENGINEER AND THE AGENCY ENVIRONMENTAL SECTION.

LEGEND

- — AF — AF — AF — ARCHEOLOGY FENCING
- x—x—x—x— PDF
- SILT FENCE
- ROCK CHECK DAM
- EXISTING DRAINAGE

McFarland-Johnson, Inc.

STATE OF VERMONT
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BROOK ROAD OVER FREEMAN BROOK

EROSION PREVENTION & SEDIMENT CONTROL

Designed By B. COLBURN	Drawn By B. COLBURN
Checked By R. JOY Date 02/07	Bridge Design Supervisor R. ROONEY Date 02/07
PROJECT WARREN	PROJECT NO. BHF 0188(7)
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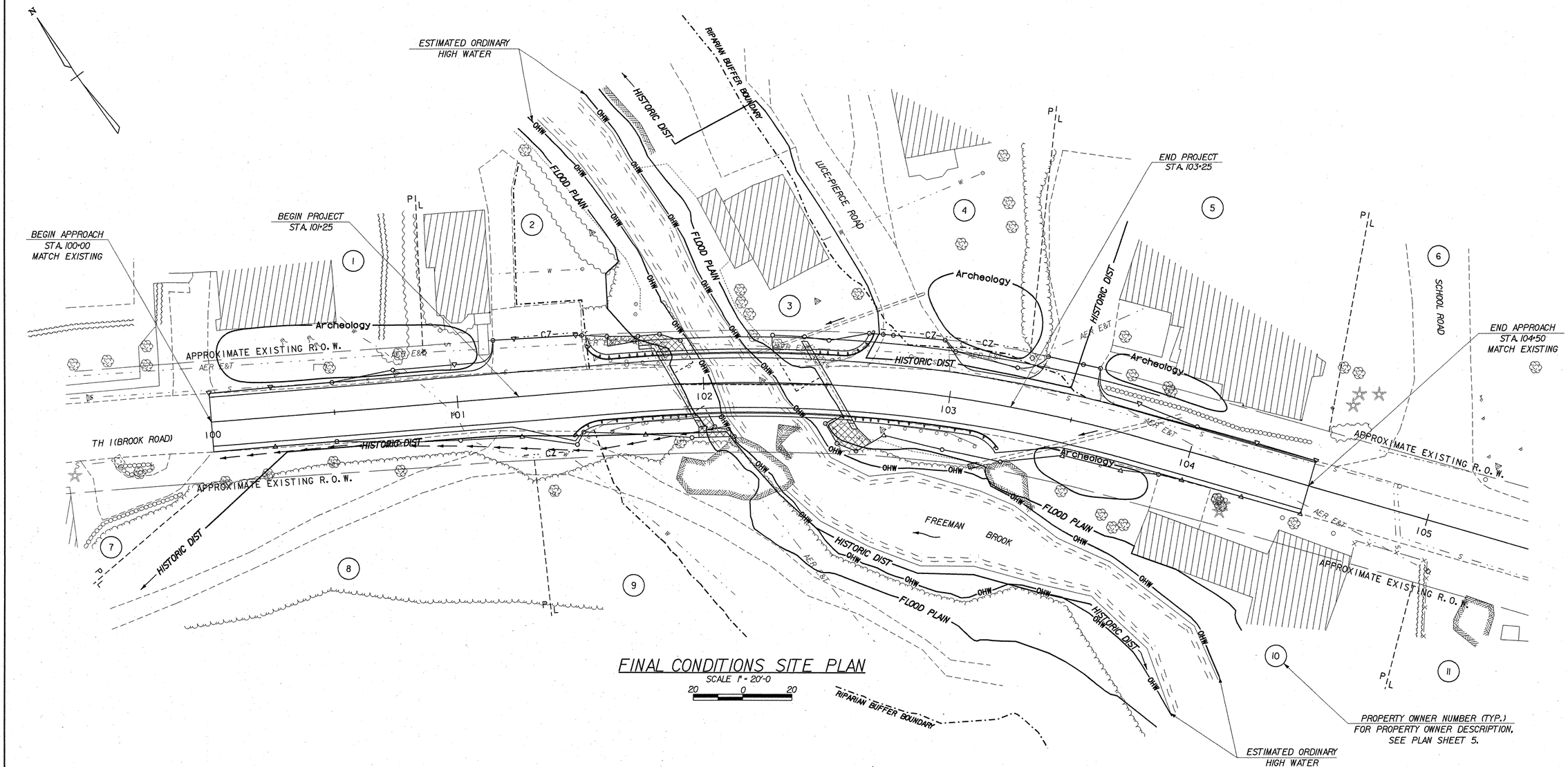

FINAL CONDITIONS SITE PLAN

SCALE 1" = 20'-0

20 0 20

NOTES

1. PROPOSED CONTOURS ARE NOT SHOWN. SEE CROSS SECTIONS AND PLAN SHEET FOR PROPOSED GRADING.

LEGEND

- OHW — ORDINARY HIGH WATER
- PROPOSED DRAINAGE
- LIMITS OF GRUBBING MATERIAL

McFarland-Johnson, Inc.

STATE OF VERMONT
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BROOK ROAD OVER FREEMAN BROOK

FINAL CONDITIONS SITE PLAN

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Checked By R. JOY Date 02/07	Bridge Design Supervisor R. ROONEY Date 02/07
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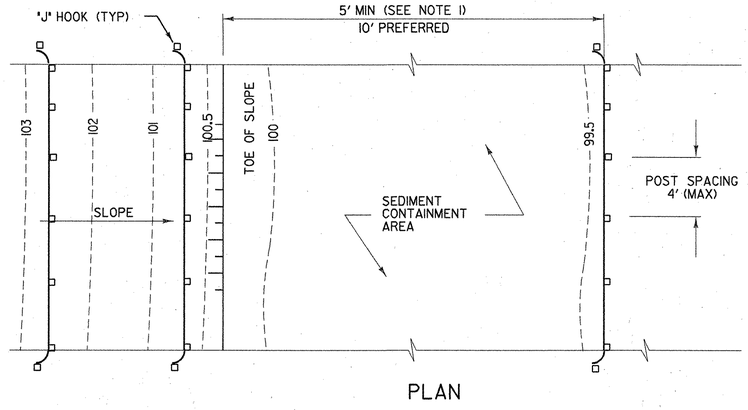
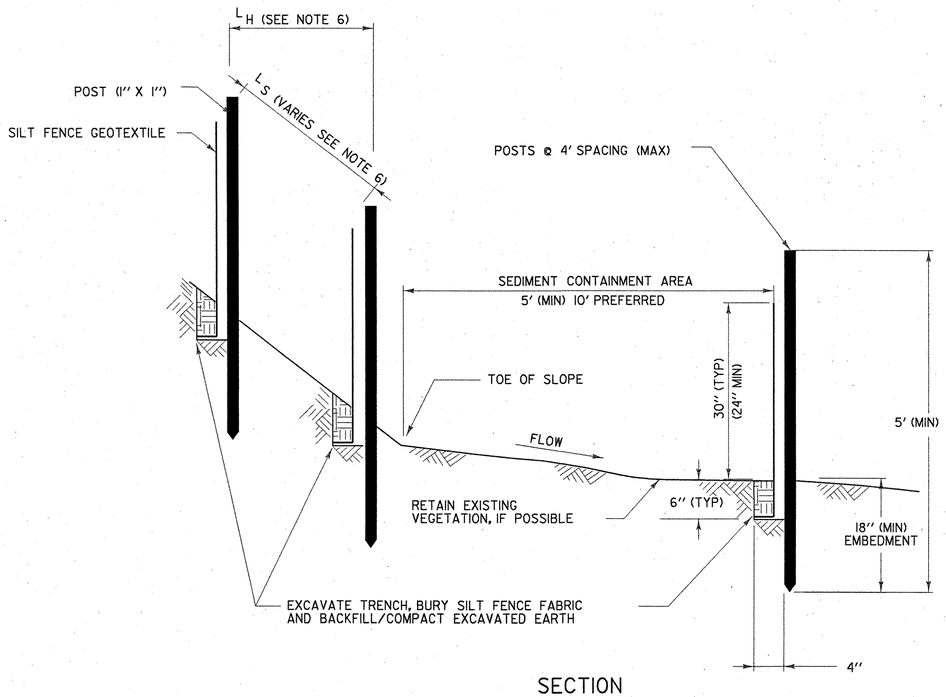


PLAN



SECTION

SILT FENCE - TEMPORARY

SILT FENCE

APPLICATION NOTES:

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

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

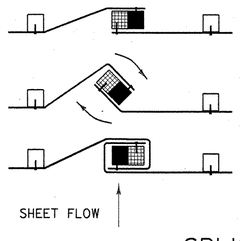
C. SILT FENCE SHALL NOT BE USED ACROSS CONCENTRATED FLOW.

GENERAL NOTES:

1. SILT FENCE SHALL GENERALLY BE PLACED A MINIMUM OF 5 FEET BEYOND TOE OF SLOPE, 10 FEET PREFERRED, TO PROVIDE ADEQUATE AREA FOR SEDIMENT STORAGE AND FACILITATE MAINTENANCE OF SEDIMENT CONTAINMENT AREA.
2. ALL ENDS SHALL BE 'J' HOOKED TO TRAP SEDIMENT.
3. IN AREAS WITH TWO SLOPES, SILT FENCE SHALL BE USED TO ERECT A DAM AND TRAP SEDIMENT AT THE BASE OF THE STEEPER SLOPE.
4. THE BOTTOM EDGE OF SILT FENCE SHALL BE BURIED A MINIMUM OF 6 INCHES BELOW GROUND, AND KEYED IN 4 INCHES. THE FENCE SHALL BE INSTALLED WITH THE POSTS ON THE DOWNSTREAM SIDE OF THE FABRIC.
5. MAXIMUM DRAINAGE AREA TRIBUTARY TO 100 FEET OF SILT FENCE SHALL BE 0.25 ACRES.
6. THE FOLLOWING ARE MAXIMUM SLOPE LENGTHS FOR THESE MEASURES:

CONSTRUCTED SLOPE	SLOPE LENGTH (LS) FT	HORIZONTAL LENGTH (LH) FT
3 : 1	80	75
4 : 1	130	125
5 : 1	200	200
> 5 : 1	250	250

7. MEASURES SHALL BE INSPECTED EVERY SEVEN (7) CALENDAR DAYS AND WITHIN 24 HOURS OF A STORM EVENT GREAT ENOUGH TO CAUSE WATER TO LEAVE THE CONSTRUCTION SITE.
8. MEASURES SHALL BE CLEANED AND REPAIRED AS NEEDED. SEDIMENT SHALL BE REMOVED WHEN ACCUMULATION REACHES ONE-HALF OF THE MEASURE HEIGHT. SEDIMENT SHALL BE DISPOSED OF AS UNSUITABLE MATERIAL.
9. SILT FENCE SHALL BE REMOVED WHEN THE AREA HAS BEEN STABILIZED. AT TIME OF REMOVAL OF THE SILT FENCE, THE DISTURBED AREA SHALL BE REPAIRED AND STABILIZED.
10. PAYMENT FOR INSTALLATION AND REMOVAL OF SILT FENCE SHALL BE MADE UNDER THE GEOTEXTILE FOR SILT FENCE ITEM.
11. PAYMENT FOR MONITORING SILT FENCE SHALL BE MADE UNDER THE MONITORING EROSION & SEDIMENT CONTROL PLAN ITEM.
12. PAYMENT FOR MAINTAINING SILT FENCE SHALL BE MADE UNDER THE FIELD MAINTENANCE OF EROSION & SEDIMENT CONTROL PLAN ITEM, UNLESS MAINTENANCE IS REQUIRED DUE TO POOR INSTALLATION PRACTICES.



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

SPLICING DETAIL

McFarland-Johnson, Inc.

STATE OF VERMONT
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	Log Sta.
Highway No. TH 1	Surv. Sta.
BROOK ROAD OVER FREEMAN BROOK	
EROSION CONTROL DETAILS (1 OF 3)	
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Checked By R. JOY Date 02/07	Bridge Design Supervisor R. ROONEY Date 02/07
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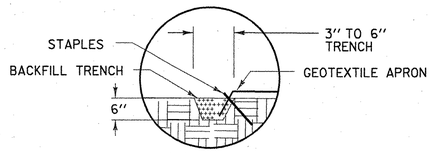
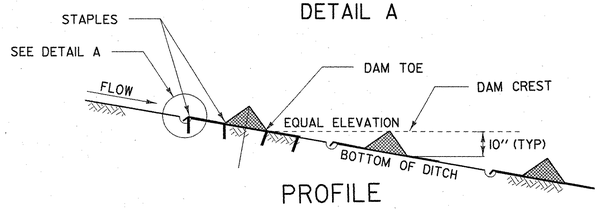
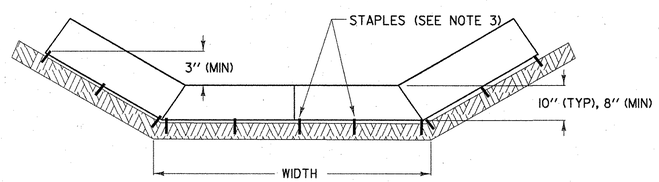
PLOTTED 19-FEB-2007



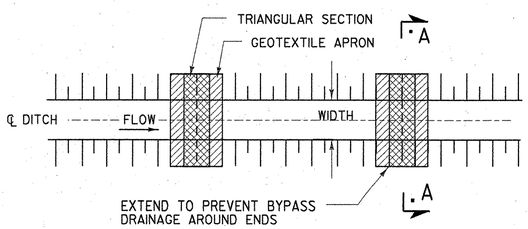
DETAIL A



PROFILE



SECTION A-A

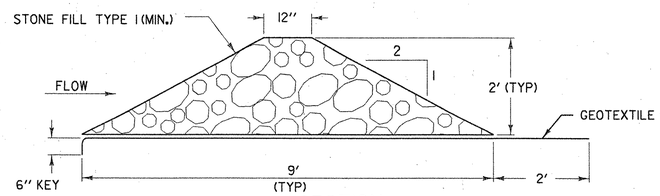


PLAN

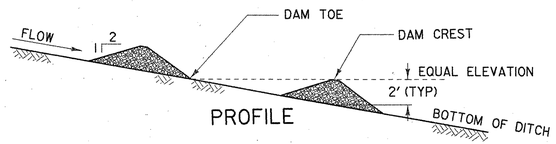
CHECK DAM - TEMPORARY (PREFABRICATED)

PREFABRICATED CHECK DAM PLACEMENT INTERVAL	
DITCH SLOPE	PLACEMENT INTERVAL **
1%	50 FT
2 %	40 FT
3 %	25 FT
4 %	20 FT
5 %	15 FT

** BASED ON 10" TYPICAL HEIGHT



CROSS SECTION



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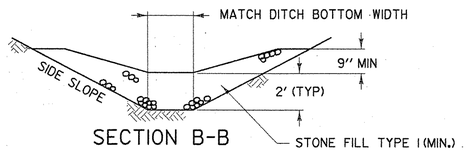
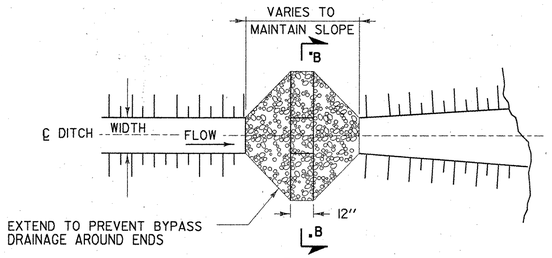


SECTION B-B



PLAN

CHECK DAM - TEMPORARY (STONE)

STONE CHECK DAM PLACEMENT INTERVAL	
DITCH SLOPE	PLACEMENT INTERVAL **
1%	200 FT
2 %	100 FT
3 %	65 FT
4 %	50 FT
5 %	40 FT
6 %	30 FT
8 %	25 FT
10 %	20 FT

** BASED ON 2' TYPICAL HEIGHT

CHECK DAMS

APPLICATION NOTES:

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

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

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

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

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

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

GENERAL NOTES:

1. GEOTEXTILE SHALL BE INSTALLED UNDER STONE FILL. IT SHALL BE KEYED IN ON THE UP HILL END AND SHALL EXTEND 2 FEET BEYOND THE STONE ON THE DOWN HILL END.
2. CORE MATERIAL FOR THE STONE CHECK DAM SHALL MEET THE GRADATION REQUIREMENTS OF STONE FILL TYPE I (MIN.). STONE SIZE SHOULD BE INCREASED WITH INCREASED SLOPE AND VELOCITY.
3. THE UPHILL END OF THE APRON FOR THE PREFABRICATED CHECK DAM SHALL BE STAPLED AND BURIED AS SHOWN IN DETAIL "A" OR AS RECOMMENDED BY THE MANUFACTURERS LITERATURE.
4. MEASURES SHALL BE INSPECTED EVERY SEVEN (7) CALENDAR DAYS AND WITHIN 24 HOURS OF A STORM EVENT GREAT ENOUGH TO CAUSE WATER TO LEAVE THE CONSTRUCTION SITE.
5. MEASURES SHALL BE CLEANED AND REPAIRED AS NEEDED. SEDIMENT SHALL BE REMOVED WHEN ACCUMULATION REACHES ONE-HALF OF THE MEASURE HEIGHT. SEDIMENT SHALL BE DISPOSED OF AS UNSUITABLE MATERIAL.
6. AT TIME OF REMOVAL OF THE CHECK DAMS, THE DISTURBED AREA SHALL BE REPAIRED AND STABILIZED.
7. PAYMENT FOR INSTALLATION AND REMOVAL OF CHECK DAMS SHALL BE MADE UNDER APPLICABLE ITEMS INCLUDED IN THE CONTRACT PLANS OR UNDER THE FIELD MAINTENANCE OF EROSION & SEDIMENT CONTROL PLAN ITEM.
8. PAYMENT FOR MONITORING CHECK DAMS SHALL BE MADE UNDER THE MONITORING EROSION & SEDIMENT CONTROL PLAN ITEM.
9. PAYMENT FOR MAINTAINING CHECK DAMS SHALL BE MADE UNDER THE FIELD MAINTENANCE OF EROSION & SEDIMENT CONTROL PLAN ITEM, UNLESS MAINTENANCE IS REQUIRED DUE TO POOR INSTALLATION PRACTICES.

PLOTTED 19-FEB-2007

STATE OF VERMONT
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BROOK ROAD OVER FREEMAN BROOK	
EROSION CONTROL DETAILS (2 OF 3)	
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Checked By R. JOY Date 02/07	Bridge Design Supervisor R. ROONEY Date 02/07
PROJECT WARREN	PROJECT NO. BHF 0188(7)
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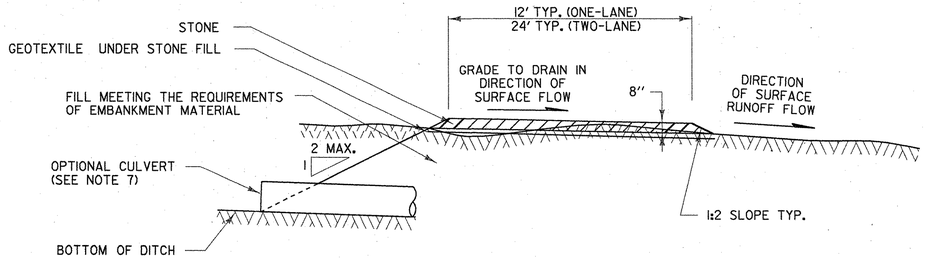
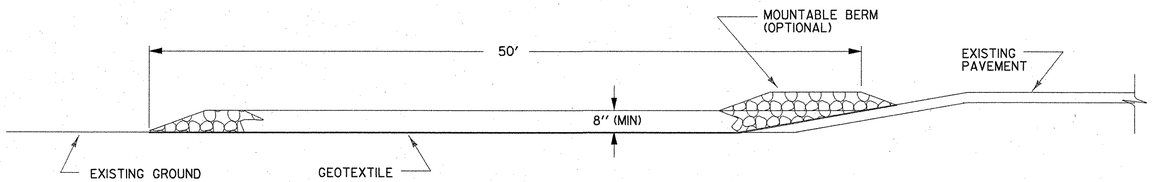
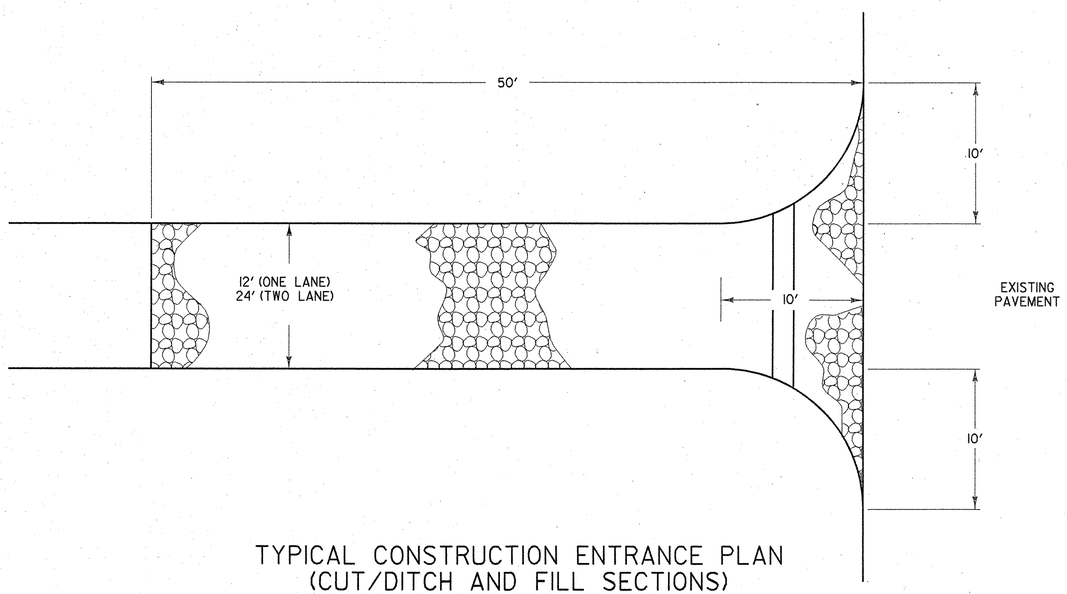


TYPICAL CONSTRUCTION ENTRANCE SECTION



TYPICAL CONSTRUCTION ENTRANCE PROFILE (CUT AND DITCH SECTIONS)



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

STABILIZED CONSTRUCTION ENTRANCE

APPLICATION NOTES:

A. THE PURPOSE OF A STABILIZED CONSTRUCTION ENTRANCE IS TO REDUCE OR ELIMINATE THE TRACKING OF SEDIMENT ONTO PUBLIC RIGHTS OF WAY OR STREETS.

GENERAL NOTES:

1. STONE SIZE - USE CLEAN STONE WITH GRADATION BETWEEN 2 INCHES AND 4 INCHES .
2. LENGTH - 50 FEET (MIN)
3. THICKNESS - 18 INCHES (MIN)
4. WIDTH - 12 FEET (MIN)
5. GEOTEXTILE UNDER STONE WILL BE PLACED OVER THE ENTIRE AREA PRIOR TO PLACING OF STONE.
6. SURFACE WATER - ALL SURFACE WATER FLOWING OR DIVERTED TOWARD CONSTRUCTION ENTRANCES SHALL BE PIPED ACROSS THE ENTRANCE AS DIRECTED BY THE ENGINEER. IF PIPING IS IMPRACTICAL, A MOUNTABLE BERM WITH 5:1 SLOPES WILL BE PERMITTED.
7. PROPOSED DRAINAGE PIPES SHALL BE SIZED WITH SUFFICIENT CAPACITY TO CARRY DITCH FLOWS. ALTERNATIVE WAYS OF TRANSPORTING DITCH DRAINAGE ACROSS CONSTRUCTION ENTRANCES MAY BE PROPOSED BY THE CONTRACTOR FOR APPROVAL BY THE ENGINEER.
8. WHEN WASHING OF VEHICLE IS NECESSARY, IT SHALL BE DONE ON AN AREA STABILIZED WITH STONE WHICH DRAINS INTO AN APPROVED SEDIMENT TRAPPING DEVICE.
9. MEASURES SHALL BE INSPECTED EVERY SEVEN (7) CALENDAR DAYS AND WITHIN 24 HOURS OF A STORM EVENT GREAT ENOUGH TO CAUSE WATER TO LEAVE THE CONSTRUCTION SITE.
10. MAINTENANCE- THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY. ALL SEDIMENT SPILLED, DROPPED, WASHED, OR TRACKED ONTO PUBLIC RIGHTS-OF-WAY MUST BE REMOVED IMMEDIATELY.
11. AT THE TIME OF REMOVAL OF THE STABILIZED CONSTRUCTION ENTRANCE THE DISTURBED AREA SHALL BE REPAIRED AND STABILIZED.
12. PAYMENT OF THE STABILIZED CONSTRUCTION ENTRANCE SHALL BE MADE UNDER APPLICABLE ITEMS INCLUDED IN THE CONTRACT PLANS OR UNDER THE FIELD MAINTENANCE OF EROSION & SEDIMENT CONTROL PLAN ITEM.
13. PAYMENT FOR MONITORING STABILIZED CONSTRUCTION ENTRANCES SHALL BE MADE UNDER THE MONITORING EROSION & SEDIMENT CONTROL PLAN ITEM.
14. PAYMENT FOR MAINTAINING THE CONSTRUCTION ENTRANCE SHALL BE MADE UNDER THE FIELD MAINTENANCE OF EROSION & SEDIMENT CONTROL PLAN ITEM, UNLESS MAINTENANCE IS REQUIRED DUE TO POOR INSTALLATION PRACTICES.

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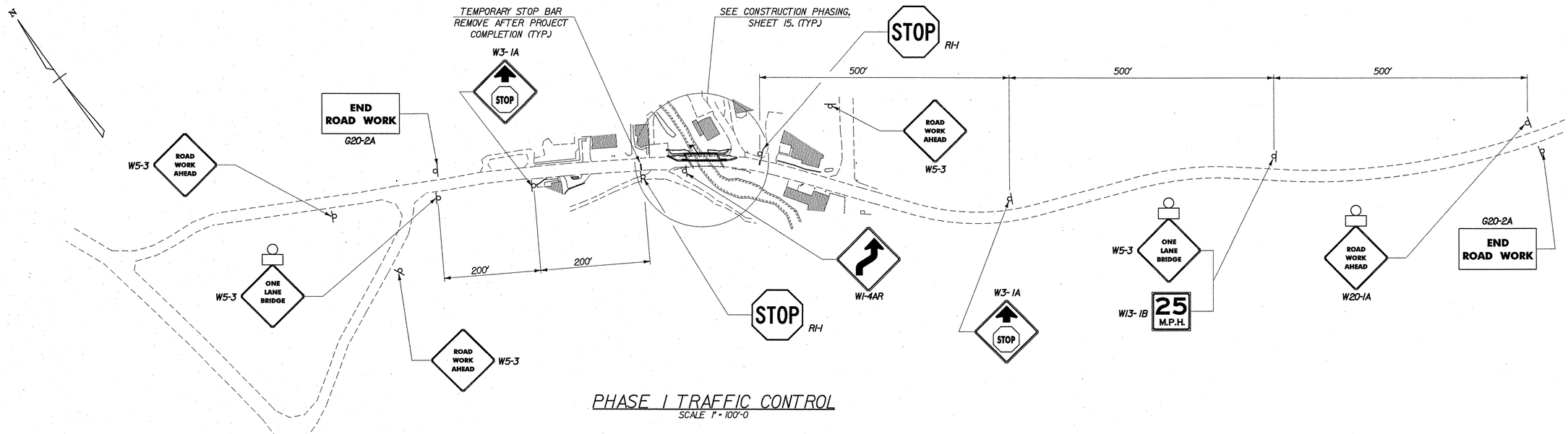
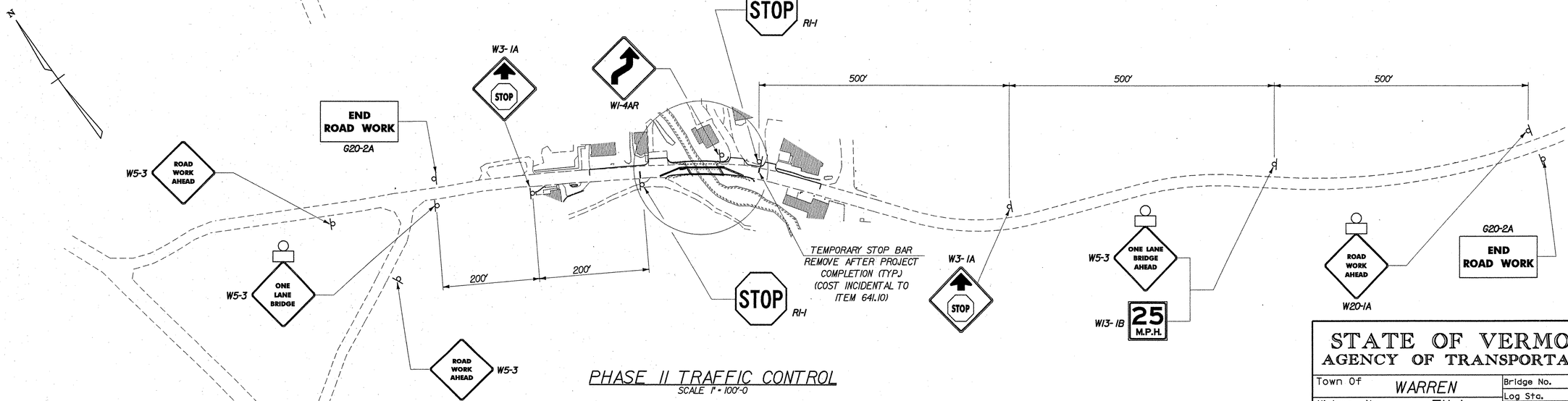
EROSION CONTROL DETAILS (3 OF 3)	
Designed By B. COLBURN	Drawn By S. DELIA
Checked By R. JOY Date 02/07	Bridge Design Supervisor R. ROONEY Date 02/07
PROJECT WARREN	PROJECT NO. BHF 0188(7)
I.G.C. Info. mV549107-Warren\BRIDGE\Final\zJ276er7.dgn	
Bridge Sheet No.	Sheet 13 of 36

McFarland-Johnson, Inc.



PHASE I TRAFFIC CONTROL
SCALE 1" = 100'-0



PHASE II TRAFFIC CONTROL
SCALE 1" = 100'-0

NOTES

1. FOR TRAFFIC CONTROL NOTES, SEE SHEET 16.
2. PAYMENT WILL BE MADE UNDER CONTRACT ITEM 641.10, EXCEPT FOR TEMPORARY STOP BARS, WHICH WILL BE PAID FOR UNDER CONTRACT ITEM 646.66.

LEGEND

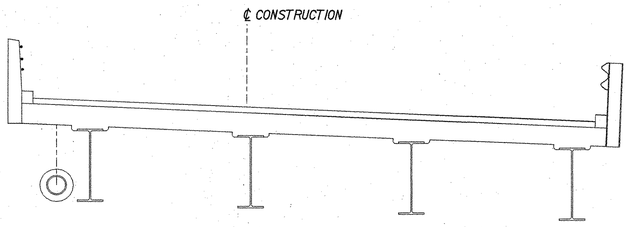
HAZARD IDENTIFICATION BEACON

McFarland-Johnson, Inc.

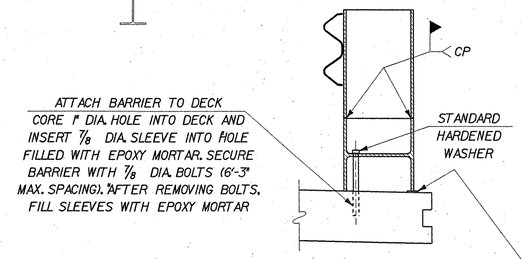
PLOTTED 19-FEB-2007

STATE OF VERMONT
AGENCY OF TRANSPORTATION

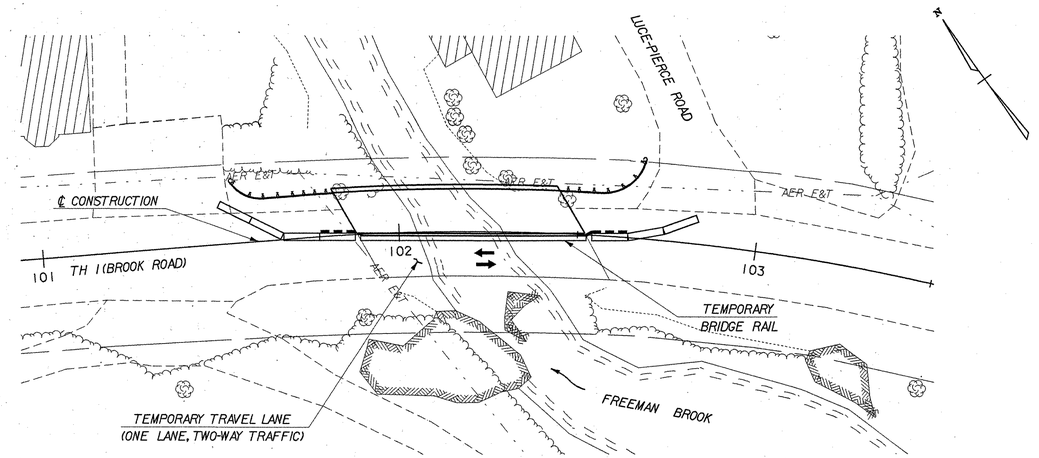
Town Of WARREN	Bridge No. 7
Highway No. TH 1	Log Sta. / Surv. Sta.
BROOK ROAD OVER FREEMAN BROOK	
TRAFFIC CONTROL SHEET	
Designed By S. DELIA	Drawn By S. DELIA
Checked By R. JOY Date 02/07	Bridge Design Supervisor R. ROONEY Date 02/07
PROJECT WARREN	PROJECT NO. BHF 0188(7)
I.G.C. Info. m:\549107-Warren\BRIDGE\Final\z1276tc2.dgn	
Bridge Sheet No.	Sheet 14 of 36



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



TEMPORARY BRIDGE RAIL DETAIL (PHASE II)
SCALE: N.T.S.
(SEE NOTE 3)



PHASE I CONSTRUCTION
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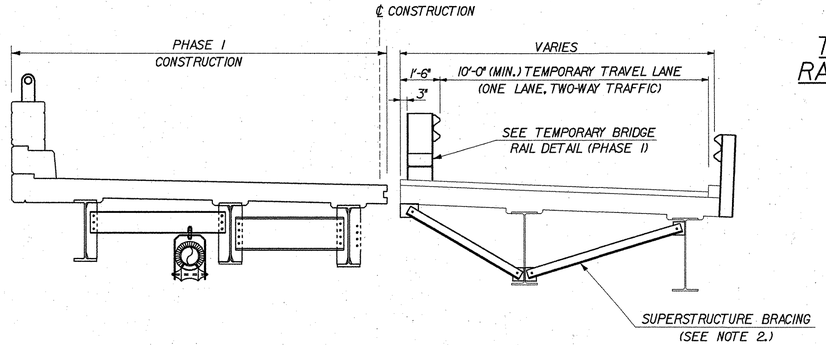

TYPICAL SECTION - PHASE I
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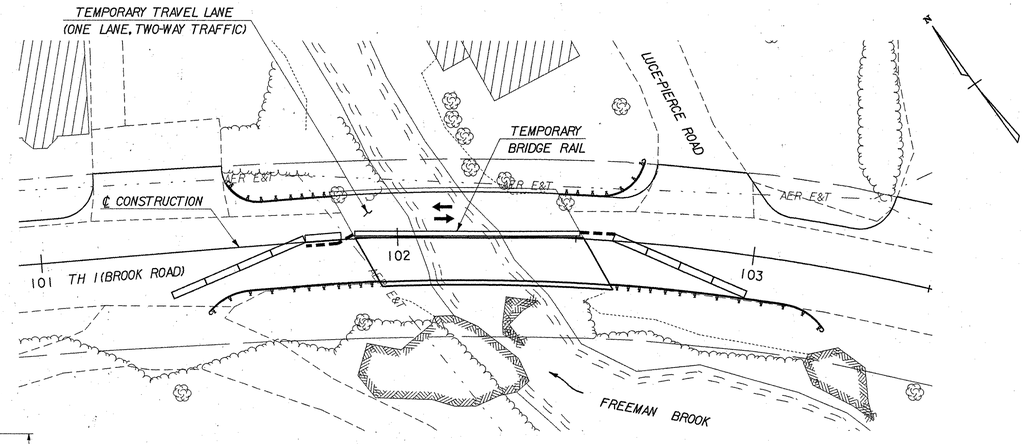

PHASE II CONSTRUCTION
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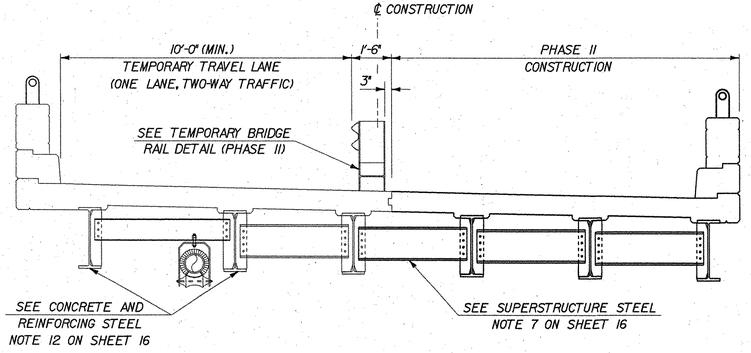

TYPICAL SECTION - PHASE II
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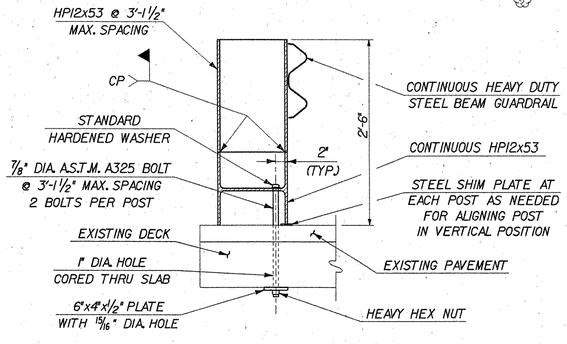


TEMPORARY BRIDGE RAIL DETAIL (PHASE I)
SCALE: N.T.S.
(SEE NOTE 3)

LEGEND

TEMPORARY EXCAVATION SUPPORT ---------

TEMPORARY CONCRETE TRAFFIC BARRIER

NOTES

1. FOR TRAFFIC CONTROL SIGNING, SEE SHEET 14.
2. FOR SUPERSTRUCTURE BRACING NOTES, SEE SHEET 16.
3. THE CONTRACTOR MAY SUBMIT ALTERNATIVE TEMPORARY RAIL DETAILS. ALL COST ASSOCIATED WITH TEMPORARY BRIDGE RAIL SHALL BE INCLUDED IN ITEM 525.40, BRIDGE RAILING, GALVANIZED HD STEEL BEAM / CURB MOUNTED (MOD).

McFarland-Johnson, Inc.

STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of WARREN	Bridge No. 7
Highway No. TH 1	Log Sta. / Surv. Sta.
BROOK ROAD OVER FREEMAN BROOK	
CONSTRUCTION PHASING	
Designed By S. DELIA	Drawn By S. DELIA
Checked By R. JOY Date 02/07	Bridge Design Supervisor R. ROONEY Date 02/07
PROJECT WARREN	PROJECT NO. BHF 0188(7)
I.G.C. Info. m\549107-Warren\BRIDGE\Final\z1276tol.dgn	
Bridge Sheet No.	Sheet 15 of 36

PLOTTED 02-MAR-2007

GENERAL NOTES

1. ALL MATERIALS AND CONSTRUCTION SHALL CONFORM TO STATE OF VERMONT AGENCY OF TRANSPORTATION STANDARD SPECIFICATIONS FOR CONSTRUCTION, DATED 2001, AND ITS LATEST REVISIONS, AND THE AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES, 17TH EDITION, DATED 2002, AND ITS LATEST REVISIONS.

2. DIMENSIONS, ANGLES, BEARINGS, AND ELEVATIONS OF THE EXISTING BRIDGE SHOWN ON THESE PLANS HAVE BEEN OBTAINED FROM PLANS OF THE EXISTING STRUCTURE AND LIMITED FIELD INVESTIGATION AND MAY NOT ACCURATELY REFLECT ACTUAL FIELD CONDITIONS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAKING FIELD MEASUREMENTS OF ALL EXISTING STRUCTURE, APPROACH, AND UTILITY COMPONENTS IMPACTED BY THE NEW WORK TO ASSURE CONSISTENCY WITH THE PROPOSED MODIFICATIONS. ANY DISCREPANCIES IN DIMENSIONS, CHARACTER OR EXTENT OF THE EXISTING FEATURES SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER BEFORE ADVANCING THE WORK.

3. ALL DIMENSIONS ARE HORIZONTAL AND VERTICAL AND ARE GIVEN AT 68 DEGREES FAHRENHEIT.

4. THE CONTRACTOR SHALL NOT BE PERMITTED TO USE ANY EQUIPMENT OUTSIDE THE LIMITS OF EXISTING RIGHT-OF-WAY SHOWN ON THESE PLANS.

5. THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING A SUITABLE STAGING AREA.

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

7. THE EXISTING STONE RIPRAP IN FRONT OF THE ABUTMENTS SHOULD BE DISTURBED AS LITTLE AS POSSIBLE. ANY STONE THAT IS DISTURBED DURING CONSTRUCTION, INCLUDING THE STONE IN THE AREA OF THE NEW UNDERDRAIN AT WINGWALL NO. 2, SHALL BE REPLACED OR RESTORED TO ITS PRESENT CONDITION TO THE SATISFACTION OF THE RESIDENT ENGINEER. PAYMENT SHALL BE CONSIDERED INCIDENTAL TO CONTRACT ITEM 613.12.

SUPERSTRUCTURE BRACING NOTES

1. SUPERSTRUCTURE BRACING WILL BE REQUIRED TO SUPPORT THE EXISTING DECK DURING PHASE REMOVAL OPERATIONS AS DEPICTED ON SHEET 15. THE SUPERSTRUCTURE BRACING SHOWN IS SCHEMATIC ONLY AND NOT INTENDED TO INDICATE A REQUIRED OR PREFERRED METHOD OF CONSTRUCTION.

2. SUPERSTRUCTURE BRACING SHALL BE IN ACCORDANCE WITH SECTION 502 AND SUBMITTALS MADE PER SECTION 105. ALL COSTS FOR DESIGN, INSTALLATION, MAINTENANCE AND REMOVAL OF THE SUPERSTRUCTURE BRACING SHALL BE INCLUDED IN ITEM 527.10 (MOD.).

3. SUPERSTRUCTURE BRACING SHALL BE DESIGNED IN ACCORDANCE WITH LATEST AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES. THE MINIMUM LIVE LOAD SHALL BE HS20. THE BRACING SHALL ALSO BE DESIGNED TO PROVIDE ADEQUATE SUPPORT FOR THE TEMPORARY H-PILE BARRIER WHEN THE BARRIER IS SUBJECTED TO AASHTO RAIL IMPACT FORCE. DESIGN CALCULATIONS AND DRAWINGS SHALL BE SIGNED, STAMPED AND DATED BY A PROFESSIONAL ENGINEER, LICENSED IN THE STATE OF VERMONT AND SUBMITTED IN ACCORDANCE WITH SECTION 105.

4. ATTACHMENT OF THE SUPERSTRUCTURE BRACING TO THE EXISTING SUPERSTRUCTURE SHALL BE APPROVED BY THE ENGINEER. WELDING TO THE EXISTING WILL NOT BE PERMITTED WITHOUT PRIOR APPROVAL FROM THE RESIDENT ENGINEER.

SEWER LINE NOTES

1. THE CONTRACTOR SHALL CONFIRM THE LOCATION OF EXISTING SEWER SYSTEM AND THAT THE PROPOSED MODIFICATIONS ARE CONSISTENT WITH EXISTING SEWER LINE. SEE GENERAL NOTE 2.

2. THE EXISTING SEWER SYSTEM SHALL BE RETAINED AND TEMPORARILY SUPPORTED AS NECESSARY. THE EXISTING BRIDGE SUPPORT HARDWARE ELEMENTS SHALL BE RETAINED WHERE POSSIBLE AS DETERMINED BY THE RESIDENT ENGINEER.

3. EXISTING SMH RIM ELEVATIONS SHALL BE ADJUSTED BY THE CONTRACTOR TO THE SATISFACTION OF THE RESIDENT ENGINEER. COST SHALL BE INCLUDED IN ITEM 604.42.

4. ITEM 628.60, SEWER MAIN ON BRIDGE (8") SHALL INCLUDE:

   A. FURNISHING ALL MATERIALS, TOOLS, LABOR, EQUIPMENT, AND INCIDENTALS TO MAINTAIN THE EXISTING SEWER MAIN ON THE BRIDGE AND ACROSS THE STREAM.
   B. THREE INCHES POLYURETHANE INSULATION WITH ALUMINUM OR HDPE JACKET
   C. BRIDGE HANGERS AND SUPPORTING SYSTEM (EXCLUDING DIAPHRAGMS) IF NEEDED
   D. METAL SLEEVES AT ABUTMENTS
   E. LINK-SEAL CONNECTIONS AT ABUTMENTS

5. THE EXISTING SEWER SERVICES SHALL BE MAINTAINED DURING CONSTRUCTION AND WILL REQUIRE TEMPORARY SUPPORT DURING CONSTRUCTION. THE CONTRACTOR SHALL DEVELOP A PROPOSED SCHEME AND SUBMIT HIS/HER PLANS FOR THE TEMPORARY SUPPORT TO THE STRUCTURES PROGRAM MANAGER FOR APPROVAL PRIOR TO IMPLEMENTING THE PLAN. SUBMITTALS SHALL BE MADE IN ACCORDANCE WITH SECTION 105. ALL COSTS SHALL BE INCLUDED IN ITEM 628.60.

CONCRETE AND REINFORCING STEEL NOTES

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

2. REINFORCING PLACEMENT TOLERANCES SHALL BE:

   SPACING: +/- ONE-INCH
   CLEARANCE: +/- ONE-QUARTER INCH

3. MINIMUM CLEAR COVER FOR REINFORCING STEEL SHALL BE AS FOLLOWS:

   ALONG TOP SURFACE OF DECK SLAB: 2.5 INCHES
   ALONG BOTTOM SURFACE OF DECK SLAB: 1.5 INCHES
   ALONG BACK FACES OF WALLS AGAINST EARTH: 2 INCHES
   ELSEWHERE, UNLESS OTHERWISE NOTED: 3 INCHES

4. ALL DECK, CURB, AND CURTAIN WALL CONCRETE SHALL BE CONCRETE HPC A, AND BE PAID AS ITEM 501.33 CONCRETE, HIGH PERFORMANCE CLASS A. ALL SUBSTRUCTURE CONCRETE SHALL BE CONCRETE HPC B, AND BE PAID AS ITEM 501.34 CONCRETE, HIGH PERFORMANCE CLASS B, UNLESS NOTED OTHERWISE.

5. ALL EXPOSED EDGES OF CONCRETE SHALL BE CHAMFERED ONE-INCH BY ONE-INCH, OR AS OTHERWISE INDICATED ON THE PLANS.

6. WATER REPELLENT (MOD - SILANE) SHALL BE APPLIED TO ALL EXPOSED CONCRETE SUPERSTRUCTURE SURFACES EXCEPT THE UNDERSIDE OF THE DECK BETWEEN DRIP NOTCHES. WATER REPELLENT (MOD - SILANE) SHALL ALSO BE APPLIED TO THE EXPOSED SUBSTRUCTURE CONCRETE, NEW AND EXISTING. EXISTING CONCRETE TO BE COATED SHALL BE PRESSURE WASHED AND ALLOWED TO AIR DRY PRIOR TO SILANE APPLICATION, AT THE DISCRETION OF THE RESIDENT ENGINEER. PAYMENT FOR THIS WORK SHALL BE INCIDENTAL TO THE ITEM.

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

8. THE KEY IN CONSTRUCTION JOINTS SHALL BE UPWARD, MONOLITHIC AND CONTINUOUS FOR THE FULL LENGTH OF THE JOINT.

9. SURFACES OF BRIDGE SEATS UNDER BEARING DEVICES SHALL BE LEVEL.

10. ABUTMENT CONCRETE REPAIR AREAS SHALL BE IDENTIFIED IN THE FIELD. A THOROUGH INSPECTION BY THE ENGINEER SHALL BE MADE OF ALL SUBSTRUCTURE AREAS AT THE TIME OF THE CONSTRUCTION. AREAS OF CONCRETE FOUND TO HAVE SPALLED, DELAMINATED OR TO BE OTHERWISE UNSOUND SHALL BE REPAIRED. ABUTMENT CONCRETE REPAIRS SHALL BE PERFORMED IN ACCORDANCE WITH SECTION 580. SEE CONCRETE SUBSTRUCTURE REPAIR DETAIL ON SHEET 24.

11. DRILL AND GROUT BARS INTO THE EXISTING ABUTMENTS SHALL INCORPORATE A CHEMICAL ADHESIVE INSTEAD OF GROUT. HOLES SHALL BE DRILLED ONE INCH LARGER THAN DOWEL SIZE. THE CHEMICAL ADHESIVE MUST BE FROM THE APPROVED PRODUCTS LISTED IN THE SPECIAL PROVISIONS OR APPROVED IN ADVANCE OF USE BY THE STRUCTURES PROGRAM MANAGER. COST SHALL BE INCLUDED IN ITEM 507.16 (MOD).

12. THE CONTRACTOR SHALL PROVIDE ADDITIONAL TEMPORARY SUPPORT TO THE STEEL BEAMS IN THE BAY BETWEEN BEAM NOS. 1 & 2 TO CARRY THE LOADING OF THE TEMPORARY DECK FALSEWORK. ALL COSTS SHALL BE INCLUDED IN ITEM 501.33.

REMOVAL NOTES

1. REMOVAL OF PORTIONS OF THE EXISTING STRUCTURE SHALL BE IN ACCORDANCE WITH SECTION 529.

2. REMOVAL OF THE EXISTING BRIDGE PAVEMENT SHALL BE PAID AS ITEM 529.10.

3. ITEM 529.20, PARTIAL REMOVAL OF STRUCTURE, SHALL INCLUDE:

   A. REMOVAL OF EXISTING BRIDGE RAILING, CONCRETE CURB, CONCRETE BRIDGE DECK AND CURTAIN WALLS.
   B. REMOVAL OF EXISTING STEEL BEAMS AND DIAPHRAGMS.
   C. REMOVAL OF ALL BEARING DEVICES.
   D. REMOVAL OF PORTIONS OF EXISTING ABUTMENTS AS SHOWN ON THE PLANS AND DIRECTED BY THE ENGINEER.
   E. ERECTION, MAINTENANCE, AND REMOVAL OF TEMPORARY STRUCTURES TO PREVENT DEBRIS FROM FALLING INTO THE FREEMAN BROOK.

4. THE CONTRACTOR'S METHODS FOR PARTIAL REMOVAL OF THE EXISTING STRUCTURES SHALL BE APPROVED BY THE STRUCTURES PROGRAM MANAGER PRIOR TO ANY REMOVAL WORK.

5. LIMITS OF REMOVAL ON THE SUBSTRUCTURE UNITS ARE APPROXIMATE. THE RESIDENT ENGINEER SHALL ESTABLISH ACTUAL LIMITS AFTER A COOPERATIVE INSPECTION BY THE CONTRACTOR AND THE RESIDENT ENGINEER, EXISTING ELEVATIONS SHALL BE FIELD VERIFIED TO ENSURE THE REMOVAL LIMITS ARE ADEQUATE TO OBTAIN THE REQUIRED DIMENSIONS AND ELEVATIONS OF THE NEW CONSTRUCTION.

6. EXISTING REINFORCING STEEL EXPOSED DURING REMOVAL OPERATIONS, WITHIN THE LIMITS OF THE NEW CONCRETE, SHALL BE RETAINED AND INCORPORATED INTO THE NEW CONCRETE. EXISTING REINFORCING STEEL TO BE RETAINED SHALL BE CLEANED OF ALL CONCRETE, DIRT, DETRIMENTAL SCALE, PAINT, OIL AND OTHER FOREIGN SUBSTANCES. ALL COSTS SHALL BE INCLUDED IN ITEM 529.20.

7. SAW CUTS SHALL BE ONE-INCH DEEP ALONG ALL EXPOSED REMOVAL LINES WHERE NEW CONCRETE IS PLACED AGAINST EXISTING CONCRETE. ALL COSTS SHALL BE INCLUDED IN ITEM 529.20.

8. EXISTING REINFORCING STEEL THAT WILL NOT BE INCORPORATED INTO THE NEW CONCRETE SHALL BE REMOVED A MINIMUM OF ONE-INCH BELOW THE CONCRETE SURFACE. CAVITIES PRODUCED BY REINFORCING STEEL REMOVAL SHALL BE CLEANED, SATURATED WITH WATER, AND POINTED AND TRUED WITH MORTAR TYPE IV PER SECTION 501. ALL COSTS SHALL BE INCLUDED IN ITEM 529.20.

9. THE EXISTING STRUCTURAL STEEL ON THIS PROJECT WAS PAINTED WITH A MATERIAL WHICH MAY CONTAIN LEAD. THE REMOVED STRUCTURAL STEEL SHALL BECOME THE PROPERTY OF THE CONTRACTOR. THE CONTRACTOR SHALL INDEMNIFY AND HOLD THE STATE, ITS OFFICERS, AND ITS EMPLOYEES HARMLESS CONCERNING THE CONTRACTOR'S USE OR DISPOSITION OF THE EXISTING STRUCTURAL STEEL.

SUPERSTRUCTURE STEEL NOTES

1. ALL NEW STRUCTURAL STEEL SHALL BE AASHTO M270, GRADE 50 (PAINTED) UNLESS OTHERWISE NOTED. STEEL BEAMS SHALL BE PAINTED GREEN.

2. ITEM 506.50, STRUCTURAL STEEL (ROLLED BEAM) SHALL INCLUDE ROLLED BEAMS, CONNECTION PLATES, DIAPHRAGMS, AND ALL REQUIRED FASTENERS.

3. ALL BOLTED FIELD CONNECTIONS SHALL BE MADE WITH 7/8-INCH DIAMETER HIGH STRENGTH BOLTS WITH 15/16-INCH DIAMETER HOLES UNLESS OTHERWISE NOTED.

4. CONNECTIONS NOT DESIGNATED SHALL BE DETAILED BY THE FABRICATOR AND SUBMITTED TO THE STRUCTURES PROGRAM MANAGER FOR APPROVAL.

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

6. THE ENDS OF BEAMS SHALL BE VERTICAL UNDER FULL DEAD LOAD DEFLECTION.

7. THE CONTRACTOR MAY HOLD THE DIAPHRAGMS BETWEEN BEAM NOS. 3 & 4 IN PLACE WITH A SINGLE UNTIGHTENED BOLT IN EACH CONNECTION PLATE UNTIL THE PHASE II CONRETE DECK POUR IS MADE. ONCE THE POUR IS COMPLETE, ALL BOLTS SHALL BE PLACED AND TIGHTENED. ALL COSTS SHALL BE INCLUDED IN ITEM 506.50.

TRAFFIC CONTROL NOTES

1. TRAFFIC WILL BE MAINTAINED DURING CONSTRUCTION BY UTILIZING A SINGLE TRAFFIC LANE WITH ALTERNATING EASTBOUND AND WESTBOUND TRAFFIC. PHASED CONSTRUCTION OF THE BRIDGE WILL BE REQUIRED. ALL WORK REQUIRED TO CONTROL TRAFFIC DURING CONSTRUCTION SHALL BE PAID AS ITEM 527.10 (MOD.). THE CONTRACTOR SHALL NOTIFY THE TOWN OF WARREN AT LEAST TWO (2) WEEKS PRIOR TO INCORPORATING THEIR ONE LANE TRAFFIC SCHEME.

2. THE TRAFFIC CONTROL SIGNING AND PHASING DETAILS DEPICTED ON SHEETS 14 AND 15 ARE CONCEPTUAL AND SCHEMATIC ONLY. THE CONTRACTOR SHALL PREPARE A DETAILED TRAFFIC CONTROL PLAN, INCLUDING THEIR PLAN FOR PHASED CONSTRUCTION OF THE ROADWAY APPROACHES AND DRIVEWAYS.

3. NO CONSTRUCTION SIGNS SHALL BE INSTALLED SO AS TO INTERFERE WITH OR OBSTRUCT THE VIEW OF EXISTING TRAFFIC CONTROL DEVICES.

4. THE ABUTMENT PHASED CONSTRUCTION JOINT DELINEATED ON THE PLANS IS APPROXIMATE AND HAS BEEN LOCATED AT THE ESTIMATED FACE OF EXISTING DECK REMOVAL. THE CONTRACTOR SHALL LOCATE ACTUAL ABUTMENT PHASED CONSTRUCTION JOINT IN HIS/HER TRAFFIC CONTROL PLAN SUBMITTAL.

5. TEMPORARY EXCAVATION SUPPORTS SHALL BE REQUIRED TO SAFELY SEPARATE THE WORK AREA FROM TRAFFIC AND TO KEEP NEW FOOTING EXCAVATION LIMITS WITHIN THE EXISTING RIGHT-OF-WAY. DESIGN OF TEMPORAY EXCAVATION SUPPORTS SHALL BE IN ACCORDANCE WITH AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES, AND DESIGN CALCULATIONS AND DRAWINGS SHALL BE SIGNED, STAMPED, AND DATED BY A PROFESSIONAL ENGINEER, LICENSED IN THE STATE OF VERMONT AND SUBMITTED IN ACCORDANCE WITH SECTION 105. COST OF ALL THIS INCLUDING DESIGN, SHALL BE INCLUDED IN ITEM 527.10 (MOD.).

6. THE COST OF ALL TEMPORARY TRAFFIC CONTROL ZONE DEVICES (EXCEPT TEMPORARY CONCRETE TRAFFIC BARRIERS) SHALL BE INCLUDED IN ITEM 641.10.

7. HAZARD IDENTIFICATION BEACONS MAY BE BATTERY OPERATED AND SHALL BE CHECKED DAILY BY THE CONTRACTOR TO ENSURE THAT THESE FUNCTION ADEQUATELY. COST SHALL BE INCLUDED IN ITEM 641.10.

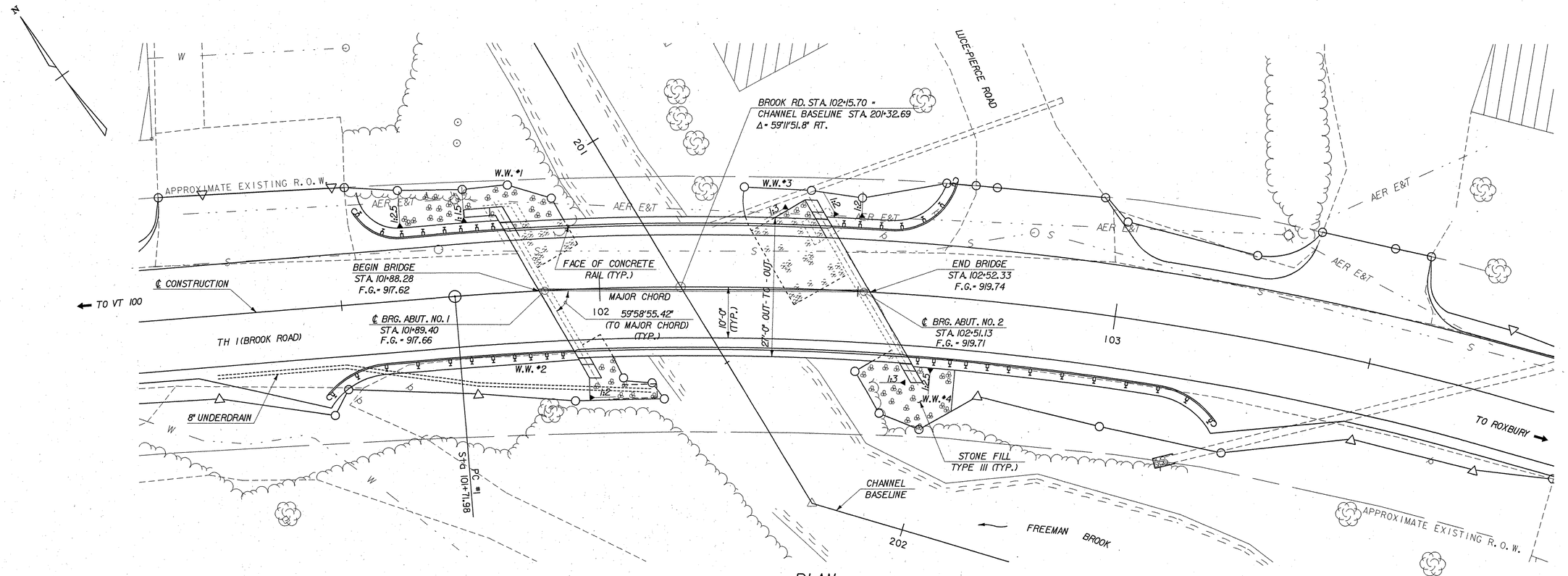
8. THERE WILL BE A PERIOD WHEN TRAFFIC IS CARRIED ON THE BARE DECK. THE BARE DECK SHALL BE SANDBLASTED AND CLEANED PRIOR TO THE ULTIMATE APPLICATION OF SHEET MEMBRANE WATERPROOFING (MOD-TORCH APPLIED) AND PAVEMENT. COST SHALL BE INCLUDED IN ITEM 519.20 (MOD.).

PLOTTED 02-MAR-2007

STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of WARREN	Bridge No. 7
Highway No. TH 1	Log Sta. / Surv. Sta.
BROOK ROAD OVER FREEMAN BROOK	
GENERAL NOTES	
Designed By R. JOY	Drawn By P. DUSTIN
Checked By R. JOY Date 02/07	Bridge Design Supervisor R. ROONEY Date 02/07
PROJECT WARREN	PROJECT NO. BHF 0188(7)
I.G.C. Info. mV5491O7-Warren\BRIDGE\Final\zj276gnt.dgn	
Bridge Sheet No.	Sheet 16 of 36

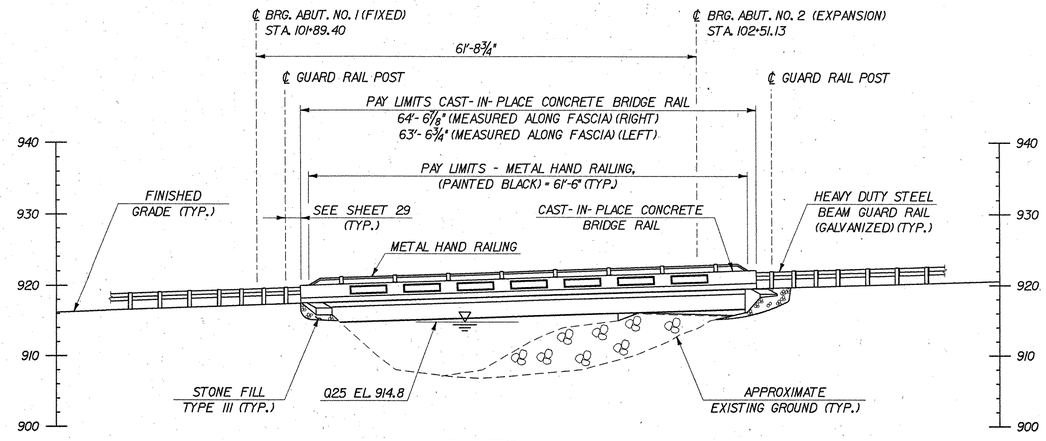
McFarland-Johnson, Inc.



PLAN

SCALE 1" = 10'-0

10 0 10



ELEVATION

SCALE 1" = 10'-0

10 0 10

PLOTTED 02-MAR-2007

McFarland-Johnson, Inc.

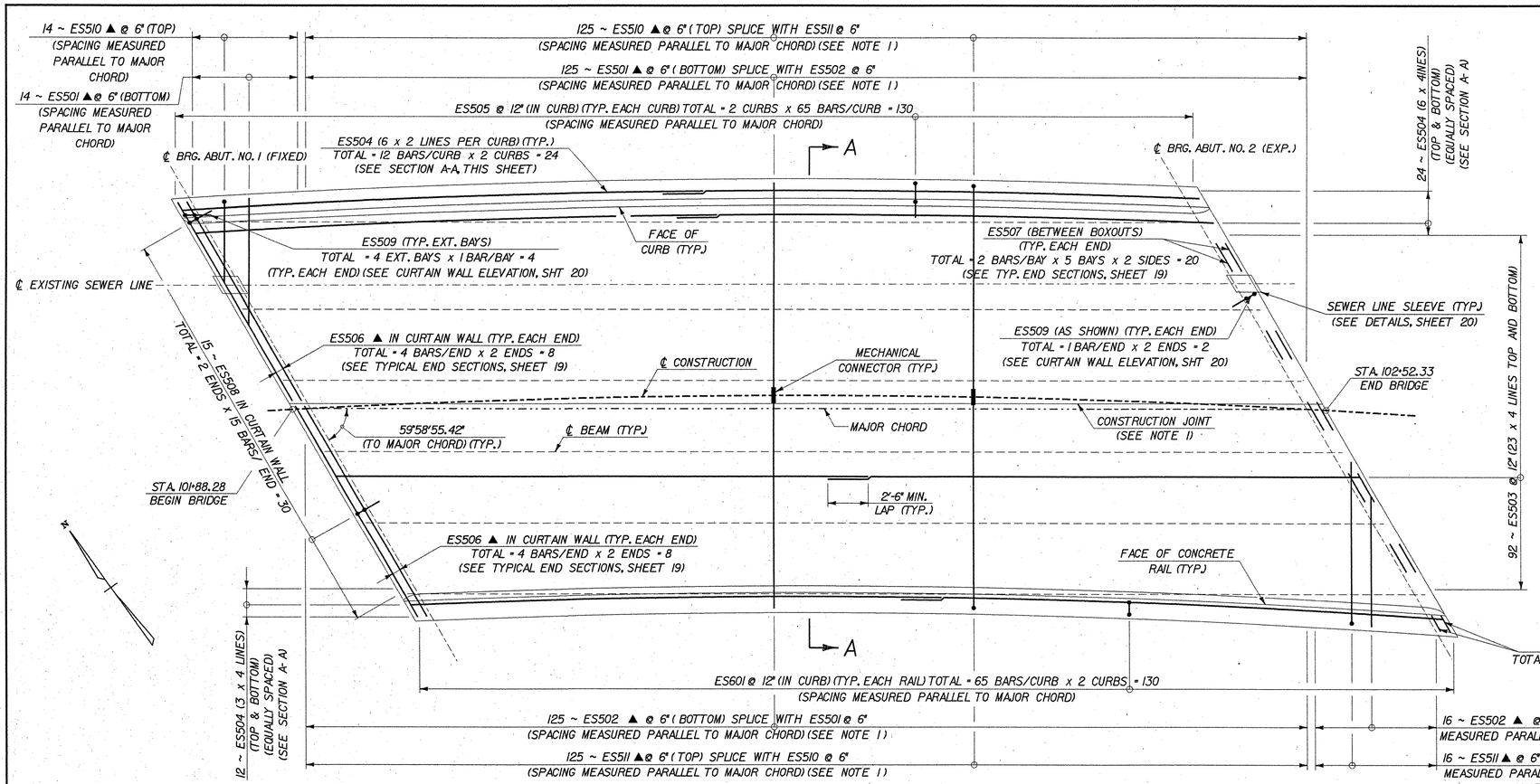
STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of WARREN	Bridge No. 7
Highway No. TH 1	Log Sta. / Surv. Sta.

BROOK ROAD OVER FREEMAN BROOK

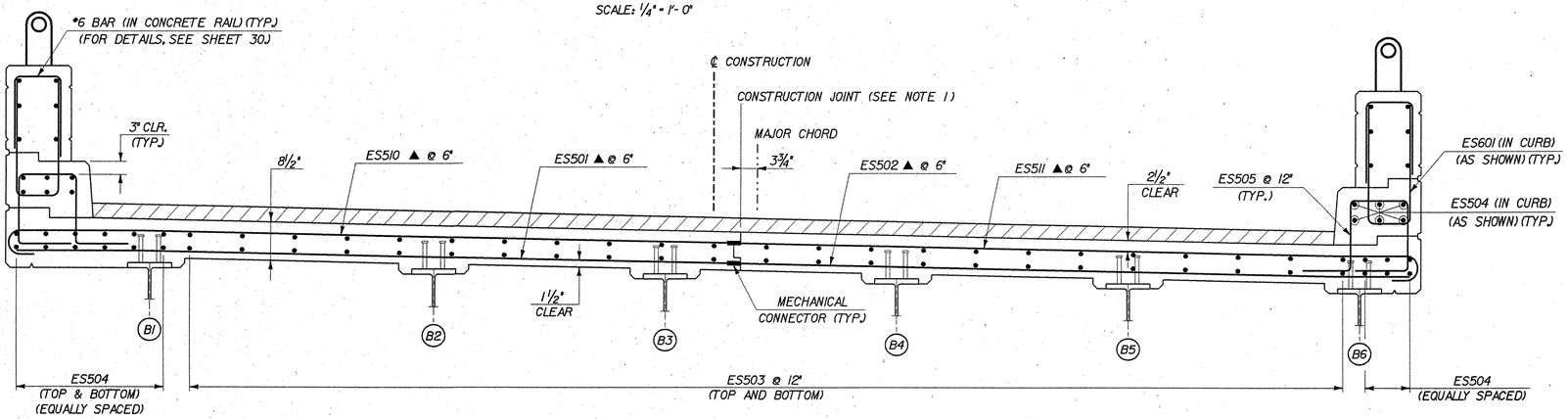
PLAN & ELEVATION

Designed By S. DEUA	Drawn By S. MERKWAN
Checked By R. JOY Date 02/07	Bridge Design Supervisor R. ROONEY Date 02/07
PROJECT WARREN	PROJECT NO. BHF 0188(7)
I.G.C. Info. m\1549107-Warren\BRIDGE\Final\z1276gpe.dgn	
Bridge Sheet No.	Sheet 17 of 36



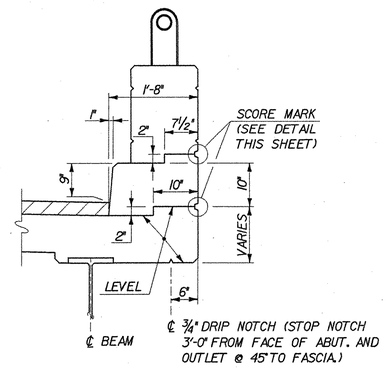
DECK PLAN

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



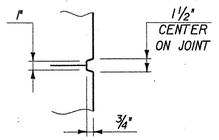
SECTION A-A

SCALE: 3/4" = 1'-0"



TYPICAL CURB DETAIL

SCALE: 3/4" = 1'-0"



SCORE MARK DETAIL

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

NOTES

1. THE CONTRACTOR MAY INVESTIGATE AND PROPOSE AN ALTERNATIVE BRIDGE DECK CONSTRUCTION JOINT LOCATION, INCLUDING INCORPORATING A JOINT FORMED ALONG A CONCENTRIC CURVE WITH THE NEW FASCIA WHICH COULD POSSIBLY AVOID THE NEED TO FIELD CUT THE TRANSVERSE DECK STEEL. THE LOCATION OF THE BRIDGE DECK CONSTRUCTION JOINT SHALL ENSURE THAT MINIMUM 10-FOOT TEMPORARY TRAVEL LANES ARE MAINTAINED. THE CONTRACTOR SHALL SUBMIT HIS/HER PROPOSED SCHEME TO THE RESIDENT ENGINEER FOR REVIEW AND APPROVAL.

LEGEND

N.F. - NEAR FACE
F.F. - FAR FACE
E.F. - EACH FACE
▲ - CUT TO FIT IN FIELD

STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of WARREN	Bridge No. 7
Highway No. TH 1	Log Sta. / Surv. Sta.

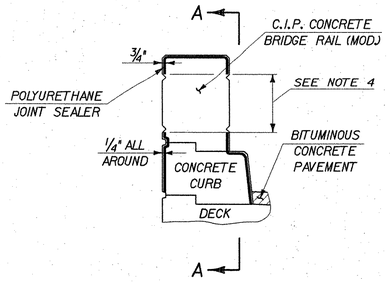
BROOK ROAD OVER FREEMAN BROOK

REINFORCING PLAN & DETAILS

Designed By S. DELIA	Drawn By S. DELIA
Checked By R. JOY Date 02/07	Bridge Design Supervisor R. ROONEY Date 02/07
PROJECT WARREN	PROJECT NO. BHF 0188(7)
I.G.C. Info. m\V549107-Warren\BRIDGE\Final\zJ276ddt.dgn	
Bridge Sheet No.	Sheet 18 of 36

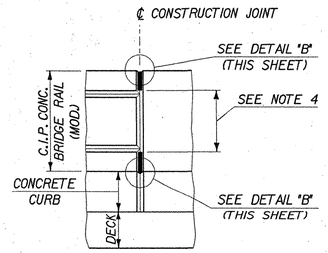
McFarland-Johnson, Inc.

PLOTTED 02-MAR-2007



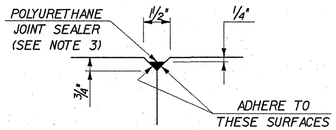
TYPICAL SECTION THROUGH CONCRETE CURB CONST. JOINT

SCALE: 3/4" = 1'-0"



SECTION A-A

SCALE: 3/4" = 1'-0"

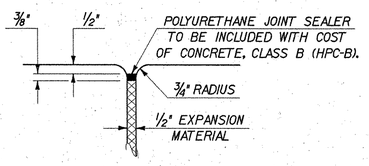


DETAIL B

SCALE: 3" = 1'-0"

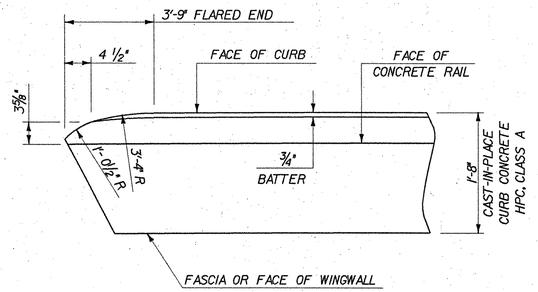
CURBING NOTES

1. FOR LOCATION OF CONSTRUCTION JOINTS, SEE SHEET 29. CONCRETE SHALL BE PLACED WITH A MINIMUM OF 48 HOURS DELAY BETWEEN ADJACENT POURS.
2. LONGITUDINAL REINFORCING SHALL PASS THROUGH CONCRETE CURB CONSTRUCTION JOINTS.
3. THE COLOR OF POLYURETHANE JOINT SEALER, (SUBSECTION 524.06 (D)) SHALL MATCH CONCRETE. COST SHALL BE INCIDENTAL TO CONTRACT ITEM 501.33.
4. POLYURETHANE JOINT SEALER SHALL BE USED ABOVE AND BELOW THE ARCHITECTURAL PANEL, BUT NOT WITHIN THE PANEL ITSELF.



JOINT BETWEEN FASCIA AND WINGWALL

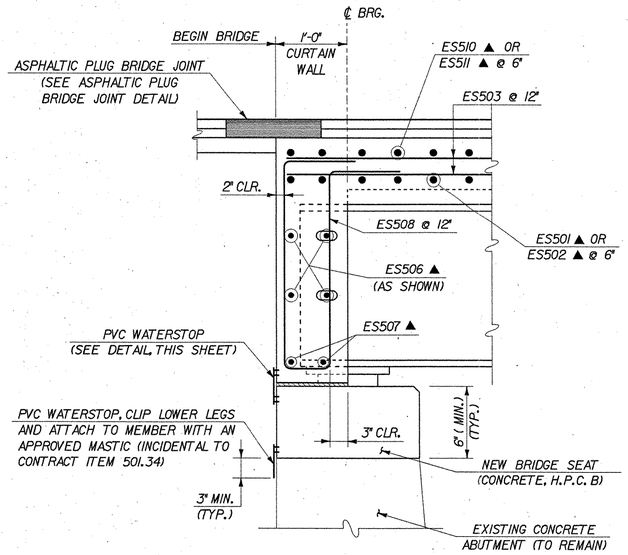
SCALE: 3" = 1'-0"



FLARED END CURB DETAIL

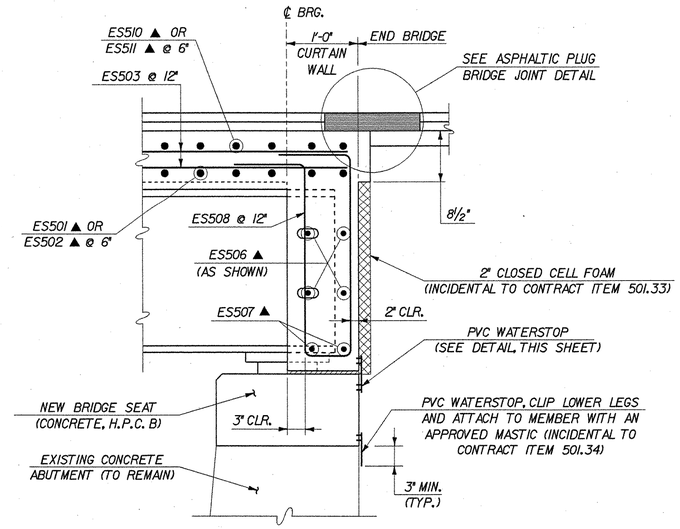
SCALE: 1 = 1'-0"

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



SECTION - FIXED END *

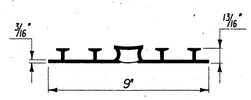
SCALE: 1" = 1'-0"



SECTION - EXPANSION END *

SCALE: 1" = 1'-0"

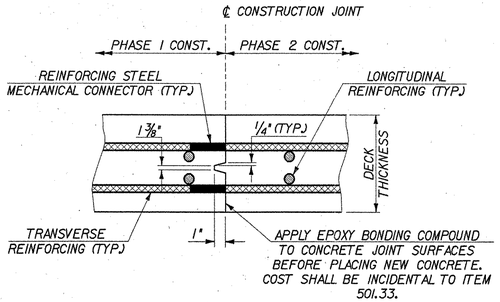
* SECTIONS SHOWN PERPENDICULAR TO ℄



P.V.C. WATERSTOP FOR EXPANSION JOINTS

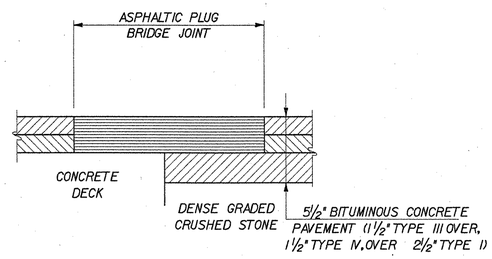
NOT TO SCALE

THE COSTS FOR P.V.C. WATERSTOP SHALL BE INCIDENTAL TO CONTRACT ITEM 501.34. OTHER CONFIGURATIONS MAY BE USED UPON APPROVAL OF THE STRUCTURES ENGINEER.



LONGITUDINAL BRIDGE SLAB CONSTRUCTION JOINT DETAIL

SCALE: 2" = 1'-0"



ASPHALTIC PLUG BRIDGE JOINT DETAIL

NOT TO SCALE

NOTES

1. FOR CONCRETE CURB REINFORCEMENT, SEE SHEET 18.
2. FOR CONCRETE RAIL REINFORCEMENT, SEE SHEET 30.

McFarland-Johnson, Inc.

STATE OF VERMONT
AGENCY OF TRANSPORTATION

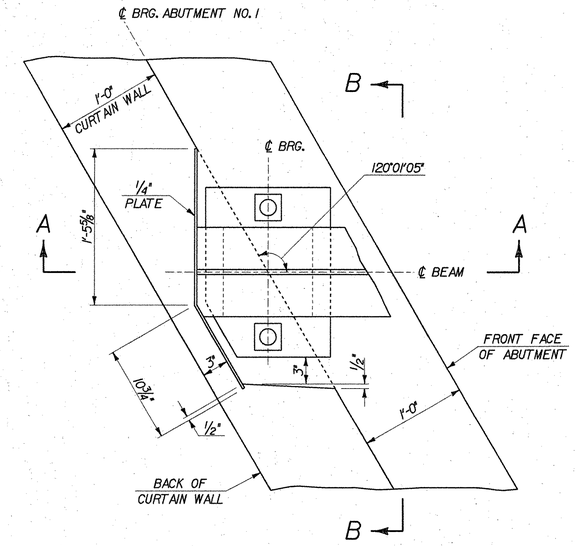
Town Of WARREN	Bridge No. 7
	Log Sta.
Highway No. TH 1	Surv. Sta.

BROOK ROAD OVER FREEMAN BROOK

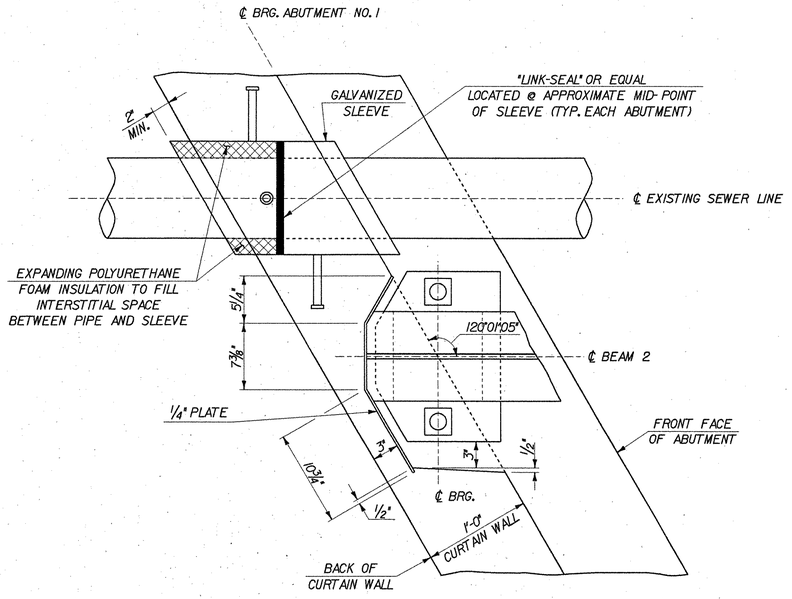
SUPERSTRUCTURE DETAILS

Designed By S. DELIA	Drawn By S. DELIA
Checked By R. JOY Date 02/07	Bridge Design Supervisor R. ROONEY Date 02/07
PROJECT WARREN	PROJECT NO. BHF 0188(7)
I.C.C. Info. mV549107-Warren\BRIDGE\Final\j276sdt.dgn	
Bridge Sheet No.	Sheet 19 of 36

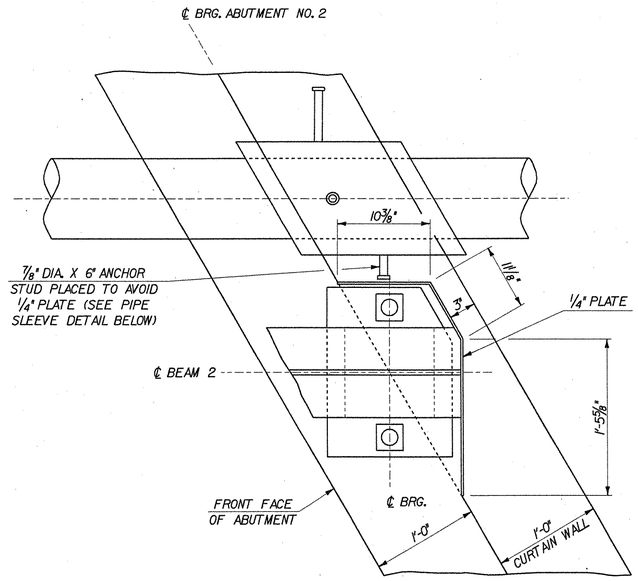
PLOTTED 02-MAR-2007



PLAN



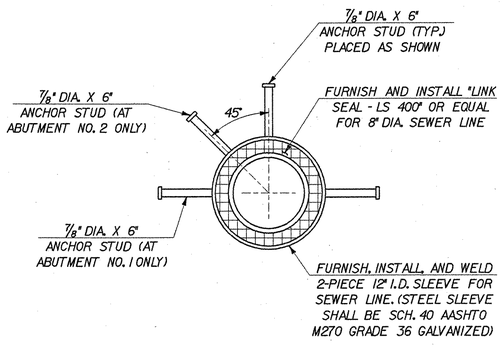
PLAN - ABUTMENT NO. 1



PLAN - ABUTMENT NO. 2

BEAM 2 BEARING BOXOUT DETAILS

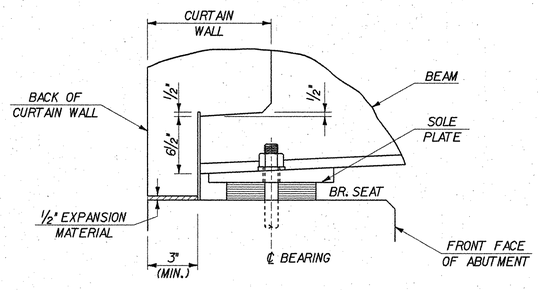
SCALE: 1½" = 1'-0"



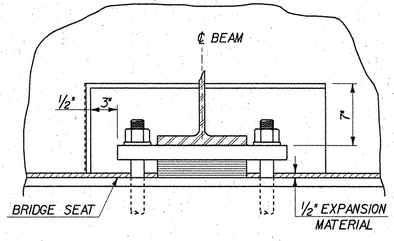
NOTE: ALL COMPONENTS OF HANGERS, SLEEVES, INSULATION, AND PIPE ARE INCLUDED IN ITEM 628.60, SEWER MAIN ON BRIDGE (8").

PIPE SLEEVE DETAIL

SCALE: 1½" = 1'-0"



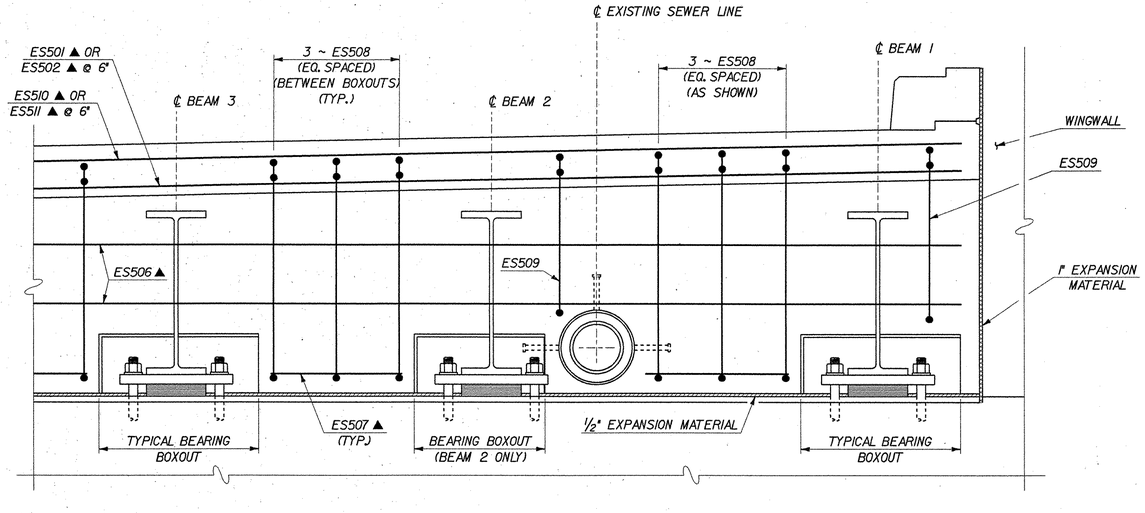
VIEW A-A



VIEW B-B

TYPICAL BEARING BOXOUT DETAILS

SCALE: 1½" = 1'-0"



CURTAIN WALL ELEVATION

SCALE: 1" = 1'-0"

ABUTMENT NO. 1 SHOWN, ABUTMENT NO. 2 SIMILAR

STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of WARREN	Bridge No. 7
Highway No. TH 1	Log Sta. / Surv. Sta.

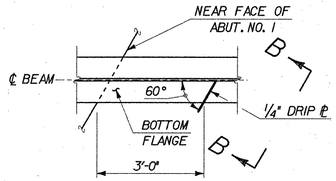
BROOK ROAD OVER FREEMAN BROOK

CURTAIN WALL DETAILS

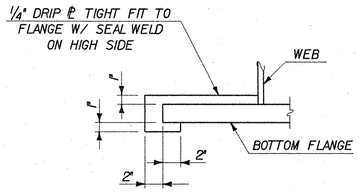
Designed By S. DEUA	Drawn By S. DEUA
Checked By R. JOY — Date 02/07	Bridge Design Supervisor R. ROONEY — Date 02/07
PROJECT WARREN	PROJECT NO. BHF 0188(7)
I.G.C. Info. m:\1549107-Warren\BRIDGE\Final\z1276cwd.dgn	
Bridge Sheet No.	Sheet 20 of 36

McFarland-Johnson, Inc.

PLOTTED 02-MAR-2007

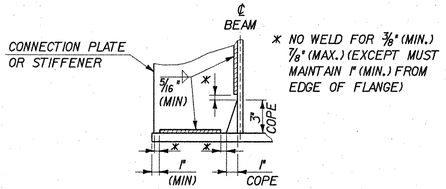


DRIP PLATE PLAN
SCALE: 3/4" = 1'-0"

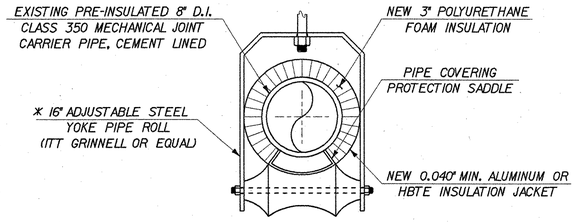


NOTE:
DRIP PLATES SHALL BE PLACED ON THE OUTSIDE EDGE OF FASCIA BEAMS ON THE ABUTMENT NO.1 END. FOR LOCATION, SEE FRAMING PLAN THIS SHEET. BEAM 6 SHOWN, BEAM 1 OPPOSITE HAND.

DRIP PLATE SECTION B-B
SCALE: 1 1/2" = 1'-0"

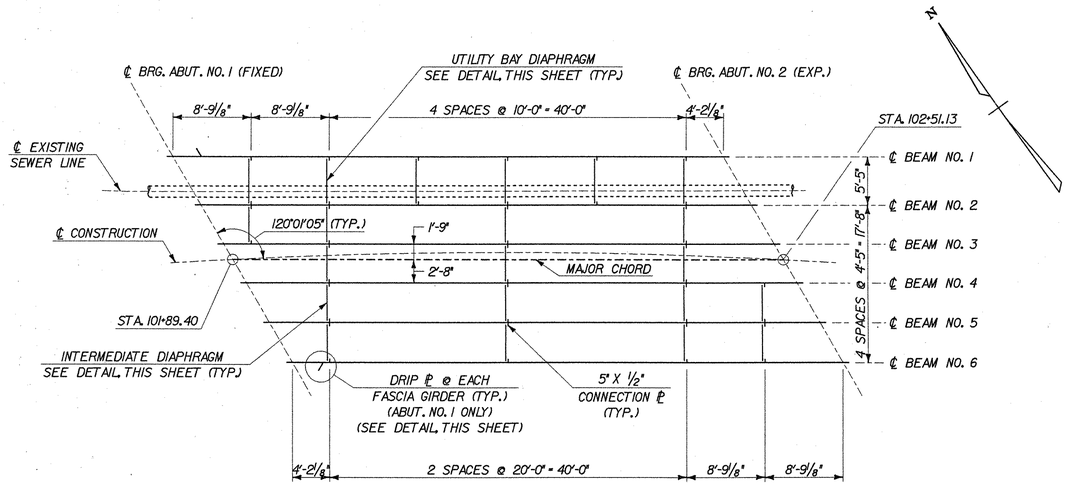


WELD TERMINATION AND COPING DETAILS
NOT TO SCALE

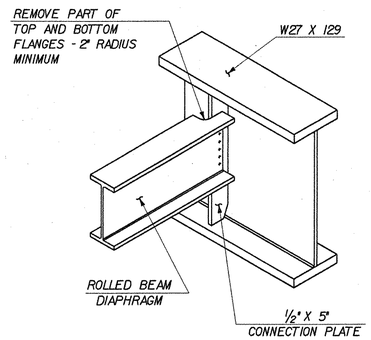


SEWER PIPE HANGER DETAIL
NOT TO SCALE

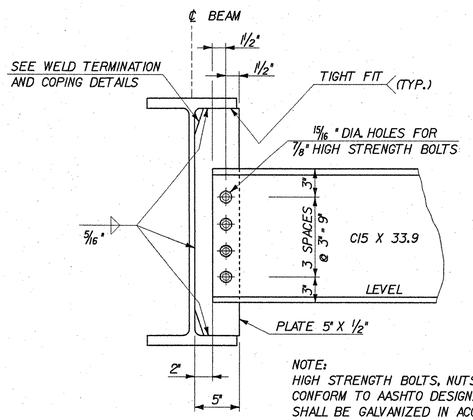
* SEE SEWER LINE NOTES ON SHEET 16



FRAMING PLAN
SCALE: 1/8" = 1'-0"

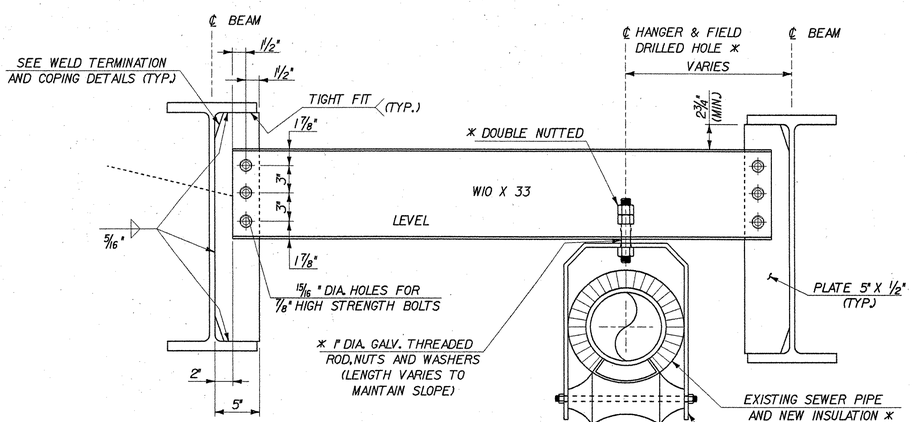


ROLLED BEAM USED AS DIAPHRAGM
NOT TO SCALE



NOTE:
HIGH STRENGTH BOLTS, NUTS AND WASHERS SHALL CONFORM TO AASHTO DESIGNATION M164, TYPE 1 AND SHALL BE GALVANIZED IN ACCORDANCE WITH AASHTO M298.

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



NOTE:
HIGH STRENGTH BOLTS, NUTS AND WASHERS SHALL CONFORM TO AASHTO DESIGNATION M164.

UTILITY BAY DIAPHRAGM
SCALE: 1 1/2" = 1'-0"

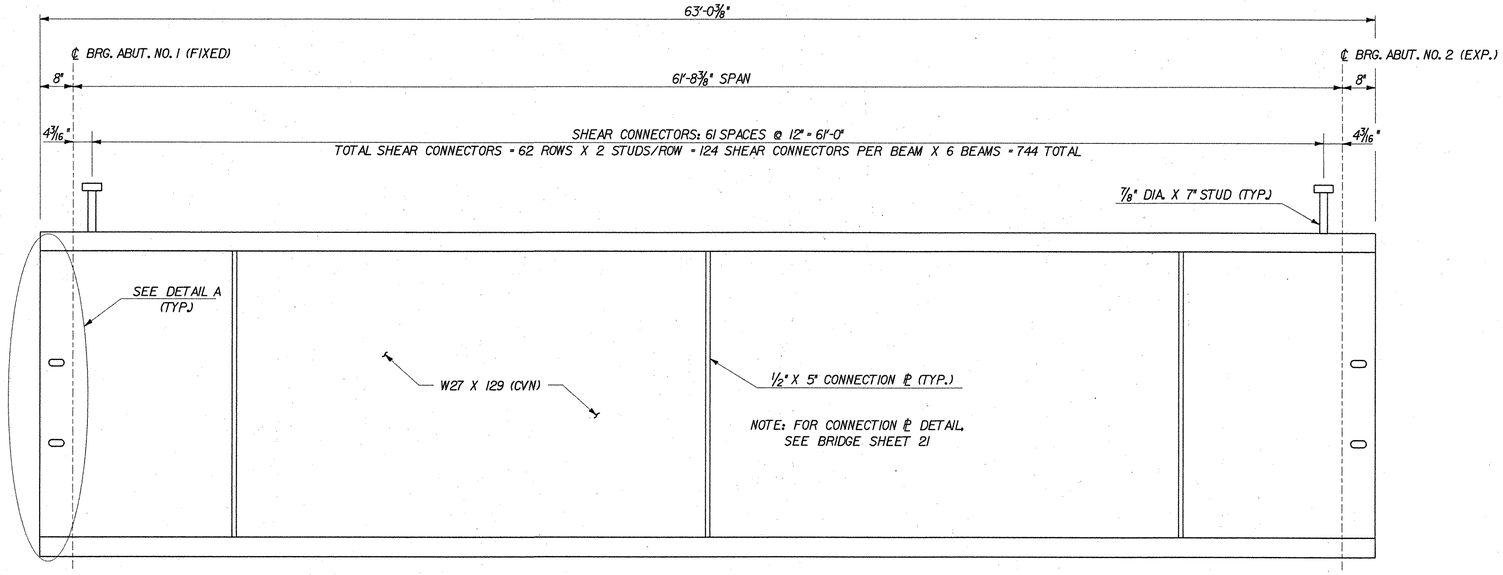
* SEE SEWER LINE NOTES ON SHEET 16

McFarland-Johnson, Inc.

STATE OF VERMONT
AGENCY OF TRANSPORTATION

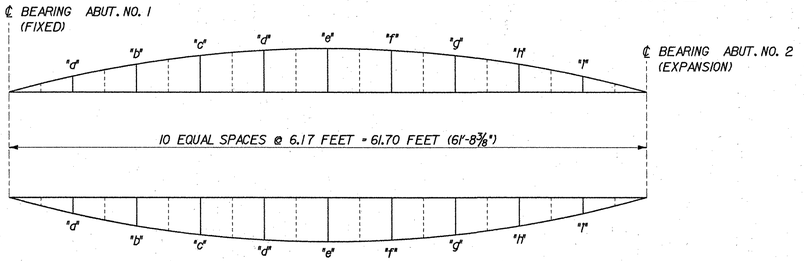
Town Of WARREN	Bridge No. 7
Highway No. TH 1	Log Sta. / Surv. Sta.
BROOK ROAD OVER FREEMAN BROOK	
FRAMING PLAN & DETAILS	
Designed By S. DEUA	Drawn By S. DEUA
Checked By R. JOY Date 02/07	Bridge Design Supervisor R. ROONEY Date 02/07
PROJECT WARREN	PROJECT NO. BHF 0188(7)
I.G.C. Info. m:\549107-Warren\BRIDGE\Final\zf276fpl.dgn	
Bridge Sheet No.	Sheet 21 of 36

PLOTTED 19-FEB-2007



BEAM ELEVATION

NOT TO SCALE



DL DEFLECTION AND CAMBER DIAGRAMS

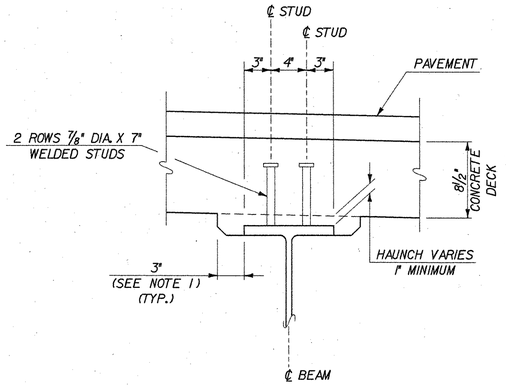
NOT TO SCALE

CAMBER AND DEFLECTION MEASUREMENTS ARE GIVEN IN INCHES AT TENTH POINTS

CAMBER AND DL DEFLECTION ORDINATE SCHEDULE

L = TOTAL LENGTH ℄ BRG. ABUT. NO. 1 TO ℄ BRG. ABUT. NO. 2 = 61'-8 3/8"

GIRDER NO.		℄ BRG. ABUT. NO. 1	"a" 0.10L	"b" 0.20L	"c" 0.30L	"d" 0.40L	"e" 0.50L	"f" 0.60L	"g" 0.70L	"h" 0.80L	"i" 0.90L	℄ BRG. ABUT. NO. 2
1	CAMBER	0"	1 1/8"	2 1/8"	2 7/8"	3 3/8"	3 9/16"	3 3/8"	2 7/8"	2 1/8"	1 3/16"	0"
	DL DEFLECTION	0"	3/16"	1 1/2"	2 1/16"	2 7/16"	2 9/16"	2 7/16"	2 1/16"	1 1/2"	3/16"	0"
2	CAMBER	0"	1 1/16"	1 15/16"	2 5/8"	3 1/16"	3 1/4"	3 1/16"	2 9/16"	2"	1 1/16"	0"
	DL DEFLECTION	0"	1/16"	1 5/16"	1 13/16"	2 1/8"	2 1/4"	2 1/8"	1 13/16"	1 5/16"	1/16"	0"
3	CAMBER	0"	1 1/16"	1 15/16"	2 5/8"	3 1/16"	3 1/4"	3 1/16"	2 11/16"	2"	1 1/16"	0"
	DL DEFLECTION	0"	1/16"	1 5/16"	1 13/16"	2 1/8"	2 1/4"	2 1/8"	1 13/16"	1 5/16"	1/16"	0"
4	CAMBER	0"	1 1/16"	1 15/16"	2 5/8"	3 1/8"	3 1/4"	3 1/16"	2 11/16"	2"	1 1/16"	0"
	DL DEFLECTION	0"	1/16"	1 5/16"	1 13/16"	2 1/8"	2 1/4"	2 1/8"	1 13/16"	1 5/16"	1/16"	0"
5	CAMBER	0"	1 1/16"	1 15/16"	2 5/8"	3 1/16"	3 1/4"	3 1/16"	2 11/16"	2"	1 1/16"	0"
	DL DEFLECTION	0"	1/16"	1 5/16"	1 13/16"	2 1/8"	2 1/4"	2 1/8"	1 13/16"	1 5/16"	1/16"	0"
6	CAMBER	0"	1 1/16"	2"	2 11/16"	3 1/8"	3 5/16"	3 1/8"	2 11/16"	2"	1 1/16"	0"
	DL DEFLECTION	0"	3/4"	1 3/8"	1 7/8"	2 3/16"	2 5/16"	2 3/16"	1 7/8"	1 3/8"	3/4"	0"

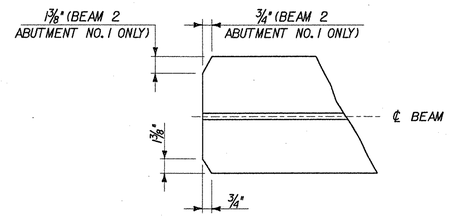


HAUNCH AND SHEAR CONNECTOR DETAIL

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

NOTES

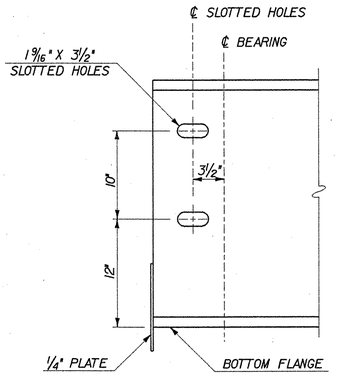
1. THE 3" HORIZONTAL SECTION MAY BE ELIMINATED FOR FORMING SYSTEMS DESIGNED FOR THE CONSTRUCTION OF VERTICAL HAUNCHES. SYSTEMS SHALL BE SUBMITTED FOR APPROVAL TO THE STRUCTURES ENGINEER. ALL VOIDS SHALL BE FILLED WITH MORTAR, TYPE IV OR AN EQUIVALENT PRODUCT FROM THE APPROVED PRODUCTS LIST.



BOTTOM FLANGE CLIP DETAIL

SCALE: 2" = 1'-0"

ABUTMENT NO. 1 SHOWN, ABUTMENT NO. 2 SIMILAR



DETAIL A

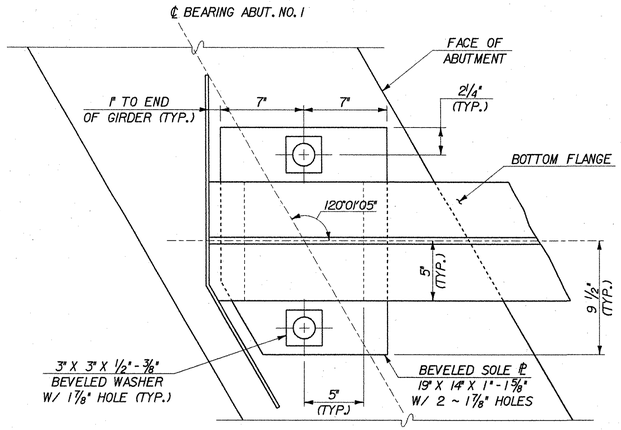
SCALE: 1 1/2" = 1'-0"

McFarland-Johnson, Inc.

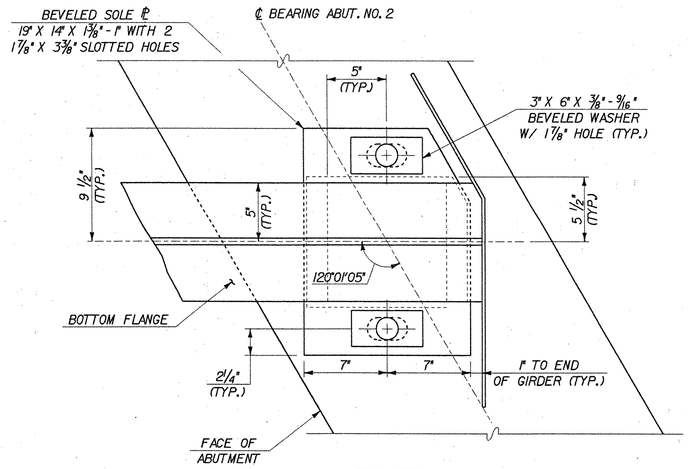
STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of WARREN	Bridge No. 7
Highway No. TH 1	Log Sta. / Surv. Sta.
BROOK ROAD OVER FREEMAN BROOK	
BEAM ELEVATION AND DETAILS	
Designed By S. DELIA	Drawn By S. DELIA
Checked By R. JOY Date 02/07	Bridge Design Supervisor R. ROONEY Date 02/07
PROJECT WARREN	PROJECT NO. BHF 0188(7)
I.G.C. Info. m:\V549107-Warren\BRIDGE\Final\zJ276gdt.dgn	
Bridge Sheet No.	Sheet 22 of 36

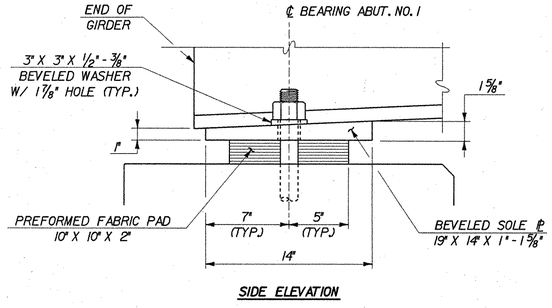
PLOTTED 19-FEB-2007



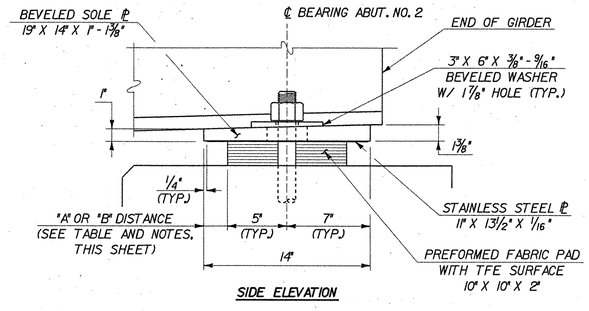
PLAN VIEW



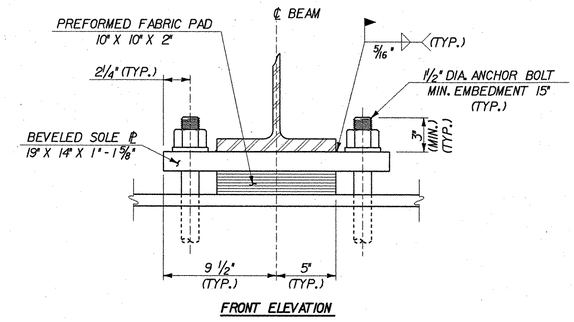
PLAN VIEW



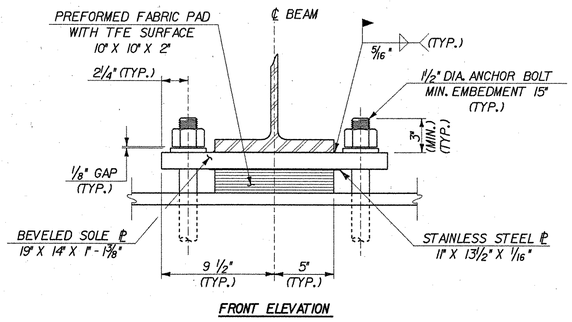
SIDE ELEVATION



SIDE ELEVATION



FRONT ELEVATION



FRONT ELEVATION

FIXED BEARING @ ABUTMENT NO. 1

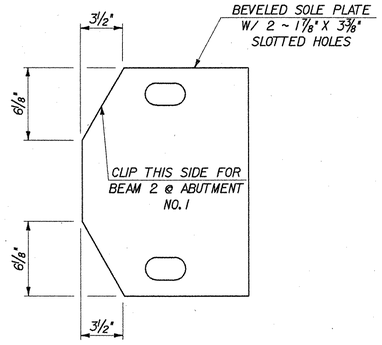
SCALE: 2" = 1'-0"

EXPANSION BEARING @ ABUTMENT NO. 2

SCALE: 2" = 1'-0"

BEARING NOTES

1. BEARINGS SHALL CONFORM TO APPLICABLE SUBSECTIONS OF SECTION 531 & 731.
2. BEARINGS SHALL BE PAID FOR UNDER ITEM 531.10, BEARING DEVICE ASSEMBLY (FABRIC).
3. SHOP DRAWINGS CONFORMING TO SUBSECTION 531.03 SHALL BE SUBMITTED TO INCLUDE WELDING AND BONDING PROCEDURES.
4. THE CONCRETE SURFACE UNDER THE BEARING DEVICE SHALL BE LEVEL.
5. "A" DISTANCE IS THE FINAL SETTING FOR THE BEARING PAD AFTER ALL DEAD LOAD HAS BEEN APPLIED. THE FINAL "A" DISTANCE, AS SHOWN IN THE TABLE, MUST BE ATTAINED WITHIN 1/8 INCH. "B" DISTANCE IS FOR SETTING THE BEARING AFTER THE STRUCTURAL STEEL IS ERECTED AND BEFORE THE CONCRETE DECK IS POURED.
6. DESIGN CRITERIA:
   A. BASE PLATE TO CONCRETE DESIGN PRESSURE = 1000 PSI MAXIMUM.
   B. MINIMUM DESIGN ROTATION = 0.015 RADIANS.
   C. DESIGN LOAD PER BEARING @ ABUTMENTS NO. 1 & 2 (UNFACTORED).
      R_{DL+SDL} = 47 KIPS
      R_{LL+I} = 48 KIPS
7. ALL STEEL IN BEARING DEVICES (EXCEPT STAINLESS STEEL) SHALL BE AASHTO M-270, GRADE 36.
8. ANCHOR BOLTS SHALL BE SWEDGED AND GALVANIZED WITH 4" OF THREAD. EXPANSION BEARING NUTS ARE TO BE DRAWN UP FINGER TIGHT AND THEN BACKED OFF 1/8 INCH. THREADS SHALL BE BURRED TO PREVENT NUT REMOVAL. ANCHOR BOLTS SHALL HAVE A MINIMUM OF 15" EMBEDMENT INTO THE CONCRETE. ANCHOR BOLTS, NUTS AND WASHERS SHALL MEET THE REQUIREMENTS OF SECTION 714.08.
9. ALL BEARING DEVICES SHALL BE GALVANIZED OR METALIZED. AREAS OF GALVANIZING OR METALIZING DAMAGED BY THE FIELD WELDS OR HANDLING SHALL BE REPAIRED PER SECTION 513 OF THE SUPPLEMENTAL SPECIFICATIONS.
10. ALL HORIZONTAL DIMENSIONS SHOWN @ 45° ARE FINAL CONDITION DIMENSIONS.



SOLE PLATE CLIP DETAIL

SCALE: 2" = 1'-0"

NOTE: FIXED BEARING SHOWN, EXP. BEARING SIMLAR.

TEMPERATURE SETTING TABLE

ABUTMENT NO. 2

TEMP	"A" DIST	"B" DIST
0° F	1 13/16"	2 3/16"
15° F	1 7/8"	2 1/4"
30° F	1 15/16"	2 5/16"
45° F	2"	2 3/8"
60° F	2 1/16"	2 7/16"
75° F	2 1/8"	2 1/2"
90° F	2 3/16"	2 9/16"
105° F	2 5/16"	2 11/16"

McFarland-Johnson, Inc.

STATE OF VERMONT
AGENCY OF TRANSPORTATION

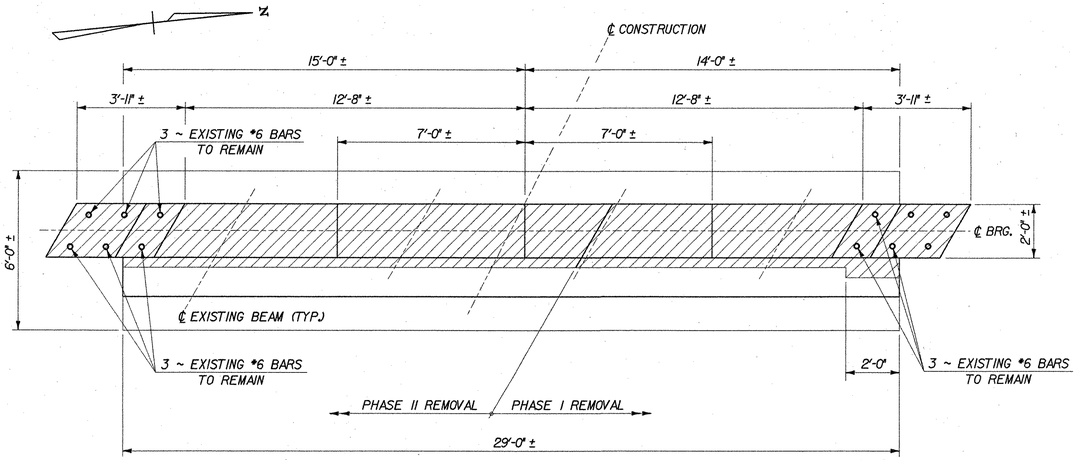
Town Of WARREN	Bridge No. 7
Highway No. TH 1	Log Sta. / Surv. Sta.

BROOK ROAD OVER FREEMAN BROOK

BEARING DETAILS

Designed By S. DEUA	Drawn By S. DEUA
Checked By R. JOY Date 02/07	Bridge Design Supervisor R. ROONEY Date 02/07
PROJECT WARREN	PROJECT NO. BHF 0188(7)
I.G.C. Info. m\V549107-Warren\BRIDGE\Final\zJ276brg.dgn	
Bridge Sheet No.	Sheet 23 of 36

PLOTTED 19-FEB-2007



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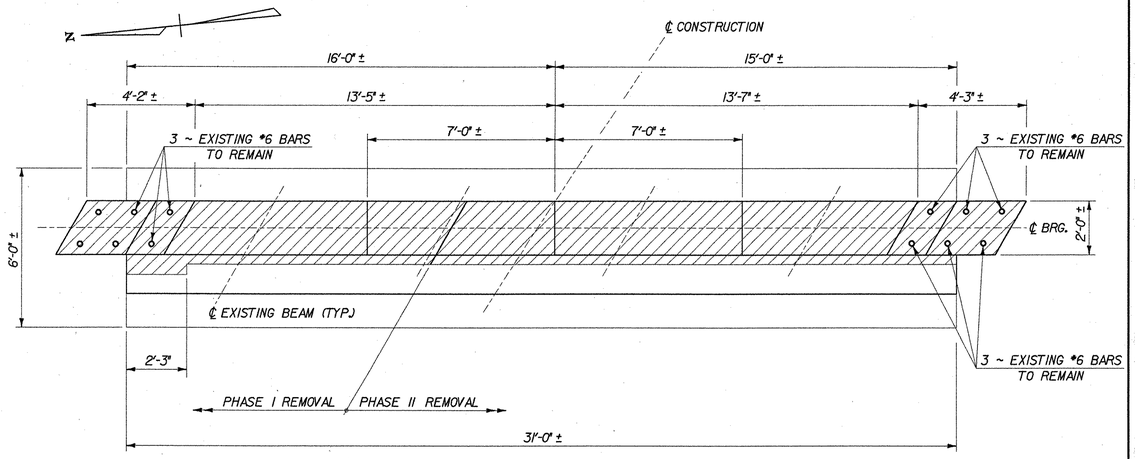

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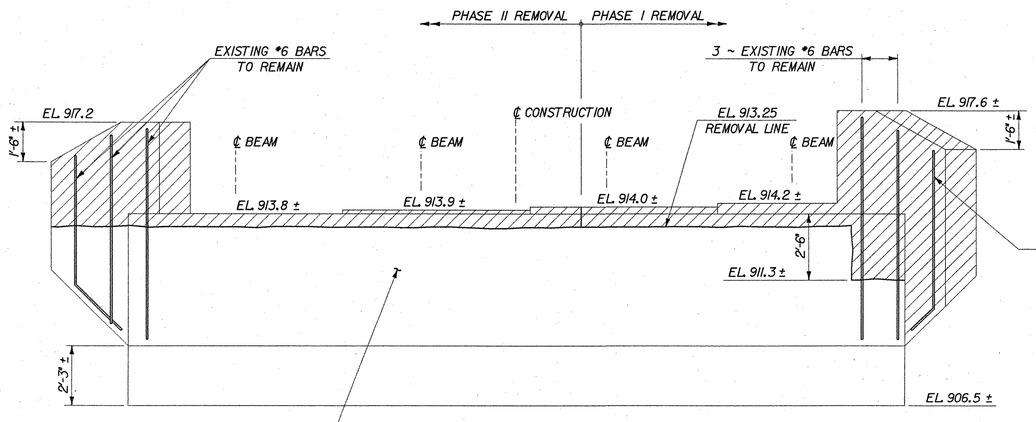
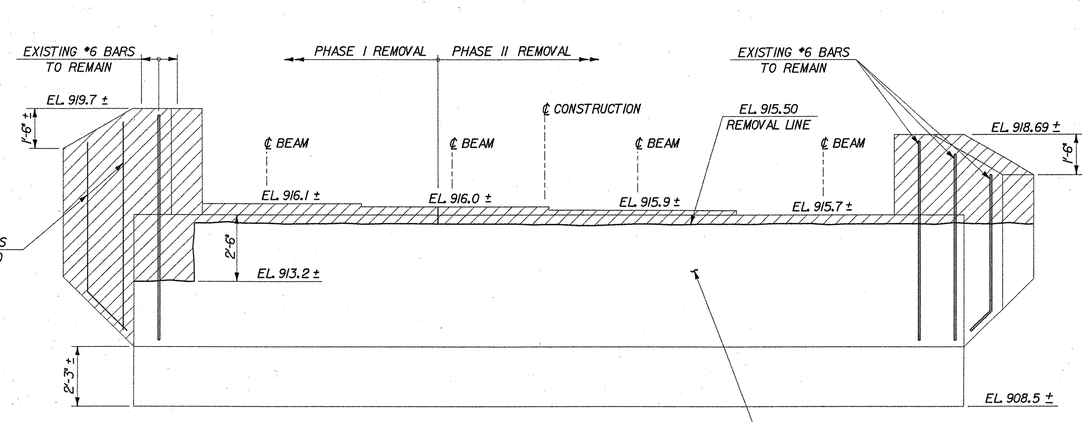


ELEVATION

ABUTMENT NO. 1 REMOVAL

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



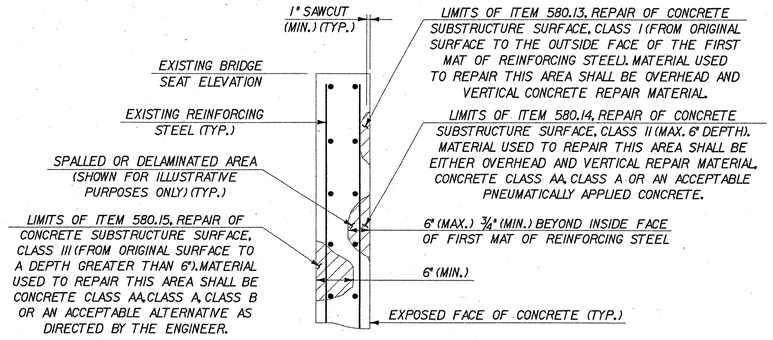
ELEVATION

ABUTMENT NO. 2 REMOVAL

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

NOTES

1. FOR REMOVAL NOTES, SEE SHEET 16.



CONCRETE SUBSTRUCTURE REPAIR DETAIL

NOT TO SCALE

LEGEND

N.F. - NEAR FACE
F.F. - FAR FACE
E.F. - EACH FACE
▲ - CUT TO FIT IN FIELD

LIMITS OF CONCRETE REMOVAL

McFarland-Johnson, Inc.

STATE OF VERMONT
AGENCY OF TRANSPORTATION

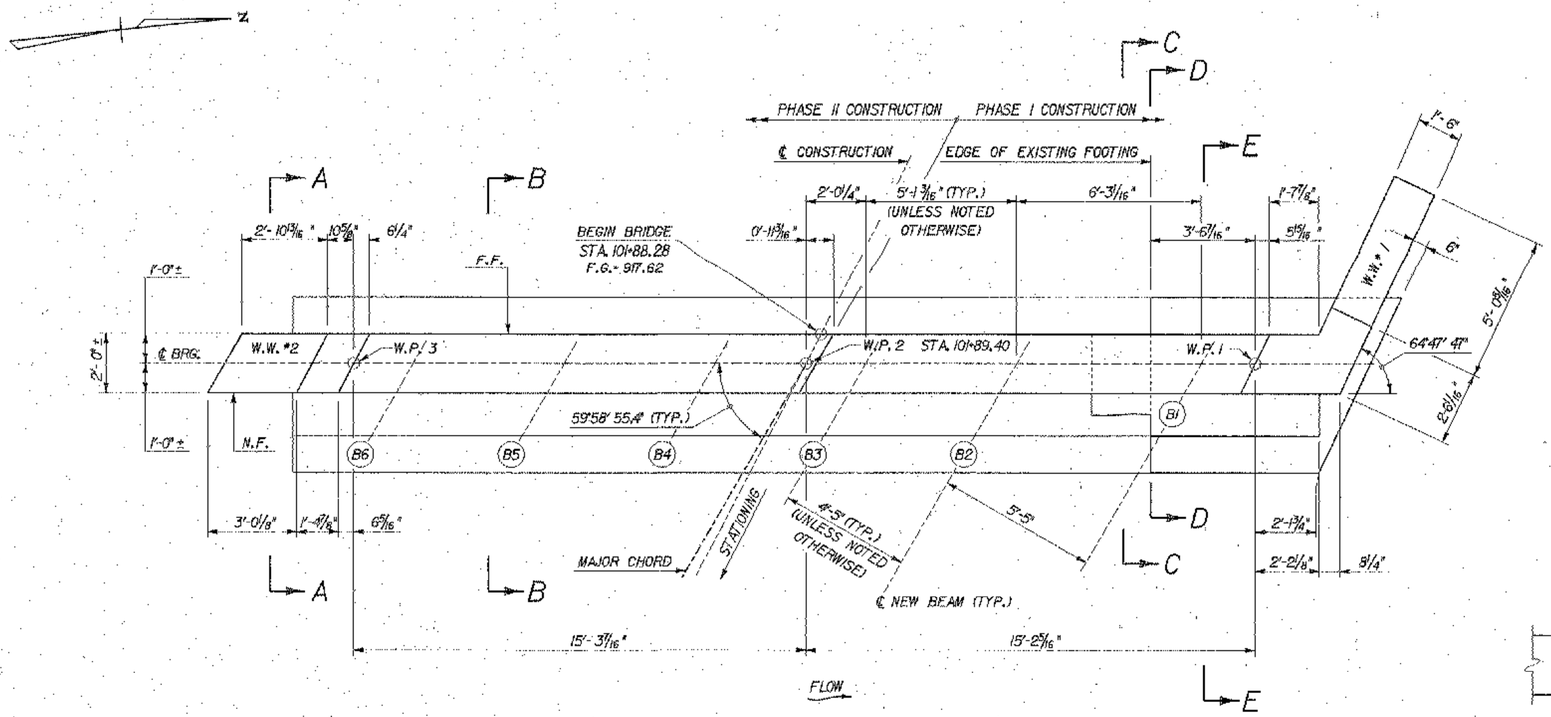
Town Of WARREN	Bridge No. 7
Highway No. TH 1	Log Sta. / Surv. Sta.

BROOK ROAD OVER FREEMAN BROOK

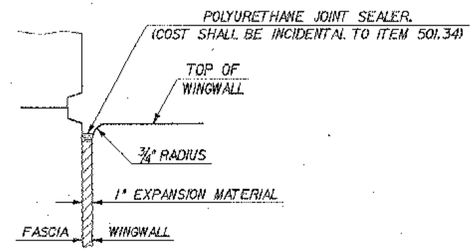
ABUTMENT REMOVAL DETAILS

Designed By S. DELIA	Drawn By P. DUSTIN
Checked By R. JOY Date 02/07	Bridge Design Supervisor R. ROONEY Date 02/07
PROJECT WARREN	PROJECT NO. BHF 0188(7)
I.G.C. Info. mV549107-Warren\BRIDGE\Final\zJ276abl.dgn	
Bridge Sheet No.	Sheet 24 of 36

PLOTTED 19-FEB-2007

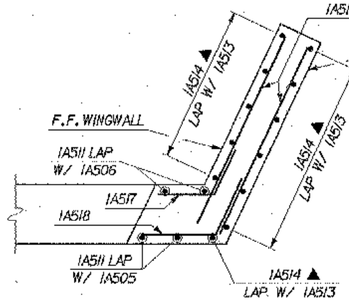


PLAN

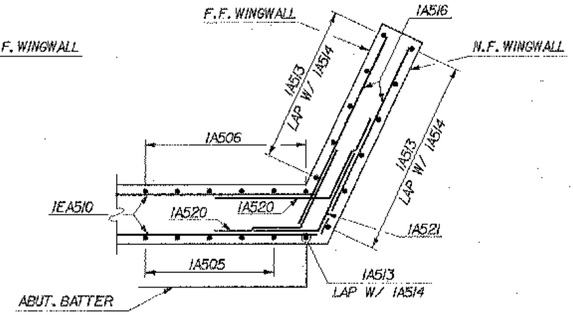


JOINT BETWEEN FASCIA AND WINGWALL

SCALE: N.T.S.



ABOVE BRIDGE SEAT



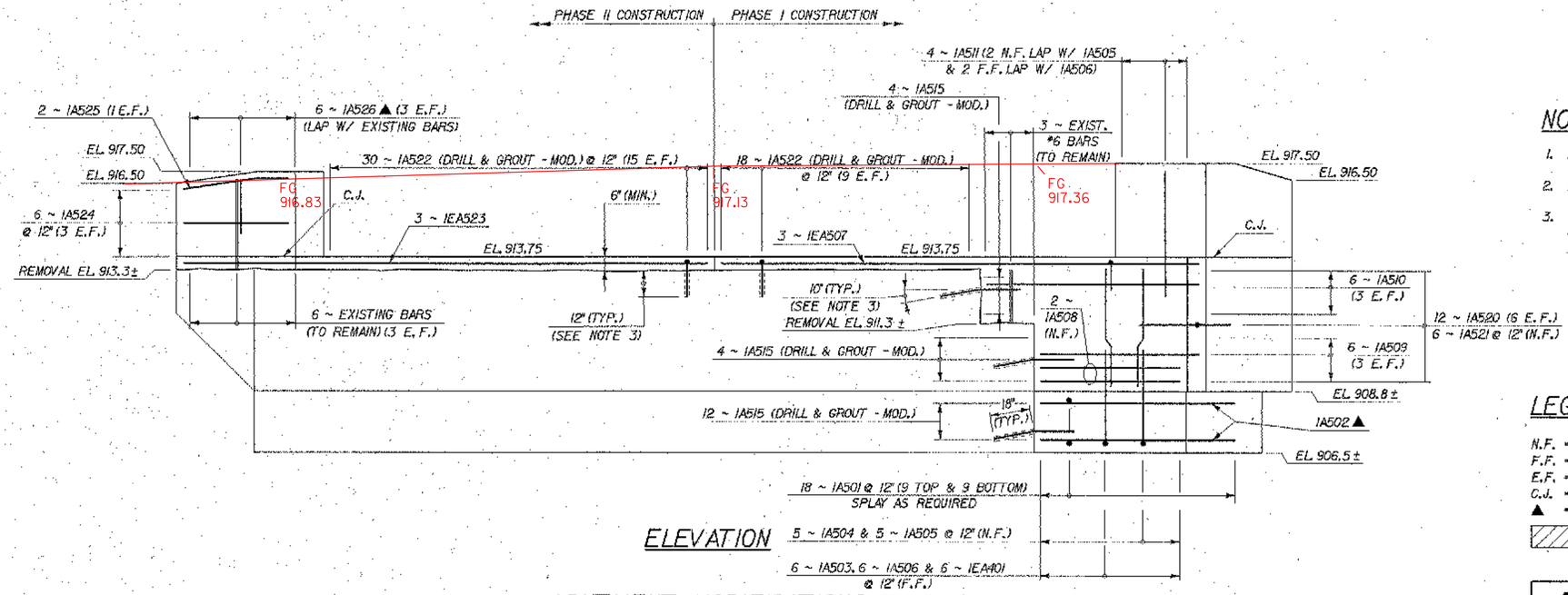
BELOW BRIDGE SEAT

WORKING POINTS

LOCATION	NORTHING	EASTING
W.P. 1	88463.8120	47954.6286
W.P. 2	88448.6883	47953.1077
W.P. 3	88433.4715	47951.5775

WINGWALL NO. 1 CORNER DETAILS

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



ELEVATION

ABUTMENT MODIFICATIONS

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

NOTES

1. FOR SECTIONS A-A, B-B, C-C, D-D, & E-E AND W.W. NO. 1 ELEVATION, SEE SHEET 26.
2. FOR GENERAL NOTES, SEE SHEET 16.
3. HORIZONTAL DRILL AND GROUT BARS SHALL BE EMBEDDED 18 INCHES INTO EXISTING CONCRETE AND VERTICAL DRILL AND GROUT BARS SHALL BE EMBEDDED 12 INCHES INTO EXISTING CONCRETE.

LEGEND

N.F. = NEAR FACE
F.F. = FAR FACE
E.F. = EACH FACE
C.J. = CONSTRUCTION JOINT
▲ = CUT TO FIT IN FIELD
LIMITS OF CONCRETE REMOVAL

McFarland-Johnson, Inc.

STATE OF VERMONT
AGENCY OF TRANSPORTATION

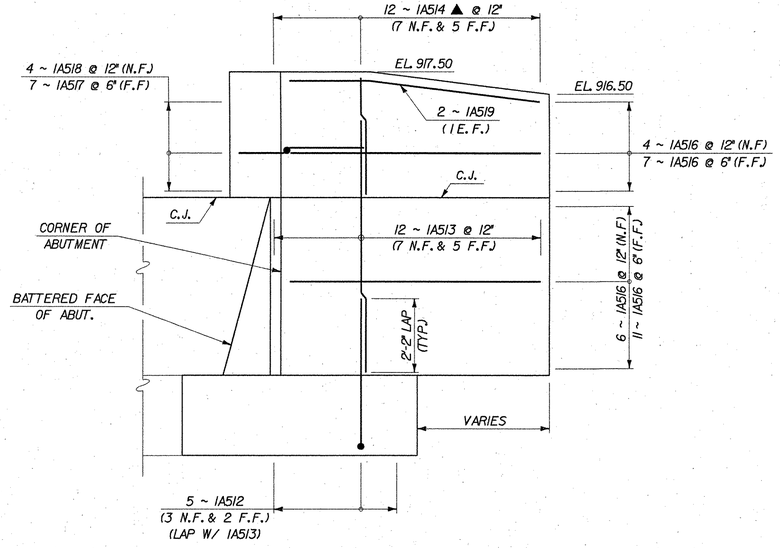
Town Of WARREN	Bridge No. 7
Highway No. TH 1	Log Sta.
	Surv. Sta.

BROOK ROAD OVER FREEMAN BROOK

ABUTMENT NO. 1

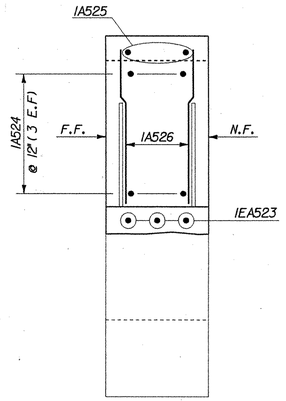
Designed By S. DELIA	Drawn By P. DUSTIN
Checked By R. JOY Date 02/07	Bridge Design Supervisor R. ROONEY Date 02/07
PROJECT WARREN	PROJECT NO. BHF 0188(7)
I.G.C. Info. m\549107-Warren\BRIDGE\Final\z1276ab2.dgn	
Bridge Sheet No.	Sheet 25 of 36

PLOTTED 02-MAR-2007



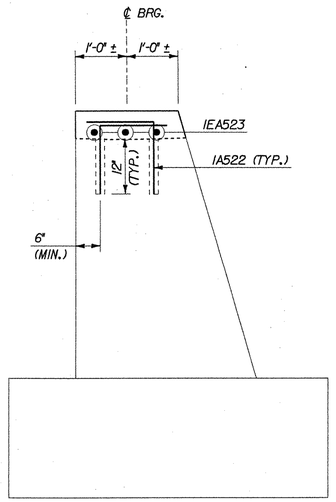
WINGWALL NO. 1 ELEVATION

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



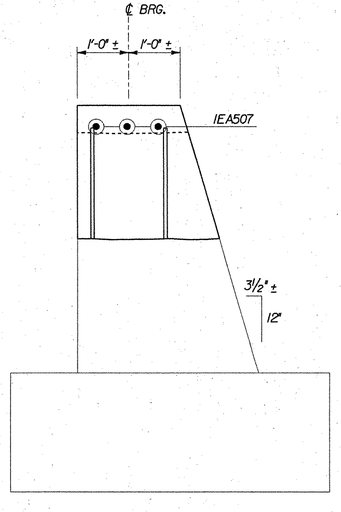
SECTION A-A

SCALE: 3/4" = 1'-0"



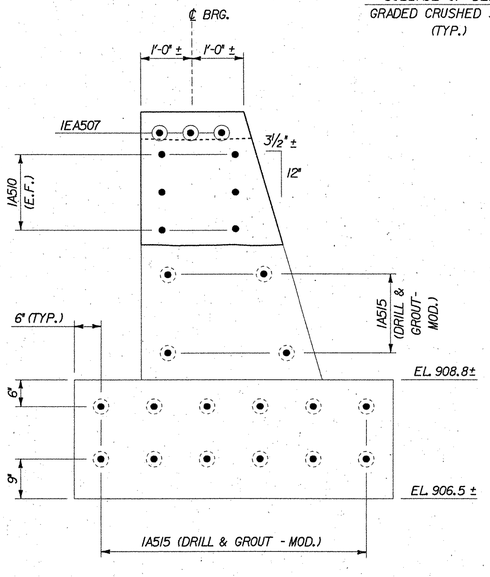
SECTION B-B

SCALE: 3/4" = 1'-0"



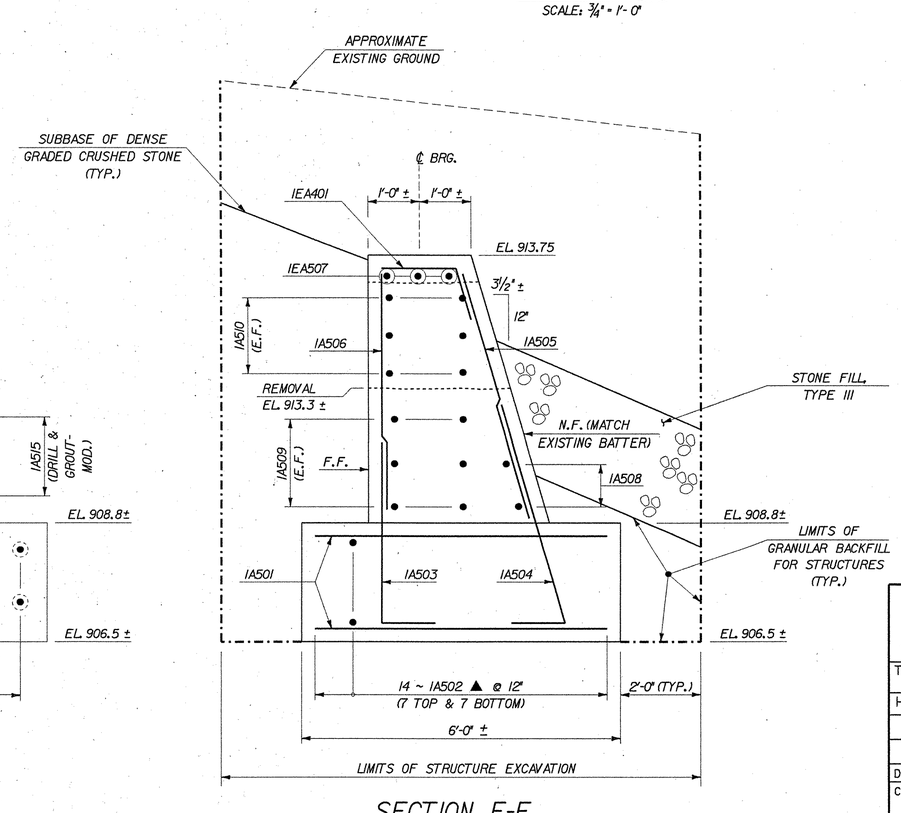
SECTION C-C

SCALE: 3/4" = 1'-0"



SECTION D-D

SCALE: 3/4" = 1'-0"



SECTION E-E

SCALE: 3/4" = 1'-0"

McFarland-Johnson, Inc.

STATE OF VERMONT
AGENCY OF TRANSPORTATION

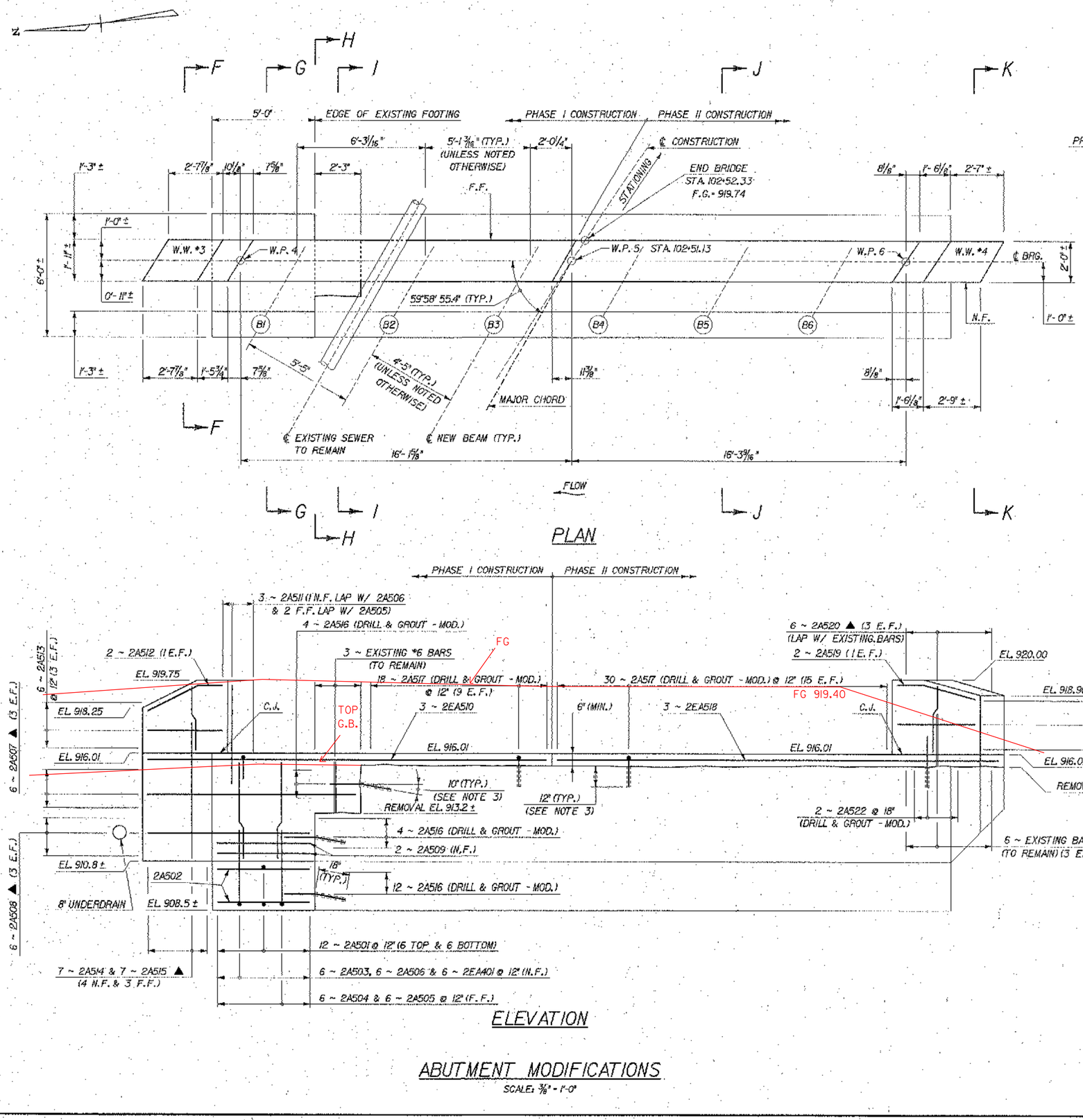
Town Of WARREN	Bridge No. 7
Highway No. TH 1	Log Sta. / Surv. Sta.

BROOK ROAD OVER FREEMAN BROOK

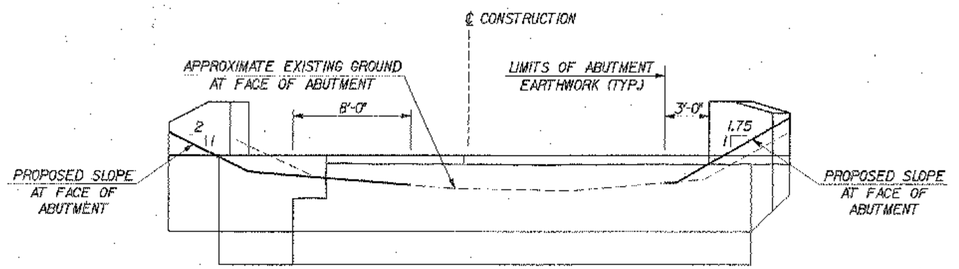
ABUTMENT NO. 1 DETAILS

Designed By S. DELIA	Drawn By P. DUSTIN
Checked By R. JOY Date 02/07	Bridge Design Supervisor R. ROONEY Date 02/07
PROJECT WARREN	PROJECT NO. BHF 0188(7)
I.G.C. Info. m\V549107-Warren\BRIDGE\Final\zj276adl.dgn	
Bridge Sheet No.	Sheet 26 of 36

PLOTTED 02-MAR-2007



PLAN



ABUTMENT GRADING DETAIL

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

WORKING POINTS		
LOCATION	NORTHING	EASTING
W.P. 4	88428.6908	48004.7899
W.P. 5	88412.6535	48003.1772
W.P. 6	88396.4568	48001.5485

ELEVATION

ABUTMENT MODIFICATIONS

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

NOTES

1. FOR SECTIONS F-F, G-G, H-H, I-I, J-J AND K-K, SEE SHEET 28.
2. FOR GENERAL NOTES, SEE SHEET 16.
3. HORIZONTAL DRILL AND GROUT BARS SHALL BE EMBEDDED 18 INCHES INTO EXISTING CONCRETE AND VERTICAL DRILL AND GROUT BARS SHALL BE EMBEDDED 12 INCHES INTO EXISTING CONCRETE.

LEGEND

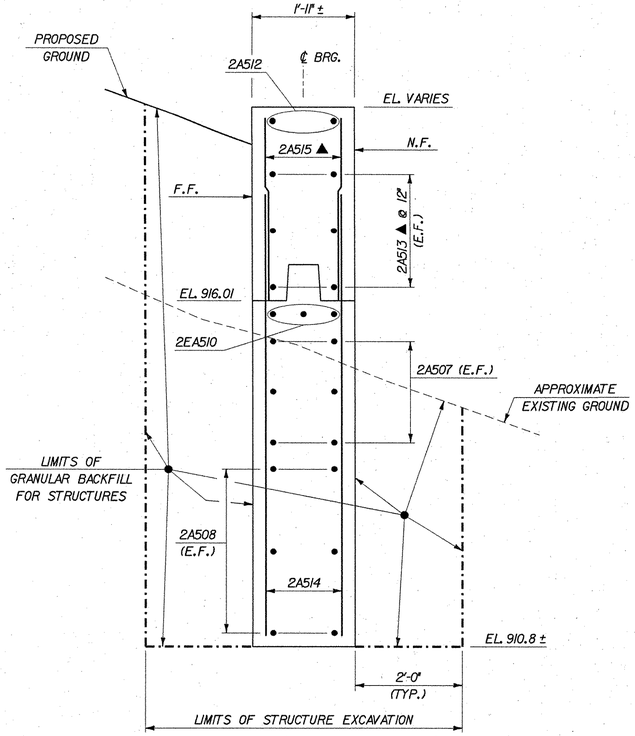
N.F. = NEAR FACE
F.F. = FAR FACE
E.F. = EACH FACE
C.J. = CONSTRUCTION JOINT
▲ = CUT TO FIT IN FIELD

McFarland-Johnson, Inc.

STATE OF VERMONT
AGENCY OF TRANSPORTATION

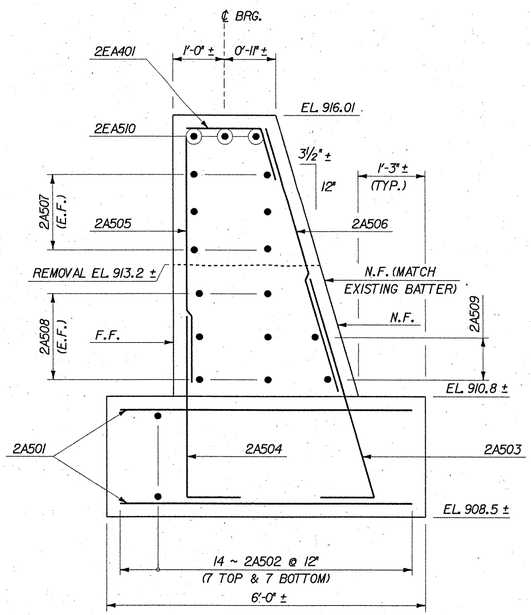
Town Of WARREN	Bridge No. 7
Highway No. TH 1	Log Sta. / Surv. Sta.
BROOK ROAD OVER FREEMAN BROOK	
ABUTMENT NO. 2	
Designed By S. DELIA	Drawn By P. DUSTIN
Checked By R. JOY Date 02/07	Bridge Design Supervisor R. ROONEY Date 02/07
PROJECT WARREN	PROJECT NO. BHF 0188(7)
I.G.C. Info. m\549107-Warren\BRIDGE\Final\z1276ab3.dgn	
Bridge Sheet No.	Sheet 27 of 36

PLOTTED 02-MAR-2007



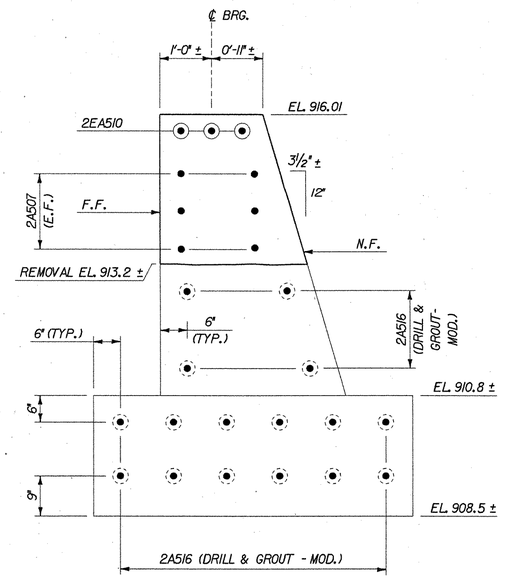
SECTION F-F

SCALE: 3/4" = 1'-0"



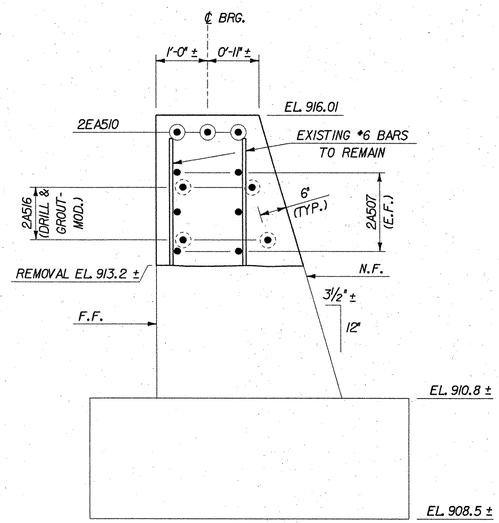
SECTION G-G

SCALE: 3/4" = 1'-0"



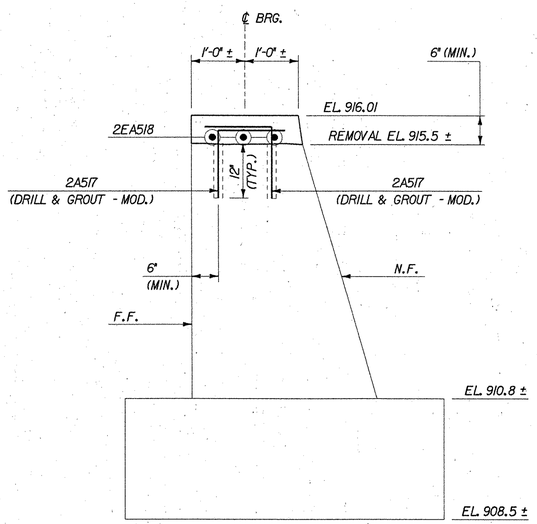
SECTION H-H

SCALE: 3/4" = 1'-0"



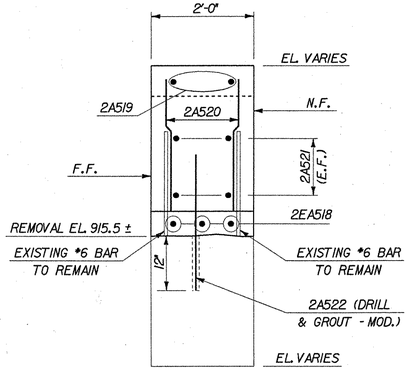
SECTION I-I

SCALE: 3/4" = 1'-0"



SECTION J-J

SCALE: 3/4" = 1'-0"



SECTION K-K

SCALE: 3/4" = 1'-0"

NOTES

N.F. = NEAR FACE
F.F. = FAR FACE
E.F. = EACH FACE
▲ = CUT TO FIT IN FIELD
1. 3" CLR. UNLESS OTHERWISE SPECIFIED ON THE PLANS.

McFarland-Johnson, Inc.

STATE OF VERMONT
AGENCY OF TRANSPORTATION

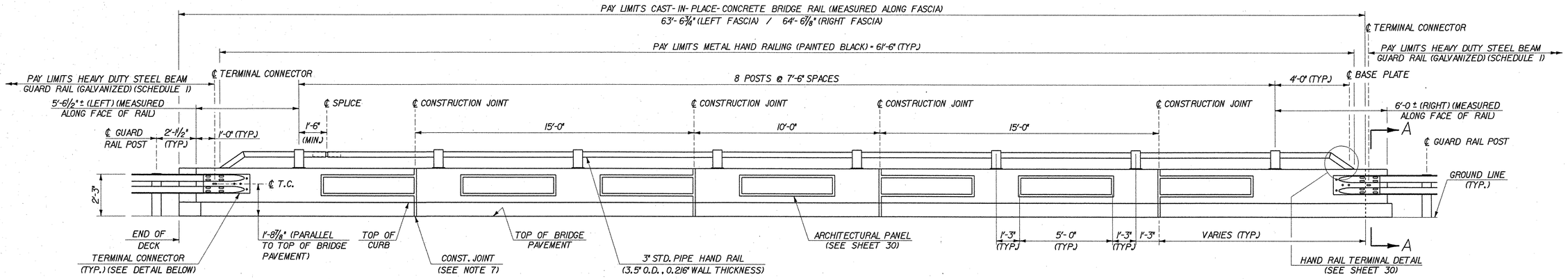
Town Of WARREN	Bridge No. 7
Highway No. TH 1	Log Sta. / Surv. Sta.

BROOK ROAD OVER FREEMAN BROOK

ABUTMENT NO. 2 DETAILS

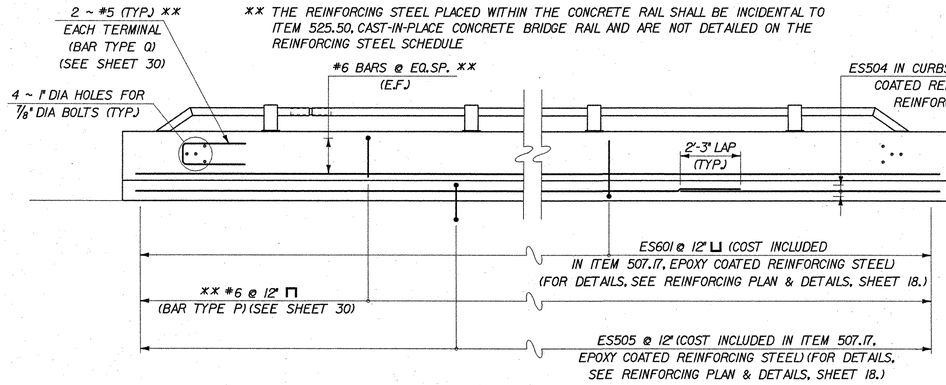
Designed By S. DEIJA	Drawn By P. DUSTIN
Checked By R. JOY Date 02/07	Bridge Design Supervisor R. ROONEY Date 02/07
PROJECT WARREN	PROJECT NO. BHF 0188(7)
I.G.C. Info. m\V549107-Warren\BRIDGE\Final\zj276ad2.dgn	
Bridge Sheet No.	Sheet 28 of 36

PLOTTED 02-MAR-2007



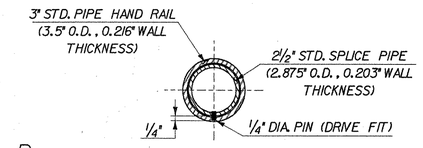
BRIDGE RAILING ELEVATION

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



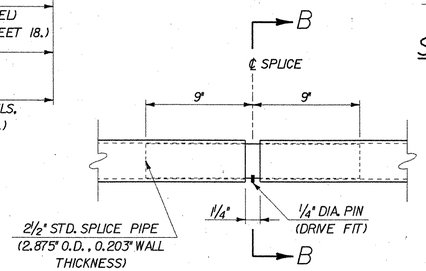
TYPICAL REINFORCEMENT LAYOUT

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



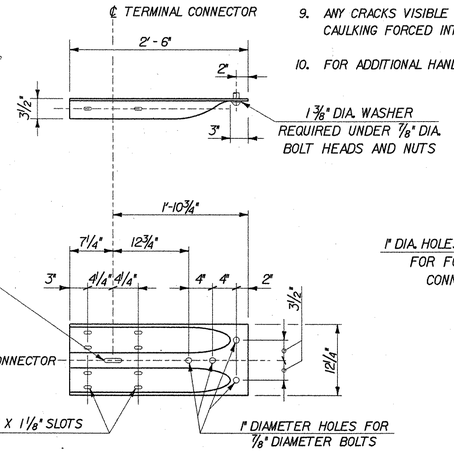
SECTION B-B

SCALE: 3" = 1'-0"



SPLICE PIPE DETAIL

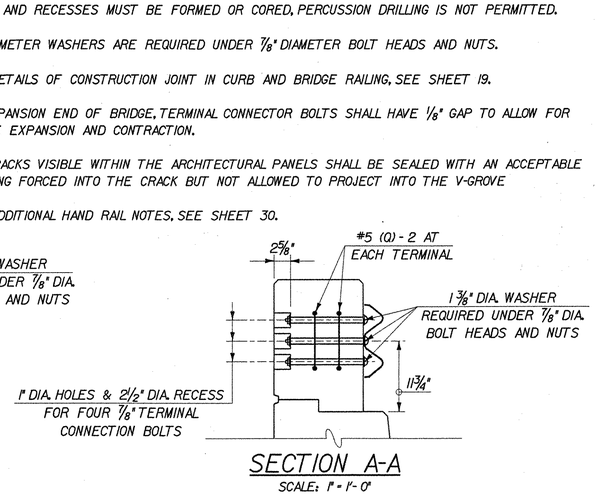
SCALE: 2" = 1'-0"



TERMINAL CONNECTOR

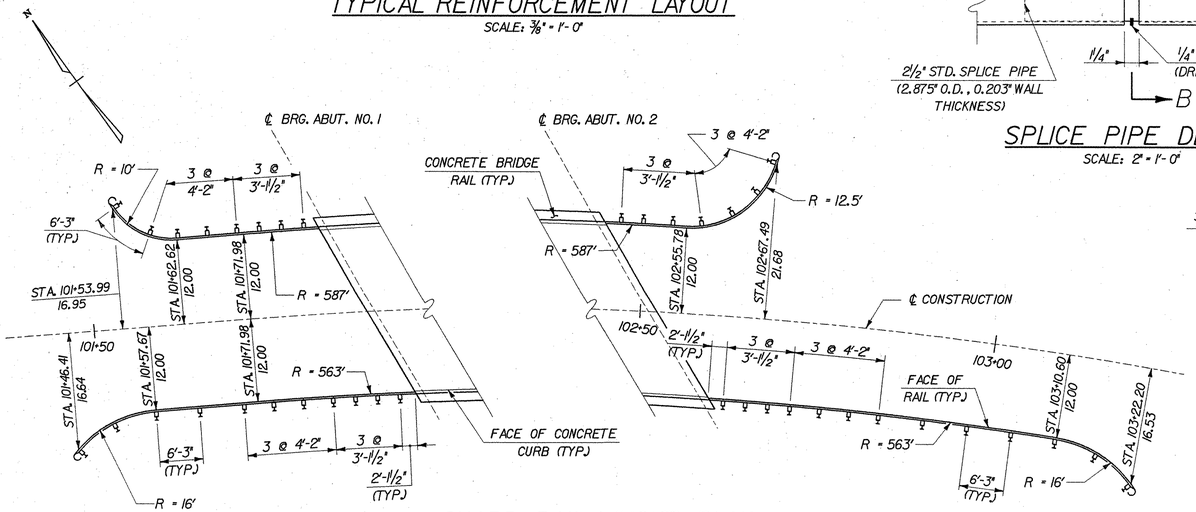
SCALE: 1" = 1'-0

TERMINAL CONNECTOR SHALL RECEIVE THE SAME PROTECTIVE COATING AS THE ATTACHED METAL BEAM GUARD RAIL. ALL COSTS FOR TERMINAL CONNECTOR SHALL BE INCLUDED IN CONTRACT ITEM 621.53.



SECTION A-A

SCALE: 1" = 1'-0"



GUARD RAIL LAYOUT PLAN

SCALE 1" = 10'-0

10 0 10

ALL DIMENSIONS PROVIDED AT FACE OF RAIL

C.I.P. CONCRETE RAIL NOTES:

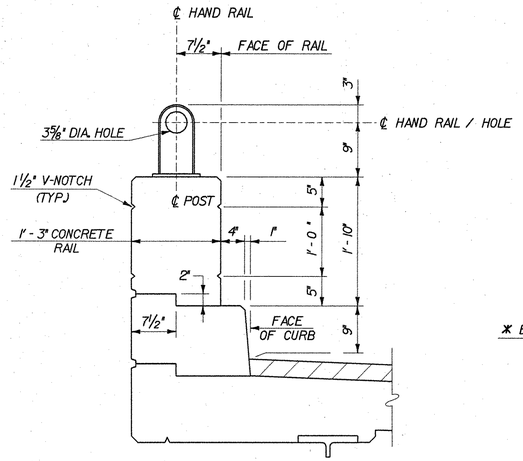
1. ALL PARTS OF THE RAILING INCLUDING REINFORCING, BOLTS, NUTS AND WASHERS ARE INCLUDED IN THE PRICE BID PER LINEAR FOOT OF ITEM 525.50, "CAST-IN-PLACE CONCRETE BRIDGE RAIL", UNLESS OTHERWISE NOTED.
2. ALL CONCRETE FOR THE CAST-IN-PLACE CONCRETE BRIDGE RAIL SHALL BE CONCRETE H.P.C. CLASS AA.
3. DIMENSIONS RELATING TO REINFORCING STEEL ARE TO CENTER OF BARS, UNLESS SPECIFIED OTHERWISE.
4. ALL REINFORCING STEEL SHALL BE EPOXY COATED.
5. HOLES AND RECESSES MUST BE FORMED OR CORED, PERCUSSION DRILLING IS NOT PERMITTED.
6. 1 3/8" DIAMETER WASHERS ARE REQUIRED UNDER 7/8" DIAMETER BOLT HEADS AND NUTS.
7. FOR DETAILS OF CONSTRUCTION JOINT IN CURB AND BRIDGE RAILING, SEE SHEET 19.
8. AT EXPANSION END OF BRIDGE, TERMINAL CONNECTOR BOLTS SHALL HAVE 1/8" GAP TO ALLOW FOR BRIDGE EXPANSION AND CONTRACTION.
9. ANY CRACKS VISIBLE WITHIN THE ARCHITECTURAL PANELS SHALL BE SEALED WITH AN ACCEPTABLE CAULKING FORCED INTO THE CRACK BUT NOT ALLOWED TO PROJECT INTO THE V-GROVE
10. FOR ADDITIONAL HAND RAIL NOTES, SEE SHEET 30.

STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of WARREN	Bridge No. 7
Highway No. TH 1	Log Sta. / Surv. Sta.
BROOK ROAD OVER FREEMAN BROOK	
RAILING DETAILS (1 OF 2)	
Designed By B. COLBURN / S. DEJIA	Drawn By B. COLBURN / P. DUSTIN
Checked By R. JOY Date 02/07	Bridge Design Supervisor R. ROONEY Date 02/07
PROJECT WARREN	PROJECT NO. BHF 0188(7)
I.G.C. Info. m:\V549107-Warren\BRIDGE\Final\zJ276rl1.dgn	
Bridge Sheet No.	Sheet 29 of 36

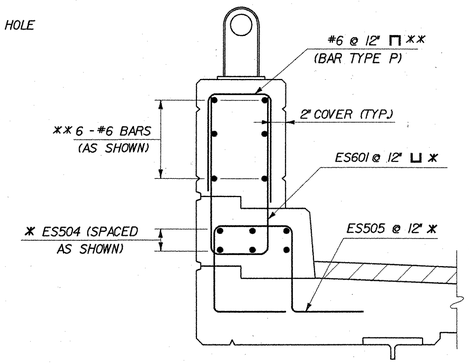
McFarland-Johnson, Inc.

PLOTTED 19-FEB-2007



TYPICAL SECTION

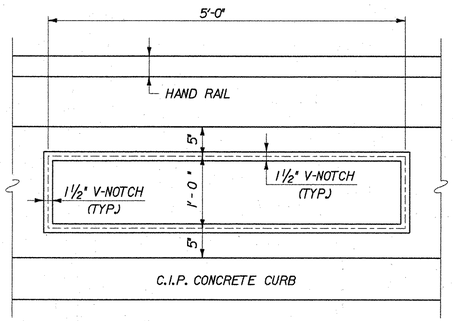
SCALE: 1" = 1'-0"



TYPICAL SECTION - REINFORCEMENT

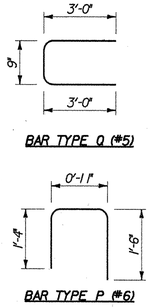
SCALE: 1" = 1'-0"

* (COST INCLUDED IN ITEM 507.17, EPOXY COATED REINFORCING STEEL) (FOR DETAILS, SEE REINFORCING PLAN & DETAILS, SHEET 18.)



ARCHITECTURAL PANEL

SCALE: 1" = 1'-0"



BAR TYPE Q (#5)

BAR TYPE P (#6)

BAR DETAILS **

NOT TO SCALE

** THE REINFORCING STEEL PLACED WITHIN THE CONCRETE RAIL SHALL BE INCIDENTAL TO ITEM 525.50, CAST-IN-PLACE CONCRETE BRIDGE RAIL AND ARE NOT DETAILED ON THE REINFORCING STEEL SCHEDULE

HAND RAIL NOTES:

1. ALL WORK AND MATERIALS SHALL CONFORM TO THE PROVISIONS OF SECTION 525, "RAILINGS" OF THE STANDARD SPECIFICATION FOR CONSTRUCTION.
2. RAIL PIPE AND POSTS SHALL MEET THE REQUIREMENTS OF SECTION 732, "RAILING MATERIALS" OF THE STANDARD SPECIFICATIONS FOR CONSTRUCTION EXCEPT THE DROP-WEIGHT TEAR TEST IN SECTION 732 SHALL NOT APPLY TO THE STRUCTURAL PIPE.
3. ALL EXPOSED CUT OR SHEARED EDGES SHALL BE ROUNDED TO A 1/16" RADIUS AND BE FREE OF BURRS.
4. RAIL POSTS SHALL BE SET NORMAL TO GRADE.
5. PROVIDE A MINIMUM OF 1 - ¾" DIAMETER HOLE IN BOTTOM OF HAND RAIL BETWEEN POSTS TO ALLOW FOR DRAINAGE.
6. SECTIONS OF RAIL TUBE SHALL BE ATTACHED TO A MINIMUM OF TWO (2) RAIL POSTS AND PREFERABLY TO AT LEAST FOUR (4) POSTS.
8. ALL PARTS SHALL BE GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH AASHTO M111, EXCEPT THAT HARDWARE SHALL MEET THE REQUIREMENTS OF AASHTO M232.
9. RAIL POSTS ANCHORING NUTS SHALL BE TIGHTENED TO A SNUG FIT AND GIVEN AN ADDITIONAL ONE-EIGHTH TURN.
10. HOLES IN RAIL FOR PIPE HAND RAIL ATTACHMENT SHALL BE FIELD-DRILLED.
11. IF THERE IS A CONFLICT BETWEEN THESE STANDARD DETAILS AND THE DESIGN, THE REQUIREMENTS OF THE DESIGN DRAWINGS SHALL BE FOLLOWED.
12. THE PIPE RAILING SHALL BE SHOP BENT TO THE CORRECT RADIUS.
13. THE FABRICATOR SHALL SUBMIT SHOP DRAWINGS INCLUDING WELDING PROCEDURES TO THE STRUCTURES SECTION FOR APPROVAL IN ACCORDANCE WITH THE PROVISION OF 506.04, "SHOP DRAWINGS". ALL WELDING SHALL CONFORM WITH SECTION 506.10.
14. HAND RAILING SHALL BE PAINTED BLACK.
15. THE METAL POSTS SHALL BE ATTACHED TO THE CONCRETE BRIDGE RAIL VIA AN ADHESIVE ANCHORING SYSTEM CONSISTING OF STAINLESS STEEL THREADED RODS EMBEDDED AND ADHERED TO FIELD DRILLED HOLES. THE ADHESIVE ANCHORING SYSTEM SHALL INCLUDE ¾-INCH HILTI RODS (304SS), NUTS, AND WASHERS, AS WELL AS THE HILTI HIT-RE500 ADHESIVE SYSTEM, OR ACCEPTED EQUAL. ALL COSTS SHALL BE INLCUDED IN ITEM 525.50, CAST-IN-PLACE CONCRETE BRIDGE RAIL.

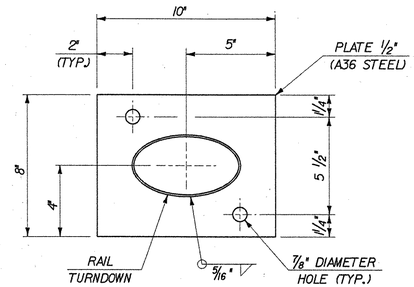
MATERIALS:

RAIL PIPE ——— ASTM A53
RAIL POSTS AND BASE PLATES ——— ASTM A709/A709M, GRADE 36
ALL OTHER SHAPES AND PLATES ——— ASTM A709/A709M, GRADE 36
ANCHOR STUDS ——— ASTM A449
ALL OTHER BOLTS (UNLESS NOTED) ——— AASHTO M164, TYPE I

NUTS FOR AASHTO M164 BOLTS AND FOR ANCHOR STUDS SHALL COMPLY WITH AASHTO M291 (ASTM A563).

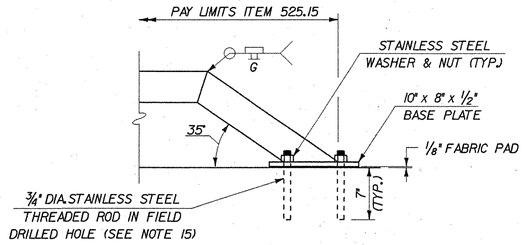
WASHERS SHALL COMPLY WITH AASHTO M293 (ASTM F436) SPECIFICATIONS.

⅛" PAD SHALL COMPLY WITH STANDARD SPECIFICATION SUBSECTION 731.01 OR 731.02.



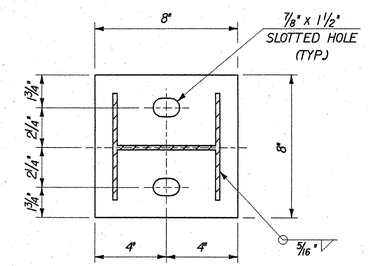
HAND RAIL TURNDOWN BASE PLATE

SCALE: 3" = 1'-0"



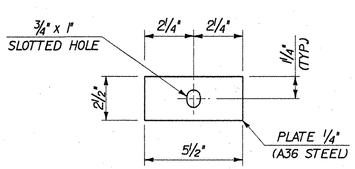
HAND RAIL TERMINAL DETAIL

SCALE: 1½" = 1'-0"



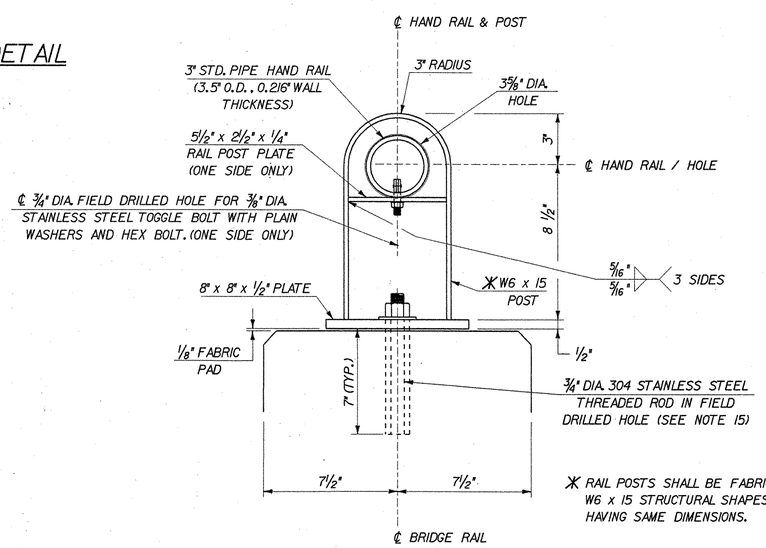
TYPICAL BASE PLATE

SCALE: 3" = 1'-0"



RAIL POST PLATE

SCALE: 3" = 1'-0"



HAND RAIL DETAIL

SCALE: 3" = 1'-0"

* RAIL POSTS SHALL BE FABRICATED FROM W6 x 15 STRUCTURAL SHAPES OR PLATES HAVING SAME DIMENSIONS.

PLOTTED 19-FEB-2007

STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of WARREN	Bridge No. 7
Highway No. TH 1	Log Sta. / Surv. Sta.
BROOK ROAD OVER FREEMAN BROOK	
RAILING DETAILS (2 OF 2)	
Designed By B. COLBURN / S. DELIA	Drawn By P. DUSTIN / S. DELIA
Checked By R. JOY Date 02/07	Bridge Design Supervisor R. ROONEY Date 02/07
PROJECT WARREN	PROJECT NO. BHF 0188(7)
I.G.C. Info. m\549107-Warren\BRIDGE\Final\zJ276r12.dgn	
Bridge Sheet No.	Sheet 30 of 36

McFarland-Johnson, Inc.

STATE OF VERMONT
AGENCY OF TRANSPORTATION

TRAFFIC SIGN SUMMARY SHEET

MILEMARKER, STATION, OR SIGN NUMBER	SIGN LEGEND	SIGN DIMENSIONS EA	SIGN DIMENSIONS WIDTH (in)	SIGN DIMENSIONS HEIGHT (in)	NEW & SALVAGED SIGNS "A"	NEW & SALVAGED SIGNS "B"	SALV SIGN	SALV TIS	EXIST POST RETAIN	EXIST POST SALVAGE	NEW SIGN POSTS: NO. OF POSTS	FLANGED CHANNEL lb/ft 1.12	FLANGED CHANNEL lb/ft 2.0	FLANGED CHANNEL lb/ft 3.0	SQUARE STEEL (in) 1.75 (lb/ft 1.88)	SQUARE STEEL (in) 2.0 (lb/ft 2.16)	SQUARE STEEL (in) 2.5 (lb/ft 3.35)	ANCHOR	SLEEVE	TUBULAR ALUMINUM Ø (in) 3.0 (lb/ft 1.3)	TUBULAR ALUMINUM Ø (in) 4.0 (lb/ft 1.7)	TUBULAR ALUMINUM Ø (in) 4.0 MOD (lb/ft 1.7)	FOUNDATION	TUBULAR STEEL Ø (in) 3.0 (lb/ft 7.6)	TUBULAR STEEL Ø (in) 3.5 (lb/ft 9.0)	TUBULAR STEEL Ø (in) 4.0 (lb/ft 10.8)	TUBULAR STEEL Ø (in) 5.0 (lb/ft 14.6)	W-SHAPE STEEL FTG. SIZE 24"	W-SHAPE STEEL FTG. SIZE 30"	W-SHAPE STEEL WEIGHT	W-SHAPE STEEL POST SIZE	SIGN FRAME REQUIRED	REMARKS	SIGN DETAIL: DETAIL ON SHEET NUMBER	SIGN DETAIL: STD. SHEET NUMBER
												OPTION ITEMS																							
1,3		2	30	30	12.50						2			32.0																			S1-1		E-153
	AHEAD	2	30	12	5.00																												R3-17A		E-143B
2	SPEED LIMIT 25	1	24	30			5.00				1			16.0																			R2-4		E-142
												FT	FT	FT 48	FT	FT	FT		EA	LB	LB	LB		LB	LB	LB	LB								
	SHEET TOTAL				SF 17.50	SF	EA. 1	SF				FT 48.0			FT					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."

PLOTTED 19-FEB-2007

McFarland-Johnson, Inc.

PROJECT NAME: WARREN
PROJECT NUMBER: BHF 0188(7)

FILE NAME: ZJ276SN1.DGN
PROJECT LEADER: WARREN TRIPP
DESIGNED BY: S. DELIA

DATE: 02/07
DRAWN BY: P. DUSTIN
CHECKED BY: R. JOY
SHEET 31 OF 36

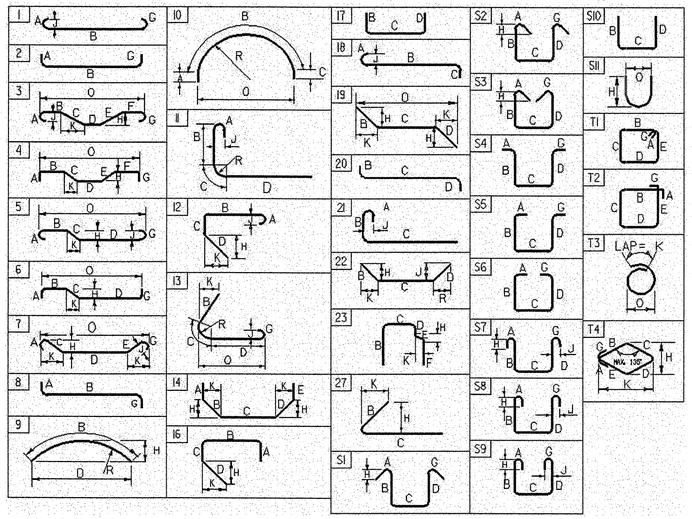
STATE OF VERMONT
AGENCY OF TRANSPORTATION

REINFORCING STEEL SCHEDULE

ITEM	EACH	SIZE	LENGTH	MARK	TYPE	A	B	C	D	E	F	G	H	J	K	R	O
	SUPERSTRUCTURE																
▲	139	5	13'- 8"	ES501	STR												
▲	141	5	13'- 6"	ES502	STR												
	92	5	33'- 0"	ES503	STR												
	60	5	33'- 4"	ES504	STR												
△ ▲	18	5	16'- 2"	ES506	STR												
▲	28	5	2'- 2"	ES507	STR												
	130	5	5'- 5"	ES505	S5	0'- 10"	1'- 4"	1'- 1"	1'- 4"			0'- 10"					
	30	5	7'- 10"	ES508	S5	0'- 10"	2'- 11"	0'- 7"	2'- 8"			0'- 10"					
	6	5	6'- 2"	ES509	S5	0'- 10"	2'- 1"	0'- 7"	1'- 10"			0'- 10"					
▲	139	5	14'- 3"	ES510	1	0'- 7"	13'- 8"					0'- 0"		0'- 5"			
▲	141	5	14'- 1"	ES511	1	0'- 7"	13'- 6"					0'- 0"		0'- 5"			
△	132	6	5'- 5"	ES601	S10		2'- 3"	0'- 11"	2'- 3"								
	ABUTMENT NO. 1																
△	8	4	3'- 5"	1EA401	16	0'- 0"	0'- 0"	1'- 5"	2'- 0"				0'- 7"		1'- 11"		
▲	18	5	6'- 0"	1A501	STR												
▲	14	5	7'- 11"	1A502	STR												
	5	5	4'- 11"	1A505	STR												
	6	5	4'- 8"	1A506	STR												
△	5	5	17'- 6"	1EA507	STR												
	2	5	5'- 2"	1A508	STR												
	6	5	5'- 11"	1A509	STR												
	6	5	7'- 11"	1A510	STR												
	4	5	5'- 11"	1A511	STR												
	12	5	7'- 2"	1A513	STR												
▲	12	5	3'- 6"	1A514	STR												
	28	5	7'- 0"	1A516	STR												
	3	5	19'- 6"	1EA523	STR												
△	8	5	3'- 11"	1A524	STR												
▲	6	5	3'- 9"	1A526	STR												
	6	5	5'- 1"	1A503	2	0'- 10"	4'- 3"					0'- 0"					
	5	5	5'- 2"	1A504	27		0'- 10"	4'- 4"					0'- 10"		0'- 3"		
	5	5	5'- 1"	1A512	2	0'- 10"	4'- 3"					0'- 0"					
	20	5	3'- 8"	1A515	16	0'- 0"	0'- 0"	2'- 2"	1'- 6"				0'- 3"		1'- 6"		
	7	5	3'- 3"	1A517	16	0'- 0"	0'- 0"	1'- 8"	1'- 8"				0'- 9"		1'- 6"		
	4	5	4'- 11"	1A518	16	0'- 0"	0'- 0"	2'- 10"	2'- 1"				0'- 11"		1'- 11"		
	2	5	7'- 1"	1A519	16	0'- 0"	0'- 0"	2'- 3"	4'- 10"				4'- 9"		0'- 11"		
	12	5	5'- 5"	1A520	16	0'- 0"	0'- 0"	2'- 10"	2'- 7"				1'- 1"		2'- 4"		
	6	5	4'- 4"	1A521	16	0'- 0"	0'- 0"	2'- 2"	2'- 2"				0'- 11"		2'- 0"		
	48	5	2'- 8"	1A522	17		1'- 5"	1'- 3"	0'- 0"								
	2	5	3'- 10"	1A525	16	0'- 0"	0'- 0"	1'- 1"	2'- 9"				0'- 5"		2'- 9"		
	ABUTMENT NO. 2																
△	8	4	3'- 5"	2EA401	16	0'- 0"	0'- 0"	1'- 5"	2'- 0"				0'- 7"		1'- 11"		
	12	5	5'- 6"	2A501	STR												
	14	5	4'- 6"	2A502	STR												
	6	5	4'- 11"	2A505	STR												
	6	5	5'- 2"	2A506	STR												
▲	6	5	10'- 4"	2A507	STR												
▲	6	5	8'- 1"	2A508	STR												
	2	5	4'- 6"	2A509	STR												
△	5	5	19'- 11"	2EA510	STR												
▲	3	5	6'- 3"	2A511	STR												
	6	5	3'- 7"	2A513	STR												
	7	5	7'- 0"	2A514	STR												
▲	7	5	3'- 5"	2A515	STR												
	3	5	20'- 7"	2EA518	STR												
▲	6	5	3'- 9"	2A520	STR												
△	8	5	3'- 9"	2A521	STR												
	2	5	2'- 6"	2A522	STR												
	6	5	5'- 2"	2A503	27		0'- 10"	4'- 4"					0'- 10"		0'- 3"		
	6	5	5'- 1"	2A504	2	0'- 10"	4'- 3"					0'- 0"					
	2	5	3'- 11"	2A512	16	0'- 0"	0'- 0"	1'- 2"	2'- 9"				2'- 5"		1'- 4"		
	20	5	3'- 8"	2A516	16	0'- 0"	0'- 0"	2'- 2"	1'- 6"				1'- 6"		0'- 3"		
	48	5	2'- 8"	2A517	17		1'- 5"	1'- 3"	0'- 0"								
	2	5	3'- 11"	2A519	16	0'- 0"	0'- 0"	1'- 3"	2'- 8"				2'- 7"		0'- 9"		

~ 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 BAR MARK PREFIX DENOTES EPOXY COATED REINFORCING STEEL.



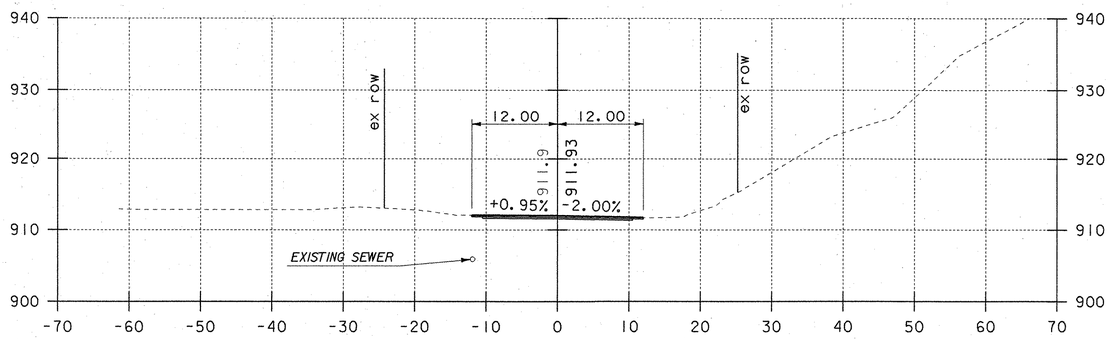
ASTM STANDARD REINFORCING BARS

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

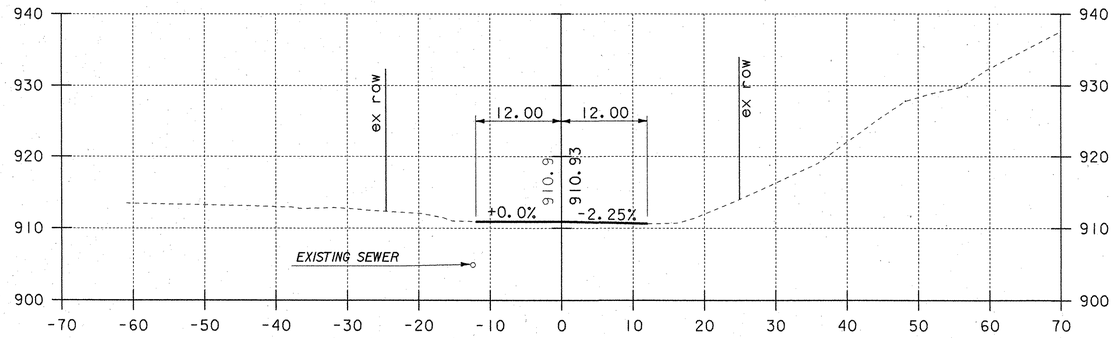
PROJECT NAME: **WARREN**
PROJECT NUMBER: **BHF 0188(7)**

FILE NAME: **zj276rsh.xls**
PROJECT MANAGER: **WARREN B. TRIPP**
DESIGNED BY: **S. DELIA**
REINFORCING STEEL SCHEDULE

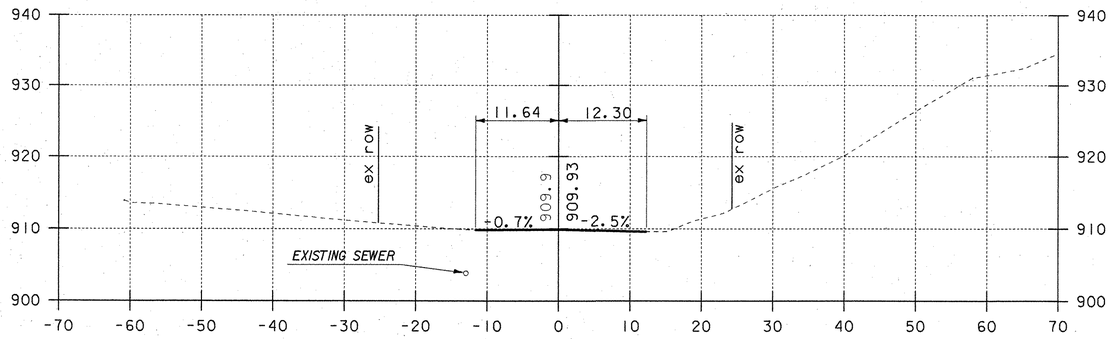
PLOT DATE: **2/15/2007**
DRAWN BY: **S. DELIA**
CHECKED BY: **R. JOY**
SHEET **32** OF **36**



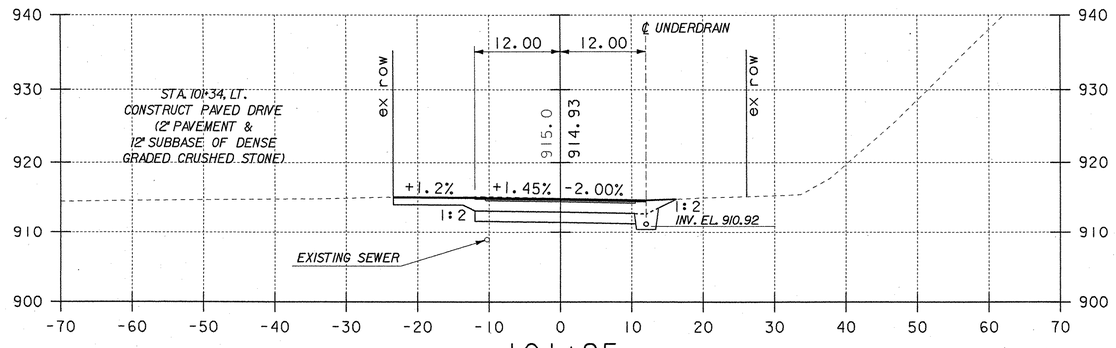
100+50
MATCH EXISTING



100+25



100+00
BEGIN APPROACH
MATCH EXISTING



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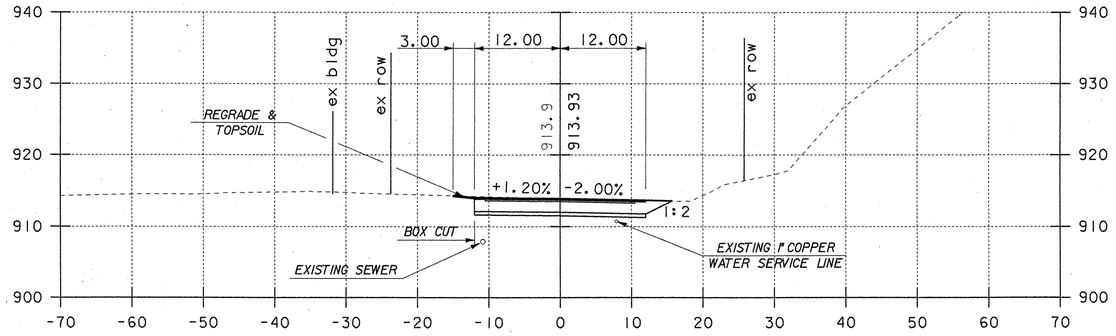

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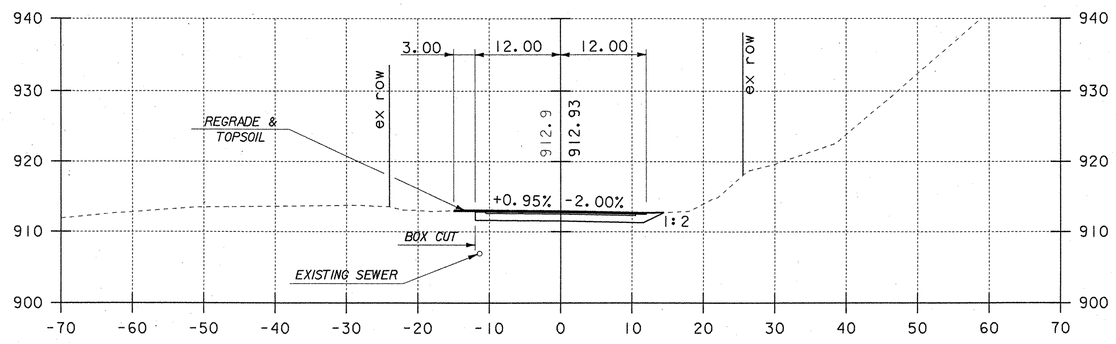


100+75

SCALE 1" = 10'-0
10 0 10

McFarland-Johnson, Inc.

STATE OF VERMONT
AGENCY OF TRANSPORTATION

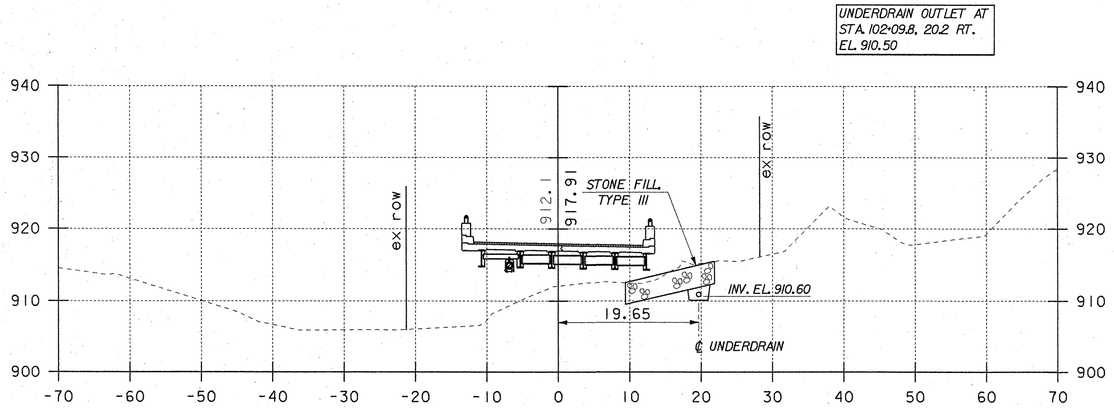
Town Of WARREN	Bridge No. 7
Highway No. TH 1	Log Sta. / Surv. Sta.

BROOK ROAD OVER FREEMAN BROOK

ROADWAY CROSS SECTIONS

Designed By L.WIXSON	Drawn By P.DUSTIN
Checked By R.JOY Date 02/07	Bridge Design Supervisor R.ROONEY Date 02/07
PROJECT WARREN	PROJECT NO. BHF 0188(7)
I.G.C. Info. m\V549107-Warren\BRIDGE\Final\zJ276xsl.dgn	
Bridge Sheet No.	Sheet 33 of 36

PLOTTED 19-FEB-2007



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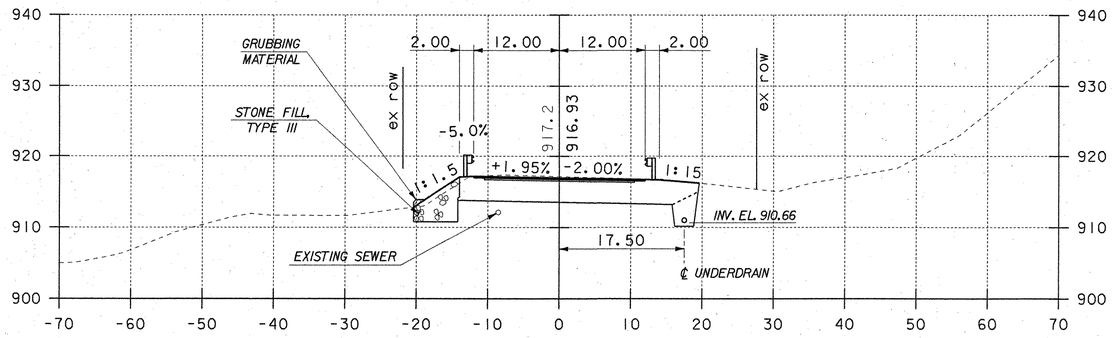

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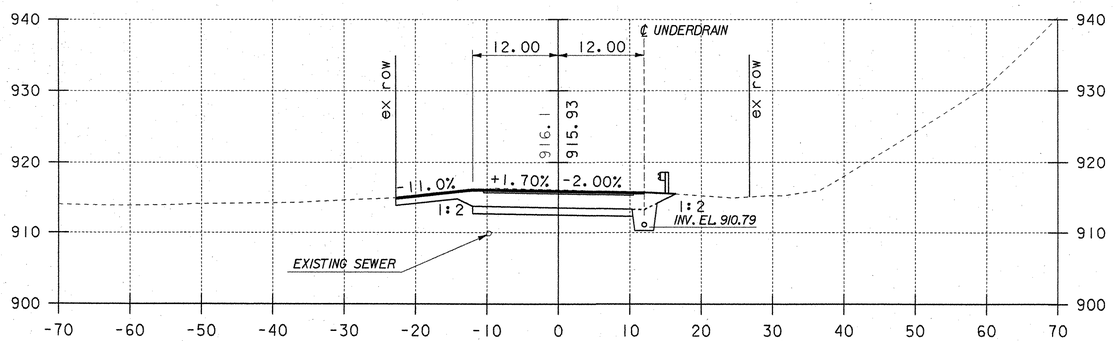

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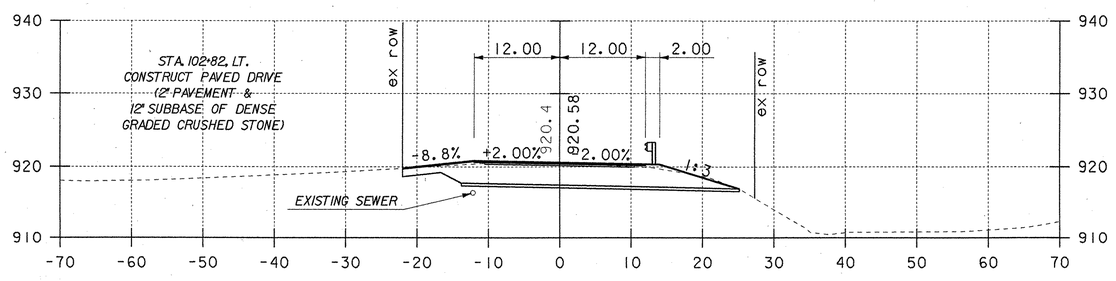

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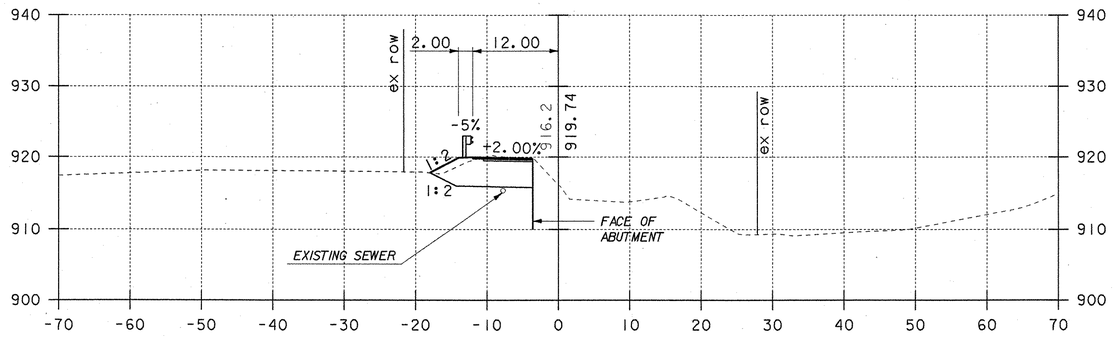

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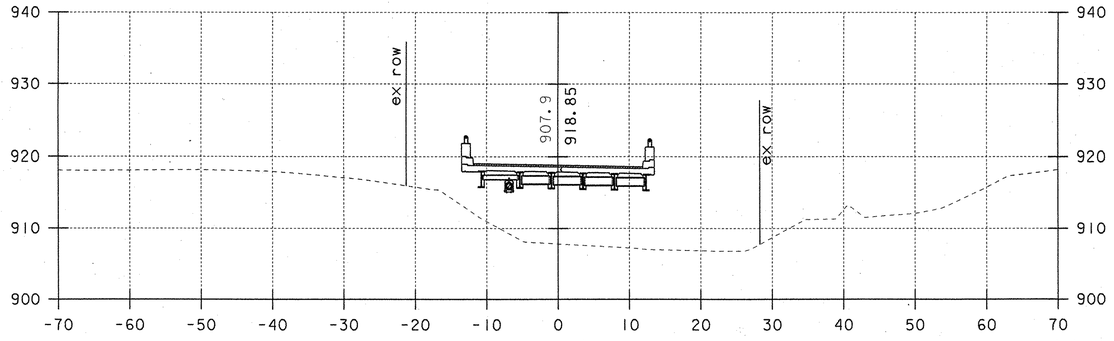


102+25

SCALE 1" = 10'-0
10 0 10

STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of WARREN	Bridge No. 7
Highway No. TH 1	Log Sta. / Surv. Sta.

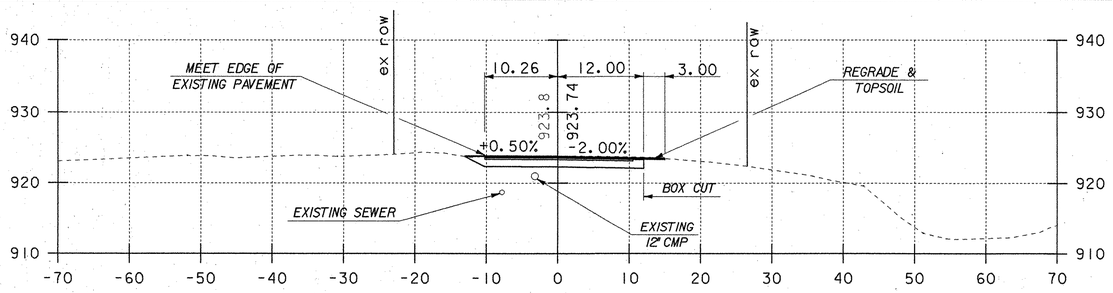
BROOK ROAD OVER FREEMAN BROOK

ROADWAY CROSS SECTIONS

Designed By L. WIXSON	Drawn By P. DUSTIN
Checked By R. JOY Date 02/07	Bridge Design Supervisor R. ROONEY Date 02/07
PROJECT WARREN	PROJECT NO. BHF 0188(7)
I.G.C. Info. m\549107-Warren\BRIDGE\Final\z1276xs2.dgn	
Bridge Sheet No.	Sheet 34 of 36

McFarland-Johnson, Inc.

PLOTTED 19-FEB-2007



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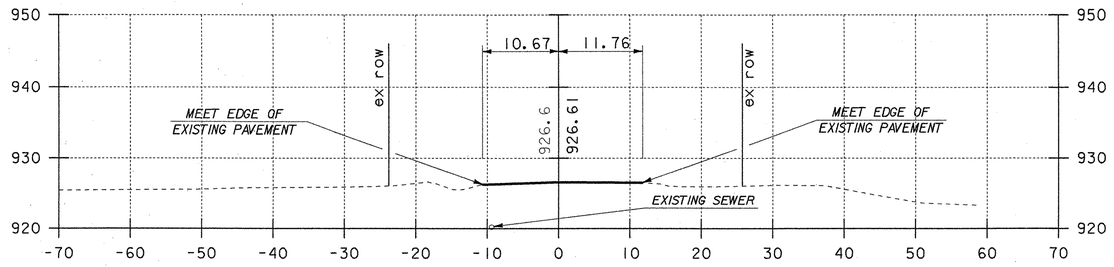

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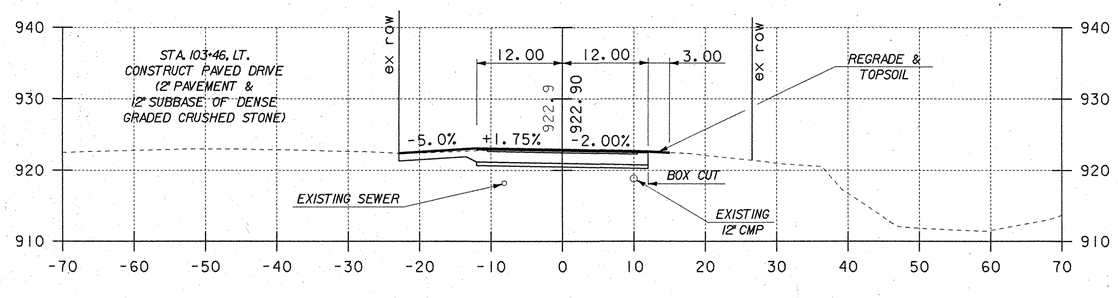

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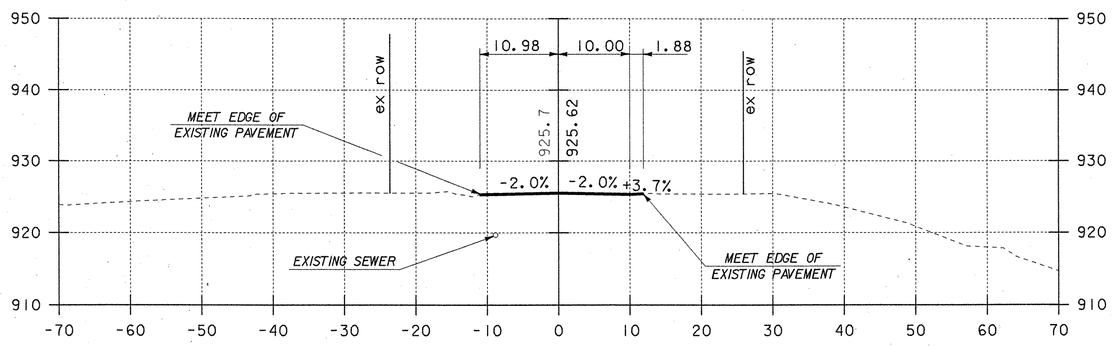

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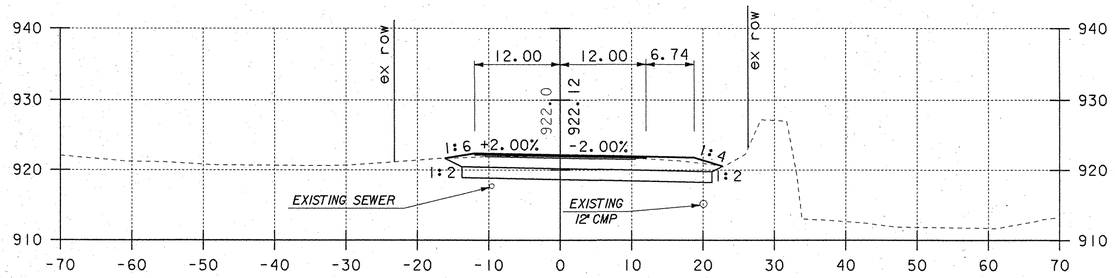

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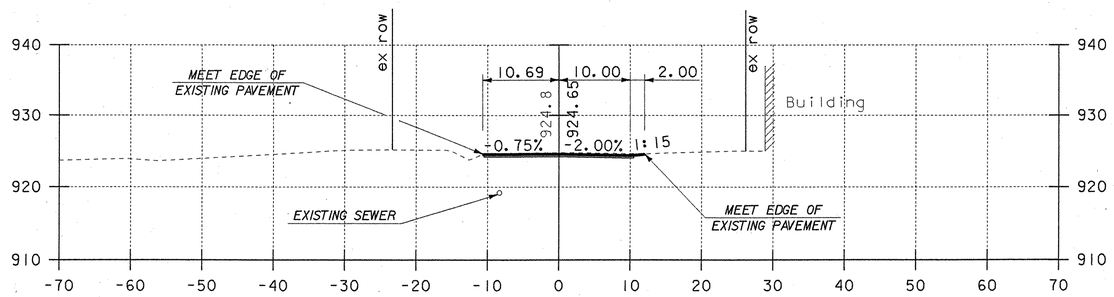

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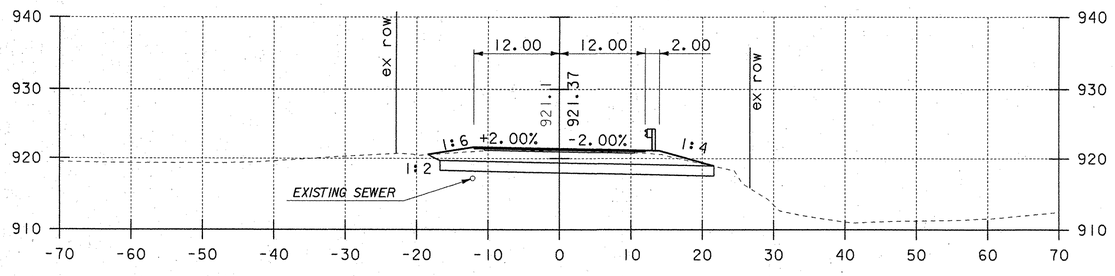


103+00

SCALE 1" = 10'-0
10 0 10

McFarland-Johnson, Inc.

STATE OF VERMONT
AGENCY OF TRANSPORTATION

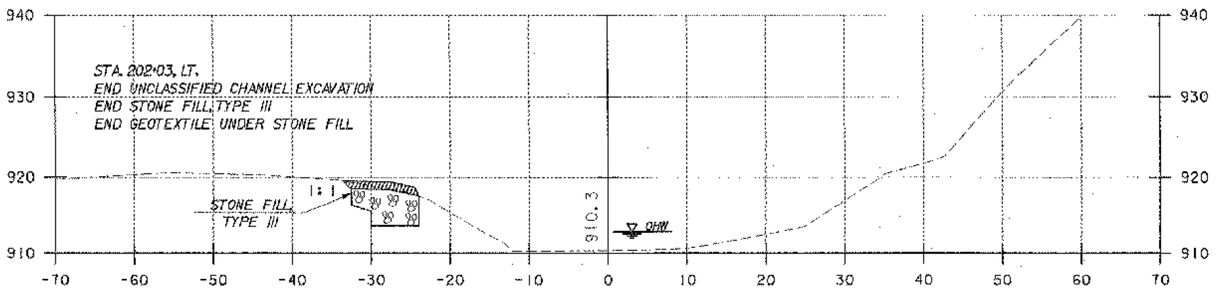
Town Of WARREN	Bridge No. 7
Highway No. TH 1	Log Sta. / Surv. Sta.

BROOK ROAD OVER FREEMAN BROOK

ROADWAY CROSS SECTIONS

Designed By L.WIXSON	Drawn By P.DUSTIN
Checked By R. JOY Date 02/07	Bridge Design Supervisor R. ROONEY Date 02/07
PROJECT WARREN	PROJECT NO. BHF 0188(7)
I.G.C. Info. m:\V549107-Warren\BRIDGE\Final\zj276xs3.dgn	
Bridge Sheet No.	Sheet 35 of 36

PLOTTED 19-FEB-2007



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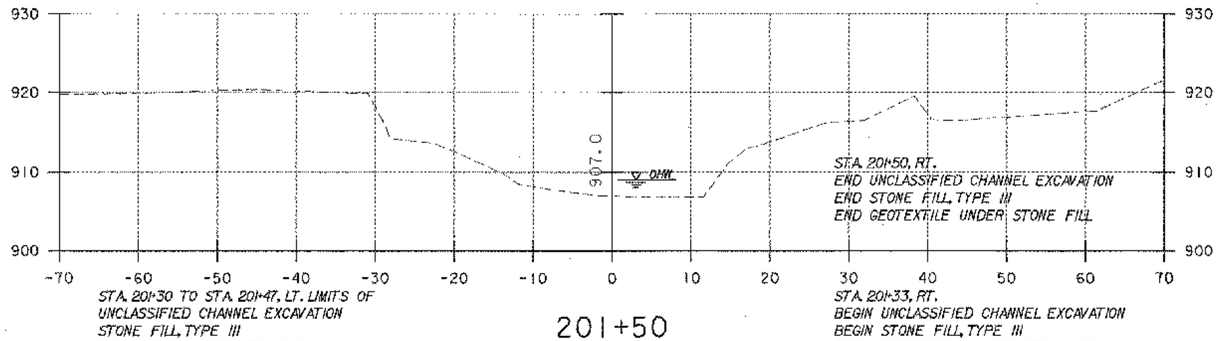

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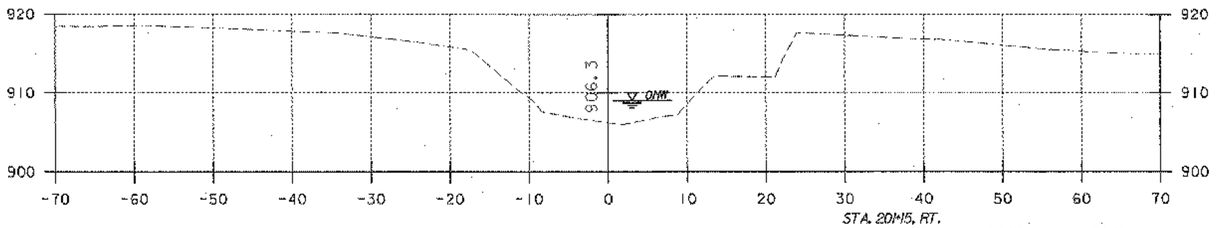

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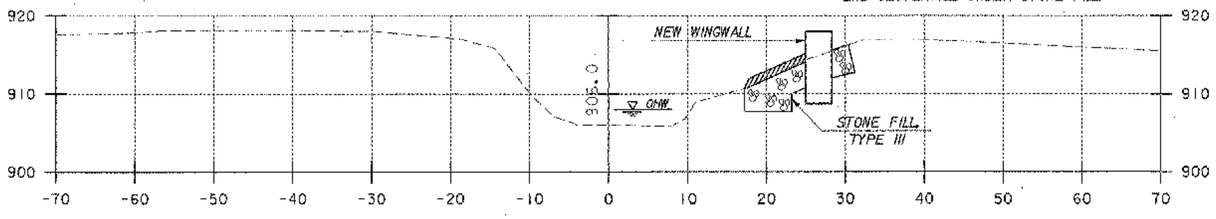

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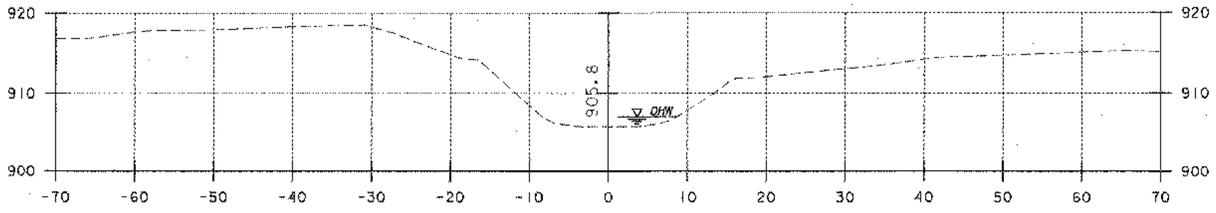

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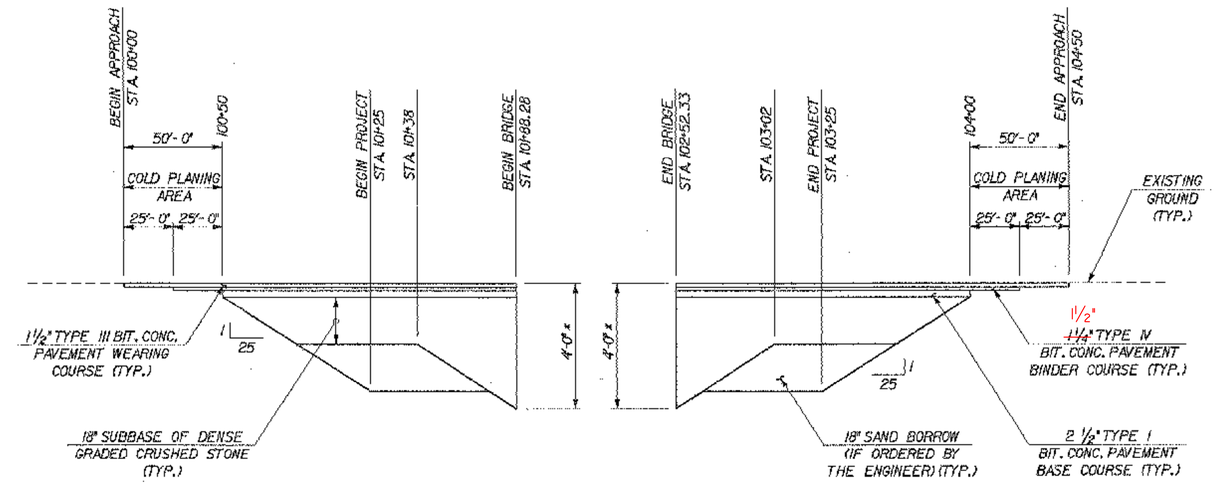
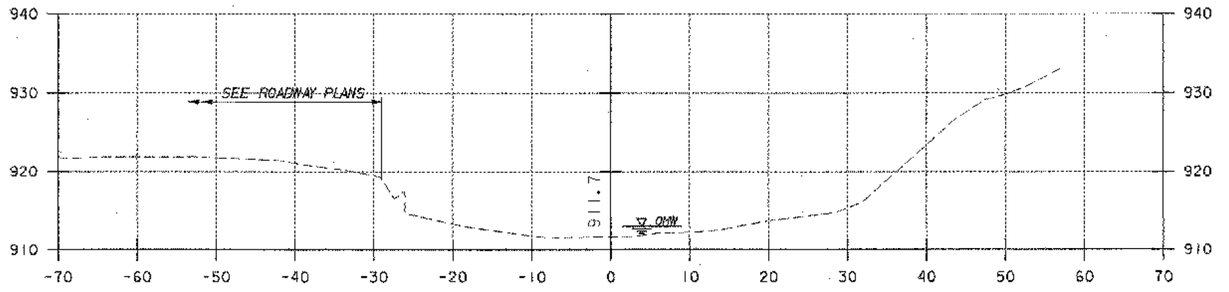
SCALE 1" = 10'-0



SUBBASE TRANSITION DETAIL

NOT TO SCALE

* AT CENTERLINE CONSTRUCTION



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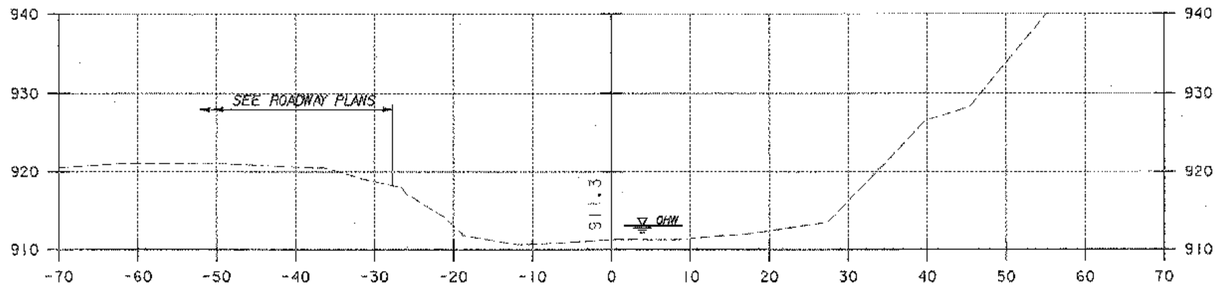


202+25

NOTES

1. FOR LIMITS OF STONE FILL SEE SHEET 5.

McFarland-Johnson, Inc.

STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of WARREN	Bridge No. 7
Highway No. TH 1	Log Sta. / Surv. Sta.

BROOK ROAD OVER FREEMAN BROOK

CHANNEL CROSS SECTIONS

Designed By L. WIXSON	Drawn By S. MERKWAN
Checked By R. JOY Date 02/07	Bridge Design Supervisor R. ROONEY Date 02/07
PROJECT WARREN	PROJECT NO. BHF 0188(7)
I.G.C. Info. m:\549107-Warren\BRIDGE\Final\z1276xsadgn	
Bridge Sheet No.	Sheet 36 of 36

05-APR-2007
PLOTTED

VERMONT

State of Vermont
PDD/Structures Design Section
National Life Building – Drawer 33
Montpelier, VT 05633-5001
www.aot.state.vt.us

Agency of Transportation

[phone] 802-828-2621
[fax] 802-828-3566
[ttd] 800-253-0191

July 26, 2007

Cosmec, Inc.
70 South Street
Walpole, MA 02081

Project Name: Warren Project #: BHF 0188(7)
Structure Identification: Brook Road over Freeman Brook

The following bearing device details [Item # 531.10, Bearing Device Assembly (Fabric)] for the above project (Vendor's Job # 60748) transmitted to us by Blow & Cote, Inc. by letter dated July 16, 2007 have been reviewed and are being returned herewith.

Sheets 5280 and 5281, Bonding Procedure EMS-QC-110, and Welding Procedure GTAW-WF are all approved.

You must provide notice to our fabrication inspector, Jeff Clark, as to the date fabrication represented by these drawings will begin. That notice must be received and acknowledged at least seven days prior to that date, as per Specification 506.03. Jeff may be contacted by phone at (802)828-0044 or email at jeff.clark@state.vt.us. Any material fabricated prior to the notification date is subject to rejection without further cause.

Sincerely,

Warren Tripp

Warren Tripp

Attachments
cc: [X] Resident Engineer Ian Jenike w/prints
[ ] Shop Inspector Jeff Clark w/prints
[ ] Contractor Blow & Cote, Inc. w/prints
[ ] Construction Divison – letter only
[ ] Materials & Research Section (C&IA Unit) – letter only
[ ] Files (Structures & Central)

037 BB

VERMONT

VT A.O.T.
PROJ. No. BHF-0188(7)
BRIDGE No.7
TOWN OF WARREN

COSMEC, INC.
70 SOUTH STREET
WALPOLE, MA 02081
PH# 508-668-6600
FAX# 508-660-1022

EMS-QC-110

VTRANS
RECEIVED
ORIG BY _____ OKD BY _____
JUL 19 2007
RESUBMIT _____ APPROVED ✓
BY _____ DATE 7-19-07

ENGINEERING AND MANUFACTURING STANDARD
PTFE FACING AND STEEL
OR PREFORMED FABRIC SUBSTRATE
SURFACE PREPARATION AND ADHESIVE PROCEDURE

The PTFE facing shall be prepared for bonding to a substrate material by chemically etching the face to be bonded using the sodium ammonia process.

The mating surface of the substrate shall be prepared for bonding using a three-step process as follows:

1. preliminary degrease using methyl ethyl ketone.
2. mechanically roughen to approx. 125 RMS and thoroughly brush and clean for final degreasing.
3. final degrease using methyl ethyl ketone

The PTFE and substrate mating surfaces shall be clean and dry with final degreasing performed within 30 minutes of bonding. Adhesive shall consist of a two-part epoxy adhesive system conforming to Military Specification MMM-A-134

The adhesive shall be applied to the full area of the contact surface in an even manner so as to establish a glue line not less than .002 inch nor more than .010 inch thick. Surfaces being bonded are to be assembled immediately with open assembly time not to exceed 20 minutes.

The PTFE material shall be greater in width and length than the substrate material by at least ½ inch when bonded. The PTFE shall be applied with contact starting at one edge and with contact progressing across entire bonded surface to eliminate air entrapment. The PTFE is to be in full contact with the steel or preformed fabric substrate. Curing of the bond shall be done under pressure of approx. 2-100 psi for 10-12 hours at approx. 70°F or other schedules as established by the manufacturer of the adhesive.

The PTFE shall be carefully trimmed to the same size as the substrate after bond curing and all bonds shall be visually inspected for bond retention.

038 RB

VT. A.O.T.
PROJ. NO. BHF-0188(7)
BRIDGE NO. 7
TOWN OF WARREN

COSMEC INC.

WELDING PROCEDURE SPECIFICATION

VTRANS
RECEIVED
CKD BY ____ OK'D BY ____
JUL 19 2007
ASSIGNMT ____ APPROVED ✓
BY ____ DATE 7-19-07

SPECIFICATIONS AND CODE: D1.6
MATERIAL SPECIFICATION ASTM A240 TYPE 304 TO ASTM A709 GR 50W
WELDING PROCESS---------- GTAW
MANUAL OR MACHINE------- MANUAL
POSITION OF WELDING----- 1F & 2F
FILLER METAL SPECIFICATION ER309L CLASSIFICATION: A5.9
MANUFACTURER: HARRIS WELCO TRADENAME:
FLUX------- INTERNAL
SHIELDING GAS---------- ARGON FLOW RATE 45 CFH
SINGLE OR MULTIPLE PAS S SINGLE
SINGLE OR MULTIPLE ARC SINGLE
WELDING CURRENT---------- DC
POLARITY: REVERSE (EN)
WELDING PROGRESSION----------
ROOT TREATMENT---------- CLEANED & PREPARED BRIGHT METAL
PREHEAT AND INTERPASS TEMPERATURE---------- SEE BELOW
POSTHEAT TEMPERATURE N/A
HEAT IMPUT MIN.---------- MAX.----

WELDING PROCEDURE

PASS NO.	ELECTRODE SIZE	WELDING CURRENT AMPERES	VOLTS	TRAVEL SPEED	JOINT DETAIL
ALL	3/32"	130--155	14-17	6.75--8.5	LAP JOINT
		16 GA THRU 10 GA BM THICKNESS			

PREHEAT TEMPS. ***PREHEAT UNTIL NO MOSITURE PRESENT

THICKNESS	TEMP.
UP TO 3/4"	100 DEG.
OVER 3/4" TO 1 1/2"	100 DEG.
OVER 1 1/2" TO 2 1/2"	100 DEG.
OVER 2 1/2"	100 DEG.

THIS PROCEURE MAY VARY DUE TO FABRICATION SEQUENCE, FIT-UP, PASS SIZE, ETC.
WITHIN THE LIMITATION OF VARIABLES GIVEN IN SECTION 5.
SUPPORTING PQR: GTAW-WF-05
PROCEDURE NO. GTAW-WF

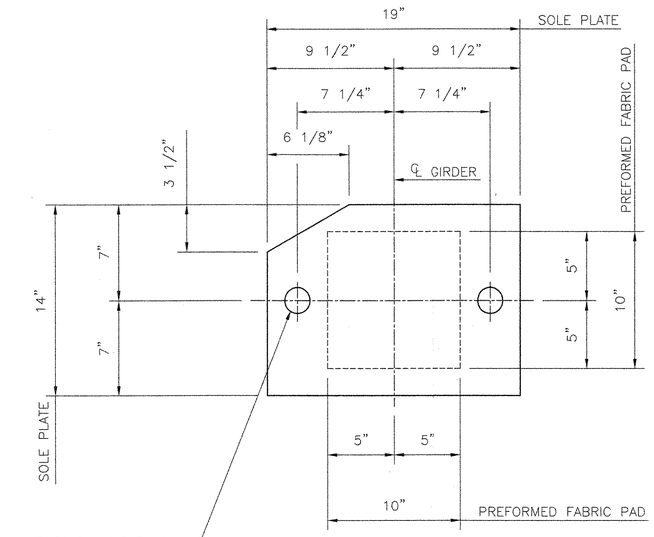
CONTRACTOR: COSMEC INC.
AUTHORIZED BY: DONALD VOSE
CWI#:01100651 Donald Vose

REVISION NO. 1

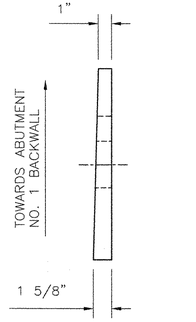
DATE:--- 2/1/2005

AWS QC 1
DONALD E VOSE
01100651
CWI

039BB

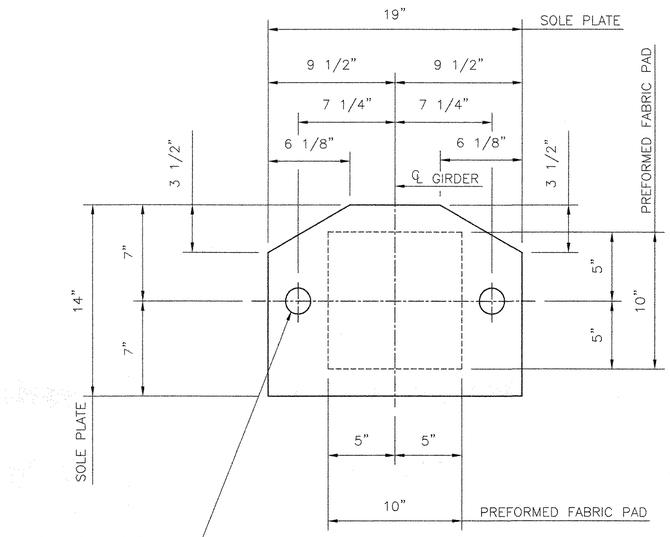


PLAN VIEW

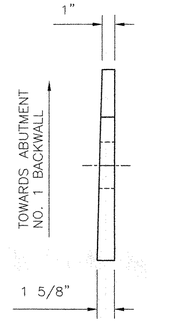


SIDE ELEVATION

SOLE PLATE ONLY

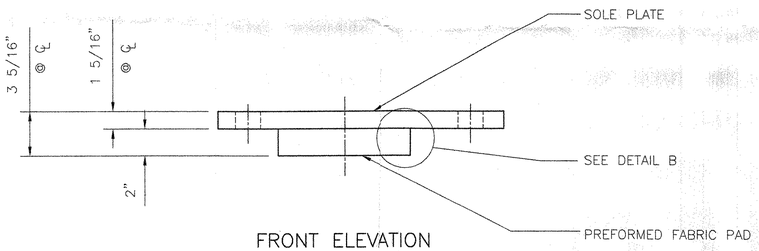


PLAN VIEW



SIDE ELEVATION

SOLE PLATE ONLY



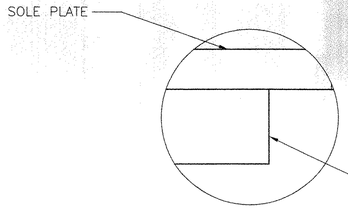
FRONT ELEVATION

COSMEC FIXED PREFORMED FABRIC PAD BEARING

LOCATION – ABUTMENT NO. 1, BEAMS 1, 3, 4, 5 & 6

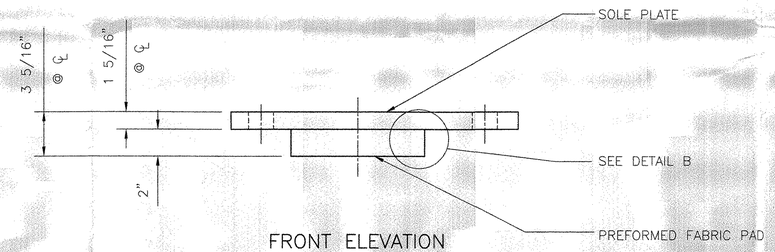
TOTAL VERTICAL CAPACITY – 95 KIPS

TOTAL QUANTITY – 5



DETAIL B

N.T.S.



FRONT ELEVATION

COSMEC FIXED PREFORMED FABRIC PAD BEARING

LOCATION – ABUTMENT NO. 1, BEAM 2

TOTAL VERTICAL CAPACITY – 95 KIPS

TOTAL QUANTITY – 1

SEE DRAWING NUMBER 5281 FOR ANCHOR BOLT DETAILS

BEARING MATERIALS:

1. STEEL – ASTM A.709 GR. 36 ZINC METALLIZED.
2. PREFORMED FABRIC PAD – AASHTO DIV. II, SPECIFICATION 18.4.9.1
3. STAINLESS STEEL – ASTM A.240 TYPE 304, NO. 8 MIRROR FINISH
4. PTFE – ASTM D.4894 VIRGIN UNFILLED
5. ANCHOR BOLTS AND HARDWARE – SEE ANCHOR BOLT DETAIL

BEARING NOTES:

1. LOCATION OF FABRICATION: 70 SOUTH STREET WALPOLE, MA 02081
2. COSMEC, INC, REPRESENTATIVE: MR. MATT McANDREWS (508)–668–6600
3. ALL STEEL BEARING SURFACES SHALL BE ZINC METALLIZED AS PER SUBSECTIONS 531.04(b) AND 506.15(c) OR (b). BEARINGS SHALL BE SEALED WITH AN APPROVED SEALER AS SPECIFIED IN STANDARD SPECIFICATION SUBSECTION 506.15(b). AREAS OF METALLIZING DAMAGED BY FIELD WELDING OR HANDLING SHALL BE PAINTED WITH AN APPROVED SEALANT, IN ACCORDANCE WITH SUPPLEMENTAL SPECIFICATION 513.06(f).
4. DESIGN CRITERIA:
   - A. AVERGAE BEARING PRESSURE = 1000 PSI MAX.
   - B. ROTATION LIMIT – 0.015 RADIANS
   - C. HORIZONTAL CAPACITY SHALL BE 10% OF THE VERTICAL DESIGN LOAD (WITH IMPACT)
   - D. DESIGN LOAD PER BEARING = 95 KIPS (DEAD LOAD PLUS LIVE LOAD WITH IMPACT)
5. BEARINGS SHALL CONFORM TO APPLICABLE SUBSECTIONS OF SECTIONS 531 AND 731 OF VAOT STANDARD SPECIFICATIONS.
6. FOR BEARINGS SETTING DIMENSIONS DUE TO TEMPERATURE SEE CONTRACT DRAWING SHEET 23 OF 36.

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

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

McFarland-Johnson, Inc.

Date 7-23-07

By Steven T. Delisa

BRIDGE NUMBER: 7

STATE OF VERMONT
AGENCY OF TRANSPORTATION

PROJECT NO. BHF–0188(7)
PROJECT NAME: WARREN
TOWN OF WARREN
COUNTY OF WASHINGTON
HIGHWAY NO. TH 1
BROOK ROAD OVER FREEMAN BROOK

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

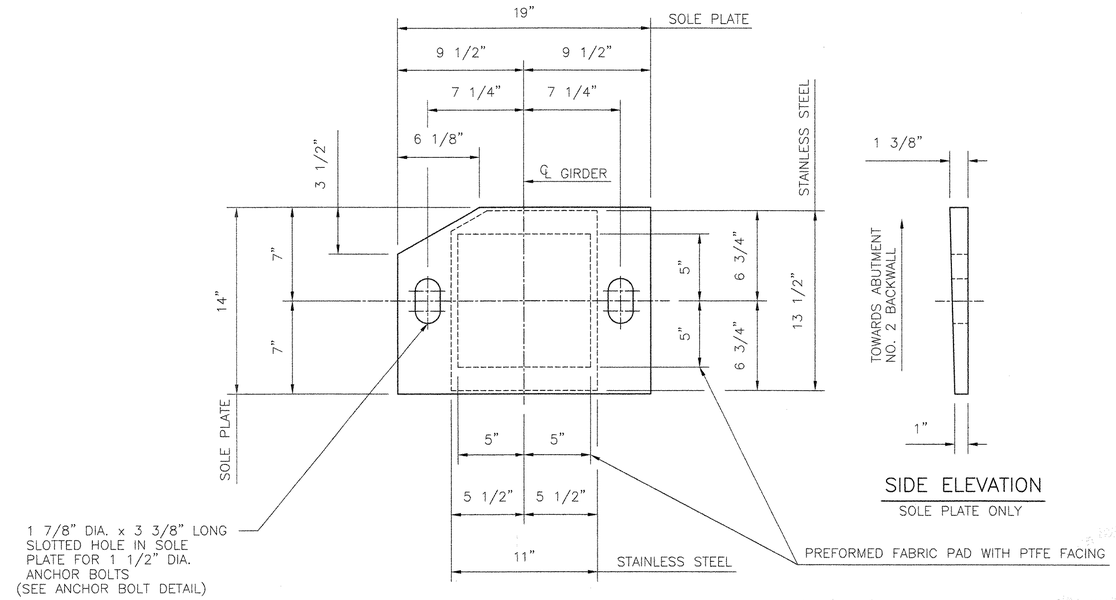
SCALE: 3/16"=1"	DRAWN BY: MCM	CHECKED BY: MM
SHEET 1 OF 2	DATE: 7/07	DATE: 7/07

COSMEC PREFORMED FABRIC BEARINGS

CUSTOMER	S.O. NUMBER	DRAWING NUMBER	REV.
BOLW & COTE, INC.	60748	5280	

REV.		BY	DATE	CK'D	DATE

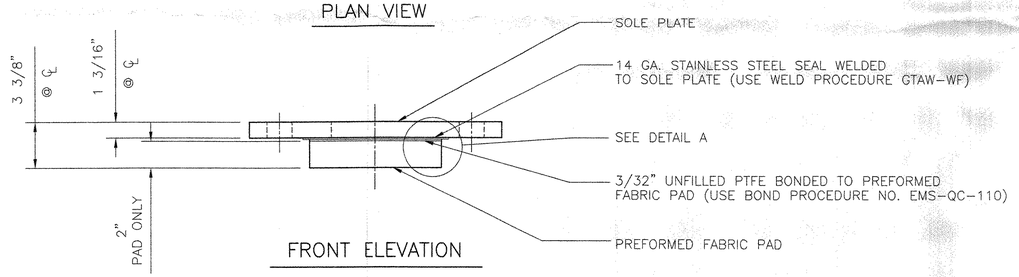
040 BB



PLAN VIEW

SIDE ELEVATION

SOLE PLATE ONLY



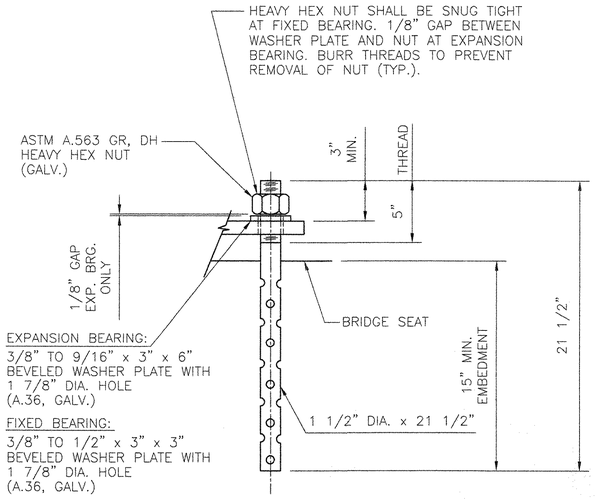
FRONT ELEVATION

COSMEC EXPANSION PREFORMED FABRIC PAD BEARING

LOCATION – ABUTMENT NO. 2, BEAMS 1 THROUGH 6

TOTAL VERTICAL CAPACITY – 95 KIPS

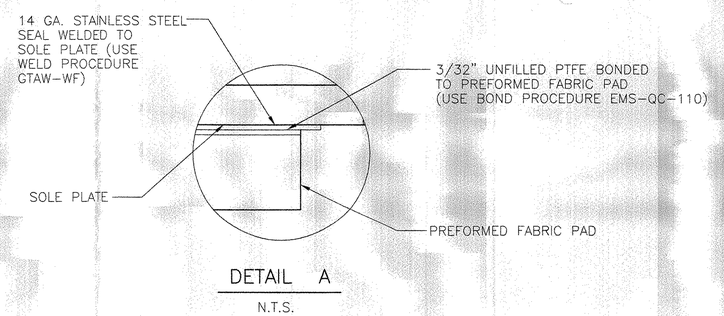
TOTAL QUANTITY – 6



ANCHOR BOLT DETAIL

ASTM F.1554 GR. 55 SWEDGED AND GALVANIZED ANCHOR ROD

TOTAL QUANTITY REQUIRED: 24



DETAIL A

N.T.S.

FOR BRIDGE BEARINGS NOTES AND MATERIALS SEE DRAWING NUMBER 5280

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

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

McFarland-Johnson, Inc.

Date 7-23-07

By Steven F. Dalia

BRIDGE NUMBER: 7

STATE OF VERMONT
AGENCY OF TRANSPORTATION

PROJECT NO. BHF-0188(7)
PROJECT NAME: WARREN
TOWN OF WARREN
COUNTY OF WASHINGTON
HIGHWAY NO. TH 1
BROOK ROAD OVER FREEMAN BROOK

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

SCALE: 3/16"=1"	DRAWN BY: MCM	CHECKED BY: MM
SHEET 2 OF 2	DATE: 7/07	DATE: 7/07

COSMEC PREFORMED FABRIC BEARINGS

REV.		BY	DATE	CK'D	DATE

CUSTOMER	S.O. NUMBER	DRAWING NUMBER	REV.
BOLW & COTE, INC.	60748	5281	

04188

VERMONT

State of Vermont
PDD/Structures Design Section
National Life Building – Drawer 33
Montpelier, VT 05633-5001
www.aot.state.vt.us

Agency of Transportation

[phone] 802-828-2621
[fax] 802-828-2566
[tdd] 800-253-0191

DATE: July 16, 2007

Casco Bay Steel Structures, Inc.
75 Spring Hill Road
Saco, ME 04072

Project Name: Warren **Project #: BHF 0188(7)**

Structure Identification: Brook Road over Freeman Brook, Bridge No. 7

The following structural steel details [Item No. 506.50, Structural Steel (Rolled Beam)] for the above project (Vendor's Job # 324)transmitted to us by letter dated July 6, 2007 from Blow& Cote, Inc. have been reviewed and are being returned herewith.

Sheets: GN 1, E 1, WS 1, C 1, X1, 1, 2, 3, and 4 and Welding Procedures 401, 250, and 101
are approved or approved as noted. Upon submitting extended weights for our approval, please make appropriate changes as indicated on these drawings and submit white prints for our use in the record plans for this project.

You must provide notice to our fabrication inspector, Jeff Clark, as to the date that fabrication represented by these drawings will begin. That notice must be received and acknowledged at least seven days prior to that date, as per Specification 506.03. Jeff may be contacted by phone at (802)828-0044 or email at jeff.clark@state.vt.us. Any material fabricated prior to the notification date is subject to rejection without further cause.

Sincerely,

Warren Tripp

Warren Tripp

Attachments
cc: [X] Resident Engineer Ian Jenike w/prints
[ ] Shop Inspector Jeff Clark w/prints[ ] Contractor w/prints
[ ] Contractor Blow & Cote, Inc. w/prints
[ ] Construction Divison – letter only
[ ] Materials & Research Section (C&IA Unit) – letter only
[ ] Files (Structures & Central)

VTrans Working to Get You There! Vermont Agency of Transportation

042 55

VERMONT

State of Vermont
PDD/Structures Design Section
National Life Building – Drawer 33
Montpelier, VT 05633-5001
www.aot.state.vt.us

Agency of Transportation

[phone] 802-828-2621
[fax] 802-828-3566
[ttd] 800-253-0191

August 9, 2007

Highway Safety Corporation
P. O. Box 358
Glastonbury, CT 06033-0358

Project Name: Warren **Project #: BHF 0188(7)**
Structure Identification: Brook Road (TH#1), Bridge #7 over Freeman Brook

The following Metal Hand Railing details [Item # 525.15, Metal Hand Railing (Painted Black)] for the above project (Vendor's Job # 1600) transmitted to us by F. R. Lafayette with a letter dated 2/24/2007 have been reviewed and are being returned herewith.

Sheets 1 and 2, Welding Procedures W-1600-a, W-1600-b, and W-1600-c, Painting procedure for galvanized surfaces, and selected paint system data are approved or approved as noted. The data sheet for the T-Anchor is rejected. As per my conversation with Paul Radice of your company we have agreed to substitute a galvanized bolt installed in a tapped and threaded hole in the pipe in lieu of the toggle bolt as shown. A letter, dated Aug. 9, 2007, requesting that change has been received and is approved.

Sheet 2 of the Shop Drawings, under the Bill of Materials, notes "Stainless Steel Post Anchors provided by others". Since those anchors are a part of the pay item I assume they are to be provided by F. R. Layfayette. **A submittal of the data sheet for the anchor bolts that are to be used is required, and full approval of the Shop Drawings for this item will be contingent upon receipt and approval of an acceptable data sheet.**

Upon receipt of these as noted plans please make appropriate changes and submit white prints for our use in the record plans for this project. Note: the changes in red shown for the radius do not need to be made on the originals, as it has no effect on the shop requirements.

You must provide notice to our fabrication inspector, Jeff Clark, as to the date fabrication represented by these drawings will begin. That notice must be received and acknowledged at least seven days prior to that date, as per Specification 506.03. Jeff may be contacted by phone at (802)828-0044 or email at jeff.clark@state.vt.us. Any material fabricated prior to the notification date is subject to rejection without further cause.

Sincerely,
Warren Tripp
Warren Tripp

Attachments
cc: [X] Resident Engineer: Ian Jenike, w/prints
[ ] Shop Inspector: Jeff Clark, w/prints
[ ] Contractor: Blow and Cote, Inc., w/prints
[ ] Subcontractor: F. R. Lafayette, Inc., w/prints
[ ] Construction Divison – letter only
[ ] Materials & Research Section (C&IA Unit) – letter only
[ ] Files (Structures & Central)

VERMONT

04355

Casco Bay Steel Structures, Inc.

5 Industry Road
South Portland, Maine 04106

hone: (207) 772-2533 Fax: (207) 772-0580

WELDING PROCEDURE SPECIFICATION

Material specification ASTM 709-Gr 36-50-50W (250-345-345W)
Welding process Shielded Metal Arc Welding (SMAW)
Manual or machine Manual
Position of welding Fleet (1F), Horizontal (2F)
Filler metal specification AWS/AWS A5.1 - A5.5
Filler metal classification E7018 - 8018 C1/C2 - 7028
Flux N.A.
Shielding gas N.A. Flow rate N.A.
Single or multiple pass Single and multiple
Single or multiple arc Single
Welding current AC / DC
Polarity Straight / Reverse
Welding progression
Root treatment Meet AWS specification
Preheat and interpass temperature To 3/4(19) 50°(10°) 3/4(19) To 1 1/2(38) 70°(30°) 1 1/2(38) To 2 1/2(63.5) 150°(65°) over 2 1/2(63.5) 225°(110°)
Postheat temperature N.A.
Heat Input Min N.A. Max N.A.

RECEIVED JUL 16 2007 BY

APPROVED DATE 7-16-07

Brook Rd / Freedom Brk Brook Dog Mo 13 HF Gilbert Warren VT. CBSS MC 324

WELDING PROCEDURE (metric)

Pass no.	Electrode size	Welding current: Amperes	Welding current: Volts	Travel speed	Joint detail: AWS D1.5
AS REQ.	7018 1/8 (3.2)	70-170	22-26	AS REQ	1F: 3/16 To 3/8 (5 To 10)
	5/32 (3.9)	120-225	22-26		3/8 To 1/2 (10 To 13)
	3/16 (4.8)	170-300	24-27		1/2 To 5/8 (13 To 16)
	8018 1/8 (3.2)	90-160	22-26		2F:
	5/32 (3.9)	120-225	22-26		
	3/16 (4.8)	180-290	24-27		3/16 To 5/16 (5 To 8)
	7028 5/32 (3.9)	170-290	22-26		3/8 (10)
	3/16 (4.8)	210-330	24-27		7/16 To 5/8 (11 To 16)

This procedure may vary due to fabrication sequence, fit-up, pass size, etc., within the limitation of variables given in applicable AWS codes or contract specifications

Procedure no. 401
Revision no.
Form III-2

AWS D1.5 QC 1 PAUL E. HOODALE 03/13/2001 CWI

Contractor Casco Bay Steel
Authorized By Paul E. Hoodale
Date 3/2/00

044 55

Casco Bay Steel Structures, Inc.
75 Spring Hill Road
Saco, Maine 04072
Phone: (207) 282-7360 Fax: (207) 282-1179

WELDING PROCEDURE SPECIFICATION

Material specification ASTM-709/A709M - Gr 36 (250) ; 50 (345), 50W (345W)
Welding process Submerged Arc Welding
Manual or machine Machine
Position of welding Horizontal (2F)
Filler metal specification AWS A5-23
Filler metal classification F8A2-EA1K-A1 Lincoln
Flux Lincoln 960 FLUX WITH LA-95 ELECTRODE
Shielding gas N/A Flow rate N/A
Single or multiple pass Single - Electrode Ex. 1 ± 3/4 (25.4 ± 17.1)
Single or multiple arc Single
Welding current DC
Polarity DCEN
Welding progression See Joint detail
Root treatment AWS - spec. - wirebrush - grind - Blast Clean area
Preheat and interpass temperature Tc 3/4 (19) - 50° (10°) - 3/4 (19) To 1 1/2 (38) 70° (20) - 1 1/2 (38) To 2 1/2 (63) 150° (65°)
Postheat temperature N/A over 2 1/2 (63) - 225° (110°)
Heat Input Min 3.0 KJ/in (1.2 KJ/mm) Max 49.1 KJ/in (1.9 KJ/mm) PQR #47-428 KJ/in (1.7 KJ/mm)

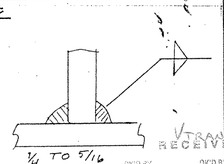
Brook Rd/Freemans Brook
Bridge 7 - Pin w/ BHFCIBERT
Warren VT. CBSS NC 324

(METRIC)

WELDING PROCEDURE

Pass no.	Electrode size	Welding current: Amperes	Welding current: Volts	Travel speed
1	3/32	299 269 TO 329	31 29 TO 33	13IPM 11 TO 15
		METRIC		
	2.4	299 269 To 329	31 29 To 33	330 mm 279 To 381

Fillet
AWS D1-5 Joint detail
2F



VTRANS RECEIVED
OKD BY _____ OKD BY JTWC
JUL 16 2007
RESUBMIT _____ APPROVED ✓
BY _____ DATE 7-16-07

This procedure may vary due to fabrication sequence, fit-up, pass size, etc., within the limitation of variables given in applicable A.W.S. codes or contract specifications

Procedure no. 250
Revision no. _____
Form III-2

AWS QC 1 PAUL E. GOODALE 06/18/2001 CWI

Contractor Casco Bay Steel
Authorized By Paul E Goodale
Date 6-13-00

045SS

Casco Bay Steel Structures, Inc.

75 Spring Hill Road
Saco, Maine 04072

Phone: (207) 282-7360 Fax: (207) 282-1179

WELDING PROCEDURE SPECIFICATION

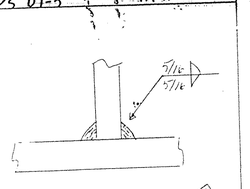
Material specification ASTM-709-Gr36-50-50W/A709M Gr 250-345-345W
Welding process Flux Cored Arc welding (FCAW)
Manual or machine Semi AUTO
Position of welding Flat - Horizonal
Filler metal specification AWS A5-29
Filler metal classification E81T1-Ni1-H4 ESAB
Flux n/A
Shielding gas 75%AR-25%CO2 Flow rate 35 CFH +8, -4
Single or multiple pass Single / Multiple Elec Ex 5/A = 1/4
Single or multiple arc Single
Welding current DC
Polarity DC EP
Welding progression See detail
Root treatment wire brush - area To be Free of Loose Scale, Slag rust & Moisture
Preheat and interpass temperature To 20°(74) 10(50), 80°(34) To 40(1/4) 20(70), 40(1/2) To 60(24) 65 C150 over 60(2 1/2) 110(225)
Postheat temperature n/A
Heat Input Min 27.7 KJ/in Max 43.6 KJ/in PQR FCM#8 39.6 KJ/in

Brink Rd/Freeman Brick
Brace J Dwg no BHFC1B&(2)
Warren VT. CBSSMC 324

WELDING PROCEDURE

Pass no.	Electrode size	Welding current: Amperes	Volts	Travel speed
		287	29	F3
	1/16	258 F	26.6 T	11.4 T
		214	31	14

AWS 5-13
AWS D1-5 Joint detail Fillet



TRANS RECEIVED
SENT BY: OK'D BY: JWC
JUL 16 2007
RESUBMIT: APPROVED:
BY: DATE: 6-19-07

AWS QC1 PAUL E. GROSSMAN #8100201 CWI

This procedure may vary due to fabrication sequence, fit-up, pass size, etc., within the limitation of variables given in applicable A.W.S. codes or contract specifications

Procedure no. 101
Revision no.
Form III-2

Contractor Casco Bay Steel
Authorized By Paul E. Goodale
Date 12-6-06

04655

GENERAL NOTES

CONSTRUCTION SPECIFICATIONS

1). ALL MATERIAL AND WORKMANSHIP TO BE IN ACCORDANCE WITH THE STATE OF VERMONT AGENCY OF TRANSPORTATION STANDARD SPECIFICATIONS FOR CONSTRUCTION DATED 2001 WITH LATEST REVISIONS AND THE SPECIAL PROVISIONS.

DESIGN SPECIFICATIONS

1). AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS (A.A.S.H.T.O.) STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES, 2002 EDITION WITH LATEST REVISIONS.

MATERIAL SPECIFICATIONS

1). UNLESS OTHERWISE NOTED, ALL STEEL TO BE AASHTO M270-50 (PAINTED).

2). MATERIAL NOTED "CVN" OR "H2-3" ON DETAIL DRAWINGS SHALL BE CHARPY V-NOTCH TESTED IN ACCORDANCE WITH THE REQUIREMENTS OF VERMONT STANDARD SPECIFICATIONS SECTION 714.01.

3). HIGH STRENGTH BOLTS: ASTM A325 7/8" DIAMETER, TYPE 1, MECH. GALVANIZED, IN 15/16" DIAMETER HOLES, UNLESS NOTED OTHERWISE. WASHERS ARE TO BE F436, MECH. GALVANIZED. NUTS SHALL BE A563 GRADE DH, MECH. GALVANIZED. NUTS & BOLTS SHALL BE ROTATIONAL CAPACITY TESTED. DO NOT MIX NUTS & BOLTS FROM DIFFERENT CONTAINERS UNLESS ALL NUTS & BOLTS HAVE THE SAME LOT NUMBER.

FABRICATION

1). ALL HOLES SHALL BE PUNCHED OR DRILLED FULL SIZE (UN).

WELDING

1). THE CONFIGURATION OF THE WELD JOINTS AND ALL WELDING PROCEDURES SHALL BE IN ACCORDANCE WITH AASHTO/AWS D1.5 BRIDGE WELDING CODE AND IN ADDITION TO SPECIFICATIONS SHOWN ABOVE. ALL WELDING WILL BE DETAILED TO PRE-QUALIFIED JOINTS, UNLESS PROHIBITED BY THE DESIGNER.

2). WELDING OF MAIN LOAD CARRYING MEMBERS AND ATTACHMENTS SHALL BE PERFORMED USING THE AUTOMATIC SUBMERGED ARC & SHIELDED METAL ARC PROCESSES. ALL WELDS ARE CONTINUOUS U.N.

3). NON DESTRUCTIVE TESTING OF WELDS SHALL BE IN ACCORDANCE WITH THE REFERENCED SPECIFICATION.

4). SEE DETAIL "WS1" ON THIS DRAWING FOR WELD TERMINATION DETAIL.

PAINTING

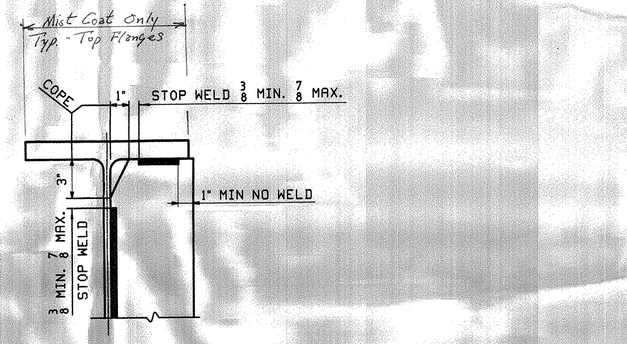
1). ALL STRUCTURAL STEEL SHALL BE PAINTED PER SUPPLEMENTAL SPECIFICATION 513 - PROTECTIVE COATINGS.

2). TOP COAT SHALL BE GREEN, COLOR CHIP NO. 14062.

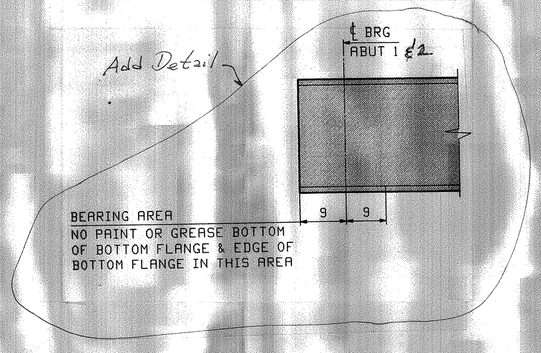
Federal Standard 595

	MANUFACTURER: INTERNATIONAL PAINT, INC.	DFT (MILS) MIN.	MAX.
P	INTERZINC 22HS INORGANIC ZINC SILICATE PRIMER	2.5	5.0
I	INTERGARD 475HS EPOXY	4.0	8.0
T	INTERTHANE 870 POLYURETHANE	3.0	5.0

← Add Detail



DETAIL "WS1"



RECEIVED
CKD BY _____ DKD BY _____
JUL 16 2007
RESUBMIT _____ APPROVED _____
BY _____ DATE _____

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

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McFarland-Johnson, Inc. _____
Date 7-16-07
By Steven F. Dellin

NOTE TO ENGINEER:
THESE NOTES ARE NOT INTENDED TO BE ALL INCLUSIVE AND COMPLIANCE WITH RELEVANT SPECIFICATIONS REMAIN UNCHANGED.

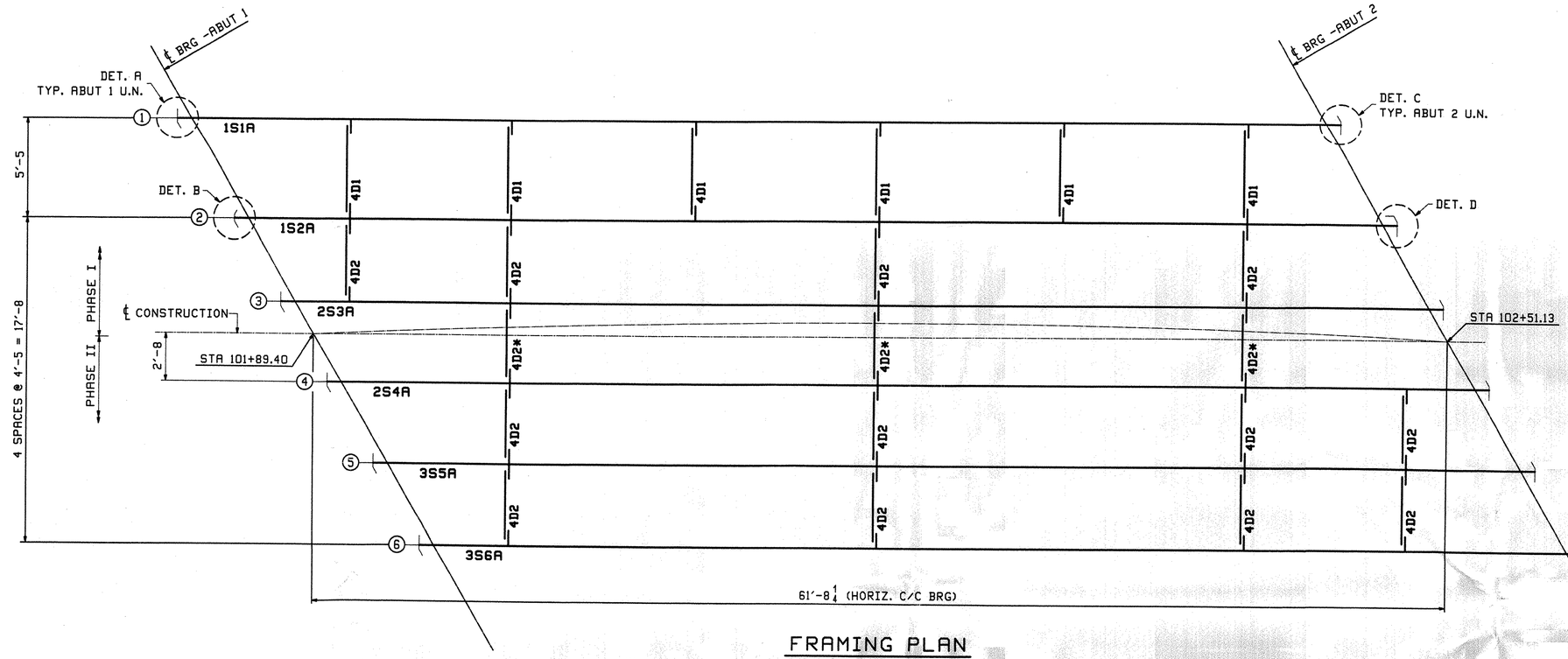
REV.	REMARKS	DATE	DWN	CHK	APP	Q.A.	NO.	DIA.	LGT	TYPE	WASHER
	OUT FOR APPROVAL	7-2-07									
	OUT FOR APPROVAL										
	ISSUED TO SHOP										
	FIELD & OFFICE										

MATERIAL: | ELECTRODES: | HOLES: | SHOP BOLTS:

SURFACE PREP. & PAINT:

DESCRIPTION: GENERAL NOTES	DRAWN BY	DATE
JOB: BROOK ROAD OVER FREEMAN BROOK	EEO	05/23/07
BIRDGE NO. 7	CHKD BY	
WARREN, VT. (COUNTY OF WASHINGTON)	ELC	6/05/07
TENSOR 2721	APPROV BY	
PROJ NO. BHF 0188(7)	SUPERVISOR	W. J. GATTI
CUSTOMER: BLOW & COTE	Q.A.	
CASCO BAY STEEL STRUCTURES, INC.	JOB NO.	DRG. NO.
75 SPRING HILL ROAD SACO, MAINE 04072	324	GN1
PHONE (207) 282-7360 FAX. (207) 282-1179	04755	REV. △

ELC Wed, Jun 13, 2007 03:08:12 PM J:\work\jobs\2721\GN1.DWG



FRAMING PLAN

ERECTOR NOTE

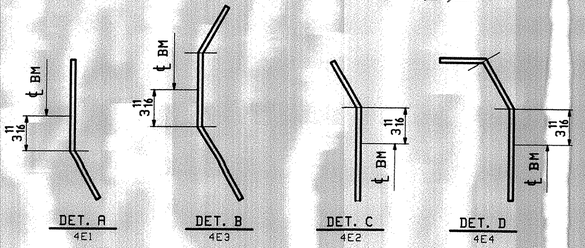
* THE CONTRACTOR MAY HOLD THE DIAPHRAGMS BETWEEN BEAMS 3 & 4 IN PLACE WITH A SINGLE UNTIGHTENED BOLT IN EACH CONNECTION PLATE UNTIL THE PHASE II CONCRETE DECK POUR IS MADE. ONCE THE POUR IS COMPLETE, ALL BOLTS SHALL BE PLACED AND TIGHTENED.

FIELD BOLT LIST						A325 Type 1 GALV. BOLTS							
LINE	NO REQ'D.	BOLT DIAM.	BOLT LEN.	BOLTS/CONN.	# OF CONN.	GRIP	THICKNESS OF PCS. CONNECTED						WASH CODE	PIECES CONNECTED AND REMARKS
1														INT DIAPHRAGMS - 4D1
2	120	7/8	2 1/4	4	30	7/8	1/2	3/8					1	DIAPHRAGM WEB TO CONN PLATE
3														
4														UTIIITY DIAPHRAGMS - 4D2
5	36	7/8	2 1/4	3	12	13/16	1/2	5/16					1	DIAPHRAGM WEB TO CONN PLATE

WASHER CODES

1: 1 Hard Flat Washer

FIELD BOLT SUMMARY			2% ADDED, MIN. 2 EXTRA			
LINE	NO. OF BOLTS	BOLT DIAM.	TYPE	BOLT LEN	ACTUAL COUNT	REMARKS
1	159	7/8	A325 Type 1 GALV.	2 1/4	156	
2						
3	159	Hard	Flat Washers for 7/8 ø BOLT			
4						
5						
6						



☒ Reviewed
☐ Rejected

☐ Furnish as Corrected
☐ Revise and Resubmit
☐ Submit Specified Item

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

McFarland-Johnson, Inc.

Date 7-11-07

By Steven F. Delia

RECEIVED
CK'D BY _____ OK'D BY _____
JUL 16 2007
RESUBMIT _____ APPROVED _____
BY _____ DATE _____

NOTES:

1. FOR GENERAL NOTES SEE DWG GN1.
2. FOR DIAPHRAGM DETAILS SEE DRG. 4.
3. FOR END PLATE DETAILS SEE DRG. 4.

REV.	REMARKS	DATE	DWN	CHK	APP	Q.A.	NO.	DIA.	LGT	TYPE	WASHER
	OUT FOR APPROVAL	7-2-07									
	OUT FOR APPROVAL										
	ISSUED TO SHOP										
	FIELD & OFFICE										

MATERIAL:	ELECTRODES:	HOLES:	SHOP BOLTS:
M270 50 U.N.		13/16ø U.N.	NONE

SURFACE PREP. & PAINT:
SEE GN1

DESCRIPTION: FRAMING PLAN & FIELD BOLTS	DRAWN BY	DATE
JOB: BROOK ROAD OVER FREEMAN BROOK	EEO	06/11/07
BIRDGE NO. 7	CHKD BY	
WARREN, VT. (COUNTY OF WASHINGTON)	ELC	06/13/07
TENSOR 2721	APPROV BY	
PROJ NO. BHF 0188(7)	SUPERVISOR	W. J. GATTI
CUSTOMER: BLOW & COTE	Q.A.	

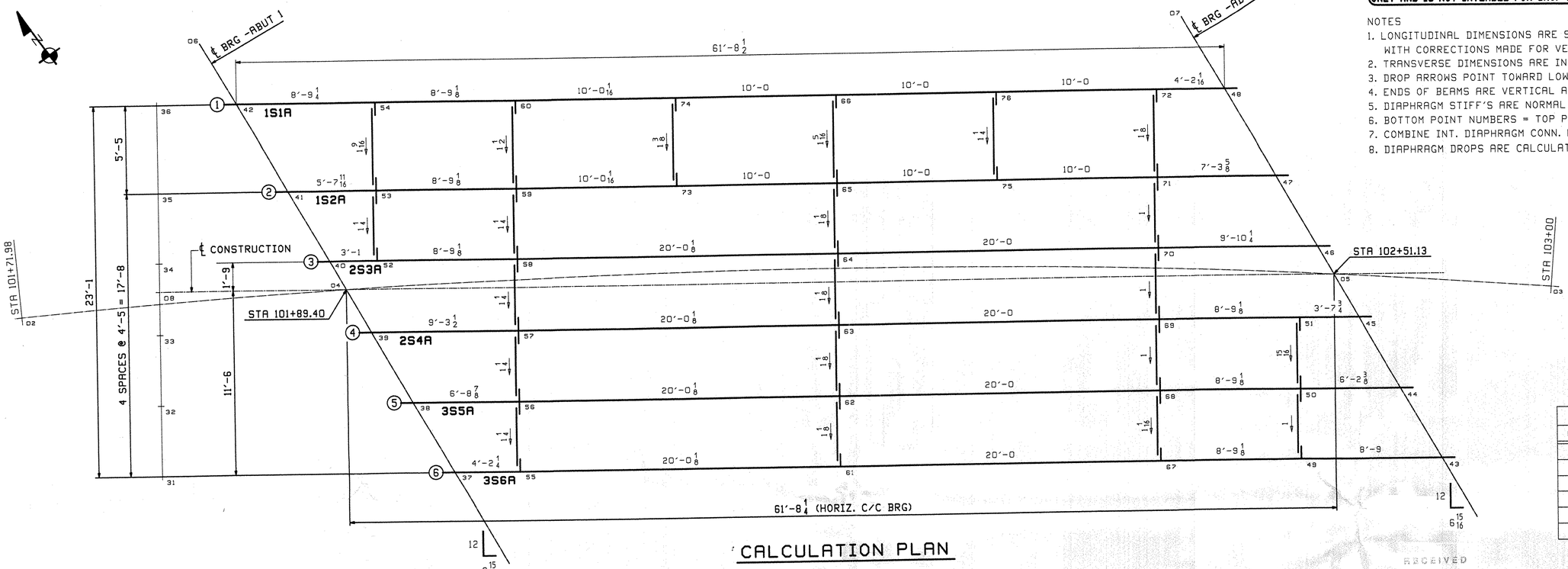
CASCO BAY STEEL STRUCTURES, INC.
75 SPRING HILL ROAD SACO, MAINE 04072
PHONE (207) 282-7360 FAX. (207) 282-1179

JOB NO.	DRG. NO.
324	E1
04855	REV. △

ELC Wed, Jun 13, 2007 03:03:38 PM //corp/jobs/2721/E1.dwg

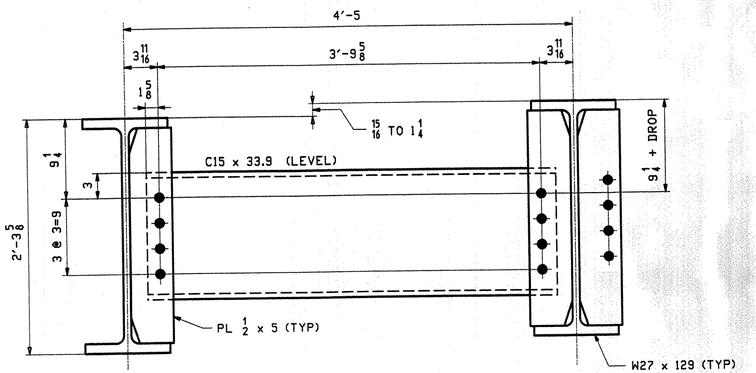
**** NOTE ****
THE PURPOSE OF THIS DRAWING IS TO COORDINATE GEOMETRIC CONTROL INFORMATION. THIS DWG IS SUBMITTED FOR INFORMATION ONLY AND IS NOT INTENDED FOR SHOP FABRICATION.

NOTES
1. LONGITUDINAL DIMENSIONS ARE SLOPING ALONG BOTTOM OF BEAMS. WITH CORRECTIONS MADE FOR VERT CURVE, GRADE & DL CAMBER (UN).
2. TRANSVERSE DIMENSIONS ARE IN A HORIZONTAL PLANE (UN).
3. DROP ARROWS POINT TOWARD LOW END OF MEMBER.
4. ENDS OF BEAMS ARE VERTICAL AFTER DL ROTATION.
5. DIAPHRAGM STIFF'S ARE NORMAL TO GRADE.
6. BOTTOM POINT NUMBERS = TOP POINT NUMBERS + 100
7. COMBINE INT. DIAPHRAGM CONN. FOR DIFF. IN DROPS OF ± 1/8.
8. DIAPHRAGM DROPS ARE CALCULATED IN THEIR FINAL POSITION.



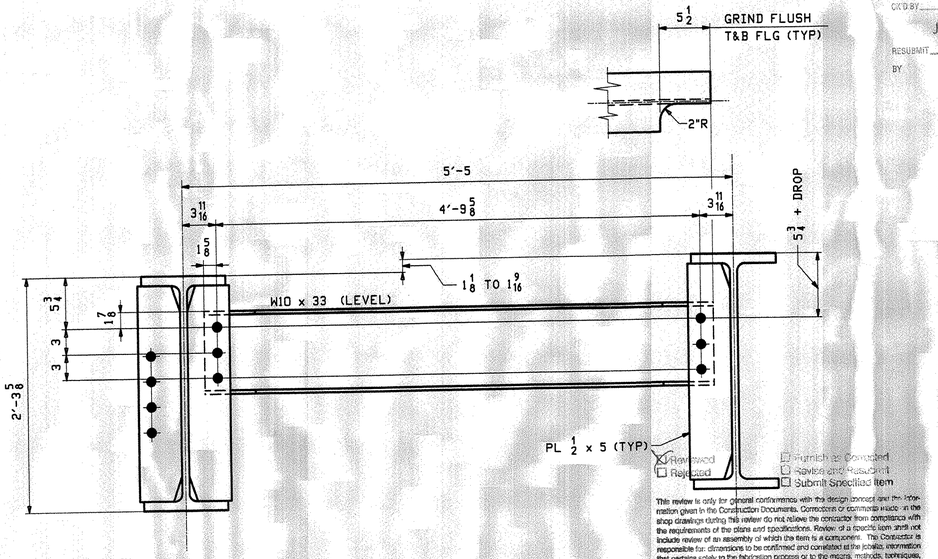
CALCULATION PLAN

GRADE		
LINE	ABUT 1	ABUT 2
1	.0415	.0314
2	.0416	.0315
3	.0416	.0315
4	.0416	.0315
5	.0416	.0315
6	.0416	.0314



TYP. INT DIAPHRAGM

LOOKING BACK STATION



UTILITY BAY DIAPHRAGM

LOOKING BACK STATION

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

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McFarland-Johnson, Inc.
Date 7-11-07
By Steven F. Delia

RECEIVED
CK'D BY_____ CK'D BY_____
JUL 16 2007
RESUBMIT_____ APPROVED_____
BY_____ DATE

REV.	REMARKS	DATE	DWN	CHK	APP	Q.A.	NO.	DIA.	LGT	TYPE	WASHER
	OUT FOR APPROVAL	7-2-07									
	OUT FOR APPROVAL										
	ISSUED TO SHOP										
	FIELD & OFFICE										

MATERIAL: M270-50
ELECTRODES:
HOLES: 15/16Ø (UN)
SHOP BOLTS:
SURFACE PREP. & PAINT:

DESCRIPTION: CALCULATION PLAN & LAYOUTS
JOB: BROOK ROAD OVER FREEMAN BROOK
BIRDGE NO. 7
WARREN, VT. (COUNTY OF WASHINGTON)
PROJ NO. BHF 0188(7)
CUSTOMER: BLOW & COTE

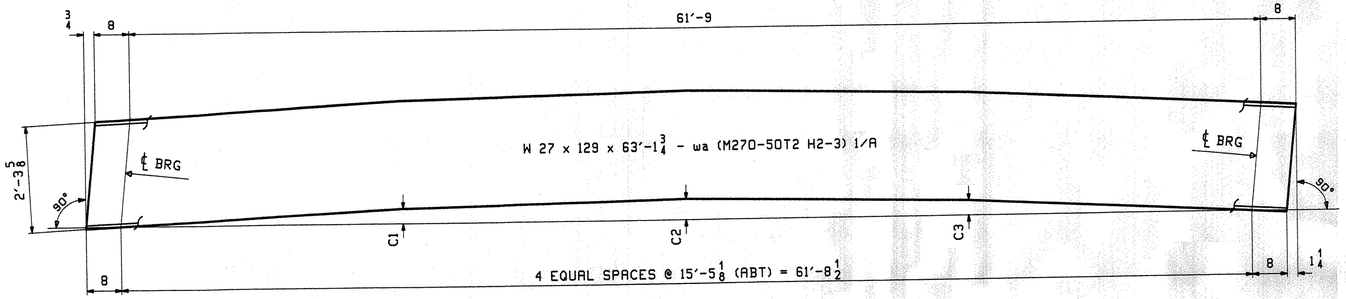
	DRAWN BY	DATE
	EEO	5/22/07
	CHKD BY	
	ELC	6/05/07
	APPROV BY	
	SUPERVISOR	W. J. GATTI
	Q.A.	

TENSOR 2721

CASCO BAY STEEL STRUCTURES, INC.
75 SPRING HILL ROAD SACO, MAINE 04072
PHONE (207) 282-7360 FAX. (207) 282-1179

JOB NO.	DRG. NO.
324	WS1
04955	REV. △

ELC Wed, Jun 13, 2007 07:54:54 AM J:\steel jobs\2721\WS1.dwg



CAMBER DIAGRAM FOR 1S1A THRU 6S6A

MARK	C1	C2	C3
1S1A	2 9/16	3 9/16	2 9/16
1S2A	2 5/16	3 1/4	2 5/16
2S3A	2 5/16	3 1/4	2 5/16
2S4A	2 5/16	3 1/4	2 5/16
3S5A	2 5/16	3 1/4	2 5/16
3S6A	2 3/8	3 5/16	2 3/8

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

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McFarland-Johnson, Inc.

Date 7-1-07

By Steven F. Dalis

RECEIVED
OK'D BY_____ OK'D BY_____
JUL 16 2007
RESUBMIT_____ APPROVED_____
BY DATE

REV.	REMARKS	DATE	DWN	CHK	APP	Q.A.	NO.	DIA.	LGT	TYPE	WASHER
	OUT FOR APPROVAL	7-2-07									
	OUT FOR APPROVAL										
	ISSUED TO SHOP										
	FIELD & OFFICE										

MATERIAL:	ELECTRODES:	HOLES:	SHOP BOLTS:
M270 50 U.N.		15/16ø U.N.	NONE

SURFACE PREP. & PAINT:

NOTES:
1. FOR GENERAL NOTES SEE DWG GN1.
2. H2-3 DENOTES MATERIAL SUBJECT TO CHARPY V-NOTCH TEST AT H FREQ. FOR ZONE 2

DESCRIPTION: CAMBER & FLANGE DIAGRAM

JOB: BROOK ROAD OVER FREEMAN BROOK
BIRDGE NO. 7
WARREN, VT. (COUNTY OF WASHINGTON)

TENSOR 2721

PROJ NO. BHF 0188(7)

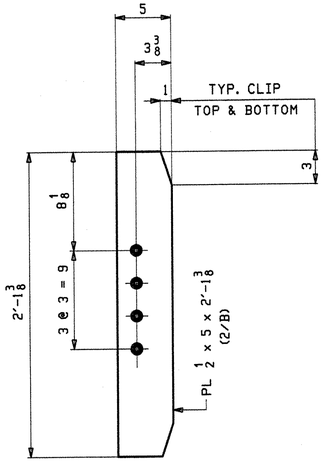
CUSTOMER: BLOW & COTE

DRAWN BY	DATE
EEO	05/23/07
CHKD BY	
ELC	6/05/07
APPROV BY	
SUPERVISOR	W. J. GATTI
Q.A.	

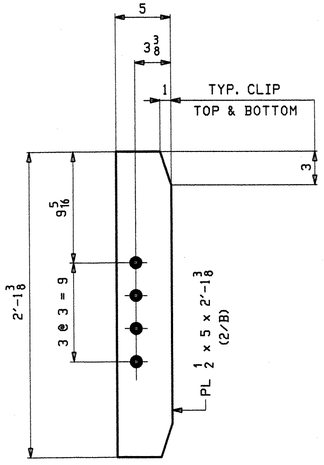
CASCO BAY STEEL STRUCTURES, INC.
75 SPRING HILL ROAD SACO, MAINE 04072
PHONE (207) 282-7360 FAX. (207) 282-1179

JOB NO.	DRG. NO.
324	C1
05055	REV. △

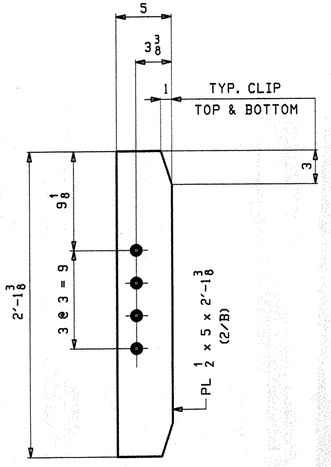
ELC Mon Jun 11, 2007 03:07:00 PM J:\steel\jobs\2721\C1.dwg



15 ~ x1a
INT CONN PL - LOW END



9 ~ x1b
INT CONN PL - HIGH END



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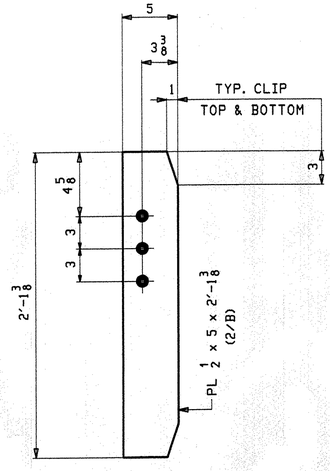
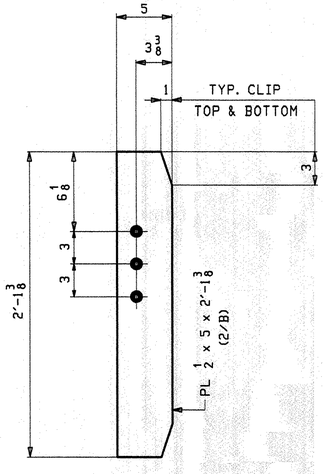
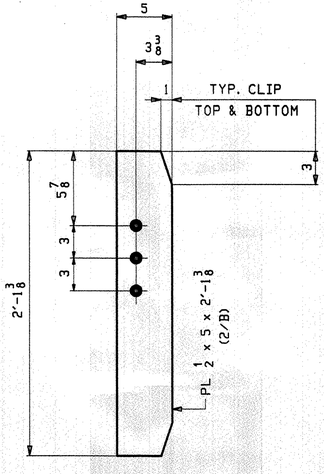
INT CONN PL - HIGH END



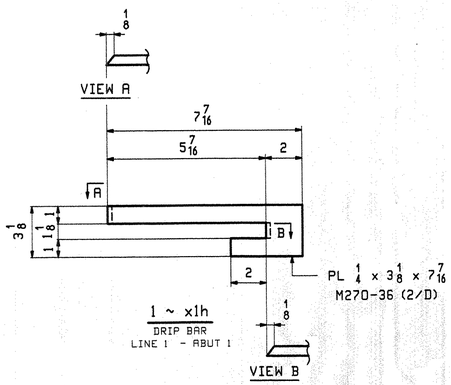
6 ~ x1d
UTILITY CONN PL - LOW END

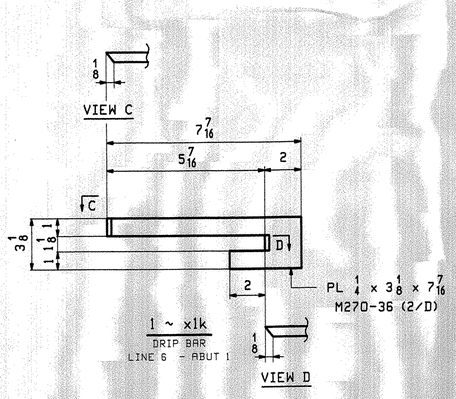


3 ~ x1f
UTILITY CONN PL - HIGH END



3 ~ x1g
UTILITY CONN PL - HIGH END





RECEIVED
CK'D BY _____ CK'D BY _____
JUL 16 2007
RESUBMIT _____ APPROVED _____
BY _____ DATE

OUT FOR APPROVAL	7-2-07								
OUT FOR APPROVAL									
ISSUED TO SHOP									
FIELD & OFFICE									

REV.	REMARKS	DATE	DWN	CHK	APP	Q.A.	NO.	DIA.	LGT	TYPE	WASHER

MATERIAL:	ELECTRODES:	HOLES:	SHOP BOLTS:
M270-50 U.N.		15/16Ø	NONE

SURFACE PREP. & PAINT:
SEE SHT. GN1

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

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McFarland-Johnson, Inc.
Date 7-11-07
By Steven F. Delia

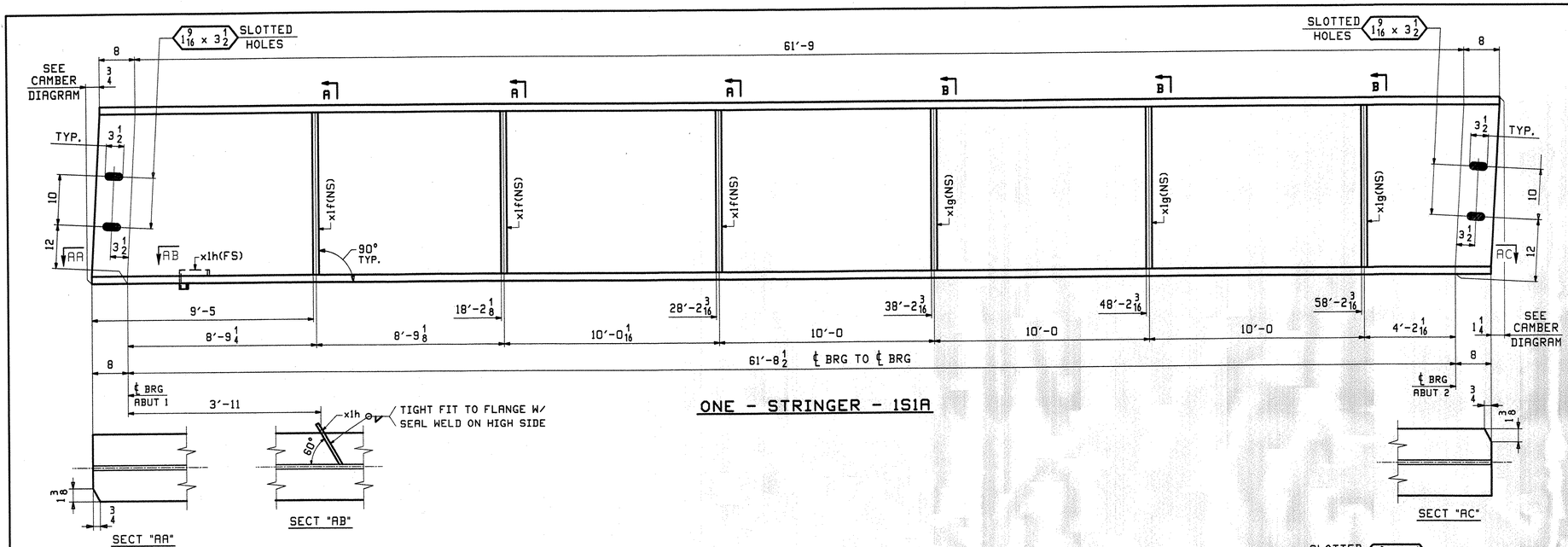
NOTES:

1. ALL MATERIAL SHALL BE M270-50 U.N.
2. ALL BOLT HOLES SHALL BE 15/16"Ø FOR 7/8"Ø HSB.
3. FOR GENERAL NOTES SEE SHEET GN1.

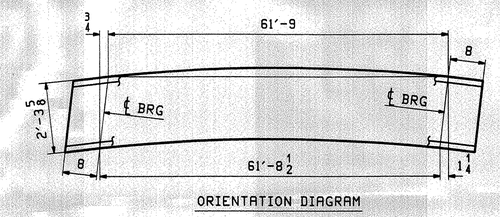
DESCRIPTION: GIRDER STANDARDS	DRAWN BY	DATE
JOB: BROOK ROAD OVER FREEMAN BROOK	EEO	06/08/07
BIRDGE NO. 7	CHKD BY	
WARREN, VT. (COUNTY OF WASHINGTON)	ELC	06/11/07
TENSOR 2721	APPROV BY	
	SUPERVISOR	W. J. GATTI
PROJ NO. BHF 0188(7)	Q.A.	
CUSTOMER: BLOW & COTE		

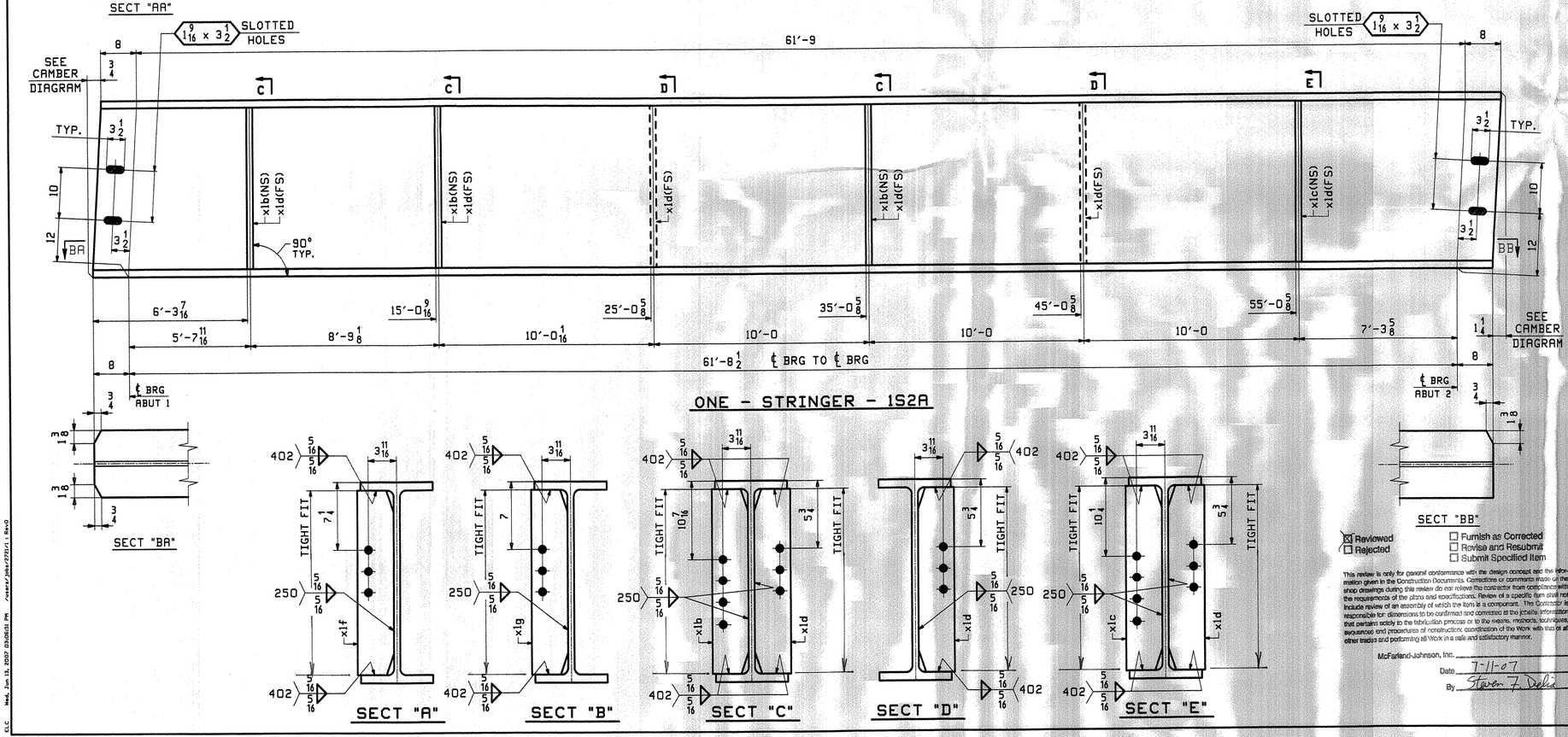
CASCO BAY STEEL STRUCTURES, INC.	JOB NO.	DRG. NO.
75 SPRING HILL ROAD SACO, MAINE 04072	324	X1
PHONE (207) 282-7360 FAX. (207) 282-1179	05/55	REV. △

ELC Wed, Jun 13, 2007 03:06:39 PM //www/jobs/2721/X1.1 RevD



ONE - STRINGER - 1S1A





ONE - STRINGER - 1S2A

ABM INFO PAGE	ABM INFO LINE	SHIP MARK	QTY	MARK	MATERIAL	LENGTH FT	LENGTH INCHES	REMARKS	WT	PROCUREMENT NOTES
		1S1A	1		STRINGER				8255	
1	A		1	wa	W 27x129	63	1 1/2	(M270-50T2) (H2-3)		
2	B		3	x1f	PL 1/2x5	2	1 3/8			
2	B		3	x1g	PL 1/2x5	2	1 3/8			
2	D		1	x1h	PL 1/4x3 1/8	0	7 7/16	(M270-36)		
		1S2A	1		STRINGER				8326	
1	A		1	wa	W 27x129	63	1 1/2	(M270-50T2) (H2-3)		
2	B		3	x1b	PL 1/2x5	2	1 3/8			
2	B		1	x1c	PL 1/2x5	2	1 3/8			
2	B		6	x1d	PL 1/2x5	2	1 3/8			

RECEIVED
JUL 16 2007

NOTES:

1. FOR GENERAL NOTES SEE DRG. GN1.
2. FOR STANDARD DETAILS SEE DRG. X1.
3. FOR CAMBER DIAGRAM SEE DRG. C1.
4. H2-3 DENOTES MATERIAL SUBJECT TO CHARPY V-NOTCH TESTING.
5. FOR WELD TERMINATION SEE DETAIL WS1 ON GN1.

OUT FOR APPROVAL	7-2-07									
OUT FOR APPROVAL										
ISSUED TO SHOP										
FIELD & OFFICE										
REV.	REMARKS	DATE	DWN	CHK	APP	Q.A.	NO.	DIA.	LGT TYPE	WASHER

MATERIAL:	ELECTRODES:	HOLES:	SHOP BOLTS:
M270 50 U.N.		13/16 Ø U.N.	NONE

SURFACE PREP. & PAINT:
SEE GN1

DESCRIPTION: STRINGERS - 1S1A & 1S2A	DRAWN BY	DATE
JOB: BROOK ROAD OVER FREEMAN BROOK	EEO	06/11/07
BIRDGE NO. 7	CHKD BY	
WARREN, VT. (COUNTY OF WASHINGTON)	ELC	06/11/07
TENSOR 2721	APPROV BY	
PROJ NO. BHF 0188(7)	SUPERVISOR	W. J. GATTI
CUSTOMER: BLOW & COTE	Q.A.	

CASCO BAY STEEL STRUCTURES, INC.
75 SPRING HILL ROAD SACO, MAINE 04072
PHONE (207) 282-7360 FAX. (207) 282-1179

JOB NO.	DRG. NO.
324	1
052 55	REV.

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

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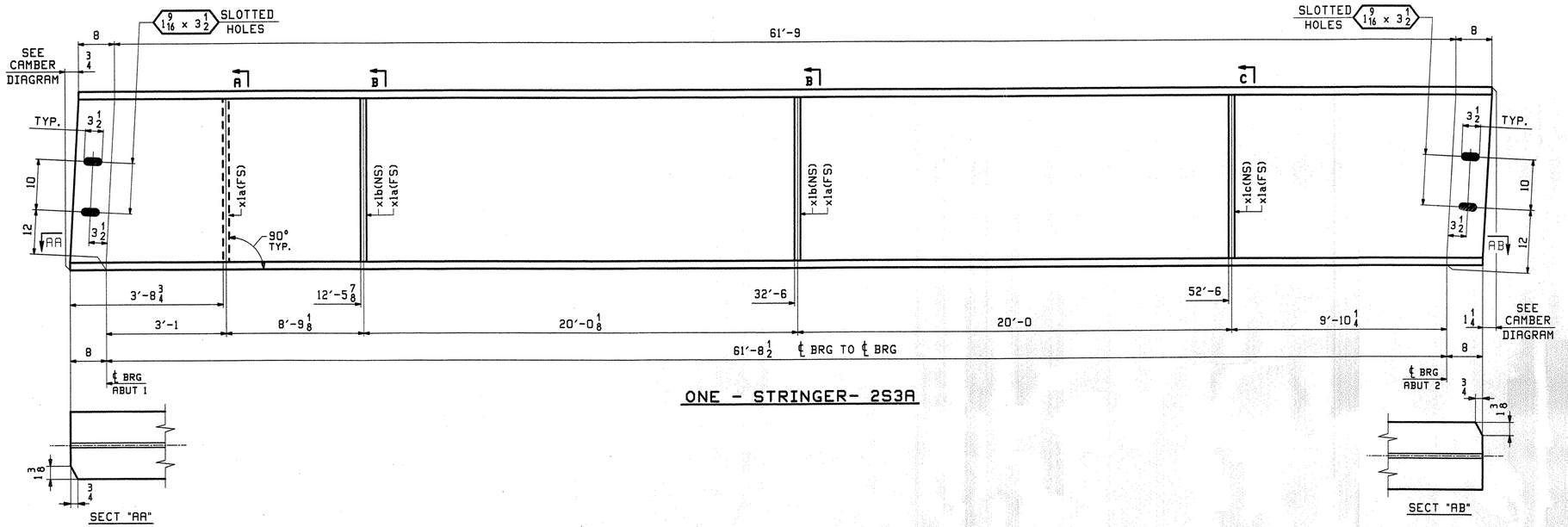
McFarland-Johnson, Inc.
Date 7-11-07
By Steven F. Dolin

ELC Wed, Jun 13, 2007 03:08:53 PM J:\pw\r\324\r2721\1 Rev0



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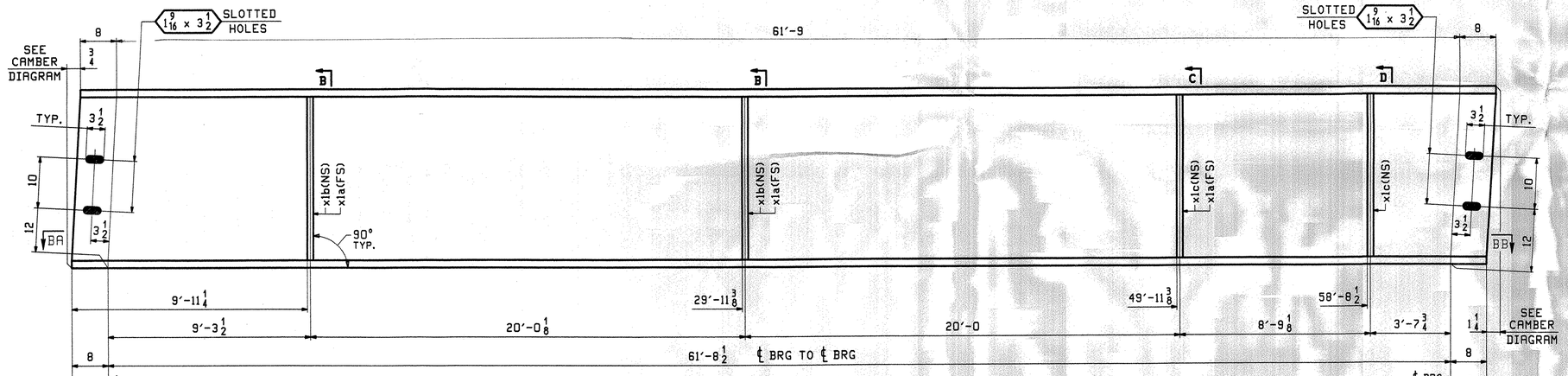

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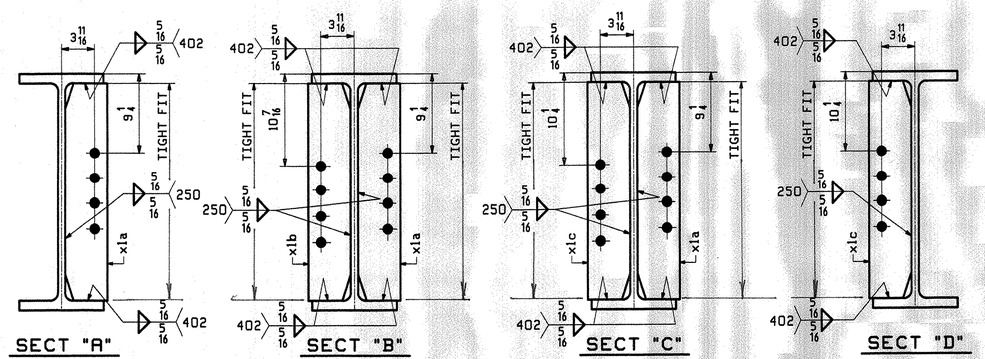

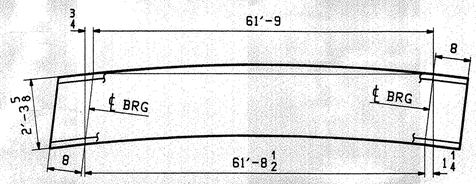

ORIENTATION DIAGRAM

ABM INFO		SHIP	BILL OF MATERIAL					JOB NO.	DRAWING NO.	REV.
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2	B		4	x1a	PL 1/2x5	2	1 3/8			
2	B		2	x1b	PL 1/2x5	2	1 3/8			
2	B		1	x1c	PL 1/2x5	2	1 3/8			
		2S4A	1		STRINGER				8272	
1	A		1	wa	W 27x129	63	1 3/4	(M270-50T2) (H2-3)		
2	B		3	x1a	PL 1/2x5	2	1 3/8			
2	B		2	x1b	PL 1/2x5	2	1 3/8			
2	B		2	x1c	PL 1/2x5	2	1 3/8			

RECEIVED
JUL 16 2007
CK'D BY _____ OK'D BY _____
RESUBMIT _____ APPROVED _____
BY _____ DATE _____

NOTES:

1. FOR GENERAL NOTES SEE DRG. GN1.
2. FOR STANDARD DETAILS SEE DRG. X1.
3. FOR CAMBER DIAGRAM SEE DRG. C1.
4. H2-3 DENOTES MATERIAL SUBJECT TO CHARPY V-NOTCH TESTING.
5. FOR WELD TERMINATION SEE DETAIL WS1 ON GN1.

OUT FOR APPROVAL	7-1-07									
OUT FOR APPROVAL										
ISSUED TO SHOP										
FIELD & OFFICE										
REV.	REMARKS	DATE	DWN	CHK	APP	Q.A.	NO.	DIA.	LGT	TYPE	WASHER

MATERIAL:	ELECTRODES:	HOLES:	SHOP BOLTS:
M270 50 U.N.		15/16ø U.N.	NONE

SURFACE PREP. & PAINT:
SEE GN1

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

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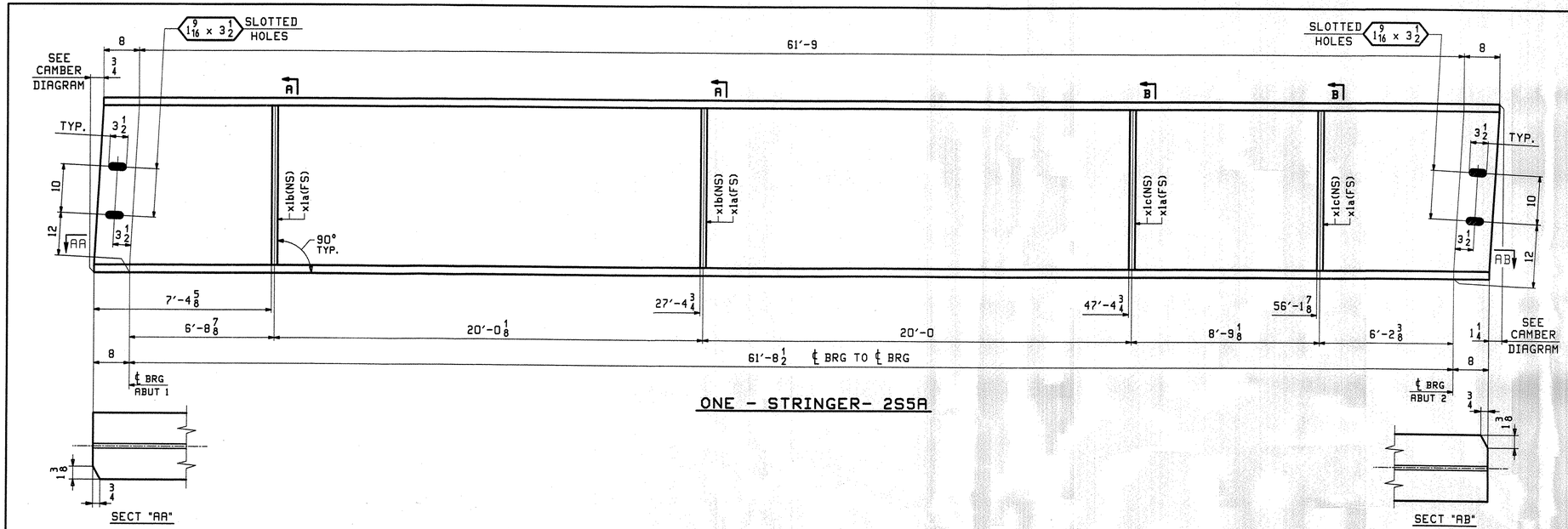
McFarland-Johnson, Inc.
Date 7-11-07
By Steven J. Delia

DESCRIPTION: STRINGERS - 2S3A & 2S4A	DRAWN BY	DATE
JOB: BROOK ROAD OVER FREEMAN BROOK	EEO	06/11/07
BIRDGE NO. 7	CHKD BY	
WARREN, VT. (COUNTY OF WASHINGTON)	ELC	06/12/07
TENSOR 2721	APPROV BY	
	SUPERVISOR	W. J. GATTI
PROJ NO. BHF 0188(7)	Q.A.	
CUSTOMER: BLOW & COTE		

CASCO BAY STEEL STRUCTURES, INC.
75 SPRING HILL ROAD SACO, MAINE 04072
PHONE (207) 282-7360 FAX. (207) 282-1179

JOB NO.	DRG. NO.
324	2
053 55	REV. △

ELC Wed, Jun 13, 2007 03:08:08 PM J:\users\jobs\2721\2 | Rev0



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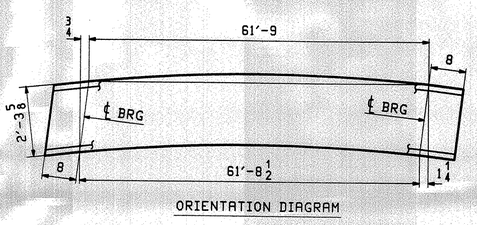
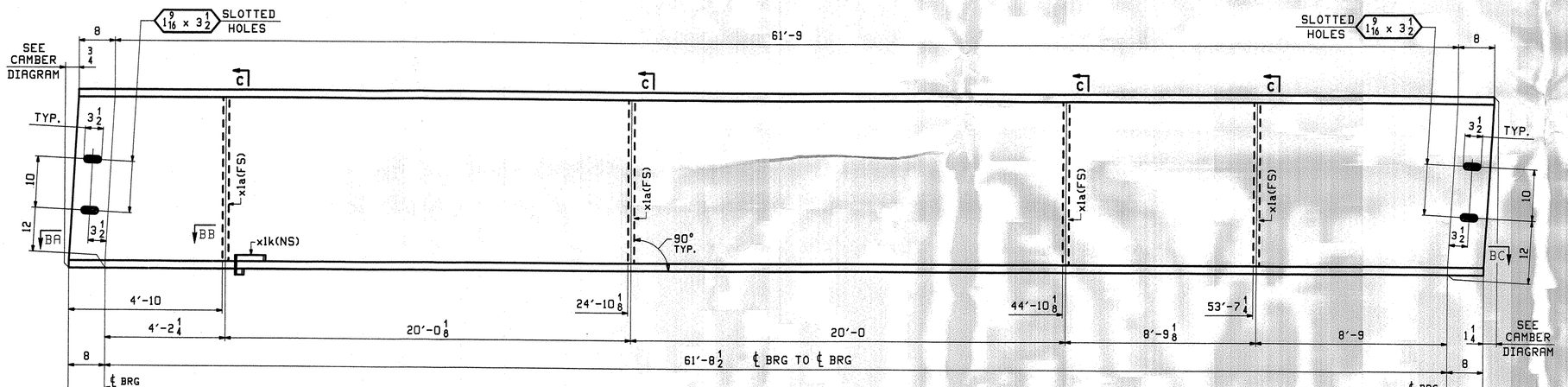


ORIENTATION DIAGRAM



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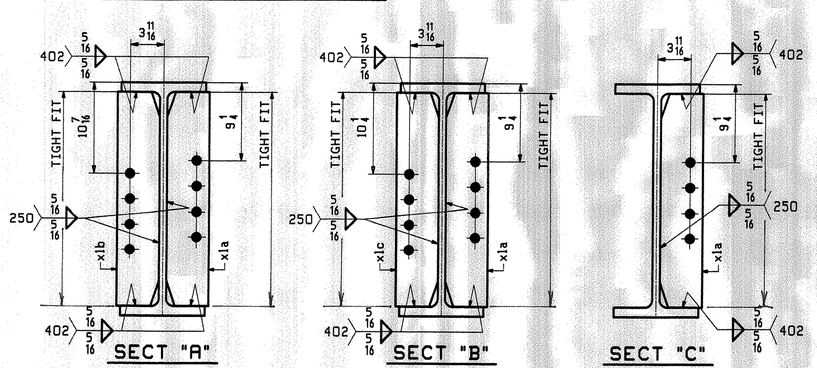

ABM INFO		SHIP	BILL OF MATERIAL					JOB NO.	DRAWING NO.	REV.
									3	
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		3S5A	1		STRINGER				8290	
1	A		1	wa	W 27x129	63	1 3/4	(M270-50T2) (H2-3)		
2	B		4	x1a	PL 1/2x5	2	1 3/8			
2	B		2	x1b	PL 1/2x5	2	1 3/8			
2	B		2	x1c	PL 1/2x5	2	1 3/8			
		3S6A	1		STRINGER				8219	
1	A		1	wa	W 27x129	63	1 3/4	(M270-50T2) (H2-3)		
2	B		4	x1a	PL 1/2x5	2	1 3/8			
2	D		1	x1k	PL 1/4x3 1/8	0	7 7/16	(M270-36)		

NOTES:

1. FOR GENERAL NOTES SEE DRG. GN1.
2. FOR STANDARD DETAILS SEE DRG. X1.
3. FOR CAMBER DIAGRAM SEE DRG. C1.
4. H2-3 DENOTES MATERIAL SUBJECT TO CHARPY V-NOTCH TESTING.
5. FOR WELD TERMINATION SEE DETAIL WS1 ON GN1.

RECEIVED
CK'D BY _____ OK'D BY _____
JUL 16 2007
RESUBMIT _____ APPROVED _____
BY _____ DATE _____

OUT FOR APPROVAL	7-11-07												
OUT FOR APPROVAL													
ISSUED TO SHOP													
FIELD & OFFICE													
REV.	REMARKS	DATE	DWN	CHK	APP	Q.A.	NO.	DIA.	LGT	TYPE	WASHER		

MATERIAL:	ELECTRODES:	HOLES:	SHOP BOLTS:
M270 50 U.N.		15/16ø U.N.	NONE

SURFACE PREP. & PAINT:
SEE GN1

Reviewed / Rejected — Furnish as Corrected / Revise and Resubmit / Submit Specified Item

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

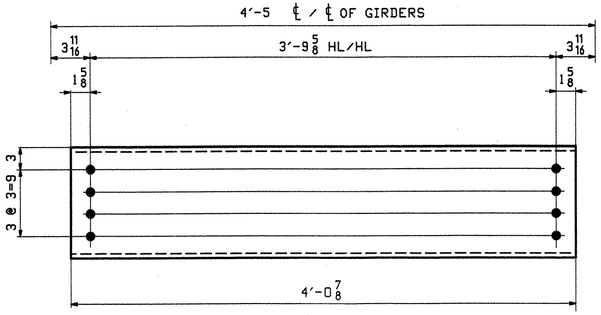
McFarland-Johnson, Inc.
Date 7-11-07
By Steven F. DeRisa

DESCRIPTION: STRINGERS - 3S5A & 3S6A	DRAWN BY	DATE
JOB: BROOK ROAD OVER FREEMAN BROOK	EEO	06/11/07
BIRDGE NO. 7	CHKD BY	
WARREN, VT. (COUNTY OF WASHINGTON)	ELC	06/12/07
TENSOR 2721	APPROV BY	
PROJ NO. BHF 0188(7)	SUPERVISOR	W. J. GATTI
CUSTOMER: BLOW & COTE	Q.A.	

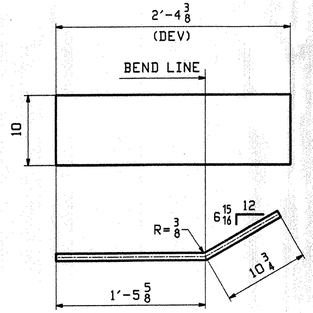
CASCO BAY STEEL STRUCTURES, INC.
75 SPRING HILL ROAD SACO, MAINE 04072
PHONE (207) 282-7360 FAX. (207) 282-1179

JOB NO.	DRG. NO.
324	3
05455	REV. △

ELC Wed, Jun 13, 2007 03:07:04 PM //corr-jobs/2721/3 | Rev0

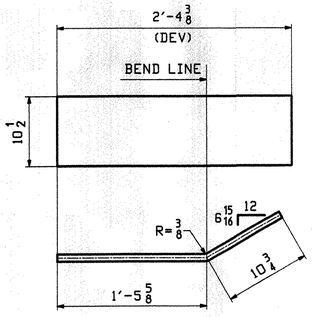


15 ~ INT. DIAPHRAGMS - 4D1



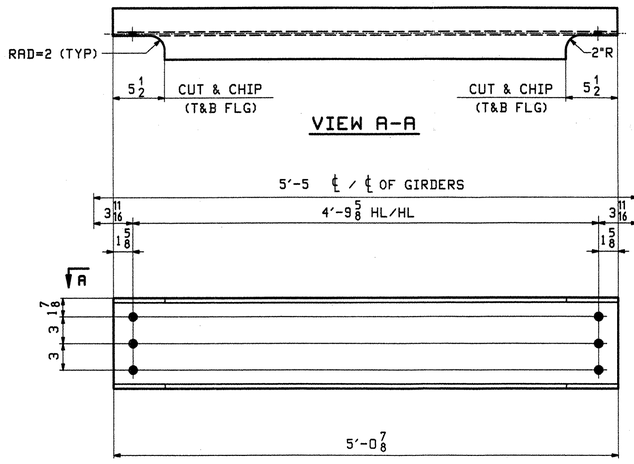
5 ~ ABUT END PLATES ~ 4E1

(GALV. AFTER FAB.)

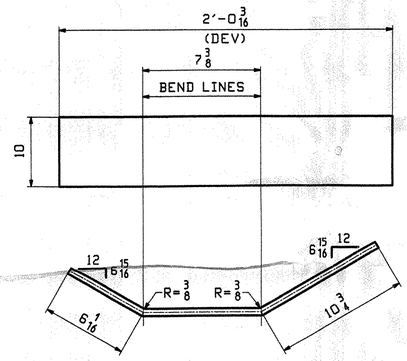


5 ~ ABUT END PLATES ~ 4E2

(GALV. AFTER FAB.)

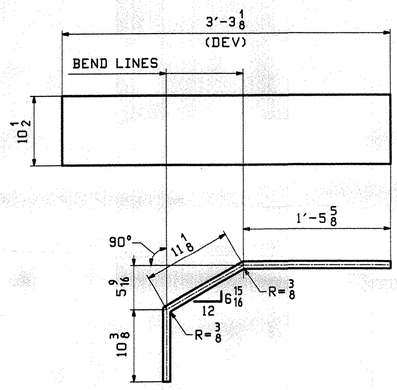


6 ~ UTILITY DIAPHRAGMS - 7D2



1 ~ ABUT END PLATE ~ 4E3

(GALV. AFTER FAB.)



1 ~ ABUT END PLATE ~ 4E4

(GALV. AFTER FAB.)

ABM INFO		SHIP	BILL OF MATERIAL					JOB NO.	DRAWING NO.		REV.
									4		
PAGE	LINE	MARK	QTY	MARK	MATERIAL	LENGTH FT	LENGTH INCHES	REMARKS	WT	PROCUREMENT NOTES	
2	F		15	4D1	C 15x33.9	4	0 7/8	(M270-50)			
2	G		6	4D2	W 10x33	5	0 7/8	(M270-50)			
2	J		5	4E1	PL 1/4x10	2	4 3/8	(M270-36)			
2	L		5	4E2	PL 1/4x10 1/2	2	4 3/8	(M270-36)			
2	J		1	4E3	PL 1/4x10	2	0 3/16	(M270-36)			
2	K		1	4E4	PL 1/4x10 1/2	3	3 1/8	(M270-36)			

RECEIVED
CK'D BY _____ CK'D BY _____
JUL 16 2007
RESUBMIT _____ APPROVED _____
BY DATE

NOTES:

1. FOR GENERAL NOTES SEE DWG GN1.

OUT FOR APPROVAL	7-1-07									
OUT FOR APPROVAL										
ISSUED TO SHOP										
FIELD & OFFICE										
REV.	REMARKS	DATE	DWN	CHK	APP	Q.A.	NO.	DIA.	LGT	TYPE	WASHER

MATERIAL:	ELECTRODES:	HOLES:	SHOP BOLTS:
M270 50 U.N.		15/16ø U.N.	NONE

SURFACE PREP. & PAINT:

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

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

McFarland-Johnson, Inc.
Date 7-16-07
By Steven F. Dubie

DESCRIPTION: DIAPHRAGMS & END PLATES		DRAWN BY	DATE
JOB:	BROOK ROAD OVER FREEMAN BROOK	EEO	06/11/07
	BIRDGE NO. 7	CHKD BY	
TENSOR 2721	WARREN, VT. (COUNTY OF WASHINGTON)	ELC	06/12/07
		APPROV BY	
PROJ NO. BHF 0188(7)		SUPERVISOR	W. J. GATTI
CUSTOMER: BLOW & COTE		Q.A.	

CASCO BAY STEEL STRUCTURES, INC.
75 SPRING HILL ROAD SACO, MAINE 04072
PHONE (207) 282-7360 FAX. (207) 282-1179

JOB NO.	DRG. NO.
324	4
05555	REV. △

ELC Wed, Jun 13, 2007 03:07:16 PM c:\users\jake\2721v4.1 Rev0

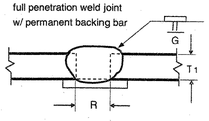
Highway Safety Corporation

Glastonbury, CT

Welding Procedure Specification

Material specification **ASTM A500 Gr B / A53 gr B**
Welding process **Shielded Metal Arc Welding (SMAW)**
Manual, semi-automatic, or automatic **Manual**
Position of welding **Flat (1G)**
Filler metal specification **AWS A5.1**
Filler metal classification **ER7018**
Electrode and manufacturer **Lincoln Electric Jet LH 78 MR**
Flux and manufacturer **N/A**
Shielding gas **N/A** Flow rate **N/A**
Single or multiple pass **Multiple**
Single or multiple arc **Single**
Welding current **AC**
Polarity **N/A**
Welding progression **Stringers**
Root treatment **clean base metal**
Preheat and interpass temperature **50ºF (min)**
Postheat treatment **None**
Electrode extension **N/A**

WELDING PROCEDURE

Weld size	Pass no.	Electrode size	Welding parameters Amperes	Welding parameters Volts	Travel speed	Joint detail
	ALL	**5/32"**	**150 A to 220 A**		**VARIES**	B-LIa full penetration weld joint w/ permanent backing bar  **T 1 = 1/4" (max)** **R = T 1**

VT RAMS
RECEIVED
ORDAY ____ OKD BY JJC
JUL 26 2007
RESUBMIT ____ APPROVED ✓
BY ____ DATE 8-2-07

This procedure may vary due to fabrication sequence, fit-up, pass size, etc. within the limitation of variables given in section 5 of latest edition AWS D1.1

WPS no. **W-1600-a**
Revision no. **0**
Supporting PQR no. **Pre-Qualified**
Project Name **Warren, VT**

Fabricator **Highway Safety Corporation**
Authorized by **Paul Radice**
Date **7/18/07**
Project Number **BHF 0188(7)**

CWI
Paul A. Radice
960702221
DEC 1 20
AWS

056 HR

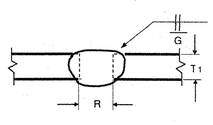
Highway Safety Corporation

Glastonbury, CT

Welding Procedure Specification

Material specification **ASTM A709 gr 36**
Welding process **Gas Metal Arc Welding (GMAW)**
Manual, semi-automatic, or automatic **Semi-Automatic**
Position of welding **Flat (1G)**
Filler metal specification **AWS A5.18**
Filler metal classification **ER70S-3**
Electrode and manufacturer **Lincoln Electric Lincoln Weld L-50**
Flux and manufacturer **N/A**
Shielding gas **85% Argon / 15% CO2** Flow rate **19-27 L / min**
Single or multiple pass **Single**
Single or multiple arc **Single**
Welding current **DCEP**
Polarity **Reverse - electrode positive**
Welding progression **Stringers**
Root treatment **clean base metal**
Preheat and interpass temperature **base metal up to 3/4" (50ºF)**
Postheat treatment **None**
Electrode extension **3/4" ± 1/4"**

WELDING PROCEDURE

Weld size	Pass no.	Electrode size	Welding parameters Amperes	Welding parameters Volts	Travel speed	Joint detail
	1	0.045"	300 A ± 30	29 V ± 2	14 ipm ± 2	B-Lla  T 1 = 1/4" (max) R = T 1

VTrans RECEIVED OK'D BY OK'D BY JWC JUL 26 2007 RESUBMIT APPROVED BY DATE 8-2-07

This procedure may vary due to fabrication sequence, fit-up, pass size, etc. within the limitation of variables given in section 5 of latest edition AWS D1.1 / D1.5

WPS no. **W-1600-b**
Revision no. **0**
Supporting PQR no. **Pre-Qualified**
Project Name **Warren, VT**

Fabricator **Highway Safety Corporation**
Authorized by **Paul Radice**
Date **7/18/07**
Project Number **BHF 0188(7)**

AWS QC 1 PAUL A. RADICE 99070221 CWI

057AR

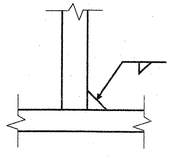
Highway Safety Corporation

Glastonbury, CT

Welding Procedure Specification

Material specification **ASTM A36, A709 Gr 36, A500 gr B, A53 gr B**
Welding process **Gas Metal Arc Welding (GMAW)**
Manual, semi-automatic, or automatic **Semi-Automatic**
Position of welding **Horizontal (2F)**
Filler metal specification **AWS A5.18**
Filler metal classification **ER70S-3**
Electrode and manufacturer **Lincoln Electric Lincoln Weld L-50**
Flux and manufacturer **N/A**
Shielding gas **85% Argon / 15% CO2** Flow rate **19-27 L / min**
Single or multiple pass **Single**
Single or multiple arc **Single**
Welding current **DCEP**
Polarity **Reverse - electrode positive**
Welding progression **Stringers**
Root treatment **clean base metal**
Preheat and interpass temperature **Base Metal up to 3/4" (50ºF) ; over 3/4-1 1/2" (70ºF)**
Postheat treatment **None**
Electrode extension **3/4" ± 1/4"**

WELDING PROCEDURE

Weld size	Pass no.	Electrode size	Welding parameters Amperes	Welding parameters Volts	Travel speed	Joint detail
1/8"	1	0.045"	300 A ± 30	29 V ± 2	28 ipm ± 2	TYPICAL ALL FILLET WELDS 
3/16"	1	0.045"	300 A ± 30	29 V ± 2	14 ipm ± 2	
5/16"	1	0.062"	275 A ± 25	25 V ± 2	9 ipm ± 2	

VT AOT RECEIVED JUL 26 2007 APPROVED DATE 8-2-07

This procedure may vary due to fabrication sequence, fit-up, pass size, etc. within the limitation of variables given in section 5 of latest edition AWS D1.1 / D1.5

WPS no. **W-1600-c**
Revision no. **0**
Supporting PQR no. **Pre-qualified**
Project Name **Warren, VT**

Fabricator **Highway Safety Corporation**
Authorized by Paul Radice
Date **7/18/07**
Project Number **BHF 0188(7)**

AWS QC-1 PAUL A. RADICE 99070221 CWI

V&STaunton Galvanizing

555 John Hancock Rd.
Taunton, MA 02780

COATING PROCEDURE FOR:
ITEM 525.15
WARREN VT BHF 0188(7)
GALVANIZE + PAINT BLACK
COLOR # 27038

September 7, 2004

Highway Safety Corp.
239 Commerce St.
Glastonbury, CT 06033

Dear Mamie Sniezko:

The following is a description of the process and protocol we use at the Taunton paint shop.

Taunton Coating Room Process.

- Product is brought directly over from the galvanizing plant and hung on racks. Storage and staging is all under enclosed roof. The prime coat will be applied within 12 hours of the galvanizing process.
- Final inspection is made to address any remaining irregularities in the galvanized surface. Air sanders and hand files are used to carefully remove irregularities if present. Any required repairs are completed according to ASTM A – 780 Standard practice for Repair of Damaged and Uncoated Areas of Hot Dip Galvanized Coatings.
- The racks are loaded into the manuel blast room.
    - Blasting pressure is low so as to not to damage the zinc.
    - Appropriate surface condition is 1.0 to 1.5 mil of profile and complete cleaning of the surface.
    - When blast is complete, the operator uses straight air to blow down the racks.
- After the blast room, racks are manually staged before the primer booth. Additional quality control is performed here to confirm smoothness of the surface and thoroughness of the blast.
- Racks are automatically introduced to the primer booth by a timed conveyor system.
INTERMEDIATE COAT
    - The epoxy ~~primer~~ is spray applied, using an airless sprayer, to achieve a dry film thickness of 4.0 – 5.0 mils. Wet film gages are used to monitor the application.
- After the prime booth, racks are automatically stored in the next buffer area and inspected for completeness of coverage and appearance.
- Primed racks of material are now loaded by transfer cart into the primer cure oven and allowed to dwell until primer has completely cured per the coating manufacturer's schedule.
    - There is high airflow in the oven to promote thorough cure of the primer.
- After the cure oven, racks are manually staged in the buffer zone before the finish booth. Additional quality control is performed here to confirm smoothness, specified thickness and quality of the primed surface.
- Cured primer racks are next introduced to the finish coat booth via a timed conveyor similar to the primer booth system.

059 HR

COLOR CHIP 27038

- The aliphatic polyurethane finish is spray applied, using an airless sprayer, to achieve a dry film thickness of ~~1.5 – 2.0~~ 3.0 -5.0 mils. Wet film gages are used to monitor the application.

- After the finish booth, racks are automatically stored in the next buffer area.
  - Additional inspection and repair is done at this stage while the finish is still semi-fluid.
- The racks are now loaded by transfer cart into the finish cure oven and allowed to dwell until finish has completely cured per the coating manufacturer's schedule.
  - The oven provides sufficient curing of finish to allow immediate packing of the product once the surface has cooled to ambient temperatures (< 90° F).
  - There is high airflow in the oven to promote thorough cure of the finish.
- The last stage is final inspection and packing using soft foam to protect the finish.

After painting, finished product is stored inside until shipment.

Additional Notes:

Environmental conditions are monitored and recorded throughout the day. All production parameters are recorded and become part of the permanent job record.

Please call me at (717) 821-3088 if you need any additional information.

Sincerely,

Peter C. Kohler
Special Coatings Project Manager
V&S Taunton Galvanizing, LLC

VTRANS
RECEIVED
REVD BY _____ OKD BY JWC
JUL 2 6 2007
DISTRIBUTE _____ APPROVED _____
BY _____ 8-2-07

060 HR

VERMONT AGENCY OF TRANSPORTATION

Protective Coatings for New and 100% Bare Existing Steel for Bridges

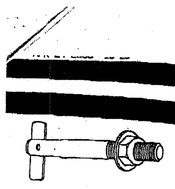
2004 Qualified Products List

Construction Spec: Section 513
Material Spec: Section 708

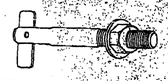
Manufacturer	Coat (P = Primer, I = Intermediate, T = Top)	Product Typhoon	Dry Film Thickness Per SSPC PA2/CS MIL	MAX.	Minimum Time Between Coats (Hours) @ 70° F	Minimum Application Temperature °F (unshelved)	MEPCOAT WEPCOAT Approved System, Date of Approval	Applications Refer to VAOT Specifications Section 513 How Structural Steel, Shop Applied	Structural Steel, Shop Applied	Structural Steel, Field Applied	Galvanized Steel, Field Applied (Grease Coating System)
1) ARMOR PROTECTIVE COATINGS (AGZ)	P	Duraforce 29 (IN Zinc Primer (Inorganic)	3.0	4.0	24	50					
	I	Armorseal 300 36e% per-pent Epoxy	4.0	6.0	8	50					
	T	Armorseal 450 HS Aliphatic Polyurethane	*3.0	5.0	-	50	Sept. 4, 1998 March 29, 2001	X	X		
2) CARBOLINE COMPANY (AOZ)	P	Corbo Zinc 11 HS Zinc (inorganic)	*3.0	4.5	18	50					
	I	Carbomastic 893 epoxy	4.0	10.0	5	50	March 3, 1999 (?)	X	X		
	T	Carbothane 133 HB aliphatic polyurethane	3.0	5.0	-	50					
2) CARBOLINE COMPANY (GIZ)	P	Carbozinc 859 CR epoxy primer (organic)	*3.0	4.0	4	50					
	I	Carbozinc 859 epoxy	3.0	10.0	4	50	Feb. 15, 1995			X	
	T	Carbothane 133 HB aliphatic polyurethane	3.0	5.0	-	50					
4) SHERWIN WILLIAMS COATINGS	P	Zinc Clad III HS	3.0	5.0	2	50	March 28, 2003			X	
	I	Macropoxy 646	5.0	10.0	8	50					
	T	Acrolon 218 Acrylic	3.0	4.0	8	39					
5) MAS INDUSTRIAL COATINGS (GIZ)	P	Fly Tile Epoxy Organic Zinc Primer	2.5	3.5	16	35	March 28, 2003			X	
	I	Fly Mastic Epoxy	5.0	7.0	6	50					
	T	Fly-Thane 450 HS	3.0	4.0	16	50					
6) KYOGY COATINGS (MOZ)	P	(Inorganic not known) MetaZinc KR 98 MC Primer	3.0	4.0	4	35	March 29, 2004			X	
	I	MetaPoxy FXH MC	3.0	4.0	4	35					
	T	Bridge Finish	2.0	3.0	8	33					
7) WASSER HIGH TECH COATINGS (MOZ)	P	(Inorganic) not known) MC-Zinc zinc rich urethane (organic)	3.0	4.0	4	35	Jan. 3, 1997 (?)	X	X	X	
	I	MC-Ferrox B urethane	3.0	5.0	4	35					
	T	MC-Ferrox A aliphatic urethane	3.0	10.0	-	35					
8) TNEMEC COMPANY INC. (MOZ)	P	Amercoat 450 Primer	3.0	5.0	4	35	8-Mar-01	X	X		
	I	Amercoat 435 Intermediate	3.0	4	4	35					
	T	Amercoat 454 Topcoat	2.0	3.0	4	35					

T-ANCHORS™

LIGHT DUTY ANCHORING TO HOLLOW WALLS & CEILINGS



The DFS T-Anchor has a gravity activated toggle head for use in hollow walls and ceilings. Can be used in concrete, steel and wood.



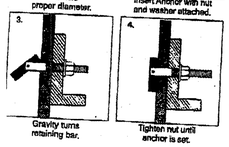
FOR LIGHT TO MEDIUM DUTY FASTENING TO HOLLOW WALLS AND CEILINGS

T-ANCHORS

Item Number	Diameter x Total Length	Grip Range	Drill Size	Box Qty.
1413STS	1/4" x 1 3/4"	1/2" - 1 1/4"	5/16	100
1461STS	1/4" x 2 1/2"	1" - 1 3/4"	5/16	100
1651STS	1/4" x 3 1/4"	1" - 2 1/2"	5/16	100
5691STS	5/16" x 2 1/2"	7/8" - 1 1/2"	5/16	100
5821STS	5/16" x 3 1/4"	1 1/8" - 2 1/8"	5/16	100
5839STS	5/16" x 3 3/4"	1 7/8" - 2 3/4"	5/16	100
3691STS	3/8" x 2 1/2"	1" - 2"	3/8	50
3839STS	3/8" x 3 3/4"	1 7/8" - 2 1/2"	3/8	50
3840STS	3/8" X 4"	2" - 3 1/2"	3/8	50
3841STS	3/8 x 4 1/2"	1/8" - 3 1/8"	3/8	50

TEST PERFORMANCE DATA

DIAMETER	PULL OUT	SHEAR
1/4" (all lengths)	700 lbs.	1500 lbs.
5/16" (all lengths)	900 lbs.	2200 lbs.
3/8" (all lengths)	1000 lbs.	3000 lbs.



T-Anchors comply with these industry standards:

- Meets or exceeds G.S.A. Standards G.S.A. FF-B-588C
- Meets load factors in compliance with A.N.S.I. A58.1
- Meets plating standards in compliance with A.S.T.M. B-633
- Products tested in accordance with A.S.T.M. E-488.88

A welded fastener of 4/4", or 25% of ultimate, should be used. Certified engineering laboratory tests conducted by manufacturer, 1/4", 5/16" may require a screw anchor of the match set 1/2" or more.

Rejected
M Tripp 8/9/07
See Attached Letter

062 HR

HIGHWAY SAFETY CORP
239 Commerce Street P.O. Box 358 Glastonbury, Connecticut 06033
860-633-9445 Fax: 860-659-9561 Toll free: 1-800-544-4929

August 9, 2007

Warren Tripp
Vermont Agency of Transportation

fax: 802-828-3566

RE: Item 525.15 metal handrailing painted black
Town of Warren, Vermont
Washington County
project # BHF 0188(7)

We would like to request a change in fastening method for the post to rail connection on the above referenced project.

The contract plans call for a stainless steel, self anchoring toggle bolt to be inserted through an oversized field-drilled hole in the bottom face of pipe rails.

Due to lack of availability of this fastener we propose the following alternate design:

- drill and tap hole in bottom face of pipe rail for 3/8-16 oversize thread.
- insert 3/8 x 1-1/2 hex bolt (A307 hot dipped galvanized) up through post connection plate and into tapped hole in pipe rail.
- use large flat washer (F844) and spring lock washer under head of bolt.
- 3/8 bolt should be snugged to point of engaging positive pressure on lock washer to deter vibration loosening of bolt.
- tapped holes in pipe shall be cleaned by re-threading after coating application.

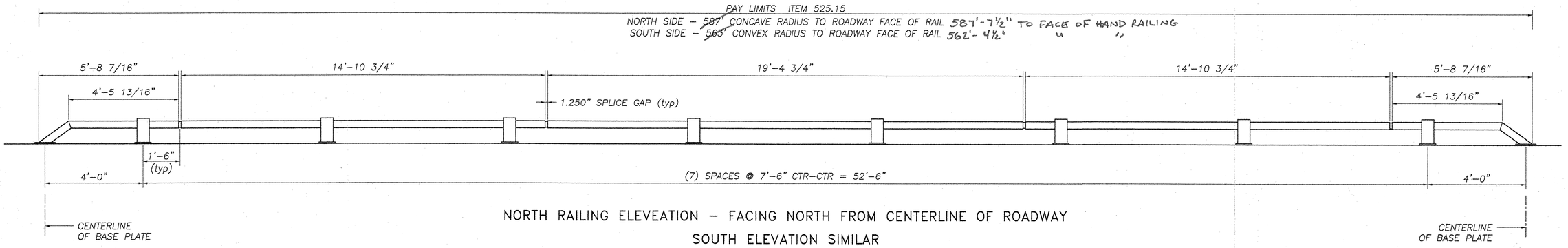
The proposed changes will be done at no additional cost to the State of Vermont

Sincerely,

Paul Radice
Chief Engineer
Highway Safety Corporation

RECEIVED
CK'D BY_____ OK'D BY_____
AUG 09 2007
RESUBMIT_____ APPROVED ✓
BY [illegible] DATE 8/9/07

063 HR



NORTH RAILING ELEVEATION – FACING NORTH FROM CENTERLINE OF ROADWAY
SOUTH ELEVATION SIMILAR

HAND RAIL NOTES:

1. ALL WORK AND MATERIALS SHALL CONFORM TO THE PROVISIONS OF SECTION 525, "RAILINGS" OF THE STANDARD SPECIFICATIONS FOR CONSTRUCTION.

2. RAIL PIPE AND POSTS SHALL MEET THE REQUIREMENTS OF SECTION 732 " RAILINGS MATERIALS" OF THE STANDARD SPECIFICATIONS FOR CONSTRUCTION EXCEPT THAT THE DROP–WEIGHT TEAR TEST IN SECTION 732 SHALL NOT APPLY TO THE STRUCTURAL PIPE.

3. ALL EXPOSED CUT OR SHEARED EDGES SHALL BE ROUNDED TO A 1/16" RADIUS AND BE FREE OF BURRS.

4. RAIL POSTS SHALL BE SET NORMAL TO GRADE.

5. PROVIDE MINIMUM OF ONE 3/4"ø DRAIN HOLE IN BOTTOM OF HAND RAIL BETWEEN POSTS TO ALLOW FOR DRAINAGE.

6. SECTIONS OF RAIL TUBES SHALL BE ATTACHED TO MINIMUM OF 2 RAIL POSTS AND PREFERABLY TO AT LEAST 4 POSTS.

8. ALL PARTS SHALL BE GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH AASHTO M111, EXCEPT THAT HARDWARE SHALL MEET THE REQUIREMENTS OF AASHTO M232.

9. RAIL POSTS ANCHORING NUTS SHALL BE TIGHTENED TO A SNUG FIT AND GIVEN AN ADDITIONAL 1/8 TURN.

10. HOLES IN RAIL FOR PIPE HANDRAIL ATTACHMENT SHALL BE FIELD DRILLED.

11. IF THERE IS A CONFLICT BETWEEN THESE STANDARD DETAILS AND THE DESIGN, THE REQUIREMENTS OF THE DESIGN DRAWINGS SHALL BE FOLLOWED.

12. THE PIPE RAILING SHALL BE SHOP–BENT TO THE REQUIRED RADIUS

13. THE FABRICATOR SHALL SUBMIT SHOP DRAWINGS INCLUDING WELD PROCEDURES TO THE STRUCTURES SECTION FOR APPROVAL IN ACCORDANCE WITH THE PROVISIONS OF 506.04 " SHOP DRAWINGS: ALL WELDING SHALL CONFORM TO SECTION 506.10

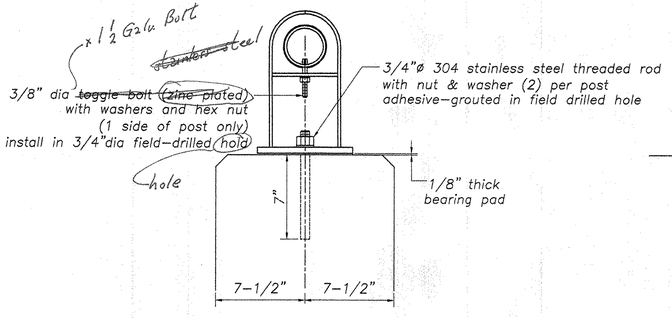
14. HAND RAILING SHALL BE PAINTED BLACK (INCLUDES ~~RAIL~~ RAIL POSTS)

15. THE METAL POSTS SHALL BE ATTACHED TO THE CONCRETE BRIDGE RAIL VIA AN ADHESIVE ANCHORING SYSTEM CONSISTING OF STAINLESS STEEL THREADED RODS EMBEDDED AND ADHERED TO FIELD DRILLED HOLES. THE ADHESIVE ANCHORING SYSTEM SHALL INCLUDE 3/4 IN HILTI RODS (304SS), NUTS, WASHERS AS WELL AS THE HILTI HIT–RE500 ADHESIVE SYSTEM OR ACCEPTED EQUAL. ALL COSTS SHALL BE INCLUDED IN ITEM 525.50, CAST IN PLACE CONCRETE BRIDGE RAIL.

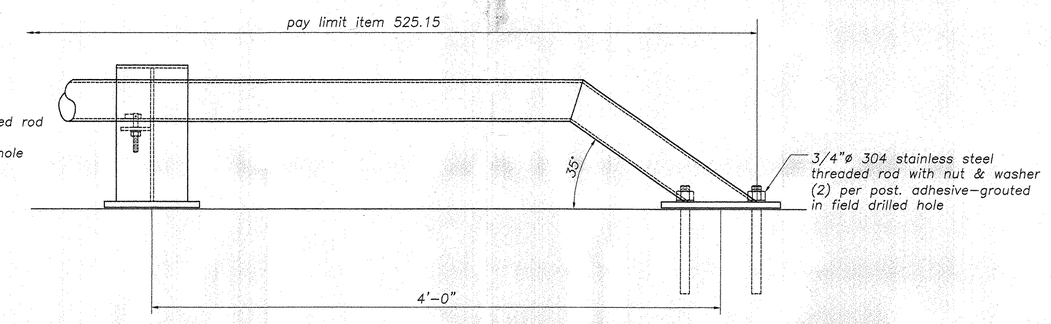
MATERIAL NOTES:

RAIL PIPE.....ASTM A53 gr B
RAIL POSTS AND BASE PLATES.....ASTM A709 gr 36
ALL OTHER SHAPES AND PLATES.....ASTM A709 gr 36

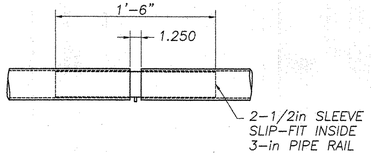
1/8" PAD SHALL COMPLY WITH STANDARD SPECIFICATION SUBSECTION 731.01 OR 731.02



TYPICAL POST SECTION



TERMINAL END DETAIL



TYPICAL RAILING SPLICE DETAIL

REVISIONS		
No.	Remarks	Date
0	Initial submittal	7/18/07

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

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McFarland-Johnson, Inc.
Date 8/6/07
By Steven F. Delia

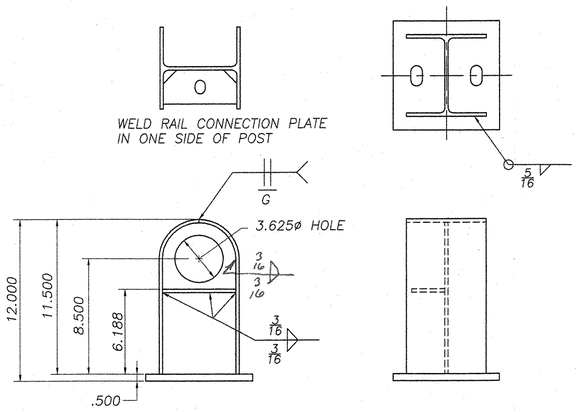
HIGHWAY SAFETY CORP.
GLASTONBURY, CT

ITEM 525.15 METAL HANDRAILING (PAINTED BLACK)
BROOK ROAD (TH1) BRIDGE #7
OVER FREEMAN BROOK
TOWN OF WARREN, WASHINGTON COUNTY
BHF 0188(7)

GENERAL CONTRACTOR
SUB CONTRACTOR F. R. LAFAYETTE

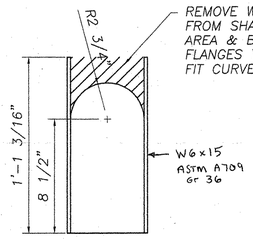
DRAWN	p. radice
CHECKED	
DATE	07–13–07
SCALE	none
HSC REFERENCE NO.	1600
SIZE	D
REVISION	0
SHEET NO.	1 of 2

064 HR

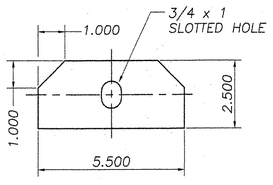


PEDESTAL POST DETAIL

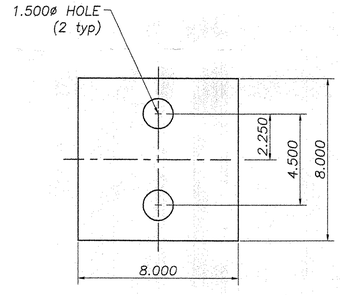
MAKE: 16 pcs



POST – CUT DETAIL



1/4 x 2–1/2 x 5–1/2
RAIL CONNECTION PLATE
GR 36 STEEL (1.9#)
MAKE: 16 pcs

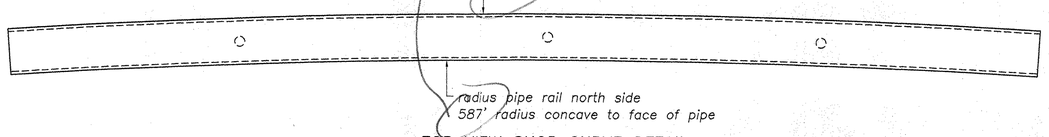


1/8 x 8 x 8
POST BEARING PAD
80±10 DURO NEOPRENE
MAKE: 16 pcs

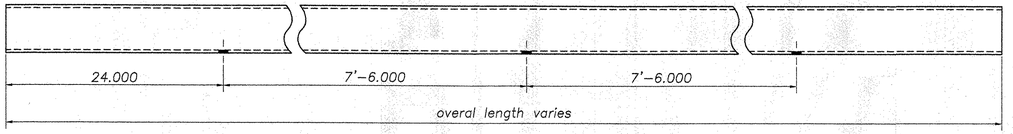
SHOP CURVE DATA	563' R	587' R
	RISE @ MIDPOINT	
19'–4.750" PIPE RAIL	1"	1"
14'–10.750" PIPE RAIL	5/8"	5/8"
5'–8.4375" TERMINAL	*1/16"	*1/16"

* RAILING TERMINAL SECTION TOO SHORT TO OBTAIN EFFECTIVE RISE WILL BE FURNISHED STRAIGHT

REVISE AS REQUIRED



TOP VIEW SHOP CURVE DETAIL
with drain holes in opposite (bottom) face



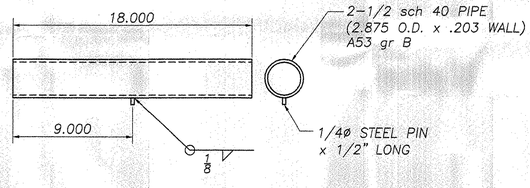
drill 0.750ø drain holes in bottom face of pipe rail start first hole 2'–0" from one end of rail and space additional holes 7'–6" ctr–ctr so that at least one drain hole lies between each post after installation

TYPICAL PIPE RAIL DETAIL

BILL OF MATERIAL		
Qty.	Description	Material
16	PEDESTAL POST	
16	W6 x 15 x 1'–1.1875"	A709 gr 36
16	PL 1/2 x 8 x 8	A709 gr 36
16	PL 1/2 x 2–1/2 x 5–1/2	A709 gr 36
4	TERMINAL RAIL TURNDOWN	
4	PIPE 3–in SCH 40 x 4'–5.8125	A53 gr B
4	PIPE 3–in SCH 40 x 1'–5.875	A53 gr B
4	PL 1/2 x 8 x 10	A709 gr 36
8	SPLICE SLEEVE	
8	PIPE 2.5–in SCH 40 x 18.000	A53 gr B
8	1/4"ø ROUND ROD x 1/2" LONG	A709 gr 36
4	PIPE 3–in SCH 40 x 14'–10.750 (SHOP CURVED)	A53 gr B
2	PIPE 3–in SCH 40 x 19'–4.750 (SHOP CURVED)	A53 gr B
16	1/8 x 8 x 8 NEOPRENE/FABRIC BEARING PAD	80±10 DURO
4	1/8 x 8 x 10 NEOPRENE/FABRIC BEARING PAD	80±10 DURO
	1/2 Galv Bolt	
16	3/8 x ~~3–1/4 T–ANCHOR TOGGLE BOLT~~	~~ZINC PLATE~~D
16	3/8 HEX NUT	A563 gr A
32	3/8 LARGE FLAT WASHER	F844

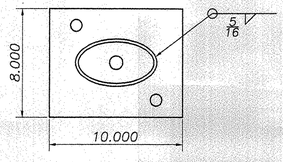
STAINLESS STEEL POST PLATE ANCHORS PROVIDED BY OTHERS

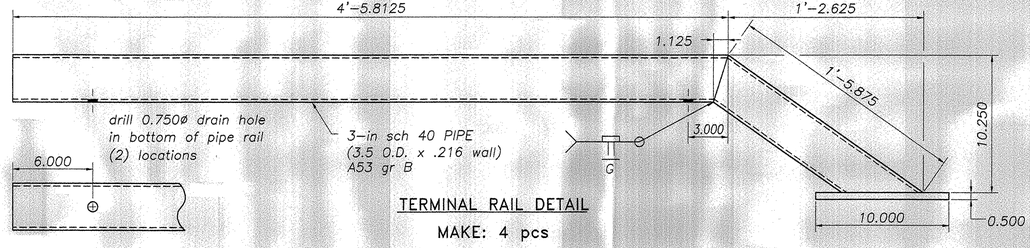
Revise as necessary



SPLICE SLEEVE DETAIL

MAKE: 8 pcs

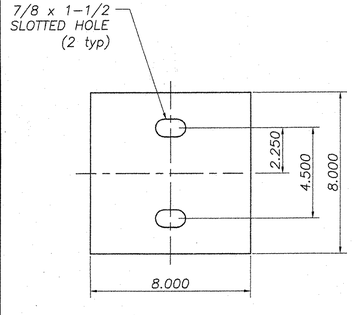




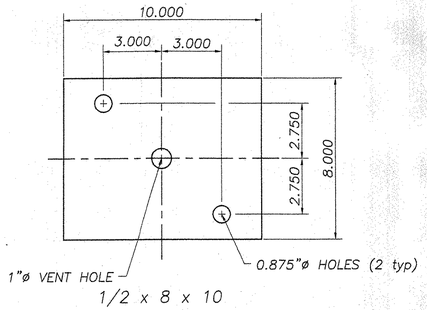
TERMINAL RAIL DETAIL

MAKE: 4 pcs

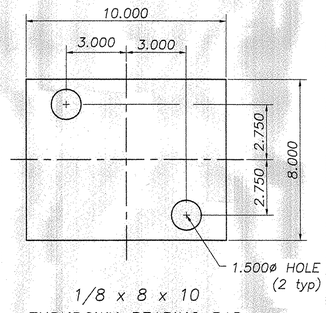
partial bottom view



1/2 x 8 x 8
POST BASE PLATE
GR 36 STEEL (9.1#)
MAKE: 16 pcs



1/2 x 8 x 10
TURNDOWN BASE PLATE
GR 36 STEEL (11.3#)
MAKE: 4 pcs



1/8 x 8 x 10
TURNDOWN BEARING PAD
80±10 DURO NEOPRENE
MAKE: 4 pcs

REVISIONS		
No.	Remarks	Date
0	Initial submittal	

☐ Reviewed ☐ Rejected
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GENERAL CONTRACTOR

SUB CONTRACTOR
F. R. LAFAYETTE

DRAWN p. radice
CHECKED mrs
DATE 07-13-07
SCALE none
NSC REFERENCE NO. 1600
SIZE D REVISION 0
SHEET NO. 2 of 2

065HR