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RECORD PLANS

CONTRACTOR: F. R. LAFAYETTE, INC. - ESSEX JUNCTION, VT

RESIDENT ENGINEER: JIM FOREST

CONSTRUCTION BEGAN: MAY 9, 2007

CONSTRUCTION COMPLETE: DECEMBER 5, 2008

RECORD PLANS BY: J. FOREST & C. PIERCE

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

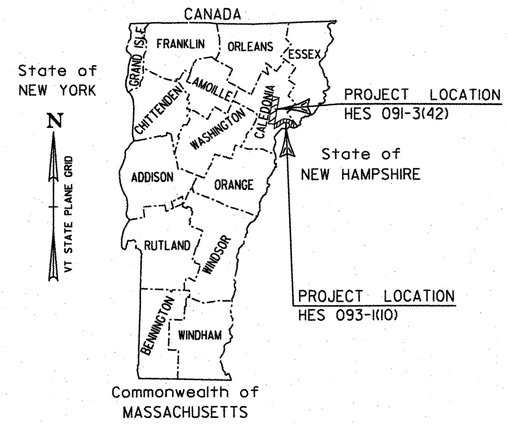
BY James A. Forest RESIDENT ENGINEER

DATE 04-27-09

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

STATE OF VERMONT
AGENCY OF TRANSPORTATION

PROPOSED IMPROVEMENT
TOWNS OF ST. JOHNSBURY-LYNDON
TOWN OF WATERFORD
COUNTY OF CALEDONIA



INTERSTATE ROUTE 91 (HES 091-3(42)) - SIGNS

BEGINNING AT MM 128.91 IN THE TOWN OF ST. JOHNSBURY AND EXTENDING NORTHERLY APPROXIMATELY 17.85 KM (11.09 MI) TO MM 140.00 IN THE TOWN OF LYNDON

LENGTH OF ROADWAY 17 848 METERS = 11.09 MILES = 17.85 KILOMETERS
LENGTH OF PROJECT 17 848 METERS = 11.09 MILES = 17.85 KILOMETERS

WORK TO BE PERFORMED UNDER THIS PROJECT INCLUDES REMOVAL OF EXISTING SIGNS AND PLACEMENT OF NEW SIGNS AND ASSOCIATED ELEMENTS ALONG THE PROJECT LENGTH, RAMPS, AND INTERCHANGES.

INTERSTATE ROUTE 93 (HES 093-1(10)) - SIGNS

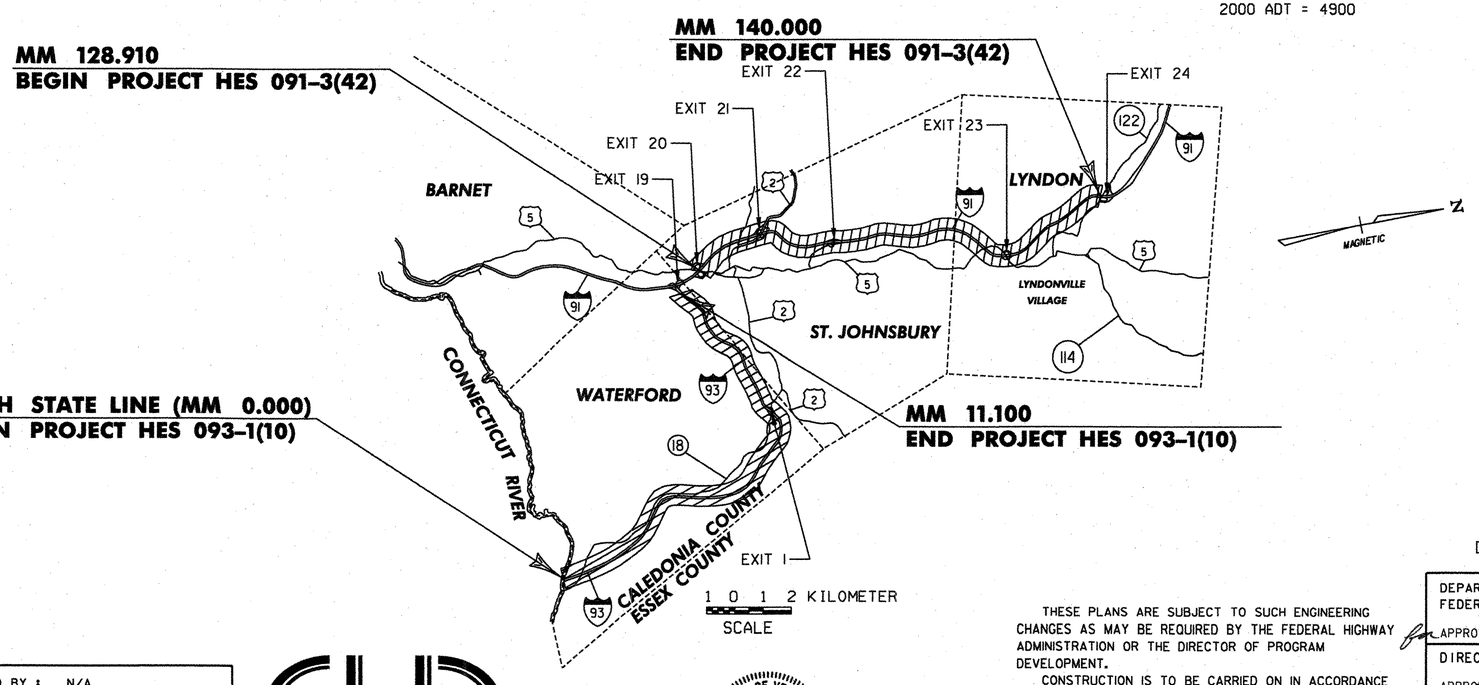
BEGINNING AT A POINT AT THE NEW HAMPSHIRE / VERMONT STATE LINE IN THE TOWN OF WATERFORD AND EXTENDING NORTHERLY APPROXIMATELY 17.86 KM (11.10 MI) TO MM 11.10

LENGTH OF ROADWAY 17 864 METERS = 11.10 MILES = 17.86 KILOMETERS
LENGTH OF PROJECT 17 864 METERS = 11.10 MILES = 17.86 KILOMETERS

WORK TO BE PERFORMED UNDER THIS PROJECT INCLUDES REMOVAL OF EXISTING SIGNS AND PLACEMENT OF NEW SIGNS AND ASSOCIATED ELEMENTS ALONG THE PROJECT LENGTH, RAMPS, AND INTERCHANGES.

TRAFFIC DATA

NORTHBOUND	SOUTHBOUND
INTERSTATE 91	
2000 ADT 9800	2000 ADT 9800
INTERSTATE 93	
2000 ADT = 4900	2000 ADT = 4900



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

SURVEYED BY : N/A
SURVEYED DATE : N/A

DATUM
VERTICAL N/A
HORIZONTAL N/A

CONSULTING ENGINEERS Inc.
540 Commercial Street • Manchester, NH 03101
(603) 668-8223 • Fax: (603) 668-8802
email: cldeld@engineers.com • www.cldengineers.com
Maine • New Hampshire • Vermont

STATE OF VERMONT CHRISTOPHER R. BEAN No. 9529 REGISTERED PROFESSIONAL ENGINEER

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.

VTrans Metric

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

DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATOR
APPROVED for Mark D. Richter DATE 2-21-07

DIRECTOR OF PROGRAM DEVELOPMENT
APPROVED Richard Tetreault DATE 1-9-07

PROJECT MANAGER : ROGER THOMPSON

PROJECT NAME : ST. JOHNBURY-LYNDON/WATERFORD
PROJECT NUMBER : HES 091-3(42)
HES 093-1(10)

SHEET 1 OF 130 SHEETS

STATE OF VERMONT
AGENCY OF TRANSPORTATION

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Metric

INDEX OF STANDARD PLANS

STD	DATE	DESCRIPTION
D-4	06/01/94	FLUSHING BASINS, END SECTION, ELBOWS - TYPICAL WATERFALL FOR CULVERTS UP TO AND INCLUDING 48" DIA - EXTENSION SERVICE BOX AND CURB STOP - CORRUGATED PIPE ELBOW
E-100	01/02/04	CONSTRUCTION APPROACH SIGNS
E-100A	01/02/04	SIDE ROAD CONSTRUCTION - APPROACH SIGNS
E-101	05/30/03	CONSTRUCTION SIGN DETAILS
E-102	06/30/03	CONSTRUCTION SIGN DETAILS
E-102A	05/01/04	CONSTRUCTION SIGN DETAILS
E-103	03/01/04	MAINLINE TRAFFIC CONTROL DIVIDED HIGHWAY - ONE LANE CLOSED
E-106	03/01/04	TRAFFIC CONTROL - MISCELLANEOUS DETAILS
E-107	06/30/03	DELINEATION, BARRICADES AND DETOURS FOR - U-TURNS ON DIVIDED HIGHWAY
E-107A	08/08/95	BREAKAWAY BARRICADE DETAILS
E-110	08/08/95	MAJOR MAINTENANCE OPERATION LANE CLOSURE
E-120	08/08/95	STANDARD SIGN PLACEMENT - EXPRESSWAY & FREEWAY
E-121	08/08/95	STANDARD SIGN PLACEMENT - CONVENTIONAL ROAD
E-123	03/16/04	GUIDE SIGN PLACEMENT - MISCELLANEOUS DETAILS
E-126	02/01/00	TYPICAL FREEWAY INTERCHANGE SIGNING
E-127	08/08/95	ROUTE MARKINGS AT RURAL INTERSECTIONS
E-130	08/08/95	TYPE "B" GUIDE SIGN, ATTACHMENT DETAILS
E-131	08/08/95	GUIDE SIGN DETAILS
E-132	08/18/95	GENERAL MOTORIST SERVICE SIGN DETAILS
E-133	08/08/95	SERVICE SIGN DETAILS
E-135	08/18/95	INTERSTATE ROUTE MARKER SIGN DETAIL
E-136A	08/08/95	U.S. ROUTE MARKER SIGN DETAILS
E-136B	08/08/95	STATE ROUTE MARKER SIGN DETAILS
E-139	05/01/04	MILEMARKER DETAILS - INTERSTATE
E-141	09/20/95	REGULATORY SIGN DETAILS
E-142	09/20/95	REGULATORY SIGN DETAILS
E-143	06/15/04	REGULATORY SIGN DETAILS
E-144	03/29/99	REGULATORY SIGN DETAILS
E-145B	12/23/94	REGULATORY SIGN DETAILS - LANE USE CONTROL SIGNS
E-146	09/20/95	REGULATORY SIGN DETAILS
E-150	05/01/04	WARNING SIGN DETAILS
E-151	05/01/04	WARNING SIGN DETAILS
E-152	05/01/04	WARNING SIGN DETAILS
E-153	05/01/04	WARNING SIGN DETAILS
E-154	05/01/04	WARNING SIGN DETAILS
E-155	05/01/04	WARNING SIGN DETAILS
E-160	05/20/99	FLANGED CHANNEL STEEL SIGN POST
E-161	08/18/95	W-SHAPED STEEL SIGN POST
E-162	05/20/99	TUBULAR ALUMINUM SIGN POST
E-163	05/20/99	TUBULAR STEEL SIGN POST
E-164	05/20/99	SQUARE STEEL SIGN POST
E-191	02/01/99	PAVEMENT MARKING DETAILS
E-192	10/12/00	PAVEMENT MARKING DETAILS
E-193	08/18/95	PAVEMENT MARKING DETAILS
E-197	04/01/05	DELINEATOR PLACEMENT TYPICAL
E-199	04/01/05	DELINEATOR AND MILEPOST MOUNTING ON BRIDGE RAIL
G-1	01/03/00	STEEL BEAM GUARDRAIL (50MPH & OVER) - HEAVY DUTY STEEL BEAM GUARDRAIL TWISTED END TERMINAL - ANCHOR FOR STEEL BEAM RAIL
G-1D	01/03/00	STEEL BEAM GUARDRAIL (40MPH & LESS) - HEAVY DUTY STEEL BEAM GUARDRAIL STEEL BEAM MEDIAN BARRIER - ANCHOR FOR STEEL BEAM RAIL
G-19	11/15/02	GENERIC GRADING PLANS FOR GUARDRAIL END TERMINALS

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4	DELINEATOR AND MILEPOST DETAILS
5-6	QUANTITY SHEETS
	HES 091-3(42)
7	TITLE SHEET
8-9	INTENTIONALLY LEFT BLANK
10	ITEM DETAIL SUMMARY SHEET
11-17	EXISTING SIGN LAYOUT SHEETS
18-24	NEW SIGN LAYOUT SHEETS
25-28	DELINEATOR LAYOUT SHEETS
29-62	TRAFFIC SIGN SUMMARY SHEETS
63-70	SIGN DETAIL SHEETS
71-76	SIGN CROSS SECTION SHEETS
77	CANTILEVER / OVERHEAD SIGN SUPPORT NOTES
78	OVERHEAD TRAFFIC SIGN BRIDGE / FOOTING DETAIL SHEET
79	BORING LOG SHEET
	HES 093-1(10)
80	TITLE SHEET
81-82	INTENTIONALLY LEFT BLANK
83	ITEM DETAIL SUMMARY SHEET
84-88	EXISTING SIGN LAYOUT SHEETS
89-93	NEW SIGN LAYOUT SHEETS
94-95	DELINEATOR LAYOUT SHEETS
96-114	TRAFFIC SIGN SUMMARY SHEETS
115-121	SIGN DETAIL SHEETS
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125	CANTILEVER / OVERHEAD SIGN SUPPORT NOTES
126-128	OVERHEAD TRAFFIC SIGN BRIDGE / FOOTING DETAIL SHEETS
129-130	BORING LOG SHEETS

PROJECT NAME:	ST. JOHNSBURY - LYNDON / WATERFORD		
PROJECT NUMBER:	HES 091-3(42) / HES 093-1(10)		
FILE NAME:	indexStJWaterford.xl:	PLOT DATE:	1/4/2007
PROJECT LEADER:	CRB	DRAWN BY:	JCS
DESIGNED BY:	DAM	CHECKED BY:	DAM
CLD REF. NO.:	97-0211	SHEET	2 OF 130

GENERAL NOTES

1. ALL MATERIALS AND CONSTRUCTION SHALL CONFORM TO THE STATE OF VERMONT AGENCY OF TRANSPORTATION (VTRANS) STANDARD SPECIFICATIONS FOR CONSTRUCTION, DATED 2001, AND ITS LATEST REVISIONS AND THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD), DATED 2003, AND ITS LATEST REVISIONS.

2. ALL SIGNS WITHIN THE PROJECT LIMITS ARE TO BE REPLACED UNLESS OTHERWISE NOTED OR AS DIRECTED BY THE ENGINEER. ALL NEW SIGNS SHALL BE INSTALLED IN ACCORDANCE WITH THESE PLANS, MUTCD, APPLICABLE VTRANS E-SERIES STANDARDS OR AS DIRECTED BY THE ENGINEER.

3. TRAFFIC CONTROL SHALL BE IN ACCORDANCE WITH APPLICABLE VTRANS E-SERIES STANDARDS AND PART 6 OF THE MUTCD OR AS DIRECTED BY THE ENGINEER.

4. TEXT LAYOUT DIMENSIONS AND DESIGN OF SYMBOLS FOR STANDARD SIGNS NOT DETAILED ON THESE PLANS OR IN THE E-SERIES STANDARDS CAN BE FOUND IN THE LATEST PUBLICATION OF THE MUTCD STANDARD HIGHWAY SIGNS.

5. THE CONTRACTOR SHALL REVIEW AND UNDERSTAND ALL APPLICABLE PERMITS PRIOR TO CONSTRUCTION AND ENSURE THAT ALL CONSTRUCTION CONDITIONS ARE MET.

6. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REPAIRING ANY DAMAGE TO PRIVATE OR PUBLIC PROPERTY CAUSED BY THE CONTRACTOR, AT THE SOLE COST OF THE CONTRACTOR.

7. THINNING AND TRIMMING MAY BE REQUIRED AT VARIOUS SIGN LOCATIONS THROUGHOUT THE PROJECT. THIS WORK SHALL INCLUDE REMOVAL OF ANY TREES, SHRUBS OR OVERGROWTH NECESSARY FOR PLACEMENT OF SIGNS AS DIRECTED BY THE ENGINEER. THIS WORK SHALL BE PAID UNDER ITEM 201.31, "THINNING AND TRIMMING (FOR SIGNS)".

8. THE CONTRACTOR SHALL ERECT NEW POSTS AND MOUNT NEW SIGNS BEHIND EXISTING SIGNS PRIOR TO REMOVING THE OLD SIGN AND POSTS, WHERE APPLICABLE, OR AS DIRECTED BY THE ENGINEER.

9. THE ABBREVIATIONS "OUT" AND "MED" REFER TO LOCATIONS OUTSIDE OF THE NORTHBOUND OR SOUTHBOUND INTERSTATE BARREL OR IN THE MEDIAN, RESPECTIVELY. ANY REFERENCE TO "LEFT" AND/OR "RIGHT" REFERS TO THE DIRECTION OF STATIONING AND NOT THE DIRECTION OF TRAFFIC.

10. DELINEATORS: NEW MAINLINE DELINEATORS WITH OR WITHOUT MILEPOST PLAQUES ARE NOT SHOWN ON THE PLANS. REFER TO STANDARD E-197 AND DETAILS ON NEXT SHEET FOR GENERAL PLACEMENT AND SPACING CRITERIA. AN ESTIMATED QUANTITY OF DELINEATORS W/STEEL POSTS AND REMOVAL OF EXISTING DELINEATORS HAS BEEN INCLUDED. DELINEATORS TO BE REMOVED SHALL NOT BE CUT BUT SHALL BE COMPLETELY REMOVED FROM THE GROUND.

11. EXISTING MILEMARKERS ON STATE HIGHWAYS OR FOR RAMPS ARE TO BE SALVAGED AND INSTALLED ON POSTS FOR NEW SIGNS OR RETAINED IF ON SEPARATE POSTS OR AS DIRECTED BY THE ENGINEER. THE MILEMARKER LOCATIONS ARE NOT DEPICTED ON THE PLANS. PAYMENT FOR ATTACHING TO NEW POSTS IS INCIDENTAL TO OTHER CONTRACT PAY ITEMS.

12. ALL STATIONING ALONG RAMPS AND STATE/TOWN HIGHWAYS IN MILES ARE APPROXIMATE ONLY. REFER TO STANDARD SHEETS FOR APPROPRIATE SIGN PLACEMENT GUIDELINES.

SEEDING FORMULA
RURAL AREAS

%. MASS.	kg/ha	NAME	PUR %	GERM %
37.5	26.0	CREEPING RED FESCUE	98	85
37.5	26.0	TALL FESCUE	95	90
5.0	4.0	RED TOP	95	90
15.0	10.0	BIRDSFOOT TREFOIL	98	85
5.0	4.0	ANNUAL RYE GRASS	95	85
100.0	70.0			

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

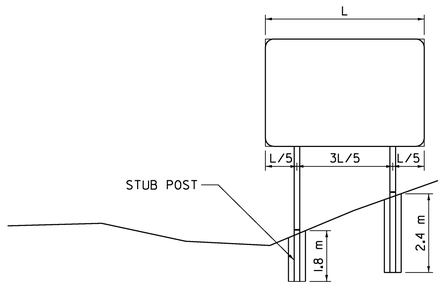
SEED: TO BE APPLIED PER SEEDING FORMULAS OR AS DIRECTED BY THE ENGINEER.

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

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

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

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



W-SHAPE FOOTING DETAIL

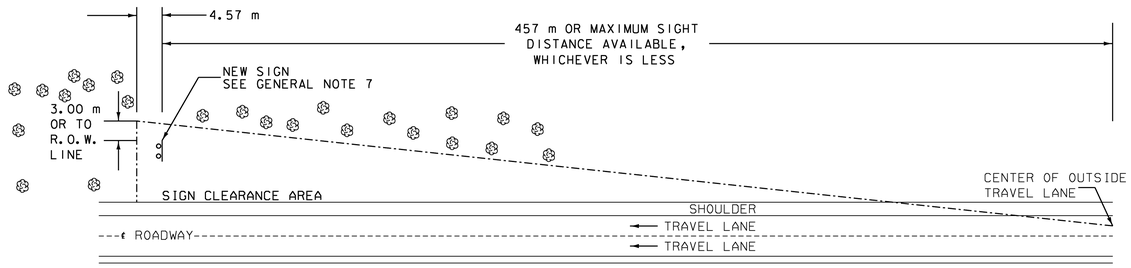
NOTES

1. THE LONGER CONCRETE FOOTINGS SHALL BE USED AT POST LOCATIONS ON STEEP SIDE SLOPES AS IDENTIFIED ON THE PLANS OR AS DIRECTED BY THE ENGINEER.

2. FORMS/TUBES FOR THE LONGER CONCRETE FOOTINGS SHALL BE SMOOTH. CORRUGATED PIPE SHALL NOT BE USED.

3. REFER TO VTRANS STANDARD E-161 FOR ADDITIONAL NOTES AND DETAILS REGARDING CONCRETE FOOTINGS.

4. PAYMENT FOR THE LONGER CONCRETE FOOTINGS SHALL BE PAID FOR UNDER ITEM 675.41, "FOUNDATION FOR W-SHAPE STEEL POSTS, 600mm (MOD. - 2.4 m FOUNDATION)". OR UNDER ITEM 675.42, "FOUNDATION FOR W-SHAPE STEEL POSTS, 750mm (MOD. - 2.4 m FOUNDATION)".



THE CONTRACTOR SHALL REMOVE ALL WOODY STEMMED GROWTH INCLUDING BRUSH, SAPLINGS, TREE LIMBS GROWING WITHIN OR PROJECTING INTO THE CLEARANCE AREA AND DOWN TO GROUND LEVEL OR AT LEAST 3.05 m BELOW THE BOTTOM OF THE SIGN, WHICH EVER IS LESS. PAYMENT WILL BE FOR ITEM 201.31 THINNING AND TRIMMING (FOR SIGNS) AND PAID FOR PER EACH SIGN ASSEMBLY LOCATION.

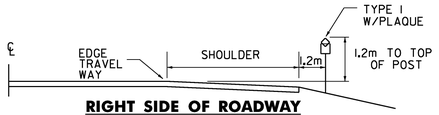
THINNING AND TRIMMING DETAIL (INTERSTATE)

GENERAL NOTES & MISCELLANEOUS DETAILS

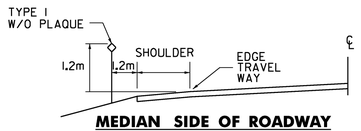
PROJECT NAME: ST. JOHNSBURY-LYNDON / WATERFORD
PROJECT NUMBER: HES 091-3(42) / HES 093-1(10)

FILE NAME: 9721ls-gennotes.dgn
PROJECT LEADER: CRB
DESIGNED BY: DAM
CLD REF. NO.: 97-021I

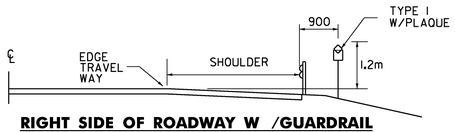
PLOT DATE: 1/4/2007
DRAWN BY: JCS
CHECKED BY: DAM
SHEET 3 OF 130



RIGHT SIDE OF ROADWAY



MEDIAN SIDE OF ROADWAY



RIGHT SIDE OF ROADWAY W /GUARDRAIL

TYPICAL PLACEMENT OF TYPE I DELINEATORS AND MILEPOSTS ON DIVIDED HIGHWAY

TYPE I DELINEATORS WITH WHITE REFLECTOR UNITS AND APPROPRIATE MILEPOST PLAQUES SHALL BE ERECTED CONTINUOUSLY ALONG THE RIGHT SIDE OF DIRECTION OF TRAVEL THE DIVIDED HIGHWAYS BETWEEN MILEMARKERS.

THE TYPE I DELINEATORS WITH OR WITHOUT MILEPOST PLAQUES SHALL BE OMITTED ALONG DECELERATION AND ACCELERATION LANES, BUT THE SUCCEEDING SPACING SHALL BE AS IF THE DELINEATORS HAD BEEN ERECTED CONTINUOUSLY AND SHALL BE SO INDICATED.

THE LOCATION OF TYPE I DELINEATORS AND MILEPOSTS ARE TO BE COMPUTED AND MARKED IN THE FIELD BY THE ENGINEER IN ACCORDANCE WITH THE LATEST REVISION OF THE AGENCY'S "POLICY ON LOCATION MARKING FOR VERMONT DIVIDED HIGHWAYS."

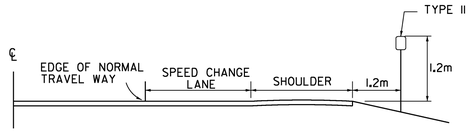
TYPE I YELLOW DELINEATORS WITHOUT MILEPOST PLAQUES SHALL BE ERECTED CONTINUOUSLY ALONG THE LEFT OR MEDIAN SIDE OF DIVIDED HIGHWAYS, CONTINUED AT APPROXIMATELY THE SAME SPACING THROUGH INTERCHANGES AND REST AREAS WHERE THERE MAY NOT BE ANY TYPE I DELINEATORS ON THE RIGHT SIDE. PLACEMENT OF TYPE I DELINEATORS SHALL BE FOLLOWED ON THE LEFT AS ON THE RIGHT. THE SAME LATERAL TYPE I DELINEATORS WITHOUT MILEPOST PLAQUE SHALL BE INSTALLED ON INTERSTATE RAMPS AS SHOWN ON THE PLANS.

TYPE I DELINEATORS USED AT U-TURNS SHALL BE PLACED WHERE THE RADII MEETS THE TANGENT OF THE MAINLINE.

TYPE III DELINEATORS

TYPE III DELINEATORS WILL BE TYPE I DELINEATORS WITH AN ADDITIONAL RED REFLECTIVE UNIT MOUNTED ON THE REVERSRE SIDE. THEY SHALL BE ERECTED ON THE RIGHT AND LEFT SIDE OF THE RAMPS AS SHOWN ON THE PLANS.

TYPE III DELINEATORS SHALL BEGIN 15.2 m FROM THE WRONG WAY SIGNS AND EXTEND EVERY 15.2 m TO A POINT NOT LESS THAN 7.6 m FROM THE DIVIDED HIGHWAY. SEE STANDARD E-197.

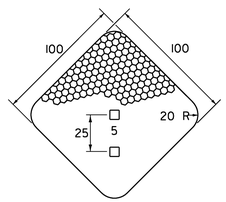


TYPICAL PLACEMENT OF TYPE II DELINEATORS ON SPEED CHANGE LANES

TYPE II DELINEATORS SHALL BE ERECTED CONTINUOUSLY ALONG THE RIGHT SIDE OF THE DECELERATION AND ACCELERATION LANES AT 30 m INTERVALS INCLUDING GUARDRAIL SECTIONS. THE DELINEATORS SHALL START AT THE BEGINNING OF THE TAPER AND END AT THE NOSE OF THE EXIT OR ENTRANCE GORE. THEY SHALL HAVE WHITE REFLECTOR UNITS.

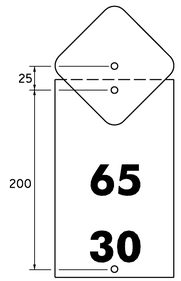
NOTES

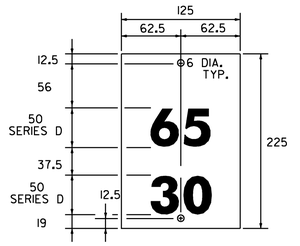
1. FOR MOUNTING DELINEATORS AND MILEPOSTS ON BRIDGES, SEE STANDARD E-199
2. MILEPOST PLAQUES WITH OR A WITHOUT REFLECTOR UNIT SHALL BE MOUNTED ON THE POST WITH TWO OR THREE 5 mm DIA. BY 37.5 mm LONG ALUMINUM BOLTS WITH 12.5 mm DIA. ALUMINUM VANDAL RESISTANT NUTS, OR 5 mm DIA. BY 37.5 mm LONG VANDAL RESISTANT FASTENERS.
3. DELINEATOR POSTS SHALL BE 3 kg/m FLANGE CHANNEL A MINIMUM OF 2.4 METERS LONG.
4. DELINEATOR POSTS SHALL HAVE A MINIMUM EMBEDMENT OF 750 mm IN THE GROUND.
5. WHEN USING DELINEATORS AND MILEPOSTS ON STEEP SLOPES (ON 2 OR STEEPER) OR ERODED SOILS ADD 300 mm FOR GREATER STABILITY.

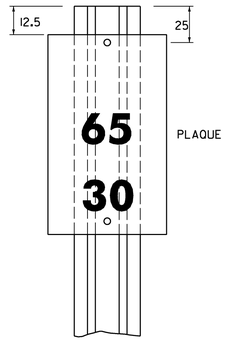


DELINEATOR REFLECTIVE SHEETING UNIT

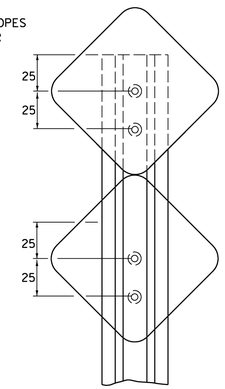
MATERIAL FOR RETROREFLECTIVE SHEETING FOR DELINEATORS SHALL BE A 1.60-mm ALUMINUM BACKING WITH A WHITE ASTM TYPE III, OR RED/YELLOW SHALL BE TYPE VII, TYPE VIII OR TYPE IX.



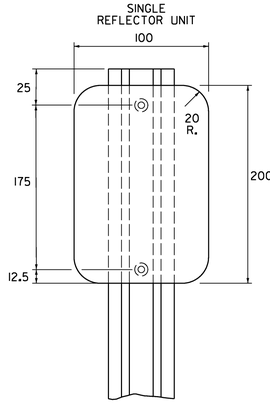




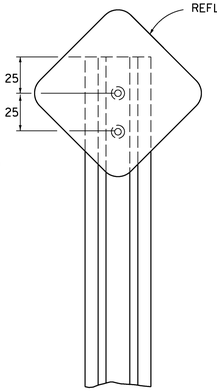
MILEPOST PLAQUE



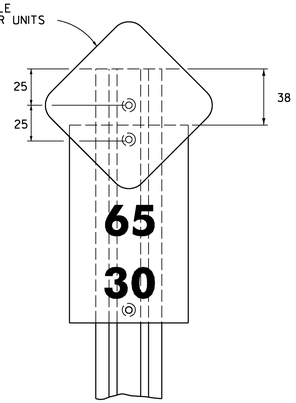
TYPE I AT U TURNS



TYPE II



TYPE I WITHOUT PLAQUE



TYPE I WITH PLAQUE

DELINEATORS WITH REFLECTIVE SHEETING

DELINEATOR AND MILEPOST DETAILS

PROJECT NAME:	ST. JOHNSBURY-LYNDON / WATERFORD
PROJECT NUMBER:	HES 091-3(42) / HES 093-1(10)
FILE NAME: 972lls-gennotes.dgn	PLOT DATE: 1/4/2007
PROJECT LEADER: CRB	DRAWN BY: JCS
DESIGNED BY: DAM	CHECKED BY: DAM
CLD REF. NO.: 97-021l	SHEET 4 OF 130

STATE OF VERMONT
AGENCY OF TRANSPORTATION

COMPOSITE QUANTITY SHEET

VAOT Metric

SUMMARY OF ESTIMATED QUANTITIES									TOTALS		DESCRIPTIONS			
ST. JOHNSBURY - LYNDON HES 091-3(42)				WATERFORD HES 093-1(10)										
ROADWAY	EROSION CONTROL	FULL C.E. ITEMS		ROADWAY	EROSION CONTROL	FULL C.E. ITEMS			GRAND TOTAL	FINAL	UNIT	ITEMS	ITEM NUMBER	ROUND
10				6					16		EACH	THINNING AND TRIMMING (FOR SIGNS)	201.31	-
44				66					110		CM	EARTH BORROW	203.30	-
												BEGIN OPTION AA		
15				15					30		M	300 mm CAAP 1.52 mm (68 mm X 12 mm)	601.0205	-
15				15					30		M	300 mm PCCSP 1.63 mm (68 mm X 12 mm)	601.0405	-
15				15					30		M	300 mm RCP CLASS III	601.0805	-
15				15					30		M	300 mm CPEP	601.0905	-
												END OPTION AA		
6				8					14		EA	YIELDING MARKER POSTS	619.17	-
658				760					1418		M	STEEL BEAM GUARD RAIL (GALVANIZED)	621.20	0.6
4				6					10		EACH	MANUFACTURED TERMINAL SECTION (TANGENT)	621.505	-
4				5					9		EACH	ANCHOR FOR STEEL BEAM RAIL	621.60	-
180				162					342		M	REMOVL AND DISP OF GUARD RAIL	621.80	0.6
1050				525					1575		HR	UNIFORMED TRAFFIC OFFICERS	630.10	15
225				125					350		HR	FLAGGERS	630.15	38
		0.5				0.5			1		LS	FIELD OFFICE-ENGINEERS	631.10	-
		0.5				0.5			1		LS	TESTING EQUIPMENT - CONCRETE	631.16	-
		0.5				0.5			1		LU	FIELD OFFICE - TELEPHONE (N.A.B.I.)	631.25	-
0.5				0.5					1		LS	MOBILIZATION / DEMOBILIZATION	635.11	-
0.5				0.5					1		LS	TRAFFIC CONTROL	641.10	-
2				2					4		EACH	PORTABLE CHANGEABLE MESSAGE SIGN	641.15	EST
2				2					4		EACH	PORTABLE ARROW BOARD	641.16	EST
				310					310		M	DURABLE 200 mm WHITE LINE (THERMOPLASTIC)	646.42	9
	7				4				11		KG	SEED	651.15	0.8
	56				26				82		KG	FERTILIZER	651.18	0.6
	0.5				0.2				0.7		T	AGRICULTURAL LIMESTONE	651.20	0.1
	0.5				0.2				0.7		T	HAY MULCH	651.25	0.1
50				23					73		CM	TOPSOIL	651.35	0.3
336				157					493		SM	TRAFFIC SIGNS, TYPE A	675.20	0.97
632				344					976		SM	TRAFFIC SIGNS, TYPE B	675.21	1.1
												BEGIN OPTION BB		
1251				582					1833		M	FLANGED CHANNEL SIGN POST	675.301	-
1251				582					1833		M	SQUARE TUBE SIGN POSTS AND ANCHOR	675.341	-
												END OPTION BB		
13267				4269					17536		KG	W-SHAPE STEEL SIGN POSTS	675.31	-
485				198					683		KG	TUBULAR ALUMINUM SIGN POSTS	675.32	1.3
8146				5189					13335		KG	TUBULAR STEEL SIGN POSTS	675.33	1.1
34				23					57		EACH	FOUNDATION FOR W-SHAPE STEEL POSTS, 600 MM DIAMETER	675.41	-
32				5					37		EACH	FOUNDATION FOR W-SHAPE STEEL POSTS, 600 MM DIAMETER) (MOD. - 2.4M FOUNDATION)	675.41	-
5									5		EACH	FOUNDATION FOR W-SHAPE STEEL POSTS, 750 MM DIAMETER	675.42	-

DETAILED SUMMARY OF QUANTITIES		
QUANTITIES	UNIT	ITEMS

PROJECT NAME: ST. JOHNSBURY - LYNDON / WATERFORD
PROJECT NUMBER HES 091-3(42) / HES 093-1(10)

FILE NAME: qssStJWaterford.xls PLOT DATE: 1/8/2007
PROJECT LEADER CRB DRAWN BY: JCS
DESIGNED BY: PTS CHECKED BY: DAM
QUANTITY SHEET #1 SHEET 5 OF 130

STATE OF VERMONT
AGENCY OF TRANSPORTATION

COMPOSITE QUANTITY SHEET

Metric

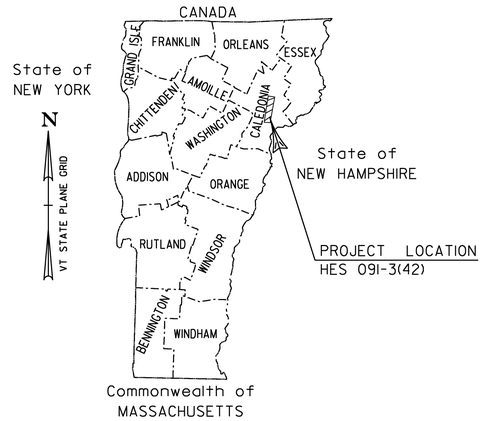
SUMMARY OF ESTIMATED QUANTITIES								TOTALS		DESCRIPTIONS			
ST. JOHNSBURY - LYNDON HES 091-3(42)				WATERFORD HES 093-1(10)									
ROADWAY	EROSION CONTROL	FULL C.E. ITEMS		ROADWAY	EROSION CONTROL	FULL C.E. ITEMS		GRAND TOTAL	FINAL	UNIT	ITEMS	ITEM NUMBER	ROUND
1								1		EACH	FOUNDATION FOR W-SHAPE STEEL POSTS, 750 MM DIAMETER (MOD. - 2.4M FOUNDATION)	675.42	-
159				117				276		EACH	FOUNDATION FOR TUBULAR STEEL POSTS	675.43	-
543				291				834		EACH	REMOVING SIGNS (TYPE A)	675.50	-
57				33				90		EACH	REMOVING SIGNS (TYPE B)	675.50	-
3				2				5		EACH	ERECTING SALVAGED SIGNS	675.60	-
1475				1100				2575		EACH	DELINEATORS W/STEEL POSTS	676.10	22
1225				1040				2265		EACH	REMOVAL OF EXIST DELINEATORS	676.12	21
1				3				4		EACH	OVERHEAD TRAFFIC SIGN SUPPORT, MULTI-SUPPORT	677.13	-

DETAILED SUMMARY OF QUANTITIES		
QUANTITIES	UNIT	ITEMS

PROJECT NAME: ST. JOHNSBURY - LYNDON / WATERFORD
PROJECT NUMBER HES 091-3(42) / HES 093-1(10)

FILE NAME: qssStJWaterford.xls PLOT DATE: 1/4/2007
PROJECT LEADER CRB DRAWN BY: JCS
DESIGNED BY: PTS CHECKED BY: DAM
QUANTITY SHEET #2 SHEET 6 OF 130

STATE OF VERMONT
AGENCY OF TRANSPORTATION



PROPOSED IMPROVEMENT
TOWNS OF ST. JOHNSBURY & LYNDON
COUNTY OF CALEDONIA

INTERSTATE ROUTE 91 (HES 091-3(42)) - SIGNS

BEGINNING AT MM 128.91 IN THE TOWN OF ST. JOHNSBURY AND EXTENDING NORTHERLY APPROXIMATELY 17.85 KM (11.09 MI) TO MM 140.00 IN THE TOWN OF LYNDON

LENGTH OF ROADWAY 17 848 METERS = 11.09 MILES = 17.85 KILOMETERS
LENGTH OF PROJECT 17 848 METERS = 11.09 MILES = 17.85 KILOMETERS

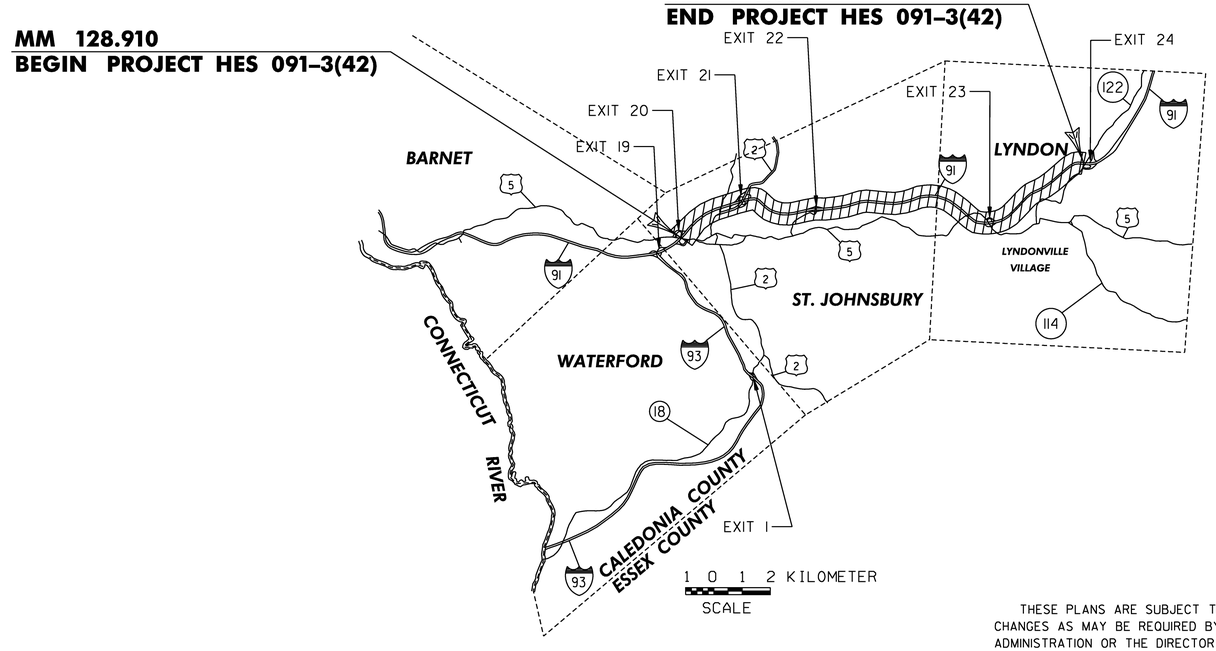
WORK TO BE PERFORMED UNDER THIS PROJECT INCLUDES REMOVAL OF EXISTING SIGNS AND PLACEMENT OF NEW SIGNS AND ASSOCIATED ELEMENTS ALONG THE PROJECT LENGTH, RAMPS, AND INTERCHANGES.

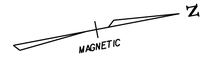
TRAFFIC DATA

NORTHBOUND	SOUTHBOUND
INTERSTATE 91	
2000 ADT 9800	2000 ADT 9800

MM 140.000
END PROJECT HES 091-3(42)

MM 128.910
BEGIN PROJECT HES 091-3(42)





CONVENTIONAL SYMBOLS

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

SURVEYED BY : N/A
SURVEYED DATE : N/A

DATUM
VERTICAL N/A
HORIZONTAL N/A

CONSULTING ENGINEERS Inc.
540 Commercial Street • Manchester, NH 03101
(603) 668-8223 • Fax: (603) 668-8802
email: cld@cldengineers.com • www.cldengineers.com
Maine • New Hampshire • Vermont

VTrans Metric
UNLESS NOTED OTHERWISE
STATIONS ARE IN MILES
ELEVATIONS ARE IN METERS
DIMENSIONS ARE IN MILLIMETERS

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

DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATOR
APPROVED _____ DATE _____

DIRECTOR OF PROGRAM DEVELOPMENT
APPROVED _____ DATE _____

PROJECT MANAGER : ROGER THOMPSON

PROJECT NAME : ST. JOHNSBURY - LYNDON
PROJECT NUMBER : HES 091-3(42)

SHEET 7 OF 130 SHEETS

STATE OF VERMONT
AGENCY OF TRANSPORTATION

ITEM DETAIL SUMMARY SHEET

Metric

			EXISTING GUARDRAIL (m)		GUARDRAIL ITEMS (m)							GUARDRAIL ITEMS (EA)					TUBE		AVAILABLE OPTIONS									REMARKS
MM	MM	POS	STEEL BEAM	CABLE	STEEL BEAM GUARDRAIL (GALVANIZED) (m) 621.20	STEEL BEAM GW. MOD. (2.4 m POST) 621.20	REMOVE & RESET 621.75	ADJUST GUARDRAIL HEIGHT 621.79	REMOVE AND DISPOSE 621.80	REM. ALUM. APPROACH R/L 621.81	NEW ALUM. APPROACH R/L 621.74	MBS (TANGENT) 621.60h	ANCHOR FOR STEEL BEAM 621.60	REPLACE GUARDRAIL POST ASSEMBLY 621.76	REPLACE GUARDRAIL BEAM UNIT 621.77	REMOVAL OF GUIDEPOST 621.81	D (mm)	L (m)	PCCSP (mm)	CASP (mm)	RCP CL	CPLP SL	COMMON EXCAVATION (m3) 203.15	LAY IN BORROW (m3) 203.81	SUBBASE OF D.G.C.S. (m3) 301.35	AGGREGATE SHOULDERS (ton) 401.12	TOPSOIL (m3)	
SOUTHBOUND																												
0.07	129.25	OUT		180.0	263.5 ~~262.2~~				176.0 ~~180.0~~			1	1											11.0					BEGIN G.R. ON INT. #20 RAMP D
129.12	129.19	MED			118.72 ~~117.8~~							1	1											11.0					
129.25		OUT															300	5	1.63	1.52	III	X						
129.39	129.46	OUT			~~114.0~~							~~1~~	~~1~~											11.0					
129.46		OUT															300	5	1.63	1.52	III	X						
137.60	137.70	OUT			~~163.4~~							~~1~~	~~1~~											11.0					
137.70		OUT															300	5	1.63	1.52	III	X						
	129.95	OUT			12.04				3.81				1															GUARD RAIL EXTENDED TO PROTECT NEW SIGN
SUBTOTAL:					394.26 657.4				179.81 ~~180.0~~			2 ~~4~~	3 ~~4~~											44.0					
ROUNDING:					0 ~~0.6~~				0.0			0	0											0.0					
PROJECT TOTALS:					394.26 ~~658.0~~				179.81 ~~180.0~~			2 ~~4~~	3 ~~4~~				300	15.0	1.63	1.52	III	X		44.0					

PROJECT NAME: ST. JOHNSBURY - LYNDON
PROJECT NUMBER: HES 091-3(42)

FILE NAME: gridsStJ.xls
PROJECT LEADER: CRB
DESIGNED BY: DAM
CLD REF. NO.: 97-0211
PLOT DATE: 1/8/2007
DRAWN BY: JCS
CHECKED BY: DAM
SHEET 10 OF 130

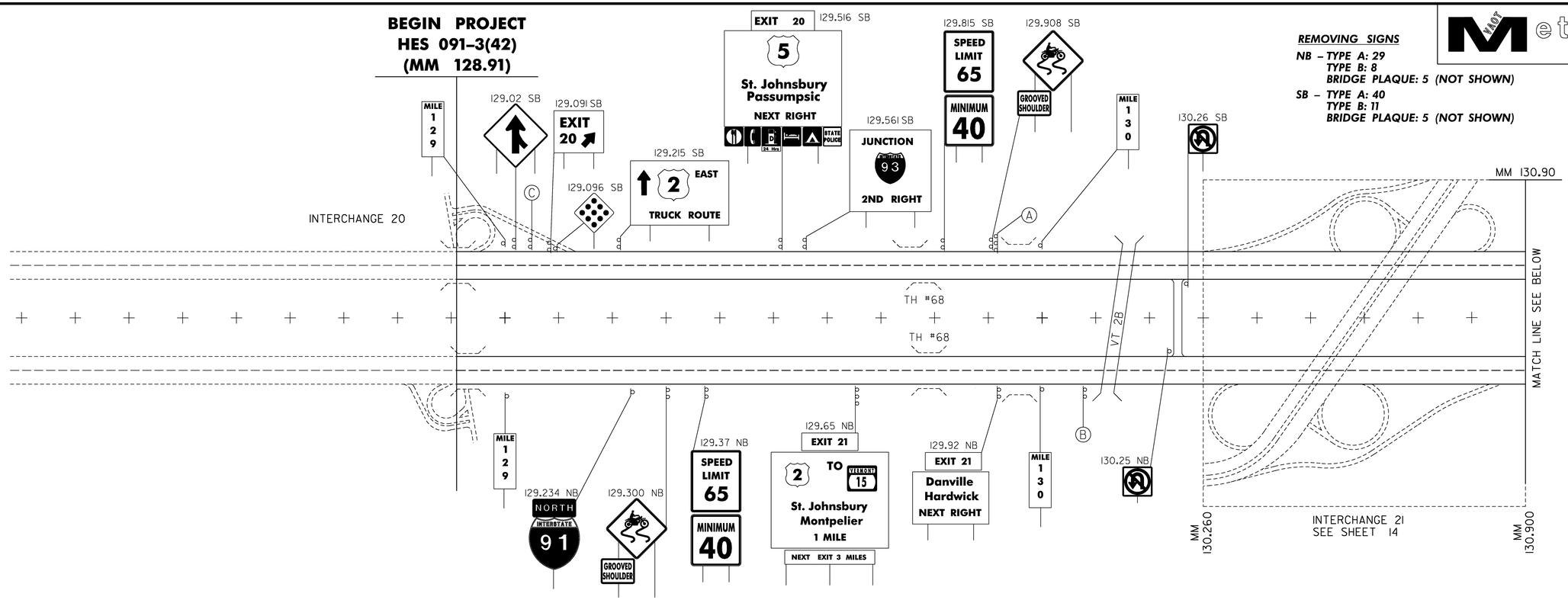
BEGIN PROJECT
HES 091-3(42)
(MM 128.91)

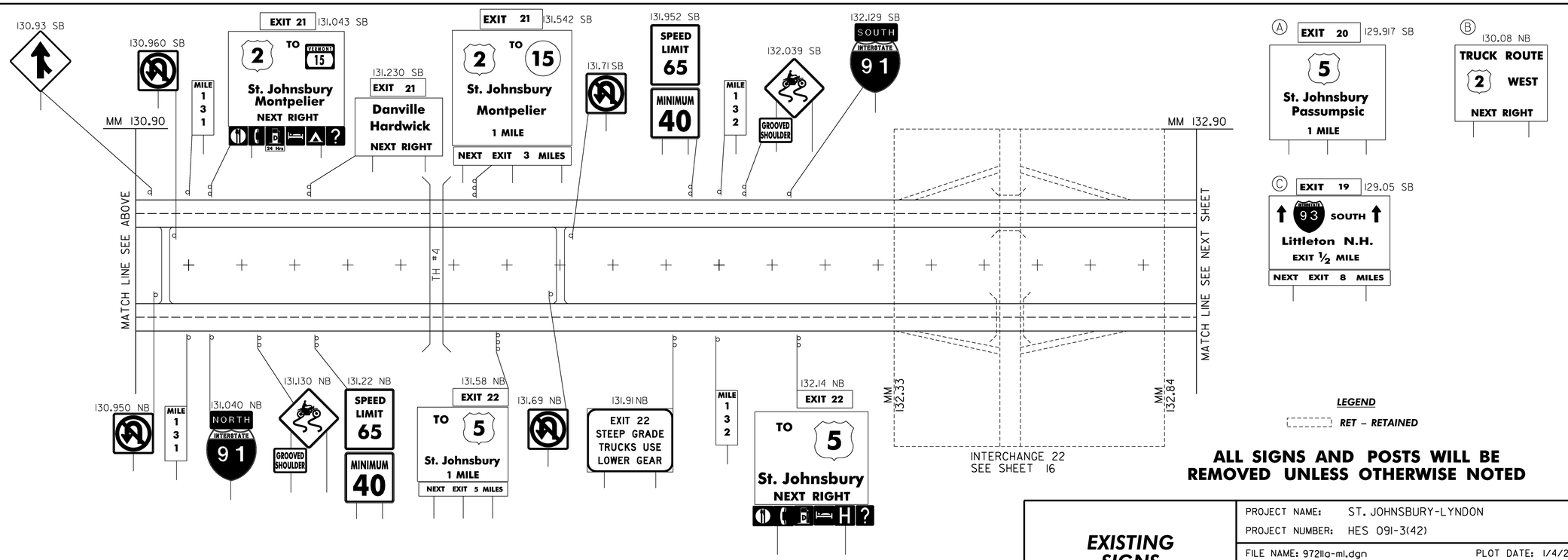
VAOT Metric

REMOVING SIGNS

NB – TYPE A: 29
TYPE B: 8
BRIDGE PLAQUE: 5 (NOT SHOWN)

SB – TYPE A: 40
TYPE B: 11
BRIDGE PLAQUE: 5 (NOT SHOWN)





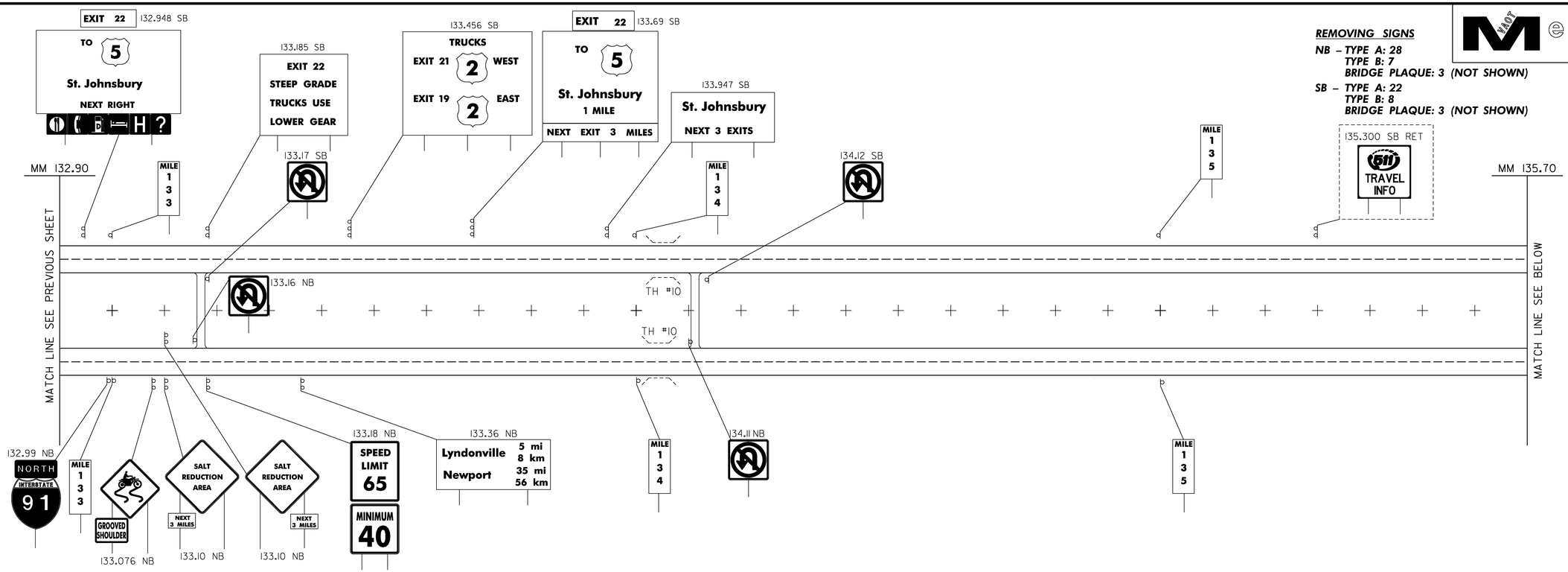
LEGEND

RET – RETAINED

ALL SIGNS AND POSTS WILL BE REMOVED UNLESS OTHERWISE NOTED

EXISTING SIGNS

PROJECT NAME:	ST. JOHNSBURY-LYNDON
PROJECT NUMBER:	HES 091-3(42)
FILE NAME: 972IIa-mi.dgn	PLOT DATE: 1/4/2007
PROJECT LEADER: CRB	DRAWN BY: HJC
DESIGNED BY: DAM	CHECKED BY: DAM
CLD REF. NO.: 97-02II	SHEET II OF 130



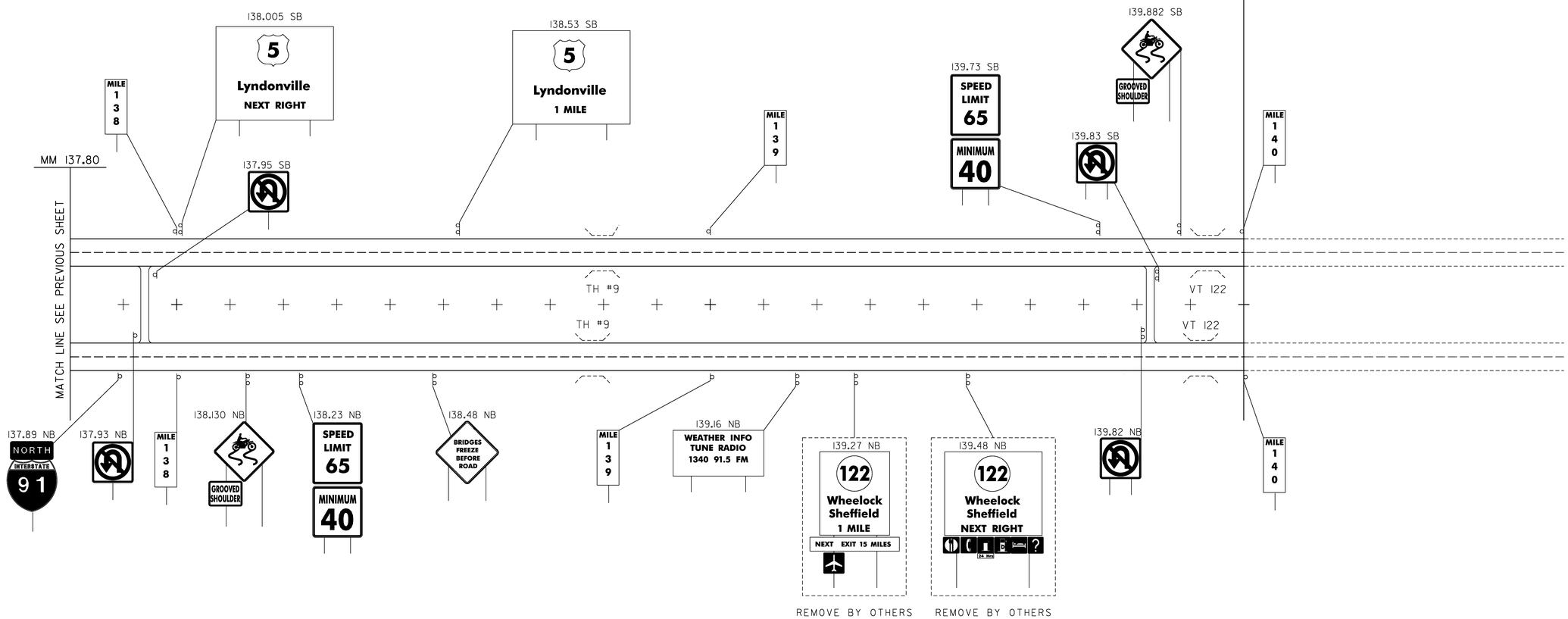
LEGEND

RET – RETAINED

ALL SIGNS AND POSTS WILL BE REMOVED UNLESS OTHERWISE NOTED

EXISTING SIGNS

PROJECT NAME:	ST. JOHNSBURY-LYNDON
PROJECT NUMBER:	HES 091-3(42)
FILE NAME: 9721la-mi.dgn	PLOT DATE: 1/4/2007
PROJECT LEADER: CRB	DRAWN BY: HJC
DESIGNED BY: DAM	CHECKED BY: DAM
CLD REF. NO.: 97-021l	SHEET 12 OF 130



REMOVING SIGNS

NB – TYPE A: 12
TYPE B: 1
BRIDGE PLAQUE: 2 (NOT SHOWN)

SB – TYPE A: 9
TYPE B: 2
BRIDGE PLAQUE: 2 (NOT SHOWN)

LEGEND

RET – RETAINED

ALL SIGNS AND POSTS WILL BE REMOVED UNLESS OTHERWISE NOTED

EXISTING SIGNS

PROJECT NAME: ST. JOHNSBURY-LYNDON
PROJECT NUMBER: HES 091-3(42)

FILE NAME: 972lla-ml.dgn
PROJECT LEADER: CRB
DESIGNED BY: DAM
CLD REF. NO.: 97-02ll

PLOT DATE: 1/4/2007
DRAWN BY: HJC
CHECKED BY: DAM
SHEET 13 OF 130

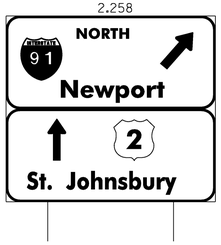
Metric

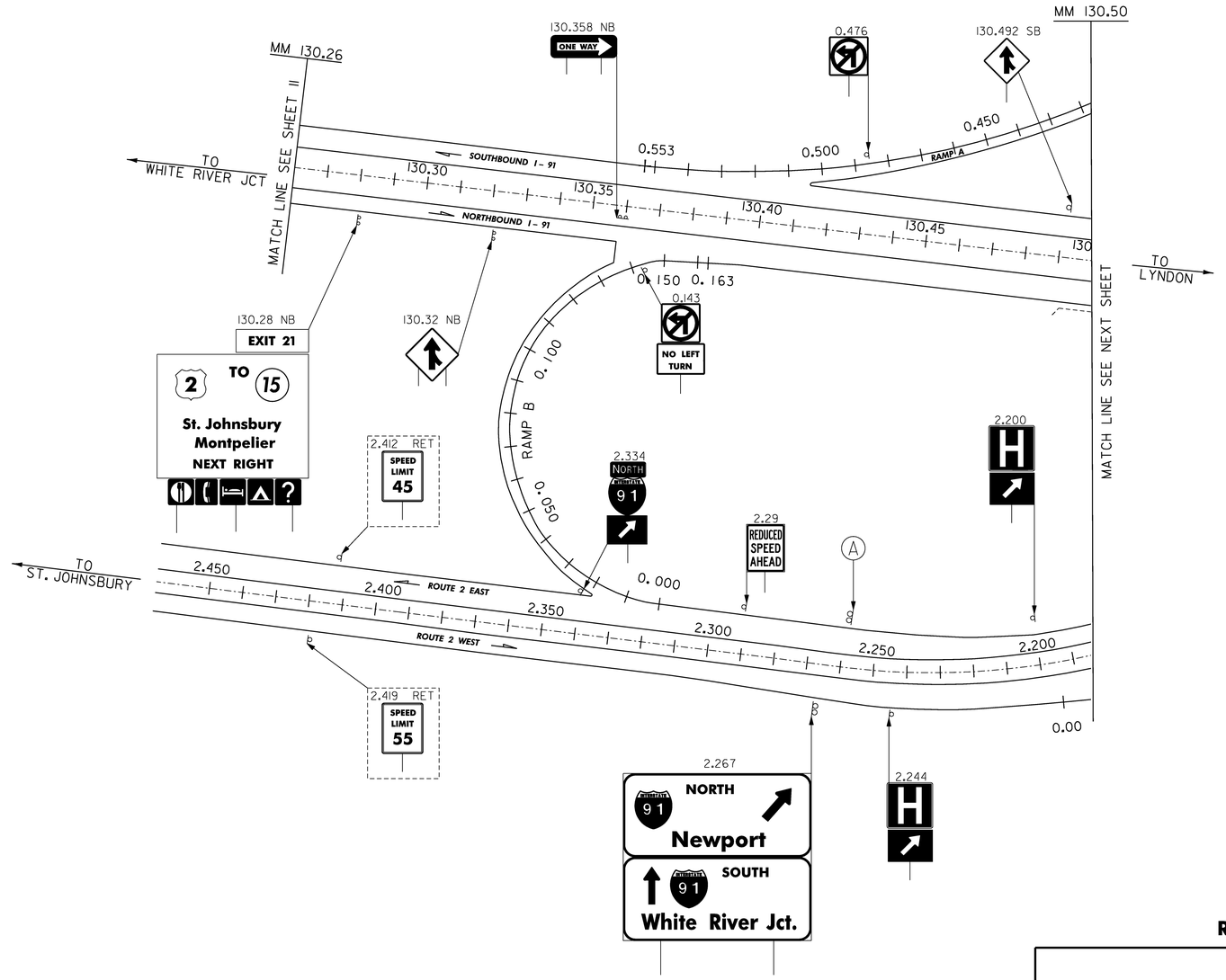
REMOVING SIGNS

TYPE A: 20
TYPE B: 5
BRIDGE PLAQUE: 1 (NOT SHOWN)

Ⓐ

2.258





LEGEND

RET – RETAINED

ALL SIGNS AND POSTS WILL BE REMOVED UNLESS OTHERWISE NOTED

INTERCHANGE 21 EXISTING SIGNS

PROJECT NAME:	ST. JOHNSBURY-LYNDON
PROJECT NUMBER:	HES 091-3(42)
FILE NAME: 97211a-exit21.dgn	PLOT DATE: 1/4/2007
PROJECT LEADER: CRB	DRAWN BY: HJC
DESIGNED BY: DAM	CHECKED BY: DAM
CLD REF. NO.: 97-0211	SHEET 14 OF 130

VAOT Metric

REMOVING SIGNS
TYPE A: 123
TYPE B: 9
BRIDGE PLAQUE: 3 (NOT SHOWN)

LEGEND
RET – RETAINED

ALL SIGNS AND POSTS WILL BE REMOVED UNLESS OTHERWISE NOTED

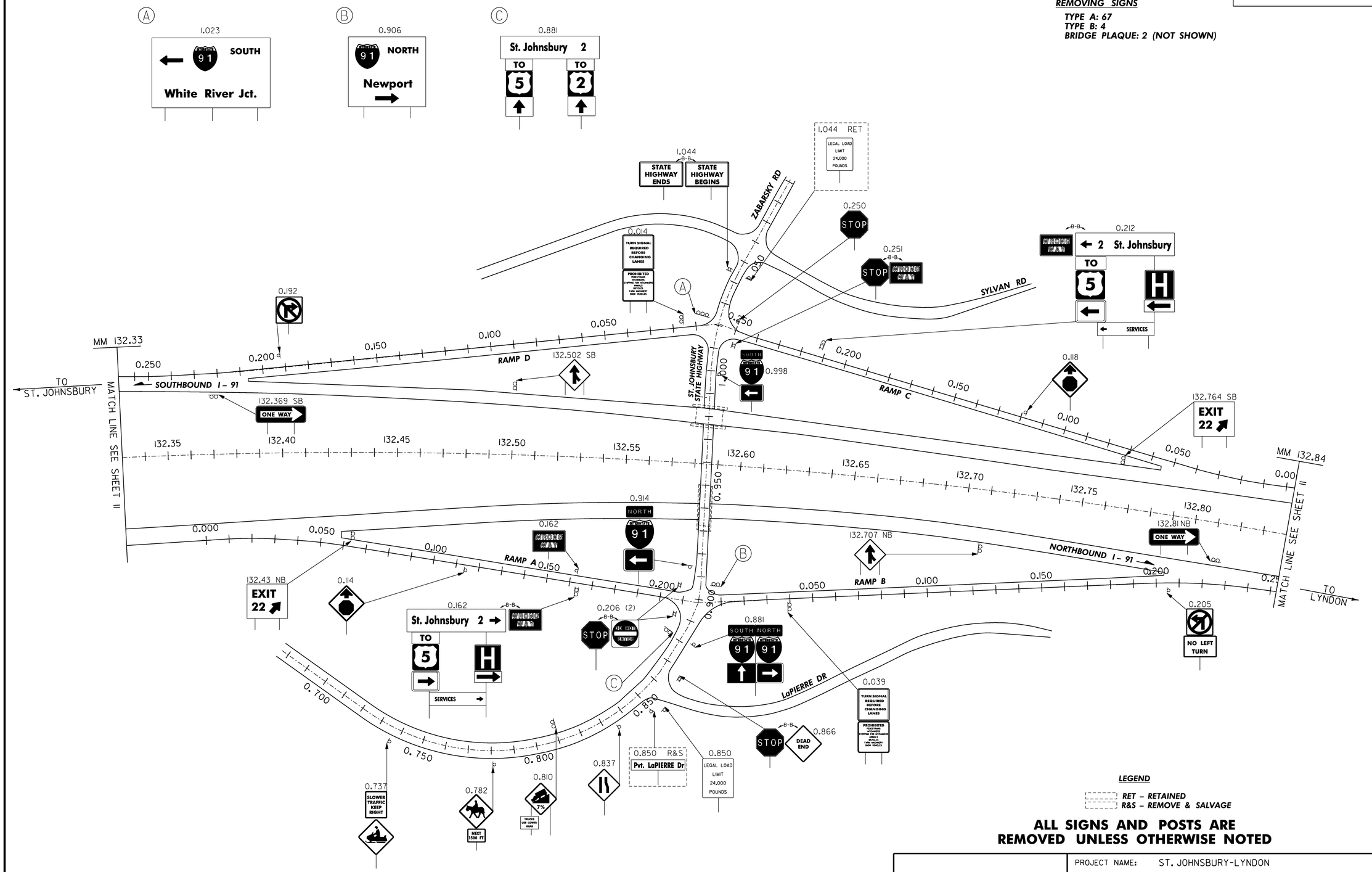
INTERCHANGE 21 EXISTING SIGNS

PROJECT NAME:	ST. JOHNSBURY-LYNDON
PROJECT NUMBER:	HES 091-3(42)
FILE NAME: 972lla-exit21.dgn	PLOT DATE: 1/4/2007
PROJECT LEADER: CRB	DRAWN BY: HJC
DESIGNED BY: DAM	CHECKED BY: DAM
CLD REF. NO.: 97-021l	SHEET 15 OF 130

VAOT Metric

REMOVING SIGNS

TYPE A: 67
TYPE B: 4
BRIDGE PLAQUE: 2 (NOT SHOWN)



LEGEND

RET – RETAINED
R&S – REMOVE & SALVAGE

ALL SIGNS AND POSTS ARE REMOVED UNLESS OTHERWISE NOTED

INTERCHANGE 22 EXISTING SIGNS

PROJECT NAME:	ST. JOHNSBURY-LYNDON
PROJECT NUMBER:	HES 091-3(42)
FILE NAME: 97211a-exit22.dgn	PLOT DATE: 1/4/2007
PROJECT LEADER: CRB	DRAWN BY: HJC
DESIGNED BY: DAM	CHECKED BY: DAM
CLD REF. NO.: 97-0211	SHEET 16 OF 130

VAOT Metric

REMOVING SIGNS
TYPE A: 163
TYPE B: 2
BRIDGE PLAQUE: 4 (NOT SHOWN)

Ⓐ 0.154 RAMP C — SOUTH 5 / TO VERMONT 114 / NORTH 5

Ⓑ 0.221 RAMP C
- ← Lyndon 1
- ← St. Johnsbury 4
- Lyndonville 2 →
- Lyndon State College 2 →
- Burke 6 →
- L. Willoughby 15 →

Ⓒ 0.251 RAMP C — SOUTH 5 / TO 114 / NORTH 5

Ⓓ 1.584 — SOUTH 5 / SOUTH INTERSTATE 91 / NORTH INTERSTATE 91

Ⓔ 1.425 / 1.550 — 13' 11"

Ⓕ 1.511 — ONLY

Ⓖ 1.487
- ← Barton 20
- ← Newport 33

NORTH INTERSTATE 91 / NORTH 5

Ⓗ 1.461 — St. Johnsbury 10 ↗ / NORTH 5 / SOUTH INTERSTATE 91

Ⓘ 0.262 RAMP B — STOP; DO NOT ENTER; ONE WAY; ONE WAY; WRONG WAY

Ⓙ 1.400 — SOUTH 5

Ⓚ South Wheelock Rd
1.387 R&S (2) — Memorial Dr

Ⓛ 1.394 — ONLY

Ⓜ 0.190 RAMP C
- Food →
- Phone →
- Gas 24 Hrs 1 →
- Gas / Diesel →
- ← 1 Lodging →
- Information 1 →

WRONG WAY

Ⓝ 1.460

Ⓞ 137.105 NB RET — BEGIN EXPERIMENTAL PAVEMENT MARKING

Ⓟ 1.575 — ← LYDON INSTITUTE

Ⓠ 1.618 RET — Back Center Rd / Memorial Dr

Ⓡ 0.036 RAMP E — YIELD

1.343 — HIDDEN DRIVE RIGHT RET; RET; 20 M.P.H. RET

1.370
- ↑ LYNDON 1
- SOUTH WHEELOCK 5 →
- STANNARD 10 →

1.371 — STOP

0.242 B-B — WRONG WAY
- ← FOOD
- ← PHONE
- ← 1 GAS 24 HRS
- ← GAS / DIESEL
- ← LODGING 1 →
- ← 1 INFORMATION

0.230
- ← Lyndonville
- Lyndon →
- St. Johnsbury →

NORTH 5 / SOUTH 5

0.262 B-B — STOP

0.177

137.316 SB — EXIT 23 ↗

137.318 SB

137.364 NB — ONE WAY

0.163

137.230 SB

0.041 — TURN SIGNAL REQUIRED BEFORE CHANGING LANES; PROHIBITED PEDESTRIANS STOPPING FOR VEHICLES BICYCLES FARM MACHINERY SNOW VEHICLES

1.422 SOUTH INTERSTATE 91

0.198

137.178 SB — ONE WAY

137.235

0.063 — TURN SIGNAL REQUIRED BEFORE CHANGING LANES; PROHIBITED PEDESTRIANS STOPPING FOR VEHICLES BICYCLES FARM MACHINERY SNOW VEHICLES

1.578 NORTH INTERSTATE 91

1.618 RET — LEGAL LOAD LIMIT 24,000 POUNDS

1.639
- ↑ Lyndon 1
- ↑ St. Johnsbury 10
- Barton 20 →
- Newport 33 →

1.671 JCT INTERSTATE 91

1.640
- Lyndonville 1
- Lyndon Center 2

1.670 — ONLY

TRAFFIC SIGNAL

1.299 JCT INTERSTATE 91

1.300 — 1.350 — 1.400 — 1.450 — 1.500 — 1.550 — 1.600 — 1.650

1.328
- ← SOUTH WHEELOCK 5
- ← STANNARD 10

1.410 SOUTH INTERSTATE 91 / NORTH INTERSTATE 91 / NORTH 5

1.412 NORTH 5 / SOUTH 5

MILE 1 3 7

136.86 SB — GROOVED SHOULDER

136.95 SB SOUTH INTERSTATE 91

1.565 SOUTH 5 / NORTH 5

1.610 RET — CALKINS DR.

1.610 RET — LEGAL LOAD LIMIT 24,000 POUNDS

0.289 (2) B-B — STOP; DO NOT ENTER; ONE WAY; ONE WAY; WRONG WAY

0.190 WRONG WAY

0.113

137.024 NB — EXIT 23 ↗

MM 136.85 MATCH LINE SEE SHEET 12

MM 137.40 MATCH LINE SEE SHEET 12

TO ST. JOHNSBURY

TO SHEFFIELD

SOUTHBOUND I-91

NORTHBOUND I-91

US ROUTE 5 SOUTH

US ROUTE 5 NORTH

RAMP A

RAMP B

RAMP C

RAMP D

RAMP E

S. WHEELOCK RD

BACK CENTER RD

CALKINS DR

0.000 — 0.050 — 0.100 — 0.150 — 0.200 — 0.229 — 0.250

136.85 — 136.90 — 136.95 — 137.00 — 137.05 — 137.10 — 137.15 — 137.20 — 137.25 — 137.30 — 137.35

LEGEND
- *RET – RETAINED*
- *R&S – REMOVE & SALVAGE*

ALL SIGNS AND POSTS WILL BE REMOVED UNLESS OTHERWISE NOTED

INTERCHANGE 23 EXISTING SIGNS

PROJECT NAME: ST. JOHNSBURY-LYNDON
PROJECT NUMBER: HES 091-3(42)

FILE NAME: 9721la-exit23.dgn
PROJECT LEADER: CRB
DESIGNED BY: DAM
CLD REF. NO.: 97-0211
PLOT DATE: 1/4/2007
DRAWN BY: HJC
CHECKED BY: DAM
SHEET 17 OF 130

Metric

BEGIN PROJECT
HES 091-3(42)
(MM 128.91)

INTERCHANGE 20

Ⓐ 129.130 SB

EXIT 19
SOUTH
Littleton NH
3/4 MILE
NEXT EXIT 8 MILES

EXIT 20
St. Johnsbury
Passumpsic

OVERHEAD TRAFFIC SIGN SUPPORT, MULTI – SUPPORT

129.030 SB
MILE 129

129.091 SB
EXIT 20

129.096 SB

129.231 SB
EXIT 45 M.P.H.

129.920 SB EXIT 20
St. Johnsbury
Passumpsic
1 MILE

129.785 SB
BRIDGE 84-S I-91

129.963 SB
BRIDGE 85 I-91

130.015 SB
SPEED LIMIT 65
MINIMUM 40

130.110 SB
GROOVED SHOULDER

130.170 SB
BRIDGE 86 I-91

130.205 SB
SOUTH INTERSTATE 91
DWIGHT D. EISENHOWER INTERSTATE SYSTEM

MM 130.90

130.252 SB

TH #68

MILE 130

VT 2B

MATCH LINE SEE BELOW

Ⓑ 129.400 SB
24 HOUR
STATE POLICE
NEXT RIGHT

Ⓒ 129.564 SB
SOUTH INTERSTATE 91
EXIT 19
EXIT 20

Ⓓ 129.367 NB
NORTH INTERSTATE 91
DWIGHT D. EISENHOWER INTERSTATE SYSTEM

MILE 129

129.270 NB
EMERGENCY STOPPING ONLY

129.554 NB
SPEED LIMIT 65
MINIMUM 40

129.464 NB
GROOVED SHOULDER

129.647 NB EXIT 21
2
St. Johnsbury
Montpelier
1 MILE

Ⓔ 129.760 NB
BRIDGE 84-N I-91

Ⓕ 129.950 NB
BRIDGE 85 I-91

Ⓖ 130.109 NB
BRIDGE 86 I-91

MILE 130

130.248 NB

MM 130.260

INTERCHANGE 21
SEE SHEET 21

MM 130.900

131.843 SB
SPEED LIMIT 65
MINIMUM 40

131.938 SB
GROOVED SHOULDER

132.032 SB
SOUTH INTERSTATE 91
DWIGHT D. EISENHOWER INTERSTATE SYSTEM

132.108 SB
EMERGENCY STOPPING ONLY

130.952 SB

131.040 SB EXIT 21
2
St. Johnsbury
Montpelier
1/2 MILE

131.470 SB
BRIDGE 89 I-91

131.702 SB

MILE 131

MILE 132

MM 130.90

130.930 SB

MATCH LINE SEE ABOVE

130.950 NB

TH #4

131.460 NB
BRIDGE 89 I-91

131.698 NB

130.980 NB
EMERGENCY STOPPING ONLY

131.075 NB
NORTH INTERSTATE 91
DWIGHT D. EISENHOWER INTERSTATE SYSTEM

131.170 NB
GROOVED SHOULDER

131.265 NB
SPEED LIMIT 65
MINIMUM 40

131.770 NB
EXIT 22
STEEP GRADE
TRUCKS USE
LOWER GEAR

132.143 NB
NEXT RIGHT

MM 132.33

MM 132.84

MM 132.90

MATCH LINE SEE NEXT SHEET

INTERCHANGE 22
SEE SHEET 23

Ⓔ 129.805 NB
TRUCK ROUTE 2 WEST
EXIT 21

Ⓕ 129.921 NB
131.236 SB
Danville
Hardwick
EXIT 21

130.080 NB EXIT 21
2
St. Johnsbury
Montpelier
1/2 MILE

Ⓗ 131.380 NB EXIT 22
TO 5
St. Johnsbury
1 MILE

Ⓘ 131.540 SB EXIT 21
2
St. Johnsbury
Montpelier
1 MILE

Ⓙ 131.908 NB EXIT 22
TO 5
St. Johnsbury
1/2 MILE

Ⓚ 132.300 NB EXIT 22
TO 5
St. Johnsbury

LEGEND

RET – RETAINED

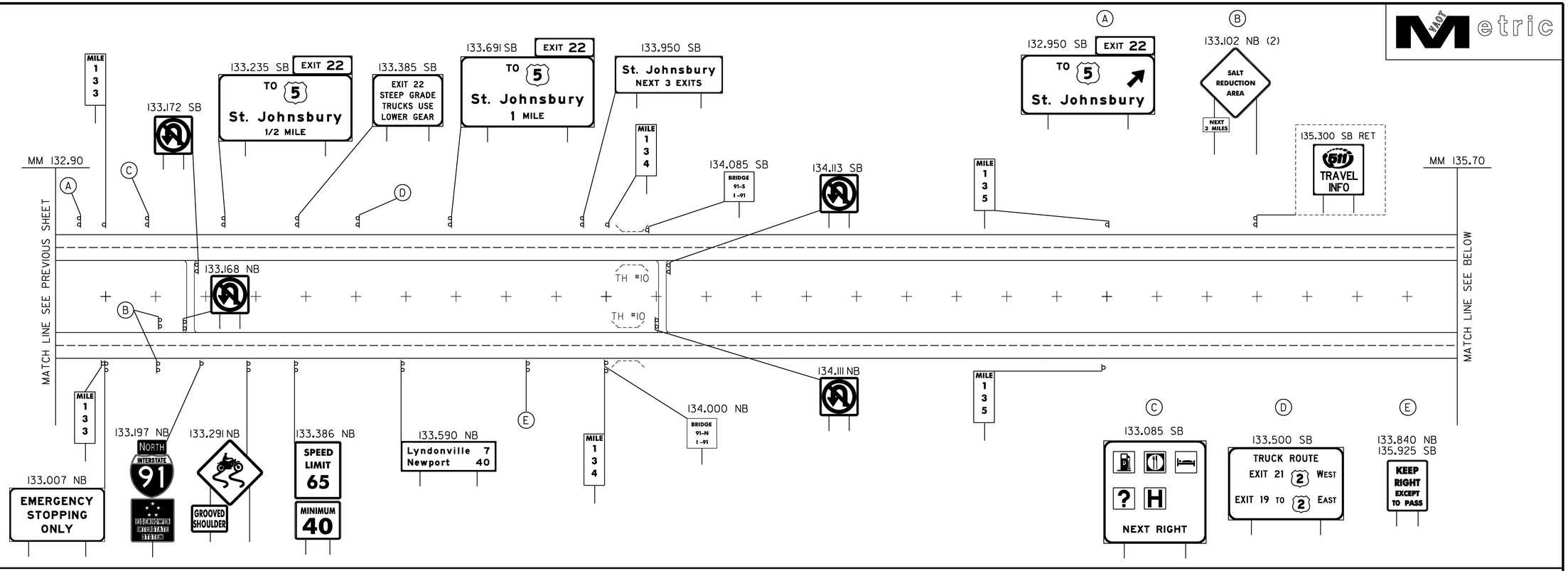
ALL SIGNS AND POSTS ARE NEW UNLESS OTHERWISE NOTED

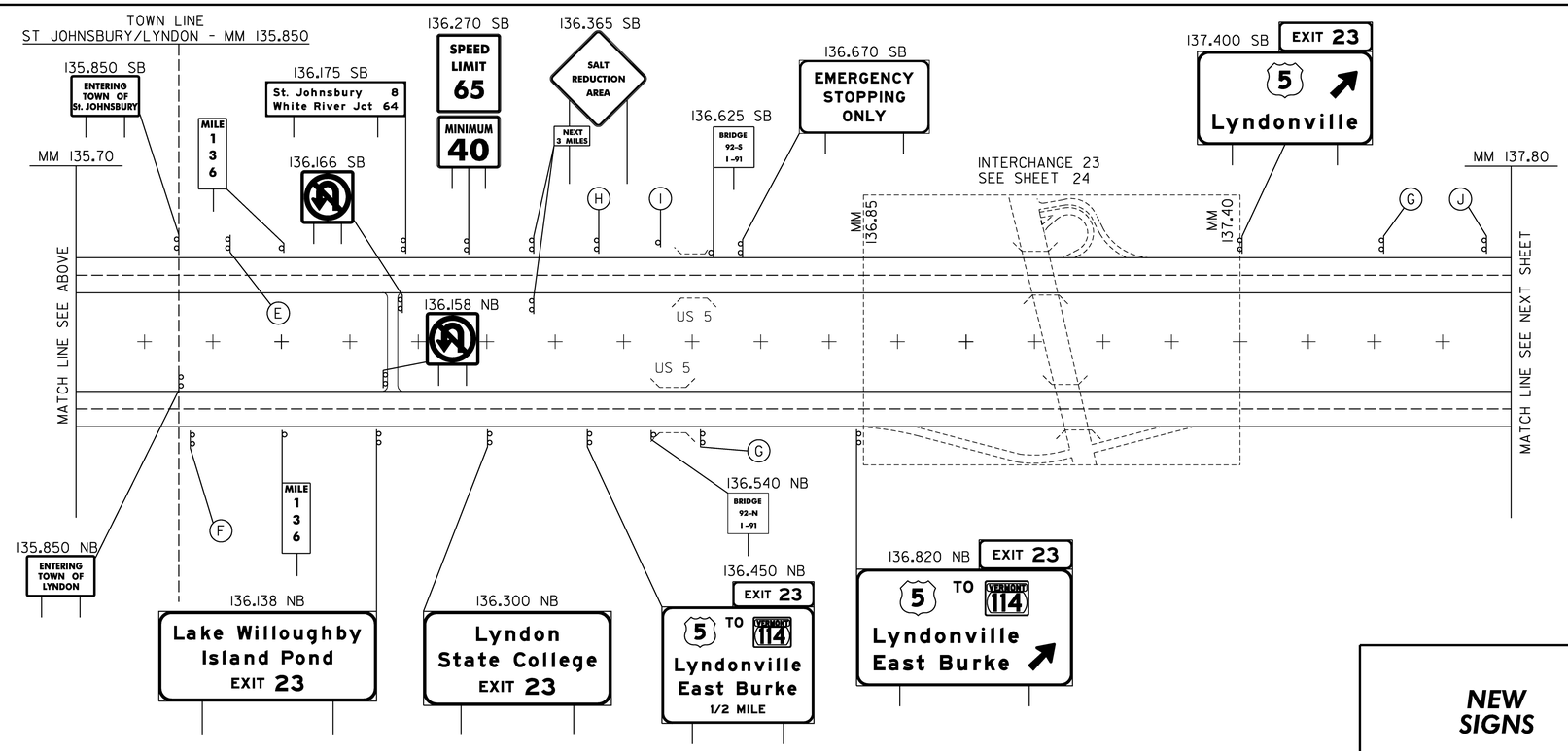
NEW SIGNS

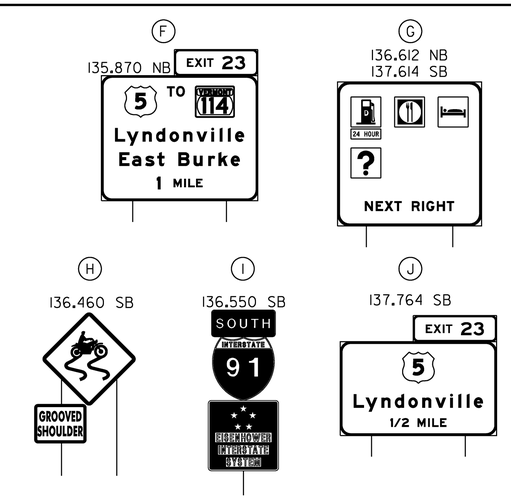
PROJECT NAME: ST. JOHNSBURY-LYNDON
PROJECT NUMBER: HES 091-3(42)

FILE NAME: 9721la-mi.dgn
PROJECT LEADER: CRB
DESIGNED BY: DAM
CLD REF. NO.: 97-021l

PLOT DATE: 1/4/2007
DRAWN BY: HJC
CHECKED BY: DAM
SHEET 18 OF 130







LEGEND

RET – RETAINED

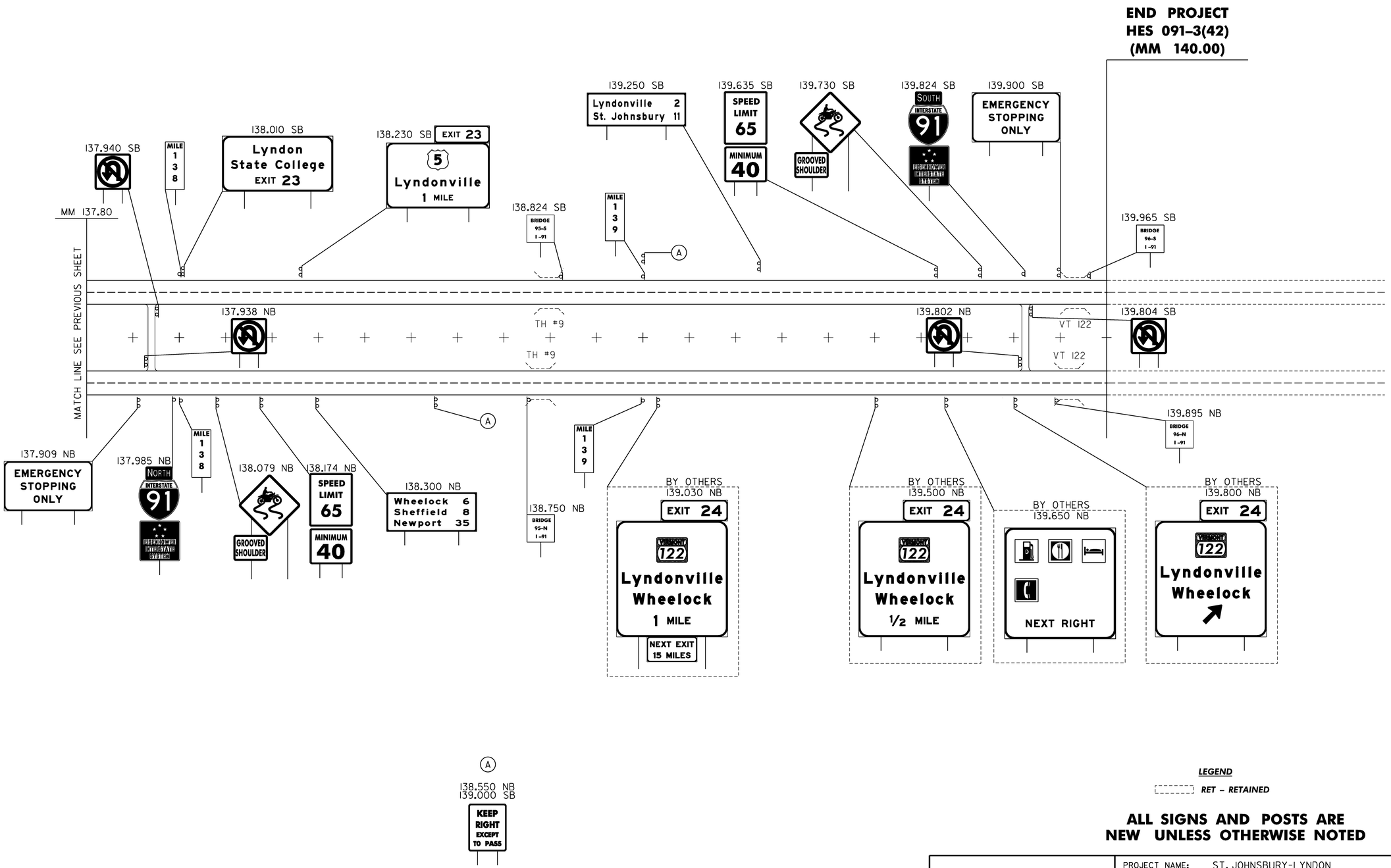
ALL SIGNS AND POSTS ARE NEW UNLESS OTHERWISE NOTED

NEW SIGNS

PROJECT NAME: ST. JOHNSBURY-LYNDON
PROJECT NUMBER: HES 091-3(42)

FILE NAME: 972lla-mi.dgn
PROJECT LEADER: CRB
DESIGNED BY: DAM
CLD REF. NO.: 97-021l

PLOT DATE: 1/4/2007
DRAWN BY: HJC
CHECKED BY: DAM
SHEET 19 OF 130



LEGEND

RET – RETAINED

ALL SIGNS AND POSTS ARE NEW UNLESS OTHERWISE NOTED

NEW SIGNS

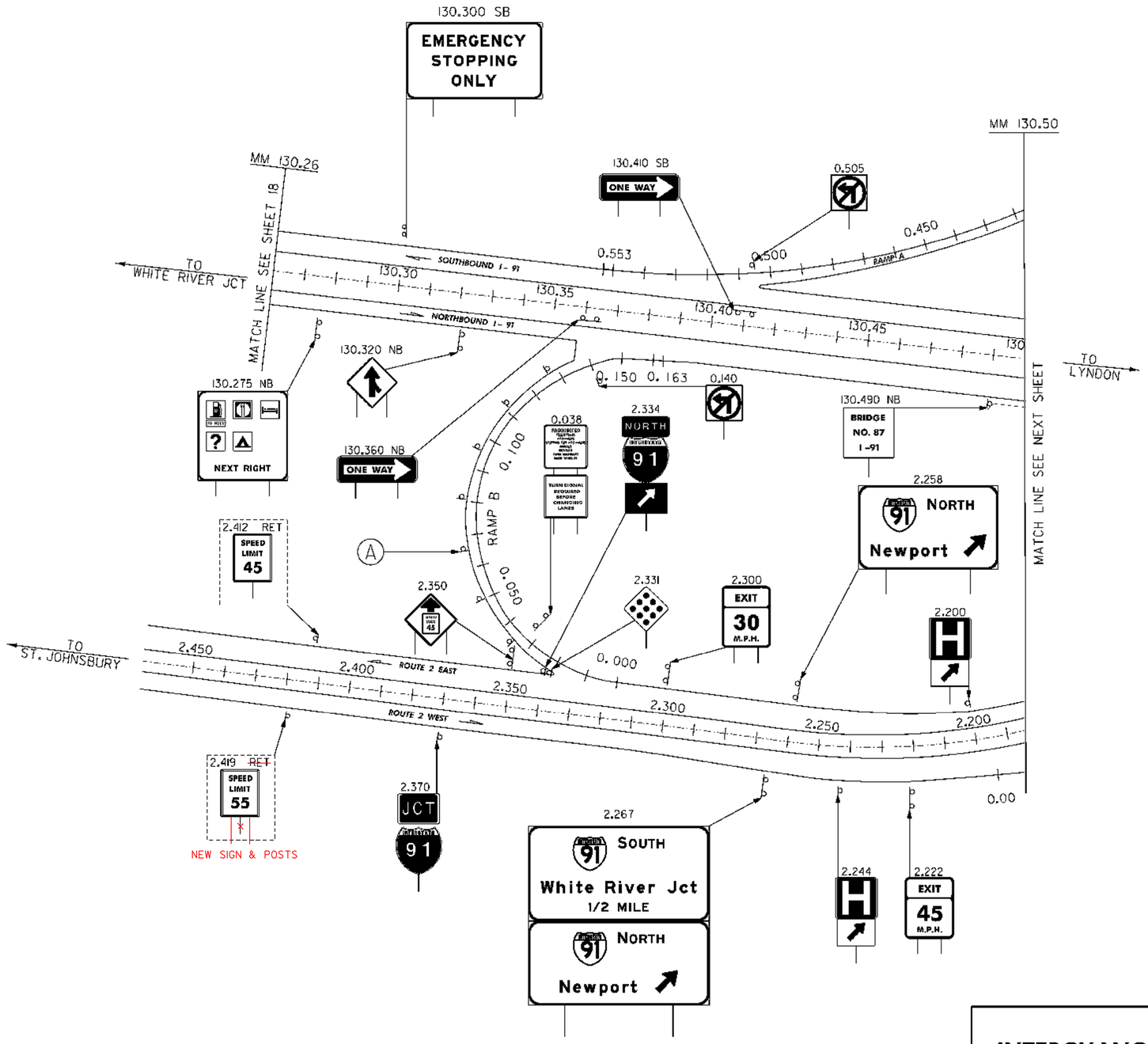
PROJECT NAME: ST. JOHNSBURY-LYNDON
PROJECT NUMBER: HES 091-3(42)

FILE NAME: 972lla-ml.dgn
PROJECT LEADER: CRB
DESIGNED BY: DAM
CLD REF. NO.: 97-02ll

PLOT DATE: 1/4/2007
DRAWN BY: HJC
CHECKED BY: DAM
SHEET 20 OF 130

(A)

0.035 - 0.127 RAMP B (7)



LEGEND

RET – *RETAINED*

ALL SIGNS AND POSTS ARE NEW UNLESS OTHERWISE NOTED

INTERCHANGE 21 NEW SIGNS

PROJECT NAME:	ST. JOHNSBURY-LYNDON
PROJECT NUMBER:	HES 091-3(42)
FILE NAME: 9721la-ex1t21.dgn	PLOT DATE: 1/4/2007
PROJECT LEADER: CRB	DRAWN BY: HJC
DESIGNED BY: DAM	CHECKED BY: DAM
CLD REF. NO.: 97-0211	SHEET 21 OF 130

Metric

A — 1.850 — 130.612 NB — 130.690 SB — EXIT 30 M.P.H.

B — 2.075 — EAST 2

C — 1.751 — 1.839 — SOUTH 91 — TO 93

D — 130.550 NB — 130.750 SB — EXIT 21 — 2 — St. Johnsbury — Montpelier

E — 0.039 RAMP G — 0.042 RAMP H — B-B — ONE WAY — ONE WAY — STOP

F — 1.890 — 2.068 — STOP

G — 1.530 — TRUCK ROUTE 2 EAST — VIA I-93 — NEXT RIGHT

0.193 — B-B — GAS/DIESEL 24 Hrs 2 — FOOD 2 — LODGING 1 — INFORMATION 1 — 5 CAMPING — WRONG WAY

0.155 — DANVILLE 7 — HARDWICK 23 — MONTPELIER 36 — ST. JOHNSBURY 1

0.193 — WRONG WAY

0.244 — WEST 2 — EAST 2

0.130 — RAMP 30 M.P.H.

0.081 — STOP AHEAD

0.080 — PROHIBITED MOVEMENT — TURN SIGNAL REQUIRED BEFORE CHANGING LANES

1.855 — B-B — WRONG WAY

1.855 — WRONG WAY

1.835 — BRIDGE ICES BEFORE ROAD

1.400 RET — NORTH 91 — SOUTH 91 — EAST 2 — TO 93

1.700 — DANVILLE 7 — HARDWICK 23 — MONTPELIER 36

1.750

1.750 — SPEED LIMIT 55

1.800 — WEST 2

0.243

1.875 — NO RIGHT TURN

0.117 — WEST 2 — EAST 2

0.079

MM 130.50

130.510 SB

130.520 SB — BRIDGE 87 I-91

130.600 SB — EXIT 21

130.604 SB

130.650 NB — BRIDGE 88 I-91

130.675 SB — BRIDGE 88 I-91

1.885 — WEST 2

1.879 — STOP

1.884 — ONE WAY

1.840

0.041 — PROHIBITED MOVEMENT — TURN SIGNAL REQUIRED BEFORE CHANGING LANES

H — 1.683 — NORTH 91 — Newport — 1/2 MILE — SOUTH 91 — White River Jct

I — 1.870 — SOUTH 91 — White River Jct

J — 0.039 RAMP G — 0.042 RAMP H — B-B — STOP — ONE WAY

K — 130.870 SB — NEXT RIGHT

L — 0.033 - 0.182 (9) RAMP C — 0.029 - 0.140 (9) RAMP D — 0.034 - 0.187 (11) RAMP E

TO WHITE RIVER JCT

MATCH LINE SEE PREVIOUS SHEET

TO ST. JOHNSBURY

ROUTE 2 EAST — ROUTE 2 WEST — SOUTHBOUND I-91 — NORTHBOUND I-91

130.830 SB — ONE WAY

MM 130.900

MATCH LINE SEE SHEET 18

TO LYNDON

130.850 NB — ONE WAY

130.702 NB — EXIT 21

130.698 NB

0.233 — YIELD

0.031

0.193 — EAST 2 — WEST 2

0.069 — EAST 2 — WEST 2

0.107 — ST. JOHNSBURY 1 — DANVILLE 7 — HARDWICK 23 — MONTPELIER 36

0.145 — B-B — 2 GAS/DIESEL 24 Hrs — 2 FOOD — 1 LODGING — 1 INFORMATION — CAMPING 5 — WRONG WAY

2.078 — ONE WAY

2.075 — STOP

2.080 (2) — NO RIGHT TURN

2.095 — WRONG WAY

2.095 — B-B — WRONG WAY

0.192

2.160

2.159 — NORTH 91

2.120 — BRIDGE ICES BEFORE ROAD

0.073 — PROHIBITED MOVEMENT — TURN SIGNAL REQUIRED BEFORE CHANGING LANES

RAMP A — RAMP B — RAMP C — RAMP D — RAMP E — RAMP F — RAMP G — RAMP H

LEGEND

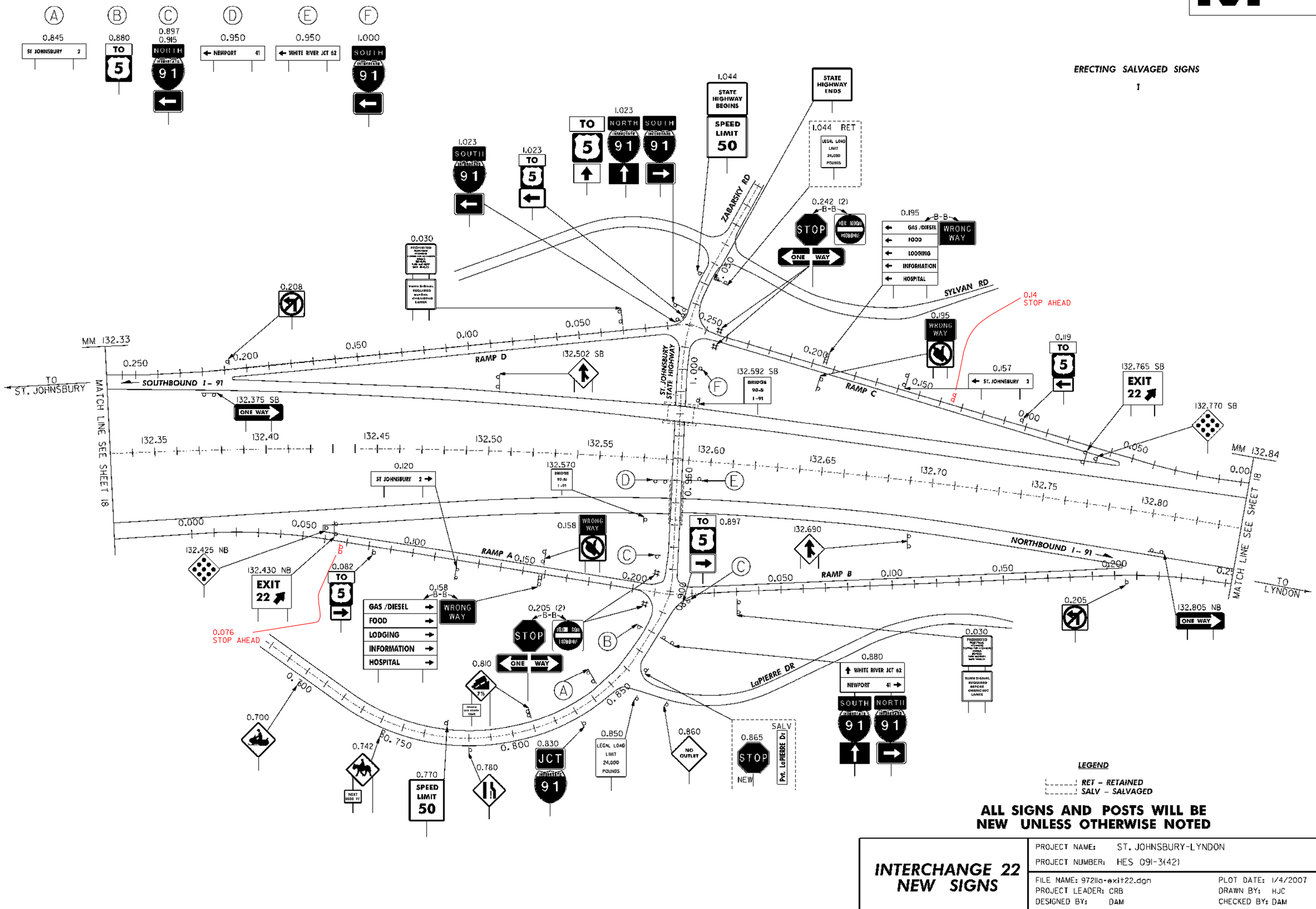
RET – RETAINED

ALL SIGNS AND POSTS ARE NEW UNLESS OTHERWISE NOTED

INTERCHANGE 21 NEW SIGNS	PROJECT NAME: ST. JOHNSBURY-LYNDON
	PROJECT NUMBER: HES 091-3(42)
FILE NAME: 9721la-exit21.dgn	PLOT DATE: 1/4/2007
PROJECT LEADER: CRB	DRAWN BY: HJC
DESIGNED BY: DAM	CHECKED BY: DAM
CLD REF. NO.: 97-021l	SHEET 22 OF 130

ERECTING SALVAGED SIGNS

1



LEGEND

RET – RETAINED
SALV – SALVAGED

ALL SIGNS AND POSTS WILL BE NEW UNLESS OTHERWISE NOTED

INTERCHANGE 22 NEW SIGNS

PROJECT NAME: ST. JOHNSBURY-LYNDON
PROJECT NUMBER: HES 091-3(42)

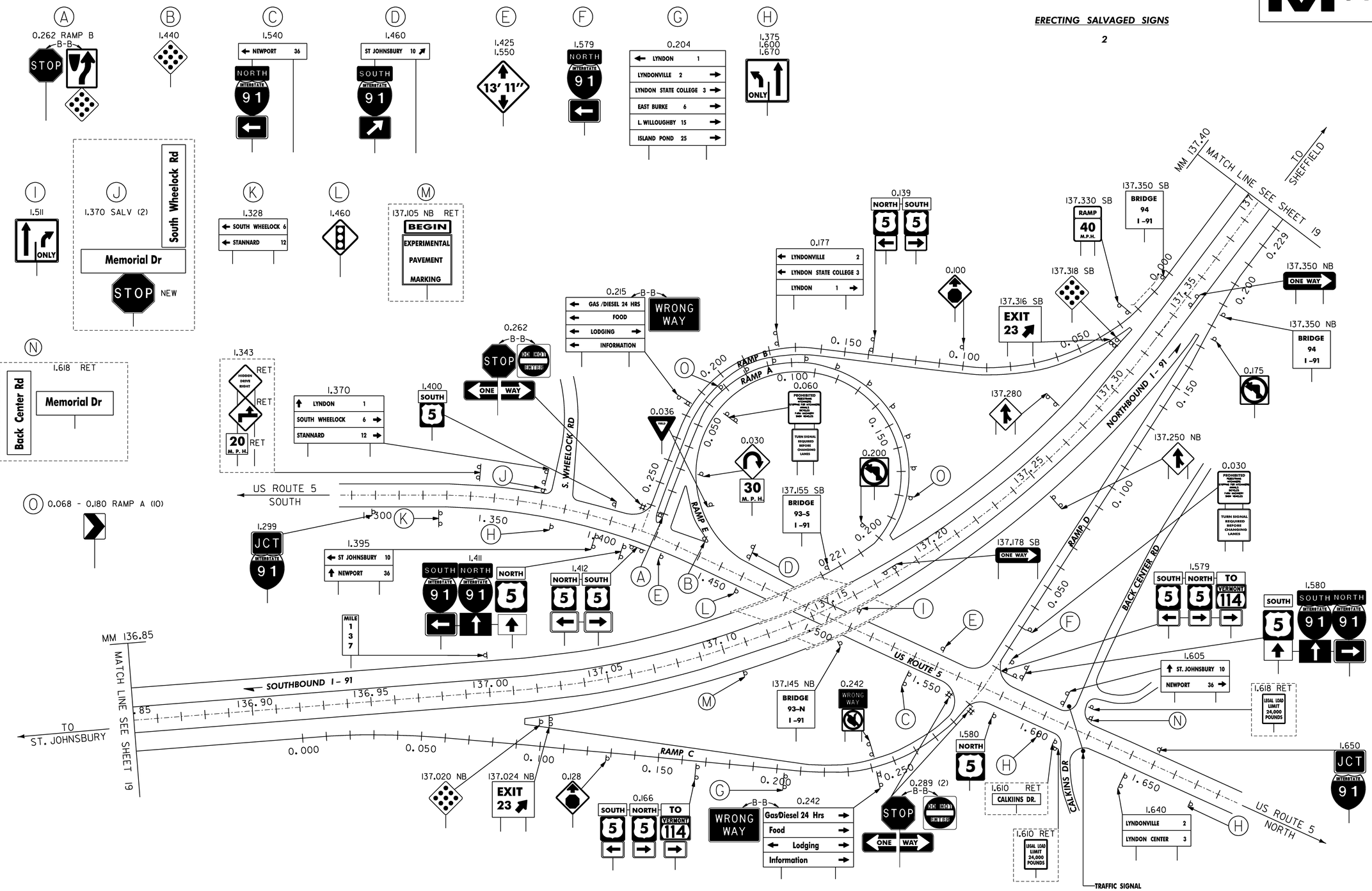
FILE NAME: 9721la-exit22.dgn
PROJECT LEADER: CRB
DESIGNED BY: DAM
CLD REF. NO.: 97-021l

PLOT DATE: 1/4/2007
DRAWN BY: HJC
CHECKED BY: DAM
SHEET 23 OF 130

VAOT Metric

ERECTING SALVAGED SIGNS

2



LEGEND

RET – RETAINED
SALV – SALVAGED

ALL SIGNS AND POSTS ARE NEW UNLESS OTHERWISE NOTED

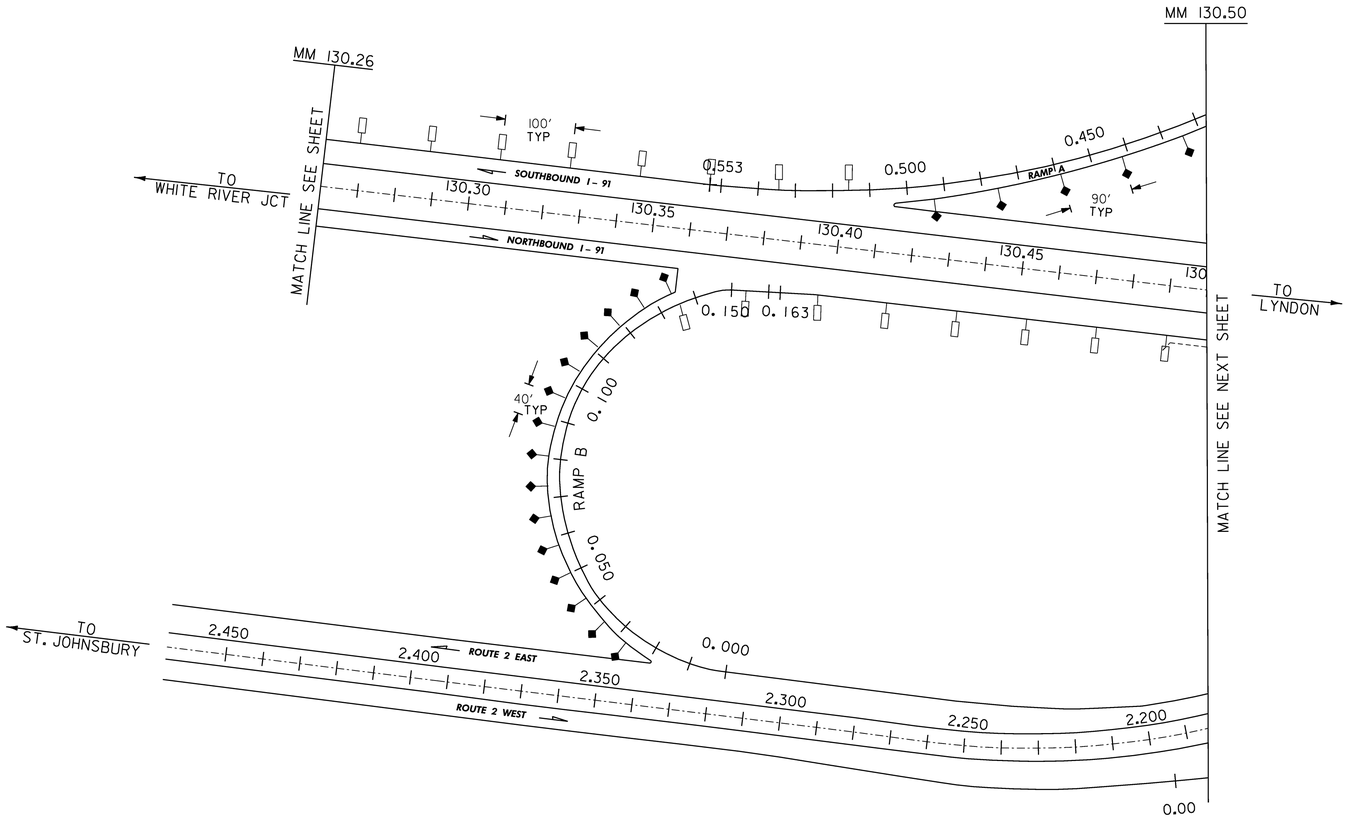
INTERCHANGE 23 NEW SIGNS

PROJECT NAME: ST. JOHNSBURY-LYNDON
PROJECT NUMBER: HES 091-3(42)

FILE NAME: 9721la-exit23.dgn
PROJECT LEADER: CRB
DESIGNED BY: DAM
CLD REF. NO.: 97-021l

PLOT DATE: 1/4/2007
DRAWN BY: HJC
CHECKED BY: DAM
SHEET 24 OF 130

Accel. lane taper ends at
130.061±, 1843' from Gore
Use 19 Type II Delineators



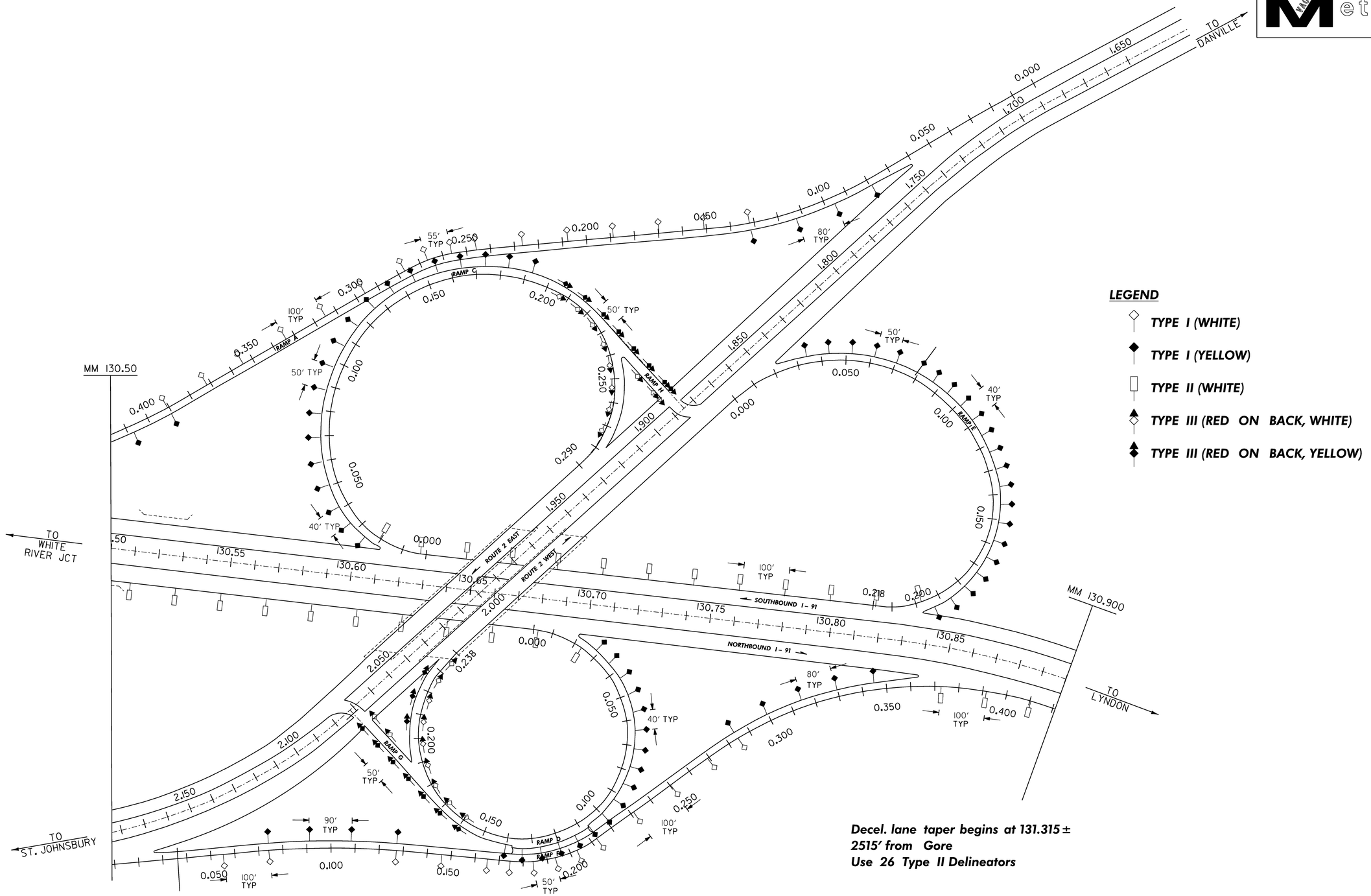
LEGEND

- ***TYPE I (WHITE)***
- ***TYPE I (YELLOW)***
- ***TYPE II (WHITE)***
- ***TYPE III (RED ON BACK, WHITE)***
- ***TYPE III (RED ON BACK, YELLOW)***

INTERCHANGE 21 DELINEATOR LAYOUT

PROJECT NAME:	ST. JOHNSBURY-LYNDON
PROJECT NUMBER:	HES 091-3(42)
FILE NAME: 9721la-exit21.dgn	PLOT DATE: 1/4/2007
PROJECT LEADER: CRB	DRAWN BY: HJC
DESIGNED BY: DAM	CHECKED BY: DAM
CLD REF. NO.: 97-0211	SHEET 25 OF 130

VAOT Metric



LEGEND

- TYPE I (WHITE)
- TYPE I (YELLOW)
- TYPE II (WHITE)
- TYPE III (RED ON BACK, WHITE)
- TYPE III (RED ON BACK, YELLOW)

Decel. lane taper begins at 131.315 ± 2515′ from Gore
Use 26 Type II Delineators

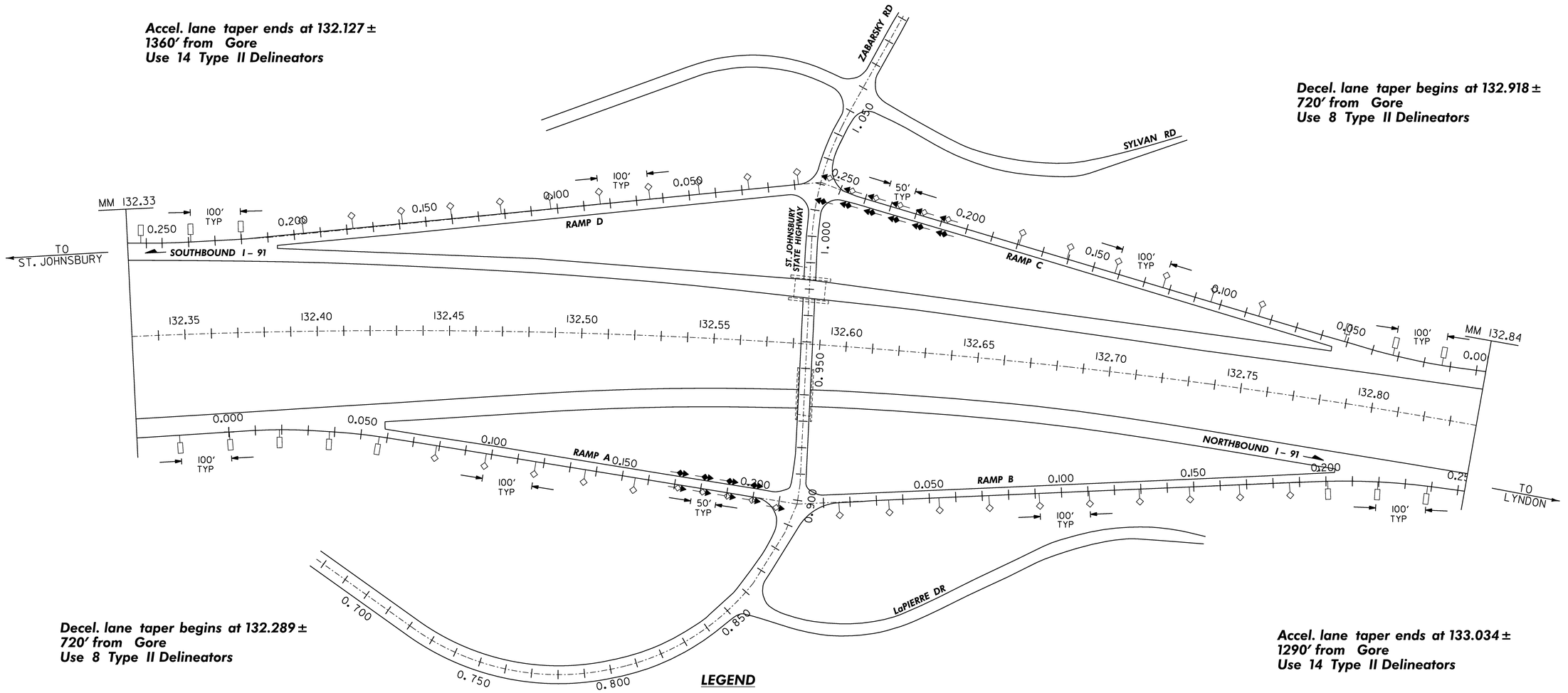
INTERCHANGE 21 DELINEATOR LAYOUT

PROJECT NAME:	ST. JOHNSBURY-LYNDON
PROJECT NUMBER:	HES 091-3(42)
FILE NAME: 97211a-exit21.dgn	PLOT DATE: 1/4/2007
PROJECT LEADER: CRB	DRAWN BY: HJC
DESIGNED BY: DAM	CHECKED BY: DAM
CLD REF. NO.: 97-0211	SHEET 26 OF 130

VAOT Metric

Accel. lane taper ends at 132.127 ± 1360′ from Gore
Use 14 Type II Delineators

Decel. lane taper begins at 132.918 ± 720′ from Gore
Use 8 Type II Delineators



Decel. lane taper begins at 132.289 ± 720′ from Gore
Use 8 Type II Delineators

Accel. lane taper ends at 133.034 ± 1290′ from Gore
Use 14 Type II Delineators

LEGEND

- *TYPE I (WHITE)*
- *TYPE I (YELLOW)*
- *TYPE II (WHITE)*
- *TYPE III (RED ON BACK, WHITE)*
- *TYPE III (RED ON BACK, YELLOW)*

INTERCHANGE 22 DELINEATOR LAYOUT

PROJECT NAME:	ST. JOHNSBURY-LYNDON
PROJECT NUMBER:	HES 091-3(42)
FILE NAME: 9721la-exit22.dgn	PLOT DATE: 1/4/2007
PROJECT LEADER: CRB	DRAWN BY: HJC
DESIGNED BY: DAM	CHECKED BY: DAM
CLD REF. NO.: 97-0211	SHEET 27 OF 130

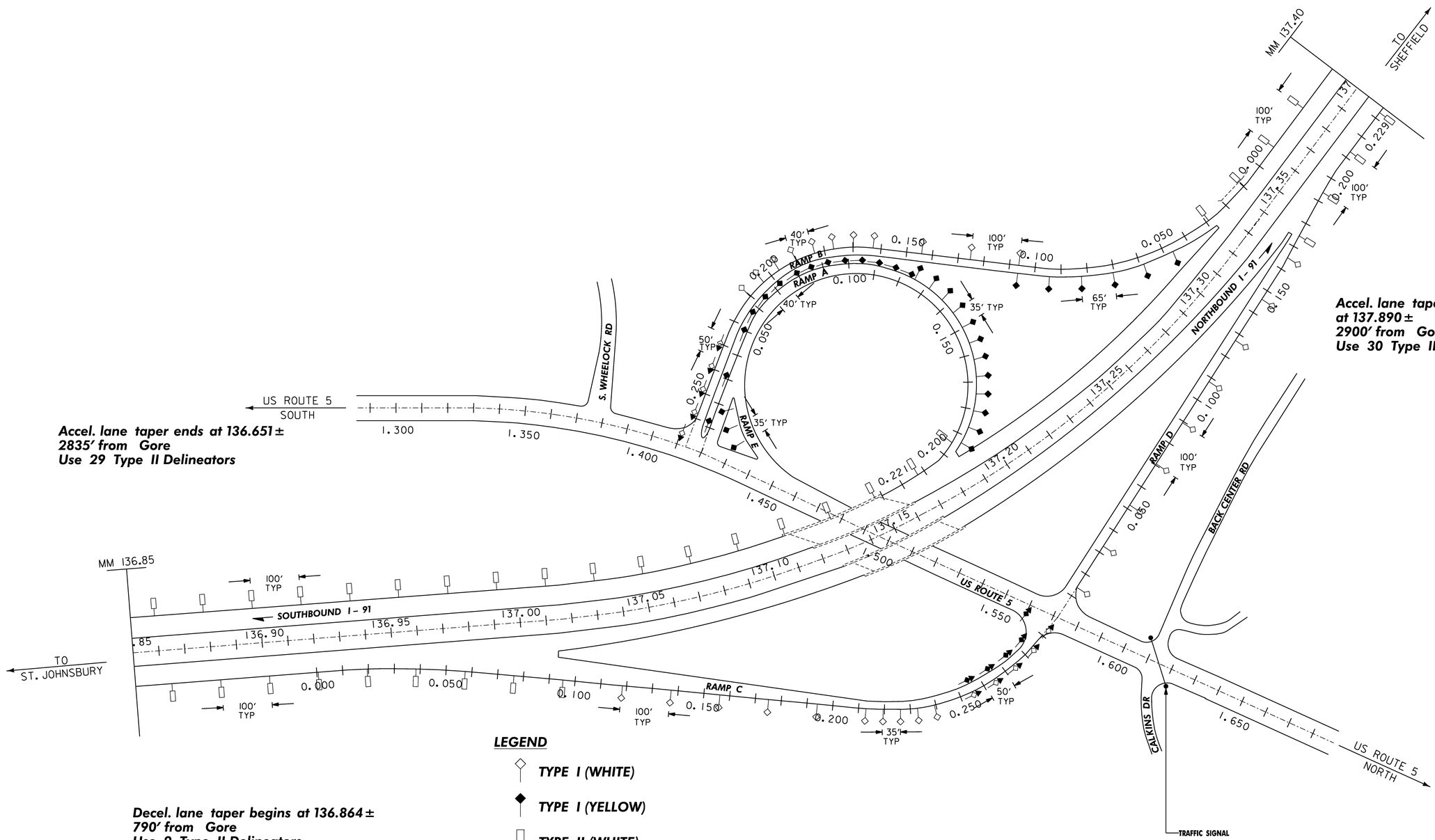
Metric

Decel. lane taper begins at 137.476 ± 800′ from Gore Use 9 Type II Delineators

Accel. lane taper ends at 137.890 ± 2900′ from Gore Use 30 Type II Delineators

Accel. lane taper ends at 136.651 ± 2835′ from Gore Use 29 Type II Delineators

Decel. lane taper begins at 136.864 ± 790′ from Gore Use 9 Type II Delineators



LEGEND

- ***TYPE I (WHITE)***
- ***TYPE I (YELLOW)***
- ***TYPE II (WHITE)***
- ***TYPE III (RED ON BACK, WHITE)***
- ***TYPE III (RED ON BACK, YELLOW)***

INTERCHANGE 23 DELINEATOR LAYOUT

PROJECT NAME:	ST. JOHNSBURY-LYNDON
PROJECT NUMBER:	HES 091-3(42)
FILE NAME: 97211a-exit23.dgn	PLOT DATE: 1/4/2007
PROJECT LEADER: CRB	DRAWN BY: HJC
DESIGNED BY: DAM	CHECKED BY: DAM
CLD REF. NO.: 97-0211	SHEET 28 OF 130

STATE OF VERMONT
AGENCY OF TRANSPORTATION

TRAFFIC SIGN SUMMARY SHEET 1

Metric

MILE MARKER	SIGN LEGEND	SIGN DIMENSIONS EA	WIDTH (mm)	HEIGHT (mm)	NEW & SALVAGED SIGNS "A"	"B"	SALV SIGN	SALV TIS	EXIST POST RETAIN	EXIST POST SALVAGE	NEW SIGN POSTS NO. OF POSTS	FLANGED CHANNEL kg/m 1.7	FLANGED CHANNEL kg/m 3.0	FLANGED CHANNEL kg/m 4.5	SQUARE STEEL (mm) 44 kg/m 3.4	SQUARE STEEL (mm) 50 kg/m 3.9	SQUARE STEEL (mm) 63 kg/m 5.0	ANCHOR	SLEEVE	TUBULAR ALUMINUM DIA (mm) 75 kg/m 1.9	TUBULAR ALUMINUM DIA (mm) 100 kg/m 2.5	TUBULAR ALUMINUM DIA (mm) 100MD kg/m 2.5	TUBULAR STEEL DIA (mm) FND-ATION	TUBULAR STEEL DIA (mm) 75 kg/m 11.3	TUBULAR STEEL DIA (mm) 90 kg/m 13.6	TUBULAR STEEL DIA (mm) 100 kg/m 16.1	TUBULAR STEEL DIA (mm) 125 kg/m 21.8	W-SHAPE STEEL FTG 600 mm	W-SHAPE STEEL SIZE 750 mm	W-SHAPE STEEL MASS	W-SHAPE STEEL POST SIZE	SIGN FRAME	REMARKS	SIGN DETAIL DETAIL ON SHEET NUMBER	SIGN DETAIL STD. SHEET NUMBER
NORTHBOUND 129.000 NB	MILE 129	1	300	1200	0.36						1			X		X		X																D10-3		E-139
129.270 NB	EMERGENCY STOPPING ONLY	1	1200	900	1.08						2												2	81.8 X										R8-7		E-142
129.367 NB	NORTH	1	750	375	0.28																													M3-1		E-135
	INTERSTATE 91	1	900	900	0.81																													M1-1		E-135
	EISENHOWER INTERSTATE SYSTEM	1	900	900	0.81						1												1	47.4 X										M1-10		E-135
129.464 NB		1	1200	1200	1.44																													VW-397	69	
	GROOVED SHOULDER	1	600	450	0.27						2									24.12 X														VP-396	69	
129.554 NB	SPEED LIMIT 65	1	1200	1500	1.80																													R2-1		E-142
	MINIMUM 40	1	1200	1200	1.44						2												2	128.3 X										VR-141		E-142
129.647 NB	EXIT 21	1	2400	750	1.80																													E1-5		E-131
	2 St. Johnsbury Montpelier 1 mile	1	5400	3600		19.44					2																		2		453 ~~447~~	W200X31.3		Bolt Tension 153.8 kN	63	
129.760 NB	BRIDGE 84-N I-91	1	150	250	0.04						1		2.44 X		X			X																VD-701	70	
129.805 NB	TRUCK ROUTE 2 Nesr EXIT 21	1	3000	2550		7.65					2																		2		~~213~~ 230	W150X18		Bolt Tension 53.4 kN SEE FOOTING DETAIL ON SHEET 3	63	
129.921 NB	Danville Hardwick EXIT 21	1	3150	2250		7.09					2												2				249 X								63	
129.950 NB	BRIDGE 85 I-91	1	150	250	0.04						1		2.44 X		X			X																VD-701	70	
130.000 NB	MILE 130	1	300	1200	0.36						1			3.66 X		X		X																D10-3		E-139
130.039 NB	BRIDGE 85-1 I-91	1	150	250	0.04						1		2.44 X		X			X																VD-701 NOT SHOWN ON PLANS.	70	
												m 0.0	m ~~7.8~~ 7.32	m 8.0 3.66	m 0.0	m 7.8	m 8.0		EA. 0	kg ~~24.2~~ 24.12	kg 0.0	kg 0.0		kg ~~279.2~~ 257.5	kg 0.0	kg 0.0	kg ~~209.7~~ 249								
												10.98								24.12				506.5												
	SHEET TOTALS	m2 10.57	m2 34.18	EA. 0	m2 0.00				m ~~15.8~~						m ~~15.8~~					kg ~~24.2~~			EA. 7	kg ~~488.9~~				EA. 4	EA. 0	683 kg ~~660~~					

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

PROJECT NAME: ST. JOHNSBURY-LYNDON
PROJECT NUMBER: HES 091-3(42)

FILE NAME:	tsssSTJ.xls	PLOT DATE:	1/4/2007
PROJECT LEADER:	CRB	DRAWN BY:	HJC
DESIGNED BY:	PTS	CHECKED BY:	DAM
CLD REF. NO.:	97-0211	SHEET	29 OF 130

STATE OF VERMONT
AGENCY OF TRANSPORTATION

TRAFFIC SIGN SUMMARY SHEET 2

Metric

MILE MARKER	SIGN LEGEND	SIGN DIMENSIONS EA	WIDTH (mm)	HEIGHT (mm)	NEW & SALVAGED SIGNS "A"	"B"	SALV SIGN	SALV TIS	EXIST POST RETAIN	EXIST POST SALVAGE	NEW SIGN POSTS NO. OF POSTS	FLANGED CHANNEL kg/m 1.7	3.0	4.5	SQUARE STEEL (mm) 44 kg/m 3.4	50 kg/m 3.9	63 kg/m 5.0	ANCHOR	SILVER	TUBULAR ALUMINUM DIA (mm) 75 kg/m 1.9	100 kg/m 2.5	100MD kg/m 2.5	TUBULAR STEEL DIA (mm) FND-ATION	75 kg/m 11.3	90 kg/m 13.6	100 kg/m 16.1	125 kg/m 21.8	W-SHAPE STEEL FTG. SIZE 600 mm	750 mm	MASS	POST SIZE	SIGN	FRAME	REMARKS	SIGN DETAIL DETAIL ON SHEET NUMBER	STD. SHEET NUMBER
130.080 NB	EXIT 21	1	2400	750	1.80																													E1-5		E-131
	2 St. Johnsbury Montpelier 1/2 MILE	1	5400	3450		18.63					2																	2		461 ~~453~~	W250X32.7			Bolt Tension 126.3 kN	63	
130.109 NB	BRIDGE 86 I-91	1	150	250	0.04						1		2.44 X			X			X														VD-701	70	
130.248 NB MED		1	900	900	0.81						2			8.53 X			X		X														R3-4		E-143
130.275 NB	FOOD LODGING GAS CAMPING NEXT RIGHT	1	3600	3600		12.96					2																	2		422 ~~405~~	W200X26.6			Bolt Tension 87.4 kN SEE FOOTING DETAIL ON SHEET 3	63	
130.320 NB		1	1200	1200	1.44						2									2I.7 X	kg												W4-1		E-150
130.360 NB MED	ONE WAY	1	900	300	0.27						2			8.53 X			X		X														R6-1R		E-142
130.490 NB	BRIDGE 87 I-91	1	150	250	0.04						1		2.44 X			X			X														VD-701	70	
130.550 NB	EXIT 21	1	2400	750	1.80																												E1-5		E-131
	2 St. Johnsbury Montpelier	1	5400	3000		16.20					2																	2		481 ~~468~~	W250X32.7			Bolt Tension 126.3 kN SEE FOOTING DETAIL ON SHEET 3	64	
130.612 NB	EXIT 30 M.P.H.	1	1200	1500	1.80						2									2I.7 X														W13-2		E-150
130.650 NB	BRIDGE 88 I-91	1	150	250	0.04						1		2.44 X			X			X														VD-701	70	
130.698 NB		1	450	450	0.20						1		2.44 X			X			X														OM-1		E-150
130.702 NB	EXIT 21	1	1800	1500		2.70					2												2	93.0 X								E5-1a		E-131
130.750 NB		1	1200	1200	1.44						2									20.7 X													W4-1		E-150
130.850 NB MED	ONE WAY	1	900	300	0.27						2			8.53 X			X		X														R6-1R		E-142
												m 0.0	m ~~10.5~~ 9.76	m ~~25.0~~ 25.59	m 0.0	m 10.5	m 25.0		EA. 0	kg ~~69.7~~ 64.1	kg 0.0	kg 0.0		kg ~~81.4~~ 93.0	kg 0.0	kg 0.0	kg 0.0									
												35.35																									
																													1364							
	SHEET TOTALS	m2	9.95	m2	50.49	EA.	0	m2	0.00		m ~~35.5~~			m ~~35.5~~					64.1	kg ~~69.7~~		EA.	2	kg ~~81.4~~			EA.	6	EA.	0	kg ~~1326~~					

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

PROJECT NAME: ST. JOHNSBURY-LYNDON
PROJECT NUMBER: HES 091-3(42)

FILE NAME:	tsssSJ.xls	PLOT DATE:	1/4/2007
PROJECT LEADER:	CRB	DRAWN BY:	HJC
DESIGNED BY:	PTS	CHECKED BY:	DAM
CLD REF. NO.:	97-0211	SHEET	30 OF 130

STATE OF VERMONT
AGENCY OF TRANSPORTATION

TRAFFIC SIGN SUMMARY SHEET 3

Metric

MILE MARKER	SIGN LEGEND	SIGN DIMENSIONS EA	WIDTH (mm)	HEIGHT (mm)	NEW & SALVAGED SIGNS "A"	"B"	SALV SIGN	SALV TIS	EXIST POST RETAIN	EXIST POST SALVAGE	NO. OF POSTS	NEW SIGN POSTS: FLANGED CHANNEL kg/m 1.7	3.0	4.5	SQUARE STEEL (mm) 44 kg/m 3.4	50 kg/m 3.9	63 kg/m 5.0	ANCHOR	SLIP BASE	TUBULAR ALUMINUM DIA (mm) 75 kg/m 1.9	100 kg/m 2.5	100MD kg/m 2.5	TUBULAR STEEL DIA (mm) FND-ATION	75 kg/m 11.3	90 kg/m 13.6	100 kg/m 16.1	125 kg/m 21.8	W-SHAPE STEEL FTG. SIZE 600 mm	750 mm	MASS	POST SIZE	SIGN FRAME	REMARKS	SIGN DETAIL: DETAIL ON SHEET NUMBER	STD. SHEET NUMBER
130.950 NB MED		1	900	900	0.81						2			8.53 X		X		X															R3-4		E-143
130.980 NB	EMERGENCY STOPPING ONLY	1	1200	900	1.08						2									19.7 X													R8-7		E-142
131.000 NB	MILE 131	1	300	1200	0.36						1			3.66 X		X		X															D10-3		E-139
131.075 NB	NORTH	1	750	375	0.28																												M3-1		E-135
	INTERSTATE 91	1	900	900	0.81																												M1-1		E-135
	EISENHOWER INTERSTATE SYSTEM	1	900	900	0.81						1												1	50.8 X									M1-10		E-135
131.170 NB		1	1200	1200	1.44																												VW-397	69	
	CHGVYLD SHOULDER	1	600	450	0.27						2												2	95.6 X									VP-396	69	
131.265 NB	SPEED LIMIT 65	1	1200	1500	1.80																												R2-1		E-142
	MINIMUM 40	1	1200	1200	1.44						2												2	118.9 X									VR-141		E-142
131.380 NB	EXIT 22	1	2400	750	1.80																												E1-5		E-131
	TO 5 St. Johnsbury 1 MILE	1	5400	2850		15.39					2																			2	294 ~~302~~	W200X26.6		Bolt Tension 102.1 kN	64	
131.460 NB	BRIDGE B9 I-91	1	150	250	0.04						1		2.44 X			X			X															VD-701	70	
131.698 NB MED		1	900	900	0.81						2			8.53 X		X		X															R3-4		E-143
131.770 NB	EXIT 22 STEEP GRADE TRUCKS USE LOWER GEAR	1	2850	2100		5.99					2												2					199 X						64	
131.908 NB	EXIT 22	1	2400	750	1.80																												E1-5		E-131
	TO 5 St. Johnsbury 1/2 MILE	1	5400	2700		14.58					2																			2	308 ~~293~~	W200X26.6		Bolt Tension 93 kN	64	
												m 0.0	m ~~2.6~~ 2.44	m ~~22.4~~ 20.72	m 0.0	m 2.6	m 22.4		EA. 0	kg ~~22.8~~ 19.7	kg 0.0	kg 0.0		kg 264.5 265.3	kg 0.0	kg 0.0	kg ~~215.2~~ 199							
												23.16																								
	SHEET TOTALS		m2 13.55	m2 35.96	EA. 0	m2 ~~0.00~~						m ~~25.0~~			m ~~25.0~~					19.7 kg ~~22.8~~			EA. 7		kg ~~479.7~~ 464.3			EA. 4	EA. 0	602 kg ~~595~~					

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

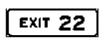
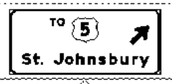
PROJECT NAME: ST. JOHNSBURY-LYNDON
PROJECT NUMBER: HES 091-3(42)

FILE NAME:	IsssSTJ.xls	PLOT DATE:	1/4/2007
PROJECT LEADER:	CRB	DRAWN BY:	HJC
DESIGNED BY:	PTS	CHECKED BY:	DAM
CLD REF. NO.:	97-0211	SHEET	31 OF 130

STATE OF VERMONT
AGENCY OF TRANSPORTATION

TRAFFIC SIGN SUMMARY SHEET 4

Metric

MILE MARKER	SIGN LEGEND	SIGN DIMENSIONS EA	WIDTH (mm)	HEIGHT (mm)	NEW & SALVAGED SIGNS "A"	"B"	SALV SIGN	SALV TIS	EXIST POST RETAIN	EXIST POST SALVAGE	NEW SIGN POSTS NO. OF POSTS	FLANGED CHANNEL kg/m 1.7	3.0	4.5	SQUARE STEEL (mm) 44 kg/m 3.4	50 kg/m 3.9	63 kg/m 5.0	ANCHOR	SLEEVE	TUBULAR ALUMINUM DIA (mm) 75 kg/m 1.9	100 kg/m 2.5	100MD kg/m 2.5	TUBULAR STEEL DIA (mm) FND-ATION	75 kg/m 11.3	90 kg/m 13.6	100 kg/m 16.1	125 kg/m 21.8	W-SHAPE STEEL FTG. SIZE 600 mm	750 mm	MASS	POST SIZE	SIGN FRAME	REMARKS	SIGN DETAIL DETAIL ON SHEET NUMBER	STD. SHEET NUMBER
132.000 NB		1	300	1200	0.36						1			3.66 X		X		X															D10-3		E-139
132.143 NB		1	3600	3600		12.96					2																	2		373 ~~337~~	W200X26.6		Bolt Tension 85.4 kN	64	
132.300 NB		1	2400	750	1.80																												E1-5		E-131
		1	5400	2400		12.96					2																	2		391 ~~433~~	W200X31.3		Bolt Tension 126.3 kN SEE FOOTING DETAIL ON SHEET 3	64	
132.425 NB		1	450	450	0.20						1		2.44 X			X		X															OM-1		E-150
132.430 NB		1	1800	1500		2.70					2												2	94.7 X								E5-1a		E-131
132.570 NB		1	150	250	0.04						1		2.44 X			X		X															VD-701	70	
132.690 NB		1	1200	1200	1.44						2												2	95.6 X								W4-1		E-150
132.805 NB MED		1	900	300	0.27						2			8.53 X		X		X															R6-1R		E-142
133.000 NB		1	300	1200	0.36						1			3.66 X		X		X															D10-3		E-139
133.007 NB		1	1200	900	1.08						2									21.4 X													R8-7		E-142
133.010 NB		1	150	250	0.04						1		2.44 X			X		X															VD-701 NOT SHOWN ON PLANS.	70	
133.102 NB MED		1	1200	1200	1.44																													69	
		1	600	450	0.27						2												2	98.2 X								W7-3a		E-152
133.102 NB		1	1200	1200	1.44																													69	
		1	600	450	0.27						2												2	92.1 X								W7-3a		E-152
												m 0.0	m ~~7.9~~ 7.32	m ~~15.8~~ 15.85	m 0.0	m 7.9	m 15.8		EA. 0	kg 22.8	kg 0.0	kg 0.0		kg ~~352.5~~ 380.6	kg 0.0	kg 0.0	kg 0.0								
														23.17												380.6								
	SHEET TOTALS	m2 9.01	m2 28.62	EA. 0	m2 0.00							m ~~23.7~~			m ~~23.7~~					21.4 kg ~~22.8~~			EA. 8	kg ~~352.5~~				EA. 4	EA. 0	764 kg ~~770~~					

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

PROJECT NAME: ST. JOHNSBURY-LYNDON
PROJECT NUMBER: HES 091-3(42)

FILE NAME:	tsssStJ.xls	PLOT DATE:	1/4/2007
PROJECT LEADER:	CRB	DRAWN BY:	HJC
DESIGNED BY:	PTS	CHECKED BY:	DAM
CLD REF. NO.:	97-0211	SHEET	32 OF 130

STATE OF VERMONT
AGENCY OF TRANSPORTATION

TRAFFIC SIGN SUMMARY SHEET 5

Metric

MILE MARKER	SIGN LEGEND	SIGN DIMENSIONS EA	WIDTH (mm)	HEIGHT (mm)	NEW & SALVAGED SIGNS "A"	"B"	SALV SIGN	SALV TIS	EXIST POST RETAIN	EXIST POST SALVAGE	NEW SIGN POSTS NO. OF POSTS	FLANGED CHANNEL kg/m 1.7	3.0	4.5	SQUARE STEEL (mm) 44 kg/m 3.4	50 kg/m 3.9	63 kg/m 5.0	ANCHOR	SLEEVE	TUBULAR ALUMINUM DIA (mm) 75 kg/m 1.9	100 kg/m 2.5	100MD kg/m 2.5	TUBULAR STEEL DIA (mm) FND-ATION	75 kg/m 11.3	90 kg/m 13.6	100 kg/m 16.1	125 kg/m 21.8	W-SHAPE STEEL FTG. SIZE 600 mm	750 mm	MASS	POST SIZE	SIGN FRAME	REMARKS	SIGN DETAIL DETAIL ON SHEET NUMBER	STD. SHEET NUMBER
133.168 NB MED		1	900	900	0.81						2			8.53 X		X		X															R3-4		E-143
133.197 NB		1	750	375	0.28																												M3-1		E-136
		1	900	900	0.81																												M1-1		E-135
		1	900	900	0.81						1												1	50.8 X								M1-10		E-135
133.291 NB		1	1200	1200	1.44																												VW-397	69	
		1	600	450	0.27						2												2	92.1 X								VP-396	69	
133.386 NB		1	1200	1500	1.80																												R2-1		E-142
		1	1200	1200	1.44						2												2	121.4 X								VR-141		E-142
133.590 NB		1	2850	900		2.57					2												2	87.8 X								NUMBER 7 CHANGED TO 5	65	
133.840 NB		1	1200	1500	1.80						2									23.31 X													VR-132	69	
134.000 NB		1	150	250	0.04						1		2.44 X			X			X														VD-701	70	
134.000 NB		1	300	1200	0.36						1			3.66 X		X		X															D10-3		E-139
134.111 NB MED		1	900	900	~~0.81~~ 1.62						2			8.53 X 8.53		X		X															R3-4 SIGN DESTROYED BY PLOWS NEW ONE INSTALLED		E-143
135.000 NB		1	300	1200	0.36						1			3.66 X		X		X															D10-3		E-139
135.850 NB MED		1	900	600	0.54						2			8.53 X		X		X															I-2		E-131
135.870 NB		1	2400	750	1.80																												E1-5		E-131
		1	4500	3600		16.20					2																		2	~~456~~ ~~378~~	W200X31.3		Bolt Tension 127.9 kN	65	
												m 0.0	~~2.6~~ 2.44	~~38.9~~ 41.44	m 0.0	2.6	38.9		EA. 0	kg ~~24.7~~	0.0	0.0		kg ~~338.5~~ 352.1	0.0	0.0	0.0							
												43.88																							
					14.18																									~~456~~					
	SHEET TOTALS				m2 ~~13.37~~	m2 18.77	EA. 0	m2 0.00				m ~~41.5~~			m ~~41.5~~					23.31 kg ~~24.7~~			EA. 7	kg ~~338.5~~				EA. 2	EA. 0	kg ~~378~~					

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

PROJECT NAME: ST. JOHNSBURY-LYNDON
PROJECT NUMBER: HES 091-3(42)

FILE NAME:	tsssSTJ.xls	PLOT DATE:	1/4/2007
PROJECT LEADER:	CRB	DRAWN BY:	HJC
DESIGNED BY:	PTS	CHECKED BY:	DAM
CLD REF. NO.:	97-0211	SHEET	33 OF 130

STATE OF VERMONT
AGENCY OF TRANSPORTATION

TRAFFIC SIGN SUMMARY SHEET 6

Metric

MILE MARKER	SIGN LEGEND	SIGN DIMENSIONS EA	WIDTH (mm)	HEIGHT (mm)	NEW & SALVAGED SIGNS "A"	"B"	SALV SIGN	SALV TIS	EXIST POST RETAIN	EXIST POST SALVAGE	NEW SIGN POSTS NO. OF POSTS	FLANGED CHANNEL kg/m 1.7	3.0	4.5	SQUARE STEEL (mm) 44 kg/m 3.4	60 kg/m 3.9	63 kg/m 5.0	ANCHOR	SILVL	TUBULAR ALUMINUM DIA (mm) 75 kg/m 1.9	100 kg/m 2.5	100MD kg/m 2.5	TUBULAR STEEL DIA (mm) FND-ATION	75 kg/m 11.3	90 kg/m 13.6	100 kg/m 16.1	125 kg/m 21.8	W-SHAPE STEEL FTG. SIZE 600 mm	750 mm	MASS	POST SIZE	SIGN FRAME	REMARKS	SIGN DETAIL DETAIL ON SHEET NUMBER	STD. SHEET NUMBER
136.000 NB	MILE 136	1	300	1200	0.36						1			3.66 X		X		X															D10-3		E-139
136.138 NB	Lake Willoughby Island Pond EXIT 23	1	5100	2100		10.71					2																	2		185 ~~191~~	W150X18		Bolt Tension 57.4 kN	65	
136.158 NB MED		1	900	900	0.81						2			8.53 X		X		X															R3-4		E-143
136.300 NB	Lyndon State College EXIT 23	1	4200	2100		8.82					2																	2		271 ~~269~~	W150X22.5		Bolt Tension 85.4 kN SEE FOOTING DETAIL ON SHEET 3	66	
136.450 NB	EXIT 23	1	2400	750	1.80																												E1-5		E-131
	5 TO 114 Lyndonville East Burke 1/2 MILE	1	4500	3450		15.53					2																	2		504 ~~485~~	W200X31.3		Bolt Tension 126.5 kN	65	
136.540 NB	BRIDGE 92-N I-91	1	150	250	0.04						1		2.44 X			X		X															VD-701	70	
136.612 NB		1	3600	3600		12.96					2																	2		349 ~~324~~	W200X26.6		Bolt Tension 85.4 kN SEE FOOTING DETAIL ON SHEET 3	65	
136.820 NB	EXIT 23	1	2400	750	1.80																												E1-5		E-131
	5 TO 114 Lyndonville East Burke	1	5550	3000		16.65					2																	2		372 ~~380~~	W200X31.3		Bolt Tension 126.3 kN SEE FOOTING DETAIL ON SHEET 3	66	
137.020 NB		1	450	450	0.20						1		2.44 X			X		X															OM-1		E-150
137.024 NB	EXIT 23	1	1800	1500		2.70					2												2	86.11 X									E5-1a		E-131
137.145 NB	BRIDGE 93-N I-91	1	150	250	0.04						1		2.44 X			X		X															VD-701	70	
137.250 NB		1	1200	1200	1.44						2												2	91.3 X									W4-1		E-150
137.350 NB	BRIDGE 94 I-91	1	150	250	0.04						1		2.44 X			X		X															VD-701	70	
137.350 NB MED	ONE WAY	1	900	300	0.27						2			8.53 X		X		X															R6-1R		E-142
137.909 NB	EMERGENCY STOPPING ONLY	1	1200	900	1.08						2												2	75.77 X									R8-7		E-142
												m 0.0	m ~~10.5~~ 9.76	m ~~20.8~~ 20.72	m 0.0	m 10.5	m 20.8		EA. 0	kg 0.0	kg 0.0	kg 0.0		kg ~~249.7~~ 253.18	kg 0.0	kg 0.0	kg 0.0							
												30.48			0									253.18				8+2		1681					
	SHEET TOTALS		m2 7.88	m2 67.37	EA. 0	m2 0.00						m ~~31.3~~			m ~~31.3~~					kg 0.0			EA. 6	kg ~~249.7~~				EA. 10	EA. 0	kg ~~1649~~					

FINAL POST LENGTHS ARE TO BE DETERMINED IN THE FIELD.
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PROJECT NAME: ST. JOHNSBURY-LYNDON
PROJECT NUMBER: HES 091-3(42)

FILE NAME:	tsssSTJ.xls	PLOT DATE:	1/4/2007
PROJECT LEADER:	CRB	DRAWN BY:	HJC
DESIGNED BY:	PTS	CHECKED BY:	DAM
CLD REF. NO.:	97-0211	SHEET	34 OF 130

STATE OF VERMONT
AGENCY OF TRANSPORTATION

TRAFFIC SIGN SUMMARY SHEET 7

Metric

MILE MARKER	SIGN LEGEND	SIGN DIMENSIONS EA	WIDTH (mm)	HEIGHT (mm)	NEW & SALVAGED SIGNS "A"	"B"	SALV SIGN	SALV TIS	EXIST POST RETAIN	EXIST POST SALVAGE	NEW SIGN POSTS NO. OF POSTS	FLANGED CHANNEL kg/m 1.7	3.0	4.5	SQUARE STEEL (mm) 44 50 63 kg/m 3.4	3.9	5.0	ANCHOR	SILEY	TUBULAR ALUMINUM DIA (mm) 75 100 100MD kg/m 1.9	2.5	2.5	TUBULAR STEEL DIA (mm) FND-ATION	75 90 100 125 kg/m 11.3	13.6	16.1	21.8	W-SHAPE STEEL FTG. SIZE 600 mm	750 mm	MASS	POST SIZE	SIGN	FRAME	REMARKS	SIGN DETAIL DETAIL ON SHEET NUMBER	STD. SHEET NUMBER
137.938 NB MED		1	900	900	0.81						2			8.53 X		X		X																R3-4		E-143
137.985 NB		1	750	375	0.28																												M3-1		E-135
		1	900	900	0.81																												M1-1		E-135
		1	900	900	0.81						1												1	49.94 X								M1-10		E-135
138.000 NB		1	300	1200	0.36						1			3.66 X		X		X															D10-3		E-139
138.079 NB		1	1200	1200	1.44																												VW-397	69	
		1	600	450	0.27						2												2	98.2 X								VP-396	69	
138.174 NB		1	1200	1500	1.80																												R2-1		E-142
		1	1200	1200	1.44						2												2	122.3 X								VR-141		E-142
138.300 NB		1	2400	1250		3.00					2												2	99.88 X									66	
138.550 NB		1	1200	1500	1.80						2									22.88 X													VR-132	69	
138.750 NB		1	150	250	0.04						1		2.44 X		X			X															VD-701	70	
139.000 NB		1	300	1200	0.36						1			3.66 X		X		X															D10-3		E-139
139.802 NB MED		1	900	900	0.81						2			8.53 X		X		X															R3-4		E-143
139.895 NB		1	150	250	0.04						1		2.44 X		X			X															VD-701	70	
												m 0.0	m 5.2 ~~4.88~~	m ~~27.6~~ 24.38	m 0.0	m 5.2	m 27.6		EA. 0	kg ~~24.7~~	kg 0.0	kg 0.0		kg ~~352.5~~ 370.32	kg 0.0	kg 0.0	kg 0.0							
												29.26			0					22.88 ~~24.7~~				370.32										
	SHEET TOTALS		m2 11.07	m2 3.00	EA. 0	m2 0.00						m ~~32.8~~			m ~~32.8~~					kg ~~24.7~~			EA. 7	kg ~~352.5~~				EA. 0	EA. 0	kg 0				

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

PROJECT NAME: ST. JOHNSBURY-LYNDON
PROJECT NUMBER: HES 091-3(42)

FILE NAME:	tsssSJ.xls	PLOT DATE:	1/4/2007
PROJECT LEADER:	CRB	DRAWN BY:	HJC
DESIGNED BY:	PTS	CHECKED BY:	DAM
CLD REF. NO.:	97-0211	SHEET	35 OF 130

STATE OF VERMONT
AGENCY OF TRANSPORTATION

TRAFFIC SIGN SUMMARY SHEET 8

USC Metric

MILE MARKER	SIGN LEGEND	SIGN DIMENSIONS EA	WIDTH (mm)	HEIGHT (mm)	NEW & SALVAGED SIGNS "A"	"B"	SALV SIGN	SALV TIS	EXIST POST RETAIN	EXIST POST SALVAGE	NEW SIGN POSTS NO. OF POSTS	FLANGED CHANNEL kg/m 1.7	3.0	4.5	SQUARE STEEL (mm) kg/m 44 3.4	50 3.9	63 5.0	ANCHOR	SLEEVE	TUBULAR ALUMINUM DIA (mm) kg/m 75 1.9	100 2.5	100MD 2.5	TUBULAR STEEL DIA (mm) kg/m FND-ATION	75 11.3	90 13.6	100 16.1	125 21.8	W-SHAPE STEEL FTG. SIZE 600 mm	750 mm	MASS	POST SIZE	SIGN FRAME	REMARKS	SIGN DETAIL DETAIL ON SHEET NUMBER	STD. SHEET NUMBER
SOUTHBOUND 129.000 SB	MILE 129	1	300	1200	0.36						1			5.66 X		X		X															D10-3		E-139
129.030 SB		1	1200	1200	1.44						2											2	91.3 X									W4-1		E-150
129.091 SB	EXIT 20	1	1800	1500		2.70					2											2	93.0 X									E5-1a		E-131
129.096 SB		1	450	450	0.20						1		2.44 X		X			X														OM-1		E-150
129.130 SB O/H	EXIT 19	1	2400	750	1.80																											E1-5		E-131
	EXIT 20	1	2400	750	1.80																											E1-5		E-131
	93 SOUTH Littleton NH 3/4 MILE / 5 St. Johnsbury Passumpsic	1	4700	2700		12.69																										OVERHEAD TRAFFIC SIGN SUPPORT, MULTI-SUPPORT DETAIL ON SHEET 78	66	
		1	5400	3000		16.20																													
	NEXT EXIT 8 MILES	1	4050	600		2.43																										E2-1		E-131
129.231 SB	EXIT 45 M.P.H.	1	1200	1500	1.80						2											2	105.9 X									W13-2		E-150
129.400 SB	NEXT RIGHT	1	3600	3600		12.96					2																2		332 ~~345~~	W200X26.6		Bolt Tension 85.4 kN	66	
129.564 SB	SOUTH EXIT 19 EXIT 20 EXIT 20 5	1	5700	4650		26.51					2																	2	663 ~~653~~	W310X44.5		Bolt Tension 149.9 kN	67	
129.785 SB	BRIDGE 84-S I-91	1	150	250	0.04						1		2.44 X		X			X														VD-701	70	
129.920 SB	EXIT 20	1	2400	750	1.80																											E1-5		E-131
	5 St. Johnsbury Passumpsic 1 MILE	1	5400	3600		19.44					2																2		477 ~~426~~	W250X32.7		Bolt Tension 126.3 kN SEE FOOTING DETAIL ON SHEET 3	67	
129.963 SB	BRIDGE 85 I-91	1	150	250	0.04						1		2.44 X		X			X														VD-701	70	
130.000 SB	MILE 130	1	300	1200	0.36						1			3.35 X		X		X														D10-3		E-139
130.015 SB	SPEED LIMIT 65	1	1200	1500	1.80																											R2-1		E-142
	MINIMUM 40	1	1200	1200	1.44						2											2	127.5 X									VR-141		E-142
												m 0.0	m ~~7.9~~ 7.32	m ~~8.0~~ 9.01	m 0.0	m 7.9	m 8.0		EA. 0	kg 0.0	kg 0.0	kg 0.0		kg ~~380.8~~ 417.7	kg 0.0	kg 0.0	kg 0.0							
												16.33			0									417.7											
																														1472					
	SHEET TOTALS	m2 12.88	m2 92.93	EA. 0	m2 ~~0.00~~		m ~~15.9~~		m ~~15.9~~			kg 0.0			EA. 8	kg ~~380.8~~			EA. 4	EA. 2	kg ~~1424~~													

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

PROJECT NAME: ST. JOHNSBURY-LYNDON
PROJECT NUMBER: HES 091-3(42)

FILE NAME:	tsssSTJ.xls	PLOT DATE:	1/4/2007
PROJECT LEADER:	CRB	DRAWN BY:	HJC
DESIGNED BY:	PTS	CHECKED BY:	DAM
CLD REF. NO.:	97-0211	SHEET	36 OF 130

STATE OF VERMONT
AGENCY OF TRANSPORTATION

TRAFFIC SIGN SUMMARY SHEET 9

Metric

MILE MARKER	SIGN LEGEND	SIGN DIMENSIONS EA	WIDTH (mm)	HEIGHT (mm)	NEW & SALVAGED SIGNS "A"	"B"	SALV SIGN	SALV TIS	EXIST POST RETAIN	EXIST POST SALVAGE	NEW SIGN POSTS NO. OF POSTS	FLANGED CHANNEL kg/m 1.7	3.0	4.5	SQUARE STEEL (mm) 44 kg/m 3.4	50 kg/m 3.9	63 kg/m 5.0	ANCHOR	SILVL	TUBULAR ALUMINUM DIA (mm) 75 kg/m 1.9	100 2.5	100MD 2.5	TUBULAR STEEL DIA (mm) FND-ATION	75 11.3	90 13.6	100 16.1	125 21.8	W-SHAPE STEEL FTG. SIZE 600 mm	750 mm	MASS	POST SIZE	SIGN FRAME	REMARKS	SIGN DETAIL DETAIL ON SHEET NUMBER	STD. SHEET NUMBER
130.039 SB	BRIDGE 85-1 I-91	1	150	250	0.04						1		2.44 X		X			X															VD-701 NOT SHOWN ON PLANS.	70	
130.110 SB		1	1200	1200	1.44																											VW-397	69	
	GROOVED SHOULDER	1	600	450	0.27						2									22.2 X												VP-396	69	
130.170 SB	BRIDGE 86 I-91	1	150	250	0.04						1		2.44 X		X			X														VD-701	70	
130.205 SB	SOUTH	1	750	375	0.28																											M3-1		E-135
	INTERSTATE 91	1	900	900	0.81																											M1-1		E-135
	EISENHOWER INTERSTATE SYSTEM	1	900	900	0.81						1												1	50.8 X								M1-10		E-135
130.252 SB MED		1	900	900	0.81						2			8.53 X		X		X														R3-4		E-143
130.300 SB	EMERGENCY STOPPING ONLY	1	1200	900	1.08						2									19.4 X												R8-7		E-142
130.410 SB MED	ONE WAY	1	900	300	0.27						2			8.53 X		X		X														R6-1R		E-142
130.510 SB		1	1200	1200	1.44						2												2	95.6 X								W4-1		E-150
130.520 SB	BRIDGE 87 I-91	1	150	250	0.04						1		2.44 X		X			X														VD-701	70	
130.600 SB	EXIT 21	1	1800	1500		2.70					2												2	86.1 X								E5-1a		E-131
130.604 SB		1	450	450	0.20						1		2.44 X		X			X														OM-1		E-150
130.675 SB	BRIDGE 88 I-91	1	150	250	0.04						1		2.44 X		X			X														VD-701	70	
130.690 SB	EXIT 30 M.P.H.	1	1200	1500	1.80						2												2	96.4 X								W13-2		E-150
												m 0.0	m ~~13.1~~ 12.2	m ~~17.2~~ 17.06	m 0.0	m 13.1	m 17.2		EA. 0	kg ~~47.0~~ 41.6	kg 0.0	kg 0.0		kg ~~314.1~~ 328.9	kg 0.0	kg 0.0	kg 0.0								
												29.26			0					41.6				328.9											
		SHEET TOTALS			m2 9.37	m2 2.70	EA. 0	m2 0.00				m ~~30.3~~			m ~~30.3~~					kg ~~47.0~~			EA. 7	kg ~~314.1~~				EA. 0	EA. 0	kg 0					

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

PROJECT NAME: ST. JOHNSBURY-LYNDON
PROJECT NUMBER: HES 091-3(42)

FILE NAME:	tsssSJ.xls	PLOT DATE:	1/4/2007
PROJECT LEADER:	CRB	DRAWN BY:	HJC
DESIGNED BY:	PTS	CHECKED BY:	DAM
CLD REF. NO.:	97-0211	SHEET	37 OF 130

STATE OF VERMONT
AGENCY OF TRANSPORTATION

TRAFFIC SIGN SUMMARY SHEET 10

Metric

MILE MARKER	SIGN LEGEND	SIGN DIMENSIONS EA	WIDTH (mm)	HEIGHT (mm)	NEW & SALVAGED SIGNS "A"	"B"	SALV SIGN	SALV TIS	EXIST POST RETAIN	EXIST POST SALVAGE	NEW SIGN POSTS NO. OF POSTS	FLANGED CHANNEL kg/m 1.7	3.0	4.5	SQUARE STEEL (mm) 44 kg/m 3.4	50 kg/m 3.9	63 kg/m 5.0	ANCHOR	SILVL	TUBULAR ALUMINUM DIA (mm) 75 kg/m 1.9	100 2.5	100MD 2.5	TUBULAR STEEL DIA (mm) FND-ATION	75 kg/m 11.3	90 13.6	100 16.1	125 21.8	W-SHAPE STEEL FTG. SIZE 600 mm	750 mm	MASS	POST SIZE	SIGN FRAME	REMARKS	SIGN DETAIL DETAIL ON SHEET NUMBER	STD. SHEET NUMBER
130.750 SB	EXIT 21	1	2400	750	1.80																													E1-5		E-131
	2 St. Johnsbury Montpelier	1	5400	3000		16.20					2																	2		438 ~~481~~	W250X32.7		Bolt Tension 126.3 kN SEE FOOTING DETAIL ON SHEET 3	64	
130.830 SB MED	ONE WAY	1	900	300	0.27						2			8.53 X		X		X															R6-1R		E-142
130.870 SB	NEXT RIGHT	1	3600	3600		12.96					2																	2 MOD		385 ~~374~~	W200X26.6		Bolt Tension 85.7 kN SEE FOOTING DETAIL ON SHEET 3	63	
130.930 SB		1	1200	1200	1.44						2									21.0 X													W4-1		E-150
130.952 SB MED		1	900	900	0.81						2			8.53 X		X		X															R3-4		E-143
131.000 SB	MILE 131	1	300	1200	0.36						1			3.51 X		X		X															D10-3		E-139
131.040 SB	EXIT 21	1	2400	750	1.80																												E1-5		E-131
	2 St. Johnsbury Montpelier 1/2 MILE	1	5400	3450		18.63					2																	2 MOD		426 ~~462~~	W250X32.7		Bolt Tension 126.3 kN SEE FOOTING DETAIL ON SHEET 3	63	
131.236 SB	Danville Hardwick EXIT 21	1	3150	2250		7.09					2												2				209.3 ~~X~~							63	
131.470 SB	BRIDGE 89 I-91	1	150	250	0.04						1		2.44 X			X			X															VD-701	70	
131.540 SB	EXIT 21	1	2400	750	1.80																												E1-5		E-131
	2 St. Johnsbury Montpelier 1 MILE	1	5400	3600		19.44					2																	2		363 ~~385~~	W200X31.3		Bolt Tension 150.6 kN	63	
131.702 SB MED		1	900	900	0.81						2			8.53 X		X		X															R3-4		E-143
131.843 SB	SPEED LIMIT 65	1	1200	1500	1.80																												R2-1		E-142
	MINIMUM 40	1	1200	1200	1.44						2												2	131.8 X									VR-141		E-142
											m 0.0	m ~~2.6~~ 2.44	m ~~30.2~~ 29.1		m 0.0	m 2.6	m 30.2		EA. 0	kg ~~22.5~~ 21.0	kg 0.0	kg 0.0		kg ~~135.6~~ 131.8	kg 0.0	kg 0.0	kg ~~217.0~~ 209.3								
											31.54				0					21.0				341.1				4+4		1612					
	SHEET TOTALS		m2 12.37	m2 74.32	EA. 0	m2 0.00					m ~~32.8~~				m ~~32.8~~					21.0 kg ~~22.5~~			EA. 4	kg ~~352.6~~				EA. 8	EA. 0	kg ~~1682~~					

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

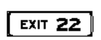
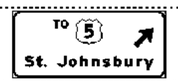
PROJECT NAME: ST. JOHNSBURY-LYNDON
PROJECT NUMBER: HES 091-3(42)

FILE NAME:	tsssStJ.xls	PLOT DATE:	1/4/2007
PROJECT LEADER:	CRB	DRAWN BY:	HJC
DESIGNED BY:	PTS	CHECKED BY:	DAM
CLD REF. NO.:	97-0211	SHEET	38 OF 130

STATE OF VERMONT
AGENCY OF TRANSPORTATION

TRAFFIC SIGN SUMMARY SHEET 11

Metric

MILE MARKER	SIGN LEGEND	SIGN DIMENSIONS EA	WIDTH (mm)	HEIGHT (mm)	NEW & SALVAGED SIGNS "A"	"B"	SALV SIGN	SALV TIS	EXIST POST RETAIN	EXIST POST SALVAGE	NEW SIGN POSTS NO. OF POSTS	FLANGED CHANNEL kg/m 1.7	3.0	4.5	SQUARE STEEL (mm) kg/m 44 3.4	50 3.9	63 5.0	ANCHOR	SLEEVE	TUBULAR ALUMINUM DIA (mm) kg/m 75 1.9	100 2.5	100MD 2.5	TUBULAR STEEL DIA (mm) kg/m FND-ATION	75 11.3	90 13.6	100 16.1	125 21.8	W-SHAPE STEEL FTG. SIZE 500 mm	750 mm	MASS	POST SIZE	SIGN FRAME	REMARKS	SIGN DETAIL DETAIL ON SHEET NUMBER	STD. SHEET NUMBER
131.938 SB		1	1200	1200	1.44																												VW-397	69	
		1	600	450	0.27						2												2	99.9 X								VP-396	69	
132.000 SB		1	300	1200	0.36						1			3.66 X		X		X														D10-3		E-139
132.032 SB		1	750	375	0.28																												M3-3		E-135
		1	900	900	0.81																												M1-1		E-135
		1	900	900	0.81						1												1	52.5 X								M1-10		E-135
132.108 SB		1	1200	900	1.08						2									19.54 X												R8-7		E-142
132.375 SB MED		1	900	300	0.27						2			8.53 X		X		X														R8-1R		E-142
132.502 SB		1	1200	1200	1.44						2												2	93.0 X								W4-1		E-150
132.592 SB		1	150	250	0.04						1		2.44 X			X		X														VD-701	70	
132.765 SB		1	1800	1500		2.70					2												2	96.4 X								E5-1a		E-131
132.770 SB		1	450	450	0.20						1		2.44 X			X		X														OM-1		E-150
132.950 SB		1	2400	750	1.80																												E1-5		E-131
		1	5400	2400		12.96					2																		2		292 ~~307~~	W200X26.6		Bolt Tension 85.4 kN	64	
133.000 SB		1	300	1200	0.36						1			3.66 X		X		X														D10-3		E-139
133.035 SB		1	150	250	0.04						1		2.44 X			X		X														VD-701 NOT SHOWN ON PLANS.	70	
133.085 SB		1	3600	3600		12.96					2																		2 MOD		~~387~~ ~~397~~	W200X26.6		Bolt Tension 86.7 kN SEE FOOTING DETAIL ON SHEET 3	64	
												m 0.0	m ~~7.9~~ 7.32	m ~~15.0~~ 15.85	m 0.0	m 7.9	m 15.0		EA. 0	kg ~~22.8~~	kg 0.0	kg 0.0		kg ~~310.7~~ 341.8	kg 0.0	kg 0.0	kg 0.0							
													23.17			0												2+2		679					
	SHEET TOTALS	m2 9.20	m2 28.62	EA. 0	m2 0.00							m ~~22.9~~			m ~~22.9~~					19.54 kg ~~22.8~~			EA. 7	341.8 kg ~~310.7~~				EA. 4	EA. 0	kg ~~704~~					

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

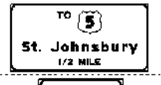
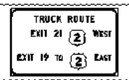
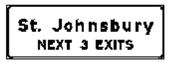
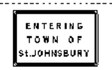
PROJECT NAME: ST. JOHNSBURY-LYNDON
PROJECT NUMBER: HES 091-3(42)

FILE NAME	tsssSIJ.xls	PLOT DATE	1/4/2007
PROJECT LEADER:	CRB	DRAWN BY:	HJC
DESIGNED BY:	PTS	CHECKED BY:	DAM
CLD REF. NO.:	97-0211	SHEET	39 OF 130

STATE OF VERMONT
AGENCY OF TRANSPORTATION

TRAFFIC SIGN SUMMARY SHEET 12

Metric

MILE MARKER	SIGN LEGEND	SIGN DIMENSIONS EA	WIDTH (mm)	HEIGHT (mm)	NEW & SALVAGED SIGNS "A"	"B"	SALV SIGN	SALV TIS	EXIST POST RETAIN	EXIST POST SALVAGE	NEW SIGN POSTS NO. OF POSTS	FLANGED CHANNEL kg/m 1.7	3.0	4.5	SQUARE STEEL (mm) 44 kg/m 3.4	50 kg/m 3.9	63 kg/m 5.0	ANCHOR	SLEEVE	TUBULAR ALUMINUM DIA (mm) 75 kg/m 1.9	100 kg/m 2.5	100MD kg/m 2.5	TUBULAR STEEL DIA(mm) FND-ATION	75 kg/m 11.3	90 kg/m 13.6	100 kg/m 16.1	125 kg/m 21.8	W-SHAPE STEEL FTG. SIZE 600 mm	750 mm	MASS	POST SIZE	SIGN FRAME	REMARKS	SIGN DETAIL DETAIL ON SHEET NUMBER	STD. SHEET NUMBER
133.172 SB MED		1	900	900	0.81						2			8.534 X		X		X															R3-4		E-143
133.235 SB		1	2400	750	1.80																												E1-5		E-131
		1	5400	2700		14.58					2																	2		279 ~~288~~	W200X26.6		Bolt Tension 93 kN SEE FOOTING DETAIL ON SHEET 3	64	
133.385 SB		1	2850	2100		5.99					2												2				201.0 ~~X~~						64	
133.500 SB		1	4050	2550		10.33					2																	2		243 ~~251~~	W150X22.5		Bolt Tension 85.4 kN	67	
133.691 SB		1	2400	750	1.80																												E1-5		E-131
		1	5400	2850		15.39					2																	2 MOD		300 ~~301~~	W200X26.6		Bolt Tension 102.5 kN SEE FOOTING DETAIL ON SHEET 3	64	
133.950 SB		1	4350	1500		6.53					2																							67	
134.000 SB		1	300	1200	0.36						1			3.66 X		X		X															D10-3		E-139
134.085 SB		1	150	250	0.04						1		2.44 X			X		X															VD-701	70	
134.113 SB MED		1	900	900	0.81						2			8.53 X		X		X															R3-4		E-143
135.000 SB		1	300	1200	0.36						1			3.66 X		X		X															D10-3		E-139
135.850 SB		1	900	600	0.54						2			8.53 X 8.53		X		X															I-2		E-131
135.925 SB		1	1200	1500	1.80						2												2	94.72 X									VR-132	69	
136.000 SB		1	300	1200	0.36						1			3.66 X		X		X															D10-3		E-139
SHEET TOTALS		m2 8.68	m2 52.82	EA. 0	m2 0.00						EA. 0	m 0.0	~~2.6~~ 2.44	~~40.8~~ 45.104	m 0.0	2.6	40.8		EA. 0	kg 0.0	0.0	0.0		kg ~~97.2~~ 94.72	0.0	0.0	~~407.0~~ 390.4	4+2		~~822~~					
												m ~~43.4~~ 47.544			m ~~43.4~~ 0					kg 0.0			EA. 6	kg ~~504.2~~ 485.1				EA. 6	EA. 0	kg ~~840~~					

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

PROJECT NAME: ST. JOHNSBURY-LYNDON
PROJECT NUMBER: HES 091-3(42)

FILE NAME:	tsssStJ.xls	PLOT DATE:	1/4/2007
PROJECT LEADER:	CRB	DRAWN BY:	HJC
DESIGNED BY:	PTS	CHECKED BY:	DAM
CLD REF. NO.:	97-0211	SHEET	40 OF 130

STATE OF VERMONT
AGENCY OF TRANSPORTATION

TRAFFIC SIGN SUMMARY SHEET 13

Metric

MILE MARKER	SIGN LEGEND	SIGN DIMENSIONS EA	WIDTH (mm)	HEIGHT (mm)	NEW & SALVAGED SIGNS "A"	"B"	SALV SIGN	SALV TIS	EXIST POST RETAIN	EXIST POST SALVAGE	NEW SIGN POSTS NO. OF POSTS	FLANGED CHANNEL kg/m 1.7	3.0	4.5	SQUARE STEEL (mm) kg/m 44 3.4	50 3.9	63 5.0	ANCHOR	SLEEVE	TUBULAR ALUMINUM DIA (mm) kg/m 75 1.9	100 2.5	100MD 2.5	TUBULAR STEEL DIA (mm) kg/m FND-ATION	75 11.3	90 13.6	100 16.1	125 21.8	W-SHAPE STEEL FTG. SIZE 600 mm	750 mm	MASS	POST SIZE	SIGN FRAME	REMARKS	SIGN DETAIL DETAIL ON SHEET NUMBER	STD. SHEET NUMBER
136.166 SB MED		1	900	900	0.81						2			8.53 X		X		X															R3-4		E-143
136.175 SB		1	3600	900		3.24					2												2			164.4 X								67	
136.270 SB		1	1200	1500	1.80																												R2-1		E-142
		1	1200	1200	1.44						2												2	119.69 X									VR-141		E-142
136.365 SB		1	1200	1200	1.44																													69	
		1	600	450	0.27						2												2	100.8 X									W7-3a		E-152
136.365 SB MED		1	1200	1200	1.44																													69	
		1	600	450	0.27						2												2	99.02 X									W7-3a		E-152
136.460 SB		1	1200	1200	1.44																													69	
		1	600	450	0.27						2												2	95.47 X									VP-396		69	
136.560 SB		1	750	375	0.28																												M3-3		E-135
		1	900	900	0.81																												M1-1		E-135
		1	900	900	0.81						1												1	49.94 X									M1-10		E-135
136.625 SB		1	150	250	0.04						1		2.44 X		X			X															VD-701		70	
136.670 SB		1	1200	900	1.08						2										18.67 X													R8-7		E-142
137.000 SB		1	300	1200	0.36						1			3.66 X		X		X															D10-3		E-139
											m 0.0	m 2.6 ~~2.6~~ 2.44	m 13.8 ~~13.8~~ 12.19		m 0.0	m 2.6	m 13.8		EA. 0	kg ~~22.8~~ 18.67	kg 0.0	kg 0.0		kg ~~452.1~~ 464.92	kg 0.0	kg ~~155.8~~ 164.4	kg 0.0							
													14.63				0				~~22.8~~				629.32									
		SHEET TOTALS	m2 12.56	m2 3.24	EA. 0	m2 0.00					m ~~16.4~~				m ~~16.4~~					18.67 kg ~~22.8~~			EA. 11	kg ~~607.9~~				EA. 0	EA. 0	kg 0					

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

PROJECT NAME: ST. JOHNSBURY-LYNDON
PROJECT NUMBER: HES 091-3(42)

FILE NAME:	tsssSTJ.xls	PLOT DATE:	1/4/2007
PROJECT LEADER:	CRB	DRAWN BY:	HJC
DESIGNED BY:	PTS	CHECKED BY:	DAM
CLD REF. NO.:	97-0211	SHEET	41 OF 130

STATE OF VERMONT
AGENCY OF TRANSPORTATION

TRAFFIC SIGN SUMMARY SHEET 14

Metric

MILE MARKER	SIGN LEGEND	SIGN DIMENSIONS EA	WIDTH (mm)	HEIGHT (mm)	NEW & SALVAGED SIGNS "A"	"B"	SALV SIGN	SALV TIS	EXIST POST RETAIN	EXIST POST SALVAGL	NEW SIGN POSTS NO. OF POSTS	FLANGED CHANNEL kg/m 1.7	3.0	4.5	SQUARE STEEL (mm) 44 kg/m 3.4	60 kg/m 3.9	63 kg/m 5.0	ANCHOR	SILVL	TUBULAR ALUMINUM DIA (mm) 75 kg/m 1.9	100 kg/m 2.5	100MD kg/m 2.5	TUBULAR STEEL DIA (mm) END-ATION	76 kg/m 11.3	90 kg/m 13.6	100 kg/m 16.1	125 kg/m 21.8	W-SHAPE STEEL FTG. SIZE 600 mm	750 mm	MASS	POST SIZE	SIGN FRAME	REMARKS	SIGN DETAIL DETAIL ON SHEET NUMBER	STD. SHEET NUMBER
137.165 SB	BRIDGE 93-S I-91	1	150	250	0.04						1		2.44 X		X			X																VD-701	70	
137.178 SB MED	ONE WAY	1	900	300	0.27						2			8.53 X		X		X																R6-1R		E-142
137.280 SB		1	1200	1200	1.44						2												2	99.02 X								W4-1		E-150
137.316 SB	EXIT 23	1	1800	1500		2.70					2												2	105.9 X								E5-1a		E-131
137.318 SB		1	450	450	~~0.20~~ 0.40						1		2.44 X 2.44		X			X																OM-1 SIGN KNOCKED DOWN NEW SIGN INSTALLED		E-150
137.330 SB	RAMP 40 M.P.H.	1	1200	1500	1.80						2												2	96.44 X								W13-3		E-150
137.350 SB	BRIDGE 94 I-91	1	150	250	0.04						1		2.44 X		X			X																VD-701	70	
137.400 SB	EXIT 23	1	2400	750	1.80																												E1-5		E-131
	5 Lyndonville	1	4500	2400		10.80					2																		2		278 ~~261~~	W200X26.6		Bolt Tension 85.4 kN	67	
137.614 SB	NEXT RIGHT	1	3600	3600		12.96					2																		2		341 ~~353~~	W200X26.6		Bolt Tension 85.4 kN (MOD)	65	
137.764 SB	EXIT 23	1	2400	750	1.80																												E1-5		E-131
	5 Lyndonville 1/2 MILE	1	4500	2700		12.15					2																		2		287 ~~294~~	W200X26.6		Bolt Tension 85.4 kN (MOD)	68	
137.940 SB MED		1	900	900	0.81						2			8.53 X		X		X																R3-4		E-143
138.000 SB	MILE 1 3 8	1	300	1200	0.36						1			3.66 X		X		X																D10-3		E-139
138.010 SB	Lyndon State College EXIT 23	1	4200	2100		8.82					2																		2		132 ~~117~~	W150X13.5		Bolt Tension 53.4 kN	66	
					8.76							m 0.0	m ~~7.9~~ 9.76	m ~~21.6~~ 20.72	m 0.0	m 7.9	m 21.6		EA. 0	kg 0.0	kg 0.0	kg 0.0		kg ~~262.1~~ 301.36	kg 0.0	kg 0.0	kg 0.0			1038					
												30.48			0									301.36											
	SHEET TOTALS		m2	m2	~~8.56~~	47.43	EA. 0	m2 ~~0.00~~				m ~~29.5~~			m ~~29.5~~					kg 0.0			EA. 6	kg ~~262.1~~				EA. 8	EA. 0	kg ~~1025~~					

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

PROJECT NAME: ST. JOHNSBURY-LYNDON
PROJECT NUMBER: HES 091-3(42)

FILE NAME:	tsssSTJ.xls	PLOT DATE:	1/4/2007
PROJECT LEADER:	CRB	DRAWN BY:	HJC
DESIGNED BY:	PTS	CHECKED BY:	DAM
CLD REF. NO.:	97-0211	SHEET	42 OF 130

STATE OF VERMONT
AGENCY OF TRANSPORTATION

TRAFFIC SIGN SUMMARY SHEET 15

Metric

MILE MARKER	SIGN LEGEND	SIGN DIMENSIONS EA	WIDTH (mm)	HEIGHT (mm)	NEW & SALVAGED SIGNS "A"	"B"	SALV SIGN	SALV TIS	EXIST POST RETAIN	EXIST POST SALVAGE	NEW SIGN POSTS NO. OF POSTS	FLANGED CHANNEL kg/m 1.7	3.0	4.5	SQUARE STEEL (mm) kg/m 44 3.4	50 3.9	63 5.0	ANCHOR	SLEEVE	TUBULAR ALUMINUM DIA (mm) kg/m 75 1.9	100 2.5	100MD 2.5	TUBULAR STEEL DIA (mm) FND-ATION	kg/m 75 11.3	90 13.6	100 16.1	125 21.8	W-SHAPE STEEL FTG. SIZE 600 mm	750 mm	MASS	POST SIZE	SIGN FRAME	REMARKS	SIGN DETAIL DETAIL ON SHEET NUMBER	STD. SHEET NUMBER
138.230 SB	EXIT 23	1	2400	750	1.80																												E1-5		E-131
	5 Lyndonville 1 MILE	1	4500	2850		12.83					2																	2		335 ~~287~~	W200X26.6		Bolt Tension 87.5 kN SEE FOOTING DETAIL ON SHEET 3	68	
138.824 SB	BRIDGE 95-S I-91	1	150	250	0.04						1		2.44 X		X			X														VD-701	70	
139.000 SB	MILE 1 3 9	1	300	1200	0.36						1			3.66 X		X		X														D10-3		E-139
139.000 SB	KEEP RIGHT EXCEPT TO PASS	1	1200	1500	1.80						2									22.3 X												VR-132	69	
139.250 SB	Lyndonville 2 St. Johnsbury 11	1	3150	900		2.84					2												2	103.3 X									68	
139.635 SB	SPEED LIMIT 65	1	1200	1500	1.80																											R2-1		E-142
	MINIMUM 40	1	1200	1200	1.44						2												2	116.24 X								VR-141		E-142
139.730 SB		1	1200	1200	1.44																											VW-397	69	
	CROSSED SHOULDER	1	600	450	0.27						2												2	89.55 X								VP-396	69	
139.804 SB MED		1	900	900	0.81						2			8.53 X		X		X														R3-4		E-143
139.824 SB	SOUTH	1	750	375	0.28																											M3-3		E-135
	INTERSTATE 91	1	900	900	0.81																											M1-1		E-135
	EISENHOWER INTERSTATE SYSTEM	1	900	900	0.81						1												1	51.6 X								M1-10		E-135
139.900 SB	EMERGENCY STOPPING ONLY	1	1200	900	1.08						2									20.27 X												R8-7		E-142
139.965 SB	BRIDGE 96-S I-91	1	150	250	0.04						1			2.44 X		X		X														VD-701	70	
												m 0.0	m ~~2.6~~ 2.44	m ~~16.4~~ 14.63	m 0.0	m 2.6	m 16.4		EA. 0	kg ~~47.5~~	kg 0.0	kg 0.0		kg ~~347.7~~ 360.69	kg 0.0	kg 0.0	kg 0.0							
												17.07			0					42.57				360.69										
	SHEET TOTALS	m2 12.78	m2 15.67	EA. 0	m2 0.00							m ~~19.0~~			m ~~19.0~~					kg ~~47.5~~			EA. 7	kg ~~347.7~~				EA. 2	EA. 0	kg ~~287~~ 335					

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

PROJECT NAME: ST. JOHNSBURY-LYNDON
PROJECT NUMBER: HES 091-3(42)

FILE NAME:	tsssTJ.xls	PLOT DATE:	1/4/2007
PROJECT LEADER:	CRB	DRAWN BY:	HJC
DESIGNED BY:	PTS	CHECKED BY:	DAM
CLD REF. NO.:	97-0211	SHEET	43 OF 130

STATE OF VERMONT
AGENCY OF TRANSPORTATION

TRAFFIC SIGN SUMMARY SHEET 16

Metric

MILE MARKER	SIGN LEGEND	SIGN DIMENSIONS EA	WIDTH (mm)	HEIGHT (mm)	NEW & SALVAGED SIGNS "A"	"B"	SALV SIGN	SALV TIS	EXIST POST RETAIN	EXIST POST SALVAGE	NEW SIGN POSTS NO. OF POSTS	FLANGED CHANNEL kg/m 1.7	3.0	4.5	SQUARE STEEL (mm) 44 kg/m 3.4	60 kg/m 3.9	63 kg/m 5.0	ANCHOR	SILVL	TUBULAR ALUMINUM DIA (mm) 75 kg/m 1.9	100 kg/m 2.5	100MD kg/m 2.5	TUBULAR STEEL DIA (mm) FND-ATION	75 kg/m 11.3	90 kg/m 13.6	100 kg/m 16.1	125 kg/m 21.8	W-SHAPE STEEL FTG. SIZE 600 mm	750 mm	MASS	POST SIZE	SIGN	FRAME	REMARKS	SIGN DETAIL DETAIL ON SHEET NUMBER	STD. SHEET NUMBER
INT.#21 0.080 RAMP A RT		1	900	900	0.81																													VR-046		E-142
		1	900	900	0.81						2												2	94.72 X									VR-002		E-142
0.130 RAMP A RT		1	900	1200	1.08						2			9.76 X		X		X															W13-3		E-150
0.505 RAMP A RT		1	600	600	0.36						1			4.27 X		X		X															R3-2		E-143
INT. #21 0.035 -0.127 LT RAMP B		7	450	600	1.89						7			29.87 X		X		X															W1-8		E-150
0.038 RAMP B RT		1	900	900	0.81																													VR-046		E-142
		1	900	900	0.81						2									22.3 X														VR-002		E-142
0.140 RAMP B RT		1	600	600	0.36						1			4.88 X		X		X															R3-2		E-143
INT.#21 0.033 -0.182 LT RAMP C		9	450	600	2.43						9			38.43 X		X		X															W1-8		E-150
0.079 RAMP C RT		1	900	900	0.81						1			9.15 X		X		X															W3-1a		E-150
0.117 RAMP C RT		1	600	300	0.18																													M3-4		E-136A
		1	600	300	0.18																													M3-2		E-136A
		1	600	600	0.36																													M1-4		E-136A
		1	600	600	0.36																													M1-4		E-136A
		1	525	375	0.20						2			9.76 X		X		X														#2	M5-1		E-136A
		1	525	375	0.20																													M6-2		E-136A
0.155 RAMP C RT		1	1800	300	0.54																													D1-1a		E-123
		1	1800	300	0.54																													D1-1a		E-123
		1	1800	300	0.54						2												2	87.8 X									D1-1a		E-123
		1	1800	300	0.54																													D1-1a		E-123
0.193 RAMP C LT		1	900	600	0.54																													R5-1a		E-143
		1	600	600	0.36						2			9.15 X		X		X															R9-4a		E-143
												m 0.0	m 0.0	m ~~105.9~~ 115.27	m 0.0	m 0.0	m 105.9		EA. 0	kg ~~23.2~~ 22.3	kg 0.0	kg 0.0		kg ~~179.8~~ 182.52	kg 0.0	kg 0.0	kg 0.0								
												115.27			0					22.3				182.52												
		SHEET TOTALS	m2 14.71	m2 0.00	EA. 0	m2 0.00						m ~~105.9~~			m ~~105.9~~					22.3 ~~23.2~~ kg			EA. 4	kg ~~179.8~~				EA. 0	EA. 0	kg 0						

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

PROJECT NAME: ST. JOHNSBURY-LYNDON
PROJECT NUMBER: HES 091-3(42)

FILE NAME:	tsssStJ.xls	PLOT DATE:	1/4/2007
PROJECT LEADER:	CRB	DRAWN BY:	HJC
DESIGNED BY:	PTS	CHECKED BY:	DAM
CLD REF. NO.:	97-0211	SHEET	44 OF 130

STATE OF VERMONT
AGENCY OF TRANSPORTATION

TRAFFIC SIGN SUMMARY SHEET 17

Metric

MILE MARKER	SIGN LEGEND	SIGN DIMENSIONS EA	WIDTH (mm)	HEIGHT (mm)	NEW & SALVAGED SIGNS "A"	"B"	SALV SIGN	SALV TIS	EXIST POST RETAIN	EXIST POST SALVAGE	NEW SIGN POSTS NO. OF POSTS	FLANGED CHANNEL kg/m 1.7	FLANGED CHANNEL kg/m 3.0	FLANGED CHANNEL kg/m 4.5	SQUARE STEEL (mm) 44 kg/m 3.4	SQUARE STEEL (mm) 50 kg/m 3.9	SQUARE STEEL (mm) 63 kg/m 5.0	ANCHOR	SILVL	TUBULAR ALUMINUM DIA (mm) 75 kg/m 1.9	TUBULAR ALUMINUM DIA (mm) 100 kg/m 2.5	TUBULAR ALUMINUM DIA (mm) 100MD kg/m 2.5	TUBULAR STEEL DIA (mm) FND-ATION	TUBULAR STEEL DIA (mm) 75 kg/m 11.3	TUBULAR STEEL DIA (mm) 90 kg/m 13.6	TUBULAR STEEL DIA (mm) 100 kg/m 16.1	TUBULAR STEEL DIA (mm) 125 kg/m 21.8	W-SHAPE STEEL FTG. SIZE 600 mm	W-SHAPE STEEL FTG. SIZE 750 mm	W-SHAPE STEEL MASS	W-SHAPE STEEL POST SIZE	SIGN FRAME	REMARKS	SIGN DETAIL DETAIL ON SHEET NUMBER	SIGN DETAIL STD. SHEET NUMBER
0.193 RAMP C RT	GAS/DIESEL 24 Hrs 2 / WRONG WAY	1	~~1800~~ 1370	~~250~~ 190	~~0.45~~ 0.26																											VD-502G BACK TO BACK		E-133
		1	900	600	0.54																											R5-1a		E-143
	FOOD 2 / LODGING 1	1	~~1800~~ 1370	~~250~~ 190	~~0.45~~ 0.26																											VD-502F		E-133
		1	1370 ~~1800~~	190 ~~250~~	0.26 ~~0.45~~																											VD-502L		E-133
	INFORMATION 1 / ← 5 CAMPING	1	~~1800~~ 1370	~~250~~ 190	~~0.45~~ 0.26						2												2	96.4 X								VD-502I		E-133
		1	1370 ~~1800~~	190 ~~250~~	0.26 ~~0.45~~																											VD-502C		E-133
0.243 RAMP C LT		~~1~~	~~600~~	~~300~~	~~0.18~~																											M3-4		E-136A
		1	450	450	0.20						1		2.44 X			X			X													OM-1		E-150
0.244 RAMP C RT	WEST EAST	1	600	300	0.18																											M3-4		E-136A
		1	600	300	0.18																											M3-2		E-136A
	2 2	1	600	600	0.36																											M1-4		E-136A
		1	600	600	0.36																											M1-4		E-136A
		1	525	375	0.20						2		9.76 X			X			X													M6-1		E-136A
		1	525	375	0.20																										#2	M6-2		E-136A
INT.#21 0.029 -0.14 LT RAMP D		9	450	600	2.43						9		38.43 X			X			X													W1-8		E-150
0.031 RAMP D RT		1	900	900	0.81						~~4~~ 2		9.15 X			X			X													W3-1a		E-150
		1	600	300	0.18																											M3-2		E-136A
0.069 RAMP D RT	EAST WEST	1	600	300	0.18																											M3-4		E-136A
	2 2	1	600	600	0.36																											M1-4		E-136A
		1	600	600	0.36																											M1-4		E-136A
		1	525	375	0.20						2		9.76 X			X			X												#2	M5-1		E-136A
		1	525	375	0.20																											M6-2		E-136A
0.107 RAMP D RT	← ST. JOHNSBURY 1	1	1800	300	0.54																											D1-1a		E-123
	DANVILLE 7 /	1	1800	300	0.54																											D1-1a		E-123
	HARDWICK 23 /	1	1800	300	0.54						2												2	92.99 X								D1-1a		E-123
	MONTPELIER 36 /	1	1800	300	0.54																											D1-1a		E-123
0.145 RAMP D LT	WRONG WAY	1	900	600	0.54																											R5-1a		E-143
		1	600	600	0.36						2		8.54 X			X			X													R9-4a		E-143
												m 0.0	m ~~2.7~~ 2.44	m ~~66.5~~ 75.64	m 0.0	m 2.7	m 66.5		EA. 0	kg 0.0	kg 0.0	kg 0.0		kg ~~171.9~~ 189.39	kg 0.0	kg 0.0	kg 0.0								
													78.08			0									189.39											
		SHEET TOTALS	m2 ~~12.43~~ 11.30	m2 0.00	EA. 0	m2 0.00						m ~~69.2~~ 78.08			m ~~69.2~~ 0					kg 0.0			EA. 4	kg ~~171.9~~ 189.39				EA. 0	EA. 0	kg 0					

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

PROJECT NAME: ST. JOHNSBURY-LYNDON
PROJECT NUMBER: HES 091-3(42)

FILE NAME:	tsssStJ.xls	PLOT DATE:	1/4/2007
PROJECT LEADER:	CRB	DRAWN BY:	HJC
DESIGNED BY:	PTS	CHECKED BY:	DAM
CLD REF. NO.:	97-0211	SHEET	45 OF 130

STATE OF VERMONT
AGENCY OF TRANSPORTATION

TRAFFIC SIGN SUMMARY SHEET 18

Metric

MILE MARKER	SIGN LEGEND	SIGN DIMENSIONS EA	WIDTH (mm)	HEIGHT (mm)	NEW & SALVAGED SIGNS "A"	"B"	SALV SIGN	SALV TIS	EXIST POST RETAIN	EXIST POST SALVAGE	NEW SIGN POSTS NO. OF POSTS	FLANGED CHANNEL kg/m 1.7	FLANGED CHANNEL kg/m 3.0	FLANGED CHANNEL kg/m 4.6	SQUARE STEEL (mm) 44 kg/m 3.4	SQUARE STEEL (mm) 50 kg/m 3.9	SQUARE STEEL (mm) 63 kg/m 5.0	ANCHOR	SLIP	TUBULAR ALUMINUM DIA (mm) 75 kg/m 1.9	TUBULAR ALUMINUM DIA (mm) 100 kg/m 2.5	TUBULAR ALUMINUM DIA (mm) 100MD kg/m 2.5	TUBULAR STEEL DIA (mm) FNDATION	TUBULAR STEEL DIA (mm) 75 kg/m 11.3	TUBULAR STEEL DIA (mm) 90 kg/m 13.6	TUBULAR STEEL DIA (mm) 100 kg/m 16.1	TUBULAR STEEL DIA (mm) 125 kg/m 21.8	W-SHAPE STEEL FTG. SIZE 600 mm	W-SHAPE STEEL FTG. SIZE 750 mm	W-SHAPE STEEL MASS	W-SHAPE STEEL POST SIZE	SIGN FRAME	REMARKS	SIGN DETAIL DETAIL ON SHEET NUMBER	SIGN DETAIL STD. SHEET NUMBER
0.145 RAMP D RT	← 2 GAS/DIESEL 24 Hrs WRONG WAY	1	~~1800~~ 1370	~~250~~ 190	~~0.45~~ 0.26																												VD-502G BACK TO BACK R5-1a		E-133 E-143
	← 2 FOOD ← 1 LODGING	1	~~1800~~ 1370 1370	~~250~~ 190 190	~~0.45~~ 0.26 0.26																												VD-502F VD-502L		E-133 E-133
	← 1 INFORMATION CAMPING 5 ➚	1	~~1800~~ 1370 1370	~~250~~ 190 190	~~0.45~~ 0.26 0.26						2												2	92.99 X									VD-502I VD-502C		E-133 E-133
0.192 RAMP D LT		1	450	450	0.20						1		2.44 X		X			X															OM-1		E-150
0.193 RAMP D LT	EAST WEST	1	600	300	0.18																												M3-2 M3-4		E-136A E-136A
	2 2	1	600	600	0.36																												M1-4 M1-4		E-136A E-136A
		1	525	375	0.20						2			9.76 X		X		X															M6-1 M6-2	#2	E-136A E-136A
0.233 RAMP D RT	YIELD	1			0.35						1			4.27 X		X		X															R1-2 900X900X900		E-146
INT.#21 0.034 -0.187 LT RAMP E		11	450	600	2.97						11			46.97 X		X		X															W1-8		E-150
0.041 RAMP E RT		1	900	900	0.81																												VR-046		E-142
		1	900	900	0.81						2										22.6 X												VR-002		E-142
0.200 RAMP E RT		1	600	600	0.36						1			4.27 X		X		X															R3-2		E-143
INT.#21 0.073 RAMP F RT		1	900	900	0.81																												VR-046		E-142
		1	900	900	0.81						2												2	98.16 X									VR-002		E-142
0.365 RAMP F RT		1	600	600	0.36						1			4.27 X		X		X															R3-2		E-143
INT.#21 0.039 RAMP G LT	STOP END ROAD CLOSED	1	750	750	0.56																												R1-1 BACK TO BACK R5-1		E-143 E-143
	ONE WAY ONE WAY	1	900	300	0.27						1			4.27 X		X		X															R6-1L		E-142
												m 0.0	m ~~2.7~~ 2.44	m ~~69.0~~ 73.81	m 0.0	m 2.7	m 69.0		EA. 0	kg ~~23.2~~ 22.6	kg 0.0	kg 0.0		kg ~~177.5~~ 191.15	kg 0.0	kg 0.0	kg 0.0								
													76.25			0								191.15											
SHEET TOTALS			m2 ~~13.14~~ 12.19	m2 0.00	EA. 0	m2 0.00						m ~~71.7~~ 76.25			m ~~71.7~~ 0					22.6 kg ~~23.2~~			EA. 4	kg ~~177.5~~ 191.15				EA. 0	EA. 0	kg 0					

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

PROJECT NAME: ST. JOHNSBURY-LYNDON
PROJECT NUMBER: HES 091-3(42)

FILE NAME:	tsssSJ.xls	PLOT DATE:	1/4/2007
PROJECT LEADER:	CRB	DRAWN BY:	HJC
DESIGNED BY:	PTS	CHECKED BY:	DAM
CLD REF. NO.:	97-0211	SHEET	46 OF 130

STATE OF VERMONT
AGENCY OF TRANSPORTATION

TRAFFIC SIGN SUMMARY SHEET 19

Metric

MILE MARKER	SIGN LEGEND	SIGN DIMENSIONS EA	WIDTH (mm)	HEIGHT (mm)	NEW & SALVAGED SIGNS "A"	"B"	SALV SIGN	SALV TIS	EXIST POST RETAIN	EXIST POST SALVAGE	NEW SIGN POSTS NO. OF POSTS	FLANGED CHANNEL kg/m 1.7	3.0	4.5	SQUARE STEEL (mm) kg/m 44 1.4	50 3.9	63 5.0	ANCHOR	SIFFVL	TUBULAR ALUMINUM DIA (mm) kg/m 75 1.9	100 2.5	100MD 2.5	TUBULAR STEEL DIA (mm) kg/m FND-ATION	75 11.3	90 13.6	100 16.1	125 21.8	W-SHAPE STEEL FTG. SIZE 600 mm	750 mm	MASS	POST SIZE	SIGN FRAME	REMARKS	SIGN DETAIL DETAIL ON SHEET NUMBER	STD. SHEET NUMBER
0.039 RAMP G RT	ONE WAY / ONE WAY	1	900	300	0.27																												R6-1R		E-142
		1	900	300	0.27																												BACK TO BACK		
																																	R6-1L		E-142
	STOP / ONE WAY ENTER	1	750	750	0.56																												R1-1		E-143
		1	750	750	0.56																												BACK TO BACK		
																																	R5-1		E-143
	DIVIDED HIGHWAY	1	600	450	0.27						1									9.8 X												R6-3A		
INT #21 0.042 RAMP H LT	STOP / ONE WAY ENTER	1	750	750	0.56																												R1-1		E-143
		1	750	750	0.56																												BACK TO BACK		
																																	R5-1		E-143
	ONE WAY / ONE WAY	1	900	300	0.27																												R6-1L		E-142
		1	900	300	0.27						1			4.27 X		X		X														BACK TO BACK		
																																	R6-1R		E-142
0.042 RAMP H RT	ONE WAY / ONE WAY	1	900	300	0.27																												R6-1R		E-142
		1	900	300	0.27																												BACK TO BACK		
																																	R6-1L		E-142
	STOP / ONE WAY ENTER	1	750	750	0.56																												R1-1		E-143
		1	750	750	0.56																												R5-1		E-143
	DIVIDED HIGHWAY	1	600	450	0.27						1									10.1 ~~X~~												R6-3A		
INT #21 1.630 RTE 2 RT	TRUCK ROUTE 2 EAST VIA I-93 NEXT RIGHT	1	2850	2850		8.12					2												2				234 X						68	
1.683 RTE 2 RT	91 NORTH Newport 1/2 MILE	1	4850	2550		12.37																											68	
	91 SOUTH White River Jct	1	4850	2400		11.64					2																		2	~~663~~ 672	W310X44.5		Bolt Tension 141.8 kN	69	
1.700 RTE 2 LT	DANVILLE 7	1	1800	300	0.54																												D2-1		E-123
	HARDWICK 23	1	1800	300	0.54																												D2-1		E-123
	MONTPELIER 36	1	1800	300	0.54						2												2	89.55 X								D2-1		E-123
1.750 RTE 2 RT		1	450	450	0.20						1		2.44 X			X			X													OM-1		E-150
2.419 RTE 2 RT	SPEED LIMIT 55	1	1200	900	1.08						2			9.76																		ADDED TO PROJECT EXISTING SIGN NOT IN SPEC. WRONG SHEETING		
												m 0.0	m ~~2.7~~ 2.44	m ~~4.1~~ 14.03	m 0.0	m 2.7	m 4.1		EA. 0	kg ~~19.0~~ 19.9	kg 0.0	kg 0.0		kg ~~80.3~~ 89.55	kg 0.0	kg 0.0	kg ~~230.7~~ 234						
					8.42							16.47			0										323.55					672				
	SHEET TOTALS		m2 ~~7.34~~	m2 32.13	EA. 0	m2 0.00						m ~~6.8~~			m ~~6.8~~					19.9	kg ~~19.0~~		EA. 4		kg ~~311.0~~		EA. 0	EA. 2	kg ~~663~~					

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

PROJECT NAME: ST. JOHNSBURY-LYNDON
PROJECT NUMBER: HES 091-3(42)

FILE NAME:	tsssSUJ.xls	PLOT DATE	1/4/2007
PROJECT LEADER:	CRB	DRAWN BY:	HJC
DESIGNED BY:	PTS	CHECKED BY:	DAM
CLD REF. NO.:	97-0211	SHEET	47 OF 130

STATE OF VERMONT
AGENCY OF TRANSPORTATION

TRAFFIC SIGN SUMMARY SHEET 20

Metric

MILE MARKER	SIGN LEGEND	SIGN DIMENSIONS EA	WIDTH (mm)	HEIGHT (mm)	NEW & SALVAGED SIGNS "A"	"B"	SALV SIGN	SALV TIS	EXIST POST RETAIN	EXIST POST SALVAGE	NEW SIGN POSTS NO. OF POSTS	FLANGED CHANNEL kg/m 1.7	3.0	4.5	SQUARE STEEL (mm) kg/m 44 3.4	50 3.9	63 5.0	ANCHOR	SLEEVE	TUBULAR ALUMINUM DIA (mm) kg/m 75 1.9	100 2.5	100MD 2.5	TUBULAR STEEL DIA (mm) kg/m FND-ATION	75 11.3	90 13.6	100 16.1	125 21.8	W-SHAPE STEEL FTG. SIZE 500 mm	750 mm	MASS	POST SIZE	SIGN	FRAME	REMARKS	SIGN DETAIL DETAIL ON SHEET NUMBER	STD. SHEET NUMBER
1.750 RTE 2 LT	SPEED LIMIT 55	1	900	1200	1.08						2			9.76 X		X		X																R2-1		E-142
1.751 RTE 2 RT	SOUTH TO	1	750	375	0.28																													M3-3		E-135
		1	600	300	0.18																													M4-5		E-135
	INTERSTATE 91 INTERSTATE 93	1	900	900	0.81																													M1-1		E-135
		1	900	900	0.81																													M1-1		E-135
		1	525	375	0.20																													M6-2		E-135
											2												2	91.27 X							#2			
		1	525	375	0.20																													M6-2		E-135
1.800 RTE 2 LT	WEST	1	750	375	0.28																													M3-4		E-136A
	2	1	900	900	0.81						1									10.6 X														M1-4		E-136A
1.835 RTE 2 RT	BRIDGE ICES BEFORE ROAD	1	1200	1200	1.44						2												2	95.47 X									W8-13		E-150
1.839 RTE 2 LT	SOUTH TO	1	750	375	0.28																													M3-3		E-135
		1	600	300	0.18																													M4-5		E-135
	INTERSTATE 91 INTERSTATE 93	1	900	900	0.81																													M1-1		E-135
		1	900	900	0.81																													M1-1		E-135
		1	525	375	0.20																													M6-2		E-135
											2												2	86.11 X							#2			
		1	525	375	0.20																													M6-2		E-135
1.840 RTE 2 LT		1	450	450	0.20						1		2.44 X			X			X															OM-1		E-150
1.850 RTE 2 LT	EXIT 30 M.P.H.	1	900	1200	1.08						2			9.76 X		X		X																W13-2		E-150
1.855 RTE 2 RT	WRONG WAY	1	1050	750	0.79						2			8.54 X		X		X																R5-1a BACK TO BACK R3-1		E-143 E-143
		1	900	900	0.81																															
1.855 RTE 2 MED	WRONG WAY	1	1050	750	0.79						2			9.15 X		X		X																R5-1a		E-143
1.870 RTE 2 LT	91 SOUTH White River Jct	1	4850	2400		11.64					2																		2		361 ~~400~~	W200X26.6		Bolt Tension 85.4 kN SEE FOOTING DETAIL ON SHEET 3	69	
1.875 RTE 2 RT	DEN 39M DENTER	1	900	900	0.81						2			9.76 X		X		X																R5-1		E-143
1.875 RTE 2 MED	DEN 39M DENTER	1	900	900	0.81						2			9.76 X		X		X																R5-1		E-143
												m 0.0	m ~~2.7~~ 2.44	m ~~59.7~~ 56.73	m 0.0	m 2.7	m 59.7		EA. 0	kg ~~11.4~~ 10.6	kg 0.0	kg 0.0		kg ~~284.8~~	kg 0.0	kg 0.0	kg 0.0							
													59.17												272.85						361				
SHEET TOTALS		m2 13.86	m2 11.64	EA. 0	m2 0.00			m ~~62.4~~								m ~~62.4~~				10.6 kg ~~11.4~~			EA. 6	kg ~~284.8~~				EA. 2	EA. 0	kg ~~400~~					

FINAL POST LENGTHS ARE TO BE DETERMINED IN THE FIELD.
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PROJECT NAME: ST. JOHNSBURY-LYNDON
PROJECT NUMBER: HES 091-3(42)

FILE NAME	tsssSTJ.xls	PLOT DATE	1/4/2007
PROJECT LEADER:	CRB	DRAWN BY:	HJC
DESIGNED BY:	PTS	CHECKED BY:	DAM
CLD REF. NO.:	97-0211	SHEET	48 OF 130

STATE OF VERMONT
AGENCY OF TRANSPORTATION

TRAFFIC SIGN SUMMARY SHEET 21

Metric

MILE MARKER	SIGN LEGEND	SIGN DIMENSIONS EA	WIDTH (mm)	HEIGHT (mm)	NEW & SALVAGED SIGNS "A"	"B"	SALV SIGN	SALV TIS	EXIST POST RETAIN	EXIST POST SALVAGE	NEW SIGN POSTS NO. OF POSTS	FLANGED CHANNEL kg/m 1.7	3.0	4.5	SQUARE STEEL (mm) kg/m 44 3.4	50 3.9	63 5.0	ANCHOR	SLEEVE	TUBULAR ALUMINUM DIA (mm) kg/m 75 1.9	100 2.5	100MD 2.5	TUBULAR STEEL DIA (mm) FND-ATION	kg/m 75 11.3	90 13.6	100 16.1	125 21.8	W-SHAPE STEEL FTG. SIZE 600 mm	750 mm	MASS	POST SIZE	SIGN FRAME	REMARKS	SIGN DETAIL DETAIL ON SHEET NUMBER	STD. SHEET NUMBER
INT.#21 1.879 RTE 2 MED	STOP	1	750	750	0.56						1			4.27 X		X		X															R1-1		E-143
1.884 RTE 2 LT	ONE WAY	1	900	300	0.27						2			8.53 X		X		X															R6-1L		E-142
1.885 RTE 2 LT	WEST	1	600	300	0.18																											M3-4		E-136A
	2	1	600	600	0.36																											M1-4		E-136A
		1	525	375	0.20						1			X		X		X															M6-1		E-136A
1.890 RTE 2 MED	STOP	1	750	750	0.56																											R1-1		E-143
		1	600	600	0.36						1			4.27 X		X		X															R3-1		E-143
2.068 RTE 2 MED	STOP	1	750	750	0.56																											R1-1		E-143
		1	600	600	0.36						1			4.88 X		X		X															R3-1		E-143
2.075 RTE 2 RT	EAST	1	600	300	0.18																											M3-2		E-136A
	2	1	600	600	0.36																											M1-4		E-136A
		1	525	375	0.20						1			4.88 X		X		X															M6-1		E-136A
2.075 RTE 2 MED	STOP	1	750	750	0.56						1			4.27 X		X		X															R1-1		E-143
2.078 RTE 2 RT	ONE WAY	1	900	300	0.27						2			8.53 X		X		X															R6-1L		E-142
2.080 RTE 2 LT	DO NOT ENTER	1	900	900	0.81						2			9.76 X		X		X															R5-1		E-143
2.080 RTE 2 MED	DO NOT ENTER	1	900	900	0.81						2			9.76 X		X		X															R5-1		E-143
												m 0.0	0.0	m 67.6 59.15	m 0.0	0.0	m 67.6		EA. 0	kg 0.0	0.0	kg 0.0		kg 0.0	0.0	kg 0.0	kg 0.0								
												59.15			0																				
		SHEET TOTALS	m2 6.60	m2 0.00	EA. 0	m2 0.00						m 67.6			m 67.6					kg 0.0			EA. 0	kg 0.0				EA. 0	EA. 0	kg 0					

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

PROJECT NAME: ST. JOHNSBURY-LYNDON
PROJECT NUMBER: HES 091-3(42)

FILE NAME:	tsssStJ.xls	PLOT DATE:	1/4/2007
PROJECT LEADER:	CRB	DRAWN BY:	HJC
DESIGNED BY:	PTS	CHECKED BY:	DAM
CLD REF. NO.:	97-0211	SHEET	49 OF 130

STATE OF VERMONT
AGENCY OF TRANSPORTATION

TRAFFIC SIGN SUMMARY SHEET 22

Metric

MILE MARKER	SIGN LEGEND	SIGN DIMENSIONS EA	WIDTH (mm)	HEIGHT (mm)	NEW & SALVAGED SIGNS "A"	"B"	SALV SIGN	SALV TIS	EXIST POST RETAIN	EXIST POST SALVAGE	NEW SIGN POSTS NO. OF POSTS	FLANGED CHANNEL kg/m 1.7	3.0	4.5	SQUARE STEEL (mm) 44 kg/m 3.4	50 kg/m 3.9	63 kg/m 5.0	ANCHOR	SLEEVE	TUBULAR ALUMINUM DIA (mm) 75 kg/m 1.9	100 kg/m 2.5	100MD kg/m 2.5	TUBULAR STEEL DIA (mm) FND-ATION	75 kg/m 11.3	90 kg/m 13.6	100 kg/m 16.1	125 kg/m 21.8	W-SHAPE STEEL FTG. SIZE 600 mm	750 mm	MASS	POST SIZE	SIGN FRAME	REMARKS	SIGN DETAIL DETAIL ON SHEET NUMBER	STD. SHEET NUMBER
INT.#21 2.095 RTE 2 MED	WRONG WAY	1	1050	750	0.79						2			9.15 X		X		X															R5-1a		E-143
2.095 RTE 2 LT	WRONG WAY + R	1 1	1050 900	750 900	0.79 0.81						2			9.76 X		X		X															R5-1a BACK TO BACK R3-1		E-143 E-143
2.120 RTE 2 LT	BRIDGE ICES BEFORE ROAD	1	1200	1200	1.44						2												2	87.83 X								W8-13		E-150
2.159 RTE 2 LT	NORTH	1	750	375	0.28																											M3-1		E-135
	INTERSTATE 91	1	900	900	0.81																											M1-1		E-135
		1	525	375	0.20						1												1	41.33 X								M6-2		E-135
2.160 RTE 2 LT		1	450	450	0.20						1		2.44 X		X			X														OM-1		E-150
2.200 RTE 2 RT	H	1	750	750	0.56																											D9-2		E-132
		1	525	375	0.20						1			4.88 X		X		X														M6-2		E-136A
2.222 RTE 2 LT	EXIT 45 M.P.H.	1	900	1200	1.08						2			9.76 X		X		X														W13-2		E-150
2.244 RTE 2 LT	H	1	750	750	0.56																											D9-2		E-132
		1	525	375	0.20						1			4.27 X		X		X														M6-2		E-136A
2.258 RTE 2 RT	91 NORTH Newport	1	3750	2250		8.44					2																		2		184 ~~190~~	W150X18		Bolt Tension 53.4 kN	69	
2.267 RTE 2 LT	91 SOUTH White River Jct 1/2 MILE	1	4850	2550		12.37																												69	
	91 NORTH Newport	1	4850	2250		10.91					2																		2		676 ~~674~~	W310X44.5		Bolt Tension 135.6 kN SEE FOOTING DETAIL ON SHEET 3	69	
											m 0.0	m ~~2.7~~ 2.44	m ~~38.2~~ 37.82		m 0.0	m ~~2.7~~	m ~~38.2~~		EA. 0	kg 0.0	kg 0.0	kg 0.0		kg 136.8	kg 0.0	kg 0.0	kg 0.0								
													40.26																1+1		860					
	SHEET TOTALS	m2 7.92	m2 31.72	EA. 0	m2 0.00						m ~~40.9~~				m ~~40.9~~					kg 0.0			EA. 3	kg 129.16 ~~136.8~~				EA. 2	EA. 2	kg ~~864~~					

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

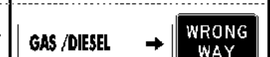
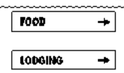
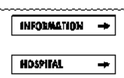
PROJECT NAME: ST. JOHNSBURY-LYNDON
PROJECT NUMBER: HES 091-3(42)

FILE NAME:	tsssSTJ.xls	PLOT DATE:	1/4/2007
PROJECT LEADER:	CRB	DRAWN BY:	HJC
DESIGNED BY:	PTS	CHECKED BY:	DAM
CLD REF. NO.:	97-0211	SHEET	50 OF 130

STATE OF VERMONT
AGENCY OF TRANSPORTATION

TRAFFIC SIGN SUMMARY SHEET 23

Metric

MILE MARKER	SIGN LEGEND	SIGN DIMENSIONS EA	WIDTH (mm)	HEIGHT (mm)	NEW & SALVAGED SIGNS "A"	"B"	SALV SIGN	SALV TIS	EXIST POST RETAIN	EXIST POST SALVAGE	NEW SIGN POSTS NO. OF POSTS	FLANGED CHANNEL kg/m 1.7	3.0	4.5	SQUARE STEEL (mm) 44 50 63 kg/m 3.4	3.9	5.0	ANCHOR	SIELVL	TUBULAR ALUMINUM DIA (mm) 75 100 100MD kg/m 1.9	2.5	2.5	TUBULAR STEEL DIA (mm) FND-ATION	75	90	100	125 kg/m 11.3	13.6	16.1	21.8	W-SHAPE STEEL FTG. SIZE 600 mm	750 mm	MASS	POST SIZE	SIGN	FRAME	REMARKS	SIGN DETAIL DETAIL ON SHEET NUMBER	STD. SHEET NUMBER
INT.#21 2.300 RTE 2 RT		1	900	1200	1.08						2			9.76 X		X		X																		W13-2		E-150
2.331 RTE 2 RT		1	450	450	0.20						1		2.44 X		X				X																		OM-1		E-150
2.334 RTE 2 RT		1	750	375	0.28																																M3-1		E-135
		1	900	900	0.81																																M1-1		E-135
		1	525	375	0.20						1												1	49.94 X												M6-2		E-135
2.350 RTE 2 RT		1	1200	1200	1.44						2												2	96.44 X												W3-5		
2.370 RTE 2 LT		1	525	375	0.20																																M2-1		E-135
		1	900	900	0.81						1									9.7 X																	M1-1		E-135
INT.#22 0.082 RAMP A RT		1	600	300	0.18																																M4-5		E-136A
		1	600	600	0.36																																M1-4		E-136A
		1	525	375	0.20						1			4.88 X		X		X																			M6-1		E-136A
0.120 RAMP A RT		1	1800	300	0.54						2			8.54 X		X		X																			D1-1a		E-123
0.156 RAMP A LT		1	900	600	0.54																																R5-1a		E-143
		1	600	600	0.36						2			4.27 X		X		X																			R9-4a		E-143
0.168 RAMP A RT		1 1	~~1800~~ 1370 900	~~250~~ 190 600	~~0.45~~ 0.26 0.54																																VD-502G BACK TO BACK R5-1a		E-133 E-143
		1 1	~~1800~~ 1370 1370 ~~1800~~	~~250~~ 190 190 ~~250~~	~~0.45~~ 0.26 0.26 ~~0.45~~																																VD-502F VD-502L		E-133 E-133
		1 1	~~1800~~ 1370 1370 ~~1800~~	~~250~~ 190 190 ~~250~~	~~0.45~~ 0.26 0.26 ~~0.45~~						2												2	88.69 X												VD-502I VD-502H		E-133 E-133
												m 0.0	m ~~2.7~~ 2.44	m ~~31.4~~ 27.45	m 0.0	m 2.7	m 31.4	EA. 0	kg ~~9.5~~ 9.7	kg 0.0	kg 0.0		kg ~~220.4~~	kg 0.0	kg 0.0	kg 0.0											
	SHEET TOTALS		m2 ~~9.99~~ 9.04	m2 0.00	EA. 0	m2 0.00						m ~~34.1~~ 29.89			m ~~34.1~~ 0					kg ~~9.5~~ 9.7			EA. 5	kg ~~220.4~~ 235.07				EA. 0	EA. 0	kg 0								

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

PROJECT NAME: ST. JOHNSBURY-LYNDON
PROJECT NUMBER: HES 091-3(42)

FILE NAME:	tsssStJ.xls	PLOT DATE	1/4/2007
PROJECT LEADER:	CRB	DRAWN BY:	HJC
DESIGNED BY:	PTS	CHECKED BY:	DAM
CLD REF. NO.:	97-0211	SHEET	51 OF 130

STATE OF VERMONT
AGENCY OF TRANSPORTATION

TRAFFIC SIGN SUMMARY SHEET 24

Metric

MILE MARKER	SIGN LEGEND	SIGN DIMENSIONS EA	WIDTH (mm)	HEIGHT (mm)	NEW & SALVAGED SIGNS "A"	"B"	SALV SIGN	SALV TIS	EXIST POST RETAIN	EXIST POST SALVAGE	NEW SIGN POSTS NO. OF POSTS	FLANGED CHANNEL kg/m 1.7	FLANGED CHANNEL kg/m 3.0	FLANGED CHANNEL kg/m 4.5	SQUARE STEEL (mm) 44 kg/m 3.4	SQUARE STEEL (mm) 50 kg/m 3.9	SQUARE STEEL (mm) 63 kg/m 5.0	ANCHOR	SILVL	TUBULAR ALUMINUM DIA (mm) 75 kg/m 1.9	TUBULAR ALUMINUM DIA (mm) 100 kg/m 2.5	TUBULAR ALUMINUM DIA (mm) 100MD kg/m 2.5	TUBULAR STEEL DIA (mm) FND-ATION	TUBULAR STEEL DIA (mm) 75 kg/m 11.3	TUBULAR STEEL DIA (mm) 90 kg/m 13.6	TUBULAR STEEL DIA (mm) 100 kg/m 16.1	TUBULAR STEEL DIA (mm) 125 kg/m 21.8	W-SHAPE STEEL FTG. SIZE 600 mm	W-SHAPE STEEL FTG. SIZE 750 mm	W-SHAPE STEEL MASS	W-SHAPE STEEL POST SIZE	SIGN FRAME	REMARKS	SIGN DETAIL DETAIL ON SHEET NUMBER	SIGN DETAIL STD. SHEET NUMBER
INT.#22 0.205 RAMP A LT	STOP / END HIGH ENTERS	1 1	750 750	750 750	0.56 0.56																												R1-1 BACK TO BACK R5-1		E-143 E-143
	ONE WAY / ONE WAY	1 1	900 900	300 300	0.27 0.27						1			4.27 X		X		X															R6-1L BACK TO BACK R6-1R		E-142 E-142
0.205 RAMP A RT	STOP / END HIGH ENTERS	1 1	750 750	750 750	0.56 0.56																												R1-1 BACK TO BACK R5-1		E-143 E-143
	ONE WAY / ONE WAY	1 1	900 900	300 300	0.27 0.27						1			4.27 X		X		X															R6-1L BACK TO BACK R6-1R		E-142 E-142
INT.#22 0.030 RAMP B RT	PROHIBITED	1	900	900	0.81																												VR-046		E-142
	PROHIBITED	1	900	900	0.81						2												2	94.72 X								VR-002		E-142
0.205 RAMP B RT		1	600	600	0.36						1			4.27 X		X		X															R3-2		E-143
INT.#22 0.119 RAMP C RT	TO	1	600	300	0.18																												M4-5		E-136A
	5	1	600	600	0.36																												M1-4		E-136A
		1	525	375	0.20						1			X		X		X															M6-1		E-136A
0.157 RAMP C RT	ST. JOHNSBURY 2	1	1800	300	0.54						2			8.54 X		X		X															D1-1a		E-123
0.195 RAMP C LT	WRONG WAY	1	900	600	0.54																												R5-1a		E-143
		1	600	600	0.36						2			9.76 X		X		X															R9-4a		E-143
0.195 RAMP C RT	GAS /DIESEL / WRONG WAY	1 1	~~1800~~ 1370 900	~~250~~ 190 600	~~0.45~~ 0.26 0.54																												VD-502G BACK TO BACK R5-1a		E-133 E-143
	FOOD LODGING	1 1	~~1800~~ 1370 1370 ~~1800~~	~~250~~ 190 190 ~~250~~	~~0.45~~ 0.26 0.26 ~~0.45~~																												VD-502F VD-502L		E-133 E-133
	INFORMATION HOSPITAL	1 1	~~1800~~ 1370 1370 ~~1800~~	~~250~~ 190 190 ~~250~~	~~0.45~~ 0.26 0.26 ~~0.45~~						2												2	85.24 X								VD-502I VD-502H		E-133 E-133
0.076 "A" LT 0.140 "C" LT	STOP AHEAD	2	900 900	900 900	0.81 0.81						2 2			9.76 X 9.76																			ADDED SIGN		
					10.94							m 0.0	m 0.0	m 33.5	m 0.0	m 0.0	m 33.5		EA. 0	kg 0.0	kg 0.0	kg 0.0		kg ~~177.5~~ 179.96	kg 0.0	kg 0.0	kg 0.0								
												50.63			0									179.96											
	SHEET TOTALS		m2 ~~10.27~~	m2 0.00	EA. 0	m2 0.00						m ~~33.5~~			m ~~33.5~~					kg 0.0			EA. 4	kg ~~177.5~~				EA. 0	EA. 0	kg 0					

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

PROJECT NAME: ST. JOHNSBURY-LYNDON
PROJECT NUMBER: HES 091-3(42)

FILE NAME:	tsssStJ.xls	PLOT DATE:	1/4/2007
PROJECT LEADER:	CRB	DRAWN BY:	HJC
DESIGNED BY:	PTS	CHECKED BY:	DAM
CLD REF. NO.:	97-0211	SHEET	52 OF 130

STATE OF VERMONT
AGENCY OF TRANSPORTATION

TRAFFIC SIGN SUMMARY SHEET 25

Metric

MILE MARKER	SIGN LEGEND	SIGN DIMENSIONS EA	WIDTH (mm)	HEIGHT (mm)	NEW & SALVAGED SIGNS "A"	"B"	SALV SIGN	SALV TIS	EXIST POST RETAIN	EXIST POST SALVAGE	NEW SIGN POSTS NO. OF POSTS	FLANGED CHANNEL kg/m 1.7	3.0	4.5	SQUARE STEEL (mm) 44 kg/m 3.4	50 kg/m 3.9	63 kg/m 5.0	ANCHOR	SILVL	TUBULAR ALUMINUM DIA (mm) 75 kg/m 1.9	100 2.5	100MD 2.5	TUBULAR STEEL DIA (mm) FND-ATION	75 kg/m 11.3	90 13.6	100 16.1	125 21.8	W-SHAPE STEEL FTG. SIZE 600 mm	750 mm	MASS	POST SIZE	SIGN FRAME	REMARKS	SIGN DETAIL DETAIL ON SHEET NUMBER	STD. SHEET NUMBER
INT.#22 0.242 RAMP C LT	STOP / DO NOT ENTER	1	750	750	0.56																												R1-1		E-143
		1	750	750	0.56																												BACK TO BACK R5-1		E-143
	ONE WAY / ONE WAY	1	900	300	0.27						1			4.67 X		X		X														R6-1L BACK TO BACK		E-142
		1	900	300	0.27																												R6-1R		E-142
INT.#22 0.242 RAMP C RT	STOP / DO NOT ENTER	1	750	750	0.56																												R1-1		E-143
		1	750	750	0.56																												R5-1		E-143
	ONE WAY / ONE WAY	1	900	300	0.27						1			4.67 X		X		X														R6-1L		E-142
		1	900	300	0.27																												R6-1R		E-142
INT.#22 0.030 RAMP D RT	RECOMMENDED ROUTE FOR TRUCKS	1	900	900	0.81																												VR-046		E-142
	TRUCK SIGNALS REQUIRED BEFORE CROSSING LANES	1	900	900	0.81						2									19.97 X												VR-002		E-142
0.208 RAMP D RT		1	600	600	0.36						1			4.27 X		X		X														R3-2		E-143
INT.#22 0.700 STJSH RT		1	750	750	0.56						1			4.27 X		X		X														W11-6		
0.742 STJSH RT		1	750	750	0.56																												W11-7		
	NEXT 1500 FT	1	600	450	0.27						2			9.76 X		X		X														W16-4		E-153
0.770 STJSH LT	SPEED LIMIT 50	1	600	750	0.45						1			4.27 X		X		X														R2-1		E-142
0.780 STJSH RT		1	900	900	0.81						1			4.27 X		X		X														W4-2		E-151
0.810 STJSH LT	7%	1	750	750	0.56																												W7-1b		
	TRUCKS USE LOWER GEAR	1	600	450	0.27						2			9.76 X		X		X														W7-2b		E-152
0.830 STJSH RT	JCT	1	525	375	0.20																												M2-1		E-135
	INTERSTATE 91	1	600	600	0.36						1			4.27 X		X		X														M1-1		E-135
0.845 STJSH LT	ST. JOHNSBURY 2	1	1800	300	0.54						2			8.54 X		X		X														D2-1		E-123
												m 0.0	m 0.0	m ~~57.7~~ 58.75	m 0.0	m 0.0	m ~~57.7~~		EA. 0	kg ~~23.2~~ 19.97	kg 0.0	kg 0.0		kg 0.0	kg 0.0	kg 0.0	kg 0.0							
												58.75			0					19.97				0.0										
	SHEET TOTALS		m2 9.88	m2 0.00	EA. 0	m2 0.00						m ~~57.7~~			m ~~57.7~~					19.97 kg ~~23.2~~			EA. 0	kg 0.0				EA. 0	EA. 0	kg 0				

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

PROJECT NAME: ST. JOHNSBURY-LYNDON
PROJECT NUMBER: HES 091-3(42)

FILE NAME:	tsssStJ.xls	PLOT DATE:	1/4/2007
PROJECT LEADER:	CRB	DRAWN BY:	HJC
DESIGNED BY:	PTS	CHECKED BY:	DAM
CLD REF. NO.:	97-0211	SHEET	53 OF 130

STATE OF VERMONT
AGENCY OF TRANSPORTATION

TRAFFIC SIGN SUMMARY SHEET 26

Metric

MILE MARKER	SIGN LEGEND	SIGN DIMENSIONS EA	WIDTH (mm)	HEIGHT (mm)	NEW & SALVAGED SIGNS "A"	"B"	SALV SIGN	SALV TIS	EXIST POST RETAIN	EXIST POST SALVAGE	NEW SIGN POSTS NO. OF POSTS	FLANGED CHANNEL kg/m 1.7	3.0	4.5	SQUARE STEEL (mm) 44 50 63 kg/m 3.4	3.9	5.0	ANCHOR	SLEEVE	TUBULAR ALUMINUM DIA (mm) 75 100 100MD kg/m 1.9	2.5	2.5	TUBULAR STEEL DIA (mm) FNDATION	75 90 100 125 kg/m 11.3	13.6	16.1	21.8	W-SHAPE STEEL FTG SIZE 600 mm	750 mm	MASS	POST SIZE	SIGN	FRAME	REMARKS	SIGN DETAIL DETAIL ON SHEET NUMBER	STD. SHEET NUMBER
INT.#22 0.850 STJSH RT	LEGAL LOAD LIMIT 24,000 POUNDS	1	600	750	0.45						1			4.27 X		X		X															VR-017		E-141
0.860 STJSH RT	NO OUTLET	1	750	750	0.56						1			4.27 X		X		X															W14-2		
0.865 STJSH RT	STOP Pvt. LaPIERRE Dr	1	750	750	0.56		X				1			4.27 X		X		X															R1-1		E-143
0.880 STJSH LT	TO 5	1	600	300	0.18						1			4.27 X		X		X															M4-5		E-136A
		1	600	600	0.36																											M1-4		E-136A
0.880 STJSH RT	WHITE RIVER JCT 62	1	1800	300	0.54																											D1-1a		E-123
	NEWPORT 41 →	1	1800	300	0.54																											D1-1a		E-123
	SOUTH NORTH	1	600	300	0.18																											M3-3		E-135
		1	600	300	0.18																											M3-1		E-135
	INTERSTATE 91 INTERSTATE 91	1	600	600	0.36																											M1-1		E-135
		1	600	600	0.36																											M1-1		E-135
	↑ →	1	525	375	0.20						2												2	94.72 X								M6-3		E-135
		1	525	375	0.20																											M6-1		E-135
0.897 STJSH RT	TO	1	600	300	0.18																											M4-5		E-136A
	5	1	600	600	0.36																											M1-4		E-136A
	→	1	525	375	0.20						1			4.88 X		X		X															M6-1		E-136A
0.897 STJSH RT	NORTH	1	600	300	0.18																											M3-1		E-135
	INTERSTATE 91	1	600	600	0.36																											M1-1		E-135
	←	1	525	375	0.20						1			4.88 X		X		X															M6-1		E-135
0.915 STJSH LT	NORTH	1	600	300	0.18																											M3-1		E-135
	INTERSTATE 91	1	600	600	0.36																											M1-1		E-135
	←	1	525	375	0.20						1			4.27 X		X		X															M6-1		E-135
												m 0.0	0.0	30.7 31.11	m 0.0	0.0	30.7		EA. 0	kg 0.0	0.0	0.0		kg 101.7 94.72	0.0	0.0	0.0								
												31.11			0									94.72											
SHEET TOTALS		m2 6.89	m2 0.00	EA. 1	m2 0.00						m 30.7				m 30.7					kg 0.0			EA. 2	kg 101.7				EA. 0	EA. 0	kg 0					

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

PROJECT NAME: ST. JOHNSBURY-LYNDON
PROJECT NUMBER: HES 091-3(42)

FILE NAME:	tsssStJ.xls	PLOT DATE:	1/4/2007
PROJECT LEADER:	CRB	DRAWN BY:	HJC
DESIGNED BY:	PTS	CHECKED BY:	DAM
CLD REF. NO.:	97-0211	SHEET	54 OF 130

STATE OF VERMONT
AGENCY OF TRANSPORTATION

TRAFFIC SIGN SUMMARY SHEET 27

Metric

MILE MARKER	SIGN LEGEND	SIGN DIMENSIONS EA	WIDTH (mm)	HEIGHT (mm)	NEW & SALVAGED SIGNS "A"	"B"	SALV SIGN	SALV TIS	EXIST POST RETAIN	EXIST POST SALVAGE	NEW SIGN POSTS NO. OF POSTS	FLANGED CHANNEL kg/m 1.7	3.0	4.5	SQUARE STEEL (mm) kg/m 44 3.4	50 3.9	63 5.0	ANCHOR	SLEEVE	TUBULAR ALUMINUM DIA (mm) kg/m 75 1.9	100 2.5	100MD 2.5	TUBULAR STEEL DIA (mm) kg/m FND-ATION	75 11.3	90 13.6	100 16.1	125 21.8	W-SHAPE STEEL FTG. SIZE 500 mm	750 mm	MASS	POST SIZE	SIGN FRAME	REMARKS	SIGN DETAIL DETAIL ON SHEET NUMBER	STD. SHEET NUMBER
INT.#22																																			
0.950 STJSH LT	NEWPORT 41	1	1800	300	0.54						2			8.54 X		X		X																D1-1a		E-123
0.950 STJSH RT	WHITE RIVER JCT 62	1	1800	300	0.54						2			8.54 X		X		X																D1-1a		E-123
1.000 STJSH RT	SOUTH	1	600	300	0.18																													M3-3		E-135
	INTERSTATE 91	1	600	600	0.36																													M1-1		E-135
		1	525	375	0.20						1			4.88 X		X		X																M6-1		E-135
1.023 STJSH LT	SOUTH	1	600	300	0.18																													M3-3		E-135
	INTERSTATE 91	1	600	600	0.36																													M1-1		E-135
		1	525	375	0.20						1			4.27 X		X		X																M6-1		E-135
1.023 STJSH LT	TO	1	600	300	0.18																													M4-5		E-136A
	5	1	600	600	0.36																													M1-4		E-136A
		1	525	375	0.20						1			4.27 X		X		X																M6-1		E-136A
1.023 STJSH LT	TO NORTH SOUTH	1	600	300	0.18																													M4-5		E-136A
		1	600	300	0.18																													M3-1		E-135
		1	600	300	0.18																													M3-3		E-135
	5 INTERSTATE 91 INTERSTATE 91	1	600	600	0.36																													M1-4		E-136A
		1	600	600	0.36																													M1-1		E-135
		1	600	600	0.36																													M1-1		E-135
		1	525	375	0.20																													M6-3		E-136A
		1	525	375	0.20						2												2	80.08 X							#3	M6-3		E-135
		1	525	375	0.20																													M6-1		E-135
1.044 STJSH LT	STATE HIGHWAY BEGINS	1	600	450	0.27																													VR-039		E-141
	SPEED LIMIT 50	1	600	750	0.45						1			4.27 X		X		X																R2-1		E-142
1.044 STJSH RT	STATE HIGHWAY ENDS	1	600	450	0.27						1			4.27 X		X		X																VR-038		E-141
												m 0.0	m 0.0	m ~~37.7~~ 39.04	m 0.0	m 0.0	m ~~37.7~~		EA. 0	kg 0.0	kg 0.0	kg 0.0		kg ~~82.5~~ 80.08	kg 0.0	kg 0.0	kg 0.0								
												39.04			0					0.0	0.0	0.0		80.08											
SHEET TOTALS		m2 6.51	m2 0.00	EA. 0	m2 0.00							m ~~37.7~~			m ~~37.7~~					kg 0.0			EA. 2	kg ~~82.5~~				EA. 0	EA. 0	kg 0					

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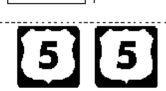
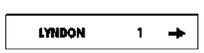
PROJECT NAME: ST. JOHNSBURY-LYNDON
PROJECT NUMBER: HES 091-3(42)

FILE NAME	tsssSTJ.xls	PLOT DATE	1/4/2007
PROJECT LEADER:	CRB	DRAWN BY:	HJC
DESIGNED BY:	PTS	CHECKED BY:	DAM
CLD REF. NO.:	97-0211	SHEET	55 OF 130

STATE OF VERMONT
AGENCY OF TRANSPORTATION

TRAFFIC SIGN SUMMARY SHEET 28

Metric

MILE MARKER	SIGN LEGEND	SIGN DIMENSIONS EA	WIDTH (mm)	HEIGHT (mm)	NEW & SALVAGED SIGNS "A"	"B"	SALV SIGN	SALV TIS	EXIST POST RETAIN	EXIST POST SALVAGE	NEW SIGN POSTS NO. OF POSTS	FLANGED CHANNEL kg/m 1.7	3.0	4.5	SQUARE STEEL (mm) 44 kg/m 3.4	50 kg/m 3.9	63 kg/m 5.0	ANCHOR	SLEEVE	TUBULAR ALUMINUM DIA (mm) 75 kg/m 1.9	100 kg/m 2.5	100MD kg/m 2.5	TUBULAR STEEL DIA (mm) FND-ATION	75 kg/m 11.3	90 kg/m 13.6	100 kg/m 16.1	125 kg/m 21.8	W-SHAPE STEEL FTG. SIZE 600 mm	750 mm	MASS	POST SIZE	SIGN FRAME	REMARKS	SIGN DETAIL DETAIL ON SHEET NUMBER	STD. SHEET NUMBER
INT.#23 0.036 RAMP A RT		1			0.35						1			4.27 X		X		X															R1-2 900X900X900		E-146
0.030 RAMP A RT		1	750	750	0.56																												W1-11		
		1	450	450	0.20						1												1	39.61 X									W13-1		E-155
0.060 RAMP A RT		1	900	900	0.81																												VR-046		E-142
		1	900	900	0.81						2												2	91.27 X									VR-002		E-142
0.068 -0.180 LT RAMP A		10	450	600	2.70						10			42.7 X 8.54		X		X															W1-8 TWO EACH KNOCKED DOWN DURING WINTER		E-150
0.200 RAMP A RT		1	600	600	0.36						1			4.27 X		X		X															R3-2		E-143
INT.#23 0.100 RAMP B RT		1	900	900	0.81						1			4.27 X		X		X															W3-1a		E-150
0.139 RAMP B RT		1	600	300	0.18																												M3-1		E-136A
		1	600	300	0.18																												M3-3		E-136A
		1	600	600	0.36																												M1-4		E-136A
		1	600	600	0.36																												M1-4		E-136A
		1	525	375	0.20						2			9.75 X		X		X														#2	M6-1		E-136A
		1	525	375	0.20																												M6-1		E-136A
0.177 RAMP B RT		1	1800	300	0.54																												D1-1a		E-123
		1	1800	300	0.54																												D1-1a		E-123
		1	1800	300	0.54						2												2	79.22 X									D1-1a		E-123
EXIT 21 0.081 RAMP A	STOP AHEAD	1	900	900	0.81						2			9.76 X																			ADDED SIGN		
SHEET TOTALS					10.51 m2 ~~9.70~~	m2 0.00	EA. 0	m2 ~~0.00~~				m 0.0	m 0.0	m ~~61.3~~ 83.56	m 0.0	m 0.0	m 61.3		EA. 0	kg 0.0	kg 0.0	kg 0.0		kg ~~212.6~~ 210.1	kg 0.0	kg 0.0	kg 0.0								
					83.56 m											~~61.3~~ m							5 EA.	210.1 kg				0 EA.	0 EA.	0 kg				

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

PROJECT NAME: ST. JOHNSBURY-LYNDON
PROJECT NUMBER: HES 091-3(42)

FILE NAME	tsssSfJ.xls	PLOT DATE	1/4/2007
PROJECT LEADER:	CRB	DRAWN BY:	HJC
DESIGNED BY:	PTS	CHECKED BY:	DAM
CLD REF. NO.:	97-0211	SHEET	56 OF 130

STATE OF VERMONT
AGENCY OF TRANSPORTATION

TRAFFIC SIGN SUMMARY SHEET 29

Metric

MILE MARKER	SIGN LEGEND	SIGN DIMENSIONS EA	WIDTH (mm)	HEIGHT (mm)	NEW & SALVAGED SIGNS "A"	"B"	SALV SIGN	SALV TIS	EXIST POST RETAIN	EXIST POST SALVAGE	NEW SIGN POSTS NO. OF POSTS	FLANGED CHANNEL kg/m 1.7	3.0	4.5	SQUARE STEEL (mm) 44 kg/m 3.4	50 kg/m 3.9	63 kg/m 5.0	ANCHOR	SLEEVE	TUBULAR ALUMINUM DIA (mm) 75 kg/m 1.9	100 kg/m 2.5	100MD kg/m 2.5	TUBULAR STEEL DIA (mm) FND-ATION	75 kg/m 11.3	90 kg/m 13.6	100 kg/m 16.1	125 kg/m 21.8	W-SHAPE STEEL FTG SIZE 600 mm	750 mm	MASS	POST SIZE	SIGN FRAME	REMARKS	SIGN DETAIL DETAIL ON SHEET NUMBER	STD. SHEET NUMBER
0.215 RAMP B RT	GAS /DIESEL 24 HRS / WRONG WAY	1	~~1800~~ 1370	~~250~~ 190	~~0.45~~ 0.26																												VD-502G BACK TO BACK		E-133
		1	900	600	0.54																												R5-1a		E-143
	FOOD	1	~~1800~~ 1370	~~250~~ 190	~~0.45~~ 0.26																												VD-502F		E-133
	LODGING / INFORMATION	1	~~1800~~ 1370	~~250~~ 190	~~0.45~~ 0.26						2												2	82.7 X								VD-502L		E-133
		1	1370 ~~1800~~	190 ~~250~~	0.26 ~~0.45~~																												VD-502I		E-133
0.262 RAMP B RT	STOP / DIE HARD BATTERY	1	~~900~~ 750	~~300~~ 750	~~0.27~~ 0.56																												R6-1L BACK TO BACK		E-142
		1	750	750	0.56																												R5-1		E-143
	ONE WAY / ONE WAY	1	900	300	0.27						1			4.27 X		X		X														R6-1L BACK TO BACK		E-142
		1	900	300	0.27																												R6-1R		E-142
0.262 RAMP B LT	STOP	1	750	750	0.56																												R1-1 BACK TO BACK		E-143
		1	600	750	0.45																												R4-7		E-144
		1	450	450	0.20						1			4.27 X		X		X														OM-1		E-150
INT.#23 0.128 RAMP C RT		1	900	900	0.81						1			4.27 X		X		X														W3-1a		E-150
0.166 RAMP C RT	SOUTH NORTH TO	1	600	300	0.18																												M3-3		E-136A
		1	600	300	0.18																												M3-1		E-136A
		1	600	300	0.18																												M4-5		E-136A
	5 5 VERMONT 114	1	600	600	0.36																												M1-4		E-136A
		1	600	600	0.36																												M1-4		E-136A
		1	750	600	0.45																												M1-4		E-136A
		1	525	375	0.20																												M6-1		E-136A
		1	525	375	0.20						2												2	87.8 X							#3	M6-1		E-136A
		1	525	375	0.20																												M6-1		E-136A
0.204 RAMP C RT	LYNDON 1	1	1800	300	0.54																												D1-1a		E-123
	LYNDONVILLE 2	1	1800	300	0.54																												D1-1a		E-123
	LYNDON STATE COLLEGE 3	1	1800	300	0.54																												D1-1a		E-123
	EAST BURKE 6	1	1800	300	0.54																												D1-1a		E-123
	L WILLOUGHBY 15	1	1800	300	0.54																												D1-1a		E-123
	ISLAND POND 25	1	1800	300	0.54						2												2	96.4 X								D1-1a		E-123
												m 0.0	m 0.0	m ~~11.9~~ 12.8	m 0.0	m 0.0	m 11.9		EA. 0	kg 0.0	kg 0.0	kg 0.0		kg ~~258.8~~ 266.9	kg 0.0	kg 0.0	kg 0.0							
														12.8			0																		
	SHEET TOTALS		m2 ~~11.28~~ 10.8	m2 0.00	EA. 0	m2 ~~0.00~~						m ~~11.9~~			m ~~11.9~~					kg 0.0			EA. 6	266.9 kg ~~258.8~~				EA. 0	EA. 0	kg 0					

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

PROJECT NAME: ST. JOHNSBURY-LYNDON
PROJECT NUMBER: HES 091-3(42)

FILE NAME:	tsssSTJ.xls	PLOT DATE:	1/4/2007
PROJECT LEADER:	CRB	DRAWN BY:	HJC
DESIGNED BY:	PTS	CHECKED BY:	DAM
CLD REF. NO.:	97-0211	SHEET	57 OF 130

STATE OF VERMONT
AGENCY OF TRANSPORTATION

TRAFFIC SIGN SUMMARY SHEET 30

Metric

MILE MARKER	SIGN LEGEND	SIGN DIMENSIONS EA	WIDTH (mm)	HEIGHT (mm)	NEW & SALVAGED SIGNS "A"	"B"	SALV SIGN	SALV TIS	EXIST POST RETAIN	EXIST POST SALVAGE	NEW SIGN POSTS NO. OF POSTS	FLANGED CHANNEL kg/m 1.7	3.0	4.5	SQUARE STEEL (mm) 44 kg/m 3.4	50 kg/m 3.9	63 kg/m 5.0	ANCHOR	SLEEVE	TUBULAR ALUMINUM DIA (mm) 75 kg/m 1.9	100 kg/m 2.5	100MD kg/m 2.5	TUBULAR STEEL DIA (mm) FND-ATION	75 kg/m 11.3	90 kg/m 13.6	100 kg/m 16.1	125 kg/m 21.8	W-SHAPE STEEL FTG SIZE 600 mm	750 mm	MASS	POST SIZE	SIGN FRAME	REMARKS	SIGN DETAIL DETAIL ON SHEET NUMBER	STD. SHEET NUMBER
0.242 RAMP C LT	WRONG WAY	1	900	600	0.54																												R5-1a		E-143
		1	600	600	0.36						2			9.14 X		X		X														R9-4a		E-143
0.242 RAMP C RT	Gas/Diesel 24 Hrs → WRONG WAY	1	~~1800~~ 1370	~~250~~ 190	~~0.45~~ 0.26																												VD-502G BACK TO BACK		E-133
		1	900	600	0.54																												R5-1a		E-143
	Food →	1	~~1800~~ 1370	~~250~~ 190	~~0.45~~ 0.26																												VD-502F		E-133
	← Lodging →	1	~~1800~~ 1370	~~250~~ 190	~~0.45~~ 0.26																												VD-502L		E-133
	Information →	1	~~1800~~ 1370	~~250~~ 190	~~0.45~~ 0.26						2												2	79.22 X								VD-502I		E-133
0.289 RAMP C LT	STOP ONE WAY	1	750	750	0.56																												R1-1 BACK TO BACK		E-143
		1	750	750	0.56																												R5-1		E-143
	ONE WAY ONE WAY	1	900	300	0.27						1			4.27 X		X		X															R6-1L BACK TO BACK		E-142
		1	900	300	0.27																												R6-1R		E-142
0.289 RAMP C RT	STOP	1	750	750	0.56																												R1-1 BACK TO BACK		E-143
		1	750	750	0.56																												R5-1		E-143
	ONE WAY ONE WAY	1	900	300	0.27						1			4.27 X		X		X															R6-1L BACK TO BACK		E-142
		1	900	300	0.27																												R6-1R		E-142
INT.#23 0.030 RAMP D RT	MOPED/BIKE	1	900	900	0.81																												VR-046		E-142
	TURN SIGNAL MOUNTED BEFORE CHANGING LANES	1	900	900	0.81						2									20.56 X													VR-002		E-142
0.175 RAMP D RT		1	600	600	0.36						1			4.27 X		X		X															R3-2		E-143
INT.#23 1.299 RTE 5 RT	JCT	1	525	375	0.20																												M2-1		E-135
	INTERSTATE 91	1	600	600	0.36						1			4.27 X		X		X															M1-1		E-135
1.328 RTE 5 RT	← SOUTH WHEELOCK 6	1	1800	300	0.54																												D1-1a		E-123
	← STANNARD 12	1	1800	300	0.54						2			8.54 X		X		X															D1-1a		E-123
					9.42							m 0.0	m 0.0	m ~~35.0~~ 34.76	m 0.0	m 0.0	m 35.0		EA. 0	kg ~~23.2~~ 20.56	kg 0.0	kg 0.0		kg ~~79.1~~ 79.22	kg 0.0	kg 0.0	kg 0.0								
					34.76																																
	SHEET TOTALS				m2 ~~10.18~~	m2 0.00	EA. 0	m2 0.00				m ~~35.0~~			m ~~35.0~~					20.56 kg ~~23.2~~			EA. 2	79.22 kg ~~79.1~~				EA. 0	EA. 0	kg 0					

FINAL POST LENGTHS ARE TO BE DETERMINED IN THE FIELD.
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PROJECT NAME: ST. JOHNSBURY-LYNDON
PROJECT NUMBER: HES 091-3(42)

FILE NAME:	tsssStJ.xls	PLOT DATE:	1/4/2007
PROJECT LEADER:	CRB	DRAWN BY:	HJC
DESIGNED BY:	PTS	CHECKED BY:	DAM
CLD REF. NO.:	97-0211	SHEET	58 OF 130

STATE OF VERMONT
AGENCY OF TRANSPORTATION

TRAFFIC SIGN SUMMARY SHEET 31

Metric

MILE MARKER	SIGN LEGEND	SIGN DIMENSIONS EA	WIDTH (mm)	HEIGHT (mm)	NEW & SALVAGED SIGNS "A"	"B"	SALV SIGN	SALV TIS	EXIST POST RETAIN	EXIST POST SALVAGE	NEW SIGN POSTS NO. OF POSTS	FLANGED CHANNEL kg/m 1.7	3.0	4.5	SQUARE STEEL (mm) 44 kg/m 3.4	50 kg/m 3.9	63 kg/m 5.0	ANCHOR	SLEEVE	TUBULAR ALUMINUM DIA (mm) 75 kg/m 1.9	100 kg/m 2.5	100MD kg/m 2.5	TUBULAR STEEL DIA (mm) FND-ATION	75 kg/m 11.3	90 kg/m 13.6	100 kg/m 16.1	125 kg/m 21.8	W-SHAPE STEEL FTG SIZE 600 mm	750 mm	MASS	POST SIZE	SIGN	FRAME	REMARKS	SIGN DETAIL DETAIL ON SHEET NUMBER	STD. SHEET NUMBER
1.370 RTE 5 LT	Memorial Dr / South Wheelock Rd	1					X																													
		1					X																													
	STOP	1	750	750	0.56						1			4.27 X		X		X																R1-1		E-143
1.370 RTE 5 LT	LYNDON 1	1	1800	300	0.54																													D1-1a		E-123
	SOUTH WHEELOCK 6	1	1800	300	0.54																													D1-1a		E-123
	STANNARD 12	1	1800	300	0.54						2												2	68.88 X									D1-1a		E-123
1.375 RTE 5 RT	ONLY	1	750	750	0.56						1			4.27 X		X		X																VR-921		E-145A
1.395 RTE 5 RT	ST. JOHNSBURY 10	1	1800	300	0.54																													D1-1a		E-123
	NEWPORT 36	1	1800	300	0.54						2			8.53 X		X		X																D1-1a		E-123
1.400 RTE 5 LT	SOUTH	1	600	300	0.18																													M3-3		E-136A
	5	1	600	600	0.36						1			4.27 X		X		X																M1-4		E-136A
1.411 RTE 5 RT	SOUTH / NORTH / NORTH	1	600	300	0.18																													M3-3		E-135
		1	600	300	0.18																													M3-1		E-135
		1	600	300	0.18																													M3-1		E-136A
	91 / 91 / 5	1	600	600	0.36																													M1-1		E-135
		1	600	600	0.36																													M1-1		E-135
		1	600	600	0.36																													M1-4		E-136A
		1	525	375	0.20																													M6-1		E-135
		1	525	375	0.20						2												2	83.52 X								#3	M6-3		E-135
		1	525	375	0.20																													M6-3		E-136A
1.412 RTE 5 RT	NORTH / SOUTH	1	600	300	0.18																													M3-1		E-136A
		1	600	300	0.18																													M3-3		E-136A
	5 / 5	1	600	600	0.36																													M1-4		E-136A
		1	600	600	0.36																													M1-4		E-136A
		1	525	375	0.20																													M6-1		E-136A
		1	525	375	0.20						2			9.75 X		X		X															#2	M6-1		E-136A
1.425 RTE 5 RT	13' 11"	1	900	900	0.81						1			4.27 X		X		X																W12-2		E-155
												m 0.0	m 0.0	m ~~34.8~~ 35.36	m 0.0	m 0.0	m 34.8	EA. 0		kg 0.0	kg 0.0	kg 0.0		kg ~~162.8~~ 152.4	kg 0.0	kg 0.0	kg 0.0								
												35.36																									
	SHEET TOTALS	m2 8.87	m2 0.00	EA. 2	m2 0.00							m ~~34.8~~			m ~~34.8~~					kg 0.0			EA. 4	152.4 kg ~~162.8~~				EA. 0	EA. 0	kg 0						

FINAL POST LENGTHS ARE TO BE DETERMINED IN THE FIELD.
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PROJECT NAME: ST. JOHNSBURY-LYNDON
PROJECT NUMBER: HES 091-3(42)

FILE NAME:	tsssStJ.xls	PLOT DATE:	1/4/2007
PROJECT LEADER:	CRB	DRAWN BY:	HJC
DESIGNED BY:	PTS	CHECKED BY:	DAM
CLD REF. NO.:	97-0211	SHEET	59 OF 130

STATE OF VERMONT
AGENCY OF TRANSPORTATION

TRAFFIC SIGN SUMMARY SHEET 32

Metric

MILE MARKER	SIGN LEGEND	SIGN DIMENSIONS EA	WIDTH (mm)	HEIGHT (mm)	NEW & SALVAGED SIGNS "A"	"B"	SALV SIGN	SALV TIS	EXIST POST RETAIN	EXIST POST SALVAGE	NEW SIGN POSTS NO. OF POSTS	FLANGED CHANNEL kg/m 1.7	FLANGED CHANNEL kg/m 3.0	FLANGED CHANNEL kg/m 4.5	SQUARE STEEL (mm) 44 kg/m 3.4	SQUARE STEEL (mm) 50 kg/m 3.9	SQUARE STEEL (mm) 63 kg/m 5.0	ANCHOR	SLEEV	TUBULAR ALUMINUM DIA (mm) 75 kg/m 1.9	TUBULAR ALUMINUM DIA (mm) 100 kg/m 2.5	TUBULAR ALUMINUM DIA (mm) 100MID kg/m 2.5	TUBULAR STEEL DIA (mm) FND-ATION	TUBULAR STEEL DIA (mm) 75 kg/m 11.3	TUBULAR STEEL DIA (mm) 90 kg/m 13.6	TUBULAR STEEL DIA (mm) 100 kg/m 16.1	TUBULAR STEEL DIA (mm) 125 kg/m 21.8	W-SHAPE STEEL FTG 600 mm	W-SHAPE STEEL SIZE 750 mm	W-SHAPE STEEL MASS	W-SHAPE STEEL POST SIZE	SIGN FRAME	REMARKS	SIGN DETAIL DETAIL ON SHEET NUMBER	SIGN DETAIL STD. SHEET NUMBER
1.440 RTE 5 LT		1	450	450	0.20						1		2.44 X		X			X															OM-1		E-150
1.460 RTE 5 LT	ST. JOHNSBURY 10	1	1800	300	0.54																												D1-1a		E-123
	SOUTH	1	600	300	0.18																												M3-3		E-135
	INTERSTATE 91	1	600	600	0.36																												M1-1		E-135
		1	525	375	0.20						2			9.76 X		X		X															M6-2		E-135
1.460 RTE 5 RT		1	900	900	0.81						1			4.27 X		X		X															W3-3		E-152
1.611 RTE 5 LT	ONLY	1	750	750	0.56						1			4.27 X		X		X															VR-921		E-145A
1.540 RTE 5 RT	NEWPORT 36	1	1800	300	0.54																												D1-1a		E-123
	NORTH	1	600	300	0.18																												M3-1		E-135
	INTERSTATE 91	1	600	600	0.36																												M1-1		E-135
		1	525	375	0.20						2			9.75 X		X		X															M6-1		E-135
1.550 RTE 5 LT	13' 11"	1	900	900	0.81						1			4.27 X		X		X															W12-2		E-155
1.579 RTE 5 LT	NORTH	1	600	300	0.18																												M3-1		E-135
	INTERSTATE 91	1	600	600	0.36																												M1-1		E-135
		1	525	375	0.20						1			4.88 X		X		X															M6-1		E-135
											m 0.0	m ~~2.7~~ 2.44	m ~~37.0~~ 37.2		m 0.0	m ~~2.7~~	m ~~37.0~~		EA. 0	kg 0.0	kg 0.0	kg 0.0		kg 0.0	kg 0.0	kg 0.0	kg 0.0								
											39.64				0																				
SHEET TOTALS		m2 5.68	m2 0.00	EA. 0	m2 0.00						m ~~39.7~~				m ~~39.7~~					kg 0.0			EA. 0	kg 0.0				EA. 0	EA. 0	kg 0					

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

PROJECT NAME: ST. JOHNSBURY-LYNDON
PROJECT NUMBER: HES 091-3(42)

FILE NAME:	tsssStJ.xls	PLOT DATE:	1/4/2007
PROJECT LEADER:	CRB	DRAWN BY:	HJC
DESIGNED BY:	PTS	CHECKED BY:	DAM
CLD REF. NO.:	97-0211	SHEET	60 OF 130

STATE OF VERMONT
AGENCY OF TRANSPORTATION

TRAFFIC SIGN SUMMARY SHEET 33

Metric

MILE MARKER	SIGN LEGEND	SIGN DIMENSIONS EA	WIDTH (mm)	HEIGHT (mm)	NEW & SALVAGED SIGNS "A"	"B"	SALV SIGN	SALV TIS	EXIST POST RETAIN	EXIST POST SALVAGE	NEW SIGN POSTS NO. OF POSTS	FLANGED CHANNEL kg/m 1.7	3.0	4.5	SQUARE STEEL (mm) 44 kg/m 3.4	50 kg/m 3.9	63 kg/m 5.0	ANCHOR	SLEEVE	TUBULAR ALUMINUM DIA (mm) 75 kg/m 1.9	100 kg/m 2.5	100MD kg/m 2.5	TUBULAR STEEL DIA (mm) FND-ATION	75 kg/m 11.3	90 kg/m 13.6	100 kg/m 16.1	125 kg/m 21.8	W-SHAPE STEEL FTG. SIZE 600 mm	750 mm	MASS	POST SIZE	SIGN FRAME	REMARKS	SIGN DETAIL DETAIL ON SHEET NUMBER	STD. SHEET NUMBER
1.579 RTE 5 LT	SOUTH NORTH TO	1	600	300	0.18																												M3-3		E-136A
		1	600	300	0.18																												M3-1		E-136A
		1	600	300	0.18																												M4-5		E-136A
	5 5 VERMONT 114	1	600	600	0.36																												M1-4		E-136A
		1	600	600	0.36																												M1-4		E-136A
		1	750	600	0.45																												M1-4		E-136A
		1	525	375	0.20																			77.49									M6-1		E-136A
		1	525	375	0.20						2												2	X							#3	M6-1		E-136A
		1	525	375	0.20																												M6-1		E-136A
1.580 RTE 5 LT	SOUTH SOUTH NORTH	1	600	300	0.18																												M3-3		E-136A
		1	600	300	0.18																												M3-3		E-135
		1	600	300	0.18																												M3-1		E-135
	5 INTERSTATE 91 INTERSTATE 91	1	600	600	0.36																												M1-4		E-136A
		1	600	600	0.36																												M1-1		E-135
		1	600	600	0.36																												M1-1		E-135
		1	525	375	0.20																			80.08									M6-3		E-136A
		1	525	375	0.20						2												2	X							#3	M6-3		E-136A
		1	525	375	0.20																												M6-1		E-135
1.580 RTE 5 RT	NORTH	1	600	300	0.18																												M3-1		E-136A
	5	1	600	600	0.36						1			4.27 X		X		X															M1-4		E-136A
1.600 RTE 5 RT	ONLY	1	750	750	0.56						1			4.27 X		X		X															VR-921		E-145A
1.605 RTE 5 LT	ST. JOHNSBURY 10	1	1800	300	0.54																												D1-1a		E-123
	NEWPORT 36	1	1800	300	0.54						2			8.54 X		X		X															D1-1a		E-123
1.640 RTE 5 RT	LYNDONVILLE 2	1	1800	300	0.54																												D2-1		E-123
	LYNDON CENTER 3	1	1800	300	0.54						2			8.54 X		X		X															D2-1		E-123
1.650 RTE 5 LT	JCT	1	525	375	0.20																												M2-1		E-135
	INTERSTATE 91	1	600	600	0.36						1			4.27 X		X		X															M1-1		E-135
1.670 RTE 5 RT	ONLY	1	750	750	0.56						1			4.27 X		X		X															VR-921		E-145A
											m 0.0	m 0.0	m 34.3 34.16	m 0.0	m 0.0	m 34.3		EA. 0		kg 0.0	kg 0.0	kg 0.0		kg 165.0 157.57	kg 0.0	kg 0.0	kg 0.0								
											34.16			0																						
	SHEET TOTALS		m2 8.91	m2 0.00	EA. 0	m2 0.00					m 34.3			m 34.3				kg 0.0		EA. 4		kg 157.57 165.0				EA. 0	EA. 0	kg 0							

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

PROJECT NAME: ST. JOHNSBURY-LYNDON
PROJECT NUMBER: HES 091-3(42)

FILE NAME:	tsssStJ.xls	PLOT DATE:	1/4/2007
PROJECT LEADER:	CRB	DRAWN BY:	HJC
DESIGNED BY:	PTS	CHECKED BY:	DAM
CLD REF. NO.:	97-0211	SHEET	61 OF 130

STATE OF VERMONT
AGENCY OF TRANSPORTATION

TRAFFIC SIGN SUMMARY SHEET 34

Metric

MILE MARKER	SIGN LEGEND	SIGN DIMENSIONS EA	WIDTH (mm)	~~HEIGHT (mm)~~	NEW & SALVAGED SIGNS "A"	"B"	SALV SIGN	SALV TIS	EXIST POST RETAIN	SALVAGE	NO. OF POSTS	NEW SIGN POSTS: FLANGED CHANNEL kg/m 1.7	3.0	4.5	SQUARE STEEL (mm) kg/m 44 3.4	50 3.9	63 5.0	ANCHOR	SIFFVL	TUBULAR ALUMINUM DIA (mm) kg/m 75 1.9	100 2.5	100MD 2.5	FND-ATION	TUBULAR STEEL DIA (mm) kg/m 75 11.3	90 13.6	100 16.1	125 21.8	W-SHAPE STEEL FTG. SIZE 600 mm	750 mm	MASS	~~POST SIZE~~ MASS	SIGN FRAME	REMARKS	SIGN DETAIL: DETAIL ON SHEET NUMBER	STD. SHEET NUMBER
	SUBTOTAL SHEET 1 29				10.57	34.18	0	0.00				~~15.8~~ 10.98				~~15.8~~			~~24.2~~ 24.12			7	~~488.9~~ 506.5				4	0	~~660~~	683				
	SUBTOTAL SHEET 2 30				9.95	50.49	0	0.00				~~35.5~~ 33.35				~~35.5~~			~~69.7~~ 64.10			2	~~81.4~~ 93.0				6	0	~~1326~~	1364				
	SUBTOTAL SHEET 3 31				13.55	35.96	0	0.00				~~25.0~~ 23.16				~~25.0~~			~~22.8~~ 19.70			7	~~479.7~~ 464.3				4	0	~~595~~	602				
	SUBTOTAL SHEET 4 32				9.01	28.62	0	0.00				~~23.7~~ 23.17				~~23.7~~			~~22.8~~ 21.40			8	~~352.5~~ 380.6				4	0	~~770~~	764				
	SUBTOTAL SHEET 5 33			14.18	~~13.37~~	18.77	0	0.00				~~41.5~~ 43.88				~~41.5~~			~~24.7~~ 23.31			7	~~338.5~~ 352.1				2	0	~~378~~	456				
	SUBTOTAL SHEET 6 34				7.88	67.37	0	0.00				~~31.3~~ 30.48				~~31.3~~			0.0			6	~~249.7~~ 253.18				10	0	~~4649~~	1681				
	SUBTOTAL SHEET 7 35				11.07	3.00	0	0.00				~~32.8~~ 29.26				~~32.8~~			~~24.7~~ 22.88			7	~~352.5~~ 370.32				0	0	0					
	SUBTOTAL SHEET 8 36				12.88	92.93	0	0.00				~~15.9~~ 16.33				~~15.9~~			0.0			8	~~380.8~~ 417.7				4	2	~~1424~~	1472				
	SUBTOTAL SHEET 9 37				9.37	2.70	0	0.00				~~30.3~~ 29.26				~~30.3~~			~~47.0~~ 41.60			7	~~314.1~~ 328.9				0	0	0					
	SUBTOTAL SHEET 10 38				12.37	74.32	0	0.00				~~32.8~~ 31.54				~~32.8~~			~~22.5~~ 21.00			4	~~352.6~~ 341.1				8	0	~~1682~~	1612				
	SUBTOTAL SHEET 11 39				9.20	28.62	0	0.00				~~22.9~~ 23.17				~~22.9~~			~~22.8~~ 19.54			7	~~310.7~~ 341.8				4	0	~~704~~	679				
	SUBTOTAL SHEET 12 40				8.68	52.82	0	0.00				~~43.4~~ 47.54				~~43.4~~			0.0			6	~~504.2~~ 485.1				6	0	~~840~~	822				
	SUBTOTAL SHEET 13 41				12.56	3.24	0	0.00				~~16.4~~ 14.63				~~16.4~~			~~22.8~~ 18.67			11	~~607.9~~ 629.32				0	0	0					
	SUBTOTAL SHEET 14 42			8.76	~~8.56~~	47.43	0	0.00				~~29.5~~ 30.48				~~29.5~~			0.0			6	~~262.1~~ 301.36				8	0	~~1025~~	1038				
	SUBTOTAL SHEET 15 43				12.78	15.67	0	0.00				~~19.0~~ 17.07				~~19.0~~			~~47.5~~ 42.57			7	~~347.7~~ 360.69				2	0	~~287~~	335				
	SUBTOTAL SHEET 16 44				14.71	0.00	0	0.00				~~105.9~~ 115.27				~~105.9~~			~~23.2~~ 22.30			4	~~179.8~~ 182.52				0	0	0					
	SUBTOTAL SHEET 17 45			11.30	~~12.43~~	0.00	0	0.00				~~69.2~~ 78.08				~~69.2~~			0.0			4	~~171.9~~ 189.39				0	0	0					
	SUBTOTAL SHEET 18 46			12.19	~~13.14~~	0.00	0	0.00				~~71.7~~ 76.25				~~71.7~~			~~23.2~~ 22.60			4	~~177.5~~ 181.15				0	0	0					
	SUBTOTAL SHEET 19 47			8.42	~~7.34~~	32.13	0	0.00				~~6.8~~ 16.47				~~6.8~~			~~19.0~~ 19.90			4	~~311.0~~ 323.55				0	2	~~663~~	672				
	SUBTOTAL SHEET 20 48				13.86	11.64	0	0.00				~~62.4~~ 59.17				~~62.4~~			~~11.4~~ 10.60			6	~~284.8~~ 272.85				2	0	~~400~~	361				
	SUBTOTAL SHEET 21 49				6.60	0.00	0	0.00				~~67.6~~ 59.15				~~67.6~~			0.0			0	0.0				0	0	0					
	SUBTOTAL SHEET 22 50				7.92	31.72	0	0.00				~~40.9~~ 40.26				~~40.9~~			0.0			3	~~136.8~~ 129.16				2	2	~~864~~	860				
	SUBTOTAL SHEET 23 51			9.04	~~9.99~~	0.00	0	0.00				~~34.1~~ 29.89				~~34.1~~			~~9.5~~ 9.70			5	~~220.4~~ 235.07				0	0	0					
	SUBTOTAL SHEET 24 52			10.94	~~10.27~~	0.00	0	0.00				~~33.5~~ 50.63				~~33.5~~			0.0			4	~~177.5~~ 179.96				0	0	0					
	SUBTOTAL SHEET 25 53				9.88	0.00	0	0.00				~~57.7~~ 58.75				~~57.7~~			~~23.2~~ 19.97			0	0.0				0	0	0					
	SUBTOTAL SHEET 26 54				6.89	0.00	1	0.00				~~30.7~~ 31.11				~~30.7~~			0.0			2	~~101.7~~ 94.72				0	0	0					
	SUBTOTAL SHEET 27 55				6.51	0.00	0	0.00				~~37.7~~ 39.04				~~37.7~~			0.0			2	~~82.6~~ 80.08				0	0	0					
	SUBTOTAL SHEET 28 56			10.51	~~9.70~~	0.00	0	0.00				~~61.3~~ 83.56				~~61.3~~			0.0			5	~~212.6~~ 210.1				0	0	0					
	SUBTOTAL SHEET 29 57			10.81	~~11.28~~	0.00	0	0.00				~~11.9~~ 12.81				~~11.9~~			0.0			6	~~258.8~~ 266.9				0	0	0					
	SUBTOTAL SHEET 30 58			9.42	~~10.18~~	0.00	0	0.00				~~35.0~~ 34.76				~~35.0~~			~~23.2~~ 20.56			2	~~79.1~~ 79.2				0	0	0					
	SUBTOTAL SHEET 31 59				8.87	0.00	2	0.00				~~34.8~~ 35.36				~~34.8~~			0.0			4	~~162.8~~ 152.4				0	0	0					
	SUBTOTAL SHEET 32 60				5.68	0.00	0	0.00				~~39.7~~ 39.64				~~39.7~~			0.0			0	0.0				0	0	0					
	SUBTOTAL SHEET 33 61				8.91	0.00	0	0.00				~~34.3~~ 34.16				~~34.3~~			0.0			4	~~165.0~~ 157.57				0	0	0					
	SUBTOTAL				335.27 ~~335.96~~	631.61	3	0.00				1300.66 ~~1251.0~~				0 ~~1251.0~~			444.52 ~~484.2~~			159	8370.59 ~~8145.5~~				66	6	13401 ~~13267~~					
	ROUNDING				0 0.04	0 ~~0.39~~	0	0.00				0.0				0.0			0 0.8			0	0 0.5				0	0	0					

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".

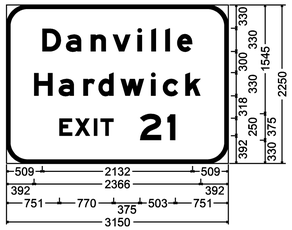
	335.27	631.61				1300.66	0	444.52		8370.59			13401	
PROJECT TOTALS	m2 ~~336.00~~	m2 ~~632.00~~	EA. 3	m2 0.00		m ~~1251.0~~	m 1,251.0	kg ~~485.0~~	EA. 159	kg ~~8146.0~~	EA. 66	EA. 6.0	kg ~~13267~~	

PROJECT NAME: ST. JOHNSBURY-LYNDON
PROJECT NUMBER: HES 091-3(42)

FILE NAME:	tsss-StJ.xls	PLOT DATE:	1/4/2007
PROJECT LEADER:	CRB	DRAWN BY:	HJC
DESIGNED BY:	PTS	CHECKED BY:	DAM
CLD REF. NO.:	97-0211	SHEET	62 OF 130

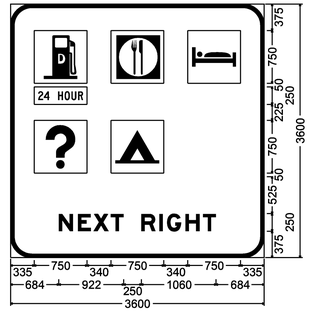
TO BOOK #1 PAGES: 40 50 52 56 58 60 62 54

M.M. 129.921 NB
M.M. 131.236 SB



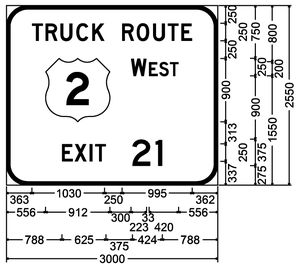
300mm Radius, 50mm Border, White on Green;
[Danville] E Mod 2K; [Hardwick] E Mod 2K; [EXIT 21] E Mod 2K;

M.M. 130.275 NB
M.M. 130.870 SB



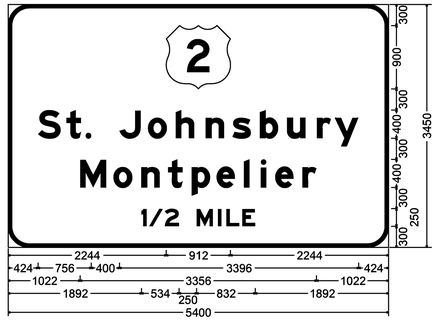
300mm Radius, 50mm Border, White on Blue;
[NEXT RIGHT] E Mod 2K;

M.M. 129.805 NB



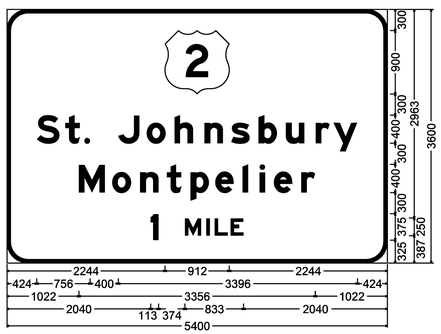
300mm Radius, 50mm Border, White on Green;
[TRUCK ROUTE] D 2K; [WEST] D 2K; [EXIT 21] D 2K;

M.M. 130.080 NB
M.M. 131.040 SB



300mm Radius, 50mm Border, White on Green;
[St. Johnsbury] E Mod 2K; [Montpelier] E Mod 2K; [1/2 MILE] E Mod 2K;

M.M. 129.647 NB
M.M. 131.540 SB



300mm Radius, 50mm Border, White on Green;
[St. Johnsbury] E Mod 2K; [Montpelier] E Mod 2K; [1 MILE] E Mod 2K;

GENERAL SIGN DETAIL NOTES

1. THE NOTE BELOW EACH SIGN DETAIL INCLUDES THE CORNER RADII, BORDER WIDTH, TEXT COLOR, BACKGROUND COLOR AND TEXT SERIES TO BE USED.
2. COLORS: UNLESS NOTED OTHERWISE, WHITE ON GREEN AND WHITE ON BLUE SIGNIFIES REFLECTORIZED WHITE TEXT ON A REFLECTORIZED GREEN OR BLUE BACKGROUND, RESPECTIVELY. BLACK ON YELLOW AND BLACK ON WHITE SIGNIFIES BLACK TEXT ON A REFLECTORIZED YELLOW OR WHITE BACKGROUND, RESPECTIVELY. ALL COLORS SHALL CONFORM WITH THE COLORS ADOPTED BY AASHTO AND APPROVED BY THE FHWA.
3. TEXT LAYOUT DIMENSIONS ARE BASED ON THE STANDARD ALPHABETS SPACING CHARTS FOUND IN THE MUTCD "STANDARD HIGHWAY SIGNS" PUBLICATION. MINOR VARIATIONS IN TEXT DIMENSIONS ARE ACCEPTABLE BASED ON INDIVIDUAL MANUFACTURER'S LETTER FABRICATION. SIGNIFICANT CHANGES WHICH AFFECT SIGN APPEARANCE SHALL BE BROUGHT TO THE ATTENTION OF THE VTRANS' TRAFFIC AND SAFETY SECTION BEFORE FABRICATION.
4. UNLESS NOTED OTHERWISE, THE DESIGN/DIMENSIONS FOR SYMBOLS SHOWN ON THESE SIGNS CAN BE FOUND IN VTRANS' STANDARDS OR IN THE STANDARD HIGHWAY SIGNS PUBLICATION.
5. FOR GUIDE SIGN ROUTE MARKER DETAILS SEE STD'S E-135, E-136A AND E-136B
6. THE NOTE BELOW EACH GUIDE SIGN DETAIL SPECIFIES APPROPRIATE ARROW LENGTHS WHEN APPLICABLE. FOR ARROW DIMENSIONS REFER TO GUIDE SIGN ARROW DETAILS IN THE STANDARD HIGHWAY SIGNS PUBLICATION.

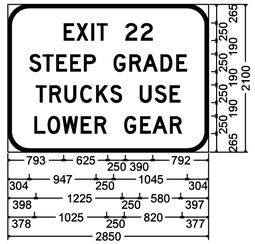
SIGN DETAIL SHEET 1

PROJECT NAME: ST. JOHNSBURY-LYNDON
PROJECT NUMBER: HES 091-3(42)

FILE NAME: 972lla-details.dgn
PROJECT LEADER: CRB
DESIGNED BY: PTS
CLD REF. NO.: 97-021l

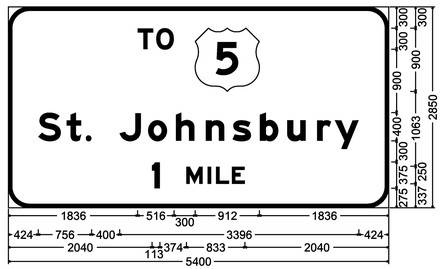
PLOT DATE: 1/4/2007
DRAWN BY: HJC
CHECKED BY: DAM
SHEET 63 OF 130

M.M. 131.770 NB
M.M. 133.385 SB



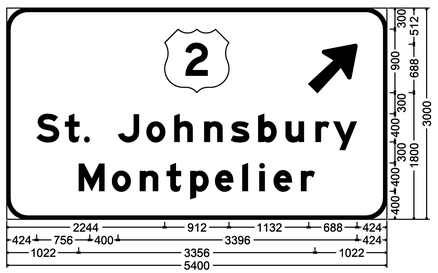
300mm Radius, 50mm Border, Black on Yellow;
[EXIT 22] D 2K; [STEEP GRADE] D 2K; [TRUCKS USE] D 2K;
[LOWER GEAR] D 2K;

M.M. 131.380 NB
M.M. 133.691 SB



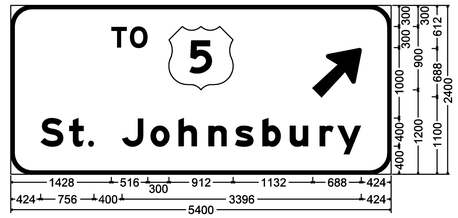
300mm Radius, 50mm Border, White on Green;
[TO] E Mod 2K; [St. Johnsbury] E Mod 2K; [1 MILE] E Mod 2K;

M.M. 130.550 NB
M.M. 130.700 SB



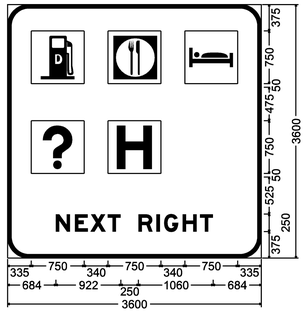
300mm Radius, 50mm Border, White on Green;
Arrow 160 - 875mm 45°; [St. Johnsbury] E Mod 2K; [Montpelier] E Mod 2K;

M.M. 132.300 NB
M.M. 132.950 SB



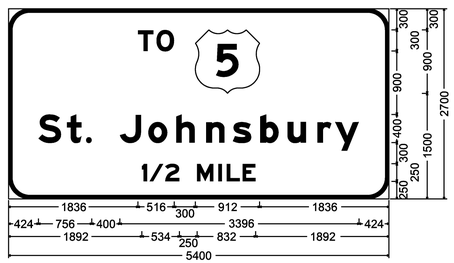
300mm Radius, 50mm Border, White on Green;
[TO] E Mod 2K; Arrow 160 - 875mm 45°; [St. Johnsbury] E Mod 2K;

M.M. 132.143 NB
M.M. 133.085 SB



300mm Radius, 50mm Border, White on Blue;
[NEXT RIGHT] E Mod 2K;

M.M. 131.908 NB
M.M. 133.235 SB



300mm Radius, 50mm Border, White on Green;
[TO] E Mod 2K; [St. Johnsbury] E Mod 2K; [1/2 MILE] E Mod 2K;

SEE GENERAL SIGN DETAIL NOTES ON SHEET 63.

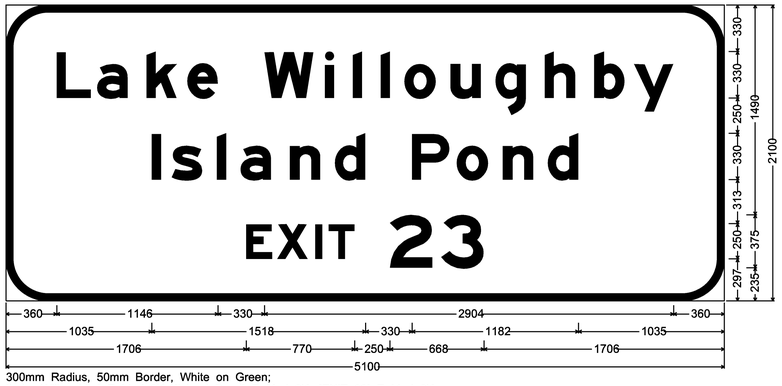
SIGN DETAIL SHEET 2

PROJECT NAME: ST. JOHNSBURY-LYNDON
PROJECT NUMBER: HES 091-3(42)

FILE NAME: 972IIa-details.dgn
PROJECT LEADER: CRB
DESIGNED BY: PTS
CLD REF. NO.: 97-02II

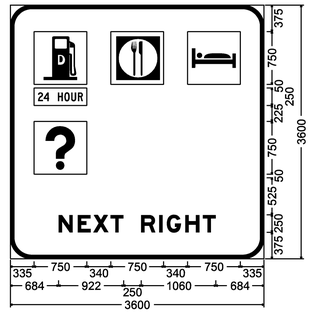
PLOT DATE: 1/4/2007
DRAWN BY: HJC
CHECKED BY: DAM
SHEET 64 OF 130

M.M. 136.138 NB



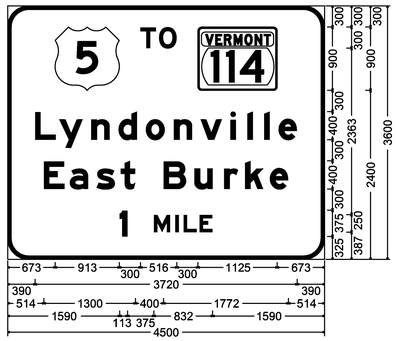
300mm Radius, 50mm Border, White on Green;
[Lake Willoughby] E Mod 2K; [Island Pond] E Mod 2K; [EXIT 23] E Mod 2K;

M.M. 136.612 NB
M.M. 137.614 SB



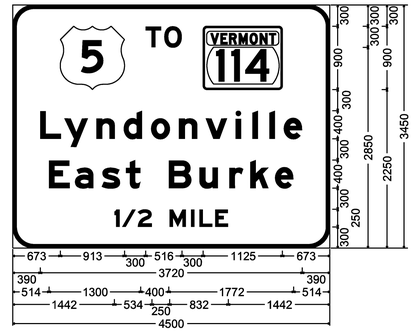
300mm Radius, 50mm Border, White on Blue;
[NEXT RIGHT] E Mod 2K;

M.M. 135.870 NB



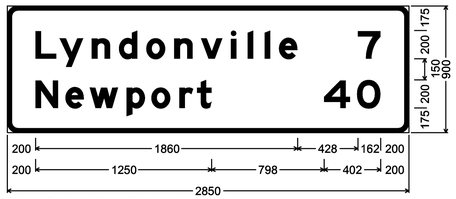
300mm Radius, 50mm Border, White on Green;
[TO] E Mod 2K; VT 114; [Lyndonville] E Mod 2K; [East Burke] E Mod 2K; [1 MILE] E Mod 2K;

M.M. 136.450 NB



300mm Radius, 50mm Border, White on Green;
[TO] E Mod 2K; VT 114; [Lyndonville] E Mod 2K; [East Burke] E Mod 2K; [1/2 MILE] E Mod 2K;

M.M. 133.590 NB



75mm Radius, 30mm Border, White on Green;
[Lyndonville] E Mod 2K; [7] E Mod 2K; [Newport] E Mod 2K;
[40] E Mod 2K;

SEE GENERAL SIGN DETAIL NOTES ON SHEET 63.

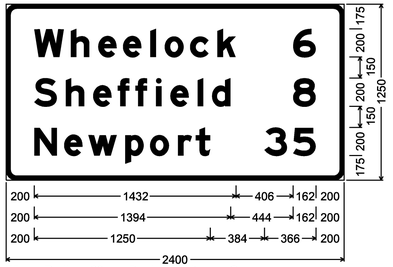
SIGN DETAIL
SHEET 3

PROJECT NAME: ST. JOHNSBURY-LYNDON
PROJECT NUMBER: HES 091-3(42)

FILE NAME: 9721la-details.dgn
PROJECT LEADER: CRB
DESIGNED BY: PTS
CLD REF. NO.: 97-0211

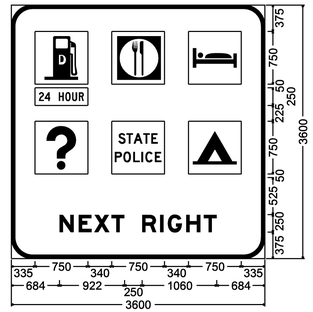
PLOT DATE: 1/4/2007
DRAWN BY: HJC
CHECKED BY: DAM
SHEET 65 OF 130

M.M. 138.300 NB



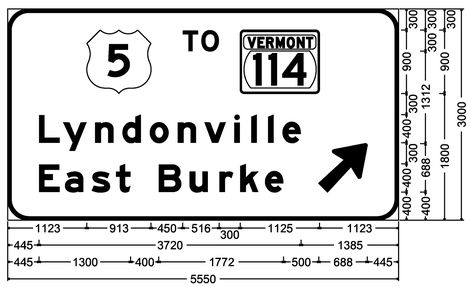
75mm Radius, 30mm Border, White on Green;
[Wheelock] E Mod 2K; [6] E Mod 2K;
[Sheffield] E Mod 2K; [8] E Mod 2K;
[Newport] E Mod 2K; [35] E Mod 2K;

M.M. 129.400 SB



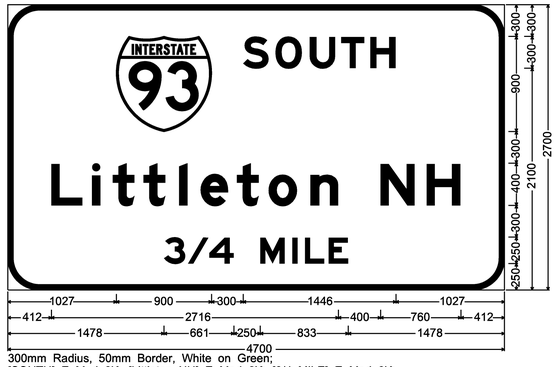
300mm Radius, 50mm Border, White on Blue;
[NEXT RIGHT] E Mod 2K;

M.M. 136.820 NB



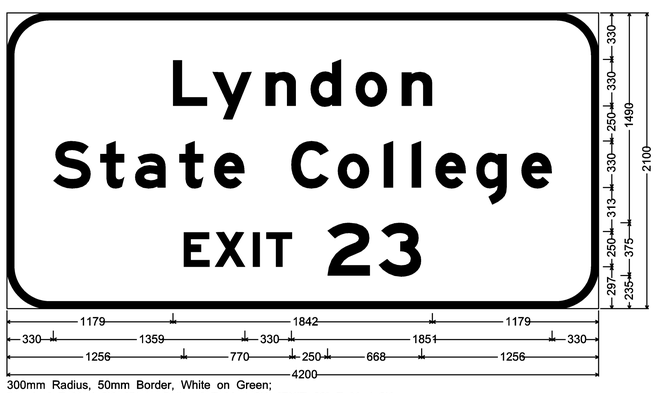
300mm Radius, 50mm Border, White on Green;
[TO] E Mod 2K; VT 114; [Lyndonville] E Mod 2K; [East Burke] E Mod 2K; Arrow 160 - 875mm 45°;

M.M. 129.130 SB
OVERHEAD



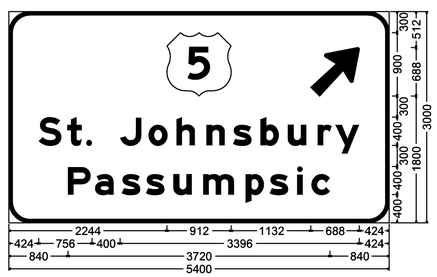
300mm Radius, 50mm Border, White on Green;
[SOUTH] E Mod 2K; [Littleton NH] E Mod 2K; [3/4 MILE] E Mod 2K;

M.M. 136.300 NB
M.M. 138.010 SB



300mm Radius, 50mm Border, White on Green;
[Lyndon] E Mod 2K; [State College] E Mod 2K; [EXIT 23] E Mod 2K;

M.M. 129.130 SB
OVERHEAD



300mm Radius, 50mm Border, White on Green;
Arrow 160 - 875mm 45°; [St. Johnsbury] E Mod 2K; [Passumpsic] E Mod 2K;

SEE GENERAL SIGN DETAIL NOTES ON SHEET 63.

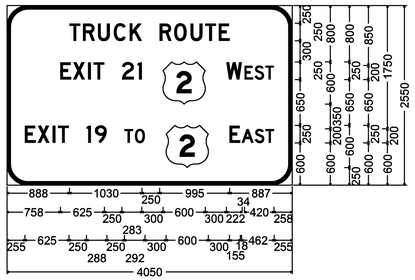
SIGN DETAIL
SHEET 4

PROJECT NAME: ST. JOHNSBURY-LYNDON
PROJECT NUMBER: HES 091-3(42)

FILE NAME: 972lla-details.dgn
PROJECT LEADER: CRB
DESIGNED BY: PTS
CLD REF. NO.: 97-0211

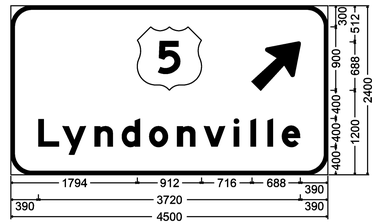
PLOT DATE: 1/4/2007
DRAWN BY: HJC
CHECKED BY: DAM
SHEET 66 OF 130

M.M. 133.500 SB



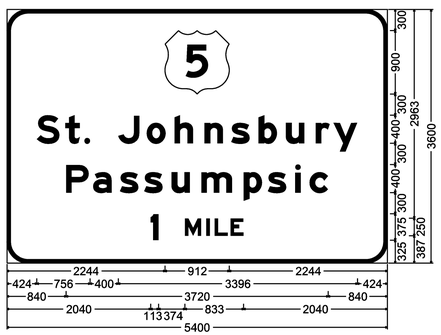
300mm Radius, 50mm Border, White on Green;
[TRUCK ROUTE] D 2K; [EXIT 21] D 2K; [WEST] D 2K; [EXIT 19 TO] D 2K; [EAST] D 2K;

M.M. 137.400 SB



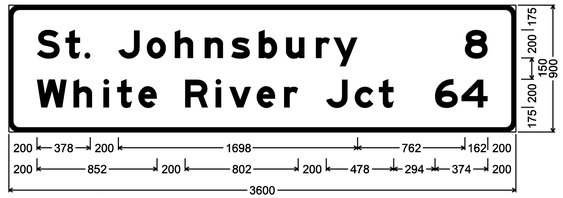
300mm Radius, 50mm Border, White on Green;
Arrow 160 - 875mm 45°; [Lyndonville] E Mod 2K;

M.M. 129.920 SB



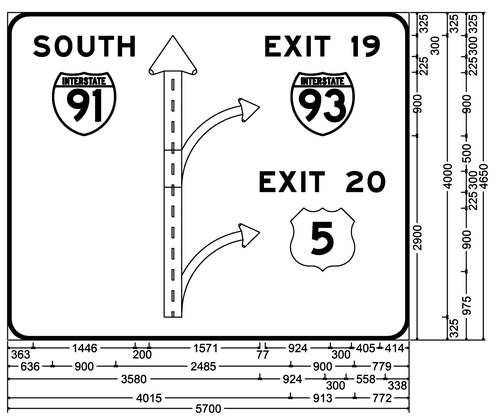
300mm Radius, 50mm Border, White on Green;
[St. Johnsbury] E Mod 2K; [Passumpsic] E Mod 2K; [1 MILE] E Mod 2K;

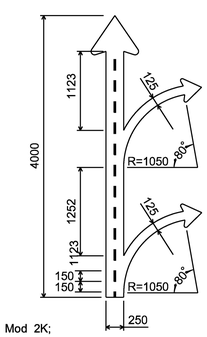
M.M. 136.175 SB



75mm Radius, 30mm Border, White on Green;
[St. Johnsbury] E Mod 2K; [8] E Mod 2K; [White River Jct] E Mod 2K;
[64] E Mod 2K;

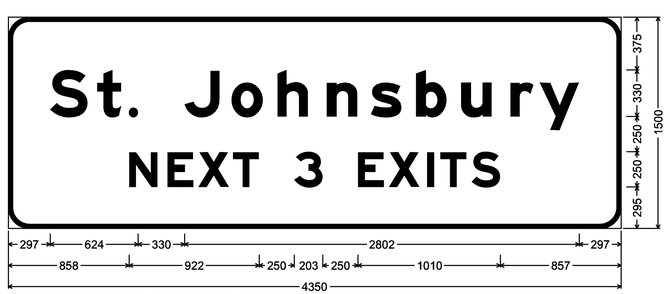
M.M. 129.564 SB





300mm Radius, 50mm Border, White on Green;
[SOUTH] E Mod 2K; Diagrammatic Arrow lane lines Black; [EXIT 19] E Mod 2K; [EXIT 20] E Mod 2K;

M.M. 133.950 SB



150mm Radius, 30mm Border, White on Green;
[St. Johnsbury] E Mod 2K; [NEXT 3 EXITS] E Mod 2K;

SEE GENERAL SIGN DETAIL NOTES ON SHEET 63.

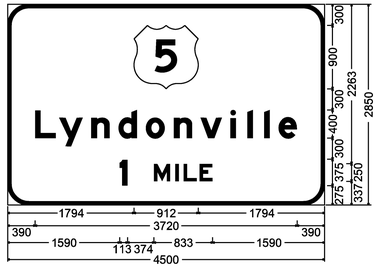
SIGN DETAIL
SHEET 5

PROJECT NAME: ST. JOHNSBURY-LYNDON
PROJECT NUMBER: HES 091-3(42)

FILE NAME: 972lla-details.dgn
PROJECT LEADER: CRB
DESIGNED BY: PTS
CLD REF. NO.: 97-02ll

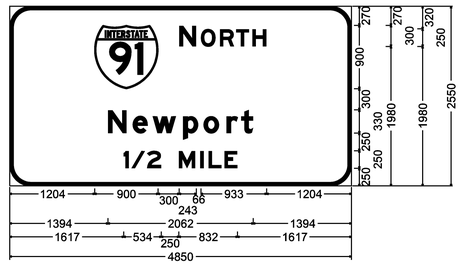
PLOT DATE: 1/4/2007
DRAWN BY: HJC
CHECKED BY: DAM
SHEET 67 OF 130

M.M. 138.230 SB



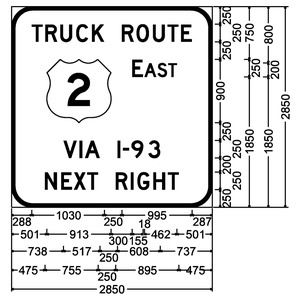
300mm Radius, 50mm Border, White on Green;
[Lyndonville] E Mod 2K; [1 MILE] E Mod 2K;

INT. # 21 RTE. 2
M.M. 1.683 RT



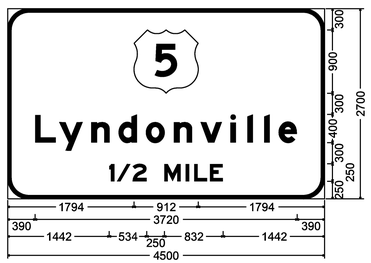
300mm Radius, 50mm Border, White on Green;
[NORTH] E Mod 2K; [Newport] E Mod 2K; [1/2 MILE] E Mod 2K;

INT. # 21 RTE. 2
M.M. 1.530 RT



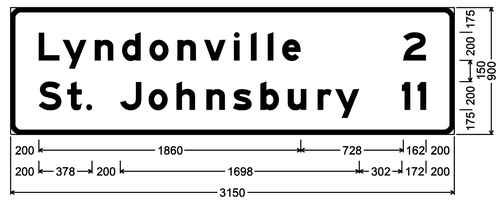
300mm Radius, 50mm Border, White on Green;
[TRUCK ROUTE] D 2K; [EAST] D 2K; [VIA I-93] D 2K;
[NEXT RIGHT] D 2K;

M.M. 137.764 SB



300mm Radius, 50mm Border, White on Green;
[Lyndonville] E Mod 2K; [1/2 MILE] E Mod 2K;

M.M. 139.250 SB



75mm Radius, 30mm Border, White on Green;
[Lyndonville] E Mod 2K; [2] E Mod 2K; [St. Johnsbury] E Mod 2K;
[11] E Mod 2K;

SEE GENERAL SIGN DETAIL NOTES ON SHEET 63.

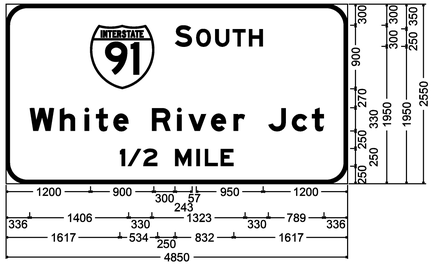
SIGN DETAIL
SHEET 6

PROJECT NAME: ST. JOHNSBURY-LYNDON
PROJECT NUMBER: HES 091-3(42)

FILE NAME: 972lla-details.dgn
PROJECT LEADER: CRB
DESIGNED BY: PTS
CLD REF. NO.: 97-021l

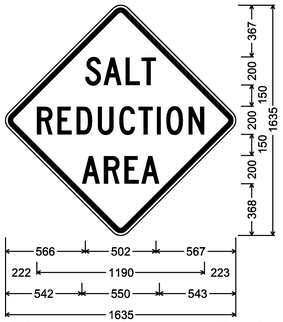
PLOT DATE: 1/4/2007
DRAWN BY: HJC
CHECKED BY: DAM
SHEET 68 OF 130

INT. # 21 RTE. 2
M.M. 2.267 LT

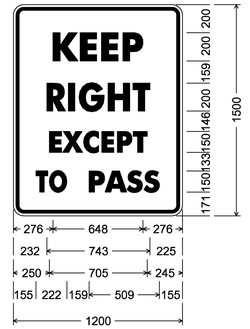


300mm Radius, 50mm Border, White on Green;
[SOUTH] E Mod 2K; [White River Jct] E Mod 2K; [1/2 MILE] E Mod 2K;

MISC.

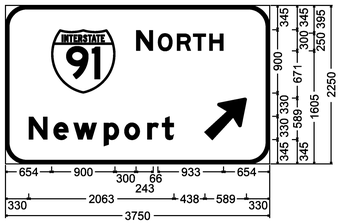


1200mm across sides 75mm Radius, 30mm Border, 20mm Indent, Black on Yellow;
[SALT] C 2K; [REDUCTION] C 2K;
[AREA] C 2K;



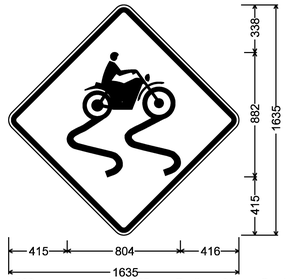
VR-132;
75mm Radius, 22mm Border, 20mm Indent, Black on White;
[KEEP] D, [RIGHT] D
[EXCEPT] D, [TO] D, [PASS] D

INT. # 21 RTE. 2
M.M. 2.258 RT

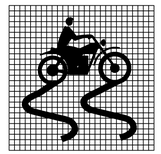


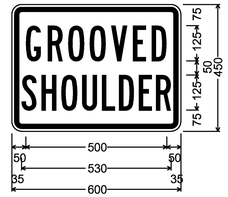
300mm Radius, 50mm Border, White on Green;
[NORTH] E Mod 2K; [Newport] E Mod 2K; Arrow 133 - 750mm 45°;

MISC.



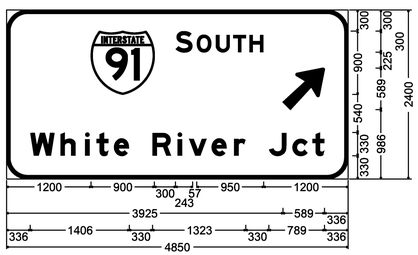
1200mm across sides 75mm Radius, 30mm Border, 20mm Indent, Black on Yellow;
motorcycle;





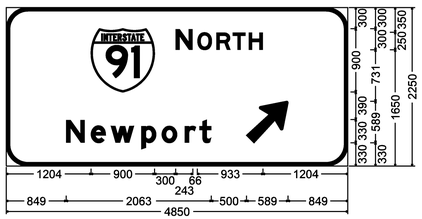
35mm Radius, 15mm Border, 10mm Indent, Black on Yellow;
[GROOVED] B;
[SHOULDER] B 70% spacing;

INT. # 21 RTE. 2
M.M. 1.683 RT
M.M. 1.870 LT



300mm Radius, 50mm Border, White on Green;
[SOUTH] E Mod 2K; Arrow 133 - 750mm 45°; [White River Jct] E Mod 2K;

INT. # 21 RTE. 2
M.M. 2.267 LT



305mm Radius, 50mm Border, White on Green;
[NORTH] E Mod 2K; [Newport] E Mod 2K; Arrow 133 - 750mm 45°;

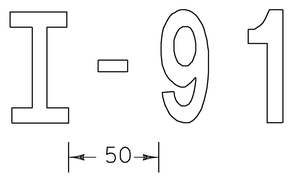
SEE GENERAL SIGN DETAIL NOTES ON SHEET 63.

SIGN DETAIL
SHEET 7

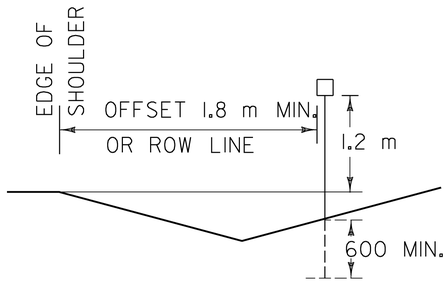
PROJECT NAME: ST. JOHNSBURY-LYNDON
PROJECT NUMBER: HES 091-3(42)

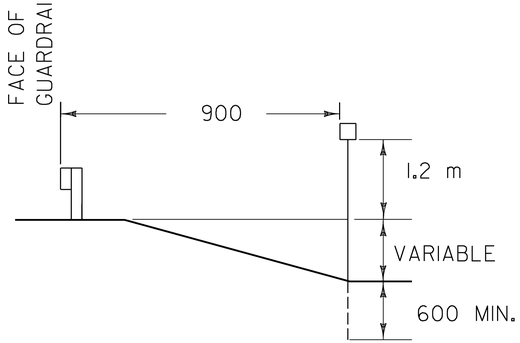
FILE NAME: 972lla-details.dgn
PROJECT LEADER: CRB
DESIGNED BY: PTS
CLD REF. NO.: 97-02ll

PLOT DATE: 1/4/2007
DRAWN BY: HJC
CHECKED BY: DAM
SHEET 69 OF 130

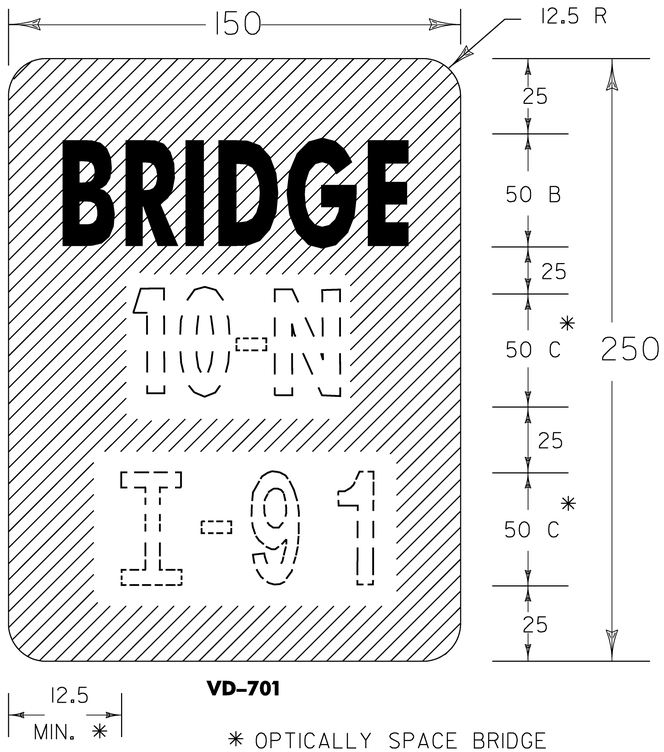


HYPHEN DETAIL





FOR EXAMPLE, ROUTE NUMBERS
SHALL APPEAR AS: I-91, US5, VT22



VD-701

* OPTICALLY SPACE BRIDGE AND ROUTE NUMBERS. SERIES B LETTERS MAY BE USED TO MAINTAIN VISUAL INTEGRITY.

THE FOLLOWING BRIDGES ARE NOT SHOWN ON THE PLANS BUT REQUIRE NEW PLAQUES. QUANTITIES FOR REMOVAL OF EXISTING PLAQUES AND INSTALLATION OF NEW PLAQUES AND POSTS HAVE BEEN ESTIMATED.

NB		SB	
130.039	85-1	130.039	85-1
133.010	90-IN	133.035	90-IS

NOTES:

GENERAL:
DOTTED LINES AND NUMERALS INDICATE TEXT THAT VARIES.

MATERIAL:
THE SIGN BASE MATERIAL SHALL BE 1mm FLAT SHEET ALUMINUM.

COLORS:
THE SIGN SHALL HAVE A RETROREFLECTORIZED WHITE TEXT ON RETROREFLECTORIZED GREEN BACKROUND. THE COLORS SHALL CONFORM WITH THOSE FOUND IN STANDARD COLOR TOLERANCE CHARTS AS APPROVED BY THE U.S. DEPARTMENT OF TRANSPORTATION, FEDERAL HIGHWAY ADMINISTRATION.

RETROREFLECTVITY WILL BE EQUAL TO OR EXCEEDING ASTM TYPE III.

LETTERING:
LETTERS AND DIGITS SHALL CONFORM WITH THE STANDARD ALPHABETS FOR HIGHWAY SIGNS AS PRINTED BY THE FEDERAL HIGHWAY ADMINISTRATION.

POSTS:
FLANGED CHANNEL STEEL 3 kg/m POSTS OR 45 mm SQUARE STEEL WITH 50 mm ANCHOR SHALL BE USED. POST SHALL BE A MINIMUM OF 2.4 m.

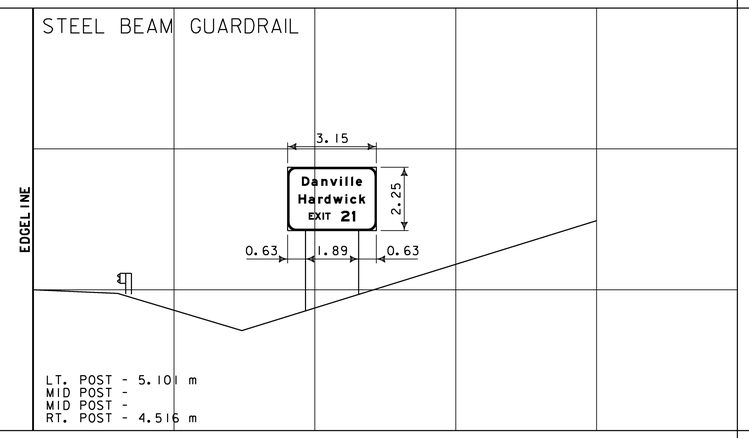
BRIDGE PLAQUE DETAIL

SIGN DETAIL SHEET 8

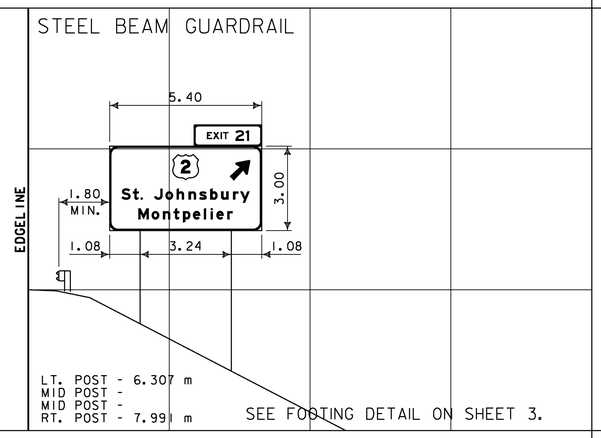
PROJECT NAME: ST. JOHNSBURY-LYNDON
PROJECT NUMBER: HES 091-3(42)

FILE NAME: 972lla-details.dgn
PROJECT LEADER: CRB
DESIGNED BY: PTS
CLD REF. NO.: 97-021l
PLOT DATE: 1/4/2007
DRAWN BY: HJC
CHECKED BY: DAM
SHEET 70 OF 130

M.M. 129.921 NB

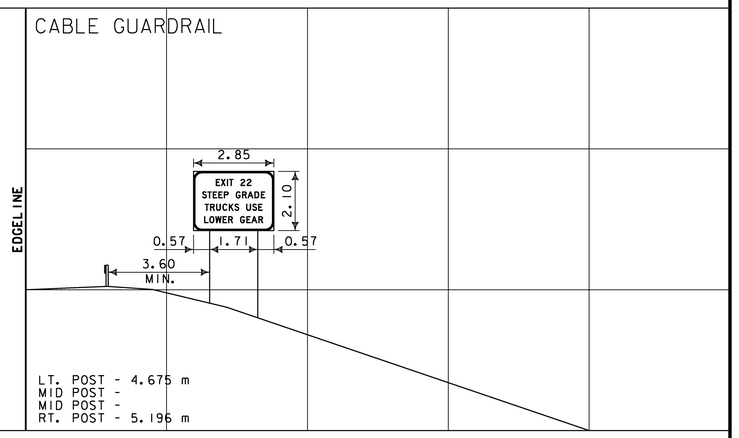


M.M. 130.550 NB

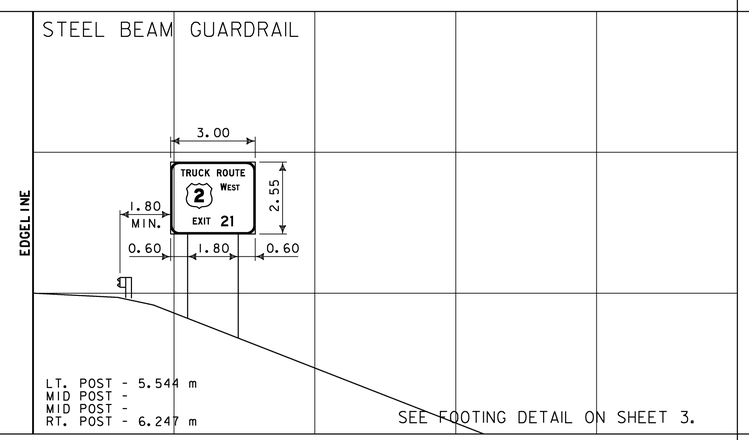


SEE FOOTING DETAIL ON SHEET 3.

M.M. 131.770 NB

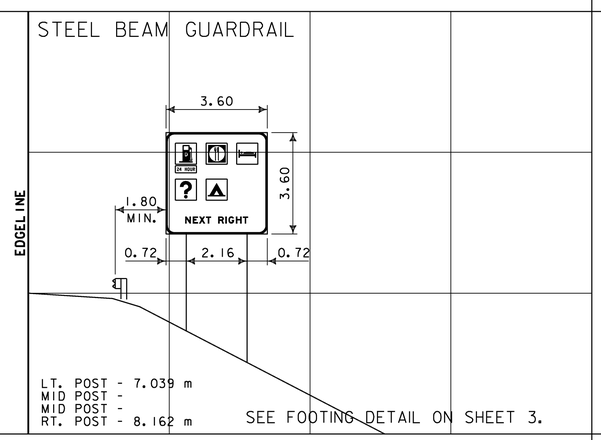


M.M. 129.805 NB



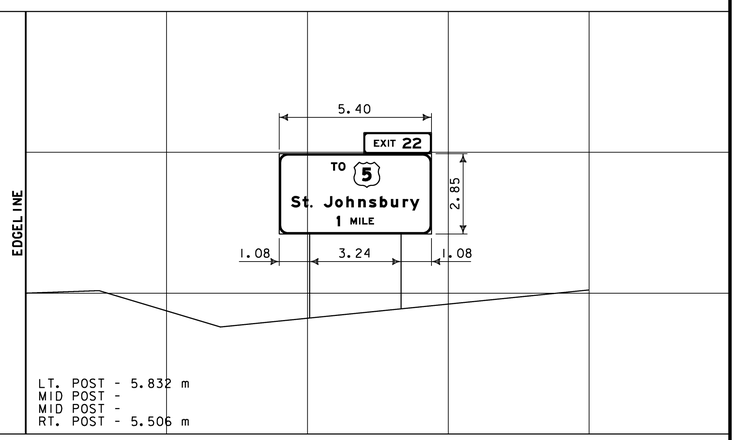
SEE FOOTING DETAIL ON SHEET 3.

M.M. 130.275 NB

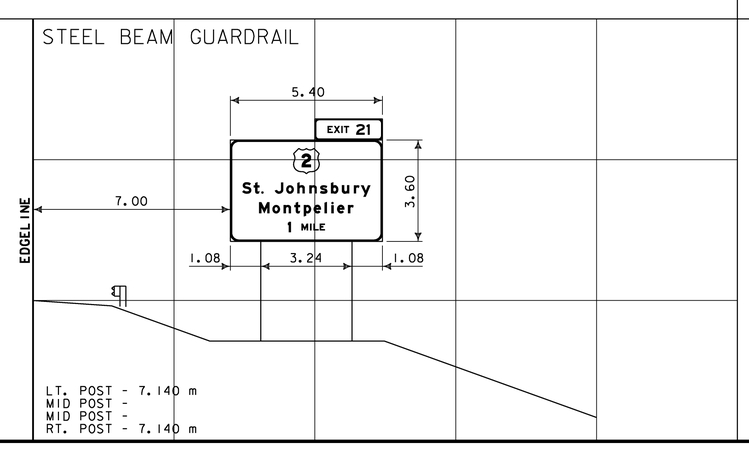


SEE FOOTING DETAIL ON SHEET 3.

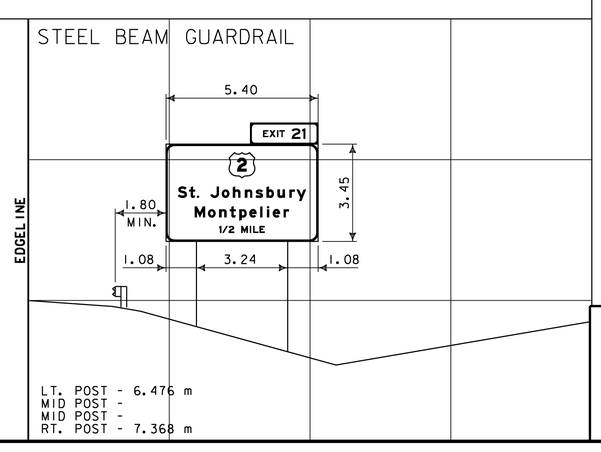
M.M. 131.380 NB

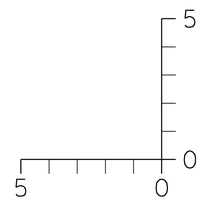


M.M. 129.647 NB



M.M. 130.080 NB





DIMENSIONS FOR CRITICAL OFFSETS OR CLEARANCES SHOWN FOR CONVENIENCE. REFER TO STANDARD SHEETS FOR PLACEMENT GUIDELINES.

SIGN CROSS SECTION SHEET 1

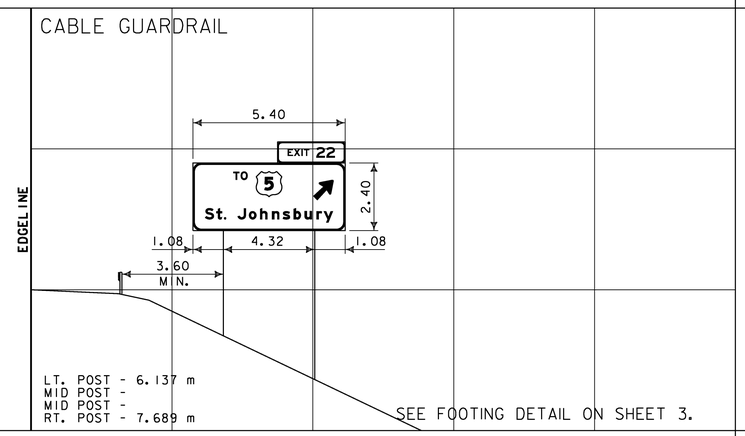
PROJECT NAME: ST. JOHNSBURY-LYNDON
PROJECT NUMBER: HES 091-3(42)

FILE NAME: 9721la-xs.dgn
PROJECT LEADER: CRB
DESIGNED BY: DAM
CLD REF. NO.: 97-0211

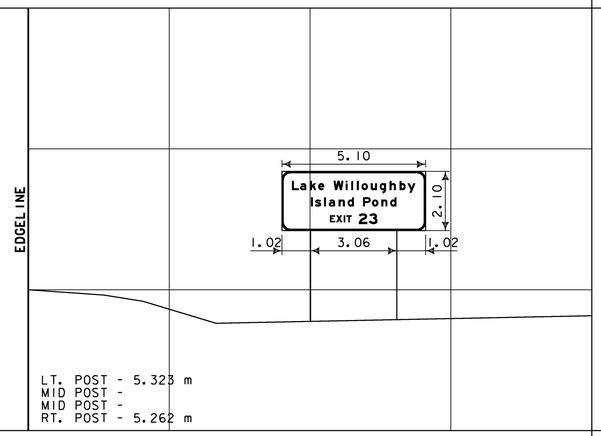
PLOT DATE: 1/4/2007
DRAWN BY: HJC
CHECKED BY: DAM
SHEET 71 OF 130

Metric

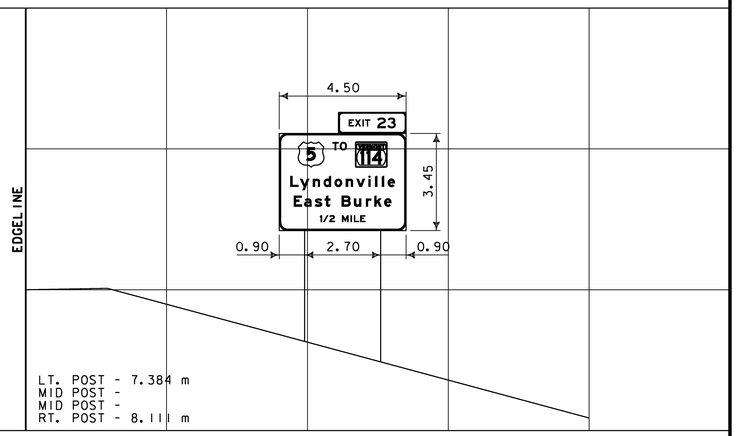
M.M. 132.300 NB



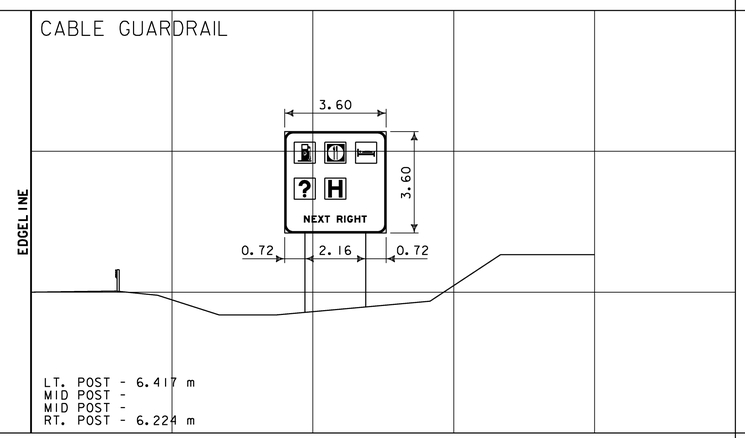
M.M. 136.138 NB



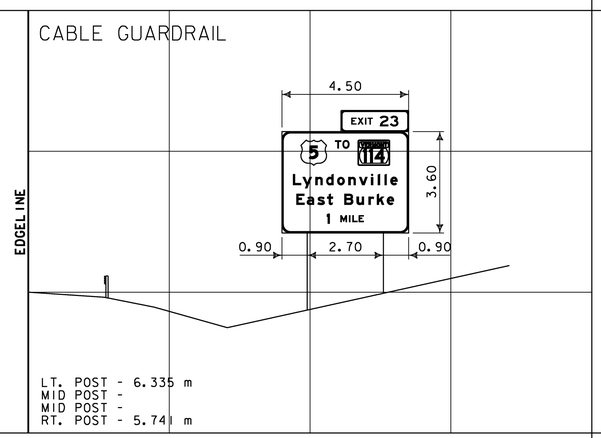
M.M. 136.450 NB



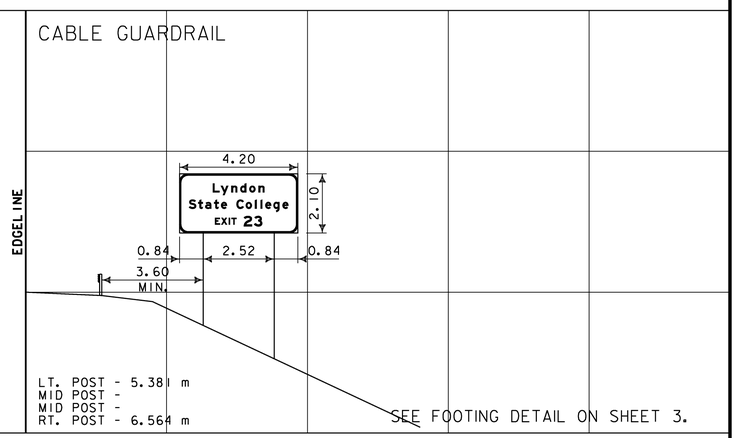
M.M. 132.143 NB



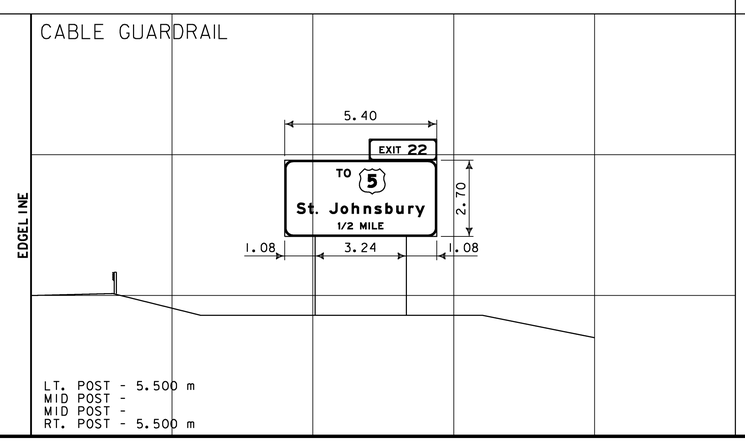
M.M. 135.870 NB



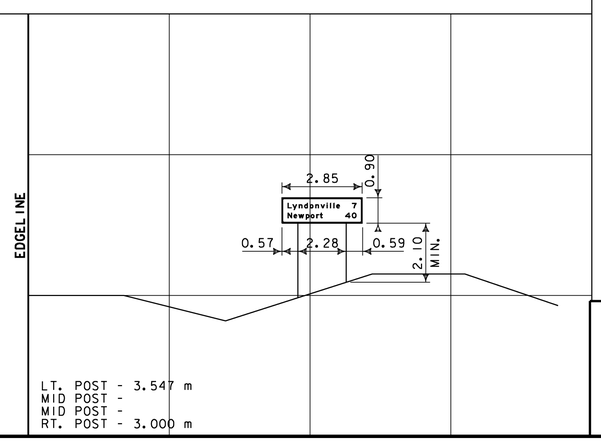
M.M. 136.300 NB

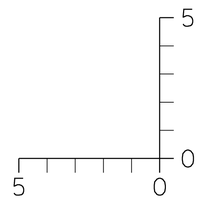


M.M. 131.908 NB



M.M. 133.590 NB





DIMENSIONS FOR CRITICAL OFFSETS OR CLEARANCES SHOWN FOR CONVENIENCE. REFER TO STANDARD SHEETS FOR PLACEMENT GUIDELINES.

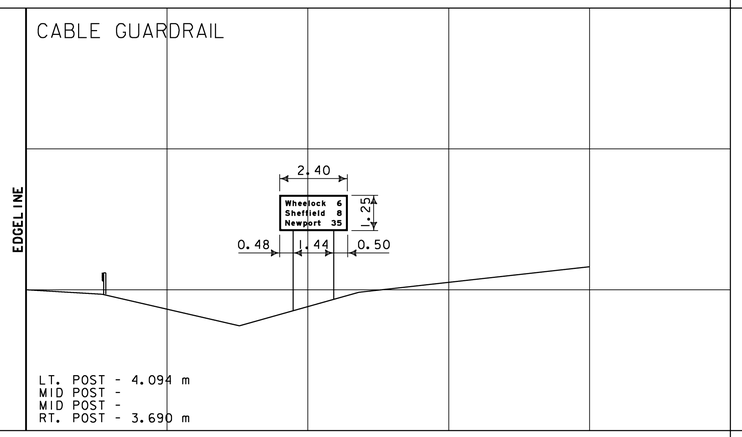
SIGN CROSS SECTION SHEET 2

PROJECT NAME: ST. JOHNSBURY-LYNDON
PROJECT NUMBER: HES 091-3(42)

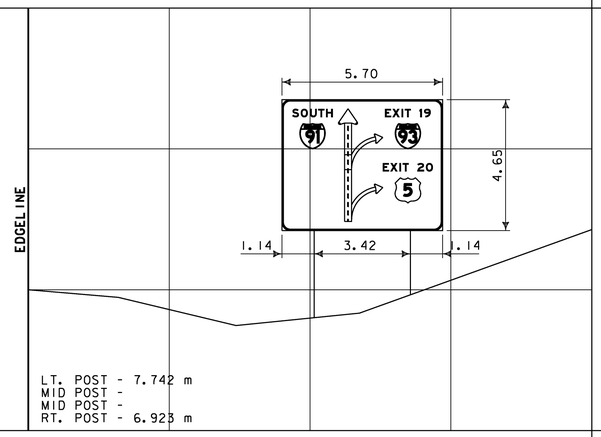
FILE NAME: 97211a-xs.dgn
PROJECT LEADER: CRB
DESIGNED BY: DAM
CLD REF. NO.: 97-0211

PLOT DATE: 1/4/2007
DRAWN BY: HJC
CHECKED BY: DAM
SHEET 72 OF 130

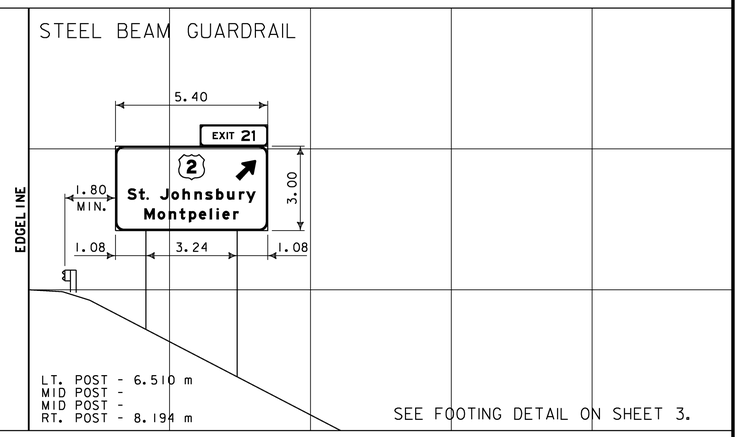
M.M. 138.300 NB



M.M. 129.564 SB

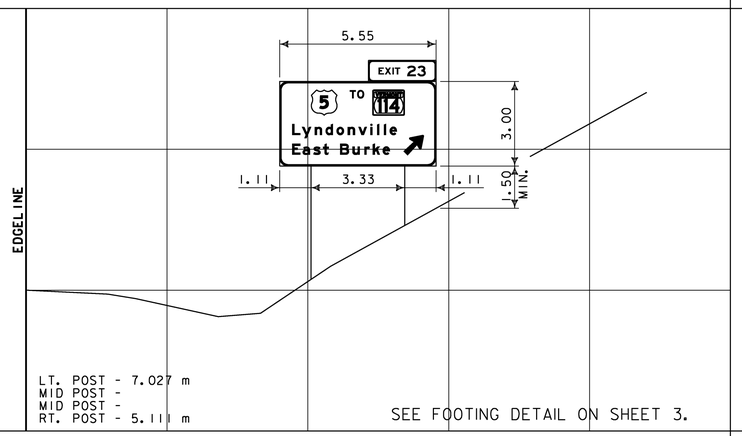


M.M. 130.750 SB



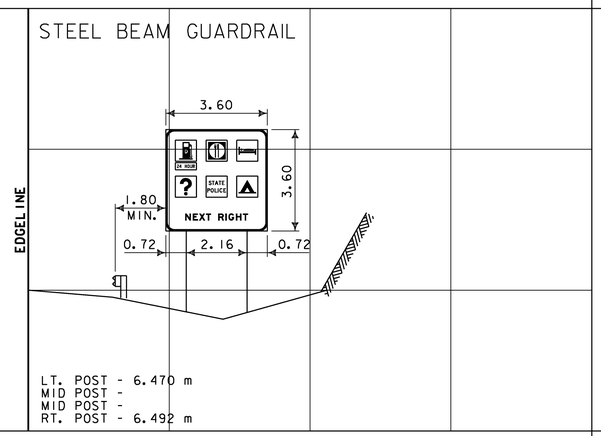
SEE FOOTING DETAIL ON SHEET 3.

M.M. 136.820 NB

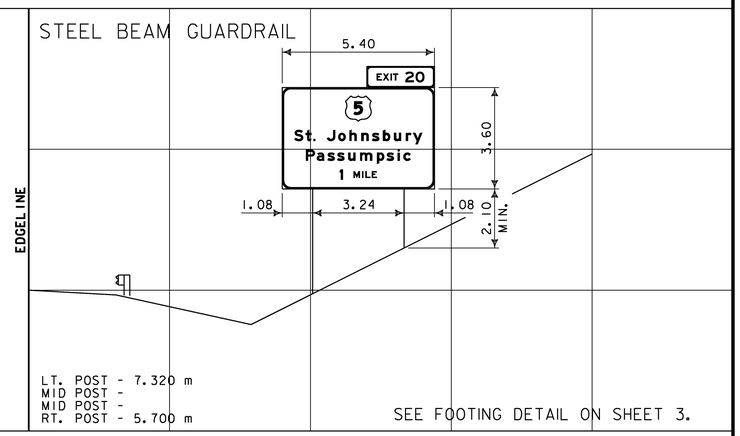


SEE FOOTING DETAIL ON SHEET 3.

M.M. 129.400 SB

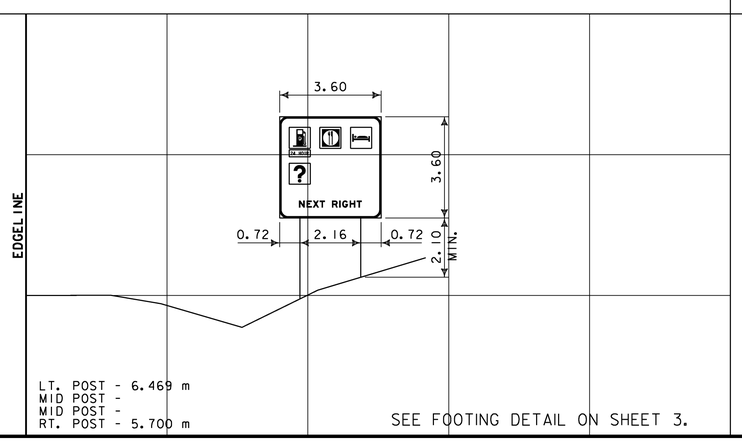


M.M. 129.920 SB

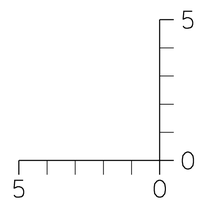


SEE FOOTING DETAIL ON SHEET 3.

M.M. 136.612 NB



SEE FOOTING DETAIL ON SHEET 3.



DIMENSIONS FOR CRITICAL OFFSETS OR CLEARANCES SHOWN FOR CONVENIENCE. REFER TO STANDARD SHEETS FOR PLACEMENT GUIDELINES.

SIGN CROSS SECTION SHEET 3

PROJECT NAME: ST. JOHNSBURY-LYNDON
PROJECT NUMBER: HES 091-3(42)

FILE NAME: 972110-xs.dgn
PROJECT LEADER: CRB
DESIGNED BY: DAM
CLD REF. NO.: 97-0211
PLOT DATE: 1/4/2007
DRAWN BY: HJC
CHECKED BY: DAM
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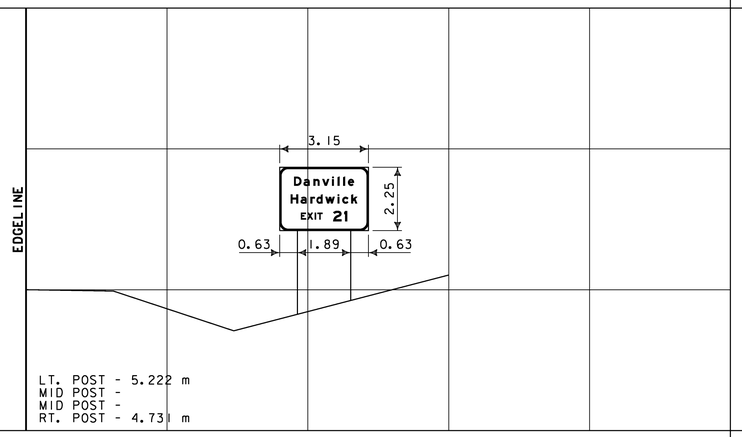
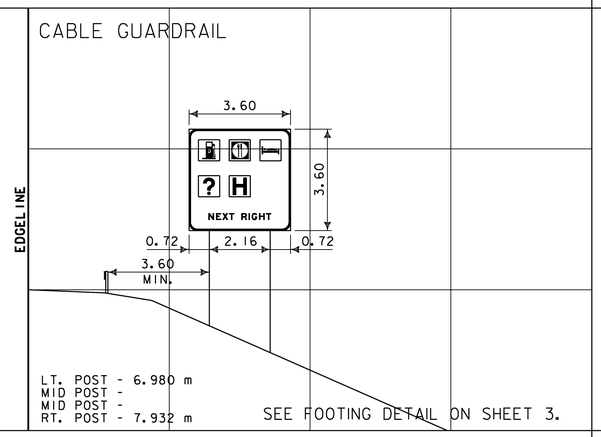
M.M. 131.236 SB

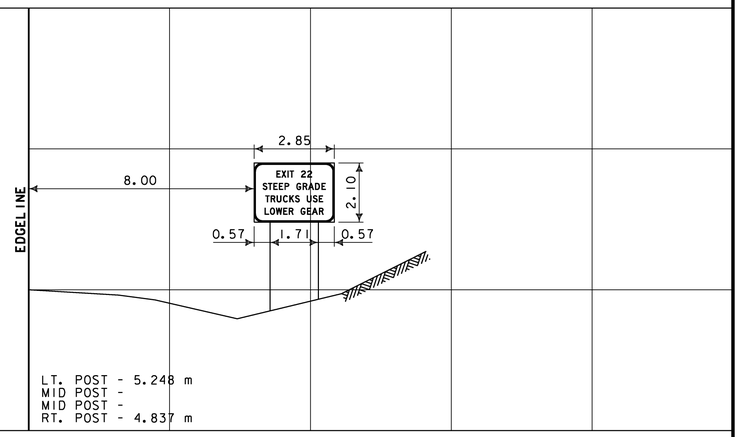


M.M. 133.085 SB

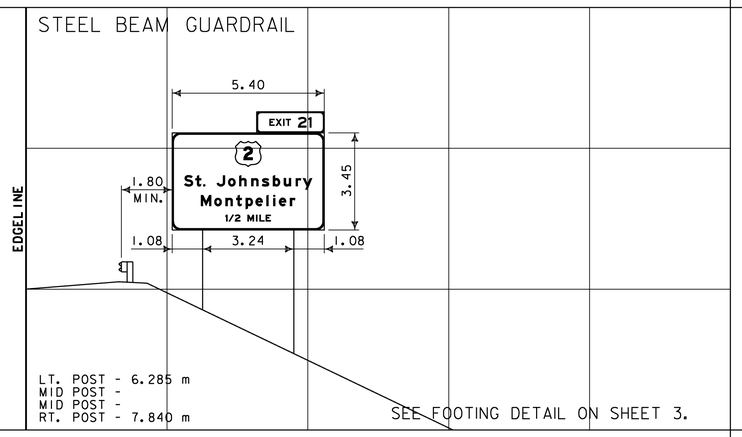


SEE FOOTING DETAIL ON SHEET 3.

M.M. 133.385 SB

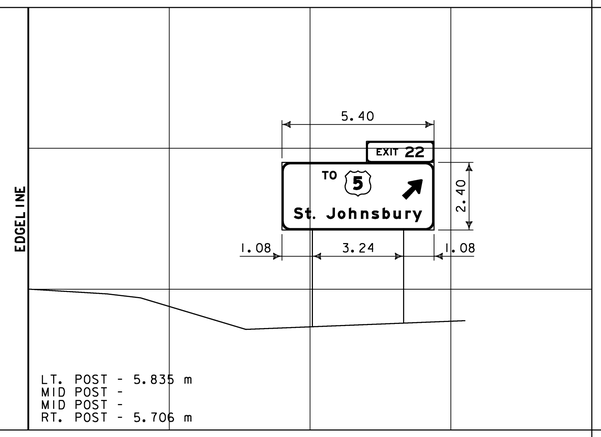


M.M. 131.040 SB

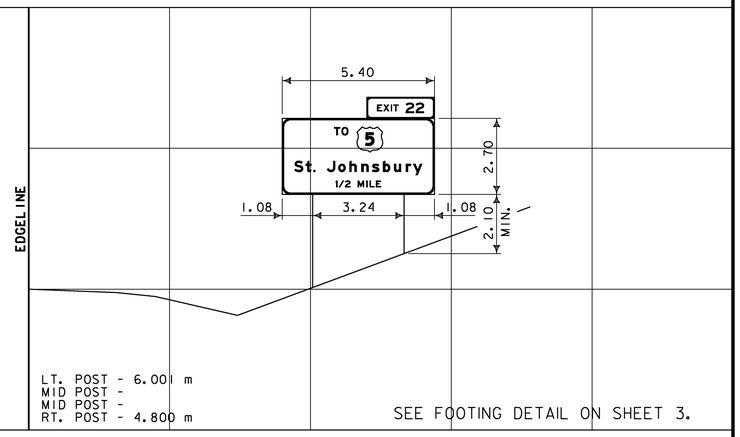


SEE FOOTING DETAIL ON SHEET 3.

M.M. 132.950 SB

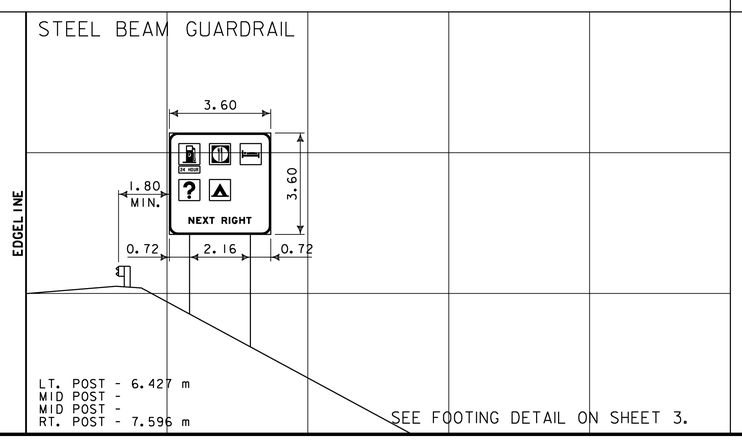


M.M. 133.235 SB



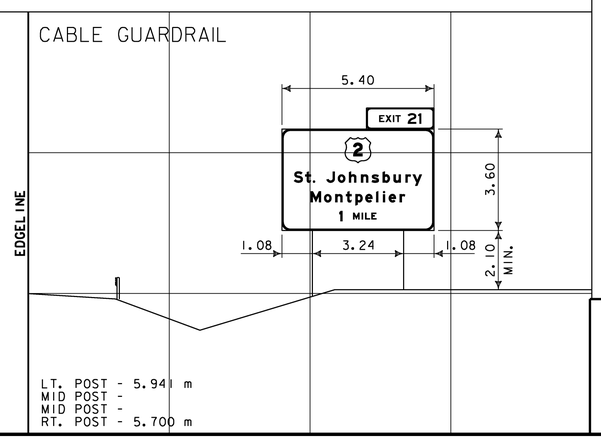
SEE FOOTING DETAIL ON SHEET 3.

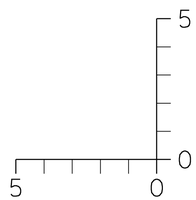
M.M. 130.870 SB



SEE FOOTING DETAIL ON SHEET 3.

M.M. 131.540 SB





DIMENSIONS FOR CRITICAL OFFSETS OR CLEARANCES SHOWN FOR CONVENIENCE. REFER TO STANDARD SHEETS FOR PLACEMENT GUIDELINES.

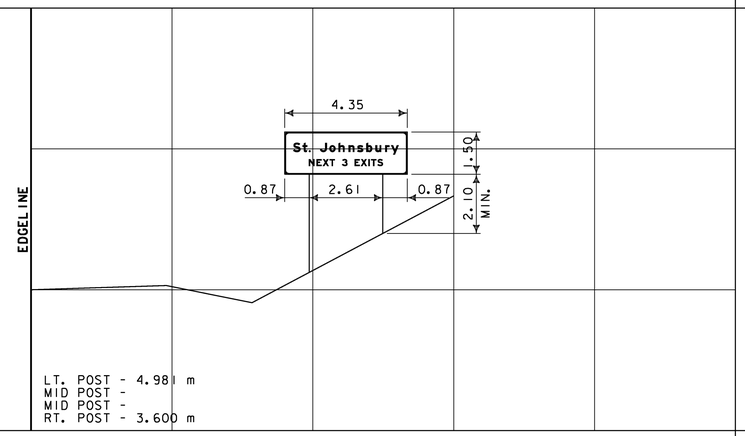
SIGN CROSS SECTION SHEET 4

PROJECT NAME: ST. JOHNSBURY-LYNDON
PROJECT NUMBER: HES 091-3(42)

FILE NAME: 972ila-xs.dgn
PROJECT LEADER: CRB
DESIGNED BY: DAM
CLD REF. NO.: 97-021I

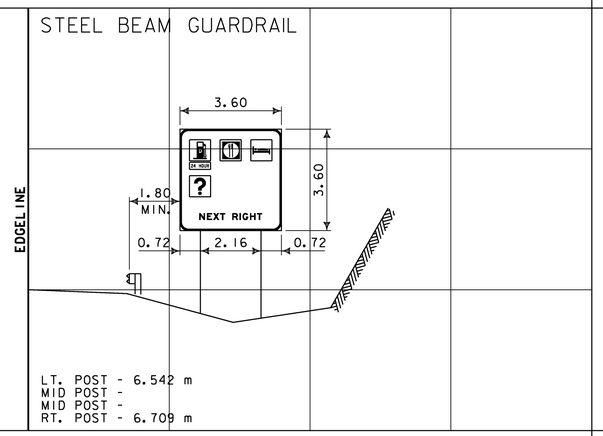
PLOT DATE: 1/4/2007
DRAWN BY: HJC
CHECKED BY: DAM
SHEET 74 OF 130

M.M. 133.950 SB



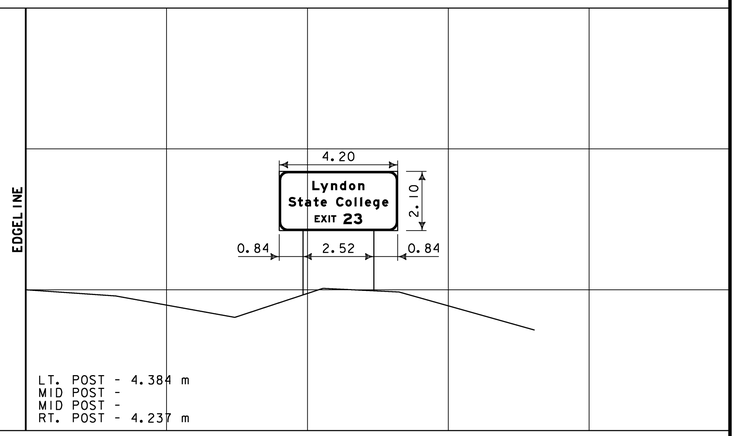
LT. POST - 4.981 m
MID POST -
MID POST -
RT. POST - 3.600 m

M.M. 137.614 SB



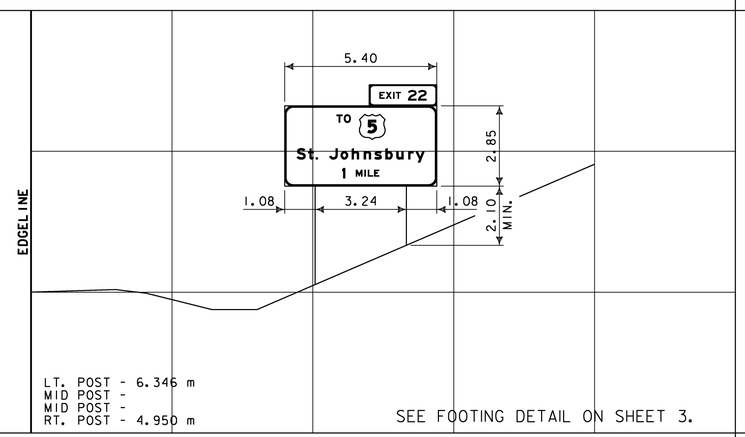
LT. POST - 6.542 m
MID POST -
MID POST -
RT. POST - 6.709 m

M.M. 138.010 SB



LT. POST - 4.384 m
MID POST -
MID POST -
RT. POST - 4.237 m

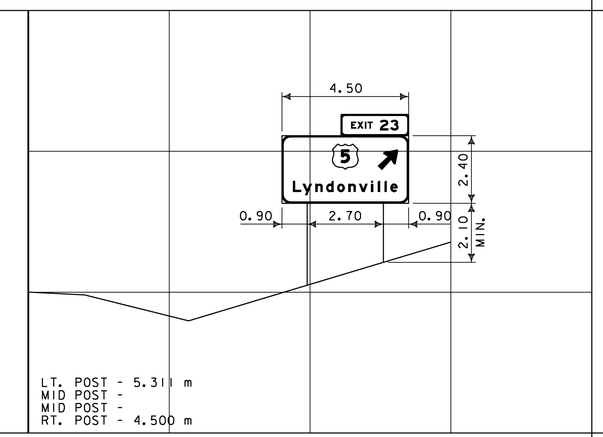
M.M. 133.691 SB



LT. POST - 6.346 m
MID POST -
MID POST -
RT. POST - 4.950 m

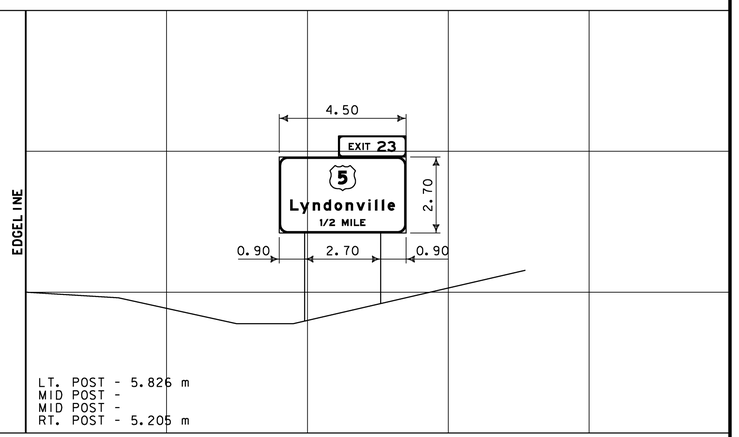
SEE FOOTING DETAIL ON SHEET 3.

M.M. 137.400 SB



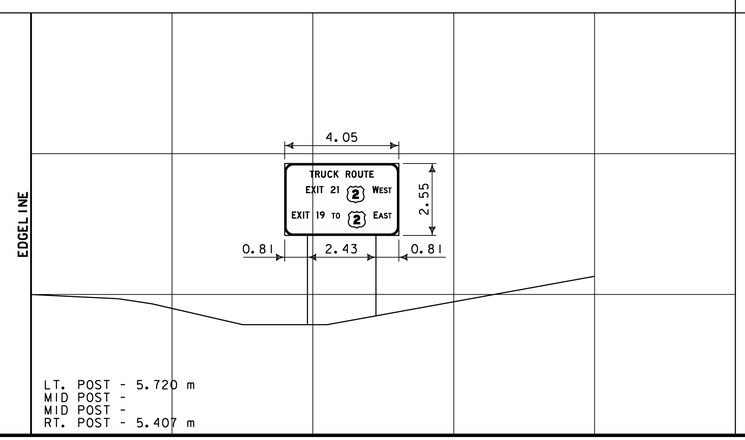
LT. POST - 5.311 m
MID POST -
MID POST -
RT. POST - 4.500 m

M.M. 137.764 SB



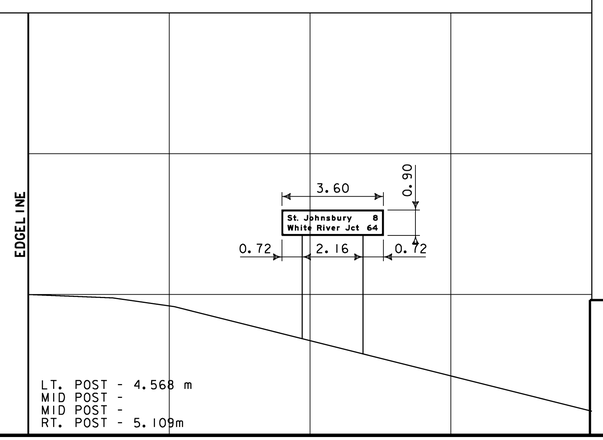
LT. POST - 5.826 m
MID POST -
MID POST -
RT. POST - 5.205 m

M.M. 133.500 SB

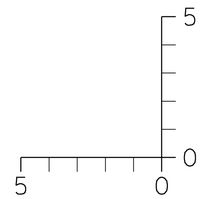


LT. POST - 5.720 m
MID POST -
MID POST -
RT. POST - 5.407 m

M.M. 136.175 SB



LT. POST - 4.568 m
MID POST -
MID POST -
RT. POST - 5.109m

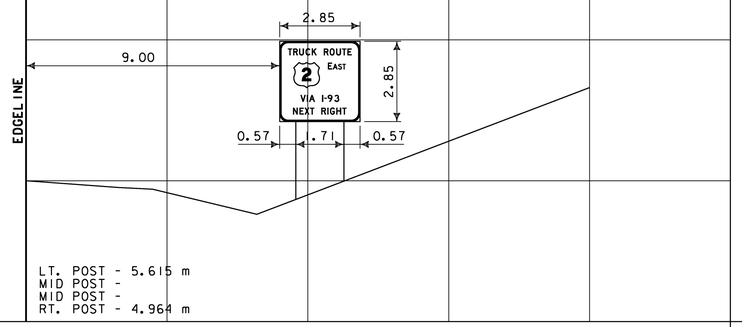


DIMENSIONS FOR CRITICAL OFFSETS OR CLEARANCES SHOWN FOR CONVENIENCE. REFER TO STANDARD SHEETS FOR PLACEMENT GUIDELINES.

SIGN CROSS SECTION SHEET 5

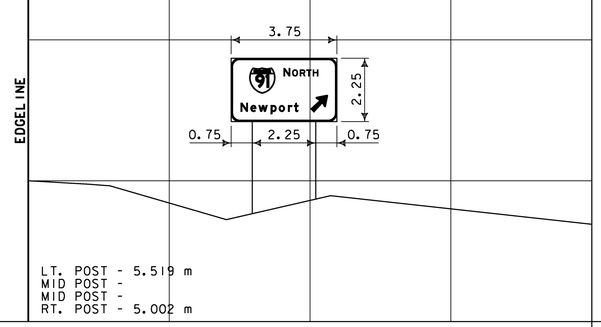
PROJECT NAME:	ST. JOHNSBURY-LYNDON
PROJECT NUMBER:	HES 091-3(42)
FILE NAME: 9721la-xs.dgn	PLOT DATE: 1/4/2007
PROJECT LEADER: CRB	DRAWN BY: HJC
DESIGNED BY: DAM	CHECKED BY: DAM
CLD REF. NO.: 97-0211	SHEET 75 OF 130

INTERCHANGE 21
ROUTE 2
M.M. 1.530 RT

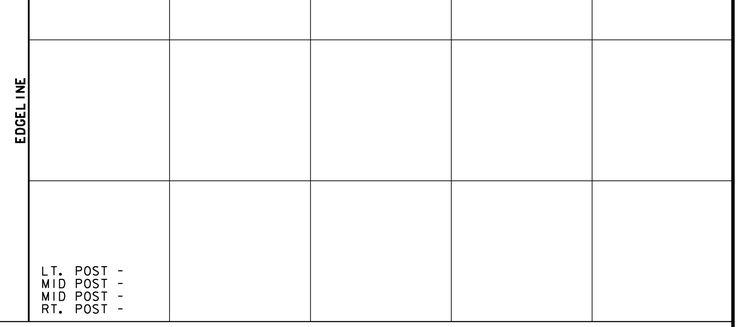


LT. POST - 5.615 m
MID POST -
MID POST -
RT. POST - 4.964 m

INTERCHANGE 21
ROUTE 2
M.M. 2.258 RT

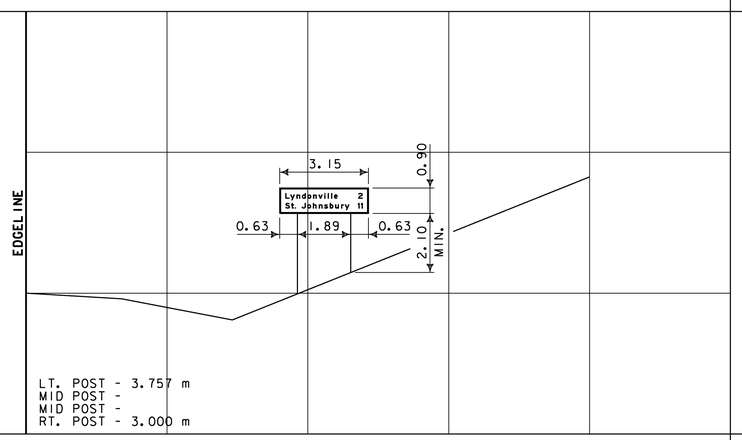


LT. POST - 5.519 m
MID POST -
MID POST -
RT. POST - 5.002 m



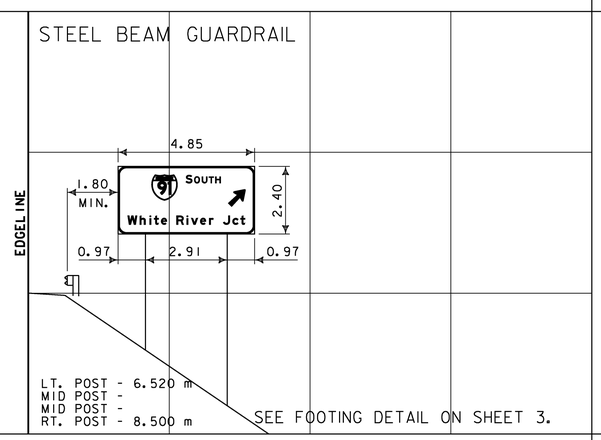
LT. POST -
MID POST -
MID POST -
RT. POST -

M.M. 139.250 SB



LT. POST - 3.757 m
MID POST -
MID POST -
RT. POST - 3.000 m

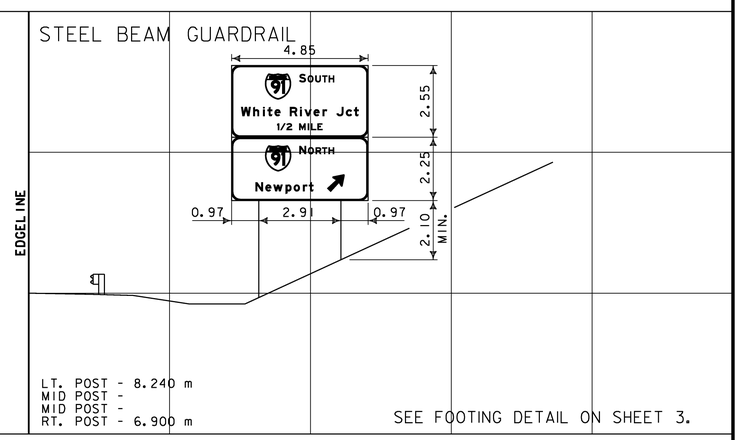
INTERCHANGE 21
ROUTE 2
M.M. 1.870 LT



LT. POST - 6.520 m
MID POST -
MID POST -
RT. POST - 8.500 m

SEE FOOTING DETAIL ON SHEET 3.

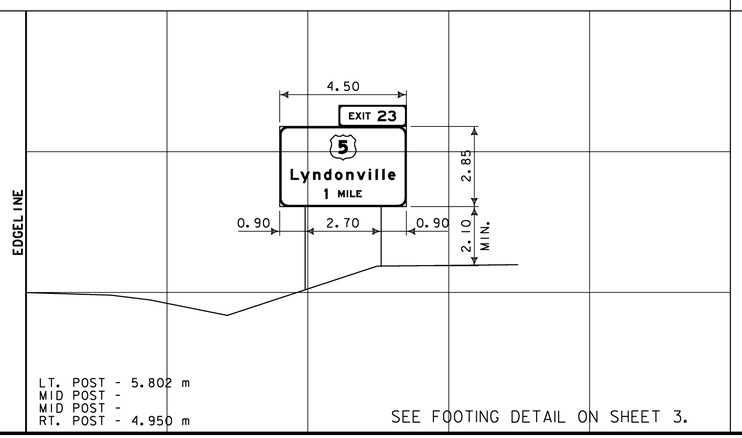
INTERCHANGE 21
ROUTE 2
M.M. 2.267 LT



LT. POST - 8.240 m
MID POST -
MID POST -
RT. POST - 6.900 m

SEE FOOTING DETAIL ON SHEET 3.

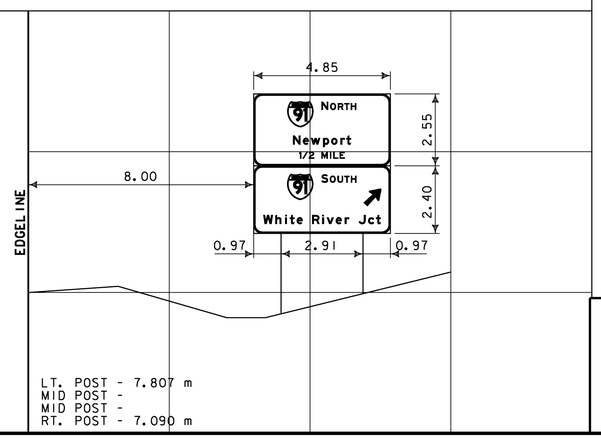
M.M. 138.230 SB



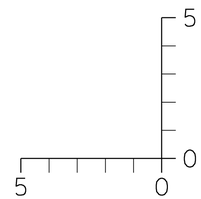
LT. POST - 5.802 m
MID POST -
MID POST -
RT. POST - 4.950 m

SEE FOOTING DETAIL ON SHEET 3.

INTERCHANGE 21
ROUTE 2
M.M. 1.683 RT



LT. POST - 7.807 m
MID POST -
MID POST -
RT. POST - 7.090 m



DIMENSIONS FOR CRITICAL OFFSETS OR CLEARANCES SHOWN FOR CONVENIENCE. REFER TO STANDARD SHEETS FOR PLACEMENT GUIDELINES.

SIGN CROSS SECTION SHEET 6

PROJECT NAME: ST. JOHNSBURY-LYNDON
PROJECT NUMBER: HES 091-3(42)

FILE NAME: 972ila-xs.dgn
PROJECT LEADER: CRB
DESIGNED BY: DAM
CLD REF. NO.: 97-021I

PLOT DATE: 1/4/2007
DRAWN BY: HJC
CHECKED BY: DAM
SHEET 76 OF 130

GENERAL NOTES

1. ALL MATERIALS AND CONSTRUCTION SHALL CONFORM TO THE STATE OF VERMONT AGENCY OF TRANSPORTATION "STANDARD SPECIFICATIONS FOR CONSTRUCTION", DATED 2001, WITH CURRENT MODIFICATIONS.

2. OVERHEAD SIGN/SIGNAL SUPPORTS SHALL CONFORM TO AASHTO'S PUBLICATION ENTITLED "STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES AND TRAFFIC SIGNALS", DATED 2001OR ITS LATEST EDITION.

3. ADDITIONAL DESIGN CRITERIA ARE AS FOLLOWS:

   CONCRETE f_c = 10 MPa f'_c = 25 MPa
   REINFORCING f_s = 165 MPa (GRADE 420)
   FOOTING SOIL PRESSURE : 145 kPa (MAXIMUM)

   WIND LOAD AND ICE LOAD PER AASHTO "STANDARD SPECIFICATIONS"

4. ANCHOR BOLTS

   FOUR STAINLESS STEEL ANCHOR BOLTS WITH TWO HEXAGON NUTS, ONE WASHER AND ONE LOCK WASHER PER BOLT SHALL BE FURNISHED WITH EACH POLE. ANCHOR BOLT PLATES, WHEN USED, SHALL ALSO BE STAINLESS STEEL. SEE SUB-SECTION 714.09.

5. FLANGE BOLTS

   ALL FLANGE BOLTS AND HEX NUTS SHALL BE HIGH STRENGTH STEEL AND SHALL CONFORM TO ASTM A 325M. THE FLANGE BOLTS SHALL BE CAPABLE OF RESISTING 133% OF THE FULL DESIGN STRESS OF THE TUBE AT ITS YIELD STRENGTH STRESS.

6. HORIZONTAL AND VERTICAL MEMBERS

   STEEL TUBES SHALL BE FORMED AND WELDED WITH ONE CONTINUOUS LONGITUDINAL WELD ONLY. AFTER FORMING AND WELDING THEY SHALL BE COLD ROLLED TO ENSURE UNIFORMITY OF SIZE AND SMOOTHNESS OF WELD. THEY SHALL HAVE A MINIMUM YIELD STRENGTH OF 330 MPa. THERE SHALL BE NO TRANSVERSE WELDING EXCEPT AT THE FLANGE CONNECTIONS AND POLE BASE PLATES, WHERE THE TUBES SHALL TELESCOPE THE FLANGES AND PLATES AND BE CONTINUOUSLY WELDED BOTH SIDES INSIDE AND OUT TO WITHSTAND THE FULL TRANSFER OF THE BENDING STRENGTH TO THE BOLTS.

7. GALVANIZING

   ALL STEEL COMPONENTS, EXCEPT CONCRETE REINFORCING AND STAINLESS STEEL HARDWARE, ARE TO BE HOT DIPPED GALVANIZED AFTER FABRICATION. THE ASSEMBLIES SHALL BE DESIGNED AND FABRICATED TO PERMIT GALVANIZING ON ALL INTERIOR AND EXTERIOR SURFACES AND SHALL BE FREE OF POCKETS AND OTHER STRUCTURAL OBSTRUCTIONS THAT WILL NOT PERMIT PROPER DEPOSITION OF ZINC COATING. GALVANIZING SHALL BE IN ACCORDANCE WITH ASTM A 123 M AND ASTM A 153 M.

8. WELDING

   A. ALL DESIGN DETAILS, WORKMANSHIP, PROCEDURES AND INSPECTION SHALL CONFORM WITH SUB-SECTION 506.10.

   B. ALL WELDS SHALL BE AT LEAST AS STRONG AS THE MATERIAL(S) BEING WELDED.

9. FOOTINGS

   A. FOOTINGS SHALL BE DESIGNED TO RESIST LOADS EQUAL TO, OR GREATER THAN, THE MAXIMUM LOADS THAT THE POLE IS DESIGNED FOR.

   B. THREE TYPES OF FOUNDATIONS, AS OUTLINED IN AASHTO STANDARD SPECIFICATIONS (SEE NOTE 2) SECTION 1.8.2 (C) SHALL BE ALLOWED.

      1. DRILLED SHAFTS,
      2. SPREAD FOOTINGS AND
      3. PILES.

   C. DRILLED SHAFT FOOTINGS SHALL BE POURED IN DRILLED SHAFTS AGAINST UNDISTURBED MATERIAL. THE TOP 600 mm OF SOIL SHALL BE NEGLECTED FOR DESIGN PURPOSES.

   D. AS AN ALTERNATIVE TO THE DRILLED HOLES, FOOTINGS MAY BE POURED IN EXCAVATED HOLES USING THE PROPER FORMS, WHICH MUST BE REMOVED. THE EXCAVATED HOLES SHALL BE AT LEAST 600 mm CLEAR OF THE FOOTING SIDES AND 300 mm DEEPER THAN THE FOOTING. CARE SHALL BE TAKEN TO AVOID EXCAVATING AROUND THE TOP OF THE FOOTING. THE BACKFILL MATERIAL SHALL BE COMPACTED AS DESCRIBED IN SUB-SECTION 204.12. DESIGN LIMITS AS FOR AUGERED FOOTING APPLY.

   E. WHERE THE DESIGN DEPTH OF A FOOTING CANNOT BE OBTAINED DUE TO UNFORSEEN FIELD CONDITIONS, THE CONTRACTOR SHALL NOTIFY THE ENGINEER AND OBTAIN A REVISED FOOTING DETAIL FROM THE ENGINEER.

   F. ANY BACKFILL PLACED ADJACENT TO THE FOOTING SHALL BE GRANULAR MATERIAL MEETING THE REQUIREMENTS FOR GRANULAR BACKFILL FOR STRUCTURES, SUB-SECTION 704.08. CONCRETE FOR FOOTING SHALL CONFORM TO THE REQUIREMENTS OF CONCRETE, CLASS B, SECTION 501, STRUCTURAL CONCRETE. GROUT MATERIAL SHALL BE NON-SHRINKING MORTAR CONFORMING TO SUB-SECTION 707.03 (MORTAR TYPE IV).

   G. SIGNALS/SIGNS SHALL BE INSTALLED AND LEVELED AND POLES SHALL BE PLUMB PRIOR TO PLACING GROUT UNDER POLE BASE.

10. SHOP DRAWINGS (6 COPIES OF EACH) SHALL BE SUBMITTED TO THE STATE OF VERMONT AGENCY OF TRANSPORTATION, STRUCTURES SECTION FOR APPROVAL PRIOR TO FABRICATION.
    THE SHOP DRAWINGS SHALL INCLUDE THE FOLLOWING INFORMATION:

    A. DETAILED DRAWING OF EACH COMPONENT OF THE STRUCTURE.

    B. MATERIAL SPECIFICATION FOR EACH COMPONENT OF THE STRUCTURE, EITHER BY COMPLETE SPECIFICATION OR REFERENCE TO APPLICABLE ASTM STANDARDS.

    C. NOTATION OF PROJECT NAME, PROJECT NUMBER, ROUTE NUMBER AND STRUCTURE STATIONING (TO BE INCLUDED ON EACH SHEET).

    D. DETAILS FOR LOCATION OF SIGNS/SIGNALS AND ATTACHMENT HARDWARE FOR THE SUPPORT STRUCTURE.

    E. ALL ELEVATIONS AND DIMENSIONS NECESSARY TO PROVIDE A COMPLETE SET OF RECORD PLANS.

    F. DEAD LOAD DEFLECTION AND CAMBER INFORMATION.

    G. WELDING DETAILS AND PROCEDURES ARE REQUIRED FOR ALL WELDS. PROCEDURES SHALL BE SUBMITTED FOR APPROVAL WITH REFERENCE TO EACH WELD IDENTIFIED ON THE SHOP DRAWINGS. (SEE SUB-SECTION 506.10)

11. EACH OVERHEAD TRAFFIC SIGNAL/SIGN SUPPORT SHALL BE GROUNDED.
    THE GROUND SHALL CONSIST OF:
    A) AN INTERNAL GROUND LUG OPPOSITE THE HAND HOLE;
    B) A 13.30 mm^2 (MIN.) SOFT DRAWN COPPER GROUNDING ELECTRODE CONDUCTOR.
    C) A 16 X 2400 (MIN.) COPPER CLAD GROUNDING ELECTRODE.
    THE RESISTANCE TO GROUND SHALL BE 25 OHMS OR LESS. ADDITIONAL GROUNDING ELECTRODES MAY BE REQUIRED (MINIMUM SPACING SHALL BE 1800 mm).
    WHERE A POWER SERVICE, METER AND DISCONNECT ARE ATTACHED TO A POLE, THERE SHALL BE A CONTINUOUS GROUNDING ELECTRODE CONDUCTOR FROM THE METER AND DISCONNECT WHICH MAY RUN INTERNAL TO THE UPRIGHT, THROUGH THE DN16 FLEXIBLE TUBING IN THE CONCRETE BASE TO THE REQUIRED GROUNDING ELECTRODE(S). THE GROUNDING ELECTRODE CONDUCTOR FROM THE POLE GROUNDING LUG, CONTROLLER CABINET AND/OR LUMINAIRE MAY ATTACH TO THIS CONTINUOUS GROUNDING ELECTRODE CONDUCTOR FROM THE SERVICE METER AND DISCONNECT. THE CONTRACTOR SHALL PERFORM A RESISTANCE TO GROUND TEST ON THE CONTINUOUS GROUNDING ELECTRODE CONDUCTOR FROM THE SERVICE METER AND DISCONNECT AND PROVIDE A WRITTEN STATEMENT TO THE AREA ELECTRICAL INSPECTOR THAT THE GROUNDING ELECTRODE CONDUCTOR IS CONTINUOUS FROM THE SERVICE METER AND DISCONNECT AND THE RESISTANCE TO GROUND IS 25 OHMS OR LESS.

12. THE COST OF SIGNAL/SIGN SUPPORTS, INCLUDING ALL HARDWARE, SIGN BRACKETS, FOOTINGS AND LUMINAIRE ARMS SHALL BE INCLUDED IN THE UNIT BID PRICE FOR ITEM 677.12, 677.13 OR 678.15, WHICHEVER IS APPLICABLE. THESE COMPONENTS SHALL CONFORM TO ALL APPLICABLE PROVISIONS OF SECTIONS 677, 678 AND 679.

13. HORIZONTAL MEMBERS SHALL BE CAMBERED AND THE VERTICAL POLES BACK-RAKED (WHERE APPLICABLE) TO THE ANTICIPATED DEAD LOAD DEFLECTION PLUS THE CAMBER, IF ANY, SPECIFIED ON THE PLANS.

14. AN EQUIVALENT ALTERNATE DESIGN MAY BE SUBSTITUTED FOR THE DETAILS AND MATERIALS SHOWN.

15. THE DETAILS OF DESIGN FOR THE STRUCTURE AND FOOTINGS ARE TO BE SUPPLIED BY THE CONTRACTOR AND/OR BY THE MANUFACTURER. THE STRUCTURE SHALL BE DESIGNED TO RESIST THE MAXIMUM LOADING AS OUTLINED IN THE AASHTO STANDARD SPECIFICATIONS (SEE NOTE 2). ALL DETAILS OF THE STRUCTURE AND THE FOOTING SHALL BE CHECKED AND STAMPED BY A STRUCTURAL ENGINEER REGISTERED IN THE STATE OF VERMONT PRIOR TO SUBMITTAL OF THE SHOP DRAWINGS TO THE STATE OF VERMONT AGENCY OF TRANSPORTATION.

16. IN ADDITION TO THE SHOP DRAWINGS OUTLINED IN NOTE 10, THE CONTRACTOR SHALL SUBMIT ALL DESIGN CALCULATIONS TO THE STATE OF VERMONT AGENCY OF TRANSPORTATION, STRUCTURES SECTION, SHOWING THE FOLLOWING INFORMATION FOR EACH OF THE VERTICAL AND HORIZONTAL COMPONENTS OF THE STRUCTURE AND FOOTING:

    A. THE DESIGN AXIAL AND SHEAR FORCES AND BENDING AND TORSIONAL MOMENTS.

    B. THE DESIGN AXIAL, BENDING AND SHEAR STRESSES AND THE COMBINED STRESS RATIO.

    C. VIBRATION AND FATIGUE CALCULATIONS AS SET FORTH IN SECTION 9 OF THE AASHTO PUBLICATION REFERENCED IN NOTE 2.

    D. THE ALLOWABLE AXIAL, BENDING, AND SHEAR STRESSES.

    E. ITEMS A, B AND D SHALL BE SHOWN FOR EACH OF THE GROUP LOADINGS (I, II AND III) AND FOR THE BASIC WIND LOAD APPLIED TO THE TWO CASES OUTLINED IN THE AASHTO STANDARD SPECIFICATIONS (SEE NOTE 2) SECTION 1.2.5 (D)(4).

    F. FAILURE TO SUPPLY THE PROPER DESIGN INFORMATION SHALL BE CAUSE FOR REJECTION OF THE STRUCTURE.

    G. A MINIMUM OF FOUR (4) WEEKS SHALL BE REQUIRED FOR REVIEW BY THE STATE OF VERMONT AGENCY OF TRANSPORTATION STRUCTURES ENGINEER IN ACCORDANCE WITH SUBSECTION 105.03.

17. THE CONTRACTOR/MANUFACTURER SHALL BE RESPONSIBLE FOR COMPLETION OF THE STRUCTURE AND FOOTING DATA ON THE DETAIL SHEET(S).

18. FOR INSTALLATIONS WHERE BOTH "EXISTING" AND "FUTURE" CONDITIONS ARE SHOWN, THE SUPPORTS SHALL BE DESIGNED FOR THE MORE SEVERE OF THE TWO LOADING CONDITIONS. THE INFORMATION OUTLINED IN NOTE 16 ABOVE SHALL BE PROVIDED FOR BOTH THE LOADING CONDITIONS.

19. NOT USED.

20. BASE PLATES SHALL BE STAMPED WITH THE VERTICAL POLE DIAMETER, HEIGHT, YIELD STRENGTH, GAUGE AND THE HORIZONTAL MEMBER DIAMETER, LENGTH, YIELD STRENGTH AND GAUGE. ALTERNATELY, THE INFORMATION MAY BE STAMPED ON A METAL TAG RIVETED TO THE POLE NEAR THE HANDHOLE.

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

VAOT Metric

ORIGINAL PREPARED - JUNE 13, 1997		
DATE	REVISIONS	BY

CANTILEVER / OVERHEAD SIGN SUPPORT NOTES

PREPARED BY _____ DATE _____
CHECKED BY _____ DATE _____
DESIGN SUPERVISOR _____ DATE _____
PROJ.

TRAFFIC SHEET NO. _____ OF _____
SHEET 77 OF 130 SHEETS

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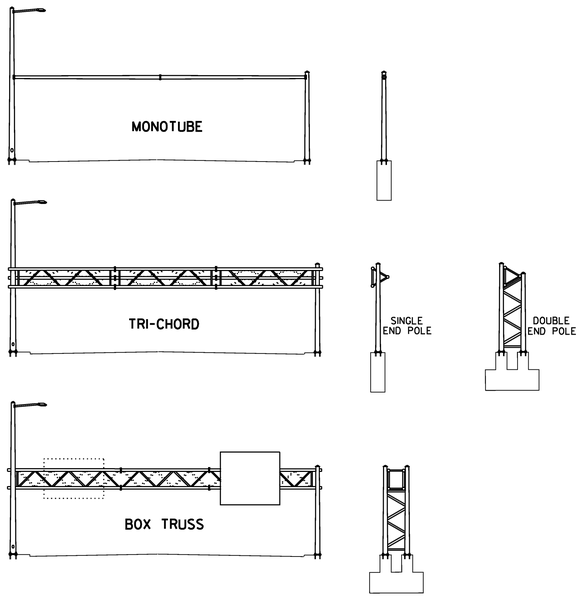
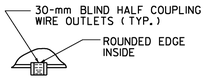
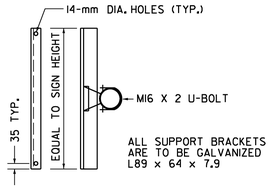
PLOTTED: 1/4/2007

9721la-overhead.dgn



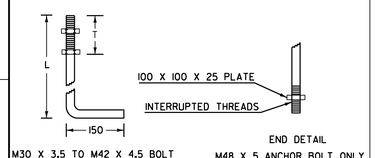


DETAIL A

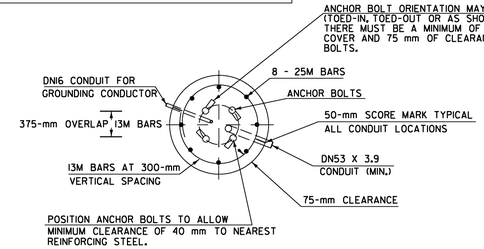


SIGN BRACKET DETAILS

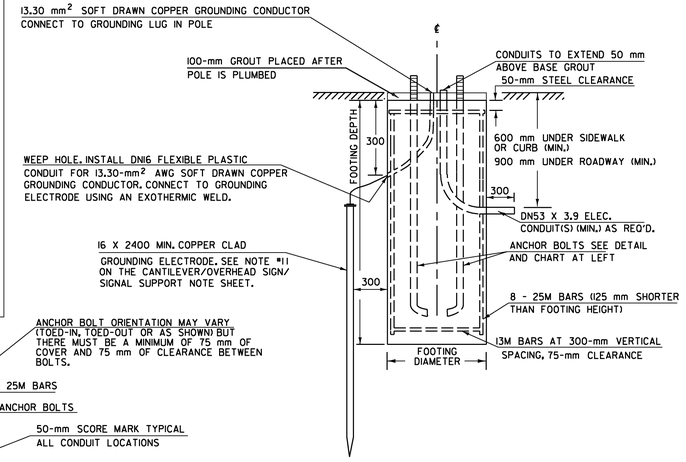
ANCHOR BOLT DETAIL		
SIZE	L (mm)	T (mm)
M30 X 3.5 X 1200	1050	200
M36 X 4 X 1500	1350	230
M42 X 4.5 X 2250	2100	230
M48 X 5 X 2400	2400	230



ANCHOR BOLT DETAIL



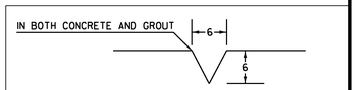
SECTION



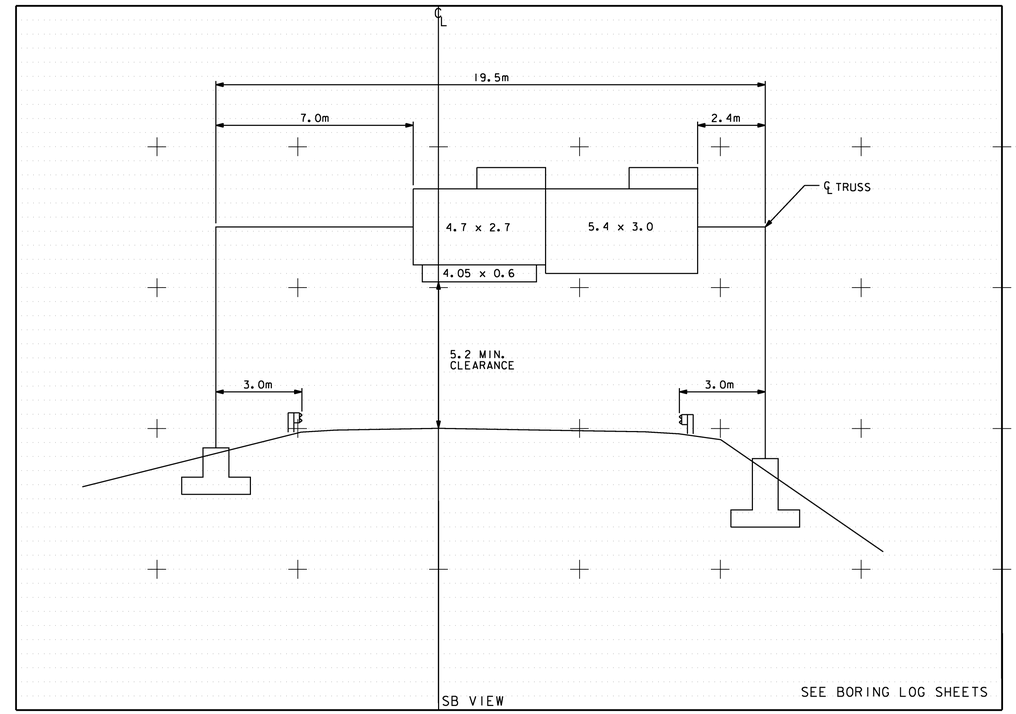
ELEVATION

OVERHEAD TRAFFIC SIGN BRIDGE FOOTING DETAIL

(SPREAD FOOTINGS OR PILES ARE OPTIONAL)



50-mm SCORE MARK DETAIL



(SEE SHEET 18 FOR LOCATION PLAN)

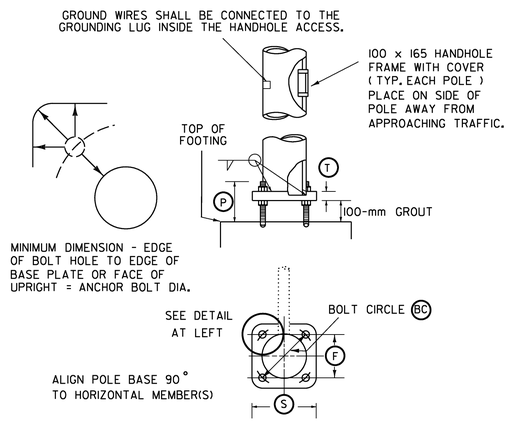
0 5 10

SCALE IN METERS

OVERHEAD SIGN BRIDGE CROSS SECTION

NOTES:

1. SEE CANTILEVER / OVERHEAD SIGN / SIGNAL SUPPORTS NOTE SHEET FOR ADDITIONAL INFORMATION.
2. MANUFACTURER TO DETERMINE TYPE OF STRUCTURE REQUIRED.
3. MONOTUBES SHALL NOT BE USED FOR SIGNS OVER 3 m IN HEIGHT.
4. STREET LIGHTING IS OPTIONAL. SEE PLAN SHEETS OR SECTION.
5. MINIMUM CLEARANCE FROM SIGNS TO ROADWAY IS 5.2 m.



POLE BASE AND BASE PLATE DETAIL

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

Metric

DATE	REVISIONS	BY

NOT TO SCALE

OVERHEAD TRAFFIC SIGN BRIDGE / FOOTING DETAIL SHEET

PREPARED BY _____ DATE _____
CHECKED BY _____ DATE _____
DESIGN SUPERVISOR _____ DATE _____
PROJ.

M.M. 129.130 SB

TRAFFIC SHEET NO. _____ OF _____
SHEET 78 OF 130 SHEETS

/traf/forms/cantilvr.dgn
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PLOTTED: 1/4/2007

9721a-overhead.dgn

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

HOLE NO.: B-6
SHEET 1 OF 1
DATE STARTED: 6/25/02
DATE COMPLETED: 6/25/02

PROJECT NAME: St. JOHNSBURY - LYNDON
SITE NAME: OVERHEAD SIGNS
STATION: MM 129.130 SOUTHBOUND
GROUND EL.: NA

PROJECT NUMBER: HES 091-3 (42)
SITE NO.: I-91
OFFSET: LEFT SIDE
G.W. DEPTH:

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

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

DEPTH	SYMBOL	CLASSIFICATION OF MATERIALS (Description)	BLOWS PER FOOT	M.C. %	GRAVEL %	SAND %	FINES %	LL	PI
		A-4, SaSi, brn, Dry, Rec. = 1.4'	3	15.9	8.1	44.4	47.5		
			Grass & Roots were within sample.						
		A-4, SaSi, brn, Moist, Rec. = 0.9'	3	27.4	0.1	35.7	64.2		
5		No Rec.	6						
		A-2-4, SiSaGr, brn-gry, Moist, Rec. = 0.65'	40	18.1	37.1	32.1	30.8		
		NXDC, 8.0'-11.0', Boulders							
10									
		NXDC, 14.0'-17.0', Boulders							
15									
		NXDC, 19.0'-21.0', Boulders							
20									
		Visual Class: Asphalted Compound, blk, Dry Rec. = 0.65'	6						
25									
30		A-2-4, Sa, brn, Moist, Rec. = 0.25'	R	13	2.2	80.9	16.9		
		Hole stopped @ 32.0'							
35									
40									
45									

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

HOLE NO.: B-7
SHEET 1 OF 1
DATE STARTED: 6/26/02
DATE COMPLETED: 6/26/02

PROJECT NAME: St. JOHNSBURY - LYNDON
SITE NAME: OVERHEAD SIGNS
STATION: MM 129.130 SOUTHBOUND
GROUND EL.: NA

PROJECT NUMBER: HES 091-3 (42)
SITE NO.: I-91
OFFSET: RIGHT SIDE
G.W. DEPTH: 21.0 (6/26/02)

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

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

DEPTH	SYMBOL	CLASSIFICATION OF MATERIALS (Description)	BLOWS PER FOOT	M.C. %	GRAVEL %	SAND %	FINES %	LL	PI
		Visual Class: Topsoil, brn, Moist, Rec. = 0.5'	5						
		A-4, SaSi, brn, Moist, Rec. = 1.1'	9	21.5	7.6	42.7	49.7		
5		A-2-4, SiSa, brn, Moist, Rec. = 1.1'	10	18.1	6.2	64.9	28.9		
		A-1-b, SaSiGr, brn, Moist Rec. = 0.65'	17	11.9	56.7	21.4	21.9		
		A-1-a, Gr, gry, Moist, Rec. = 0.60' Sample had a small section of silty clay.	30	7.7	79.3	9.7	11		
10		NXDC, 10.0'-12.0', Boulders							
		NXDC, 13.75'-16.75', Boulders							
15									
		NXDC, 18.25'-20.0', Cleaned out casing							
20	▽	A-1-b, SaGr, brn-gry, Moist, Rec. = 0.9'	44	10.1	44.7	43.7	11.6		
25		A-2-4, SiSaGr, brn-gry, Moist, Rec. = 1.33'	80	18.6	40.3	33.2	26.5		
30		A-2-4, Sa, gry-brn, Moist, Rec. = 1.2'	47	14.2	17.1	66.5	16.4		
		Hole stopped @ 32.0'							
35		Drillers's Notes: Ground water elevation was 21.0' before casing was pulled (06/26/02).							
40									
45									

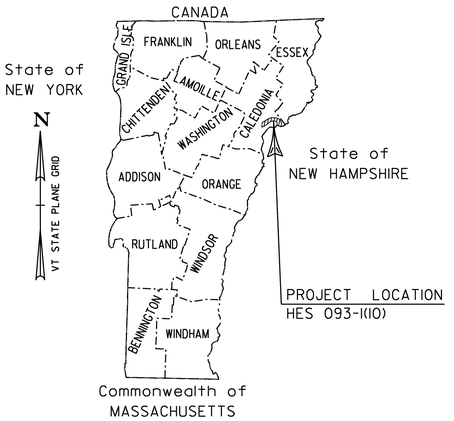
BORING LOG

SHEET #1

SURVEYED BY _____ DATE _____
DRAWN BY J.TOUCHETTE DATE 07/02
SQUAD LEADER C.C. BENDA
DESIGN FILE NO. /M&R/87a023/ma023bor.dgn
IPARM FILE _____ DATE PLOTTED 1/4/2007
PROJ. NAME St. JOHNSBURY - LYNDON
PROJ. NO. HES 091-3 (42)
SHEET 79 OF 130 SHEETS

STATE OF VERMONT
AGENCY OF TRANSPORTATION

PROPOSED IMPROVEMENT
TOWN OF WATERFORD
COUNTY OF CALEDONIA



INTERSTATE ROUTE 93 (HES 093-1(10)) - SIGNS

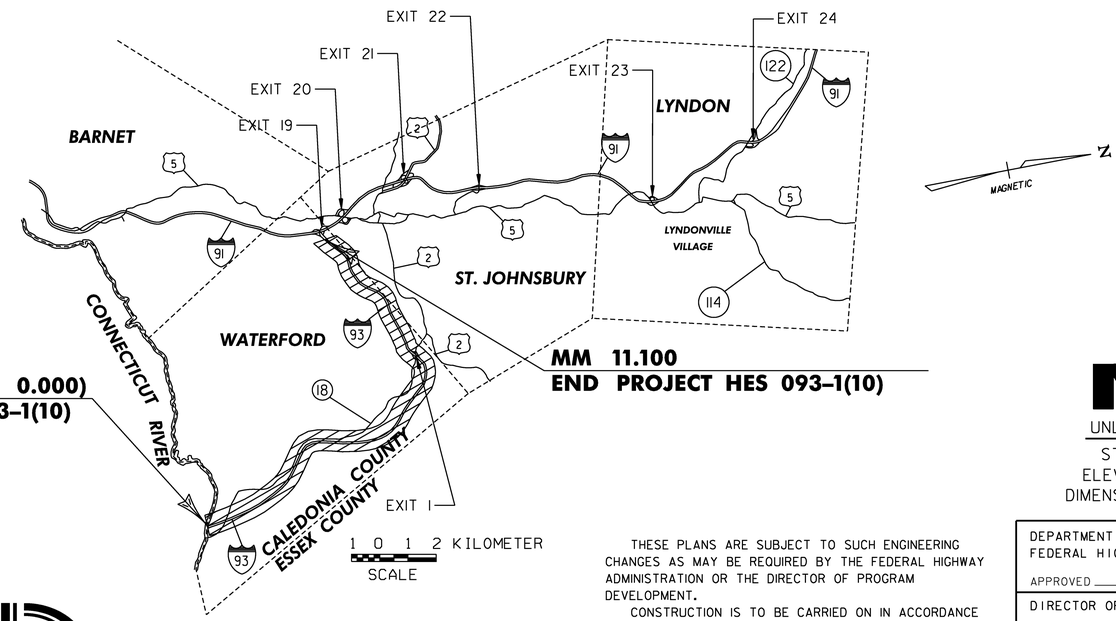
BEGINNING AT A POINT AT THE NEW HAMPSHIRE / VERMONT STATE LINE IN THE TOWN OF WATERFORD AND EXTENDING NORTHERLY APPROXIMATELY 17.86 KM (11.10 MI) TO MM 11.10

LENGTH OF ROADWAY 17 864 METERS = 11.10 MILES = 17.86 KILOMETERS
LENGTH OF PROJECT 17 864 METERS = 11.10 MILES = 17.86 KILOMETERS

WORK TO BE PERFORMED UNDER THIS PROJECT INCLUDES REMOVAL OF EXISTING SIGNS AND PLACEMENT OF NEW SIGNS AND ASSOCIATED ELEMENTS ALONG THE PROJECT LENGTH, RAMPS, AND INTERCHANGES.

TRAFFIC DATA

NORTHBOUND	SOUTHBOUND
INTERSTATE 93	
2000 ADT = 4900	2000 ADT = 4900



VT–NH STATE LINE (MM 0.000)
BEGIN PROJECT HES 093–1(10)

MM 11.100
END PROJECT HES 093–1(10)

CONVENTIONAL SYMBOLS

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

SURVEYED BY : N/A
SURVEYED DATE : N/A

DATUM
VERTICAL N/A
HORIZONTAL N/A

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Maine • New Hampshire • Vermont

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.

VAOT Metric

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

DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATOR
APPROVED _____ DATE _____

DIRECTOR OF PROGRAM DEVELOPMENT
APPROVED _____ DATE _____

PROJECT MANAGER : ROGER THOMPSON

PROJECT NAME : WATERFORD
PROJECT NUMBER : HES 093-1(10)

SHEET 80 OF 130 SHEETS

STATE OF VERMONT
AGENCY OF TRANSPORTATION

ITEM DETAIL SUMMARY SHEET

Metric

			EXISTING GUARDRAIL (m)		GUARDRAIL ITEMS (m)							GUARDRAIL ITEMS (EA)					TAPER		AVAILABLE OPTIONS									REMARKS
MM	MM	POS	STEEL BEAM	CABLE	STEEL BEAM GUARDRAIL (GALVANIZED) (m) 621.20	STEEL BEAM BR. MOD (2/3 m POST) 621.20	REMOVE & RESET 621.75	ADJUST GUARDRAIL HEIGHT 621.79	REMOVE AND DISPOSE 621.80	REM. ALUM. APPROACH RAIL 621.81	REM. ALUM. APPROACH RAIL 621.74	MTS (TANGENT) 621.505	ANCHOR FOR STEEL BEAM 621.61	REPLACE GUARDRAIL POST ASSEMBLY 621.76	REPLACE GUARDRAIL BEAM UNIT 621.77	REMOVAL OF GUIDEPOST 621.701	D (mm)	L (m)	COMMON EXCAVATION (m3) 203.16	LAY-TH DOWN (m3) 203.81	SUBBASE OR D.G.S. (m3) 304.06	AGGR. GAIL SHOULDERS (ton) 401.12	TOPSOIL (m3)	
NORTHBOUND																												
9.98	10.06	MED			~~129.2~~ 130.1							1	1								11							
10.00	10.06	OUT			~~98.8~~ 99.7							1	1								11							
10.00		OUT															300	5	1.63	1.52	III	X						
10.39	10.49	MED	61.4		~~155.8~~ 148.6				~~61.4~~ 68.5			1									11							REMOVE TAPER, INSTALL NEW G.R. AND MTS, CONNECT TO EXISTING SBGR
10.40	10.51	OUT			~~178.6~~ 160.6							1	1								11							
10.40		OUT															300	5	1.63	1.52	III	X						
10.91	10.98	MED			~~114.0~~ 114.9							1	1								11							
10.93	10.98	OUT			~~83.6~~ 84.4							~~1~~ 2	1								11							
10.93		OUT															300	5	1.63	1.52	III	X						
11.07	11.10	OUT	60.0						60.0																			OVERHEAD TRAFFIC SIGN BRIDGE REMOVED
11.08	11.10	MED	40.0						40.0																			OVERHEAD TRAFFIC SIGN BRIDGE REMOVED
SUBTOTAL:					~~760.0~~ 738.3				~~161.4~~ 168.5			~~6~~ 7	5								66.0							
ROUNDING:					0.0				~~0.6~~			~~0~~	0								0.0							
PROJECT TOTALS:					~~760.0~~ 738.3				~~162~~ 168.5			~~6~~ 7	5				~~300~~	~~15.0~~	~~1.63~~	~~1.52~~	~~III~~	~~X~~		66.0				

PROJECT NAME: WATERFORD
PROJECT NUMBER: HES 093-1(10)

FILE NAME: gridsWaterford.xls
PROJECT LEADER: CRB
DESIGNED BY: DAM
CLD REF. NO.: 97-0211
PLOT DATE: 1/8/2007
DRAWN BY: DAM
CHECKED BY: JAW
SHEET 83 OF 130

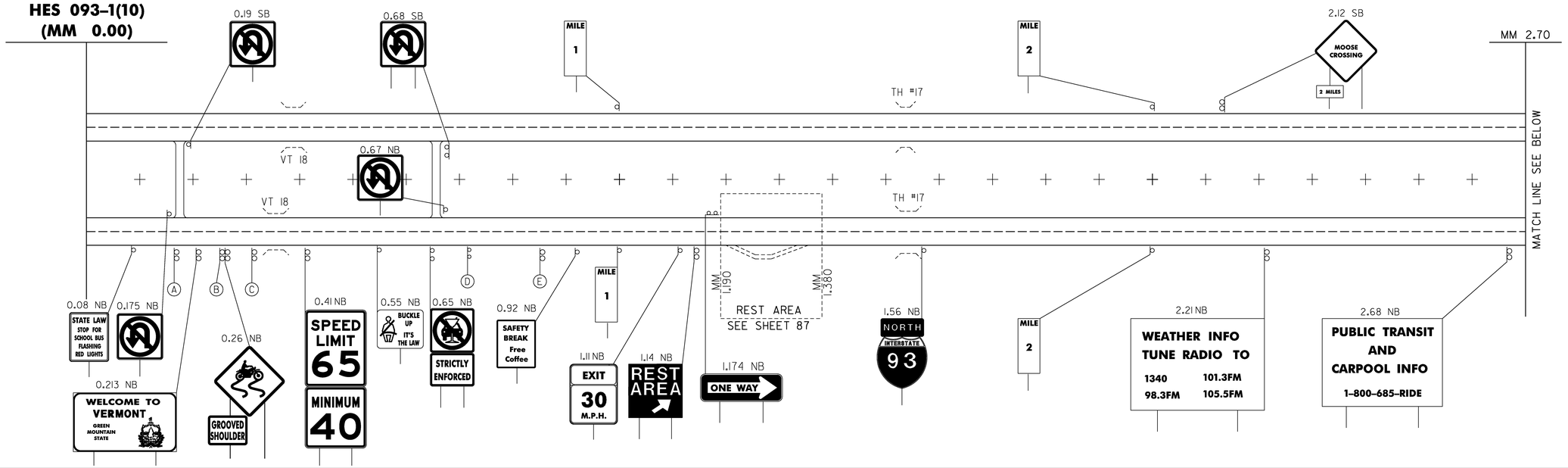
VAOT Metric

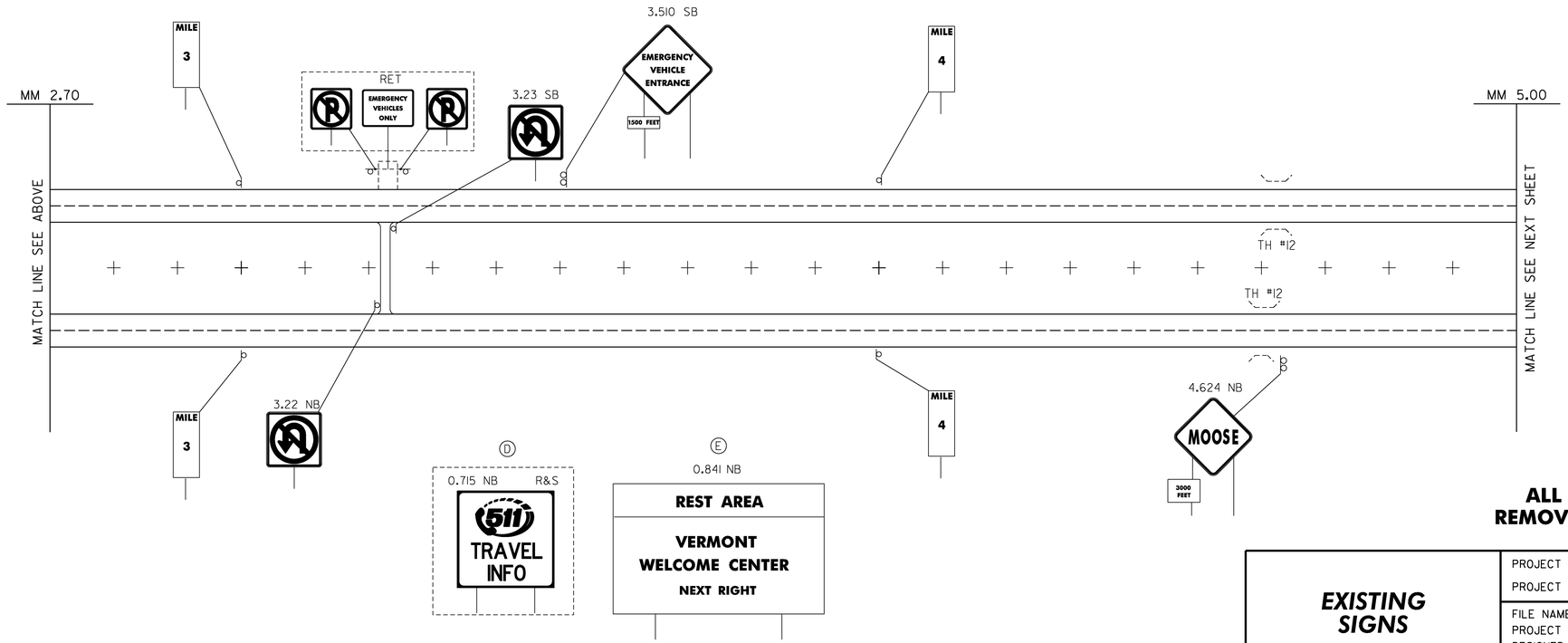
REMOVING SIGNS

NB – TYPE A: 24
TYPE B: 9
BRIDGE PLAQUE: 5 (NOT SHOWN)

SB – TYPE A: 11
TYPE B: 0
BRIDGE PLAQUE: 4 (NOT SHOWN)

BEGIN PROJECT
HES 093-1(10)
(MM 0.00)





LEGEND

RET – RETAINED
R&S – REMOVE & SALVAGE

ALL SIGNS AND POSTS WILL BE REMOVED UNLESS OTHERWISE NOTED

EXISTING SIGNS

PROJECT NAME: WATERFORD
PROJECT NUMBER: HES 093-1(10)

FILE NAME: 97211b-ml.dgn
PROJECT LEADER: CRB
DESIGNED BY: DAM
CLD REF. NO.: 97-0211

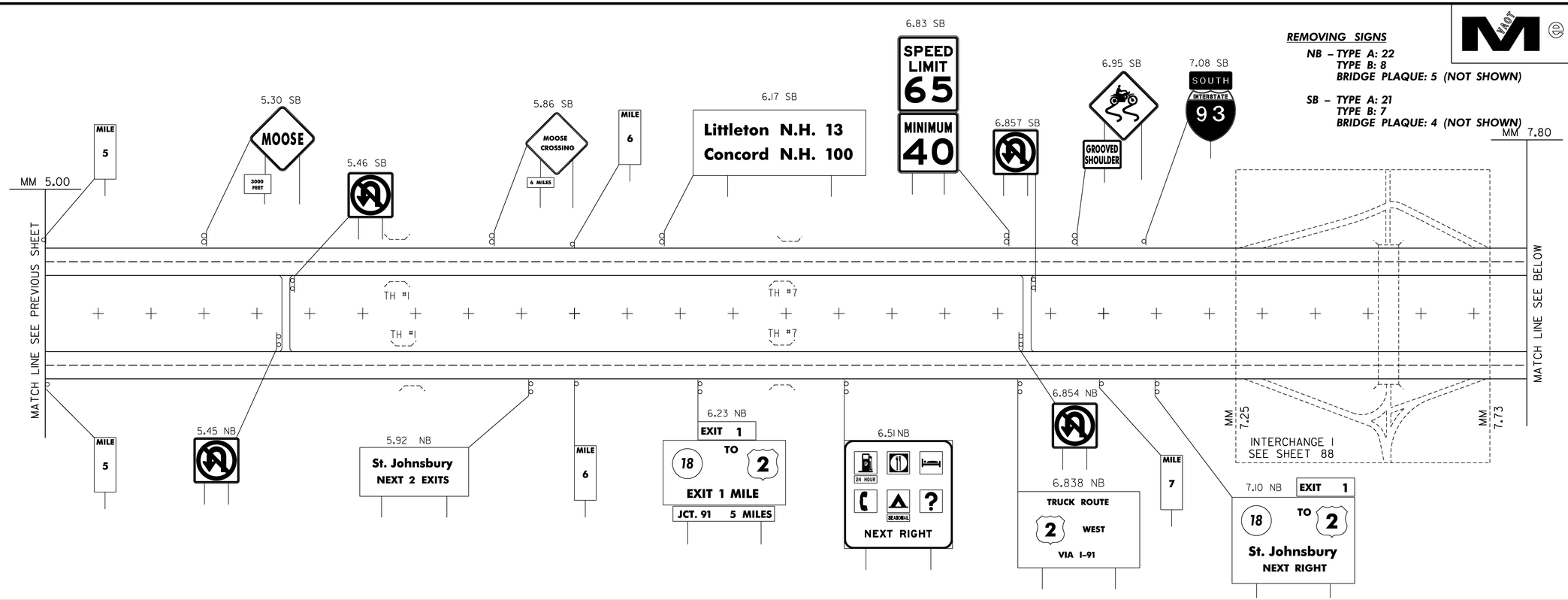
PLOT DATE: 1/4/2007
DRAWN BY: HJC
CHECKED BY: DAM
SHEET 84 OF 130

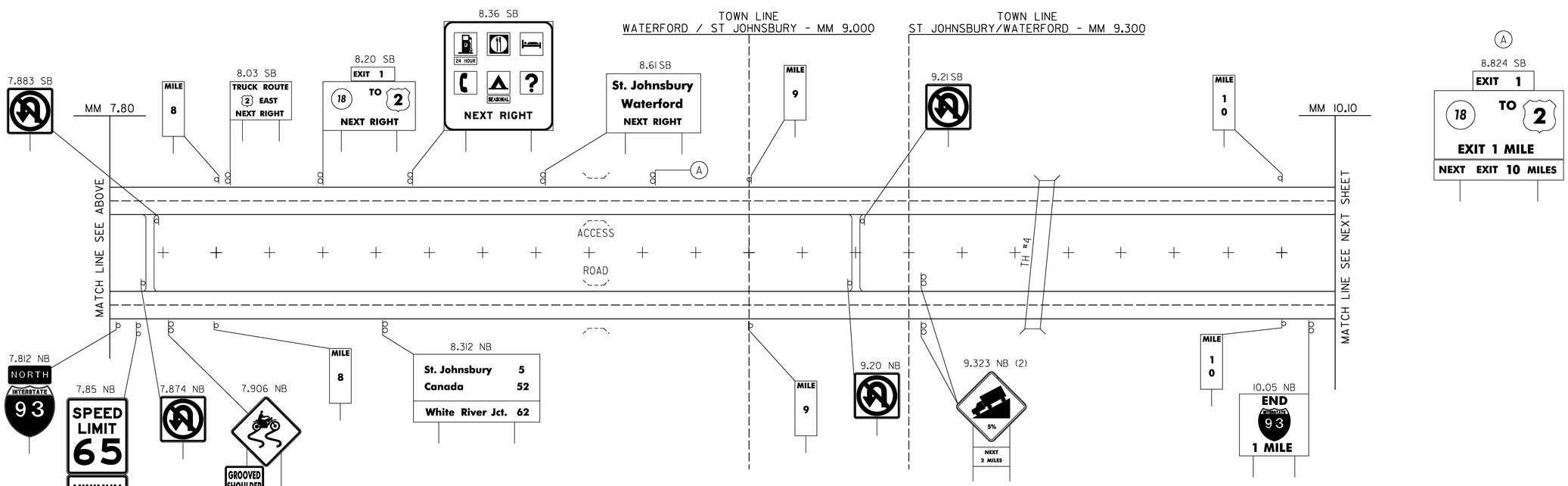
Metric

REMOVING SIGNS

NB – TYPE A: 22
TYPE B: 8
BRIDGE PLAQUE: 5 (NOT SHOWN)

SB – TYPE A: 21
TYPE B: 7
BRIDGE PLAQUE: 4 (NOT SHOWN)





ALL SIGNS AND POSTS WILL BE REMOVED UNLESS OTHERWISE NOTED

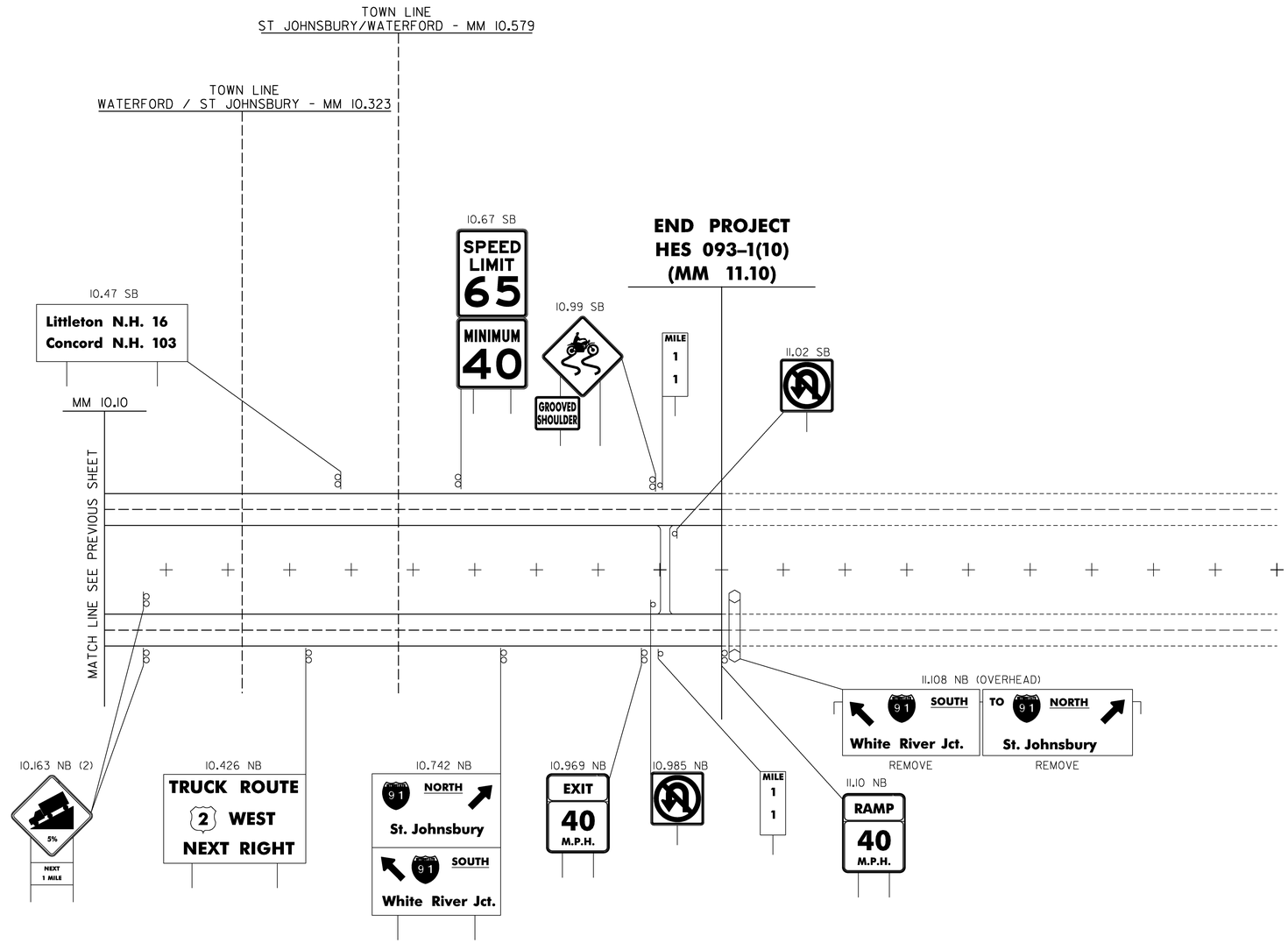
EXISTING SIGNS

PROJECT NAME:	WATERFORD
PROJECT NUMBER:	HES 093-1(10)
FILE NAME: 9721lb-ml.dgn	PLOT DATE: 1/4/2007
PROJECT LEADER: CRB	DRAWN BY: HJC
DESIGNED BY: DAM	CHECKED BY: DAM
CLD REF. NO.: 97-0211	SHEET 85 OF 130

REMOVING SIGNS

NB – TYPE A: 8
TYPE B: 5

SB – TYPE A: 6
TYPE B: 1



ALL SIGNS AND POSTS WILL BE REMOVED UNLESS OTHERWISE NOTED

EXISTING SIGNS

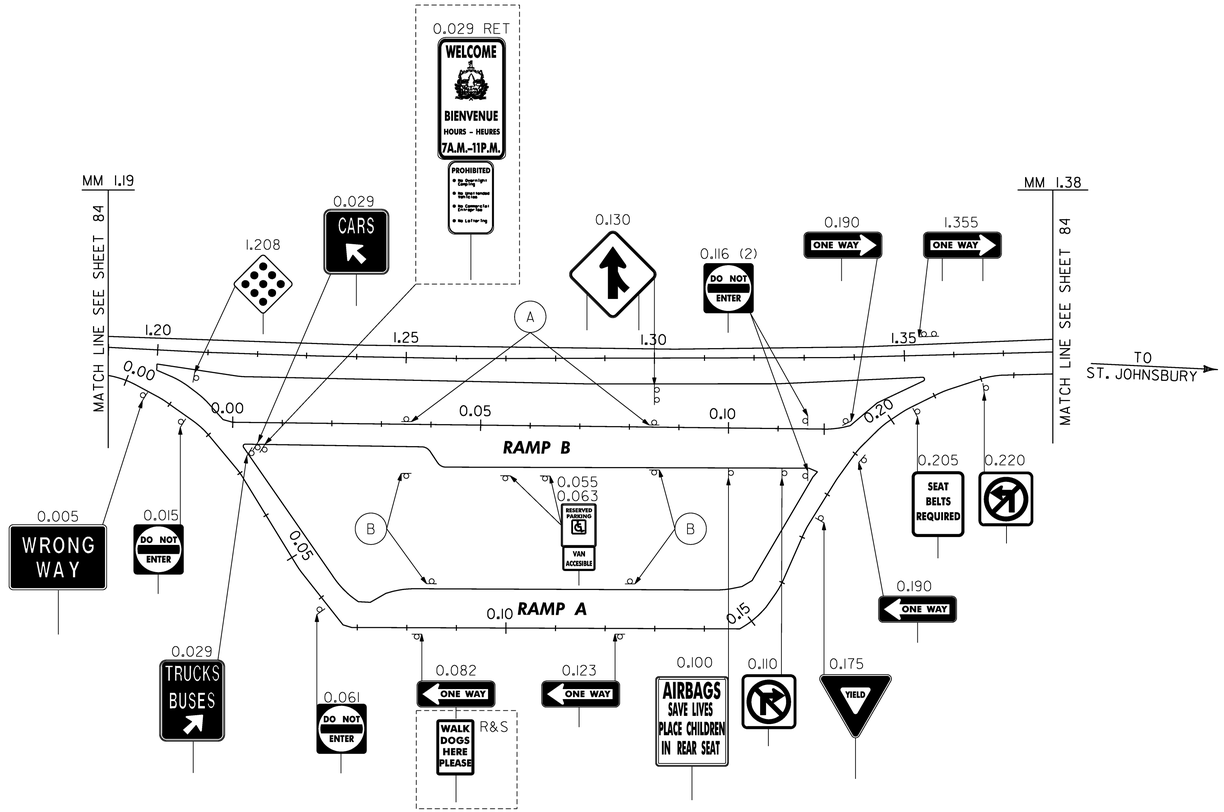
PROJECT NAME: WATERFORD
PROJECT NUMBER: HES 093-1(10)

FILE NAME: 9721lb-ml.dgn
PROJECT LEADER: CRB
DESIGNED BY: DAM
CLD REF. NO.: 97-021l

PLOT DATE: 1/4/2007
DRAWN BY: HJC
CHECKED BY: DAM
SHEET 86 OF 130

REMOVING SIGNS

TYPE A: 24
TYPE B: 0



A

0.035 RAMP B RET
0.085 RAMP B RET

WALK DOGS HERE PLEASE

B

0.085 RAMP A RET
0.125 RAMP A RET
0.035 RAMP B RET
0.085 RAMP B RET

NO DOGS BEYOND THIS POINT
USE DOG WALK ACCROSS THE PARKING AREA

LEGEND

RET – RETAINED
R&S – REMOVE AND SALVAGE

ALL SIGNS AND POSTS WILL BE REMOVED UNLESS OTHERWISE NOTED

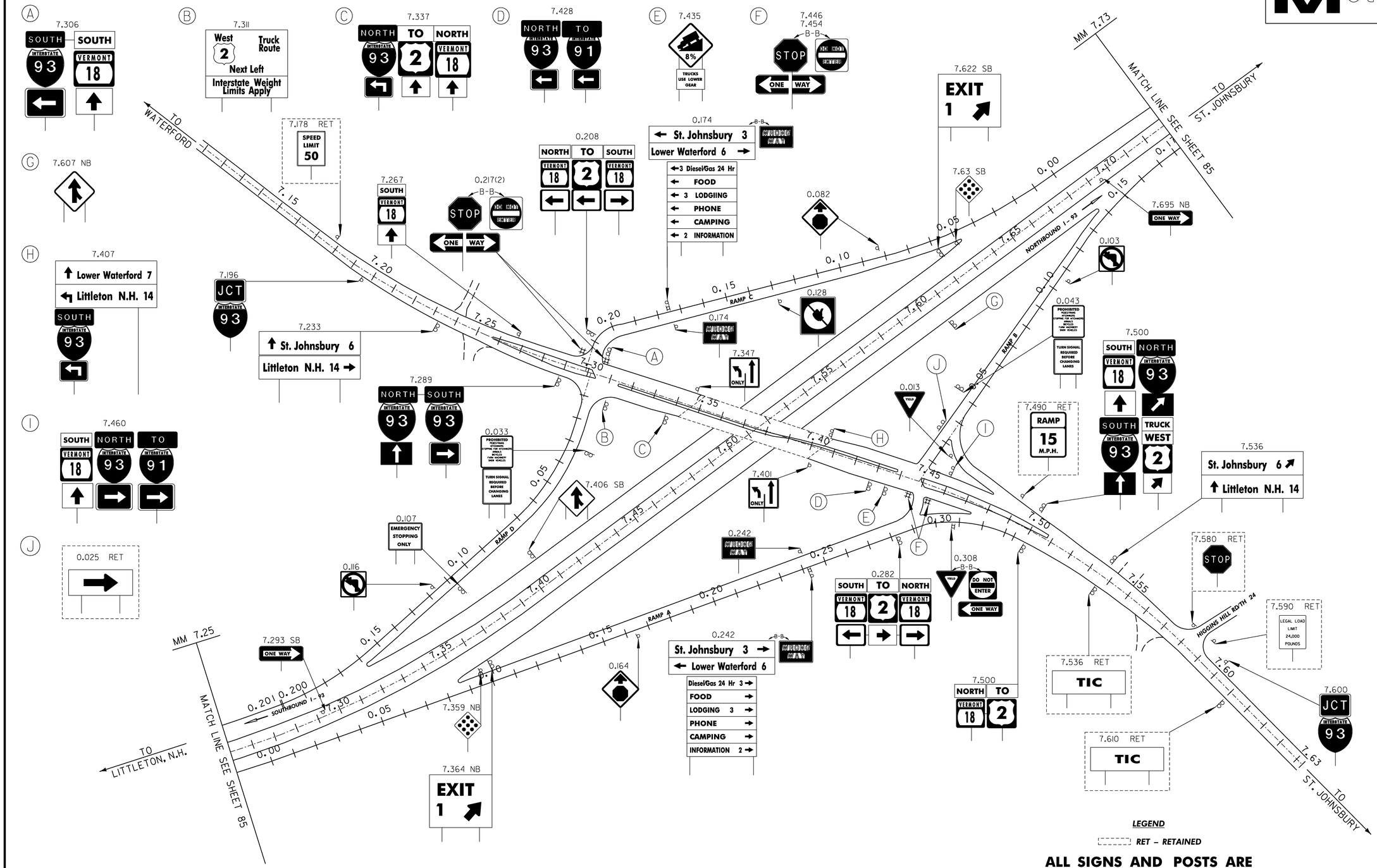
REST AREA 1.27 I-93 NB EXISTING SIGNS

PROJECT NAME: WATERFORD
PROJECT NUMBER: HES 093-1(110)

FILE NAME: 9721lb-ra.dgn
PROJECT LEADER: CRB
DESIGNED BY: DAM
CLD REF. NO.: 97-0211

PLOT DATE: 1/4/2007
DRAWN BY: HJC
CHECKED BY: DAM
SHEET 87 OF 130

VAOT Metric



LEGEND

RET – RETAINED

ALL SIGNS AND POSTS ARE REMOVED UNLESS OTHERWISE NOTED

REMOVING SIGNS

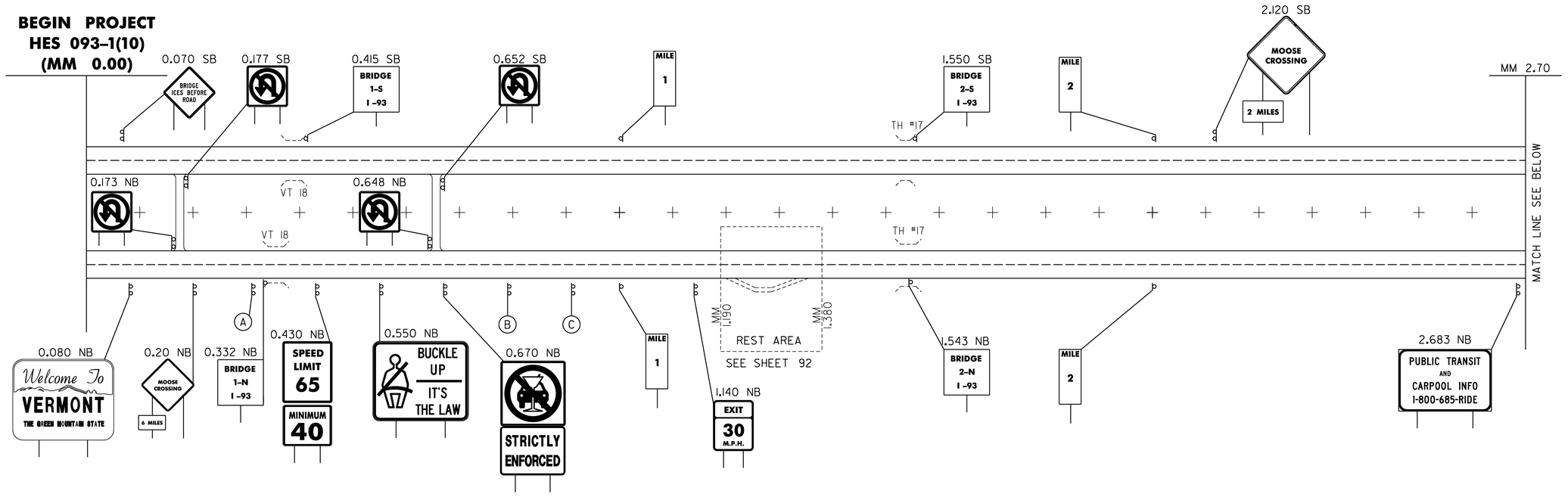
TYPE A: 149
TYPE B: 3
BRIDGE PLAQUE: 8 (NOT SHOWN)

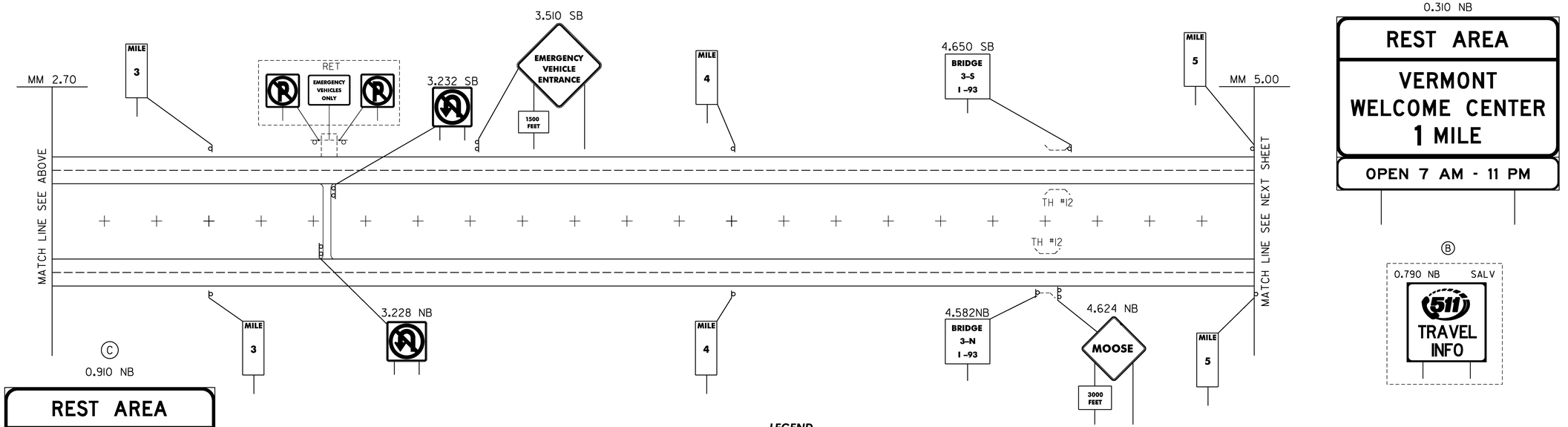
INTERCHANGE 1 EXISTING SIGNS

PROJECT NAME: WATERFORD
PROJECT NUMBER: HES 093-1(10)

FILE NAME: 9721lb-Exit1.dgn
PROJECT LEADER: CRB
DESIGNED BY: DAM
CLD REF. NO.: 97-021l

PLOT DATE: 1/4/2007
DRAWN BY: HJC
CHECKED BY: DAM
SHEET 88 OF 130





LEGEND

RET – RETAINED

SALV – SALVAGED

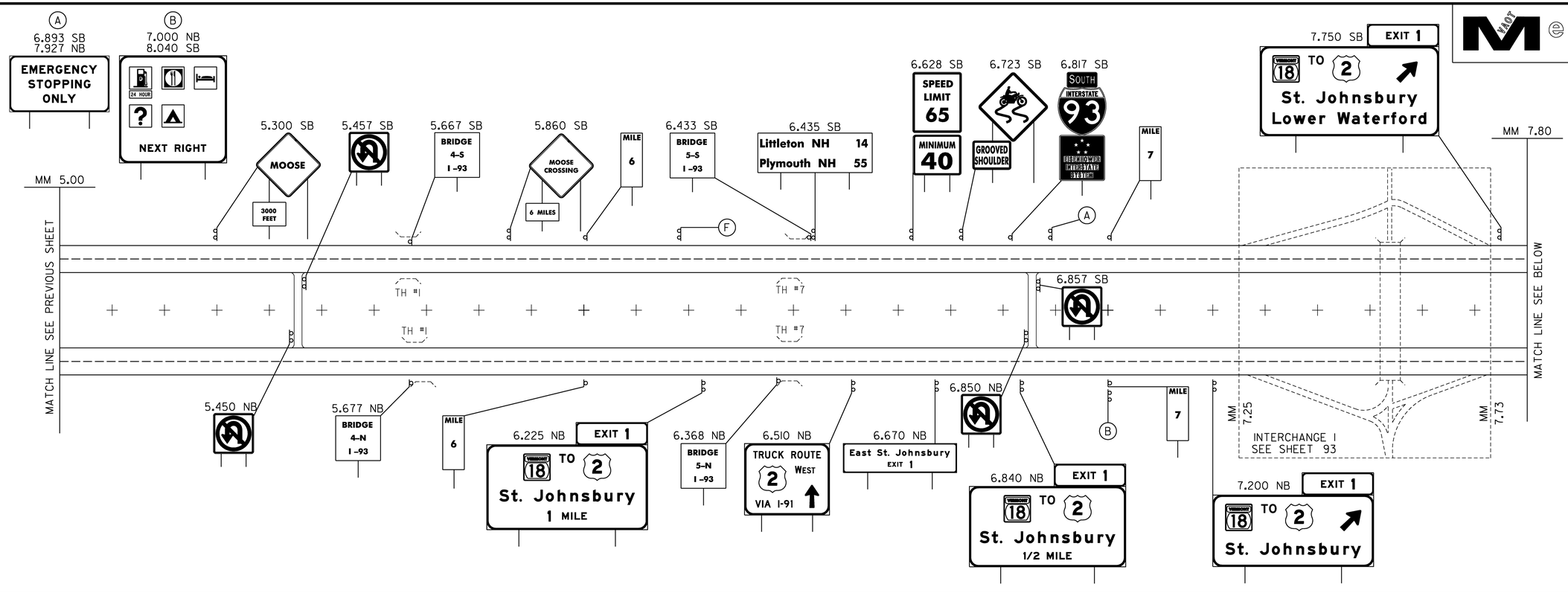
ALL SIGNS AND POSTS ARE NEW UNLESS OTHERWISE NOTED

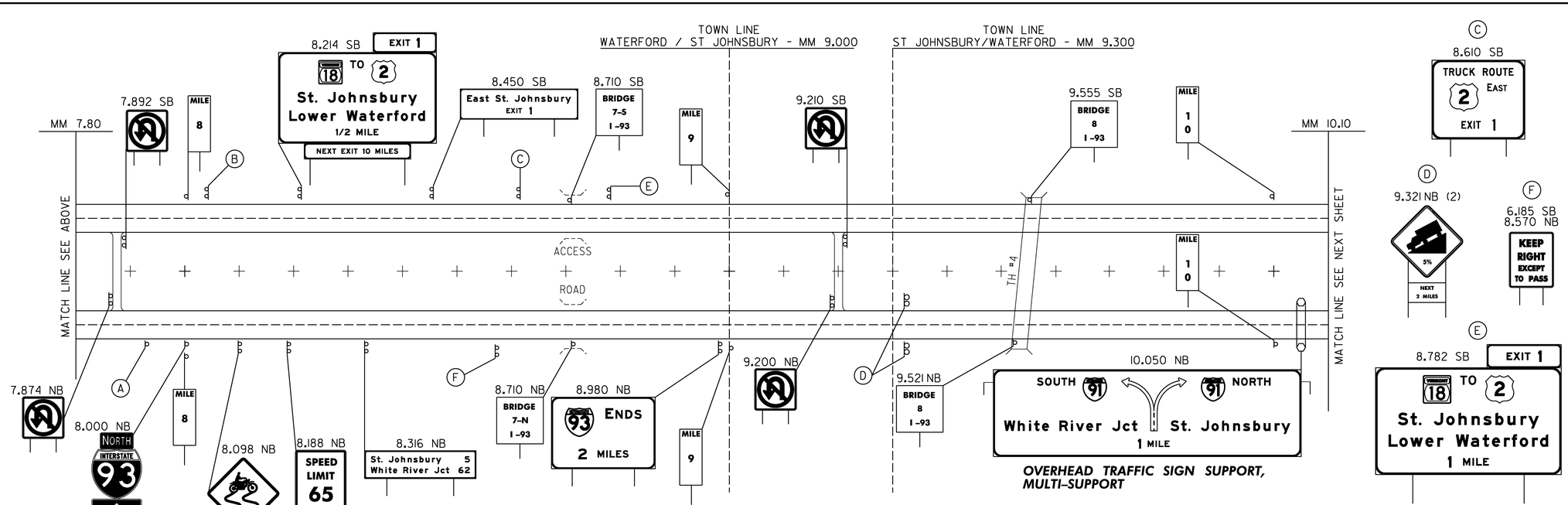
NEW SIGNS

PROJECT NAME: WATERFORD
PROJECT NUMBER: HES 093-1(10)

FILE NAME: 97211b-ml.dgn
PROJECT LEADER: CRB
DESIGNED BY: DAM
CLD REF. NO.: 97-0211

PLOT DATE: 1/4/2007
DRAWN BY: HJC
CHECKED BY: DAM
SHEET 89 OF 130





OVERHEAD TRAFFIC SIGN SUPPORT, MULTI-SUPPORT

ALL SIGNS AND POSTS ARE NEW UNLESS OTHERWISE NOTED

NEW SIGNS

PROJECT NAME: WATERFORD
PROJECT NUMBER: HES 093-1(10)

FILE NAME: 9721lb-ml.dgn
PROJECT LEADER: CRB
DESIGNED BY: DAM
CLD REF. NO.: 97-0211

PLOT DATE: 1/4/2007
DRAWN BY: HJC
CHECKED BY: DAM
SHEET 90 OF 130

TOWN LINE
ST JOHNSBURY/WATERFORD - MM 10.579

TOWN LINE
WATERFORD / ST JOHNSBURY - MM 10.323

DURABLE 200 mm WHITE LINE (SOLID)
10.970 NB C/L TO 11.100 NB C/L (209 m)
11.100 NB C/L TO 0.057 EXIT 19 RAMP C (Theoretical Gore) (92 m)

10.210 SB
KEEP RIGHT EXCEPT TO PASS

10.468 SB
Littleton NH 18
Plymouth NH 59

10.667 SB
SPEED LIMIT 65
MINIMUM 40

10.990 SB
GROOVED SHOULDER

END PROJECT
HES 093-1(10)
(MM 11.10)

11.084 SB
SOUTH INTERSTATE 93

MILE 1 1

11.020 SB

MM 10.10

MATCH LINE SEE PREVIOUS SHEET

10.163 NB (2)
5%
NEXT 1 MILE

10.740 NB
TRUCK ROUTE
EXIT 21 2 WEST
NEXT RIGHT

10.970 NB
EXIT 40 M.P.H.

MILE 1 1

10.988 NB

10.470 NB
SOUTH 91 NORTH 91
White River Jct St. Johnsbury

OVERHEAD TRAFFIC SIGN SUPPORT, MULTI-SUPPORT

10.970 NB
SOUTH 91
White River Jct

NORTH 91
St. Johnsbury

OVERHEAD TRAFFIC SIGN SUPPORT, MULTI-SUPPORT

ALL SIGNS AND POSTS ARE NEW UNLESS OTHERWISE NOTED

NEW SIGNS

PROJECT NAME: WATERFORD
PROJECT NUMBER: HES 093-1(10)

FILE NAME: 9211b-ml.dgn
PROJECT LEADER: CRB
DESIGNED BY: DAM
CLD REF. NO.: 97-0211

PLOT DATE: 1/4/2007
DRAWN BY: HJC
CHECKED BY: DAM
SHEET 91 OF 130

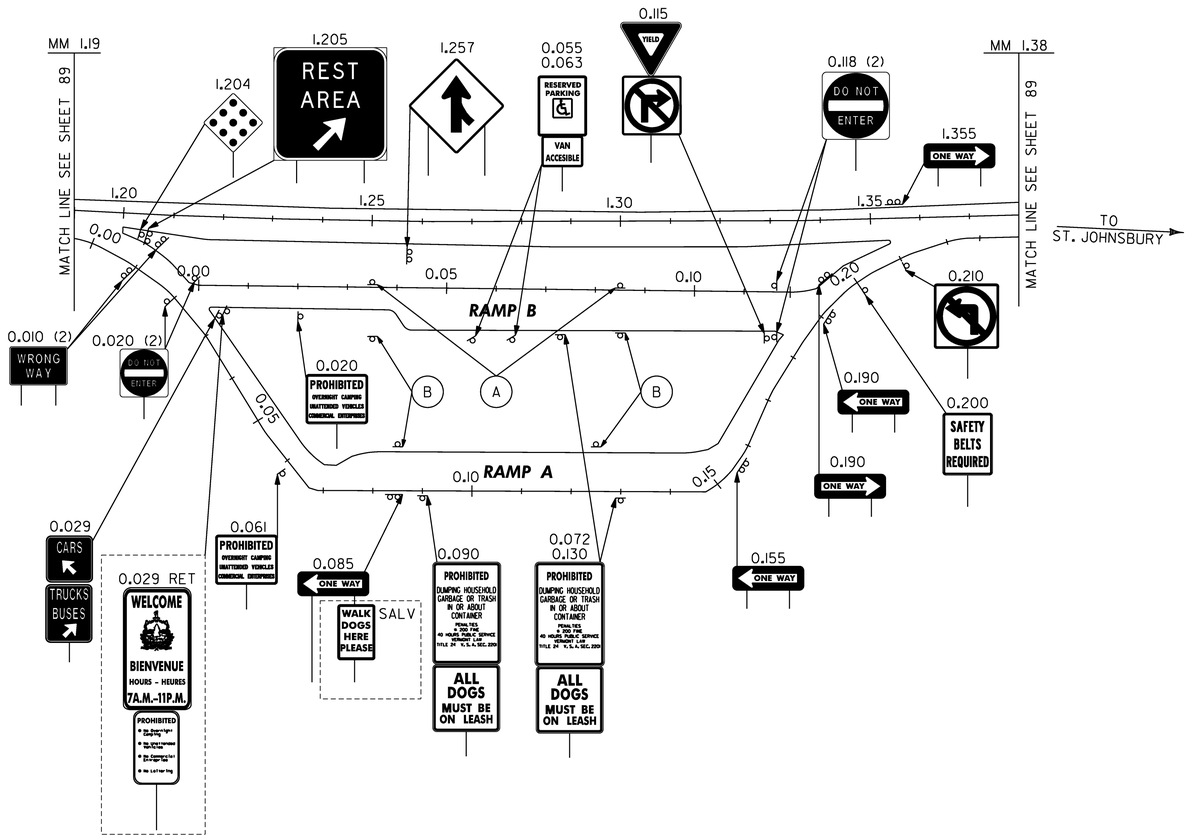
Metric

(A)

0.035 RAMP B RET
0.085 RAMP B RET

(B)

0.085 RAMP A RET
0.125 RAMP A RET
0.035 RAMP B RET
0.085 RAMP B RET



LEGEND

RET – RETAINED
SALV – SALVAGED

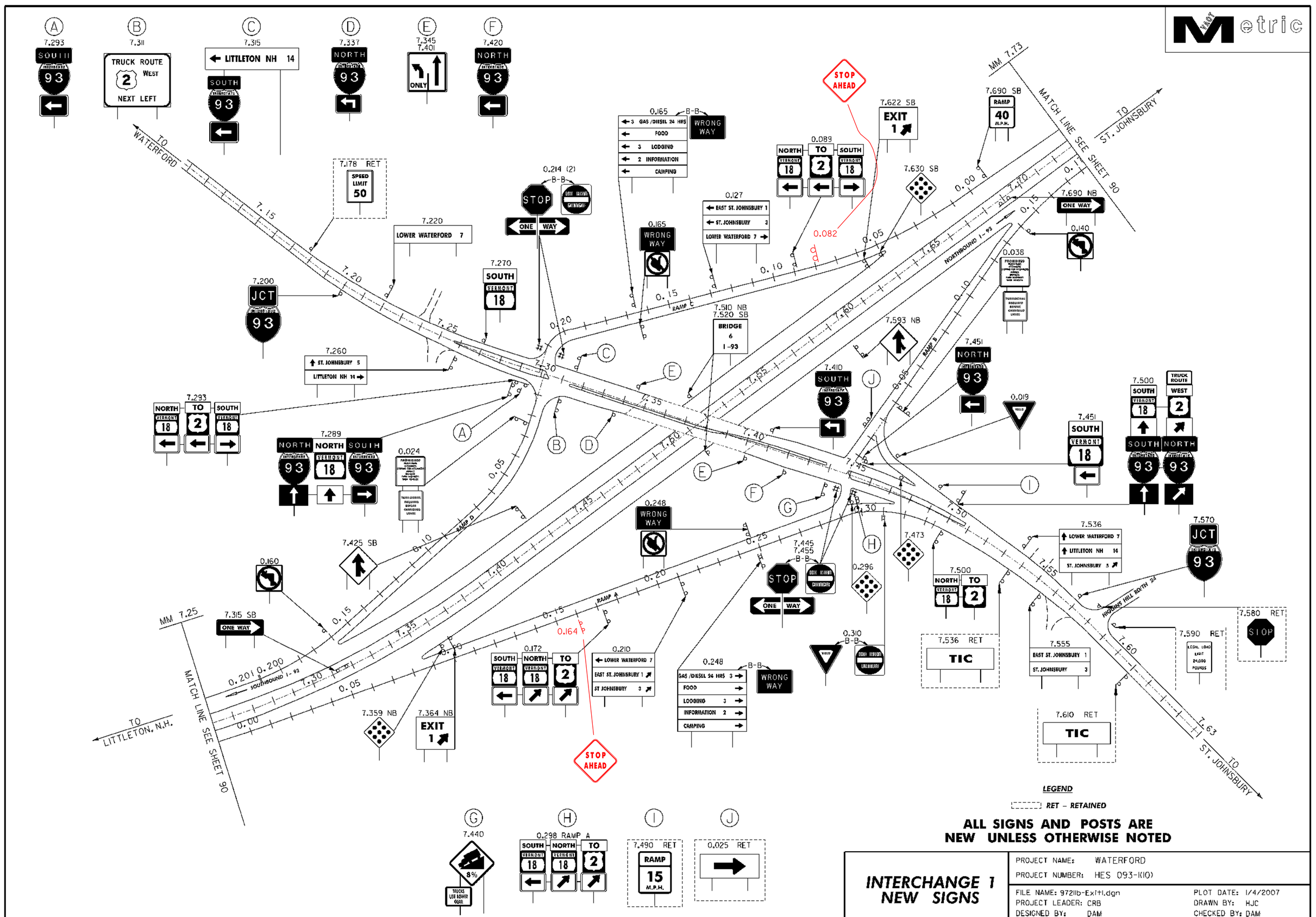
ALL SIGNS AND POSTS ARE NEW UNLESS OTHERWISE NOTED

REST AREA
1.27 I-93 NB
NEW SIGNS

PROJECT NAME: WATERFORD
PROJECT NUMBER: HES 093-I(10)

FILE NAME: 9721lb-ra.dgn
PROJECT LEADER: CRB
DESIGNED BY: DAM
CLD REF. NO.: 97-021l

PLOT DATE: 1/4/2007
DRAWN BY: HJC
CHECKED BY: DAM
SHEET 92 OF 130



LEGEND

RET – RETAINED

ALL SIGNS AND POSTS ARE NEW UNLESS OTHERWISE NOTED

INTERCHANGE 1 NEW SIGNS

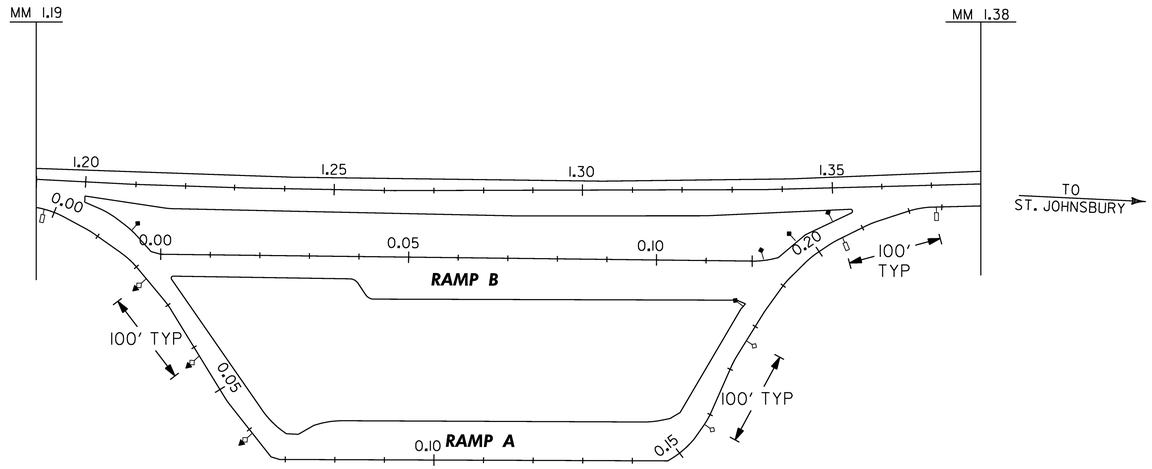
PROJECT NAME: WATERFORD
PROJECT NUMBER: HES 093-1(10)

FILE NAME: 9721b-Ext1.dgn
PROJECT LEADER: CRB
DESIGNED BY: DAM
CLD REF. NO.: 97-021I

PLOT DATE: 1/4/2007
DRAWN BY: HJC
CHECKED BY: DAM
SHEET 93 OF 130

Decel. lane taper begins at 1.078 ± 685′ from Gore
Use 8 Type II Delineators

Accel. lane taper ends at 1.655 ± 1610′ from Gore
Use 17 Type II Delineators



LEGEND

- ***TYPE I (WHITE)***
- ***TYPE I (YELLOW)***
- ***TYPE II (WHITE)***
- ***TYPE III (RED ON BACK, WHITE)***
- ***TYPE III (RED ON BACK, YELLOW)***

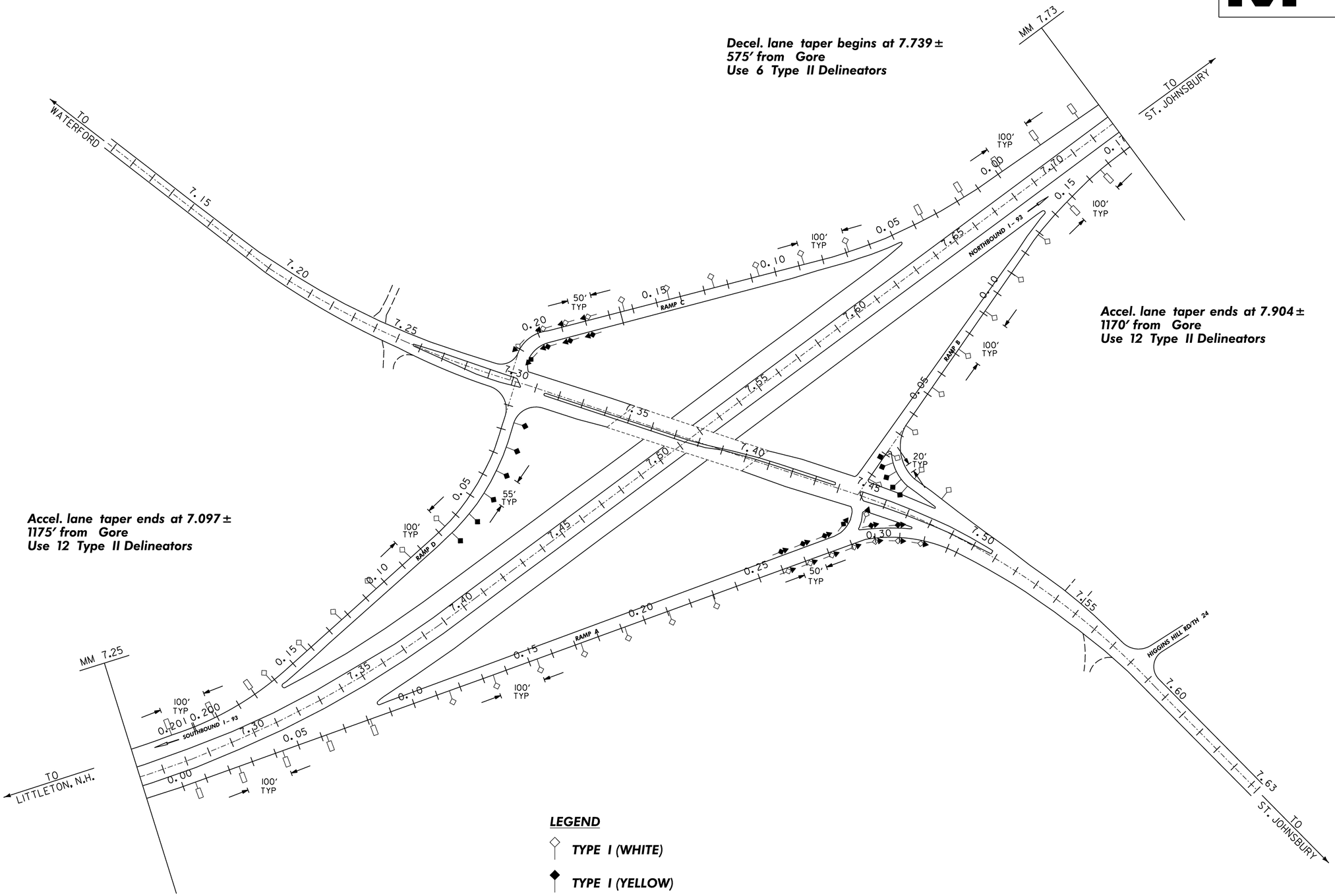
REST AREA 1.27 I-93 NB DELINEATOR LAYOUT

PROJECT NAME: WATERFORD
PROJECT NUMBER: HES 093-1(10)

FILE NAME: 9721lb-ra.dgn
PROJECT LEADER: CRB
DESIGNED BY: DAM
CLD REF. NO.: 97-021l

PLOT DATE: 1/4/2007
DRAWN BY: HJC
CHECKED BY: DAM
SHEET 94 OF 130

VAOT Metric



LEGEND

- TYPE I (WHITE)
- TYPE I (YELLOW)
- TYPE II (WHITE)
- TYPE III (RED ON BACK, WHITE)
- TYPE III (RED ON BACK, YELLOW)

INTERCHANGE 1 DELINEATOR LAYOUT

PROJECT NAME:	WATERFORD
PROJECT NUMBER:	HES 093-1(110)
FILE NAME: 9721lb-Exit1.dgn	PLOT DATE: 1/4/2007
PROJECT LEADER: CRB	DRAWN BY: HJC
DESIGNED BY: DAM	CHECKED BY: DAM
CLD REF. NO.: 97-0211	SHEET 95 OF 130

STATE OF VERMONT
AGENCY OF TRANSPORTATION

TRAFFIC SIGN SUMMARY SHEET 1

Metric

MILE MARKER	SIGN LEGEND	SIGN DIMENSIONS EA	WIDTH (mm)	HEIGHT (mm)	NEW & SALVAGED SIGNS "A"	"B"	SALV SIGN	SALV TIS	EXIST POST RETAIN	EXIST POST SALVAGE	NEW SIGN POSTS NO. OF POSTS	FLANGED CHANNEL kg/m 1.7	3.0	4.5	SQUARE STEEL (mm) kg/m 44 3.4	50 3.9	63 5.0	ANCHOR	SLEEVE	TUBULAR ALUMINUM DIA (mm) kg/m 75 1.9	100 2.5	100MD 2.5	TUBULAR STEEL DIA (mm) kg/m FNDATION	75 11.3	90 13.6	100 16.1	125 21.8	W-SHAPE STEEL FTG SIZE 600 mm	750 mm	MASS	POST SIZE	SIGN	FRAME	REMARKS	SIGN DETAIL DETAIL ON SHEET NUMBER	STD. SHEET NUMBER
NORTHBOUND 0.080 NB	Welcome To VERMONT THE GREEN MOUNTAIN STATE	1	1500	1200	1.80						2												2	90 X										VD-421	115	
0.173 NB MED		1	900	900	0.81						2			8.534 X		X		X																R3-4		E-143
0.200 NB	MOOSE CROSSING	1	1200	1200	1.44																														120	
	6 MILES	1	750	300	0.23						2												2	84 X										W16-3a		
0.310 NB	REST AREA VERMONT WELCOME CENTER 1 MILE	1	4050	2550		10.33																													115	
	OPEN 7 AM - 11 PM	1	4050	600		2.43					2																	2		178 ~~393~~ 369	W200X26.6			Bolt Tension 85.4 kN	115	
0.332 NB	BRIDGE I-N I-93	1	150	250	0.04						1		2.44 X			X		X																VD-701	121	
0.430 NB	SPEED LIMIT 65	1	1200	1500	1.80																													R2-1		E-142
	MINIMUM 40	1	1200	1200	1.44						2												2	119 X										VR-141		E-142
0.550 NB	BUCKLE UP IT'S THE LAW	1	1800	1500		2.70					2												2	99 X											115	
0.648 NB MED		1	900	900	0.81						2			8.534 X		X		X																R3-4		E-143
0.670 NB		1	900	900	0.81																														115	
	STRICTLY ENFORCED	1	900	600	0.54						2												2	90 X											115	
0.790 NB	TRAVEL INFO	1					I X				2												2	95 X										D12-5		
0.910 NB	REST AREA VERMONT WELCOME CENTER NEXT RIGHT	1	4050	2550		10.33					2																	2		225 ~~280~~	W150X22.5			Bolt Tension 85.4 kN	115	
1.000 NB ~~1.095~~ NB	MILE 1	1	300	600	0.18		I X				1			2.90 X 2.44		X		X																D10-1		E-139
1.140 NB	EXIT 30 M.P.H.	1	1200	1500	1.80						2												2	95 X										W13-2		E-150
												m 0.0	m 2.6	m 22.1 2.44 22.4 24.9	m 0.0	m 2.6	m 22.1		EA. 0	kg 0.0	kg 0.0	kg 0.0		kg 678.9	kg 0.0	kg 0.0	kg 0.0 672								
	SHEET TOTALS	m2 11.70	m2 25.79	EA. ~~1~~ 2	m2 0.00				m ~~24.7~~			m			m ~~24.7~~				kg 0.0			EA. 14	kg ~~678.9~~				EA. 4	EA. 0	kg ~~673~~ 772						

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

PROJECT NAME: WATERFORD
PROJECT NUMBER: HES 093-1(10)

FILE NAME:	tsssWaterford.xls	PLOT DATE:	1/4/2007
PROJECT LEADER:	CRB	DRAWN BY:	HJC
DESIGNED BY:	PTS	CHECKED BY:	DAM
CLD REF. NO.:	97-0211	SHEET	96 OF 130

STATE OF VERMONT
AGENCY OF TRANSPORTATION

TRAFFIC SIGN SUMMARY SHEET 2

Metric

MILE MARKER	SIGN LEGEND	SIGN DIMENSIONS EA	WIDTH (mm)	HEIGHT (mm)	NEW & SALVAGED SIGNS "A"	"B"	SALV SIGN	SALV TIS	EXIST POST RETAIN	EXIST POST SALVAGE	NEW SIGN POSTS NO. OF POSTS	FLANGED CHANNEL kg/m 1.7	3.0	4.5	SQUARE STEEL (mm) kg/m 44 3.4	60 3.9	63 5.0	ANCHOR	SILVER	TUBULAR ALUMINUM DIA (mm) kg/m 75 1.9	100 2.5	100MD 2.5	TUBULAR STEEL DIA (mm) kg/m FND-ATION	75 11.3	90 13.6	100 16.1	125 21.8	W-SHAPE STEEL FTG. SIZE 600 mm	750 mm	MASS	POST SIZE	SIGN FRAME	REMARKS	SIGN DETAIL DETAIL ON SHEET NUMBER	STD. SHEET NUMBER
1.204 NB		1	450	450	0.20						1		2.44 X		X			X															OM-1		E-150
1.205 NB	REST AREA	1	1950	1950		3.80					2												2	96 X										E-131
1.257 NB		1	1200	1200	1.44						2												2	81 X									W4-1		E-150
1.355 NB MED	ONE WAY	1	900	300	0.27						2			8.534 X		X		X															R6-1R		E-142
1.407 NB TO 9.621 NB	BRIDGE XXXX I-93	6	150	250	0.24						6		14.64 X		X			X															VD-701 NOT SHOWN ON PLANS.	121	
1.543 NB	BRIDGE 2-N I-93	1	150	250	0.04						1		2.44 X		X			X															VD-701	121	
2.000 NB	MILE 2	1	300	600	0.18						1			3.05 X		X		X															D10-1		E-139
2.683 NB	PUBLIC TRANSIT AND CARPOOL INFO 1-800-685-RIDE	1	1800	1200		2.16					2												2	89 X										E-131
3.000 NB	MILE 3	1	300	600	0.18						1			3.05 X		X		X															D10-1		E-139
3.228 NB MED		1	900	900	0.81						2			8.534 X		X		X															R3-4		E-143
4.000 NB	MILE 4	1	300	600	0.18						1			3.05 X		X		X															D10-1		E-139
4.582 NB	BRIDGE 3-N I-93	1	150	250	0.04						1		2.44 X		X			X															VD-701	121	
4.624 NB	MOOSE	1	1200	1200	1.44																													120	
	3000 FEET	1	600	450	0.27						2												2	92 X									W16-2		
5.000 NB	MILE 5	1	300	600	0.18						1			3.05 X		X		X															D10-1		E-139
5.450 NB MED		1	900	900	0.81						2			8.534 X		X		X															R3-4		E-143
																							~~2~~											
											m 0.0	m ~~23.5~~ 21.96	m ~~41.4~~ 37.79		m 0.0	m 23.5	m 41.4		EA. 0	kg 0.0	kg 0.0	kg 0.0		kg 386.2	kg 0.0	kg 0.0	kg 0.0							
											59.8												8				358							
	SHEET TOTALS		m2 6.28	m2 5.96	EA. 0	m2 0.00					m ~~64.9~~				m ~~64.9~~					kg 0.0			EA. ~~10~~	kg ~~386.2~~				EA. 0	EA. 0	kg 0					

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

PROJECT NAME: WATERFORD
PROJECT NUMBER: HES 093-1(10)

FILE NAME:	tsssWaterford.xls	PLOT DATE:	1/4/2007
PROJECT LEADER:	CRB	DRAWN BY:	HJC
DESIGNED BY:	PTS	CHECKED BY:	DAM
CLD REF. NO.:	97-0211	SHEET	97 OF 130

STATE OF VERMONT
AGENCY OF TRANSPORTATION

TRAFFIC SIGN SUMMARY SHEET 3

Metric

MILE MARKER	SIGN LEGEND	SIGN DIMENSIONS EA	WIDTH (mm)	HEIGHT (mm)	NEW & SALVAGED SIGNS "A"	"B"	SALV SIGN	SALV TIS	EXIST POST RETAIN	EXIST POST SALVAGE	NEW SIGN POSTS NO. OF POSTS	FLANGED CHANNEL kg/m 1.7	3.0	4.5	SQUARE STEEL (mm) kg/m 44 3.4	50 3.9	63 5.0	ANCHOR	SIFVL	TUBULAR ALUMINUM DIA (mm) kg/m 75 1.9	100 2.5	100MD 2.5	TUBULAR STEEL DIA (mm) kg/m FNDATION	75 11.3	90 13.6	100 16.1	125 21.8	W-SHAPE STEEL FTG. SIZE 600 mm	750 mm	MASS	POST SIZE	SIGN FRAME	REMARKS	SIGN DETAIL DETAIL ON SHEET NUMBER	STD. SHEET NUMBER
6.677 NB	BRIDGE 4-N I-93	1	150	250	0.04						1		2.44 X		X			X																VD-701	121	
6.000 NB	MILE 6	1	300	600	0.18						1			3.05 X		X		X																D10-1		E-139
6.225 NB	EXIT 1	1	2400	750	1.80																													E1-5		E-131
	18 TO 2 St. Johnsbury 1 MILE	1	5400	2850		15.39					2																	2		324 ~~289~~	W200X26.6		Bolt Tension 102.1 kN	116	
6.368 NB	BRIDGE 5-N I-93	1	150	250	0.04						1		2.44 X		X			X																VD-701	121	
6.510 NB	TRUCK ROUTE 2 West VIA I-91	1	2850	2400		6.84					2												2				246 X								116	
6.670 NB	East St. Johnsbury EXIT 1	1	5850	1500		8.78					2																	2		232 ~~272~~	W150X22.5		Bolt Tension 85.4 kN	116	
6.840 NB	EXIT 1	1	2400	750	1.80																													E1-5		E-131
	18 TO 2 St. Johnsbury 1/2 MILE	1	5250	2700		14.18					2																	2		300 ~~274~~	W200X26.6		Bolt Tension 90.7 kN	116	
6.850 NB MED		1	900	900	0.81						2			8.534 X		X		X																R3-4		E-143
7.000 NB	MILE 7	1	300	600	0.18						1			2.90 X		X		X																D10-1		E-139
7.000 NB	1 ID 2 A NEXT RIGHT	1	3600	3600		12.96					2																	2		393 ~~319~~	W200X26.6		Bolt Tension 85.4 kN	116	
7.200 NB	EXIT 1	1	2400	750	1.80																													E1-5		E-131
	18 TO 2 St. Johnsbury	1	5400	2400		12.96					2																	2		312 ~~272~~	W200X26.6		Bolt Tension 85.4 kN	116	
7.359 NB		1	450	450	0.20						1		2.44 X		X			X																OM-1		E-150
																							~~2~~												
											m 0.0	m 7.9	m 16.0	m 0.0	m 7.9	m 16.0		EA. 0	kg 0.0	kg 0.0	kg 0.0		kg 0.0	kg 0.0	kg 0.0	kg 213.0								
												7.32	14.48																							
											21.8												2				246			1561					
	SHEET TOTALS		m2 6.85	m2 71.11	EA. 0	m2 ~~0.00~~					m ~~23.9~~			m ~~23.9~~					kg 0.0			EA. ~~4~~	kg ~~213.0~~			EA. 10	EA. 0	kg ~~1426~~						

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PROJECT NAME: WATERFORD
PROJECT NUMBER: HES 093-1(10)

FILE NAME:	tsssWaterford.xls	PLOT DATE:	1/4/2007
PROJECT LEADER:	CRB	DRAWN BY:	HJC
DESIGNED BY:	PTS	CHECKED BY:	DAM
CLD REF. NO.:	97-0211	SHEET	98 OF 130

STATE OF VERMONT
AGENCY OF TRANSPORTATION

TRAFFIC SIGN SUMMARY SHEET 4

Metric

MILE MARKER	SIGN LEGEND	SIGN DIMENSIONS EA	WIDTH (mm)	HEIGHT (mm)	NEW & SALVAGED SIGNS "A"	"B"	SALV SIGN	SALV TIS	EXIST POST RETAIN	EXIST POST SALVAGE	NEW SIGN POSTS NO. OF POSTS	FLANGED CHANNEL kg/m 1.7	FLANGED CHANNEL kg/m 3.0	FLANGED CHANNEL kg/m 4.5	SQUARE STEEL (mm) 44 kg/m 3.4	SQUARE STEEL (mm) 60 kg/m 3.9	SQUARE STEEL (mm) 63 kg/m 5.0	ANCHOR	SILVL	TUBULAR ALUMINUM DIA (mm) 75 kg/m 1.9	TUBULAR ALUMINUM DIA (mm) 100 kg/m 2.5	TUBULAR ALUMINUM DIA (mm) 100MD kg/m 2.5	TUBULAR STEEL DIA (mm) FND-ATION	TUBULAR STEEL DIA (mm) 75 kg/m 11.3	TUBULAR STEEL DIA (mm) 90 kg/m 13.6	TUBULAR STEEL DIA (mm) 100 kg/m 16.1	TUBULAR STEEL DIA (mm) 125 kg/m 21.8	W-SHAPE STEEL FTG. SIZE 600 mm	W-SHAPE STEEL FTG. SIZE 750 mm	W-SHAPE STEEL MASS	W-SHAPE STEEL POST SIZE	SIGN FRAME	REMARKS	SIGN DETAIL DETAIL ON SHEET NUMBER	SIGN DETAIL STD. SHEET NUMBER
7.364 NB	EXIT 1	1	1800	1500		2.70					2												2	90 X									E5-1a		E-131
7.510 NB	BRIDGE 6 I-93	1	150	250	0.04						1		2.44 X		X			X															VD-701	121	
7.593 NB		1	1200	1200	1.44						2										9.707 X												W4-1		E-150
7.690 NB MED	ONE WAY	1	900	300	0.27						2			8.534 X		X		X															R6-1R		E-142
7.874 NB MED		1	900	900	0.81						2			8.534 X		X		X															R3-4		E-143
7.927 NB	EMERGENCY STOPPING ONLY	1	1200	900	1.08						2												2	84 X									R8-7		E-142
8.000 NB	NORTH	1	750	375	0.28																												M3-1		E-135
	INTERSTATE 93	1	900	900	0.81																												M1-1		E-135
	DWIGHT D. EISENHOWER INTERSTATE SYSTEM	1	900	900	0.81						1												1	50 X									M1-10 POST WAS TOO SHORT CHANGED TO CORRECT LENGTH POST		E-135
8.000 NB	MILE 8	1	300	600	0.18						1			3.05 X		X		X															D10-1		E-139
8.098 NB		1	1200	1200	1.44																												VW-397	120	
	GROOVED SHOULDER	1	600	450	0.27						2										21.471 X												VP-396	120	
8.188 NB	SPEED LIMIT 65	1	1200	1500	1.80																												R2-1		E-142
	MINIMUM 40	1	1200	1200	1.44						2												2	119 X									VR-141		E-142
8.316 NB	St. Johnsbury 5 White River Jct 62	1	3600	900		3.24					2												2			150 X							E7	117	
8.670 NB	KEEP RIGHT EXCEPT TO PASS	1	1200	1500	1.80						2												2	99 X									VR-132	120	
8.710 NB	BRIDGE 7-N I-93	1	150	250	0.04						1		2.44 X		X			X															VD-701	121	
												m 0.0	m ~~5.2~~ 4.88	m ~~20.5~~ 20.11	m 0.0	m 5.2	m 20.5		EA. 0	kg 46.7	kg 0.0	kg 0.0		kg ~~434.1~~ 442	kg 0.0	kg ~~161.9~~ 150	kg 0.0								
												25.0								41.2				592											
	SHEET TOTALS	m2 12.51	m2 5.94	EA. 0	m2 0.00							m ~~25.7~~			m ~~25.7~~					kg ~~46.7~~			EA. 11	kg ~~596.0~~				EA. 0	EA. 0	kg 0					

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PROJECT NAME: WATERFORD
PROJECT NUMBER: HES 093-1(10)

FILE NAME:	tsssWaterford.xls	PLOT DATE:	1/4/2007
PROJECT LEADER:	CRB	DRAWN BY:	HJC
DESIGNED BY:	PTS	CHECKED BY:	DAM
CLD REF. NO.:	97-0211	SHEET	99 OF 130

STATE OF VERMONT
AGENCY OF TRANSPORTATION

TRAFFIC SIGN SUMMARY SHEET 5

Metric

MILE MARKER	SIGN LEGEND	SIGN DIMENSIONS EA	WIDTH (mm)	HEIGHT (mm)	NEW & SALVAGED SIGNS "A"	"B"	SALV SIGN	SALV TIS	EXIST POST RETAIN	EXIST POST SALVAGE	NEW SIGN POSTS NO. OF POSTS	FLANGED CHANNEL kg/m 1.7	3.0	4.5	SQUARE STEEL (mm) 44 kg/m 3.4	50 kg/m 3.9	63 kg/m 5.0	ANCHOR	SLEEVE	TUBULAR ALUMINUM DIA (mm) 75 kg/m 1.9	100 kg/m 2.5	100MD kg/m 2.5	TUBULAR STEEL DIA (mm) FND-ATION	75 kg/m 11.3	90 kg/m 13.6	100 kg/m 16.1	125 kg/m 21.8	W-SHAPE STEEL FTG SIZE 600 mm	750 mm	MASS	POST SIZE	SIGN	FRAME	REMARKS	SIGN DETAIL DETAIL ON SHEET NUMBER	STD. SHEET NUMBER
8.980 NB	93 ENDS 2 MILES	1	4350	3000		13.05					2																	2		~~305~~ 316	W200X26.6			Bolt Tension 85.4 kN	117	
9.000 NB	MILE 9	1	300	600	0.18						1			3.28 X		X		X																D10-1		E-139
9.200 NB MED		1	900	900	0.81						2			8.534 X		X		X																R3-4		E-143
9.321 NB MED	5%	1	1200	1200	1.44																													W7-1b		
	NEXT 2 MILES	1	600	450	0.27						2									20.443 X														W7-3a		E-152
9.321 NB	5%	1	1200	1200	1.44																													W7-1b		
	NEXT 2 MILES	1	600	450	0.27						2									22.648 X														W7-3a		E-152
9.521 NB	BRIDGE 8 I-93	1	150	250	0.04						1		2.44 X		X			X																VD-701	121	
10.000 NB	MILE 10	1	300	900	0.27						1			3.35 X		X		X																D10-2		E-139
10.050 NB O/H	SOUTH 91 NORTH 91 White River Jct St. Johnsbury 1 MILE	1	11700	3300		38.61																												OVERHEAD TRAFFIC SIGN SUPPORT, MULTI - SUPPORT DETAIL ON SHEET 126	117	
10.163 NB MED	5%	1	1200	1200	1.44																													W7-1b		
	NEXT 1 MILE	1	600	450	0.27						2												2	94 X									W7-3a		E-152
10.163 NB	5%	1	1200	1200	1.44																													W7-1b		
	NEXT 1 MILE	1	600	450	0.27						2												2	102 X									W7-3a		E-152
10.470 NB O/H	SOUTH 91 NORTH 91 White River Jct St. Johnsbury	1	11700	2700		31.59																												OVERHEAD TRAFFIC SIGN SUPPORT, MULTI - SUPPORT DETAIL ON SHEET 127	117	
10.740 NB	TRUCK ROUTE EXIT 21 2 MILES NEXT RIGHT	1	3750	2400		9.00					2																	2		~~134~~ 132	W150X13.5			Bolt Tension 55 kN	117	
												m 0.0	m ~~2.6~~ 2.44	m ~~16.8~~ 15.17	m 0.0	m 2.6	m 16.8		EA. 0	kg 48.4	kg 0.0	kg 0.0		kg 187.6	kg 0.0	kg 0.0	kg 0.0								
														17.6								43.1					196			448					
	SHEET TOTALS	m2 8.14	m2 92.25	EA. 0	m2 0.00							m ~~19.4~~			m ~~19.4~~							kg ~~48.4~~			EA. 4	kg ~~187.6~~				EA. 4	EA. 0	kg ~~439~~					

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PROJECT NAME: WATERFORD
PROJECT NUMBER: HES 093-1(10)

FILE NAME:	tsssWaterford.xls	PLOT DATE:	1/4/2007
PROJECT LEADER:	CRB	DRAWN BY:	HJC
DESIGNED BY:	PTS	CHECKED BY:	DAM
CLD REF. NO.:	97-0211	SHEET	100 OF 130

STATE OF VERMONT
AGENCY OF TRANSPORTATION

TRAFFIC SIGN SUMMARY SHEET 6

Metric

MILE MARKER	SIGN LEGEND	SIGN DIMENSIONS EA	WIDTH (mm)	HEIGHT (mm)	NEW & SALVAGED SIGNS "A"	"B"	SALV SIGN	SALV TIS	EXIST POST RETAIN	EXIST POST SALVAGE	NEW SIGN POSTS NO. OF POSTS	FLANGED CHANNEL kg/m 1.7	3.0	4.5	SQUARE STEEL (mm) 44 kg/m 3.4	60 kg/m 3.9	63 kg/m 5.0	ANCHOR	SILVL	TUBULAR ALUMINUM DIA (mm) 75 kg/m 1.9	100 kg/m 2.5	100MD kg/m 2.5	TUBULAR STEEL DIA (mm) FND-ATION	75 kg/m 11.3	90 kg/m 13.6	100 kg/m 16.1	125 kg/m 21.8	W-SHAPE STEEL FTG. SIZE 600 mm	750 mm	MASS	POST SIZE	SIGN	FRAME	REMARKS	SIGN DETAIL DETAIL ON SHEET NUMBER	STD. SHEET NUMBER
10.970 NB	EXIT 40 M.P.H.	1	1200	1500	1.80						2												2	I02 X										W13-2		E-150
10.970 NB O/H	91 SOUTH White River Jct ↓ / 91 NORTH St. Johnsbury ↓	1 1	5850 5400	3150 3150		18.43 17.01																											OVERHEAD TRAFFIC SIGN SUPPORT, MULTI - SUPPORT DETAIL ON SHEET 128	117,118	
10.988 NB MED		1	900	900	0.81						2			8.534 X		X		X															R3-4		E-143
11.000 NB	MILE 1 1	1	300	900	0.27						1			3.20 X		X		X															D10-2		E-139
SOUTHBOUND 0.070 SB	BRIDGE ICES BEFORE ROAD	1	1200	1200	1.44						2												2	77 X									W8-13		E-150
0.177 SB MED		1	900	900	0.81						2			8.534 X		X		X															R3-4		E-143
0.415 SB	BRIDGE I-S I-93	1	150	250	0.04						1		2.44 X		X			X															VD-701	121	
0.652 SB MED		1	900	900	0.81						2			8.534 X		X		X															R3-4		E-143
1.000 SB	MILE 1	1	300	600	0.18						1			2.90 X		X		X															D10-1		E-139
1.550 SB 1.095 SB	BRIDGE 2-S I-93	1 1	150	250	0.04		I X				1 1		2.44 X 2.44		X			X															VD-701	121	
2.000 SB	MILE 2	1	300	600	0.18						1			2.90 X		X		X															D10-1		E-139
2.120 SB	MOOSE CROSSING	1	1200	1200	1.44																													120	
	2 MILES	1	750	300	0.23						2												2	I07 X									W16-3a		
3.000 SB	MILE 3	1	300	600	0.18						1			2.90 X		X		X															D10-1		E-139
3.232 SB MED		1	900	900	0.81						2			8.534 X		X		X															R3-4		E-143
3.510 SB	EMERGENCY VEHICLE ENTRANCE	1	1200	1200	1.44																												VW-544	120	
	I 500 FEET	1	600	450	0.27						2												2	99 X									W16-2		
												m 0.0	m 5.2	m 51.6	m 0.0	m 5.2	m 51.6		EA. 0	kg 24.2	kg 0.0	kg 0.0		kg 281.4	kg 0.0	kg 0.0	kg 0.0								
													7.32	46.02																						
													53.4								0				385											
SHEET TOTALS			m2 10.75	m2 35.44	EA. ~~0~~	m2 ~~0.00~~			m ~~56.8~~			m ~~56.8~~								kg ~~24.2~~			EA. 8	kg ~~281.4~~				EA. 0	EA. 0	kg 0					

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PROJECT NAME: WATERFORD
PROJECT NUMBER: HES 093-1(10)

FILE NAME:	tsssWaterford.xls	PLOT DATE:	1/4/2007
PROJECT LEADER:	CRB	DRAWN BY:	HJC
DESIGNED BY:	PTS	CHECKED BY:	DAM
CLD REF. NO.:	97-0211	SHEET	101 OF 130

STATE OF VERMONT
AGENCY OF TRANSPORTATION

TRAFFIC SIGN SUMMARY SHEET 7

Metric

MILE MARKER	SIGN LEGEND	SIGN DIMENSIONS EA	WIDTH (mm)	HEIGHT (mm)	NEW & SALVAGED SIGNS "A"	"B"	SALV SIGN	SALV TIS	EXIST POST RETAIN	EXIST POST SALVAGE	NEW SIGN POSTS NO. OF POSTS	FLANGED CHANNEL kg/m 1.7	3.0	4.5	SQUARE STEEL (mm) kg/m 44 3.4	50 3.9	63 5.0	ANCHOR SLEEVE	TUBULAR ALUMINUM DIA (mm) kg/m 75 1.9	100 2.5	100MD 2.5	TUBULAR STEEL DIA (mm) kg/m FND-ATION	75 11.3	90 13.6	100 16.1	125 21.8	W-SHAPE STEEL FTG. SIZE 500 mm	750 mm	MASS	POST SIZE	SIGN FRAME	REMARKS	SIGN DETAIL DETAIL ON SHEET NUMBER	STD. SHEET NUMBER
4.000 SB	MILE 4	1	300	600	0.18						1			3.04 X		X		X														D10-1		E-139
4.650 SB	BRIDGE 3-S I-93	1	150	250	0.04						1		2.44 X		X			X														VD-701	121	
5.000 SB	MILE 5	1	300	600	0.18						1			3.12 X		X		X														D10-1		E-139
5.300 SB	MOOSE	1	1200	1200	1.44																												120	
	3000 FEET	1	600	450	0.27						2											2	106 X									W16-2		
5.457 SB MED		1	900	900	0.81						2			8.534 X		X		X														R3-4		E-143
5.667 SB	BRIDGE 4-S I-93	1	150	250	0.04						1		2.44 X		X			X														VD-701	121	
5.860 SB	MOOSE CROSSING	1	1200	1200	1.44																												120	
	6 MILES	1	750	300	0.23						2										19.119 X											W16-3a		
6.000 SB	MILE 6	1	300	600	0.18						1			3.05 X		X		X														D10-1		E-139
6.185 SB	KEEP RIGHT EXCEPT TO PASS	1	1200	1500	1.80						2											2	95 X									VR-132	120	
6.433 SB	BRIDGE 5-S I-93	1	150	250	0.04						1		2.44 X		X			X														VD-701	121	
6.435 SB	Littleton NH 14 / Plymouth NH 55	1	3150	900		2.84					2											2		115 X								E7	118	
6.628 SB	SPEED LIMIT 65	1	1200	1500	1.80																											R2-1		E-142
	MINIMUM 40	1	1200	1200	1.44						2											2	126 X									VR-141		E-142
																						~~2~~												
												m 0.0	m ~~7.8~~	m ~~19.3~~	m 0.0	m 7.8	m 19.3		EA. 0	kg 24.2	kg 0.0	kg 0.0		kg ~~309.7~~ 327	kg ~~118.1~~ 115	kg 0.0	kg 0.0								
												25.1								19.1			8	442											
											SHEET TOTALS	m2 9.89	m2 2.84	EA. 0	m2 ~~0.00~~		m ~~27.1~~			m ~~27.1~~			kg ~~24.2~~		EA. ~~10~~	kg ~~425.8~~		EA. 0	EA. 0	kg 0					

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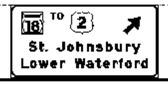
PROJECT NAME: WATERFORD
PROJECT NUMBER: HES 093-1(10)

FILE NAME	tsssWaterford.xls	PLOT DATE	1/4/2007
PROJECT LEADER:	CRB	DRAWN BY:	HJC
DESIGNED BY:	PTS	CHECKED BY:	DAM
CLD REF. NO.:	97-0211	SHEET	102 OF 130

STATE OF VERMONT
AGENCY OF TRANSPORTATION

TRAFFIC SIGN SUMMARY SHEET 8

Metric

MILE MARKER	SIGN LEGEND	SIGN DIMENSIONS EA	WIDTH (mm)	HEIGHT (mm)	NEW & SALVAGED SIGNS "A"	"B"	SALV SIGN	SALV TIS	EXIST POST RETAIN	EXIST POST SALVAGE	NEW SIGN POSTS NO. OF POSTS	FLANGED CHANNEL kg/m 1.7	FLANGED CHANNEL kg/m 3.0	FLANGED CHANNEL kg/m 4.5	SQUARE STEEL (mm) 44 kg/m 3.4	SQUARE STEEL (mm) 50 kg/m 3.9	SQUARE STEEL (mm) 63 kg/m 5.0	ANCHOR	SLEEVE	TUBULAR ALUMINUM DIA (mm) 75 kg/m 1.9	TUBULAR ALUMINUM DIA (mm) 100 kg/m 2.5	TUBULAR ALUMINUM DIA (mm) 100MD kg/m 2.5	TUBULAR STEEL DIA (mm) FND-ATION	TUBULAR STEEL DIA (mm) 75 kg/m 11.3	TUBULAR STEEL DIA (mm) 90 kg/m 13.6	TUBULAR STEEL DIA (mm) 100 kg/m 16.1	TUBULAR STEEL DIA (mm) 125 kg/m 21.8	W-SHAPE STEEL FTG. SIZE 600 mm	W-SHAPE STEEL FTG. SIZE 750 mm	W-SHAPE STEEL MASS	W-SHAPE STEEL POST SIZE	SIGN FRAME	REMARKS	SIGN DETAIL DETAIL ON SHEET NUMBER	SIGN DETAIL STD. SHEET NUMBER
6.723 SB		1	1200	1200	1.44																												VW-397	120	
		1	600	450	0.27						2												2	96 X								VP-396	120	
6.817 SB		1	750	375	0.28																												M3-3		E-135
		1	900	900	0.81																												M1-1		E-135
		1	900	900	0.81						1												1	53 X								M1-10		E-135
6.857 SB MED		1	900	900	0.81						2			8.534 X		X		X														R3-4		E-143
6.893 SB		1	1200	900	1.08						2												2	88 X								R8-7		E-142
7.000 SB		1	300	600	0.18						1			3.05 X		X		X														D10-1		E-139
7.315 SB MED		1	900	300	0.27						2			8.534 X		X		X														R6-1R		E-142
7.425 SB		1	1200	1200	1.44						2												2	92 X								W4-1		E-150
7.520 SB		1	150	250	0.04						1		2.44 X		X			X														VD-701	121	
7.622 SB		1	1800	1500		2.70					2												2	97 X								E5-1a		E-131
7.630 SB		1	450	450	0.20						1		2.438 X		X			X														OM-1		E-150
7.675 SB TO 2.058 SB		4	150	250	0.16						4		9.76 X		X			X														VD-701 NOT SHOWN ON PLANS. SHEET 121 OF 130	121	
7.690 SB		1	1200	1500	1.80						2												2	98 X								W13-3		E-150
7.750 SB		1	2400	750	1.80																												E1-5		E-131
		1	6000	3000		18.00					2																		2	362 ~~379~~	W200X31.3		Bolt Tension 126.3 kN SEE FOOTING DETAIL ON SHEET 3	118	
												m 0.0	m ~~15.7~~ 14.6	m ~~20.5~~ 20.1	m 0.0	m 15.7	m 20.5		EA. 0	kg 0.0	kg 0.0	kg 0.0		kg 492.7	kg 0.0	kg 0.0	kg 0.0							
														34.8												52.4								
	SHEET TOTALS	m2	11.39	m2	20.70	EA.	0	m2	~~0.00~~			m	~~36.2~~		m	~~36.2~~				kg	0.0		EA.	11	kg	~~492.7~~		EA.	2	EA.	0	kg	~~362~~ ~~379~~			

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

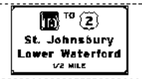
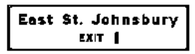
PROJECT NAME: WATERFORD
PROJECT NUMBER: HES 093-1(10)

FILE NAME	tsssWaterford.xls	PLOT DATE	1/4/2007
PROJECT LEADER:	CRB	DRAWN BY:	HJC
DESIGNED BY:	PTS	CHECKED BY:	DAM
CLD REF. NO.:	97-0211	SHEET	103 OF 130

STATE OF VERMONT
AGENCY OF TRANSPORTATION

TRAFFIC SIGN SUMMARY SHEET 9

Metric

MILE MARKER	SIGN LEGEND	SIGN DIMENSIONS EA	WIDTH (mm)	HEIGHT (mm)	NEW & SALVAGED SIGNS "A"	"B"	SALV SIGN	SALV TIS	EXIST POST RETAIN	EXIST POST SALVAGE	NEW SIGN POSTS NO. OF POSTS	FLANGED CHANNEL kg/m 1.7	3.0	4.5	SQUARE STEEL (mm) 44 60 63 kg/m 3.4	3.9	5.0	ANCHOR	SILVL	TUBULAR ALUMINUM DIA (mm) 75 100 100MD kg/m 1.9	2.5	2.5	TUBULAR STEEL DIA (mm) FND-ATION	76 90 100 125 kg/m 11.3	13.6	16.1	21.8	W-SHAPE STEEL FTG. SIZE 600 mm	750 mm	MASS	POST SIZE	SIGN FRAME	REMARKS	SIGN DETAIL DETAIL ON SHEET NUMBER	STD. SHEET NUMBER
7.892 SB MED		1	900	900	0.81						2			8.534 X		X		X															R3-4		E-143
8.000 SB		1	300	600	0.18						1			2.81 X		X		X															D10-1		E-139
8.040 SB		1	3600	3600		12.96					2																	2		328 ~~339~~	W200X26.6		Bolt Tension 85.4 kN	116	
8.214 SB		1	2400	750	1.80																											E1-5		E-131
		1	6000	3450		20.70																											118	
		1	4050	600		2.43					2																	2		438 ~~402~~	W250X32.7		E2-1 Bolt Tension 126.3 kN		E-131
8.450 SB		1	5850	1500		8.78					2																	1 ~~2~~	1	159 ~~160~~	W150X18		Bolt Tension 53.4 kN SEE FOOTING DETAIL ON SHEET 3	116	
8.610 SB		1	3000	2550		7.65					2												2				218 X						118	
8.710 SB		1	150	250	0.04						1		2.44 X		X			X														VD-701	121	
8.782 SB		1	2400	750	1.80																											E1-5		E-131
		1	6000	3450		20.70					2																	2		433 ~~451~~	W250X32.7		Bolt Tension 129.2 kN SEE FOOTING DETAIL ON SHEET 3	119	
9.000 SB		1	300	600	0.18						1			3.12 X		X		X															D10-1		E-139
9.210 SB MED		1	900	900	0.81						2			8.534 X		X		X															R3-4		E-143
											m 0.0	m ~~2.6~~ 2.44	m ~~25.4~~ 22.99		m 0.0	m 2.6	m 25.4		EA. 0	kg 0.0	kg 0.0	kg 0.0		kg 0.0	kg 0.0	kg 0.0	kg 213.9							
											25.5																								
	SHEET TOTALS	m2	5.62		m2	73.22	EA.	0	m2	0.00		m ~~28.0~~			m ~~28.0~~					kg 0.0			EA. 2	kg ~~213.9~~				EA. ~~8~~ 7	EA. ~~0~~ 1	kg ~~1352~~ 1358					

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

PROJECT NAME: WATERFORD
PROJECT NUMBER: HES 093-1(10)

FILE NAME:	tsssWaterford.xls	PLOT DATE:	1/4/2007
PROJECT LEADER:	CRB	DRAWN BY:	HJC
DESIGNED BY:	PTS	CHECKED BY:	DAM
CLD REF. NO.:	97-0211	SHEET	104 OF 130

STATE OF VERMONT
AGENCY OF TRANSPORTATION

TRAFFIC SIGN SUMMARY SHEET 10

Metric

MILE MARKER	SIGN LEGEND	SIGN DIMENSIONS EA	WIDTH (mm)	HEIGHT (mm)	NEW & SALVAGED SIGNS "A"	"B"	SALV SIGN	SALV TIS	EXIST POST RETAIN	EXIST POST SALVAGE	NEW SIGN POSTS NO. OF POSTS	FLANGED CHANNEL kg/m 1.7	3.0	4.5	SQUARE STEEL (mm) 44 kg/m 3.4	50 kg/m 3.9	63 kg/m 5.0	ANCHOR	SILVL	TUBULAR ALUMINUM DIA (mm) 75 kg/m 1.9	100 kg/m 2.5	100MD kg/m 2.5	TUBULAR STEEL DIA (mm) FND-ATION	75 kg/m 11.3	90 kg/m 13.6	100 kg/m 16.1	125 kg/m 21.8	W-SHAPE STEEL FTG. SIZE 600 mm	750 mm	MASS	POST SIZE	SIGN	FRAME	REMARKS	SIGN DETAIL DETAIL ON SHEET NUMBER	STD. SHEET NUMBER
9.555 SB	BRIDGE 8 I-93	1	150	250	0.04						1		2.44 X		X			X																	VD-701	121	
10.000 SB	MILE 1 0	1	300	900	0.27						1			3.28 X		X		X																	D10-2		E-139
10.210 NB	KEEP RIGHT EXCEPT TO PASS	1	1200	1500	1.80						2												2	98 X										VR-132	120	
10.468 SB	Littleton NH 18 / Plymouth NH 59	1	3150	900		2.84					2												2	73 X										E7	119	
10.667 SB	SPEED LIMIT 65	1	1200	1500	1.80																													R2-1		E-142
	MINIMUM 40	1	1200	1200	1.44						2												2	130 X										VR-141		E-142
10.990 SB		1	1200	1200	1.44																													VW-397	120	
	GROOVED SURFACE	1	600	450	0.27						2												2	99 X										VP-396	120	
11.000 SB	MILE 1 1	1	300	900	0.27						1			3.28 X		X		X																	D10-2		E-139
11.020 SB MED		1	900	900	0.81						2			8.534 X		X		X																	R3-4		E-143
11.084 SB	SOUTH	1	750	375	0.28																													M3-1		E-135
	INTERSTATE 93	1	900	900	0.81																													M1-1		E-135
		1	900	900	0.81						1												1	53 X										M1-10		E-135
REST AREA 1.27 NB 0.010 RAMP A LT	WRONG WAY	1	900	600	0.54						2			8.534 X		X		X																	R5-1a		E-143
0.010 RAMP A RT	WRONG WAY	1	900	600	0.54						2			8.534 X		X		X																	R5-1a		E-143
0.020 RAMP A LT	DO NOT ENTER	1	750	750	0.56						1			4.267 X		X		X																	R5-1		E-143
0.020 RAMP A RT	DO NOT ENTER	1	750	750	0.56						1			4.267 X		X		X																	R5-1		E-143
												m 0.0	m ~~2.6~~ 2.44	m ~~39.6~~ 40.69	m 0.0	m 2.6	m 39.6		EA. 0	kg 0.0	kg 0.0	kg 0.0		kg 445.5	kg 0.0	kg 0.0	kg 0.0								
												43.2																								
	SHEET TOTALS	m2 12.24	m2 2.84	EA. 0	m2 ~~0.00~~							m ~~42.2~~			m ~~42.2~~					kg 0.0			EA. 9	kg ~~445.5~~				EA. 0	EA. 0	kg 0						
												453																								

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

PROJECT NAME: WATERFORD
PROJECT NUMBER: HES 093-1(10)

FILE NAME:	tsssWaterford.xls	PLOT DATE	1/4/2007
PROJECT LEADER:	CRB	DRAWN BY:	HJC
DESIGNED BY:	PTS	CHECKED BY:	DAM
CLD REF. NO.:	97-0211	SHEET	105 OF 130

STATE OF VERMONT
AGENCY OF TRANSPORTATION

TRAFFIC SIGN SUMMARY SHEET 11

Metric

MILE MARKER	SIGN LEGEND	SIGN DIMENSIONS EA	WIDTH (mm)	HEIGHT (mm)	NEW & SALVAGED SIGNS "A"	"B"	SALV SIGN	SALV TIS	EXIST POST RETAIN	EXIST POST SALVAGE	NEW SIGN POSTS NO. OF POSTS	FLANGED CHANNEL kg/m 1.7	3.0	4.5	SQUARE STEEL (mm) kg/m 44 1.7	50 3.4	63 3.9	5.0	ANCHOR	SLEEVE	TUBULAR ALUMINUM DIA (mm) kg/m 75 1.9	100 2.5	100MD 2.5	TUBULAR STEEL DIA (mm) FND-ATION	kg/m 75 11.3	90 13.6	100 16.1	125 21.8	W-SHAPE STEEL FTG. SIZE 600 mm	750 mm	MASS	POST SIZE	SIGN FRAME	REMARKS	SIGN DETAIL DETAIL ON SHEET NUMBER	STD. SHEET NUMBER
REST AREA 1.27 NB 0.029 RAMP A LT	CARS	1	600	600	0.36																													VD-10L	119	
	TRUCKS BUSES	1	600	750	0.45						1			4.877 X		X		X																VD-239R	119	
0.061 RAMP A RT	PROHIBITED OVERNIGHT CAMPING UNATTENDED VEHICLES COMMERCIAL ENTERPRISES	1	750	600	0.45						1			4.267 X		X		X																VR-032		E-144
0.085 RAMP A RT	ONE WAY	1	900	300	0.27																													R6-1L		E-142
	WALK DOGS HERE PLEASE	1					X				2			8.534 X		X		X																		
0.090 RAMP A RT	PROHIBITED DOGS, HORSES OR OTHER ANIMALS PURSUANT TO TITLE 10 OR ANY RULE THEREUNDER ARE PROHIBITED	1	600	900	0.54																													VR-278		E-144
	ALL DOGS MUST BE ON LEASH	1	600	600	0.36						1			4.877 X		X		X																VR-648		E-144
0.130 RAMP A RT	PROHIBITED CAMPING, PICNICKING, CAMPFIRES OR TRAVEL TO OR ABOUT CEMETERIES	1	600	900	0.54																													VR-278		E-144
	ALL DOGS MUST BE ON LEASH	1	600	600	0.36						1			4.877 X		X		X																VR-648		E-144
0.155 RAMP A RT	ONE WAY	1	900	300	0.27						2			8.534 X		X		X																R6-1L		E-142
0.190 RAMP A LT	ONE WAY	1	900	300	0.27						2			8.534 X		X		X																R6-1R		E-142
0.190 RAMP A RT	ONE WAY	1	900	300	0.27						2			8.534 X		X		X																R6-1L		E-142
0.200 RAMP A RT	SAFETY BELTS REQUIRED	1	600	750	0.45						1			4.267 X		X		X																	119	
0.210 RAMP A RT		1	600	600	0.36						1			4.267 X		X		X																R3-2		E-143
REST AREA 1.27 NB 0.020 RAMP B RT	PROHIBITED OVERNIGHT CAMPING UNATTENDED VEHICLES COMMERCIAL ENTERPRISES	1	750	600	0.45						1			4.267 X		X		X																VR-032		E-144
0.055 RAMP B RT	RESERVED PARKING	1	300	450	0.14																														119	
	VAN ACCESSIBLE	1	300	150	0.05						1			4.267 X		X		X								2								R7-8A		E-132
												m 0.0	m 0.0	m ~~60.2~~	m 0.0	m 0.0	m 60.2		EA. 0	kg 0.0	kg 0.0	kg 0.0		kg 0.0	kg 0.0	kg 0.0	kg 0.0								
												70.1												0												
	SHEET TOTALS	m2 5.59	m2 0.00	EA. 1	m2 ~~0.00~~							m ~~60.2~~			m ~~60.2~~					kg 0.0			EA. ~~2~~	kg 0.0				EA. 0	EA. 0	kg 0					

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

PROJECT NAME: WATERFORD
PROJECT NUMBER: HES 093-1(10)

FILE NAME:	tsssWaterford.xls	PLOT DATE:	1/4/2007
PROJECT LEADER:	CRB	DRAWN BY:	HJC
DESIGNED BY:	PTS	CHECKED BY:	DAM
CLD REF. NO.:	97-0211	SHEET	106 OF 130

STATE OF VERMONT
AGENCY OF TRANSPORTATION

TRAFFIC SIGN SUMMARY SHEET 12

Metric

MILE MARKER	SIGN LEGEND	SIGN DIMENSIONS EA.	WIDTH (mm)	HEIGHT (mm)	NEW & SALVAGED SIGNS "A"	"B"	SALV SIGN	SALV TIS	EXIST POST RETAIN	EXIST POST SALVAGE	NEW SIGN POSTS NO. OF POSTS	FLANGED CHANNEL kg/m 1.7	3.0	4.5	SQUARE STEEL (mm) 44 50 63 kg/m 3.4	3.9	5.0	ANCHOR	SLIP SLEEVE	TUBULAR ALUMINUM DIA (mm) 75 100 100MD kg/m 1.9	2.5	2.5	TUBULAR STEEL DIA (mm) FNDATION	75	90	100	125 kg/m 11.3	13.6	16.1	21.8	W-SHAPE STEEL FTG. SIZE 600 mm	750 mm	MASS	POST SIZE	SIGN	FRAME	REMARKS	SIGN DETAIL DETAIL ON SHEET NUMBER	STD. SHEET NUMBER
REST AREA 1.27 NB 0.063 RAMP B RT	RESERVED PARKING	1	300	450	0.14																																	119	
	VAN ACCESSIBLE	1	300	150	0.05						1			4.267 X		X		X																			R7-8A		E-132
0.072 RAMP B RT	PROHIBITED	1	600	900	0.54																															VR-278		E-144
	ALL DOGS MUST BE ON LEASH	1	600	600	0.36						1			4.877 X		X		X																			VR-648		E-144
0.115 RAMP B RT	YIELD	1			0.35																															R1-2 900X900X900		E-146
		1	600	600	0.36						1			4.877 X		X		X																			R3-1		E-143
0.118 RAMP B LT	DO NOT ENTER	1	750	750	0.56						1			4.267 X		X		X																			R5-1		E-143
0.118 RAMP B RT	DO NOT ENTER	1	750	750	0.56						1			4.267 X		X		X																			R5-1		E-143
INT.#1		1	600	300	0.18																															M3-3		E136-B
0.172 RAMP A RT	SOUTH NORTH TO	1	600	300	0.18																															M3-1		E136-B
		1	600	300	0.18																															M4-5		E-136A
	VERMONT 18 VERMONT 18 2	1	600	600	0.36																															M1-5		E-136B
		1	600	600	0.36																															M1-5		E-136B
		1	600	600	0.36																															M1-4		E-136A
		1	525	375	0.20																															M6-1		E-136A
		1	525	375	0.20						2												2	92 X										#3	M6-2		E136-B
		1	525	375	0.20																															M6-2		E-136A
0.210 RAMP A RT	LOWER WATERFORD 7	1	1800	300	0.54																															D1-1a		E-123
	EAST ST. JOHNSBURY 1	1	1800	300	0.54						2												2	86 X											D1-1a		E-123
	ST JOHNSBURY 3	1	1800	300	0.54																															D1-1a		E-123
0.248 RAMP A RT	GAS /DIESEL 24 HRS 3 WRONG WAY	1	~~1800~~ 1370	~~250~~ 190	~~0.45~~ 0.26																															VD-502G BACK TO BACK		E-133
		1	900	600	0.54																															R5-1a		E-143
	FOOD	1	~~1800~~ 1370	~~250~~ 190	~~0.45~~ 0.26																															VD-502F		E-133
	LODGING 3	1	1370 ~~1800~~	190 ~~250~~	0.26 ~~0.45~~																															VD-502L		E-133
	INFORMATION 2	1	~~1800~~ 1370	~~250~~ 190	~~0.45~~ 0.26						2			9.75 X									2	93 X											VD-502I		E-133
	CAMPING	1	1370 ~~1800~~	190 ~~250~~	0.26 ~~0.45~~						2																									VD-502C		E-133
0.164 RAMP A RT	STOP AHEAD	1	900	900	0.81							m 0.0	m 0.0	m 20.7	m 0.0	m 0.0	m 20.7		EA. 0		kg 0.0	kg 0.0	kg 0.0		kg ~~244.2~~ 271	kg 0.0	kg 0.0	kg 0.0									
					9.41							32.3													271													
	SHEET TOTALS				m2 ~~9.55~~	m2 0.00	EA. 0	m2 0.00				m ~~20.7~~			m ~~20.7~~						kg 0.0			EA. 6	kg ~~244.2~~				EA. 0	EA. 0	kg 0						

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

PROJECT NAME: WATERFORD
PROJECT NUMBER: HES 093-1(10)

FILE NAME:	tsssWaterford.xls	PLOT DATE:	1/4/2007
PROJECT LEADER:	CRB	DRAWN BY:	HJC
DESIGNED BY:	PTS	CHECKED BY:	DAM
CLD REF. NO.:	97-0211	SHEET	107 OF 130

STATE OF VERMONT
AGENCY OF TRANSPORTATION

TRAFFIC SIGN SUMMARY SHEET 13

Metric

MILE MARKER	SIGN LEGEND	SIGN DIMENSIONS EA	WIDTH (mm)	HEIGHT (mm)	NEW & SALVAGED SIGNS "A"	"B"	SALV SIGN	SALV TIS	EXIST POST RETAIN	EXIST POST SALVAGE	NEW SIGN POSTS NO. OF POSTS	FLANGED CHANNEL kg/m 1.7	3.0	4.5	SQUARE STEEL (mm) kg/m 44 3.4	50 3.9	63 5.0	ANCHOR	SLEEVE	TUBULAR ALUMINUM DIA (mm) kg/m 75 1.9	100 2.53	100MD 2.5	TUBULAR STEEL DIA (mm) FND-ATION	kg/m 75 11.3	90 13.6	100 16.1	125 21.8	W-SHAPE STEEL FTG. SIZE 600 mm	750 mm	MASS	POST SIZE	SIGN FRAME	REMARKS	SIGN DETAIL DETAIL ON SHEET NUMBER	STD. SHEET NUMBER
0.248 RAMP A LT	WRONG WAY	1	900	600	0.54																												R5-1a		E-143
		1	600	600	0.36						2			9.144 X		X		X														R9-4a		E-143
0.296 RAMP A LT		1	450	450	0.20						1		2.438 X		X			X														OM-1		E-150
0.298 RAMP A LT	SOUTH	1	600	300	0.18																												M3-3		E136-B
	NORTH	1	600	300	0.18																												M3-1		E136-B
	TO	1	600	300	0.18																												M4-5		E-136A
	VERMONT 18	1	600	600	0.36																												M1-5		E-136B
	VERMONT 18	1	600	600	0.36																												M1-5		E-136B
	2	1	600	600	0.36																												M1-4		E-136A
		1	525	375	0.20																												M6-1		E136-B
		1	525	375	0.20						2												2	77 X							#3	M6-2		E136-B
		1	525	375	0.20																												M6-2		E-136A
0.310 RAMP A RT	YIELD / DO NOT ENTER	1			0.35																												R1-2 900X900X900		E-146
		1	750	750	0.56						1			4.267 X		X		X														BACK TO BACK R5-1		E-143
INT.#1 0.019 RAMP B RT	YIELD	1			0.35						1			4.267 X		X		X														R1-2 900X900X900		E-146
0.038 RAMP B RT	PROHIBITED	1	900	900	0.81																												VR-046		E-142
	TRAIN SIGNAL REQUIRES STOPPING	1	900	900	0.81						2												2	98 X								VR-002		E-142
0.140 RAMP B RT		1	600	600	0.36						1			4.267 X		X		X														R3-2		E-143
INT.#1 0.089 RAMP C RT	NORTH	1	600	300	0.18																												M3-1		E136-B
	TO	1	600	300	0.18																												M4-5		E-136A
	SOUTH	1	600	300	0.18																												M3-3		E136-B
	VERMONT 18	1	600	600	0.36																												M1-5		E-136B
	2	1	600	600	0.36																												M1-4		E-136A
	VERMONT 18	1	600	600	0.36																												M1-5		E-136B
		1	525	375	0.20																												M6-1		E136-B
		1	525	375	0.20						2												2	26.60 X							#3	M6-1 POSTS 16'-9" 17'-9"		E-136A
		1	525	375	0.20																												M6-1		E136-B
0.127 RAMP C RT	EAST ST. JOHNSBURY 1	1	1800	300	0.54																												D1-1a		E-123
	ST. JOHNSBURY 3	1	1800	300	0.54																												D1-1a		E-123
	LOWER WATERFORD 7	1	1800	300	0.54						2			9.75 X									2	90 X								D1-1a		E-123
0.082 RAMP C RT	STOP AHEAD		900	900	0.81						2	m 0.0	m 2.7	m 21.3	m 0.0	m 2.7	m 21.3		EA. 0	kg 0.0	kg 31.3	kg 0.0		kg 252.1	kg 0.0	kg 0.0	kg 0.0							
												2.44	3.7											265										
					11.21							34.1									26.6			265										
	SHEET TOTALS		m2	m2	EA.	m2						m			m				EA.	kg			EA.	kg				EA.	EA.	kg				
			10.40	0.00	0	0.00						24.0			24.0					31.3			6	252.1				0	0	0				

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

PROJECT NAME: WATERFORD
PROJECT NUMBER: HES 093-1(10)

FILE NAME:	tsssWaterford.xls	PLOT DATE:	1/4/2007
PROJECT LEADER:	CRB	DRAWN BY:	HJC
DESIGNED BY:	PTS	CHECKED BY:	DAM
CLD REF. NO.:	97-0211	SHEET	108 OF 130

STATE OF VERMONT
AGENCY OF TRANSPORTATION

TRAFFIC SIGN SUMMARY SHEET 14

Metric

MILE MARKER	SIGN LEGEND	SIGN DIMENSIONS EA	WIDTH (mm)	HEIGHT (mm)	NEW & SALVAGED SIGNS "A"	"B"	SALV SIGN	SALV TIS	EXIST POST RETAIN	EXIST POST SALVAGE	NEW SIGN POSTS NO. OF POSTS	FLANGED CHANNEL kg/m 1.7	3.0	4.5	SQUARE STEEL (mm) kg/m 44 3.4	50 3.9	63 5.0	ANCHOR	SLEEVE	TUBULAR ALUMINUM DIA (mm) kg/m 75 1.9	100 2.5	100MD 2.5	TUBULAR STEEL DIA (mm) FND-ATION	kg/m 75 11.3	90 13.6	100 16.1	125 21.8	W-SHAPE STEEL FTG. SIZE 600 mm	750 mm	MASS	POST SIZE	SIGN	FRAME	REMARKS	SIGN DETAIL DETAIL ON SHEET NUMBER	STD. SHEET NUMBER
INT.#1 0.165 RAMP C RT	3 GAS /DIESEL 24 HRS WRONG WAY	1	~~1800~~ 1370	~~250~~ 190	~~0.45~~ 0.26																												VD-502G BACK TO BACK		E-133
		1	900	600	0.54																												R5-1a		E-143
	FOOD	1	~~1800~~ 1370	~~250~~ 190	~~0.45~~ 0.26																												VD-502F		E-133
	3 LODGING	1	1370 ~~1800~~	190 ~~250~~	0.26 ~~0.45~~																												VD-502L		E-133
	2 INFORMATION	1	~~1800~~ 1370	~~250~~ 190	~~0.45~~ 0.26						2												2	102 X									VD-502I		E-133
	CAMPING	1	1370 ~~1800~~	190 ~~250~~	0.26 ~~0.45~~																												VD-502C		E-133
0.165 RAMP C LT	WRONG WAY	1	900	600	0.54																												R5-1a		E-143
		1	600	600	0.36						2			9.754 X		X		X														R9-4a		E-143
0.214 RAMP C LT	STOP DO NOT ENTER	1	750	750	0.56																												R1-1 BACK TO BACK		E-143
		1	750	750	0.56																												R5-1		E-143
	ONE WAY ONE WAY	1	900	300	0.27																												R6-1L BACK TO BACK		E-142
		1	900	300	0.27						1			4.267 X		X		X														R6-1R		E-142
0.214 RAMP C RT	STOP DO NOT ENTER	1	750	750	0.56																												R1-1 BACK TO BACK		E-143
		1	750	750	0.56																												R5-1		E-143
	ONE WAY ONE WAY	1	900	300	0.27																												R6-1L BACK TO BACK		E-142
		1	900	300	0.27						1			4.267 X		X		X														R6-1R		E-142
0.024 RAMP D RT	PROHIBITED	1	900	900	0.81																												VR-046		E-142
	TURN SIGNAL REQUIRED BEFORE CHANGING LANES	1	900	900	0.81						2												2	93 X									VR-002		E-142
0.160 RAMP D RT		1	600	600	0.36						1			4.267 X		X		X														R3-2		E-143
INT.#1 7.200 RTE 18 RT	JCT	1	525	375	0.20																												M2-1		E-135
	INTERSTATE 93	1	600	600	0.36						1			4.267 X		X		X														M1-1		E-135
7.220 RTE 18 LT	LOWER WATERFORD 7	1	1800	300	0.54						2			8.534 X		X		X					~~2~~									D2-1		E-123
7.260 RTE 18 RT	ST. JOHNSBURY 5	1	1800	300	0.54																												D1-1a		E-123
	LITTLETON NH 14	1	1800	300	0.54						2			8.534 X		X		X					~~2~~									D1-1a		E-123
												m 0.0	m 0.0	m 42.7	m 0.0	m 0.0	m 42.7		EA. 0	kg 0.0	kg 0.0	kg 0.0		kg 177.5	kg 0.0	kg 0.0	kg 0.0								
					10.22							43.9											4		195										
	SHEET TOTALS		m2	m2	m2	EA.	m2					m			m					kg			EA.	kg				EA.	EA.	kg					
			~~11.17~~	0.00	0	0	~~0.00~~					~~42.7~~			~~42.7~~					0.0			~~8~~	~~177.5~~				0	0	0					

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PROJECT NAME: WATERFORD
PROJECT NUMBER: HES 093-1(10)

FILE NAME:	tsssWaterford.xls	PLOT DATE:	1/4/2007
PROJECT LEADER:	CRB	DRAWN BY:	HJC
DESIGNED BY:	PTS	CHECKED BY:	DAM
CLD REF. NO.:	97-0211	SHEET	109 OF 130

STATE OF VERMONT
AGENCY OF TRANSPORTATION

TRAFFIC SIGN SUMMARY SHEET 15

Metric

MILE MARKER	SIGN LEGEND	SIGN DIMENSIONS EA	WIDTH (mm)	HEIGHT (mm)	NEW & SALVAGED SIGNS "A"	"B"	SALV SIGN	SALV TIS	EXIST POST RETAIN	EXIST POST SALVAGE	NEW SIGN POSTS NO. OF POSTS	FLANGED CHANNEL kg/m 1.7	3.0	4.5	SQUARE STEEL (mm) kg/m 44 3.4	50 3.9	63 5.0	ANCHOR	SILEVT	TUBULAR ALUMINUM DIA (mm) kg/m 75 1.9	100 2.5	100MD 2.5	TUBULAR STEEL DIA (mm) FND-ATION	kg/m 75 11.3	90 13.6	100 16.1	125 21.8	W-SHAPE STEEL FTG. SIZE 600 mm	750 mm	MASS	POST SIZE	SIGN	FRAME	REMARKS	SIGN DETAIL DETAIL ON SHEET NUMBER	STD. SHEET NUMBER
INT.#1																																				
7.270 RTE 18 LT	SOUTH	1	600	300	0.18																													M3-3		E136-B
	VERMONT 18	1	600	600	0.36						1			4.267 X		X		X															M1-5		E-136B
7.289 RTE 18 RT	NORTH	1	600	300	0.18																													M3-1		E-135
	NORTH	1	600	300	0.18																													M3-1		E136-B
	SOUTH	1	600	300	0.18																													M3-3		E-135
	INTERSTATE 93	1	600	600	0.36																													M1-1		E-135
	VERMONT 18	1	600	600	0.36																													M1-5		E-136B
	INTERSTATE 93	1	600	600	0.36																													M1-1		E-135
		1	525	375	0.20																													M6-3		E-135
		1	525	375	0.20						2												2	79 X							#3	M6-3		E136-B
		1	525	375	0.20																													M6-1		E-135
7.293 RTE 18 RT	NORTH	1	600	300	0.18																													M3-1		E136-B
	TO	1	600	300	0.18																													M4-5		E-136A
	SOUTH	1	600	300	0.18																													M3-3		E136-B
	VERMONT 18	1	600	600	0.36																													M1-5		E-136B
	2	1	600	600	0.36																													M1-4		E-136A
	VERMONT 18	1	600	600	0.36																													M1-5		E-136B
		1	525	375	0.20																													M6-1		E136-B
		1	525	375	0.20						2												2	77 X							#3	M6-1		E-136A
		1	525	375	0.20																													M6-1		E136-B
7.293 RTE 18 RT	SOUTH	1	600	300	0.18																													M3-3		E-135
	INTERSTATE 93	1	600	600	0.36																													M1-1		E-135
		1	525	375	0.20						1			4.877 X		X		X															M6-1		E-135
7.311 RTE 18 RT	TRUCK ROUTE 2 WEST NEXT LEFT	1	3000	2400		7.20					2												2				239 X							119	
7.315 RTE 18 LT	LITTLETON NH 14	1	1800	300	0.54																													D1-1a		E-123
	SOUTH	1	600	300	0.18																													M3-1		E-135
	INTERSTATE 93	1	600	600	0.36																													M1-1		E-135
		1	525	375	0.20						2											19.707 X											M6-1		E-135
												m 0.0	0.0	8.7	m 0.0	0.0	8.7		EA. 0	kg 22.7	0.0	0.0		kg 165.0 156	0.0	0.0	239.8 239								
												9.2								19.7				395												
												m			m					kg				kg				EA.	EA.							
	SHEET TOTALS	m2 7.00		m2 7.20	EA. 0	m2 0.00						m 8.7			m 8.7					kg 22.7			EA. 6	kg 404.8				EA. 0	EA. 0	kg 0						

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

PROJECT NAME: WATERFORD
PROJECT NUMBER: HES 093-1(10)

FILE NAME:	tsssWaterford.xls	PLOT DATE	1/4/2007
PROJECT LEADER:	CRB	DRAWN BY:	HJC
DESIGNED BY:	PTS	CHECKED BY:	DAM
CLD REF. NO.:	97-0211	SHEET	110 OF 130

STATE OF VERMONT
AGENCY OF TRANSPORTATION

TRAFFIC SIGN SUMMARY SHEET 16

Metric

MILE MARKER	SIGN LEGEND	SIGN DIMENSIONS EA	WIDTH (mm)	HEIGHT (mm)	NEW & SALVAGED SIGNS "A"	"B"	SALV SIGN	SALV TIS	EXIST POST RETAIN	EXIST POST SALVAGE	NEW SIGN POSTS NO. OF POSTS	FLANGED CHANNEL kg/m 1.7	3.0	4.5	SQUARE STEEL (mm) kg/m 44 1.7	50 3.4	63 3.9	ANCHOR 5.0	SIFFVL	TUBULAR ALUMINUM DIA (mm) kg/m 75 1.9	100 2.5	100MD 2.5	TUBULAR STEEL DIA (mm) kg/m FND-ATION	75 11.3	90 13.6	100 16.1	125 21.8	W-SHAPE STEEL FTG. SIZE 600 mm	750 mm	MASS	POST SIZE	SIGN FRAME	REMARKS	SIGN DETAIL DETAIL ON SHEET NUMBER	STD. SHEET NUMBER
7.337 RTE 18 RT	NORTH	1	600	300	0.18									4.877 X		X		X															M3-3		E-135
	INTERSTATE 93	1	600	600	0.36																												M1-1		E-135
		1	525	375	0.20						1			4.877 X		X		X															M5-1		E-135
7.345 RTE 18 LT	ONLY	1	750	750	0.56						1			4.267 X		X		X															VR-921		E-145A
7.401 RTE 18 RT	ONLY	1	750	750	0.56						1			4.267 X		X		X															VR-921		E-145A
7.410 RTE 18 LT	SOUTH	1	600	300	0.18																												M3-3		E-135
	INTERSTATE 93	1	600	600	0.36																												M1-1		E-135
		1	525	375	0.20						1			4.877 X		X		X															M5-1		E-135
7.420 RTE 18 RT	NORTH	1	600	300	0.18																												M3-1		E-135
	INTERSTATE 93	1	600	600	0.36																												M1-1		E-135
		1	525	375	0.20						1			4.877 X		X		X															M6-1		E-135
7.440 RTE 18 RT	8%	1	900	900	0.81																												W7-1b		
	TRUCKS USE LOWER GEAR	1	600	450	0.27						2			9.754 X		X		X															W7-2b		E-152
7.445 RTE 18 RT	STOP / DO NOT ENTER	1	750	750	0.56																												R1-1		E-143
		1	750	750	0.56																												BACK TO BACK R5-1		E-143
	ONE WAY / ONE WAY	1	900	300	0.27						1			4.267 X		X		X															R6-1L		E-142
		1	900	300	0.27																												BACK TO BACK R6-1R		E-142
												m 0.0	0.0	m 39.0	m 0.0	0.0	m 39.0	EA. 0	kg 0.0	0.0	kg 0.0		kg 0.0	0.0	kg 0.0	kg 0.0								
														37.2																					
	SHEET TOTALS		m2 6.08	m2 0.00	EA. 0	m2 ~~0.00~~						m ~~39.0~~			m ~~39.0~~				kg 0.0			EA. 0	kg 0.0				EA. 0	EA. 0	kg 0						

FINAL POST LENGTHS ARE TO BE DETERMINED IN THE FIELD.
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PROJECT NAME: WATERFORD
PROJECT NUMBER: HES 093-1(10)

FILE NAME:	tsssWaterford.xls	PLOT DATE	1/4/2007
PROJECT LEADER:	CRB	DRAWN BY:	HJC
DESIGNED BY:	PTS	CHECKED BY:	DAM
CLD REF. NO.:	97-0211	SHEET 111 OF 130	

STATE OF VERMONT
AGENCY OF TRANSPORTATION

TRAFFIC SIGN SUMMARY SHEET 17

Metric

MILE MARKER	SIGN LEGEND	SIGN DIMENSIONS EA	WIDTH (mm)	HEIGHT (mm)	NEW & SALVAGED SIGNS "A"	"B"	SALV SIGN	SALV TIS	EXIST POST RETAIN	EXIST POST SALVAGE	NEW SIGN POSTS NO. OF POSTS	FLANGED CHANNEL kg/m 1.7	3.0	4.5	SQUARE STEEL (mm) 44 kg/m 3.4	50 kg/m 3.9	63 kg/m 5.0	ANCHOR	SLIP BASE	TUBULAR ALUMINUM DIA (mm) 75 kg/m 1.9	100 kg/m 2.5	100MD kg/m 2.5	TUBULAR STEEL DIA (mm) FNDATION	75 kg/m 11.3	90 kg/m 13.6	100 kg/m 16.1	125 kg/m 21.8	W-SHAPE STEEL FTG. SIZE 600 mm	750 mm	MASS	POST SIZE	SIGN	FRAME	REMARKS	SIGN DETAIL DETAIL ON SHEET NUMBER	STD. SHEET NUMBER
INT.#1 7.451 RTE 18 LT	NORTH	1	600	300	0.18																													M3-1		E-135
	INTERSTATE 93	1	600	600	0.36																													M1-1		E-135
	←	1	525	375	0.20						1			4.877 X		X		X															M6-1		E-135
7.451 RTE 18 LT	SOUTH	1	600	300	0.18																													M3-3		E136-B
	VERMONT 18	1	600	600	0.36																													M1-5		E-136B
	←	1	525	375	0.20						1			4.877 X		X		X															M6-1		E136-B
7.455 RTE 18 RT	STOP	1	750	750	0.56																													R1-1		E-143
	DO NOT ENTER	1	750	750	0.56																													BACK TO BACK R5-1		E-143
	ONE WAY ONE WAY	1	900	300	0.27						1			4.267 X		X		X															R6-1L		E-142
		1	900	300	0.27																													BACK TO BACK R6-1R		E-142
7.473 RTE 18 LT		1	450	450	0.20						1		2.438 X		X			X															OM-1		E-150
7.500 RTE 18 LT	TRUCK ROUTE	1	600	450	0.27																													R14-1		
	SOUTH WEST	1	600	300	0.18																													M3-3		E136-B
		1	600	300	0.18																													M3-4		E-136A
	VERMONT 18 2	1	600	600	0.36																													M1-5		E-136B
		1	600	600	0.36																													M1-4		E-136A
	↑ ↗	1	525	375	0.20																												#2	M6-3		E136-B
		1	525	375	0.20																													M6-2		E-136A
	SOUTH NORTH	1	600	300	0.18																													M3-3		E-135
		1	600	300	0.18																													M3-1		E-135
	INTERSTATE 93 INTERSTATE 93	1	600	600	0.36																													M1-1		E-135
		1	600	600	0.36																													M1-1		E-135
	↑ ↗	1	525	375	0.20						2												2	117 X								#2	M6-3		E-135
		1	525	375	0.20																													M6-2		E-135
												m 0.0	m 2.7 ~~2.7~~ 2.44	m 13.2 ~~13.2~~ 14.03	m 0.0	m 2.7	m 13.2		EA. 0	kg 0.0	kg 0.0	kg 0.0		kg ~~108.5~~ 117	kg 0.0	kg 0.0	kg 0.0								
												16.5																									
		SHEET TOTALS	m2 6.57	m2 0.00	EA. 0	m2 ~~0.00~~						m ~~15.9~~			m ~~15.9~~					kg 0.0			EA. 2	kg ~~108.5~~ 117				EA. 0	EA. 0	kg 0						

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

PROJECT NAME: WATERFORD
PROJECT NUMBER: HES 093-1(10)

FILE NAME:	tsssWaterford.xls	PLOT DATE:	1/4/2007
PROJECT LEADER:	CRB	DRAWN BY:	HJC
DESIGNED BY:	PTS	CHECKED BY:	DAM
CLD REF. NO.:	97-0211	SHEET	112 OF 130

STATE OF VERMONT
AGENCY OF TRANSPORTATION

TRAFFIC SIGN SUMMARY SHEET 18

Metric

MILE MARKER	SIGN LEGEND	SIGN DIMENSIONS EA	WIDTH (mm)	HEIGHT (mm)	NEW & SALVAGED SIGNS "A"	"B"	SALV SIGN	SALV TIS	EXIST POST RETAIN	EXIST POST SALVAGE	NEW SIGN POSTS NO. OF POSTS	FLANGED CHANNEL kg/m 1.7	3.0	4.5	SQUARE STEEL (mm) kg/m 44 3.4	50 3.9	63 5.0	ANCHOR	STIFFY	TUBULAR ALUMINUM DIA (mm) kg/m 75 1.9	100 2.5	100MID 2.5	TUBULAR STEEL DIA (mm) kg/m FNDATION	75 11.3	90 13.6	100 16.1	125 21.8	W-SHAPE STEEL FTG. SIZE 600 mm	750 mm	MASS	POST SIZE	SIGN FRAME	REMARKS	SIGN DETAIL DETAIL ON SHEET NUMBER	STD. SHEET NUMBER
INT.#1 7.500 RTE 18 RT	NORTH TO	1	600	300	0.18																												M3-1		E136-B
		1	600	300	0.18																												M4-5		E-136A
	VERMONT 18 2	1	600	600	0.36						2			8.534 X		X		X													#1	M1-5		E-136B
		1	600	600	0.36																												M1-4		E-136A
7.536 RTE 18 LT	LOWER WATERFORD 7	1	1800	300	0.54																												D1-1a		E-123
	LITTLETON NH 14	1	1800	300	0.54																												D1-1a		E-123
	ST. JOHNSBURY 5	1	1800	300	0.54						2												2	77 X								D1-1a		E-123
7.555 RTE 18 RT	EAST ST. JOHNSBURY 1	1	1800	300	0.54																												D2-1		E-123
	ST. JOHNSBURY 3	1	1800	300	0.54						2			8.534 X		X		X															D2-1		E-123
7.570 RTE 18 LT	JCT	1	525	375	0.20																												M2-1		E-135
	INTERSTATE 93	1	600	600	0.36						1			4.267 X		X		X															M1-1		E-135
EXIT #I RAMP "C"	BRG 6-I-B						I				I		2.44 X																						
EXIT #I RAMP "B"	BRG 6-I-B						I				I		2.44 X																						
																							2												
											m 0.0	m 0.0 4.88	m 21.9 21.33	m 0.0	m 0.0	m 21.9		EA. 0	kg 0.0	kg 0.0	kg 0.0		kg 80.3	kg 0.0	kg 0.0	kg 0.0								
							2					26.2											2		77										
		SHEET TOTALS	m2	m2	EA.	m2					m				m					kg			EA.	kg				EA.	EA.	kg					
			4.34	0.00	~~0~~	~~0.00~~					~~21.9~~				~~21.9~~					0.0			~~4~~	~~80.3~~				0	0	0					

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

PROJECT NAME: WATERFORD
PROJECT NUMBER: HES 093-1(10)

FILE NAME:	tsssWaterford.xls	PLOT DATE:	1/4/2007
PROJECT LEADER:	CRB	DRAWN BY:	HJC
DESIGNED BY:	PTS	CHECKED BY:	DAM
CLD REF. NO.:	97-0211	SHEET	113 OF 130

STATE OF VERMONT
AGENCY OF TRANSPORTATION

TRAFFIC SIGN SUMMARY SHEET 19

Metric

MILE MARKER	SIGN LEGEND	SIGN DIMENSIONS EA	WIDTH (mm)	HEIGHT (mm)	NEW & SALVAGED SIGNS "A"	"B"	SALV SIGN	SALV TIS	EXIST POST RETAIN	EXIST POST SALVAGE	NO. OF POSTS	NEW SIGN POSTS: FLANGED CHANNEL kg/m 1.7	3.0	4.5	SQUARE STEEL (mm) 44 kg/m 3.4	50 kg/m 3.9	63 kg/m 5.0	ANCHOR	SIFVL	TUBULAR ALUMINUM DIA (mm) 75 kg/m 1.9	100 kg/m 2.5	100MD kg/m 2.5	TUBULAR STEEL DIA (mm) FND-ATION	75 kg/m 11.3	90 kg/m 13.6	100 kg/m 16.1	125 kg/m 21.8	W-SHAPE STEEL FTG. SIZE 600 mm	750 mm	MASS	POST SIZE	SIGN	FRAME	REMARKS	SIGN DETAIL DETAIL ON SHEET NUMBER	STD. SHEET NUMBER
	SUBTOTAL SHEET 1 96				11.70	25.79	~~1~~ 2	0.00				~~24.7~~	24.9			~~24.7~~				0.0			14		~~678.9~~	672	4	0	~~673~~	772					
	SUBTOTAL SHEET 2 97				6.28	5.96	0	0.00				~~64.9~~	59.8			~~64.9~~				0.0			~~10~~	8	386.2	358	0	0	0					
	SUBTOTAL SHEET 3 98				6.85	71.11	0	0.00				~~23.9~~	21.8			~~23.9~~				0.0			~~4~~	2	~~213.0~~	246	10	0	~~1426~~	1561					
	SUBTOTAL SHEET 4 99				12.51	5.94	0	0.00				~~25.7~~	25.0			~~25.7~~				~~46.7~~	41.2		11		~~596.0~~	592	0	0	0					
	SUBTOTAL SHEET 5 100				8.14	92.25	0	0.00				~~19.4~~	17.6			~~19.4~~				~~48.4~~	43.1		4		~~187.6~~	196	4	0	~~439~~	448					
	SUBTOTAL SHEET 6 101				10.75	35.44	~~0~~ 1	0.00				~~56.8~~	53.4			~~56.8~~				~~24.2~~	0		8		~~281.4~~	385	0	0	0					
	SUBTOTAL SHEET 7 102				9.89	2.84	0	0.00				~~27.1~~	25.1			~~27.1~~				~~24.2~~	19.1		~~10~~	8	~~425.8~~	442	0	0	0					
	SUBTOTAL SHEET 8 103				11.39	20.70	0	0.00				~~36.2~~	34.8			~~36.2~~				0.0			11		~~492.7~~	524	2	0	~~379~~	362					
	SUBTOTAL SHEET 9 104				5.62	73.22	0	0.00				~~28.0~~	25.5			~~28.0~~				0.0			2		~~213.9~~	218	~~8~~ 7	~~0~~ 1	~~1352~~	1358					
	SUBTOTAL SHEET 10 105				12.24	2.84	0	0.00				~~42.2~~	43.2			~~42.2~~				0.0			9		~~445.5~~	453	0	0	0					
	SUBTOTAL SHEET 11 106				5.59	0.00	1	0.00				~~60.2~~	70.1			~~60.2~~				0.0			~~2~~	0	0.0		0	0	0					
	SUBTOTAL SHEET 12 107			9.41	~~9.55~~	0.00	0	0.00				~~20.7~~	32.3			~~20.7~~				0.0			6		~~244.2~~	271	0	0	0					
	SUBTOTAL SHEET 13 108			11.21	~~10.40~~	0.00	0	0.00				~~24.0~~	34.1			~~24.0~~				~~31.3~~	26.6		6		~~252.1~~	265	0	0	0					
	SUBTOTAL SHEET 14 109			10.22	~~11.17~~	0.00	0	0.00				~~42.7~~	43.9			~~42.7~~				0.0			~~8~~	4	~~177.5~~	195	0	0	0					
	SUBTOTAL SHEET 15 110				7.00	7.20	0	0.00				~~8.7~~	9.2			~~8.7~~				~~22.7~~	19.7		6		~~404.8~~	395	0	0	0					
	SUBTOTAL SHEET 16 111				6.08	0.00	0	0.00				~~39.0~~	37.2			~~39.0~~				0.0			0		0.0		0	0	0					
	SUBTOTAL SHEET 17 112				6.57	0.00	0	0.00				~~15.9~~	16.5			~~15.9~~				0.0			2		~~108.5~~	117	0	0	0					
	SUBTOTAL SHEET 18 113				4.34	0.00	~~0~~ 2	0.00				~~21.9~~	26.2			~~21.9~~				0.0			~~4~~	2	~~80.3~~	77	0	0	0					
	SUBTOTAL				155.79 ~~156.07~~	343.29	6 ~~2~~	0 0.00				600.6 ~~582.0~~				~~582.0~~				149.7 ~~197.5~~			103 ~~117~~		5406 ~~5188.4~~		27 ~~28~~	1 ~~0~~	4501 ~~4269~~					
	ROUNDING				0 ~~0.93~~	~~0.71~~	~~0~~	~~0.00~~				~~0.0~~				~~0.0~~				~~0.5~~			~~0~~		0.6		~~0~~	~~0~~	~~0~~					

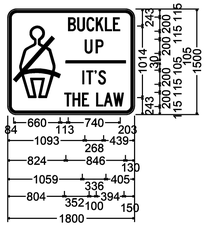
FINAL POST LENGTHS ARE TO BE DETERMINED IN THE FIELD. POST SIZES ARE COMPUTED BASED ON INFORMATION FURNISHED ON THE STANDARD SHEETS AND THE TRAFFIC & SAFETY DIVISION'S "SIGN POST DESIGN GUIDELINE".

PROJECT TOTALS																																				
	155.79	343.29	6				600.6				~~582.0~~			149.7			103		5406			27	1	4501											
	m2	m2	EA.	m2			m				m			kg			EA.		kg			EA.	EA.	kg											
	~~157.00~~	~~344.00~~	~~2~~	~~0.00~~			~~582.0~~				~~582.0~~			~~198.0~~			~~117~~		~~5189.0~~			~~28~~	~~0~~	4269											

PROJECT NAME: WATERFORD
PROJECT NUMBER: HES 093-1(10)

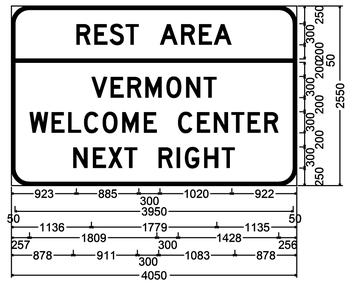
FILE NAME:	tsssWaterford.xls	PLOT DATE:	1/4/2007
PROJECT LEADER:	CRB	DRAWN BY:	HJC
DESIGNED BY:	PTS	CHECKED BY:	DAM
CLD REF. NO.:	97-0211	SHEET	114 OF 130

M.M. 0.550 NB



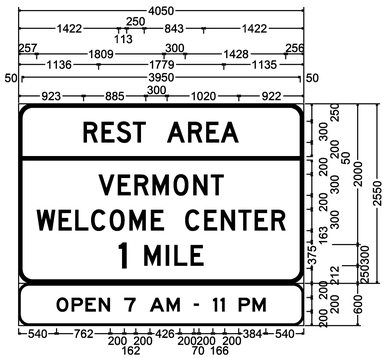
125mm Radius, 30mm Border, 20mm Indent, Black on White;
Person w/Seat Belt;
[BUCKLE] C 2K 50% spacing; [UP] C 2K;
[IT'S] C 2K;
[THE LAW] C 2K 50% spacing;

M.M. 0.910 NB



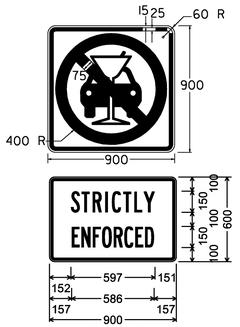
250mm Radius, 50mm Border, White on Blue;
[REST AREA] D 2K; [VERMONT] D 2K; [WELCOME CENTER] D 2K; [NEXT RIGHT] D 2K;

M.M. 0.310 NB



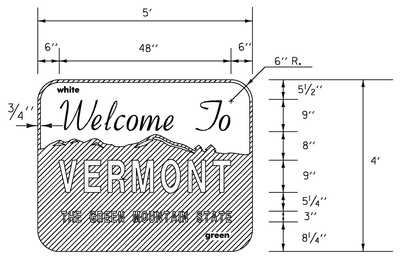
Advance Rest Area-Welcome Center Sign; 200mm Radius, 50mm Border, White on Blue;
[REST AREA] D 2K; [VERMONT] D 2K; [WELCOME CENTER] D 2K; [1] E 2K; [MILE] D 2K;
150mm Radius, 25mm Border, White on Blue;
[OPEN 7 AM - 11 PM] E 2K;

M.M. 0.670 NB



35mm Radius, 15mm Border, 10mm Indent, Black on Yellow;
[STRICTLY] B 2K;
[ENFORCED] B 2K 50% spacing;

M.M. 0.080 NB



VD-421

NOTE:
FOR THE WORDS "WELCOME TO" USE GERBER FONT MURRAY HILL BOLD OR EQUIVALENT. TEXT COLOR IS GREEN.
ALL OTHER TEXT USE GERBER FONT SOUVENIR DEMI BOLD OR EQUIVALENT. TEXT COLOR IS WHITE.
REFER TO STD. E-131 FOR COLORS.
MATERIALS:
THE SIGN BASE MATERIALS USED FOR THIS SIGN MAY BE ANY OF THE FOLLOWING OF THE MINIMUM THICKNESS NOTED.
FLAT SHEET ALUMINUM 0.100"
HIGH DENSITY OVERLAID PLYWOOD 5/8"

GENERAL SIGN DETAIL NOTES

1. THE NOTE BELOW EACH SIGN DETAIL INCLUDES THE CORNER RADII, BORDER WIDTH, TEXT COLOR, BACKGROUND COLOR AND TEXT SERIES TO BE USED.
2. COLORS: UNLESS NOTED OTHERWISE, WHITE ON GREEN AND WHITE ON BLUE SIGNIFIES REFLECTORIZED WHITE TEXT ON A REFLECTORIZED GREEN OR BLUE BACKGROUND, RESPECTIVELY. BLACK ON YELLOW AND BLACK ON WHITE SIGNIFIES BLACK TEXT ON A REFLECTORIZED YELLOW OR WHITE BACKGROUND, RESPECTIVELY. ALL COLORS SHALL CONFORM WITH THE COLORS ADOPTED BY AASHTO AND APPROVED BY THE FHWA.
3. TEXT LAYOUT DIMENSIONS ARE BASED ON THE STANDARD ALPHABETS SPACING CHARTS FOUND IN THE MUTCD "STANDARD HIGHWAY SIGNS" PUBLICATION. MINOR VARIATIONS IN TEXT DIMENSIONS ARE ACCEPTABLE BASED ON INDIVIDUAL MANUFACTURER'S LETTER FABRICATION. SIGNIFICANT CHANGES WHICH AFFECT SIGN APPEARANCE SHALL BE BROUGHT TO THE ATTENTION OF THE VTRANS' TRAFFIC AND SAFETY SECTION BEFORE FABRICATION.
4. UNLESS NOTED OTHERWISE, THE DESIGN/DIMENSIONS FOR SYMBOLS SHOWN ON THESE SIGNS CAN BE FOUND IN VTRANS' STANDARDS OR IN THE STANDARD HIGHWAY SIGNS PUBLICATION.
5. FOR GUIDE SIGN ROUTE MARKER DETAILS SEE STD'S E-135, E-136A AND E-136B
6. THE NOTE BELOW EACH GUIDE SIGN DETAIL SPECIFIES APPROPRIATE ARROW LENGTHS WHEN APPLICABLE. FOR ARROW DIMENSIONS REFER TO GUIDE SIGN ARROW DETAILS IN THE STANDARD HIGHWAY SIGNS PUBLICATION.

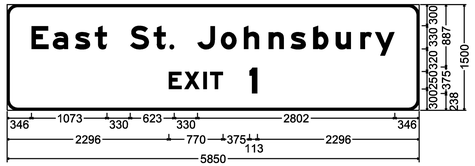
SIGN DETAIL SHEET 1

PROJECT NAME: WATERFORD
PROJECT NUMBER: HES 093-1(10)

FILE NAME: 972llb-details.dgn
PROJECT LEADER: CRB
DESIGNED BY: PTS
CLD REF. NO.: 97-021l

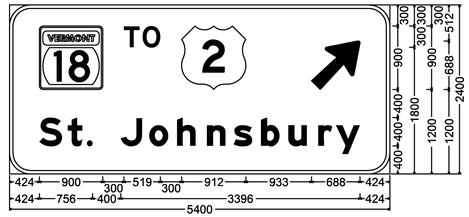
PLOT DATE: 1/4/2007
DRAWN BY: HJC
CHECKED BY: DAM
SHEET 115 OF 130

M.M. 6.670 NB
M.M. 8.450 SB



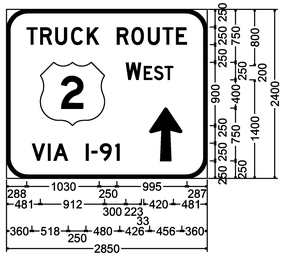
150mm Radius, 30mm Border, White on Green;
[East St. Johnsbury] E Mod 2K; [EXIT 1] E Mod 2K;

M.M. 7.200 NB



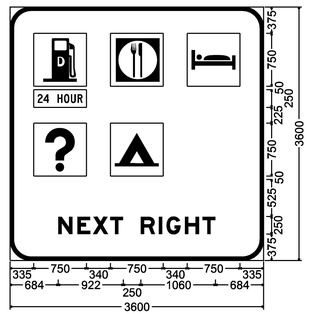
300mm Radius, 50mm Border, White on Green;
[TO] E 2K; Arrow 160 - 875mm 45°; [St. Johnsbury] E Mod 2K;

M.M. 6.510 NB



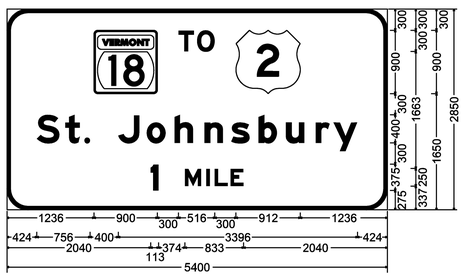
300mm Radius, 50mm Border, White on Green;
[TRUCK ROUTE] D 2K; [WEST] D 2K; [VIA I-91] D 2K;
Arrow 133 - 750mm 90°;

M.M. 7.000 NB
M.M. 8.040 SB



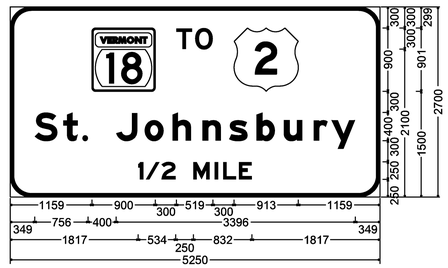
300mm Radius, 50mm Border, White on Blue;
[NEXT RIGHT] E Mod 2K;

M.M. 6.225 NB



300mm Radius, 50mm Border, White on Green;
[TO] E Mod 2K; [St. Johnsbury] E Mod 2K; [1 MILE] E Mod 2K;

M.M. 6.840 NB



300mm Radius, 50mm Border, White on Green;
[TO] E 2K; [St. Johnsbury] E Mod 2K; [1/2 MILE] E Mod 2K;

SEE GENERAL SIGN DETAIL NOTES ON SHEET 115.

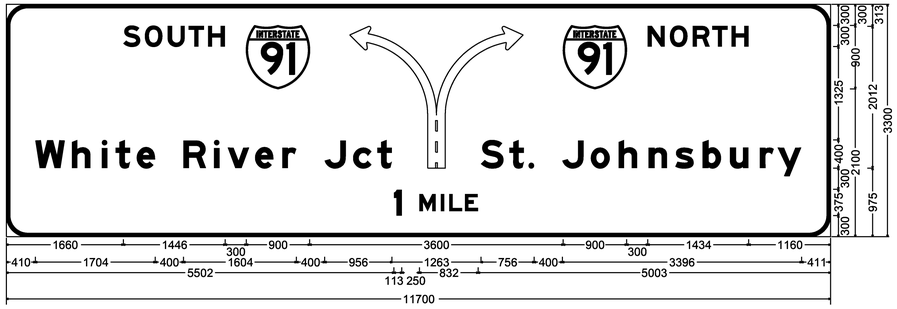
SIGN DETAIL SHEET 2

PROJECT NAME: WATERFORD
PROJECT NUMBER: HES 093-1(110)

FILE NAME: 9721lb-details.dgn
PROJECT LEADER: CRB
DESIGNED BY: PTS
CLD REF. NO.: 97-0211

PLOT DATE: 1/4/2007
DRAWN BY: HJC
CHECKED BY: DAM
SHEET 116 OF 130

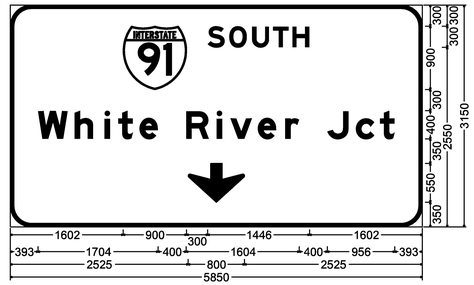
M.M. 10.050 NB OVERHEAD



300mm Radius, 50mm Border, White on Green;
[SOUTH] E Mod 2K; [NORTH] E Mod 2K; [White River Jct] E Mod 2K; Diagrammatic Arrow lane lines Black; [St. Johnsbury] E Mod 2K; [1 MILE] E Mod 2K;

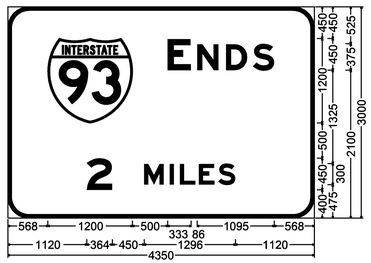
FOR ARROW DIMENSIONS SEE SHEET 119.

M.M. 10.970 NB OVERHEAD



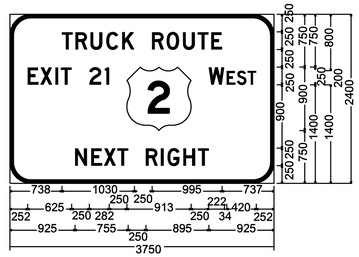
300mm Radius, 50mm Border, White on Green;
[SOUTH] E Mod 2K; [White River Jct] E Mod 2K; Down Arrow 550mm 270°;

M.M. 8.980 NB



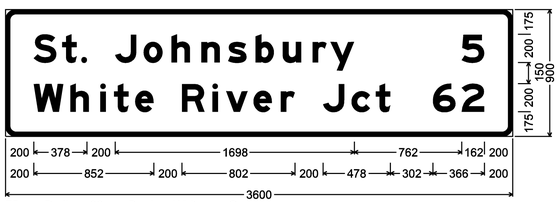
300mm Radius, 50mm Border, White on Green;
[ENDS] E Mod 2K; [2 MILES] E Mod 2K;

M.M. 10.740 NB



300mm Radius, 50mm Border, White on Green;
[TRUCK ROUTE] D 2K; [EXIT 21] D 2K; [WEST] D 2K; [NEXT RIGHT] D 2K;

M.M. 8.316 NB

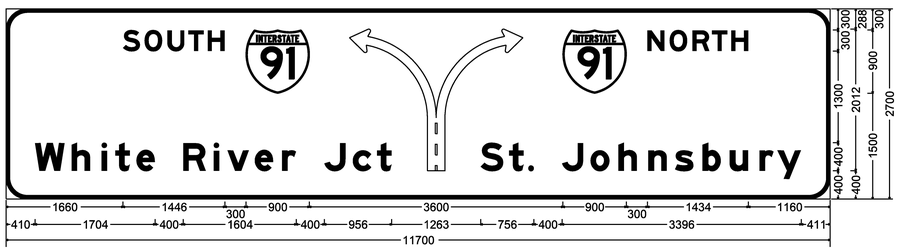


75mm Radius, 30mm Border, White on Green;
[St. Johnsbury] E Mod 2K; [White River Jct] E Mod 2K; [5] E Mod 2K;
[62] E Mod 2K;

SEE GENERAL SIGN DETAIL NOTES ON SHEET 115.

M.M. 10.470 NB OVERHEAD

FOR ARROW DIMENSIONS SEE SHEET 119.



300mm Radius, 50mm Border, White on Green;
[SOUTH] E Mod 2K; [NORTH] E Mod 2K; [White River Jct] E Mod 2K; Diagrammatic Arrow lane lines Black; [St. Johnsbury] E Mod 2K;

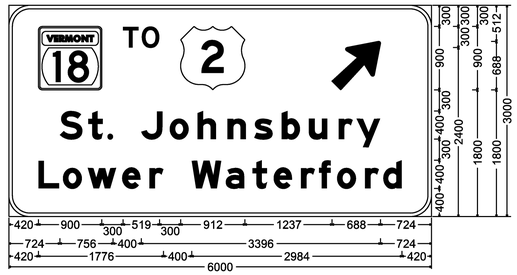
SIGN DETAIL SHEET 3

PROJECT NAME: WATERFORD
PROJECT NUMBER: HES 093-1(10)

FILE NAME: 972llb-details.dgn
PROJECT LEADER: CRB
DESIGNED BY: PTS
CLD REF. NO.: 97-021l

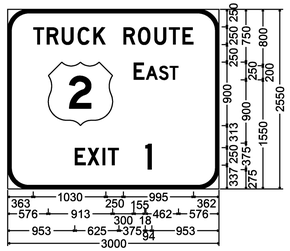
PLOT DATE: 1/4/2007
DRAWN BY: HJC
CHECKED BY: DAM
SHEET 117 OF 130

M.M. 7.750 SB



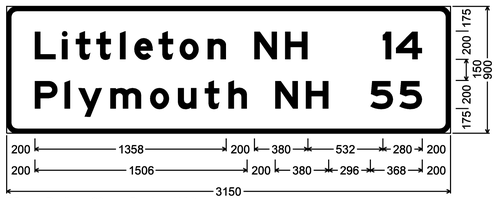
300mm Radius, 50mm Border, White on Green;
[TO] E 2K; Arrow 160 - 875mm 45°; [St. Johnsbury] E Mod 2K; [Lower Waterford] E Mod 2K;

M.M. 8.610 SB



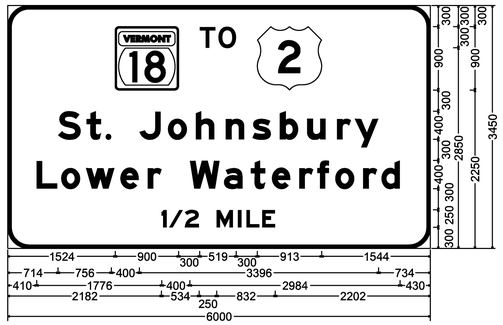
300mm Radius, 50mm Border, White on Green;
[TRUCK ROUTE] D 2K; [EAST] D 2K; [EXIT 1] D 2K;

M.M. 6.435 SB



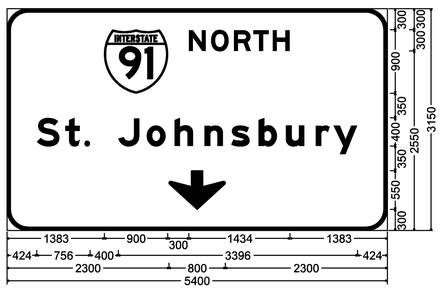
75mm Radius, 30mm Border, White on Green;
[Littleton NH] E Mod 2K; [Plymouth NH] E Mod 2K; [14] E Mod 2K;
[55] E Mod 2K;

M.M. 8.214 SB



300mm Radius, 50mm Border, White on Green;
[TO] E 2K; [St. Johnsbury] E Mod 2K; [Lower Waterford] E Mod 2K; [1/2 MILE] E Mod 2K;

M.M. 10.970 NB
OVERHEAD



300mm Radius, 50mm Border, White on Green;
[NORTH] E Mod 2K; [St. Johnsbury] E Mod 2K; Down Arrow 550mm 270°;

SEE GENERAL SIGN DETAIL NOTES ON SHEET 115.

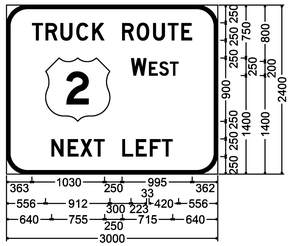
SIGN DETAIL
SHEET 4

PROJECT NAME: WATERFORD
PROJECT NUMBER: HES 093-1(10)

FILE NAME: 972llb-details.dgn
PROJECT LEADER: CRB
DESIGNED BY: PTS
CLD REF. NO.: 97-021l

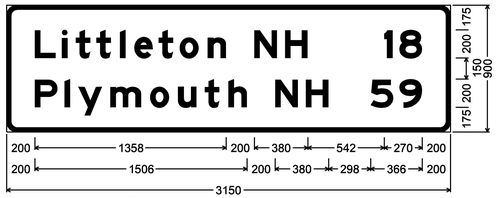
PLOT DATE: 1/4/2007
DRAWN BY: HJC
CHECKED BY: DAM
SHEET 118 OF 130

INT. # 1 RTE 18
M.M. 7.300 RT



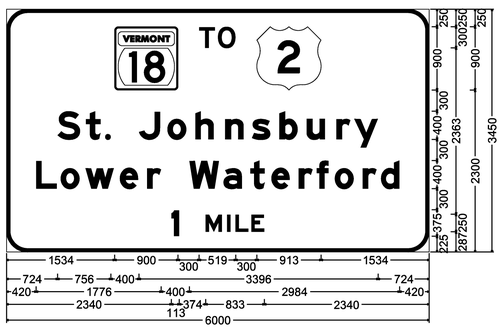
300mm Radius, 50mm Border, White on Green;
[TRUCK ROUTE] D 2K; [WEST] D 2K; [NEXT LEFT] D 2K;

M.M. 10.468 SB



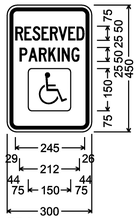
75mm Radius, 30mm Border, White on Green;
[Littleton NH] E Mod 2K; [Plymouth NH] E Mod 2K; [18] E Mod 2K;
[59] E Mod 2K;

M.M. 8.782 SB

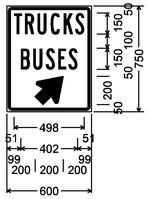


300mm Radius, 50mm Border, White on Green;
[TO] E 2K; [St. Johnsbury] E Mod 2K; [Lower Waterford] E Mod 2K; [1 MILE] E Mod 2K;

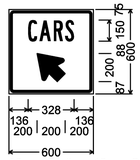
REST AREA



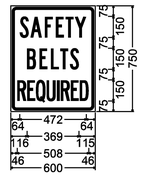
R7-8;
35mm Radius, 10mm Border, 10mm Indent, Green on White;
[RESERVED] C 2K 51% spacing;
[PARKING] C 2K 66% spacing;
Rounded Rectangle 13mm Radius Blue;



35mm Radius, 15mm Border, 10mm Indent, White on Blue;
[TRUCKS] B 2K;
[BUSES] B 2K;
Standard Arrow 243mm X 211mm 45°;

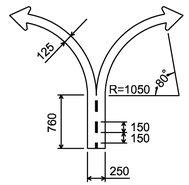


35mm Radius, 15mm Border, 10mm Indent, White on Blue;
[CARS] B 2K;
Standard Arrow 243mm X 211mm 135°;



VR-602;
40mm Radius, 15mm Border, 10mm Indent, Black on White;
[SAFETY] B 2K;
[BELTS] B 2K;
[REQUIRED] B 2K 26% spacing;

OVERHEAD SIGN ARROWS



SEE GENERAL SIGN DETAIL NOTES ON SHEET 115.

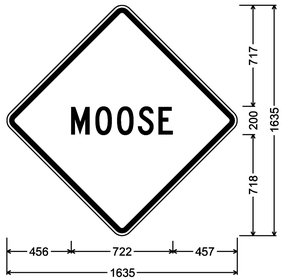
SIGN DETAIL SHEET 5

PROJECT NAME: WATERFORD
PROJECT NUMBER: HES 093-1(10)

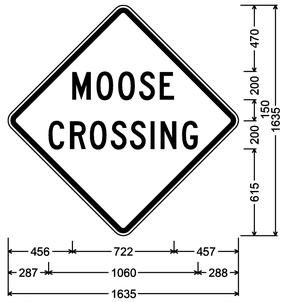
FILE NAME: 9721lb-details.dgn
PROJECT LEADER: CRB
DESIGNED BY: PTS
CLD REF. NO.: 97-0211

PLOT DATE: 1/4/2007
DRAWN BY: HJC
CHECKED BY: DAM
SHEET 119 OF 130

MISC.

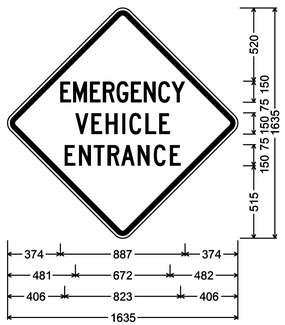


1200mm across sides 75mm Radius, 30mm Border, 20mm Indent, Black on Yellow;
[MOOSE] C 2K;

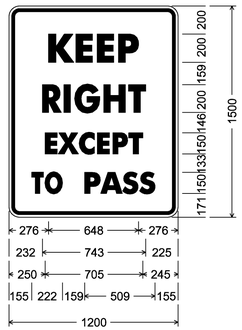


1200mm across sides 75mm Radius, 30mm Border, 20mm Indent, Black on Yellow;
[MOOSE] C 2K; [CROSSING] C 2K;

MISC.

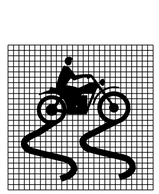


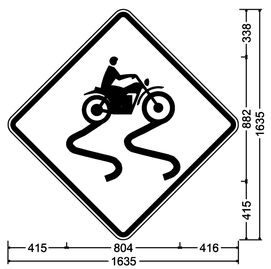
1200mm across sides 75mm Radius, 30mm Border, 20mm Indent, Black on Yellow;
[EMERGENCY] C 2K 60% spacing;
[VEHICLE] C 2K; [ENTRANCE] C 2K;



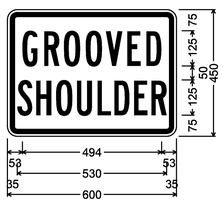
VR-132;
75mm Radius, 22mm Border, 20mm Indent, Black on White;
[KEEP] D, [RIGHT] D
[EXCEPT] D, [TO] D, [PASS] D

MISC.





1200mm across sides 75mm Radius, 30mm Border, 20mm Indent, Black on Yellow;
motorcycle;



35mm Radius, 15mm Border, 10mm Indent, Black on Yellow;
[GROOVED] B 2K;
[SHOULDER] B 2K 70% spacing;

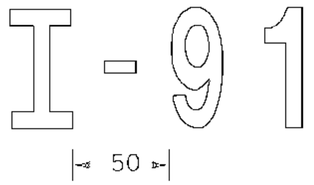
SEE GENERAL SIGN DETAIL NOTES ON SHEET 115.

SIGN DETAIL SHEET 6

PROJECT NAME: WATERFORD
PROJECT NUMBER: HES 093-1(10)

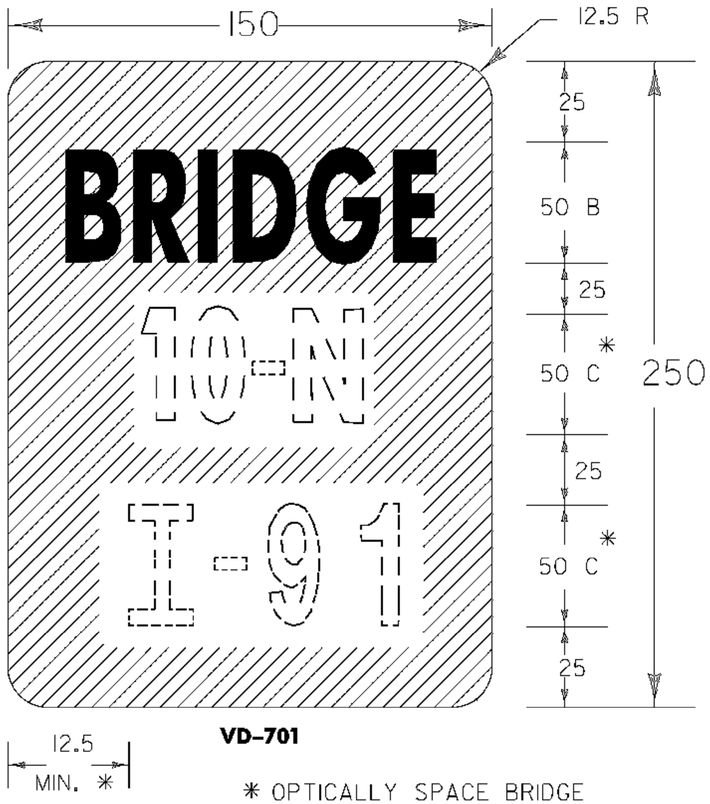
FILE NAME: 972lib-details.dgn
PROJECT LEADER: CRB
DESIGNED BY: PTS
CLD REF. NO.: 97-021l

PLOT DATE: 1/4/2007
DRAWN BY: HJC
CHECKED BY: DAM
SHEET 120 OF 130



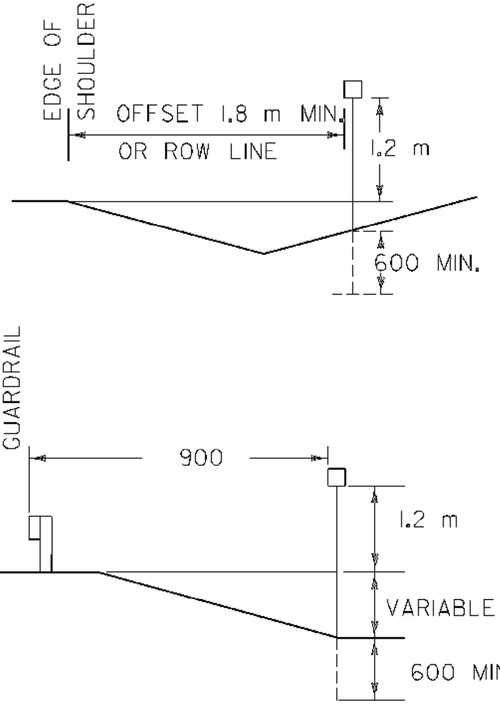
HYPHEN DETAIL

FOR EXAMPLE, ROUTE NUMBERS
SHALL APPEAR AS: I-91, US5, VT22



VD-701

* OPTICALLY SPACE BRIDGE AND ROUTE NUMBERS. SERIES B LETTERS MAY BE USED TO MAINTAIN VISUAL INTEGRITY.



THE FOLLOWING BRIDGES ARE NOT SHOWN ON THE PLANS BUT REQUIRE NEW PLAQUES. QUANTITIES FOR REMOVAL OF EXISTING PLAQUES AND INSTALLATION OF NEW PLAQUES AND POSTS HAVE BEEN ESTIMATED.

	NB		SB		
2.44m	1.407	I-2N			
2.44m	2.058	2-1	2.058	2-1	2.44m
2.44m	7.578	6-1	7.578	6-1	2.44m
2.44m	7.668	6-3	7.668	6-3	2.44m
2.44m	7.675	6-4	7.675	6-4	2.44m
2.44m	9.621	8-IN			

PLAQUES (150 x 250) = 0.04 SM
NB 7.578

NOTES:

GENERAL:
DOTTED LINES AND NUMERALS INDICATE TEXT THAT VARIES.

MATERIAL:
THE SIGN BASE MATERIAL SHALL BE 1mm FLAT SHEET ALUMINUM.

COLORS:
THE SIGN SHALL HAVE A RETROREFLECTORIZED WHITE TEXT ON RETROREFLECTORIZED GREEN BACKROUND. THE COLORS SHALL CONFORM WITH THOSE FOUND IN STANDARD COLOR TOLERANCE CHARTS AS APPROVED BY THE U.S. DEPARTMENT OF TRANSPORTATION, FEDERAL HIGHWAY ADMINISTRATION.

RETROREFLECTVITY WILL BE EQUAL TO OR EXCEEDING ASTM TYPE III.

LETTERING:
LETTERS AND DIGITS SHALL CONFORM WITH THE STANDARD ALPHABETS FOR HIGHWAY SIGNS AS PRINTED BY THE FEDERAL HIGHWAY ADMINISTRATION.

POSTS:
FLANGED CHANNEL STEEL 3 kg/m POSTS OR 45 mm SQUARE STEEL WITH 50 mm ANCHOR SHALL BE USED. POST SHALL BE A MINIMUM OF 2.4 m.

BRIDGE PLAQUE DETAIL

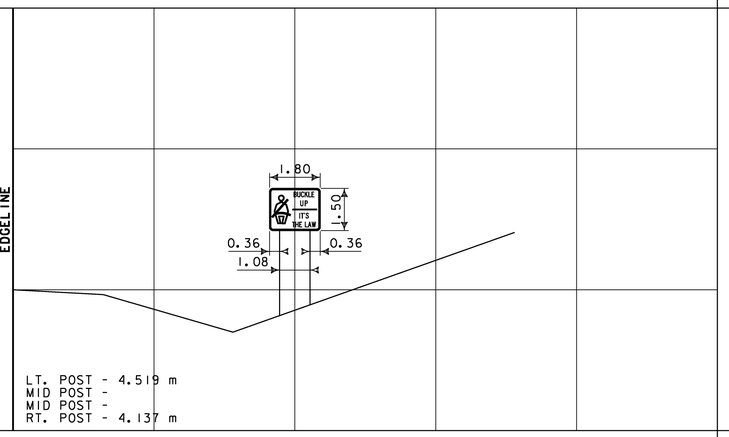
SIGN DETAIL SHEET 7

PROJECT NAME: WATERFORD
PROJECT NUMBER: HES 093-K(10)

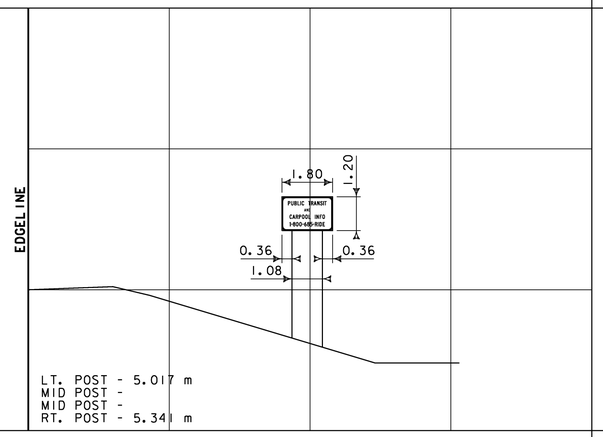
FILE NAME: 972IIb-details.dgn
PROJECT LEADER: CRB
DESIGNED BY: PTS
CLD REF. NO.: 97-02II

PLOT DATE: 1/4/2007
DRAWN BY: HJC
CHECKED BY: DAM

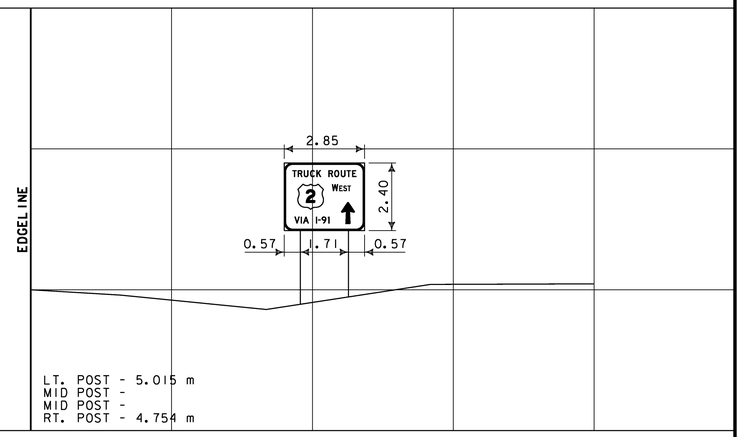
M.M. 0.550 NB



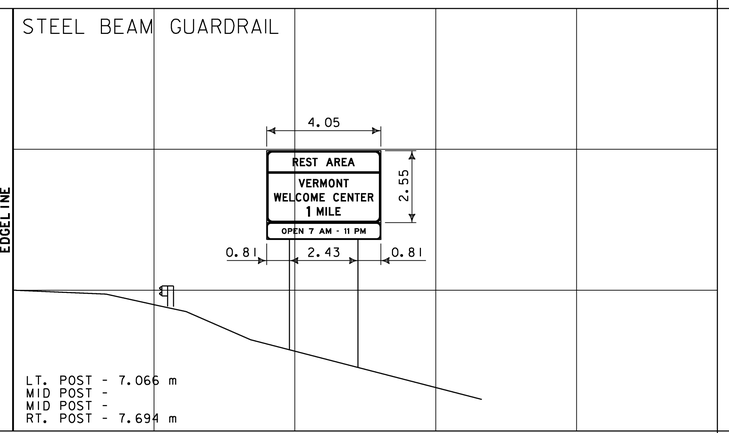
M.M. 2.683 NB



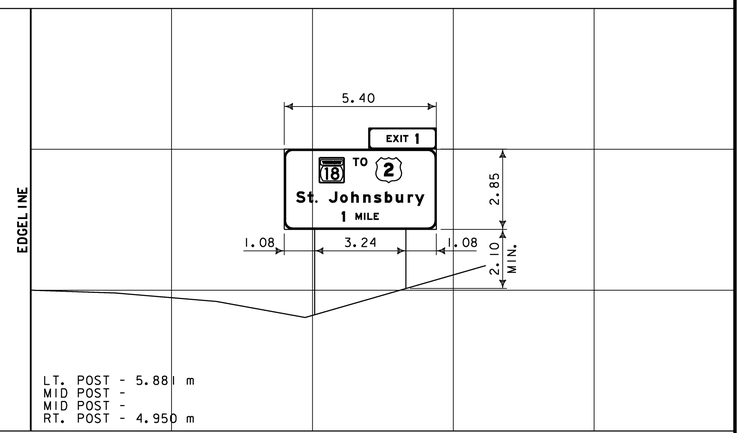
M.M. 6.510 NB



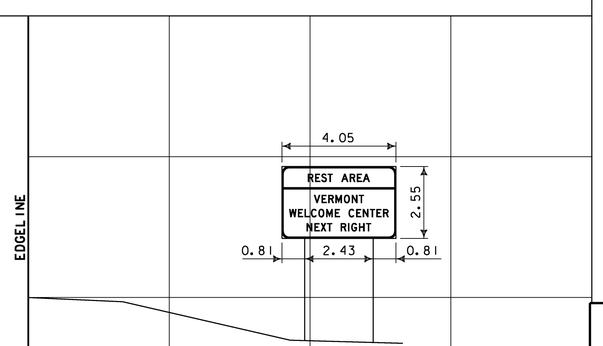
M.M. 0.310 NB

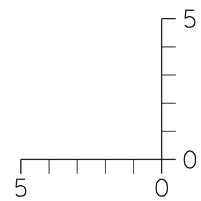


M.M. 6.225 NB



M.M. 0.910 NB





DIMENSIONS FOR CRITICAL OFFSETS OR CLEARANCES SHOWN FOR CONVENIENCE. REFER TO STANDARD SHEETS FOR PLACEMENT GUIDELINES.

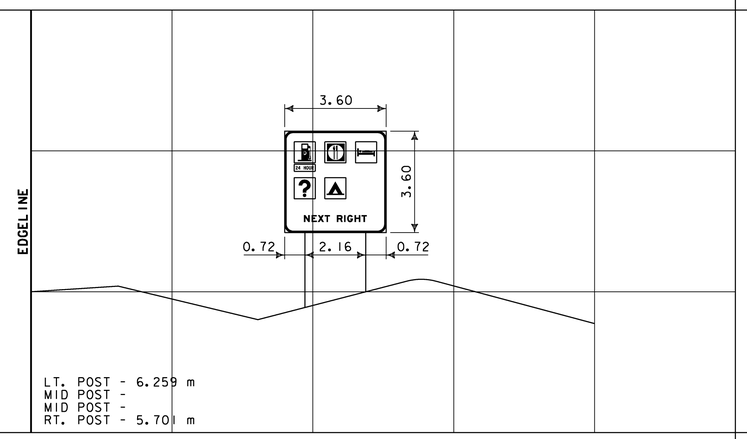
SIGN CROSS SECTION SHEET 1

PROJECT NAME: WATERFORD
PROJECT NUMBER: HES 093-1(110)

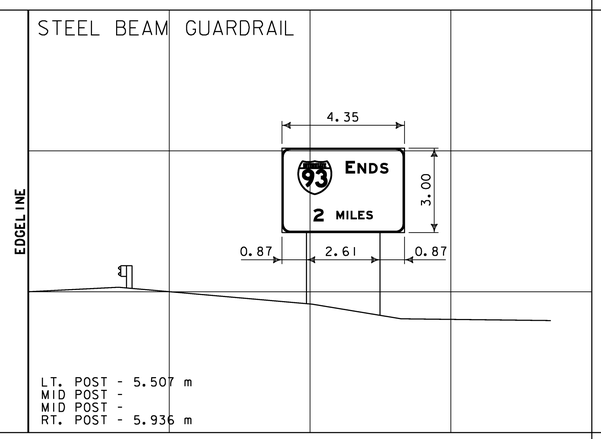
FILE NAME: 9721lb-xs.dgn
PROJECT LEADER: CRB
DESIGNED BY: DAM
CLD REF. NO.: 97-0211

PLOT DATE: 1/4/2007
DRAWN BY: HJC
CHECKED BY: DAM
SHEET 122 OF 130

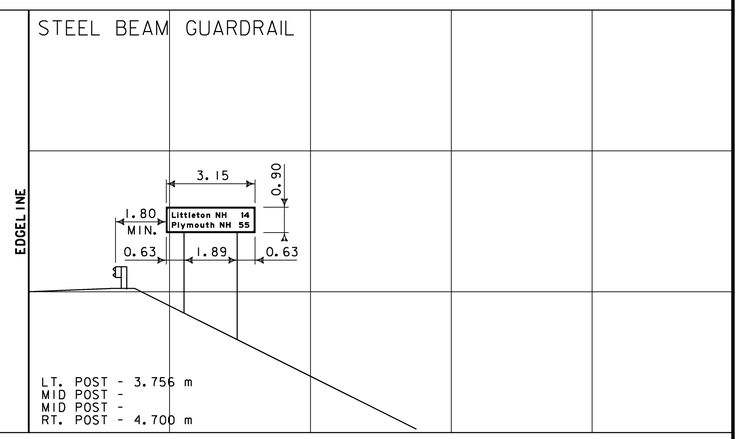
M.M. 7.000 NB



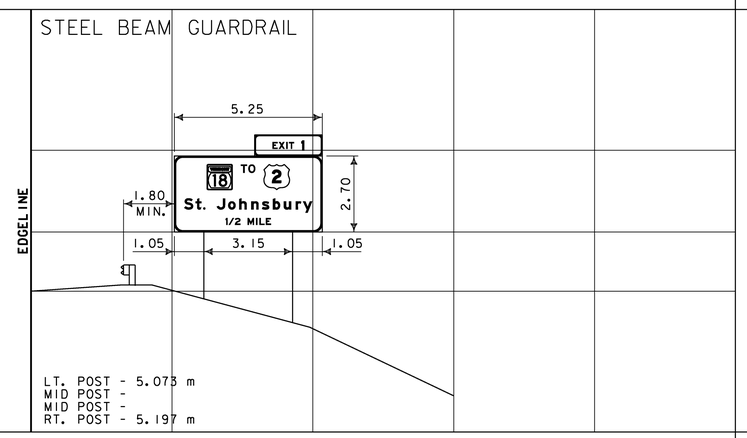
M.M. 8.980 NB



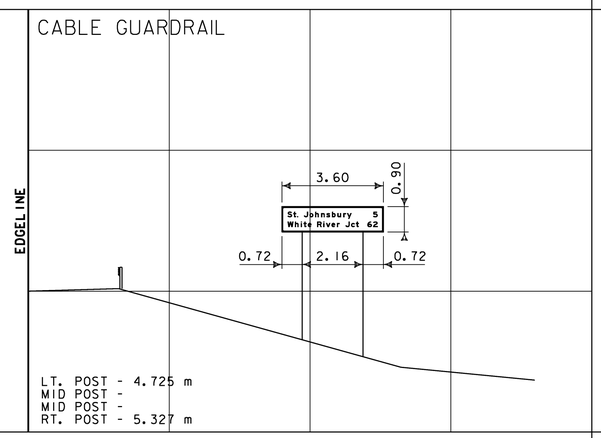
M.M. 6.435 SB



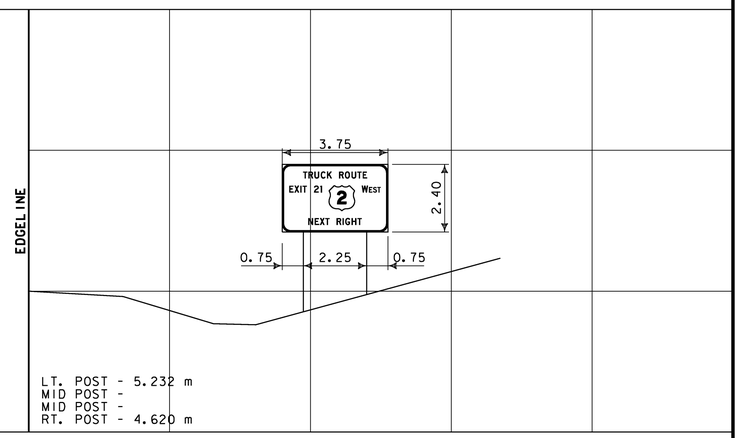
M.M. 6.840 NB



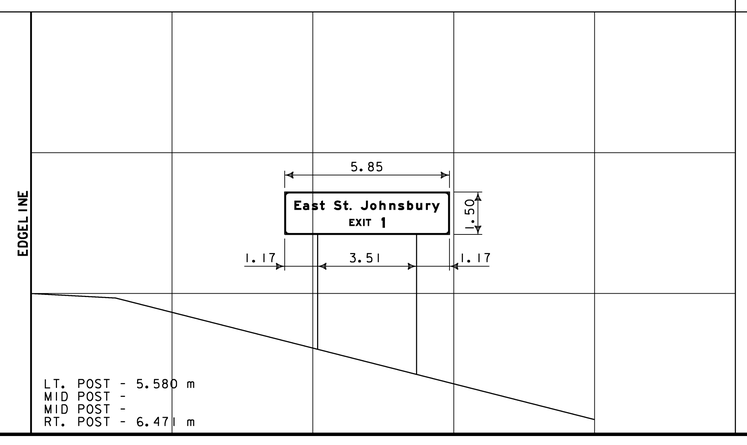
M.M. 8.316 NB



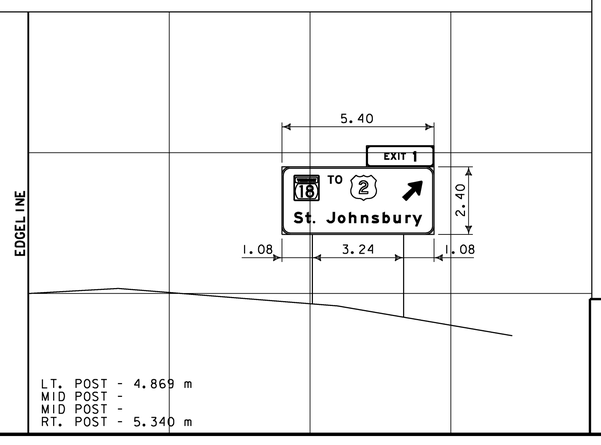
M.M. 10.740 NB

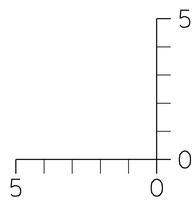


M.M. 6.670 NB



M.M. 7.200 NB





DIMENSIONS FOR CRITICAL OFFSETS OR CLEARANCES SHOWN FOR CONVENIENCE. REFER TO STANDARD SHEETS FOR PLACEMENT GUIDELINES.

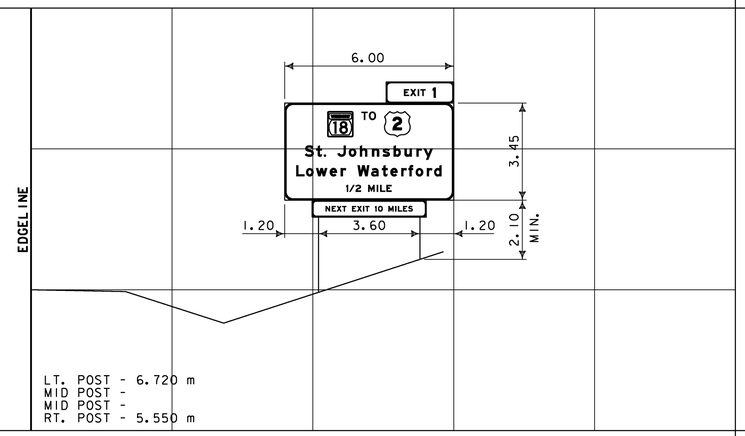
SIGN CROSS SECTION SHEET 2

PROJECT NAME: WATERFORD
PROJECT NUMBER: HES 093-1(110)

FILE NAME: 972ilb-xs.dgn
PROJECT LEADER: CRB
DESIGNED BY: DAM
CLD REF. NO.: 97-021I

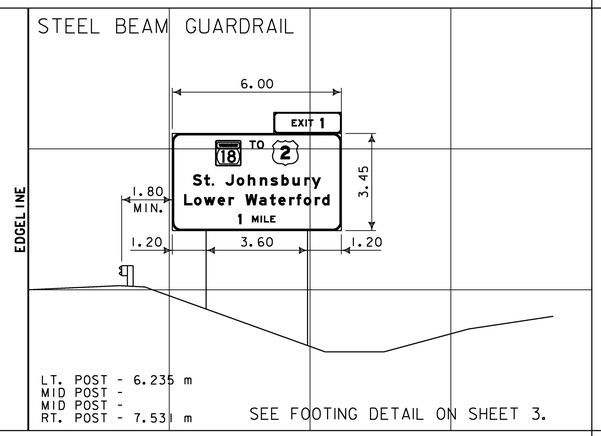
PLOT DATE: 1/4/2007
DRAWN BY: HJC
CHECKED BY: DAM
SHEET 123 OF 130

M.M. 8.214 SB



LT. POST - 6.720 m
MID POST -
MID POST -
RT. POST - 5.550 m

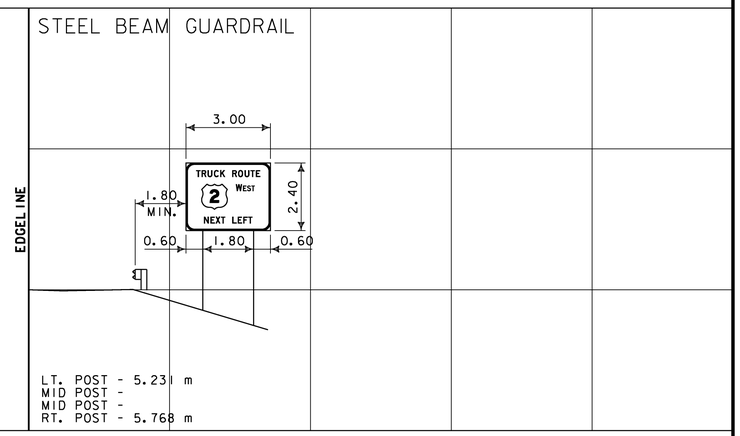
M.M. 8.782 SB



LT. POST - 6.235 m
MID POST -
MID POST -
RT. POST - 7.531 m

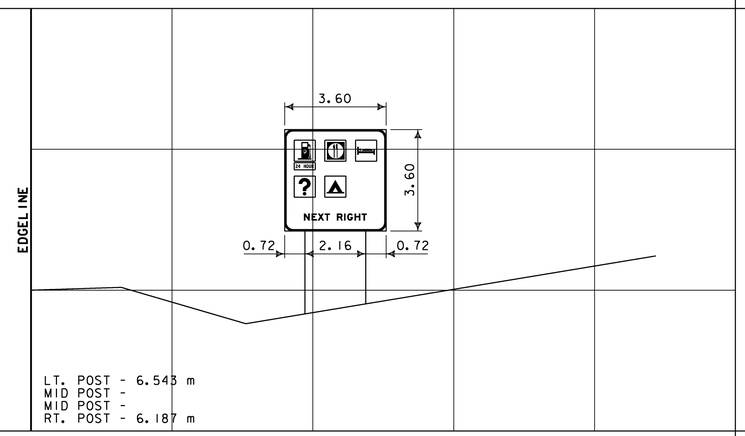
SEE FOOTING DETAIL ON SHEET 3.

INTERCHANGE 1
ROUTE 18
M.M. 7.311 RT



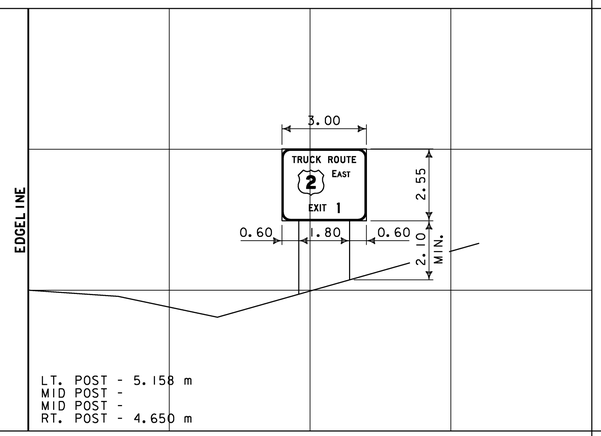
LT. POST - 5.231 m
MID POST -
MID POST -
RT. POST - 5.768 m

M.M. 8.040 SB



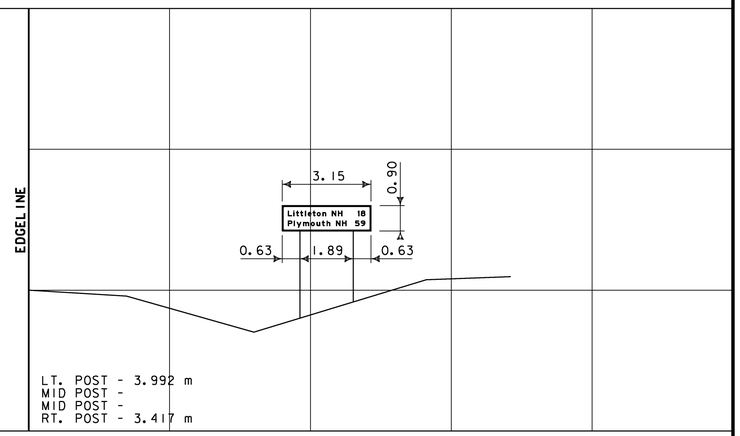
LT. POST - 6.543 m
MID POST -
MID POST -
RT. POST - 6.187 m

M.M. 8.610 SB



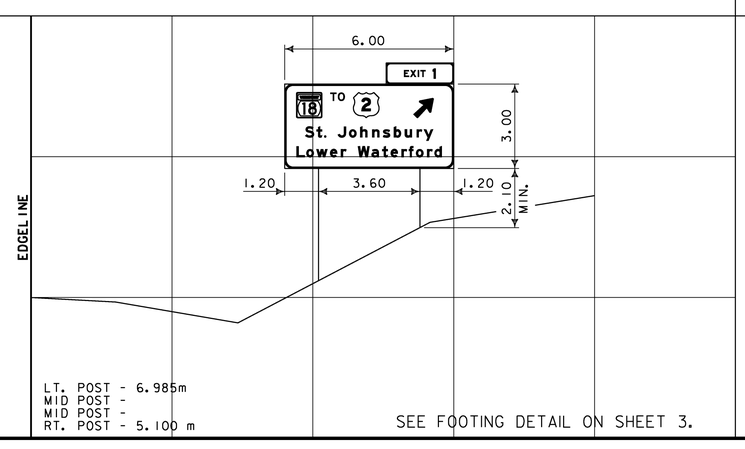
LT. POST - 5.158 m
MID POST -
MID POST -
RT. POST - 4.650 m

M.M. 10.468 SB



LT. POST - 3.992 m
MID POST -
MID POST -
RT. POST - 3.417 m

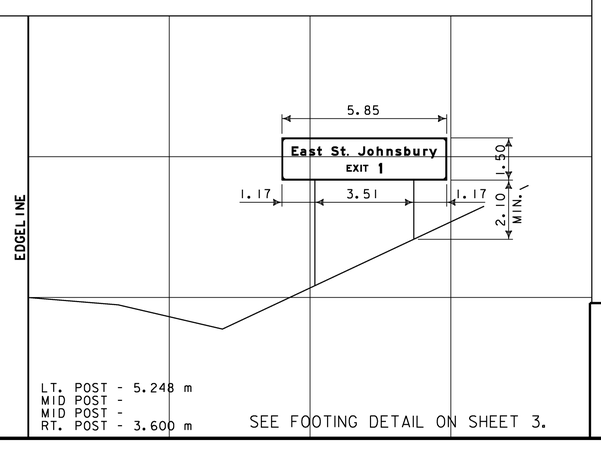
M.M. 7.750 SB



LT. POST - 6.985m
MID POST -
MID POST -
RT. POST - 5.100 m

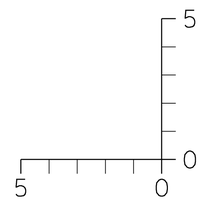
SEE FOOTING DETAIL ON SHEET 3.

M.M. 8.450 SB



LT. POST - 5.248 m
MID POST -
MID POST -
RT. POST - 3.600 m

SEE FOOTING DETAIL ON SHEET 3.



DIMENSIONS FOR CRITICAL OFFSETS OR CLEARANCES SHOWN FOR CONVENIENCE. REFER TO STANDARD SHEETS FOR PLACEMENT GUIDELINES.

SIGN CROSS SECTION SHEET 3

PROJECT NAME: WATERFORD
PROJECT NUMBER: HES 093-1(110)

FILE NAME: 9721lb-xs.dgn
PROJECT LEADER: CRB
DESIGNED BY: DAM
CLD REF. NO.: 97-021I

PLOT DATE: 1/4/2007
DRAWN BY: HJC
CHECKED BY: DAM
SHEET 124 OF 130

GENERAL NOTES

1. ALL MATERIALS AND CONSTRUCTION SHALL CONFORM TO THE STATE OF VERMONT AGENCY OF TRANSPORTATION "STANDARD SPECIFICATIONS FOR CONSTRUCTION", DATED 2001, WITH CURRENT MODIFICATIONS.

2. OVERHEAD SIGN/SIGNAL SUPPORTS SHALL CONFORM TO AASHTO'S PUBLICATION ENTITLED "STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES AND TRAFFIC SIGNALS", DATED 2001OR ITS LATEST EDITION.

3. ADDITIONAL DESIGN CRITERIA ARE AS FOLLOWS:

   CONCRETE f_c = 10 MPa f'_c = 25 MPa
   REINFORCING f_s = 165 MPa (GRADE 420)
   FOOTING SOIL PRESSURE : 145 kPa (MAXIMUM)

   WIND LOAD AND ICE LOAD PER AASHTO "STANDARD SPECIFICATIONS"

4. ANCHOR BOLTS

   FOUR STAINLESS STEEL ANCHOR BOLTS WITH TWO HEXAGON NUTS, ONE WASHER AND ONE LOCK WASHER PER BOLT SHALL BE FURNISHED WITH EACH POLE. ANCHOR BOLT PLATES, WHEN USED, SHALL ALSO BE STAINLESS STEEL. SEE SUB-SECTION 714.09.

5. FLANGE BOLTS

   ALL FLANGE BOLTS AND HEX NUTS SHALL BE HIGH STRENGTH STEEL AND SHALL CONFORM TO ASTM A 325M. THE FLANGE BOLTS SHALL BE CAPABLE OF RESISTING 133% OF THE FULL DESIGN STRESS OF THE TUBE AT ITS YIELD STRENGTH STRESS.

6. HORIZONTAL AND VERTICAL MEMBERS

   STEEL TUBES SHALL BE FORMED AND WELDED WITH ONE CONTINUOUS LONGITUDINAL WELD ONLY. AFTER FORMING AND WELDING THEY SHALL BE COLD ROLLED TO ENSURE UNIFORMITY OF SIZE AND SMOOTHNESS OF WELD. THEY SHALL HAVE A MINIMUM YIELD STRENGTH OF 330 MPa. THERE SHALL BE NO TRANSVERSE WELDING EXCEPT AT THE FLANGE CONNECTIONS AND POLE BASE PLATES, WHERE THE TUBES SHALL TELESCOPE THE FLANGES AND PLATES AND BE CONTINUOUSLY WELDED BOTH SIDES INSIDE AND OUT TO WITHSTAND THE FULL TRANSFER OF THE BENDING STRENGTH TO THE BOLTS.

7. GALVANIZING

   ALL STEEL COMPONENTS, EXCEPT CONCRETE REINFORCING AND STAINLESS STEEL HARDWARE, ARE TO BE HOT DIPPED GALVANIZED AFTER FABRICATION. THE ASSEMBLIES SHALL BE DESIGNED AND FABRICATED TO PERMIT GALVANIZING ON ALL INTERIOR AND EXTERIOR SURFACES AND SHALL BE FREE OF POCKETS AND OTHER STRUCTURAL OBSTRUCTIONS THAT WILL NOT PERMIT PROPER DEPOSITION OF ZINC COATING. GALVANIZING SHALL BE IN ACCORDANCE WITH ASTM A 123 M AND ASTM A 153 M.

8. WELDING

   A. ALL DESIGN DETAILS, WORKMANSHIP, PROCEDURES AND INSPECTION SHALL CONFORM WITH SUB-SECTION 506.10.

   B. ALL WELDS SHALL BE AT LEAST AS STRONG AS THE MATERIAL(S) BEING WELDED.

9. FOOTINGS

   A. FOOTINGS SHALL BE DESIGNED TO RESIST LOADS EQUAL TO, OR GREATER THAN, THE MAXIMUM LOADS THAT THE POLE IS DESIGNED FOR.

   B. THREE TYPES OF FOUNDATIONS, AS OUTLINED IN AASHTO STANDARD SPECIFICATIONS (SEE NOTE 2) SECTION 1.8.2 (C) SHALL BE ALLOWED.

      1. DRILLED SHAFTS,
      2. SPREAD FOOTINGS AND
      3. PILES.

   C. DRILLED SHAFT FOOTINGS SHALL BE POURED IN DRILLED SHAFTS AGAINST UNDISTURBED MATERIAL. THE TOP 600 mm OF SOIL SHALL BE NEGLECTED FOR DESIGN PURPOSES.

   D. AS AN ALTERNATIVE TO THE DRILLED HOLES, FOOTINGS MAY BE POURED IN EXCAVATED HOLES USING THE PROPER FORMS, WHICH MUST BE REMOVED. THE EXCAVATED HOLES SHALL BE AT LEAST 600 mm CLEAR OF THE FOOTING SIDES AND 300 mm DEEPER THAN THE FOOTING. CARE SHALL BE TAKEN TO AVOID EXCAVATING AROUND THE TOP OF THE FOOTING. THE BACKFILL MATERIAL SHALL BE COMPACTED AS DESCRIBED IN SUB-SECTION 204.12. DESIGN LIMITS AS FOR AUGERED FOOTING APPLY.

   E. WHERE THE DESIGN DEPTH OF A FOOTING CANNOT BE OBTAINED DUE TO UNFORSEEN FIELD CONDITIONS, THE CONTRACTOR SHALL NOTIFY THE ENGINEER AND OBTAIN A REVISED FOOTING DETAIL FROM THE ENGINEER.

   F. ANY BACKFILL PLACED ADJACENT TO THE FOOTING SHALL BE GRANULAR MATERIAL MEETING THE REQUIREMENTS FOR GRANULAR BACKFILL FOR STRUCTURES, SUB-SECTION 704.08. CONCRETE FOR FOOTING SHALL CONFORM TO THE REQUIREMENTS OF CONCRETE, CLASS B, SECTION 501, STRUCTURAL CONCRETE. GROUT MATERIAL SHALL BE NON-SHRINKING MORTAR CONFORMING TO SUB-SECTION 707.03 (MORTAR TYPE IV).

   G. SIGNALS/SIGNS SHALL BE INSTALLED AND LEVELED AND POLES SHALL BE PLUMB PRIOR TO PLACING GROUT UNDER POLE BASE.

10. SHOP DRAWINGS (6 COPIES OF EACH) SHALL BE SUBMITTED TO THE STATE OF VERMONT AGENCY OF TRANSPORTATION, STRUCTURES SECTION FOR APPROVAL PRIOR TO FABRICATION.
    THE SHOP DRAWINGS SHALL INCLUDE THE FOLLOWING INFORMATION:

    A. DETAILED DRAWING OF EACH COMPONENT OF THE STRUCTURE.

    B. MATERIAL SPECIFICATION FOR EACH COMPONENT OF THE STRUCTURE, EITHER BY COMPLETE SPECIFICATION OR REFERENCE TO APPLICABLE ASTM STANDARDS.

    C. NOTATION OF PROJECT NAME, PROJECT NUMBER, ROUTE NUMBER AND STRUCTURE STATIONING (TO BE INCLUDED ON EACH SHEET).

    D. DETAILS FOR LOCATION OF SIGNS/SIGNALS AND ATTACHMENT HARDWARE FOR THE SUPPORT STRUCTURE.

    E. ALL ELEVATIONS AND DIMENSIONS NECESSARY TO PROVIDE A COMPLETE SET OF RECORD PLANS.

    F. DEAD LOAD DEFLECTION AND CAMBER INFORMATION.

    G. WELDING DETAILS AND PROCEDURES ARE REQUIRED FOR ALL WELDS. PROCEDURES SHALL BE SUBMITTED FOR APPROVAL WITH REFERENCE TO EACH WELD IDENTIFIED ON THE SHOP DRAWINGS. (SEE SUB-SECTION 506.10)

11. EACH OVERHEAD TRAFFIC SIGNAL/SIGN SUPPORT SHALL BE GROUNDED.
    THE GROUND SHALL CONSIST OF:
    A) AN INTERNAL GROUND LUG OPPOSITE THE HAND HOLE;
    B) A 13.30 mm^2 (MIN.) SOFT DRAWN COPPER GROUNDING ELECTRODE CONDUCTOR.
    C) A 16 X 2400 (MIN.) COPPER CLAD GROUNDING ELECTRODE.
    THE RESISTANCE TO GROUND SHALL BE 25 OHMS OR LESS. ADDITIONAL GROUNDING ELECTRODES MAY BE REQUIRED (MINIMUM SPACING SHALL BE 1800 mm).
    WHERE A POWER SERVICE, METER AND DISCONNECT ARE ATTACHED TO A POLE, THERE SHALL BE A CONTINUOUS GROUNDING ELECTRODE CONDUCTOR FROM THE METER AND DISCONNECT WHICH MAY RUN INTERNAL TO THE UPRIGHT, THROUGH THE DN16 FLEXIBLE TUBING IN THE CONCRETE BASE TO THE REQUIRED GROUNDING ELECTRODE(S). THE GROUNDING ELECTRODE CONDUCTOR FROM THE POLE GROUNDING LUG, CONTROLLER CABINET AND/OR LUMINAIRE MAY ATTACH TO THIS CONTINUOUS GROUNDING ELECTRODE CONDUCTOR FROM THE SERVICE METER AND DISCONNECT. THE CONTRACTOR SHALL PERFORM A RESISTANCE TO GROUND TEST ON THE CONTINUOUS GROUNDING ELECTRODE CONDUCTOR FROM THE SERVICE METER AND DISCONNECT AND PROVIDE A WRITTEN STATEMENT TO THE AREA ELECTRICAL INSPECTOR THAT THE GROUNDING ELECTRODE CONDUCTOR IS CONTINUOUS FROM THE SERVICE METER AND DISCONNECT AND THE RESISTANCE TO GROUND IS 25 OHMS OR LESS.

12. THE COST OF SIGNAL/SIGN SUPPORTS, INCLUDING ALL HARDWARE, SIGN BRACKETS, FOOTINGS AND LUMINAIRE ARMS SHALL BE INCLUDED IN THE UNIT BID PRICE FOR ITEM 677.12, 677.13 OR 678.15, WHICHEVER IS APPLICABLE. THESE COMPONENTS SHALL CONFORM TO ALL APPLICABLE PROVISIONS OF SECTIONS 677, 678 AND 679.

13. HORIZONTAL MEMBERS SHALL BE CAMBERED AND THE VERTICAL POLES BACK-RAKED (WHERE APPLICABLE) TO THE ANTICIPATED DEAD LOAD DEFLECTION PLUS THE CAMBER, IF ANY, SPECIFIED ON THE PLANS.

14. AN EQUIVALENT ALTERNATE DESIGN MAY BE SUBSTITUTED FOR THE DETAILS AND MATERIALS SHOWN.

15. THE DETAILS OF DESIGN FOR THE STRUCTURE AND FOOTINGS ARE TO BE SUPPLIED BY THE CONTRACTOR AND/OR BY THE MANUFACTURER. THE STRUCTURE SHALL BE DESIGNED TO RESIST THE MAXIMUM LOADING AS OUTLINED IN THE AASHTO STANDARD SPECIFICATIONS (SEE NOTE 2). ALL DETAILS OF THE STRUCTURE AND THE FOOTING SHALL BE CHECKED AND STAMPED BY A STRUCTURAL ENGINEER REGISTERED IN THE STATE OF VERMONT PRIOR TO SUBMITTAL OF THE SHOP DRAWINGS TO THE STATE OF VERMONT AGENCY OF TRANSPORTATION.

16. IN ADDITION TO THE SHOP DRAWINGS OUTLINED IN NOTE 10, THE CONTRACTOR SHALL SUBMIT ALL DESIGN CALCULATIONS TO THE STATE OF VERMONT AGENCY OF TRANSPORTATION, STRUCTURES SECTION, SHOWING THE FOLLOWING INFORMATION FOR EACH OF THE VERTICAL AND HORIZONTAL COMPONENTS OF THE STRUCTURE AND FOOTING:

    A. THE DESIGN AXIAL AND SHEAR FORCES AND BENDING AND TORSIONAL MOMENTS.

    B. THE DESIGN AXIAL, BENDING AND SHEAR STRESSES AND THE COMBINED STRESS RATIO.

    C. VIBRATION AND FATIGUE CALCULATIONS AS SET FORTH IN SECTION 9 OF THE AASHTO PUBLICATION REFERENCED IN NOTE 2.

    D. THE ALLOWABLE AXIAL, BENDING, AND SHEAR STRESSES.

    E. ITEMS A, B AND D SHALL BE SHOWN FOR EACH OF THE GROUP LOADINGS (I, II AND III) AND FOR THE BASIC WIND LOAD APPLIED TO THE TWO CASES OUTLINED IN THE AASHTO STANDARD SPECIFICATIONS (SEE NOTE 2) SECTION 1.2.5 (D)(4).

    F. FAILURE TO SUPPLY THE PROPER DESIGN INFORMATION SHALL BE CAUSE FOR REJECTION OF THE STRUCTURE.

    G. A MINIMUM OF FOUR (4) WEEKS SHALL BE REQUIRED FOR REVIEW BY THE STATE OF VERMONT AGENCY OF TRANSPORTATION STRUCTURES ENGINEER IN ACCORDANCE WITH SUBSECTION 105.03.

17. THE CONTRACTOR/MANUFACTURER SHALL BE RESPONSIBLE FOR COMPLETION OF THE STRUCTURE AND FOOTING DATA ON THE DETAIL SHEET(S).

18. FOR INSTALLATIONS WHERE BOTH "EXISTING" AND "FUTURE" CONDITIONS ARE SHOWN, THE SUPPORTS SHALL BE DESIGNED FOR THE MORE SEVERE OF THE TWO LOADING CONDITIONS. THE INFORMATION OUTLINED IN NOTE 16 ABOVE SHALL BE PROVIDED FOR BOTH THE LOADING CONDITIONS.

19. NOT USED.

20. BASE PLATES SHALL BE STAMPED WITH THE VERTICAL POLE DIAMETER, HEIGHT, YIELD STRENGTH, GAUGE AND THE HORIZONTAL MEMBER DIAMETER, LENGTH, YIELD STRENGTH AND GAUGE. ALTERNATELY, THE INFORMATION MAY BE STAMPED ON A METAL TAG RIVETED TO THE POLE NEAR THE HANDHOLE.

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

VAOT Metric

ORIGINAL PREPARED - JUNE 13, 1997		
DATE	REVISIONS	BY

CANTILEVER / OVERHEAD SIGN SUPPORT NOTES

PREPARED BY _____ DATE _____
CHECKED BY _____ DATE _____
DESIGN SUPERVISOR _____ DATE _____
PROJ.

TRAFFIC SHEET NO. _____ OF _____
SHEET 125 OF 130 SHEETS

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PLOTTED: 1/4/2007

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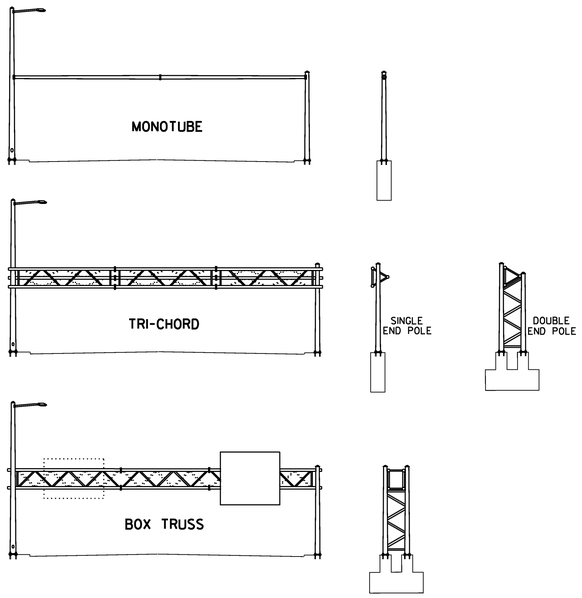
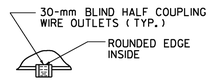
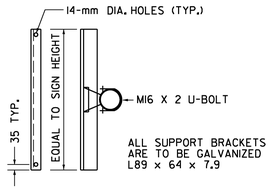


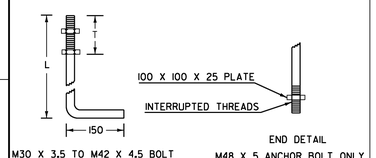


DETAIL A

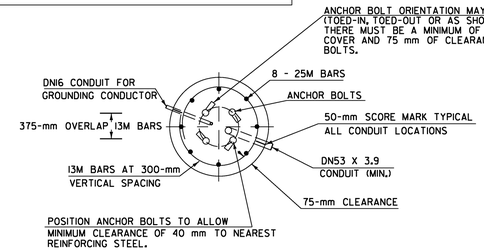


SIGN BRACKET DETAILS

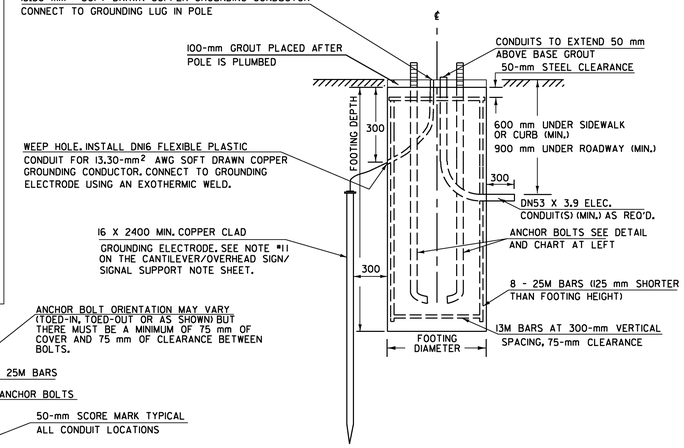
ANCHOR BOLT DETAIL		
SIZE	L (mm)	T (mm)
M30 X 3.5 X 1200	1050	200
M36 X 4 X 1500	1350	230
M42 X 4.5 X 2250	2100	230
M48 X 5 X 2400	2400	230



ANCHOR BOLT DETAIL



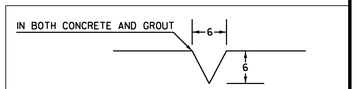
SECTION



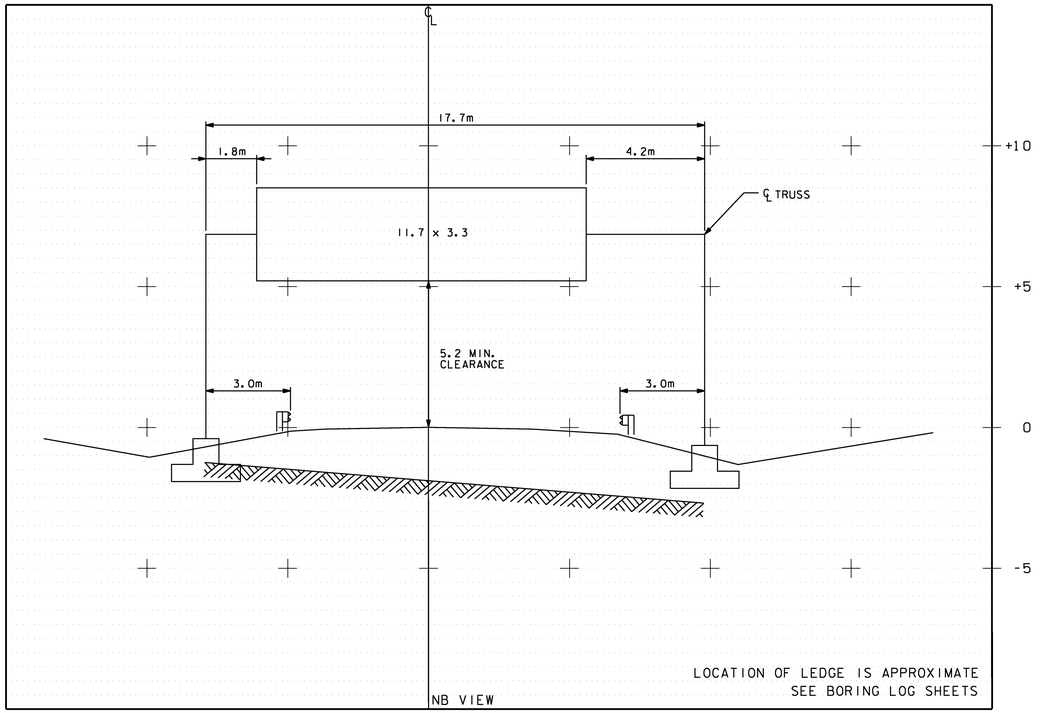
ELEVATION

OVERHEAD TRAFFIC SIGN BRIDGE FOOTING DETAIL

(SPREAD FOOTINGS OR PILES ARE OPTIONAL)



50-mm SCORE MARK DETAIL



(SEE SHEET 90 FOR LOCATION PLAN)

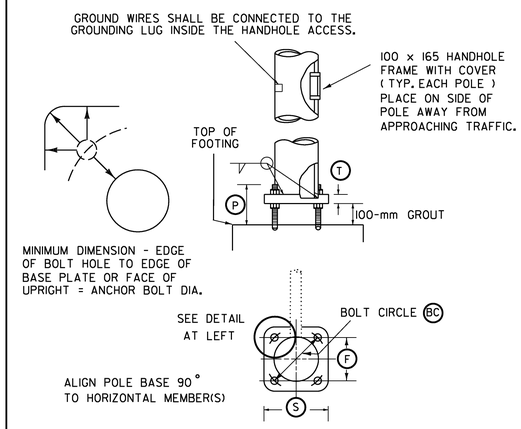
0 5 10

SCALE IN METERS

OVERHEAD SIGN BRIDGE CROSS SECTION

NOTES:

1. SEE CANTILEVER / OVERHEAD SIGN / SIGNAL SUPPORTS NOTE SHEET FOR ADDITIONAL INFORMATION.
2. MANUFACTURER TO DETERMINE TYPE OF STRUCTURE REQUIRED.
3. MONOTUBES SHALL NOT BE USED FOR SIGNS OVER 3 m IN HEIGHT.
4. STREET LIGHTING IS OPTIONAL. SEE PLAN SHEETS OR SECTION.
5. MINIMUM CLEARANCE FROM SIGNS TO ROADWAY IS 5.2 m.



POLE BASE AND BASE PLATE DETAIL

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

NOT TO SCALE

DATE	REVISIONS	BY

OVERHEAD TRAFFIC SIGN BRIDGE / FOOTING DETAIL SHEET #1

PREPARED BY _____ DATE _____
CHECKED BY _____ DATE _____
DESIGN SUPERVISOR _____ DATE _____
PROJ.

M.M. 10.050 NB

TRAFFIC SHEET NO. _____ OF _____
SHEET 126 OF 130 SHEETS

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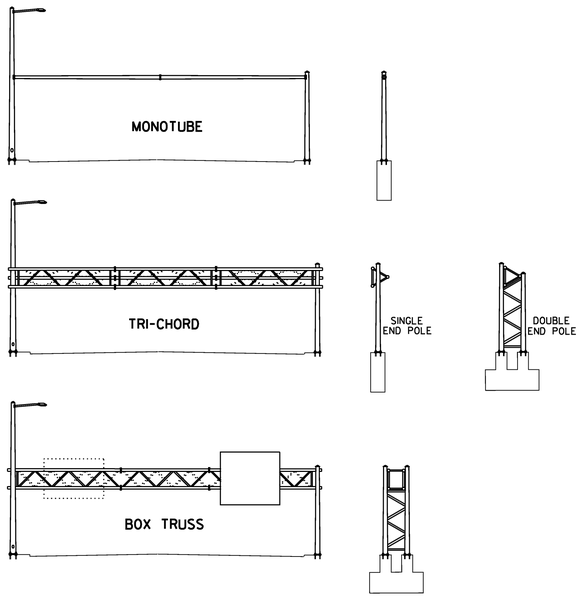
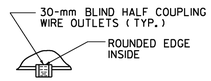
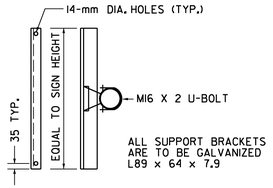




DETAIL A



SIGN BRACKET DETAILS

ANCHOR BOLT DETAIL		
SIZE	L (mm)	T (mm)
M30 X 3.5 X 1200	1050	200
M36 X 4 X 1500	1350	230
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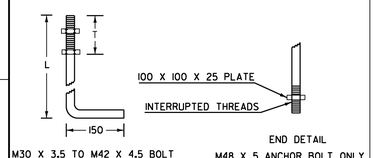
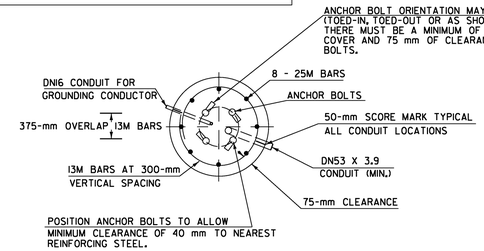
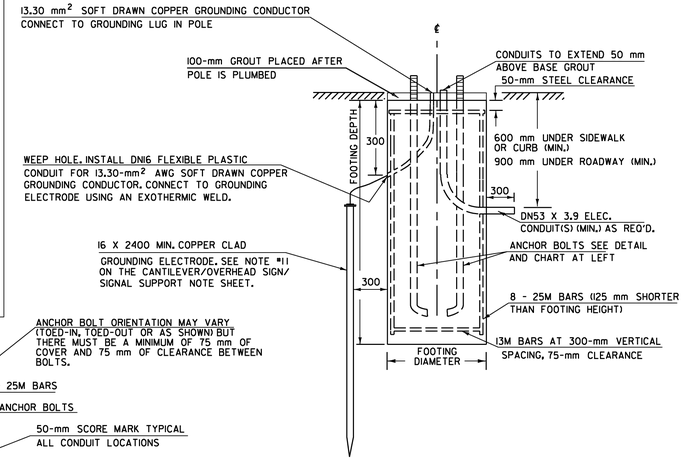


ANCHOR BOLT DETAIL



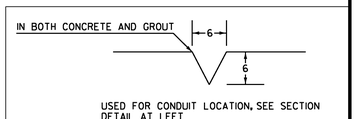
SECTION



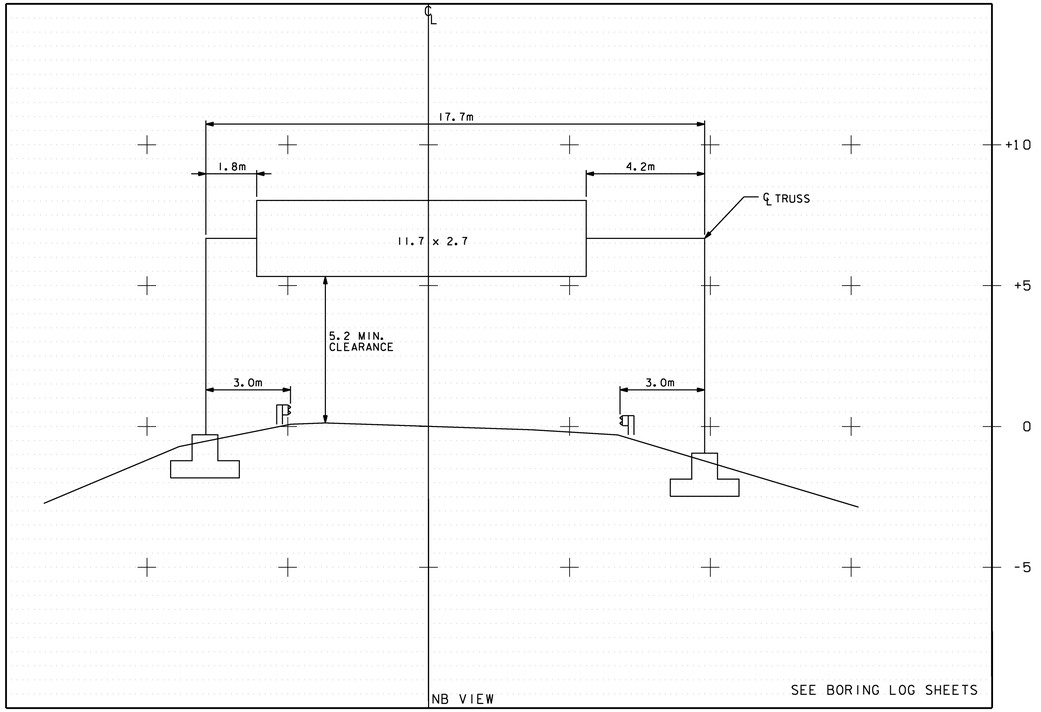
ELEVATION

OVERHEAD TRAFFIC SIGN BRIDGE FOOTING DETAIL

(SPREAD FOOTINGS OR PILES ARE OPTIONAL)



50-mm SCORE MARK DETAIL

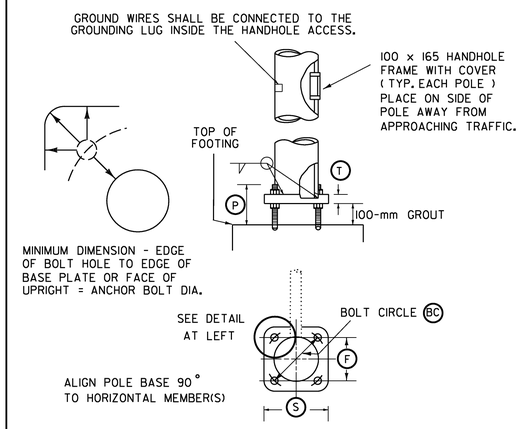


(SEE SHEET 91 FOR LOCATION PLAN)

OVERHEAD SIGN BRIDGE CROSS SECTION

NOTES:

1. SEE CANTILEVER / OVERHEAD SIGN / SIGNAL SUPPORTS NOTE SHEET FOR ADDITIONAL INFORMATION.
2. MANUFACTURER TO DETERMINE TYPE OF STRUCTURE REQUIRED.
3. MONOTUBES SHALL NOT BE USED FOR SIGNS OVER 3 m IN HEIGHT.
4. STREET LIGHTING IS OPTIONAL. SEE PLAN SHEETS OR SECTION.
5. MINIMUM CLEARANCE FROM SIGNS TO ROADWAY IS 5.2 m.



POLE BASE AND BASE PLATE DETAIL

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

NOT TO SCALE

DATE	REVISIONS	BY

OVERHEAD TRAFFIC SIGN BRIDGE / FOOTING DETAIL SHEET #2

PREPARED BY _____ DATE _____
CHECKED BY _____ DATE _____
DESIGN SUPERVISOR _____ DATE _____
PROJ.

M.M. 10.470 NB

TRAFFIC SHEET NO. _____ OF _____
SHEET 127 OF 130 SHEETS

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PLOTTED: 1/4/2007

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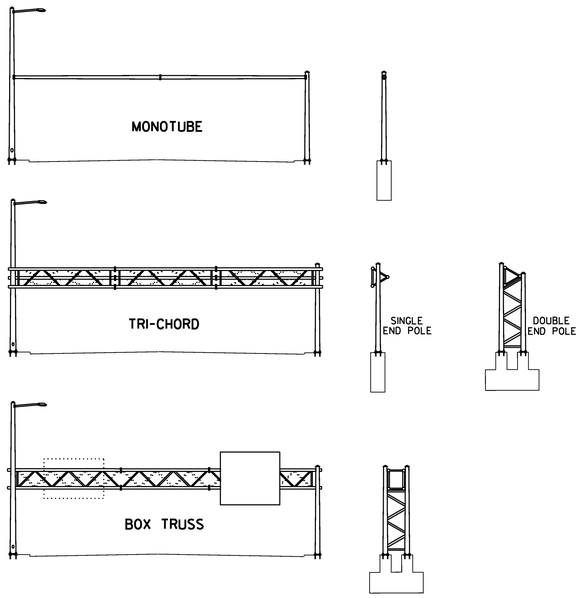
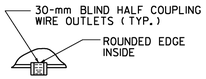
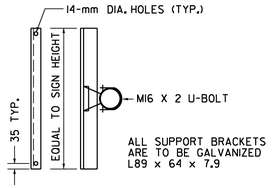


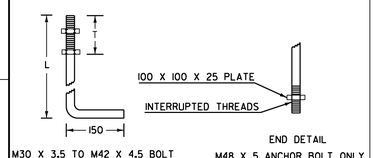


DETAIL A

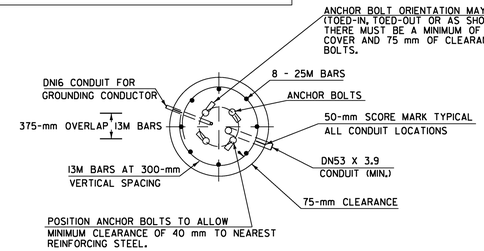


SIGN BRACKET DETAILS

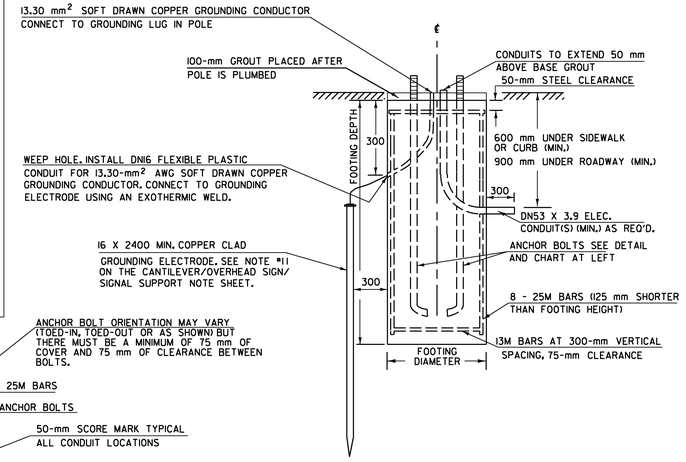
ANCHOR BOLT DETAIL		
SIZE	L (mm)	T (mm)
M30 X 3.5 X 1200	1050	200
M36 X 4 X 1500	1350	230
M42 X 4.5 X 2250	2100	230
M48 X 5 X 2400	2400	230



ANCHOR BOLT DETAIL



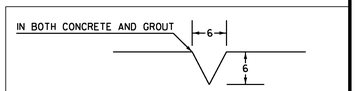
SECTION



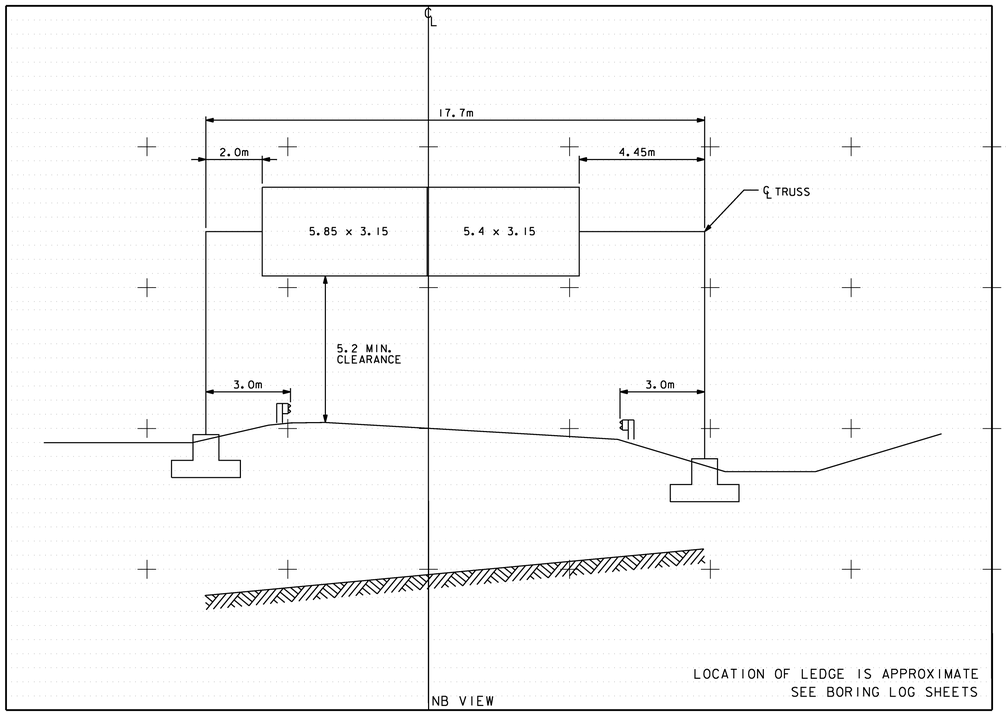
ELEVATION

OVERHEAD TRAFFIC SIGN BRIDGE FOOTING DETAIL

(SPREAD FOOTINGS OR PILES ARE OPTIONAL)



50-mm SCORE MARK DETAIL



(SEE SHEET 91 FOR LOCATION PLAN)

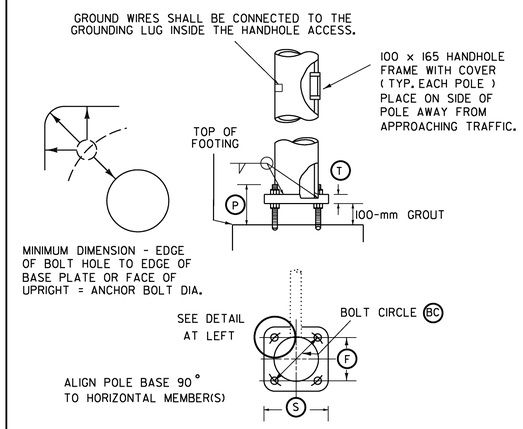
0 5 10

SCALE IN METERS

OVERHEAD SIGN BRIDGE CROSS SECTION

NOTES:

1. SEE CANTILEVER / OVERHEAD SIGN / SIGNAL SUPPORTS NOTE SHEET FOR ADDITIONAL INFORMATION.
2. MANUFACTURER TO DETERMINE TYPE OF STRUCTURE REQUIRED.
3. MONOTUBES SHALL NOT BE USED FOR SIGNS OVER 3 m IN HEIGHT.
4. STREET LIGHTING IS OPTIONAL. SEE PLAN SHEETS OR SECTION.
5. MINIMUM CLEARANCE FROM SIGNS TO ROADWAY IS 5.2 m.



POLE BASE AND BASE PLATE DETAIL

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

NOT TO SCALE

DATE	REVISIONS	BY

OVERHEAD TRAFFIC SIGN BRIDGE / FOOTING DETAIL SHEET #3

PREPARED BY _____ DATE _____
CHECKED BY _____ DATE _____
DESIGN SUPERVISOR _____ DATE _____
PROJ.

M.M. 10.970 NB

TRAFFIC SHEET NO. _____ OF _____
SHEET 128 OF 130 SHEETS

/traf/forms/cantilvr.dgn
ovhdss.1
PLOTTED: 1/4/2007

972lb-overhead.dgn

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

HOLE NO.: B-1
SHEET 1 OF 1
DATE STARTED: 6/4/02
DATE COMPLETED: 6/5/02

PROJECT NAME: WATERFORD
SITE NAME: OVERHEAD SIGNS
STATION: MM 10.050 NORTHBOUND
GROUND EL.:

PROJECT NUMBER: HES 093-1(10)
SITE NO.: I-93
OFFSET: RIGHT SIDE
G.W. DEPTH: 1.0 (06/06/02)

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

BORING RIG: TRACK RIG
BORING TYPE: HOLLOW STEM AUGER
SAMPLE TYPE: SPLIT BARREL

DEPTH	SYMBOL	CLASSIFICATION OF MATERIALS (Description)	BLOWS PER FOOT	M.C. %	GRAVEL %	SAND %	FINES %	LL	PI
▽		A-2-4, GrSiSa, brn, Moist, Rec. = 1.65'	11	17	24.3	45.2	30.5		
		Grass & Roots were within sample.							
		A-2-4, SiGrSa, brn, Moist, Rec. = 1.65'	22	11.4	36	37.6	26.4		
5		A-1-b, SiSaGr with broken rock,gry,Moist,Rec. = 0.9'	R	13.4	42.6	34.5	22.9		
		Top of bedrock @ 5.5'							
			RUN	REC%	RQD%	Dip°			
		Run#1: NXGDC, 5.5'-10.5', Rec. = 4.4', See Geologist's Report.	1	88	86	70			
10		Run#2: NXGDC, 10.5'-15.5', Rec. = 4.4', See Geologist's Report.	2	88	84	70			
15									
		Hole stopped @ 15.5'							

Geologist's Report:

Run#1: Dark gray to black slate with quartz veins, Moderately hard, Unweathered, Competent.

Run#2: Dark gray to black slate with quartz veins, Moderately hard, Unweathered, Competent.

20 25 30 35 40 45

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

HOLE NO.: B-2
SHEET 1 OF 1
DATE STARTED: 6/5/02
DATE COMPLETED: 6/5/02

PROJECT NAME: WATERFORD
SITE NAME: OVERHEAD SIGNS
STATION: MM 10.050 NORTHBOUND
GROUND EL.:

PROJECT NUMBER: HES 093-1(10)
SITE NO.: I-93
OFFSET: LEFT SIDE
G.W. DEPTH: 5.5 (06/06/02)

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

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

DEPTH	SYMBOL	CLASSIFICATION OF MATERIALS (Description)	BLOWS PER FOOT	M.C. %	GRAVEL %	SAND %	FINES %	LL	PI
		A-2-4, SiSa, brn, Moist, Rec. = 1.45'	11	13.4	15.9	55.6	28.5		
		Grass & Roots were within sample.							
		Top of bedrock @ 1.8'							
		Run#1: NXGDC, 1.8'-6.8', Rec. = 5.0', See Geologist's Report.	RUN 1	REC% 100	RQD% 94	Dip° 60			
5▽		Run#2: NXGDC, 6.8'-11.8', Rec. = 5.0', See Geologist's Report.	2	100	80	60			
10									
		Hole stopped @ 11.8'							

Geologist's Report:

Run#1: Dark gray to black slate with quartz veins and meta-quartzite, Moderately hard, Unweathered, Competent.

Run#2: Gray meta-quartzite and slate with quartz veins, Hard to moderately hard, Unweathered, Competent.

15 20 25 30 35 40 45

SURVEYED BY _____ DATE _____
DRAWN BY J.TOUCHETTE DATE 07/02
SQUAD LEADER C.C. BENDA
DESIGN FILE NO. /M&R/87a030/ma030bor.dgn
IPARM FILE _____ DATE PLOTTED 1/4/2007
PROJ. NAME WATERFORD
PROJ. NO. HES 093-1(10)
SHEET 129 OF 130 SHEETS

BORING LOG

SHEET #1

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

HOLE NO.: B-3
SHEET 1 OF 1
DATE STARTED: 6/6/02
DATE COMPLETED: 6/6/02

PROJECT NAME: WATERFORD
SITE NAME: OVERHEAD SIGNS
STATION: MM 10.470 NORTHBOUND
GROUND EL.:

PROJECT NUMBER: HES 093-I(10)
SITE NO.: I-93
OFFSET: RIGHT SIDE
G.W. DEPTH:

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

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

DEPTH	SYMBOL	CLASSIFICATION OF MATERIALS (Description)	BLOWS PER FOOT	M.C. %	GRAVEL %	SAND %	FINES %	LL	PI
		A-2-4, GrSiSa, brn, Moist, Rec. = 1.75' Grass & Roots were within sample.	6	11.5	20.8	48.5	30.7		
		A-4, SiSa, brn, Moist, Rec. = 1.25'	13	14.8	19.9	43.7	36.4		
5		A-2-4, SiGrSa, brn, Moist, Rec. = 1.0'	43	12.2	33	37.2	29.8		
		A-2-4, SiGrSa, brn, Moist, Rec. = 1.1'	58	14.5	31.7	40.5	27.8		
		A-2-4, SiGrSa, brn, Moist, Rec. = 1.2'	45	12.4	30.6	39.6	29.8		
10		A-2-4, GrSiSa, brn-gry, Moist, Rec. = 1.0' Wood/Root was within sample.	25	15.3	21.6	42.9	35.5		
15		A-2-4, SiSa, brn-gry, Moist, Rec. = 0.9'	29	17.5	15.1	57.1	27.8		
20		A-2-4, SaSiGr, gry, Moist, Rec. = 0.6' Wood/Root was within sample.	47	11.8	45.1	22.6	32.3		
25		A-2-4, SiGrSa, gry, Moist, Rec. = 1.3'	R	10.2	34.6	35.9	29.5		
30		29.0'-30.0', BXDC, Cleaned out casing, into Boulder or Ledge. Hole stopped @ 30.0'							
35									
40									
45									

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

HOLE NO.: B-4
SHEET 1 OF 1
DATE STARTED: 6/10/02
DATE COMPLETED: 6/10/02

PROJECT NAME: WATERFORD
SITE NAME: OVERHEAD SIGNS
STATION: MM 10.470 NORTHBOUND
GROUND EL.:

PROJECT NUMBER: HES 093-I(10)
SITE NO.: I-93
OFFSET: LEFT SIDE
G.W. DEPTH: 12.7 (06/10/02)

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

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

DEPTH	SYMBOL	CLASSIFICATION OF MATERIALS (Description)	BLOWS PER FOOT	M.C. %	GRAVEL %	SAND %	FINES %	LL	PI
		A-1-b, SaGr, brn, Moist, Rec. = 0.9'	11	9	50.1	34.8	15.1		
		A-1-b, SaGr, brn-gry, Moist, Rec. = 1.0'	23	9	43.7	37.2	19.1		
5		A-2-4, GrSiSa, brn, Moist, Rec. = 1.2'	26	13.1	21.1	44.1	34.8		
		A-2-4, SiSa, brn, Moist, Rec. = 1.0'	24	13.8	20	46	34		
		A-2-4, SiSaGr, brn, Moist, Rec. = 1.25'	29	11.6	38	34.9	27.1		
10		A-2-4, GrSiSa, brn, Moist, Rec. = 1.33'	18	16.2	21.5	44.9	33.6		
15		A-2-4, SiGrSa, brn, Moist, Rec. = 0.4'	2	18.8	34	35.3	30.7		
20		A-2-4, SiSa, brn, Moist, Rec. = 1.33'	22	16.5	11	53.8	35.2		
25		BXDC, 23.75'-25.0', Boulder A-4, SaGrSi, gry, Moist, Rec. = 1.2'	20	13.7	32.3	25.5	42.2		
30		BXDC, 29.2'-32.0', Boulders Hole stopped @ 32.0'							
35									
40									
45									

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

HOLE NO.: B-5
SHEET 1 OF 1
DATE STARTED: 6/11/02
DATE COMPLETED: 6/11/02

PROJECT NAME: WATERFORD
SITE NAME: OVERHEAD SIGNS
STATION: MM 10.970 NORTHBOUND
GROUND EL.:

PROJECT NUMBER: HES 093-I(10)
SITE NO.: I-93
OFFSET: RIGHT SIDE
G.W. DEPTH: 0.5 (06/11/02) RAINY DAY

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

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

DEPTH	SYMBOL	CLASSIFICATION OF MATERIALS (Description)	BLOWS PER FOOT	M.C. %	GRAVEL %	SAND %	FINES %	LL	PI
		A-1-b, GrSa, brn, Moist, Rec. = 1.3' Grass & Roots were within sample.	13	9.5	40.1	41.7	18.2		
		A-1-b, SaGr, brn, Moist, Rec. = 1.25'	43	11.3	42.3	38.1	19.6		
5		A-1-a, SaGr, brn, Moist, Rec. = 0.75'	54	10.3	60.7	27.5	11.8		
		A-1-a, Gr, brn, Moist, Rec. = 0.9'	37	9.4	75.1	15.7	9.2		
		A-1-b, SaGr, brn-gry, Moist, Rec. = 0.8'	41	10.5	52.2	29	18.8		
10		A-1-a, SaGr, gry, Moist Rec. = 0.4' Top of bedrock @ 10.4'	R	8	61	25.5	13.5		
		Run#1: NXGDC, 10.4'-15.4', Rec. = 5.0', See Geologist's Report.	RUN 1	REC% 100	RQD% 84	Dip° 60			
15		Hole stopped @ 15.4'							
20									
25									
30									
35									
40									
45									

Geologist's Report:

Run#1: Gray shale (silicious) with quartz veins, Hard, Unweathered, Competent.

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

HOLE NO.: B-6
SHEET 1 OF 1
DATE STARTED: 6/13/02
DATE COMPLETED: 6/13/02

PROJECT NAME: WATERFORD
SITE NAME: OVERHEAD SIGNS
STATION: MM 10.970 NORTHBOUND
GROUND EL.:

PROJECT NUMBER: HES 093-I(10)
SITE NO.: I-93
OFFSET: LEFT SIDE
G.W. DEPTH: 5.75 (06/13/02)

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

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

DEPTH	SYMBOL	CLASSIFICATION OF MATERIALS (Description)	BLOWS PER FOOT	M.C. %	GRAVEL %	SAND %	FINES %	LL	PI
		A-1-b, SaGr, brn, Moist, Rec. = 0.9' Grass & Roots were within sample.	10	10.6	50	30.8	19.2		
		A-4, SiSa, gry, Moist, Rec. = 1.2'	40	12.6	17	42.8	40.2		
5		A-2-4, SiSa, gry-brn, Moist, Rec. = 1.25'	23	16.8	19.2	46.5	34.3		
		A-1-b, SiSaGr, gry, Moist, Rec. = 0.2'	34	12.2	50.9	25.8	23.3		
		A-2-4, SiGrSa, brn, Moist, Rec. = 1.33'	27	13.9	27.9	45.2	26.9		
10		A-2-4, GrSiSa, brn, Moist, Rec. = 0.8'	39	13	23.3	50.1	26.6		
15		A-1-b, SiSaGr, gry, Moist, Rec. = 1.5' Top of bedrock @ 17.0'	59	9.4	41.4	35.1	23.5		
		Run#1: NXGDC, 17.0'-20.25', Rec. = 2.1' See Geologist's Report.	RUN 1	REC% 65	RQD% 55	Dip° 60			
20		Run#2: NXGDC, 20.25'-23.25', Rec. = 2.66' See Geologist's Report.	2	89	75	60			
25		Hole stopped @ 23.25'							
30									
35									
40									
45									

Geologist's Report:

Run#1: Gray silicious slate, Hard, Unweathered, Competent.

Run#2: Gray silicious slate, Hard, Unweathered, Competent.

BORING LOG

SHEET #2

SURVEYED BY _____ DATE _____
DRAWN BY J.TOUCHETTE DATE 07/02
SQUAD LEADER C.C. BENDA
DESIGN FILE NO. /M&R/87a030/ma030bor.dgn
IPARM FILE _____ DATE PLOTTED 1/4/2007
PROJ. NAME WATERFORD
PROJ. NO. HES 093-I(10)
SHEET 130 OF 130 SHEETS

VERMONT

Agency of Transportation

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

[phone] 802-828-2621
[fax] 802-828-2437
[ttd] 800-253-0191

September 21, 2007

Highway Safety Corp
ATTN: Paul Radice
239 Commerce Street
P. O. Box 358
Glastonbury, CT 06033-0358

These sheets and welding specifications are sent as follow up to discussions between VTrans welding inspector Jeff Clark and Paul Radice of Highway Safety Corp. Paul and Jeff discussed the issues associated with following drawings and welding procedures. Jeff explained the issues noted in these shop drawings were already corrected and these drawings are sent as a follow up to complete the project file.

Project Name: **ST Johnsbury - Lyndon** **Project #:** **HES 091-3(42)**

Structure Identification: **TRI-CHORD SIGN STRUCTURE – I91 MM 129.130 SB**

The following **Tri Chord Sign Structure** details [Item #677.13, Name (OVERHEAD TRAFFIC SIGN SUPPORT, MULTI-SUPPORT)] for the above project (Vendor's Job #**1587d**) transmitted with your letter dated 23–July–07 have been reviewed and are being returned herewith.

Project Name: **Waterford** **Project #:** **HES 093-19(10)**

Structure Identification: **TRI-CHORD SIGN STRUCTURE – I93 MM 10.050 NB**

The following **Tri Chord Sign Structure** details [Item #677.13, Name (OVERHEAD TRAFFIC SIGN SUPPORT, MULTI-SUPPORT)] for the above project (Vendor's Job #**1587e**) transmitted with your letter dated 23–July–07 have been reviewed and are being returned herewith.

Structure Identification: **TRI-CHORD SIGN STRUCTURE – I93 MM 10.470 NB**

The following **Tri Chord Sign Structure** details [Item #677.13, Name (OVERHEAD TRAFFIC SIGN SUPPORT, MULTI-SUPPORT)] for the above project (Vendor's Job #**1587f**) transmitted with your letter dated 23–July–07 have been reviewed and are being returned herewith.

131 SIGN

VTrans Working to Get You There! Vermont Agency of Transportation

Structure Identification: **TRI-CHORD SIGN STRUCTURE – I93 STA 10.970 NB**

The following **Tri Chord Sign Structure** details [Item #677.13, Name (OVERHEAD TRAFFIC SIGN SUPPORT, MULTI-SUPPORT)] for the above project (Vendor's Job #**1587g**) transmitted with your letter dated 23–July–07 have been reviewed and are being returned herewith.

The Sheets noted below apply to all 4 structures listed above.

Sheets: 3 and 7 are approved as noted
Welding procedure WPS -1587-1 and 1587 -3 are approved
Welding procedure WPS -1587-2 is approved as noted

The Note Below refers to all structures

There shall be no fabrication done until all drawings and welding procedures are 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,

Roger L. Thompson PE
Roadway Project Manager

Attachments
cc: [X] Resident Engineer Jim Forest w/prints
[X] Shop Inspector Jeff Clark –letter only
[X] Contractor (Highway Safety)w/prints
[X] Sub Contractor (F.R. Lafayette)w/prints
[X] Construction Division – letter only
[X] Materials & Research Section (C&IA Unit) – letter only
[X] Files (Structures & Central)

I 32 SIGN

VERMONT

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 14, 2007

Highway Safety Corp
ATTN: Paul Radice
239 Commerce Street
P. O. Box 358
Glastonbury, CT 06033-0358

Project Name: ST Johnsbury - Lyndon **Project #: HES 091-3(42)**

Structure Identification: TRI-CHORD SIGN STRUCTURE – I91 MM 129.130 SB

The following **Tri Chord Sign Structure** details [Item #677.13, Name (OVERHEAD TRAFFIC SIGN SUPPORT, MULTI-SUPPORT)] for the above project (Vendor's Job #**1587d**) transmitted with your letter dated 23–July–07 have been reviewed and are being returned herewith.

Sheets: 1-3, 8 are approved
Sheets: 4 -7 are approved as noted

Project Name: Waterford **Project #: HES 093-19(10)**

Structure Identification: TRI-CHORD SIGN STRUCTURE – I93 MM 10.050 NB

The following **Tri Chord Sign Structure** details [Item #677.13, Name (OVERHEAD TRAFFIC SIGN SUPPORT, MULTI-SUPPORT)] for the above project (Vendor's Job #**1587e**) transmitted with your letter dated 23–July–07 have been reviewed and are being returned herewith.

Sheets: 1-3, 5 are approved
Sheets: 4, 6-8 are approved as noted

133-SIGN

VTrans Working to Get You There Vermont Agency of Transportation

Structure Identification: TRI-CHORD SIGN STRUCTURE – I93 MM 10.470 NB

The following **Tri Chord Sign Structure** details [Item #677.13, Name (OVERHEAD TRAFFIC SIGN SUPPORT, MULTI-SUPPORT)] for the above project (Vendor's Job #**1587f**) transmitted with your letter dated 23–July–07 have been reviewed and are being returned herewith.

Sheets: 1-3, 5 and 8 are approved
Sheets: 4, 6-7 are approved as noted

Calculations: The reviewer noticed that the width and location for sign 2 appears to be incorrect. The fabricator needs to verify this information and recheck the calculations. If during this check of the calculations the design changes; the fabricator will need to resubmit a complete set of drawings and calculations to VTrans for review.

Structure Identification: TRI-CHORD SIGN STRUCTURE – I93 STA 10.970 NB

The following **Tri Chord Sign Structure** details [Item #677.13, Name (OVERHEAD TRAFFIC SIGN SUPPORT, MULTI-SUPPORT)] for the above project (Vendor's Job #**1587g**) transmitted with your letter dated 23–July–07 have been reviewed and are being returned herewith.

Sheets: 1-3, 5 and 8 are approved
Sheets: 4, 6-7 are approved as noted

Calculations: The reviewer noticed that the sign location for sign 1 appears to be incorrect. The fabricator needs to verify this information and recheck the calculations. If during this check of the calculations the design changes; the fabricator will need to resubmit a complete of drawings and calculations to VTrans for to review.

The Note Below refers to all structures

There shall be no fabrication done until all drawings and welding procedures are 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,

Roger L. Thompson PE
Roadway Project Manager

134-5160

Attachments
cc: [X] Resident Engineer Jim Forest w/prints
[X] Shop Inspector Jeff Clark w/prints
[X] Contractor (Highway Safety)w/prints
[X] Sub Contractor (F.R. Lafayette)w/prints
[X] Construction Division – letter only
[X] Materials & Research Section (C&IA Unit) – letter only
[X] Files (Structures & Central)

VERMONT

DESIGN CALCULATIONS

OVERHEAD SIGN STRUCTURE
INTERSTATE ROUTE 91
STATION 129.130 SB
PROJECT NO. AC IM 091-2(73)

VERMONT AGENCY OF TRANSPORTATION

STATE OF VERMONT
PHILIP B. CHENEY
6163
REGISTERED
PROFESSIONAL ENGINEER

7.23.2007

P. BRADFORD CHENEY
PRESIDENT

DATE

SUBMITTED BY:

CME ASSOCIATES, INC.
333 EAST RIVER DRIVE, SUITE 400
EAST HARTFORD, CT 06108

JULY 20, 2007

SUBMITTED TO:

HIGHWAY SAFETY CORPORATION
239 COMMERCE STREET
P.O. BOX 358
GLASTONBURY, CT 06033-0358

CME **CME Associates, Inc.**

1354/6N-3

Highway Safety Corporation
239 Commerce Street
Glastonbury, CT 06033-0358

Project: Highway Safety
By: APB Checked: JAR
Date: 7/20/2006
Sheet No. of

Overhead Truss Sign Support Program **Tri-Chord Truss** **Single Post Support**

State:	Vermont
Project:	
Sign Location:	MM 129.130 SB

Overall Dimensions (all in feet)

Span L	Left Post Height H1	Rt. Post Height H2	Truss Section Lengths: Section 1 (feet)	Section 2 (feet)	Section 3 (feet)	Number of Truss Pieces
63.97	23.94	25.73	31.99	31.99	0.00	2

Miscellaneous Data

Wind Speed (mph)	Sign Weight (psf)	Ice Load? (yes/no)
90	3.65	yes

Sign Dimensions (all in feet)

Sign 1 Length L1	Sign 1 Width W1	Sign 1 Location D1	Sign 2 Length L2	Sign 2 Width W2	Sign 2 Location D2	Sign 3 Length L3	Sign 3 Width W3	Sign 3 Location D3
15.42	11.81	30.68	17.72	10.93	47.73	0.00	0.00	0.00

Overhead Truss Chords

Height of Truss Dt (ft)	Width of Truss Wt (ft)	1st Truss Section Outside Dia. (inches)	1st Truss Section Wall Thick. (inches)	2nd Truss Section Outside Dia. (inches)	2nd Truss Section Wall Thick. (inches)	3rd Truss Section Outside Dia. (inches)	3rd Truss Section Wall Thick. (inches)	Chord Yield Str. (ksi)	Number of Chords 1, 3 or 4
3.00	3.00	4.000	0.226	4.00	0.23	4.000	0.226	42.0	3
				4.000	0.226	<-- Values Used in computations			

Overhead Truss Diagonals

Equal Leg Angles Leg Size (inches)	Equal Leg Angles Thickness (inches)	Round Pipe Outside Dia. (inches)	Round Pipe Thickness (inches)	Diagonal Yield Str. (ksi)	Vertical diag. angle (deg)	Horizontal diag. angle (deg)	Drilled Shafts for foundation ?	Circular Footing Stem? (yes/no)
2.00	0.250	0.00	0.000	36.0	39	39	no	yes

No. of Posts per end 1 or 2	Left Post Verticals Spacing Sp (Feet)	Outside Dia. (inches)	Wall Thick. (inches)	Post Yield Str. (ksi)	Vertical diag. angle (deg)	Right Post Verticals Spacing Sp (Feet)	Outside Dia. (inches)	Wall Thick. (inches)	Post Yield Str. (ksi)
1	0.00	14.000	0.500	42.0	45	0.000	14.000	0.500	42.000

Post Diagonals

Equal Leg Angles Leg Size (inches)	Equal Leg Angles Thickness (inches)	Round Pipe Outside Dia. (inches)	Round Pipe Thickness (inches)	Diagonal Yield Str. (ksi)	
0.00	0.000	3.00	0.125	36.0	
0.00	0.000	0.00	0.000	0.00	<-- Values Used in Computations

Results

		D/C or CSR	OK / NG ?
Truss	Section 1 Chords	0.79	OK
	Section 2 Chords	0.66	OK
	Section 3 Chords	0.79	OK
	Truss Diagonals	0.60	OK
Posts	Left Post	0.62	OK
	Right Post	0.92	OK
	Left Post Diagonals	N/A	N/A
	Right Post Diagonals	N/A	N/A

Truss Deflections in Inches			
	Defl. Under DL + Ice	0.82	
	Allowable (L/150)	5.12	OK
	Camber	1.28	
	Deflection OK		

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Connection Design

Number of Posts per end: 1

Baseplate and Anchor Bolt Input

Baseplate Thickness inches	Baseplate Yield Str. * ksi	Anchor Bolts per post: No. of Bolts	Diameter Inches	Yield Str. (ksi) *
2.000	50.00	4	2.000	55
		4,6, or 8		

* Normal Yield Strengths (36, 55, 110 ksi) AASHTO M314

Analysis Results

Bolt Circle Dia. (in)	Baseplate Dia. (in)	Socket Weld Design: Weld Size inches	Total Weld Length (in)
22.00	30.00	0.460	87.96

Anchor Bolts: Embedment inches	Extension inches	Tot. Length inches	Anchor CSR	Baseplate Bending ksi	
36.00	8.000	44.000	0.88	68.85	Actual
			1.0	37.50	Capacity
			OK	See Note	Result

Note: If Base plate bending stress exceeded, add vertical stiffeners.
Length of required 1/4" weld on each leg of each stiffener = 4.00 inches

Truss Chord Splice Connection Input

Conn. Plate Thickness inches	Conn. Plate Yield Str. ksi	A325 Bolt Diameter Inches	Number of Bolts
0.750	50.00	0.750	4

Input this area for monotubes also

Analysis Results

Bolt Circle Dia. (in)	Conn Plate Dia (in)	Socket Weld Design: Weld Size inches	Total Weld Length (in)
7.00	10.00	0.228	25.13

Connection Bolts: Bolt Spacing inches	Bolt D/C ksi	Conn. Pl. Bending ksi	
5.498	0.56	21.33	Actual
2.25	1.0	37.50	Allowed
OK	OK	OK	Result

Truss Diagonal Connection Input (for 1/2 connection)

Conn. Plate Thickness inches	Conn. Plate 1/2 Length inches	Conn. Plate Yield Str ksi	A325 Bolt Diameter Inches	Number of Bolts per diag.
0.375	10.000	50.00	0.000	0
				See Note

Note: Enter zero for welded connection

Analysis Results

Diagonal Bolt Force kips	Conn Plate Stress ksi	Diagonal Weld Length inches	
N/A	2.11	6.0	Actual
N/A	30.00	1.175	Capacity/required
N/A	OK	OK	Result

Chord Weld Connection: Weld Size inches	Total Weld Length (in)	Weld Load k/in	
0.250	20.00	0.700	Actual
		6.72	Capacity
		OK	Result

Post Diagonal Connection Input (for 1/2 connection)

Conn. Plate Thickness inches	Conn. Plate 1/2 Length Inches	Conn. Plate Yield Str. ksi	A325 Bolt Diameter Inches	Number of Bolts per diag.
0.000	10.000	50.00	0.875	0
				See Note

-N/A SINGLE POST USED-
Note: Enter zero for welded connection

Analysis Results

Diagonal Bolt Force kips	Conn Plate Stress ksi	Diagonal Weld Length inches	
N/A	0.00	12.0	Actual
N/A	30.00	0.000	Capacity/required
N/A	OK	OK	Result

Post Weld Connection: Weld Size inches	Total Weld Length (in)	Weld Load k/in	
0.250	20.00	0.000	Actual
		6.72	Capacity
		OK	Result

Truss Support Connection (use W Shape)

Section	Web Thickness inches	Web Depth Inches	Member Yield Str. ksi
W8x8.5	0.170	5.875	36.00

Use W8x8.5 for mast
Weld all around with 1/4" weld
-N/A SINGLE POST USED-

Analysis Results

End Weld Length inches		End Shear Load kips	
2.12	required	4.36	Actual
0.65	provided	11.67	Capacity
OK	Result	OK	Result

Bolt Data: Bolt Dia. inches	n = Threads Per Inch	A net sq. inches	A Gross sq. inches
0.500	13	0.142	0.196
0.625	11	0.226	0.307
0.750	10	0.334	0.442
0.875	9	0.462	0.601
1.000	8	0.606	0.785
1.125	7	0.763	0.994
1.250	7	0.969	1.227
1.375	6	1.155	1.485
1.500	6	1.405	1.767
1.750	5	1.899	2.405
2.000	4.5	2.498	3.142
2.250	4.5	3.248	3.976
2.500	4	3.999	4.909
2.750	4	4.934	5.940
3.000	4	5.987	7.069
3.250	4	7.099	8.296
3.500	4	8.329	9.621
4.000	4	11.083	12.566
4.250	4	12.607	14.186
4.500	4	14.229	15.904
4.750	4	15.950	17.721
5.000	4	17.769	19.635

Truss Support Connection (For Tri-Chord)

Dist. from edge of post to CL of chord	Depth of Plate (inches)	Full Width of Plate (inches)
9.000	16.000	16.00
inches		

Analysis Results

Weld Stress (ksi)	
2.12	Actual
19.02	Capacity
OK	Result

Monotube Connection at Pole

Analysis Results

Dia. of U-bolt	Saddle Length and Post Top Plate	Saddle Height	Depth of Saddle Notch	Thickness of Connection material	Yield Strength of U-bolt	U-bolt Stress (ksi)	
0.75	16	10.5	12	0.75	36	1.60	Required
inches	inches	inches	inches	inches	ksi	18.00	provided
						OK	Result

-N/A FOR Tri-Chord-

General Information: Post Dimensions: Post Dia.	Thickness	Chord Dimensions: Diameter	Thickness
14.00	0.50	4.00	0.226

Conn.
1375/16a.2

Baseplate Design - Double End Post Design

Anchor Bolt Analysis (4 bolt pattern, round baseplate)

Not Applicable, see single post design below

Bolt Circle Dia. =	22.00	inches
A bolts =	9.993	sq. inches
I bolts =	604.57	in^4
S bolts =	54.96	in^3
Base Plate Dia. =	**36.00**	**inches**
Allow.Tensile Stress = Ft =	27.50	ksi
Allow.Shear Stress = Fv =	16.50	ksi

Anchor Bolt Properties		
Net Tensile Stress Area = At =	2.498	sq. inches
Gross Area = Ag =	3.142	sq. inches

Reactions		Max. Axial kips	Min. Axial kips	Mwsak kip-ft	V kips	AB Comp. Stress ksi	AB Tens. Stress ksi	AB Shear Stress ksi	CBR Eq. 5-24	Baseplate Weld Information: Post Bending Str. (ksi)	Post Axial Str. (ksi)	Max. Stress ksi
Left Support	G1	3.76	3.76	0.00	0.00	0.38	0.38	0.00	0.00	0.00	0.18	0.18
Right Support		4.21	4.21	0.00	0.00	0.42	0.42	0.00	0.00	0.00	0.20	0.20
Left Support	G5 C1	2.83	2.83	24.83	3.92	5.70	-5.14	0.39	0.04	4.32	0.13	4.45
Right Support		3.17	3.17	21.88	5.29	5.09	-4.46	0.53	0.03	3.80	0.15	3.95
Left Support	G5 C2	2.83	2.83	37.24	2.72	8.41	-7.85	0.27	0.08	6.48	0.13	6.61
Right Support		3.17	3.17	32.82	3.37	7.48	-6.85	0.34	0.06	5.71	0.15	5.86
Left Support	G6 C1	3.81	3.81	12.41	2.13	3.09	-2.33	0.21	0.01	2.16	0.18	2.34
Right Support		4.36	4.36	10.94	2.83	2.83	-1.95	0.28	0.01	1.90	0.21	2.11
Left Support	G6 C2	3.81	3.81	18.62	1.34	4.45	-3.68	0.13	0.02	3.24	0.18	3.42
Right Support		4.36	4.36	16.41	1.73	4.02	-3.15	0.17	0.01	2.85	0.21	3.06
						8.41	-7.85	0.53	0.08			6.61

Baseplate weld design

Not Applicable, see single post design below

S post =	69.01	in^4	
A post =	21.21	in^2	
Max. Weld Size =	0.4375	inches	
Min. Weld Size =	0.25	inches	
Force per inch of post edge =	3.90	kips per inch	
Weld Stress based on Max. Weld Size =	5.34	ksi	Based on double weld (socket connection)
Weld Stress based on Min. Weld Size =	9.35	ksi	Based on double weld (socket connection)
Weld Yield Strength =	70	ksi	
Allowable Weld stress =	18.9	ksi	
Required weld size =	0.124	inches	
Design Weld Size =	**0.25**	**inches**	Based on double weld (socket connection)
Weld Length =	**87.96**	**inches**	Based on double weld (socket connection)

Baseplate Thickness

Not Applicable, see single post design below

Width of Baseplate section =	8.000	inches	
Thickness =	2.000	inches	
Sx =	5.33	in^3	
Bolt spacing = X =	17.28	inches	Measured along circumference of bolt circle
Force per inch of post edge =	3.30	kips per inch	
Moment in Baseplate =	98.66	kip inches	
Bending Stress =	18.50	ksi	
Allowable Bending Stress =	37.50	ksi	
No vertical Stiffeners needed			
Capacity of 1/4" weld =	3.36	kips per inch	
Length of 1/4" horizontal weld required on each leg of each vertical stiffener = X =	3.13	inches	

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Baseplate Design - Single End Post Design

Anchor Bolt Analysis

Number of Bolts =	4	
Bolt Circle Dia. =	22.00	inches
A bolts =	9.993	sq. inches
I bolts =	654.57	in^4
Sstrong bolts =	54.96	in^3

Anchor Bolt Properties		
Net Tensile Stress Area = At =	2.498	sq. inches
Gross Area = Ag =	3.142	sq. inches

Base Plate Dia. = 30.00 inches
Allow.Tensile Stress = Ft = 27.50 ksi
Allow.Shear Stress = Fv = 16.50 ksi

Reactions	Axial kips	Mx kip-ft	Mz kip-ft	Shear kips	AB Tens. Stress ksi	AB Shear Stress ksi	CSR Eq. 5-24
G1	3.76	0.00	0.00		-0.38	0.00	0.00
G5 C1	2.83	94.89	24.83	3.92	25.86	0.39	0.68
G5 C2	2.83	56.93	37.24	2.72	20.28	0.27	0.54
G6 C1	3.81	49.87	12.41	2.13	13.22	0.21	0.23
G6 C2	3.81	29.92	18.62	1.34	10.22	0.13	0.14
					25.86	0.39	0.68

Baseplate weld design

S post =	69.01	in^4	
A post =	21.21	in^2	
Max. Weld Size =	0.4375	inches	
Min. Weld Size =	0.25	inches	
Force per inch of post edge =	12.30	kips per inch	
Weld Stress based on Max. Weld Size =	19.88	ksi	Based on double weld (socket connection)
Weld Stress based on Min. Weld Size =	34.79	ksi	Based on double weld (socket connection)
Weld Yield Strength =	70	ksi	
Allowable Weld stress =	18.9	ksi	
Required weld size =	0.4490	inches	
Design Weld Size =	**0.4402018**	**inches**	Based on double weld (socket connection)
Weld Length =	**87.96**	**inches**	Based on double weld (socket connection)

Baseplate Weld Information

	Post Bending Str. (ksi)	Post Axial Str. (ksi)	Max. Stress ksi
G1	0.00	0.18	0.18
G5 C1	24.46	0.13	24.60
G5 C2	14.68	0.13	14.81
G6 C1	12.71	0.18	12.89
G6 C2	7.63	0.18	7.81
			24.60

Baseplate Thickness

Width of Baseplate section =	9.000	inches	
Thickness =	2.000	inches	
Sx =	5.33	in^3	
Bolt spacing = X =	17.28	inches	Measured along circumference of bolt circle
Force per inch of post edge =	12.30	kips per inch	
Moment in Baseplate =	367.18	kip inches	
Bending Stress =	68.85	ksi	
Allowable Bending Stress =	37.50	ksi	
Baseplate stress exceeded, add vertical stiffeners			
Capacity of 1/4" weld =	5.36	kips per inch	
Length of 1/4" weld required on each leg of each vertical stiffener =	9.62	inches	

Truss Chord Splices

Bolt Stresses

Maximum Chord Force =	43.69	kips		
Max. Chord Diameter =	4.000	inches		
Bolt Circle Dia. =	7.000	inches		
Bolt Area =	0.334	in^2		
A bolts =	1.338	sq. inches	4	bolts
Bolt Tensile Stress =	32.66	ksi		
Allow.Tensile Stress = Ft =	38.00	ksi (A325 Bolts)		
Demand/Capacity Ratio =	**0.86**			

For Monotube Only
Loads:

Mvert. kip-ft	Mhoriz. kip-ft	SHEAR Horizontal kips	SHEAR Vertical kips	Bolt Tens. Stress ksi	Bolt Shear Stress ksi
43.97	69.90	0.00	0.19	512.92	0.47

Mtotal =	100.07 ft-kip
Vtotal =	0.63 kip
Moment of Inertia =	8.19 in^4
S =	2.34 in^3
Allow.Tensile Stress, Ft =	38.00 ksi
Allow.Shear Stress, Fv =	19.00 ksi
CSR =	0.01 OK

Bolt stresses based on A325 Bolts (AASHTO Table 10.32.3B)
Bolt stresses reduced by 0.875 for bolts over 1 inch diameter

Plate Stresses

Width of conn. plate section =	3.000	inches
Thickness =	0.750	inches
Sx =	0.281	in^3
Bolt Circle Circumference =	21.991	inches
Bolt Spacing =	5.498	inches
Force per inch along circumference =	1.99	kips per inch
Moment in Conn. plate =	6.01	kip inches
Bending Stress =	21.35	ksi
Allowable Bending Stress =	37.50	ksi

Weld Stresses

Max. Weld Size =	0.226	inches	
Min. Weld Size =	0.226	inches	
Force per inch of pipe edge =	3.48	kips per inch	
Weld Stress based on Max. Weld Size =	10.69	ksi	Based on double weld (socket connection)
Weld Stress based on Min. Weld Size =	10.69	ksi	Based on double weld (socket connection)
Weld Yield Strength =	70	ksi	
Allowable Weld stress =	18.9	ksi	
Required weld size =	0.130	inches	
Design Weld Size =	**0.226**	**inches**	Based on double weld (socket connection)
Weld Length =	**25.13**	**inches**	Based on double weld (socket connection)

Conn.

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Truss Diagonal Splices

Bolted Splice Design

Maximum Axial Force in Diagonal =	7.90	kips
Bolt Dia. =	0.000	inches
Bolt Area =	#N/A	inches
Number of Bolts=	0	
Allowable Shear stress =	15	ksi (AASHTO Table 10.32.3C) Galvanized surface
Allowable Load on Connection =	#N/A	kips (single shear)

Welded Splice Design

Maximum Axial Force in Diagonal =	7.90	kips
Capacity of 1/4" weld =	6.72	kips per inch (double weld)
Required Length of Weld =	1.175	inches (based on 2 welds)
Minimum for angles =	6.0	inches (based on 2 welds 3" long)
Minimum for pipes =	12.0	inches (based on 4 welds 3" long)
Minimum Weld Length =	6.0	inches

Connection Plate Design

Total Force in 1/2 Plate =	7.90	kips
Stress in plate =	2.11	ksi
Allowable stress =	30.00	ksi

Connection Plate Weld

Force per inch of weld =	0.79	kips per inch
Capacity of 1/4" weld =	6.72	kips per inch (double weld)

Post Diagonal Connections

Bolted Splice Design

N/A - Single Post Design

Maximum Axial Force in Diagonal =	0.00	kips
Bolt Dia. =	0.875	inches
Bolt Area =	0.601	inches
Number of Bolts=	0	
Allowable Shear stress =	15	ksi (AASHTO Table 10.32.3C) Galvanized surface
Allowable Load on Connection =	0.0	kips (single shear)

Welded Splice Design

Maximum Axial Force in Diagonal =	0.00	kips
Capacity of 1/4" weld =	6.72	kips per inch (double weld)
Required Length of Weld =	0.000	inches (based on 2 welds)
Minimum for angles =	6.0	inches (based on 2 welds 3" long)
Minimum for pipes =	12.0	inches (based on 4 welds 3" long)
Minimum Weld Length =	12.0	inches

Connection Plate Design

Total Force in 1/2 Plate =	0.00	kips
Stress in plate =	0.00	ksi
Allowable stress =	30.00	ksi

Connection Plate Weld

Force per inch of weld =	0.00	kips per inch
Capacity of 1/4" weld =	6.72	kips per inch (double weld)

Truss Support Connection (use W6x8.5)

N/A - See Connection Below

Maximum Reaction =	4.36	kips (half reaction)
Capacity of 1/4" weld =	3.36	kips per inch (single weld)
Length of Weld Required =	0.649	inches (based on double weld)
Length of Weld Provided =	19.00	inches
Shear Capacity of W6x8.5 =	11.87	kips

Truss Support Connection (Single or Double pole) - Tri - Chord Only

Maximum Reaction (Vert) =	4.36	kips (max of left or right conn.)	Number of Chords =	3
Maximum wind Load (Horiz) =	5.23	kips (max of left or right conn.)	Poles (per end) =	1
Reaction per chord connection (Vert) =	2.18	kips	# of Connections =	2
Reaction per chord connection (Horiz) =	2.61	kips	Weld Size =	0.19 in
Area of Weld =	8.48	in^2		
Sweld =	22.62	in^3		
fv =	0.26	ksi		
fb =	1.79	ksi		
ft =	0.31	ksi		
(fv^2+(fb+ft)^2)^1/2 =	2.12	ksi		
Allowable stress of weld =	19	ksi		

Monotube Support Connection (Single Vertical Pole)

N/A - See Connection Above

Max Shear =	2.48 kips	Div by 2 because 2 u-bolts are always used
Monotube Dia. =	14.00 in	
U-bolt Leg Dia =	0.75 in	
Area of U-bolt Leg =	0.334 in^2	
Tension in U-bolt Leg =	0.54 kips	Based on depth of saddle equal to 0.3 * Diameter of Monotube
Stress in U-bolt =	1.62 ksi	
Allowable U-bolt stress =	18 ksi	Eq. 8-21
Stress Check	OK	

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Spread Footing Analysis

Spread Input Information: Note: width is in plane of trus, Length is perpendicular to plane of truss

Footing Designation Used		Rectangular Stem Dimensions Used				Above Soil (Unit Weight)	
Width	Length	Height	Width	Length	# of Sides	Stem Above Grade	Soil Cover
12.00	12.00	2.00	0.50	0.50	4	0.00	0.00

Circular Stem Dimensions Used			Used?
Diameter	Height	# of Sides	Y or N
0.00	0.00	0.00	NO

Analysis Results

Soil Pressures			F.S.(OB)	F.S.(SB)	F.S.(OB)
Toe Soil Pressure	Heel Soil Pressure	Max Soil Pressure	Overturning Ratio	Sliding Ratio	Sliding
1.00	1.00	1.00	Toe Ok	Toe Ok	0.00
			Heel Ok	Heel Ok	
			OK	OK	OK

Concrete or Reinforcing Over Limit	Include Circular Area in Calculations?		Circular Stem Restraints		
Concrete Reinforcing	Footing Stem	Circular Stem	Stem Type	Circular Stem	Stem
Allowable (Fc)	Lower Limit Grade (Fy)	Soil Unit Wt	Bars	Bars	Bars
2500	4000	0	0	0	0

Analysis Results

Note: Rounded up to use Numbers							
	Use As Provided	Area	Min Area	Bars	Bars	#	#
Footing Top Mat	12.00	144.00	1.800	4 #5	4 #5	4.00	4.00
Footing Bottom Mat	12.00	144.00	1.800	4 #5	4 #5	4.00	4.00
Square Stem(s)	0.00	0.00	0.000	0 #3	0 #3	0.00	0.00
Circular Stem	n/a	n/a	n/a	n/a	n/a	n/a	n/a

Load Factor of Base Soil Overturning:	1.00
Total volume of Concrete (with Reinforcing):	57.59CY

Footing Size	12'0.00" 12'0"	Footing Area	Bar Area	
Footing Min. Mat Uniform	324.00 SQ FT	144.00	1.800	Assumed Unit Weight of Soil
Footing Min. Mat Uniform	324.00	144.00	1.800	
		0.00	0.00	

		Footing Overbite	
Group 1	DL	1.00	WL+WIND FORCES PERPENDICULAR TO RAFE
Group 2 Case 1 Dy + Wx + .28W		1.00	WL+WIND FORCES TRANSVERSE (PARALLEL) TO RAFE
Group 2 Case 2 Dy + .28Wy + Wz		1.00	
Group 2 Case 3 Dy + .28Wy - Wz		1.00	Minimum wind pressure of 20 psf
Group 2 Case 3 Dy + .6Wx + Wz		1.00	Minimum wind pressure of 20 psf

LOAD COMBINATION RESULTS (Loads and Moments are for both sides)

Loads include overthrust

		Overall Dimensions				Portion of Base in Footing			Moment at Top of Ftg.			F.S. (OB)	F.S. (SB)	F.S. (OB)
Reactions		Upward	Resultant	Eccentricity	Overall	Actual	Soil Bearing	Load	Resisting	Driving	Ratio	Resisting	Sliding	Sliding
Left Support		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	n/a	n/a	n/a	n/a
Right Support	W1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	n/a	n/a	n/a	n/a
Left Support		42.66	42.66	0.00	0.00	4.62	1.016	0.00	127.98	0.00	0.00	0.00	0.00	0.00
Right Support	W2	42.66	42.66	0.00	0.00	4.62	1.016	0.00	127.98	0.00	0.00	0.00	0.00	0.00
Left Support		64.43	64.43	0.00	0.00	5.57	1.532	28.79	84.43	192.88	43.78	0.00	0.00	0.00
Right Support	W3	64.43	64.43	0.00	0.00	5.57	1.532	28.79	84.43	192.88	43.78	0.00	0.00	0.00
Left Support		84.20	84.20	0.00	0.00	6.57	2.002	43.19	84.43	252.26	57.23	0.00	0.00	0.00
Right Support	W4	84.20	84.20	0.00	0.00	6.57	2.002	43.19	84.43	252.26	57.23	0.00	0.00	0.00
Left Support		21.33	21.33	0.00	0.00	2.31	0.507	14.40	42.67	64.22	33.34	0.00	0.00	0.00
Right Support	W5	21.33	21.33	0.00	0.00	2.31	0.507	14.40	42.67	64.22	33.34	0.00	0.00	0.00
Left Support		19.50	19.50	0.00	0.00	2.31	0.507	21.59	42.67	58.50	27.33	0.00	0.00	0.00
Right Support	W6	19.50	19.50	0.00	0.00	2.31	0.507	21.59	42.67	58.50	27.33	0.00	0.00	0.00
Left Support		19.79	57.21	0.01	1.44	4.38	1.016	48.10	113.94	171.56	33.34	0.00	0.00	0.00
Right Support		19.79	57.21	0.01	1.44	4.38	1.016	48.10	113.94	171.56	33.34	0.00	0.00	0.00

Assumed Friction Factor for Sliding=0.5

Uplift and Sliding Checks (Article 12.5.3)

Loads include overthrust

		Net Pressures				
Reactions		Actual	at Left	at Right	Allow	
Left Support		0.00	0.00	0.00	0.00	
Right Support	W1	0.00	0.00	0.00	0.00	
Left Support		0.75	0.75	0.75	0.13	
Right Support	W2	0.75	0.75	0.75	0.13	
Left Support		1.13	1.13	1.13	0.19	
Right Support	W3	1.13	1.13	1.13	0.19	
Left Support		1.48	1.48	1.48	0.25	
Right Support	W4	1.48	1.48	1.48	0.25	
Left Support		0.37	0.36	0.38	0.07	
Right Support	W5	0.37	0.36	0.38	0.07	
Left Support		0.34	0.34	0.34	0.06	
Right Support	W6	0.34	0.34	0.34	0.06	
Left Support		0.67	0.66	0.67	0.07	
Right Support		0.67	0.66	0.67	0.07	

Assumed Friction Factor for Sliding=0.5

Load/Optional Footing Reinforcing

Concrete Length	Concrete Width	Footing Thickness	Cover		Bar Size	Bar Area	Bar Dia.	Bar Weight	#
Fc=2500		Fy=60	Top	Bot		Each	Each	Each	Mat
12.00	12.00	24.00	3.00	3.00	#5	0.31	0.625	1.043	16.000

Moment =	2975.52	(inch-kips)	Steel =	69.05	(sqin)
d =	4.047		Shear Stress =	22.47	(psi)
Jx reg. =	3.79	inches*2	Allow. st.=	53.03	(psi)
				OK	
Number of Bars	16	(based on design)			
Bar Spacing	7.200	inches (based on design)			
Max. Spacing =	18.00	inches			
Number of Bars	8	(based on max spacing)			
Number of Bars	16	(top and bottom)			
Rebar Size	#5				
Bar Length	10.58	feet			

Reinforcing Bar Properties			
Bar Size	Dia.	Dia.	Area/Ft
3	2.01	0.375	0.376
4	2.54	0.500	0.668
5	3.01	0.625	1.043
6	3.46	0.748	1.502
7	3.91	0.875	2.044
8	4.75	1.000	2.670
9	1.91	1.128	3.4
10	1.96	1.270	4.3
11	1.92	1.410	5.313
14	2.01	1.693	7.65
18	2.26	2.257	13.6

Transverse Footing Reinforcing

Concrete Length	Concrete Width	Footing Thickness	Cover		Bar Size	Bar Area	Bar Dia.	Bar Weight	#
Fc=2500		Fy=60	Top	Bot		Each	Each	Each	Mat
4.00	12.00	24.00	3.00	3.00	#5	0.31	0.625	1.043	16.000

Moment =	1648.77	(inch-kips)	Steel =	64.05	(sqin)
d =	4.047		Shear Stress =	12.45	(psi)
Mu reg. =	2.80	inches*2	Allow. st.=	53.03	(psi)
				OK	
Number of Bars	16	(based on design)			
Bar Spacing	10.286	inches (based on design)			
Max. Spacing =	18.00	inches			
Number of Bars	8	(based on max spacing)			
Number of Bars	16	(top and bottom)			
Rebar Size	#5				
Bar Length	11.58	feet			

Rectangular Stem Reinforcing (side Face)

HOT WPI #1#5 E #5 E SEE CIRCULAR STEM

Concrete Length	Concrete Width	Stem Thickness	Cover		Bar Size	Bar Area	Bar Dia.	Bar Weight	#
Fc=2500		Fy=60	Out	In		Each	Each	Each	Mat
4.00	0.50	12.00	2.00	0	#3	0.11	0.375	0.376	16.000

Moment =	617.42	(inch-kips)	Steel =	1.56	(sqin)
d =	8.687		Shear Stress =	0.94	(psi)
Av req. =	0.03	inches*2	Allow. st.=	53.03	(psi)
				OK	
Number of Bars	4	(based on design)			
Bar Spacing	48.000	inches (based on design)			
Max. Spacing =	18.00	inches			
Number of Bars	2	(based on max spacing)			
Number of Bars	4	(each face)			
Rebar Size	#3				
Bar Length	3.58	feet			

Rectangular Stem Reinforcing (end Face)

HOT WPI #1#5 E #5 E SEE CIRCULAR STEM

Concrete Length	Concrete Width	Stem Thickness	Cover		Bar Size	Bar Area	Bar Dia.	Bar Weight	#
Fc=2500		Fy=60	Out	In		Each	Each	Each	Mat
4.00	0.50	12.00	2.00	0	#3	0.11	0.375	0.376	16.000

Moment =	1509.31	(inch-kips)	Steel =	3.24	(sqin)
d =	8.687		Shear Stress =	2.30	(psi)
Av req. =	0.07	inches*2	Allow. st.=	53.03	(psi)
				OK	
Number of Bars	8	(based on design)			
Bar Spacing	4.572	inches (based on design)			
Max. Spacing =	18.00	inches			
Number of Bars	4	(based on max spacing)			
Number of Bars	8	(each face)			
Rebar Size	#3				
Bar Length	3.58	feet			

Stem Reinforcing (transverse)

Use bar bars at 12" HOT WPI #1#5 E #5 E SEE CIRCULAR STEM

Number of Bars	1	(based on design)
Number of Bars	1	(based on max spacing)
Bar Length	3.167	feet

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Circular Stem Design - For Use in Spread Footings with Circular Stem

f'c =	3.00	ksi	
Fy =	60	ksi	
Cc =	2.00	in	Clear cover is uniform around the cross section
h =	36.00	in	Outside Diameter of Column (Approx. 70" max)
Bar Size =	6	As =	0.44 in^2
		Dia =	0.75 in
Hoop Bar		As =	0.2 in^2
size =	4	Dia =	0.5 in
Spacing =	5.00	in	Approximate desired spacing of main reinforcing (assumes as max)
Φ=	1		

Determine if section is adequate for loads applied

Mu =	167.26	ft-kips	Mu = Resultant moment = sqrt(Mstrong^2+Mweak^2)
Pu =	4.36	kips	**IS SECTION OK? YES**

Calculate location of steel reinforcing around perimeter of column:

Dia. of inner ring of reinf.= 30.25 in
perimeter= 95.03 in

# of bars = 20 number of (even) bars that will fit in perimeter Program allows 42 bars maximum OK
Number of bar rows = 11
spacing = 3.03 (in) actual vertical spacing of bars

Note: Program orients bars so that one layer is on the centroid of column (conservative)

Calculate location of bars with respect to the extreme compression fiber:

Rebar level	Is rebar level in	Is steel used for Tension or Comp.?	# bars in each level	Area of Steel Calculation As tension	As comp
d1	2.88 in	Comp	1		0.44
d2	5.90 in	Comp	2		0.88
d3	8.93 in	Comp	2		0.88
d4	11.95 in	Comp	2		0.88
d5	14.98 in	Comp	2		0.88
d6	18.00 in	Steel Not Used	2		
d7	21.03 in	Tension	2	0.88	
d8	24.05 in	Tension	2	0.88	
d9	27.08 in	Tension	2	0.88	
d10	30.10 in	Tension	2	0.88	
d11	33.13 in	Tension	1	0.44	
d12	NA				
d13	NA				
d14	NA				
d15	NA				
d16	NA				
d17	NA				
			As tens =	3.96 As comp=	3.96

Centroid of Tension and Compression Steel from extreme compression fiber:
d(tension) = 26.40 in
d(comp) = 9.60 in

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Find max axial force: M=0 stand. Spec. 8.16.4.2.1

ΦPo = Φ[0.85*f'c(Ag-Ast)+Ast*fy]

Ag = 1017.9 in^2
Ast = 8.8 in^2

ΦPo = 3101.1 kip Mn = 0

Find axial and moment capacity at balanced strain condition: Stand. Spec 8.16.4.2.3

ΦPb = Φ[0.85*f'c*b'ab+A's'fs-As*fy]

ΦMb = Φ[0.85*f'c*b'ab(d-d"-ab/2)+A's'fs(d-d'-d")+As*fy*d"]

d = 26.40 (in) dist from extreme compression fiber to centroid of tension steel
d' = 9.60 (in) dist from extreme compression fiber to centroid of comp. steel
d" = 8.40 (in) dist from centroid of gross section to centroid of tension steel
ab = 14.06 in
β1 = 0.9
f's = 33.57 ksi
b = 35.13 in
A's = 3.96 in^2 As = 3.96 in^2

ΦPb = 1155.10 kip

ΦMb = 16931.00 in-kip = 1410.92 ft-kip

Find Moment Capacity of Section: P=0

Note: neglect compression steel

c = 5.89 (in) with a % error of 0.05 % OK
b = 25.51
θ = 90.24

Reinforcement Ratio: Used to check if fs=fy
ρ = 0.00588
ρb = 0.022638
Is ρ<.75ρb ? OK

ΦMn = As*fy(d-a/2)
5643.78 in-kip = 470.31 ft-kip Pn = 0

Determine if section is adequate for loads applied

Mu = 167.26495 ft-kips
Pu = 4.3608873 kips

Points for interaction diagram: Note: points are connected with straight lines

Article 8.15.4 Stand. Spec: The combined flexural and axial load capacity of compression members shall be taken as 35% of that from 8.16.4

	P	M	
1	1085.4	0	
2	404.29	493.82	
3	0	164.61	
4	4.3608873	167.265	Point 4 is from actual loads

Linear Interpolation Program #1 (upper line)

Are you in upper region? No

	Pu		Mu	
Value Below	1085.40		0.00	
Value at desired Loc.	4.36	x =	783.774	Max
Value Above	404.29		493.82	

Linear Interpolation Program #2 (lower line)

Are you in lower region? Yes

	Pu		Mu	
Value Below	404.29		493.82	
Value at desired Loc.	4.36	x =	168.161	Max
Value Above	0.00		164.61	

Circular Stem

143-5 ϕ d-d

Cost Data

Input	Number of Chords: Truss Chords	Truss Diagonals	Posts	3 Post Diagonals (Quantity)	Number of Webs per Unit: Post Bend Connection	Truss Chord Connection	Truss Diag Connection	Post Diag Connection	Truss Tube Connection	Foundation Concrete	Foundation Reinforcing
Cost Units	CY	CY	CY	CY	EA	EA	EA	EA	EA	CY	LB
Cost Per Unit or Connection	$162.00	$162.00	$162.00	$162.00	$25.00	$25.00	$25.00	$25.00	$25.00	$270.00	$1.00
Contingency Factor	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05
Adjusted Cost Per Unit	$170.10	$170.10	$170.10	$170.10	$26.25	$26.25	$26.25	$26.25	$26.25	$283.50	$1.05

Truss Chords

Chord	Actual OD (inches)	Wall Thick (inches)	Cost (each)	Analysis (each)	Cost
1	4.500	0.237	$1.00	$1.00	$2.00
2	4.00	0.237	$0.89	$0.89	$1.78
3	4.00	0.237	$0.89	$0.89	$1.78
4	4.00	0.237	$1.00	$1.00	$2.00
				Chord Cost	$7.56

Truss Diagonals

Diagonal	Section 1 Number	Section 1 Length (ft)	Section 1 Total Cost	Section 2 Number	Section 2 Length (ft)	Section 2 Total Cost	Section 3 Number	Section 3 Length (ft)	Section 3 Total Cost	Total all Diagonals (each) Cost
Size	4	4.00	$0.89	4	4.00	$0.89	4	4.00	$0.89	
Qty	4	4.00	$0.89	4	4.00	$0.89	4	4.00	$0.89	
Totals			$3.56			$3.56			$3.56	$10.67
Number of Side Panels	1							Angle Cost		$1.00
Number of Top Panels	2							Cost		$12.67
								Tube Cost		$19.00

Posts

Post	Inside Dia (inches)	Schedule (inches)	Total Length (each)	Weight (each)	Cost
Qty	4	0.337	47.47	15.997	$1,600.00
Totals	4.00	0.337	47.47	15.997	$1,600.00
				Chord Cost	$1,600.00

Post Diagonals & Horizontals

Post Diagonals	Diagonals: Number	Diagonals: Length	Diagonals: Total	Horizontals: Number	Horizontals: Length	Horizontals: Total	Total all Diagonals & Horizontals (each) Cost
Size	4	4.00	4.00	1	4.00	4.00	
Qty	4	4.00	4.00	1	4.00	4.00	
Totals			8.00			4.00	12.00
						Angle Cost	$1.00
						Cost	$12.67
						Tube Cost	$19.00

Connections

Number	Post Bend Connection	Truss Chord Connection	Truss Diag Connection	Post Diag Connection	Truss Tube Connection	Number of Webs	3
Size	4.500	4.500	4.500	4.500	4.500		
Cost	$25.00	$25.00	$25.00	$25.00	$25.00		
Total	$1,125.00	$100.00	$1,175.00	$100	$1,675	Total Cost	$4,075

Foundation

Styrian Finance — Concrete: 4.00 CY; Reinforcing: 120 LB; Footer Width: feet in Out

Footer	Concrete CY	Reinforcing LB
Cost	$270.00	$1.05
Total	$1,080.00	$126.00

Spread Footer — Concrete: 4.00 CY; Reinforcing: 120 LB

Footer	Concrete CY	Reinforcing LB
Cost	$270.00	$1.05
Total	$1,080.00	$126.00
		Chord Cost

Total weight	
Truss Chords	1700
Truss Diagonals	0
Posts	1440
Post Diagonals & Horizontals	0
Connections	0
Total weight (lbs)	3140

Summary

Truss Chords	$7.56
Truss Diagonals	$10.67
Posts	$1,600.00
Post Diagonals & Horizontals	$0.00
Connections	$4,075.00
Foundation	$1,332.00
Total Estimated Cost	$7,025.23

Connection Data

Swaglets

			Unit Cost	Cost
Outside Diameter =	50.00	inches		
Inside Diameter =	48.00	inches		
Thickness =	1			
Weight (w/o stiffeners) =	0.4	pounds	$0.55	$164.47
Number of Stiffeners =	4		$3.45	$13.80
Number of Webs =	3	Webs CAN' weld	$3.45	$10.35
Gusset Weld Size =	0.437			
Gusset Weld Length =	81.68	inches	$0.25	$20.42
Total Cost for each Swaglet connection =				$209.07

weight (lbs): 1744

Truss Spline (each leg)

			Unit Cost	Cost
Outside Diameter =	10.00	inches		
Inside Diameter =	8.00	inches		
Thickness =	0.750	inches		
Weight (Calculated) =	0.3	pounds	$0.55	$16.28
Number of Webs =	4		$3.45	$13.80
Number of Stiffeners =	4			
Gusset Weld Size =	0.437			
Gusset Weld Length =	81.68	inches	$0.25	$10.21
Total Cost for each Truss spline connection =				$40.29

weight (lbs): 30

Truss Diagonal Tub Plate

			Unit Cost	Cost
Thickness =	0.375	inches		
Width =	7.00	inches		
Tub Length =	12.00	inches		
Weight =	1.2	pounds	$0.55	$4.32
Weld Size =	0.25	inches		
Chord Weld Length =	24.00	inches		
Diagonal Weld Length =	4	inches		
Total Weld Length =	28.00	inches	$0.25	$7.00
Number of Webs =	2			
Number of Stiffeners =	2		$2.30	$4.60
Total Cost for each 120 diagonal tab plate connection =				$15.92

weight (lbs): 7

Post Diagonal Tub Plate

			Unit Cost	Cost
Thickness =	0.500	inches		
Width =	7.00	inches		
1/2 Length =	10.00	inches		
Weight =	1.7	pounds	$0.55	$1.76
Weld Size =	0.25	inches		
Chord Weld Length =	24.00	inches		
Diagonal Weld Length =	4	inches		
Total Weld Length =	28.00	inches	$0.25	$6.92
Number of Webs =	2			
Number of Stiffeners =	2		$2.30	$4.60
Total Cost for each 120 diagonal tab plate connection =				$13.28

weight (lbs): 10

Truss Support Member (2 post - 4 chord)

N/A - See Connection Below

			Unit Cost	Cost
Diameter =	Same as	Truss Chords		
Length =	4.17	feet	$0.10	($0.170)
Weld Size =	0.00	inches		
Total Length =	0.00	inches	$0.25	$17.42
			Total Cost	$17.25

weight (lbs): -6.80

Total Cost for each truss support connection = $17.25

Truss Support Member (1 post - 4 chord Cantilever)

			Unit Cost	Cost
Diameter =	Same as	8 inches Truss Chords		
Price Weight =		31.00 lb		
Tax of Procedure =		6.5 %		
Total Price Weight =		33.02 lb	$0.55	$18.84
Weld Size =		0.19 in		
Weld Length =		50.27 inches	$0.25	$12.57
# of Welds =		2	$2.30	$4.60
			Total Cost	$35.99

Total Cost for each truss support connection = $35.99

Truss Support Member (Bowstring Chord)

N/A - See Connection Above

			Unit Cost	Cost
wt of top plate =		54.45 lb		
wt of truss bends plate =		71.82 lb		
Tax of Procedure =		6.5 %		
Total Price Weight =		126.27 lb	$0.55	$69.45
Weld Size Saddle and Brace Arm =		0.44 inches		
Weld Length =		157.08 inches	$0.25	$39.68
Weld Size Post to cap =		0.375 inches		
Weld Length =		87.96 inches	$0.25	$22.00
# of Welds =		2	$2.30	$9.20
			Total Cost	$140.33

Total Cost for each truss support connection = $0.00

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Section Properties

Number of Posts per end	1	Number of Chords	3

Overhead Truss

Section 1

	Chord Area Ao	Mom. Of I Io	Dia. Area Ad	Total I Itot	Total S Stot	Total Area Atot	Chord Rmin	Weight per foot	Ice Area	Wind Area Chord	Wind Area Diags.	Diagonal R min	No. of Diags. per plane	Diagonal Length
Hor. Axis	2.68	4.771	0.94	1751	97.26	11.66	1.33	39.7	6.0	1.00	0.71	0.389	9	2.93
Vert. Axis	2.68	4.771	0.94	1751	84.13	11.66	1.33	39.7	6.0	1.00	0.71	0.389	9	2.93
	in^2	in^4	in^2	in^4	in^3	in^2	in.	lb/ft	ft^2/ft	ft^2/ft	ft^2/ft	in.		(feet)

Section 2

	Chord Area Ao	Mom. Of I Io	Dia. Area Ad	Total I Itot	Total S Stot	Total Area Atot	Chord Rmin	Weight per foot	Ice Area	Wind Area Chord	Wind Area Diags.	Diagonal R min	No. of Diags. per plane	Diagonal Length
Hor. Axis	2.68	4.771	0.94	1751	97.26	11.66	1.33	39.7	6.0	1.00	0.71	0.389	9	2.93
Vert. Axis	2.68	4.771	0.94	1751	84.13	11.66	1.33	39.7	6.0	1.00	0.71	0.389	9	2.93
	in^2	in^4	in^2	in^4	in^3	in^2	in.	lb/ft	ft^2/ft	ft^2/ft	ft^2/ft	in.		(feet)

Section 3 = Section 1

	Chord Area Ao	Mom. Of I Io	Dia. Area Ad	Total I Itot	Total S Stot	Total Area Atot	Chord Rmin	Weight per foot	Ice Area	Wind Area Chord	Wind Area Diags.	Diagonal R min	No. of Diags. per plane	Diagonal Length
Hor. Axis	2.68	4.77	0.94	1751	97.26	11.66	1.33	39.67	6.0	1.00	0.71	0.39	9.00	2.93
Vert. Axis	2.68	4.77	0.94	1751	84.13	11.66	1.33	39.67	6.0	1.00	0.71	0.39	9.00	2.93
	in^2	in^4	in^2	in^4	in^3	in^2	in.	lb/ft	ft^2/ft	ft^2/ft	ft^2/ft	in.		(feet)

Posts

Left Post

Chord Area Ao	Mom. Of I Io	Diag. Area Ad	Ixx Ixtot	Sxx Stot	Izz Iytot	Chord Rmin	Szz post	Weight	Ice Area	Wind Area Chord	Diagonal R min	Total Number of Diagonals	Diagonal Length
21.21	483.093	0.00	483.09	69.01	483.09	4.77	69.01	72.16	3.67	1.167	999	0	0.00
in^2	in^4	in^2	in^4	in^3	in^4	in.	in^3	lb/ft	ft^2/ft	ft^2/ft	in.		(feet)

Right Post

Chord Area Ao	Mom. Of I Io	Diag. Area Ad	Ixx Ixtot	Sxx Stot	Izz Iytot	Chord Rmin	Szz post	Weight	Ice Area	Wind Area Chord	Diagonal R min	Total Number of Diagonals	Diagonal Length
21.21	483.093	0.00	483.09	69.01	483.09	4.77	69.0	72.16	3.67	1.167	999	0	0.00
in^2	in^4	in^2	in^4	in^3	in^4	in.	in^3	lb/ft	ft^2/ft	ft^2/ft	in.		(feet)

Signs

Sign 1

Area	Weight	Ice Load	LW Ratio
582.1102	665	546	1.30567316
ft^2	lbs	lbs.	

Sign 2

Area	Weight	Ice Load	LW Ratio
193.8756	707	581	1.621221984
ft^2	lbs	lbs.	

Sign 3

Area	Weight	Ice Load	LW Ratio
0	0	0	0
ft^2	lbs	lbs.	

Section 1 & 3

Ice Area 4 =	8.0
Ice Area 3 =	6.0
Wind area diags 4 =	0.4713
Wind area diags 3 =	0.7070
Ice Area 1 =	1.047195

Section 2

Ice Area 4 =	8.0
Ice Area 3 =	6.0
Wind area diags 4 =	0.4713
Wind area diags 3 =	0.7070
Ice Area 1 =	1.0472

145-sign-d

Wind Pressure Calculations

Pz=.00256*Kz*Qh*V*I*Cd

Height Factor	Dead Factor	Basic Wind Velocity	Importance Factor	Velocity Conversion Factor
Kz	G	V	I	Cv
0.95	1.14	90	1.0	1.00

Calculation of Kz

Kz = 2.01 (h/900)^(2/9.5) =

Elevation	
C.O.G	
elp+truss	
0.951	25.73005

Horizontal Trusses

SECTION 1				SECTION 2			
Drag Coeff. (chord)	Drag Coeff. (diagonal)	Wind Pressure (chord)	Wind Pressure (diagonal)	Drag Coeff. (chord)	Drag Coeff. (diagonal)	Wind Pressure (chord)	Wind Pressure (diagonal)
Cd	Cd	Pz	Pz	Cd	Cd	Pz	Pz
1.10	1.70	24.73	38.22	1.10	1.70	24.73	38.22

Horizontal Truss Drag Coefficient Calculation (Cylindrical Members)

Section 1					Section 2				
Min. Value	Cd	Max. Value	Cv*h*d Chord	Cv*h*d Diagonal	Min. Value	Cd	Max. Value	Cv*h*d Chord	Cv*h*d Diagonal
0	1.10	39	30.0	0	0	1.10	39	30.0	0
39	1.05	78			39	1.05	78		
78	0.45				78	0.45			

Signs

SIGN 1		SIGN 2		SIGN 3	
Drag Coeff.	Wind Pressure	Drag Coeff.	Wind Pressure	Drag Coeff.	Wind Pressure
Cd	Pz	Cd	Pz	Cd	Pz
1.141	25.66	1.163	26.16	1.556	29.61

Horizontal Truss Diagonal Drag Coefficient (Flat Members) 1.70

Vertical Posts

LEFT SIDE		RIGHT SIDE	
Drag Coeff.	Wind Pressure	Drag Coeff.	Wind Pressure
Cd	Pz	Cd	Pz
0.45	10.12	0.45	10.12

INTERPOLATE SIGN 1

L/W =	1.305973	L/W	Cd
Cd =	1.141	1	1.12
		2	1.19
		5	1.20
		10	1.20
		15	1.30

USED IN CALCULATION				
L/W1=	1	C1=	1.12	1.12
L/W2=	2	C2=	1.19	

INTERPOLATE SIGN 2

L/W =	1.821226	L/W	Cd
Cd =	1.163	1	1.12
		2	1.19
		5	1.20
		10	1.23
		15	1.30

USED IN CALCULATION				
L/W1=	1	C1=	1.12	1.12
L/W2=	2	C2=	1.19	

INTERPOLATE SIGN 3

L/W =	0	L/W	Cd
Cd =	1.000	1	1.12
		2	1.19
		5	1.20
		10	1.23
		15	1.30

USED IN CALCULATION				
L/W1=	1	C1=	1.12	1.12
L/W2=	2	C2=	1.19	

*For Group Load Combination III minimum pressure Pz = 25 psf

	Weighted Avg Pressure	Used for Group III Wind
Section 1 Truss Pz =	33.32	33.32
Section 2 Truss Pz =	30.32	30.32
Sign 1 Pz =	25.66	25.66
Sign 2 Pz =	26.16	26.16
Sign 3 Pz =	23.61	25.00
Left Post =	10.12	25.00
Right Post =	10.12	25.00

Drag Coefficient for Vertical Posts

Left Vertical Post				Right Vertical Post			
Min. Value	Cd	Max. Value	Cv*h*d	Min. Value	Cd	Max. Value	Cv*h*d
0	1.00	39	105.0	0	1.10	39	105.0
39	0.30	78		39	0.30	78	
78	0.45			78	0.45		

146-Sign-3

Moments and Shears on Overhead Truss Due to Wind Loads

Span	Wind Load on truss Section 1	Wind Load on truss Section 2	Wind Load on truss (plf)	Wind Load on Signs Load (kips)	Dist. from Left (feet)	
feet	(plf)	(plf)	(plf)	3.87	30.66	P1 Left Sign
63.97	51.75	51.75	51.75	4.15	47.73	P2 Center Sign
				0.50	0.00	P3 Right Sign

Total Uniform Load =	0.052 klf	Total Load =	11.33 kips

Left Reaction	Right Reaction
4.73 kips	6.61 kips

Moments and Shears

X/L	Distance	P1 dist.	P2 dist.	P3 dist.	Moment
0.0	0.0	0	0	0	0.00
0.1	6.4	0	0	6.397	29.17
0.2	12.8	0	0	12.794	56.23
0.3	19.2	0	0	19.191	81.17
0.4	25.6	0	0	25.588	103.99
0.5	32.0	1.325	0	31.985	119.56
0.6	38.4	7.722	0	38.382	113.36
0.7	44.8	14.119	0	44.779	105.04
0.8	51.2	20.516	3.446	51.176	80.31
0.9	57.6	26.913	9.843	57.573	41.21
1.0	64.0	33.31	16.24	63.97	0.00

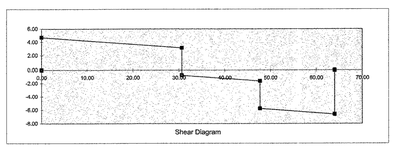
Values for Shear Diagram	
0.00	0.00
0.00	4.73
30.66	3.14
30.66	-0.74
47.73	-1.62
47.73	-5.77
47.73	-1.62
47.73	-5.77
64.0	-6.61
64.0	0.00

Shear at Point Loads		Shear Left	Shear Right	Max or Min
At Left Reaction	0.00	0.00	4.73	4.73
At Point P1	120.88	3.14	-0.74	3.14
At Point P2	100.49	-1.62	-5.77	-5.77
At Point P3	0.00	-3.30	-3.30	-3.30
At Right Reaction	0.00	-6.61	0.00	-6.61

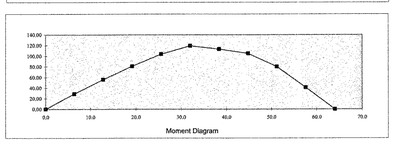
	Myy	Shearxx
Maximums	119.56	4.73
Minimums	0.00	-6.61

Forces at Field Splices and Mid-Span

Left Side		Right Side		Mid-Span	
Location	31.99 feet	Location	63.97 feet	Location	31.99 feet
Left Reaction	4.73 kips	Left Reaction	4.73 kips	Left Reaction	4.73 kips
Point Load 1	3.87 kips	Point Load 1	3.87 kips	Point Load 1	3.87 kips
Point Load 2	0.00 kips	Point Load 2	4.15 kips	Point Load 2	0.00 kips
Point Load 3	0.00 kips	Point Load 3	0.00 kips	Point Load 3	0.00 kips
Uniform Load	0.052 kips per foot	Uniform Load	0.052 kips per foot	Uniform Load	0.052 kips per foot
Shear at splice	-0.80 kips	Shear at splice	-6.61 kips	Shear at Mid-Span	-0.80 kips
Moment at splice	119.56 kip feet	Moment at splice	-0.03 kip feet	Mom. at Mid-Span	119.56 kip feet



Shear Diagram



Moment Diagram

147-Sign-d

Group Load Combination III - Moments and Shears on Overhead Truss Due to Wind Loads

Span	Wind Load on truss Section 1	Wind Load on truss Section 2	Wind Load on truss'	Wind Load on Signs		
				Load (klbs)	Dist. from Left (feet)	
feet	(plf)	(plf)	(plf)	3.87	30.66	P1 Left Sign
63.97	51.75	51.75	51.75	4.15	47.73	P2 Center Sign
				0.00	0.00	P3 Right Sign

Total Uniform Load =	0.052 klf

Total Load =	11.33 kips

Left Reaction
4.73 kips

Right Reaction
6.61 kips

Moments and Shears

X/L	Distance	P1 dist.	P2 dist.	P3 dist.	Moment
0.0	0.0	0	0	0	0.00
0.1	6.4	0	0	6.397	29.17
0.2	12.8	0	0	12.794	56.23
0.3	19.2	0	0	19.191	81.17
0.4	25.6	0	0	25.588	103.99
0.5	32.0	1.325	0	31.985	119.66
0.6	38.4	7.722	0	38.382	113.38
0.7	44.8	14.119	0	44.779	105.04
0.8	51.2	20.516	3.448	51.176	80.31
0.9	57.6	26.913	9.843	57.573	41.21
1.0	64.0	33.31	16.24	63.97	0.00

Values for Shear Diagram	
0.00	0.00
0.00	4.73
30.66	3.14
30.66	-0.74
47.73	-1.62
47.73	-5.77
47.73	-1.62
47.73	-5.77
64.0	-6.61
64.0	0.00

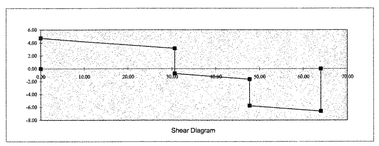
Shear at Point Loads

		Shear Left	Shear Right	Max or Min
At Left Reaction	0.00	0.00	4.73	4.73
At Point P1	120.58	3.14	-0.74	3.14
At Point P2	100.49	-1.62	-5.77	-5.77
At Point P3	0.00	-3.30	-3.30	-3.30
At Right Reaction	0.00	-6.61	0.00	-6.61

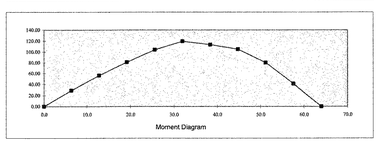
	Myy	Shearxx
Maximums	119.56	4.73
Minimums	0.00	-6.61

Forces at Field Splices and Mid-Span

Left Side		Right Side		Mid-Span	
Location	31.99 feet	Location	63.97 feet	Location	31.99 feet
Left Reaction	4.73 kips	Left Reaction	4.73 kips	Left Reaction	4.73 kips
Point Load 1	3.87 kips	Point Load 1	3.87 kips	Point Load 1	3.87 kips
Point Load 2	0.00 kips	Point Load 2	4.15 kips	Point Load 2	0.00 kips
Point Load 3	0.00 kips	Point Load 3	0.00 kips	Point Load 3	0.00 kips
Uniform Load	0.052 kips per foot	Uniform Load	0.052 kips per foot	Uniform Load	0.052 kips per foot
Shear at splice	-0.80 kips	Shear at splice	-6.61 kips	Shear at Mid-Span	-0.80 kips
Moment at splice	119.56 kip feet	Moment at splice	-0.03 kip feet	Mom. at Mid-Span	119.56 kip feet



Shear Diagram



Moment Diagram

148-Sign-d

Moments and Shears on Overhead Truss Due to Dead Loads

Span	Dead Load on Truss	Dead Load on Signs		
		Load	Dist. from Left	
(feet)	(plf)	(kips)	(feet)	
63.97	40	0.66	30.66	P1 Left Sign
		0.71	47.73	P2 Center Sign
		0.00	0.00	P3 Right Sign

Total Uniform Load =	0.04 klf

Total Load =	3.91 kips

Left Reaction
1.79 kips

Right Reaction
2.11 kips

Moments and Shears

NO.	Distance	P1 dist.	P2 dist.	P3 dist.	Moment
0.0	0.0	0	0	0	0.00
0.1	6.4	0	0	6.397	10.67
0.2	12.8	0	0	12.794	19.71
0.3	19.2	0	0	19.191	27.13
0.4	25.6	0	0	25.588	32.93
0.5	32.0	1.325	0	31.985	36.22
0.6	38.4	7.722	0	38.382	34.52
0.7	44.8	14.119	0	44.779	31.20
0.8	51.2	20.516	3.448	51.176	23.81
0.9	57.6	26.913	9.845	57.573	12.72
1.0	64.0	33.31	16.24	63.97	0.00

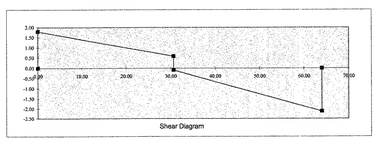
Values for Shear Diagram	
0.00	0.00
0.00	1.79
30.66	0.58
30.66	-0.09
30.66	0.58
30.66	-0.09
30.66	0.58
30.66	-0.09
64.0	-2.11
64.0	0.00

Shear at Point Loads		Shear Left	Shear Right	Max or Min
At Left Reaction	0.00	0.00	1.79	1.79
At Point P1	30.37	0.58	-0.09	0.58
At Point P2	29.11	-0.75	-1.47	-1.47
At Point P3	0.00	0.42	0.42	0.42
At Right Reaction	0.00	-2.11	0.00	-2.11

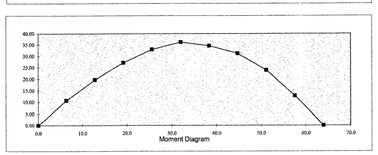
	Moment	Shear
Maximum	36.22	1.79
Minimum	0.00	-3.11

Forces at Field Splices and at Mid-Span

Left Side		Right Side		Mid-Span	
Location	31.99 feet	Location	63.97 feet	Location	31.99 feet
Left Reaction	1.79 kips	Left Reaction	1.79 kips	Left Reaction	1.79 kips
Point Load 1	0.66 kips	Point Load 1	0.66 kips	Point Load 1	0.66 kips
Point Load 2	0.00 kips	Point Load 2	0.71 kips	Point Load 2	0.00 kips
Point Load 3	0.00 kips	Point Load 3	0.00 kips	Point Load 3	0.00 kips
Uniform Load	0.04 kips per foot	Uniform Load	0.04 kips per foot	Uniform Load	0.04 kips per foot
Shear at splice	-0.14 kips	Shear at splice	-2.12 kips	Shear at splice	-0.14 kips
Moment at splice	36.22 kip feet	Moment at splice	-0.01 kip feet	Moment at splice	36.22 kip feet



Shear Diagram



Moment Diagram

149-Sign-d

Moments and Shears on Overhead Truss Due to Ice Loads

Span	Ice Load on truss	Ice Load on Signs		
		Load	Dist. from Left	
(feet)	(plf)	(kips)	(feet)	
63.97	18	0.55	30.66	P1 Left Sign
		0.58	47.73	P2 Center Sign
		0.00	0.00	P3 Right Sign

Total Uniform Load =	0.02 klf

Total Load =	2.27 kips

Left Reaction
1.00 kips

Right Reaction
1.27 kips

Moments and Shears

X/L	Distance	P1 dist.	P2 dist.	P3 dist.	Moment
0.0	0.0	0	0	0	0.00
0.1	6.4	0	0	6.397	6.06
0.2	12.8	0	0	12.794	11.39
0.3	19.2	0	0	19.191	15.99
0.4	25.6	0	0	25.588	19.65
0.5	32.0	1.525	0	31.985	22.25
0.6	38.4	7.722	0	38.382	21.16
0.7	44.8	14.119	0	44.779	19.33
0.8	51.2	20.516	3.446	51.176	14.76
0.9	57.6	26.913	9.843	57.573	7.75
1.0	64.0	33.31	16.24	63.97	0.00

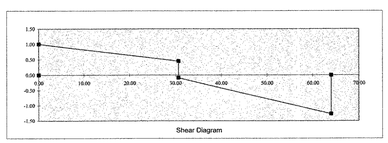
Values for Shear Diagram	
0.00	0.00
0.00	1.00
30.66	0.46
30.66	-0.09
30.66	0.46
30.66	-0.09
30.66	0.46
30.66	-0.09
64.0	-1.27
64.0	0.00

Shear at Point Loads		Shear Left	Shear Right	Max or Min
At Left Reaction	0.00	0.00	1.00	1.00
At Point P1	22.39	0.46	-0.09	0.46
At Point P2	18.23	-0.40	-0.98	-0.98
At Point P3	0.00	-0.12	-0.12	-0.12
At Right Reaction	0.00	-1.27	0.00	-1.27

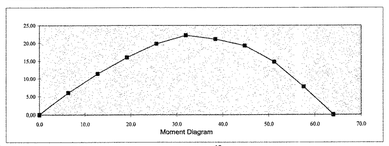
	Moment	Shear
Maximum	22.25	1.00
Minimum	0.00	-1.27

Forces at Field Splices and at Mid-Span

Left Side		Right Side		Mid-Span	
Location	31.99 feet	Location	63.97 feet	Location	31.99 feet
Left Reaction	1.00 kips	Left Reaction	1.00 kips	Left Reaction	1.00 kips
Point Load 1	0.55 kips	Point Load 1	0.55 kips	Point Load 1	0.55 kips
Point Load 2	0.00 kips	Point Load 2	0.58 kips	Point Load 2	0.00 kips
Point Load 3	0.00 kips	Point Load 3	0.00 kips	Point Load 3	0.00 kips
Uniform Load	0.02 kips per foot	Uniform Load	0.02 kips per foot	Uniform Load	0.02 kips per foot
Shear at splice	-0.11 kips	Shear at splice	-1.27 kips	Shear at splice	-0.11 kips
Moment at splice	22.25 kip feet	Moment at splice	-0.01 kip feet	Moment at splice	22.25 kip feet



Shear Diagram



Moment Diagram

150-Signed

Horizontal Truss Group Loads

Group Load	Load Combination	Percent Overload	Remark
1	DL	1.00	
2	DL+W	1.33	
3	DL+Ice+.5W	1.33	Minimum Pz = 25.0 psf

Horizontal Overhead Truss Analysis

Location		Mvert (kip-ft)			Mhoriz. (kip-ft)				Vhoriz. (kips)				Vvert (kips)		
		DL	ICE	WIND	DL	ICE	WIND	WIND II	DL	ICE	WIND	WIND II	DL	ICE	WIND
Left Support	LOAD CASES	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.73	4.73	1.79	1.00	0.00
Left Splice		36.22	22.25	0.00	0.00	0.00	119.56	119.56	0.00	0.00	0.80	0.80	0.14	0.11	0.00
Midspan		36.22	22.25	0.00	0.00	0.00	119.56	119.56	0.00	0.00	-0.80	0.80	-0.14	-0.11	0.00
Sign 1		36.37	22.39	0.00	0.00	0.00	120.58	120.58	0.00	0.00	3.14	3.14	0.58	0.46	0.00
Sign 2		29.11	18.23	0.00	0.00	0.00	100.49	100.49	0.00	0.00	5.77	5.77	1.47	0.98	0.00
Sign 3		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.30	3.30	0.42	0.12	0.00
Right Splice		-0.01	-0.01	0.00	0.00	0.00	-0.03	-0.03	0.00	0.00	6.61	6.61	2.12	1.27	0.00
Right Support		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.61	6.61	2.11	1.27	0.00

GROUP LOAD COMBINATIONS

		Location	Section	Bending About Horizontal Axis			Bending About Vertical Axis			SHEAR	SHEAR	Combined Forces		
				Mvert	Axial Stress	Axial Force	Mhoriz.	Axial Stress	Axial Force	Horizontal	Vertical	AXIAL (Fa)		SHEAR (Fv)
												Section 1	Section 2	Diagonal
		ft		kip-ft	ksi	kips	kip-ft	ksi	kips	kips	kips	kips	kips	kips
Left Support	GROUP LOAD 1	0.00	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.79	0.00	0.00	1.79
Left Splice		31.99	1	36.22	4.47	11.98	0.00	0.00	0.00	0.00	0.14	11.98	0.00	0.14
Midspan		31.99	1	36.22	4.47	11.98	0.00	0.00	0.00	0.00	-0.14	11.98	0.00	0.00
Sign 1		30.66	1	36.37	4.49	12.02	0.00	0.00	0.00	0.00	0.58	12.02	0.00	0.58
Sign 2		47.73	2	29.11	3.59	9.63	0.00	0.00	0.00	0.00	1.47	0.00	9.63	1.47
Sign 3		0.00	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.42	0.00	0.00	0.42
Right Splice		63.97	1	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	2.12	0.00	0.00	2.12
Right Support		63.97	2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.11	0.00	0.00	2.11
Left Support	GROUP LOAD 2	0.00	1	0.00	0.00	0.00	0.00	0.00	0.00	3.55	1.39	0.00	0.00	3.55
Left Splice		31.99	1	27.23	3.36	9.00	89.90	12.82	34.36	0.60	0.10	43.36	0.00	0.69
Midspan		31.99	1	27.24	3.36	9.00	89.90	12.82	34.36	-0.60	-0.10	43.36	0.00	-0.10
Sign 1		30.66	1	27.35	3.37	9.04	90.66	12.93	34.65	2.38	0.43	43.69	0.00	2.36
Sign 2		47.73	2	21.89	2.70	7.24	75.56	10.78	28.88	4.34	1.11	0.00	36.12	4.34
Sign 3		0.00	1	0.00	0.00	0.00	0.00	0.00	0.00	2.48	0.32	0.00	0.00	2.48
Right Splice		63.97	1	-0.01	0.00	0.00	-0.02	0.00	-0.01	4.97	1.59	-0.01	0.00	4.97
Right Support		63.97	2	0.00	0.00	0.00	0.00	0.00	0.00	4.97	1.58	0.00	0.00	4.97
Left Support	GROUP LOAD 3	0.00	1	0.00	0.00	0.00	0.00	0.00	0.00	1.78	2.10	0.00	0.00	2.10
Left Splice		31.99	1	43.97	5.42	14.54	44.95	6.41	17.18	0.30	0.19	31.72	0.00	0.30
Midspan		31.99	1	43.97	5.42	14.54	44.95	6.41	17.18	0.60	-0.19	31.72	0.00	0.60
Sign 1		30.66	1	44.18	5.45	14.61	45.33	6.47	17.33	1.18	0.78	31.93	0.00	1.18
Sign 2		47.73	2	35.60	4.39	11.77	37.78	5.39	14.44	2.17	1.84	0.00	28.21	2.17
Sign 3		0.00	1	0.00	0.00	0.00	0.00	0.00	0.00	1.24	0.41	0.00	0.00	1.24
Right Splice		63.97	1	-0.01	0.00	0.00	-0.01	0.00	0.00	2.48	2.54	-0.01	0.00	2.54
Right Support		63.97	2	0.00	0.00	0.00	0.00	0.00	0.00	2.48	2.54	0.00	0.00	2.54
										4.97	2.54	43.69	36.12	4.97

		Location	Section	Monotube Forces							
				Section 1				Section 2			
		ft		Mvert kip-ft	Mhoriz. kip-ft	H Shear kips	V Shear kips	Mvert kip-ft	Mhoriz. kip-ft	H Shear kips	V Shear kips
Left Support	GROUP LOAD 1	0.00	1	0.00	0.00	0.00	1.79	0.00	0.00	0.00	0.00
Left Splice		31.99	1	36.22	0.00	0.00	0.14	0.00	0.00	0.00	0.00
Midspan		31.99	1	36.22	0.00	0.00	-0.14	0.00	0.00	0.00	0.00
Sign 1		30.66	1	36.37	0.00	0.00	0.58	0.00	0.00	0.00	0.00
Sign 2		47.73	2	0.00	0.00	0.00	0.00	29.11	0.00	0.00	1.47
Sign 3		0.00	1	0.00	0.00	0.00	0.42	0.00	0.00	0.00	0.00
Right Splice		63.97	1	-0.01	0.00	0.00	2.12	0.00	0.00	0.00	0.00
Right Support		63.97	2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.11
Left Support	GROUP LOAD 2	0.00	1	0.00	0.00	3.55	1.39	0.00	0.00	0.00	0.00
Left Splice		31.99	1	27.23	89.90	0.60	0.10	0.00	0.00	0.00	0.00
Midspan		31.99	1	27.24	89.90	-0.60	-0.10	0.00	0.00	0.00	0.00
Sign 1		30.66	1	27.35	90.66	2.38	0.43	0.00	0.00	0.00	0.00
Sign 2		47.73	2	0.00	0.00	0.00	0.00	21.89	75.56	4.34	1.11
Sign 3		0.00	1	0.00	0.00	2.48	0.32	0.00	0.00	0.00	0.00
Right Splice		63.97	1	-0.01	-0.02	4.97	1.59	0.00	0.00	0.00	0.00
Right Support		63.97	2	0.00	0.00	0.00	0.00	0.00	0.00	4.97	1.59
Left Support	GROUP LOAD 3	0.00	1	0.00	0.00	1.78	2.10	0.00	0.00	0.00	0.00
Left Splice		31.99	1	43.97	44.95	0.30	0.19	0.00	0.00	0.00	0.00
Midspan		31.99	1	43.97	44.95	0.60	-0.19	0.00	0.00	0.00	0.00
Sign 1		30.66	1	44.18	45.33	1.18	0.78	0.00	0.00	0.00	0.00
Sign 2		47.73	2	0.00	0.00	0.00	0.00	35.60	37.78	2.17	1.84
Sign 3		0.00	1	0.00	0.00	1.24	0.41	0.00	0.00	0.00	0.00
Right Splice		63.97	1	-0.01	-0.01	2.48	2.54	0.00	0.00	0.00	0.00
Right Support		63.97	2	0.00	0.00	0.00	0.00	0.00	0.00	2.48	2.54
				44.18	90.66	4.97	2.54	35.60	75.56	4.97	2.54

	Mvert	Mhoriz.	SHEAR Horizontal	SHEAR Vertical
	kip-ft	kip-ft	kips	kips
For Monotube Design Only - Section 1	44.18	90.66	4.97	2.54
For Monotube Design Only - Section 2	35.60	75.56	4.97	2.54
At Splice	43.97	89.90	0.60	0.19

157 - Signed

VERTICAL TRUSS LOAD COMBINATIONS

		Percent Overstress	
Group I	DL	1.00	
Group II Case 1	DL + Wn + .2Wt	1.33	Wn = WIND FORCES IN THE X DIRECTION
Group II Case 2	DL + .8Wn + .3Wt	1.33	
Group III Case 1	DL + ICE + .5Wn + .1Wt	1.33	Minimum wind pressure of 25 psf
Group III Case 2	DL + ICE + .3Wn + .15Wt	1.33	Minimum wind pressure of 25 psf

LOADS ON VERTICAL POSTS

Location	LOADS	vxx (kips/ft)				AXIAL (kips/ft)			Vxx				AXIAL		
		DL	ICE	WIND	WIND III	DL	ICE	WIND	DL	ICE	WIND	WIND III	DL	ICE	WIND
Left Support		0.00	0.00	0.012	0.029	0.072	0.011	0.00	0.00	0.00	4.73	4.75	1.79	1.00	0.00
Right Support		0.00	0.00	0.012	0.029	0.072	0.011	0.00	0.00	0.00	6.61	6.61	2.11	1.27	0.00
										Wt =	11.33	11.33			

Depth of Horizontal Truss Dt	Total left Post Ht. Hl	Total Right Post Ht. Hr
3.00	27.27	29.06

LOAD COMBINATION RESULTS (Loads and Moments are for both posts)

Reactions		Mstrong kip-ft	Mweak kip-ft	Vstrong kips	Wind Tr kips	Axial kips	Relative Stiffness Tranverse Wind Wt kips
Left Support	G I	0.00	0.00	0.00	0	3.76	0
Right Support		0.00	0.00	0.00	0	4.21	0
Left Support	GII C1	94.89	24.83	3.92	0.99	2.83	6.24
Right Support		140.70	21.88	5.23	0.82	3.17	5.10
Left Support	GII C2	56.93	37.24	2.28	1.48	2.83	6.24
Right Support		84.42	32.82	3.14	1.23	3.17	5.10
Left Support	GIII C1	49.87	12.41	2.08	0.49	3.81	6.24
Right Support		73.10	10.94	2.80	0.41	4.36	5.10
Left Support	GIII C2	29.92	18.62	1.25	0.49	3.81	6.24
Right Support		43.86	16.41	1.66	0.41	4.36	5.10

Posts

Left Post

Chord Area Ac	Mom. Of I Ix	Diag. Area Ad	Ixx Ixtot	Sxx Stot	Izz	Chord Rmin	Szz	Weight	Ice Area	Wind Area Chord	Diagonal R min
21.21	483.063	0.00	483	69.01	483.09	4.77	69.0	72.16	3.67	1.167	ssss
in^2	in^4	in^2	in^4	in^3	in^4	in.	in^3	lb/ft	ft^2/ft	ft^2/ft	in.

Right Post

Chord Area Ac	Mom. Of I Ix	Diag. Area Ad	Ixx Ixtot	Sxx Stot	Izz	Chord Rmin	Szz	Weight	Ice Area	Wind Area Chord	Diagonal R min
21.21	483.093	0.00	483	69.01	483.09	4.77	69.0	72.18	3.67	1.167	ssss
in^2	in^4	in^2	in^4	in^3	in^4	in.	in^3	lb/ft	ft^2/ft	ft^2/ft	in.

LOAD COMBINATION RESULTS (Per Post for design)

Reactions		Max. Axial kips	Min. Axial kips	Mstrong kip-ft	Mweak kip-ft	Mmax kip-ft	V kips
Left Support	G I	3.76	3.76	0.00	0.00	0.00	0.00
Right Support		4.21	4.21	0.00	0.00	0.00	0.00
Left Support	GII C1	2.83	2.83	94.89	24.83	94.89	3.92
Right Support		3.17	3.17	140.70	21.88	140.70	5.29
Left Support	GII C2	2.83	2.83	56.93	37.24	56.93	2.72
Right Support		3.17	3.17	84.42	32.82	84.42	3.37
Left Support	GIII C1	3.81	3.81	49.87	12.41	49.87	2.13
Right Support		4.36	4.36	73.10	10.94	73.10	2.83
Left Support	GIII C2	3.81	3.81	29.92	18.62	29.92	1.34
Right Support		4.36	4.36	43.86	16.41	43.86	1.73

Number of Posts	1

152-Sign-d

Horizontal Truss Analysis FALSE

Section 1 - Chords

Unbraced Length (in.)	Pipe Diameter (in.)	Wall Thickness (in.)	Pipe Area (in.^2)	Chord Yield Str. (ksi)	Max. Axial Force kips	Column Slenderness Cc	kL/Rmin	fa Compression (ksi)	Fa Compression (ksi)	RESULT C/D
72.0	4.000	0.226	2.68	42.0	43.69	116.7	53.95	16.31	20.52	0.79

Section 2 - Chords

Unbraced Length (in.)	Pipe Diameter (in.)	Wall Thickness (in.)	Pipe Area (in.^2)	Chord Yield Str. (ksi)	Max. Axial Force kips	Column Slenderness Cc	kL/Rmin	fa Compression (ksi)	Fa Compression (ksi)	RESULT C/D
72.0	4.000	0.226	2.68	42.0	36.12	116.7	53.95	13.48	20.52	0.66

Diagonals -Horizontal

Unbraced Length (in.)	Pipe or Angle	Diagonal Area (in.^2)	R min (in.)	Chord Yield Str. (ksi)	Max. Axial Force kips	Column Slenderness Cc	kL/Rmin	fa Compression (ksi)	Fa Compression (ksi)	RESULT C/D
35.2	ANGLE	0.94	0.39	36.0	7.90	126.1	90.43	8.42	14.15	0.60

Diagonals - Vertical

Unbraced Length (in.)	Pipe or Angle	Diagonal Area (in.^2)	R min (in.)	Chord Yield Str. (ksi)	Max. Axial Force kips	Column Slenderness Cc	kL/Rmin	fa Compression (ksi)	Fa Compression (ksi)	RESULT C/D
35.2	ANGLE	0.94	0.39	36.0	4.04	126.1	90.43	4.31	14.15	0.30

Deflections at Mid-Span

Span = 767.64 inches
I = 1751 in^4

	Uniform Load		Point Loads			Mid-Span
	Load plf	Load k/inch	Load kips	Dist. A inches	Dist. B inches	Deflection inches
Dead Load of Truss	40	0.0033059				0.29
Dead Load of Sign 1			0.66	367.92	399.72	0.1231
Dead Load of Sign 2			0.71	572.76	194.88	0.0928
Dead Load of Sign 3			0.00	0.00	0.00	0.0000
Ice on Truss	18	0.0014924				0.13
Ice on Sign 1			0.55	367.92	399.72	0.1012
Ice on Sign 2			0.58	572.76	194.88	0.0763
Ice on Sign 3			0.00	0.00	0.00	0.0000

Total Defl. (DL+Ice)	0.82	inches
Allowable Deflection	5.12	inches

Dead Load Deflection	0.51	inches
Extra Camber (L/1000)	0.76764	inches
Total Camber	1.28	inches

153-SIGN-2

VERTICAL TRUSS ANALYSIS | Number of Posts | 1

Local Building AASHTO 5.8

Left Post

Outside Dia.	Wall Thick.	Yield Str.	λ	λp	λr	Unsw	Result
(inches)	(inches)	(ksi)					
14.000	0.250	42.0	28.00	80.#/	180.8	300.5	Compact

Right Post

Outside Dia.	Wall Thick.	Yield Str.	λ	λp	λr	Unsw	Result
(inches)	(inches)	(ksi)					
14.000	0.250	42.0	28.00	80.8	180.8	300.5	Compact

Diagonals

Leg Size	Thickness	Pole Dia.	Wall Thk.	Yield Str.	λ	λp	λr	Result
(inches)	(inches)	(inches)	(inches)	(ksi)				
0.00	0.00	0.00	0.00	0.00	0/0	999.0	999.0	N/A

λ width-thickness ratio
λp compact width-thickness ratio
λr non-compact width-thickness ratio
Unsw maximum width-thickness ratio
E 29000 ksi (Young's Modulus)

Post Design Values

K
2/3
1.5
2

<= input for 2 chord post
<= Value used in computations

Fa calculated for KL/ryy only

RENDING AND SHEAR STRESSES

	Mmax kip-ft	Sprod in^3	fb ksi	Shear kips	Pipe Area in^2	Ixx in^4	Asaf kips	Area y in^2	fa ksi
Left Support	0.00	69.01	0.00	0.00	21.21	0.00	3.76	21.21	0.18
Right Support	0.00	69.01	0.00	0.00	21.21	0.00	4.21	21.21	0.00

RESULTS

	Fb ksi	Fv ksi	Fa ksi	Cc	Rwsch	KL/R	Fe'	Eqn. 5-17 OSB	Eqn. 5-18 OSB	Eqn. 5-19 OSB	MAX OSB
Left Support	27.72	13.86	8.84	118.75	4.77	120.60	9.39	0.000	0.000	0.000	0.00
Right Support	27.72	13.86	7.77	118.75	4.77	138.60	7.77	0.000	0.000	0.000	0.00

	Length	Pipe or Angle	Diagonal Area	Rmin	Chord Yield Str.	Max Axial Force	Column Slenderness	KL/Rmin	fe (ksi)	Fa (ksi)	Result C/D
Left Diagonal	0.00	PIPE	0.00	999.00	0	0.00	999.00	0.00	999.00	999.00	1.00
Right Diagonal	0.00	PIPE	0.00	999.00	0	0.00	999.00	0.00	999.00	999.00	1.00

Fb Calculation

Left Support	Term 1	Term 2	Term 3
Eqn. 5-17	0.000	0.000	0.000
Eqn. 5-18	0.000	0.000	0.000
Eqn. 5-19	0.000	0.000	0.000
Right Support	**Term 1**	**Term 2**	**Term 3**
Eqn. 5-17	0.000	0.000	0.000
Eqn. 5-18	0.000	0.000	0.000
Eqn. 5-19	0.000	0.000	0.000

	Compression (ksi)	Non-Compact (ksi)	Shelter
	27.72	51.65	51.65

RENDING AND SHEAR STRESSES

	Mmax kip-ft	Sprod in^3	Sustain psi	Shear kips	Pipe Area in^2	Ixx in^4	Asaf kips	Area y in^2	fv ksi
Left Support	54.00	69.01	18.50	3.00	21.21	0.30	3.76	21.21	0.13
Right Support	140.70	69.01	24.40	5.29	21.21	0.29	3.72	21.21	0.19

RESULTS

	Fb ksi	Fv ksi	Fa ksi	Cc	Rwsch	KL/R	Fe'	Eqn. 5-17 OSB	Eqn. 5-18 OSB	Eqn. 5-19 OSB	MAX OSB
Left Support	27.72	13.86	8.84	118.75	4.77	108.60	8.84	0.001	0.000	0.000	0.00
Right Support	27.72	13.86	7.77	118.75	4.77	138.60	7.77	0.890	0.816	0.000	0.89

	Length	Pipe or Angle	Diagonal Area	Rmin	Chord Yield Str.	Max Axial Force	Column Slenderness	KL/Rmin	fe (ksi)	Fa (ksi)	Result C/D
Left Diagonal	0.00	PIPE	0.00	999.00	0	0.00	999.00	0.00	999.00	999.00	1.00
Right Diagonal	0.00	PIPE	0.00	999.00	0	0.00	999.00	0.00	999.00	999.00	1.00

Fb Calculation

Left Support	Term 1	Term 2	Term 3
Eqn. 5-17	0.000	0.000	0.000
Eqn. 5-18	0.000	0.000	0.000
Eqn. 5-19	0.000	0.000	0.000
Right Support	**Term 1**	**Term 2**	**Term 3**
Eqn. 5-17	0.000	0.000	0.000
Eqn. 5-18	0.000	0.000	0.000
Eqn. 5-19	0.914	0.914	0.000

	Compression (ksi)	Non-Compact (ksi)	Shelter
	27.72	51.65	51.65

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GROUP # CASE 2

BENDING AND SHEAR STRESSES

	Mmaxz kip-ft	Sposz in^3	fbweakz ksi	Shearz kips	Pipe Areaz in^2	fvz ksi	Axial kips	Area y in^2	fa y ksi
Left Support	66.93	69.01	8.90	2.72	21.21	0.13	2.83	21.21	0.13
Right Support	84.42	69.01	14.66	3.37	21.21	0.16	3.17	21.21	0.15

RESULTS

	Fb kip	Fv ksi	Fa ksi	Cc	Rweak	KUR	Fa'	Eqn. 5-17 CSR	Eqn. 5-18 CSR	Eqn. 5-19 CSR	MAX CSR
Left Support	27.72	13.86	7.77	118.76	4.77	129.60	8.69	0.320	0.342	0.335	0.342
Right Support	27.72	13.86	7.77	118.76	4.77	129.60	7.77	0.245	0.556	0.545	0.556

	Length ft	Pipe or Angle	Diagonal Area	Rmin	Cfvred Yield Str.	Max Axial Force	Columns Slenderness	KL/Rmin	fa (ksi)	Fa (ksi)	Result C/C
Left Diagonal	0.00	PIPE	0.00	999.00	0	0.00	999.00	0.00	999.00	999.00	1.00
Right Diagonal	0.00	PIPE	0.00	999.00	0	0.00	999.00	0.00	999.00	999.00	1.00

Fb Calculation

	Term 1	Term 2	Term 3
Left Support	0.000	0.000	0.000
Eqn. 5-17	0.000	0.000	0.000
Eqn. 5-18	0.000	0.000	0.000
Eqn. 5-19	0.000	0.000	0.000
Right Support	Term 1	Term 2	Term 3
Eqn. 5-17	0.000	0.000	0.000
Eqn. 5-18	0.000	0.000	0.000
Eqn. 5-19	0.000	0.000	0.000

Fb Calculation	Compared (ksi)	Non-Compact (ksi)	Shorter
	27.72	51.60	51.60
	27.72	51.60	51.60

GROUP # CASE 1

BENDING AND SHEAR STRESSES

	Mmaxz kip-ft	Sposz in^3	fbweakz ksi	Shearz kips	Pipe Areaz in^2	fvz ksi	Axial kips	Area y in^2	fa y ksi
Left Support	49.87	69.01	9.67	2.13	21.21	0.10	3.81	21.21	0.18
Right Support	73.10	69.01	12.71	2.63	21.21	0.12	4.36	21.21	0.21

RESULTS

	Fb kip	Fv ksi	Fa ksi	Cc	Rweak	KUR	Fa'	Eqn. 5-17 CSR	Eqn. 5-18 CSR	Eqn. 5-19 CSR	MAX CSR
Left Support	27.72	13.86	8.89	118.76	4.77	129.60	8.89	0.320	0.342	0.335	0.342
Right Support	27.72	13.86	7.77	118.76	4.77	129.60	7.77	0.281	0.485	0.475	0.485

	Length ft	Pipe or Angle	Diagonal Area	Rmin	Cfvred Yield Str.	Max Axial Force	Columns Slenderness	KL/Rmin	fa (ksi)	Fa (ksi)	Result C/C
Left Diagonal	0.00	PIPE	0.00	999.00	0	0.00	999.00	0.00	999.00	999.00	1.00
Right Diagonal	0.00	PIPE	0.00	999.00	0	0.00	999.00	0.00	999.00	999.00	1.00

Fb Calculation

	Term 1	Term 2	Term 3
Left Support	0.000	0.000	0.000
Eqn. 5-17	0.000	0.000	0.000
Eqn. 5-18	0.000	0.000	0.000
Eqn. 5-19	0.000	0.000	0.000
Right Support	Term 1	Term 2	Term 3
Eqn. 5-17	0.000	0.000	0.000
Eqn. 5-18	0.000	0.000	0.000
Eqn. 5-19	0.000	0.000	0.000

Fb Calculation	Compared (ksi)	Non-Compact (ksi)	Shorter
	27.72	51.60	51.60
	27.72	51.60	51.60

GROUP # CASE 3

BENDING AND SHEAR STRESSES

	Mmaxz kip-ft	Sposz in^3	fbweakz ksi	Shearz kips	Pipe Areaz in^2	fvz ksi	Axial kips	Area y in^2	fa y ksi
Left Support	29.92	69.01	9.20	1.34	21.21	0.06	3.81	21.21	0.18
Right Support	41.80	69.01	7.83	1.73	21.21	0.08	4.36	21.21	0.21

RESULTS

	Fb kip	Fv ksi	Fa ksi	Cc	Rweak	ALR	Fa'	Eqn. 5-17 CSR	Eqn. 5-18 CSR	Eqn. 5-19 CSR	MAX CSR
Left Support	27.72	13.86	8.89	118.76	4.77	129.60	8.89	0.196	0.21	0.21	0.21
Right Support	27.72	13.86	7.77	118.76	4.77	129.60	7.77	0.265	0.51	0.50	0.51

	Length ft	Pipe or Angle	Diagonal Area	Rmin	Cfvred Yield Str.	Max Axial Force	Columns Slenderness	KL/Rmin	fa (ksi)	Fa (ksi)	Result C/C
Left Diagonal	0.00	PIPE	0.00	999.00	0	0.00	999.00	0.00	999.00	999.00	1.00
Right Diagonal	0.00	PIPE	0.00	999.00	0	0.00	999.00	0.00	999.00	999.00	1.00

Fb Calculation

	Term 1	Term 2	Term 3
Left Support	0.000	0.000	0.000
Eqn. 5-17	0.000	0.000	0.000
Eqn. 5-18	0.000	0.000	0.000
Eqn. 5-19	0.000	0.000	0.000
Right Support	Term 1	Term 2	Term 3
Eqn. 5-17	0.000	0.000	0.000
Eqn. 5-18	0.000	0.000	0.000
Eqn. 5-19	0.000	0.000	0.000

Fb Calculation	Compared (ksi)	Non-Compact (ksi)	Shorter
	27.72	51.60	51.60
	27.72	51.60	51.60

Left Post	Max. Axial Force in Dsng. =	0.00
Right Post	Max. Axial Force in Dsng. =	0.00
Max. Overall =		0.00

Left Post max CSR	0.43
Right Post max CSR	0.80
Left Diag max CSR	1.00
Right Diag max CSR	1.00

155-sign-d

Horizontal Monotube Analysis

E = 29000 ksi (Young's Modulus)
k chord = 1.00

	Mvert	Mhortiz.	SHEAR Horizontal	SHEAR Vertical	Max Axial
	kip-ft	kip-ft	kips	kips	Kips
Section 1	44.18	90.66	4.97	2.54	5.29
Section 2	35.60	75.56	4.97	2.54	5.29

Local Buckling AASHTO 5.5

Section 1

Outside Dia. (inches)	Wall Thick. (inches)	Yield Str. (ksi)	λ	λp	λr	λmax	Result
4.000	0.23	42.0	17.70	86.9	180.6	309.5	Compact

Local Buckling AASHTO 5.5

Section 2

Outside Dia. (inches)	Wall Thick. (inches)	Yield Str. (ksi)	λ	λp	λr	λmax	Result
4.000	0.23	42.0	17.70	86.9	180.6	309.5	Compact

λ width-thickness ratio
λp compact width-thickness ratio
λr non-compact width-thickness ratio
λmax maximum width-thickness ratio
E 29000 ksi (Young's Modulus)

Section 1

Unbraced Length (in.)	Pipe Diameter (in.)	Wall Thickness (in.)	Pipe Area (in.^2)	Chord Yield Str. (ksi)	kL/Rmin
72.0	4.000	0.226	2.68	42.0	53.95

Section 2

Unbraced Length (in.)	Pipe Diameter (in.)	Wall Thickness (in.)	Pipe Area (in.^2)	Chord Yield Str. (ksi)	kL/Rmin
72.0	4.000	0.226	2.68	42.0	53.95

GROUP 1

	BENDING AND SHEAR STRESSES								
	Mmax kip-ft	S in^3	fb ksi	Shear kips	Pipe Area in^2	fv ksi	Axial kips	Area y in^2	fa ksi
Section 1	100.86	97.26	12.44	5.58	2.68	2.08	5.29	2.68	1.97
Section 2	83.52	97.26	10.31	5.58	2.68	2.08	5.29	2.68	1.97

	RESULTS										
	Fb ksi	Fv ksi	Fa ksi	Cc	R	KL/R	Fe'	Eqn. 5-17 CSR	Eqn. 5-18 CSR	Eqn. 5-19 CSR	**MAX CSR**
Section 1	27.72	13.86	21.75	116.75	1.33	53.95	51.30	0.550	0.607	0.562	0.607
Section 2	27.72	13.86	21.75	116.75	1.33	53.95	51.30	0.473	0.522	0.485	0.522

Section 1	Term 1	Term 2	Term 3
Eqn. 5-17	0.078	0.449	0.023
Eqn. 5-18	0.091	0.494	0.023
Eqn. 5-19	0.091	0.449	0.023
Section 2	Term 1	Term 2	Term 3
Eqn. 5-17	0.078	0.372	0.023
Eqn. 5-18	0.091	0.409	0.023
Eqn. 5-19	0.091	0.372	0.023

Fb Calculation		
Compact (ksi)	Non-Compact (ksi)	Slender
27.72	72.09	72.09
27.72	72.09	72.09

156-Sign-d

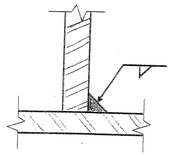
Highway Safety Corporation

Glastonbury, CT

Welding Procedure Specification

Material specification: **ASTM A36, A572 gr 50, A709 Gr 36, ASTM A709 Gr 50, A500 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: **DC**
Polarity: **Reverse**
Welding progression: **Stringers**
Root treatment: **None**
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
3/16"	1	0.045"	300 A ± 30	29 V ± 2	28 ipm ± 2	TYPICAL ALL FILLET WELDS 
1/4"	1	0.045"	300 A ± 30	29 V ± 2	14 ipm ± 2	

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RESUBMIT BY ____ APPROVED ____
DATE 8-29-07

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

PAINT RADIOC
CWI 98078221
QC1 EXP. 7/01/16

WPS no. **W-1587-1**
Revision no. **0**
Supporting PQR no. **Pre-qualified**
Project Name **St. Johnsbury, Lyndon, Waterford VT**

Fabricator: **Highway Safety Corporation**
Authorized by: Paul Radice
Date: 7/24/07
Project Number **HES 091-3(42) & HES 093-1(10)**

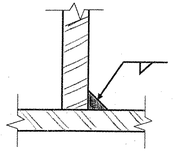
Highway Safety Corporation

Glastonbury, CT

Welding Procedure Specification

Material specification **ASTM A36, A572 gr 50, A709 Gr 36, ASTM A709 Gr 50, A500 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 **DC**
Polarity **Reverse**
Welding progression **Stringers**
Root treatment **None**
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
3/16"	1	0.045"	300 A ± 30	29 V ± 2	28 ipm ± 2	TYPICAL ALL FILLET WELDS 
1/4"	1	0.045"	300 A ± 30	29 V ± 2	14 ipm ± 2	

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

PAUL RADICE
CWI 98070221
QC1 EXP. 7/01/10

WPS no. **W-1587-1**
Revision no. **0**
Supporting PQR no. **Pre-qualified**
Project Name **St. Johnsbury, Lyndon, Waterford VT**

Fabricator **Highway Safety Corporation**
Authorized by Paul Radice
Date **7/24/07**
Project Number **HES 091-3(42) & HES 093-1(10)**

Highway Safety Corporation

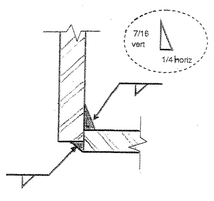
Glastonbury, CT

Welding Procedure Specification

Material specification: ASTM A36, A572 gr 50, A709 Gr 36, ASTM A709 Gr 50, A500 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 & Multiple
Single or multiple arc: Single
Welding current: DC
Polarity: Reverse
Welding progression: Stringers
Root treatment: None
Preheat and interpass temperature: Base Metal up to 3/4" (50°F) ; over 3/4-1 1/2" (70°F)
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
7/16" x 1/4"	1 & 2	0.045"	300 A ± 30	29 V ± 2	14 ipm ± 2	UN-EQUAL LEG FILLET WELD @ BASE PLATE CONNECTION



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APPROVED
BY
DATE

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

PAUL RADICE
CWI 98078221
QCI EXP. 7/31/08

WPS no. W-1587-2
Revision no. 0
Supporting PQR no. Pre-qualified
Project Name St. Johnsbury, Lyndon, Waterford VT

Fabricator Highway Safety Corporation
Authorized by Paul Radice
Date 7/24/07
Project Number HES 091-3(42) & HES 093-1(10)

159- Sign-2

Highway Safety Corporation

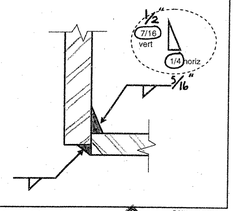
Glastonbury, CT

Welding Procedure Specification

Material specification **ASTM A36, A572 gr 50, A709 Gr 36, ASTM A709 Gr 50, A500 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 & Multiple**
Single or multiple arc **Single**
Welding current **DC**
Polarity **Reverse**
Welding progression **Stringers**
Root treatment **None**
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
1/2" 7/16" x 5/16" 1/4"	1 & 2	0.045"	300 A ± 30 ?	29 V ± 2	14 ipm ± 2	UN-EQUAL LEG FILLET WELD @ BASE PLATE CONNECTION



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

PAUL RADICE
CWI 98070721
QCI EXP: 7/01/10

WPS no. **W-1587-2**
Revision no. **0**
Supporting PQR no. **Pre-qualified**
Project Name **St. Johnsbury, Lyndon, Waterford VT**

Fabricator **Highway Safety Corporation**
Authorized by Paul Radice
Date **7/24/07**
Project Number **HES 091-3(42) & HES 093-1(10)**

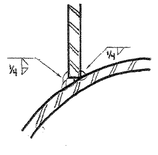
Highway Safety Corporation

Glastonbury, CT

Welding Procedure Specification

Material specification: **ASTM A36, A572 gr 50, A709 Gr 36, ASTM A709 Gr 50, A500 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: **DC**
Polarity: **Reverse**
Welding progression: **Stringers**
Root treatment: **None**
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
1/4"	1	0.045"	300 A ± 30	29 V ± 2	14 ipm ± 2	TYPICAL AT SUPPORT PLATE TO COLUMN POLE CONNECTION 

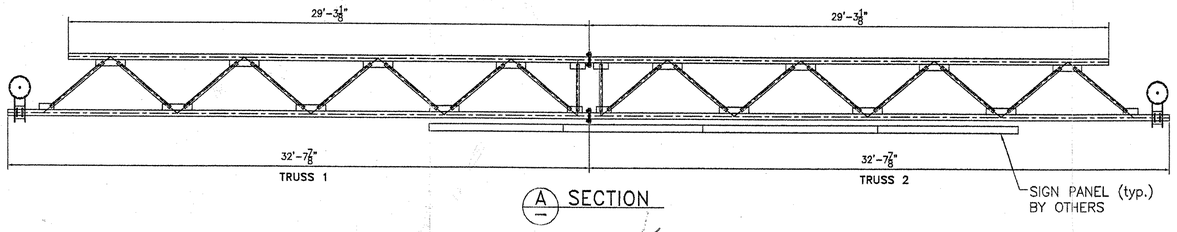
VTRANS RECEIVED AUG 29 2007 CHKD BY ____ ON'D BY ____ RESUBMIT ____ APPROVED ____ BY ____ DATE ____

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

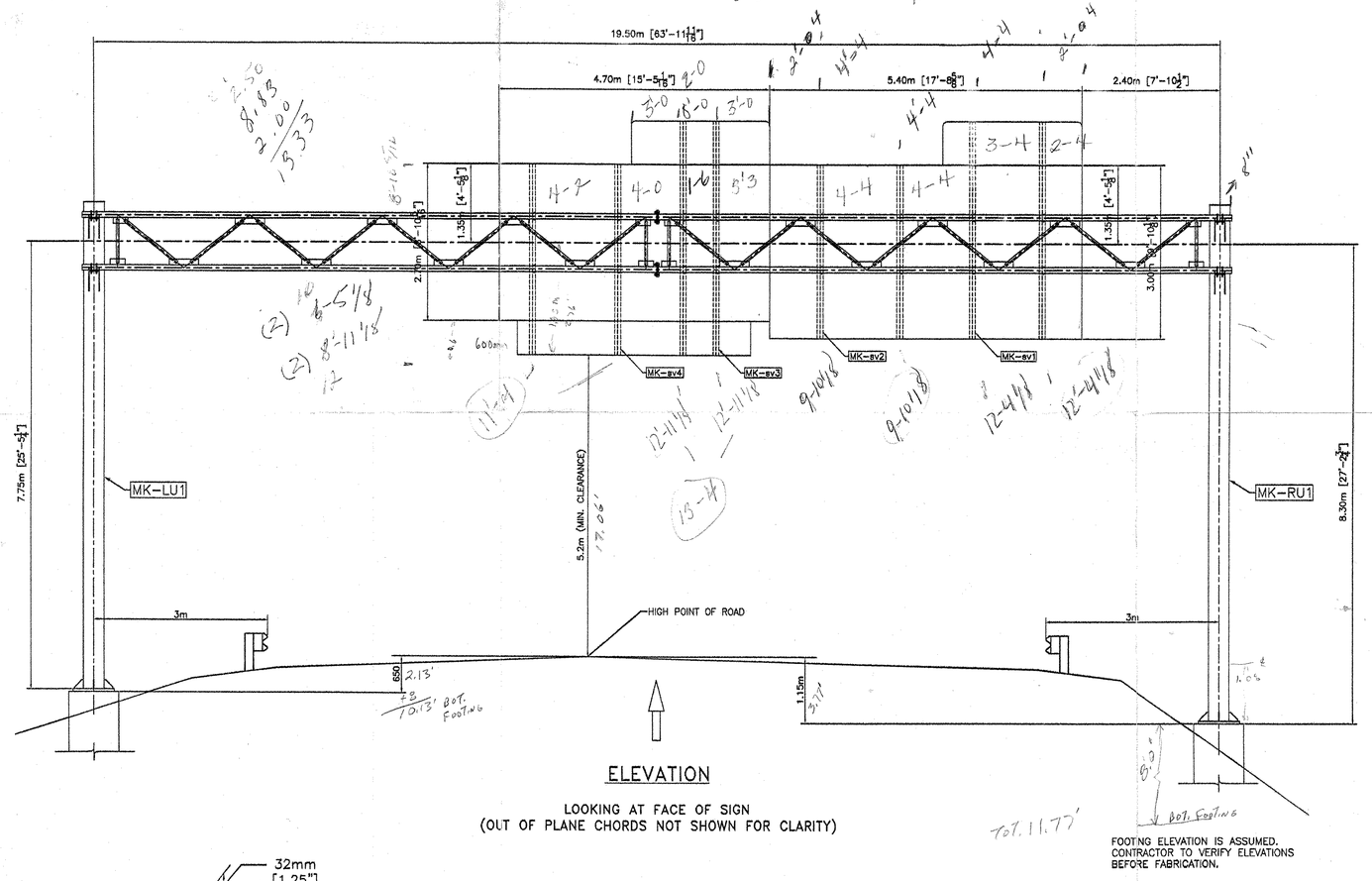
PAUL RADICE CWI 98070221 QC1 EXP. 7/01/10

WPS no. **W-1587-3**
Revision no. **0**
Supporting POR no. **Pre-qualified**
Project Name **St. Johnsbury, Lyndon, Waterford VT**

Fabricator **Highway Safety Corporation**
Authorized by Paul Radice 161-51gn-d
Date **8/29/07**
Project Number **HES 091-3(42) & HES 093-1(10)**



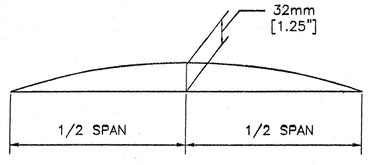
A SECTION



ELEVATION

LOOKING AT FACE OF SIGN
(OUT OF PLANE CHORDS NOT SHOWN FOR CLARITY)

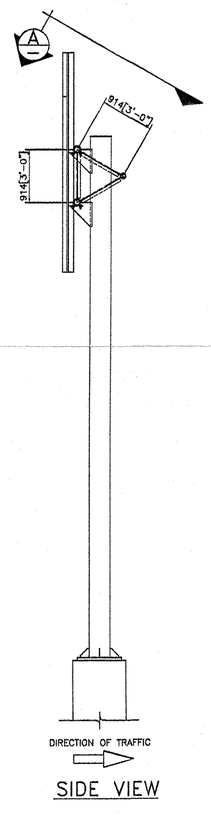
FOOTING ELEVATION IS ASSUMED. CONTRACTOR TO VERIFY ELEVATIONS BEFORE FABRICATION.



CAMBER DIAGRAM

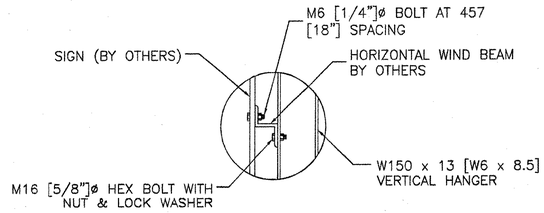
NOTE:

CAMBER WILL BE ACHIEVED BY SHORTENING LOWER CHORD PIPES BY AN AMOUNT SUCH THAT POSITIVE UPWARD DEFLECTION IS PRODUCED WHEN TRUSSES ARE BROUGHT TOGETHER AT SPLICES.

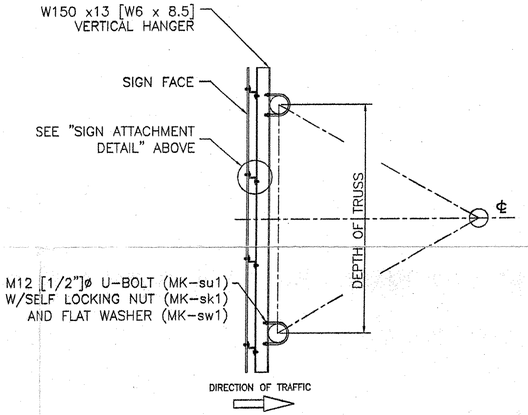


DIRECTION OF TRAFFIC

SIDE VIEW



SIGN ATTACHMENT DETAIL



SIGN MOUNTING DETAIL

VERTICAL HANGER BEAMS & U-BOLTS INCLUDED

RECEIVED
CK'D BY GWX CK'D BY
JUL 27 2007
RESUBMIT APPROVED X
BY DATE 07/31/07

ALL DIMENSIONS SHOWN ARE IN MILLIMETERS (mm) UNLESS OTHERWISE NOTED. ENGLISH CONVERSION SHOWN IN [ ] FOR REFERENCE ONLY.

REVISIONS		
No.	Remarks	Date
0	Initial submittal	

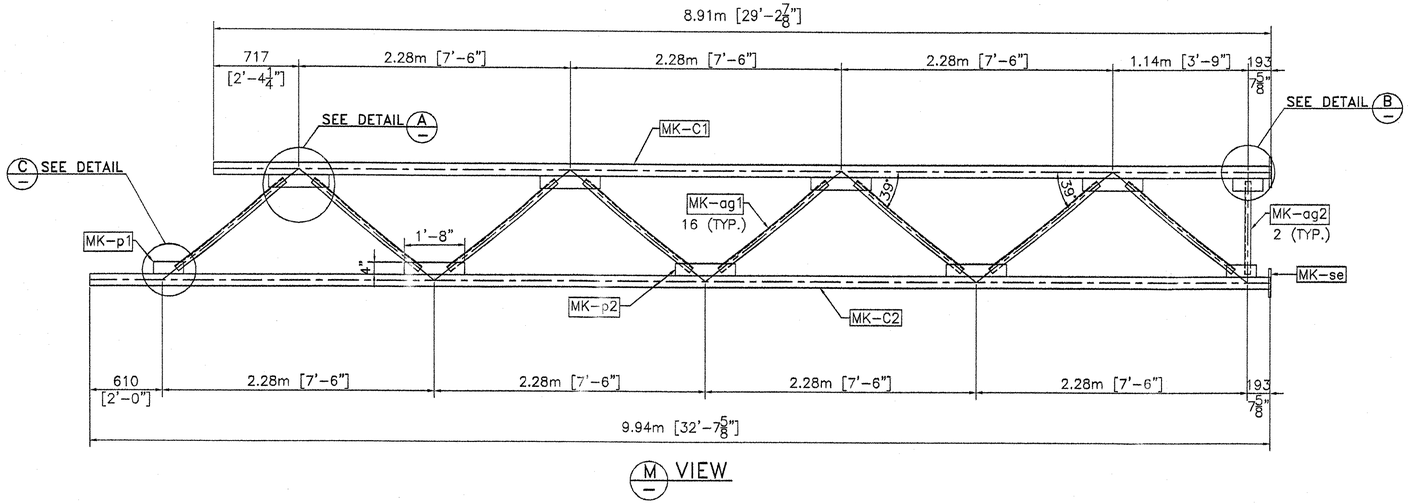
HIGHWAY SAFETY CORP.
GLASTONBURY, CT

TRI-CHORD SIGN STRUCTURE
STATE OF VERMONT
COUNTY OF CALEDONIA
MM 129.130 SB
PROJECT No. HES 091-3(42)
HES 093-1(10)

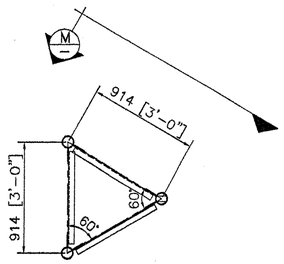
GENERAL CONTRACTOR
SUB CONTRACTOR F.R. LAFAYETTE

DRAWN	MHM
CHECKED	P Radice
DATE	5/23/07
SCALE	N.T.S.
HSC REFERENCE NO.	1587d
SIZE D	REVISION 0
SHEET NO.	1 of 8

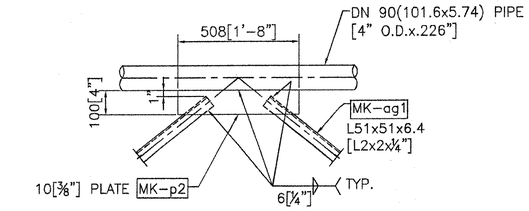
162-SIGN-d



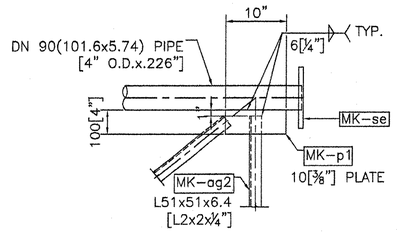
M VIEW



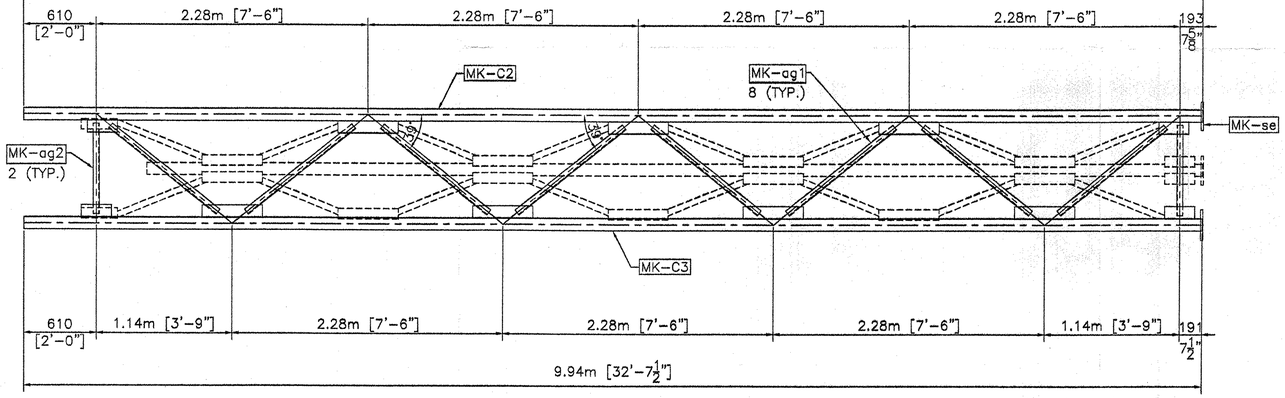
SIDE VIEW



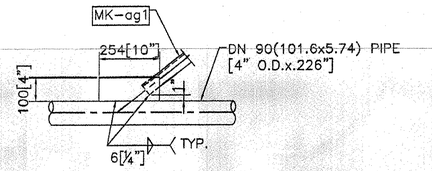
DETAIL "A"



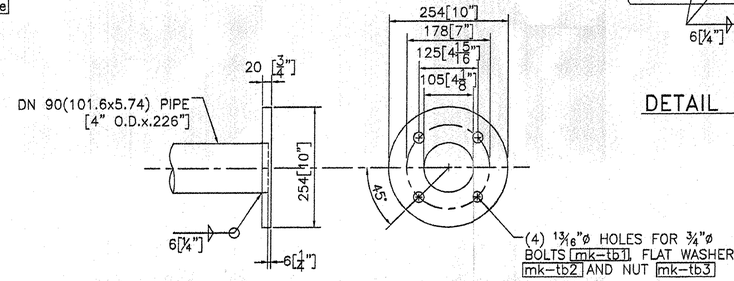
DETAIL "B"



FRONT VIEW



DETAIL "C"



SPLICE DETAIL
MK-se

TRUSS 1

ALL DIMENSIONS SHOWN ARE IN MILLIMETERS (mm) UNLESS OTHERWISE NOTED. ENGLISH CONVERSION SHOWN IN [ ] FOR REFERENCE ONLY.

RECEIVED
CK'D BY GWC OK'D BY
JUL 27 2007
RESUBMIT APPROVED
BY DATE 07/31/07

STATE OF VERMONT PHILIP B. CHENEY 6163 REGISTERED PROFESSIONAL ENGINEER

QUALITY STEEL BUILDINGS AISC CERTIFICATION

REVISIONS		
No.	Remarks	Date
0	Initial submittal	

HIGHWAY SAFETY CORP.
GLASTONBURY, CT

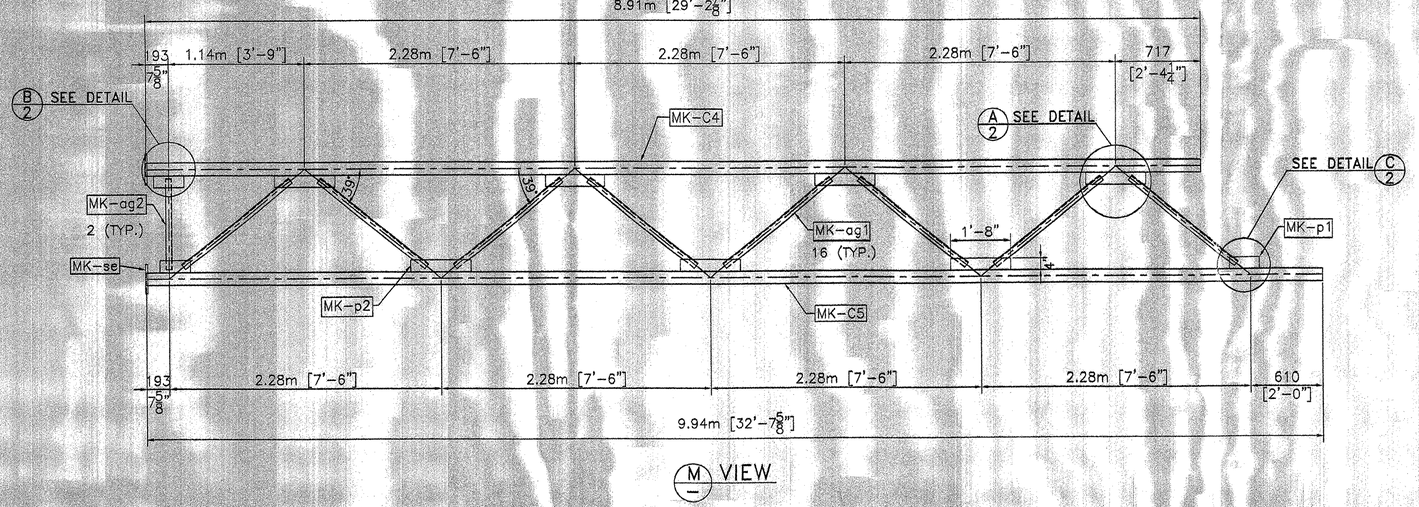
TRI-CHORD SIGN STRUCTURE
STATE OF VERMONT
COUNTY OF CALEDONIA
MM 129.130 SB
PROJECT No. HES 091-3(42)
HES 093-1(10)

GENERAL CONTRACTOR

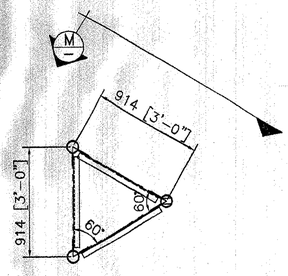
SUB CONTRACTOR F.R. LAFAYETTE

DRAWN MHM
CHECKED P Radice
DATE 5/23/07
SCALE NTS
HSC REFERENCE NO. 1587d
SIZE D REVISION 0
SHEET NO. 2 of 8

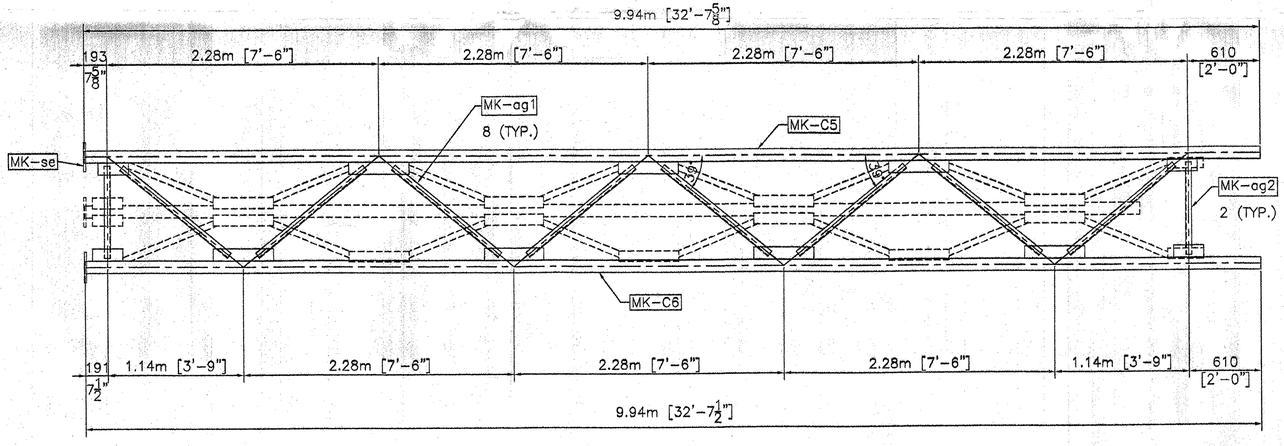
163-Sign-1



M/— VIEW



SIDE VIEW



FRONT VIEW

TRUSS 2

NOTE:

1. STRUCTURE DESIGNED IN ACCORDANCE WITH LATEST EDITION AASHTO STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINARIES AND TRAFFIC SIGNALS.

2. ALL HOLES FOR HIGH STRENGTH FASTENERS SHALL BE DRILLED OR SUB-PUNCHED FULL SIZE. SLOTTED HOLES AND/OR VENT OR ACCESS HOLES MAY BE CUT WITH MECHANICALLY GUIDED PLASMA OR MECHANICALLY GUIDED FLAME TORCH.

3. GRIND SHARP CORNERS OF ALL PLATES TO A $\frac{1}{16}$" MIN. RADIUS PRIOR TO GALVANIZING.

4. ALL WELDING SHALL BE PERFORMED BY QUALIFIED WELDERS IN ACCORDANCE WITH AWS D1.1.

5. ALL STEEL PLATES FOR STRUCTURAL COMPONENTS SHALL BE ASTM A709 GR. 50.

6. STEEL PLATES AND SHAPES FOR NON-STRUCTURAL COMPONENTS SHALL BE ASTM A709 GR. 36.

7. STEEL PIPES FOR STRUCTURAL MEMBERS SHALL HAVE MINIMUM YIELD OF 42 ksi AND SHALL CONFORM TO ONE OF THE FOLLOWING GRADES: ASTM A500 GR. B, OR API 5LX42.

8. UNLESS OTHERWISE NOTED, ALL BOLTS FOR STRUCTURAL CONNECTIONS SHALL BE M164 TYPE 1 (A325).

9. GALVANIZED U-BOLTS FOR CONNECTION OF SIGN HANGER BEAMS TO TRUSS SHALL BE ASTM F-1554 GR. 36.

10. ALL STRUCTURAL STEEL SHALL BE HOT-DIPPED GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH AASHTO M111 (ASTM A123).

11. ALL HARDWARE, UNLESS OTHERWISE NOTED, SHALL BE HOT-DIPPED GALVANIZED PER AASHTO M232 (ASTM A153).

12. ANCHOR HARDWARE SHALL BE STAINLESS STEEL AND MEET REQUIREMENTS OF VAOT STANDARD SPECIFICATION 714.09.

13. CONCRETE AND REBAR SHOWN IN FOOTING DESIGN TO BE FURNISHED BY OTHERS.

14. FOUNDATION DESIGN BASED ON USE OF 3000 psi MINIMUM CONCRETE.

15. SPACE BETWEEN THE TOP OF CONCRETE AND THE BOTTOM OF STEEL BASE PLATE SHALL BE FILLED WITH TYPE IV MORTAR AFTER LEVELING.

16. BOLTS INSTALLED IN STRUCTURAL CONNECTIONS SHALL BE PROVIDED AND TENSIONED PER APPLICABLE PROVISIONS OF VAOT STANDARD SPECIFICATIONS SECTION 506.

17. SEAL WELD ALL CONNECTIONS WHEN POSSIBLE PRIOR TO GALVANIZING.

RECEIVED
CK'D BY GLC OK'D BY DLT
JUL 27 2007
RESUBMIT ____ APPROVED X AS NOTED
BY ____ DATE 07/31/07

STATE OF VERMONT PHILIP B. CHENEY 6163 REGISTERED PROFESSIONAL ENGINEER

QUALITY CERTIFICATION AISC CERTIFICATION

ALL DIMENSIONS SHOWN ARE IN MILLIMETERS (mm) UNLESS OTHERWISE NOTED. ENGLISH CONVERSION SHOWN IN [ ] FOR REFERENCE ONLY.

REVISIONS		
No.	Remarks	Date
0	Initial submittal	

HIGHWAY SAFETY CORP.
GLASTONBURY, CT

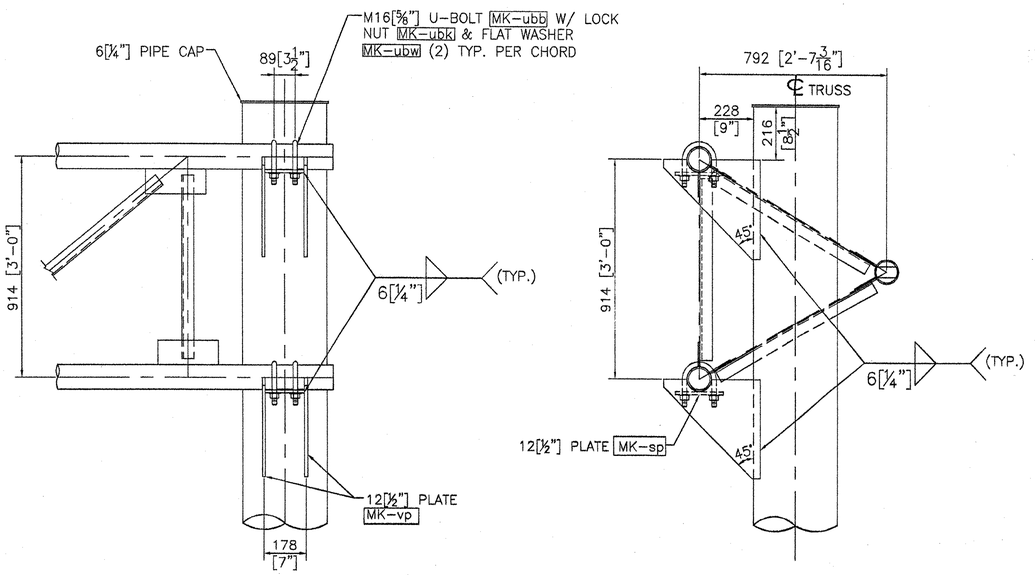
TRI-CHORD SIGN STRUCTURE
STATE OF VERMONT
COUNTY OF CALEDONIA
MM 129.130 SB
PROJECT No. HES 091-3(42)
HES 093-1(10)

GENERAL CONTRACTOR

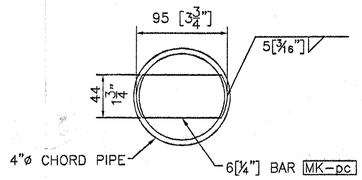
SUB CONTRACTOR F.R. LAFAYETTE

DRAWN	MHM
CHECKED	P Radics
DATE	5/23/07
SCALE	NTS
HSC REFERENCE NO.	1587d
SIZE	D
REVISION	0
SHEET NO.	3 of 8

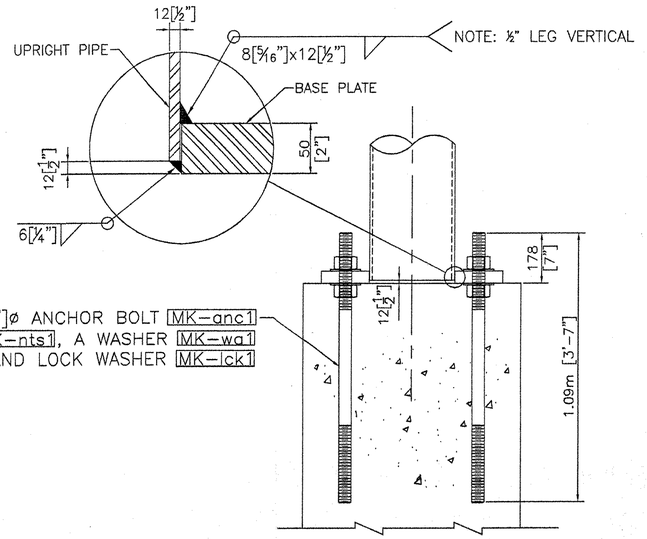
164-sign-d



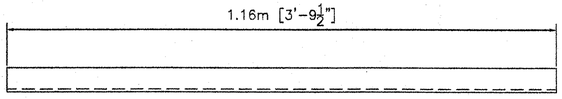
TRUSS CONNECTION DETAIL



PLUG DETAIL
(EACH END OF TRUSS CHORD)



ANCHORAGE ASSEMBLY



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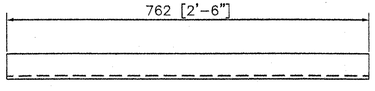

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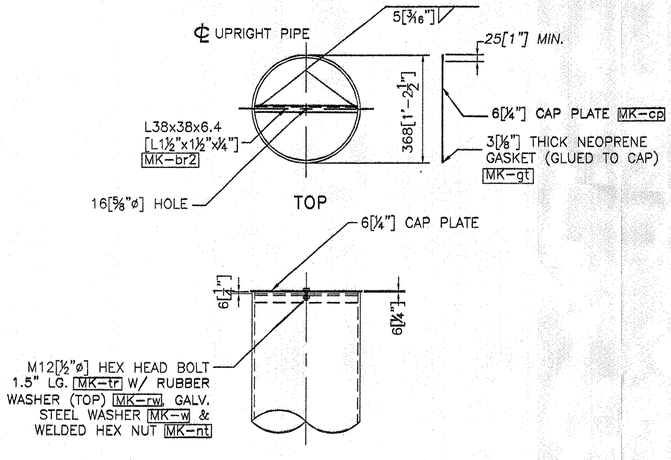
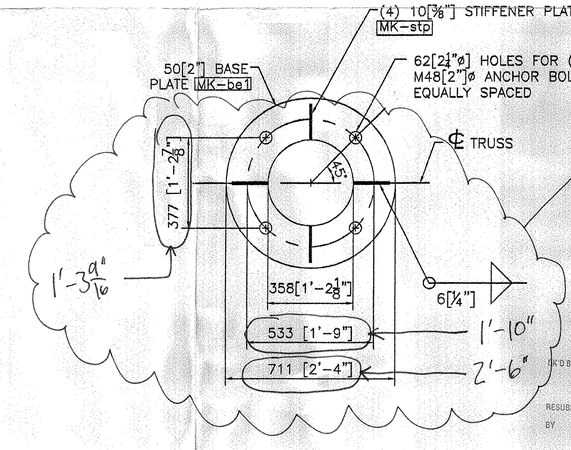


UPRIGHT CAP DETAIL

ASSEMBLE CAP TO POST PRIOR TO SHIPPING.



BASE PLATE DETAIL

NOTE:
BASE PLATE SHALL BE STAMPED WITH THE VERTICAL POLE DIAMETER (VD.), HEIGHT (VHT.), YIELD STRENGTH (VYS.), GAUGE(VGE.), AND SAME FOR HORIZONTAL MEMBER (HD.), (HYS.), AND (HGE.).

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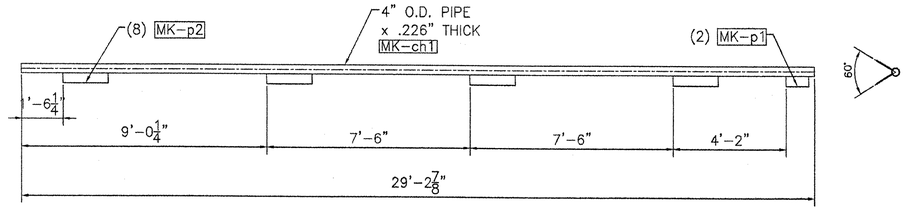
HIGHWAY SAFETY CORP.
GLASTONBURY, CT

TRI-CHORD SIGN STRUCTURE
STATE OF VERMONT
COUNTY OF CALEDONIA
MM 129.130 SB
PROJECT No. HES 091-3(42)
HES 093-1(10)

GENERAL CONTRACTOR
SUB CONTRACTOR F.R. LAFAYETTE

DRAWN	MHM
CHECKED	P Radice
DATE	5/23/07
SCALE	NTS
HSC REFERENCE NO.	1587d
SIZE D	REVISION 0
SHEET NO.	4 of 8

165-sign-3



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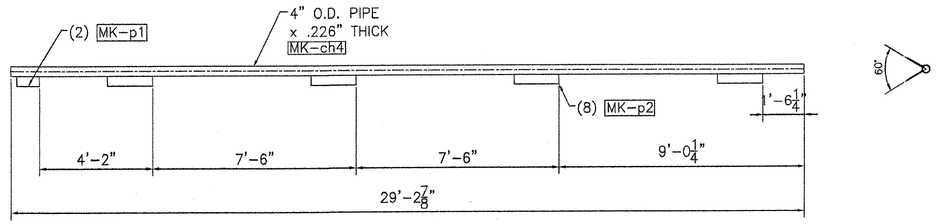

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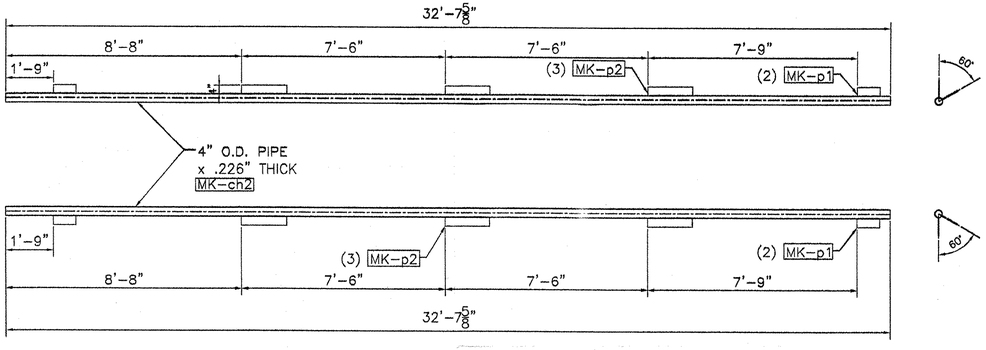

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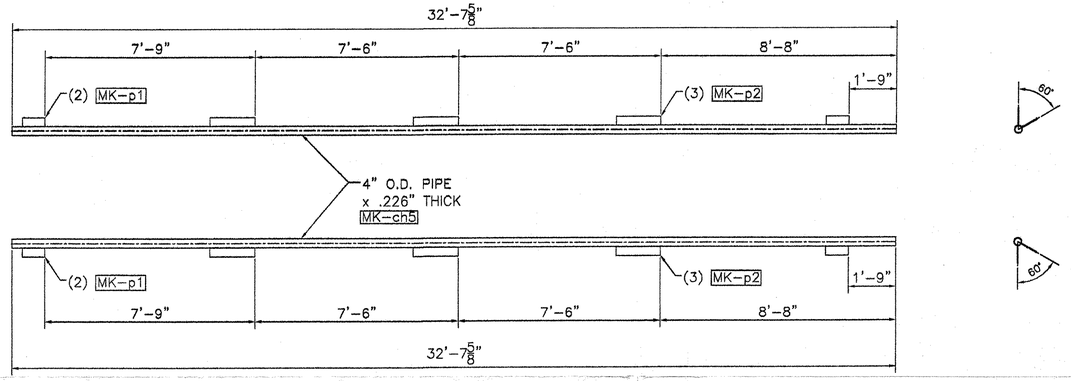

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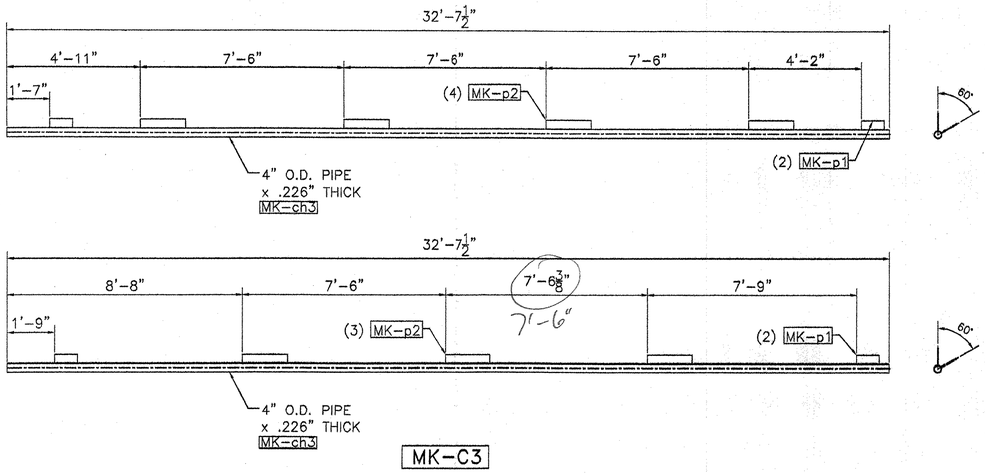

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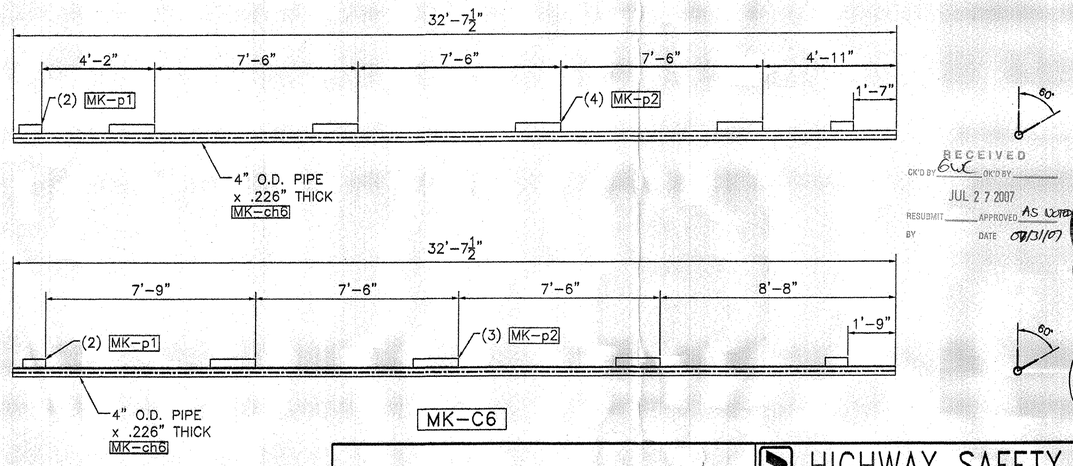

MK-C6

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STATE OF VERMONT
PHILIP B. CHENEY
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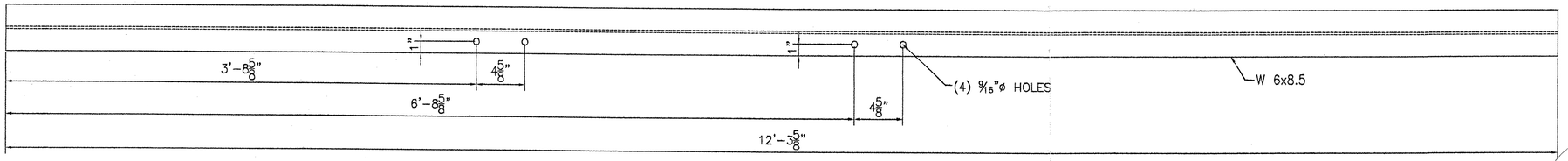
REVISION	0
SHEET NO.	5 of 8

166-sign-5



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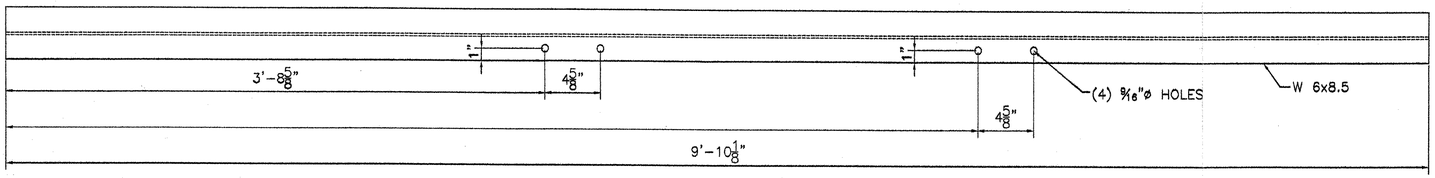

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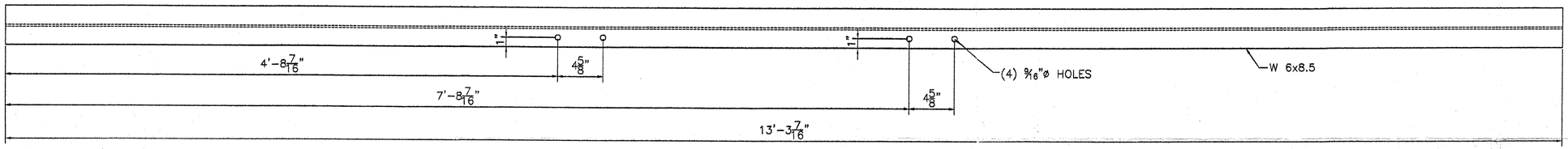

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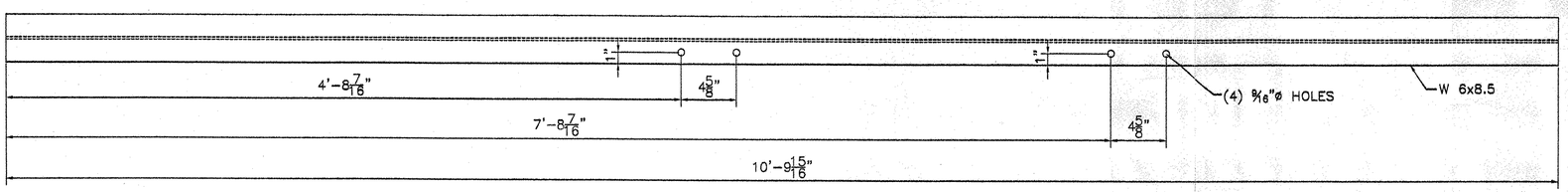

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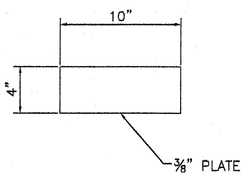

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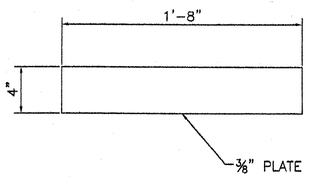

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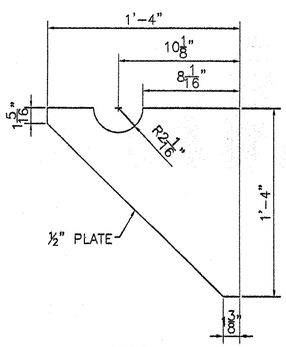

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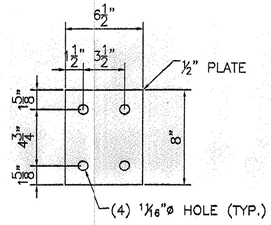

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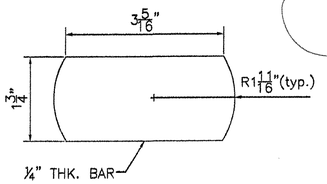

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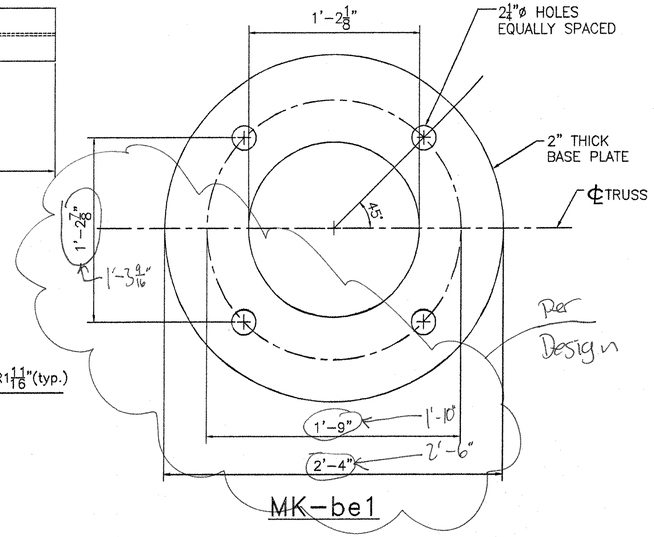

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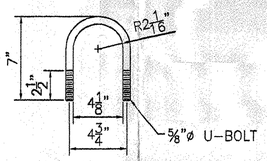

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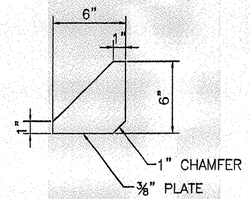

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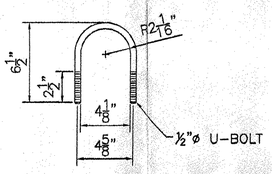

MK-su1

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HIGHWAY SAFETY CORP.

GLASTONBURY, CT

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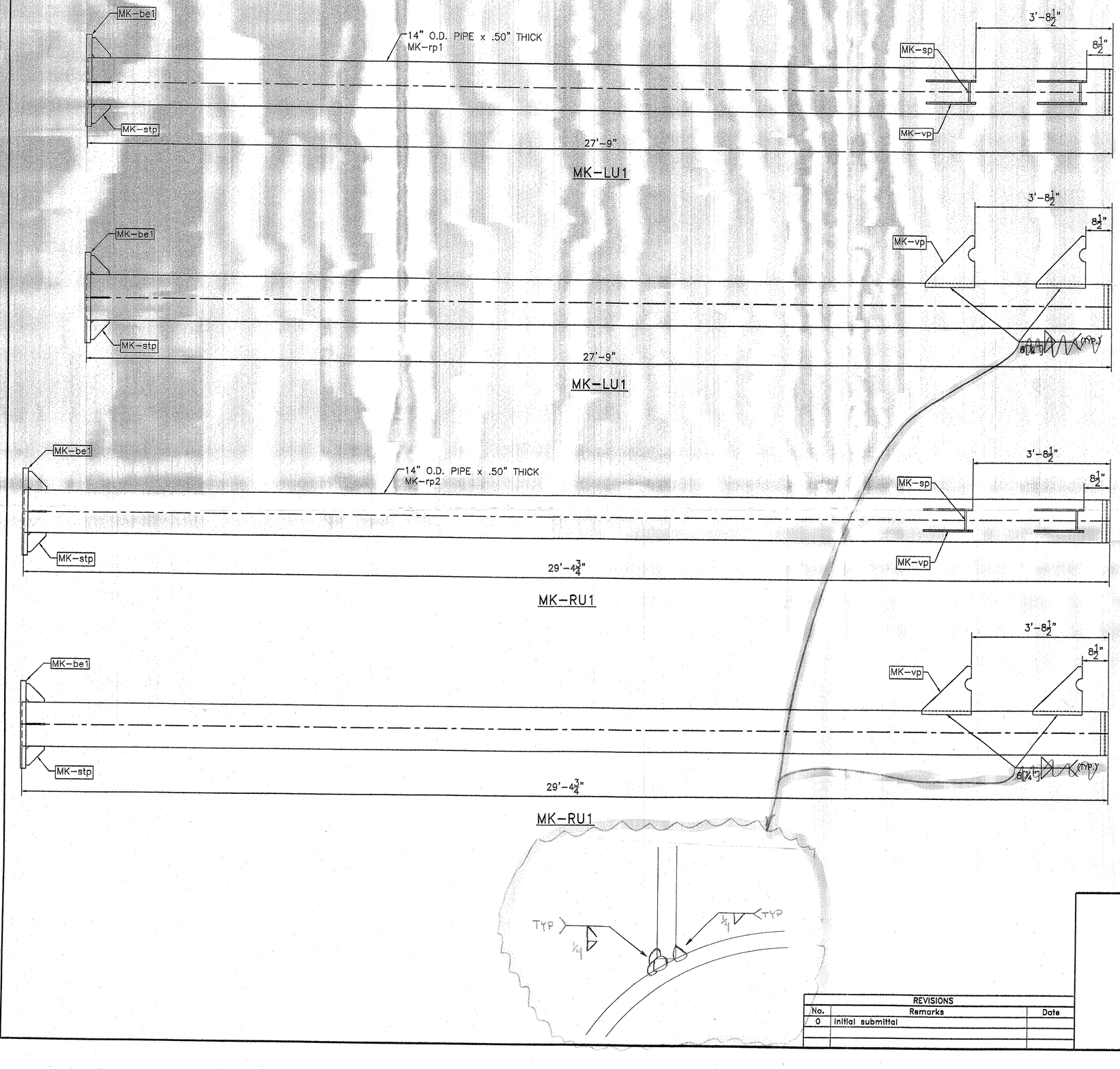
REVISION	0
SHEET NO.	6 of 8

167-sign-d



erection mark	piece qty	item description	size/shape	length/qty per unit	material notes
TRUSS 1 ASSEMBLY					
C1		**CHORD PIPE ASSEMBLY**			
ch1	1	pipe	4" O.D.x 0.226" wall	29'-2.875"	A500 gr B API 5LX42
p1	2	plate	PL 0.375" x 4"	10"	A709 gr 50
p2	8	plate	PL 0.375" x 4"	1'-8"	A709 gr 50
ag1	16	angle	L2"x2"x.25"	3'-9.50"	A36
ag2	2	angle	L2"x2"x.25"	2'-6"	A36
pc	1	plate	0.25" x 1.75"	3.75"	A36
se	1	splice plate	0.75" x 10" O.D.		A709 gr 50
C2		**CHORD PIPE ASSEMBLY**			
ch2	1	pipe	4" O.D.x 0.226" wall	32'-7.625"	A500 gr B API 5LX42
p1	4	plate	PL 0.375" x 4"	10"	A709 gr 50
p2	6	plate	PL 0.375" x 4"	1'-8"	A709 gr 50
ag1	8	angle	L2"x2"x.25"	3'-9.50"	A36
ag2	2	angle	L2"x2"x.25"	2'-6"	A36
pc	1	plate	0.25" x 1.75"	3.75"	A36
se	1	splice plate	0.75" x 10" O.D.		A709 gr 50
C3		**CHORD PIPE ASSEMBLY**			
ch3	1	pipe	4" O.D.x 0.226" wall	32'-7.50"	A500 gr B API 5LX42
p1	4	plate	PL 0.375" x 4"	10"	A709 gr 50
p2	7	plate	PL 0.375" x 4"	1'-8"	A709 gr 50
pc	1	plate	0.25" x 1.75"	3.75"	A36
se	1	splice plate	0.75" x 10" O.D.		A709 gr 50
TRUSS 2 ASSEMBLY					
C4		**CHORD PIPE ASSEMBLY**			
ch4	1	pipe	4" O.D.x 0.226" wall	29'-2.875"	A500 gr B API 5LX42
p1	2	plate	PL 0.375" x 4"	10"	A709 gr 50
p2	8	plate	PL 0.375" x 4"	1'-8"	A709 gr 50
ag1	16	angle	L2"x2"x.25"	3'-9.50"	A36
ag2	2	angle	L2"x2"x.25"	2'-6"	A36
pc	1	plate	0.25" x 1.75"	3.75"	A36
se	1	splice plate	0.75" x 10" O.D.		A709 gr 50
C5		**CHORD PIPE ASSEMBLY**			
ch5	1	pipe	4" O.D.x 0.226" wall	32'-7.625"	A500 gr B API 5LX42
p1	4	plate	PL 0.375" x 4"	10"	A709 gr 50
p2	6	plate	PL 0.375" x 4"	1'-8"	A709 gr 50
ag1	8	angle	L2"x2"x.25"	3'-9.50"	A36
ag2	2	angle	L2"x2"x.25"	2'-6"	A36
pc	1	plate	0.25" x 1.75"	3.75"	A36
se	1	splice plate	0.75" x 10" O.D.		A709 gr 50
C6		**CHORD PIPE ASSEMBLY**			
ch6	1	pipe	4" O.D.x 0.226" wall	32'-7.50"	A500 gr B API 5LX42
p1	4	plate	PL 0.375" x 4"	10"	A709 gr 50
p2	7	plate	PL 0.375" x 4"	1'-8"	A709 gr 50
pc	1	plate	0.25" x 1.75"	3.75"	A36
se	1	splice plate	0.75" x 10" O.D.		A709 gr 50
VERTICAL PIPE ASSEMBLY					
SU1		LEFT PIPE ASSEMBLY			
rp1	1	pipe	14" O.D.x 0.50" wall	27'-9"	A500 gr B API 5LX42
sp	2	plate	PL 0.5" x 8.5"	8"	A709 gr 50
vp	4	plate	PL 0.5" x 1'-4"	1'-4"	A709 gr 50
cp	1	plate	0.25" X 11-2.5" O.D.		A36
br2	1	angle	L 1.5"x1.5"x.25"	1'-1"	A36
gt	1	gasket	.125"x1'-2.5" O.D.		50 duro. Neoprene
nt	1	hex nut	.50" dia.		A563
tr	1	hex bolt	.50" dia.	1.5"	A325
w	1	washer	.50" dia.		F844
rw	1	rubber washer	.50" dia.		50 duro. Neoprene
stp	4	plate	PL 0.375"x 6"	6"	A709 gr 50
be1	1	base plate	2" x 2'-4" O.D. 3'-6" O.D.		A709 gr 50
RU1		**RIGHT PIPE ASSEMBLY**			
rp2	1	pipe	14" O.D.x 0.50" wall	29'-4.75"	A500 gr B API 5LX42
sp	2	plate	PL 0.5" x 8.5"	8"	A709 gr 50
vp	4	plate	PL 0.5" x 1'-4"	1'-4"	A709 gr 50
cp	1	plate	0.25" X 11-2.5" O.D.		A36
br2	1	angle	L 1.5"x1.5"x.25"	1'-1"	A36
gt	1	gasket	.125"x1'-2.5" O.D.		50 duro. Neoprene
nt	1	hex nut	.50" dia.		A563
tr	1	hex bolt	.50" dia.	1.5"	A325
w	1	washer	.50" dia.		F844
rw	1	rubber washer	.50" dia.		50 duro. Neoprene
stp	4	plate	PL 0.375"x 6"	6"	A709 gr 50
be1	1	base plate	2" x 2'-4" O.D. 3'-6" O.D.		A709 gr 50
LOOSE ITEMS					
sv1	2	sign hanger	W8x8.5	12'-3.625"	A36
sv2	2	sign hanger	W8x8.5	9'-10.125"	A36
sv3	2	sign hanger	W8x8.5	13'-3.437"	A36
sv4	2	sign hanger	W8x8.5	10'-9.937"	A36
ubb	8	u-bolt	0.625" dia.	7"	F1554 Gr. 36
ubk	16	lock nut	0.625" dia.		A563 DH
ubw	16	washer	0.625" dia.		F436
su1	16	u-bolt	0.50" dia.	6.5"	F1554 Gr. 36
sk1	32	lock nut	0.50" dia.		A563 DH
sw1	32	washer	0.50" dia.		F436
tb1	16	hex bolt	0.75" dia.	3"	A325
tb2	16	washer	0.75" dia.		F543
tb3	16	hex nut	0.75" dia.		A563 DH
anc1	8	anchor bolt	2" dia.	3'-7"	S/S A276 T304
nts1	16	hex nut	2" dia.		S/S A1945 T304
lwk1	8	lock washer	2" dia.		S/S TY 304
wa1	8	flat washer	2" dia.		S/S TY 304

12ea

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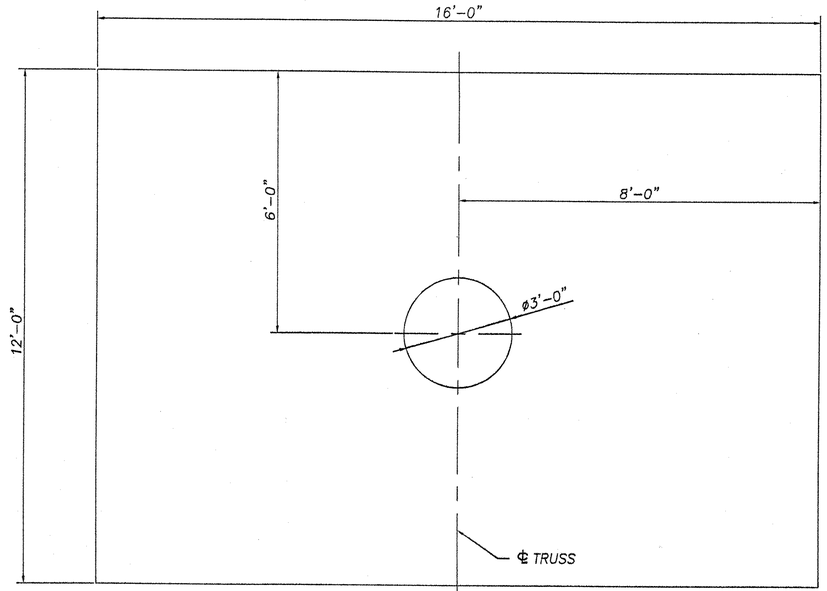
HSC REFERENCE NO. 1587d
SIZE D REVISION 0
SHEET NO. 7 of 8

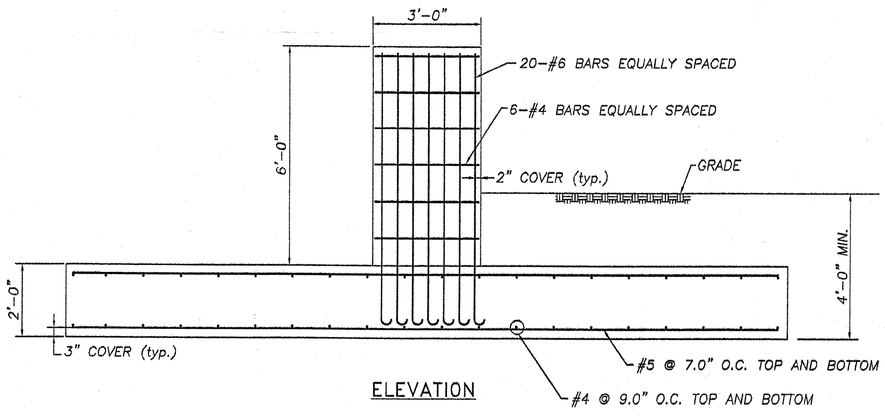
168-Sign-8



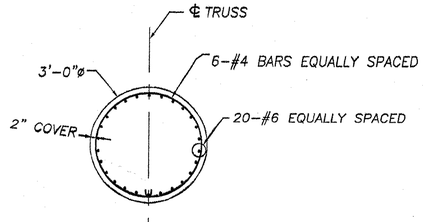
PLAN

REBAR LIST

REBAR	PCS. REQRD.	LENGTH
#4	12	9'-4"
#4	88	13'-6"
#5	84	19'-6"
#6 (HOOK ONE END)	40	8'-6"



ELEVATION



PLAN (STEM)

REVISIONS		
No.	Remarks	Date
0	Initial submittal	

RECEIVED
CK'D BY GK CK'D BY
JUL 27 2007
RESUBMIT APPROVED X
BY DATE 07/31/07

STATE OF VERMONT PHILIP B. CHENEY 6163 REGISTERED PROFESSIONAL ENGINEER

AISC QUALITY CERTIFICATION PROFESSIONAL

HIGHWAY SAFETY CORP.
GLASTONBURY, CT

TRI-CHORD SIGN STRUCTURE
STATE OF VERMONT
COUNTY OF CALEDONIA
MM 129.130 SB
PROJECT No. HES 091-3(42)
HES 093-1(10)

GENERAL CONTRACTOR
SUB CONTRACTOR F.R. LAFEYETTE

DRAWN	MHM
CHECKED	P Radice
DATE	5/23/07
SCALE	N.T.S.
HSC REFERENCE NO.	1587d
SIZE	D
REVISION	0
SHEET NO.	8 of 8

169-Sign-2

DESIGN CALCULATIONS

OVERHEAD SIGN STRUCTURE
INTERSTATE ROUTE 91
STATION 10.050 NB
PROJECT No. HES 091-3(42)
HES 093-1(10)

VERMONT AGENCY OF TRANSPORTATION

STATE OF VERMONT
PHILIP B. CHENEY
6163
REGISTERED
PROFESSIONAL ENGINEER

7.23.07

P. BRADFORD CHENEY
PRESIDENT

DATE

SUBMITTED BY:

CME ASSOCIATES, INC.
333 EAST RIVER DRIVE, SUITE 400
EAST HARTFORD, CT 06108

JULY 20, 2007

SUBMITTED TO:

HIGHWAY SAFETY CORPORATION
239 COMMERCE STREET
P.O. BOX 358
GLASTONBURY, CT 06033-0358

CME **CME Associates, Inc.**

175 SIGN-C

Highway Safety Corporation
239 Commerce Street
Glastonbury, CT 06033-0358

Project:	Highway Safety		
By:	APB	Checked:	JAR
Date:	7/20/2007		
Sheet No.		of	

Overhead Truss Sign Support Program **Tri-Chord Truss** **Single Post Support**

State:	Vermont
Project:	
Sign Location:	MM 10.050 NB

Overall Dimensions (all in feet)

Span	Left Post Height	Rt. Post Height	Truss Section Lengths			Number of Truss
L	H1	H2	Section 1 (feet)	Section 2 (feet)	Section 3 (feet)	Pieces
58.07	22.2	23.19	29.04	29.04	0.00	2

Miscellaneous Data

Wind Speed	Sign Weight	Ice Load?
(mph)	(psf)	(yes/no)
90	3.65	yes

Sign Dimensions (all in feet)

Sign 1			Sign 2			Sign 3		
Length L1	Width W1	Location D1	Length L2	Width W2	Location D2	Length L3	Width W3	Location D3
38.39	10.83	25.10	0.00	0.00	0.00	0.00	0.00	0.00

Overhead Truss Chords

Height of Truss Dt (ft)	Width of Truss Wt (ft)	1st Truss Section		2nd Truss Section		3rd Truss Section		Chord Yield Str. (ksi)	Number of Chords 1, 3 or 4
		Outside Dia. (inches)	Wall Thick. (inches)	Outside Dia. (inches)	Wall Thick. (inches)	Outside Dia. (inches)	Wall Thick. (inches)		
3.00	3.00	4.000	0.226	4.00	0.23	4.000	0.226	42.0	3
				4.000	0.226	<-- Values Used in computations			

Overhead Truss Diagonals

Equal Leg Angles		Round Pipe		Diagonal Yield Str. (ksi)	Vertical diag. angle (deg)	Horizontal diag. angle (deg)	Drilled Shafts for foundation ?	Circular Footing Stem? (yes/no)
Leg Size (inches)	Thickness (inches)	Outside Dia. (inches)	Thickness (inches)					
2.00	0.250	0.00	0.000	36.0	38	38	no	yes

No. of Posts per end 1 or 2	Left Post Verticals			Post Yield Str. (ksi)	Vertical diag. angle (deg)	Right Post Verticals			Post Yield Str. (ksi)
	Spacing Sp (Feet)	Outside Dia. (inches)	Wall Thick. (inches)			Spacing Sp (Feet)	Outside Dia. (inches)	Wall Thick. (inches)	
1	0.00	14.000	0.500	42.0	45	0.000	14.000	0.500	42.000

Post Diagonals

Equal Leg Angles		Round Pipe		Diagonal Yield Str. (ksi)	
Leg Size (inches)	Thickness (inches)	Outside Dia. (inches)	Thickness (inches)		
0.00	0.000	3.00	0.125	36.0	
0.00	0.000	0.00	0.000	0.00	<-- Values Used in Computations

Results

		D/C or CSR	OK / NG ?
Truss	Section 1 Chords	0.96	OK
	Section 2 Chords	0.00	OK
	Section 3 Chords	NA	N/A
	Truss Diagonals	0.60	OK
Posts	Left Post	0.79	OK
	Right Post	0.68	OK
	Left Post Diagonals	N/A	N/A
	Right Post Diagonals	N/A	N/A

Truss Deflections in Inches	Defl. Under DL + Ice	0.66	
	Allowable (L/150)	4.65	OK
	Camber	1.10	
	Deflection OK		

1/6-sign-C

Connection Design

Number of Posts per end: 1

Baseplate and Anchor Bolt Input

Baseplate Thickness inches	Baseplate Yield Str. * ksi	Anchor Bolts per post: No. of Bolts	Diameter inches	Yield Str (ksi) *
2.250	50.00	4	2.250	55
		4,6, or 8		

* Normal Yield Strengths (36, 55, 110 ksi)
AASHTO M314

Analysis Results

Bolt Circle Dia. (in)	Baseplate Dia (in)	Socket Weld Design: Weld Size inches	Total Weld Length (in)
23.00	32.00	0.402	87.66

Anchor Bolts: Embedment inches	Extension inches	Tot. Length inches	Anchor CSR	Baseplate Bending ksi	
36.00	9.000	45.000	0.72	46.18	Actual
			1.0	37.50	Capacity
			OK	See Note	Result

Note: If Base plate bending stress exceeded, add vertical stiffeners.
Length of required 1/4" weld on each leg of each stiffener = 3.00 inches

Truss Chord Splice Connection Input

Conn. Plate Thickness inches	Conn. Plate Yield Str., ksi	A325 Bolt Diameter inches	Number of Bolts
0.750	50.00	0.750	6

Input this area for monotubes also

Analysis Results

Bolt Circle Dia. (in)	Conn Plate Dia (in)	Socket Weld Design: Weld Size inches	Total Weld Length (in)	Connection Bolts: Bolt Spacing inches	Bolt D/C ksi	Conn. Pl. Bending ksi	
7.00	10.00	0.226	25.13	3.665	0.69	11.45	Actual
				2.29	1.0	37.50	Allowed
				OK	OK	OK	Result

Truss Diagonal Connection Input (for 1/2 connection)

Conn. Plate Thickness inches	Conn. Plate 1/2 Length inches	Conn. Plate Yield Str. ksi	A325 Bolt Diameter inches	Number of Bolts per diag.
0.375	10.000	50.00	0.000	0
				See Note

Note: Enter zero for welded connection

Analysis Results

Diagonal Bolt Force kips	Conn Plate Stress ksi	Diagonal Weld Length inches	
N/A	2.16	6.0	Actual
N/A	30.00	1.207	Capacity/required
N/A	OK	OK	Result

Chord Weld Connection: Weld Size inches	Total Weld Length (in)	Weld Load k/in	
0.250	20.00	0.811	Actual
		6.72	Capacity
		OK	Result

Post Diagonal Connection Input (for 1/2 connection)

Conn. Plate Thickness inches	Conn. Plate 1/2 Length inches	Conn. Plate Yield Str. ksi	A325 Bolt Diameter inches	Number of Bolts per diag.
0.500	10.000	50.00	0.875	0
				See Note

-N/A SINGLE POST USED-
Note: Enter zero for welded connection

Analysis Results

Diagonal Bolt Force kips	Conn Plate Stress ksi	Diagonal Weld Length inches	
N/A	0.00	12.0	Actual
N/A	30.00	0.000	Capacity/required
N/A	OK	OK	Result

Post Weld Connection: Weld Size inches	Total Weld Length (in)	Weld Load k/in	
0.250	20.00	0.000	Actual
		6.72	Capacity
		OK	Result

Truss Support Connection (use W Shape)

Section	Web Thickness inches	Web Depth inches	Member Yield Str. ksi
W6x8.5	0.170	5.875	36.00

Use W6x8.5 for most
Weld all around with 1/4" weld
-N/A SINGLE POST USED-

Analysis Results

End Weld Length inches		End Shear Load kips	
0.60	required	4.03	Actual
19.0	provided	11.57	Capacity
OK	Result	OK	Result

Bolt Data: Bolt Dia., inches	n = Threads Per Inch	A net sq. inches	A Gross sq. inches
0.500	13	0.142	0.196
0.625	11	0.226	0.307
0.750	10	0.334	0.442
0.875	9	0.462	0.601
1.000	8	0.606	0.785
1.125	7	0.763	0.994
1.250	7	0.969	1.227
1.375	6	1.155	1.485
1.500	6	1.405	1.767
1.750	5	1.899	2.405
2.000	4.5	2.498	3.142
2.250	4.5	3.248	3.976
2.500	4	3.999	4.909
2.750	4	4.934	5.940
3.000	4	5.967	7.069
3.250	4	7.099	8.296
3.500	4	8.329	9.621
4.000	4	11.083	12.566
4.250	4	12.607	14.186
4.500	4	14.229	15.904
4.750	4	15.950	17.721
5.000	4	17.769	19.635

Truss Support Connection (For Tri-Chord)

Dist. from edge of post to CL of Plate	Depth of Plate (inches)	Full Width of Plate (inches)	
9.000	16.000	16.00	Actual
inches			Capacity
			Result

Analysis Results

Weld Stress (ksi)	
2.05	Actual
19.00	Capacity
OK	Result

Monotube Connection at Pole

Dia. of U-bolt	Saddle Length and Post Top Plate	Saddle Height	Depth of Saddle Notch	Thickness of Connection material	Yield Strength of U-Bolt	
0.75	18	10.5	1.2	0.75	36	ksi
inches	inches	inches	inches	inches		

-N/A FOR Tri-Chord-

General Information: Post Dimensions: Post Dia.	Thickness	Chord Dimensions: Diameter	Thickness
14.00	0.00	4.00	0.226

Analysis Results

U-bolt Stress (ksi)	
1.83	Required
18.00	provided
OK	Result

1987 Sign-e

Baseplate Design - Double End Post Design

Anchor Bolt Analysis (4 bolt pattern, round baseplate)

Not Applicable, see single post design below

Bolt Circle Dia =	23.00	inches
A bolts =	12.991	sq. inches
I bolts =	859.01	in^4
S bolts =	74.70	in^3
Base Plate Dia. =	**32.00**	**inches**
Allow.Tensile Stress = Ft =	27.50	ksi
Allow.Shear Stress = Fv =	16.50	ksi

Anchor Bolt Properties		
Net Tensile Stress Area = At =	3.248	sq. inches
Gross Area = Ag =	3.976	sq. inches

Reactions		Max. Axial kips	Min. Axial kips	Mweak kip-ft	V kips	Allowable Weld Information: Allowable Com. Stress ksi	Allowable Tens. Stress ksi	Allowable Shear Stress ksi	CSR Eq. 5-24	Post Bending Str. (ksi)	Post Axial Str. (ksi)	Max. Shears ksi
Left Support	G1	3.85	3.85	0.00	0.00	0.29	0.29	0.00	0.00	0.00	0.18	0.18
Right Support		3.72	3.72	0.00	0.00	0.29	0.29	0.00	0.00	0.00	0.18	0.18
Left Support	G5 C1	2.90	2.90	23.66	5.31	4.02	-3.59	0.41	0.02	4.11	0.14	4.25
Right Support		2.79	2.79	21.91	4.39	3.74	-3.31	0.34	0.01	3.81	0.13	3.94
Left Support	G6 C2	2.90	2.90	35.49	3.47	5.92	-5.48	0.27	0.04	6.17	0.14	6.31
Right Support		2.79	2.79	32.87	2.91	5.50	-5.07	0.22	0.03	5.72	0.13	5.85
Left Support	G6 C1	4.03	4.03	11.83	2.52	2.21	-1.99	0.22	0.00	2.06	0.19	2.25
Right Support		3.81	3.81	10.99	2.37	2.05	-1.47	0.18	0.00	1.91	0.18	2.08
Left Support	G6 C2	4.03	4.03	17.74	1.74	3.16	-2.54	0.13	0.01	3.09	0.19	3.28
Right Support		3.81	3.81	16.44	1.46	2.93	-2.35	0.11	0.01	2.86	0.18	3.04
						5.92	-5.48	0.41	0.04			6.31

Baseplate weld design

Not Applicable, see single post design below

S post =	69.01	in^4	
A post =	21.21	in^2	
Max. Weld Size =	0.4375	inches	
Min. Weld Size =	0.25	inches	
Force per inch of post edge =	3.15	kips per inch	
Weld Stress based on Max. Weld Size =	5.10	ksi	Based on double weld (socket connection)
Weld Stress based on Min. Weld Size =	8.92	ksi	Based on double weld (socket connection)
Weld Yield Strength =	70	ksi	
Allowable Weld stress =	18.9	ksi	
Required weld size =	0.118	inches	
Design Weld Size =	**0.25**	**inches**	Based on double weld (socket connection)
Weld Length =	**87.96**	**inches**	Based on double weld (socket connection)

Baseplate Thickness

Not Applicable, see single post design below

Width of Baseplate section =	9.000	inches	
Thickness =	2.250	inches	
Sx =	7.59	in^3	
Bolt spacing = X =	18.06	inches	Measured along circumference of bolt circle
Force per inch of post edge =	3.15	kips per inch	
Moment in Baseplate =	102.91	kip inches	
Bending Stress =	13.55	ksi	
Allowable Bending Stress =	37.50	ksi	
No vertical Stiffeners needed			
Capacity of 1/4" weld =	3.36	kips per inch	
Length of 1/4" horizontal weld required on each leg of each vertical stiffener = X =	2.86	inches	

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Baseplate Design - Single End Post Design

Anchor Bolt Analysis

Number of Bolts =	4	
Bolt Circle Dia. =	23.00	Inches
A bolts =	12.991	sq. inches
I bolts =	859.01	in^4
Sstrong bolts =	74.70	in^3

Anchor Bolt Properties		
Net Tensile Stress Area = At =	3.248	sq. inches
Gross Area = Ag =	3.976	sq. inches

Base Plate Dia. = 32.00 inches
Allow.Tensile Stress = Ft = 27.00 ksi
Allow.Shear Stress = Fv = 16.50 ksi

Reactions	Axial kips	Mx kip-ft	Mz kip-ft	Shear kips	AB Tens. Stress ksi	AB Shear Stress ksi	CSR Eq. 9-24
G1	3.85	0.00	0.00	0.00	-0.30	0.00	0.00
G2 C1	2.90	122.93	23.66	3.31	23.31	0.41	0.72
G2 C2	2.90	73.70	35.49	3.47	17.22	0.27	0.40
G3 C1	4.03	83.56	11.83	2.82	11.80	0.22	0.19
G3 C2	4.03	38.14	17.74	1.74	8.67	0.13	0.10
					23.31	0.41	0.72

Baseplate weld design

S post =	89.01	in^4	
A post =	21.21	in^2	
Max. Weld Size =	0.4375	inches	
Min. Weld Size =	0.25	inches	
Force per inch of post edge =	10.75	kips per inch	
Weld Stress based on Max. Weld Size =	17.37	ksi	Based on double weld (socket connection)
Weld Stress based on Min. Weld Size =	30.40	ksi	Based on double weld (socket connection)
Weld Yield Strength =	70	ksi	
Allowable Weld stress =	18.9	ksi	
Required weld size =	0.402	inches	
Design Weld Size =	**0.4021435**	**inches**	Based on double weld (socket connection)
Weld Length =	**87.96**	**inches**	Based on double weld (socket connection)

Baseplate Weld Information

	Post Bending Str. (tot)	Post Axial Str. (tot)	Max. Stress ksi
G1	0.00	0.18	0.18
G2 C1	21.36	0.14	21.49
G2 C2	12.81	0.14	12.95
G3 C1	11.05	0.19	11.24
G3 C2	6.63	0.19	6.82
			21.49

Baseplate Thickness

Width of Baseplate section =	9.000	inches	
Thickness =	2.250	inches	
Sx =	7.59	in^3	
Bolt spacing = X =	16.06	inches	Measured along circumference of bolt circle
Force per inch of post edge =	10.75	kips per inch	
Moment in Baseplate =	350.69	kip inches	
Bending Stress =	46.18	ksi	
Allowable Bending Stress =	37.50	ksi	
	Baseplate stress exceeded, add vertical stiffeners		
Capacity of 1/4" weld =	3.36	kips per inch	
Length of 1/4" weld required on each leg of each vertical stiffener =	11.27	inches	

Truss Chord Splices

Bolt Stresses

Maximum Chord Force =	52.70	kips		
Max. Chord Diameter =	4.000	inches		
Bolt Circle Dia. =	7.000	inches		
Bolt Area =	0.334	in^2		
A bolts =	2.007	sq. inches	6	bolts
Bolt Tensile Stress =	26.26	ksi		
Allow.Tensile Stress = Ft =	38.00	ksi (A325 Bolts)		
Demand/Capacity Ratio =	**0.69**			

For Monotube Only
Loads:

Mvert	Mhoriz.	SHEAR Horizontal	SHEAR Vertical	Bolt Tens. Stress	Bolt Shear Stress
kip-ft	kip-ft	kips	kips	ksi	ksi
44.28	101.87	2.55	0.00	379.56	1.54

Mtotal = 111.08 ft-kip
Vtotal = 3.08 kip
Moment of Inertia = 12.29 in^4
S = 3.51 in^3
Allow.Tensile Stress, Ft = 38.00 ksi
Allow.Shear Stress, Fv = 19.00 ksi
CSR = 0.05 OK!

(Bolt stresses based on A325 Bolts (AASHTO Table 10.32.3B)
Bolt stresses reduced by 0.875 for bolts over 1 inch diameter

Plate Stresses

Width of conn. plate section =	3.000	inches
Thickness =	0.750	inches
Sx =	0.281	in^3
Bolt Circle Circumference =	21.991	inches
Bolt Spacing =	3.865	inches
Force per inch along circumference =	2.40	kips per inch
Moment in Conn. plate =	3.22	kip inches
Bending Stress =	11.45	ksi
Allowable Bending Stress =	37.50	ksi

Weld Stresses

Max. Weld Size =	0.226	inches	
Min. Weld Size =	0.226	inches	
Force per inch of pipe edge =	4.19	kips per inch	
Weld Stress based on Max. Weld Size =	13.12	ksi	Based on double weld (socket connection)
Weld Stress based on Min. Weld Size =	13.12	ksi	Based on double weld (socket connection)
Weld Yield Strength =	70	ksi	
Allowable Weld stress =	18.9	ksi	
Required weld size =	0.187	inches	
Design Weld Size =	**0.226**	**inches**	Based on double weld (socket connection)
Weld Length =	**25.13**	**inches**	Based on double weld (socket connection)

Conn.

179-Sign-e

Truss Diagonal Splices

Bolted Splice Design

Maximum Axial Force in Diagonal =	8.11	kips
Bolt Dia. =	0.000	inches
Bolt Area =	#N/A	inches
Number of Bolts=	0	
Allowable Shear stress =	15	ksi (AASHTO Table 10.32.3C) Galvanized surface
Allowable Load on Connection =	#N/A	kips (single shear)

Welded Splice Design

Maximum Axial Force in Diagonal =	8.11	kips
Capacity of 1/4" weld =	6.72	kips per inch (double weld)
Required Length of Weld =	1.207	inches (based on 2 welds)
Minimum for angles =	6.0	inches (based on 2 welds 3" long)
Minimum for pipes =	12.0	inches (based on 4 welds 3" long)
Minimum Weld Length =	6.0	inches

Connection Plate Design

Total Force in 1/2 Plate =	8.11	kips
Stress in plate =	2.16	ksi
Allowable stress =	30.00	ksi

Connection Plate Weld

Force per inch of weld =	0.81	kips per inch
Capacity of 1/4" weld =	6.72	kips per inch (double weld)

Post Diagonal Connections

Bolted Splice Design

NA - Single Post Design

Maximum Axial Force in Diagonal =	0.00	kips
Bolt Dia. =	0.875	inches
Bolt Area =	0.601	inches
Number of Bolts=	0	
Allowable Shear stress =	15	ksi (AASHTO Table 10.32.3C) Galvanized surface
Allowable Load on Connection =	0.0	kips (single shear)

Welded Splice Design

Maximum Axial Force in Diagonal =	0.00	kips
Capacity of 1/4" weld =	6.72	kips per inch (double weld)
Required Length of Weld =	0.000	inches (based on 2 welds)
Minimum for angles =	6.0	inches (based on 2 welds 3" long)
Minimum for pipes =	12.0	inches (based on 4 welds 3" long)
Minimum Weld Length =	12.0	inches

Connection Plate Design

Total Force in 1/2 Plate =	0.00	kips
Stress in plate =	0.00	ksi
Allowable stress =	30.00	ksi

Connection Plate Weld

Force per inch of weld =	0.00	kips per inch
Capacity of 1/4" weld =	6.72	kips per inch (double weld)

Truss Support Connection (use W6x8.5)

NA - See Connection Below

Maximum Reaction =	4.03	kips (half reaction)
Capacity of 1/4" weld =	3.36	kips per inch (single weld)
Length of Weld Required =	0.600	inches (based on double weld)
Length of Weld Provided =	19.00	inches
Shear Capacity of W6x8.5 =	11.87	kips

Truss Support Connection (Single or Double pole) - Tri - Chord Only

Maximum Reaction (Vert) =	4.03	kips (max of left or right conn.)	Number of Chords =	3	
Maximum wind Load (Horiz) =	5.22	kips (max of left or right conn.)	Poles (per end) =	1	
Reaction per chord connection (Vert) =	2.02	kips	# of Connections =	2	
Reaction per chord connection (Horiz) =	2.61	kips	Weld Size =	0.19	in
Area of Weld =	8.48	in^2			
Sweld =	22.62	in^3			
fv =	0.24	ksi			
fb =	1.72	ksi			
ft =	0.31	ksi			
(fv^2+[fb+ft]^2)^1/2 =	2.05	ksi			
Allowable stress of weld =	19	ksi			

Monotube Support Connection (Single Vertical Pole)

NA - See Connection Above

Max Shear =	2.50 kips	Div by 2 because 2 u-bolts are always used
Monotube Dia. =	14.00 in	
U-bolt Leg Dia =	0.75 in	
Area of U-bolt Leg =	0.334 in^2	
Tension in U-bolt Leg =	0.54 kips	Based on depth of saddle equal to 0.3 * Diameter of Monotube
Stress in U-bolt =	1.63 ksi	
Allowable U-bolt stress	18 ksi	Eq. S-21
Stress Check	OK	

7/20/2007

Conn.

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Spread Footing Analysis

Spread Check Info Input: Three width is in plane of load, Length is perpendicular to plane of load

Overall Check Info Input			Rectangular Stem Dimensional Data				Clear Soil Cover Height	
Width	Length	Depth	Width	Length	X Offset	Y Offset	Soil Cover
10.00	10.00	2.00	0.83	0.83	0.00	0.00	2.50

Soil Unit Weight (pcf) and Soil Friction Angle

Overall Stem Dimensional Data			Design
Width	Length	X Offset	Y Offset	Method
0.83	0.83	0.00	0.00	ACI

Analysis Results

Soil Pressure			F.S. FOR T & V OR * F.S. FOR	
Toe Soil Bearing	Heel Soil Bearing	Load	Overturning Overturning	Sliding
2 Kaips	2 Kaips	k	Stress Incr. Factor Incr.	
1.00	1.00	DC	1.50	13.00
1.25	1.25	DC+LL	1.00	1.00

Concrete and Reinforcing Steel Input Required (CALCULATE STEM REQUIRED)

Concrete Material Properties			Rebar Reinforcing		Stem Wall Dimensional Data			Cover Bar Reference		
Concrete Strength	Concrete Density	Modulus of Rupture	Bar Size	Bar Fy	Stem Wall Thickness	Stem Wall Length	Stem Wall Height	Cover Offset	Offset Direction	
Kaips (f'c)	Lbs/Cubic Foot	Lbs/Cubic Inch	Bar Size	Bar Fy	Ksys	Ksys	Ksys	Ksys	Ksys	Ksys
3.00	0.00	0.00	5	60	0.00	0.00	0.00	N/A	N/A	N/A

Analysis Results

Toe Pressure	Heel Pressure	Allowable Pressure	Pressure at Edge of Stem	Pressure at Toe of Stem	Pressure at Heel of Stem	F.S. FOR V vs. FOR * F.S. FOR
Actual	Actual	Actual	Actual	Actual	Actual	Actual
Ksf	Ksf	Ksf	Ksf	Ksf	Ksf	Ratio
1.000	1.000	2.000	1.000	1.000	1.000	1.500

Overturning Moment	Resisting Moment	Sliding Force	Resisting Force	Soil Bearing Area	Overturning Eccentricity	Sliding Stress Ratio
Ft-K	Ft-K	K	K	Square Feet	Feet	
0.000	0.000	0.000	0.000	100.00	0.000	0.000

Footing Size	240.00	Sq In	Footing	Soil	Resumed Unit Weight of Soil
Footing Sq. Ins. Provided	240.00	Sq In	Area	Area	
Footing Sq. Ins. Needed	144.00	Sq In	100.00	97.22	

Footing Sq. Ins. Provided	240.00	Sq In	Area	Area	
Footing Sq. Ins. Needed	144.00	Sq In	100.00	97.22	

Resumed Unit Weight of Soil

Stem Wall Footing Sq Ins Provided	240.00
Stem Wall Footing Sq Ins Needed	144.00
Stem Wall Footing Sq Ins Provided	240.00
Stem Wall Footing Sq Ins Needed	144.00

Overturning Safety Factor Input	
Overturning Safety Factor Provided	1.500
Overturning Safety Factor Needed	1.500

Sliding Safety Factor Input	
Sliding Safety Factor Provided	1.500
Sliding Safety Factor Needed	1.500

Sum Bridge of Water Sum Surcharges	20 Ksf
Total Volume of Concrete Sum Surcharges	40 Cu Yd

Footing	Footing Cantilever
Group #	Ft
Group # Case 1 Dc + Wc + Pc	1.00
Group # Case 2 Dc + Pbw + Wm	1.35
Group # Case 3 Dc + LS + Pc	1.00
Group # Case 3 Dc + LS + Wm + Pc	1.00

Wc = WIND FORCES PERPENDICULAR TO RWS
Wm = WIND FORCES TRANSVERSE (PARALLEL) TO RWS

Minimum soil pressure of 0# psf
Minimum soil pressure of 0# psf

LOAD COMBINATION RESULTS Loads and Moments are for both ends

Loads include overstress

	Footing at Elevation				Footing at Base of Footing				Pressure at Toe of Toe		Pressure at Toe of Stem		F.S. FOR V vs. FOR * F.S. FOR
Condition	Moment	Moment	Vertical	Vertical	Axial	Moment	Axial	Moment	Actual	Actual	Actual	Actual	Actual
Description	Ft-K	Ft-K	Kips	Kips	Kips	Ft-K	Kips	Ft-K	Ksf	Ksf	Ksf	Ksf	Ratio
Left Footing		0.00	0.00	0.00	0.00	0.00	0.00	0.00	N/A	N/A	N/A	N/A	
Left Footing	Dc	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	N/A	N/A	
Left Footing	Wc	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	N/A	N/A	
Left Footing	Wm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	N/A	N/A	
Left Footing	Pc	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	N/A	N/A	
Left Footing	Pbw	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	N/A	N/A	
Right Footing		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	N/A	N/A	
Right Footing	Dc	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	N/A	N/A	
Right Footing	Wc	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	N/A	N/A	
Right Footing	Wm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	N/A	N/A	
Right Footing	Pc	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	N/A	N/A	
Right Footing	Pbw	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	N/A	N/A	
Left Footing	DC	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Left Footing	DC+LL	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Right Footing	DC	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Right Footing	DC+LL	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	

Uplift and Sliding Checks (Vertical Loads Only)

Loads include overstress

		Soil Pressures			Soil
		Toe	Heel	Footing	Footing
Condition		At Toe	At Heel	At Toe	At Toe
Description		Ksf	Ksf	Ksf	Ksf
Left Footing		0.00	0.00	0.00	0.00
Right Footing		0.00	0.00	0.00	0.00
Left Footing	DC	0.00	0.00	0.00	0.00
Left Footing	DC+LL	0.00	0.00	0.00	0.00
Right Footing	DC	0.00	0.00	0.00	0.00
Right Footing	DC+LL	0.00	0.00	0.00	0.00
Left Footing	DC	0.00	0.00	0.00	0.00
Left Footing	DC+LL	0.00	0.00	0.00	0.00
Right Footing	DC	0.00	0.00	0.00	0.00
Right Footing	DC+LL	0.00	0.00	0.00	0.00
	Max *	0.00		0.00	0.00
	Min *	0.00		0.00	0.00

Resumed Primary Factor for Bridge 4

Longitudinal Footing Reinforcing

Footing Condition	Footing Condition	Footing Cover		Bar Fy	Bar Area	Bar Dia	Bar Weight	d
Length	Width	Thickness	Cover	Bar	Area	Dia	Weight	d
Feet	Feet	Inches	Inch	Ksi	Sq In	Inches	Lbs/Ft	Inches
0.83	10.00	24.00	3.00	60	0.31	0.625	1.043	21.000

Moment = 2484.00 (inch-kips)
Vu = 0.687
Rn req.'d = 7.92 in/ksi^2

Number of Bars = 20 (based on d/sp=)
Bar Spacing = 7.472 inches (based on req'd)
Max Spacing = 18.000 inches
Number of Bars = 12 (based on max spacing)
Number of Bars = 20 (top and bottom)
Bar Size = #5 (inch-#)
Bar Length = 17.000 feet

Shear = 77.04 (Kips)
Shear Stress = 19.68 (psi)
Allow. vc = 52.03 (psi)
OK

Transverse Footing Reinforcing

Footing Condition	Footing Condition	Footing Cover		Bar Fy	Bar Area	Bar Dia	Bar Weight	d
Length	Width	Thickness	Cover	Bar	Area	Dia	Weight	d
Feet	Feet	Inches	Inch	Ksi	Sq In	Inches	Lbs/Ft	Inches
0.83	10.00	24.00	3.00	60	0.31	0.625	1.043	21.000

Moment = 2484.00 (inch-kips)
Vu = 0.687
Rn req.'d = 8.89 in/ksi^2

Number of Bars = 30 (based on d/sp=)
Bar Spacing = 6.544 inches (based on req'd)
Max Spacing = 18.000 inches
Number of Bars = 12 (based on max spacing)
Number of Bars = 30 (top and bottom)
Bar Size = #5 (inch-#)
Bar Length = 10.000 feet

Shear = 73.52 (Kips)
Shear Stress = 18.77 (psi)
Allow. vc = 52.03 (psi)
OK

Rectangular Stem Reinforcing (side Face) NOT APPLICABLE SEE CIRCULAR STEM

Footing Condition	Footing Condition	Stem Cover		Bar Fy	Bar Area	Bar Dia	Bar Weight	d
Length	Width	Thickness	Cover	Bar	Area	Dia	Weight	d
Feet	Feet	Inches	Inch	Ksi	Sq In	Inches	Lbs/Ft	Inches
2.00	0.00	0.00	3	60	0.31	0.625	1.043	18.750

Moment = 456.00 (kch-inch)
Vu = 0.687
Rn req.'d = 1.51 in/ksi^2

Number of Bars = 3 (based on d/sp=)
Bar Spacing = 18.000 inches (based on req'd)
Max Spacing = 18.000 inches
Number of Bars = 3 (based on max spacing)
Number of Bars = 3 (each face)
Bar Size = #5 (inch-#)
Bar Length = 6.000 feet

Shear = 1.03 (Kips)
Shear Stress = 0.72 (psi)
Allow. vc = 52.03 (psi)
OK

Rectangular Stem Reinforcing (end Face) NOT APPLICABLE SEE CIRCULAR STEM

Footing Condition	Footing Condition	Stem Cover		Bar Fy	Bar Area	Bar Dia	Bar Weight	d
Length	Width	Thickness	Cover	Bar	Area	Dia	Weight	d
Feet	Feet	Inches	Inch	Ksi	Sq In	Inches	Lbs/Ft	Inches
2.00	0.00	0.00	3	60	0.31	0.625	1.043	18.750

Moment = 1729.33 (kch-inch)
Vu = 2.604
Rn req.'d = 2.04 in/ksi^2

Number of Bars = 3 (based on d/sp=)
Bar Spacing = 5.000 inches (based on req'd)
Max Spacing = 18.000 inches
Number of Bars = 3 (based on max spacing)
Number of Bars = 3 (each face)
Bar Size = #5 (inch-#)
Bar Length = 6.000 feet

Shear = 3.13 (Kips)
Shear Stress = 2.19 (psi)
Allow. vc = 51.72 (psi)
OK

Stem Reinforcing (Vertical/d/s) Use #4 bars at 12"

NOT APPLICABLE SEE CIRCULAR STEM

Max. Spacing = 12.00 inches
Number of Bars = 1 (based on max spacing)
Bar Spacing = 12.00 (inches)
Bar Length = 3.167 feet

Reinforcing Bar Properties			
Bar Size	Bar Area	Bar Dia	Bar Weight
#	Sq In	Inches	Lbs/Ft
3	0.11	0.375	0.376
4	0.20	0.500	0.668
5	0.31	0.625	1.043
6	0.44	0.750	1.502
7	0.60	0.875	2.044
8	0.79	1.000	2.670
9	1.00	1.128	3.40
10	1.27	1.270	4.303
11	1.56	1.410	5.313
14	2.25	1.693	7.65
18	4.00	2.257	13.6

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Circular Stem Design - For Use in Spread Footings with Circular Stem

f'c =	3.00	ksi	
Fy =	60	ksi	
Cc =	2.00	in	Clear cover is uniform around the cross section
h =	36.00	in	Outside Diameter of Column (Approx. 70" max)
Bar Size =	5	As =	0.31 in^2
		Dia =	0.625 in
Hoop Bar		As =	0.2 in^2
size =	4	Dia =	0.5 in
Spacing =	3.75	in	Approximate desired spacing of main reinforcing (assumes as max)
Qs=	1		

Determine if section is adequate for loads applied

Mu =	149.57	ft-kips	Mu = Resultant moment = sqrt(Mstrong^2+Mweak^2)
Pu =	4.03	kips	**IS SECTION OK? YES**

Calculate location of steel reinforcing around perimeter of column:

Dia. of inner ring of reinf.= 30.375 in
perimeter= 95.43 in

# of bars = 26 number of (even) bars that will fit in perimeter Program allows 42 bars maximum OK
Number of bar rows = 13
spacing = 2.53 (in) actual vertical spacing of bars

Note: Program orients bars so that one layer is on the centroid of column (conservative)

Calculate location of bars with respect to the extreme compression fiber:

Rebar level	Is rebar level in	Is steel used for Tension or Comp.?	# bars in each level	Area of Steel Calculation As tension	As comp
d1	2.81 in	Comp	2		0.62
d2	5.34 in	Comp	2		0.62
d3	7.88 in	Comp	2		0.62
d4	10.41 in	Comp	2		0.62
d5	12.94 in	Comp	2		0.62
d6	15.47 in	Comp	2		0.62
d7	18.00 in	Steel Not Used	2		
d8	20.53 in	Tension	2	0.62	
d9	23.06 in	Tension	2	0.62	
d10	25.59 in	Tension	2	0.62	
d11	28.13 in	Tension	2	0.62	
d12	30.66 in	Tension	2	0.62	
d13	33.19 in	Tension	2	0.62	
d14	NA				
d15	NA				
d16	NA				
d17	NA				
			As tens =	3.72	As comp= 3.72

Centroid of Tension and Compression Steel from extreme compression fiber:
d(tension) = 26.88 in
d(comp) = 9.14 in

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Find max axial force: M=0 stand. Spec. 8.16.4.2.1

ΦPo = Φ[0.85*f'c(Ag-Ast)+Ast*fy]

Ag = 1017.9 in^2
Ast = 8.1 in^2

ΦPo = 3058.6 kip Mn = 0

Find axial and moment capacity at balanced strain condition: Stand. Spec 8.16.4.2.3

ΦPb = Φ[0.85*f'c*b*ab+A's*f's-As*fy]

ΦMb = Φ[0.85*f'c*b*ab(d-d"-ab/2)+A'sf's(d-d'-d")+As*fy*d"]

d = 26.86 (in) dist from extreme compression fiber to centroid of tension steel
d' = 9.14 (in) dist from extreme compression fiber to centroid of comp. steel
d" = 8.86 (in) dist from centroid of gross section to centroid of tension steel
ab = 14.31 in
β1 = 0.9
f's = 36.97 ksi
b = 35.23 in
A's = 3.72 in^2 As = 3.72 in^2

ΦPb = 1199.76 kip

ΦMb = 17138.38 in-kip = 1428.20 ft-kip

Find Moment Capacity of Section: P=0

Note: neglect compression steel

c = 5.64 (in) with a % error of 0.06 % OK
b = 25.06
θ = 88.22

Reinforcement Ratio: Used to check if fs=fy
p = 0.005527
pb = 0.022638
Is p<.75pb ? OK

ΦMn = As*fy(d-a/2)
5428.57 in-kip = 452.38 ft-kip Pn = 0

Determine if section is adequate for loads applied

Mu = 149.57266 ft-kips
Pu = 4.0300609 kips

Points for interaction diagram: Note: points are connected with straight lines

Article 8.15.4 Stand. Spec. The combined flexural and axial load capacity of compression members shall be taken as 35% of that from 8.16.4

	P	M
1	1070.5	0
2	419.91	499.87
3	0	158.33
4	4.0300609	149.5727 Point 4 is from actual loads

Linear Interpolation Program #1 (upper line)
Are you in upper region? No

	Pu		Mu	
Value Below	1070.52		0.00	
Value at desired Loc.	4.03	x =	819.399	Max
Value Above	419.91		499.87	

Linear Interpolation Program #2 (lower line)
Are you in lower region? Yes

	Pu		Mu	
Value Below	419.91		499.87	
Value at desired Loc.	4.03	x =	161.611	Max
Value Above	0.00		158.33	

Circular Stem

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Cost Data

Input	Truss Studs	Truss Plywood	Plate Studs	Post Studs	Post Plywood	Tee Bolt	Number of Chords / Truss: Truss Chord Screws	Truss Web Screws	Truss Peg	Number of Studs per Unit: Truss Studs	Post Studs	Post Peg	Foundation Anchors	Foundation Anchorage
Cost Units	Each	Sheet	Each	Each	Sheet	Each	Each	Each	Each	Each	Each	Each	Each	Each
Cost Per Unit (or Increment)	$3.50	$100.00	$3.50	$3.50	$100.00	$10.00	$0.05	$0.05	$2.00	$3.50	$3.50	$2.00	$25.00	$1.00
Cost Used for Parts	7.00	0.125	7.00	7.00	1.25	10.00	0.05	0.05	0.05	7.00	7.00	2.00	1.00	1.00
Unrounded Cost Per Unit	$24.50	$12.50	$24.50	$24.50	$125.00	$100.00	$0.25	$0.25	$0.10	$24.50	$24.50	$4.00	$25.00	$1.00

Truss Chords

Chord	Outside Dia.	Wall Thick.	Total	Weight /	
	Inches	Inches	Length	Foot	Cost
1	4.00	0.226	81.41	13.62	$276.71
2	4.00	0.226	47.11	13.62	$160.11
3	4.00	0.226	0.00	13.62	$0.00
				Total Cost:	$1,749.72

Truss Diagonals

Diagonal	Detail 1			Detail 2			Detail 3			Total all Diagonals
	Number	Length	Total	Number	Length	Total	Number	Length	Total	Each Type
Type		Inches	Inch		Inches	Inch		Inches	Inch	Inch
Flat	16	3.75	60	5	5.59	28	16	3.66	59	147
Total			60			28			59	207
								Weight/Length		4.03
								Cost		$14.52
								Total Cost		$835.53

Number of Slab Planes 1
Number of Top Planes 2

Posts

Post	Outside Dia.	Thickness	Total	Weight /	Cost
	Inches	Inches	Length	Foot	
Top	4.00	0.237	81.41	28.55	$1,824.64
Slab	4.00	0.237	15.13	28.55	$ 431.93
				Total Cost:	$2,256.57

Post Diagonals & Horizontals

Post	Diagonals			Horizontals			Total all Diagonals & Horiz. Each Type
	Number	Length	Total	Number	Length	Total	
		Inches	Inch		Inches	Inch	Inch
Top	4	4.00	16	4	3.66	15	31
Slab	4	4.00	16	5	3.66	18	34
Totals			32			33	65
						Weight/Length	4.03
						Cost	$14.52
						Total Cost	$262.04

Connections

	Tee Nuts/ Connector	Tee Chord Screws/Nuts	Truss Peg Connector	Post Peg Connector	Truss Knife Connectors	Number of Chords: 3
Number	24.00	60.00	4.00	8.00	60.00	
Cost	$24.00	$0.00	$1.20	$0.80	$0.00	
Totals	$ 24.00	$ 0.00	$ 4.80	$ 6.40	$ 0.00	Total Cost: $ 35.20

Foundation

Spread Package	Concrete	Reinforcing	Anchor Bolts	Spread Footings		
	CY	LB	Not in Use		Concrete	Reinforcing
Number	0.00	0.00		Number	CY	LB
Cost	$200.00	$0.50		Cost	$200.00	$0.50
Total	$ 0.00	$ 0.00		Total	$0.00	$0.00

Total Cost: $16.20

Post Length	
Top	180
Truss Diagonals	180
Slab	180
Post Diagonals & Horizontals	180
Connection	240
Total	960
Cost/Length (Ft/yr)	1.25

Summary	
Truss Chords	$1,749.72
Truss Diagonals	$835.53
Posts	$2,256.57
Post Diagonals & Horizontals	$262.04
Connections	$1,414.10
Foundation	$16,200.00
Total Annualized Cost	$23,518.16

Connection Data

Baseplate

				Unit Cost	Cost	
Outside Diameter =	12.00	inches				
Inside Diameter =	4.00	inches				
Thickness =	2.25					
Weight (w/o piffle/cup) =	4.29	pounds		$0.50	$240.48	weight (lbs)
Pipe Wall Thickness =	0.25			$0.00	$0.00	415
Pipe/Web Weld Length =	16	inches	4 Web + 1 Cuff Weld	$0.00	$0.00	
Gusset Weld Size =	0.250					
Gusset Weld Length =	8.00	inches		$0.08	$34.43	
Total Cost for each baseplate connection =					$274.91	

Truss Splice (each leg)

				Unit Cost	Cost	
Outside Diameter =	10.00	inches				
Inside Diameter =	8.00	inches				
Length =	24.00	inches				
Weight (if known) =	28	pounds		$0.50	$120.05	weight (lbs)
Bolt Diameter =	0.75	inches				28
Number of Bolts =	4			$3.45	$261.79	
Gusset Weld Size =	0.250					
Gusset Weld Length =	20.07	inches		$0.26	$14.67	
Total Cost for each truss splice connection =					$511.05	

Truss Diagonal Tab Plate

				Unit Cost	Cost	
Thickness =	0.375	inches				
Width =	7.00	inches				
1/2 Length =	10.00	inches				
Weight =	7	pounds		$0.50	$4.12	weight (lbs)
Weld Size =	0.250	inches				7
Chord Weld Length =	20.00	inches				
Diagonal Weld Length =	8	inches				
Total Weld Length =	28.00	inches		$0.28	$7.35	
Bolt Diameter =	0.75	inches				
Number of Bolts =	2			$2.30	$3.05	
Total Cost for each Y20 diagonal tab plate connection =					$7.35	

Post Diagonal Tab Plate

				Unit Cost	Cost	
Thickness =	0.500	inches				
Width =	7.00	inches				
1/2 Length =	10.00	inches				
Weight =	9.6	pounds		$0.50	$5.79	weight (lbs)
Weld Size =	0.250	inches				12
Chord Weld Length =	20.00	inches				
Diagonal Weld Length =	8	inches				
Total Weld Length =	28.00	inches		$0.28	$2.96	
Bolt Diameter =	0.875	inches				
Number of Bolts =	2			$3.05	$3.05	
Total Cost for each Y20 diagonal tab plate connection =					$8.84	

Truss Support Member (2 post - 4 chord)

NA - See Dimension Below

				Unit Cost	Cost	
Chords	4.00	0.237				
Length =	0.17	feet		$0.14	($0.10)	weight (lbs)
Weight =	28	pounds				-0.52
Post Length =	28	inches		$0.28	$14.64	
Total Cost for each truss support connection =					$14.64	

Truss Support Member (Tri-plated Cons.)

				Unit Cost	Cost	
Plate Thickness =	0.50	inches				
Plate Width =	31.00	in				
Post Diameter =	4					
Total Plate Weight =	63.00			$0.50	$39.84	
Web Size =	0.50	inches				
Web Length =	6.00	inches		$0.05	$17.82	
# of Webs =	36			$0.05	$0.81	
Total Cost for each truss support connection =					$58.56	

Truss Support Member (Monotube Cons.)

NA - See Dimension Above

				Unit Cost	Cost
Plate Thickness =	0.50	inches			
# of Top Plate Bolts =	24.00				
# of Tension Key =	12.00				
Total Plate Weight =	63.00			$0.50	$60.82
Web Size =	0.50	inches			
Web Length =	36	inches		$0.25	$28.68
Web Slot Pitch =	1.875	inches			
Web Slot Length =	40.000	inches		$0.25	$28.68
# of Webs =	2			$0.05	$0.03
Total Cost for each truss support connection =					$57.37

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Section Properties

Number of Posts per end	1	Number of Chords	3

Overhead Truss

Section 1

	Chord Area Ao	Mom. Of I Io	Dia. Area Ad	Total I Itot	Total S Stot	Total Area Atot	Chord Rmin	Weight per foot	Ice Area	Wind Area Chord	Wind Area Diags.	Diagonal R min	No. of Diags. per plane	Diagonal Length
Hor. Axis	2.68	4.771	0.94	1751	97.26	11.61	1.33	39.5	6.0	1.00	0.71	0.389	8	2.88
Vert. Axis	2.68	4.771	0.94	1751	84.13	11.61	1.33	39.5	6.0	1.00	0.71	0.389	8	2.88
	in^2	in^4	in^2	in^4	in^3	in^2	in.	lb/ft	ft^2/ft	ft^2/ft	ft^2/ft	in.		(feet)

Section 2

	Chord Area Ao	Mom. Of I Io	Dia. Area Ad	Total I Itot	Total S Stot	Total Area Atot	Chord Rmin	Weight per foot	Ice Area	Wind Area Chord	Wind Area Diags.	Diagonal R min	No. of Diags. per plane	Diagonal Length
Hor. Axis	2.68	4.771	0.94	1751	97.26	11.61	1.33	39.5	6.0	1.00	0.71	0.389	8	2.88
Vert. Axis	2.68	4.771	0.94	1751	84.13	11.61	1.33	39.5	6.0	1.00	0.71	0.389	8	2.88
	in^2	in^4	in^2	in^4	in^3	in^2	in.	lb/ft	ft^2/ft	ft^2/ft	ft^2/ft	in.		(feet)

Section 3 = Section 1

	Chord Area Ao	Mom. Of I Io	Dia. Area Ad	Total I Itot	Total S Stot	Total Area Atot	Chord Rmin	Weight per foot	Ice Area	Wind Area Chord	Wind Area Diags.	Diagonal R min	No. of Diags. per plane	Diagonal Length
Hor. Axis	2.68	4.77	0.94	1751	97.26	11.61	1.33	39.50	6.0	1.00	0.71	0.39	8.00	2.88
Vert. Axis	2.68	4.77	0.94	1751	84.13	11.61	1.33	39.50	6.0	1.00	0.71	0.39	8.00	2.88
	in^2	in^4	in^2	in^4	in^3	in^2	in.	lb/ft	ft^2/ft	ft^2/ft	ft^2/ft	in.		(feet)

Posts

Left Post

Chord Area Ao	Mom. Of I Io	Diag. Area Ad	Ixx Ixtot	Sxx Stot	Izz Iytot	Chord Rmin	Szz posit	Weight	Ice Area	Wind Area Chord	Diagonal R min	Total Number of Diagonals	Diagonal Length
21.21	483.093	0.00	483.09	69.01	483.09	4.77	69.01	72.16	3.67	1.167	999	0	0.00
in^2	in^4	in^2	in^4	in^3	in^4	in.	in^3	lb/ft	ft^2/ft	ft^2/ft	in.		(feet)

Right Post

Chord Area Ao	Mom. Of I Io	Diag. Area Ad	Ixx Ixtot	Sxx Stot	Izz Iytot	Chord Rmin	Szz posit	Weight	Ice Area	Wind Area Chord	Diagonal R min	Total Number of Diagonals	Diagonal Length
21.21	483.093	0.00	483.09	69.01	483.09	4.77	69.0	72.16	3.67	1.167	999	0	0.00
in^2	in^4	in^2	in^4	in^3	in^4	in.	in^3	lb/ft	ft^2/ft	ft^2/ft	in.		(feet)

Signs

Sign 1			
Area	Weight	Ice Load	L/W Ratio
415.7637	1018	1247	3.54478301
ft^2	lbs	lbs.	

Sign 2			
Area	Weight	Ice Load	L/W Ratio
0	0	0	0
ft^2	lbs	lbs.	

Sign 3			
Area	Weight	Ice Load	L/W Ratio
0	0	0	0
ft^2	lbs	lbs.	

Section 1 & 3	
Ice Area 4 =	8.0
Ice Area 3 =	8.0
Wind area diags 4 =	0.4713
Wind area diags 3 =	0.7070
Ice Area 1 =	1.047198

Section 2	
Ice Area 4 =	8.0
Ice Area 3 =	6.0
Wind area diags 4 =	0.4713
Wind area diags 3 =	0.7070
Ice Area 1 =	1.0472

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Moments and Shears on Overhead Truss Due to Wind Loads

Span	Wind Load on truss Section 1	Wind Load on truss Section 2	Wind Load on truss	Wind Load on Signs Load	Wind Load on Signs Dist. from Left	
feet	(plf)	(plf)	(plf)	(kips)	(feet)	
58.07	51.15	51.15	51.15	0.00	0.00	P1 Left Sign
				0.00	0.00	P2 Center Sign
				0.00	0.00	P3 Right Sign

Total Uniform Load =	0.051 kif

Total Load =	12.05 kips

Left Reaction	6.64 kips

Right Reaction	5.41 kips

Moments and Shears

NL	Distance	P1 dist.	P2 dist.	P3 dist.	Moment
0.0	0.0	0	0	0	0.00
0.1	5.8	0	5.807	5.807	37.69
0.2	11.6	0	11.614	11.614	73.66
0.3	17.4	0	17.421	17.421	107.90
0.4	23.2	0	23.228	23.228	140.42
0.5	29.0	3.035	29.035	29.035	135.49
0.6	34.8	9.742	34.842	34.842	111.84
0.7	40.6	15.549	40.649	40.649	86.47
0.8	46.5	21.305	46.456	46.456	59.37
0.9	52.3	27.163	52.263	52.263	30.55
1.0	58.1	32.97	58.07	58.07	0.00

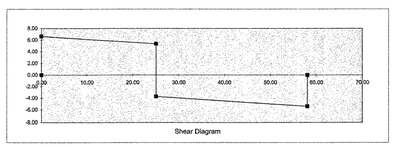
Values for Shear Diagram	
0.00	0.00
0.00	6.64
25.10	5.36
25.10	-3.72
25.10	5.36
25.10	-3.72
25.10	5.36
25.10	-3.72
58.1	-5.41
58.1	0.00

Shear at Point Loads		Shear Left	Shear Right	Max or Min
At Left Reaction	0.00	0.00	6.64	6.64
At Point P1	150.53	5.36	-3.72	5.36
At Point P2	0.00	-2.44	-2.44	-2.44
At Point P3	0.00	-2.44	-2.44	-2.44
At Right Reaction	0.00	-5.41	0.00	-5.41

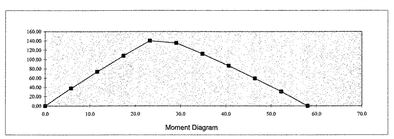
	Myy	Shearvs
Maximums	140.42	6.64
Minimums	0.00	-5.41

Forces at Field Splices and Mid-Span

Left Side			Right Side			Mid-Span		
Location	29.04	feet	Location	58.07	feet	Location	29.04	feet
Left Reaction	6.64	kips	Left Reaction	6.64	kips	Left Reaction	6.64	kips
Point Load 1	9.08	kips	Point Load 1	9.08	kips	Point Load 1	9.08	kips
Point Load 2	0.00	kips	Point Load 2	0.00	kips	Point Load 2	0.00	kips
Point Load 3	0.00	kips	Point Load 3	0.00	kips	Point Load 3	0.00	kips
Uniform Load	0.051	kips per foot	Uniform Load	0.051	kips per foot	Uniform Load	0.051	kips per foot
Shear at splice	-3.92	kips	Shear at splice	-5.41	kips	Shear at Mid-Span	-3.92	kips
Moment at splice	135.49	kip feet	Moment at splice	0.00	kip feet	Mom. at Mid-Span	135.49	kip feet



Shear Diagram



Moment Diagram

136-5/6N-C

Wind Pressure Calculations

Psn 0025(PK,*Qh*)*Vh*2*Cp*2*Cd*

Height Factor	Gust Factor	Basic Wind Velocity	Importance Factor	Velocity Conversion Factor
Kz	G	V	I	Cv
0.94	1.14	90	1.0	1.00

Calculation of Kz

kz = 2.01 (h/900)^(2/9.5) = 0.930

Elevation C.O.G sig+inuus 23.19005

Horizontal Truss

SECTION 1				SECTION 2			
Drag Coeff. (chord)	Drag Coeff. (diagonal)	Wind Pressure (chord)	Wind Pressure (diagonal)	Drag Coeff. (chord)	Drag Coeff. (diagonal)	Wind Pressure (chord)	Wind Pressure (diagonal)
Cd	Cd	Pz	Pz	Cd	Cd	Pz	Pz
1.70	1.70	24.44	37.78	1.70	1.70	24.44	37.78

Horizontal Truss Drag Coefficient Calculation (Cylindrical Members)

Section 1					Section 2					Section 3				
Min. Value	Cd	Max. Value	Cv*V*2 Chord	Cv*V*2 Diagonal	Min. Value	Cd	Max. Value	Cv*V*2 Chord	Cv*V*2 Diagonal	Min. Value	Cd	Max. Value	Cv*V*2 Chord	Cv*V*2 Diagonal
0	1.10	39	30.0	0	0	1.10	39	30.0	0	0	1.10	39	30.0	0
39	1.05	78			39	1.05	78			39	1.05	78		
78	0.45				78	0.45				78	0.45			

Signs

SIGN 1		SIGN 2		SIGN 3	
Drag Coeff.	Wind Pressure	Drag Coeff.	Wind Pressure	Drag Coeff.	Wind Pressure
Cd	Pz	Cd	Pz	Cd	Pz
1.195	26.56	1.183	26.29	1.183	26.29

Horizontal Truss Diagonal Drag Coefficient (Flat Members) 1.70

Vertical Posts

LEFT SIDE		RIGHT SIDE	
Drag Coeff.	Wind Pressure	Drag Coeff.	Wind Pressure
Cd	Pz	Cd	Pz
0.45	10.00	0.45	10.00

*For Group Load Combination III minimum pressure Pz = 25 psf

	Weighted Avg. Pressure	Used for Group III Wind
Section 1 Truss Pz =	29.96	29.96
Section 2 Truss Pz =	29.96	29.96
Sign 1 Pz =	26.56	26.56
Sign 2 Pz =	26.29	26.29
Sign 3 Pz =	26.29	26.29
Left Post =	10.00	25.00
Right Post =	10.00	25.00

INTERPOLATE SIGN 1

L/W =	3.564705	L/W	Cd	USED IN CALCULATION			
Cd =	1.195	1	1.12	L/W1=	2	C1=	1.19
		2	1.19	L/W2=	5	C2=	1.2
		5	1.20				
		10	1.23				
		15	1.30				

INTERPOLATE SIGN 2

L/W =	5	L/W	Cd	USED IN CALCULATION			
Cd =	1.183	1	1.12	L/W1=	2	C1=	1.19
		2	1.19	L/W2=	5	C2=	1.2
		5	1.20				
		10	1.23				
		15	1.30				

INTERPOLATE SIGN 3

L/W =	5	L/W	Cd	USED IN CALCULATION			
Cd =	1.183	1	1.12	L/W1=	2	C1=	1.19
		2	1.19	L/W2=	5	C2=	1.2
		5	1.20				
		10	1.23				
		15	1.30				

Drag Coefficient for Vertical Posts

Left Vertical Post				Right Vertical Post			
Min. Value	Cd	Max. Value	Cv*V*2	Min. Value	Cd	Max. Value	Cv*V*2
0	1.10	39	105.0	0	1.10	39	105.0
39	0.30	78		39	0.30	78	
78	0.45			78	0.45		

186-S16A-e

Group Load Combination III - Moments and Shears on Overhead Truss Due to Wind Loads

Span	Wind Load on truss Section 1	Wind Load on truss Section 2	Wind Load on truss	Wind Load on Signs Load	Wind Load on Signs Dist. from Left	
feet	(plf)	(plf)	(plf)	(kips)	(feet)	
58.07	51.15	51.15	51.15	0.00	0.00	P1 Left Sign
				0.00	0.00	P2 Center Sign
				0.00	0.00	P3 Right Sign

Total Uniform Load =	0.051 klf

Total Load =	12.05 kips

Left Reaction
6.64 kips

Right Reaction
5.41 kips

Moments and Shears

XL	Distance	P1 dist.	P2 dist.	P3 dist.	Moment
0.0	0.0	0	0	0	0.00
0.1	5.8	0	5.807	5.807	37.69
0.2	11.6	0	11.614	11.614	73.66
0.3	17.4	0	17.421	17.421	107.90
0.4	23.2	0	23.228	23.228	140.42
0.5	29.0	3.935	29.035	29.035	135.49
0.6	34.8	9.742	34.842	34.842	111.64
0.7	40.6	15.549	40.649	40.649	86.47
0.8	46.5	21.356	46.456	46.456	59.37
0.9	52.3	27.163	52.263	52.263	30.55
1.0	58.1	32.97	58.07	58.07	0.00

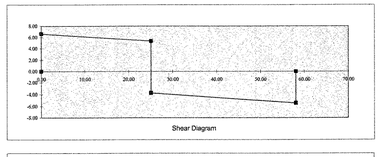
Values for Shear Diagram	
0.00	0.00
0.00	6.64
25.10	5.36
25.10	-3.72
25.10	5.36
25.10	-3.72
25.10	5.36
25.10	-3.72
58.1	-5.41
58.1	0.00

Shear at Point Loads	Shear Left	Shear Right	Max or Min
At Left Reaction	0.00	6.64	6.64
At Point P1	150.53	5.36	-3.72	5.36
At Point P2	0.00	-2.44	-2.44	-2.44
At Point P3	0.00	-2.44	-2.44	-2.44
At Right Reaction	0.00	-5.41	0.00	-5.41

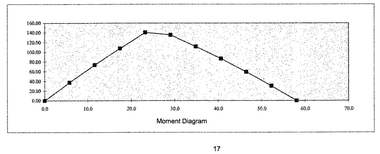
	Mxy	Shearxx
Maximums	140.42	6.64
Minimums	0.00	-5.41

Forces at Field Splices and Mid-Span

Left Side		Right Side		Mid-Span	
Location	29.04 feet	Location	58.07 feet	Location	29.04 feet
Left Reaction	6.64 kips	Left Reaction	6.64 kips	Left Reaction	6.64 kips
Point Load 1	9.08 kips	Point Load 1	9.08 kips	Point Load 1	9.08 kips
Point Load 2	0.00 kips	Point Load 2	0.00 kips	Point Load 2	0.00 kips
Point Load 3	0.00 kips	Point Load 3	0.00 kips	Point Load 3	0.00 kips
Uniform Load	0.051 kips per foot	Uniform Load	0.051 kips per foot	Uniform Load	0.051 kips per foot
Shear at splice	-3.92 kips	Shear at splice	-5.41 kips	Shear at Mid-Span	-3.92 kips
Moment at splice	135.49 kip feet	Moment at splice	0.00 kip feet	Mom. at Mid-Span	135.49 kip feet



Shear Diagram



Moment Diagram

187-S16a-e

Moments and Shears on Overhead Truss Due to Dead Loads

Span (feet)	Dead Load on truss (plf)	Dead Load on Signs Load (kips)	Dist. from Left (feet)	
58.07	40	1.52	25.10	P1 Left Sign
		0.00	0.00	P2 Center Sign
		0.00	0.00	P3 Right Sign

Total Uniform Load =	0.04 kip

Total Load =	3.81 kips

Left Reaction
2.01 kips

Right Reaction
1.80 kips

Moments and Shears

NL	Distance	P1 dist.	P2 dist.	P3 dist.	Moment
0.0	0.0	0	0	0	0.00
0.1	5.8	0	5.807	5.807	11.00
0.2	11.6	0	11.614	11.614	20.66
0.3	17.4	0	17.421	17.421	29.00
0.4	23.2	0	23.228	23.228	36.03
0.5	29.0	3.935	29.035	29.035	35.70
0.6	34.8	9.742	34.842	34.842	31.22
0.7	40.6	15.549	40.649	40.649	25.41
0.8	46.5	21.356	46.456	46.456	18.27
0.9	52.3	27.163	52.263	52.263	9.80
1.0	58.1	32.97	58.07	58.07	0.00

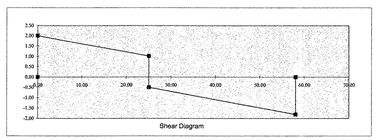
Values for Shear Diagram	
0.00	0.00
0.00	2.01
25.10	1.02
25.10	-0.50
25.10	1.02
25.10	-0.50
25.10	1.02
25.10	-0.50
58.1	-1.80
58.1	0.00

Shear at Point Loads	Shear Left	Shear Right	Max or Min
At Left Reaction	0.00	0.00	2.01
At Point P1	37.97	1.02	-0.50	1.02
At Point P2	0.00	0.49	0.49	0.49
At Point P3	0.00	0.49	0.49	0.49
At Right Reaction	0.00	-1.80	0.00	-1.80

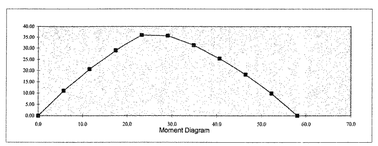
	Moment	Shear
Maximum	36.02	2.01
Minimum	0.00	-1.80

Forces at Field Splices and at Mid-Span

Left Side		Right Side		Mid-Span	
Location	29.04 feet	Location	58.07 feet	Location	29.04 feet
Left Reaction	2.01 kips	Left Reaction	2.01 kips	Left Reaction	2.01 kips
Point Load 1	1.52 kips	Point Load 1	1.52 kips	Point Load 1	1.52 kips
Point Load 2	0.00 kips	Point Load 2	0.00 kips	Point Load 2	0.00 kips
Point Load 3	0.00 kips	Point Load 3	0.00 kips	Point Load 3	0.00 kips
Uniform Load	0.04 kips per foot	Uniform Load	0.04 kips per foot	Uniform Load	0.04 kips per foot
Shear at splice	-0.66 kips	Shear at splice	-1.80 kips	Shear at splice	-0.66 kips
Moment at splice	35.70 kip feet	Moment at splice	0.00 kip feet	Moment at splice	35.70 kip feet



Shear Diagram



Moment Diagram

188-S16A-C

Moments and Shears on Overhead Truss Due to Ice Loads

Span	Ice Load	Ice Load on Signs		
	on truss	Load	Dist. from Left	
(feet)	(plf)	(kips)	(feet)	
58.07	16	1.25	25.10	P1 Left Sign
		0.00	0.00	P2 Center Sign
		0.00	0.00	P3 Right Sign

Total Uniform Load =	0.02 klf	Total Load =	2.29 kips

Left Reaction	Right Reaction
1.23 kips	1.06 kips

Moments and Shears

No.	Distance	P1 dist.	P2 dist.	P3 dist.	Moment
0.0	0.0	0	0	0	0.00
0.1	5.8	0	5.807	5.807	6.83
0.2	11.6	0	11.614	11.614	13.06
0.3	17.4	0	17.421	17.421	18.68
0.4	23.2	0	23.228	23.228	23.70
0.5	29.0	3.835	29.035	29.035	23.20
0.6	34.8	9.742	34.842	34.842	19.77
0.7	40.6	15.549	40.649	40.649	15.73
0.8	46.5	21.356	46.456	46.456	11.09
0.9	52.3	27.163	52.263	52.263	5.85
1.0	58.1	32.97	58.07	58.07	0.00

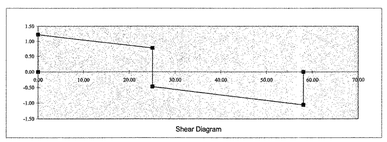
Values for Shear Diagram	
0.00	0.00
0.00	1.23
25.10	0.78
25.10	-0.47
25.10	0.78
25.10	-0.47
25.10	0.78
25.10	-0.47
58.1	-1.06
58.1	0.00

Shear at Point Loads		Shear Left	Shear Right	Max or Min
At Left Reaction	0.00	0.00	1.23	1.23
At Point P1	25.19	0.78	-0.47	0.78
At Point P2	0.00	-0.02	-0.02	-0.02
At Point P3	0.00	-0.02	-0.02	-0.02
At Right Reaction	0.00	-1.06	0.00	-1.06

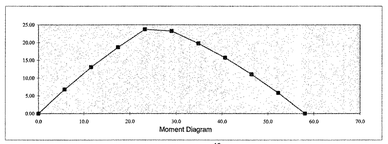
	Moment	Shear
Maximum	23.70	1.23
Minimum	0.00	-1.06

Forces at Field Splices and at Mid-Span

Left Side		Right Side		Mid-Span	
Location	29.04 feet	Location	58.07 feet	Location	29.04 feet
Left Reaction	1.23 kips	Left Reaction	1.23 kips	Left Reaction	1.23 kips
Point Load 1	1.25 kips	Point Load 1	1.25 kips	Point Load 1	1.25 kips
Point Load 2	0.00 kips	Point Load 2	0.00 kips	Point Load 2	0.00 kips
Point Load 3	0.00 kips	Point Load 3	0.00 kips	Point Load 3	0.00 kips
Uniform Load	0.02 kips per foot	Uniform Load	0.02 kips per foot	Uniform Load	0.02 kips per foot
Shear at splice	-0.54 kips	Shear at splice	-1.06 kips	Shear at splice	-0.54 kips
Moment at splice	23.20 kip feet	Moment at splice	0.00 kip feet	Moment at splice	23.20 kip feet



Shear Diagram



Moment Diagram

189-5164-E

Horizontal Truss Group Loads

Group Load	Load Combination	Percent Overload	Remark
1	DL	1.00	
2	DL+W	1.33	
3	DL+Ice+.5W	1.33	Minimum Pz = 25.0 psf

Horizontal Overhead Truss Analysis

Location		Mvert (kip-ft)			Mhoriz. (kip-ft)				Vhoriz. (kips)				Vvert (kips)		
		DL	ICE	WIND	DL	ICE	WIND	WIND III	DL	ICE	WIND	WIND III	DL	ICE	WIND
Left Support	LOAD CASES	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.64	6.64	2.01	1.23	0.00
Left Splice		35.70	23.20	0.00	0.00	0.00	135.49	135.49	0.00	0.00	3.92	3.92	0.66	0.54	0.00
Midspan		35.70	23.20	0.00	0.00	0.00	135.49	135.49	0.00	0.00	-3.92	3.92	-0.66	-0.54	0.00
Sign 1		37.97	25.19	0.00	0.00	0.00	150.53	150.53	0.00	0.00	5.36	5.36	1.02	0.78	0.00
Sign 2		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.44	2.44	0.49	0.02	0.00
Sign 3		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.44	2.44	0.49	0.02	0.00
Right Splice		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.41	5.41	1.80	1.06	0.00
Right Support		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.41	5.41	1.80	1.06	0.00

GROUP LOAD COMBINATIONS

		Location	Section	Bending About Horizontal Axis			Bending About Vertical Axis			SHEAR	SHEAR	Combined Forces		
				Mvert	Axial Stress	Axial Force	Mhoriz.	Axial Stress	Axial Force	Horizontal	Vertical	AXIAL (Fa)		SHEAR (Fv)
												Section 1	Section 2	Diagonal
		ft		kip-ft	ksi	kips	kip-ft	ksi	kips	kips	kips	kips		kips
Left Support	GROUP LOAD 1	0.00	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.01	0.00	0.00	2.01
Left Splice		29.04	1	35.70	4.40	11.80	0.00	0.00	0.00	0.00	0.66	11.80	0.00	0.66
Midspan		29.04	1	35.70	4.40	11.80	0.00	0.00	0.00	0.00	-0.66	11.80	0.00	0.00
Sign 1		25.10	1	37.97	4.68	12.55	0.00	0.00	0.00	0.00	1.02	12.55	0.00	1.02
Sign 2		0.00	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.49	0.00	0.00	0.49
Sign 3		0.00	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.49	0.00	0.00	0.49
Right Splice		58.07	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.80	0.00	0.00	1.80
Right Support		58.07	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.80	0.00	0.00	1.80
Left Support	GROUP LOAD 2	0.00	1	0.00	0.00	0.00	0.00	0.00	0.00	4.99	1.51	0.00	0.00	4.99
Left Splice		29.04	1	26.84	3.31	8.87	101.87	14.53	38.94	2.95	0.49	47.81	0.00	2.95
Midspan		29.04	1	26.84	3.31	8.87	101.87	14.53	38.94	-2.95	-0.49	47.81	0.00	-0.49
Sign 1		25.10	1	28.55	3.52	9.44	113.18	16.14	43.26	4.03	0.76	52.70	0.00	4.03
Sign 2		0.00	1	0.00	0.00	0.00	0.00	0.00	0.00	1.83	0.37	0.00	0.00	1.83
Sign 3		0.00	1	0.00	0.00	0.00	0.00	0.00	0.00	1.83	0.37	0.00	0.00	1.83
Right Splice		58.07	1	0.00	0.00	0.00	0.00	0.00	0.00	4.07	1.36	0.00	0.00	4.07
Right Support		58.07	1	0.00	0.00	0.00	0.00	0.00	0.00	4.07	1.36	0.00	0.00	4.07
Left Support	GROUP LOAD 3	0.00	1	0.00	0.00	0.00	0.00	0.00	0.00	2.50	2.43	0.00	0.00	2.50
Left Splice		29.04	1	44.28	5.46	14.64	50.93	7.27	19.47	1.48	0.90	34.11	0.00	1.48
Midspan		29.04	1	44.28	5.46	14.64	50.93	7.27	19.47	2.95	-0.90	34.11	0.00	2.95
Sign 1		25.10	1	47.49	5.86	15.70	56.59	8.07	21.63	2.01	1.35	37.33	0.00	2.01
Sign 2		0.00	1	0.00	0.00	0.00	0.00	0.00	0.00	0.92	0.38	0.00	0.00	0.92
Sign 3		0.00	1	0.00	0.00	0.00	0.00	0.00	0.00	0.92	0.38	0.00	0.00	0.92
Right Splice		58.07	1	0.00	0.00	0.00	0.00	0.00	0.00	2.03	2.15	0.00	0.00	2.15
Right Support		58.07	1	0.00	0.00	0.00	0.00	0.00	0.00	2.03	2.15	0.00	0.00	2.15
										4.99	2.43	52.70	0.00	4.99

		Location	Section	Monotube Forces							
				Section 1				Section 2			
				Mvert	Mhoriz.	H Shear	V Shear	Mvert	Mhoriz.	H Shear	V Shear
		ft		kip-ft	kip-ft	kips	kips	kip-ft	kip-ft	kips	kips
Left Support	GROUP LOAD 1	0.00	1	0.00	0.00	0.00	2.01	0.00	0.00	0.00	0.00
Left Splice		29.04	1	35.70	0.00	0.00	0.66	0.00	0.00	0.00	0.00
Midspan		29.04	1	35.70	0.00	0.00	-0.66	0.00	0.00	0.00	0.00
Sign 1		25.10	1	37.97	0.00	0.00	1.02	0.00	0.00	0.00	0.00
Sign 2		0.00	1	0.00	0.00	0.00	0.49	0.00	0.00	0.00	0.00
Sign 3		0.00	1	0.00	0.00	0.00	0.49	0.00	0.00	0.00	0.00
Right Splice		58.07	1	0.00	0.00	0.00	1.80	0.00	0.00	0.00	0.00
Right Support		58.07	1	0.00	0.00	0.00	1.80	0.00	0.00	0.00	0.00
Left Support	GROUP LOAD 2	0.00	1	0.00	0.00	4.99	1.51	0.00	0.00	0.00	0.00
Left Splice		29.04	1	26.84	101.87	2.95	0.49	0.00	0.00	0.00	0.00
Midspan		29.04	1	26.84	101.87	-2.95	-0.49	0.00	0.00	0.00	0.00
Sign 1		25.10	1	28.55	113.18	4.03	0.76	0.00	0.00	0.00	0.00
Sign 2		0.00	1	0.00	0.00	1.83	0.37	0.00	0.00	0.00	0.00
Sign 3		0.00	1	0.00	0.00	1.83	0.37	0.00	0.00	0.00	0.00
Right Splice		58.07	1	0.00	0.00	4.07	1.36	0.00	0.00	0.00	0.00
Right Support		58.07	1	0.00	0.00	4.07	1.36	0.00	0.00	0.00	0.00
Left Support	GROUP LOAD 3	0.00	1	0.00	0.00	2.50	2.43	0.00	0.00	0.00	0.00
Left Splice		29.04	1	44.28	50.93	1.48	0.90	0.00	0.00	0.00	0.00
Midspan		29.04	1	44.28	50.93	2.95	-0.90	0.00	0.00	0.00	0.00
Sign 1		25.10	1	47.49	56.59	2.01	1.35	0.00	0.00	0.00	0.00
Sign 2		0.00	1	0.00	0.00	0.92	0.38	0.00	0.00	0.00	0.00
Sign 3		0.00	1	0.00	0.00	0.92	0.38	0.00	0.00	0.00	0.00
Right Splice		58.07	1	0.00	0.00	2.03	2.15	0.00	0.00	0.00	0.00
Right Support		58.07	1	0.00	0.00	2.03	2.15	0.00	0.00	0.00	0.00
				47.49	113.18	4.99	2.43	0.00	0.00	0.00	0.00

	Mvert	Mhoriz.	SHEAR Horizontal	SHEAR Vertical
	kip-ft	kip-ft	kips	kips
For Monotube Design Only - Section 1	47.49	113.18	4.99	2.43
For Monotube Design Only - Section 2	0.00	0.00	0.00	0.00
At Splice	44.28	101.87	2.95	0.90

190-5160-E

VERTICAL TRUSS LOAD COMBINATIONS

		Percent Overstress	
Group I	DL	1.00	
Group II Case 1	DL + Wn + .2Wt	1.33	Wn = WIND FORCES IN THE X DIRECTION
Group II Case 2	DL + .6Wn + .3Wt	1.33	
Group III Case 1	DL + ICE + .5Wn + .1Wt	1.33	Minimum wind pressure of 25 psf
Group III Case 2	DL + ICE + .3Wn + .15Wt	1.33	Minimum wind pressure of 25 psf

LOADS ON VERTICAL POSTS

Location		vxx (kips/ft)				AXIAL (kips/ft)			Vxx				AXIAL		
	LOADS	DL	ICE	WIND	WIND III	DL	ICE	WIND	DL	ICE	WIND	WIND III	DL	ICE	WIND
Left Support		0.00	0.00	0.012	0.029	0.072	0.011	0.00	0.00	0.00	6.64	6.64	2.01	1.23	0.00
Right Support		0.00	0.00	0.012	0.029	0.072	0.011	0.00	0.00	0.00	5.41	5.41	1.80	1.06	0.00
										Wt =	12.05	12.05			

Depth of Horizontal Truss Dt	Total left Post Ht. Hl	Total Right Post Ht. Hr
3.00	25.53	26.52

Relative Stiffness Transverse Wind Wt
kips
0
0
6.39
5.66
6.39
5.66
6.39
5.66
6.39
5.66

LOAD COMBINATION RESULTS (Loads and Moments are for both posts)

Reactions		Mstrong kip-ft	Mweak kip-ft	Vstrong kips	Wind Tr kips	Axial kips
Left Support	G I	0.00	0.00	0.00	0	3.85
Right Support		0.00	0.00	0.00	0	3.72
Left Support	GII C1	122.83	23.66	5.22	1.01	2.90
Right Support		104.85	21.91	4.30	0.90	2.79
Left Support	GII C2	73.70	35.49	3.13	1.51	2.90
Right Support		62.91	32.87	2.58	1.35	2.79
Left Support	GIII C1	63.56	11.83	2.75	0.50	4.03
Right Support		54.74	10.96	2.32	0.45	3.81
Left Support	GIII C2	38.14	17.74	1.67	0.50	4.03
Right Support		32.84	16.44	1.39	0.45	3.81

Posts

Left Post

Chord Area Ac	Mom. Of I Iy	Diag. Area Ad	bxx bdot	Sxx Sdot	Izz	Chord Rmin	Szz	Weight	Ice Area	Wind Area Chord	Diagonal R min
21.21	483.093	0.00	483	69.01	483.09	4.77	69.0	72.16	3.67	1.167	999
in^2	in^4	in^2	in^4	in^3	in^4	in.	in^3	lb/ft	ft^2/ft	ft^2/ft	in.

Right Post

Chord Area Ac	Mom. Of I Iy	Diag. Area Ad	bxx bdot	Sxx Sdot	Izz	Chord Rmin	Szz	Weight	Ice Area	Wind Area Chord	Diagonal R min
21.21	483.093	0.00	483	69.01	483.09	4.77	69.0	72.16	3.67	1.167	999
in^2	in^4	in^2	in^4	in^3	in^4	in.	in^3	lb/ft	ft^2/ft	ft^2/ft	in.

LOAD COMBINATION RESULTS (Per Post for design)

Reactions		Max. Axial kips	Min. Axial kips	Mstrong kip-ft	Mweak kip-ft	Mmax kip-ft	V kips
Left Support	G I	3.85	3.85	0.00	0.00	0.00	0.00
Right Support		3.72	3.72	0.00	0.00	0.00	0.00
Left Support	GII C1	2.90	2.90	122.83	23.66	122.83	5.31
Right Support		2.79	2.79	104.85	21.91	104.85	4.39
Left Support	GII C2	2.90	2.90	73.70	35.49	73.70	3.47
Right Support		2.79	2.79	62.91	32.87	62.91	2.91
Left Support	GIII C1	4.03	4.03	63.56	11.83	63.56	2.82
Right Support		3.81	3.81	54.74	10.96	54.74	2.37
Left Support	GIII C2	4.03	4.03	38.14	17.74	38.14	1.74
Right Support		3.81	3.81	32.84	16.44	32.84	1.48

Number of Posts	1

191-S16N-2

Horizontal Truss Analysis FALSE

Section 1 - Chords

Unbraced Length (in.)	Pipe Diameter (in.)	Wall Thickness (in.)	Pipe Area (in.^2)	Chord Yield Str. (ksi)	Max. Axial Force kips	Column Slenderness Cc	kL/Rmin	fa Compression (ksi)	Fa Compression (ksi)	RESULT C/D
72.0	4.000	0.226	2.68	42.0	52.70	116.7	53.95	19.67	20.52	0.96

Section 2 - Chords

Unbraced Length (in.)	Pipe Diameter (in.)	Wall Thickness (in.)	Pipe Area (in.^2)	Chord Yield Str. (ksi)	Max. Axial Force kips	Column Slenderness Cc	kL/Rmin	fa Compression (ksi)	Fa Compression (ksi)	RESULT C/D
72.0	4.000	0.226	2.68	42.0	0.00	116.7	53.95	0.00	20.52	0.00

Diagonals -Horizontal

Unbraced Length (in.)	Pipe or Angle	Diagonal Area (in.^2)	R min (in.)	Chord Yield Str. (ksi)	Max. Axial Force kips	Column Slenderness Cc	kL/Rmin	fa Compression (ksi)	Fa Compression (ksi)	RESULT C/D
34.6	ANGLE	0.94	0.39	36.0	8.11	126.1	88.97	8.65	14.32	0.60

Diagonals - Vertical

Unbraced Length (in.)	Pipe or Angle	Diagonal Area (in.^2)	R min (in.)	Chord Yield Str. (ksi)	Max. Axial Force kips	Column Slenderness Cc	kL/Rmin	fa Compression (ksi)	Fa Compression (ksi)	RESULT C/D
34.6	ANGLE	0.94	0.39	36.0	3.95	126.1	88.97	4.22	14.32	0.29

Deflections at Mid-Span

Span = 696.84 inches
I = 1751 in^4

	Uniform Load		Point Loads			Mid-Span
	Load plf	Load k/inch	Load kips	Dist. A inches	Dist. B inches	Deflection inches
Dead Load of Truss	40	0.0032918				0.20
Dead Load of Sign 1			1.52	301.20	395.64	0.2055
Dead Load of Sign 2			0.00	0.00	0.00	0.0000
Dead Load of Sign 3			0.00	0.00	0.00	0.0000
Ice on Truss	18	0.0014924				0.09
Ice on Sign 1			1.25	301.20	395.64	0.1689
Ice on Sign 2			0.00	0.00	0.00	0.0000
Ice on Sign 3			0.00	0.00	0.00	0.0000

Total Defl. (DL+Ice)	0.66	inches
Allowable Deflection	4.65	inches

Dead Load Deflection	0.40 inches
Extra Camber (L/1000)	0.69684 inches
Total Camber	1.10 inches

192-sign-e

VERTICAL TRUSS ANALYSIS

Number of Posts: 1

Local Building AASHTO 3.9

Left Post

Outside Dia (inches)	Wall Thick. (inches)	Yield Str. (ksi)	λ	λp	λr	Lmax	Result
14.000	0.50	42.0	28.00	50.9	150.8	339.9	Compact

Right Post

Outside Dia (inches)	Wall Thick. (inches)	Yield Str. (ksi)	λ	λp	λr	Lmax	Result
14.000	0.50	42.0	28.00	50.9	150.8	339.9	Compact

Diagonals

Leg Size (inches)	Thickness (inches)	Fore Dia. (in/out)	Wall Thk. (in/out)	Yield Str. (ksi)	λ	λp	λr	Result
0.00	0.00	0.00	0.00	0.00	999	999.0	999.0	NA

λ width-thickness ratio
λp compact width-thickness ratio
λr non-compact width-thickness ratio
Lmax maximum width-thickness ratio
E 29000 ksi (Young's Modulus)

Post Design Values

K
2/3
1.5
3

<-- Input for 2 chord post
<-- Value used in computations

Fa calculated for KL/ryy only

Shape 1

BENDING AND SHEAR STRESSES

	Mmax kip-ft	Spool in^3	fb ksi	Shear/ Web	Pipe Area in^2	fvA ksi	Axial kips	Area y in^2	fa ksi
Left Support	0.00	68.01	0.00	0.00	21.21	0.00	3.50	21.21	0.16
Right Support	0.00	68.01	0.00	0.00	21.21	0.00	3.72	21.21	0.18

REBOL1-8

	Pb ksi	Fv ksi	Fa ksi	Cc	Rxxsub	KL/R	Fa'	Eqn. 5-1? Cc/KL	Eqn. 5-1? CcRt	Eqn. 5-1? CcRt	MAX CcRt
Left Support	27.72	13.86	10.33	119.75	4.77	120.86	10.33	0.0166	0.0166	0.0166	0.0166
Right Support	27.72	13.86	9.40	119.75	4.77	125.80	9.40	0.0071	0.0166	0.0166	0.0166

	Length in	Pipe or Angle	Diagonal Area	Rmin	Chord Yield Str.	Max Axial Force	Column Slenderness	KL/Rmin	fa Axial	Fb Bend	Result CIC
Left Diagonal	0.00	PIPE	0.00	999.00	0	0.00	999.00		0.00	999.00	1.00
Right Diagonal	0.00	PIPE	0.00	999.00	0	0.00	999.00		0.00	999.00	1.00

Fb Calculation

Left Support	Term 1	Term 2	Term 3	Fb ksi
Eqn. 5-???	0.000	0.000	0.000	
Eqn. 5-1A	0.016	0.000	0.000	
Eqn. 5-1B	0.016	0.990	0.000	
Right Support	**Term 1**	**Term 2**	**Term 3**	
Eqn. 5-???	0.000	0.000	0.000	
Eqn. 5-1A	0.016	0.000	0.000	
Eqn. 5-1B	0.016	0.990	0.000	

	Compact (Yes)	Non-Compact (Yes)	Slender
Left Support	27.72	51.60	51.60
Right Support	27.72	51.60	51.60

Shape 1 Leg 1

BENDING AND SHEAR STRESSES

	Mmax kip-ft	Spool in^3	Sweak in^3	Shear/ kips	Pipe Area in^2	Fcr ksi	Axial kips	Area y in^2	fa ksi
Left Support	122.83	68.01	21.70	4.39	21.21	5.21	2.66	21.21	0.13
Right Support	104.86	68.01	19.23	4.39	21.21	5.21	2.79	21.21	0.13

REBOL1E

	Pb ksi	Fv ksi	Fa ksi	Cc	Rxxsub	KL/R	Fa'	Eqn. 5-1? Cc/KL	Eqn. 5-1? CcRt	Eqn. 5-1? CcRt	MAX CcRt
Left Support	27.72	13.86	10.33	119.75	4.77	120.86	10.33	0.0166	0.0166	0.0166	0.0166
Right Support	27.72	13.86	9.40	119.75	4.77	125.80	9.40	0.0852	0.6811	0.6811	0.6811

	Length in	Pipe or Angle	Diagonal Area	Rmin	Chord Yield Str.	Max Axial Force	Column Slenderness	KL/Rmin	fa Axial	Fb Bend	Result CIC
Left Diagonal	0.00	PIPE	0.00	999.00	0	0.00	999.00		0.00	999.00	1.00
Right Diagonal	0.00	PIPE	0.00	999.00	0	0.00	999.00		0.00	999.00	1.00

Fb Calculation

Left Support	Term 1	Term 2	Term 3	Fb ksi
Eqn. 5-???	0.000	0.000	0.000	
Eqn. 5-1A	0.016	0.000	0.000	
Eqn. 5-1B	0.016	0.990	0.000	
Right Support	**Term 1**	**Term 2**	**Term 3**	
Eqn. 5-???	0.000	0.000	0.000	
Eqn. 5-1A	0.016	0.000	0.000	
Eqn. 5-1B	0.016	0.990	0.000	

	Compact (Yes)	Non-Compact (Yes)	Slender
Left Support	27.72	51.60	51.60
Right Support	27.72	51.60	51.60

193-516A-E

WHOP 4 CASE 1

BRACING AXIC SHEAR STRESSES

	Mmax kip-ft	Spost in^3	Sweak in	Shear kips	Pipe Area in^2	fxs ksi	Axial kips	Area y in^2	fs ksi
Left Support	58.76	99.41	10.98	2.80	21.21	0.14	2.79	21.21	0.13
Right Support	58.83	99.41	10.96	2.80	21.21	0.14	2.79	21.21	0.13

	Left Support	Right Support
Eqn. 5-17	0.000	0.000
Eqn. 5-18	0.014	0.014
Eqn. 5-19	0.014	0.014
MAX CSR	0.014	0.014

	Left Support	Right Support
Tens. |Tens.|/Fa+b	0.000	0.000
Eqn. 5-17	0.000	0.000
Eqn. 5-18	0.014	0.014
Eqn. 5-19	0.014	0.014
Max Eqn. 5-19	0.014	0.014

Fb Calculation

Cmcomp (lbs)	Fa+b Compact (ksi)	Slender
27.72	31.65	31.65
27.72	31.65	31.65

RESULTS

	Fb ksi	Fv ksi	Fa ksi	Cc	Rweak	KLR	Fa'	Eqn. 5-17 CSR	Eqn. 5-18 CSR	Eqn. 5-19 CSR	MAX CSR
Left Support	27.72	13.86	10.23	118.75	4.77	120.60	10.23	0.000	0.014	0.014	0.014
Right Support	27.72	13.86	9.45	118.75	4.77	125.50	9.45	0.000	0.014	0.014	0.014

	Length ft	Pipe or Angle	Diagonal Area	Rmin	Cfactor Yield Str.	Max Axial Force	Column Slenderness	kL/Rmin	fa ksi	Fe ksi	Result C/D
Left Diagonal	0.00	PIPE	0.00	999.00	0	0.00	999.00	0.00	999.00	999.00	1.00
Right Diagonal	0.00	PIPE	0.00	999.00	0	0.00	999.00	0.00	999.00	999.00	1.00

WHOP 4 CASE 1

BRACING AND SHEAR STRESSES

	Mmax kip-ft	Spost in^3	Sweak in	Shear kips	Pipe Area in^2	fxs ksi	Axial kips	Area y in^2	fs ksi
Left Support	63.86	99.41	11.93	2.43	21.21	0.15	4.63	21.21	0.16
Right Support	54.74	99.41	9.93	3.07	21.21	0.11	3.63	21.21	0.19

	Left Support	Right Support
Eqn. 5-17	0.000	0.000
Eqn. 5-18	0.015	0.015
Eqn. 5-19	0.015	0.015
MAX CSR	0.015	0.015

	Left Support	Right Support
Tens. |Tens.|/Fa+b	0.000	0.000
Eqn. 5-17	0.000	0.000
Eqn. 5-18	0.015	0.015
Eqn. 5-19	0.015	0.015
Max Eqn. 5-19	0.015	0.015

Fb Calculation

Cmcomp (lbs)	Fa+b Compact (ksi)	Slender
27.72	31.65	31.65
27.72	31.65	31.65

RESULTS

	Fb ksi	Fv ksi	Fa ksi	Cc	Rweak	KLR	Fa'	Eqn. 5-17 CSR	Eqn. 5-18 CSR	Eqn. 5-19 CSR	MAX CSR
Left Support	27.72	13.86	10.23	118.75	4.77	120.60	10.23	0.000	0.015	0.015	0.015
Right Support	27.72	13.86	9.45	118.75	4.77	125.50	9.45	0.000	0.015	0.015	0.015

	Length ft	Pipe or Angle	Diagonal Area	Rmin	Cfactor Yield Str.	Max Axial Force	Column Slenderness	kL/Rmin	fa ksi	Fe ksi	Result C/D
Left Diagonal	0.00	PIPE	0.00	999.00	0	0.00	999.00	0.00	999.00	999.00	1.00
Right Diagonal	0.00	PIPE	0.00	999.00	0	0.00	999.00	0.00	999.00	999.00	1.00

WHOP 4 CASE 1

BRACING AXIC SHEAR STRESSES

	Mmax kip-ft	Spost in^3	Sweak in	Shear kips	Pipe Area in^2	fxs ksi	Axial kips	Area y in^2	fs ksi
Left Support	35.14	99.41	6.63	1.47	21.21	0.09	2.63	21.21	0.16
Right Support	33.94	99.41	5.71	1.80	21.21	0.07	3.63	21.21	0.19

	Left Support	Right Support
Eqn. 5-17	0.000	0.000
Eqn. 5-18	0.010	0.010
Eqn. 5-19	0.010	0.010
MAX CSR	0.010	0.010

	Left Support	Right Support
Tens. |Tens.|/Fa+b	0.000	0.000
Eqn. 5-17	0.000	0.000
Eqn. 5-18	0.010	0.010
Eqn. 5-19	0.010	0.010
Max Eqn. 5-19	0.010	0.010

Fb Calculation

Cmcomp (lbs)	Fa+b Compact (ksi)	Slender
27.72	31.65	31.65
27.72	31.65	31.65

RESULTS

	Fb ksi	Fv ksi	Fa ksi	Cc	Rweak	KLR	Fa'	Eqn. 5-17 CSR	Eqn. 5-18 CSR	Eqn. 5-19 CSR	MAX CSR
Left Support	27.72	13.86	10.23	118.75	4.77	120.60	10.23	0.000	0.000	0.000	0.000
Right Support	27.72	13.86	9.45	118.75	4.77	125.50	9.45	0.000	0.000	0.000	0.000

	Length ft	Pipe or Angle	Diagonal Area	Rmin	Cfactor Yield Str.	Max Axial Force	Column Slenderness	kL/Rmin	fa ksi	Fe ksi	Result C/D
Left Diagonal	0.00	PIPE	0.00	999.00	0	0.00	999.00	0.00	999.00	999.00	1.00
Right Diagonal	0.00	PIPE	0.00	999.00	0	0.00	999.00	0.00	999.00	999.00	1.00

Left Post	Max. Axial Force in Diag. =	0.00
Right Post	Max. Axial Force in Diag. =	0.00

Max. Overall = 0.00

Left Post max DSR	0.00
Right Post max DSR	0.00
Left diag max KR/C	1.00
Right diag max C/Rk	1.00

194-5/6N-e

Horizontal Monotube Analysis

E = 29000 ksi (Young's Modulus)
k chord = 1.00

	Mvert	Mhoriz.	SHEAR Horizontal	SHEAR Vertical	Max Axial
	kip-ft	kip-ft	kips	kips	Kips
Section 1	47.49	113.18	4.99	2.43	5.31
Section 2	0.00	0.00	0.00	0.00	5.31

Local Buckling AASHTO 5.5							
Section 1							
Outside Dia. (inches)	Wall Thick. (inches)	Yield Str. (ksi)	λ	λp	λr	λmax	Result
4.000	0.23	42.0	17.70	86.9	180.6	309.5	Compact

Local Buckling AASHTO 5.5							
Section 2							
Outside Dia. (inches)	Wall Thick. (inches)	Yield Str. (ksi)	λ	λp	λr	λmax	Result
4.000	0.23	42.0	17.70	86.9	180.6	309.5	Compact

λ width-thickness ratio
λp compact width-thickness ratio
λr non-compact width-thickness ratio
λmax maximum width-thickness ratio
E 29000 ksi (Young's Modulus)

Section 1					
Unbraced Length (in.)	Pipe Diameter (in.)	Wall Thickness (in.)	Pipe Area (in.^2)	Chord Yield Str. (ksi)	kL/Rmin
72.0	4.000	0.226	2.68	42.0	53.95

Section 2					
Unbraced Length (in.)	Pipe Diameter (in.)	Wall Thickness (in.)	Pipe Area (in.^2)	Chord Yield Str. (ksi)	kL/Rmin
72.0	4.000	0.226	2.68	42.0	53.95

GROUP 1	BENDING AND SHEAR STRESSES									
	Mmax kip-ft	S in^3	fb ksi	Shear kips	Pipe Area in^2	fv ksi	Axial kips	Area y in^2	fa ksi	
Section 1	122.74	97.26	15.14	5.55	2.68	2.07	5.31	2.68	1.98	
Section 2	0.00	97.26	0.00	0.00	2.68	0.00	5.31	2.68	1.98	

	RESULTS										
	Fb ksi	Fv ksi	Fa ksi	Cc	R	KL/R	Fe'	Eqn. 5-17 CSR	Eqn. 5-18 CSR	Eqn. 5-19 CSR	**MAX CSR**
Section 1	27.72	13.86	21.75	116.75	1.33	53.95	51.30	0.647	0.715	0.660	0.715
Section 2	27.72	13.86	21.75	116.75	1.33	53.95	51.30	0.079	0.091	0.091	0.091

				Fb Calculation		
Section 1	Term 1	Term 2	Term 3	Compact (ksi)	Non-Compact (ksi)	Slender
Eqn. 5-17	0.079	0.546	0.022			
Eqn. 5-18	0.091	0.601	0.022			
Eqn. 5-19	0.091	0.546	0.022			
Section 2	Term 1	Term 2	Term 3			
Eqn. 5-17	0.079	0.000	0.000			
Eqn. 5-18	0.091	0.000	0.000	27.72	72.09	72.09
Eqn. 5-19	0.091	0.000	0.000	27.72	72.09	72.09

195-SIGN-C

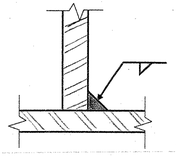
Highway Safety Corporation

Glastonbury, CT

Welding Procedure Specification

Material specification **ASTM A36, A572 gr 50, A709 Gr 36, ASTM A709 Gr 50, A500 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 **DC**
Polarity **Reverse**
Welding progression **Stringers**
Root treatment **None**
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
3/16"	1	0.045"	300 A ± 30	29 V ± 2	28 ipm ± 2	TYPICAL ALL FILLET WELDS 
1/4"	1	0.045"	300 A ± 30	29 V ± 2	14 ipm ± 2	

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

PAUL RADICE
CWI 98070221
QC1 EXP. 7/01/10

WPS no. **W-1587-1**
Revision no. **0**
Supporting PQR no. **Pre-qualified**
Project Name **St. Johnsbury, Lyndon, Waterford VT**

Fabricator **Highway Safety Corporation**
Authorized by Paul Radice 126-516N-e
Date **7/24/07**
Project Number **HES 091-3(42) & HES 093-1(10)**

Highway Safety Corporation

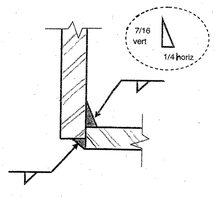
Glastonbury, CT

Welding Procedure Specification

Material specification **ASTM A36, A572 gr 50, A709 Gr 36, ASTM A709 Gr 50, A500 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 & Multiple**
Single or multiple arc **Single**
Welding current **DC**
Polarity **Reverse**
Welding progression **Stringers**
Root treatment **None**
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	Volts	Travel speed	Joint detail
7/16" x 1/4"	1 & 2	0.045"	300 A ± 30	29 V ± 2	14 ipm ± 2	UN-EQUAL LEG FILLET WELD @ BASE PLATE CONNECTION



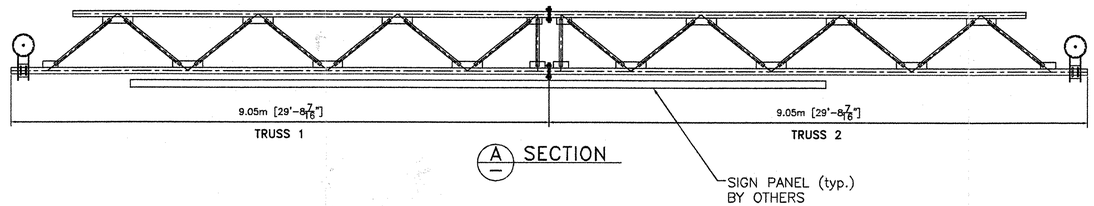
This procedure may vary due to fabrication sequence, fit-up, pass size, etc. within the limitation of variables given in section 5 of latest edition AWS D1.1

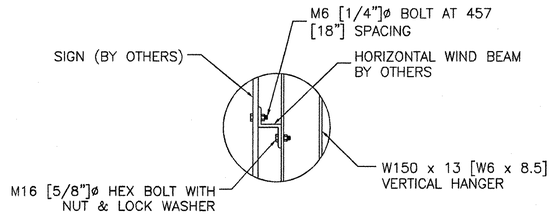
PAUL RADICE
CWI 98070221
QC1 EXP. 7/01/16

WPS no. **W-1587-2**
Revision no. **0**
Supporting PQR no. **Pre-qualified**
Project Name **St. Johnsbury, Lyndon, Waterford VT**

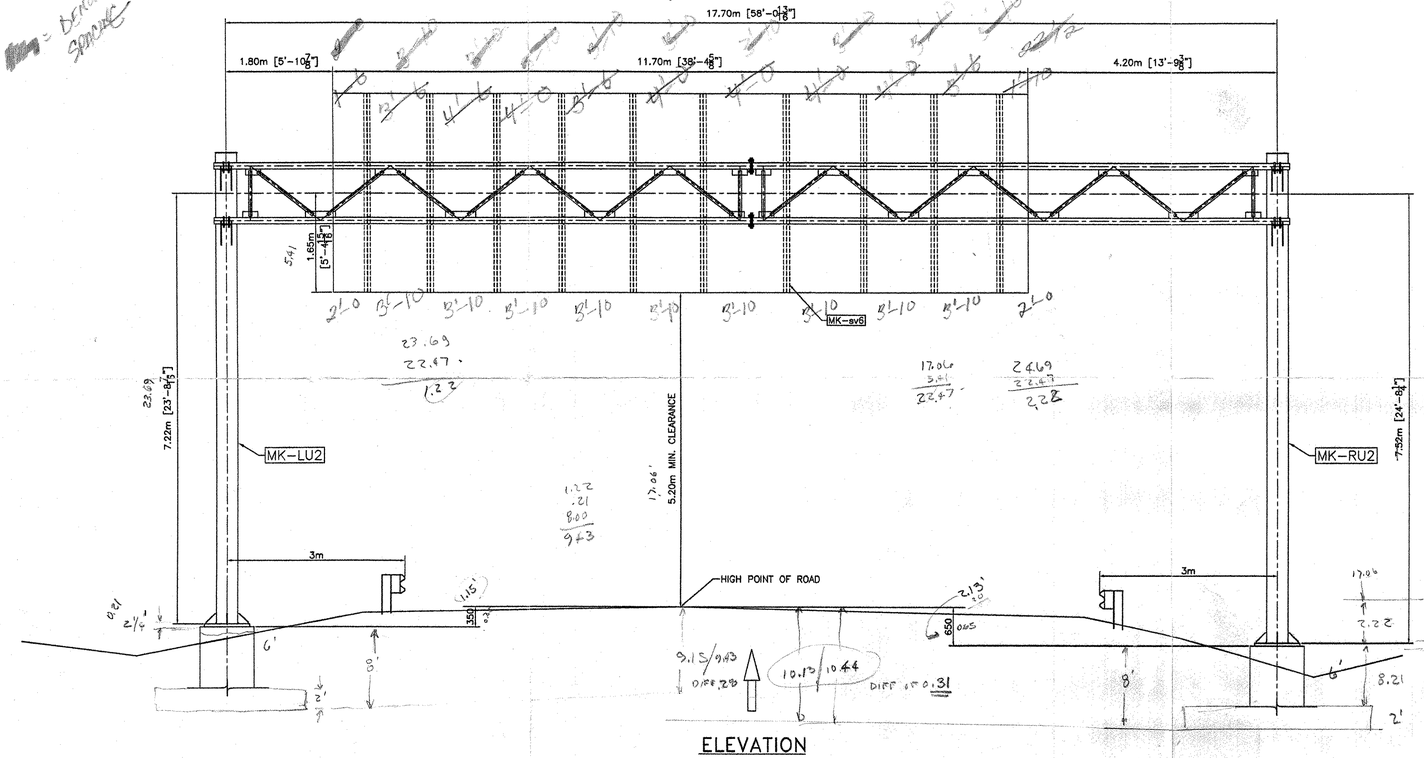
Fabricator **Highway Safety Corporation**
Authorized by Paul Radice
Date **7/24/07**
Project Number **HES 091-3(42) & HES 093-1(10)**

197-546A e





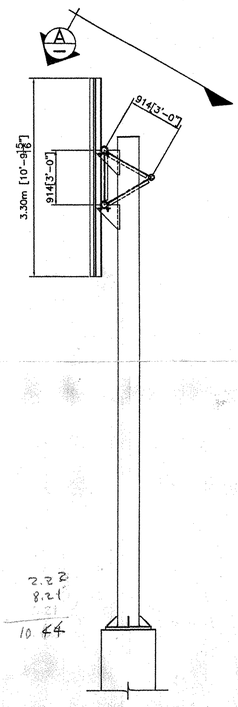
SIGN ATTACHMENT DETAIL



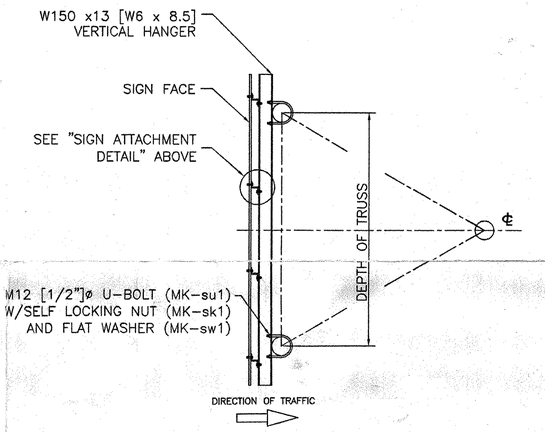
ELEVATION

LOOKING AT FACE OF SIGN
(OUT OF PLANE CHORDS NOT SHOWN FOR CLARITY)

FOOTING ELEVATION IS ASSUMED.
CONTRACTOR TO VERIFY ELEVATIONS
BEFORE FABRICATION.

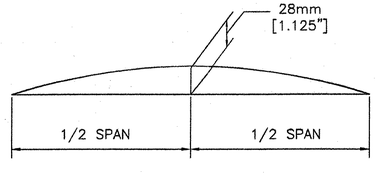


SIDE VIEW



SIGN MOUNTING DETAIL

VERTICAL HANGER BEAMS & U-BOLTS INCLUDED



CAMBER DIAGRAM

NOTE:

CAMBER WILL BE ACHIEVED BY SHORTENING LOWER CHORD PIPES BY AN AMOUNT SUCH THAT POSITIVE UPWARD DEFLECTION IS PRODUCED WHEN TRUSSES ARE BROUGHT TOGETHER AT SPLICES.

ALL DIMENSIONS SHOWN ARE IN MILLIMETERS (mm) UNLESS OTHERWISE NOTED. ENGLISH CONVERSION SHOWN IN [ ] FOR REFERENCE ONLY.

RECEIVED
JUL 27 2007

REVISIONS		
No.	Remarks	Date
0	Initial submittal	

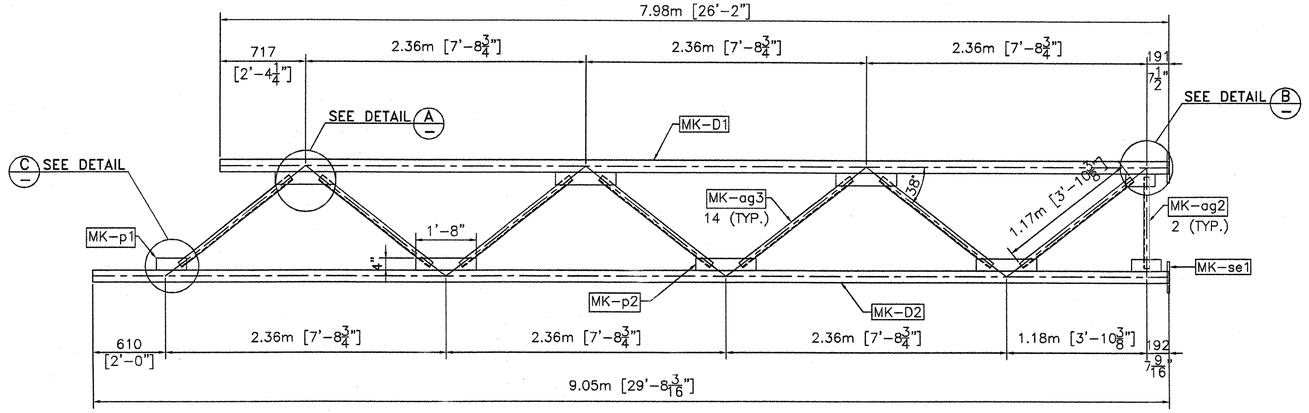
HIGHWAY SAFETY CORP.
GLASTONBURY, CT

TRI-CHORD SIGN STRUCTURE
STATE OF VERMONT
COUNTY OF CALEDONIA
MM 10.050 NB
PROJECT No. HES 091-3(42)
HES 093-1(10)

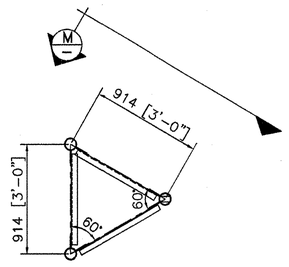
GENERAL CONTRACTOR
SUB CONTRACTOR F.R. LAFAYETTE

DRAWN	MHM
CHECKED	P Radice
DATE	5/23/07
SCALE	N.T.S.
HSC REFERENCE NO.	1587e
SIZE	D
REVISION	0
SHEET NO.	1 of 8

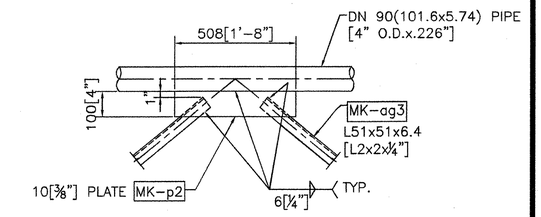
198-S16N-E



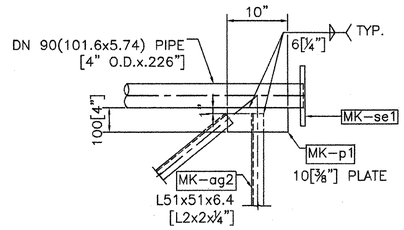
M VIEW



SIDE VIEW



DETAIL "A"



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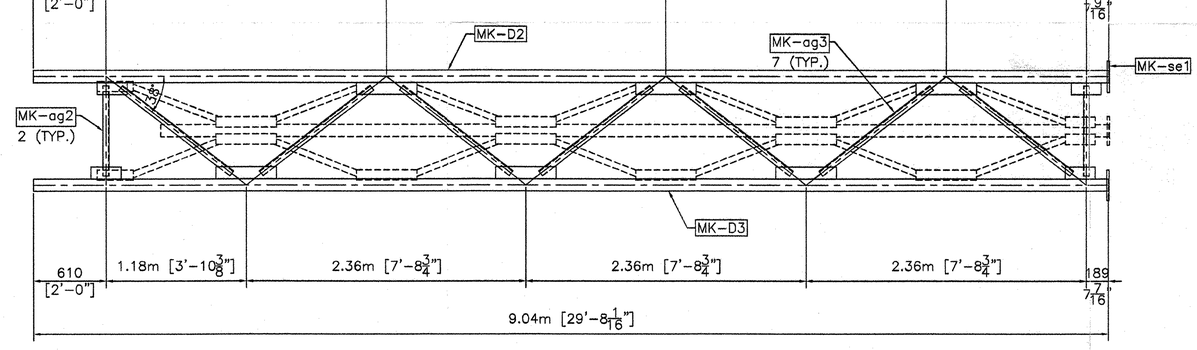
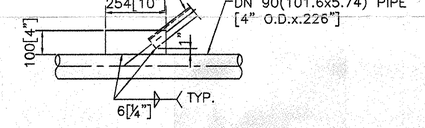


FRONT VIEW

TRUSS 1



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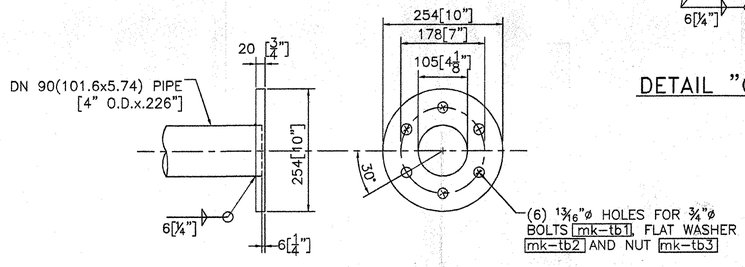

SPLICE DETAIL
MK-se1

RECEIVED
OK'D BY GJC OK'D BY
JUL 27 2007
RESUBMIT APPROVED X
BY DATE 08/02/07

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REVISIONS		
No.	Remarks	Date
0	Initial submittal	

HIGHWAY SAFETY CORP.
GLASTONBURY, CT

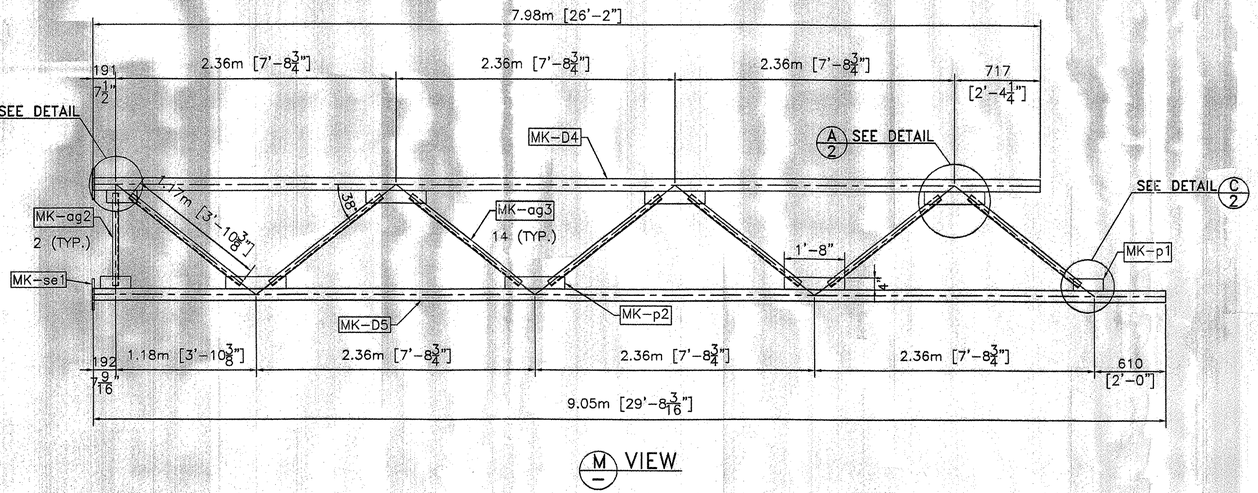
TRI-CHORD SIGN STRUCTURE
STATE OF VERMONT
COUNTY OF CALEDONIA
MM 10.050 NB
PROJECT No. HES 091-3(42)
HES 093-1(10)

GENERAL CONTRACTOR

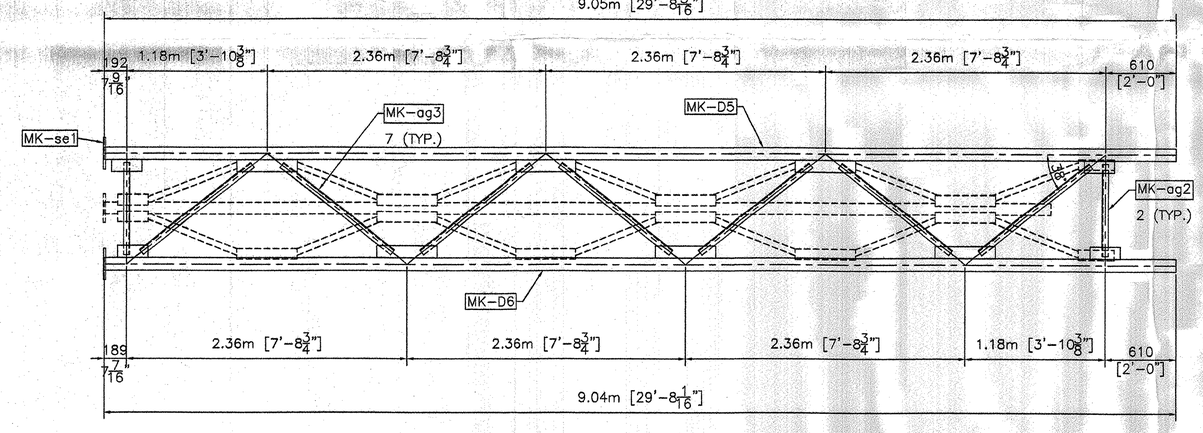
SUB CONTRACTOR F.R. LAFAYETTE

DRAWN	MHM
CHECKED	P Radice
DATE	5/23/07
SCALE	NTS
HSC REFERENCE NO.	1587e
SIZE	D
REVISION	0
SHEET NO.	2 of 8

199-SIGN-e

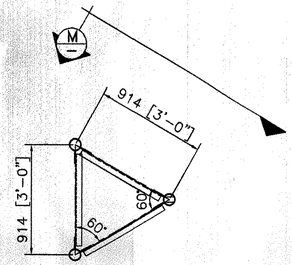


M/— VIEW



FRONT VIEW

TRUSS 2



SIDE VIEW

NOTE:

1. STRUCTURE DESIGNED IN ACCORDANCE WITH LATEST EDITION AASHTO STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINARIES AND TRAFFIC SIGNALS.

2. ALL HOLES FOR HIGH STRENGTH FASTENERS SHALL BE DRILLED OR SUB-PUNCHED FULL SIZE. SLOTTED HOLES AND/OR VENT OR ACCESS HOLES MAY BE CUT WITH MECHANICALLY GUIDED PLASMA OR MECHANICALLY GUIDED FLAME TORCH.

3. GRIND SHARP CORNERS OF ALL PLATES TO A $\frac{1}{16}$" MIN. RADIUS PRIOR TO GALVANIZING.

4. ALL WELDING SHALL BE PERFORMED BY QUALIFIED WELDERS IN ACCORDANCE WITH AWS D1.1.

5. ALL STEEL PLATES FOR STRUCTURAL COMPONENTS SHALL BE ASTM A709 GR. 50.

6. STEEL PLATES AND SHAPES FOR NON-STRUCTURAL COMPONENTS SHALL BE ASTM A709 GR. 36.

7. STEEL PIPES FOR STRUCTURAL MEMBERS SHALL HAVE MINIMUM YIELD OF 42 ksi AND SHALL CONFORM TO ONE OF THE FOLLOWING GRADES: ASTM A500 GR. B, OR API 5LX42.

8. UNLESS OTHERWISE NOTED, ALL BOLTS FOR STRUCTURAL CONNECTIONS SHALL BE M164 TYPE 1 (A325).

9. GALVANIZED U-BOLTS FOR CONNECTION OF SIGN HANGER BEAMS TO TRUSS SHALL BE ASTM F-1554 GR. 36.

10. ALL STRUCTURAL STEEL SHALL BE HOT-DIPPED GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH AASHTO M111 (ASTM A123).

11. ALL HARDWARE, UNLESS OTHERWISE NOTED, SHALL BE HOT-DIPPED GALVANIZED PER AASHTO M232 (ASTM A153).

12. ANCHOR HARDWARE SHALL BE STAINLESS STEEL AND MEET REQUIREMENTS OF VAOT STANDARD SPECIFICATION 714.09.

13. CONCRETE AND REBAR SHOWN IN FOOTING DESIGN TO BE FURNISHED BY OTHERS.

14. FOUNDATION DESIGN BASED ON USE OF 3000 psi MINIMUM CONCRETE.

15. SPACE BETWEEN THE TOP OF CONCRETE AND THE BOTTOM OF STEEL BASE PLATE SHALL BE FILLED WITH TYPE IV MORTAR AFTER LEVELING.

16. BOLTS INSTALLED IN STRUCTURAL CONNECTIONS SHALL BE PROVIDED AND TENSIONED PER APPLICABLE PROVISIONS OF VAOT STANDARD SPECIFICATIONS SECTION 506.

17. SEAL WELD ALL CONNECTIONS WHEN POSSIBLE PRIOR TO GALVANIZING

RECEIVED
CK'D BY GWC OK'D BY RLT
JUL 27 2007
RESUBMIT ____ APPROVED Y
BY DATE 08/02/07

ALL DIMENSIONS SHOWN ARE IN MILLIMETERS (mm) UNLESS OTHERWISE NOTED. ENGLISH CONVERSION SHOWN IN [ ] FOR REFERENCE ONLY.

REVISIONS		
No.	Remarks	Date
0	Initial submittal	

HIGHWAY SAFETY CORP.
GLASTONBURY, CT

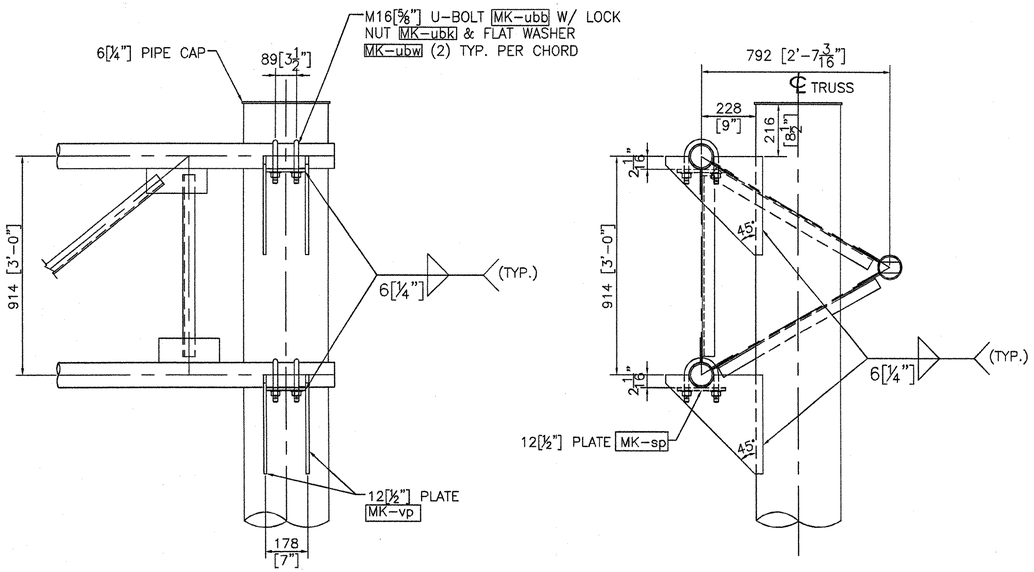
TRI-CHORD SIGN STRUCTURE
STATE OF VERMONT
COUNTY OF CALEDONIA
MM 10.050 NB
PROJECT No. HES 091-3(42)
HES 093-1(10)

DRAWN	MHM
CHECKED	JP Radice
DATE	5/23/07
SCALE	NTS
HSC REFERENCE NO.	1587e
SIZE	D
REVISION	0
SHEET NO.	3 of 8

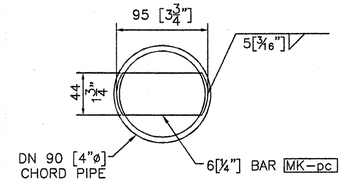
GENERAL CONTRACTOR

SUB CONTRACTOR F.R. LAFAYETTE

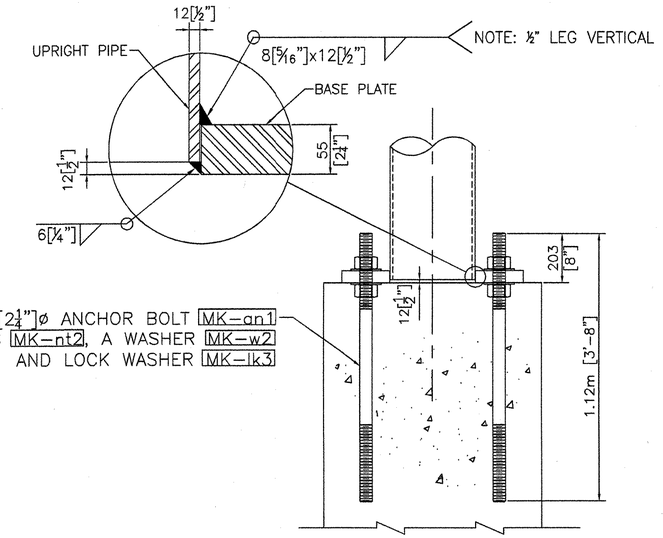
200-SIGN-e



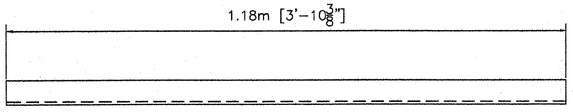
TRUSS CONNECTION DETAIL



PLUG DETAIL
(EACH END OF TRUSS CHORD)



ANCHORAGE ASSEMBLY



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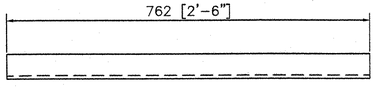
[L2x2x¼"]



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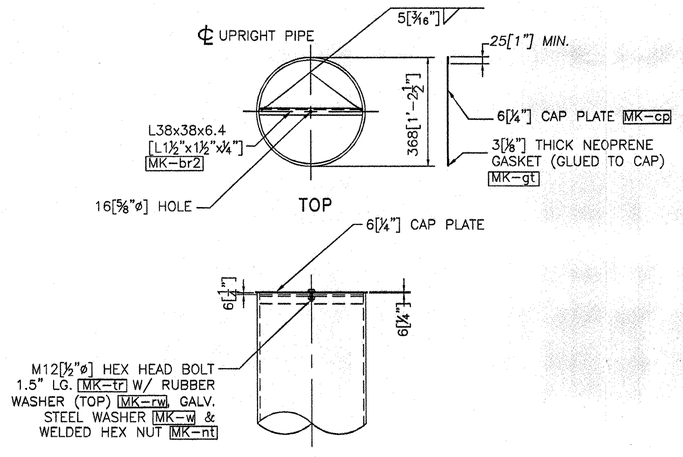
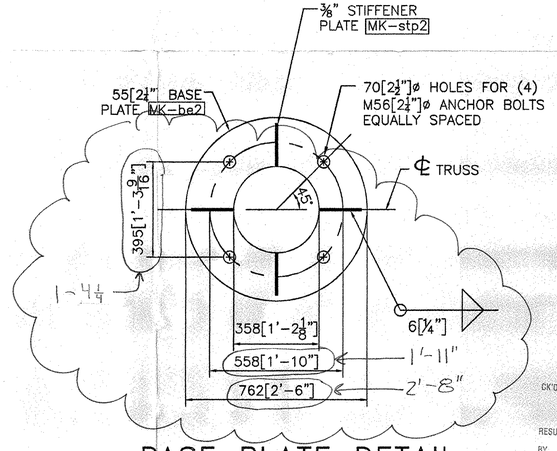


UPRIGHT CAP DETAIL

ASSEMBLE CAP TO POST PRIOR TO SHIPPING.



BASE PLATE DETAIL

NOTE:
BASE PLATE SHALL BE STAMPED WITH THE VERTICAL POLE DIAMETER (VD.), HEIGHT (VHT.), YIELD STRENGTH (VYS.), GAUGE(VGE.), AND SAME FOR HORIZONTAL MEMBER (HD.), (HYS.), AND (HGE.).

RECEIVED
CK'D BY GWC CK'D BY
JUL 27 2007
RESUBMIT APPROVED AS NOTED
BY DATE 08/02/07

ALL DIMENSIONS SHOWN ARE IN MILLIMETERS (mm) UNLESS OTHERWISE NOTED. ENGLISH CONVERSION SHOWN IN [ ] FOR REFERENCE ONLY.

REVISIONS		
No.	Remarks	Date
0	Initial submittal	

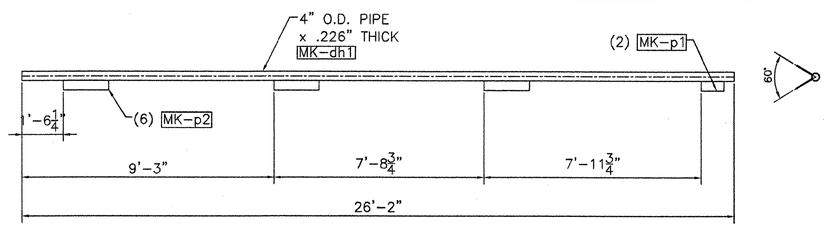
HIGHWAY SAFETY CORP.
GLASTONBURY, CT

TRI-CHORD SIGN STRUCTURE
STATE OF VERMONT
COUNTY OF CALEDONIA
MM 10.050 NB
PROJECT No. HES 091-3(42)
HES 093-1(10)

DRAWN	MHM
CHECKED	P Radice
DATE	5/23/07
SCALE	NTS
HSC REFERENCE NO.	1587e
SIZE	D
REVISION	0
SHEET NO.	4 of 8

GENERAL CONTRACTOR
SUB CONTRACTOR F.R. LAFAYETTE

801-S16A-e



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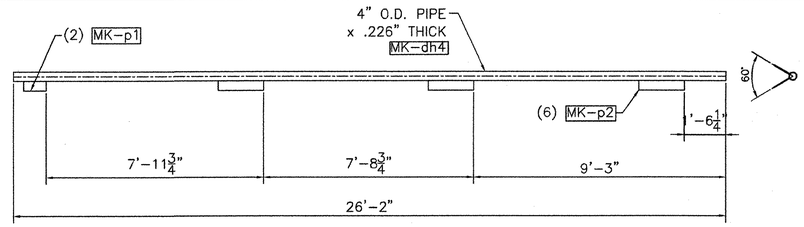

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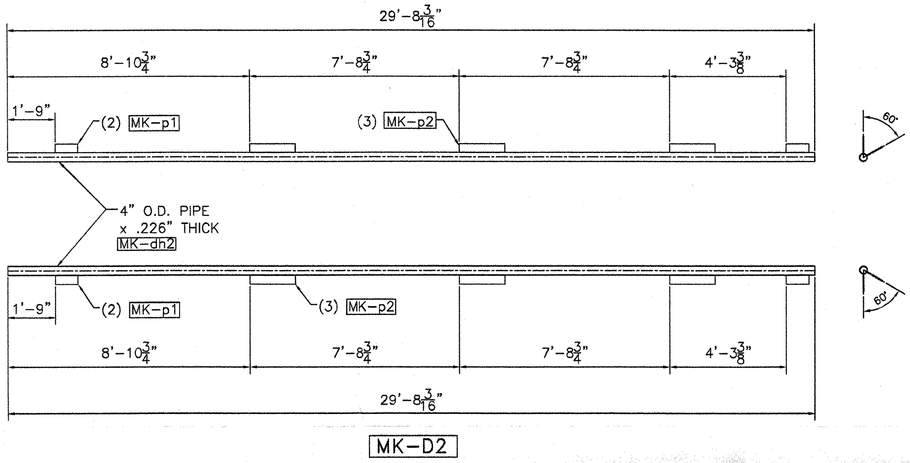

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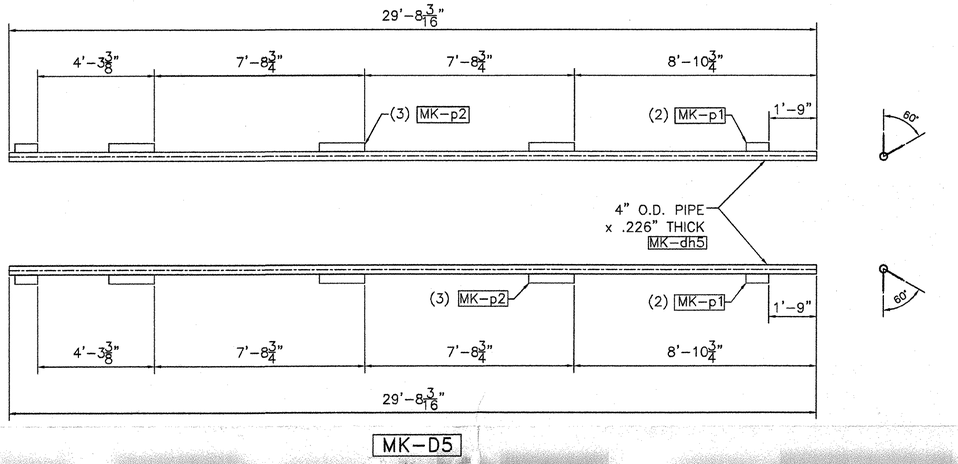

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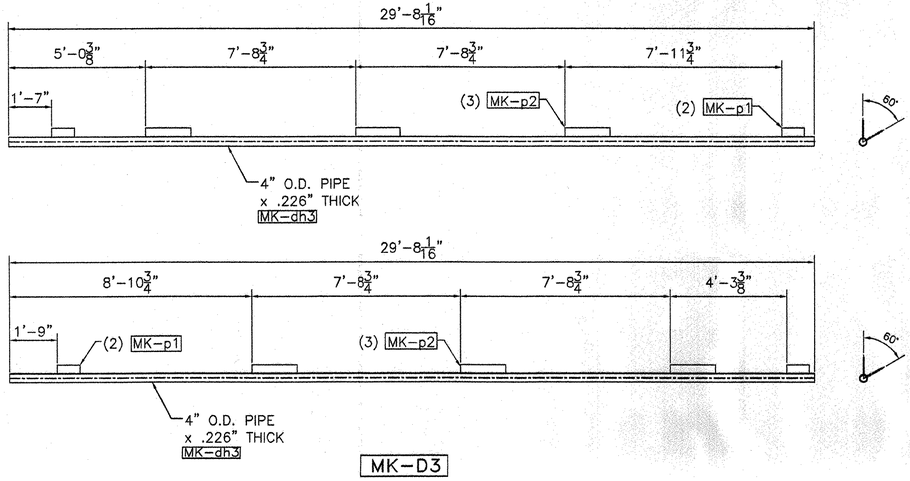

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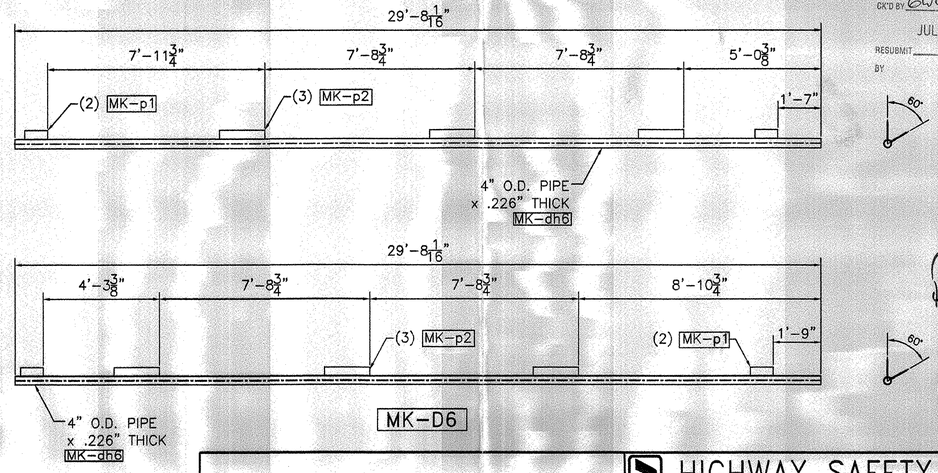


MK-D6

RECEIVED
CK'D BY GWC OK'D BY
JUL 27 2007
RESUBMIT ____ APPROVED X
BY DATE 08/02/07

STATE OF VERMONT
PHILIP B. CHERRY
6163
REGISTERED PROFESSIONAL ENGINEER

AISC QUALITY STEEL BUILDER CERTIFICATION

REVISIONS		
No.	Remarks	Date
0	Initial submittal	

HIGHWAY SAFETY CORP.

GLASTONBURY, CT

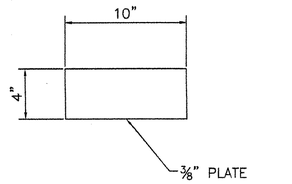
TRI-CHORD SIGN STRUCTURE
STATE OF VERMONT
COUNTY OF CALEDONIA
MM 10.050 NB
PROJECT No. HES 091-3(42)
HES 093-1(10)

GENERAL CONTRACTOR

SUB CONTRACTOR F.R. LAFAYETTE

DRAWN	MHM
CHECKED	P Radice
DATE	5/23/07
SCALE	NTS
HSC REFERENCE NO.	1587e
SIZE	D
REVISION	0
SHEET NO.	5 of 8

202-SIGN-E



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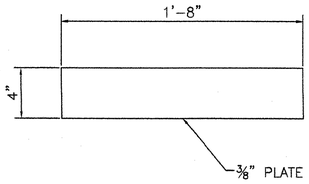

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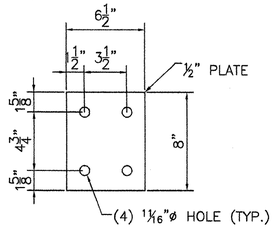

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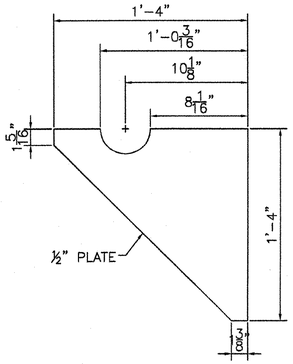

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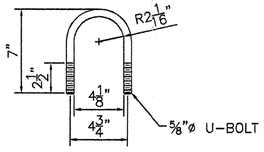

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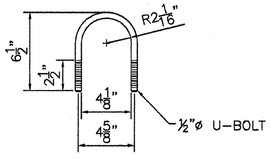

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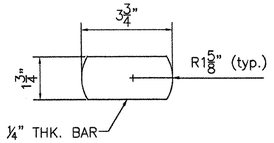

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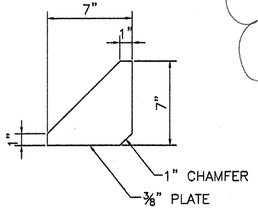

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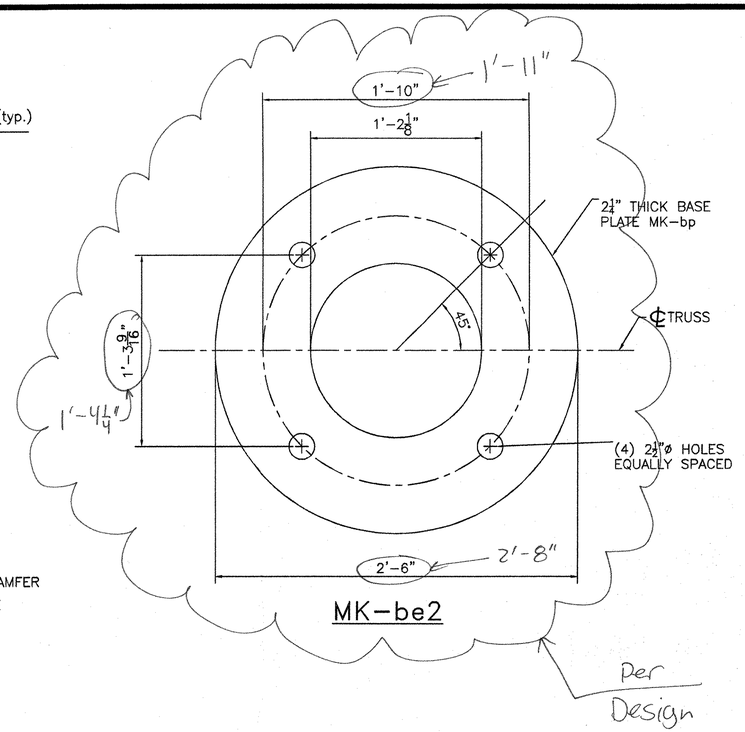

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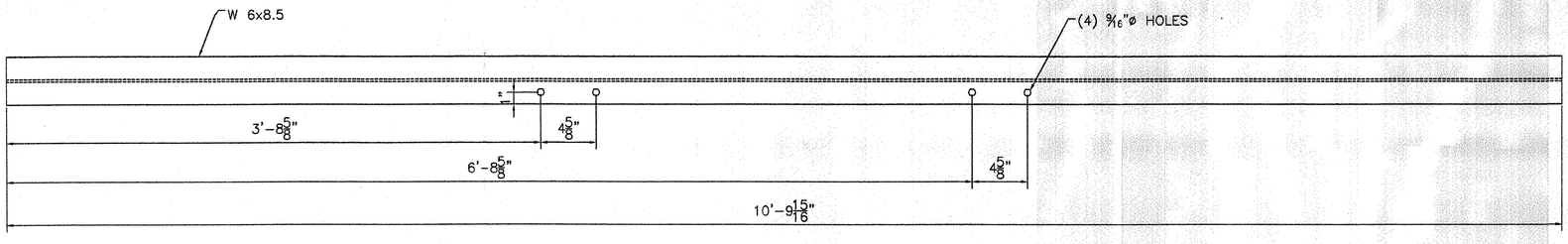


MK–sv6

RECEIVED
CK'D BY GWC CK'D BY
JUL 27 2007
RESUBMIT APPROVED AS NOTED
BY DATE 08/02/07

REVISIONS		
No.	Remarks	Date
0	Initial submittal	

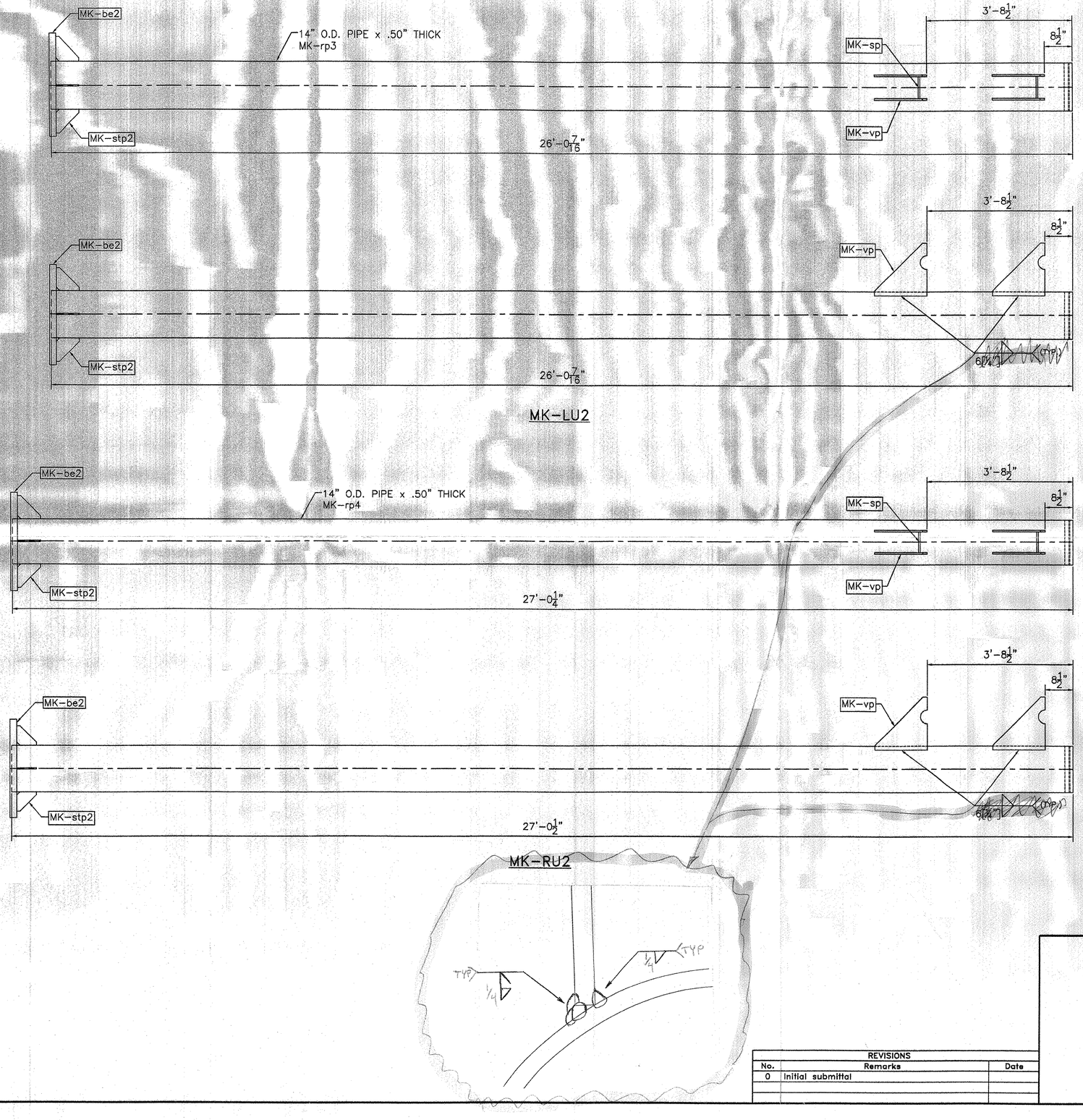
HIGHWAY SAFETY CORP.
GLASTONBURY, CT

TRI–CHORD SIGN STRUCTURE
STATE OF VERMONT
COUNTY OF CALEDONIA
MM 10.050 NB
PROJECT No. HES 091–3(42)
HES 093–1(10)

DRAWN	MHM
CHECKED	P Radice
DATE	5/23/07
SCALE	NTS
HSC REFERENCE NO.	1587e
SIZE	D
REVISION	0
SHEET NO.	6 of 8

GENERAL CONTRACTOR
SUB CONTRACTOR F.R. LAFAYETTE

203-SIGN-e



erection mark	piece qty	item description	size/shape	length/qty per unit	material notes
TRUSS 1 ASSEMBLY					
D1		**CHORD PIPE ASSEMBLY**			
					A500 gr B
dh1	1	pipe	4" O.D.x 0.226" wall	26'-2"	API 5LX42
p1	2	plate	PL 0.375" x 4"	10"	A709 gr 50
p2	6	plate	PL 0.375" x 4"	1'-8"	A709 gr 50
ag3	14	angle	L2"x2"x.25"	3'-10.375"	A36
ag2	2	angle	L2"x2"x.25"	2'-6"	A36
pc	1	plate	0.25" x 1.75"	3.75"	A36
se1	1	splice plate	0.75" x 10" O.D.		A709 gr 50
D2		**CHORD PIPE ASSEMBLY**			
					A500 gr B
dh2	1	pipe	4" O.D.x 0.226" wall	29'-8.187"	API 5LX42
p1	4	plate	PL 0.375" x 4"	10"	A709 gr 50
p2	6	plate	PL 0.375" x 4"	1'-8"	A709 gr 50
ag3	7	angle	L2"x2"x.25"	3'-10.375"	A36
ag2	2	angle	L2"x2"x.25"	2'-6"	A36
pc	1	plate	0.25" x 1.75"	3.75"	A36
se1	1	splice plate	0.75" x 10" O.D.		A709 gr 50
D3		**CHORD PIPE ASSEMBLY**			
					A500 gr B
dh3	1	pipe	4" O.D.x 0.226" wall	29'-9.062"	API 5LX42
p1	4	plate	PL 0.375" x 4"	10"	A709 gr 50
p2	6	plate	PL 0.375" x 4"	1'-8"	A709 gr 50
pc	1	plate	0.25" x 1.75"	3.75"	A36
se1	1	splice plate	0.75" x 10" O.D.		A709 gr 50
TRUSS 2 ASSEMBLY					
D4		**CHORD PIPE ASSEMBLY**			
					A500 gr B
dh4	1	pipe	4" O.D.x 0.226" wall	26'-2"	API 5LX42
p1	2	plate	PL 0.375" x 4"	10"	A709 gr 50
p2	6	plate	PL 0.375" x 4"	1'-8"	A709 gr 50
ag3	14	angle	L2"x2"x.25"	3'-10.375"	A36
ag2	2	angle	L2"x2"x.25"	2'-6"	A36
pc	1	plate	0.25" x 1.75"	3.75"	A36
se1	1	splice plate	0.75" x 10" O.D.		A709 gr 50
D5		**CHORD PIPE ASSEMBLY**			
					A500 gr B
dh5	1	pipe	4" O.D.x 0.226" wall	29'-8.187"	API 5LX42
p1	4	plate	PL 0.375" x 4"	10"	A709 gr 50
p2	6	plate	PL 0.375" x 4"	1'-8"	A709 gr 50
ag3	7	angle	L2"x2"x.25"	3'-10.375"	A36
ag2	2	angle	L2"x2"x.25"	2'-6"	A36
pc	1	plate	0.25" x 1.75"	3.75"	A36
se1	1	splice plate	0.75" x 10" O.D.		A709 gr 50
D6		**CHORD PIPE ASSEMBLY**			
					A500 gr B
dh6	1	pipe	4" O.D.x 0.226" wall	29'-9.062"	API 5LX42
p1	4	plate	PL 0.375" x 4"	10"	A709 gr 50
p2	6	plate	PL 0.375" x 4"	1'-8"	A709 gr 50
pc	1	plate	0.25" x 1.75"	3.75"	A36
se1	1	splice plate	0.75" x 10" O.D.		A709 gr 50
VERTICAL PIPE ASSEMBLY					
LU2		**LEFT PIPE ASSEMBLY**			
					A500 gr B
rp3	1	pipe	14" O.D.x 0.50" wall	26'-0.437"	API 5LX42
sp	2	plate	PL 0.5" x 6.5"	8"	A709 gr 50
vp	4	plate	PL 0.5" x 1'-4"	1'-4"	A709 gr 50
cp	1	plate	0.25" X 1'-2.5" O.D.		A36
br2	1	angle	L 1.5"x1.5"x.25"	1'-1"	A36
gt	1	gasket	.125"x1'-2.5" O.D.		50 duro. Neoprene
nt	1	hex nut	.50" dia.		A563
tr	1	hex bolt	.50" dia.	1.5"	A325
w	1	washer	.50" dia.		F844
rw	1	rubber washer	.50" dia.		50 duro. Neoprene
stp2	4	plate	PL 0.375" x 7"	7"	A709 gr 50
be2	1	base plate	2.25" x 2'-0" O.D. 2'-8"		A709 gr 50
RU2		**RIGHT PIPE ASSEMBLY**			
					A500 gr B
rp4	1	pipe	14" O.D.x 0.50" wall	27'-0.50"	API 5LX42
sp	2	plate	PL 0.5" x 6.5"	8"	A709 gr 50
vp	4	plate	PL 0.5" x 1'-4"	1'-4"	A709 gr 50
cp	1	plate	0.25" X 1'-2.5" O.D.		A36
br2	1	angle	L 1.5"x1.5"x.25"	1'-1"	A36
gt	1	gasket	.125"x1'-2.5" O.D.		50 duro. Neoprene
nt	1	hex nut	.50" dia.		A563
tr	1	hex bolt	.50" dia.	1.5"	A325
w	1	washer	.50" dia.		F844
rw	1	rubber washer	.50" dia.		50 duro. Neoprene
stp2	4	plate	PL 0.375" x 7"	7"	A709 gr 50
be2	1	base plate	2.25" x 2'-0" O.D. 2'-8"		A709 gr 50
		LOOSE ITEMS			
sv6	10	sign hanger	WBx6.5	10'-0.937"	A36
ub	8	u-bolt	0.625" dia.	7"	F1554 Gr. 36
ubk	16	lock nut	0.625" dia.		A563 DH
ubw	16	washer	0.625" dia.		F436
su1	20	u-bolt	0.50" dia.	6.5"	F1554 Gr. 36
sk1	40	lock nut	0.50" dia.		A563 DH
sw1	40	washer	0.50" dia.		F436
tb1	24	hex bolt	0.75" dia.	3"	A325
tb2	24	washer	0.75" dia.		F543
tb3	24	hex nut	0.75" dia.		A563 DH
an1	8	anchor bolt	2.25" dia.	3'-6"	S/S A276 T304
nl2	16	hex nut	2.25" dia.		S/S A194B T304
lk3	8	lock washer	2.25" dia.		S/S TY 304
w2	8	flat washer	2.25" dia.		S/S TY 304

18

RECEIVED
CK'D BY GJC CK'D BY LLJ
JUL 27 2007
RESUBMIT ____ APPROVED AS NOTED
BY ____ DATE 08/02/07

STATE OF VERMONT
PHILLIP B. CHENEY
6163
REGISTERED PROFESSIONAL ENGINEER

QUALITY ASSURANCE CERTIFICATION

REVISIONS		
No.	Remarks	Date
0	Initial submittal	

HIGHWAY SAFETY CORP.

GLASTONBURY, CT

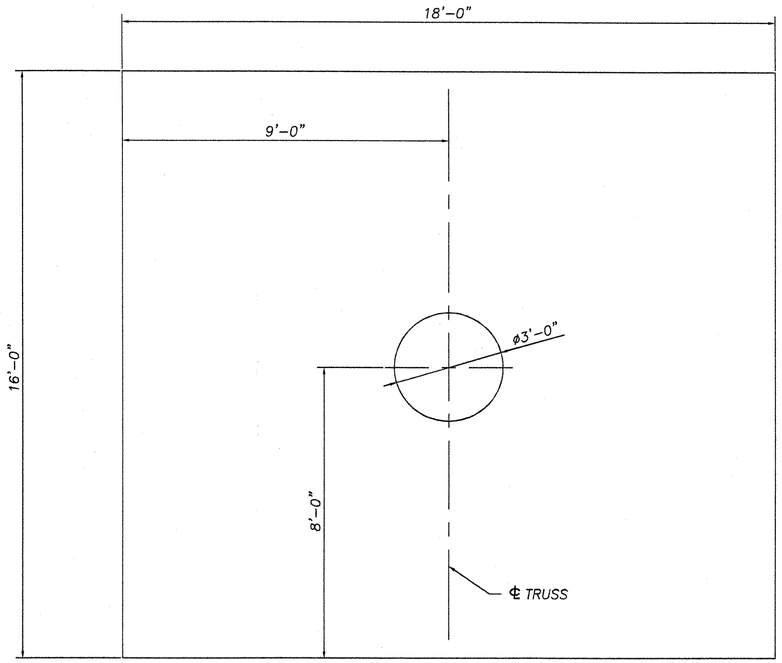
TRI-CHORD SIGN STRUCTURE
STATE OF VERMONT
COUNTY OF CALEDONIA
MM 10.050 NB
PROJECT No. HES 091-3(42)
HES 093-1(10)

DRAWN	MHM
CHECKED	P Radice
DATE	5/23/07
SCALE	N.T.S.
HSC REFERENCE NO.	1587e
SIZE	D
REVISION	0
SHEET NO.	7 of 8

GENERAL CONTRACTOR

SUB CONTRACTOR F.R. LAFAYETTE

204-516N-e

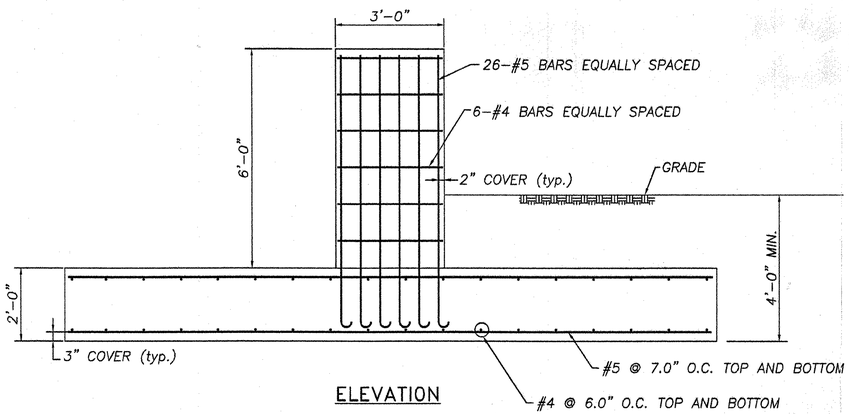


PLAN

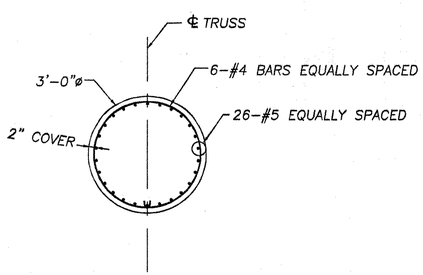
REBAR LIST

REBAR	PCS. REQRD.	LENGTH
#4	12	9'-4"
#4	144	15'-6"
#5	96	17'-6"
#5 (HOOK ONE END)	52	8'-6"

108



ELEVATION



PLAN (STEM)

RECEIVED
CK'D BY EUC CK'D BY
JUL 27 2007
RESUBMIT APPROVED AS NOTED
BY DATE 08/02/07

STATE OF VERMONT PHILLIP B. CHENEY 6163 REGISTERED PROFESSIONAL ENGINEER

DUAL STATE STEEL BRIDGE CERTIFICATION AISC

REVISIONS		
No.	Remarks	Date
0	Initial submittal	

HIGHWAY SAFETY CORP.

GLASTONBURY, CT

TRI-CHORD SIGN STRUCTURE
STATE OF VERMONT
COUNTY OF CALEDONIA
MM 10.050 NB
PROJECT No. HES 091-3(42)
HES 093-1(10)

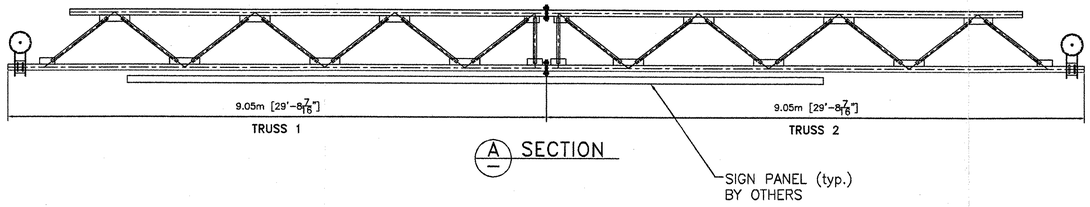
DRAWN	MHM
CHECKED	P Radice
DATE	5/23/07
SCALE	N.T.S.
HSC REFERENCE NO.	1587e
SIZE	D
REVISION	0
SHEET NO.	8 of 8

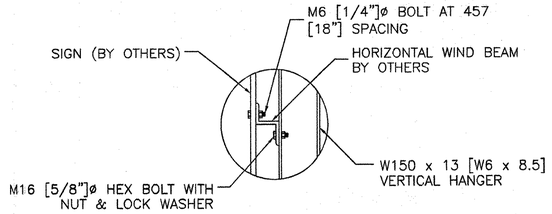
GENERAL CONTRACTOR

SUB CONTRACTOR F.R. LAFEYETTE

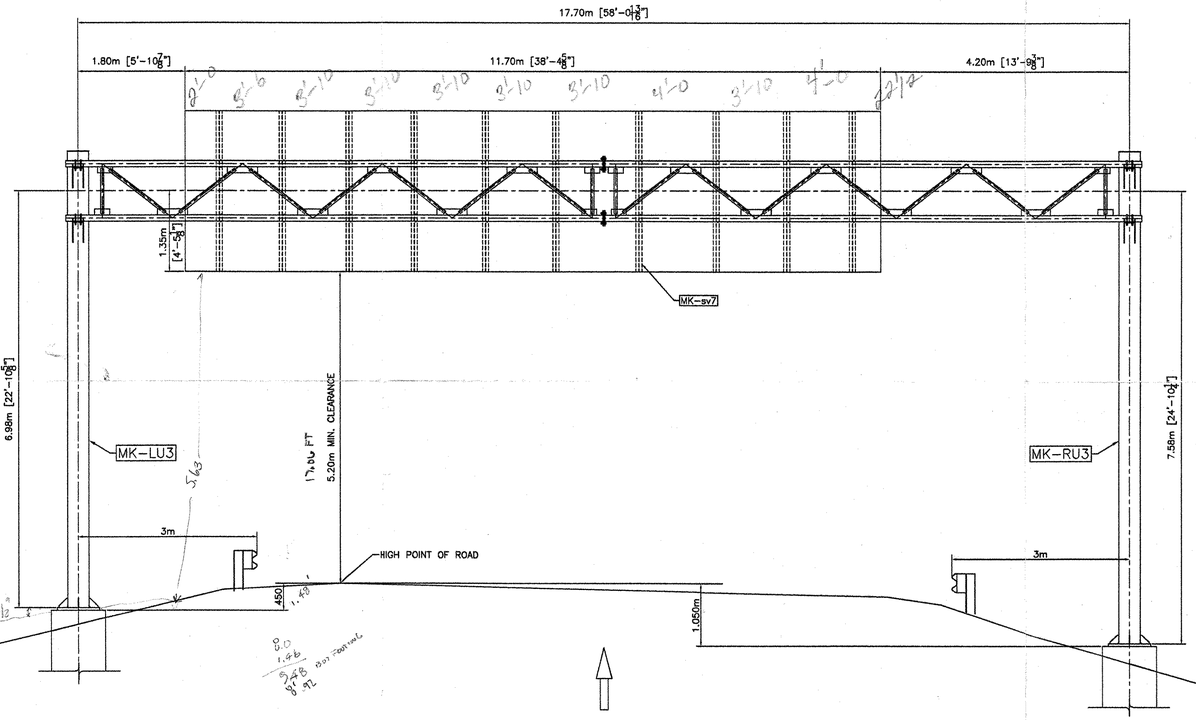
FOOTINGS

ROS-Sign-e



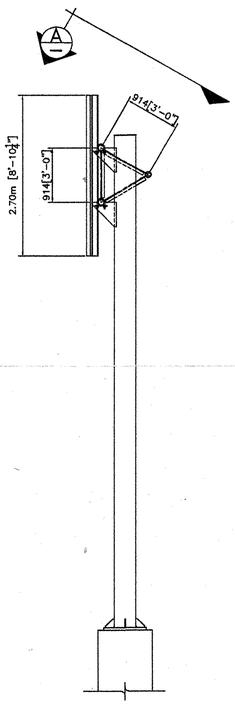


SIGN ATTACHMENT DETAIL



ELEVATION

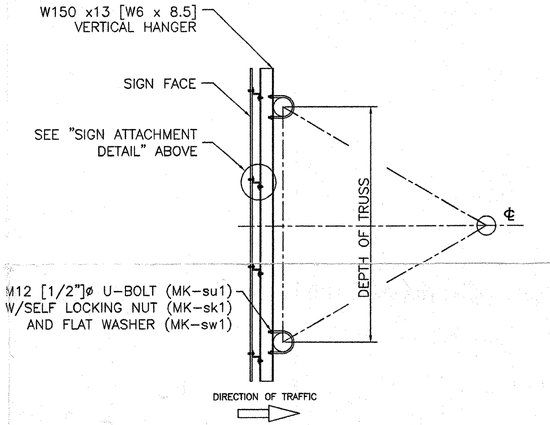
LOOKING AT FACE OF SIGN
(OUT OF PLANE CHORDS NOT SHOWN FOR CLARITY)



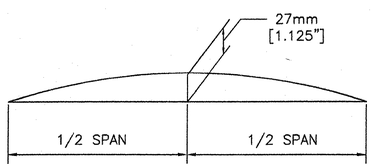
FOOTING ELEVATION IS ASSUMED.
CONTRACTOR TO VERIFY ELEVATIONS
BEFORE FABRICATION.

DIRECTION OF TRAFFIC

SIDE VIEW



SIGN MOUNTING DETAIL
VERTICAL HANGER BEAMS & U-BOLTS INCLUDED



CAMBER DIAGRAM

NOTE:

CAMBER WILL BE ACHIEVED BY SHORTENING LOWER CHORD PIPES BY AN AMOUNT SUCH THAT POSITIVE UPWARD DEFLECTION IS PRODUCED WHEN TRUSSES ARE BROUGHT TOGETHER AT SPLICES.

REVISIONS		
No.	Remarks	Date
0	Initial submittal	

RECEIVED
CK'D BY GWK OK'D BY
JUL 27 2007
RESUBMIT APPROVED X
BY DATE 08/07/07

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STATE OF VERMONT PHILIP B. CHENEY 6163 REGISTERED PROFESSIONAL ENGINEER

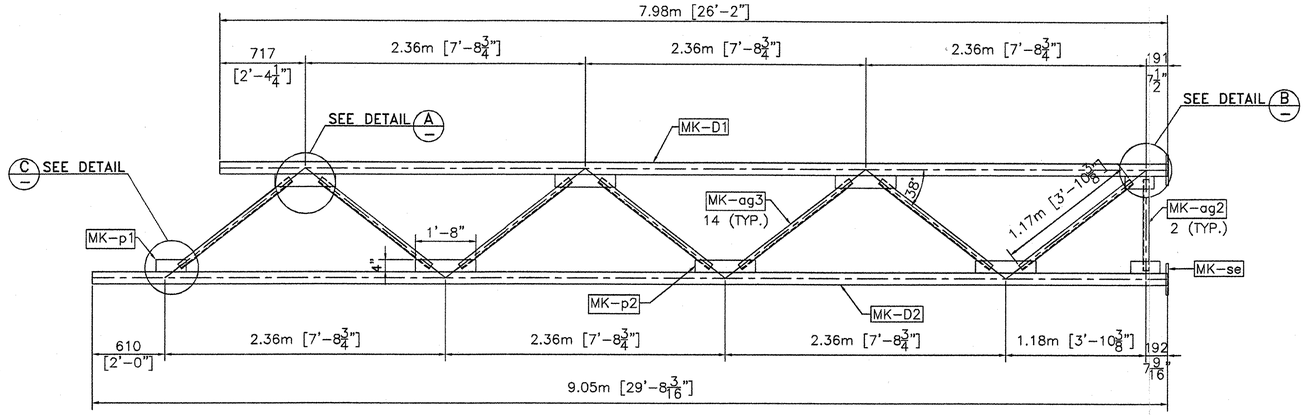
HIGHWAY SAFETY CORP.
GLASTONBURY, CT

TRI-CHORD SIGN STRUCTURE
STATE OF VERMONT
COUNTY OF CALEDONIA
MM 10.470 NB
PROJECT No. HES 091-3(42)
HES 093-1(10)

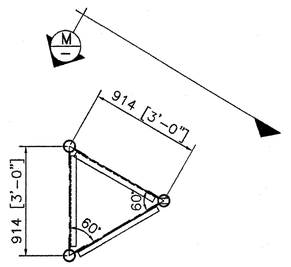
GENERAL CONTRACTOR
SUB CONTRACTOR F.R. LAFAYETTE

DRAWN	MHM
CHECKED	P Radice
DATE	5/23/07
SCALE	N.T.S.
HSC REFERENCE NO.	1587f
SIZE	D
REVISION	0
SHEET NO.	1 of 8

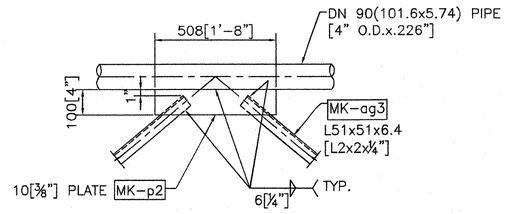
210-SIGN-f



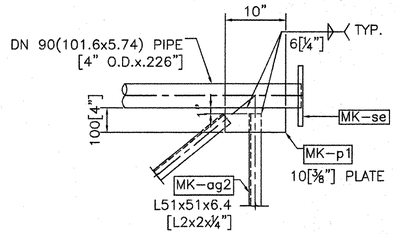
M VIEW



SIDE VIEW



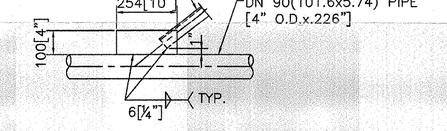
DETAIL "A"



DETAIL "B"

FRONT VIEW

TRUSS 1



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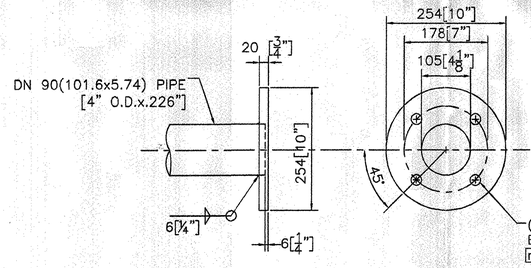

SPLICE DETAIL
MK-se

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GENERAL CONTRACTOR
SUB CONTRACTOR F.R. LAFAYETTE

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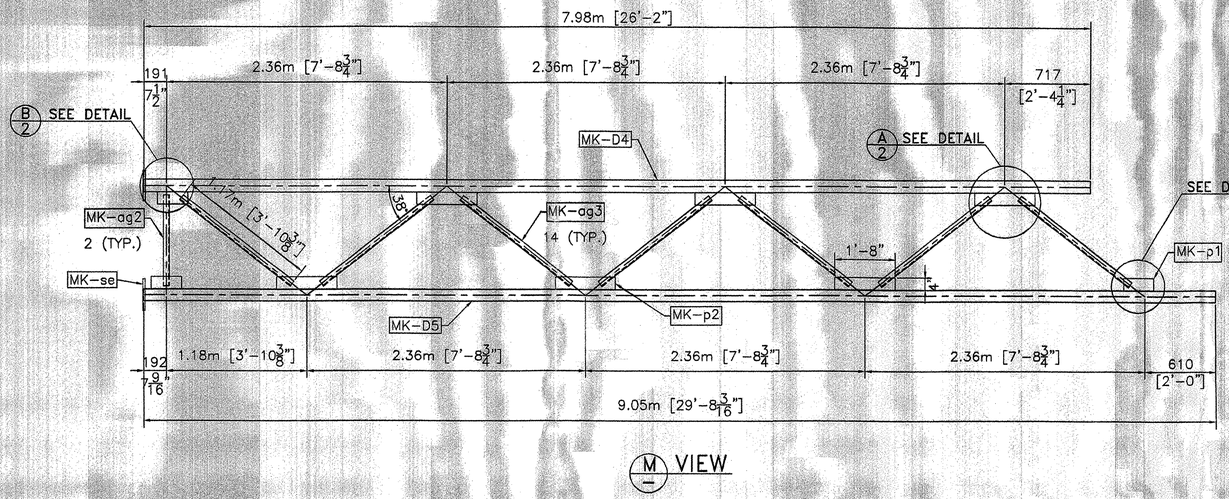
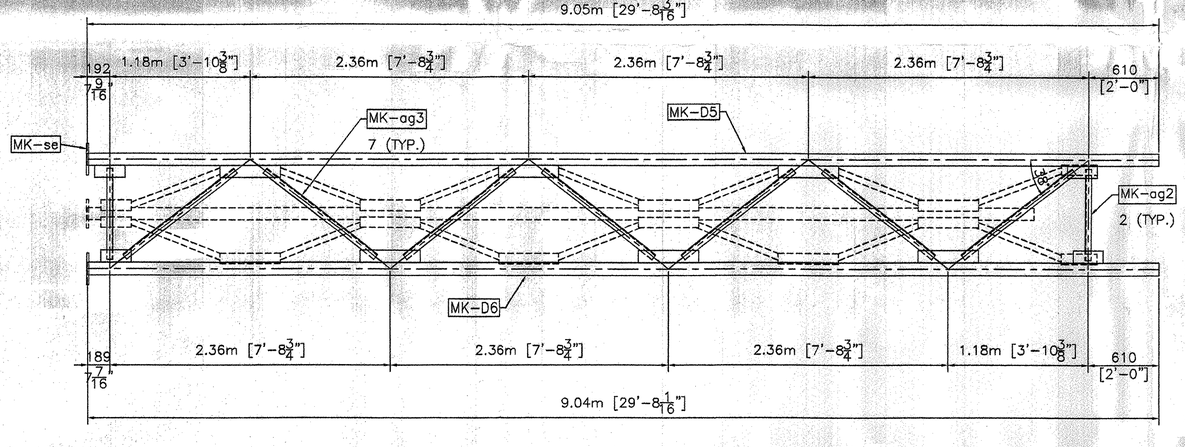
CHECKED	P Radice
DATE	5/23/07
SCALE	NTS
HSC REFERENCE NO.	1587f
SIZE	D
REVISION	0
SHEET NO.	2 of 8

211-516N-f

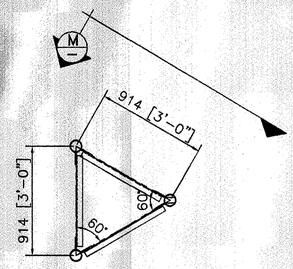


M/— VIEW



FRONT VIEW

TRUSS 2



SIDE VIEW

NOTE:

1. STRUCTURE DESIGNED IN ACCORDANCE WITH LATEST EDITION AASHTO STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINARIES AND TRAFFIC SIGNALS.
2. ALL HOLES FOR HIGH STRENGTH FASTENERS SHALL BE DRILLED OR SUB-PUNCHED FULL SIZE. SLOTTED HOLES AND/OR VENT OR ACCESS HOLES MAY BE CUT WITH MECHANICALLY GUIDED PLASMA OR MECHANICALLY GUIDED FLAME TORCH.
3. GRIND SHARP CORNERS OF ALL PLATES TO A $\frac{1}{16}$" MIN. RADIUS PRIOR TO GALVANIZING.
4. ALL WELDING SHALL BE PERFORMED BY QUALIFIED WELDERS IN ACCORDANCE WITH AWS D1.1.
5. ALL STEEL PLATES FOR STRUCTURAL COMPONENTS SHALL BE ASTM A709 GR. 50.
6. STEEL PLATES AND SHAPES FOR NON-STRUCTURAL COMPONENTS SHALL BE ASTM A709 GR. 36.
7. STEEL PIPES FOR STRUCTURAL MEMBERS SHALL HAVE MINIMUM YIELD OF 42 ksi AND SHALL CONFORM TO ONE OF THE FOLLOWING GRADES: ASTM A500 GR. B, OR API 5LX42.
8. UNLESS OTHERWISE NOTED, ALL BOLTS FOR STRUCTURAL CONNECTIONS SHALL BE M164 TYPE 1 (A325).
9. GALVANIZED U-BOLTS FOR CONNECTION OF SIGN HANGER BEAMS TO TRUSS SHALL BE ASTM F-1554 GR. 36.
10. ALL STRUCTURAL STEEL SHALL BE HOT-DIPPED GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH AASHTO M111 (ASTM A123).
11. ALL HARDWARE, UNLESS OTHERWISE NOTED, SHALL BE HOT-DIPPED GALVANIZED PER AASHTO M232 (ASTM A153).
12. ANCHOR HARDWARE SHALL BE STAINLESS STEEL AND MEET REQUIREMENTS OF VAOT STANDARD SPECIFICATION 714.09.
13. CONCRETE AND REBAR SHOWN IN FOOTING DESIGN TO BE FURNISHED BY OTHERS.
14. FOUNDATION DESIGN BASED ON USE OF 3000 psi MINIMUM CONCRETE.
15. SPACE BETWEEN THE TOP OF CONCRETE AND THE BOTTOM OF STEEL BASE PLATE SHALL BE FILLED WITH TYPE IV MORTAR AFTER LEVELING.
16. BOLTS INSTALLED IN STRUCTURAL CONNECTIONS SHALL BE PROVIDED AND TENSIONED PER APPLICABLE PROVISIONS OF VAOT STANDARD SPECIFICATIONS SECTION 506.
17. SEAL WELD ALL CONNECTIONS WHEN POSSIBLE PRIOR TO GALVANIZING.

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PHILIP B. CHANEY 6163 REGISTERED PROFESSIONAL ENGINEER STATE OF VERMONT

QUALITY STEEL BRIDGES AISC CERTIFICATION

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HIGHWAY SAFETY CORP.
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TRI-CHORD SIGN STRUCTURE
STATE OF VERMONT
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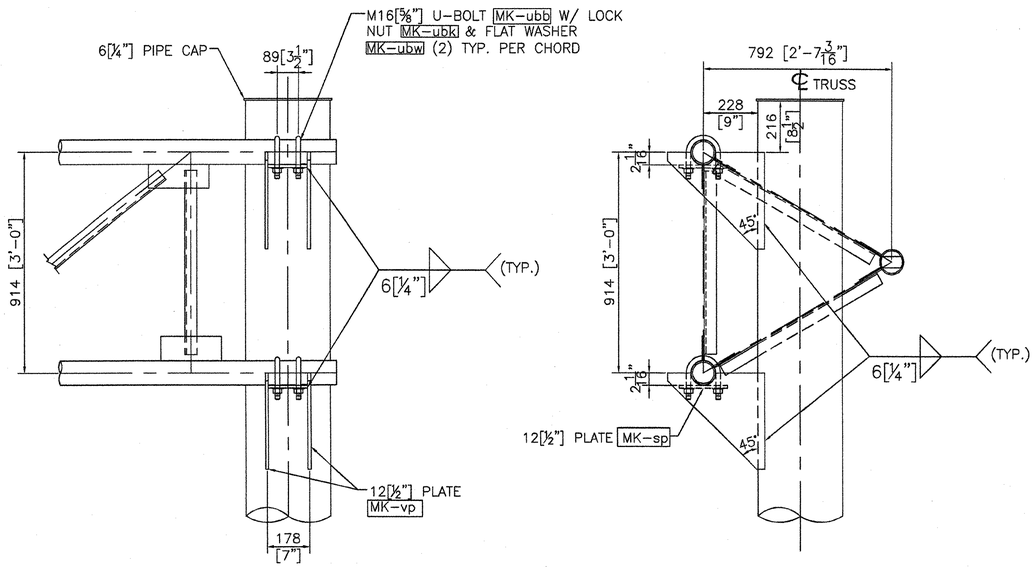
PROJECT No. HES 091-3(42)
HES 093-1(10)

GENERAL CONTRACTOR

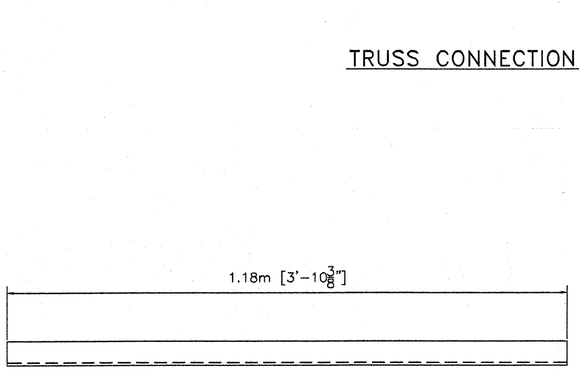
SUB CONTRACTOR F.R. LAFAYETTE

DRAWN	MHM
CHECKED	P Radice
DATE	5/23/07
SCALE	NTS
HSC REFERENCE NO.	1587f
SIZE	D
REVISION	0
SHEET NO.	3 of 8

212-S16N-f



TRUSS CONNECTION DETAIL



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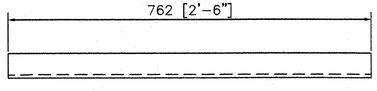
[L2x2x¼"]



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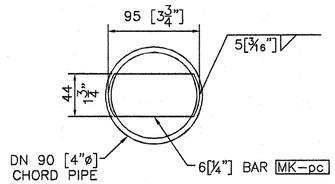
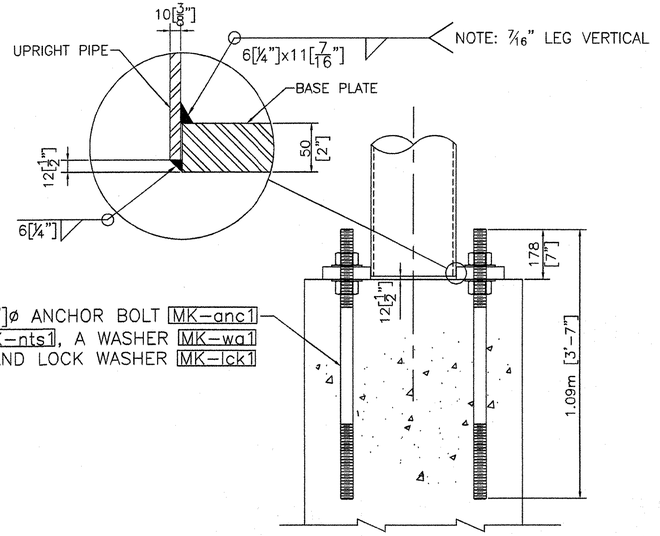
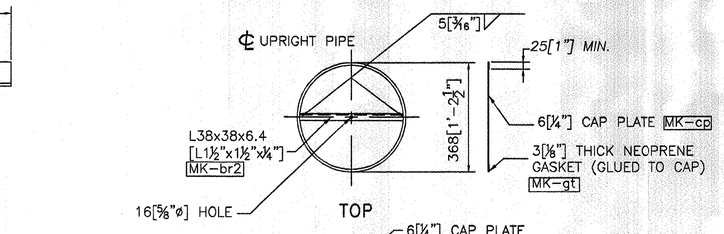


PLUG DETAIL
(EACH END OF TRUSS CHORD)

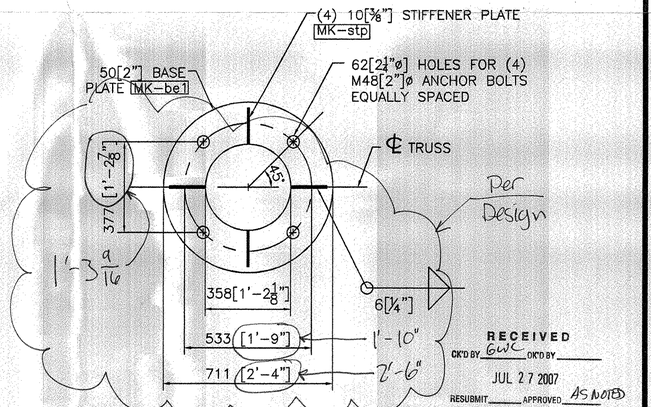


ANCHORAGE ASSEMBLY



UPRIGHT CAP DETAIL

ASSEMBLE CAP TO POST PRIOR TO SHIPPING.



BASE PLATE DETAIL

NOTE:
BASE PLATE SHALL BE STAMPED WITH THE VERTICAL POLE DIAMETER (VD.), HEIGHT (VHT.), YIELD STRENGTH (VYS.), GAUGE(VGE.), AND SAME FOR HORIZONTAL MEMBER (HD.), (HYS.), AND (HGE.).

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STATE OF VERMONT PHILIP D. CHERRY 6163 REGISTERED PROFESSIONAL ENGINEER

QUALITY STEEL BRIDGES AISC CERTIFICATION

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GLASTONBURY, CT

TRI-CHORD SIGN STRUCTURE
STATE OF VERMONT
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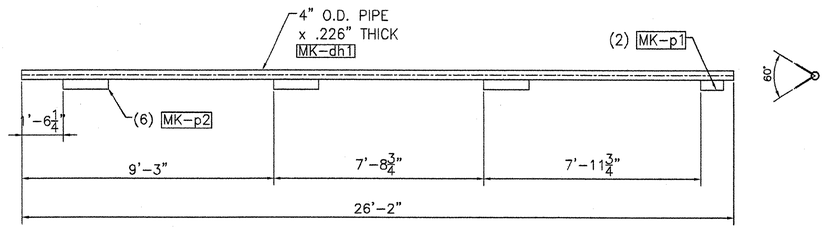
MM 10.470 NB
PROJECT No. HES 091-3(42)
HES 093-1(10)

GENERAL CONTRACTOR

SUB CONTRACTOR F.R. LAFAYETTE

DRAWN	MHM
CHECKED	P Radice
DATE	5/23/07
SCALE	NTS
HSC REFERENCE NO.	1587f
SIZE D	REVISION 0
SHEET NO.	4 of 8

213-516N-4



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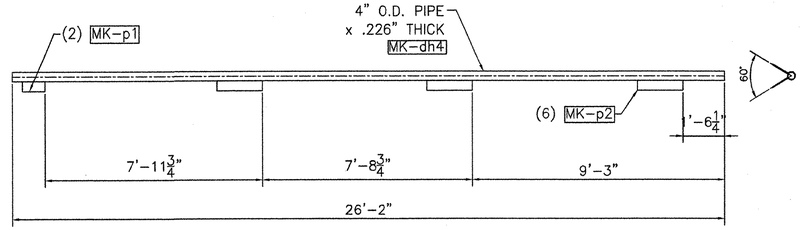

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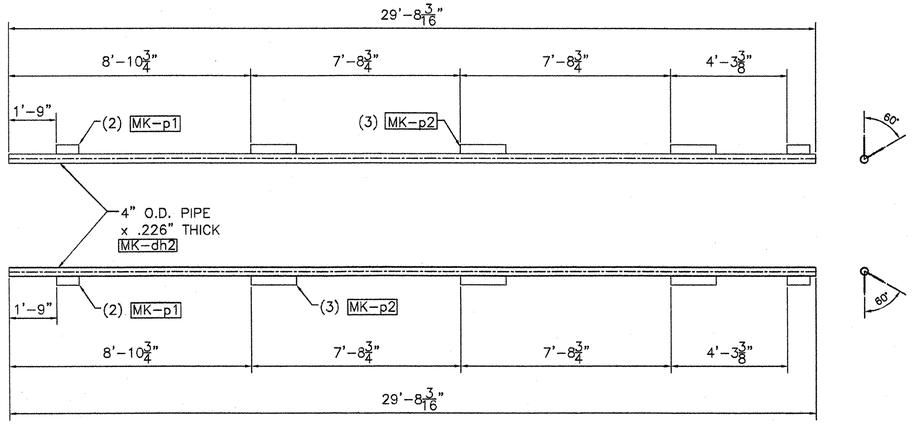

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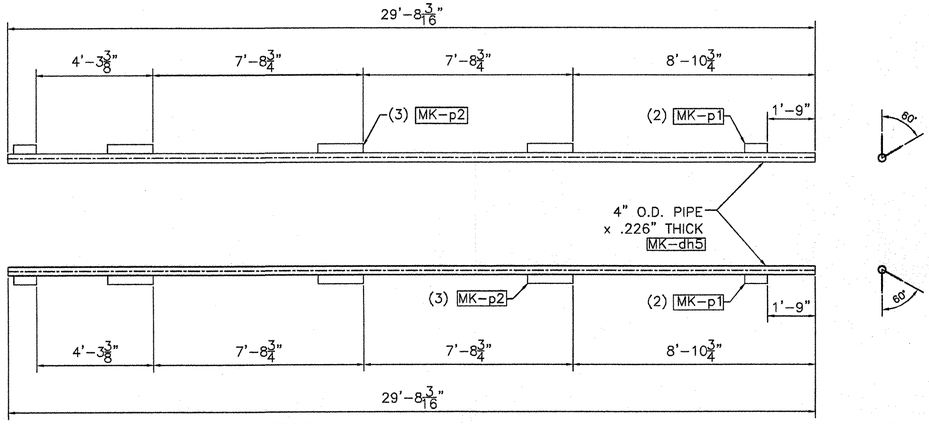

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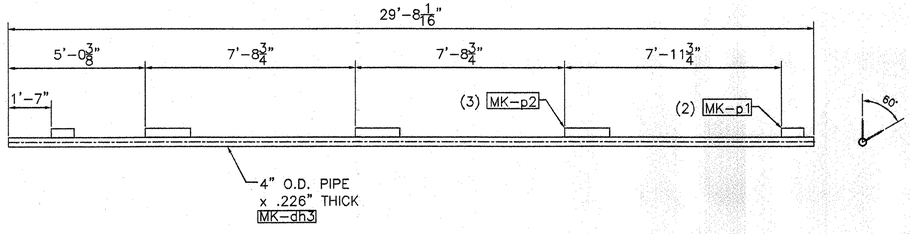

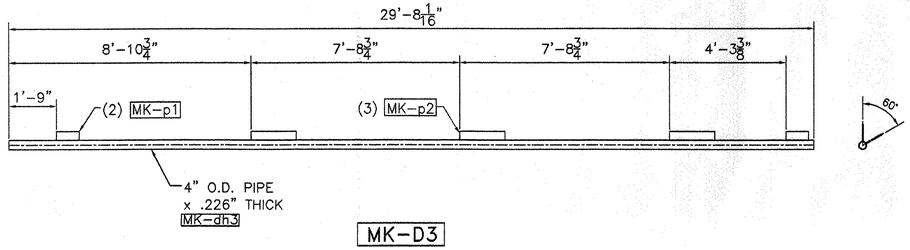

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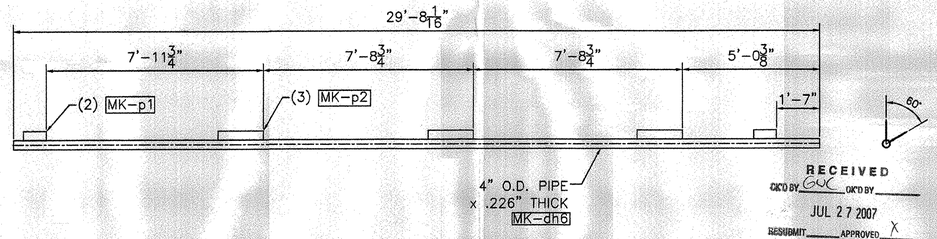

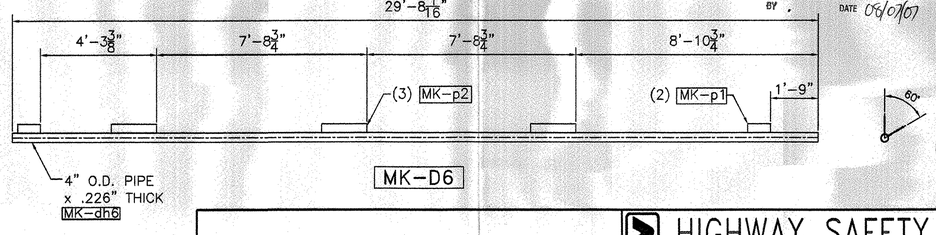

MK-D6

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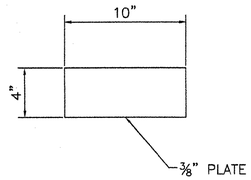
SIZE	D
REVISION	0
SHEET NO.	5 of 8

214-516N-f



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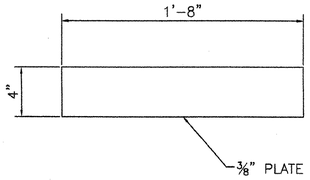

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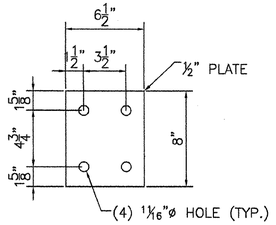

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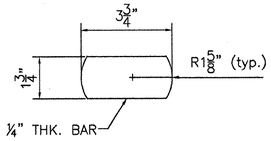

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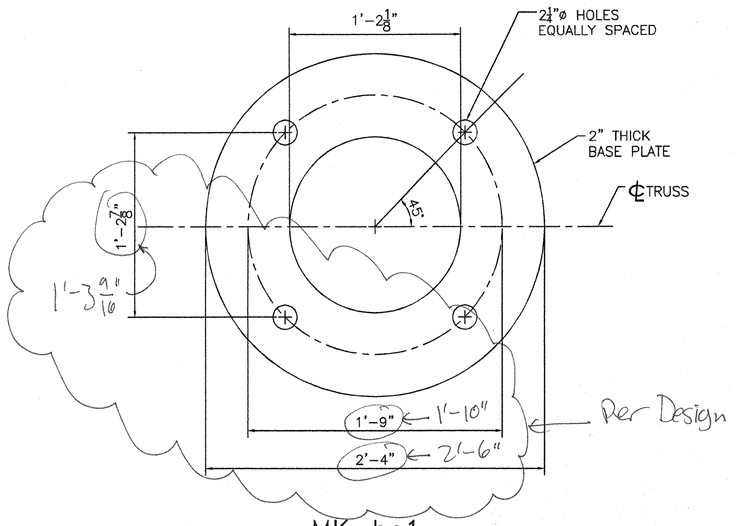

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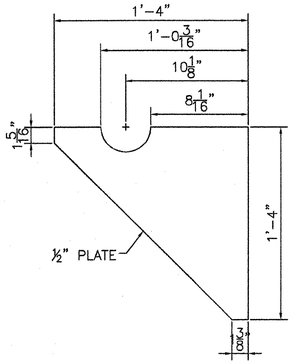

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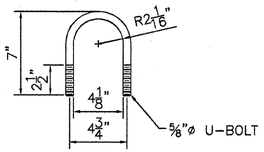

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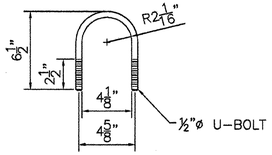

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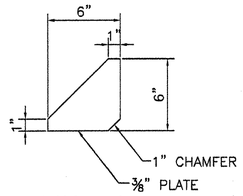

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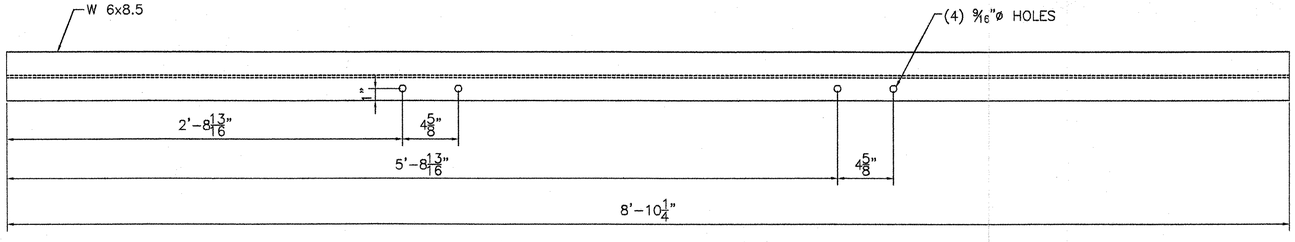

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JUL 27 2007
RESUBMIT _____ APPROVED AS NOTED
BY DATE 08/07/07

REVISIONS		
No.	Remarks	Date
0	Initial submittal	

HIGHWAY SAFETY CORP.
GLASTONBURY, CT

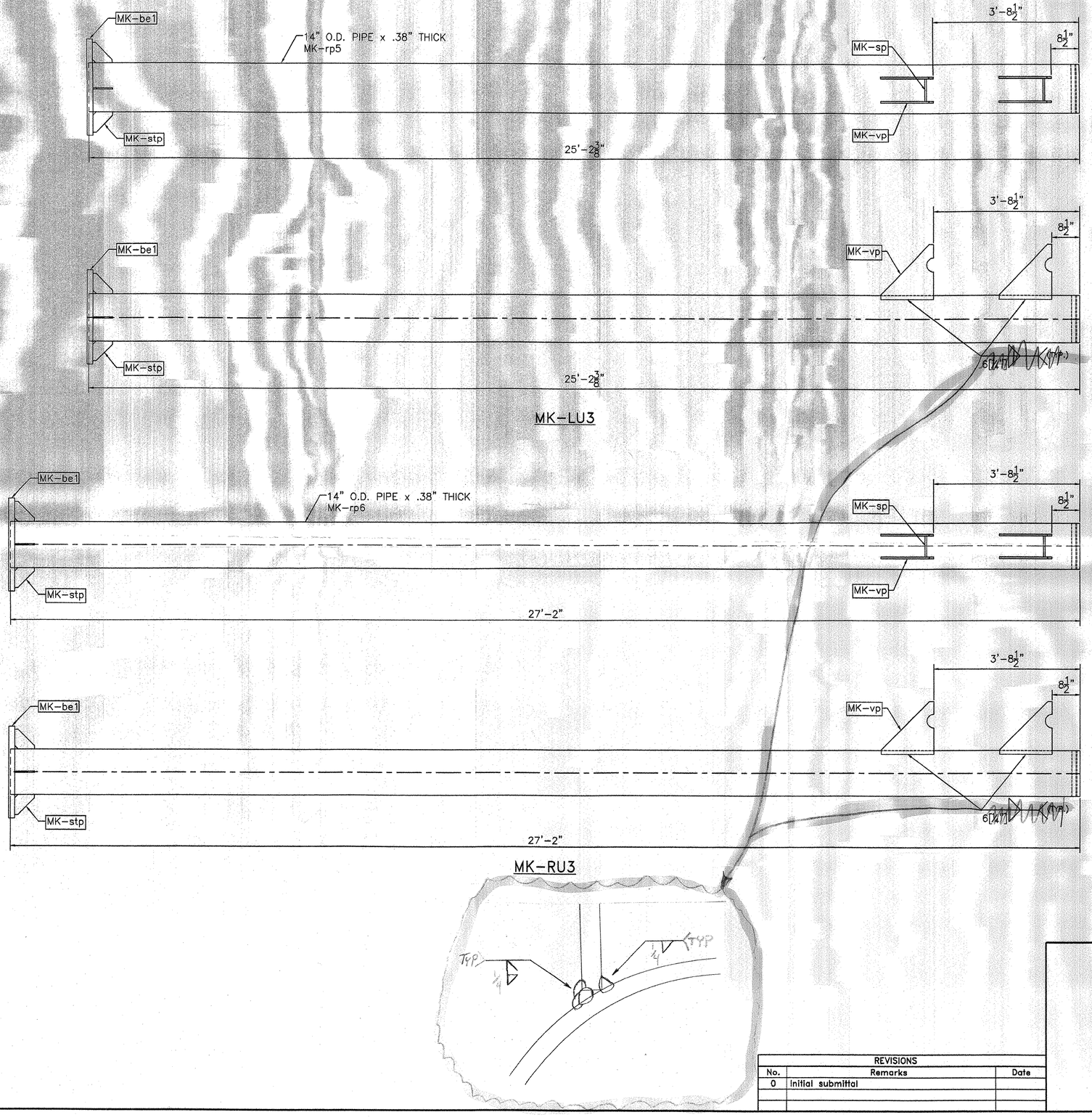
TRI-CHORD SIGN STRUCTURE
STATE OF VERMONT
COUNTY OF CALEDONIA
MM 10.470 NB
PROJECT No. HES 091-3(42)
HES 093-1(10)

GENERAL CONTRACTOR

SUB CONTRACTOR F.R. LAFAYETTE

DRAWN MHM
CHECKED P Radice
DATE 5/23/07
SCALE NTS
HSC REFERENCE NO. 1587f
SIZE D REVISION 0
SHEET NO. 6 of 8

215-SIGN-2



erection mark	piece qty	item description	size/shape	length/qty per unit	material notes
TRUSS 1 ASSEMBLY					
D1		**CHORD PIPE ASSEMBLY**			
dh1	1	pipe	4" O.D.x 0.226" wall	26'-2"	A500 gr B API 5LX42
p1	2	plate	PL 0.375" x 4"	10"	A709 gr 50
p2	6	plate	PL 0.375" x 4"	1'-8"	A709 gr 50
ag3	14	angle	L2"x2"x.25"	3'-10.375"	A36
ag2	2	angle	L2"x2"x.25"	2'-6"	A36
pc	1	plate	0.25" x 1.75"	3.75"	A36
se1	1	splice plate	0.75" x 10" O.D.		A709 gr 50
D2		**CHORD PIPE ASSEMBLY**			
dh2	1	pipe	4" O.D.x 0.226" wall	29'-8.187"	A500 gr B API 5LX42
p1	4	plate	PL 0.375" x 4"	10"	A709 gr 50
p2	6	plate	PL 0.375" x 4"	1'-8"	A709 gr 50
ag3	7	angle	L2"x2"x.25"	3'-10.375"	A36
ag2	2	angle	L2"x2"x.25"	2'-6"	A36
pc	1	plate	0.25" x 1.75"	3.75"	A36
se1	1	splice plate	0.75" x 10" O.D.		A709 gr 50
D3		**CHORD PIPE ASSEMBLY**			
dh3	1	pipe	4" O.D.x 0.226" wall	29'-8.062"	A500 gr B API 5LX42
p1	4	plate	PL 0.375" x 4"	10"	A709 gr 50
p2	6	plate	PL 0.375" x 4"	1'-8"	A709 gr 50
pc	1	plate	0.25" x 1.75"	3.75"	A36
se1	1	splice plate	0.75" x 10" O.D.		A709 gr 50
TRUSS 2 ASSEMBLY					
D4		**CHORD PIPE ASSEMBLY**			
dh4	1	pipe	4" O.D.x 0.226" wall	26'-2"	A500 gr B API 5LX42
p1	2	plate	PL 0.375" x 4"	10"	A709 gr 50
p2	6	plate	PL 0.375" x 4"	1'-8"	A709 gr 50
ag3	14	angle	L2"x2"x.25"	3'-10.375"	A36
ag2	2	angle	L2"x2"x.25"	2'-6"	A36
pc	1	plate	0.25" x 1.75"	3.75"	A36
se1	1	splice plate	0.75" x 10" O.D.		A709 gr 50
D5		**CHORD PIPE ASSEMBLY**			
dh5	1	pipe	4" O.D.x 0.226" wall	29'-8.187"	A500 gr B API 5LX42
p1	4	plate	PL 0.375" x 4"	10"	A709 gr 50
p2	6	plate	PL 0.375" x 4"	1'-8"	A709 gr 50
ag3	7	angle	L2"x2"x.25"	3'-10.375"	A36
ag2	2	angle	L2"x2"x.25"	2'-6"	A36
pc	1	plate	0.25" x 1.75"	3.75"	A36
se1	1	splice plate	0.75" x 10" O.D.		A709 gr 50
D6		**CHORD PIPE ASSEMBLY**			
dh6	1	pipe	4" O.D.x 0.226" wall	29'-8.062"	A500 gr B API 5LX42
p1	4	plate	PL 0.375" x 4"	10"	A709 gr 50
p2	6	plate	PL 0.375" x 4"	1'-8"	A709 gr 50
pc	1	plate	0.25" x 1.75"	3.75"	A36
se1	1	splice plate	0.75" x 10" O.D.		A709 gr 50
VERTICAL PIPE ASSEMBLY					
LU3		**LEFT PIPE ASSEMBLY**			
rp5	1	pipe	14" O.D.x 0.38" wall	25'-2.375"	A500 gr B API 5LX42
sp	2	plate	PL 0.5" x 6.5"	8"	A709 gr 50
vp	4	plate	PL 0.5" x 1'-4"	1'-4"	A709 gr 50
cp	1	plate	0.25" X 1'-2.5" O.D.		A36
br2	1	angle	L 1.5"x1.5"x.25"	1'-1"	A36
gt	1	gasket	.125"x1'-2.5" O.D.		50 duro. Neoprene
nt	1	hex nut	.50" dia.		A563
tr	1	hex bolt	.50" dia.	1.5"	A325
w	1	washer	.50" dia.		F844
rw	1	rubber washer	.50" dia.		50 duro. Neoprene
stp	4	plate	PL 0.375" x 6"	6"	A709 gr 50
be1	1	base plate	2" x 2'-0" O.D.	c.2'-6"	A709 gr 50
RU3		**RIGHT PIPE ASSEMBLY**			
rp6	1	pipe	14" O.D.x 0.38" wall	27'-2"	A500 gr B API 5LX42
sp	2	plate	PL 0.5" x 6.5"	8"	A709 gr 50
vp	4	plate	PL 0.5" x 1'-4"	1'-4"	A709 gr 50
cp	1	plate	0.25" X 1'-2.5" O.D.		A36
br2	1	angle	L 1.5"x1.5"x.25"	1'-1"	A36
gt	1	gasket	.125"x1'-2.5" O.D.		50 duro. Neoprene
nt	1	hex nut	.50" dia.		A563
tr	1	hex bolt	.50" dia.	1.5"	A325
w	1	washer	.50" dia.		F844
rw	1	rubber washer	.50" dia.		50 duro. Neoprene
stp	4	plate	PL 0.375" x 6"	6"	A709 gr 50
be1	1	base plate	2" x 2'-0" O.D.	c.2'-6"	A709 gr 50
LODGE ITEMS					
sv7	10	sign hanger	W8x8.5	10'-9.937"	A36
ubb	8	u-bolt	0.625" dia.	7"	F1554 Gr. 36
ubk	16	lock nut	0.625" dia.		A563 DH
ubw	16	washer	0.625" dia.		F436
su1	20	u-bolt	0.50" dia.	6.5"	F1554 Gr. 36
sk1	40	lock nut	0.50" dia.		A563 DH
sw1	40	washer	0.50" dia.		F436
tb1	18	hex bolt	0.75" dia.	3"	A325
tb2	18	washer	0.75" dia.		F543
tb3	18	hex nut	0.75" dia.		A563 DH
anc1	8	anchor bolt	2" dia.	3'-7"	S/S A276 T304
nts1	16	hex nut	2" dia.		S/S A194B T304
lck1	8	lock washer	2" dia.		S/S TY 304
wa1	8	flat washer	2" dia.		S/S TY 304

REVISIONS		
No.	Remarks	Date
0	Initial submittal	

RECEIVED
CK'D BY GWX CK'D BY LUS
JUL 27 2007
RESUBMIT ____ APPROVED AS NOTED
BY DATE 08/07/07

STATE OF VERMONT PHILIP B. CHENEY 6163 REGISTERED PROFESSIONAL ENGINEER

HIGHWAY SAFETY CORP.
GLASTONBURY, CT

TRI-CHORD SIGN STRUCTURE
STATE OF VERMONT
COUNTY OF CALEDONIA
MM 10.470 NB
PROJECT No. HES 091-3(42)
HES 093-1(10)

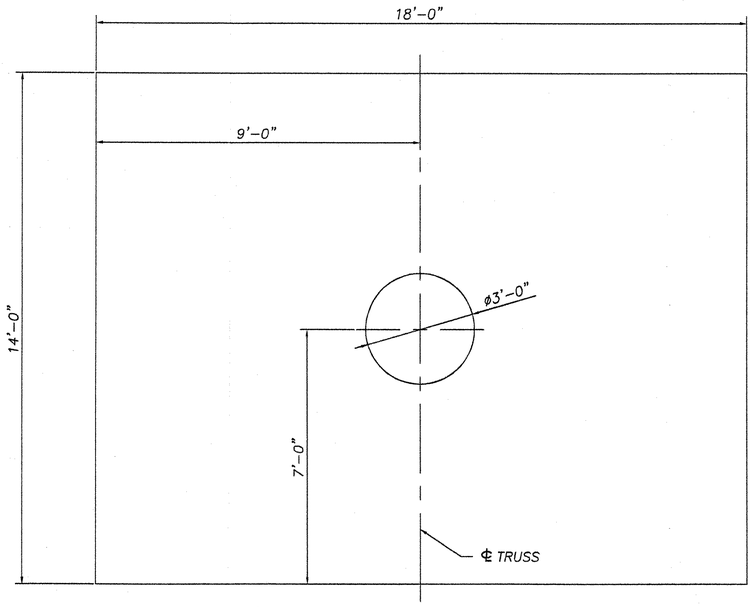
GENERAL CONTRACTOR
SUB CONTRACTOR F.R. LAFAYETTE

DRAWN	MHM
CHECKED	P Radice
DATE	5/23/07
SCALE	N.T.S.
HSC REFERENCE NO.	1587f
SIZE	D
REVISION	0
SHEET NO.	7 of 8

216-516N-f

REBAR LIST

REBAR	PCS. REQRD.	LENGTH
#4	12	9'-4"
#4	104	13'-6"
#5	92	17'-6"
#5 (HOOK ONE END)	52	8'-6"



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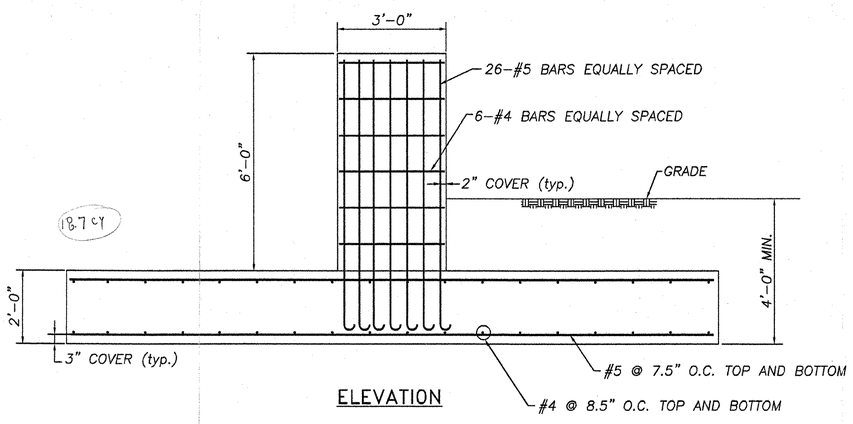

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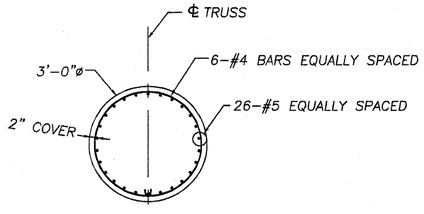

PLAN (STEM)

NB 10.47

REVISIONS		
No.	Remarks	Date
0	Initial submittal	

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CK'D BY GX OK'D BY
JUL 27 2007
RESUBMIT APPROVED X
BY DATE 08/07/07

STATE OF VERMONT PHILIP B. CHENEY 6163 REGISTERED PROFESSIONAL ENGINEER

QUALITY ASSURANCE AISC CERTIFICATION

HIGHWAY SAFETY CORP.
GLASTONBURY, CT

TRI-CHORD SIGN STRUCTURE
STATE OF VERMONT
COUNTY OF CALEDONIA
MM 10.470 NB
PROJECT No. HES 091-3(42)
HES 093-1(10)

GENERAL CONTRACTOR

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HSC REFERENCE NO.	1587f
SIZE	D
REVISION	0
SHEET NO.	8 of 8

217-SIGN-F

10.97

DESIGN CALCULATIONS

OVERHEAD SIGN STRUCTURE
INTERSTATE ROUTE 91
STATION 10.970 NB
PROJECT No. HES 091-3(42)
HES 093-1(10)

VERMONT AGENCY OF TRANSPORTATION

STATE OF VERMONT
PHILIP B. CHENEY
6163
REGISTERED
PROFESSIONAL ENGINEER

7.23.07

P. BRADFORD CHENEY
PRESIDENT

DATE

SUBMITTED BY:

CME ASSOCIATES, INC.
333 EAST RIVER DRIVE, SUITE 400
EAST HARTFORD, CT 06108

JULY 20, 2007

SUBMITTED TO:

HIGHWAY SAFETY CORPORATION
239 COMMERCE STREET
P.O. BOX 358
GLASTONBURY, CT 06033-0358

CME **CME Associates, Inc.**

820-SIGN-9

Highway Safety Corporation
239 Commerce Street
Glastonbury, CT 06033-0358

Project: Highway Safety
By: APB Checked: JAR
Date: 7/20/2007
Sheet No. of

Overhead Truss Sign Support Program **Tri-Chord Truss** **Single Post Support**

State: Vermont
Project:
Sign Location: MM 10.970 NB

Overall Dimensions (all in feet)

Span L	Left Post Height H1	Rt. Post Height H2	Truss Section Lengths: Section 1 (feet)	Section 2 (feet)	Section 3 (feet)	Number of Truss Pieces
58.07	22.86	25.16	29.04	29.04	0.00	2

Miscellaneous Data

Wind Speed (mph)	Sign Weight (psf)	Ice Load? (yes/no)
90	3.65	yes

Sign Dimensions (all in feet)

Sign 1 Length L1	Sign 1 Width W1	Sign 1 Location D1	Sign 2 Length L2	Sign 2 Width W2	Sign 2 Location D2	Sign 3 Length L3	Sign 3 Width W3	Sign 3 Location D3
19.19	10.33	16.16	17.72	9.50	34.62	0.00	0.00	0.00

Overhead Truss Chords

Height of Truss Dt (ft)	Width of Truss Wt (ft)	1st Truss Section Outside Dia. (inches)	1st Truss Section Wall Thick. (inches)	2nd Truss Section Outside Dia. (inches)	2nd Truss Section Wall Thick. (inches)	3rd Truss Section Outside Dia. (inches)	3rd Truss Section Wall Thick. (inches)	Chord Yield Str. (ksi)	Number of Chords 1, 3 or 4
3.00	3.00	4.000	0.226	4.00	0.23	4.000	0.226	42.0	3
				4.000	0.226	<-- Values Used in computations			

Overhead Truss Diagonals

Equal Leg Angles Leg Size (inches)	Equal Leg Angles Thickness (inches)	Round Pipe Outside Dia. (inches)	Round Pipe Thickness (inches)	Diagonal Yield Str. (ksi)	Vertical diag. angle (deg)	Horizontal diag. angle (deg)	Drilled Shafts for foundation ?	Circular Footing Stem? (yes/no)
2.00	0.250	0.00	0.000	36.0	38	38	no	yes

No. of Posts per end 1 or 2	Left Post Verticals Spacing Sp (Feet)	Left Post Verticals Outside Dia. (inches)	Left Post Verticals Wall Thick. (inches)	Post Yield Str. (ksi)	Vertical diag. angle (deg)	Right Post Verticals Spacing Sp (Feet)	Right Post Verticals Outside Dia. (inches)	Right Post Verticals Wall Thick. (inches)	Post Yield Str. (ksi)
1	0.00	14.000	0.500	42.0	45	0.000	14.000	0.500	42.000

Post Diagonals

Equal Leg Angles Leg Size (inches)	Equal Leg Angles Thickness (inches)	Round Pipe Outside Dia. (inches)	Round Pipe Thickness (inches)	Diagonal Yield Str. (ksi)	
0.00	0.000	3.00	0.125	36.0	
0.00	0.000	0.00	0.000	0.00	<-- Values Used in Computations

Results

		D/C or CSR	OK / NG ?
Truss	Section 1 Chords	0.64	OK
	Section 2 Chords	0.64	OK
	Section 3 Chords	NA	N/A
	Truss Diagonals	0.54	OK
Posts	Left Post	0.74	OK
	Right Post	0.66	OK
	Left Post Diagonals	N/A	N/A
	Right Post Diagonals	N/A	N/A

Truss Deflections in Inches

Defl. Under DL + Ice	0.57	
Allowable (L/150)	4.65	OK
Camber	1.05	

Deflection OK

221-S16N-9

Connection Design

Number of Posts per end	1

Baseplate and Anchor Bolt Input

Baseplate Thickness inches	Baseplate Yield Str. * ksi	Anchor Bolts per post: No. of Bolts	Diameter Inches	Yield Str. (ksi) *
2.250	50.00	4	2.250	55
		4,6, or 8		

* Normal Yield Strengths (36, 55, 110 ksi)
AASHTO M314

Analysis Results

Bolt Circle Dia. (in)	Baseplate Dia (in)	Socket Weld Design: Weld Size inches	Total Weld Length (in)	Embedment inches	Anchor Bolts: Extension inches	Tot. Length inches	Anchor CSR	Baseplate Bending ksi	
23.00	32.00	0.374	87.96	36.00	9.000	45.000	0.83	42.95	Actual
							1.0	37.00	Capacity
							OK	See Note	Result

Note: If Base plate bending stress exceeded, add vertical stiffeners.
Length of required 1/4" weld on each leg of each stiffener = 3.00 inches

Truss Chord Splice Connection Input

Conn. Plate Thickness inches	Conn. Plate Yield Str. ksi	A325 Bolt Diameter Inches	Number of Bolts
0.750	50.00	0.750	6

Input this area for monotubes also

Analysis Results

Bolt Circle Dia. (in)	Conn Plate Dia (in)	Socket Weld Design: Weld Size inches	Total Weld Length (in)	Connection Bolts: Bolt Spacing inches	Bolt D/C ksi	Conn. Pl. Bending ksi	
7.00	10.00	0.226	25.13	3.665	0.47	7.70	Actual
				2.25	1.0	37.50	Allowed
				OK	OK	OK	Result

Truss Diagonal Connection Input (for 1/2 connection)

Conn. Plate Thickness inches	Conn. Plate 1/2 Length inches	Conn. Plate Yield Str. ksi	A325 Bolt Diameter Inches	Number of Bolts per diag.
0.375	10.000	50.00	0.000	0
				See Note

Note: Enter zero for welded connection

Analysis Results

Diagonal Bolt Force kips	Conn Plate Stress ksi	Diagonal Weld Length inches		Chord Weld Connection: Weld Size inches	Total Weld Length (in)	Weld Load k/in	
N/A	1.95	6.0	Actual	0.250	20.00	0.731	Actual
N/A	30.00	1.089	Capacity	required		6.72	Capacity
N/A	OK	OK	Result			OK	Result

Post Diagonal Connection Input (for 1/2 connection)

Conn. Plate Thickness inches	Conn. Plate 1/2 Length inches	Conn. Plate Yield Str ksi	A325 Bolt Diameter Inches	Number of Bolts per diag.
0.500	10.000	50.00	0.875	0
				See Note

-N/A SINGLE POST USED-
Note: Enter zero for welded connection

Analysis Results

Diagonal Bolt Force kips	Conn Plate Stress ksi	Diagonal Weld Length inches		Post Weld Connection: Weld Size inches	Total Weld Length (in)	Weld Load k/in	
N/A	0.00	12.0	Actual	0.250	20.00	0.000	Actual
N/A	30.00	0.000	Capacity	required		6.72	Capacity
N/A	OK	OK	Result			OK	Result

Truss Support Connection (use W Shape)

Section	Web Thickness inches	Web Depth inches	Member Yield Str. ksi
W6x8.5	0.170	5.875	30.00

Use W6x8.5 for most
Weld all around with 1/4" weld
-N/A SINGLE POST USED-

Analysis Results

End Weld Length inches		End Shear Load kips	
0.59	required	3.99	Actual
19.0	provided	11.87	Capacity
OK	Result	OK	Result

Truss Support Connection (For Tri-Chord)

Dist. from edge of post to CL of chord	Depth of Plate (inches)	Full Width of Plate (inches)
9.000	16.000	16.00
inches		

Analysis Results

Weld Stress (ksi)	
1.91	Actual
19.00	Capacity
OK	Result

Monotube Connection at Pole

Dia. of U-bolt	Saddle Length and Post Top Plate	Saddle Height	Depth of Saddle Notch	Thickness of Connection material	Yield Strength of U-Bolt
0.75	16	10.5	1.2	0.75	36
inches	inches	inches	inches	inches	ksi

-N/A FOR Tri-Chord

General Information			
Post Dimensions		Chord Dimensions	
Post Dia.	Thickness	Diameter	Thickness
14.00	0.50	4.00	0.226

Analysis Results

U-bolt Stress (ksi)	
1.47	Required
18.00	provided
OK	Result

Bolt Data: Bolt Dia. inches	n = Threads Per inch	A net sq. inches	A Gross sq. inches
0.500	13	0.142	0.196
0.625	11	0.226	0.307
0.750	10	0.334	0.442
0.875	9	0.462	0.601
1.000	8	0.606	0.785
1.125	7	0.763	0.994
1.250	7	0.969	1.227
1.375	6	1.155	1.485
1.500	6	1.405	1.767
1.750	5	1.899	2.405
2.000	4.5	2.498	3.142
2.250	4.5	3.248	3.976
2.500	4	3.999	4.909
2.750	4	4.934	5.940
3.000	4	5.967	7.069
3.250	4	7.099	8.296
3.500	4	8.329	9.621
4.000	4	11.083	12.566
4.250	4	12.607	14.186
4.500	4	14.229	15.904
4.750	4	15.950	17.721
5.000	4	17.769	19.635

222-Sign-9

Baseplate Design - Double End Post Design

Anchor Bolt Analysis (4 bolt pattern, round baseplate)

Not Applicable, see single post design below

Bolt Circle Dia. = 23.00 inches
A bolts = 12.991 sq. inches
I bolts = 859.01 in^4
S bolts = 74.70 in^3
Base Plate Dia. = 32.50 inches
Allow.Tensile Stress = Ft = 27.50 ksi
Allow.Shear Stress = Fv = 16.50 ksi

Anchor Bolt Properties		
Net Tensile Stress Area = At =	3.249	sq. inches
Gross Area = Ag =	3.976	sq. inches

Reactions		Max. Axial kips	Min. Axial kips	Mweak kip-ft	V kips	AB Com. Stress ksi	AB Tens. Stress ksi	AB Shear Stress ksi	CSR Eq. 5-24	Baseplate Weld Information: Prod. Bending Str. (ksi)	Prod. Axial Str. (ksi)	Max. Stress ksi
Left Support	G1	3.81	3.81	0.00	0.00	0.29	0.29	0.00	0.00	0.00	0.18	0.18
Right Support		3.77	3.77	0.00	0.00	0.29	0.29	0.00	0.00	0.00	0.18	0.18
Left Support	G2 C1	2.86	2.86	23.26	4.53	3.96	-3.52	0.37	0.02	4.04	0.13	4.18
Right Support		2.84	2.84	19.67	3.92	3.38	-2.94	0.30	0.01	3.42	0.13	3.55
Left Support	G2 C2	2.86	2.86	34.89	3.19	5.83	-5.38	0.25	0.04	6.07	0.13	6.20
Right Support		2.84	2.84	29.51	2.57	4.96	-4.52	0.20	0.03	5.13	0.13	5.26
Left Support	G3 C1	3.95	3.95	11.53	2.58	2.17	-1.56	0.20	0.00	2.02	0.19	2.21
Right Support		3.81	3.81	9.84	2.14	1.87	-1.29	0.17	0.00	1.71	0.18	1.89
Left Support	G3 C2	3.95	3.95	17.84	1.60	3.11	-2.50	0.12	0.01	3.03	0.19	3.22
Right Support		3.81	3.81	14.76	1.32	2.66	-2.08	0.10	0.01	2.57	0.18	2.75
						5.83	-5.38	0.37	0.04			6.20

Baseplate weld design

Not Applicable, see single post design below

S post = 69.01 in^4
A post = 21.21 in^2
Max. Weld Size = 0.4375 inches
Min. Weld Size = 0.25 inches
Force per inch of post edge = 3.10 kips per inch
Weld Stress based on Max. Weld Size = 5.01 ksi Based on double weld (socket connection)
Weld Stress based on Min. Weld Size = 8.77 ksi Based on double weld (socket connection)
Weld Yield Strength = 70 ksi
Allowable Weld stress = 18.9 ksi
Required weld size = 0.116 inches
Design Weld Size = 0.25 inches Based on double weld (socket connection)
Weld Length = 87.96 inches Based on double weld (socket connection)

Baseplate Thickness

Not Applicable, see single post design below

Width of Baseplate section = 9.000 inches
Thickness = 2.250 inches
Sx = 7.59 in^3
Bolt spacing = X = 18.06 inches Measured along circumference of bolt circle
Force per inch of post edge = 3.10 kips per inch
Moment in Baseplate = 101.15 kip inches
Bending Stress = 13.32 ksi
Allowable Bending Stress = 37.50 ksi
No vertical Stiffeners needed
Capacity of 1/4" weld = 3.36 kips per inch
Length of 1/4" horizontal weld required on each leg of each vertical stiffener = X = 2.82 inches

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Baseplate Design - Single End Post Design

Anchor Bolt Analysis

Number of Bolts =	4	
Bolt Circle Dia. =	23.00	inches
A bolts =	12.991	sq. inches
I bolts =	899.01	in^4
Sstrong bolts =	74.70	in^3

Anchor Bolt Properties		
Net Tensile Stress Area = At =	3.248	sq. inches
Gross Area = Ag =	3.976	sq. inches

Base Plate Dia. = 32.00 inches

Allow.Tensile Stress = Ft =	27.50	ksi
Allow.Shear Stress = Fv =	16.50	ksi

Reactions	Axial kips	Mx kip-ft	Mz kip-ft	Shear kips	AB Tens. Stress ksi	AB Shear Stress ksi	CSR Eq. 6-24
G1	3.81	0.00	0.00	0.00	-0.29	0.00	0.00
G5 C1	2.86	114.19	23.26	4.83	21.66	0.37	0.63
G5 C2	2.86	68.51	34.89	3.19	16.39	0.25	0.36
G6 C1	3.95	59.34	11.63	2.58	11.10	0.20	0.16
G6 C2	3.95	35.60	17.44	1.60	8.22	0.12	0.09
					21.66	0.37	0.63

Baseplate weld design

S post =	69.21	in^4	
A post =	21.21	in^2	
Max. Weld Size =	0.4375	inches	
Min. Weld Size =	0.25	inches	
Force per inch of post edge =	9.99	kips per inch	
Weld Stress based on Max. Weld Size =	16.16	ksi	Based on double weld (socket connection)
Weld Stress based on Min. Weld Size =	29.27	ksi	Based on double weld (socket connection)
Weld Yield Strength =	70	kips	
Allowable Weld stress =	18.9	kai	
Required weld size =	0.374	inches	
Design Weld Size =	**0.3739913**	**inches**	Based on double weld (socket connection)
Weld Length =	**87.96**	**inches**	Based on double weld (socket connection)

Baseplate Weld Information	Post Bending Str. (ksi)	Post Axial Str. (ksi)	Max. Stress ksi
G1	0.00	0.18	0.18
G5 C1	19.85	0.13	19.99
G5 C2	11.91	0.13	12.05
G6 C1	10.32	0.19	10.50
G6 C2	6.19	0.19	6.38
			19.99

Baseplate Thickness

Width of Baseplate section =	9.000	inches	
Thickness =	2.250	inches	
Sx =	7.59	in^3	
Bolt spacing = X =	18.06	inches	Measured along circumference of bolt circle
Force per inch of post edge =	9.99	kips per inch	
Moment in Baseplate =	326.14	kip inches	
Bending Stress =	42.95	ksi	
Allowable Bending Stress =	37.50	ksi	
	Baseplate stress exceeded, add vertical stiffeners		
Capacity of 1/4" weld =	3.36	kips per inch	
Length of 1/4" weld required on each leg of each vertical stiffener =	10.57	inches	

Truss Chord Splices

Bolt Stresses

Maximum Chord Force =	35.47	kips	
Max. Chord Diameter =	4.000	inches	
Bolt Circle Dia. =	7.000	inches	
Bolt Anet =	0.334	in^2	
A bolts =	2.007	sq. inches	6 bolts
Bolt Tensile Stress =	17.67	ksi	
Allow.Tensile Stress = Ft =	38.00	ksi (A325 Bolts)	
Demand/Capacity Ratio =	**0.47**		

For Monotube Only

Loads:

Mvert kip-ft	Mhoriz. kip-ft	SHEAR Horizontal kips	SHEAR Vertical kips	Bolt Tens. Stress ksi	Bolt Shear Stress ksi
36.07	73.28	0.18	0.06	279.08	0.10

Mvtotal =	81.67 ft-kip	
Vtotal =	0.20 kip	
Moment of Inertia =	12.29 in^4	
S =	3.51 in^3	
Allow.Tensile Stress, Ft =	38.00 ksi	
Allow.Shear Stress, Fv =	19.00 ksi	
CSR =	1.00 OK!!!	

Bolt stresses based on A325 Bolts (AASHTO Table 10.32.3B)
Bolt stresses reduced by 0.875 for bolts over 1 inch diameter

Plate Stresses

Width of conn. plate section =	3.000	inches	
Thickness =	0.750	inches	
Sx =	0.281	in^3	
Bolt Circle Circumference =	21.991	inches	
Bolt Spacing =	3.665	inches	
Force per inch along circumference =	1.61	kips per inch	
Moment in Conn. plate =	2.17	kip inches	
Bending Stress =	7.70	ksi	
Allowable Bending Stress =	37.50	ksi	

Weld Stresses

Max. Weld Size =	0.226	inches	
Min. Weld Size =	0.226	inches	
Force per inch of pipe edge =	2.82	kips per inch	
Weld Stress based on Max. Weld Size =	8.83	ksi	Based on double weld (socket connection)
Weld Stress based on Min. Weld Size =	8.83	ksi	Based on double weld (socket connection)
Weld Yield Strength =	70	ksi	
Allowable Weld stress =	18.9	ksi	
Required weld size =	0.106	inches	
Design Weld Size =	**0.226**	**inches**	Based on double weld (socket connection)
Weld Length =	**25.13**	**inches**	Based on double weld (socket connection)

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Truss Diagonal Splices

Bolted Splice Design

Maximum Axial Force in Diagonal =	7.31	kips
Bolt Dia. =	0.000	inches
Bolt Area =	#N/A	inches
Number of Bolts=	0	
Allowable Shear stress =	15	ksi (AASHTO Table 10.32.3C) Galvanized surface
Allowable Load on Connection =	#N/A	kips (single shear)

Welded Splice Design

Maximum Axial Force in Diagonal =	7.31	kips
Capacity of 1/4" weld =	6.72	kips per inch (double weld)
Required Length of Weld =	1.089	inches (based on 2 welds)
Minimum for angles =	6.0	inches (based on 2 welds 3" long)
Minimum for pipes =	12.0	inches (based on 4 welds 3" long)
Minimum Weld Length =	6.0	inches

Connection Plate Design

Total Force in 1/2 Plate =	7.31	kips
Stress in plate =	1.95	ksi
Allowable stress =	30.00	ksi

Connection Plate Weld

Force per inch of weld =	0.73	kips per inch
Capacity of 1/4" weld =	6.72	kips per inch (double weld)

Post Diagonal Connections

Bolted Splice Design

NA - Single Post Design

Maximum Axial Force in Diagonal =	0.00	kips
Bolt Dia. =	0.875	inches
Bolt Area =	0.601	inches
Number of Bolts=	0	
Allowable Shear stress =	15	ksi (AASHTO Table 10.32.3C) Galvanized surface
Allowable Load on Connection =	0.0	kips (single shear)

Welded Splice Design

Maximum Axial Force in Diagonal =	0.00	kips
Capacity of 1/4" weld =	6.72	kips per inch (double weld)
Required Length of Weld =	0.000	inches (based on 2 welds)
Minimum for angles =	6.0	inches (based on 2 welds 3" long)
Minimum for pipes =	12.0	inches (based on 4 welds 3" long)
Minimum Weld Length =	12.0	inches

Connection Plate Design

Total Force in 1/2 Plate =	0.00	kips
Stress in plate =	0.00	ksi
Allowable stress =	30.00	ksi

Connection Plate Weld

Force per inch of weld =	0.00	kips per inch
Capacity of 1/4" weld =	6.72	kips per inch (double weld)

Truss Support Connection (use W6x8.5)

NA - See Connection Below

Maximum Reaction =	3.95	kips (half reaction)
Capacity of 1/4" weld =	3.36	kips per inch (single weld)
Length of Weld Required =	0.588	inches (based on double weld)
Length of Weld Provided =	19.00	inches
Shear Capacity of W6x8.5 =	11.87	kips

Truss Support Connection (Single or Double pole) - Tri - Chord Only

Maximum Reaction (Vert) =	3.95	kips (max of left or right conn.)	Number of Chords =	3
Maximum wind Load (Horiz) =	4.73	kips (max of left or right conn.)	Poles (per end) =	1
Reaction per chord connection (Vert) =	1.97	kips	# of Connections =	2
Reaction per chord connection (Horiz) =	2.37	kips	Weld Size =	0.19 in
Area of Weld =	5.48	in^2		
Sweld =	22.62	in^3		
fv =	0.23	ksi		
fb =	1.62	ksi		
fr =	0.28	ksi		
(fv^2+(fb+fb/3)^2)^1/2 =	1.91	ksi		
Allowable stress of weld =	19	ksi		

Monotube Support Connection (Single Vertical Pole)

NA - See Connection Above

Max Shear =	2.25 kips	Div by 2 because 2 u-bolts are always used
Monotube Dia. =	14.00 in	
U-bolt Leg Dia =	0.75 in	
Area of U-bolt Leg =	0.334 in^2	
Tension in U-bolt Leg =	0.49 kips	Based on depth of saddle equall to 0.3 * Diameter of Monotube
Stress in U-bolt =	1.47 ksi	
Allowable U-bolt stress	19 ksi	Eq. 5-21
Stress Check	OK	

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Spread Footing Analysis

Footing Data													
Footing Depth below Grade			Footing width is shorter of Cone Length is perpendicular to Cone of Influence										
Length	Footing Width	Thickness	Depth	Length	Width	Area	Weight	Soil Weight	Soil Area				
14.00	10.00	3.00	4.00	14.00	10.00	140.00	420.00	1176.00					
Footing Eccentricity and Overturning Check													
Cone to Cone Eccentricity									Footing Overturning Check				
Ex (ft)									Ex Allowed	Safety Factor			
0.00									0.33	OK			

Analysis Results

Soil Pressure			F.S. FOR [1.5 TO 6] F.S. FOR [2 TO 6]		
Max Net Soil Pressure (psf)	Min. Net Soil Pressure (psf)	LIFT	Overturning Check	Overturning Check	Sliding
Footing 1	Footing 1		Footing 1	Footing 1	Footing 1
OK	OK		OK	OK	OK

Attitude of Reinforcing Mat Level		Tensile Reinforcing		Max. Net Soil Pressure		Max. Gross Soil Pressure		Factor of Safety		Factor of Safety	
Concrete Weight	Sliding Effec.	Steel Area	Steel Ratio	Net Soil Pressure	Net Soil Pressure	Gross Soil Pressure	Gross Soil Pressure	Overturning	Overturning	Sliding	Sliding
Strength (f'c)	Factor (Fric/Coh)	(sq. in.)	(As/bd)	(psf)	(ksf)	(psf)	(ksf)	Ratio	Check	Ratio	Check
3000	0.30	0.00	0.000	0	0.000	0	0.000	N/A	N/A	N/A	N/A

Analysis Results

Item	Load Combination for each Condition						
	1	2	3	4	5	6	7
Length (Top) (ft)	14.00	14.00	14.00	14.00	14.00	14.00	14.00
Width (Top) (ft)	10.00	10.00	10.00	10.00	10.00	10.00	10.00
Bearing Capacity (ksf)	6.000	6.000	6.000	6.000	6.000	6.000	6.000
Weight Increase	OK	OK	OK	OK	N/A	N/A	N/A
Uplift Check	OK	OK	OK	OK	N/A	N/A	N/A

Load Combination Factor (each Combination)	0.75(D+L)
Total Volume of Concrete (each Combination)	42.00 CY

Footing Data			Footing Area	Soil Weight	
Footing Area, Top (sq.ft.)	140.00	SQ.FT.	140.00	1176.00	Assumed Unit Weight of Soil
Footing Area, Base (sq.ft.)	196.00	SQ.FT.			
			SQ.FT.	LBS	

	Percent Overdesign	
Group 1	1.00	
Group 2 Case 1 DL + 65% # LIVE	1.00	1% = # END FORCES PERPENDICULAR TO SIDING
Group 2 Case 2 DL + 65% # Shr	1.00	1% = # SHEAR FORCES TRANSVERSE (PARALLEL) TO SIDING
Group 3 Case 1 DL + 65% # LIVE + WIND	1.00	
Group 3 Case 2 DL + 65% # Shr + WIND	1.00	Minimum shaft area of Rock = 7.07sqft
Group 4 Case 2 DL + EQ + 24% # + 70	1.00	Minimum shaft pressure of Shaft

LOAD COMBINATION RESULTS (Loads and Moments are for both angles)

(loads include overstrength)

Overturning	Moment About Footing Edge				Shear at Footing		Moment at Base of Footing		Moment at Top of Pier		F.S. FOR [1.5 TO 6] F.S. FOR [2 TO 6]		Sliding
	Moment	Moment	Moment	Moment	Shear	Shear	Moment	Moment	Moment	Moment	Overturning	Overturning	Sliding
Direction	Axis X	Axis Z	Axis X	Axis Z	Axis X	Axis Z	Axis X	Axis Z	Axis X	Axis Z	Ratio	Check	Ratio
Uplift Support		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	N/A	N/A	N/A
Left Support	#1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	N/A	N/A	N/A
Left Support	#2	119.56	0.00	4.63	0.00	1.65	0.00	0.00	153.48	0.00	1.31	0.00	11.26
Right Support		119.56	0.00	4.63	0.00	1.65	0.00	0.00	153.48	0.00	1.31	0.00	11.26
Uplift Support		192.67	19.62	7.46	0.75	2.66	192.67	19.62	153.48	19.62	0.80	20.00	7.46
Left Support	#3	192.67	19.62	7.46	0.75	2.66	192.67	19.62	153.48	19.62	0.80	20.00	7.46
Right Support		66.45	41.01	2.57	1.12	0.89	70.33	43.03	53.65	43.03	0.76	20.00	20.00
Uplift Support		66.45	41.01	2.57	1.12	0.89	70.33	43.03	53.65	43.03	0.76	20.00	20.00
Right Support	#4	66.45	5.49	2.57	0.46	0.89	70.33	10.55	154.64	41.84	2.19	20.00	20.00
Uplift Support		66.45	5.49	2.57	0.46	0.89	70.33	10.55	154.64	41.84	2.19	20.00	20.00
Right Support	#5	66.45	34.75	2.57	0.98	0.89	70.33	37.77	154.64	36.98	2.19	20.00	20.00
Uplift Support		66.45	34.75	2.57	0.98	0.89	70.33	37.77	154.64	36.98	2.19	20.00	20.00
Max Values		174.72	44.88	6.75	1.25	2.52	192.68	43.96	202.64	130.72	44.97	60.14	60.14

**Uplift and Bearing Checks (Uplift, FS? is

(loads include overstrength)

Overturning	Soil Pressure				Uplift
	Max	Min	Max	Min	
Direction	At pt 1	At pt 2	At pt 3	At pt 4	At pt 5
Left Support	#1	0.81	0.81	0.81	0.81
Uplift Support		0.81	0.81	0.81	0.81
Left Support	#2	0.84	0.78	0.47	0.37
Right Support		0.84	0.78	0.47	0.37
Uplift Support	#2	0.75	0.68	0.37	0.43
Right Support		0.75	0.68	0.37	0.43
Uplift Support	#3	0.75	0.68	0.37	0.43
Right Support		0.72	0.68	0.55	0.55
Uplift Support	#4	0.72	0.68	0.55	0.55
Right Support		0.69	0.68	0.55	0.55
Uplift Support	#5	0.69	0.68	0.55	0.55
Right Support		0.69	0.68	0.55	0.55
Max Values		0.84		0.81	0.81

Longitudinal Footing Reinforcing

Concrete Strength	Reinforcing Steel Yield	Cover	Bar Size	Bar Area	Bar Dia.	Bar Weight	d
Length	Width	Thickness		Clear			
Feet	Feet	inch	inch		inch	inch	inch
7.00	17.00	36.00	3.00	3	0.31	0.833	1.128

Moment =	2924.38 (inch kips)	Shear =	80.00 (Kips)
f_s =	0.67	Shear Stress =	10.16 (psi)
As req. =	9.88 inches^2	Allow. v_c =	21.03 (psi)
			OK

Number of Bars	29 (based on design)
Bar Spacing	5.742 inches (based on design)
Max. Spacing =	18.00 inches
Number of Bars	16 (based on max spacing)
Number of Bars	13 (based on minimum)
Bar Weight	0.833 lbs/ft
Bar Length	17.000 feet

Reinforcing Bar Properties		
Bar Size	d (in)	Weight (lb/ft)
3	0.38	0.376
4	0.50	0.668
5	0.63	1.043
6	0.75	1.502
7	0.88	2.044
8	1.00	2.670
9	1.13	3.400
10	1.27	4.303
11	1.41	5.313
14	1.69	7.650
18	2.26	13.600

Transverse Footing Reinforcing

Concrete Strength	Reinforcing Steel Yield	Footing Thickness	Cover	Bar Size	Bar Area	Bar Dia.	Bar Weight	d
Width	Depth	Clear						
Feet	Feet	inch	inch		inch	inch	inch	inch
9.00	14.00	36.00	3.00	3	0.31	0.833	1.128	32.00

Moment =	2759.00 (kcfs inch)	Shear =	60.00 (Kips)
f_s =	0.67	Shear Stress =	10.29 (psi)
As req. =	9.97 inches^2	Allow. v_c =	21.03 (psi)
			OK

Number of Bars	27 (based on design)
Bar Spacing	6.704 inches (based on design)
Max. Spacing =	18.00 inches
Number of Bars	13 (based on max spacing)
Number of Bars	12 (top and bottom)
Bar Weight	0.833 lbs/ft
Bar Length	13.000 feet

Rectangular Stem Reinforcing (side Faces) NOT APPLICABLE SEE CIRCULAR STEM

Concrete Strength	Reinforcing Steel Yield	Stem Thickness	Cover	Bar Size	Bar Area	Bar Dia.	Bar Weight	d
Length	Width	Clear						
Feet	Feet	inch	inch		inch	inch	inch	inch
1.00	3.00	12.00	2.00	3	0.31	0.833	1.128	10.000

Moment =	489.00 (inch kips)	Shear =	1.00 (Kips)
f_s =	0.67	Shear Stress =	0.33 (psi)
As req. =	0.94 inches^2	Allow. v_c =	63.00 (psi)
			OK

Number of Bars	2 (based on design)
Bar Spacing	18.000 inches (based on design)
Max. Spacing =	18.00 inches
Number of Bars	2 (based on max spacing)
Number of Bars	2 (each face)
Bar Weight	12.408 lbs/ft
Bar Length	1.000 feet

Rectangular Stem Reinforcing (end Faces) NOT APPLICABLE SEE CIRCULAR STEM

Concrete Strength	Reinforcing Steel Yield	Stem Thickness	Cover	Bar Size	Bar Area	Bar Dia.	Bar Weight	d
Length	Width	Clear						
Feet	Feet	inch	inch		inch	inch	inch	inch
3.00	3.00	42.00	2.00	3	0.31	0.833	1.128	40.000

Moment =	4597.40 (inch kips)	Shear =	4.73 (Kips)
f_s =	0.67	Shear Stress =	0.39 (psi)
As req. =	1.66 inches^2	Allow. v_c =	63.00 (psi)
			OK

Number of Bars	2 (based on design)
Bar Spacing	8.358 inches (based on design)
Max. Spacing =	18.00 inches
Number of Bars	10 (based on max spacing)
Number of Bars	2 (each face)
Bar Weight	3.400 lbs/ft
Bar Length	3.000 feet

Stem Reinforcing (horizontals) Use #4 bars at 12" NOT APPLICABLE SEE CIRCULAR STEM

Max. Spacing =	12.00 inches
Number of Bars	2 (based on max spacing)
Bar Weight	0.668 lbs/ft
Bar Length	3.167 feet

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Circular Stem Design - For Use in Spread Footings with Circular Stem

f'c =	3.00	ksi	
Fy =	60	ksi	
Cc =	2.00	in	Clear cover is uniform around the cross section
h =	36.00	in	Outside Diameter of Column (Approx. 70" max)
Bar Size =	5	As =	0.31 in^2
		Dia =	0.625 in
Hoop Bar		As =	0.2 in^2
size =	4	Dia =	0.5 in
Spacing =	3.75	in	Approximate desired spacing of main reinforcing (assumes as max)
Φ=	1		

Determine if section is adequate for loads applied

Mu =	139.19	ft-kips	Mu = Resultant moment = sqrt(Mstrong^2+Mweak^2)
Pu =	3.95	kips	**IS SECTION OK? YES**

Calculate location of steel reinforcing around perimeter of column:

Dia. of inner ring of reinf.= 30.375 in
perimeter= 95.43 in

# of bars = 26 number of (even) bars that will fit in perimeter Program allows 42 bars maximum OK
Number of bar rows = 13
spacing = 2.53 (in) actual vertical spacing of bars

Note: Program orients bars so that one layer is on the centroid of column (conservatlve)

Calculate location of bar with respect to the extreme compression fiber:

Rebar level	Is rebar level in		Is steel used for Tension or Comp.?	# bars in each level	Area of Steel Calculation As tension	As comp
d1	2.81	in	Comp	2		0.62
d2	5.34	in	Comp	2		0.62
d3	7.88	in	Comp	2		0.62
d4	10.41	in	Comp	2		0.62
d5	12.94	in	Comp	2		0.62
d6	15.47	in	Comp	2		0.62
d7	18.00	in	Steel Not Used	2		
d8	20.53	in	Tension	2	0.62	
d9	23.06	in	Tension	2	0.62	
d10	25.59	in	Tension	2	0.62	
d11	28.13	in	Tension	2	0.62	
d12	30.66	in	Tension	2	0.62	
d13	33.19	in	Tension	2	0.62	
d14	NA					
d15	NA					
d16	NA					
d17	NA					
				As tens =	3.72	As comp= 3.72

Centroid of Tension and Compression Steel from extreme compression fiber:
d(tension) = 26.86 in
d(comp) = 9.14 in

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Find max axial force: M=0 stand. Spec. 8.16.4.2.1

ΦPo = Φ[0.85*f'c(Ag-Ast)+Ast*fy]

Ag = 1017.9 in^2
Ast = 8.1 in^2

ΦPo = 3058.6 kip Mn = 0

Find axial and moment capacity at balanced strain condition: Stand. Spec 8.16.4.2.3

ΦPb = Φ[0.85*f'c*b*ab+A's*f's-As*fy]

ΦMb = Φ[0.85*f'c*b*ab(d-d"-ab/2)+A'sf's(d-d'-d")+As*fy*d"]

d = 26.86 (in) dist from extreme compression fiber to centroid of tension steel
d' = 9.14 (in) dist from extreme compression fiber to centroid of comp. steel
d" = 8.86 (in) dist from centroid of gross section to centroid of tension steel
ab = 14.31 in
β1 = 0.9
f's = 36.97 ksi
b = 35.23 in
A's = 3.72 in^2 As = 3.72 in^2

ΦPb = 1199.76 kip

ΦMb = 17138.38 in-kip = 1428.20 ft-kip

Find Moment Capacity of Section: P=0

Note: neglect compression steel

c = 5.64 (in) with a % error of 0.06 % OK
b = 25.06
θ = 88.22

Reinforcement Ratio: Used to check if fs=fy
ρ = 0.005527
ρb = 0.022638
is ρ<.75ρb ? OK

ΦMn = As*fy(d-a/2)
5428.57 in-kip = 452.38 ft-kip Pn = 0

Determine if section is adequate for loads applied

Mu = 139.19075 ft-kips
Pu = 3.9463256 kips

Points for interaction diagram: Note: points are connected with straight lines

Article 8.15.4 Stand. Spec: The combined flexural and axial load capacity of compression members shall be taken as 35% of that from 8.16.4

	P	M	
1	1070.5	0	
2	419.91	499.87	
3	0	158.33	
4	3.9463256	139.1908	Point 4 is from actual loads

Linear Interpolation Program #1 (upper line)

Are you in upper region? No

	Pu		Mu	
Value Below	1070.52		0.00	
Value at desired Loc.	3.95	x =	819.464	Max
Value Above	419.91		499.87	

Linear Interpolation Program #2 (lower line)

Are you in lower region? Yes

	Pu		Mu	
Value Below	419.91		499.87	
Value at desired Loc.	3.95	x =	161.543	Max
Value Above	0.00		158.33	

Circular Stem

228-Sign-9

Cost Data

Input	Number of Chords		Plate	Number of Webs per side				Foundation Quantity	Foundation Remaining
	Truss Chords	Type of Diagonals	Plate Thickness	Truss Spacing	Truss Diagonals	Truss Verticals	Truss Top Extension		
Cost Units	CST	CST	CST	Inches	Each	Each	Each	CY	CY
Cost Per Unit or Connection	$124.00	$124.00	$124.00	$120.00	$125.00	$125.00	$0.00	$25.00	$25.00
Cost per Square Foot	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
Connection Per Unit	$150.00	$125.00	$150.00	$150.00	$150.00	$125.00	$0.00	$250.00	$125.00

Truss Chords

Chords	Chord Size by Number	Chord Size by Material	Total Length	Weight per Inch	Cost
1	2.00	4.00	21.11	1.360	$76.71
2	4.00	4.00	47.11	1.360	$256.10
3	4.00	4.00	4.00	1.360	$21.74
				Total Cost	$1,354.55

Trusses Diagonals

Quantity	Section 1			Section 2			Section 3			Total Lin Feet (no loss)
	Number	Length	Total	Number	Length	Total	Number	Length	Total	
Units	4	2.96	11.1	4	2.96	20.1	2	0.59	22.1	
Qty	16	2.83	45.1	8	2.96	40.1	16	0.59	45.1	107.7
Feet			127			60.2			68.1	
Number of Web Planes	1								Total Lin Feet	1.00
Number of Tier Planes	2								Total Quan	107.70
									Total Quan	849.00

Posts

Post	Outside Dia Number	Thickness Number	Post Length	Weight per Inch	Cost
Left	4.00	0.25	48.00	0.340	$1,762.57
Right	4.00	0.25	42.00	0.340	$2,035.00
				Total Cost	$3,845.58

Post Diagonals & Horizontals

Post	Diagonals			Horizontals			Total Lin Feet (no loss)
	Number	Length	Total	Number	Length	Total	
Left	2	4.50	9.00	1	0.96	0.96	
Right	2	4.50	9.00	1	0.96	0.96	
Units			1.92			0.96	
						Weight (Lbs)	2.88
						Total Quan	2.88
						Total Cost	$0.48

Connections

	Tree Base Number	Tree Chord Number	Truss Chrd Number	Post Chrd Number	Truss Truss Number
Number	2.00	0.00	0.00	0.00	0.00
Cost	$250.00	$0.00	$0.00	$0.00	$0.00
Total	$500.00	$0.00	$0.00	$0.00	$0.00

Number of Chords: 3

Cost per Connection: $500.00

Foundations

Which Type of Foundation has been selected?

Dished Shafts

Not to Use

Dished Shafts	Diameter	Depth
Number	2.00	1.00
Cost	$250.00	$0.00
Total	$500.00	$0.00

Grand Total: $500.00

Spread Footings

Spread Footings	Concrete	Reinforcing
Number	0.00	0.00
Cost	$0.00	$0.00
Total	$0.00	$0.00

Total Cost: $0.00

Roof weight

Truss Chords	1849
Truss Diagonals	908
Posts	3227
Post Diagonals & Horizontals	2
Connections	500
Total weight (lbs)	6485

Summary

Truss Chords	$1,354.55
Truss Diagonals	$849.00
Posts	$3,845.58
Post Diagonals & Horizontals	$0.48
Connections	$500.00
Foundations	$14,648.40
Total Estimated Cost	$21,198.00

Connection Data

Sawplate

			Unit Cost	Cost
Outside Diameter =	10.00	inches		
Inside Diameter =	14.00	inches		
Thickness =	2.25			
Number of Splitters =	4	each/ft	$3.50	$340.48
Number of Splitters =	4		$0.01	$1.00
Splitter Weld Length =	36	inches (1/4" weld)	$0.25	$36.00
Number of Bolts =	20			
Socket Weld Length =	87.96	inches	$0.25	$22.00
Total Cost for sawplate connection =				$729.48

weight (lbs): 415

Truss Spline (each leg)

			Unit Cost	Cost
Outside Diameter =	10.00	inches		
Inside Diameter =	9.50	inches		
Thickness =	0.750	inches		
Weight (2 plates) =	28	each/ft	$5.50	$165.28
Bolt Diameter =	0.75	inches		
Number of Bolts =	6		$1.40	$83.70
Socket Weld Length =	9.248			
Socket Weld Length =	52.01	inches	$0.25	$13.00
Total Cost for each truss spline connection =				$261.98

weight (lbs): 28

Truss Diagonal Tab Plate

			Unit Cost	Cost
Thickness =	0.375	inches		
Width =	10.00	inches		
1.5 Length =	10.00	inches		
Weight =	7.5	each/ft	$1.00	$4.22
Bolt Number =	6.00	each		
Chord Weld Length =	30.00	inches		
Diagonal Weld Length =	20	inches		
Total Weld Length =	50.00	inches	$0.25	$7.09
Bolt Diameter =	0	inches		
Number of Bolts =	0		$0.25	$0.00
Total Cost for each 1/2 diagonal tab plate connection =				$11.29

weight (lbs): 7

Post Diagonal Tab Plate

			Unit Cost	Cost
Thickness =	0.500	inches		
Width =	7.00	inches		
1.5 Length =	10.00	inches		
Weight =	10	each/ft	$0.00	$3.78
Weld Size =	0.25	inches		
Chord Weld Length =	21.00	inches		
Diagonal Weld Length =	12	inches		
Total Weld Length =	32.00	inches	$0.25	$4.48
Bolt Diameter =	0.75	inches		
Number of Bolts =	4		$2.25	$9.00
Total Cost for each 1/2 diagonal tab plate connection =				$17.26

weight (lbs): 18

Truss Support Member (2 each - 4 Used)

NA - See Connection Below

Lumber	2x4(3.5 X		Unit Cost	Cost
Length =	72.00	Total	$0.15	($0.15)
Bolt Size =	0.75	inches		
Weld Length =	78	inches	$0.25	$10.64
Total Cost for each truss support connection =				$10.49

weight (lbs): -9.50

Truss Support Member (Pin-shared Cons.)

			Unit Cost	Cost
Plate Thickness =	0.500	inches		
Plate Height =	24.00	in		
No of Pumscrom =	12			
Total Plate Weight =	81.60	lb	$0.55	$36.84
Weld Size =	0.25	inches		
Weld Length =	84	inches	$0.25	$21.00
Number of Bolts =	4		$2.25	$9.00
Total Cost for each truss support connection =				$66.84

Truss Support Member (Monotube Cons.)

NA - See Connection Below

			Unit Cost	Cost
No of Tier Plates =	2			
wt of oval webs plate =	71.10	lb		
No of Tension Pins =	12.00			
wt of Tension Pins =	19.20	lb	$0.55	$90.45
Weld Size between oval to chord (flat)	0.250	inches		
Weld Length =	84	inches	$0.25	$20.68
Weld Size =	0.250	inches		
Weld Length =	87.96	inches	$0.25	$22.00
No of Bolts =	4		$2.25	$9.00
Total Cost for each truss support connection =				$142.13

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Section Properties

Number of Posts per end	1	Number of Chords	3

Overhead Truss

Section 1

	Chord Area Ao	Mom. Of I Io	Dia. Area Ad	Total I Itot	Total S Stot	Total Area Atot	Chord Rmin	Weight per foot	Ice Area	Wind Area Chord	Wind Area Diags.	Diagonal R min	No. of Diags. per plane	Diagonal Length
Hor. Axis	2.68	4.771	0.94	1751	97.26	11.61	1.33	39.5	6.0	1.00	0.71	0.389	8	2.88
Vert. Axis	2.68	4.771	0.94	1751	84.13	11.61	1.33	39.5	6.0	1.00	0.71	0.389	8	2.88
	in^2	in^4	in^2	in^4	in^3	in^2	in.	lb/ft	ft^2/ft	ft^2/ft	ft^2/ft	in.		(feet)

Section 2

	Chord Area Ao	Mom. Of I Io	Dia. Area Ad	Total I Itot	Total S Stot	Total Area Atot	Chord Rmin	Weight per foot	Ice Area	Wind Area Chord	Wind Area Diags.	Diagonal R min	No. of Diags. per plane	Diagonal Length
Hor. Axis	2.68	4.771	0.94	1751	97.26	11.61	1.33	39.5	6.0	1.00	0.71	0.389	8	2.88
Vert. Axis	2.68	4.771	0.94	1751	84.13	11.61	1.33	39.5	6.0	1.00	0.71	0.389	8	2.88
	in^2	in^4	in^2	in^4	in^3	in^2	in.	lb/ft	ft^2/ft	ft^2/ft	ft^2/ft	in.		(feet)

Section 3 = Section 1

	Chord Area Ao	Mom. Of I Io	Dia. Area Ad	Total I Itot	Total S Stot	Total Area Atot	Chord Rmin	Weight per foot	Ice Area	Wind Area Chord	Wind Area Diags.	Diagonal R min	No. of Diags. per plane	Diagonal Length
Hor. Axis	2.68	4.77	0.94	1751	97.26	11.61	1.33	39.50	6.0	1.00	0.71	0.39	8.00	2.88
Vert. Axis	2.68	4.77	0.94	1751	84.13	11.61	1.33	39.50	6.0	1.00	0.71	0.39	8.00	2.88
	in^2	in^4	in^2	in^4.	in^3	in^2	in.	lb/ft	ft^2/ft	ft^2/ft	ft^2/ft	in.		(feet)

Posts

Left Post

Chord Area Axs	Mom. Of I Io	Diag. Area Ad	Ixx Ixtot	Sxx Stot	Izz Iytot	Chord Rmin	Szz postt	Weight	Ice Area	Wind Area Chord	Diagonal R min	Total Number of Diagonals	Diagonal Length
21.21	483.093	0.00	483.09	69.01	483.09	4.77	69.01	72.16	3.67	1.167	999	0	0.00
in^2	in^4	in^2	in^4	in^3	in^4	in.	in^3	lb/ft	ft^2/ft	ft^2/ft	in.		(feet)

Right Post

Chord Area Axs	Mom. Of I Io	Diag. Area Ad	Ixx Ixtot	Sxx Stot	Izz Iytot	Chord Rmin	Szz postt	Weight	Ice Area	Wind Area Chord	Diagonal R min	Total Number of Diagonals	Diagonal Length
21.21	483.093	0.00	483.09	69.01	483.09	4.77	69.0	72.16	3.67	1.167	999	0	0.00
in^2	in^4	in^2	in^4	in^3	in^4	in.	in^3	lb/ft	ft^2/ft	ft^2/ft	in.		(feet)

Signs

Sign 1

Area	Weight	Ice Load	LW Ratio
198.2327	724	595	1.65769603
ft^2	lbs	lbs.	

Sign 2

Area	Weight	Ice Load	LW Ratio
198.3305	614	505	1.65515765
ft^2	lbs	lbs.	

Sign 3

Area	Weight	Ice Load	LW Ratio
0	0	0	0
ft^2	lbs	lbs.	

Section 1 & 3

Ice Area 4 =	8.0
Ice Area 3 =	6.0
Wind area diags 4 =	0.4713
Wind area diags 3 =	0.7070
Ice Area 1 =	1.047185

Section 2

Ice Area 4 =	8.0
Ice Area 3 =	6.0
Wind area diags 4 =	0.4713
Wind area diags 3 =	0.7070
Ice Area 1 =	1.0472

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Wind Pressure Calculations

Pz= .0025(Kz)(Kzt)(V^2)(I)(Cn)

Velocity Exposure Coefficient	Gust Factor	Basic Wind Velocity	Importance Factor	Velocity Conversion Factor
Kz	G	V	I	Cn
0.95	1.14	90	1.0	1.00

Calculation of Kz

kz = 2.01 (h/900)^(2/9.5) = 0.947

Elevation C.O.O sign/mast 26.16005

Horizontal Truss Drag Coefficient Calculation (Cylindrical Members)

Section 1						Section 2					
Min. Value	Cd	Max. Value	Cv^2*G Chord	Cv^2*G Diagonal		Min. Value	Cd	Max. Value	Cv^2*G Chord	Cv^2*G Diagonal	
0	1.10	39	32.0	0		0	1.10	39	30.0	0	
39	1.55	78				39	1.55	78			
78	0.45					78	0.45				

Horizontal Truss Diagonal Drag Coefficient (Flat Members) 1.70

Horizontal Trusses

SECTION 1				SECTION 2				
Drag Coeff. (chord)	Drag Coeff. (diagonal)	Wind Pressure (chord)	Wind Pressure (diagonal)	Drag Coeff. (chord)	Drag Coeff. (diagonal)	Wind Pressure (chord)	Wind Pressure (diagonal)	
Cd	Cd	Pz	Pz	Cd	Cd	Pz	Pz	
1.10	1.70	24.61	38.04	1.10	1.70	24.61	38.04	

Signs

SIGN 1		SIGN 2		SIGN 3	
Drag Coeff.	Wind Pressure	Drag Coeff.	Wind Pressure	Drag Coeff.	Wind Pressure
Cd	Pz	Cd	Pz	Cd	Pz
1.180	26.40	1.181	26.42	1.000	23.49

INTERPOLATE SIGN 1

L/W = 1.507699
Cd = 1.180

L/W	Cd
1	1.12
2	1.19
5	1.20
10	1.23
15	1.30

USED IN CALCULATION			
L/W1=	1	C1=	1.12
L/W2=	2	C2=	1.19

1.12

INTERPOLATE SIGN 2

L/W = 1.865156
Cd = 1.181

L/W	Cd
1	1.12
2	1.19
5	1.20
10	1.23
15	1.30

USED IN CALCULATION			
L/W1=	1	C1=	1.12
L/W2=	2	C2=	1.19

1.12

INTERPOLATE SIGN 3

L/W = 0
Cd = 1.050

L/W	Cd
1	1.12
2	1.19
5	1.20
10	1.23
15	1.30

USED IN CALCULATION			
L/W1=	1	C1=	1.12
L/W2=	2	C2=	1.19

Vertical Posts

LEFT SIDE		RIGHT SIDE	
Drag Coeff.	Wind Pressure	Drag Coeff.	Wind Pressure
Cd	Pz	Cd	Pz
0.45	10.07	0.45	10.07

Drag Coefficient for Vertical Posts

Left Vertical Post				Right Vertical Post			
Min. Value	Cd	Max. Value	Cv^2*G	Min. Value	Cd	Max. Value	Cv^2*G
0	1.10	39	105.0	0	1.10	39	105.0
39	0.30	78		39	0.30	78	
78	0.45			78	0.45		

*For Group Load Combination III minimum pressure Pz = 25 psf

	Weighted Avg	Used for Design
	Pressure	@ Wind
Section 1 Truss Pz =	30.17	30.17
Section 2 Truss Pz =	30.17	30.17
Sign 1 Pz =	26.40	26.40
Sign 2 Pz =	26.42	26.42
Sign 3 Pz =	23.49	25.00
Left Post =	10.07	25.00
Right Post =	10.07	25.00

231-Sign-9

Moments and Shears on Overhead Truss Due to Wind Loads

Span	Wind Load on truss Section 1	Wind Load on truss Section 2	Wind Load on truss	Wind Load on Signs Load	Wind Load on Signs Dist. from Left	
feet	(plf)	(plf)	(plf)	(kips)	(feet)	
58.07	51.51	51.51	51.51	4.25	16.16	P1 Left Sign
				3.53	34.62	P2 Center Sign
				0.00	0.00	P3 Right Sign

Total Uniform Load =	0.052 klf

Total Load =	12.77 kips

Left Reaction
5.99 kips

Right Reaction
4.78 kips

Moments and Shears

XL	Distance	P1 dist.	P2 dist.	P3 dist.	Moment
0.0	0.0	0	0	0	0.00
0.1	5.8	0	0	5.807	33.90
0.2	11.6	0	0	11.614	66.06
0.3	17.4	1.261	0	17.421	91.13
0.4	23.2	7.068	0	23.228	95.16
0.5	29.0	12.875	0	29.035	97.46
0.6	34.8	18.682	0.226	34.842	97.22
0.7	40.6	24.489	6.033	40.649	73.52
0.8	46.5	30.296	11.84	46.456	52.08
0.9	52.3	36.103	17.647	52.263	26.91
1.0	58.1	41.91	23.454	58.07	0.00

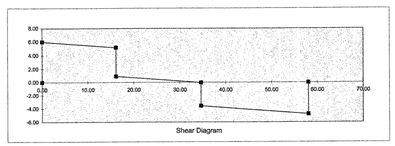
Values for Shear Diagram	
0.00	0.00
0.00	5.99
16.16	5.15
16.16	0.91
34.62	-0.04
34.62	-3.58
34.62	-0.04
34.62	-3.58
58.1	-4.78
58.1	0.00

Shear at Point Loads		Shear Left	Shear Right	Max or Min
At Left Reaction	0.00	0.00	5.99	5.99
At Point P1	90.02	5.15	0.91	5.15
At Point P2	98.03	-0.04	-3.58	-3.58
At Point P3	0.00	-1.79	-1.79	-1.79
At Right Reaction	0.00	-4.78	0.00	-4.78

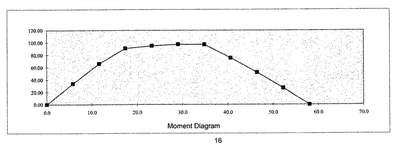
	Myy	Shearxx
Maximums	97.46	5.99
Minimums	0.00	-4.78

Forces at Field Splices and Mid-Span

Left Side		Right Side		Mid-Span	
Location	29.04 feet	Location	58.07 feet	Location	29.04 feet
Left Reaction	5.99 kips	Left Reaction	5.99 kips	Left Reaction	5.99 kips
Point Load 1	4.25 kips	Point Load 1	4.25 kips	Point Load 1	4.25 kips
Point Load 2	0.00 kips	Point Load 2	3.53 kips	Point Load 2	0.00 kips
Point Load 3	0.00 kips	Point Load 3	0.00 kips	Point Load 3	0.00 kips
Uniform Load	0.052 kips per foot	Uniform Load	0.052 kips per foot	Uniform Load	0.052 kips per foot
Shear at splice	0.25 kips	Shear at splice	-4.78 kips	Shear at Mid-Span	0.25 kips
Moment at splice	97.46 kip feet	Moment at splice	0.00 kip feet	Mom. at Mid-Span	97.46 kip feet



Shear Diagram



Moment Diagram

W M&S
232-Sign-g

Group Load Combination III - Moments and Shears on Overhead Truss Due to Wind Loads

Span	Wind Load on truss Section 1	Wind Load on truss Section 2	Wind Load on truss	Wind Load on Signs Load	Dist. from Left	
				(klps)	(feet)	
feet	(plf)	(plf)	(plf)	4.25	16.16	P1 Left Sign
58.07	51.51	51.51	51.51	3.53	34.62	P2 Center Sign
				0.00	0.00	P3 Right Sign

Total Uniform Load =	0.052 k/f

Total Load =	10.77 klps

Left Reaction	5.99 klps

Right Reaction	4.78 klps

Moments and Shears

XL	Distance	P1 dist.	P2 dist.	P3 dist.	Moment
0.0	0.0	0	0	0	0.00
0.1	5.8	0	0	5.807	33.90
0.2	11.6	0	0	11.614	68.08
0.3	17.4	1.261	0	17.421	91.13
0.4	23.2	7.068	0	23.228	95.18
0.5	29.0	12.875	0	29.035	87.46
0.6	34.8	18.682	0.228	34.842	97.22
0.7	40.6	24.489	6.033	40.649	75.52
0.8	46.5	30.296	11.84	46.456	52.06
0.9	52.3	36.103	17.647	52.263	26.91
1.0	58.1	41.91	23.454	58.07	0.00

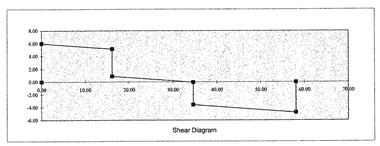
Values for Shear Diagram	
0.00	0.00
0.00	5.99
16.16	5.15
16.16	0.91
34.62	-0.04
34.62	-3.58
34.62	-0.04
34.62	-3.58
58.1	-4.78
58.1	0.00

Shear at Point Loads	Shear Left	Shear Right	Max or Min
At Left Reaction	0.00	0.00	5.99
At Point P1	90.02	5.15	0.91	5.15
At Point P2	98.03	-0.04	-3.58	-3.58
At Point P3	0.00	-1.79	-1.79	-1.79
At Right Reaction	0.00	-4.78	0.00	-4.78

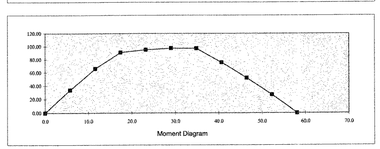
	Myy	Shearxx
Maximums	97.46	5.99
Minimums	0.00	-4.78

Forces at Field Splices and Mid-Span

Left Side		Right Side		Mid-Span	
Location	29.04 feet	Location	58.07 feet	Location	29.04 feet
Left Reaction	5.99 klps	Left Reaction	5.99 klps	Left Reaction	5.99 klps
Point Load 1	4.25 klps	Point Load 1	4.25 klps	Point Load 1	4.25 klps
Point Load 2	0.00 klps	Point Load 2	3.53 klps	Point Load 2	0.00 klps
Point Load 3	0.00 klps	Point Load 3	0.00 klps	Point Load 3	0.00 klps
Uniform Load	0.052 klps per foot	Uniform Load	0.052 klps per foot	Uniform Load	0.052 klps per foot
Shear at splice	0.25 klps	Shear at splice	-4.78 klps	Shear at Mid-Span	0.25 klps
Moment at splice	97.46 kip feet	Moment at splice	0.00 kip feet	Mom. at Mid-Span	97.46 kip feet



Shear Diagram



Moment Diagram

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Moments and Shears on Overhead Truss Due to Dead Loads

Span (feet)	Dead Load on truss (plf)	Dead Load on Signs Load (kips)	Dist. from Left (feet)	
58.07	40	0.72	16.16	P1 Left Sign
		0.61	34.62	P2 Center Sign
		0.00	0.00	P3 Right Sign

Total Uniform Load =	0.04 klf

Total Load =	3.83 kips

Left Reaction =
1.92 kips

Right Reaction =
1.71 kips

Moments and Shears

XX	Distance	P1 dist.	P2 dist.	P3 dist.	Moment
0.0	0.0	0	0	0	0.00
0.1	5.8	0	0	5.807	10.47
0.2	11.6	0	0	11.614	19.60
0.3	17.4	1.261	0	17.421	26.49
0.4	23.2	7.068	0	23.228	28.76
0.5	29.0	12.875	0	29.035	29.70
0.6	34.8	18.682	0.226	34.842	29.17
0.7	40.6	24.489	6.033	40.649	23.87
0.8	46.5	30.296	11.84	46.456	17.25
0.9	52.3	36.103	17.647	52.263	9.29
1.0	58.1	41.91	23.454	58.07	0.00

Values for Shear Diagram	
0.00	0.00
0.00	1.92
16.16	1.28
16.16	0.56
16.16	1.28
16.16	0.56
16.16	1.28
16.16	0.56
58.1	-1.71
58.1	0.00

Shear at Point Loads

	Shear Left	Shear Right	Max or Min
At Left Reaction	0.00	0.00	1.92
At Point P1	25.83	1.28	1.28
At Point P2	29.35	-0.17	-0.79
At Point P3	0.00	0.56	0.56
At Right Reaction	0.00	-1.71	-1.71

	Moment	Shear
Maximum	29.70	1.92
Minimum	0.00	-1.71

Forces at Field Splices and at Mid-Span

Left Side		Right Side		Mid-Span	
Location	29.04 feet	Location	58.07 feet	Location	29.04 feet
Left Reaction	1.92 kips	Left Reaction	1.92 kips	Left Reaction	1.92 kips
Point Load 1	0.72 kips	Point Load 1	0.72 kips	Point Load 1	0.72 kips
Point Load 2	0.00 kips	Point Load 2	0.61 kips	Point Load 2	0.00 kips
Point Load 3	0.00 kips	Point Load 3	0.00 kips	Point Load 3	0.00 kips
Uniform Load	0.04 kips per foot	Uniform Load	0.04 kips per foot	Uniform Load	0.04 kips per foot
Shear at splice	0.05 kips	Shear at splice	-1.71 kips	Shear at splice	0.05 kips
Moment at splice	29.70 kip feet	Moment at splice	0.00 kip feet	Moment at splice	29.70 kip feet

Shear Diagram

Moment Diagram

234-Sign-9

Moments and Shears on Overhead Truss Due to Ice Loads

Span	Ice Load on truss	Ice Load on Signs		
		Load	Dist. from Left	
(feet)	(plf)	(kips)	(feet)	
58.07	18	0.59	16.16	P1 Left Sign
		0.50	34.62	P2 Center Sign
		0.00	0.00	P3 Right Sign

Total Uniform Load =	0.02 klf

Total Load =	2.14 kips

Left Reaction	1.15 kips

Right Reaction	0.99 kips

Moments and Shears

XL	Distance	P1 dist.	P2 dist.	P3 dist.	Moment
0.0	0.0	0	0	0	0.00
0.1	5.8	0	0	5.807	6.39
0.2	11.6	0	0	11.614	12.16
0.3	17.4	1.261	0	17.421	16.62
0.4	23.2	7.066	0	23.228	17.75
0.5	29.0	12.875	0	29.035	18.28
0.6	34.8	18.682	0.228	34.842	18.06
0.7	40.6	24.489	6.033	40.649	14.47
0.8	46.5	30.296	11.84	46.456	10.25
0.9	52.3	36.103	17.647	52.263	5.43
1.0	58.1	41.91	23.454	58.07	0.00

Values for Shear Diagram	
0.00	0.00
0.00	1.15
16.16	0.86
16.16	0.27
16.16	0.86
16.16	0.27
16.16	0.86
16.16	0.27
58.1	-0.99
58.1	0.00

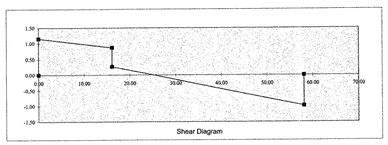
Shear at Point Loads

		Shear Left	Shear Right	Max or Min
At Left Reaction	0.00	0.00	1.15	1.15
At Point P1	16.30	0.86	0.27	0.86
At Point P2	18.21	-0.06	-0.57	-0.57
At Point P3	0.00	0.05	0.05	0.05
At Right Reaction	0.00	-0.99	0.00	-0.99

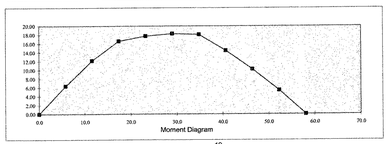
	Moment	Shear
Maximums	18.28	1.15
Minimums	0.00	-0.99

Forces at Field Splices and at Mid-Span

Left Side		Right Side		Mid-Span	
Location	29.04 feet	Location	58.07 feet	Location	29.04 feet
Left Reaction	1.15 kips	Left Reaction	1.15 kips	Left Reaction	1.15 kips
Point Load 1	0.59 kips	Point Load 1	0.59 kips	Point Load 1	0.59 kips
Point Load 2	0.00 kips	Point Load 2	0.50 kips	Point Load 2	0.00 kips
Point Load 3	0.00 kips	Point Load 3	0.00 kips	Point Load 3	0.00 kips
Uniform Load	0.02 kips per foot	Uniform Load	0.02 kips per foot	Uniform Load	0.02 kips per foot
Shear at splice	0.04 kips	Shear at splice	-0.99 kips	Shear at splice	0.04 kips
Moment at splice	18.28 kip feet	Moment at splice	0.00 kip feet	Moment at splice	18.28 kip feet



Shear Diagram



Moment Diagram

235-sign 9

Horizontal Truss Group Loads

Group Load	Load Combination	Percent Overload	Remark
1	DL	1.00	
2	DL+W	1.33	
3	DL+Ice+.5W	1.33	Minimum Pz = 25.0 psf

Horizontal Overhead Truss Analysis

Location		Mvert (kip-ft)			Mhoriz. (kip-ft)				Vhoriz. (kips)				Vvert (kips)		
		DL	ICE	WIND	DL	ICE	WIND	WIND III	DL	ICE	WIND	WIND III	DL	ICE	WIND
Left Support	LOAD CASES	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.99	5.99	1.92	1.19	0.00
Left Splice		29.70	18.28	0.00	0.00	0.00	97.46	97.46	0.00	0.00	0.25	0.25	0.05	0.04	0.00
Midspan		29.70	18.28	0.00	0.00	0.00	97.46	97.46	0.00	0.00	0.25	0.25	0.05	0.04	0.00
Sign 1		25.83	16.30	0.00	0.00	0.00	50.02	90.02	0.00	0.00	5.15	5.15	1.28	0.88	0.00
Sign 2		29.38	18.21	0.00	0.00	0.00	98.03	98.03	0.00	0.00	3.58	3.58	0.79	0.57	0.00
Sign 3		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.79	1.79	0.58	0.05	0.00
Right Splice		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.78	4.78	1.71	0.99	0.00
Right Support		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.78	4.78	1.71	0.99	0.00

GROUP LOAD COMBINATIONS

		Location	Section	Bending About Horizontal Axis			Bending About Vertical Axis			SHEAR Horizontal	SHEAR Vertical	Combined Forces		
				Mvert	Axial Stress	Axial Force	Mhoriz.	Axial Stress	Axial Force			AXIAL (Fa)	SHEAR (Fv)	
												Section 1	Section 2	Diagonal
		ft		kip-ft	ksi	kips	kip-ft	ksi	kips	kips	kips	kips	kips	kips
Left Support	GROUP LOAD 1	0.00	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.92	0.00	0.00	1.92
Left Splice		29.04	1	29.70	3.68	9.82	0.00	0.00	0.00	0.00	0.05	9.82	0.00	0.05
Midspan		29.04	1	29.70	3.68	9.82	0.00	0.00	0.00	0.00	0.05	9.82	0.00	0.05
Sign 1		16.16	1	25.83	3.19	8.54	0.00	0.00	0.00	0.00	1.28	8.54	0.00	1.28
Sign 2		34.62	2	29.38	3.62	9.70	0.00	0.00	0.00	0.00	0.79	0.00	9.70	0.79
Sign 3		0.00	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.58	0.00	0.00	0.58
Right Splice		58.07	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.71	0.00	0.00	1.71
Right Support		58.07	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.71	0.00	0.00	1.71
Left Support	GROUP LOAD 2	0.00	1	0.00	0.00	0.00	0.00	0.00	0.00	4.50	1.44	0.00	0.00	4.50
Left Splice		29.04	1	22.33	2.76	7.38	73.28	10.45	28.01	0.18	0.04	35.39	0.00	0.18
Midspan		29.04	1	22.33	2.76	7.38	73.28	10.45	28.01	0.18	0.04	35.39	0.00	0.18
Sign 1		16.16	1	19.42	2.40	6.42	67.69	9.65	25.87	3.88	0.96	32.29	0.00	3.88
Sign 2		34.62	2	22.07	2.72	7.30	73.70	10.51	28.17	2.69	0.59	0.00	35.47	2.69
Sign 3		0.00	1	0.00	0.00	0.00	0.00	0.00	0.00	1.35	0.44	0.00	0.00	1.35
Right Splice		58.07	1	0.00	0.00	0.00	0.00	0.00	0.00	3.60	1.29	0.00	0.00	3.60
Right Support		58.07	1	0.00	0.00	0.00	0.00	0.00	0.00	3.60	1.29	0.00	0.00	3.60
Left Support	GROUP LOAD 3	0.00	1	0.00	0.00	0.00	0.00	0.00	0.00	2.25	2.31	0.00	0.00	2.31
Left Splice		29.04	1	36.07	4.45	11.93	36.64	5.23	14.00	0.09	0.06	25.93	0.00	0.09
Midspan		29.04	1	36.07	4.45	11.93	36.64	5.23	14.00	0.18	0.06	25.93	0.00	0.18
Sign 1		16.16	1	31.67	3.91	10.47	33.84	4.83	12.94	1.94	1.61	23.41	0.00	1.94
Sign 2		34.62	2	25.76	4.41	11.82	36.85	5.26	14.08	1.34	1.02	0.00	25.91	1.34
Sign 3		0.00	1	0.00	0.00	0.00	0.00	0.00	0.00	0.67	0.48	0.00	0.00	0.67
Right Splice		58.07	1	0.00	0.00	0.00	0.00	0.00	0.00	1.80	2.03	0.00	0.00	2.03
Right Support		58.07	1	0.00	0.00	0.00	0.00	0.00	0.00	1.80	2.03	0.00	0.00	2.03
										4.50	2.31	35.39	35.47	4.50

		Location	Section	Monotube Forces							
				Section 1				Section 2			
				Mvert	Mhoriz.	H Shear	V Shear	Mvert	Mhoriz.	H Shear	V Shear
		ft		kip-ft	kip-ft	kips	kips	kip-ft	kip-ft	kips	kips
Left Support	GROUP LOAD 1	0.00	1	0.00	0.00	0.00	1.92	0.00	0.00	0.00	0.00
Left Splice		29.04	1	29.70	0.00	0.00	0.05	0.00	0.00	0.00	0.00
Midspan		29.04	1	29.70	0.00	0.00	0.05	0.00	0.00	0.00	0.00
Sign 1		16.16	1	25.83	0.00	0.00	1.28	0.00	0.00	0.00	0.00
Sign 2		34.62	2	0.00	0.00	0.00	0.00	29.38	0.00	0.00	0.79
Sign 3		0.00	1	0.00	0.00	0.00	0.58	0.00	0.00	0.00	0.00
Right Splice		58.07	1	0.00	0.00	0.00	1.71	0.00	0.00	0.00	0.00
Right Support		58.07	1	0.00	0.00	0.00	1.71	0.00	0.00	0.00	0.00
Left Support	GROUP LOAD 2	0.00	1	0.00	0.00	4.50	1.44	0.00	0.00	0.00	0.00
Left Splice		29.04	1	22.33	73.28	0.18	0.04	0.00	0.00	0.00	0.00
Midspan		29.04	1	22.33	73.28	0.18	0.04	0.00	0.00	0.00	0.00
Sign 1		16.16	1	19.42	67.69	3.88	0.96	0.00	0.00	0.00	0.00
Sign 2		34.62	2	0.00	0.00	0.00	0.00	22.07	73.70	2.69	0.59
Sign 3		0.00	1	0.00	0.00	1.35	0.44	0.00	0.00	0.00	0.00
Right Splice		58.07	1	0.00	0.00	3.60	1.29	0.00	0.00	0.00	0.00
Right Support		58.07	1	0.00	0.00	3.60	1.29	0.00	0.00	0.00	0.00
Left Support	GROUP LOAD 3	0.00	1	0.00	0.00	2.25	2.31	0.00	0.00	0.00	0.00
Left Splice		29.04	1	36.07	36.64	0.09	0.06	0.00	0.00	0.00	0.00
Midspan		29.04	1	36.07	36.64	0.18	0.06	0.00	0.00	0.00	0.00
Sign 1		16.16	1	31.67	33.84	1.94	1.61	0.00	0.00	0.00	0.00
Sign 2		34.62	2	0.00	0.00	0.00	0.00	35.76	36.85	1.34	1.02
Sign 3		0.00	1	0.00	0.00	0.67	0.48	0.00	0.00	0.00	0.00
Right Splice		58.07	1	0.00	0.00	1.80	2.03	0.00	0.00	0.00	0.00
Right Support		58.07	1	0.00	0.00	1.80	2.03	0.00	0.00	0.00	0.00
				36.07	73.28	4.50	2.31	35.76	73.70	2.69	1.02

	Mvert	Mhoriz.	SHEAR Horizontal	SHEAR Vertical
	kip-ft	kip-ft	kips	kips
For Monotube Design Only - Section 1	36.07	73.28	4.50	2.31
For Monotube Design Only - Section 2	35.76	73.70	2.69	1.02
At Splice	36.07	73.28	0.18	0.06

236-59m-9

VERTICAL TRUSS LOAD COMBINATIONS

		Percent Overstress	
Group I	DL	1.00	
Group II Case 1	DL + Wn + .2Wt	1.33	Wn = WIND FORCES IN THE X DIRECTION
Group II Case 2	DL + .6Wn + .3Wt	1.33	
Group III Case 1	DL + ICE + .5Wn + .1Wt	1.33	Minimum wind pressure of 25 psf
Group III Case 2	DL + ICE + .3Wn + .15Wt	1.33	Minimum wind pressure of 25 psf

LOADS ON VERTICAL POSTS

Location	LOADS	vxx (kips/ft)				AXIAL (kips/ft)			Vxx				AXIAL		
		DL	ICE	WIND	WIND III	DL	ICE	WIND	DL	ICE	WIND	WIND III	DL	ICE	WIND
Left Support		0.00	0.00	0.012	0.029	0.072	0.011	0.00	0.00	0.00	5.99	5.99	1.82	1.15	0.00
Right Support		0.00	0.00	0.012	0.029	0.072	0.011	0.00	0.00	0.00	4.78	4.78	1.71	0.99	0.00
										Wt =	10.77	10.77			

Depth of Horizontal Truss	Total left Post Ht.	Total Right Post Ht.
Dt	Hl	Hr
3.00	26.19	28.49

LOAD COMBINATION RESULTS (Loads and Moments are for both posts)

Reactions		Mstrong	Mweak	Vstrong	Wind Tr	Axial	Relative Stiffness Tranverse Wind
		kip-ft	kip-ft	kips	kips	kips	Wt kips
Left Support	G I	0.00	0.00	0.00	0	3.81	0
Right Support		0.00	0.00	0.00	0	3.77	0
Left Support	GII C1	114.19	23.26	4.73	0.96	2.86	6.10
Right Support		100.67	19.67	3.85	0.75	2.84	4.67
Left Support	GII C2	68.51	34.89	2.84	1.45	2.86	6.10
Right Support		60.40	29.51	2.31	1.13	2.84	4.67
Left Support	GIII C1	59.34	11.63	2.54	0.48	3.95	6.10
Right Support		52.99	9.84	2.11	0.38	3.81	4.67
Left Support	GIII C2	35.60	17.44	1.52	0.48	3.95	6.10
Right Support		31.80	14.76	1.27	0.38	3.81	4.67

Posts

Left Post

Chord Area Ac	Mom. Of I Ic	Diag. Area Ad	Ixx Ixtot	Sxx Stot	Izz	Chord Rmin	Szz	Weight	Ice Area Chord	Wind Area Chord	Diagonal R min
21.21	483.093	0.00	483	69.01	483.09	4.77	69.0	72.16	3.67	1.167	######
in^2	in^4	in^2	in^4	in^3	in^4	in.	in^3	lb/ft	ft^2/ft	ft^2/ft	in.

Right Post

Chord Area Ac	Mom. Of I Ic	Diag. Area Ad	Ixx Ixtot	Sxx Stot	Izz	Chord Rmin	Szz	Weight	Ice Area Chord	Wind Area Chord	Diagonal R min
21.21	483.093	0.00	483	69.01	483.09	4.77	69.0	72.16	3.67	1.167	######
in^2	in^4	in^2	in^4	in^3	in^4	in.	in^3	lb/ft	ft^2/ft	ft^2/ft	in.

LOAD COMBINATION RESULTS (Per Post for design)

Reactions		Max. Axial	Min. Axial	Mstrong	Mweak	Mmax	V
		kips	kips	kip-ft	kip-ft	kip-ft	kips
Left Support	G I	3.81	3.81	0.00	0.00	0.00	0.00
Right Support		3.77	3.77	0.00	0.00	0.00	0.00
Left Support	GII C1	2.86	2.86	114.19	23.26	114.19	4.83
Right Support		2.84	2.84	100.67	19.67	100.67	3.92
Left Support	GII C2	2.86	2.86	68.51	34.89	68.51	3.19
Right Support		2.84	2.84	60.40	29.51	60.40	2.57
Left Support	GIII C1	3.95	3.95	59.34	11.63	59.34	2.58
Right Support		3.81	3.81	52.99	9.84	52.99	2.14
Left Support	GIII C2	3.95	3.95	35.60	17.44	35.60	1.60
Right Support		3.81	3.81	31.80	14.76	31.80	1.32

Number of Posts	1

237-5199-5

Horizontal Truss Analysis FALSE

Section 1 - Chords

Unbraced Length (in.)	Pipe Diameter (in.)	Wall Thickness (in.)	Pipe Area (in.^2)	Chord Yield Str. (ksi)	Max. Axial Force kips	Column Slenderness Cc	kL/Rmin	fa Compression (ksi)	Fa Compression (ksi)	RESULT C/D
72.0	4.000	0.226	2.68	42.0	35.39	116.7	53.95	13.21	20.52	0.64

Section 2 - Chords

Unbraced Length (in.)	Pipe Diameter (in.)	Wall Thickness (in.)	Pipe Area (in.^2)	Chord Yield Str. (ksi)	Max. Axial Force kips	Column Slenderness Cc	kL/Rmin	fa Compression (ksi)	Fa Compression (ksi)	RESULT C/D
72.0	4.000	0.226	2.68	42.0	35.47	116.7	53.95	13.24	20.52	0.64

Diagonals -Horizontal

Unbraced Length (in.)	Pipe or Angle	Diagonal Area (in.^2)	R min (in.)	Chord Yield Str. (ksi)	Max. Axial Force kips	Column Slenderness Cc	kL/Rmin	fa Compression (ksi)	Fa Compression (ksi)	RESULT C/D
34.6	ANGLE	0.94	0.39	36.0	7.31	126.1	88.97	7.80	14.32	0.54

Diagonals - Vertical

Unbraced Length (in.)	Pipe or Angle	Diagonal Area (in.^2)	R min (in.)	Chord Yield Str. (ksi)	Max. Axial Force kips	Column Slenderness Cc	kL/Rmin	fa Compression (ksi)	Fa Compression (ksi)	RESULT C/D
34.6	ANGLE	0.94	0.39	36.0	3.75	126.1	88.97	4.00	14.32	0.28

Deflections at Mid-Span

Span = 696.84 inches
I = 1751 in^4

	Uniform Load		Point Loads			Mid-Span
	Load plf	Load k/inch	Load kips	Dist. A inches	Dist. B inches	Deflection inches
Dead Load of Truss	40	0.0032918				0.20
Dead Load of Sign 1			0.72	193.92	502.92	0.0740
Dead Load of Sign 2			0.61	415.39	281.45	0.0812
Dead Load of Sign 3			0.00	0.00	0.00	0.0000
Ice on Truss	18	0.0014924				0.09
Ice on Sign 1			0.59	193.92	502.92	0.0609
Ice on Sign 2			0.50	415.39	281.45	0.0668
Ice on Sign 3			0.00	0.00	0.00	0.0000

Total Defl. (DL+Ice)	0.57	inches
Allowable Deflection	4.65	inches

Dead Load Deflection	0.35 inches
Extra Camber (L/1000)	0.69684 inches
Total Camber	1.05 inches

238-Sign-9

VERTICAL TRUSS ANALYSIS

Number of Pairs: 1

Local Buckling AASHTO 5.5

Left Post:

Outside Dia. (inches)	Wall Thick. (inches)	Yield Str. (ksi)	λ	λp	λr	λmax	Result
14.000	0.50	42.0	28.00	58.9	150.6	309.5	Compact

Right Post:

Outside Dia.	Wall Thick.	Yield Str.					
(inches)	(inches)	(ksi)	λ	λp	λr	λmax	Result
14.000	0.50	42.0	28.00	58.9	150.6	309.5	Compact

Diagonals

Leg Size (inches)	Thickness (inches)	Pipe Dia. (inches)	Wall Thk. (inches)	Yield Str. (ksi)	h	λp	λr	Result
0.00	0.00	0.00	0.00	0.00	####	999.0	999.0	NA

λ width-thickness ratio
λp compact width-thickness ratio
λr non-compact width-thickness ratio
λmax maximum width-thickness ratio
E 29000 ksi (Young's Modulus)

Post Design Values

K	
#N/A	
1.5	<-- input for 3 chord post
2	<-- Value used in computations

Fa calculated for KL/ryy only

BRACING AND SHEAR STRESSES

		Mmax kip-ft	Sxx=I x/-c in^3	fb ksi	Shear Vmax	Pipe Area in^2	fvs ksi	Axial max	Area y in^2	fa ksi
GROUP 1	Left Support	0.00	49.01	0.00	0.00	21.21	0.00	3.91	21.21	0.18
	Right Support	0.00	49.01	0.00	0.00	21.21	0.00	3.72	21.21	0.18

REBUS YS

	Fb ksi	Fv ksi	Fa ksi	Cc	Rxxsqrt	KLR	Fe'	Eqn. 5-17 Cp/t	Eqn. 5-18 Cp/t	Eqn. 5-19 Cp/t	MAX Cp/t
Left Support	27.72	13.86	9.65	118.75	4.77	124.17	9.65	0.222	0.148	0.148	0.222
Right Support	27.72	13.86	9.77	118.75	4.77	124.17	9.77	0.007	0.022	0.022	0.022

	Length	Pipe or Angle	Diagonal Area	Rxxrs	Chord Yield Str.	Max Axial Force	Column Slenderness	kL/Rxxrs	fe (ksi)	Fa (ksi)	Result C/D
Left Diagonal	0.00	PIPE	0.00	999.00	0	0.00	999.00	0.00	999.00	999.00	1.00
Right Diagonal	0.00	PIPE	0.00	999.00	0	0.00	999.00	0.00	999.00	999.00	1.00

Fb Calculation

Left Support	Term 1	Term 2	Term 3	Fb
Eqn. 5-17	0.222	0.222	0.222	
Eqn. 5-18	0.222	0.222	0.222	
Eqn. 5-19	0.222	0.222	0.222	
Right Support	Term 1	Term 2	Term 3	Fb
Eqn. 5-17	0.007	0.007	0.007	
Eqn. 5-18	0.022	0.022	0.022	
Eqn. 5-19	0.022	0.022	0.022	

	Fb	Compact (ksi)	Non-Compact (ksi)	Shorter
MAX Left	27.72	21.95	21.95	
MAX Right	27.72	21.60	21.60	

BRACING AND SHEAR STRESSES

		Mmax kip-ft	Sxx=I x/-c in^3	Rxxsqrt ksi	Shear Vmax	Pipe Area in^2	fvs ksi	Axial max	Area y in^2	fa ksi
GROUP 1 WEB 1	Left Support	114.19	98.01	19.89	4.63	21.21	0.22	3.99	21.21	0.19
	Right Support	100.67	49.01	17.60	3.62	21.21	0.17	3.84	21.21	0.18

REBUS YS

	Fb ksi	Fv ksi	Fa ksi	Cc	Rxxsqrt	KLR	Fe'	Eqn. 5-17 Cp/t	Eqn. 5-18 Cp/t	Eqn. 5-19 Cp/t	MAX Cp/t
Left Support	27.72	13.86	9.65	118.75	4.77	124.17	9.65	0.222	0.148	0.148	0.222
Right Support	27.72	13.86	9.77	118.75	4.77	124.17	9.77	0.007	0.022	0.022	0.022

	Length	Pipe or Angle	Diagonal Area	Rxxrs	Chord Yield Str.	Max Axial Force	Column Slenderness	kL/Rxxrs	fe (ksi)	Fa (ksi)	Result C/D
Left Diagonal	0.00	PIPE	0.00	999.00	0	0.00	999.00	0.00	999.00	999.00	1.00
Right Diagonal	0.00	PIPE	0.00	999.00	0	0.00	999.00	0.00	999.00	999.00	1.00

Fb Calculation

Left Support	Term 1	Term 2	Term 3	Fb
Eqn. 5-17	0.222	0.222	0.222	
Eqn. 5-18	0.222	0.222	0.222	
Eqn. 5-19	0.222	0.222	0.222	
Right Support	Term 1	Term 2	Term 3	Fb
Eqn. 5-17	0.007	0.007	0.007	
Eqn. 5-18	0.022	0.022	0.022	
Eqn. 5-19	0.022	0.022	0.022	

	Fb	Compact (ksi)	Non-Compact (ksi)	Shorter
MAX Left	27.72	21.95	21.95	
MAX Right	27.72	21.60	21.60	

239-Sign_9

GROUP 1 CASE 1

SEISMIC AND SHEAR STRESSES

	Mmax kip-ft	Spost in^3	Sweak kif	Shear kips	Pipe Area in^2	Ko kif	Axial kips	Area y in^2	fa ksi
Left Support	69.57	59.01	11.57	3.70	21.21	0.13	2.66	21.21	0.13
Right Support	60.40	59.01	10.50	2.57	21.21	0.12	2.66	21.21	0.13

RESULTS

	Fb ksi	Fv ksi	Fa ksi	Cc	Rweak	KLR	Fa'	Eqn. 5-7.1 Cqlc	Eqn. 5-7.2 Cqlc	Eqn. 5-7.3 Cqlc	MAX Cqlc
Left Support	27.72	13.86	9.66	116.70	4.77	124.17	9.66	0.405	0.405	0.405	0.405
Right Support	27.72	13.86	9.66	116.70	4.77	128.77	9.66	0.345	0.362	0.345	0.362

	Length	Pipe or Angle	Diagonal Area	Rmin	Cfund Yield Str.	Max Axial Force	Column Slenderness	KLR/rmin	fa (ksi)	Fb (ksi)	Result C/D
Left Diagonal	0.00	PIPE	0.00	999.00	0	0.00	999.00	0.00	999.00	999.00	1.00
Right Diagonal	0.00	PIPE	0.00	999.00	0	0.00	999.00	0.00	999.00	999.00	1.00

Left Post Max. Axial Force in Diag. = 0.00
Right Post Max. Axial Force in Diag. = 0.00

Max. Overall = 0.00

Left Post max CSR = 0.73
Right Post max CSR = 0.62

Left drag max CSR = 1.00
Right drag max CSR = 1.00

Fb Calculation

	Cmpsed (ksi)	Non-Cmpsed (ksi)	Governing
Left Support	27.72	51.60	51.60
Right Support	27.72	51.60	51.60

	Eqns. 5-7 Term 1	Term 2	Term 3
Eqn. 5-7.1	0.000	0.405	0.000
Eqn. 5-7.2	0.000	0.405	0.000
Eqn. 5-7.3	0.000	0.405	0.000

	Eqns. 5-7 Term 1	Term 2	Term 3
Eqn. 5-7.1	0.000	0.405	0.000
Eqn. 5-7.2	0.000	0.362	0.000
Eqn. 5-7.3	0.000	0.345	0.000

GROUP 2 CASE 1

SEISMIC AND SHEAR STRESSES

	Mmax kip-ft	Spost in^3	Sweak kif	Shear kips	Pipe Area in^2	Ko kif	Axial kips	Area y in^2	fa ksi
Left Support	59.34	69.01	10.32	2.58	21.21	0.12	3.66	21.21	0.18
Right Support	50.84	69.01	9.01	2.14	21.21	0.10	1.83	21.21	0.09

RESULTS

	Fb ksi	Fv ksi	Fa ksi	Cc	Rweak	KLR	Fa'	Eqn. 5-7.1 Cqlc	Eqn. 5-7.2 Cqlc	Eqn. 5-7.3 Cqlc	MAX Cqlc
Left Support	27.72	13.86	9.66	116.70	4.77	124.17	9.66	0.405	0.405	0.405	0.405
Right Support	27.72	13.86	9.66	116.70	4.77	128.77	9.66	0.345	0.362	0.345	0.362

	Length	Pipe or Angle	Diagonal Area	Rmin	Cfund Yield Str.	Max Axial Force	Column Slenderness	KLR/rmin	fa (ksi)	Fb (ksi)	Result C/D
Left Diagonal	0.00	PIPE	0.00	999.00	0	0.00	999.00	0.00	999.00	999.00	1.00
Right Diagonal	0.00	PIPE	0.00	999.00	0	0.00	999.00	0.00	999.00	999.00	1.00

Fb Calculation

	Cmpsed (ksi)	Non-Cmpsed (ksi)	Governing
Left Support	27.72	51.60	51.60
Right Support	27.72	51.60	51.60

	Eqns. 5-7 Term 1	Term 2	Term 3
Eqn. 5-7.1	0.000	0.405	0.000
Eqn. 5-7.2	0.000	0.362	0.000
Eqn. 5-7.3	0.000	0.345	0.000

GROUP 3 CASE 1

SEISMIC AND SHEAR STRESSES

	Mmax kip-ft	Spost in^3	Sweak kif	Shear kips	Pipe Area in^2	Ko kif	Axial kips	Area y in^2	fa ksi
Left Support	50.40	59.01	8.73	1.65	21.21	0.09	3.83	21.21	0.18
Right Support	31.60	69.01	5.59	1.50	21.21	0.08	3.83	21.21	0.18

RESULTS

	Fb ksi	Fv ksi	Fa ksi	Cc	Rweak	KLR	Fa'	Eqn. 5-7.1 Cqlc	Eqn. 5-7.2 Cqlc	Eqn. 5-7.3 Cqlc	MAX Cqlc
Left Support	27.72	13.86	9.66	116.70	4.77	124.17	9.66	0.291	0.291	0.291	0.291
Right Support	27.72	13.86	8.11	116.70	4.77	128.77	8.11	0.201	0.220	0.201	0.220

	Length	Pipe or Angle	Diagonal Area	Rmin	Cfund Yield Str.	Max Axial Force	Column Slenderness	KLR/rmin	fa (ksi)	Fb (ksi)	Result C/D
Left Diagonal	0.00	PIPE	0.00	999.00	0	0.00	999.00	0.00	999.00	999.00	1.00
Right Diagonal	0.00	PIPE	0.00	999.00	0	0.00	999.00	0.00	999.00	999.00	1.00

Fb Calculation

	Cmpsed (ksi)	Non-Cmpsed (ksi)	Governing
Left Support	27.72	51.60	51.60
Right Support	27.72	51.60	51.60

	Eqns. 5-7 Term 1	Term 2	Term 3
Eqn. 5-7.1	0.000	0.291	0.000
Eqn. 5-7.2	0.000	0.220	0.000
Eqn. 5-7.3	0.000	0.201	0.000

240-sign-g

Horizontal Monotube Analysis

E = 29000 ksi (Young's Modulus)
k chord = 1.00

	Mvert kip-ft	Mhoriz. kip-ft	SHEAR Horizontal kips	SHEAR Vertical kips	Max Axial Kips
Section 1	36.07	73.28	4.50	2.31	4.83
Section 2	35.76	73.70	2.69	1.02	4.83

Local Buckling AASHTO 5.5
Section 1

Outside Dia (inches)	Wall Thick. (inches)	Yield Str. (ksi)	λ	λp	λr	λmax	Result
4.000	0.23	42.0	17.70	86.9	180.6	309.5	Compact

Local Buckling AASHTO 5.5
Section 2

Outside Dia (inches)	Wall Thick. (inches)	Yield Str. (ksi)	λ	λp	λr	λmax	Result
4.000	0.23	42.0	17.70	86.9	180.6	309.5	Compact

λ width-thickness ratio
λp compact width-thickness ratio
λr non-compact width-thickness ratio
λmax maximum width-thickness ratio
E 29000 ksi (Young's Modulus)

Section 1

Unbraced Length (in.)	Pipe Diameter (in.)	Wall Thickness (in.)	Pipe Area (in.^2)	Chord Yield Str. (ksi)	kL/Rmin
72.0	4.000	0.226	2.68	42.0	53.95

Section 2

Unbraced Length (in.)	Pipe Diameter (in.)	Wall Thickness (in.)	Pipe Area (in.^2)	Chord Yield Str. (ksi)	kL/Rmin
72.0	4.000	0.226	2.68	42.0	53.95

GROUP 1

	BENDING AND SHEAR STRESSES								
	Mmax kip-ft	S in^3	fb ksi	Shear kips	Pipe Area in^2	fv ksi	Axial kips	Area y in^2	fa ksi
Section 1	81.67	97.26	10.08	5.06	2.68	1.89	4.83	2.68	1.80
Section 2	81.92	97.26	10.11	2.87	2.68	1.07	4.83	2.68	1.80

	RESULTS										
	Fb ksi	Fv ksi	Fa ksi	Cc	R	KL/R	Fe'	Eqn. 5-17 CSR	Eqn. 5-18 CSR	Eqn. 5-19 CSR	**MAX CSR**
Section 1	27.72	13.86	21.75	116.75	1.33	53.95	51.30	0.454	0.498	0.465	0.498
Section 2	27.72	13.86	21.75	116.75	1.33	53.95	51.30	0.442	0.486	0.453	0.486

				Fb Calculation		
Section 1	Term 1	Term 2	Term 3	Compact (ksi)	Non-Compact (ksi)	Slender
Eqn. 5-17	0.072	0.364	0.019			
Eqn. 5-18	0.083	0.396	0.019			
Eqn. 5-19	0.083	0.364	0.019			
Section 2	Term 1	Term 2	Term 3			
Eqn. 5-17	0.072	0.365	0.006			
Eqn. 5-18	0.083	0.398	0.006	27.72	72.09	72.09
Eqn. 5-19	0.083	0.365	0.006	27.72	72.09	72.09

Z41-5154-9

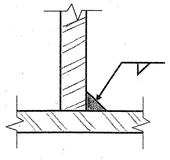
Highway Safety Corporation

Glastonbury, CT

Welding Procedure Specification

Material specification **ASTM A36, A572 gr 50, A709 Gr 36, ASTM A709 Gr 50, A500 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 **DC**
Polarity **Reverse**
Welding progression **Stringers**
Root treatment **None**
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
3/16"	**1**	**0.045"**	**300 A ± 30**	**29 V ± 2**	**28 ipm ± 2**	**TYPICAL ALL FILLET WELDS** 
1/4"	**1**	**0.045"**	**300 A ± 30**	**29 V ± 2**	**14 ipm ± 2**	

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

PAUL RADICE
CWI 98070221
QC1 EXP. 7/01/10

WPS no. **W-1587-1**
Revision no. **0**
Supporting PQR no. **Pre-qualified**
Project Name **St. Johnsbury, Lyndon, Waterford VT**

Fabricator **Highway Safety Corporation**
Authorized by Paul Radice 2-42-5149
Date **7/24/07**
Project Number **HES 091-3(42) & HES 093-1(10)**

Highway Safety Corporation

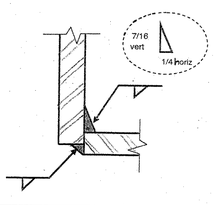
Glastonbury, CT

Welding Procedure Specification

Material specification **ASTM A36, A572 gr 50, A709 Gr 36, ASTM A709 Gr 50, A500 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 & Multiple**
Single or multiple arc **Single**
Welding current **DC**
Polarity **Reverse**
Welding progression **Stringers**
Root treatment **None**
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
7/16" x 1/4"	1 & 2	0.045"	300 A ± 30	29 V ± 2	14 ipm ± 2	UN-EQUAL LEG FILLET WELD @ BASE PLATE CONNECTION

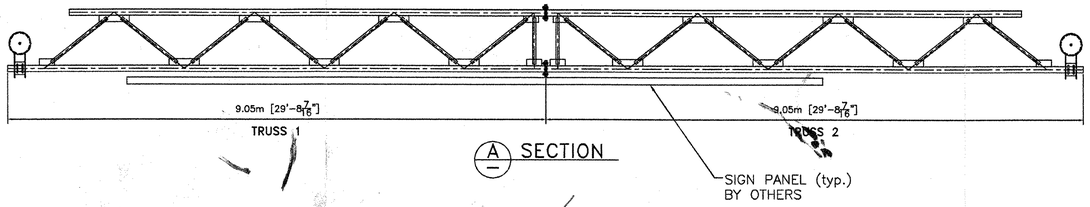


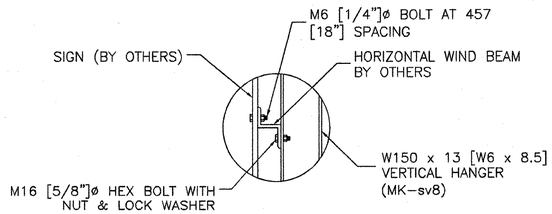
This procedure may vary due to fabrication sequence, fit-up, pass size, etc. within the limitation of variables given in section 5 of latest edition AWS D1.1

PAUL RADICE
CWI 98070271
QCI EXP. 7/01/08

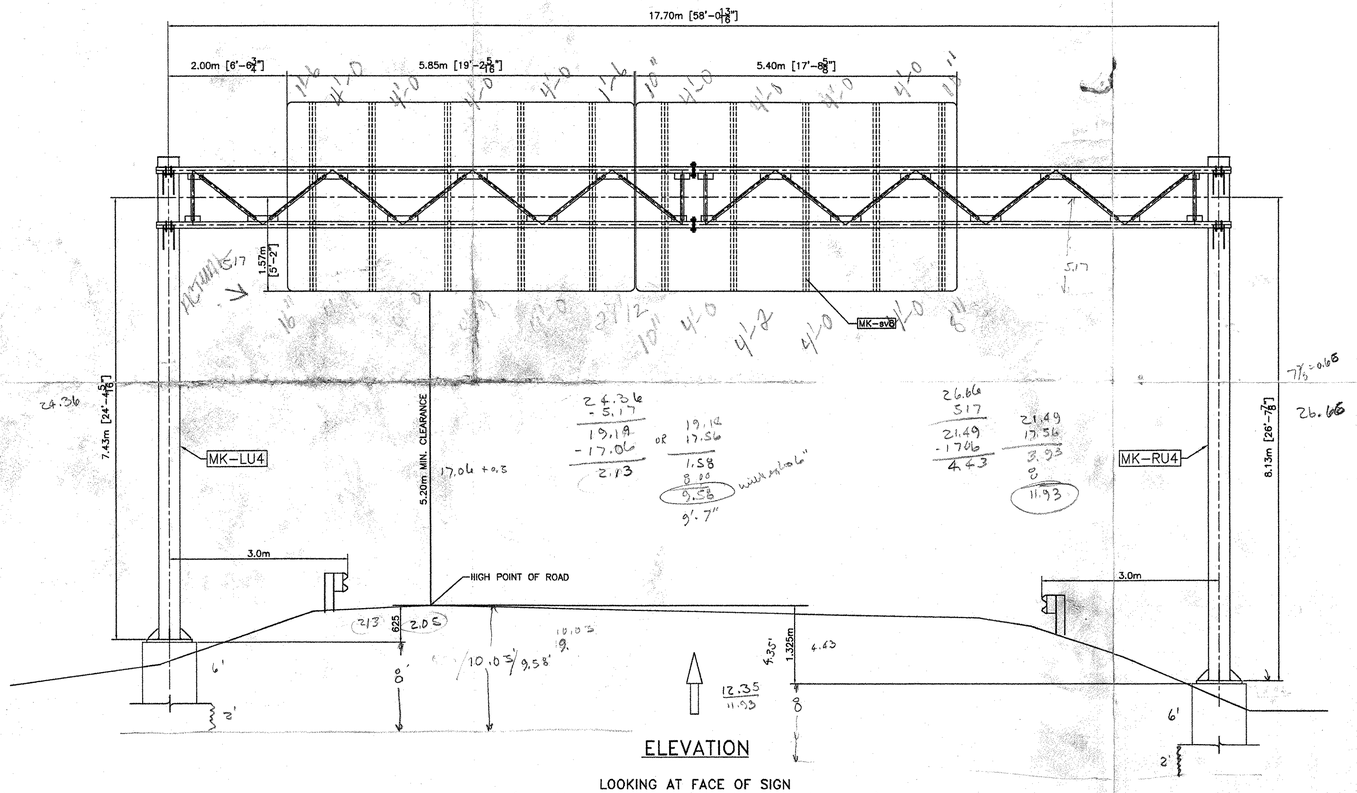
WPS no. **W-1587-2**
Revision no. **0**
Supporting PQR no. **Pre-qualified**
Project Name **St. Johnsbury, Lyndon, Waterford VT**

Fabricator **Highway Safety Corporation**
Authorized by Paul Radice 245-5141-9
Date **7/24/07**
Project Number **HES 091-3(42) & HES 093-1(10)**





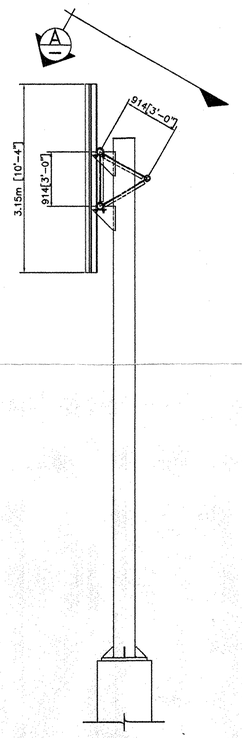
SIGN ATTACHMENT DETAIL



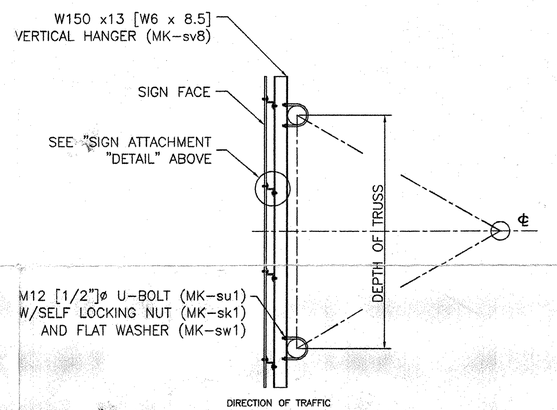
ELEVATION

LOOKING AT FACE OF SIGN
(OUT OF PLANE CHORDS NOT SHOWN FOR CLARITY)

FOOTING ELEVATION IS ASSUMED.
CONTRACTOR TO VERIFY ELEVATIONS
BEFORE FABRICATION.

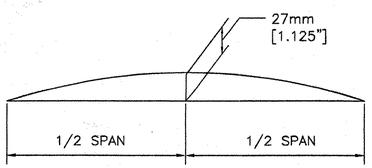


SIDE VIEW



SIGN MOUNTING DETAIL

VERTICAL HANGER BEAMS & U-BOLTS INCLUDED



CAMBER DIAGRAM

NOTE:

CAMBER WILL BE ACHIEVED BY SHORTENING LOWER CHORD PIPES BY AN AMOUNT SUCH THAT POSITIVE UPWARD DEFLECTION IS PRODUCED WHEN TRUSSES ARE BROUGHT TOGETHER AT SPLICES.

ALL DIMENSIONS SHOWN ARE IN MILLIMETERS (mm) UNLESS OTHERWISE NOTED. ENGLISH CONVERSION SHOWN IN [ ] FOR REFERENCE ONLY.

RECEIVED
JUL 27 2007
BY DATE 08/06/07

STATE OF VERMONT
PHILIP B. CHENEY
6163
REGISTERED PROFESSIONAL ENGINEER

QUALITY ASSURANCE CERTIFICATION

REVISIONS		
No.	Remarks	Date
0	Initial submittal	

HIGHWAY SAFETY CORP.
GLASTONBURY, CT

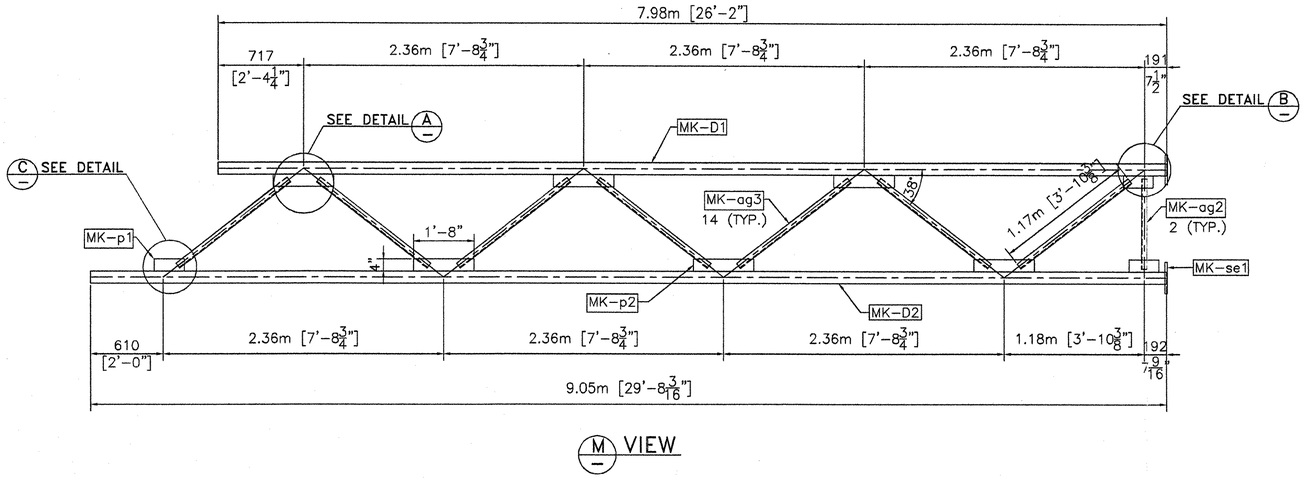
TRI-CHORD SIGN STRUCTURE
STATE OF VERMONT
COUNTY OF CALEDONIA
MM 10.970 NB
PROJECT No. HES 091-3(42)
HES 093-1(10)

GENERAL CONTRACTOR

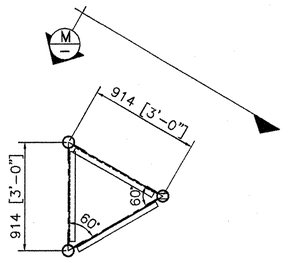
SUB CONTRACTOR F.R. LAFAYETTE

DRAWN	MHM
CHECKED	P. Radice
DATE	5/23/07
SCALE	N.T.S.
HSC REFERENCE NO.	1587g
SIZE D	REVISION 0
SHEET NO.	1 of 8

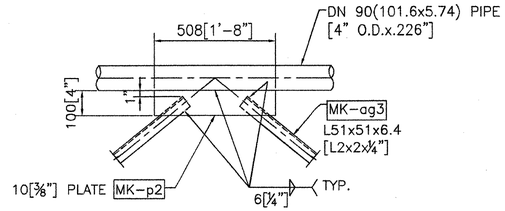
POSTS 246-S16N-G



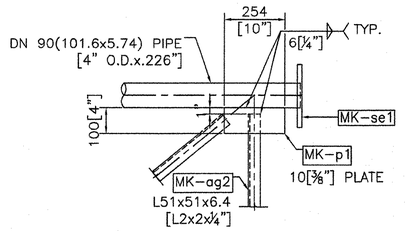
M VIEW



SIDE VIEW



DETAIL "A"



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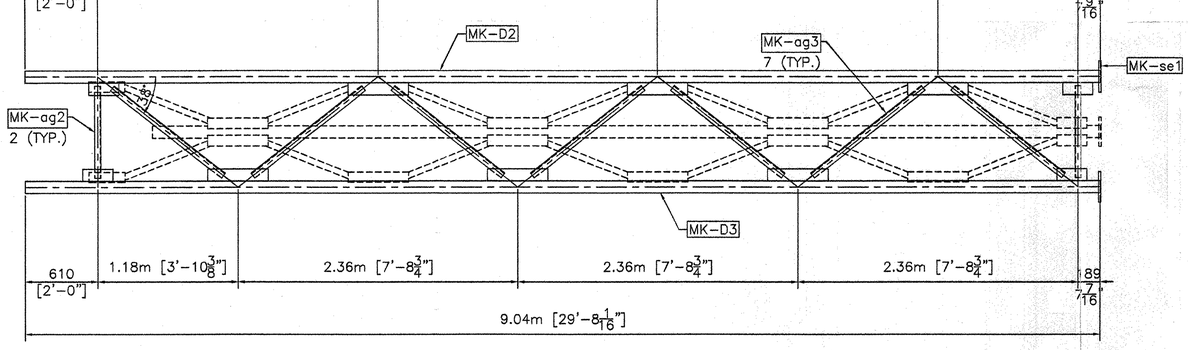
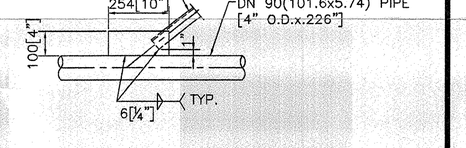
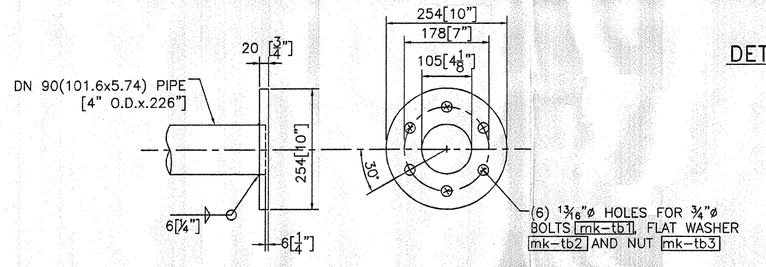


FRONT VIEW

TRUSS 1



DETAIL "C"



SPLICE DETAIL
MK-se1

RECEIVED
CK'D BY GJC OK'D BY
JUL 27 2007
RESUBMIT APPROVED X
BY DATE 08/08/07

ALL DIMENSIONS SHOWN ARE IN MILLIMETERS (mm) UNLESS OTHERWISE NOTED. ENGLISH CONVERSION SHOWN IN [ ] FOR REFERENCE ONLY.

REVISIONS		
No.	Remarks	Date
0	Initial submittal	

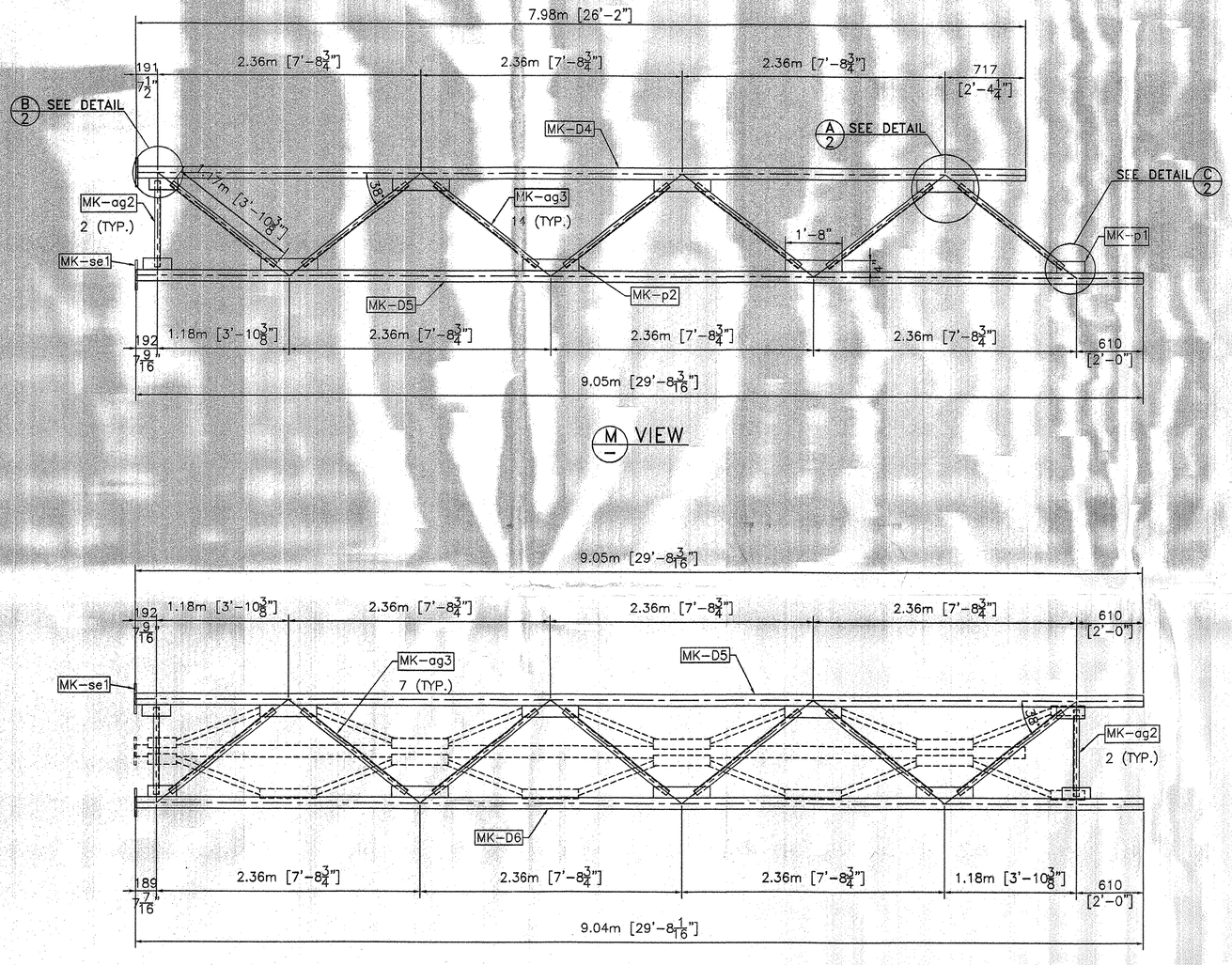
HIGHWAY SAFETY CORP.
GLASTONBURY, CT

TRI-CHORD SIGN STRUCTURE
STATE OF VERMONT
COUNTY OF CALEDONIA
MM 10.970 NB
PROJECT No. HES 091-3(42)
HES 093-1(10)

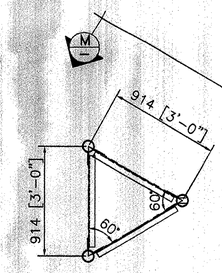
GENERAL CONTRACTOR
SUB CONTRACTOR F.R. LAFAYETTE

DRAWN	MHM
CHECKED	P Radice
DATE	5/23/07
SCALE	NTS
HSC REFERENCE NO.	1587g
SIZE	D
REVISION	0
SHEET NO.	2 of 8

247-SIGN-3



FRONT VIEW



SIDE VIEW

NOTE:

1. STRUCTURE DESIGNED IN ACCORDANCE WITH LATEST EDITION AASHTO STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINARIES AND TRAFFIC SIGNALS.

2. ALL HOLES FOR HIGH STRENGTH FASTENERS SHALL BE DRILLED OR SUB-PUNCHED FULL SIZE. SLOTTED HOLES AND/OR VENT OR ACCESS HOLES MAY BE CUT WITH MECHANICALLY GUIDED PLASMA OR MECHANICALLY GUIDED FLAME TORCH.

3. GRIND SHARP CORNERS OF ALL PLATES TO A $\frac{1}{16}$" MIN. RADIUS PRIOR TO GALVANIZING.

4. ALL WELDING SHALL BE PERFORMED BY QUALIFIED WELDERS IN ACCORDANCE WITH AWS D1.1.

5. ALL STEEL PLATES FOR STRUCTURAL COMPONENTS SHALL BE ASTM A709 GR. 50.

6. STEEL PLATES AND SHAPES FOR NON-STRUCTURAL COMPONENTS SHALL BE ASTM A709 GR. 36.

7. STEEL PIPES FOR STRUCTURAL MEMBERS SHALL HAVE MINIMUM YIELD OF 42 ksi AND SHALL CONFORM TO ONE OF THE FOLLOWING GRADES: ASTM A500 GR. B, OR API 5LX42.

8. UNLESS OTHERWISE NOTED, ALL BOLTS FOR STRUCTURAL CONNECTIONS SHALL BE M164 TYPE 1 (A325).

9. GALVANIZED U-BOLTS FOR CONNECTION OF SIGN HANGER BEAMS TO TRUSS SHALL BE ASTM F-1554 GR. 36.

10. ALL STRUCTURAL STEEL SHALL BE HOT-DIPPED GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH AASHTO M111 (ASTM A123).

11. ALL HARDWARE, UNLESS OTHERWISE NOTED, SHALL BE HOT-DIPPED GALVANIZED PER AASHTO M232 (ASTM A153).

12. ANCHOR HARDWARE SHALL BE STAINLESS STEEL AND MEET REQUIREMENTS OF VAOT STANDARD SPECIFICATION 714.09.

13. CONCRETE AND REBAR SHOWN IN FOOTING DESIGN TO BE FURNISHED BY OTHERS.

14. FOUNDATION DESIGN BASED ON USE OF 3000 psi MINIMUM CONCRETE.

15. SPACE BETWEEN THE TOP OF CONCRETE AND THE BOTTOM OF STEEL BASE PLATE SHALL BE FILLED WITH TYPE IV MORTAR AFTER LEVELING.

16. BOLTS INSTALLED IN STRUCTURAL CONNECTIONS SHALL BE PROVIDED AND TENSIONED PER APPLICABLE PROVISIONS OF VAOT STANDARD SPECIFICATIONS SECTION 506.

17. SEAL WELD ALL CONNECTIONS WHEN POSSIBLE PRIOR TO GALVANIZING

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QUALITY STEEL BRIDGES AISC CERTIFICATION

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TRUSS 2

REVISIONS		
No.	Remarks	Date
0	Initial submittal	

HIGHWAY SAFETY CORP.
GLASTONBURY, CT

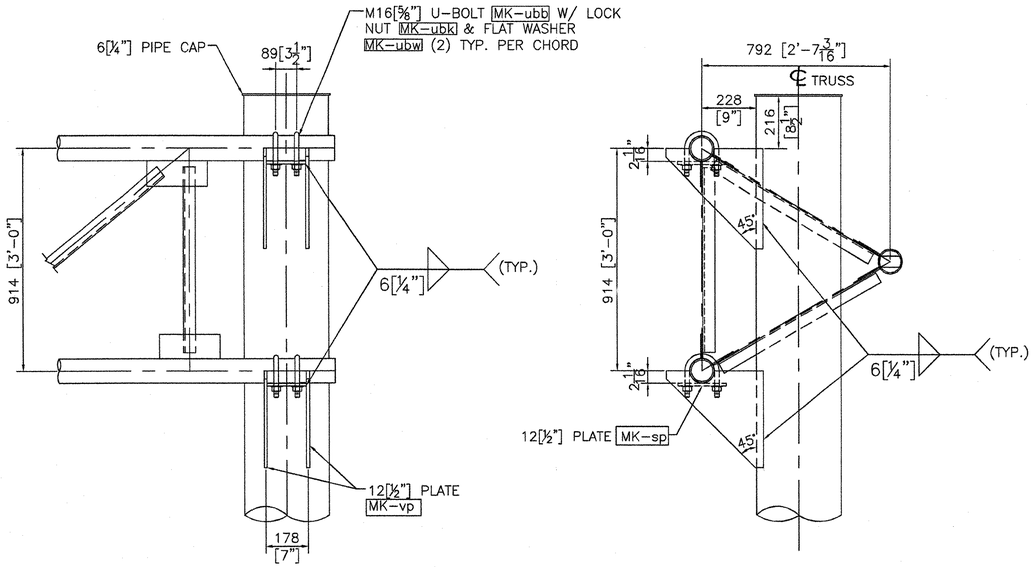
TRI-CHORD SIGN STRUCTURE
STATE OF VERMONT
COUNTY OF CALEDONIA
MM 10.970 NB
PROJECT No. HES 091-3(42)
HES 093-1(10)

GENERAL CONTRACTOR

SUB CONTRACTOR F.R. LAFAYETTE

DRAWN	MHM
CHECKED	P Radice
DATE	5/23/07
SCALE	NTS
HSC REFERENCE NO.	1587g
SIZE	D
REVISION	0
SHEET NO.	3 of 8

248-SIGN-g



TRUSS CONNECTION DETAIL

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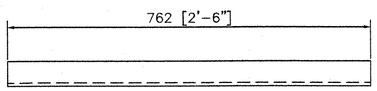
[L2x2x¼"]



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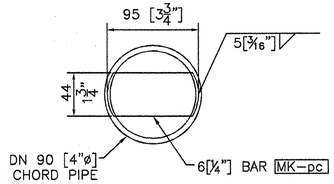
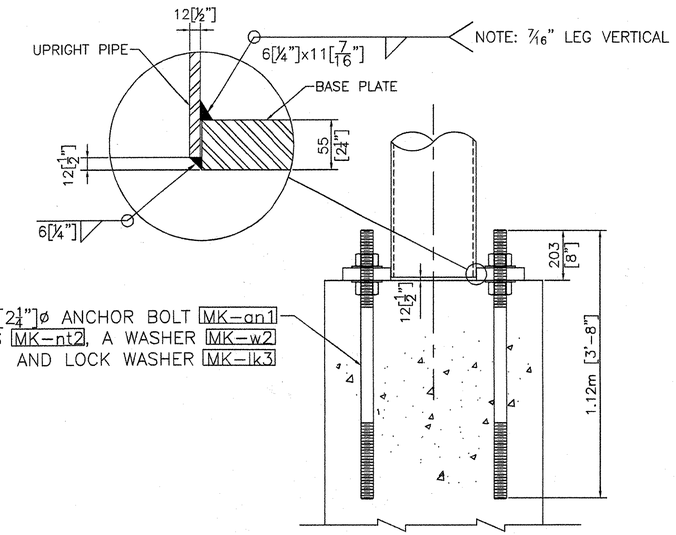
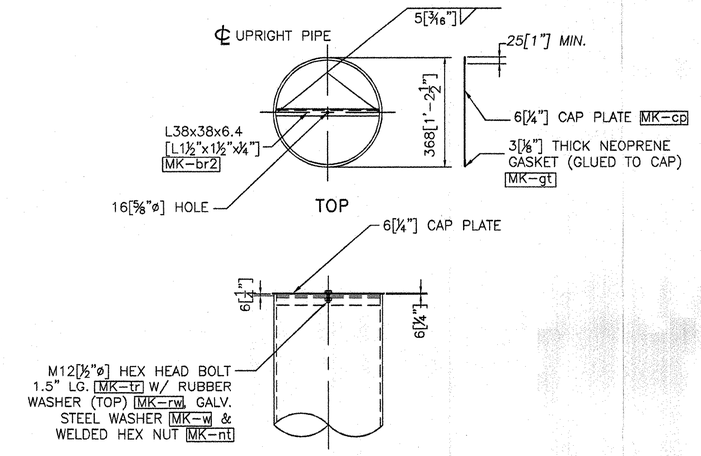
L51x51x6.4
[L2x2x¼"]



PLUG DETAIL
(EACH END OF TRUSS CHORD)

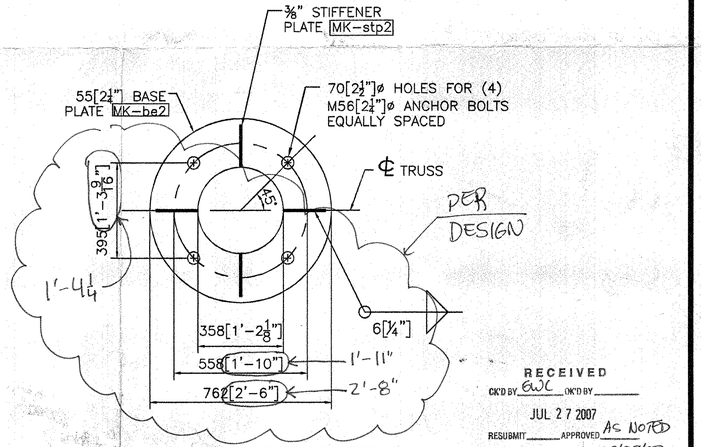


ANCHORAGE ASSEMBLY



UPRIGHT CAP DETAIL

ASSEMBLE CAP TO POST PRIOR TO SHIPPING.



BASE PLATE DETAIL

NOTE:
BASE PLATE SHALL BE STAMPED WITH THE VERTICAL POLE DIAMETER (VD.), HEIGHT (VHT.), YIELD STRENGTH (VYS.), GAUGE(VGE.), AND SAME FOR HORIZONTAL MEMBER (HD.), (HYS.), AND (HGE.).

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STATE OF VERMONT PHILIP B. CHENEY 6163 REGISTERED PROFESSIONAL ENGINEER

QUALITY STEEL BRIDGES AISC CERTIFICATION

ALL DIMENSIONS SHOWN ARE IN MILLIMETERS (mm) UNLESS OTHERWISE NOTED. ENGLISH CONVERSION SHOWN IN [ ] FOR REFERENCE ONLY.

REVISIONS		
No.	Remarks	Date
0	Initial submittal	

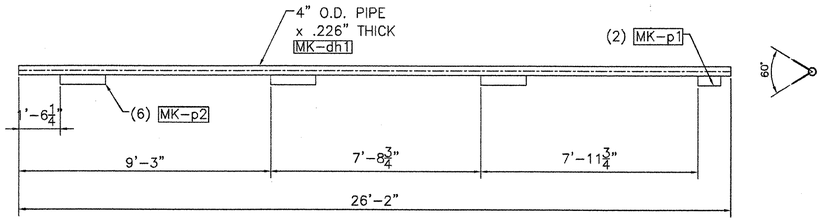
HIGHWAY SAFETY CORP.
GLASTONBURY, CT

TRI-CHORD SIGN STRUCTURE
STATE OF VERMONT
COUNTY OF CALEDONIA
MM 10.970 NB
PROJECT No. HES 091-3(42)
HES 093-1(10)

DRAWN	MHM
CHECKED	P Radice
DATE	5/23/07
SCALE	NTS
HSC REFERENCE NO.	1587g
SIZE	D
REVISION	0
SHEET NO.	4 of 8

GENERAL CONTRACTOR
SUB CONTRACTOR F.R. LAFAYETTE

249-SIGN-9



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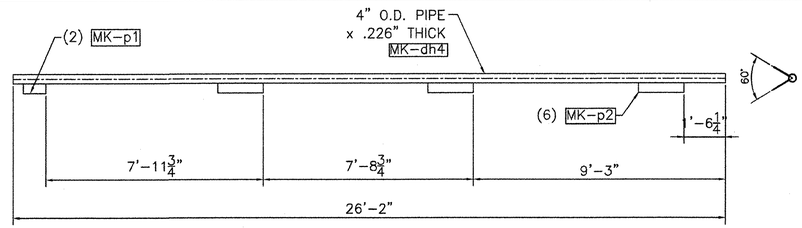

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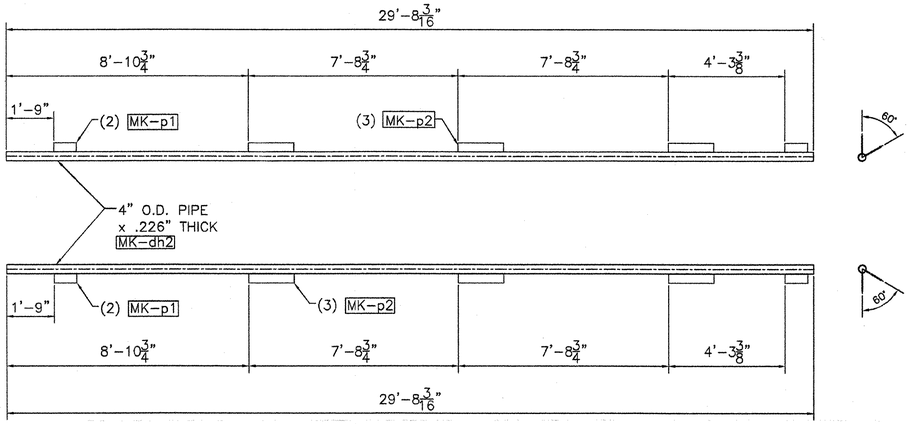

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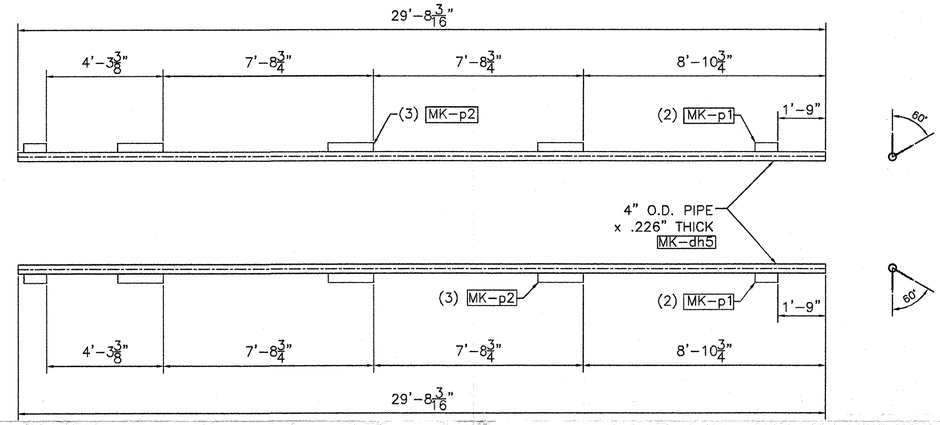

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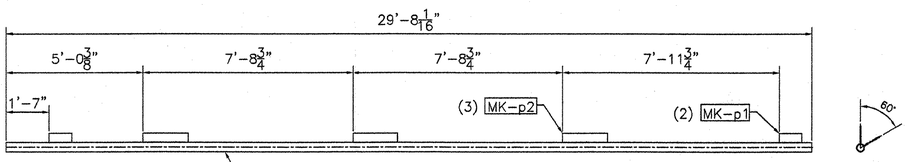

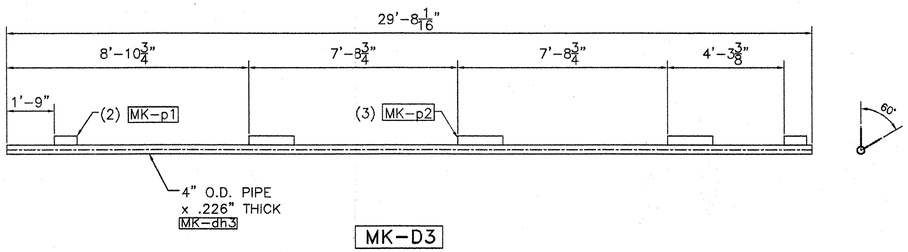

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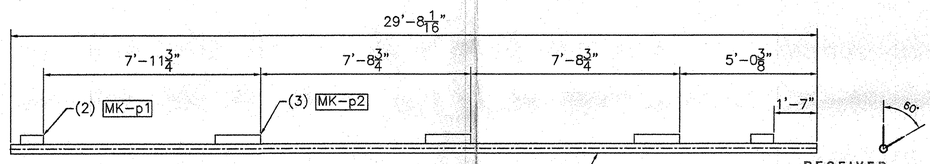

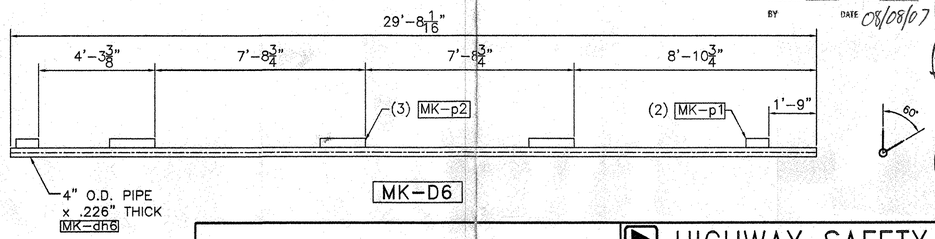

MK-D6

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BY DATE 08/08/07

STATE OF VERMONT
PHILIP B. CHENEY
6163
REGISTERED PROFESSIONAL ENGINEER

QUALITY CERTIFIED AISC FABRICATOR

REVISIONS		
No.	Remarks	Date
0	initial submittal	

HIGHWAY SAFETY CORP.

GLASTONBURY, CT

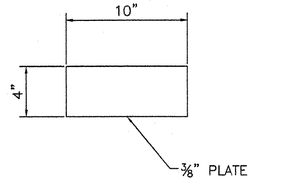
TRI-CHORD SIGN STRUCTURE
STATE OF VERMONT
COUNTY OF CALEDONIA
MM 10.970 NB
PROJECT No. HES 091-3(42)
HES 093-1(10)

GENERAL CONTRACTOR

SUB CONTRACTOR
F.R. LAFAYETTE

DRAWN	MHM
CHECKED	P Radice
DATE	5/23/07
SCALE	NTS
HSC REFERENCE NO.	1587g
SIZE	D
REVISION	0
SHEET NO.	5 of 8

250-618N-9



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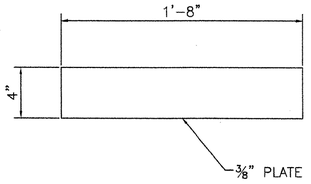

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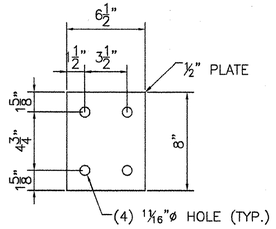

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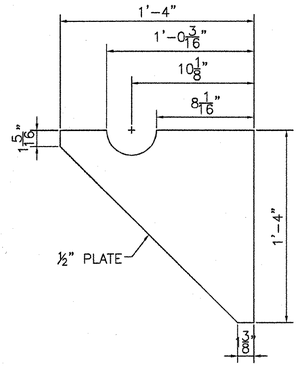

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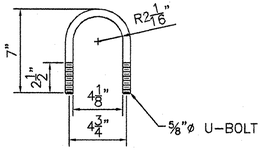

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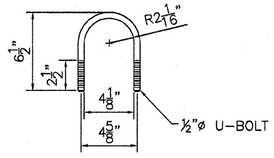

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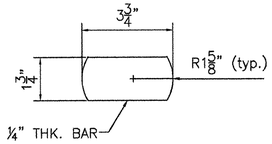

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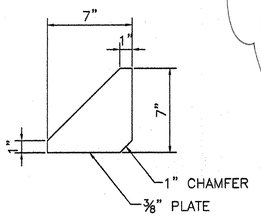

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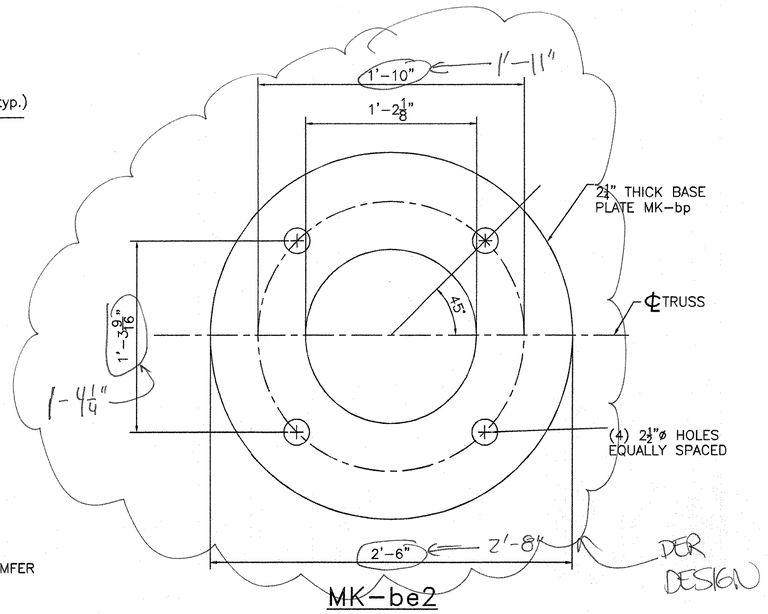

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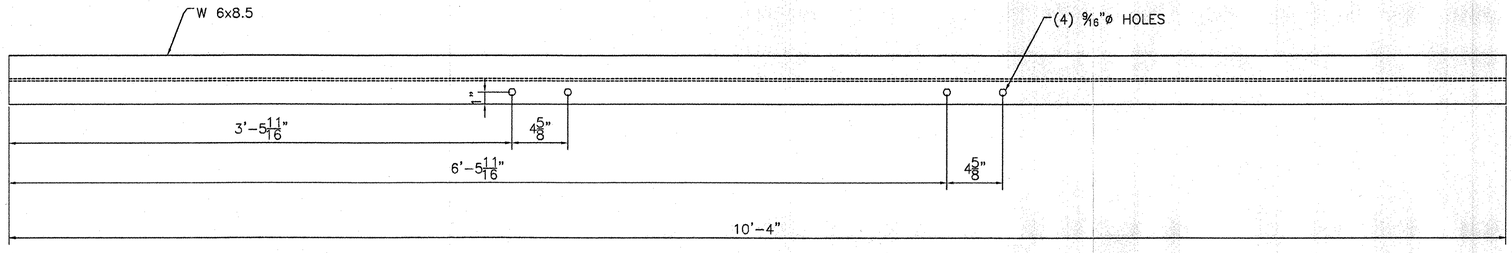

MK–sv8

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STATE OF VERMONT PHILIP B. CHENEY 6163 REGISTERED PROFESSIONAL ENGINEER

REVISIONS		
No.	Remarks	Date
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HIGHWAY SAFETY CORP.
GLASTONBURY, CT

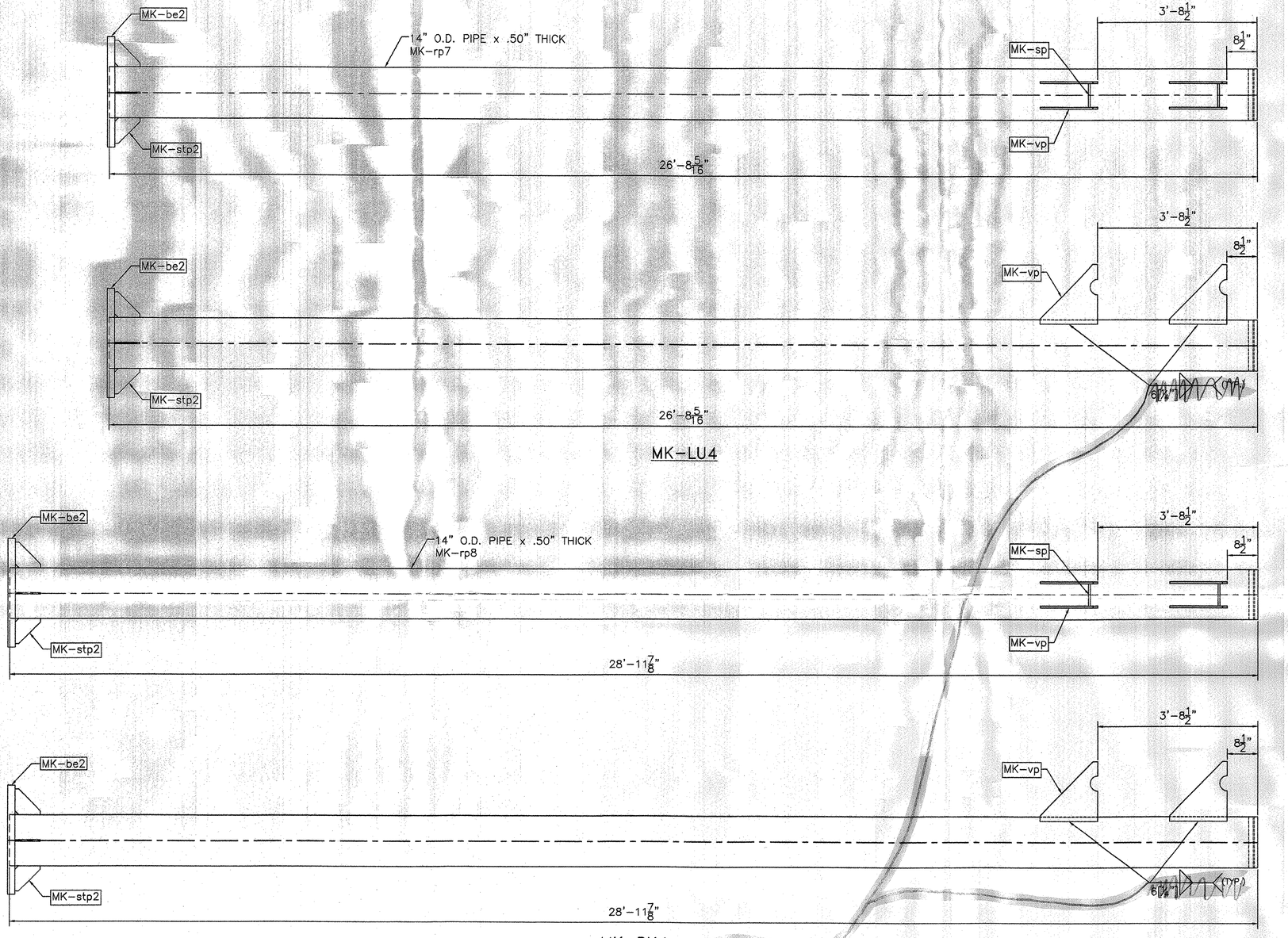
TRI–CHORD SIGN STRUCTURE
STATE OF VERMONT
COUNTY OF CALEDONIA
MM 10.970 NB
PROJECT No. HES 091–3(42)
HES 093–1(10)

GENERAL CONTRACTOR

SUB CONTRACTOR
F.R. LAFAYETTE

DRAWN	MHM
CHECKED	P Radice
DATE	5/23/07
SCALE	NTS
HSC REFERENCE NO.	1587g
SIZE	D
REVISION	0
SHEET NO.	6 of 8

251-516W-g



erection mark	piece qty	item description	size/shape	length/qty per unit	material notes
TRUSS 1 ASSEMBLY					
D1		**CHORD PIPE ASSEMBLY**			
dh1	1	pipe	4" O.D.x 0.226" wall	26'-2"	A500 gr B API 5LX42
p1	2	plate	PL 0.375" x 4"	10"	A709 gr 50
p2	6	plate	PL 0.375" x 4"	1'-8"	A709 gr 50
ag3	14	angle	L2"x2"x.25"	3'-10.375"	A36
ag2	2	angle	L2"x2"x.25"	2'-6"	A36
pc	1	plate	0.25" x 1.75"	3.75"	A36
se1	1	splice plate	0.75" x 10" O.D.		A709 gr 50
D2		**CHORD PIPE ASSEMBLY**			
dh2	1	pipe	4" O.D.x 0.226" wall	29'-8.187"	A500 gr B API 5LX42
p1	4	plate	PL 0.375" x 4"	10"	A709 gr 50
p2	6	plate	PL 0.375" x 4"	1'-8"	A709 gr 50
ag3	7	angle	L2"x2"x.25"	3'-10.375"	A36
ag2	2	angle	L2"x2"x.25"	2'-6"	A36
pc	1	plate	0.25" x 1.75"	3.75"	A36
se1	1	splice plate	0.75" x 10" O.D.		A709 gr 50
D3		**CHORD PIPE ASSEMBLY**			
dh3	1	pipe	4" O.D.x 0.226" wall	29'-8.062"	A500 gr B API 5LX42
p1	4	plate	PL 0.375" x 4"	10"	A709 gr 50
p2	6	plate	PL 0.375" x 4"	1'-8"	A709 gr 50
pc	1	plate	0.25" x 1.75"	3.75"	A36
se1	1	splice plate	0.75" x 10" O.D.		A709 gr 50
TRUSS 2 ASSEMBLY					
D4		**CHORD PIPE ASSEMBLY**			
dh4	1	pipe	4" O.D.x 0.226" wall	26'-2"	A500 gr B API 5LX42
p1	2	plate	PL 0.375" x 4"	10"	A709 gr 50
p2	6	plate	PL 0.375" x 4"	1'-8"	A709 gr 50
ag3	14	angle	L2"x2"x.25"	3'-10.375"	A36
ag2	2	angle	L2"x2"x.25"	2'-6"	A36
pc	1	plate	0.25" x 1.75"	3.75"	A36
se1	1	splice plate	0.75" x 10" O.D.		A709 gr 50
D5		**CHORD PIPE ASSEMBLY**			
dh5	1	pipe	4" O.D.x 0.226" wall	29'-8.187"	A500 gr B API 5LX42
p1	4	plate	PL 0.375" x 4"	10"	A709 gr 50
p2	6	plate	PL 0.375" x 4"	1'-8"	A709 gr 50
ag3	7	angle	L2"x2"x.25"	3'-10.375"	A36
ag2	2	angle	L2"x2"x.25"	2'-6"	A36
pc	1	plate	0.25" x 1.75"	3.75"	A36
se1	1	splice plate	0.75" x 10" O.D.		A709 gr 50
D6		**CHORD PIPE ASSEMBLY**			
dh6	1	pipe	4" O.D.x 0.226" wall	29'-8.062"	A500 gr B API 5LX42
p1	4	plate	PL 0.375" x 4"	10"	A709 gr 50
p2	6	plate	PL 0.375" x 4"	1'-8"	A709 gr 50
pc	1	plate	0.25" x 1.75"	3.75"	A36
se1	1	splice plate	0.75" x 10" O.D.		A709 gr 50
VERTICAL PIPE ASSEMBLY					
LU4		**LEFT PIPE ASSEMBLY**			
rp7	1	pipe	14" O.D.x 0.50" wall	26'-8.313"	A503 gr B API 5LX42
sp	2	plate	PL 0.5" x 8.5"	8"	A709 gr 50
vp	4	plate	PL 0.5" x 1'-4"	1'-4"	A709 gr 50
cp	1	plate	3.25" X 1'-2.5" O.D.		A36
br2	1	angle	L 1.5"x1.5"x.25"	1'-1"	A36
gt	1	gasket	125"x1'-2.5" O.D.		50 duro. Neoprene
nt	1	hex nut	50" dia.		A563
tr	1	hex bolt	50" dia.	1.5"	A325
w	1	washer	50" dia.		F844
rw	1	rubber washer	50" dia.		50 duro. Neoprene
stp2	4	plate	PL 0.375"x 7"	7"	A709 gr 50
be2	1	base plate	2.25" x 2'-0" O.D.		A709 gr 50
RU4		**RIGHT PIPE ASSEMBLY**			
rp8	1	pipe	14" O.D.x 0.50" wall	23'-11.875"	A503 gr B API 5LX42
sp	2	plate	PL 0.5" x 8.5"	8"	A709 gr 50
vp	4	plate	PL 0.5" x 1'-4"	1'-4"	A709 gr 50
cp	1	plate	3.25" X 1'-2.5" O.D.		A36
br2	1	angle	L 1.5"x1.5"x.25"	1'-1"	A36
gt	1	gasket	125"x1'-2.5" O.D.		50 duro. Neoprene
nt	1	hex nut	50" dia.		A563
tr	1	hex bolt	50" dia.	1.5"	A325
w	1	washer	50" dia.		F844
rw	1	rubber washer	50" dia.		50 duro. Neoprene
stp2	4	plate	PL 0.375"x 7"	7"	A709 gr 50
be2	1	base plate	2.25" x 2'-0" O.D.		A709 gr 50
LOOSE ITEMS					
sv6	10	sign hanger	W6x8.5	10'-4"	A36
ubb	8	u-bolt	3.625" dia.	7"	F1554 Gr. 36
ubh	16	lock nut	3.625" dia.		A563 DH
ubw	16	washer	3.625" dia.		F436
au1	20	u-bolt	3.50" dia.	6.5"	F1554 Gr. 36
sk1	40	lock nut	3.50" dia.		A563 DH
sw1	40	washer	3.50" dia.		F436
tb1	24	hex bolt	3.75" dia.	3"	A325
tb2	24	washer	3.75" dia.		F843
tb3	24	hex nut	3.75" dia.		A563 DH
an1	16	anchor bolt	2.25" dia.	3'-6"	S/S A276 T304
nt2	16	hex nut	2.25" dia.		S/S A194B T304
lk3	8	lock washer	2.25" dia.		S/S "Y 304
w2	8	flat washer	2.25" dia.		S/S "Y 304

STATE OF VERMONT
PHILIP B. CHENEY
6163
REGISTERED PROFESSIONAL ENGINEER

RECEIVED
CK'D BY GJC CK'D BY RK
JUL 27 2007
RESUBMIT____ APPROVED AS NOTED
BY DATE 08/08/07

REVISIONS		
No.	Remarks	Date
0	Initial submittal	

HIGHWAY SAFETY CORP.
GLASTONBURY, CT

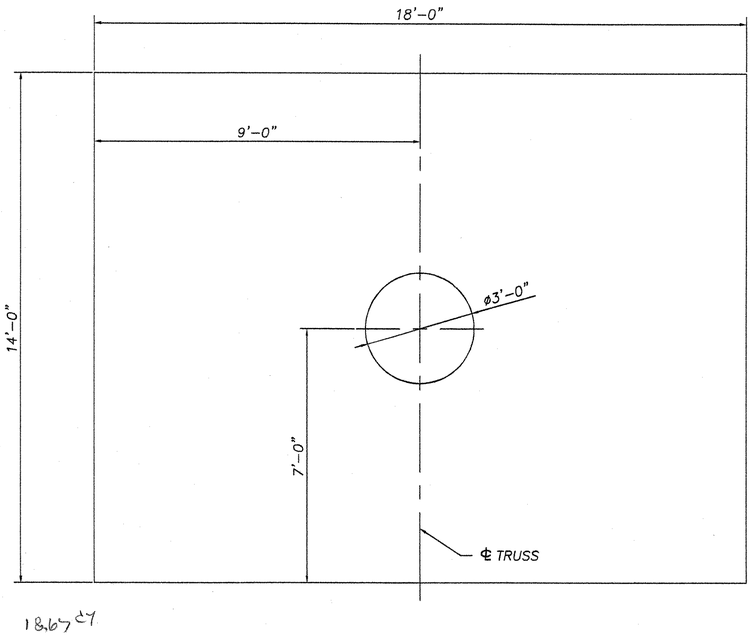
TRI-CHORD SIGN STRUCTURE
STATE OF VERMONT
COUNTY OF CALEDONIA
MM 10.970 NB
PROJECT No. HES 091-3(42)
HES 093-1(10)

GENERAL CONTRACTOR

SUB CONTRACTOR F.R. LAFAYETTE

DRAWN	MHM
CHECKED	P Radice
DATE	5/23/07
SCALE	N.T.S.
HSC REFERENCE NO.	1587g
SIZE	D
REVISION	0
SHEET NO.	7 of 8

252-5160.9

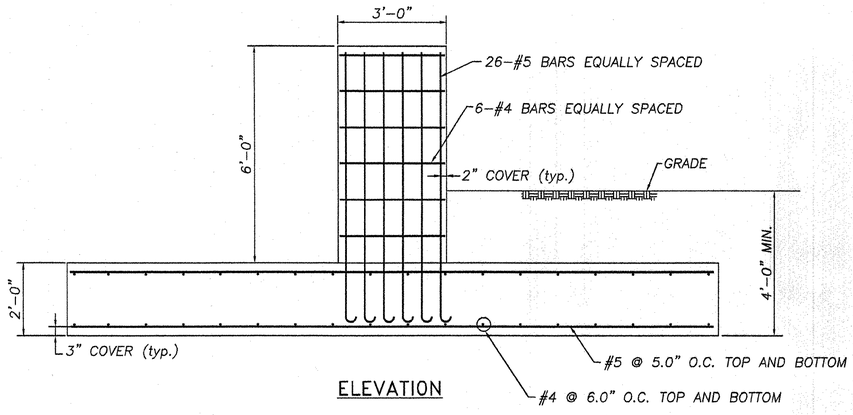


18.67 CY

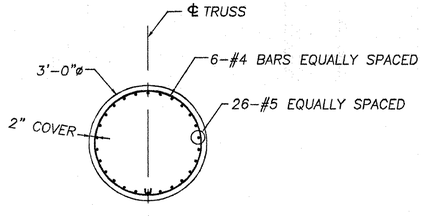
PLAN

REBAR LIST

REBAR	PCS. REQRD.	LENGTH
#4	12	9'-4"
#4	144	13'-6"
#5	136	17'-6"
#5 (HOOK ONE END)	52	8'-6"



ELEVATION



PLAN (STEM)

RECEIVED
CK'D BY Gal OK'D BY
JUL 27 2007
RESUBMIT APPROVED X
BY DATE 08/08/07

STATE OF VERMONT PHILIP B. CHENEY 6163 REGISTERED PROFESSIONAL ENGINEER

AISC QUALITY CERTIFICATION

REVISIONS		
No.	Remarks	Date
0	Initial submittal	

HIGHWAY SAFETY CORP.
GLASTONBURY, CT

TRI-CHORD SIGN STRUCTURE
STATE OF VERMONT
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PROJECT No. HES 091-3(42)
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DRAWN	MHM
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SCALE	N.T.S.
HSC REFERENCE NO.	1587g
SIZE	D
REVISION	0
SHEET NO.	8 of 8

253-516N-9