TRAFFIC SIGNING LETTING DATE 3/16/10

IM-029-8(38)150--13-97

WOODBURY CO.

IOWA ONE CALL SM
1-800-292-8989 | 811
www.iowaonecall.com

Iowa Department of Transportation

Highway Division

PLANS OF PROPOSED IMPROVEMENTS ON THE

INTERSTATE ROAD SYSTEM

WOODBURY COUNTY

TRAFFIC SIGNING

I-29 SIOUX CITY INTERSTATE AREA FROM 1.9 MILES
S. OF RIVERSIDE BLVD. INTERCHANGE N. TO BIG SIOUX RIVER

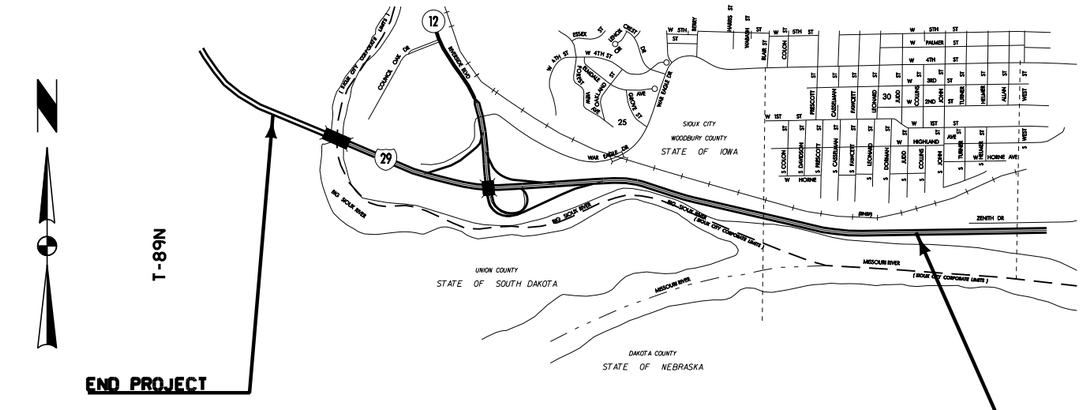
The Iowa Department of Transportation Standard Specifications for Highway and Bridge Construction, series 2001, plus General Supplemental Specifications; and applicable Supplemental Specifications, Developmental Specifications, and Special Provisions, shall apply to construction on this project.

Value Engineering Saves. Refer to Article 1105.15 of the Specifications.

REVISIONS

TOTAL 63
PROJECT INDENTIFICATION NUMBER
03-97-029-010-03
PROJECT NUMBER
IM-029-8(38)150--13-97
R.O.W. PROJECT NUMBER
ROW NUMBER

INDEX OF SHEETS — 105-3, 10-18-05



INDEX OF SEALS

SHEET NO.	NAME	TYPE
A.1	Michael J. Jorgensen	Traffic Signing
V.1	James R. Hauber	Structural Design

LICENSED PROFESSIONAL ENGINEER
Michael J. Jorgensen
12101
IOWA

I hereby certify that this plan was prepared by me or under my direct personal supervision and that I am a duly licensed Professional Engineer under the laws of the State of Iowa.

Signature — Date 12/01/09

Michael J. Jorgensen
Printed or Typed Name

My license renewal date is December 31, 20 10

Pages or sheets covered by this seal: A.1, C.1-C.5, N.1-N.16 and P.1-P.20

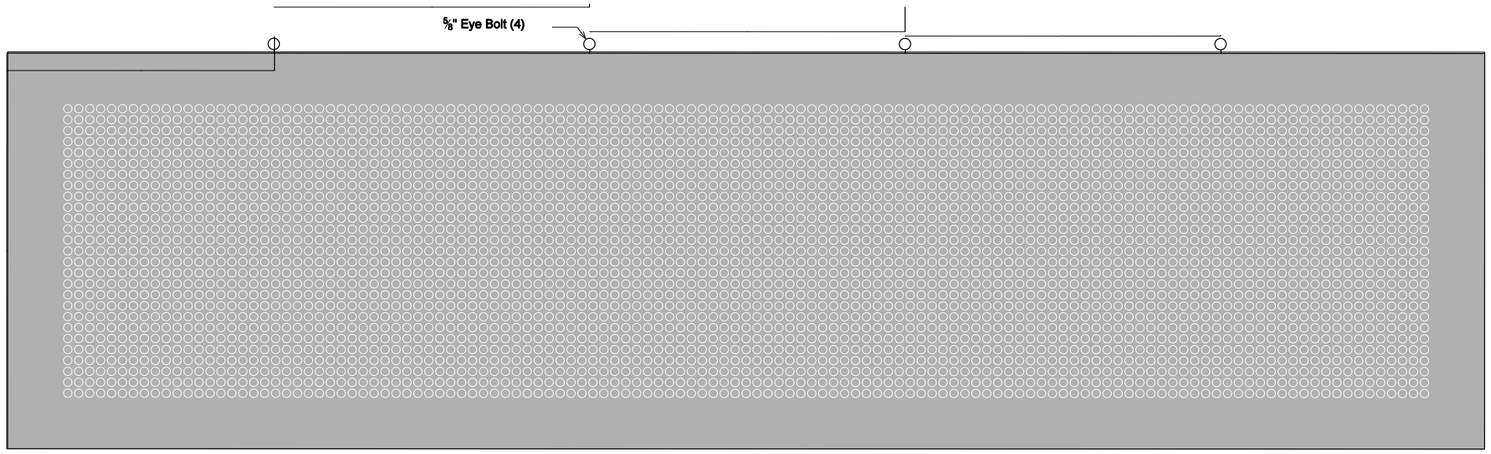
DGNSPEC USERNAME SYSTEMTIME

ENGLISH 10000 Resolution | Iowa Department of Transportation | OFFICE OF TRAFFIC & SAFETY | DESIGN TEAM JORGENSEN/RINGGENBERG | WOODBURY COUNTY | PROJECT NUMBER IM-029-8(38)150--13-97 | SHEET NUMBER A.1

DIMENSIONAL INFORMATION

Manufacturer: Daktronics
Model Number: VF-1000-27X125-18-W
Type: Full Matrix
Pixels: 125 x 27 (width x height)

Height: 7'10"
Width: 29' 1½"
Depth: 3'11"
Weight: 3950 lbs



STORAGE LOCATION

Iowa Department of Transportation
Hamilton Avenue Maintenance Facility
200 S. Hamilton Blvd.
Sioux City, IA 51108
Steve Botos

Steve Botos' contact information is:

E-mail: Steve.Botos@dot.iowa.gov
Phone: (712) 252-1836

TRANSPORTATION REQUIREMENTS

All material and equipment necessary to transport the sign to or from the storage site shall be furnished by the Contractor.

The sign shall be transported in the upright posititon. At no point in time shall the sign be laid on its side, front, or back.

To avoid damage to the sign during tranport, consult the sign manufacturer to determine the correct method to secure the sign to the trailer. Any damage incurred duing transportation shall be the responsibility of the Contractor.

STORAGE REQUIREMENTS

All material and equipment necessary to store the sign at the designated site shall be furnished by the Contractor.

The sign shall be stored upright and level. At no point in time shall the sign be laid on its side, front, or back.

The sign must be blocked up at least three inches from the ground. When the sign is not to be stored on concrete, extra blocking should be used to account for settlement.

To avoid damaging the bottom skin of the housing, blocking shall be placed directly beneath the sign's internal structural supports.

Remove all blocking from the DMS after installation on the sign truss.

During transportation and storage, the DMS shall be secured at all times to prevent tipping. The DMS shall be secured with dead man anchors or other suitable methods. Ensure that the DMS is not marred by the selected method. Tipping may be caused by any number of reasons, but high winds and other weather related events are the primary concern while the DMS is on the ground.

Any damage resulting from the failure to properly secure the DMS shall be the responsibility of the Contractor.

ATTACHMENT HARDWARE

All materials necessary to attach the DMS to the support structure will be furnished with the DMS.

Dry fit the DMS to the sign truss to determine the actual attachment bracket locations. Adjust the brackets to avoid conflicts between the U Bolts and the internal members of the sign truss. Drill the bolt holes in the Z bracket on the back of the DMS after conflicts are resolved.

After installation of the DMS onto the truss, ensure that all unused hardware (bolts, nuts, washers, etc), construction materials, tools and such are removed from the structure. The Contractor is liable for any damages that result from materials falling into traffic.

LIFTING REQUIREMENTS

The following procedures should be followed when lifting the sign for either removal or installation. This includes lifting the sign from the storage site to the trailer or the reverse, and from the trailer to the support structure or the reverse.

The Contractor shall provide all equipment necessary to lift the DMS.

The crane and lifting bar shall be rated to lift the weight of the sign.

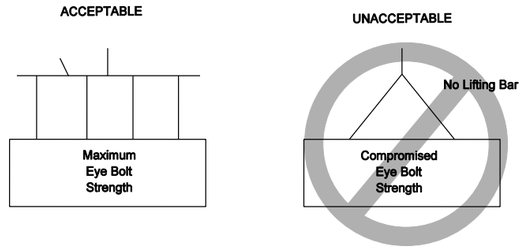
Any damage incurred during lifting shall be the responsibility of the Contractor.

Consult the manufaturer for complete lifting requirements.

** Daktronics Signs **

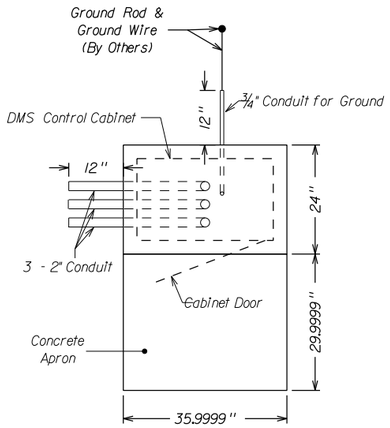
The eyebolts used to lift the sign shall be furnished by the Contractor.
The rated load of the eyebolts shall not be exceeded.
Consult Daktronics for specific information about the eyebolts.

The figures illustrate the correct (left example) and the incorrect (right example) method of lifting a sign. Lift the sign with the lifting bar as shown on the left. Use every lifting point (eyebolt) provided. Not doing so may cause the eyebolts to fail.

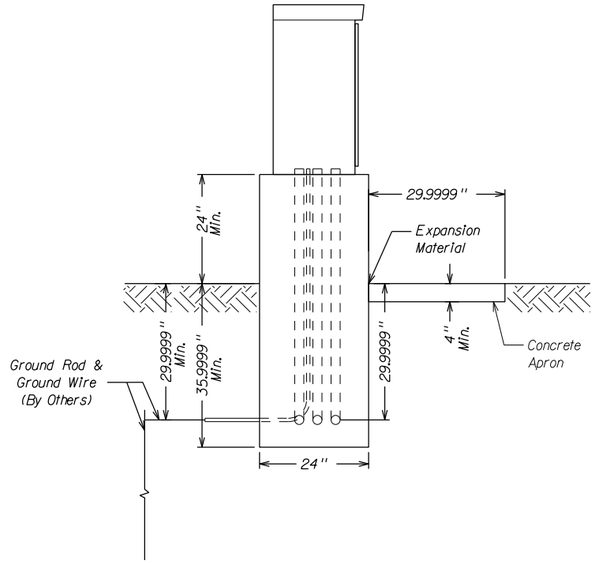


After installation, plug and seal the eyebolt openings as per the manufacturer's requirements. Any damage incurred by improperly sealed openings shall be the responsibility of the Contractor.

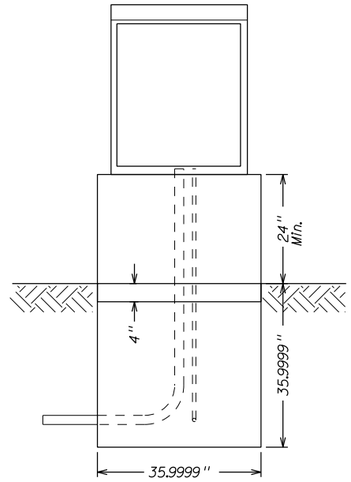
LARGE DYNAMIC MESSAGE SIGN TYPICAL DIMENSIONS AND CARE AND HANDLING REQUIREMENTS



Top View



Side View



Front View

Center DMS Cabinet on footing and attach with pull out anchors. Refer to IM 453.09 for approved anchors.

Center conduits in the footing. Prior to pouring the footing, confirm that no conflicts exist between the conduit placement and the control cabinet. Maintain at least 2" of clearance to the edge of the control cabinet.

Cap all open ends of conduit before backfilling. For future reference, mark the locations of all conduit entering the footing on the side which the conduit enters. Locate marks near the top to ensure they remain visible after backfilling and shaping.

Install socket type bell ends on conduit protruding from the footing. Finished conduit (including bell end) is to protrude 5 to 6 inches from the top of footing.

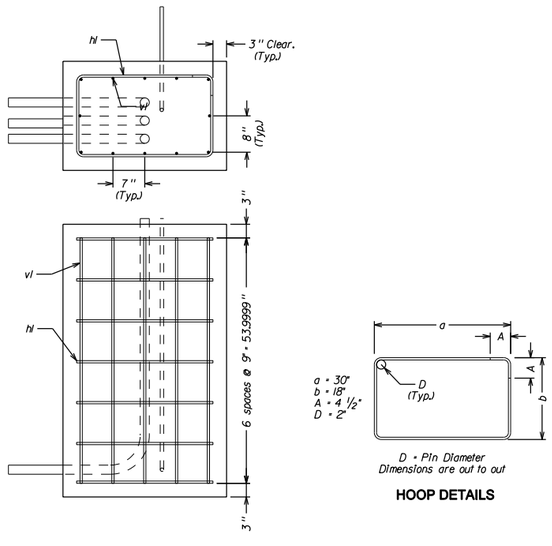
Use Class C Structural Concrete for the footing. Meet the requirements of Section 2403 for placement of the concrete. The top of the footing is to be level, and the top edges rounded with an edger.

Provide forms of sufficient strength to prevent warping, bulging, of other deflections. Refer to Section 2403.03 L for additional requirements.

Epoxy reinforcement to meet the requirements of Section 2404.

Conduit to meet the requirements of Section 2523.

Excavation, backfilling, and site restoration to meet the requirements of Section 2523.



HOOP DETAILS

Reinforcing Details

EPOXY REINFORCMENT QUANTITIES per footing				
BAR	QTY	SIZE	LENGTH	WEIGHT
v1	12	#4	54	36.1
h1	7	#4	105	40.9
Total Weight				77.0

CONCRETE QUANTITIES per footing location	
Footing	1.11 cu yd
Pad	0.09 cu yd

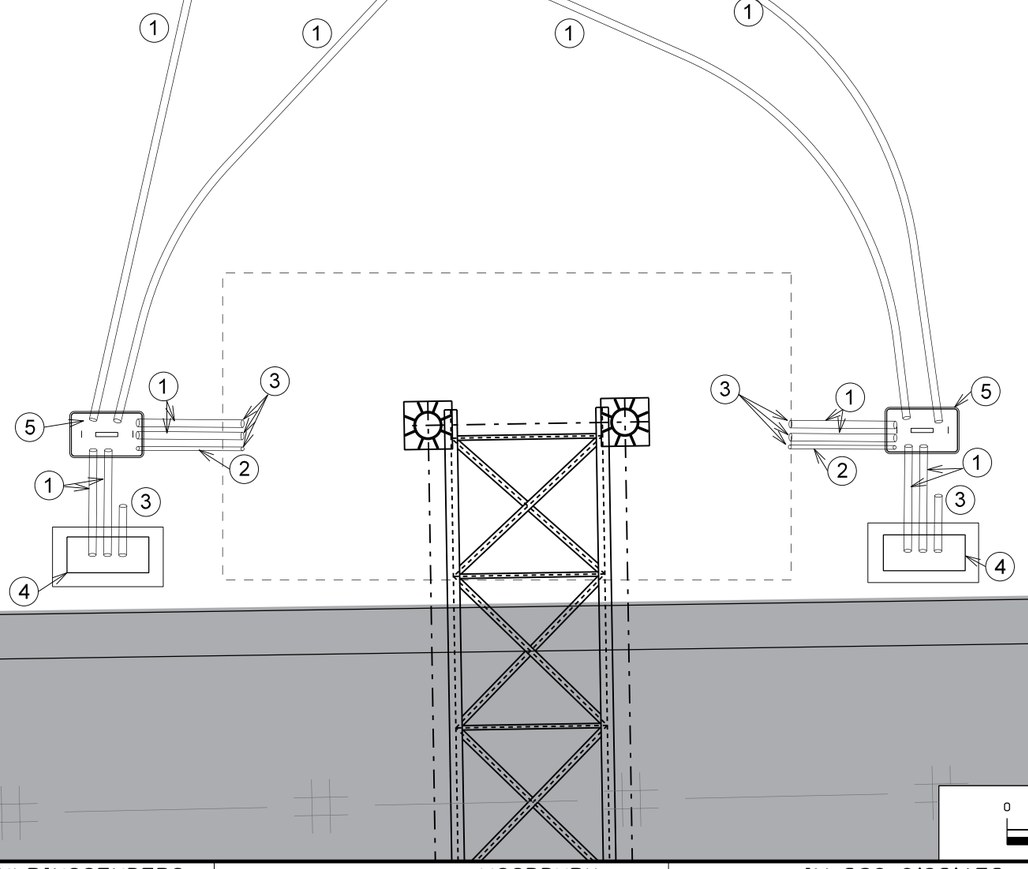
DMS CONTROL CABINET FOOTING DETAILS

SIOUX CITY TWP.
T-89N R-48W
SEC. 25

618

617+90
HHII-F0-07

618+00
HHII-E1-12



0 FEET 5

NOTES

1. 2 INCH CONDUIT
2. 1 INCH CONDUIT
3. STUB OUT CONDUIT
4. CONTROL CABINET
5. RM-38 JUNCTION BOX

DMS INSTALLATION APPURTENANCES

W:\Projects\P0012002\4702901003\TrafEng\Sec03\5_Segment-3_ITS\5_Segment03P00.sht
inarigo
11/25/2009

ENGLISH 10000 Resolution | Iowa Department of Transportation | OFFICE OF TRAFFIC & SAFETY | DESIGN TEAM JORGENSEN\RINGGENBERG | WOODBURY COUNTY | PROJECT NUMBER IM-029-8(30)150--13-97 | SHEET NUMBER B.3

ESTIMATED PROJECT QUANTITIES

ITEM NO.	ITEM CODE	ITEM	UNIT	TOTAL	AS BUILT QUAN.
1	2401-6745910	REMOVAL OF SIGN	EACH	5	
2	2402-2720000	EXCAVATION, CLASS 20	CY	370	
3	2403-0100000	STRUCTURAL CONCRETE (MISCELLANEOUS)	CY	135.0	
4	2404-7775005	REINFORCING STEEL, EPOXY COATED	LB	18,797	
5	2423-1010700	OVERHEAD SIGN SUPPORT STRUCTURE, ALUMINUM SUPERSTRUCTURE, 70 FT. SPAN	EACH	2	
6	2423-1050330	OVERHEAD SIGN SUPPORT STRUCTURE, CANTILEVERED, 33 FT. ARM	EACH	1	
7	2423-1050350	OVERHEAD SIGN SUPPORT STRUCTURE, CANTILEVERED, 35 FT. ARM	EACH	1	
8	2524-9081275	CONCRETE FOOTING FOR BREAKAWAY SIGN POST, 2'-8" DIA. X 7'-6"	EACH	8	
9	2524-9081290	CONCRETE FOOTING FOR BREAKAWAY SIGN POST, 2'-8" DIA. X 9'-0"	EACH	3	
10	2524-9090010	DELINEATORS, SINGLE WHITE (RE-7)	EACH	44	
11	2524-9090011	DELINEATORS, DOUBLE WHITE (RE-7)	EACH	17	
12	2524-9210005	MILEPOST MARKERS, D10-3A	EACH	2	
13	2524-9275222	WOOD POSTS FOR TYPE A OR B SIGNS, 4 IN. X 6 IN.	LF	80.0	
14	2524-9281210	STEEL BREAKAWAY SIGN POSTS FOR TYPE A OR B SIGNS, W 8 X 21	LF	53.0	
15	2524-9281426	STEEL BREAKAWAY SIGN POSTS FOR TYPE A OR B SIGNS, W 12 X 26	LF	191.0	
16	2524-9380001	TYPE B SIGNS, EXTRUDED ALUMINUM STRUCTURAL PANELS	SF	1,676	
17	2528-8445110	TRAFFIC CONTROL	LS	1.00	
18	2533-4980005	MOBILIZATION	LS	1.00	
19	2599-9999005	DMS INSTALLATION	EACH	1	
20	2599-9999005	FURNISH AND INSTALL ITS CONDUIT SYSTEM	EACH	1	
21	2599-9999005	TYPE A SIGN, INSTALLATION ONLY	EACH	5	
22	2599-9999009	DRILLED SHAFT	LF	50.0	
23	2599-9999009	PERFORATED SQUARE TUBE POSTS	LF	120.0	

ESTIMATE REFERENCE INFORMATION

ITEM NO.	ITEM CODE	DESCRIPTION
1	2401-6745910	REMOVAL OF SIGN Refer to tabulation 190-62 and sheet N.17 for location and details.
2 3 4	2402-2720000 2403-0100000 2404-7775005	EXCAVATION, CLASS 20 STRUCTURAL CONCRETE (MISCELLANEOUS) REINFORCING STEEL, EPOXY COATED Refer to tabulation 190-52 for locations and details.
5 6 7	2423-1010700 2423-1050330 2423-1050350	OVERHEAD SIGN SUPPORT STRUCTURE, ALUMINUM SUPERSTRUCTURE, 70 FT. SPAN OVERHEAD SIGN SUPPORT STRUCTURE, CANTILEVERED, 33 FT. ARM OVERHEAD SIGN SUPPORT STRUCTURE, CANTILEVERED, 35 FT. ARM Refer to tabulation 190-25 for locations and details.
8 9	2524-9081275 2524-9081290	CONCRETE FOOTING FOR BREAKAWAY SIGN POST, 2'-8" DIA. X 7'-6" CONCRETE FOOTING FOR BREAKAWAY SIGN POST, 2'-8" DIA. X 9'-0" Items are for the installation of steel post sign supports for Type B signs. Refer tabulation 190-50 for locations and details.
10 11 12	2524-9090010 2524-9090011 2524-9210005	DELINEATORS, SINGLE WHITE (RE-7) DELINEATORS, DOUBLE WHITE (RE-7) MILEPOST MARKERS, D10-3A Refer to tabulation 190-25 for locations and details.
13	2524-9275222	WOOD POSTS FOR TYPE A OR B SIGNS, 4 IN. X 6 IN. Refer to Tabulation 190-51 and 190-50 for locations and details.
14 15	2524-9281210 2524-9281426	STEEL BREAKAWAY SIGN POSTS FOR TYPE A OR B SIGNS, W 8 X 21 STEEL BREAKAWAY SIGN POSTS FOR TYPE A OR B SIGNS, W 12 X 26 Items are for the installation of steel post sign supports for Type B signs. Refer tabulation 190-50 for locations and details.
16	2524-9380001	TYPE B SIGNS, EXTRUDED ALUMINUM STRUCTURAL PANELS Items are for the fabrication and installation of Type B signs. Refer tabulation 190-50 for locations and details.
17	2528-8445110	TRAFFIC CONTROL - -
18	2533-4980005	MOBILIZATION - -

TRAFFIC CONTROL PLAN

108-23
04-04-89

Refer to project IM-029-8(36)150--13-97 for Traffic Control Plan

ESTIMATE REFERENCE INFORMATION

ITEM NO.	ITEM CODE	DESCRIPTION
19	2599-9999005	DMS INSTALLATION This bid item is for the installation of a Dynamic Message Sign (DMS) onto an overhead sign support structure. The DMS will be provided by the Iowa Department of Transportation. METHOD OF MEASUREMENT: The Engineer will count each DMS installed. BASIS OF PAYMENT: For each DMS and associated appurtenances installed, the Contractor will be paid the contract unit price.
20	2599-9999005	FURNISH AND INSTALL ITS CONDUIT SYSTEM Refer to the P sheets and SP-090035.
21	2599-9999005	TYPE A SIGN, INSTALLATION ONLY This item shall consist of installation of Type A signs. Type A signs to be installed will be furnished as shown in the plans. Type A signs will be available for pickup from a DOT storage area, as designated by the Engineer. The signs shall be installed, on posts or other sign support structure, as shown in the plans. Installation shall be in accordance with Articles 2524.07 and 2524.10. Measurement: The Engineer will count each Type A sign installed. Payment: For each Type A sign installed, the Contractor shall be paid the contract unit price. This payment shall be full compensation for erecting the signs complete, including installing the sign as shown in the plans, furnishing all labor, and furnishing all other details necessary to provide the signs complete and erected in place.
22	2599-9999009	DRILLED SHAFT Refer to sheets V.17 and V.18 for Details
23	2599-9999009	PERFORATED SQUARE TUBE POSTS Item is for the installation of Type A signs on perforated square tube posts. See tabulation 190-51 for locations and details where this type of post is to be used. The bid item total estimates that: 6 - 20ft posts are required. Final post lengths will depend on the sight conditions, including offsets and mounting heights of the sign, and foreslopes along the roadway. If perforated square tube posts are cut in the field, cut ends shall be coated with zinc rich paint as per specifications. Use a 42 - inch minimum length, heavy duty, winged unibase anchor, or an equivelent multi-piece anchor for both types of assemblies. Use a 2" 12 gauge post for all other assemblies. Use a 2.25" anchor sleeve with a minimum 12"x13" soil bearing wing. Measurement: Measurement will be to the nearest foot of each post size installed. Payment: Payment will be made at the contract unit price per linear foot of each post size installed. This payment shall be full compensation for furnishing, fabricating, and erecting the posts, including galvanizing and other details necessary to provide the sign posts complete and erect in place.

STANDARD ROAD PLANS

105-4
10-16-07

The following Standard Road Plans shall be considered applicable to construction work on this project.

Number	Date	Sheets	Title
SI-101	04-21-09		Locations - Type 'A' Signs
SI-102	10-20-09		Locations - Type 'B' Signs
SI-111	10-20-09		Support Structures - Wood Posts
SI-113	10-20-09		Support Structures - Steel Breakaway Posts
SI-119	10-20-09		Support Structures - Mounting Brackets
SI-123	10-20-09		Fabrication - Type 'B' Signs
SI-131	10-20-09		Sign Installation - Type 'A' Signs
SI-132	10-20-09		Installation - Type 'B' Signs
TC-1	10-17-06		Work not Affecting Traffic
TC-402	10-21-08		Shoulder Closure

SIGNING NOTES

SIGN-NOTE 09-25-02

GENERAL:

Materials and construction shall conform to the requirements of the applicable sections of the "Iowa Department of Transportation Standard Specifications for Highway and Bridge Construction, series 2001" plus General Supplemental Specifications; and applicable Supplemental Specifications, Developmental Specifications, and Special Provisions.

The exact location of installation for any item is subject to approval by the engineer.

Before excavation, the contractor shall check for the locations of utilities, drainage structures and other facilities in the construction area. Any damage to such facilities due to the contractor's activities shall be repaired at his expense.

During construction of this project the contractor will be required to coordinate his operations with those of other contractors working within the same area.

The following shall apply for both English and Metric projects.

All sign details shown in the plans are in English units because the signs are manufactured using English units. If the project is in Metric units, the outside dimensions of each sign are shown in both units.

All bid quantities have been shown in the units of the project.

The following tolerances will be allowed on all signs:

Accumulation error of not greater than +/- 0.50" per line of copy, not greater than +/- 0.50" for spacing between lines of copy, and the margin between lines of copy and the inside edge of the sign border.

The following tolerances will be allowed on each letter or numeral: (The measurements will be made to the nearest*".)

nominal height	variation in height	variation in width
4" thru 12"	-1/8" to +3/8"	-1/4" to +1/4"
over 12"	-1/8" to +3/8"	-3/8" to +3/8"

Type B signs can be separated into two categories:
Major Guide Signs, and
Minor Guide Signs

Major Guide Signs include the advance and exit direction guide signs for an interchange or intersection.

Minor Guide Signs include all other guide signs such as next exits signs, supplemental guide signs, logo signs, exit gore signs, post-interchange mileage signs, ramp destination signs, and ramp logo signs for an interchange; and destination signs along sideroads.

Type A signs are not separated into categories, but special consideration should be given to regulatory signs.

Existing Type B signs shall remain in place until the new replacement signs are installed. If construction activities require the removal of a sign prior to installation of the replacement sign, the existing sign may be relocated to temporary posts, or a temporary plywood sign may be installed to replace the existing sign.

Existing non-regulatory Type A signs are NOT required to remain in place until installation of a replacement sign. Existing regulatory Type A signs, particulary Stop signs, should not be removed until the replacement sign is installed. This guideline may not apply if the traffic control plans have sufficient temporary signing.

During the replacement or modification of signs, no more than one of the major guide sign for each direction of travel at an interchange shall be out of service at any one time. No major guide sign shall be out of service for more than 8 hours. Minor guide signs shall not be out of service for more than 24 hours.

Existing signs and posts shall be removed within 24 hours following the installation of a new replacement sign.

SIGNING NOTES

SIGN-NOTE 09-25-02

In any case where the plans call for a new sign and posts to be installed at the same station location and offset as an existing sign, the new posts will be installed at a minimum of either 5 ft (1.5 m) ahead or behind the existing sign installation. Whenever posts for a replacement sign are erected directly in front of an existing sign, the new replacement sign shall be installed and the existing sign installation shall be removed within 24 hours of the time that the new posts are erected.

Where signs are located behind guardrail, the near edge of the sign shall be a minimum of 3 ft (1 m) behind the guardrail posts. The engineer may approve reducing this distance to a minimum of 1 ft (0.3 m) where field conditions warrant.

Unless otherwise noted, auxiliary panels such as exit number panels shall remain or be reattached to the sign using the existing mounting hardware. Also, when replacing an existing logo sign with a new logo sign, the business logo panel(s) will be removed from the existing sign and attached to the new sign as directed by the engineer. Care should be taken to prevent damage to the auxiliary or logo panels when removing and reattaching them. This work shall be considered incidental and no separate payment will be made.

In the location columns of Tabulation TYPE-B, the following symbols are used:
(R) = Ramp
(X) = Crossroad/Intersecting Road at Interchange
(M) = Metric Station Number
(L) = Left Side of Roadway

The following notes shall apply to the corresponding sign installations shown on the plan sheets and listed in the tabulations.

IB INSTALL NEW TYPE B SIGN
IA INSTALL NEW TYPE A SIGN

The Contractor shall install new signs at the locations identified in the plans.

For installation of new signs on existing posts:

- if the new sign is taller than the existing sign, the Contractor shall furnish the necessary hardware to extend the sign above the posts. Refer to Standard Road Plan SI-132.

- if the new sign is shorter that the existing sign,

  for wood posts, the Contractor shall install the sign at the proper height and cut off the excess post length.

  for steel posts, the Contractor shall install the sign at the top of the posts.

For installation of new signs on an existing sign support structure, refer to note (L).

All costs incurred for mounting hardware, extension of signs above existing posts, and cutting off wood posts shall be considered incidental to the price bid for Type A or Type B signs.

MS MODIFY EXISTING SIGN ASSEMBLY

The Contractor shall modify the copy on the existing sign as shown in the plan.

Existing copy which is removed shall delivered to a DOT storage area within 50 mi (80 km), as designated by the Engineer.

The Contractor shall install the new copy as needed to make the sign modifications.

All costs for copy removal, delivery to a DOT storage area, and installation of new copy shall be included in the price bid for sign modification.

SIGNING NOTES

SIGN-NOTE 09-25-02

MB INSTALL SPECIAL MOUNTING BRACKET

Special mounting brackets shall be installed at the locations identified in the plans. Refer to the tabulations TYPE-A, MILEPOST, and/or MNT-BRK details.

PW INSTALL NEW WOOD POSTS
PB INSTALL NEW BREAKAWAY STEEL POSTS AND FOOTINGS

New wood posts or breakaway steel posts and footings shall be installed at the locations indicated in the plans. Refer to tabulations TYPE-A and TYPE-B for post size and footing information.

If note (RR) accompanies either (PW) or (PB), an existing sign will be installed on the new posts.

RR REMOVE AND REINSTALL EXISTING SIGN:

Existing major Type B guide signs on posts shall not be removed until the new posts are installed. Then the sign shall be removed and promptly installed at the new location.

Existing major Type B guide signs on overhead support structures, minor Type B guide signs, plywood signs, and Type A signs may be removed and stored. The Contractor may remove the signs and transport them to a DOT storage area within 50 mi (80 km), as designated by the Engineer. The Contractor shall transport the signs back to the job site when ready for installation at the new location.

Signs damaged by the Contractor's activities shall be replaced at the Contractor's cost.

All costs for the sign removal, delivery to the DOT storage area (if applicable), and reinstallation shall be included in the price bid for remove and reinstall existing sign.

RA REMOVE EXISTING TYPE A SIGN ASSEMBLY
RB REMOVE EXISTING TYPE B SIGN ASSEMBLY

A Type A Sign Assembly consists of
- one or more signs,
- installed on one or more wood posts,
- either directly mounted to the post, or mounted to the post with special sign mounting brackets.

A Type B Sign Assembly consists of
- the main sign,
- all auxiliary signs and brackets, and
- the wood or steel posts.

Unless stated otherwise in the plans, all posts shall be removed with the signs and brackets.

The Contractor shall remove each sign assembly identified in the plans. Steel posts removed shall become the property of the Contractor. All other materials removed shall remain the property of the DOT.

Each sign assembly removed, shall be disassembled before delivery to the DOT. For Type A sign assemblies, the Contractor shall unbolt all signs, special mounting brackets, and posts from each other. For Type B sign assemblies, the Contractor shall unbolt all extruded aluminum panels, brackets, and posts from each other. Care should be taken not to damage the disassembled materials.

Holes remaining from the removal of wood posts shall be backfilled and restored to the normal surrounding conditions. This work shall be considered incidental and no separate payment will be made.

The Contractor shall deliver the removed signs, special sign mounting brackets, extruded aluminum panels, and wood posts to a DOT storage area within 50 mi (80 km), as designated by the Engineer.

SIGNING NOTES

SIGN-NOTE 09-25-02

The concrete footings for steel posts are not considered part of the sign assembly.

All costs for the sign assembly removal and disassembly, post removal (if applicable), restoration of the surrounding conditions, and delivery to the DOT storage area shall be included in the price bid for removal of sign.

RF REMOVE EXISTING CONCRETE FOOTING FOR STEEL POST

Existing concrete footings shall be removed to a depth of 1 ft (0.3 m) below ground. The remaining holes shall be backfilled and restored to the normal surrounding conditions. This work shall be considered incidental and no separate payment will be made.

RS REMOVE EXISTING TYPE B SIGN SUPPORT STRUCTURE

The following are considered Type B Sign Support Structures:

- overhead sign truss and footings,
- cantilevered sign truss and footing, or
- bridge mounted brackets.

For removal purposes, wood and steel posts are not considered Type B Sign Support Structures.

Unless otherwise directed in the plans, the existing overhead trusses, cantilevered trusses, and bridge brackets, which are removed, shall become the property of the Contractor. If stated in the plan, the Contractor shall deliver the overhead trusses, cantilevered trusses, and bridge brackets to a DOT storage area within 50 mi (80 km), as designated by the Engineer.

All costs for the sign support structure removal, delivery to the DOT storage area (if applicable), and restoration of the surrounding conditions shall be included in the price bid for removal of sign support structure and footing.

L MODIFY SIGN SUPPORT ANGLES NEEDED TO INSTALL SIGNS ON EXISTING SIGN SUPPORT STRUCTURES

Refer to the sign support structure details for information on the required angle brackets.

Provided all specifications are met, the existing sign support angles may be reused. Existing sign support angles to be reused shall only be installed on the sign support structure from which they were removed.

Any sign support angles removed and not reused shall become the property of the Contractor.

When reusing the existing sign support angles with a shorter replacement sign, the sign support angles may need to be trimmed. Refer to the sign support structure details to determine if and where to trim the sign support angles.

Existing fasteners shall not be reused. New stainless steel bolts and nuts shall be used to install the existing or new sign support angles to the sign support structure.

Payment will not be made for the removal of existing sign support angles. This work shall be included in the price bid for removal of the sign.

Payment will not be made for reinstallation, and/or modification of existing sign support angles; furnishing and installation of new sign support angles (if required); and furnishing and installation of new fasteners. This work shall be included in the price bid for Type B signs.

TABULATION OF MATERIALS FOR TYPE 'B' SIGNS

190-50
08-22-06

NO.	SIGN NUMBER RTE.	CO.	EXIT NO.	ROAD ID M,R,S	SEQ. NO.	DIR OF TRAVEL	SIGN LOCATION M.P.	STATION	FAB INFO	SIGN WIDTH (ft)	SIGN HEIGHT (ft)	NEW AREA (SQ. ft)	WOOD POSTS 4X6 L (ft)	M (ft)	R (ft)	STEEL BREAKAWAY POSTS W8x21 L (ft)	M (ft)	R (ft)	FOOTING 2'8"x7'6" (each)	W12x26 L (ft)	M1 (ft)	M2 (ft)	R (ft)	FOOTING 2'8"x9' (each)	INSTALLATION TYPE	DIM "X" (ft)	DIM "Y" (ft)	SEE SIGNING NOTES	REMARKS
	29	97	149	M	002	S		593+55	new	23.5	8.5	199.75																IB	
	29	97	149	M	001	S		612+50	new	21	14.5	304.5																IB	
	29	97	149	M	001A				new	8.5	2.5	21.25																IB	
	29	97	149	M	001B				new	6.5	7	45.5																IB	
	29	97	151	M	009	S		662+00	new	15	7	105				14.808	0	17.808	2						1	30	7	IB/PB	
	29	97	151	M	008	S		670+00	new	11	5	55				9.208	0	11.208	2						1	30	7	IB/PB	
	29	97	151	M	007	S		677+75	new	7.5	5	37.5	20	0	20										4			IB/PW	
	29	97	151	M	006	S		681+50	new	19	10.5	199.5																IB	
	29	97	151	M	006A				new	8	2.5	20																IB	
	29	97	151	M	005	S		688+00	new	16	14	224								28.108	26.208	0	24.608	3	1	30	7	IB/PB	
	29	97	151	M	003	S		686+05	new	17	12.5	212.5								24.416	24.416	0	24.416	3				IB/PB	
	29	97	151	M	002	S		676+75	new	19	10	190								19.416	0	0	19.416	2				IB/PB	
	29	97	151	M	002A				new	9	2.5	22.5																IB	
	29	97	151	M	001	S		668+75	new	10.5	6	63	20	0	20													IB/PW	
				TOTALS								1700	40	0	40	24.016	0	29.016	4	71.94	50.624	0	68.44	8					

* DIMENSIONS SHOWN ARE FOR ESTIMATING PURPOSES ONLY. THE CONTRACTOR WILL VERIFY ALL DIMENSIONS IN THE FIELD BEFORE DETAILING SHOP DRAWINGS.

TABULATION OF MATERIALS FOR TYPE 'A' SIGNS

190-51
09-15-06

TYPE A SIGNING TYPICALS	SIGN NUMBER	DIR. OF TRAV.	SIGN LOCATION MILEPOST	STATION	WOOD POSTS REQUIRED NO. OF POSTS	PERFORATED SQ TUBE POSTS LEG 1 (ft)	LEG 2 (ft)	TYPE A SIGN MOUNTING BRACKETS ONE POST BRACKET	TWO POST BRACKET	AUXILIARY BRACKET	H BRACKET	F BRACKET	F1 BRACKET	CROSSOVER DELINEATORS & OBJECT MARKERS OM2-3YH	DOUBLE YELLOW	INSTALLATION TYPE	DIM "X" (ft)	SEE SIGNING NOTES	REMARKS
	R2-1Y	S		628+00	2	20	20									1		IA/PW	
	R2-4A	S														1		IA	
	M1-1A	S		638+00	1	20										1		IA/PW	
	M1-6N	S			1	20										1		IA/PW	
	W4-1B	S		660+57	2	20	20									1		IA/PW	
TOTALS	5				6	80	40	0	0	0	0	0	0						

SUMMARY OF TYPE 'A' SIGNS

190-66
09-25-02

SIGN NUMBER	QUANTITY (EACH)	SIZE (INCHES)	D.O.T. STOCK NO.
M1-1A	1	24X24	812 513100
M1-6N	1	24x30	813 513740
R2-1Y	1	48X60	812 600267
R2-4A	1	48X48	812 600315
W4-1B	1	48X48	812 700480
TOTALS	5		

Note: Type 'A' signs furnished by DOT

TABULATION OF MATERIALS FOR OVERHEAD SIGN SUPPORT STRUCTURES

190-52
09-25-02

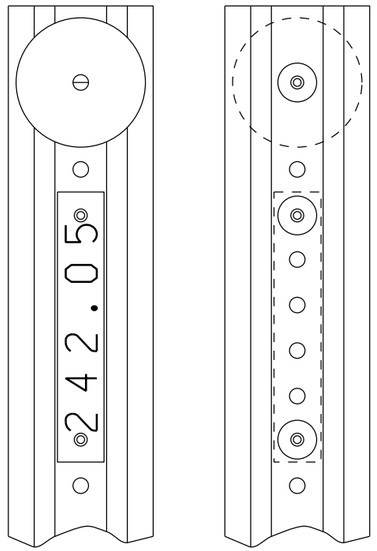
STRUCTURE TYPE/LENGTH	LOCATION MILEPOST	STATION	DIR OF TRAVEL	MEDIAN FOOTING OFFSET (Ft)	OUTSIDE FOOTING OFFSET (Ft)	DIMENSION 'L' MEDIAN (Ft)	OUTSIDE (Ft)	FOOTING TYPE (SEE SHEET)	FOUNDATION QUANTITIES EXCAVATION (CLASS 20) (Cu Yd)	REINFORCING STEEL (Lb)	EPOXY-COATED STEEL (Lb)	STRUCTURAL CONCRETE (Cu Yd)
35' Cantilever		593+50	S		10ft 6in			V.5	52.6		3662	21.9
Truss Footing Only		600+00	N	0				V.18	26.7		3877	10.7
70' Truss		612+50	S	0	5ft 6in	2	5	N.8	115.6		4129	41.46
70' Truss		618+00	S	0	5ft 6in	3	5	V.16 & N.9	104		4226	42.48
33' Cantilever		681+50	S	0	6ft 7in			V.6	70.8		2903	18.3
								TOTALS	369.7		18797	134.84

TABULATION OF MATERIALS FOR MILE MARKERS AND DELINEATORS

190-25
03-06-09

Refer to Standard Road Plans RE-7 and SI-171.

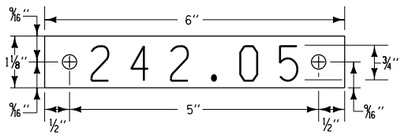
BEGIN STATION	END STATION	LOCATION	MILE MARKERS															DELINEATORS									INSTALLATION		REMARKS
			D10-1	D10-2	D10-3	D10-4	D10-5	D10-6	D10-1A	D10-2A	D10-3A	D10-5A	D10-6A	D10-1D	D10-2D	D10-3D	Equation Panels	D-1W with D10-4A	D-1W	D-2WV	OM2-3WV	OM2-3WH	D-1Y	D-2YV	OM2-3YV	OM2-3YH	TYPE	OFFSET	
584+33.9	594+89.9	Rt Side Only																	3								1	8	
592+25.9	Same	Rt Side Only, MM 150									1																1	8	
613+37.9	618+64.9	Rt Side Only																	3								1	8	
637+13.9	642+42.9	Rt Side Only																	3								1	8	
645+05.9	Same	Rt Side Only, MM 151									1																1	8	
655+61.9	676+73.9	Rt Side Only																	9								1	8	
684+65.9	687+29.9	Rt Side Only																	2								1	8	
6264+00.6	6278+00.6	Ramp B																	15								1	8	
679+00.6	685+00.6																			7							1	8	
		Ramp D																											
654+31.07	655+31.07																			10							1	8	
6456+33	6464+33																		9								1	8	
TOTALS			0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	44	17	0	0	0	0	0	0			



FRONT VIEW

BACK VIEW

DELINEATOR POST NUMBERING



D10-4A

Markers for each one-twentieth of a mile will be placed on the mainline delineator posts as illustrated.

The markers on the post shall consist of a number representing the proper mile. The numerals shall be on a non-reflectorized pressure-sensative face material. The non-reflectorized sheeting shall comply with specifications developed by the manufacturer of the reflective sheeting used in the fabrication of the reflectorized mile marker panels.

The markers shall be applied to properly treated aluminum blanks having a thickness of 0.063 inches in a manner specified by the sheeting manufacturer or by a method which shall produce an equivalent result.

The aluminum marker shall be fastened to the delineator post with aluminum pull-through, hollow, blind rivets with a diameter of 1/8" and a brazier head with a grip range of 0.126 to 0.250.

The holes in the marker panel shall be drilled with a No. 30 drill (0.128" diam.).

The numerals shall be black on a white background.

The aluminum markers will be required for delineators on either side of the roadway (i.e. for both directions of travel).

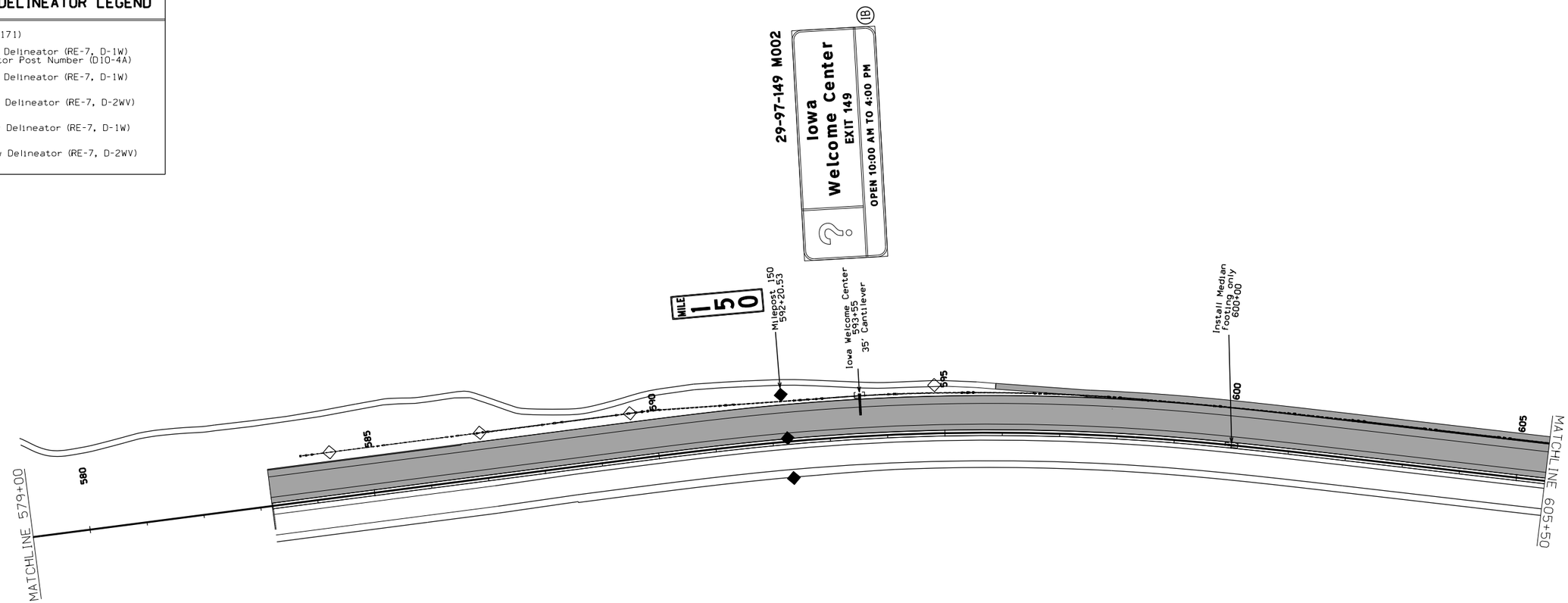
TABULATION OF EXISTING SIGNS TO BE REMOVED

190-62
08-24-06

SIGN NUMBER OR DESCRIPTION	LOCATION STATION (approximate)	DIR OF TRAVEL	TYPE "A" SIGN ASSEMBLY (each) (RA)	TYPE "B" SIGN ASSEMBLY (each) (RB)	REMOVE & REINSTALL EXISTING SIGNS TYPE "A" (each) (RR)	REMOVE & REINSTALL EXISTING SIGNS TYPE "B" (each) (RR)	CONCRETE FOOTING (each) (RF)	SUPPORT STRUCTURE & FOOTING (each) (RS)	APPLICABLE SIGNING NOTES	REMARKS
1	586+00	S		1					RB	Refer to sheet N.17
2	685+00	S		1					RB	Refer to sheet N.17
3	696+09	S		1					RB	Refer to sheet N.17
4	700+39	S		1					RB	Refer to sheet N.17
5	705+00	S		1					RB	Refer to sheet N.17
TOTALS			0	5	0	0	0	0		

MILEPOST & DELINEATOR LEGEND

- Milepost (SI-171)
- Single White Delineator (RE-7, D-1W) with Delineator Post Number (D10-4A)
- Single White Delineator (RE-7, D-1W)
- Double White Delineator (RE-7, D-2WV)
- Single Yellow Delineator (RE-7, D-1W)
- Double Yellow Delineator (RE-7, D-2WV)



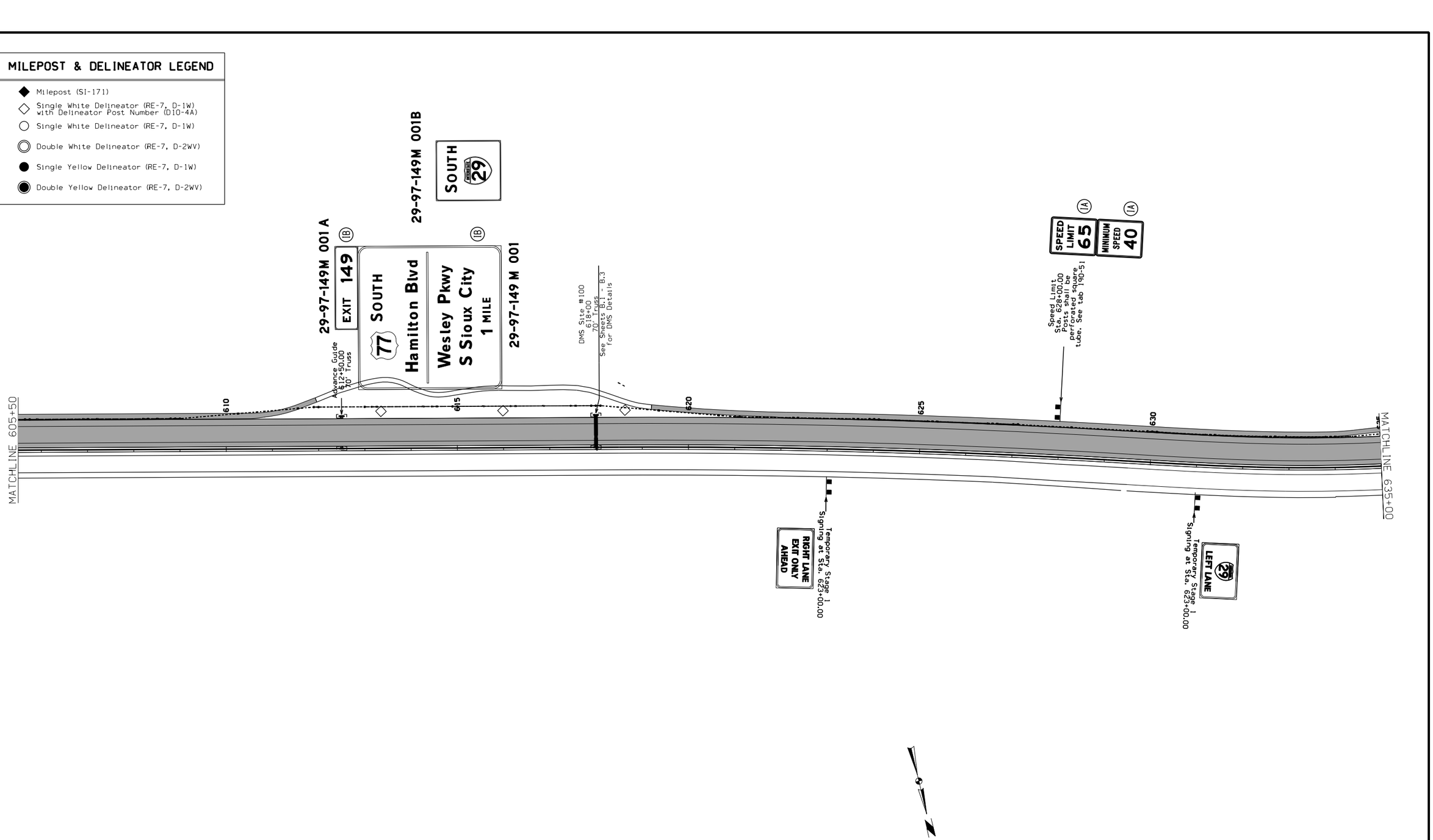
0 FEET 100

I-29 Woodbury Co
Riverside Interchange
Mainline Signing

ENGLISH 10000 Resolution	Iowa Department of Transportation	OFFICE OF TRAFFIC & SAFETY	DESIGN TEAM JORGENSEN/RINGGENBERG	WOODBURY COUNTY	PROJECT NUMBER IM-029-8(38)150--13-97	SHEET NUMBER N.1

MILEPOST & DELINEATOR LEGEND

- Milepost (SI-171)
- Single White Delineator (RE-7, D-1W) with Delineator Post Number (D10-4A)
- Single White Delineator (RE-7, D-1W)
- Double White Delineator (RE-7, D-2WV)
- Single Yellow Delineator (RE-7, D-1W)
- Double Yellow Delineator (RE-7, D-2WV)

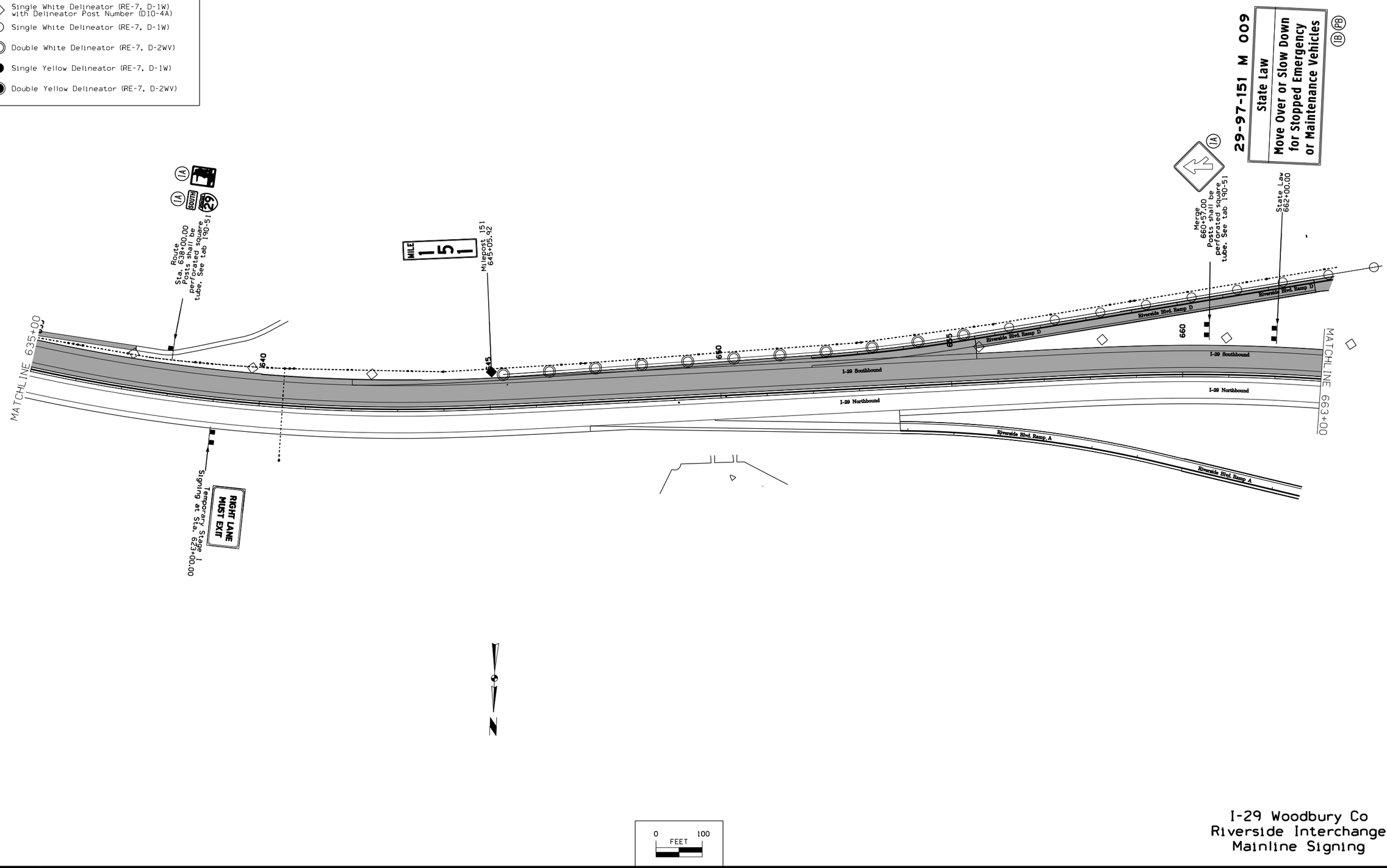


0 100 FEET

I-29 Woodbury Co
Riverside Interchange
Mainline Signing

MILEPOST & DELINEATOR LEGEND

- Milepost (SI-171)
- Single White Delineator (RE-7, D-1W) with Delineator Post Number (D10-4A)
- Single White Delineator (RE-7, D-1W)
- Double White Delineator (RE-7, D-2WV)
- Single Yellow Delineator (RE-7, D-1W)
- Double Yellow Delineator (RE-7, D-2WV)



I-29 Woodbury Co
Riverside Interchange
Mainline Signing

ENGLISH 10000 Resolution	Iowa Department of Transportation	OFFICE OF TRAFFIC & SAFETY	DESIGN TEAM JORGENSEN/RINGGENBERG	WOODBURY COUNTY	PROJECT NUMBER IM-029-8(38)150--13-97	SHEET NUMBER N.3

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MILEPOST & DELINEATOR LEGEND

- Milepost (SI-171)
- Single White Delineator (RE-7, D-1W) with Delineator Post Number (D10-4A)
- Single White Delineator (RE-7, D-1W)
- Double White Delineator (RE-7, D-2WV)
- Single Yellow Delineator (RE-7, D-1W)
- Double Yellow Delineator (RE-7, D-2WV)

29-97-151 M 008
IOWA STATE PATROL
HELP LINE
1-800-525-5555
9-1-1 FOR EMERGENCIES
(IB) (PB)

Help Info
670+00.00

29-97-151 M 007
(IB) (PW)
EXIT
151

Exit Gore
677+75.00

29-97-151 M 006A
(IB)
EXIT
151

NORTH
12
Riverside Blvd
(IB) (PB)

29-97-151 M 006

Final Guide
681+50.00
90' Truss

29-97-151 M 005
(IB) (PB)
THE PEOPLE OF
IOWA
WELCOME YOU

Welcome to Iowa
688+00.00

MATCHLINE 663+00

MATCHLINE 691+00

665 670 675 680 685 690

0 100
FEET

I-29 Woodbury Co
Riverside Interchange
Mainline Signing

ENGLISH 10000 Resolution	Iowa Department of Transportation	OFFICE OF TRAFFIC & SAFETY	DESIGN TEAM JORGENSEN/RINGGENBERG	WOODBURY COUNTY	PROJECT NUMBER IM-029-8(38)150--13-97	SHEET NUMBER N.4

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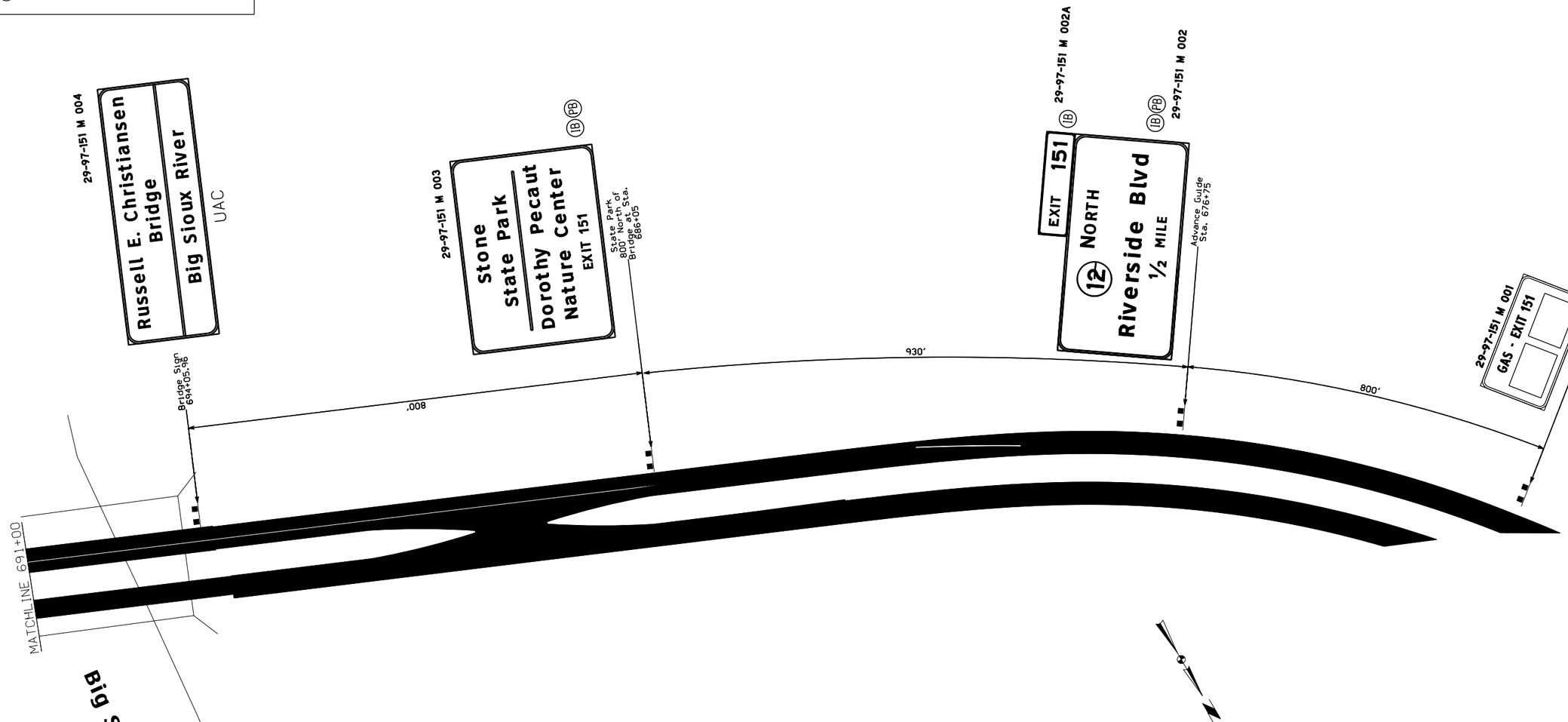
MILEPOST & DELINEATOR LEGEND

- Milepost (SI-171)
- Single White Delineator (RE-7, D-1W) with Delineator Post Number (D10-4A)
- Single White Delineator (RE-7, D-1W)
- Double White Delineator (RE-7, D-2WV)
- Single Yellow Delineator (RE-7, D-1W)
- Double Yellow Delineator (RE-7, D-2WV)



0 100 FEET

I-29 Woodbury Co
Riverside Interchange
Mainline Signing

ENGLISH 10000 Resolution	Iowa Department of Transportation	OFFICE OF TRAFFIC & SAFETY	DESIGN TEAM JORGENSEN/RINGGENBERG	WOODBURY COUNTY	PROJECT NUMBER IM-029-8(38)150--13-97	SHEET NUMBER N.5

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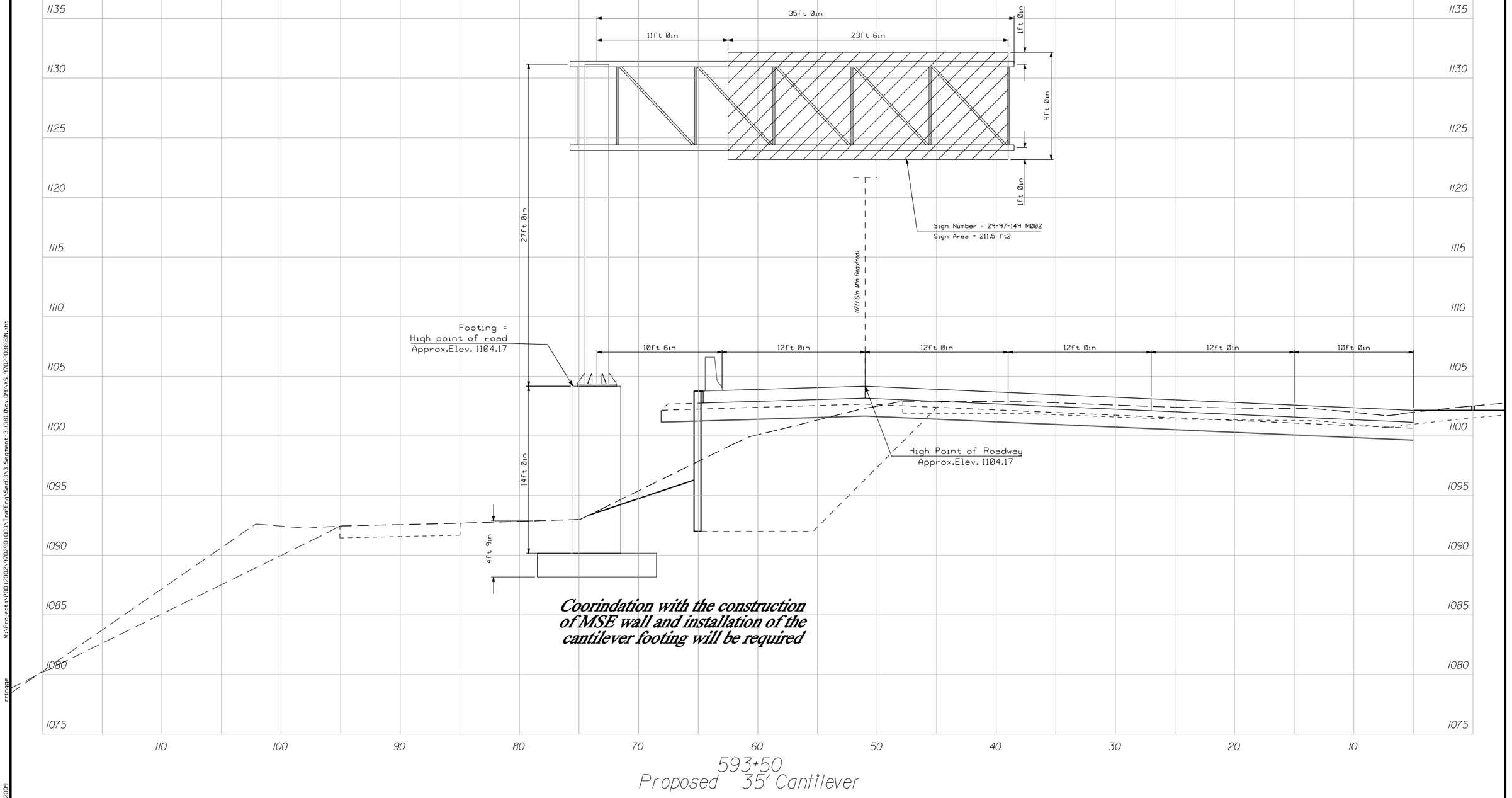
11/25/2009



Coorindation with the construction of MSE wall and installation of the cantilever footing will be required

593+50

Proposed 35' Cantilever

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11/25/2009

ENGLISH 10000 Resolution	Iowa Department of Transportation	OFFICE OF TRAFFIC & SAFETY	DESIGN TEAM JORGENSEN/RINGGENBERG	WOODBURY COUNTY	PROJECT NUMBER IM-029-8(38)150--13-97	SHEET NUMBER N.6	

65'

19'

9'

2.5'

10'

12.5'

21.5'

Truss, sign and outside footing installed
in project IM-029-8(39)150--13-97
November 2010 letting.

Top of Footing
Approx.Elev. 1107.81

5ft 0in

12ft 0in

10ft 0in

4ft 3in

High Point of Roadway
Approx.Elev. 1103.81

Median footing installed in project
IM-029-8(38)150--13-97

4ft 10in

L = 6

Existing
Sanitary Sewer
36 inch

600+00
Proposed Truss

ENGLISH 10000 Resolution	Iowa Department of Transportation	OFFICE OF TRAFFIC & SAFETY	DESIGN TEAM JORGENSEN/RINGGENBERG	WOODBURY COUNTY	PROJECT NUMBER IM-029-8(38)150--13-97	SHEET NUMBER N.7	

12/21/2009

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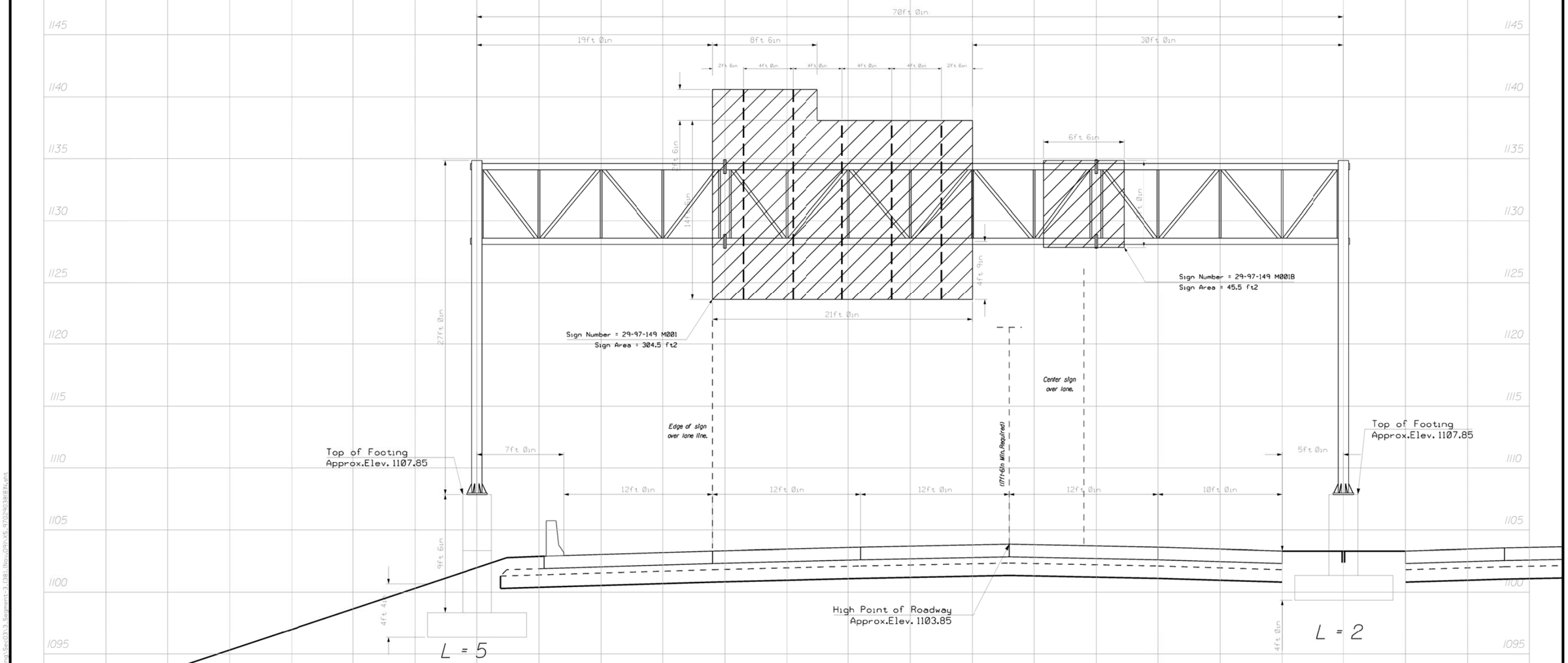


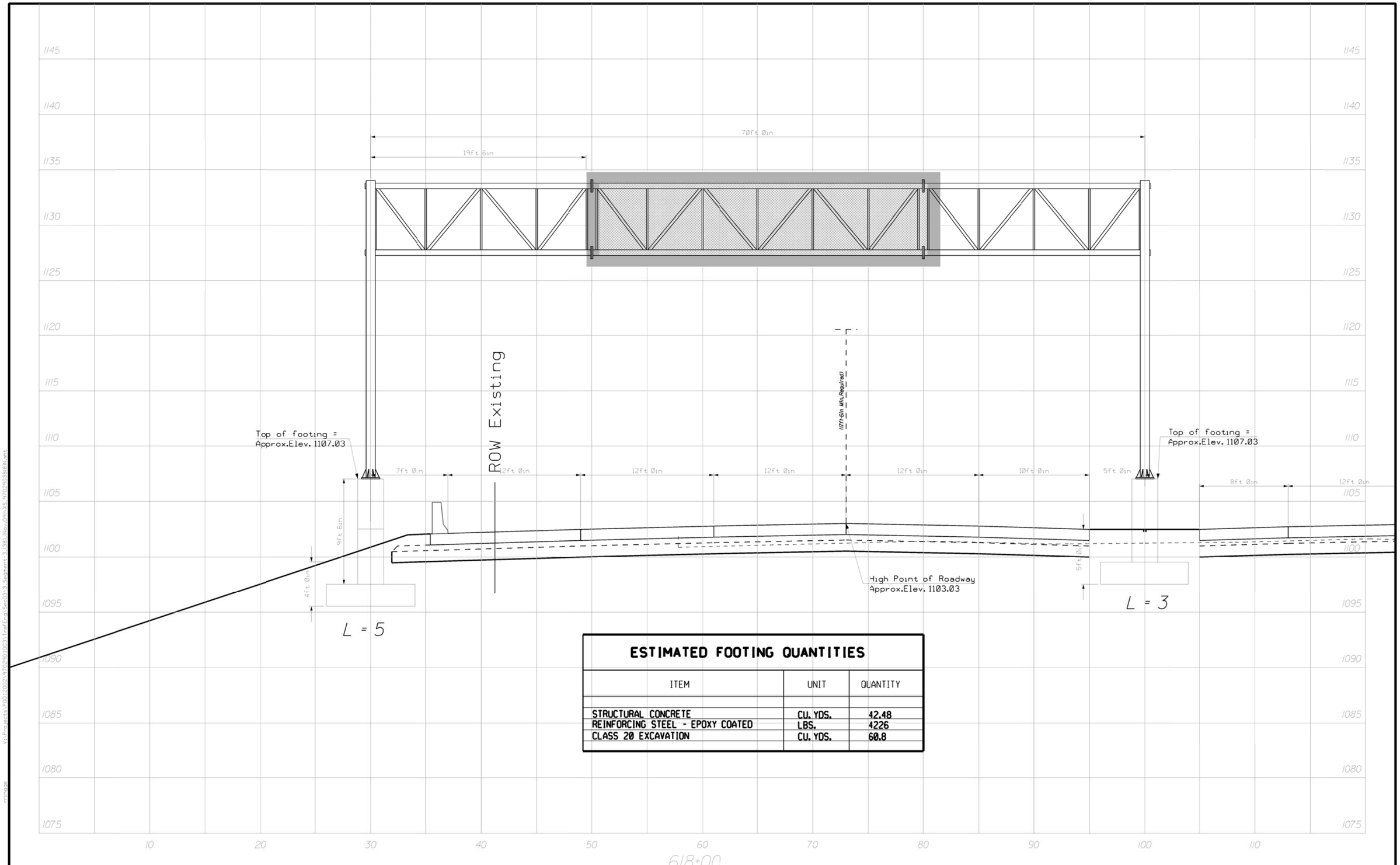
INDEX FOR OVERHEAD SIGN TRUSS STANDARDS

STOH-01-06	INDEX AND NOTES FOR 50' TO 100' SPANS
STOH-02-06	ELEVATION VIEWS FOR 50' TO 70' SPANS
STOH-03-06	BASE PLATE DETAILS FOR 50' TO 70' SPANS
STOH-08-06	TRUSS SUPPORT AND CHORD SPLICE DETAILS FOR 50' TO 100' SPANS
STOH-10-06	SIGN SUPPORT DETAILS FOR 50' TO 100' SPANS
STOH-14-06	DAMPING DEVICE DETAILS FOR 50' TO 100' SPANS
STOH-15-06	FOOTING DETAILS FOR 50' TO 100' SPANS

ESTIMATED FOOTING QUANTITIES

ITEM	UNIT	QUANTITY
STRUCTURAL CONCRETE	CU. YDS.	41.46
REINFORCING STEEL - EPOXY COATED	LBS.	4129
CLASS 20 EXCAVATION	CU. YDS.	56

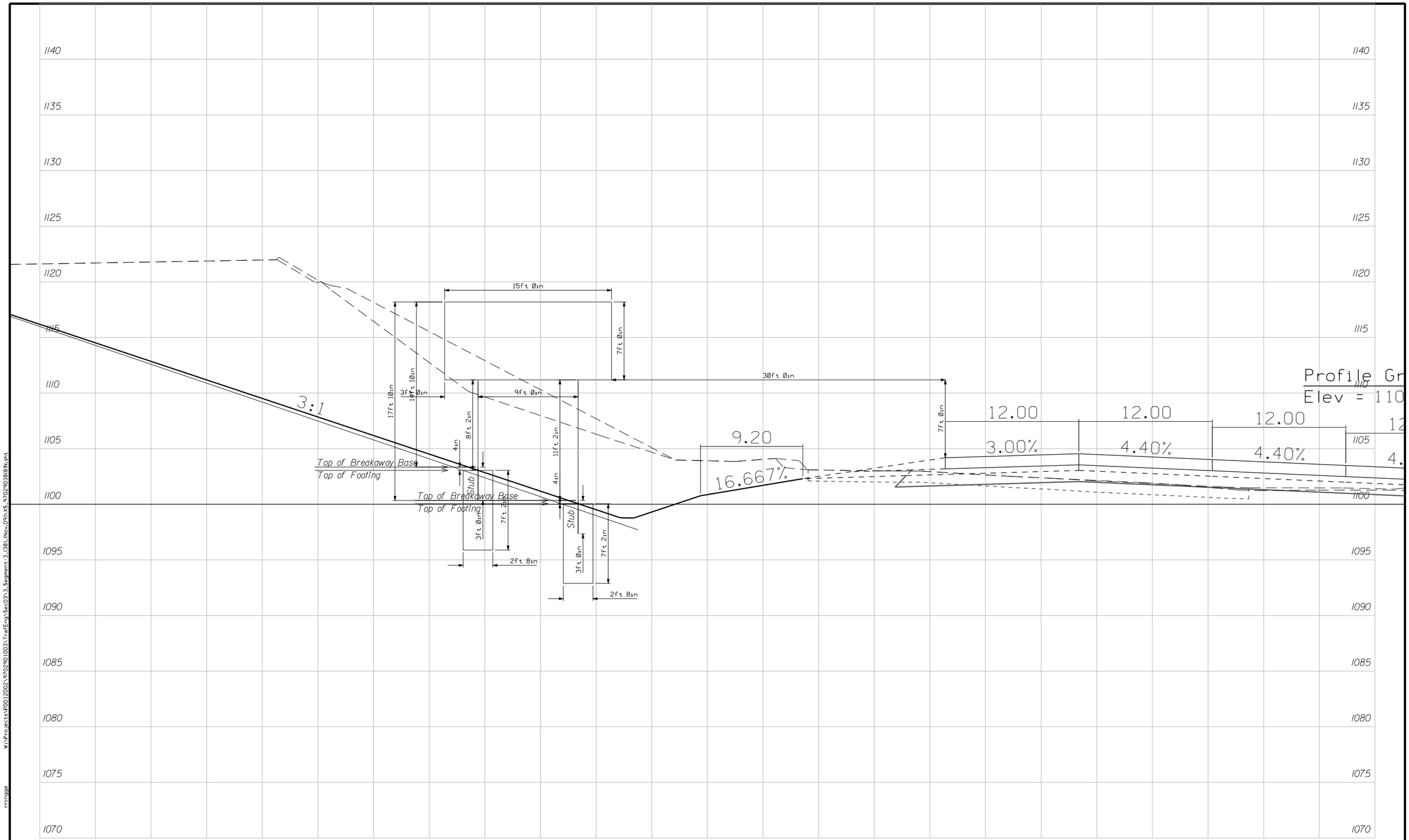
612+50
Proposed Truss



ESTIMATED FOOTING QUANTITIES

ITEM	UNIT	QUANTITY
STRUCTURAL CONCRETE	CU. YDS.	42.48
REINFORCING STEEL - EPOXY COATED	LBS.	4226
CLASS 20 EXCAVATION	CU. YDS.	60.8

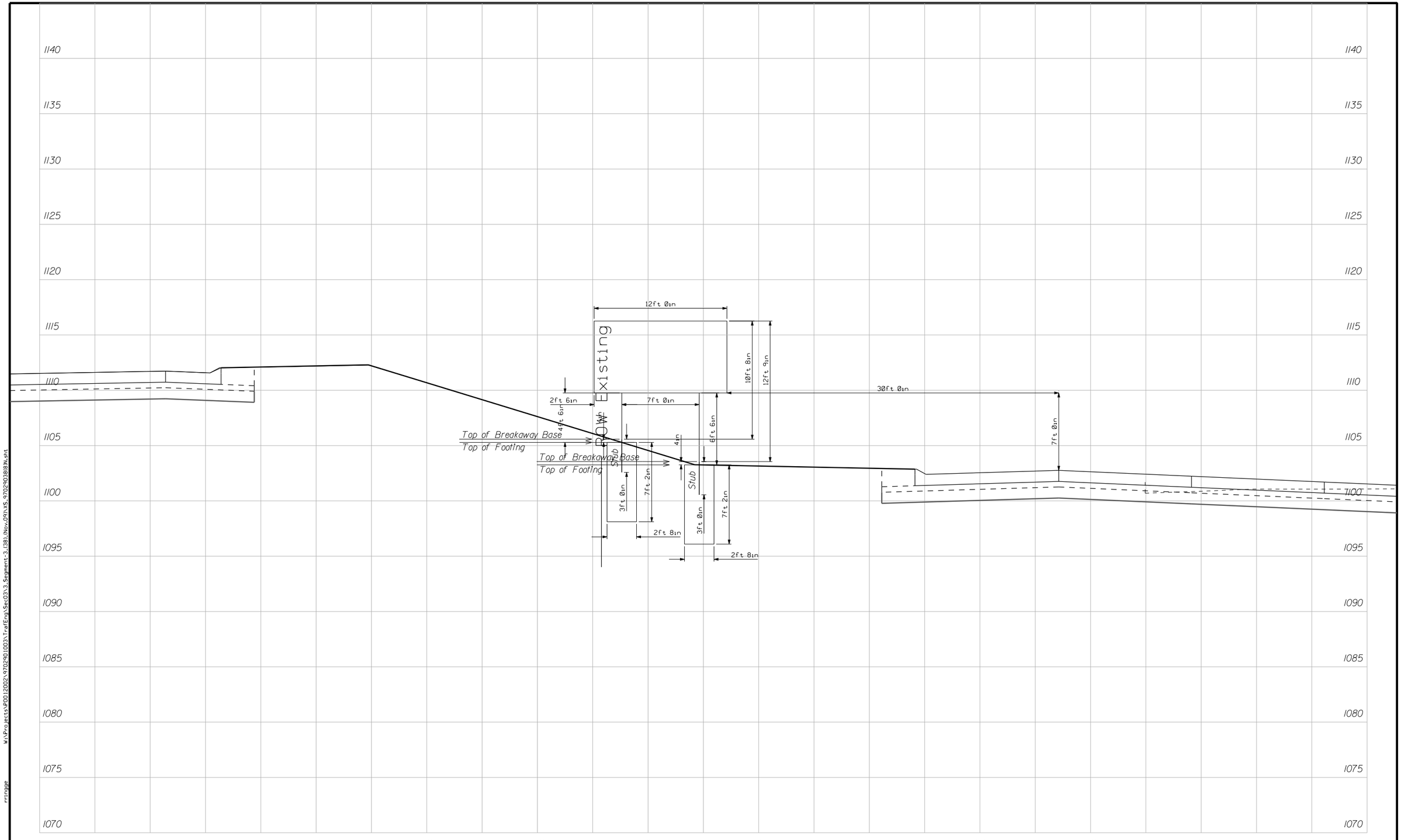
618+00
Proposed Truss for DMS Site 100



662+00

Proposed Steel Breakaway Posts

ENGLISH 10000 Resolution	Iowa Department of Transportation	OFFICE OF TRAFFIC & SAFETY	DESIGN TEAM JORGENSEN/RINGGENBERG	WOODBURY COUNTY	PROJECT NUMBER IM-029-8(38)150--13-97	SHEET NUMBER N.10



670+00
Proposed Steel Breakaway Posts

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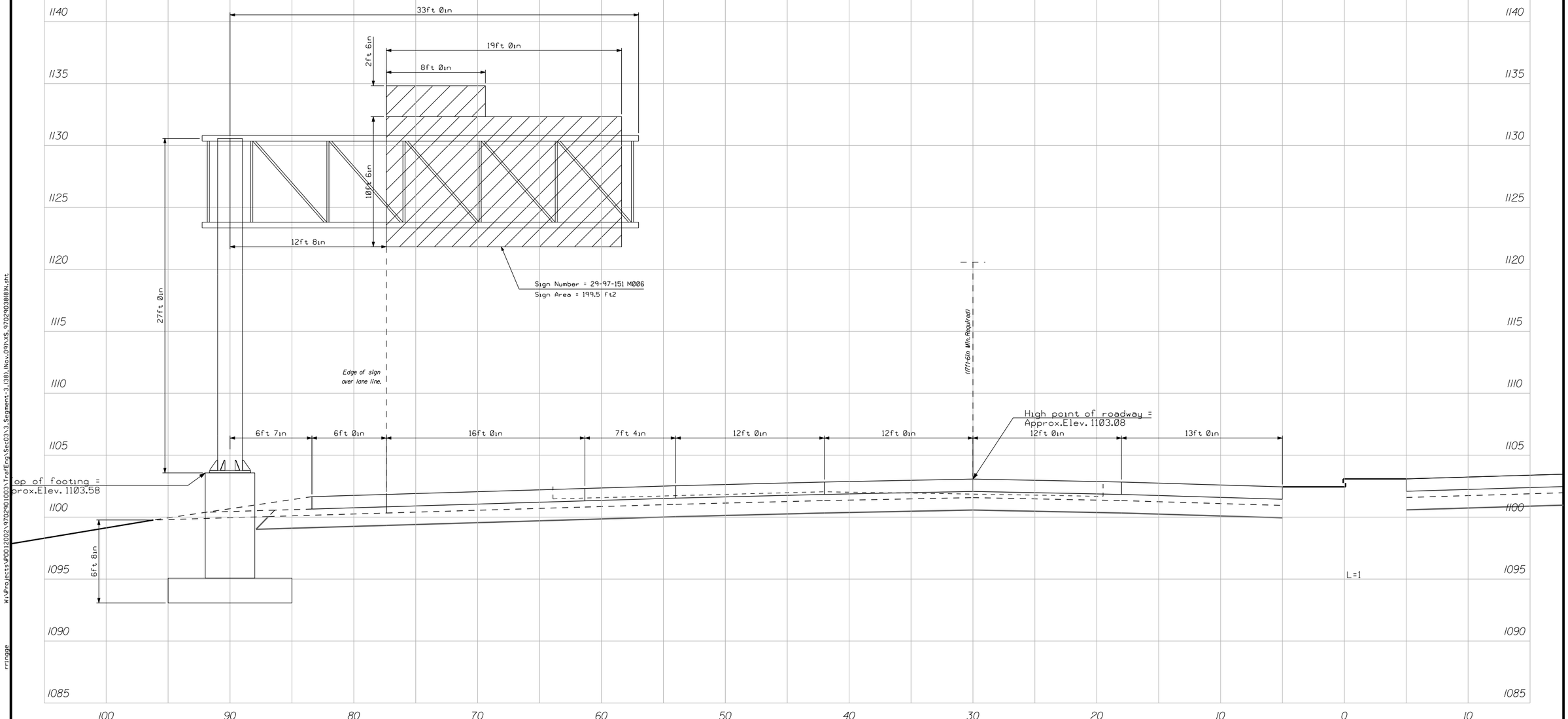
11/25/2009

ENGLISH 10000 Resolution	Iowa Department of Transportation	OFFICE OF TRAFFIC & SAFETY	DESIGN TEAM JORGENSEN/RINGGENBERG	WOODBURY COUNTY	PROJECT NUMBER IM-029-8(38)150--13-97	SHEET NUMBER N.11



681+50
Proposed 33' Cantilever

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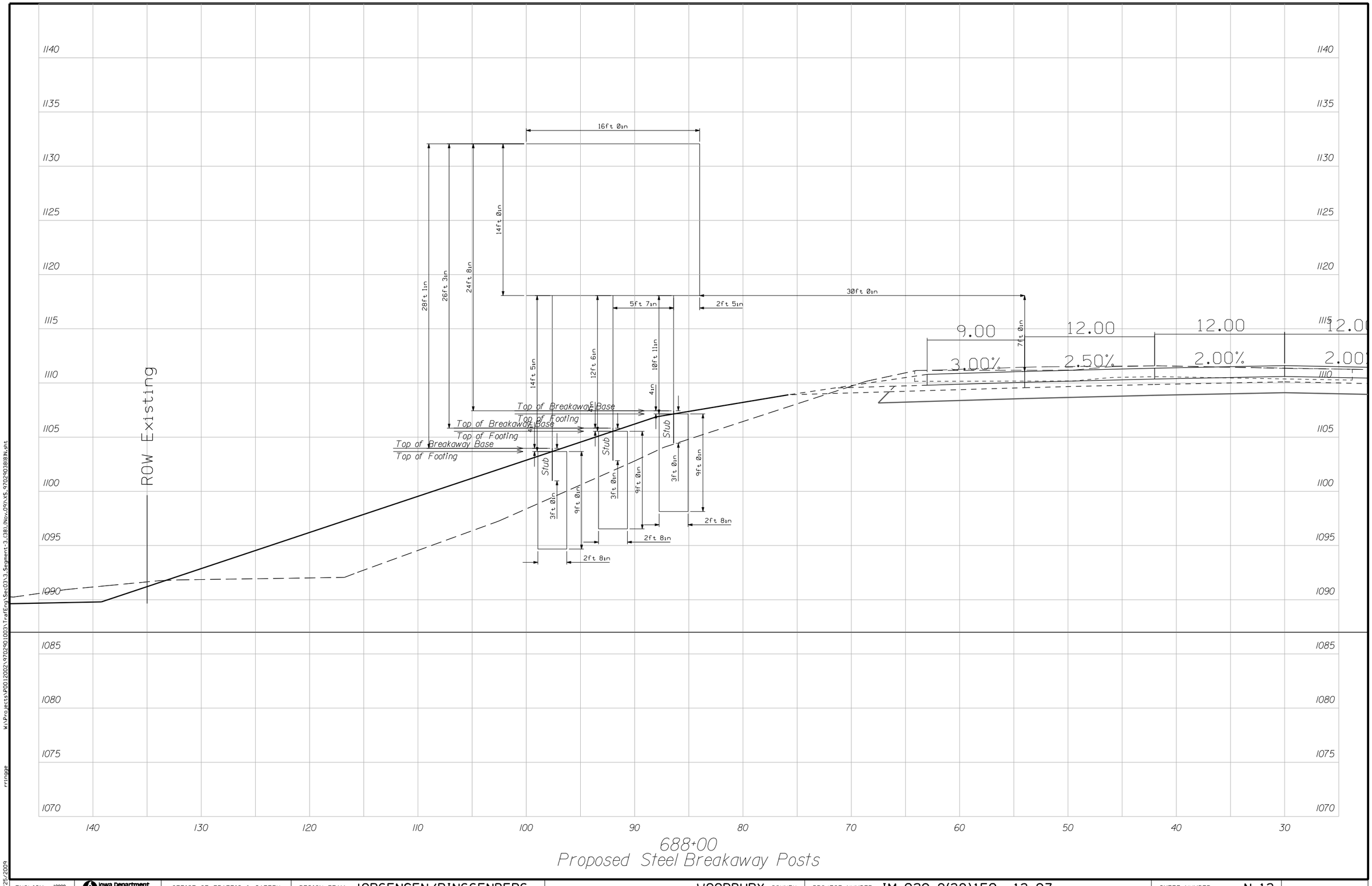
11/25/2009

ENGLISH 10000 Resolution	Iowa Department of Transportation	OFFICE OF TRAFFIC & SAFETY	DESIGN TEAM JORGENSEN/RINGGENBERG	WOODBURY COUNTY	PROJECT NUMBER IM-029-8(38)150--13-97	SHEET NUMBER N.12



688+00
Proposed Steel Breakaway Posts

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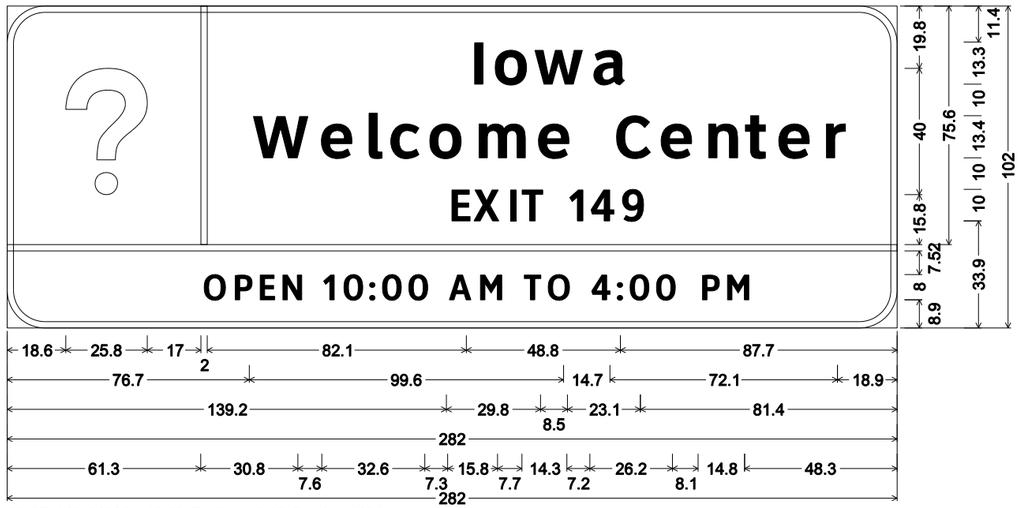
11/25/2009

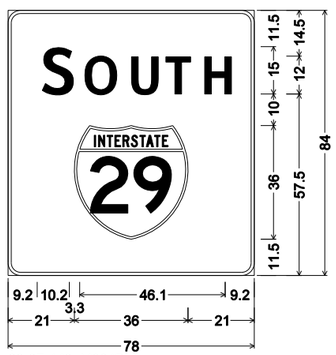
ENGLISH 10000 Resolution	Iowa Department of Transportation	OFFICE OF TRAFFIC & SAFETY	DESIGN TEAM JORGENSEN/RINGGENBERG	WOODBURY COUNTY	PROJECT NUMBER IM-029-8(38)150--13-97	SHEET NUMBER N.13

29-97-149 M002



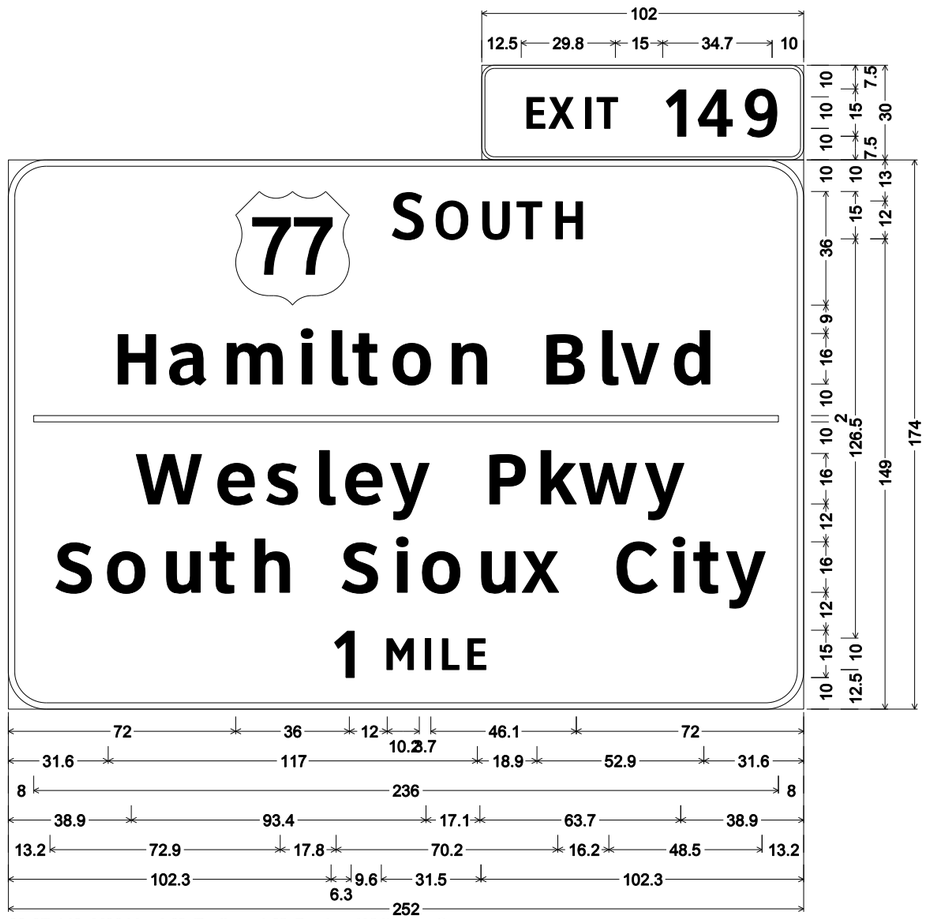
29-97-149 M002; 12.0" Radius, 2.0" Border, White on Blue;
[?] White E; [Iowa] ClearviewHwy-5-W; [Welcome Center] ClearviewHwy-5-W; [EXIT 149] ClearviewHwy-4-W;
[OPEN 10:00 AM TO 4:00 PM] ClearviewHwy-4-W;

29-97-149M 001B



29-97-149 M001B;
4.0" Radius, 1.0" Border, White on Green;
[S OUTH] ClearviewHwy-4-W;

29-97-149M 001A

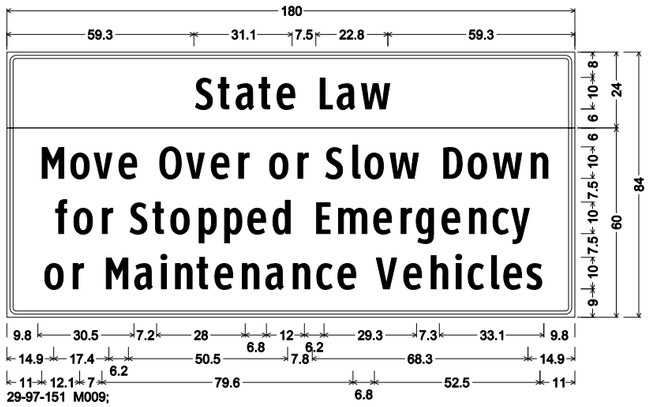


29-97-149 M001A; 4.0" Radius, 1.0" Border, White on Green;
[EXIT] ClearviewHwy-4-W; [149] ClearviewHwy-4-W;
29-97-149 M001; 12.0" Radius, 2.0" Border, White on Green;
[S OUTH] ClearviewHwy-4-W; [Hamilton Blvd] ClearviewHwy-5-W;
[Wesley Pkwy] ClearviewHwy-5-W; [South Sioux City] ClearviewHwy-5-W;
[1] ClearviewHwy-4-W [ ] ClearviewHwy-5-W [MILE] ClearviewHwy-4-W;

29-97-149 M 001

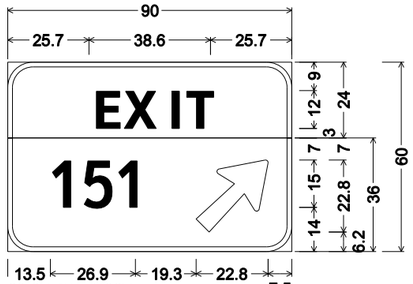
I-29 Woodbury Co
Riverside Interchange
Sign Details

29-97-151 M 009



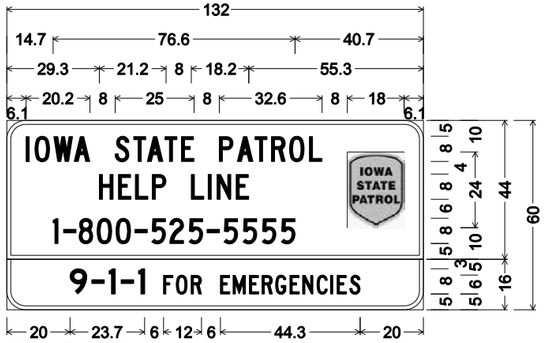
29-97-151 M009;
3.0" Radius, 1.0" Border, 1.0" Indent, Black on Yellow;
[State Law] ClearviewHwy-2-W;
3.0" Radius, 1.0" Border, 1.0" Indent, Black on White;
[Move Over or Slow Down] ClearviewHwy-2-W;
[for Stopped Emergency] ClearviewHwy-2-W;
[or Maintenance Vehicles] ClearviewHwy-2-W;

29-97-151 M 007



29-97-151 M007;
top;
8.0" Radius, 1.5" Border, White on Green;
[EXIT] ClearviewHwy-5-W;
bottom;
8.0" Radius, 1.5" Border, White on Green;
[151] ClearviewHwy-3-W;
Arrow 16 - 29.0" 45°;

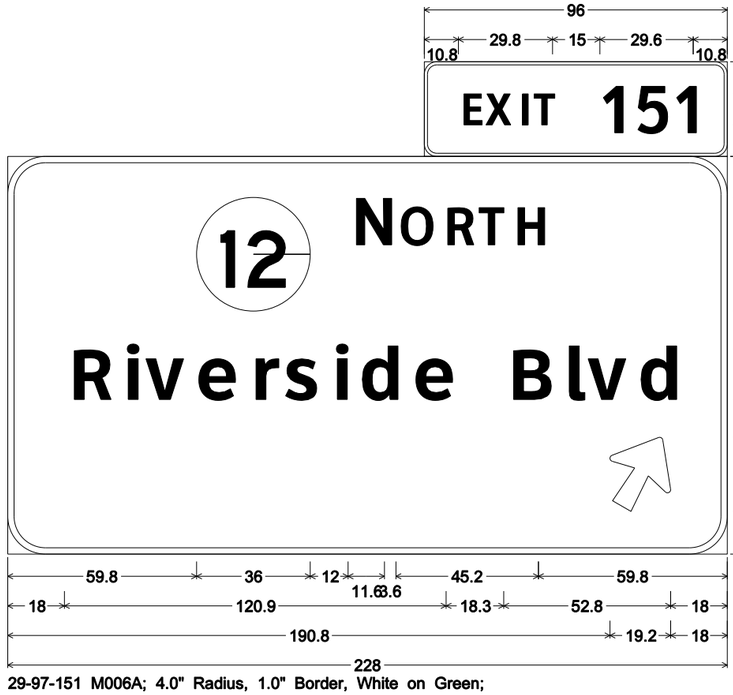
29-97-151 M 008



29-97-151 M008;
6.0" Radius, 1.3" Border, White on Blue;
[IOWA STATE PATROL] C; [HELP LINE] C;
[1-800-525-5555] C;
6.0" Radius, 1.3" Border, White on Blue;
[9-1-1] D [FOR EMERGENCIES] C;

29-97-151 M 006A

29-97-151 M 006



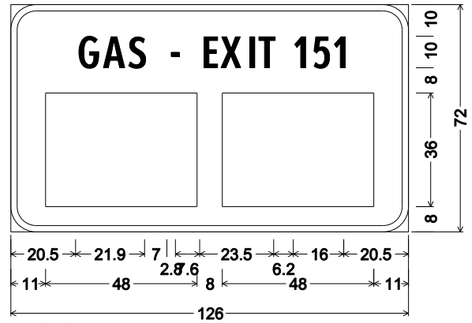
29-97-151 M006A; 4.0" Radius, 1.0" Border, White on Green;
[EXIT] ClearviewHwy-4-W; [151] ClearviewHwy-4-W;
29-97-151 M006; 12.0" Radius, 2.0" Border, White on Green;
[N ORTH] ClearviewHwy-4-W; [Riverside Blvd] ClearviewHwy-5-W; Arrow 8 - 25.0" 60°;

I-29 Woodbury Co
Riverside Interchange
Sign Details

29-97-151 M 005

Interstate Welcome to Iowa 16'x14'; No border, White on White;

29-97-151 M 001

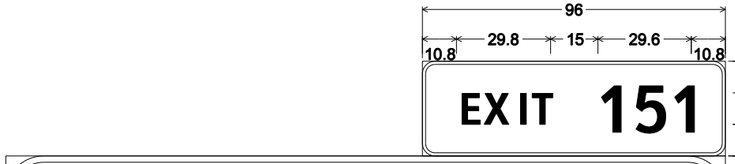


29-97-151 M001;
8.0" Radius, 2.0" Border, White on Blue;
[GAS - EXIT 151] ClearviewHwy-2-W;

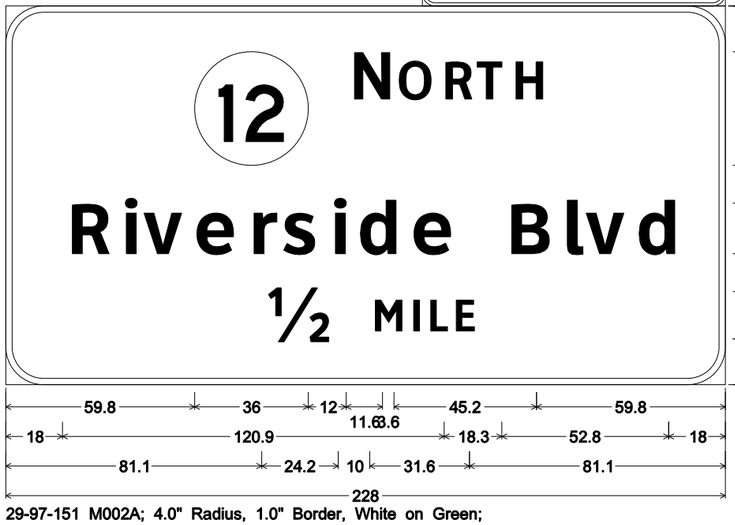
29-97-151 M 003

29-97-151 M003; 12.0" Radius, 2.0" Border, White on Brown;
[Stone] ClearviewHwy-5-W; [State Park] ClearviewHwy-5-W;
[Dorothy Pecaut] ClearviewHwy-5-W; [Nature Center] ClearviewHwy-5-W;
[EXIT 151] ClearviewHwy-4-W;

29-97-151 M 002A

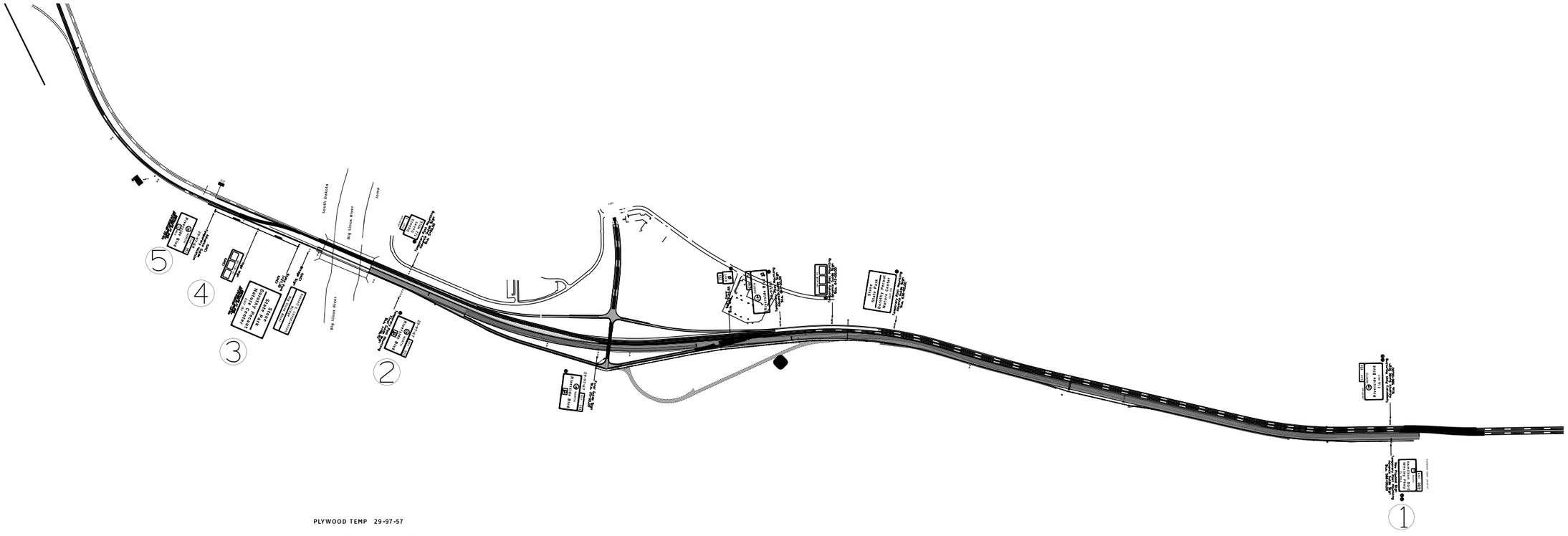


29-97-151 M 002



29-97-151 M002A; 4.0" Radius, 1.0" Border, White on Green;
[EXIT] ClearviewHwy-4-W; [151] ClearviewHwy-4-W;
29-97-151 M002; 12.0" Radius, 2.0" Border, White on Green;
[N ORTH] ClearviewHwy-4-W; [Riverside Blvd] ClearviewHwy-5-W;
[½] ClearviewHwy-4-W; [MILE] ClearviewHwy-4-W;

I-29 Woodbury Co
Riverside Interchange
Sign Details

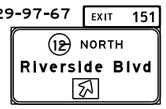


PLYWOOD TEMP 29-97-57

1

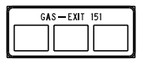
29-97-67

2



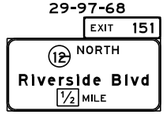
3

4



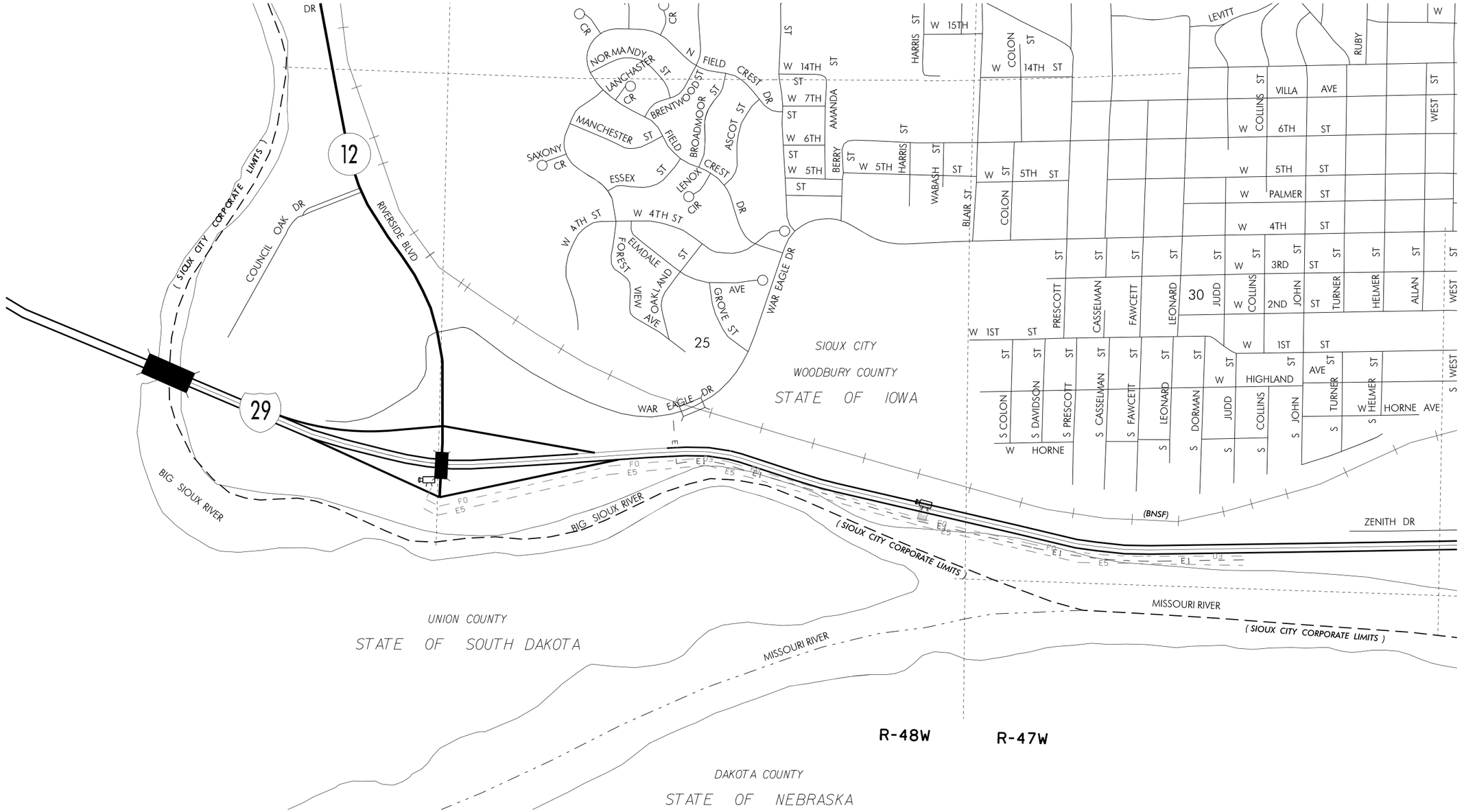
29-97-68

5



I-29 Woodbury Co
Riverside Interchange
Sign Removals

ENGLISH 10000 Resolution	Iowa Department of Transportation	OFFICE OF TRAFFIC & SAFETY	DESIGN TEAM JORGENSEN/RINGGENBERG	WOODBURY COUNTY	PROJECT NUMBER IM-029-8(38)150--13-97	SHEET NUMBER N.17	



LEGEND

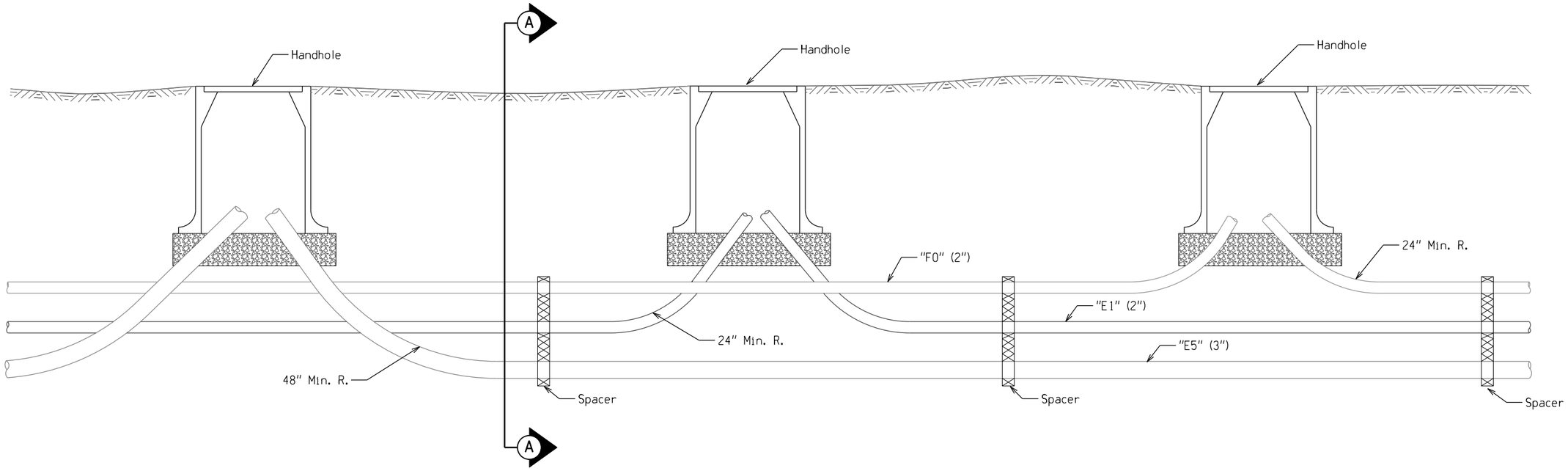
- TRAFFIC CAMERA (BY OTHERS)
- OVERHEAD DMS
- E1 — ELECTRIC
- F0 — FIBER OPTIC
- E5 — FUTURE USE

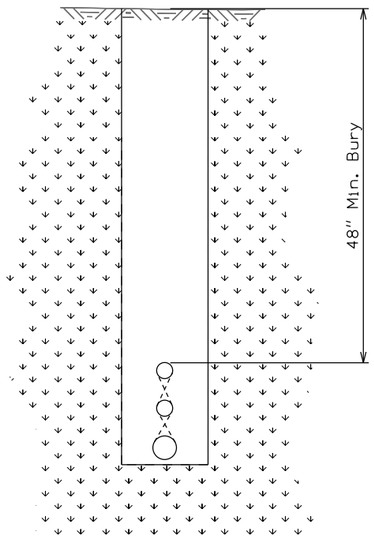
LOCATION MAP SCALE
0 0.1 0.2 0.3
Miles

PROJECT LOCATION MAP
ITS CONDUIT

ENGLISH 10000 Resolution	Iowa Department of Transportation	OFFICE OF TRAFFIC & SAFETY	DESIGN TEAM JORGENSEN\RINGGENBERG	WOODBURY COUNTY	PROJECT NUMBER IM-029-8(30)150--13-97	SHEET NUMBER P.1

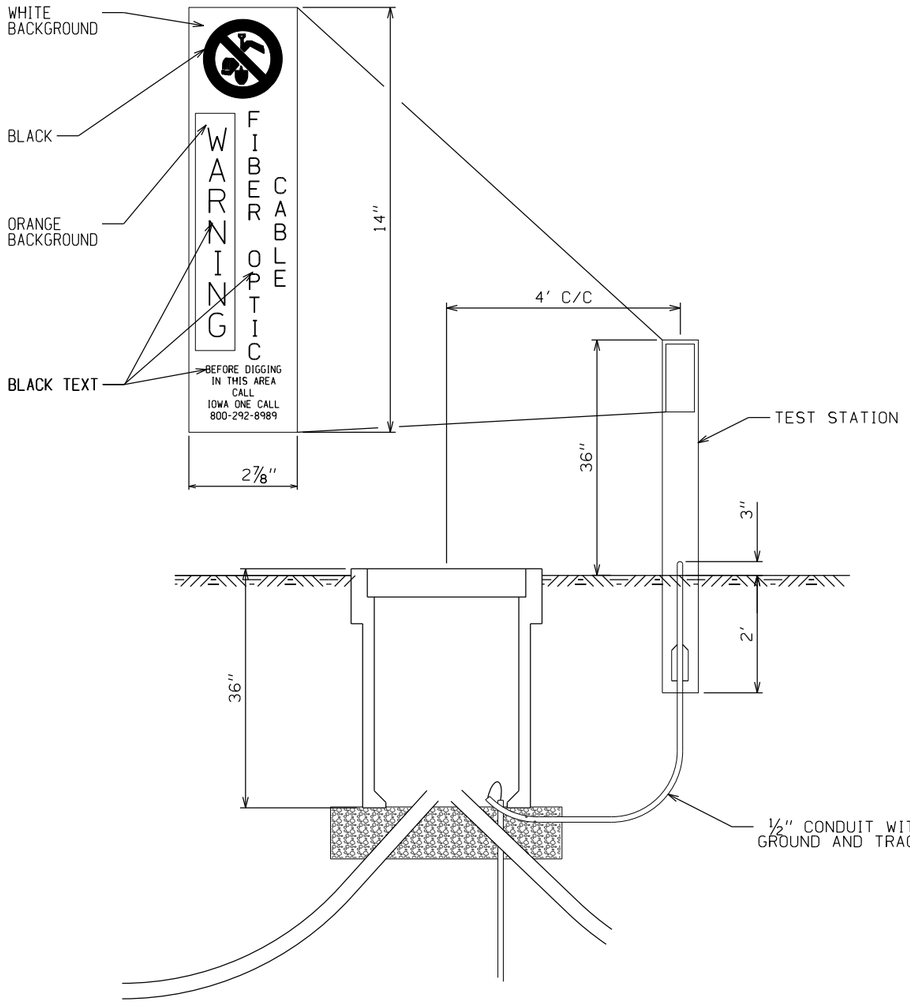
DGNSPEC USERNAME SYSTEMTIME



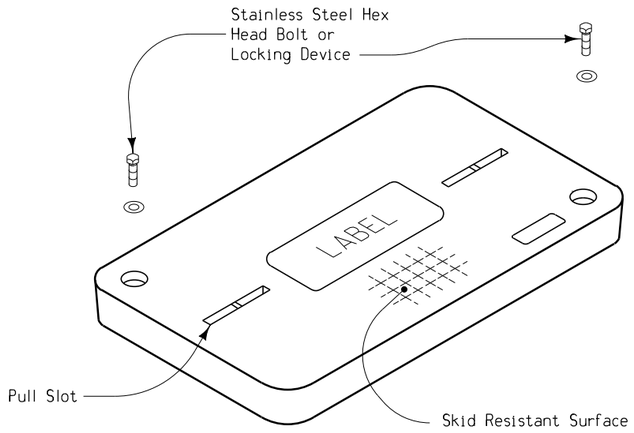


SEC. A-A

CONDUIT INSTALLTION DETAILS



TEST STATION FOR
LARGE TYPE II HANDHOLE



COVER

GENERAL NOTES:

The details indicated hereon are for typical handholes. Alternate designs may be submitted to the Engineer for approval.

Materials and methods of construction shall be in accordance with current Standard and Supplemental Specifications.

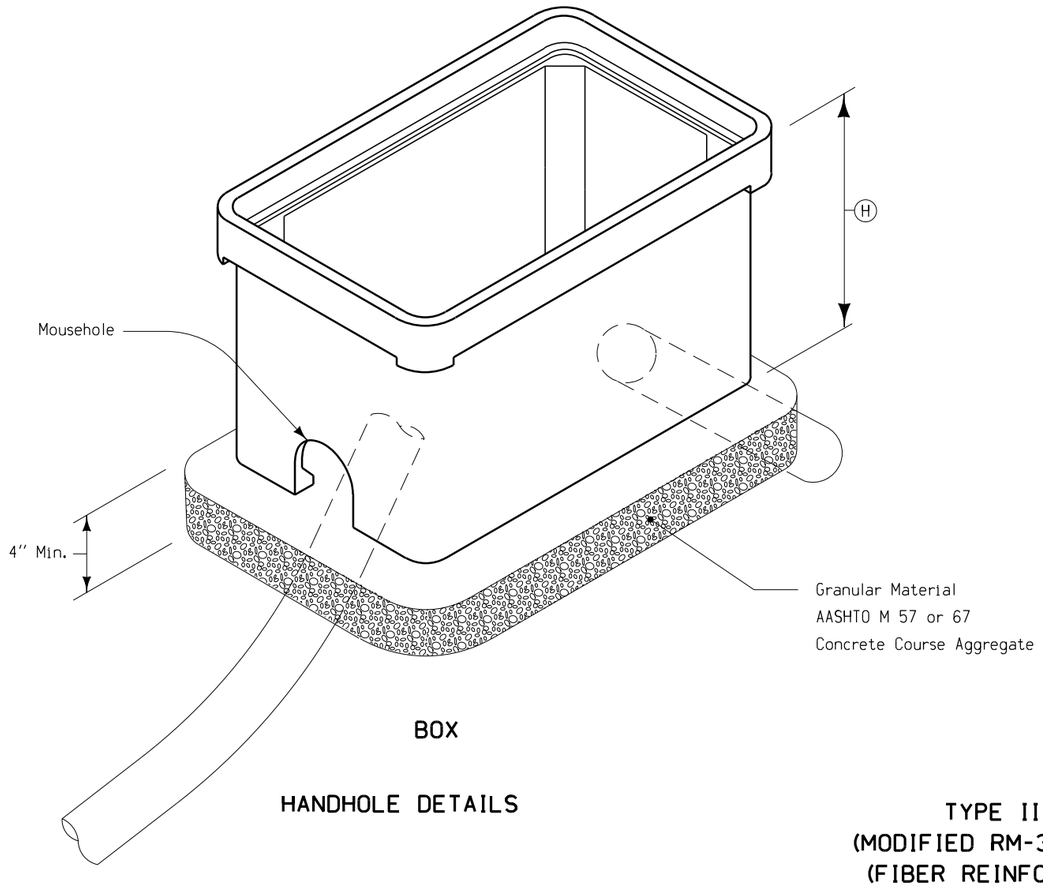
Refer to appropriate Standard Road Plans and project plans for additional details.

Handhole shall be installed per manufacturer's recommendations.

Covers of junction boxes installed in locations subject to pedestrian traffic shall have an approved anti–skid pattern.

When indicated in the project plans, locking devices shall be provided and handholes and covers shall be manufactured to accomodate the locks.

All covers shall be labeled. Cover text shall be standardized for each conduit run series. Text shall be approved by the Engineer.



BOX

HANDHOLE DETAILS

HANDHOLE DIMENSIONS			
HANDHOLE SIZE	OPENING		(H)
	LENGTH (in.)	WIDTH (in.)	HEIGHT (in.)
LARGE	30 1/8	47 5/8	36
SMALL	15 1/4	27 1/2	24

TYPE II HANDHOLE
(MODIFIED RM-38 JUNCTION BOX)
(FIBER REINFORCED CONCRETE)

ITS CONDUIT SYSTEM COMPONENTS

ITEM	UNIT	QUANTITY	
		ESTIMATED	AS-BUILT
TYPE I HANDHOLE (RM-42)	EACH	34	
TYPE II HANDHOLE, LARGE	EACH	10	
TYPE II HANDHOLE, SMALL	EACH	22	
TEST STATION	EACH	10	
LOCKING DEVICE	EACH	36	
2 INCH CONDUIT	LIN FT	14195	
3 INCH CONDUIT	LIN FT	8175	
1C #10 TRACER	LIN FT	8685	

GENERAL NOTES

ALL CONDUIT SHALL BE PLACED AT 48 INCH MINIMUM COVER UNLESS OTHERWISE SPECIFIED ON THE PLANS.

THE CONTRACTOR SHALL BORE UNDER ANY EXISTING ASPHALT OR CONCRETE PAVEMENT, RAILROAD, OR OTHER STRUCTURE OR WHERE INDICATED IN THE PLANS. AT ALL OTHER LOCATIONS, THE METHOD OF PLACEMENT WILL BE AT THE CONTRACTOR'S DISCRETION.

THE MINIMUM BENDING RADIUS OF CONDUIT SHALL 24 INCHES FOR 2 INCH CONDUIT AND 48 INCHES FOR 3 INCH CONDUIT.

CONDUIT SHALL ENTER THE HANDHOLE FROM THE BOTTOM AND EXTEND FOUR TO SIX INCHES ABOVE THE AGGREGATE BEDDING. SIDE PENETRATIONS ARE NOT ALLOWED.

ALL HANDHOLE LOCATIONS ARE TO BE STAKED BY THE DOT.

SET HANDHOLES FLUSH WITH THE SURFACE MATCHING THE SLOPE WHEN CONSTURCTING IN THE RECREATION TRAIL OR OTHER PAVED SURFACE. SET HANDHOLES APPROXIMATELY ONE INCH ABOVE THE FINSIHED SURFACE OF THE SURROUNDING GROUND WHEN CONSTRUCTING IN AN EARTH EMBANKMENT OR NON-PAVED SURFACE.

THE PLAN LOCATIONS OF UNDERGROUND AND AERIAL UTILITIES, WHEN SHOWN, ARE APPROXIMATE ONLY. IN ADDITION, A PORTION OF UTILITY INFORMATION MAY NOT HAVE BEEN PROVIDED. ALL UTILITIES SHALL BE LOCATED AND MARKED PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONTACTING UTILITIES AND LOCATOR SERVICES AND SCHEDULING THE LOCATION OF UNDERGROUND UTILITIES. THE CONTRACTOR SHALL ALSO CONTACT ANY AND ALL UTILITIES AND LOCAL GOVERNMENT AGENCIES NOT PARTICIPATING IN LOCATION SERVICES.

THE CONTRACTOR SHALL NOT DISTURB ANY EXISTING UTILITIES EXCEPT AS SPECIFICALLY DEFINED WITHIN THE SCOPE OF WORK FOR THIS CONTRACT. WHERE WORK AFFECTS OR IS AFFECTED BY THE EXISTING UTILITIES, THE WORK SHALL BE COORDINATED WITH THE UTILITY COMPANY AND/OR OWNER. THE CONTRACTOR IS RESPONSIBLE FOR COORDINATING WITH THE DOT.

UTILITY COMPANIES WHOSE FACILITIES ARE SHOWN ON THE PLANS OR KNOWN TO BE WITHIN THE CONSTRUCTION LIMITS SHALL BE NOTIFIED BY THE CONTRACTOR OF THE STARTING CONSTRUCTION DATE.

PROPOSED ITS EQUIPMENT LOCATIONS ARE APPROXIMATE AND MAY REQUIRE MODIFICATION TO AVOID CONFLICTS WITH UNDERGROUND AND AERIAL UTILITIES OR OTHER OBSTRUCTIONS. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE ANY CONFLICTS WITH EXISTING UTILITIES AT SITES IN THE FIELD PRIOR TO INITIATION OF CONSTRUCTION AT THAT SITE. THE CONTRACTOR SHALL RECEIVE APPROVAL FROM THE ENGINEER PRIOR TO REVISING THE PLAN LOCATION OF ANY CONDUIT OR HANDHOLES.
ABOVE GROUND RISERS, CONDUIT INSTALLED UNDER RAILROADS, AND ALL CONDUIT INSTALLED ON BRIDGES SHALL BE RIGID STEEL CONDUIT. ALL OTHER CONDUIT SHALL BE HDPE CONDUIT OF THE SIZE INDICATED. RIGID P.V.C CONDUIT (SCHEDULE 40 OR AS APPROVED) MAY BE SUBSTITUTED FOR CONDUIT RUNS UNDER 50 FEET.

ANY AND ALL IMPROVEMENTS SUCH AS ASPHALT OR CONCRETE PAVEMENTS, CURBS, GUTTERS, WALKS, DRAINAGE DITCHES, CULVERTS, DRAIN TILES, EMBANKMENTS, SHRUBS, TREES, GRASS, SOD, ETC., IF DAMAGED, SHALL BE RESTORED TO PRE-CONSTRUCTION CONDITIONS (OR BETTER) AS DIRECTED BY THE ENGINEER.

IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO REPAIR ANY EXISTING CONDUIT, CONDUCTORS, OR OTHER FACILITIES DAMAGED DURING CONSTRUCTION. ALL EXISTING INFRASTRUCTURE REMOVED OR DAMAGED BY THE CONTRACTOR SHALL BE REPLACED IN KIND BY THE CONTRACTOR, WITH NO ADDITIONAL COMPENSATION.

TABULATION OF HANDHOLES

HANDHOLE DESIGNATION	LOCATION				TYPE 1	TYPE 2		COVER LOCKS	REMARKS
	STATION	OFFSET	DIRECTION	ROADWAY		LARGE	SMALL		
HHII-FO-01	583+80	80'	LT	I-29		1			
HHII-E1-01	583+90	80'	LT	I-29			1		
HHII-E5-01	584+00	80'	LT	I-29		1			
HHI-E1-02	586+90	80'	LT	I-29	1				ON 3:1 SLOPE
HHI-E5-02	587+00	80'	LT	I-29	1				ON 3:1 SLOPE
HHI-FO-02	589+80	80'	LT	I-29	1				ON 3:1 SLOPE
HHI-E1-03	589+90	80'	LT	I-29	1				ON 3:1 SLOPE
HHI-E5-03	590+00	80'	LT	I-29	1				ON 3:1 SLOPE
HHI-E1-04	592+80	80'	LT	I-29	1				ON 3:1 SLOPE
HHI-E5-04	592+90	80'	LT	I-29	1				
HHI-FO-03	595+30	70'	LT	I-29	1				ON 3:1 SLOPE
HHI-E1-05	595+40	70'	LT	I-29	1				ON 3:1 SLOPE
HHI-E5-05	595+50	70'	LT	I-29	1				
HHII-E1-06	598+40	66.5'	LT	I-29			1		
HHII-E5-06	598+50	66.5'	LT	I-29			1		
HHII-FO-04	602+05	66.5'	LT	I-29			1	X	IN REC TRAIL
HHII-E1-07	602+15	66.5'	LT	I-29			1	X	IN REC TRAIL
HHII-E5-07	602+25	66.5'	LT	I-29			1	X	IN REC TRAIL
HHII-E1-08	605+65	66.5'	LT	I-29			1	X	IN REC TRAIL
HHII-E5-08	605+75	66.5'	LT	I-29			1	X	IN REC TRAIL
HHII-FO-05	608+80	66.5'	LT	I-29			1	X	IN REC TRAIL
HHII-E1-09	608+90	66.5'	LT	I-29			1	X	IN REC TRAIL
HHII-E5-09	609+00	66.5'	LT	I-29			1	X	IN REC TRAIL
HHI-E1-10	611+90	90'	LT	I-29	1				ON 3:1 SLOPE
HHI-E5-10	612+00	90'	LT	I-29	1				ON 3:1 SLOPE
HHI-FO-06	613+00	90'	LT	I-29	1				ON 3:1 SLOPE
HHI-E1-11	614+90	90'	LT	I-29	1				ON 3:1 SLOPE
HHI-E5-11	615+00	90'	LT	I-29	1				ON 3:1 SLOPE
HHII-FO-07	617+90	90'	LT	I-29		1			ON 3:1 SLOPE
HHII-E1-12	618+00	90'	LT	I-29		1			ON 3:1 SLOPE
HHI-E5-12	618+10	90'	LT	I-29	1				ON 3:1 SLOPE
HHII-E1-13	621+00	66.5'	LT	I-29			1	X	IN REC TRAIL
HHII-E5-13	621+10	66.5'	LT	I-29			1	X	IN REC TRAIL
HHII-FO-08	623+90	66.5'	LT	I-29			1	X	IN REC TRAIL
HHII-E1-14	624+00	66.5'	LT	I-29			1	X	IN REC TRAIL
HHII-E5-14	624+10	66.5'	LT	I-29			1	X	IN REC TRAIL
HHII-E1-15	627+00	66.5'	LT	I-29			1	X	IN REC TRAIL
HHII-E5-15	627+10	66.5'	LT	I-29			1	X	IN REC TRAIL
HHII-FO-09	629+90	66.5'	LT	I-29			1	X	IN REC TRAIL
HHII-E1-16	630+00	66.5'	LT	I-29			1	X	IN REC TRAIL
HHII-E5-16	630+10	66.5'	LT	I-29			1	X	IN REC TRAIL
HHII-E1-17	635+80	66.5'	LT	I-29	1				
HHII-E5-17	635+90	66.5'	LT	I-29	1				
HHII-FO-10	636+00	71'	LT	I-29		1			
HHI-E1-18	637+50	72'	LT	I-29	1				ON 3:1 SLOPE
HHI-E5-18	637+60	72'	LT	I-29	1				ON 3:1 SLOPE
HHII-E1-19	640+50	80'	LT	I-29		1			ON 3:1 SLOPE
HHII-E5-19	640+60	80'	LT	I-29		1			ON 3:1 SLOPE
HHI-FO-11	640+70	80'	LT	I-29	1				ON 3:1 SLOPE

TABULATION OF HANDHOLES

HANDHOLE DESIGNATION	LOCATION				TYPE 1	TYPE 2		COVER LOCKS	REMARKS
	STATION	OFFSET	DIRECTION	ROADWAY		LARGE	SMALL		
HHI-E1-20	640+50	120'	RT	I-29		1			
HHI-E5-20	644+00	80'	LT	I-29	1				
HHI-E5-21	647+00	85'	LT	I-29	1				
HHI-FO-12	647+10	85'	LT	I-29	1				
HHI-E5-22	650+00	95'	LT	I-29	1				
HHI-E5-23	653+00	98'	LT	I-29	1				
HHI-FO-13	653+10	98'	LT	I-29	1				
HHI-E5-24	6456+00	25'	LT	RAMP D	1				
HHI-E5-25	6459+00	25'	LT	RAMP D	1				
HHI-FO-14	6459+10	25'	LT	RAMP D	1				
HHI-E5-26	6462+00	25'	LT	RAMP D	1				
HHI-FO-15	6464+00	25'	LT	RAMP D	1				
HHI-E5-27	6464+10	25'	LT	RAMP D	1				
HHII-FO-16	6264+45	25'	LT	RAMP B		1			
HHII-E6-28	6264+55	25'	LT	RAMP B		1			
HHI-FO-17	6264+45	30'	RT	RAMP B	1				
HHII-FO-18	6662+50	30'	RT	RIVERSIDE			1		

TABULATION OF CONDUIT

CONDUIT RUN DESIGNATION	LOCATION FROM	LOCATION TO	2" CONDUIT	3" CONDUIT	MIN BORE LENGTH	INSTALL #12 TRACER	REMARKS
F0-01	HHII-F0-01	HHI-F0-02	600'			610'	
E1-01	HHII-E1-01	HHI-E1-02	300'				
E5-01	HHII-E5-01	HHI-E5-02		300'			
E1-02	HHI-E1-02	HHI-E1-03	300'				
E5-02	HHI-E5-02	HHI-E5-03		300'			
F0-02	HHI-F0-02	HHI-F0-03	550'			560'	
E1-03	HHI-E1-03	HHI-E1-04	290'				
E5-03	HHI-E5-03	HHI-E5-04		290'			
E1-04	HHI-E1-04	HHI-E1-05	260'				
E5-04	HHI-E5-04	HHI-E5-05		260'			
F0-03	HHI-F0-03	HHII-F0-04	675'			685'	
E1-05	HHI-E1-05	HHII-E1-06	300'				
E5-05	HHI-E5-05	HHII-E5-06		300'			
E1-06	HHII-E1-06	HHII-E1-07	375'				
E5-06	HHII-E5-06	HHII-E5-07		375'			
F0-04	HHII-F0-04	HHII-F0-05	675'			685'	
E1-07	HHII-E1-07	HHII-E1-08	350'				
E5-07	HHII-E5-07	HHII-E5-08		350'			
E1-08	HHII-E1-08	HHII-E1-09	325'				
E5-08	HHII-E5-08	HHII-E5-09		325'			
F0-05	HHII-F0-05	HHI-F0-06	420'			430'	
E1-09	HHII-E1-09	HHI-E1-10	300'				
E5-09	HHII-E5-09	HHI-E5-10		300'			
E1-10	HHI-E1-10	HHI-E1-11	300'				
E5-10	HHI-E5-10	HHI-E5-11		300'			
F0-06	HHI-F0-06	HHII-F0-07	490'			500'	
E1-11	HHI-E1-11	HHII-E1-12	310'				
E5-11	HHI-E5-11	HHI-E5-12		310'			
F0-07	HHII-F0-07	HHII-F0-08	600'			610'	
E1-12	HHII-E1-12	HHII-E1-13	300'				
E5-12	HHI-E5-12	HHII-E5-13		300'			
E1-13	HHII-E1-13	HHII-E1-14	300'				
E5-13	HHII-E5-13	HHII-E5-14		300'			
F0-08	HHII-F0-08	HHII-F0-09	600'			610'	
E1-14	HHII-E1-14	HHII-E1-15	300'				
E5-14	HHII-E5-14	HHII-E5-15		300'			
E1-15	HHII-E1-15	HHII-E1-16	300'				
E5-15	HHII-E5-15	HHII-E5-16		300'			
F0-09	HHII-F0-09	HHII-F0-10	610'			620'	
E1-16	HHII-E1-16	HHII-E1-17	580'				
E5-16	HHII-E5-16	HHII-E5-17		580'			
E1-17	HHII-E1-17	HHI-E1-18	170'				
E5-17	HHII-E5-17	HHI-E5-18		170'			
F0-10	HHII-F0-10	HHI-F0-11	470'			480'	
E1-18	HHI-E1-18	HHII-E1-19	300'				
E5-18	HHI-E5-18	HHII-E5-19		300'			
E1-19	HHII-E1-19	HHII-E1-20	200'			210'	
E5-19	HHII-E5-19	HHII-E5-20		340'			
F0-11	HHI-F0-11	HHI-F0-12	640'			650'	

TABULATION OF CONDUIT

CONDUIT RUN DESIGNATION	LOCATION FROM	LOCATION TO	2" CONDUIT	3" CONDUIT	MIN BORE LENGTH	INSTALL #12 TRACER	REMARKS
E5-20	HHI-E5-20	HHI-E5-21		300'			
E5-21	HHI-E5-21	HHI-E5-22		300'			
F0-12	HHI-F0-12	HHI-F0-13	600'			610'	
E5-22	HHI-E5-22	HHI-E5-23		300'			
E5-23	HHI-E5-23	HHI-E5-24		300'			
F0-13	HHI-F0-13	HHI-F0-14	600'			610'	
E5-24	HHI-E5-24	HHI-E5-25		300'			
E5-25	HHI-E5-25	HHI-E5-26		300'			
F0-14	HHI-F0-14	HHII-F0-15	500'			510'	
E5-26	HHI-E5-26	HHII-E5-27		210'			
E5-27	HHI-E5-25	HHI-E5-26		165'			
F0-15	HHI-F0-14	HHII-F0-15	165'			165'	
F0-16	HHI-F0-15	HHII-F0-16	55'			55'	
F0-17	HHI-F0-16	HHII-F0-17	85'			85'	

SIOUX CITY TWP.
T-89N R-47W
SEC. 30

N

583+80
HHII-F0-01
583+90
HHII-E1-01
584+00
HHII-E5-01

586+90
HHI-E1-02
587+00
HHI-E5-02

F0 E1 E5 F0 E1 E5 F0 Brush & Trees E1

582 583 584 585 586 587 588

I–29 Southbound

I–29 Northbound

12.00
3.0%
12.
2.

1089.6
APPROX. 100 YR
FLOOD ELEV.

PARTIAL SECTION
STA. 585+00

BNSF
F03

0 FEET 20

LEGEND

- F0 — Communcation Conduit
  - Junction Box
- E1 — ITS Power Conduit
  - Junction Box
- E5 — Future Use Conduit
  - Junction Box

ITS CONDUIT

DGNSEC
USERNAME
SYSTEMTIME

ENGLISH 10000 Resolution	Iowa Department of Transportation	OFFICE OF TRAFFIC & SAFETY	DESIGN TEAM JORGENSEN\RINGGENBERG	WOODBURY COUNTY	PROJECT NUMBER IM-029-8(30)150--13-97	SHEET NUMBER P.7

SIOUX CITY TWP.
T-89N R-47W
SEC. 30

589+80
HHI-F0-02
589+90
HHI-E1-03
590+00
HHI-E5-03
592+80
HHI-E1-04
592+90
HHI-E5-04

E1 E5 F0

588 589 590 591 592 593 594

I–29 Southbound

I–29 Northbound

San

BNSF

F03

M

0 20
FEET

LEGEND

- F0 — Communcation Conduit
  Junction Box
- E1 — ITS Power Conduit
  Junction Box
- E5 — Future Use Conduit
  Junction Box

ITS CONDUIT

DGNSPEC
USERNAME
SYSTEMTIME

ENGLISH 10000 Resolution	Iowa Department of Transportation	OFFICE OF TRAFFIC & SAFETY	DESIGN TEAM JORGENSEN\RINGGENBERG	WOODBURY COUNTY	PROJECT NUMBER IM-029-8(30)150--13-97	SHEET NUMBER P.8

SIOUX CITY TWP.
T-89N R-47W
SEC. 30

595+30
HHI-F0-03

595+40
HHI-E1-05

595+50
HHI-E5-05

598+40
HHII-E1-06

598+50
HHII-E5-06

F0 E1 E5

594 595 596 597 598 599 600

I-29 Southbound

I-29 Northbound

San.

BNSF

F03

M

Brush & Trees

0 20
FEET

LEGEND

- F0 — Communcation Conduit
- Junction Box
- E1 — ITS Power Conduit
- Junction Box
- E5 — Future Use Conduit
- Junction Box

ITS CONDUIT

DGNSPEC
USERNAME
SYSTEMTIME

ENGLISH 10000 Resolution	Iowa Department of Transportation	OFFICE OF TRAFFIC & SAFETY	DESIGN TEAM JORGENSEN\RINGGENBERG	WOODBURY COUNTY	PROJECT NUMBER IM-029-8(30)150--13-97	SHEET NUMBER P.9

SIOUX CITY TWP.
T-89N R-47W
SEC. 30

602+05
HHII-F0-04
602+15
HHII-E1-07
602+25
HHII-E5-07
605+65
HHII-E1-08
605+75
HHII-E5-08

600 601 602 603 604 605 606

I-29 Southbound

I-29 Northbound

BNSF

13.58
12.00
12.00
3.0%
0.7%
3.00
12.00
1.5%
1089.6
APPROX. 100 YR
FLOOD ELEV.

PARTIAL SECTION
STA. 601+50

0 20
FEET

LEGEND

- FO — Communcation Conduit
- Junction Box
- E1 — ITS Power Conduit
- Junction Box
- E5 — Future Use Conduit
- Junction Box

ITS CONDUIT

DGNSPEC
USERNAME
SYSTIMENAME

ENGLISH 10000 Resolution	Iowa Department of Transportation	OFFICE OF TRAFFIC & SAFETY	DESIGN TEAM JORGENSEN\RINGGENBERG	WOODBURY COUNTY	PROJECT NUMBER IM-029-8(30)150--13-97	SHEET NUMBER P.10

SIOUX CITY TWP.
T-89N R-47W
SEC. 30

SIOUX CITY TWP.
T-89N R-48W
SEC. 25

Brush & Trees

608+80
HHII-F0-05
608+90
HHII-E1-09
609+00
HHII-E5-09
612+00
HHI-E5-10
611+90
HHI-E1-10

606 607 608 609 610 611 612

I–29 Southbound

I–29 Northbound

BNSF

Brush & Trees

0 FEET 20

LEGEND

- F0 — Communcation Conduit
- Junction Box
- E1 — ITS Power Conduit
- Junction Box
- E5 — Future Use Conduit
- Junction Box

ITS CONDUIT

DGNSPEC
USERNAME
SYSTEMTIME

ENGLISH 10000 Resolution | Iowa Department of Transportation | OFFICE OF TRAFFIC & SAFETY | DESIGN TEAM JORGENSEN\RINGGENBERG | WOODBURY COUNTY | PROJECT NUMBER IM-029-8(30)150--13-97 | SHEET NUMBER P.11

SIOUX CITY TWP.
T-89N R-48W
SEC. 25

Brush & Trees

613+00
HHI-F0-06

614+90
HHI-E1-11

615+00
HHI-E5-11

618+00
HHII-E1-12

617+90
HHII-F0-07

F0 E1 E5 F0 E1 E5 F0 E1 E5 F0 E1 E5

612 613 614 615 616 617

I-29 Southbound

I-29 Northbound

San. San. San. San. San.

M M M M M

BNSF

F03 F03 F03 F03

Brush & Trees

0 20
FEET

LEGEND

- F0 — Communcation Conduit
- Junction Box
- E1 — ITS Power Conduit
- Junction Box
- E5 — Future Use Conduit
- Junction Box

ITS CONDUIT

DGNSPEC
USERNAME
SYSTEMTIME

ENGLISH 10000 Resolution | Iowa Department of Transportation | OFFICE OF TRAFFIC & SAFETY | DESIGN TEAM JORGENSEN\RINGGENBERG | WOODBURY COUNTY | PROJECT NUMBER IM-029-8(30)150--13-97 | SHEET NUMBER P.12

SIOUX CITY TWP.
T-89N R-48W
SEC. 25

618+10
HHII-E5-12

621+00
HHII-E1-13
621+10
HHII-E5-13

624+00
HHII-E1-14
623+90
HHII-F0-08

West Trail Realignment

West Trail Realignment

619

620

I–29 Southbound

621

622

I–29 Southbound

623

624

I–29 Northbound

BNSF

0 FEET 20

LEGEND

- F0 — Communcation Conduit
  - Junction Box
- E1 — ITS Power Conduit
  - Junction Box
- E5 — Future Use Conduit
  - Junction Box

ITS CONDUIT

DGNSPEC
USERNAME
SYSTEMTIME

ENGLISH 10000 Resolution	Iowa Department of Transportation	OFFICE OF TRAFFIC & SAFETY	DESIGN TEAM JORGENSEN\RINGGENBERG	WOODBURY COUNTY	PROJECT NUMBER IM-029-8(30)150--13-97	SHEET NUMBER P.13

SIOUX CITY TWP.
T-89N R-48W
SEC. 25

624+10
HHII-E5-14

627+00
HHII-E1-15

627+10
HHII-E5-15

630+00
HHII-E1-16

629+90
HHII-F0-09

624 625 626 627 628 629 630

I-29 Southbound

I-29 Northbound

San. M

BNSF

F03

Brush & Trees

0 20
FEET

LEGEND

— F0 — Communcation Conduit
Junction Box

— E1 — ITS Power Conduit
Junction Box

— E5 — Future Use Conduit
Junction Box

ITS CONDUIT

DGNSPEC
USERNAME
SYSTEMTIME

ENGLISH 10000 Resolution	Iowa Department of Transportation	OFFICE OF TRAFFIC & SAFETY	DESIGN TEAM JORGENSEN\RINGGENBERG	WOODBURY COUNTY	PROJECT NUMBER IM-029-8(30)150--13-97	SHEET NUMBER P.14

SIOUX CITY TWP.
T-89N R-48W
SEC. 25

630+10
HHII-E5-16

636+00
HHII-F0-10

635+90
HHII-E5-17

635+80
HHI-E1-17

630

631

632

633

634

635

636

I–29 Southbound

I–29 Northbound

13.58
12.00
3.4%

12.00
3.4%

ROW

1089.6
APPROX. 100 YR
FLOOD ELEV.

3.00
11.68
1.5%

PARTIAL SECTION
STA. 632+00

San.

M

San.

M

BNSF

0 20
FEET

LEGEND

— F0 — Communcation Conduit
Junction Box

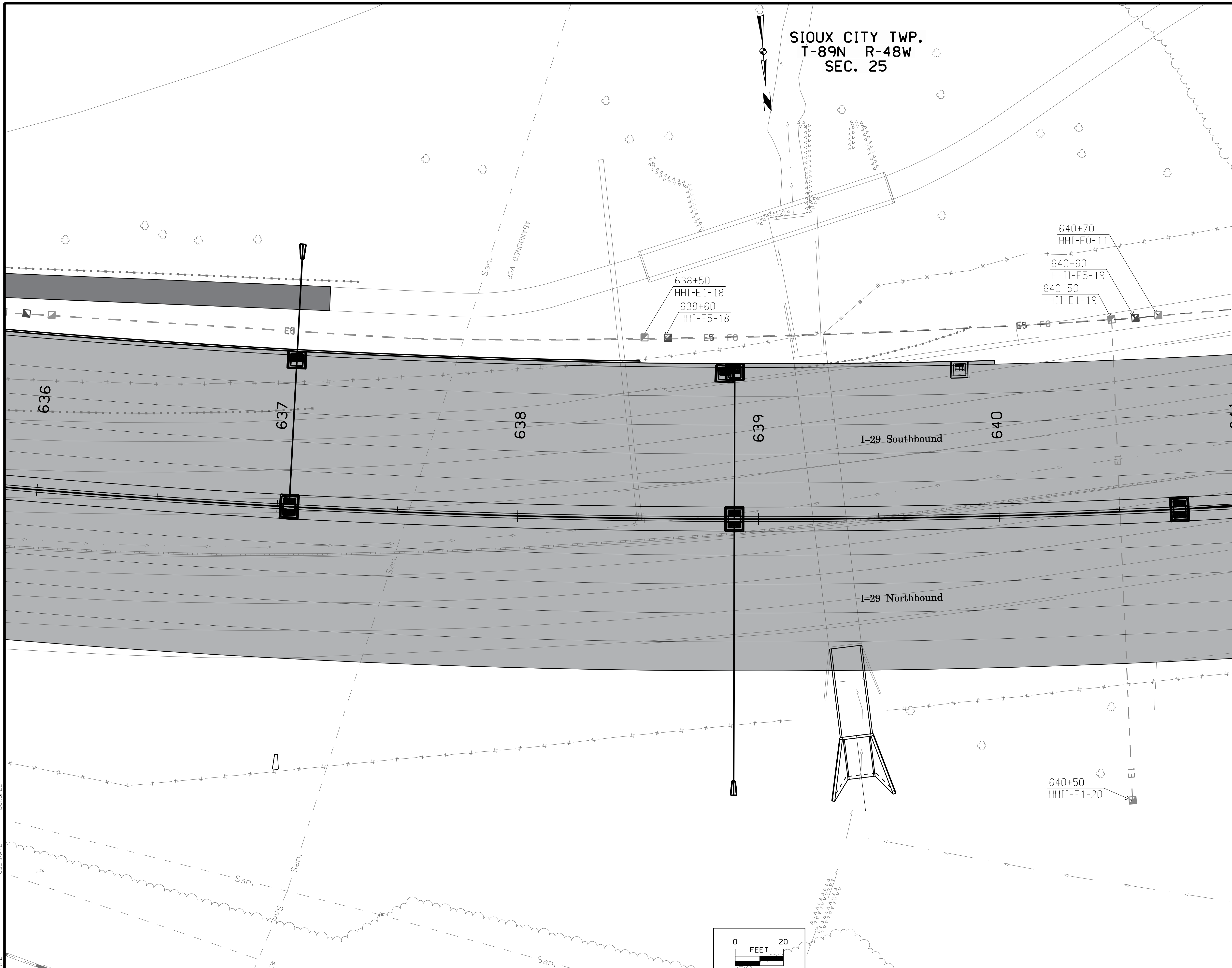
— E1 — ITS Power Conduit
Junction Box

— E5 — Future Use Conduit
Junction Box

ITS CONDUIT

DGNSPEC
USERNAME
SYSTEMTIME

ENGLISH 10000 Resolution | Iowa Department of Transportation | OFFICE OF TRAFFIC & SAFETY | DESIGN TEAM JORGENSEN\RINGGENBERG | WOODBURY COUNTY | PROJECT NUMBER IM-029-8(30)150--13-97 | SHEET NUMBER P.15



LEGEND

— FO —	Communcation Conduit	Junction Box
— E1 —	ITS Power Conduit	Junction Box
— E5 —	Future Use Conduit	Junction Box

ITS CONDUIT

SIOUX CITY TWP.
T-89N R-48W
SEC. 25

644+00
HHI-E5-20

647+10
HHI-F0-12

E5 F0

E5 F0

E6

E6

642

643

644

645

646

647

648

I-29 Southbound

E3

E3

I-29 Northbound

0 20
FEET

LEGEND

— F0 — Communcation Conduit
Junction Box

— E1 — ITS Power Conduit
Junction Box

— E5 — Future Use Conduit
Junction Box

ITS CONDUIT

DGNSPEC
USERNAME
SYSTEMTIME

ENGLISH 10000 Resolution | Iowa Department of Transportation | OFFICE OF TRAFFIC & SAFETY | DESIGN TEAM JORGENSEN\RINGGENBERG | WOODBURY COUNTY | PROJECT NUMBER IM-029-8(30)150--13-97 | SHEET NUMBER P.17

SIOUX CITY TWP.
T-89N R-48W
SEC. 25

650+00
HHI-E5-22

653+00
HHI-E5-23

653+10
HHI-F0-13

6452

6453

6454

E8

E3

E2

648

649

650

651

652

653

654

I-29 Southbound

I-29 Northbound

0 20
FEET

LEGEND

- F0 — Communcation Conduit
  - Junction Box
- E1 — ITS Power Conduit
  - Junction Box
- E5 — Future Use Conduit
  - Junction Box

ITS CONDUIT

DGNSPEC
USERNAME
SYSTEMTIME

ENGLISH 10000 Resolution	Iowa Department of Transportation	OFFICE OF TRAFFIC & SAFETY	DESIGN TEAM JORGENSEN\RINGGENBERG	WOODBURY COUNTY	PROJECT NUMBER IM-029-8(30)150--13-97	SHEET NUMBER P.18

SIOUX CITY TWP.
T-89N R-48W
SEC. 25

6456+00
HHI-E5-24

6459+00
HHI-E5-25

6459+10
HHI-FO-13

Riverside Blvd. Ramp D

I-29 Southbound

I-29 Northbound

Riverside Blvd. Ramp A

0 20
FEET

LEGEND

- FO — Communcation Conduit
- Junction Box
- E1 — ITS Power Conduit
- Junction Box
- E5 — Future Use Conduit
- Junction Box

ITS CONDUIT

ENGLISH	Iowa Department of Transportation	OFFICE OF TRAFFIC & SAFETY	DESIGN TEAM JORGENSEN\RINGGENBERG	WOODBURY COUNTY	PROJECT NUMBER IM-029-8(30)150--13-97	SHEET NUMBER P.19

SIOUX CITY TWP.
T-89N R-48W
SEC. 25

SIOUX CITY TWP.
T-89N R-48W
SEC. 26

6460
6461
6462
6463
6464
6264
6265
6662
6663
663
664
665
6664
6665

6462+00
HHI-E5-26

6464+00
HHI-F0-15
6464+10
HHI-E5-27

6264+45
HHI-F0-16
6264+55
HHI-E6-28

6264+45
HHI-F0-17

6662+50
HHI-F0-18

E5
E6
F0

Riverside Blvd. Ramp D

IA12/Riverside Blvd.

I-29 Southbound

I-29 Northbound

3.00 7.00
2.0% 4.0%
1111.16
30.000 Lt
6:1

PARTIAL SECTION
STA. 6461+00

0 20
FEET

LEGEND

— F0 —	Communcation Conduit
	Junction Box
— E1 —	ITS Power Conduit
	Junction Box
— E5 —	Future Use Conduit
	Junction Box

ITS CONDUIT

DGNSPEC
USERNAME
SYSTEMTIME

ENGLISH 10000 Resolution | Iowa Department of Transportation | OFFICE OF TRAFFIC & SAFETY | DESIGN TEAM JORGENSEN\RINGGENBERG | WOODBURY COUNTY | PROJECT NUMBER IM-029-8(30)150--13-97 | SHEET NUMBER P.20

ANCHOR BOLT NOTES:

PROCEDURE FOR TIGHTENING ANCHOR BOLT NUTS ON CANTILEVER SIGN TRUSS.

1) THIS WORK SHALL BE PERFORMED ONLY ON DAYS WITH WINDS LESS THAN 15 MPH. ALL TIGHTENING OF THE NUTS IS TO BE DONE IN THE PRESENCE OF THE INSPECTOR. ONCE THE TIGHTENING PROCEDURE IS STARTED IT MUST BE COMPLETED ON ALL OF THE BASE PLATE NUTS WITHOUT PAUSE OR DELAY.

2) PROPERLY SIZED WRENCHES DESIGNED FOR TIGHTENING NUTS AND/OR BOLTS SHALL BE USED TO AVOID ROUNDING OR OTHER DAMAGE TO THE NUTS. ADJUSTABLE END OR PIPE WRENCHES MAY NOT BE USED.

3) BASE PLATE, ANCHOR RODS AND NUTS ARE TO BE FREE OF ANY DIRT OR DEBRIS.

4) APPLY STICK WAX OR BEES WAX TO THE THREADS AND BEARING SURFACES OF THE ANCHOR BOLT, NUTS, AND WASHERS.

5) TIGHTEN TOP NUTS SO THEY FULLY CONTACT THE BASE PLATE. TIGHTEN LEVELING NUTS TO SNUG TIGHT CONDITION. SNUG TIGHT IS DEFINED AS THE FULL EFFORT OF ONE PERSON ON A WRENCH WITH A LENGTH EQUAL TO 14 TIMES THE BOLT DIAMETER BUT NOT LESS THAN 18 INCHES. APPLY THE FULL EFFORT AS CLOSE TO THE END OF THE WRENCH AS POSSIBLE. PULL FIRMLY BY LEANING BACK AND USING ENTIRE BODY WEIGHT ON THE END OF THE WRENCH UNTIL THE NUT STOPS ROTATING. USE A MINIMUM OF TWO SEPARATE PASSES OF TIGHTENING. SEQUENCE THE TIGHTENING IN EACH PASS SO THAT THE NUT ON THE OPPOSITE SIDE, TO THE EXTENT POSSIBLE, WILL BE SUBSEQUENTLY TIGHTENED UNTIL ALL OF THE NUTS IN THAT PASS HAVE BEEN TIGHTENED.

6) TIGHTEN TOP NUTS TO SNUG TIGHT AS DESCRIBED FOR THE LEVELING NUTS.

7) MATCH-MARK THE TOP NUTS AND BASE PLATE USING PAINT, CRAYON, OR OTHER APPROVED MEANS TO PROVIDE A REFERENCE FOR DETERMINING THE RELATIVE ROTATION OF THE NUT AND BASE PLATE DURING TIGHTENING. USING A STRIKING OR HYDRAULIC WRENCH, FURTHER TIGHTEN THE TOP NUTS IN TWO PASSES AS LISTED IN THE FOLLOWING TABLE. USE A SEQUENCE OF TIGHTENING IN EACH PASS SO THAT THE NUT ON THE OPPOSITE SIDE, TO THE EXTENT POSSIBLE, WILL BE SUBSEQUENTLY TIGHTENED UNTIL ALL NUTS IN THAT PASS HAVE BEEN TURNED. DO NOT ROTATE THE LEVELING NUT DURING THE TOP NUT TIGHTENING.

ANCHOR BOLT SIZE	FIRST PASS	SECOND PASS	TOTAL ROTATION
GREATER THAN $1\frac{1}{2}\Phi$"	1/12 TURN	1/12 TURN	1/6 TURN

8) LUBRICATE, PLACE AND TIGHTEN THE JAM NUTS TO SNUG TIGHT.

DESIGN STRESSES:

DESIGN STRESSES FOR MATERIALS ARE IN ACCORDANCE WITH A.A.S.H.T.O STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGN, LUMINAIRES AND TRAFFIC SIGNALS, SERIES OF 2001 WITH CURRENT INTERIMS.

ALUMINUM ALLOY 6061-T6 IN ACCORDANCE WITH SECTION 6.
STEEL IN ACCORDANCE WITH SECTION 5.

SPECIFICATIONS:

DESIGN: A.A.S.H.T.O. STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES AND TRAFFIC SIGNALS, SERIES OF 2001 WITH CURRENT INTERIMS; STATE STANDARD FATIGUE DESIGN.
CONSTRUCTION: IOWA D.O.T. STANDARD SPECIFICATIONS, SERIES 2001 PLUS APPLICABLE GENERAL SUPPLEMENTAL SPECIFICATIONS, DEVELOPMENTAL SPECIFICATIONS, SUPPLEMENTAL SPECIFICATIONS AND SPECIAL PROVISIONS SHALL APPLY TO CONSTRUCTION WORK ON THIS PROJECT.

ALUMINUM WELDING NOTES:

1) FABRICATION SHALL CONFORM TO SECTION 6.9 OF AASHTO 2001 STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES AND TRAFFIC SIGNALS, EXCEPT AS MODIFIED BY THE FOLLOWING NOTES. CLASS II WORKMANSHIP REQUIRED.

2) ALL WELDING SHALL BE DONE BY GAS METAL-ARC WELDING (GMAW) PROCESS.

3) ONLY STRINGER BEAD TECHNIQUE SHALL BE USED IN WELDING. NO WEAVE BEAD TECHNIQUE IS ALLOWED.

4) INTERPASS TEMPERATURE SHALL NOT EXCEED 200°F.

5) TACK WELD ENDS SHALL BE FILLED AND NOT TERMINATE IN CRATERS. IF A TACK WELD IS CRACKED, THE CRACK SHALL BE REMOVED BEFORE WELDING BEGINS.

6) ALL INITIAL ROOT PASSES SHALL NOT EXCEED $\frac{5}{16}$ INCH AND MUST PENETRATE THE ROOT.

7) THE CONVEXITY OF FILLET WELD SHALL NOT EXCEED $\frac{1}{16}$ INCH.

8) THE ENTIRE STRUCTURE SHALL BE CLEANED BEFORE SHIPPING.

9) TUBES SHOULD BE MILLED TO THE REQUIRED RADII WITH THE MAXIMUM GAP AT ANY POINT NOT GREATER THAN $\frac{1}{16}$ INCH

10) ALL AREAS OF WELDING MUST BE BRUSHED WITH STAINLESS STEEL BRUSHES IMMEDIATELY PRIOR TO MAKING THE WELDS.

11) ONLY MICROSCOPICALLY CLEAN WELDING WIRES (THOSE WHICH HAVE BEEN SHAVED AFTER DRAWING) SHOULD BE USED AND SPOOLS OF WIRE REMAINING AT THE END OF THE DAY'S PRODUCTION SHOULD BE SEALED IN POLYETHYLENE BAGS. WIRE NOT SO PROTECTED SHOULD BE DISCARDED. THIS INCLUDES WIRE IN THE DRIVE ROLLS AND GUN.

12) FORCED FITS MUST BE AVOIDED AND ONLY DOWN HAND WELDING IS ALLOWED.

13) ALL WELD CRATERS MUST BE ELIMINATED AND WELDS SHOULD CARRY THROUGH TIGHT AREAS WITHOUT STOPPING WHEN POSSIBLE.

14) ALUMINUM FILLER ALLOY ER5356 OR ER5556 SHALL BE USED.

STAINLESS STEEL BOLTING NOTES:

1) UNLESS OTHERWISE NOTED ON THE PLAN, ALL STAINLESS STEEL BOLTS AND U-BOLTS SHALL BE FURNISHED WITH STAINLESS STEEL REGULAR HEXAGONAL NUTS, JAM NUTS AND WASHERS UNDER BOTH HEADS AND NUTS.

2) IN CASE STAINLESS STEEL LOCK WASHERS ARE USED IN LIEU OF JAM NUTS, THE REGULAR WASHERS UNDER NUTS ARE TO BE OMITTED.

3) STAINLESS STEEL BOLTS SHALL COMPLY WITH ASTM A-320 OR F593 AS PER STANDARD SPECIFICATIONS. STAINLESS STEEL PARTS SHALL COMPLY WITH ASTM A240, 300 SERIES.

STEEL NOTES:

ALL STEEL SHAPES, BARS, AND PLATES SHALL COMPLY WITH ASTM A36 EXCEPT MINOR PARTS APPROVED BY THE ENGINEER MAY COMPLY WITH ASTM A575 GRADE M1020. ALL STEEL PIPE SHALL COMPLY WITH THE REQUIREMENTS OF ASTM A53 GRADE B, TYPE E OR S OR API 5L GRADE B.

ALL STEEL SECTIONS SHALL BE HOT DIPPED GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH ASTM A123. PROVIDE VENT HOLES FOR GALVANIZING.

ALL ANCHOR BOLT MATERIAL SHALL COMPLY WITH THE REQUIREMENTS OF IOWA DOT MATERIALS IM 453.08.

STEEL WELDING SHALL BE IN ACCORDANCE WITH THE CURRENT EDITION OF THE AWS SPECIFICATIONS D1.1, STRUCTURAL WELDING CODE-STEEL.

ULTRASONIC TESTING SHALL BE PREFORMED ON THE POST TO BASE PLATE. MAGNETIC PARTICAL TESTING SHALL BE PERFORMED ON THE POST TO STIFFENER WELDS.

THE $1\frac{1}{4}$"Φ A325 BOLTS SHALL BE TORQUED TO 1400 FT-LBS.

DESIGN NO.	STATION	LOCATION
1009	593+50	S.B. I-29
1209	681+50	S.B. I-29

GENERAL NOTES:

ALL CANTILEVER TRUSSES ARE DESIGNED FOR 30 lb/ft^2 WIND PRESSURE ON TRUSS MEMBERS AND SIGN PANELS.

ALL ROUND TUBES, SIGN SUPPORT ANGLES AND BRACKETS, BARS, AND PLATES FOR THE CANTILEVER SIGN TRUSS SHALL BE ALUMINUM ALLOY 6061-T6 UNLESS OTHERWISE NOTED OR SHOWN.

ALL DIAMETERS OF ALUMINUM TUBING SHOWN ARE OUTSIDE DIAMETERS.

SHOP DRAWINGS SHALL BE SUBMITTED FOR APPROVAL.

CLEAR DISTANCE FROM FACE OF CONCRETE TO THE NEAREST REINFORCING BAR SHALL BE 2" UNLESS OTHERWISE SHOWN.

THE ANCHOR BOLT ASSEMBLY SHALL BE CENTERED AT THE CENTER OF SHAFT AND SECURELY WIRED IN PLACE BEFORE CONCRETE IS PLACED.

THE FOOTING SHALL BE BACKFILLED PRIOR TO ERECTING SIGN TRUSS.

DESIGN ALLOWABLE SOIL BEARING IS 1.0 TONS PER SQ. FT.

ALL REINFORCING TO BE GRADE 60.

ALL CONCRETE TO BE CLASS "C" STRUCTURAL CONCRETE.

KEYWAY DIMENSIONS SHOWN ON THE PLANS ARE BASED ON NOMINAL DIMENSIONS UNLESS STATED OTHERWISE. IN ADDITION, THE BEVEL USED ON THE KEYWAY SHALL BE LIMITED TO A MAXIMUM OF 10 DEGREES FROM VERTICAL.

FOUNDATIONS AND ANCHOR BOLTS:

1) THE FOUNDATION SHALL BE ACCURATELY LOCATED, WITH THE CENTER OF THE ANCHOR BOLT GROUP NOT MORE THAN ONE INCH FROM THE PLAN LOCATION.

2) THE ELEVATION OF THE TOP OF THE FOUNDATION SHALL BE WITHIN ONE INCH OF PLAN ELEVATION.

3) ANCHOR BOLTS SHALL BE PLUMB WITHIN $\frac{1}{4}$ INCH PER FOOT FROM VERTICAL.

4) ANCHOR BOLTS SHALL PROJECT ABOVE TOP OF FOUNDATION WITHIN $\frac{1}{4}$ INCH OF THE PLAN DIMENSION.

5) WELDING OF ANCHOR BOLTS SHALL NOT BE ALLOWED. THE CONTRACTOR SHALL OBTAIN A TEMPLATE FROM THE MANUFACTURER / FABRICATOR FOR PROPER PLACEMENT OF THE ANCHOR BOLTS.

COMPLETED ALUMINUM AND STEEL STRUCTURE:

1) THE STEEL END POST SHALL BE PLUMB WITHIN $\frac{1}{16}$ INCH PER FOOT OF VERTICAL IN TWO PERPENDICULAR DIRECTIONS.

2) THE TRUSS SHALL BE SQUARE WITHIN ITS SUPPORTS. HORIZONTAL LINE BETWEEN CHORDS SHALL BE LEVEL WITHIN $\frac{1}{16}$ INCH PER FOOT OF HORIZONTAL, AND VERTICAL LINE BETWEEN CHORDS SHALL BE PLUMB WITHIN $\frac{1}{16}$ INCH PER FOOT OF VERTICAL.

STRUCTURAL DESIGN

LICENSED PROFESSIONAL ENGINEER
James R. Hauber
18418
IOWA

I hereby certify that this engineering document was prepared by me or under my direct personal supervision and that I am a duly licensed Professional Engineer under the laws of the State of Iowa.

Signature James Hauber Date 10-06-2009

Printed or Typed Name James R. Hauber

My license renewal date is December 31, 2010

Pages or sheets covered by this seal: V.1 THRU V.16

DESIGN FOR
ALUMINUM CANTILEVER TRUSS AND STEEL END POST
GENERAL NOTES

STA. SEE TABLE FEB., 2010

WOODBURY COUNTY
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 1 OF 6 FILE NO. 30237 DESIGN NO. SEE TABLE

DESIGN TEAM JRH / BDK	7'-0 CANTILEVER SIGN TRUSS - NOTES	MODIFIED STANDARD SHEET 5557	WOODBURY COUNTY	PROJECT NUMBER IM-029-8(38)150--13-97	SHEET NUMBER V.1

CANTILEVERSIGNTRUSS.DGN - 5557 - THIS SHEET ISSUED 04-09.

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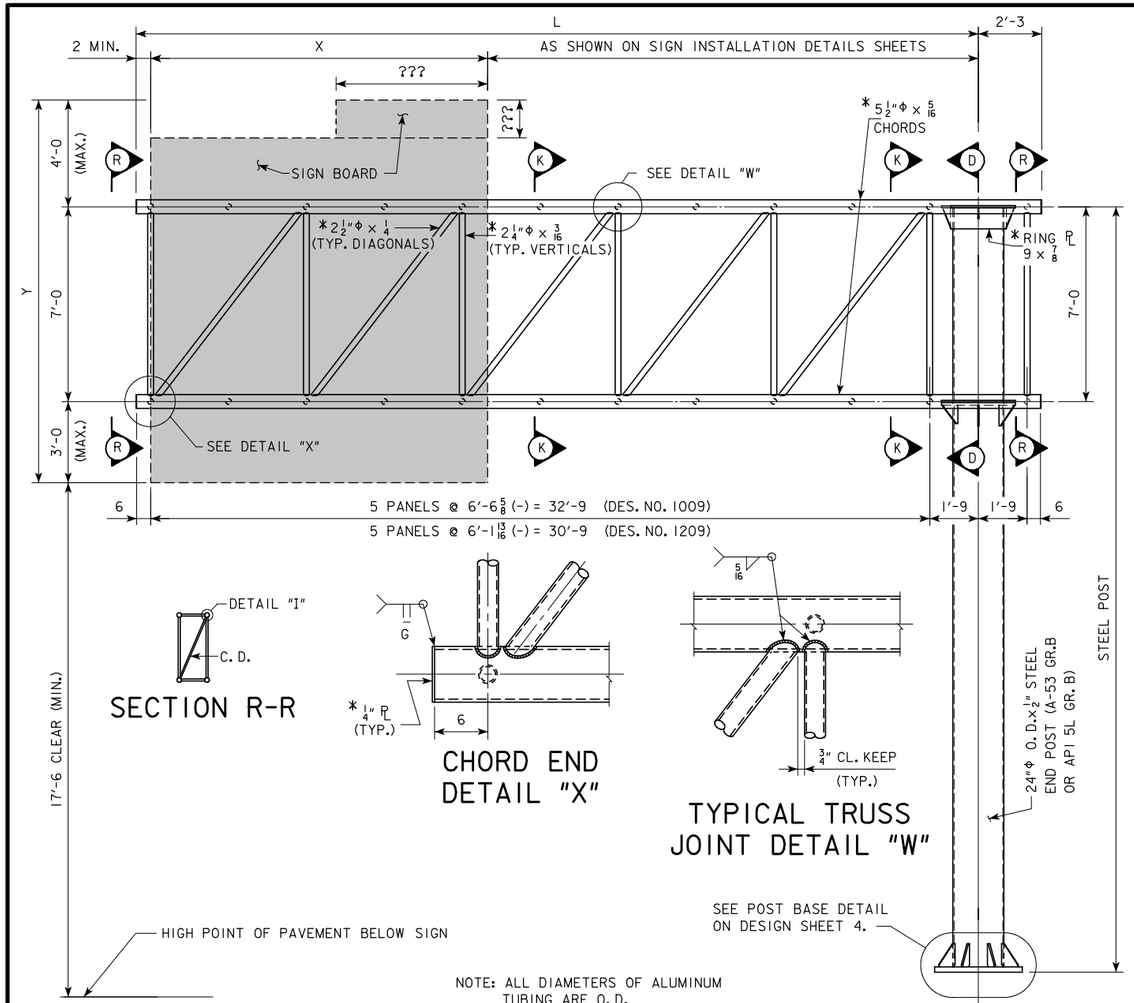
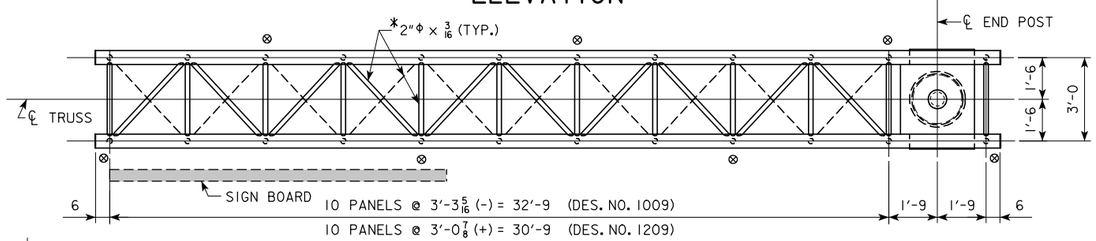
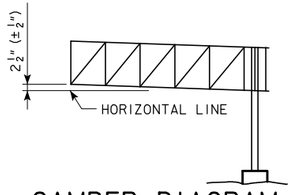


NOTE: ALL DIAMETERS OF ALUMINUM TUBING ARE O.D.

ELEVATION



PLAN



CAMBER DIAGRAM

⊗ INDICATES THE CONNECTION OF CROSS DIAGONALS (C.D.) IN VERTICAL PLANE TO THE TOP CHORD MEMBERS. SEE SECTIONS K-K & R-R.

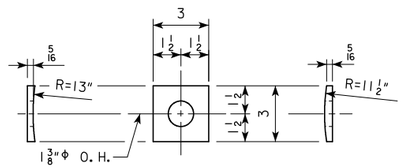
* INDICATES 6061-T6 ALUMINUM ALLOY MATERIAL.

Δ INDICATES A36 STEEL MATERIAL.

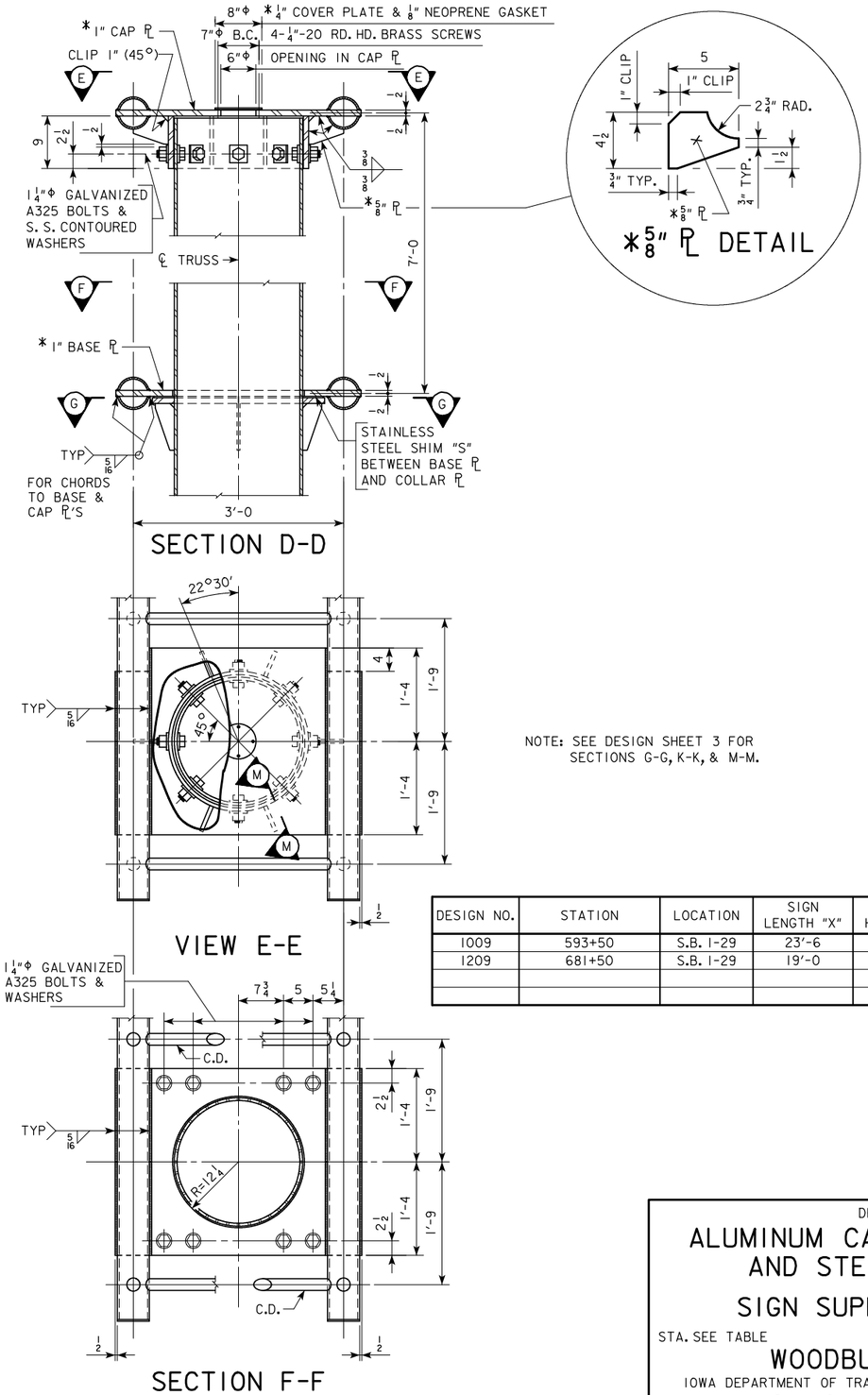
CHORD END DETAIL "X"

TYPICAL TRUSS JOINT DETAIL "W"

NOTE: O.H. = OVERSIZED HOLE



STAINLESS STEEL CONTOURED WASHERS



SECTION D-D

*5/8" PL DETAIL

VIEW E-E

SECTION F-F

NOTE: SEE DESIGN SHEET 3 FOR SECTIONS G-G, K-K, & M-M.

DESIGN NO.	STATION	LOCATION	SIGN LENGTH "X"	SIGN HEIGHT "Y"	STEEL POST	CANTILEVER LENGTH "L"
1009	593+50	S.B. I-29	23'-6	8'-6	27'-0	35'-0
1209	681+50	S.B. I-29	19'-0	13'-0	27'-0	33'-0

DESIGN FOR

ALUMINUM CANTILEVER TRUSS AND STEEL END POST

SIGN SUPPORT DETAILS

STA. SEE TABLE FEB., 2010

WOODBURY COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 2 OF 6 FILE NO. 30237 DESIGN NO. SEE TABLE

REVISION 05-09 - ADDED THE MAXIMUM STEEL POST HEIGHT.
CANTILEVERSIGNTRUSS.DGN - 5558 - THIS SHEET ISSUED 04-09.

DESIGN TEAM JRH / BDK	7'-0 CANTILEVER SIGN TRUSS - SUPPORT DETAILS	MODIFIED STANDARD SHEET 5558	WOODBURY COUNTY	PROJECT NUMBER IM-029-8(38)150--13-97	SHEET NUMBER V.2

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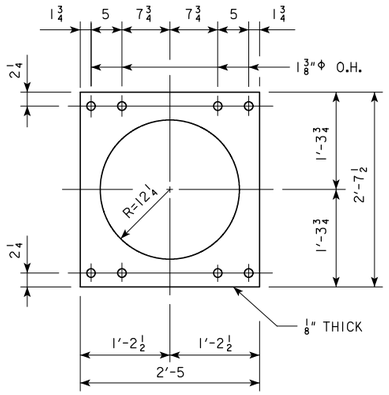
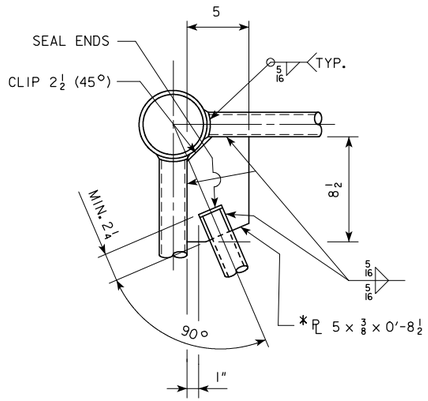
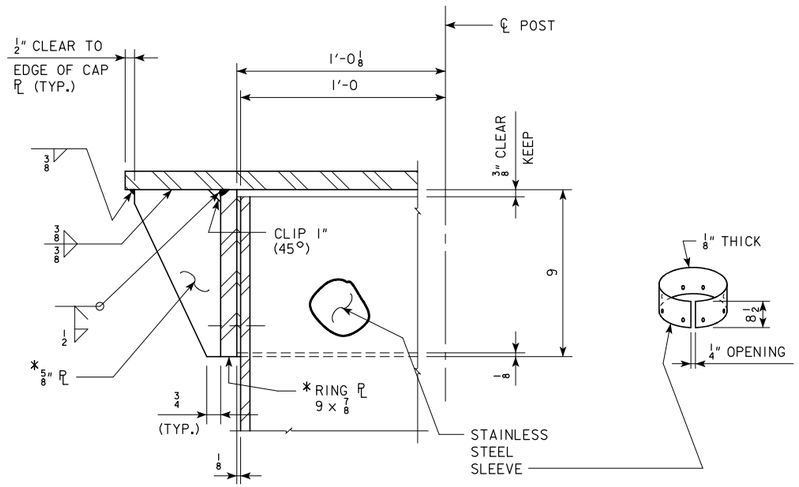


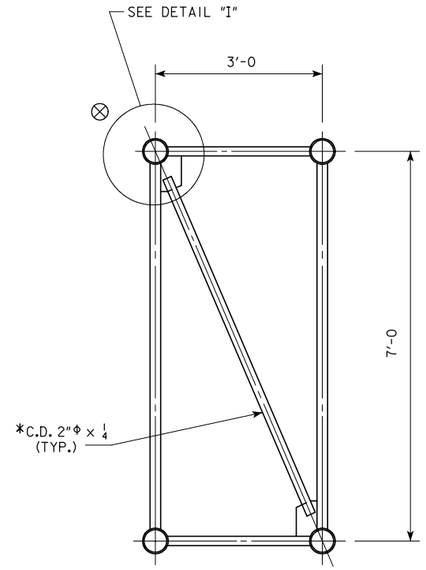
STAINLESS STEEL SHIM "S"



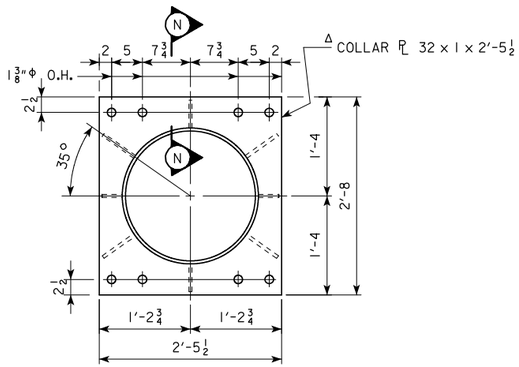
DETAIL "I"



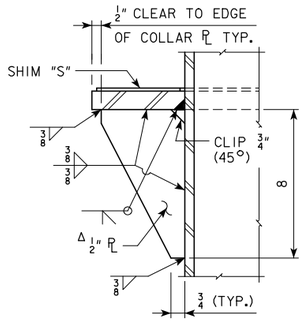
SECTION M-M



SECTION K-K



SECTION G-G



SECTION N-N

⊗ INDICATES THE CONNECTION OF CROSS DIAGONALS (C.D.) IN VERTICAL PLANE TO THE TOP CHORD MEMBERS. SEE SECTIONS K-K & R-R.

* INDICATES 6061-T6 ALUMINUM ALLOY MATERIAL.

Δ INDICATES A36 STEEL MATERIAL.

NOTE: SEE DESIGN SHEET 2 FOR LOCATIONS OF SECTIONS G-G, K-K, & M-M.

DESIGN NO.	STATION	LOCATION
1009	593+50	S.B. I-29
1209	681+50	S.B. I-29

DESIGN FOR

ALUMINUM CANTILEVER TRUSS AND STEEL END POST

SIGN SUPPORT DETAILS

STA. SEE TABLE FEB., 2010

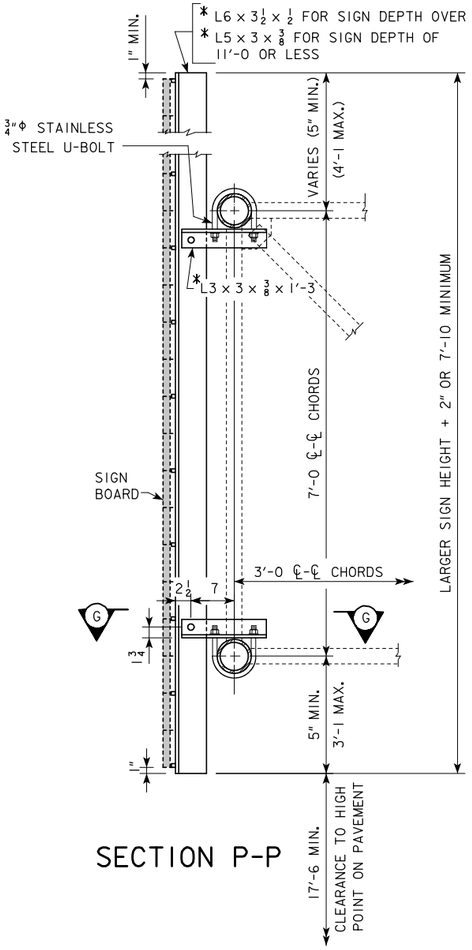
WOODBURY COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

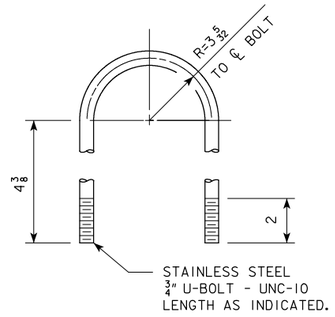
DESIGN SHEET NO. 3 OF 6 FILE NO. 30237 DESIGN NO. SEE TABLE

CANTILEVERSIGNTRUSS.DGN - 5559 - THIS SHEET ISSUED 04-09.

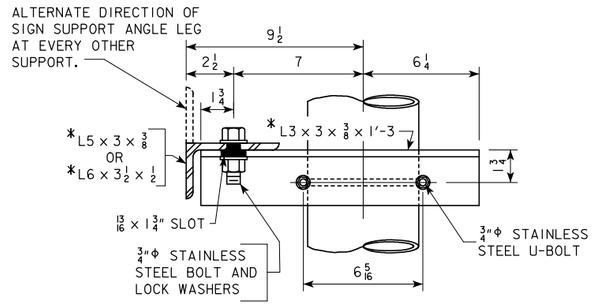
REVISION 05-09 - CHANGED THE MAXIMUM VERTICAL DISTANCES OF THE SIGN SUPPORT ANGLES ABOVE & BELOW THE CHORDS BY 1" EACH.
CANTILEVERSIGNTRUSS.DGN - 5560 - THIS SHEET ISSUED 04-09.



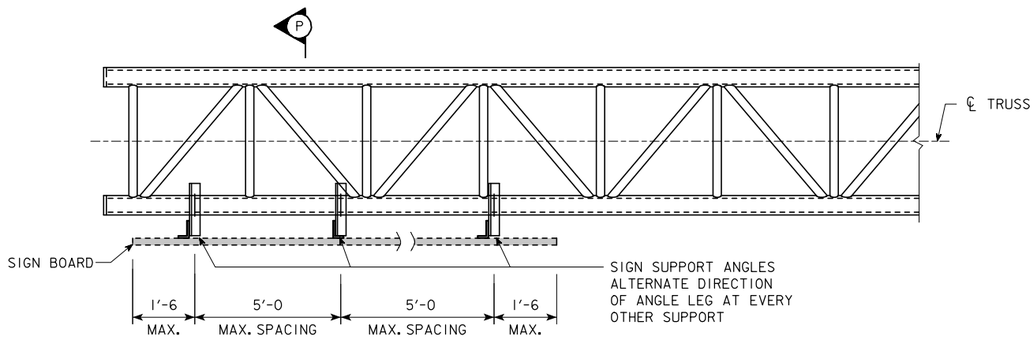
SECTION P-P



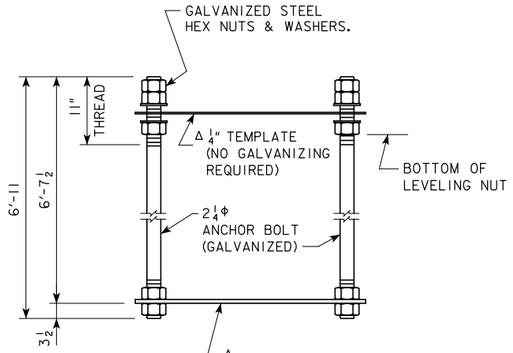
U-BOLT DETAILS



SECTION G-G

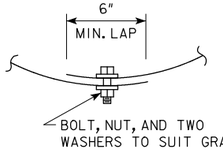


PART SIGN TRUSS PLAN



ANCHOR BOLTS ASSEMBLY

(ALL ANCHOR BOLT MATERIAL SHALL COMPLY WITH THE REQUIREMENTS OF IOWA DOT MATERIALS I.M. 453.08.)



RODENT GUARD CLOSURE DETAIL

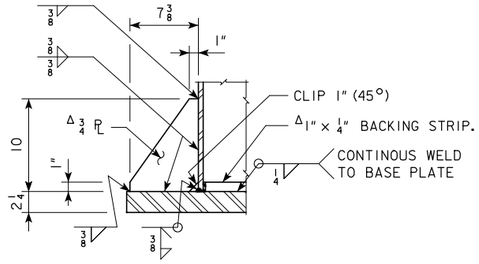
4 A RODENT GUARD SHALL BE PLACED BETWEEN THE CONCRETE FOOTING AND THE BASE PLATE, SEE MATERIALS I.M. 443.01.

AS AN ALTERNATE STAINLESS STEEL STANDARD GRADE WIRE CLOTH, ¼" MAXIMUM OPENING WITH A MINIMUM WIRE DIAMETER OF AWG. NO. 16 WITH A MINIMUM 2" LAP. SECURE TO BASE PLATE AFTER ERECTION WITH ¾" STAINLESS STEEL BANDING.

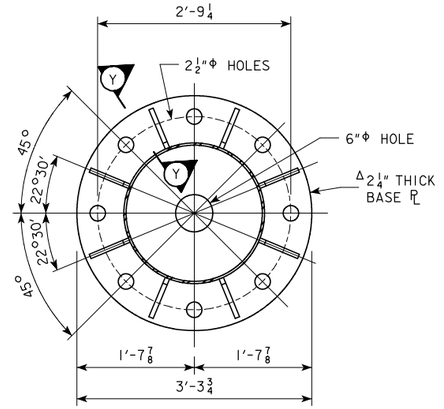
* INDICATES 6061-T6 ALUMINUM ALLOY MATERIAL.

Δ INDICATES A36 STEEL MATERIAL.

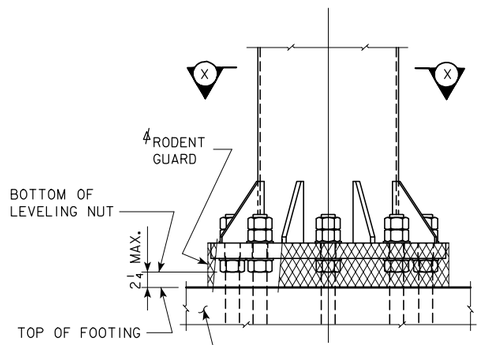
DESIGN NO.	STATION	LOCATION
1009	593+50	S.B. I-29
1209	681+50	S.B. I-29



SECTION Y-Y



SECTION X-X



POST BASE DETAIL

DESIGN FOR

ALUMINUM CANTILEVER TRUSS AND STEEL END POST

SIGN SUPPORT DETAILS

STA. SEE TABLE — FEB., 2010

WOODBURY COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 4 OF 6 — FILE NO. 30237 — DESIGN NO. SEE TABLE

DESIGN TEAM JRH / BDK	7'-0 CANTILEVER SIGN TRUSS - SUPPORT DETAILS	MODIFIED STANDARD SHEET 5560	WOODBURY COUNTY	PROJECT NUMBER IM-029-8(38)150--13-97	SHEET NUMBER V.4

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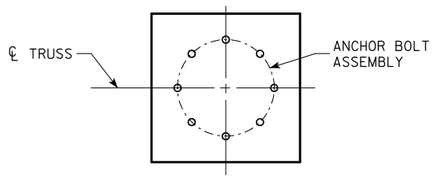
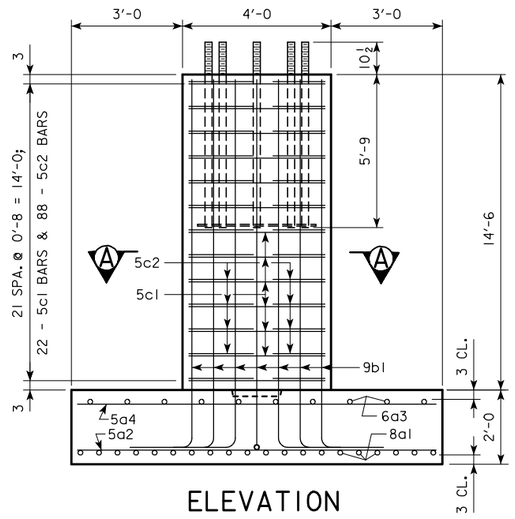
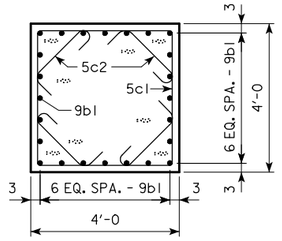


TOP VIEW

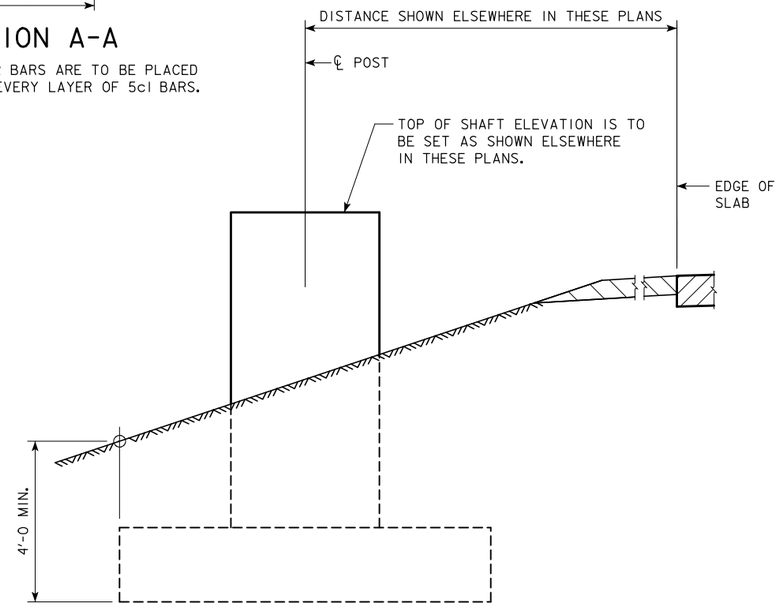


ELEVATION

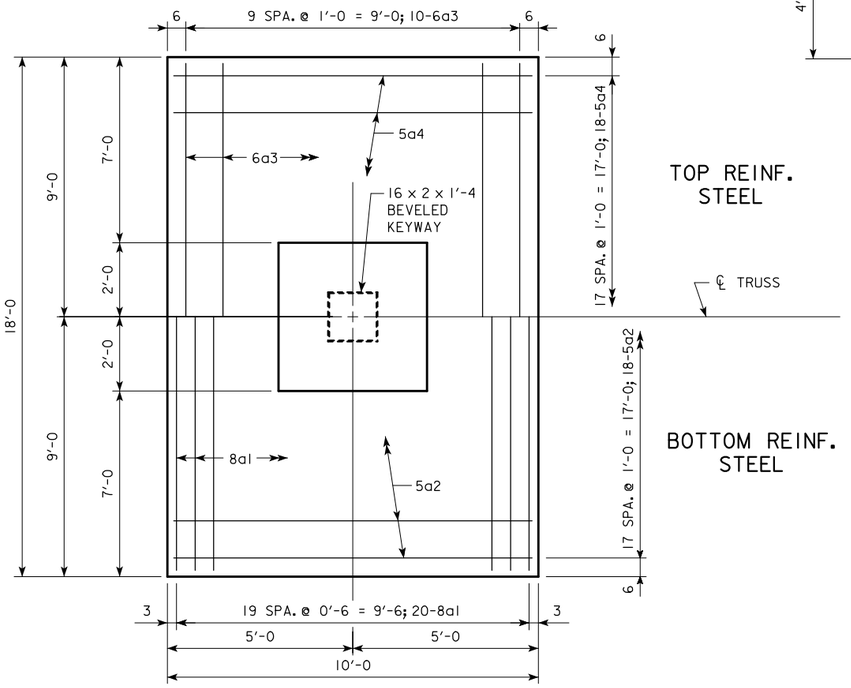


SECTION A-A

NOTE: 4 - 5c2 BARS ARE TO BE PLACED WITH EVERY LAYER OF 5c1 BARS.



ELEVATION - TOP OF SHAFT AND BACKFILL



TOP REINF. STEEL

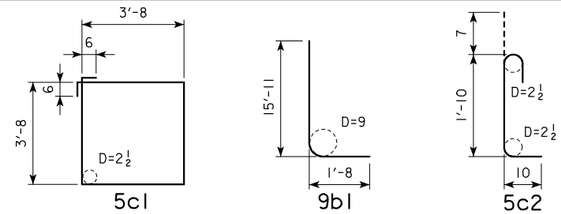
BOTTOM REINF. STEEL

FOOTING PLAN

EPOXY COATED REINFORCING BAR LIST

BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
8a1	FOOTING BOTT., LONGIT.	——	20	17'-8	943
5a2	FOOTING BOTT., TRANSV.	——	18	9'-8	181
6a3	FOOTING TOP, LONGIT.	——	10	17'-8	265
5a4	FOOTING TOP, TRANSV.	——	18	9'-8	181
9b1	FOOTING TO SHAFT DOWEL	L	24	17'-7	1435
5c1	SHAFT HOOPS	□	22	15'-8	359
5c2	SHAFT TIES	⊔	88	3'-3	298
	EPOXY COATED REINFORCING STEEL - TOTAL (LBS.)				3662

BENT BAR DETAILS



NOTE: ALL DIMENSIONS ARE OUT TO OUT. D = PIN DIAMETER.

CONCRETE PLACEMENT QUANTITIES

SHAFT	8.6
FOOTING	13.3
TOTAL - CU. YDS.	21.9

ESTIMATED FOOTING QUANTITIES

ITEM	UNIT	DESIGN NO. 1009
STRUCTURAL CONCRETE	CU. YDS.	21.9
REINFORCING STEEL-EPOXY COATED	LBS.	3662
CLASS 20 EXCAVATION	CU. YDS.	52.6

DESIGN NO.	STATION	LOCATION
1009	593+50	S.B. I-29

DESIGN FOR

ALUMINUM CANTILEVER TRUSS AND STEEL END POST

FOOTING DETAILS

STA. SEE TABLE — FEB., 2010

WOODBURY COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 5 OF 6 FILE NO. 30237 DESIGN NO. SEE TABLE

REVISION 05-09 - REFERENCE TO DETERMINE THE TOP OF SHAFT ELEVATION CHANGED.
CANTILEVERSIGNTRUSS.DGN - 5561 - THIS SHEET ISSUED 04-09.

DESIGN TEAM JRH / BDK	7'-0 CANTILEVER SIGN TRUSS - FOOTING DETAILS	MODIFIED STANDARD SHEET 5561	WOODBURY COUNTY	PROJECT NUMBER IM-029-8(38)150--13-97	SHEET NUMBER V.5

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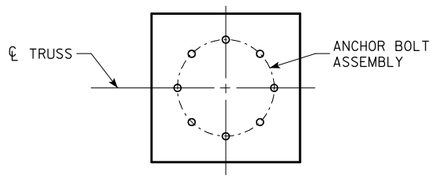
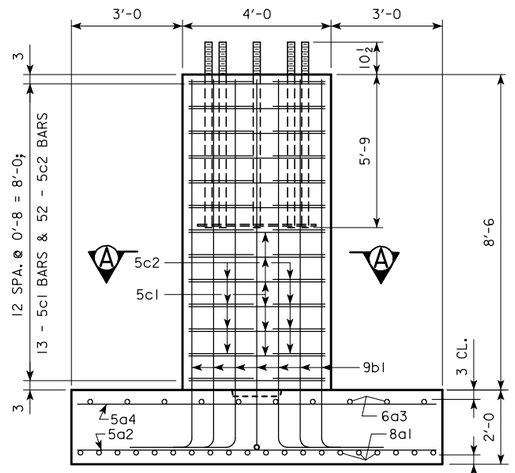
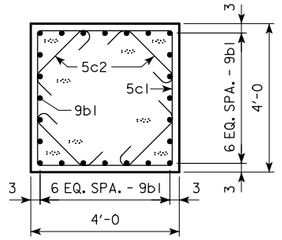


TOP VIEW

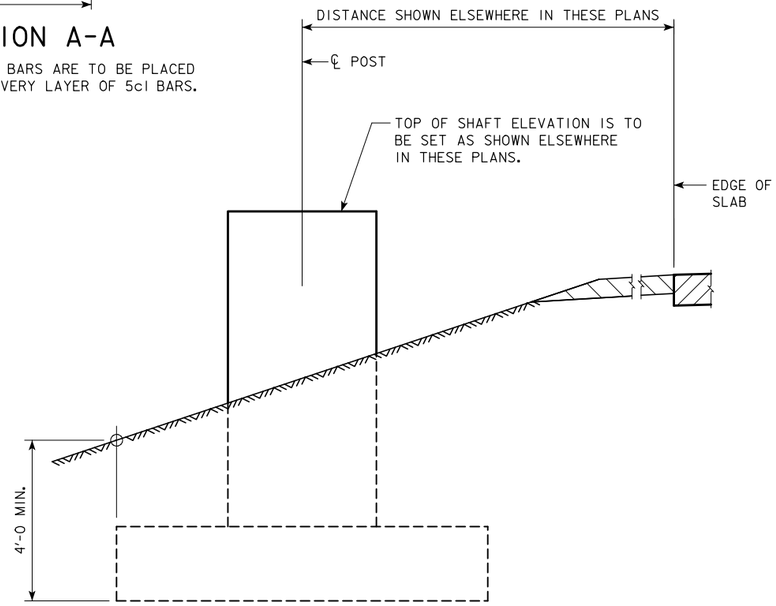


ELEVATION

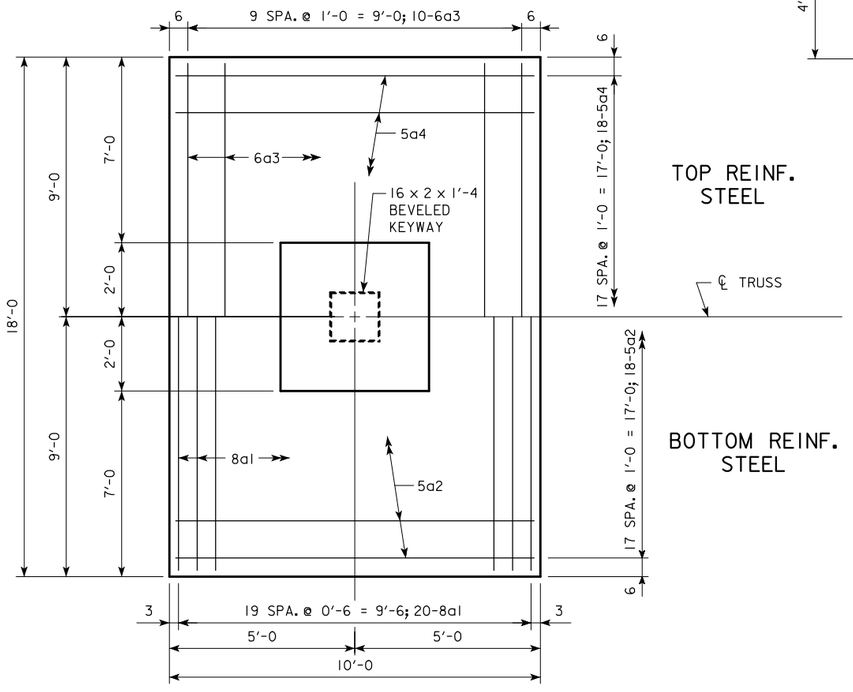


SECTION A-A

NOTE: 4 - 5c2 BARS ARE TO BE PLACED WITH EVERY LAYER OF 5c1 BARS.



ELEVATION - TOP OF SHAFT AND BACKFILL



TOP REINF. STEEL

℄ TRUSS

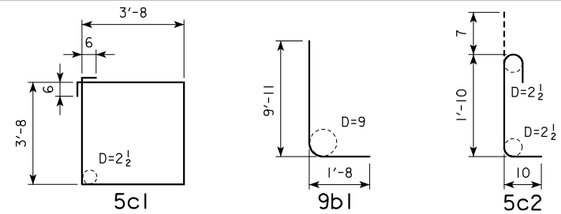
BOTTOM REINF. STEEL

FOOTING PLAN

EPOXY COATED REINFORCING BAR LIST

BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
8a1	FOOTING BOTT., LONGIT.	——	20	17'-8	943
5a2	FOOTING BOTT., TRANSV.	——	18	9'-8	181
6a3	FOOTING TOP, LONGIT.	——	10	17'-8	265
5a4	FOOTING TOP, TRANSV.	——	18	9'-8	181
9b1	FOOTING TO SHAFT DOWEL	L	24	11'-7	945
5c1	SHAFT HOOPS	□	13	15'-8	212
5c2	SHAFT TIES	⊔	52	3'-3	176
	EPOXY COATED REINFORCING STEEL - TOTAL (LBS.)				2903

BENT BAR DETAILS



NOTE: ALL DIMENSIONS ARE OUT TO OUT. D = PIN DIAMETER.

CONCRETE PLACEMENT QUANTITIES

SHAFT	5.0
FOOTING	13.3
TOTAL - CU. YDS.	18.3

ESTIMATED FOOTING QUANTITIES

ITEM	UNIT	DESIGN NO. 1209
STRUCTURAL CONCRETE	CU. YDS.	18.3
REINFORCING STEEL-EPOXY COATED	LBS.	2903
CLASS 20 EXCAVATION	CU. YDS.	70.8

DESIGN NO.	STATION	LOCATION
1209	681+50	S.B. I-29

DESIGN FOR

ALUMINUM CANTILEVER TRUSS AND STEEL END POST

FOOTING DETAILS

STA. SEE TABLE — FEB., 2010

WOODBURY COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 6 OF 6 FILE NO. 30237 DESIGN NO. SEE TABLE

REVISION 05-09 - REFERENCE TO DETERMINE THE TOP OF SHAFT ELEVATION CHANGED.
CANTILEVERSIGNTRUSS.DGN - 5561 - THIS SHEET ISSUED 04-09.

ANCHOR BOLT NOTES:

PROCEDURE FOR TIGHTENING ANCHOR BOLT NUTS ON OVERHEAD SIGN TRUSS.

1) THIS WORK SHALL BE PERFORMED ONLY ON DAYS WITH WINDS LESS THAN 15 MPH. ALL TIGHTENING OF THE NUTS IS TO BE DONE IN THE PRESENCE OF THE INSPECTOR. ONCE THE TIGHTENING PROCEDURE IS STARTED IT MUST BE COMPLETED ON ALL OF THE BASE PLATE NUTS WITHOUT PAUSE OR DELAY.

2) PROPERLY SIZED WRENCHES DESIGNED FOR TIGHTENING NUTS AND/OR BOLTS SHALL BE USED TO AVOID ROUNDING OR OTHER DAMAGE TO THE NUTS. ADJUSTABLE END OR PIPE WRENCHES MAY NOT BE USED.

3) BASE PLATE, ANCHOR RODS AND NUTS ARE TO BE FREE OF ANY DIRT OR DEBRIS.

4) APPLY STICK WAX OR BEES WAX TO THE THREADS AND BEARING SURFACES OF THE ANCHOR BOLT, NUTS, AND WASHERS.

5) TIGHTEN TOP NUTS SO THEY FULLY CONTACT THE BASE PLATE. TIGHTEN LEVELING NUTS TO SNUG TIGHT CONDITION. SNUG TIGHT IS DEFINED AS THE FULL EFFORT OF ONE PERSON ON A WRENCH WITH A LENGTH EQUAL TO 14 TIMES THE BOLT DIAMETER BUT NOT LESS THAN 18 INCHES. APPLY THE FULL EFFORT AS CLOSE TO THE END OF THE WRENCH AS POSSIBLE. PULL FIRMLY BY LEANING BACK AND USING ENTIRE BODY WEIGHT ON THE END OF THE WRENCH UNTIL THE NUT STOPS ROTATING. USE A MINIMUM OF TWO SEPARATE PASSES OF TIGHTENING. SEQUENCE THE TIGHTENING IN EACH PASS SO THAT THE NUT ON THE OPPOSITE SIDE, TO THE EXTENT POSSIBLE, WILL BE SUBSEQUENTLY TIGHTENED UNTIL ALL OF THE NUTS IN THAT PASS HAVE BEEN TIGHTENED.

6) TIGHTEN TOP NUTS TO SNUG TIGHT AS DESCRIBED FOR THE LEVELING NUTS.

7) MATCH-MARK THE TOP NUTS AND BASE PLATE USING PAINT, CRAYON, OR OTHER APPROVED MEANS TO PROVIDE A REFERENCE FOR DETERMINING THE RELATIVE ROTATION OF THE NUT AND BASE PLATE DURING TIGHTENING. USING A STRIKING OR HYDRAULIC WRENCH, FURTHER TIGHTEN THE TOP NUTS IN TWO PASSES AS LISTED IN THE FOLLOWING TABLE. USE A SEQUENCE OF TIGHTENING IN EACH PASS SO THAT THE NUT ON THE OPPOSITE SIDE, TO THE EXTENT POSSIBLE, WILL BE SUBSEQUENTLY TIGHTENED UNTIL ALL NUTS IN THAT PASS HAVE BEEN TURNED. DO NOT ROTATE THE LEVELING NUT DURING THE TOP NUT TIGHTENING.

ANCHOR BOLT SIZE	FIRST PASS	SECOND PASS	TOTAL ROTATION
LESS THAN OR EQUAL TO $1\frac{1}{2}\Phi$"	1/6 TURN	1/6 TURN	1/3 TURN
GREATER THAN $1\frac{1}{2}\Phi$"	1/12 TURN	1/12 TURN	1/6 TURN

8) LUBRICATE, PLACE AND TIGHTEN THE JAM NUTS TO SNUG TIGHT.

DESIGN STRESSES:

DESIGN STRESSES FOR MATERIALS ARE IN ACCORDANCE WITH A.A.S.H.T.O STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGN, LUMINAIRES AND TRAFFIC SIGNALS, SERIES OF 2001 INCLUDING INTERMS UP TO 2006.

STAINLESS STEEL U-BOLT NOTES:

1) UNLESS OTHERWISE NOTED ON THE PLAN, ALL STAINLESS STEEL U-BOLTS SHALL BE FURNISHED WITH STAINLESS STEEL REGULAR HEXAGONAL NUTS, JAM NUTS AND WASHERS UNDER BOTH HEADS AND NUTS. STAINLESS STEEL U-BOLTS SHALL MEET REQUIREMENTS OF ASTM A320, TYPE 304 OR ASTM F593 GROUP 1, 2, OR 3 CONDITION A.

2) IN CASE STAINLESS STEEL LOCK WASHERS ARE USED IN LIEU OF JAM NUTS, THE REGULAR WASHERS UNDER NUTS ARE TO BE OMITTED.

STEEL NOTES:

STEEL SHAPES FOR D.M.S. CONNECTION DETAIL SHALL COMPLY WITH ASTM A572 GRADE 50, ALL OTHER STEEL SHAPES SHALL MEET THE REQUIREMENTS OF ASTM A36. ALL STEEL BARS, AND PLATES SHALL COMPLY WITH ASTM A36 EXCEPT MINOR PARTS APPROVED BY THE ENGINEER MAY COMPLY WITH ASTM A575 GRADE M1020. THE METAL BAR GRATING INCLUDING BEARING BAR, CROSS BAR, AND BANDING BARS SHALL COMPLY WITH THE REQUIREMENTS OF ASTM A1011 TYPE 2. ALL STEEL PIPE SHALL COMPLY WITH THE REQUIREMENTS OF ASTM A53 GRADE B, TYPE E OR S. STAINLESS STEEL BOLTS SHALL COMPLY WITH ASTM A320 OR F592 AS PER STANDARD SPECIFICATIONS.

ALL STEEL SECTIONS SHALL BE HOT DIPPED GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH ASTM A123. PROVIDE VENT HOLES FOR GALVANIZING.

STEEL WELDING SHALL BE IN ACCORDANCE WITH THE CURRENT EDITION OF THE AWS SPECIFICATIONS D1.1, STRUCTURAL WELDING CODE-STEEL.

MAGNETIC PARTICLE TESTING SHALL BE PREFORMED ON THE POST TO BASE PLATE AND STIFFENER FILLET WELDS.

SPECIFICATIONS:

DESIGN: A.A.S.H.T.O. STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES AND TRAFFIC SIGNALS, SERIES OF 2001 INCLUDING INTERMS UP TO 2006; STATE STANDARD FATIGUE DESIGN. AMERICAN INSTITUTE OF STEEL CONSTRUCTION, THIRTEENTH EDTION.

CONSTRUCTION: IOWA D.O.T. STANDARD SPECIFICATIONS, SERIES 2001 PLUS APPLICABLE GENERAL SUPPLEMENTAL SPECIFICATIONS, DEVELOPMENTAL SPECIFICATIONS, SUPPLEMENTAL SPECIFICATIONS AND SPECIAL PROVISIONS SHALL APPLY TO CONSTRUCTION WORK ON THIS PROJECT.

GENERAL NOTES:

ALL TRUSSES ARE DESIGNED FOR 30 lb/ft^2 WIND PRESSURE ON TRUSS MEMBERS AND 40 lb/ft^2 ON DMS. THE DMS IS LIMITED TO 4000 LBS. AND A WIDTH OF 29'-3, A HEIGHT OF 7'-10, AND A DEPTH OF 3'-11.

ALL PIPES, SHAPES, AND PLATES SHALL BE STRUCTURAL STEEL COMPLYING WITH THE ASTM SPECIFICATIONS NOTED.

SHOP DRAWINGS SHALL BE SUBMITTED FOR APPROVAL.

SHOP DRAWINGS SHALL INDICATE LEFT AND RIGHT SUPPORTS.

THE PRECISE ALIGNING AND ERECTING OF ALL COMPONENTS OF THE OVERHEAD SIGN TRUSS AND ITS SUPPORTS SHALL BE CONSIDERED ESSENTIAL. THE CONTRACTOR SHALL SUBMIT DOCUMENTATION TO THE ENGINEER SHOWING THAT THE VARIOUS COMPONENTS HAVE BEEN MEASURED AND ARE LOCATED WITHIN THE TOLERANCES LISTED BELOW.

FOUNDATIONS AND ANCHOR BOLTS:

1) EACH FOUNDATION SHALL BE ACCURATELY LOCATED, WITH THE CENTER OF THE TWO ANCHOR BOLT GROUPS NOT MORE THAN 1 INCH FROM THE PLAN LOCATION IN THE DIRECTION PARALLEL WITH AND PERPENDICULAR TO THE OVERHEAD TRUSS.

2) THE TWO FOUNDATIONS SHALL BE PARALLEL, WITH THE DISTANCES ALONG THE OVERHEAD TRUSS BETWEEN CENTERS OF FRONT AND REAR ANCHOR BOLT GROUPS DIFFERING BY NOT MORE THAN 1 INCH.

3) ELEVATIONS OF THE TOP OF EACH FOUNDATION SHALL BE WITHIN 1 INCH OF PLAN ELEVATION.

4) ANCHOR BOLT GROUPS SHALL BE LOCATED ACCURATELY BY TEMPLATE OR OTHER POSITIVE MEANS, WITH CENTERS OF ADJACENT ANCHOR BOLT GROUPS WITHIN $\frac{3}{16}$ INCH OF THE CORRECT DISTANCE APART.

5) ANCHOR BOLTS SHALL BE PLUMB WITHIN $\frac{1}{4}$ INCH PER FOOT FROM VERTICAL.

6) ANCHOR BOLTS SHALL PROJECT ABOVE TOP OF FOUNDATION WITHIN $\frac{1}{4}$ INCH OF THE PLAN DIMENSION.

7) WELDING OF ANCHOR BOLTS SHALL NOT BE ALLOWED. THE CONTRACTOR SHALL OBTAIN A TEMPLATE FROM THE MANUFACTURER / FABRICATOR FOR PROPER PLACEMENT OF THE ANCHOR BOLTS.

COMPLETED STEEL STRUCTURE:

1) EACH TRUSS SUPPORT COLUMN SHALL BE PLUMB WITHIN $\frac{1}{16}$ INCH PER FOOT OF VERTICAL IN TWO PERPENDICULAR DIRECTIONS.

2) STICK-OUT OF EACH TRUSS LOWER CHORD SHALL BE WITHIN $2\frac{3}{4}$ AND $5\frac{1}{2}$ INCHES MEASURED FROM OUTER U-BOLT TO INSIDE OF CHORD END PLATE.

3) THE TRUSS SHALL BE SQUARE WITHIN SUPPORTS. HORIZONTAL LINE BETWEEN CHORDS SHALL BE LEVEL WITHIN $\frac{1}{16}$ INCH PER FOOT OF HORIZONTAL, AND VERTICAL LINE BETWEEN CHORDS SHALL BE PLUMB WITHIN $\frac{1}{16}$ INCH PER FOOT OF VERTICAL.

DESIGN FOR

GALVANIZED OVERHEAD SIGN TRUSS WITH GALVANIZED STEEL SUPPORTS

GENERAL NOTES

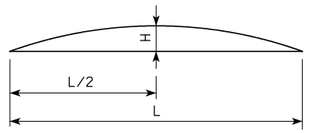
STA. 618+00 FEB., 2010

WOODBURY COUNTY

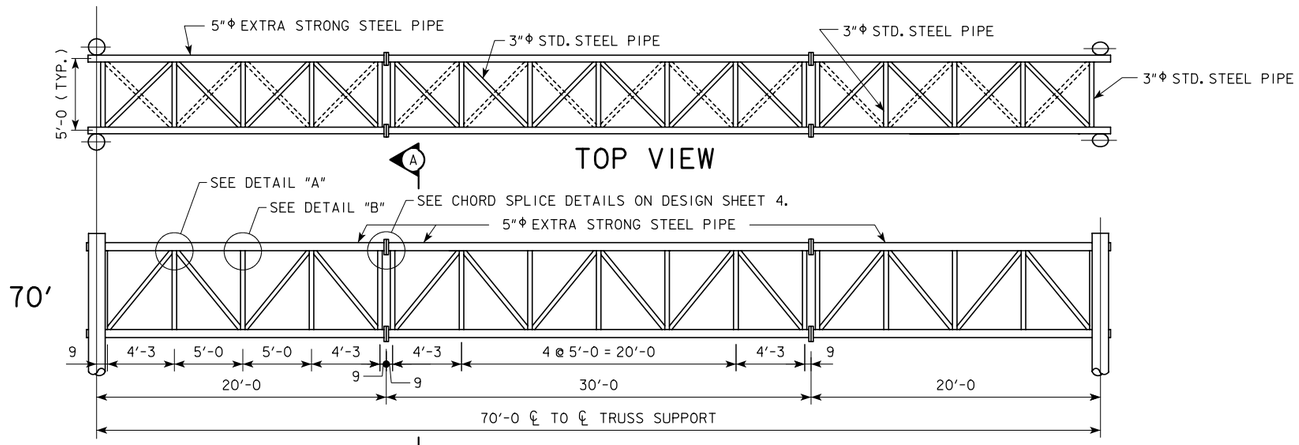
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

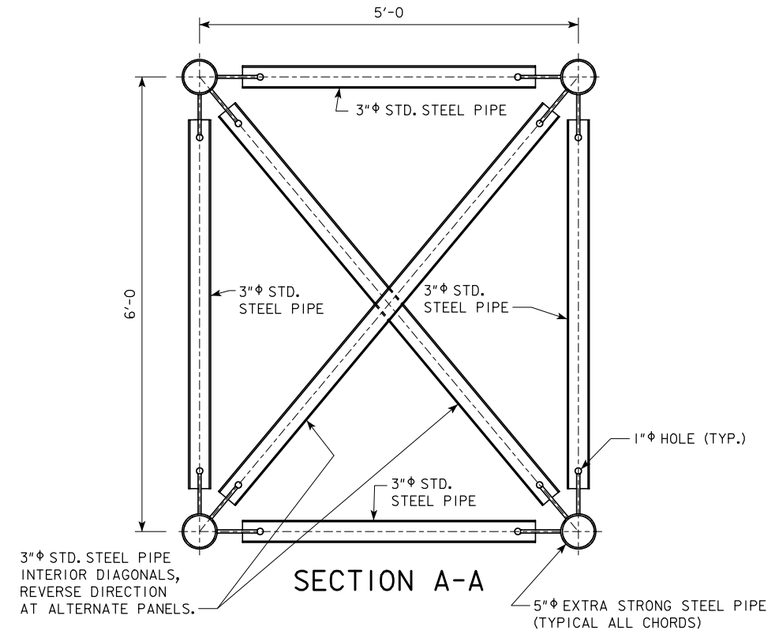
DESIGN SHEET NO. 1 OF 10 FILE NO. 30237 DESIGN NO. 1109

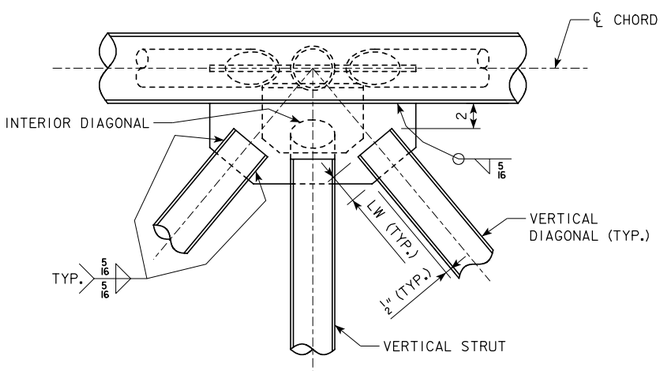
SPAN L	CAMBER H
70′	$1\frac{3}{8}$



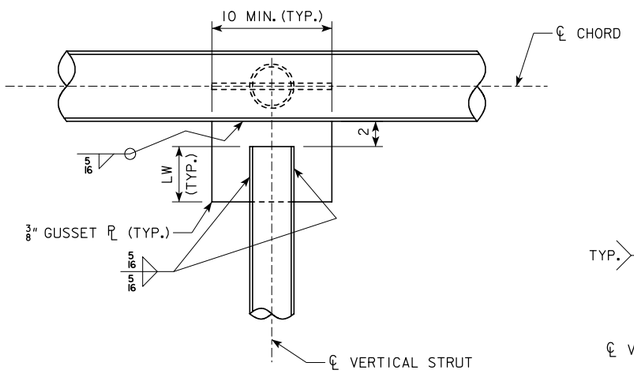
CAMBER DIAGRAM



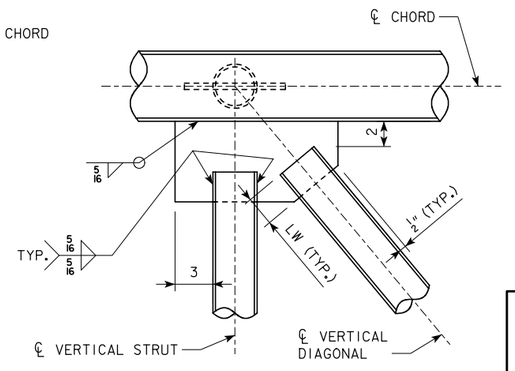




DETAIL "A"
FOR 3"Φ STD. STEEL PIPE
LW (MIN.) = $3\frac{1}{2}$"



DETAIL "B"
FOR 3"Φ STD. STEEL PIPE
LW (MIN.) = $3\frac{1}{2}$"



DETAIL "C"
FOR 3"Φ STD. STEEL PIPE
LW (MIN.) = $3\frac{1}{2}$"

DESIGN FOR
GALVANIZED OVERHEAD SIGN TRUSS WITH GALVANIZED STEEL SUPPORTS

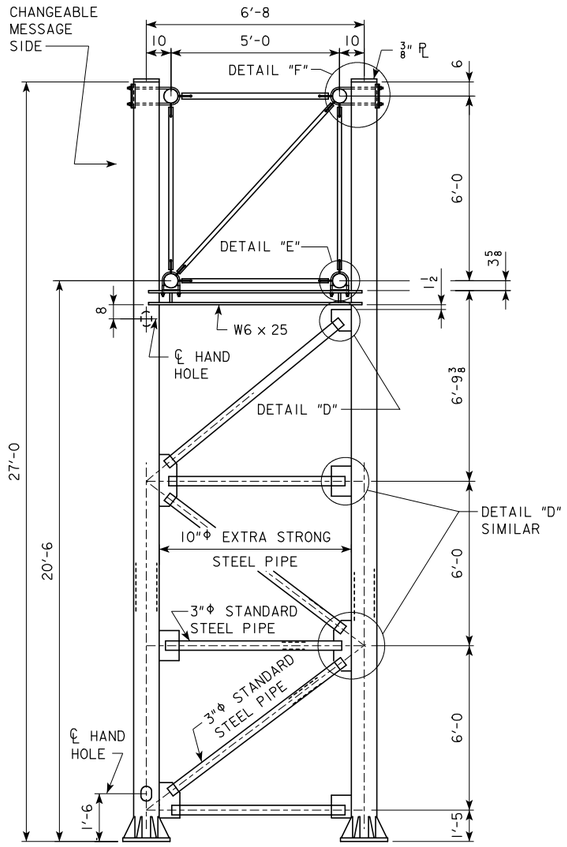
ELEVATION VIEWS

STA. 618+00 FEB., 2010

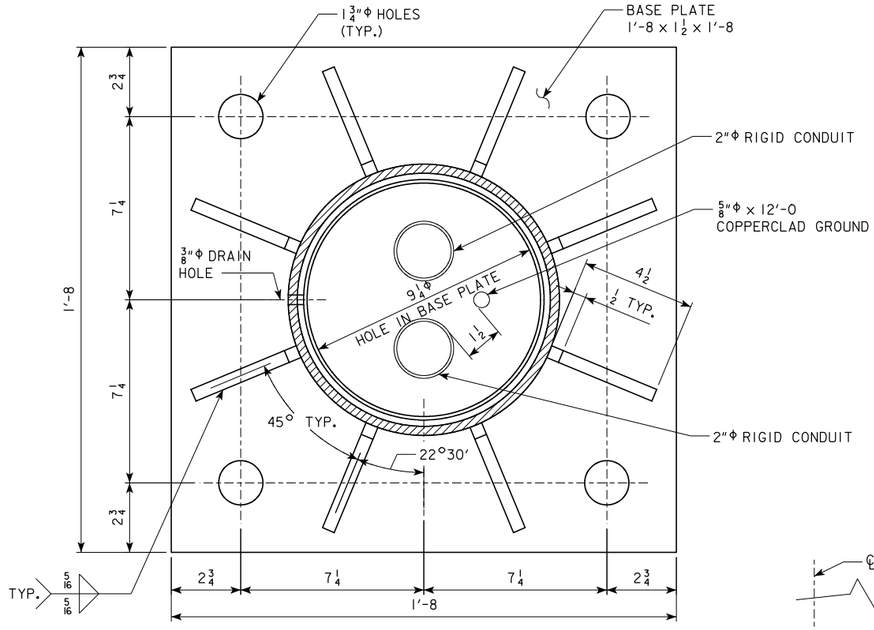
WOODBURY COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

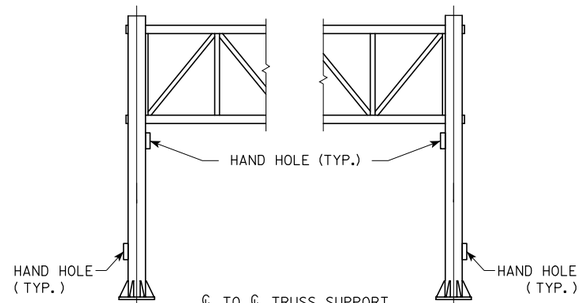
DESIGN SHEET NO. 2 OF 10 FILE NO. 30237 DESIGN NO. 1109



END VIEW OF TRUSS SUPPORT

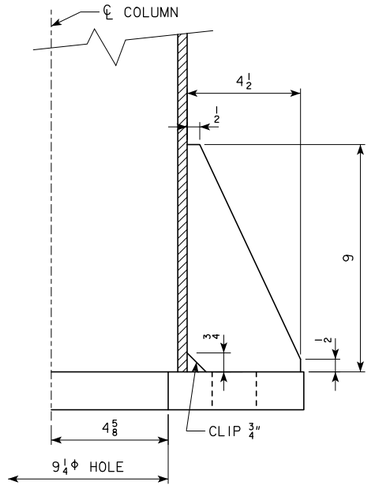


BASE PLATE PLAN

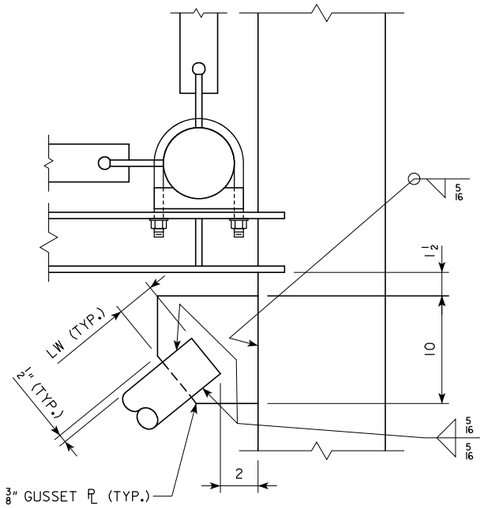


PART ELEVATION

NOTE: HAND HOLES SHALL BE IN BOTH END TRUSS SUPPORTS AND ON DYNAMIC MESSAGE SIDE ONLY.

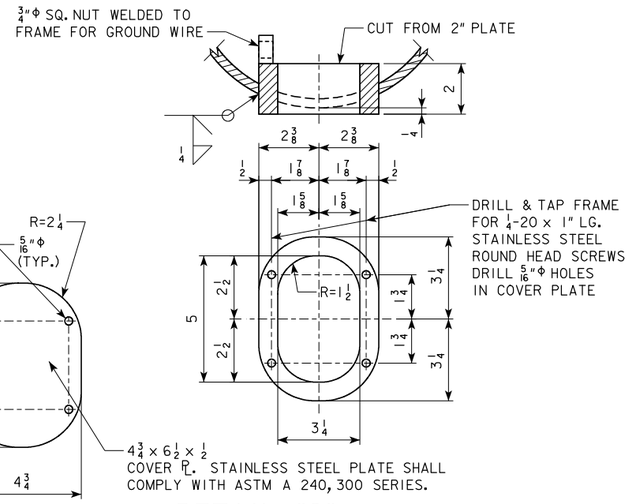


BASE CROSS-SECTION

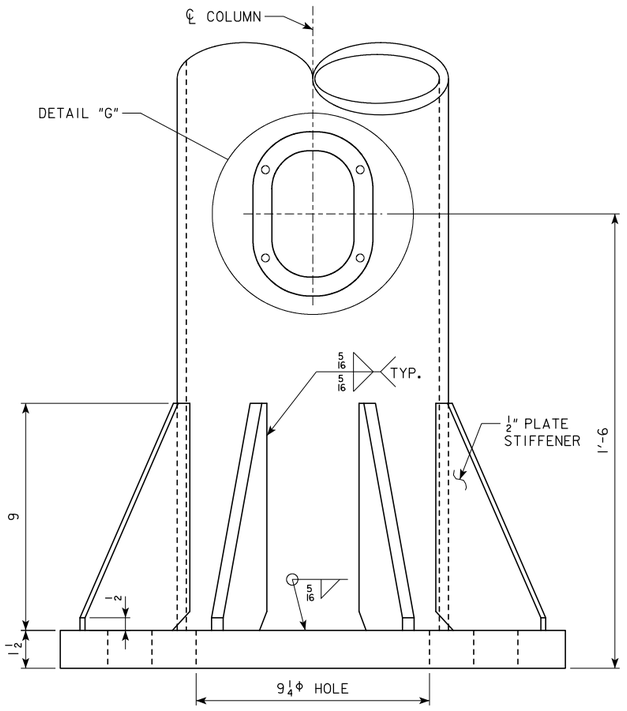


DETAIL "D"

FOR 3"Φ STD. STEEL PIPE LW (MIN.) = 3 1/2"



DETAIL "G"



BASE SIDE VIEW

NOTE: SEE DESIGN SHEET 4 FOR DETAILS "E" & "F".

DESIGN FOR

GALVANIZED OVERHEAD SIGN TRUSS WITH GALVANIZED STEEL SUPPORTS

BASE PLATE DETAILS

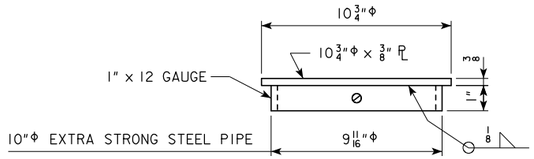
STA. 618+00 FEB., 2010

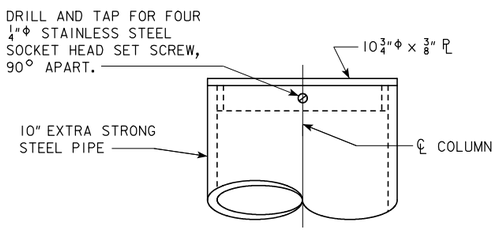
WOODBURY COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

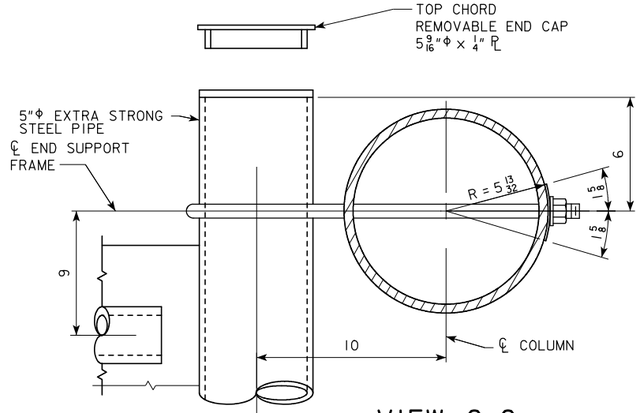
DESIGN SHEET NO. 3 OF 10 FILE NO. 30237 DESIGN NO. 1109

DESIGN TEAM JRH / BDK	WOODBURY COUNTY	PROJECT NUMBER IM-029-8(38)150--13-97	SHEET NUMBER V.9

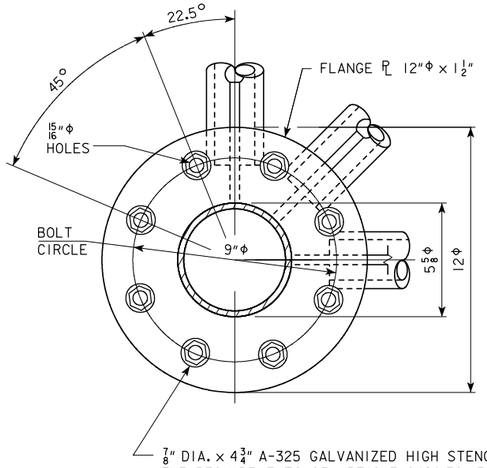


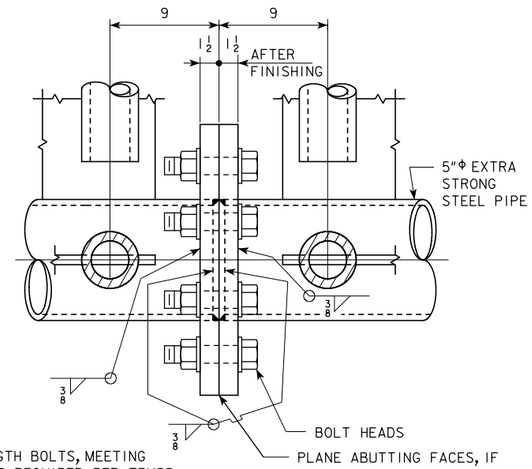


END COLUMN TOP DETAIL



VIEW C-C

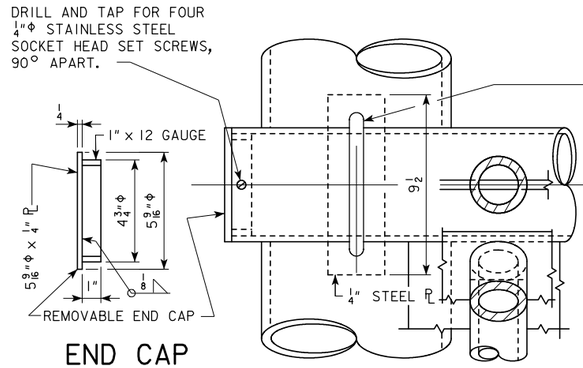




7/8" DIA. x 4 3/4" A-325 GALVANIZED HIGH STENGTH BOLTS, MEETING THE REQUIREMENTS OF ARTICLE 2408.39. 32 REQUIRED PER TRUSS SPLICE, 64 HARDENED WASHERS REQUIRED PER TRUSS SPLICE. HARDENED WASHER WILL BE PROVIDED UNDER BOTH HEAD AND NUT OF BOLT
32 - 7/8" DIA. HEAVY HEX NUTS REQUIRED PER TRUSS SPLICE. DRILL
8 - 15/16" DIA. HOLES IN EACH FLANGE. HIGH STRENGTH BOLT SHALL BE TENSIONED BY TURN-OF-NUT METHOD.

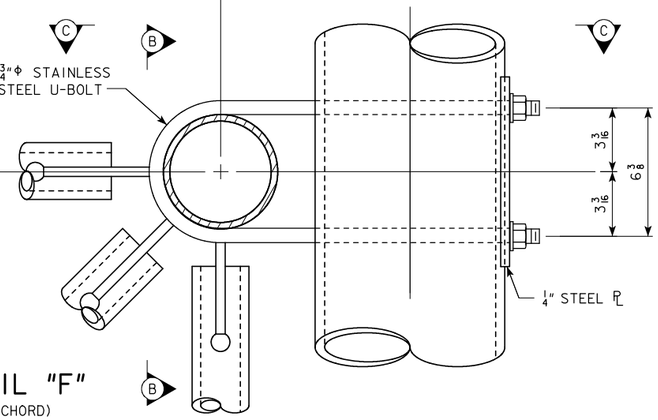
CHORD SPLICE

NOTE:
FLANGES MAY BE WELDED TO CHORD MEMBERS AFTER FINISHING PROVIDED PROPER ALIGNMENT IS SECURED.

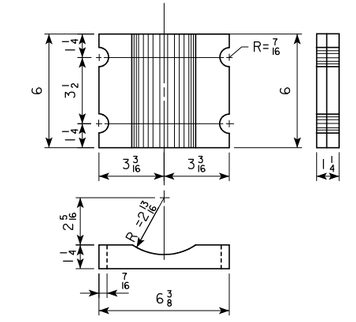


END CAP

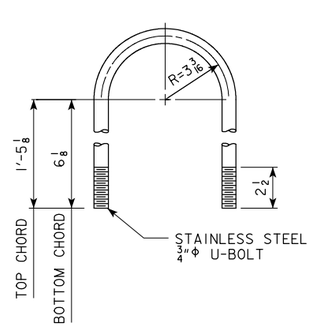
VIEW B-B



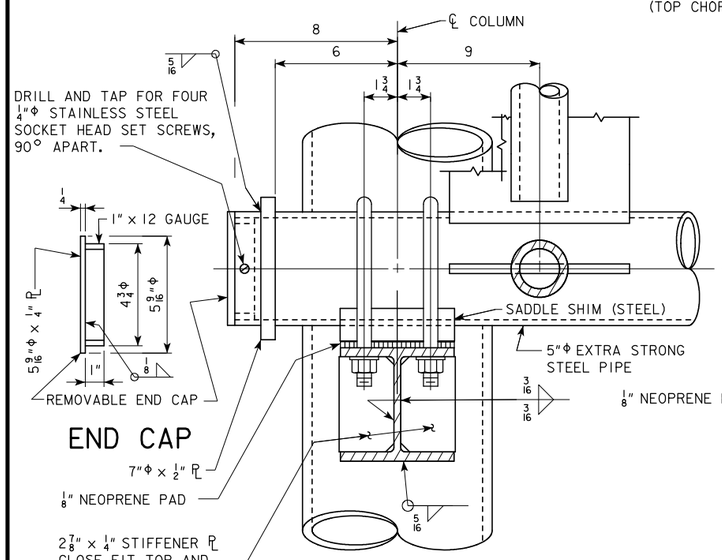
DETAIL "F"
(TOP CHORD)



SADDLE SHIM DETAIL



STAINLESS STEEL U-BOLT DETAIL



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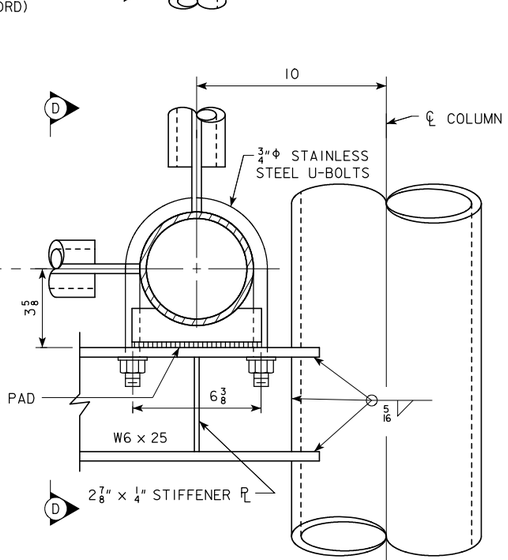
VIEW D-D



DETAIL "E"
(BOTTOM CHORD)

NOTE: SEE DESIGN SHEET 3 FOR LOCATION OF DETAILS "E" & "F".

DESIGN FOR
GALVANIZED OVERHEAD SIGN TRUSS WITH GALVANIZED STEEL SUPPORTS

TRUSS SUPPORT & CHORD SPLICE DETAILS

STA. 618+00 FEB., 2010

WOODBURY COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 4 OF 10 FILE NO. 30237 DESIGN NO. 1109

DESIGN TEAM JRH / BDK	WOODBURY COUNTY	PROJECT NUMBER IM-029-8(38)150--13-97	SHEET NUMBER V.10

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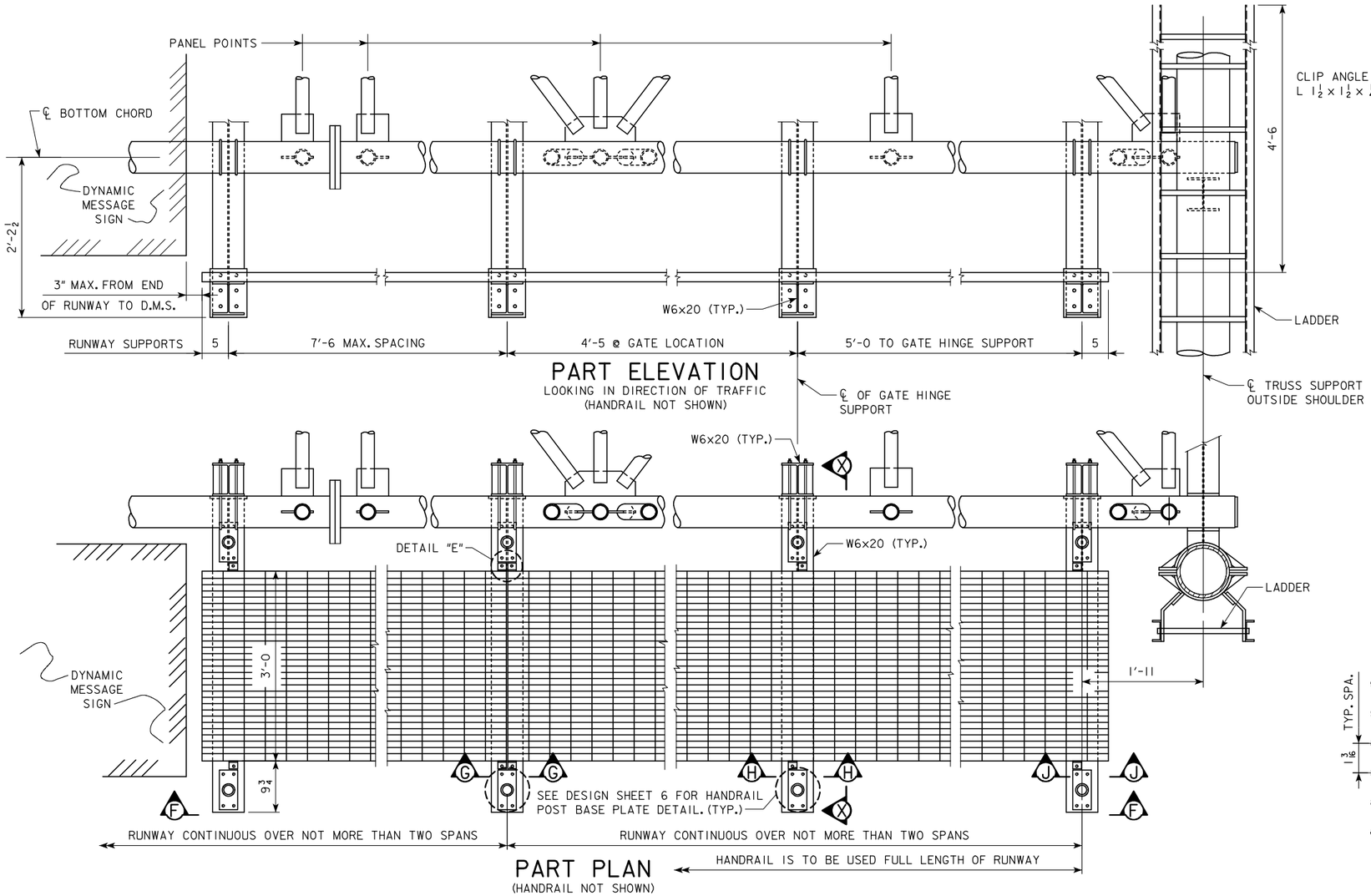
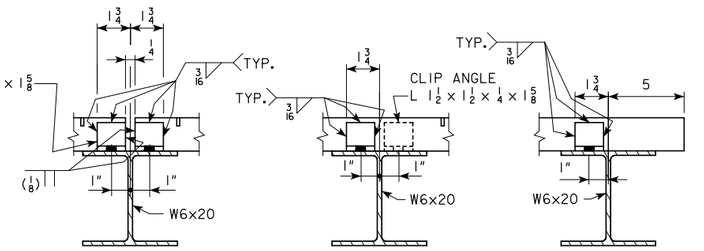


PART ELEVATION

LOOKING IN DIRECTION OF TRAFFIC
(HANDRAIL NOT SHOWN)

PART PLAN

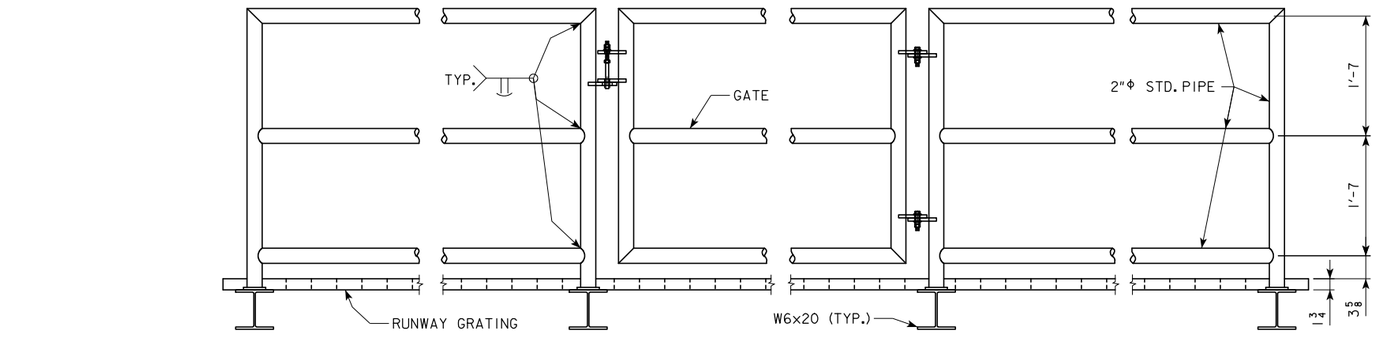
(HANDRAIL NOT SHOWN)



SECTION G-G SECTION H-H SECTION J-J

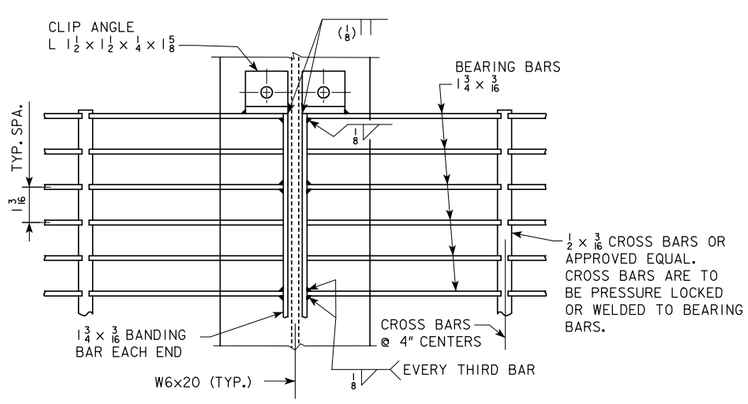
NOTE:
7/16"Φ HOLE IN CLIP ANGLE AND 7/16"Φ HOLE IN W6x20 FOR 3/8"Φ STAINLESS STEEL BOLT. ADJUST CLIP SO GRATING BEARS ON BEAM.

NOTE:
THE GALVANIZED METAL BAR GRATING INCLUDING BEARING BAR, CROSS BARS, AND BANDING BARS SHALL COMPLY WITH THE REQUIREMENTS OF ASTM A1011 TYPE 2.



VIEW F-F

(SHOWING HANDRAIL & GATE DETAILS)
(GATE IS LOCATED ON SIDE FARTHEST FROM TRUSS ONLY)



DETAIL "E"

NOTES:
SEE DESIGN SHEET 6 FOR SECTION X-X.
SEE DESIGN SHEET 7 FOR LADDER DETAILS.

DESIGN FOR

GALVANIZED OVERHEAD SIGN TRUSS WITH GALVANIZED STEEL SUPPORTS

RUNWAY DETAILS

STA. 618+00 FEB., 2010

WOODBURY COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 5 OF 10 FILE NO. 30237 DESIGN NO. 1109

DESIGN TEAM JRH / BDK	WOODBURY COUNTY	PROJECT NUMBER IM-029-8(38)150--13-97	SHEET NUMBER V.11

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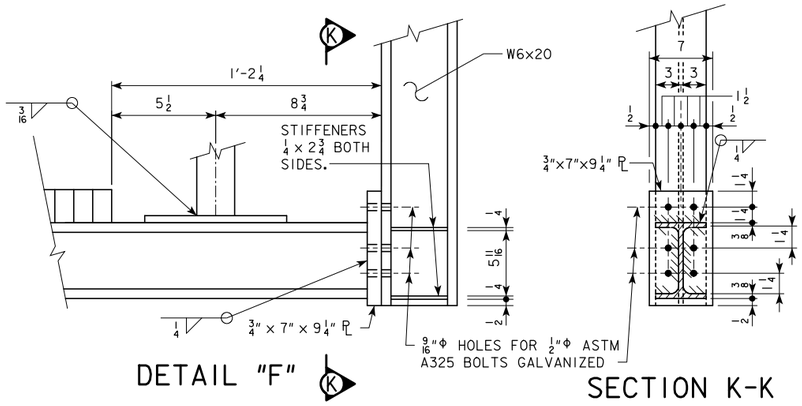
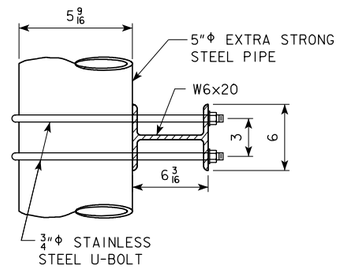
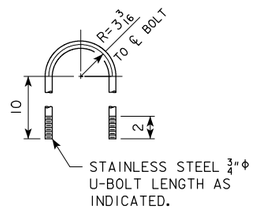


DETAIL "F"

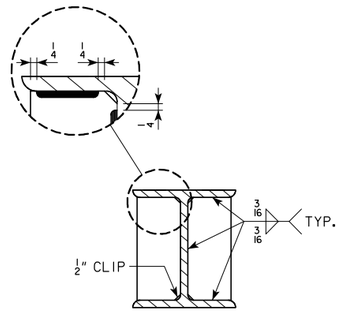
SECTION K-K



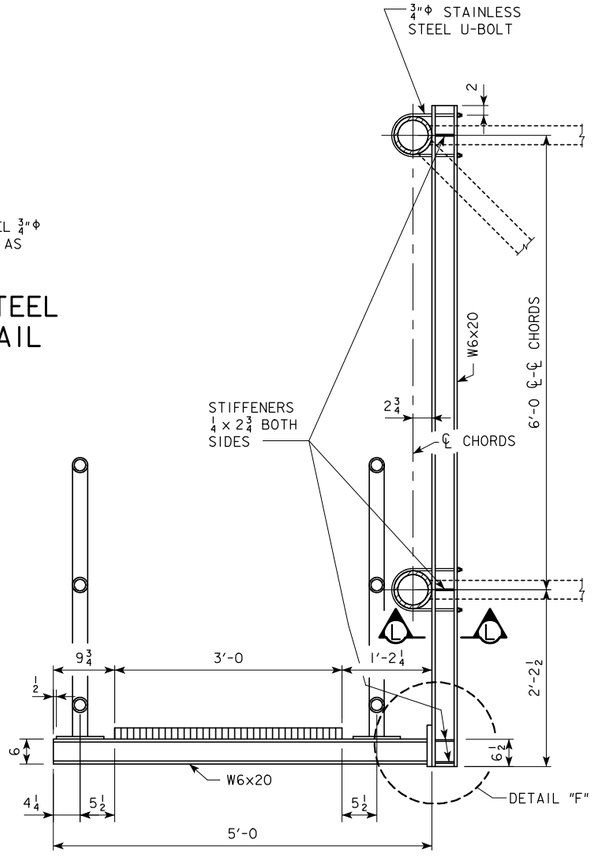
SECTION L-L



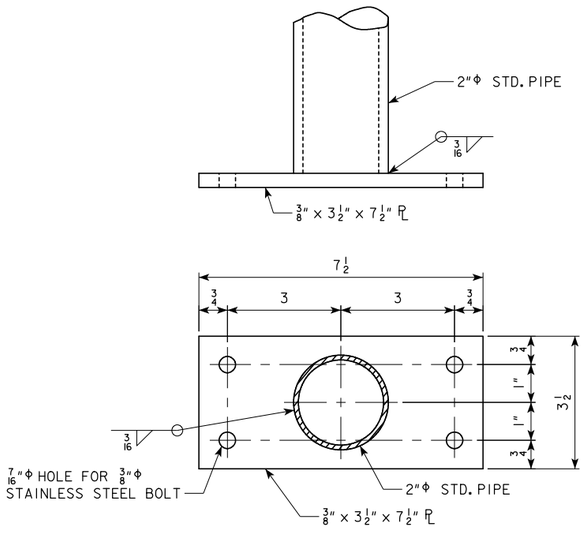
STAINLESS STEEL U-BOLT DETAIL



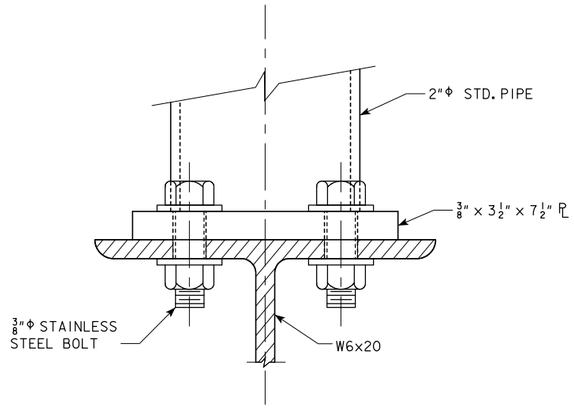
TYPICAL STIFFENER DETAIL



SECTION X-X
TYPICAL RUNWAY SECTION



HANDRAIL POST BASE PLATE



END ELEVATION OF HANDRAIL POST BASE

DESIGN FOR

GALVANIZED OVERHEAD SIGN TRUSS WITH GALVANIZED STEEL SUPPORTS

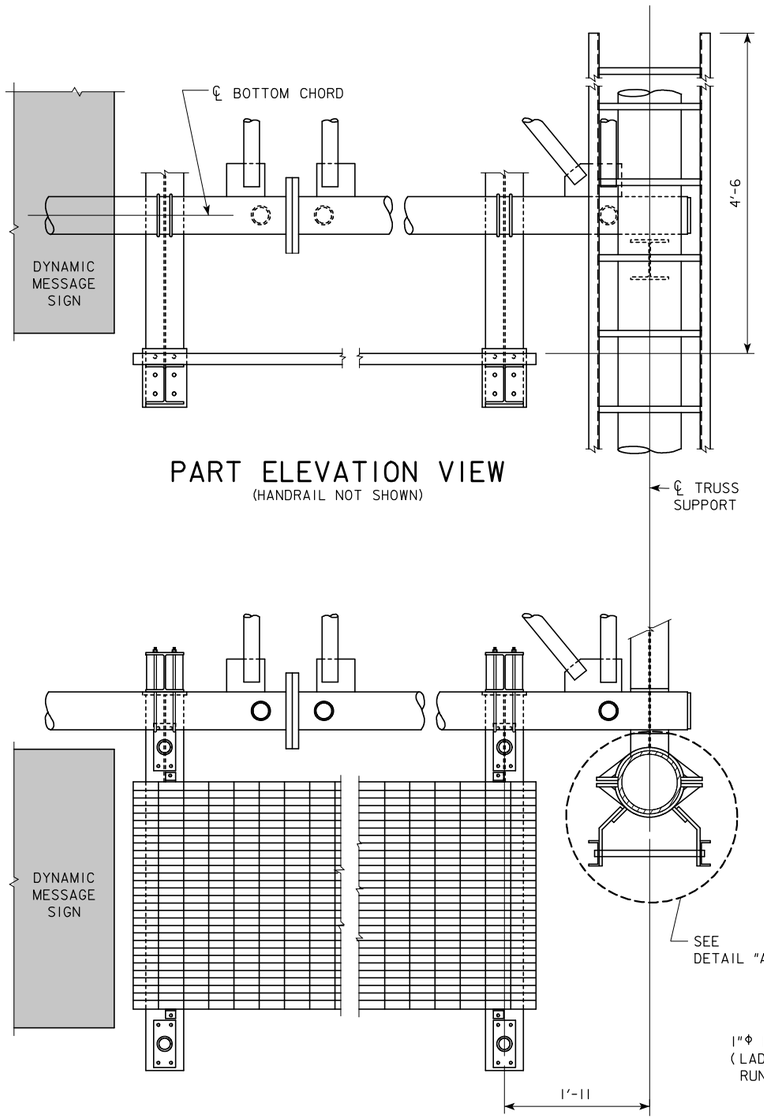
RUNWAY DETAILS

STA. 618+00 FEB., 2010

WOODBURY COUNTY

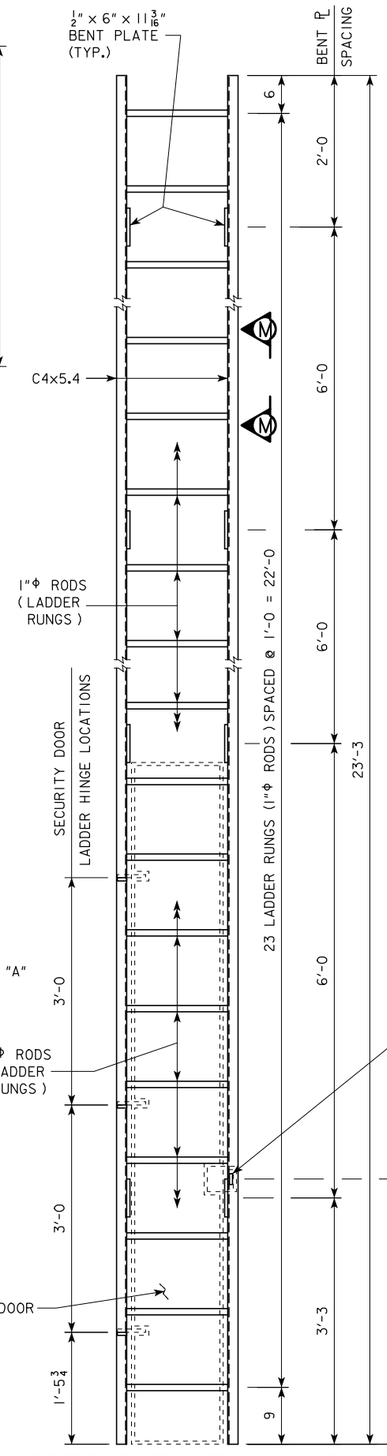
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 6 OF 10 FILE NO. 30237 DESIGN NO. 1109

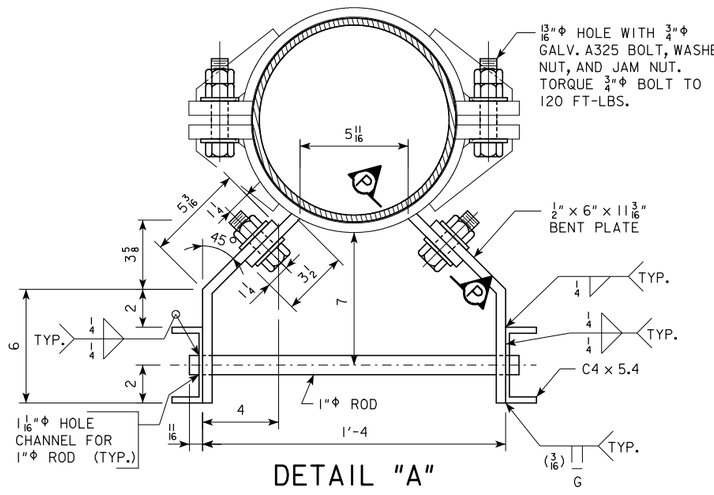


PART ELEVATION VIEW
(HANDRAIL NOT SHOWN)

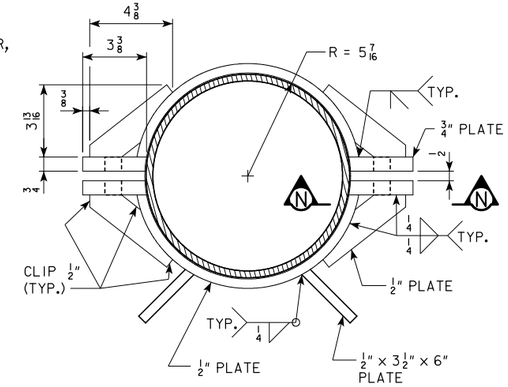
PART PLAN VIEW
(HANDRAIL NOT SHOWN)



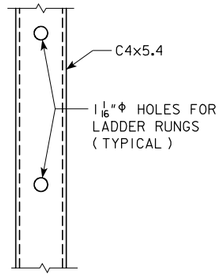
LADDER ELEVATION VIEW
(CLAMP ASSEMBLY NOT SHOWN)



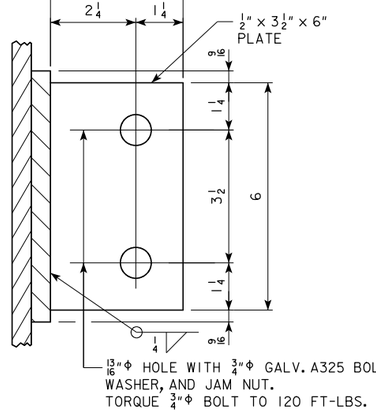
DETAIL "A"



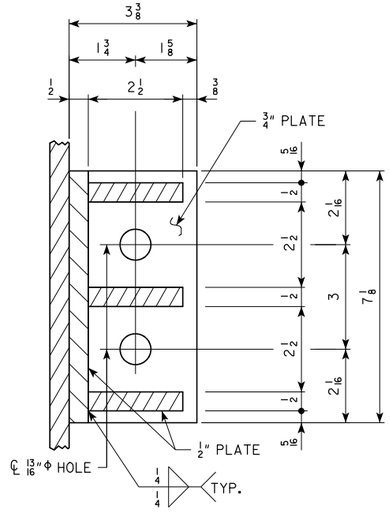
CLAMP ASSEMBLY
(4 REQUIRED PER LADDER)



VIEW M-M



SECTION P-P



SECTION N-N

NOTE: SEE DESIGN SHEET 8 FOR SECURITY DOOR DETAILS.

DESIGN FOR
GALVANIZED OVERHEAD SIGN TRUSS WITH GALVANIZED STEEL SUPPORTS

LADDER DETAILS

STA. 618+00 FEB., 2010

WOODBURY COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 7 OF 10 FILE NO. 30237 DESIGN NO. 1109

DESIGN TEAM JRH / BDK | WOODBURY COUNTY | PROJECT NUMBER IM-029-8(38)150--13-97 | SHEET NUMBER V.13

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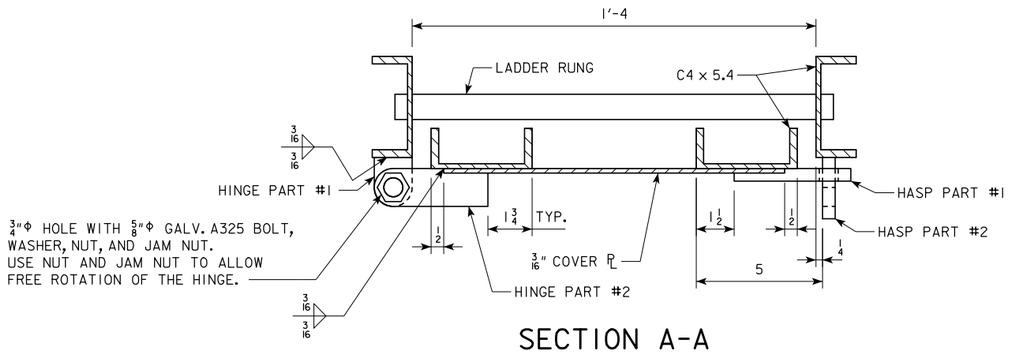
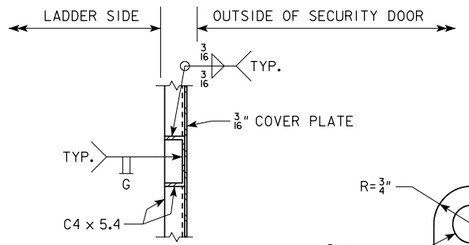
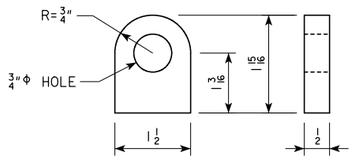


SECTION A-A

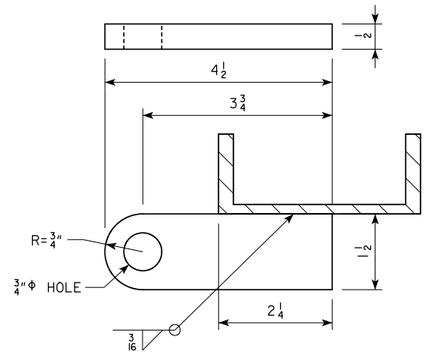
(4X SCALE TO SHOW DETAILS)



SECTION B-B



HINGE PART #1



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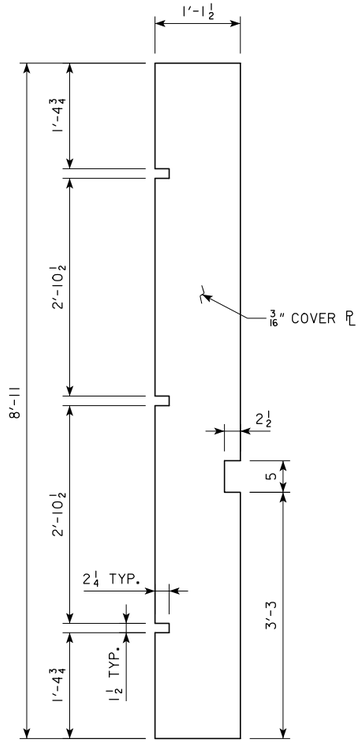
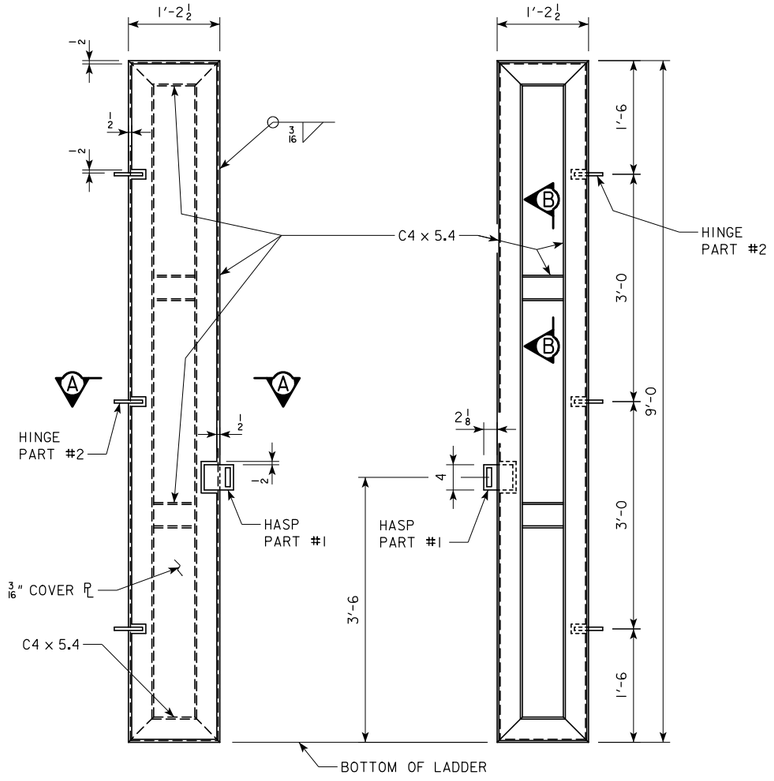


3/16" COVER PL DETAIL

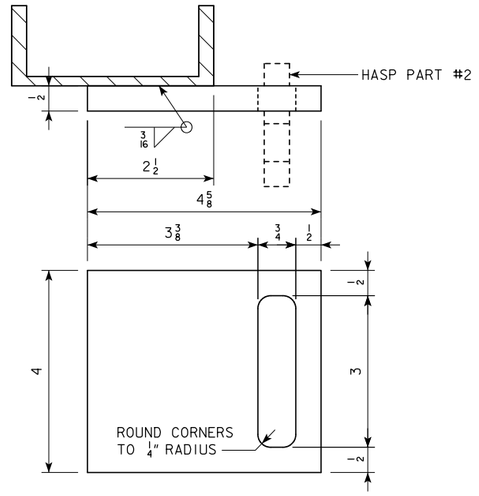


SECURITY DOOR ELEV.

(FRONT SIDE OF DOOR)

SECURITY DOOR ELEV.

BACK (LADDER) SIDE OF DOOR



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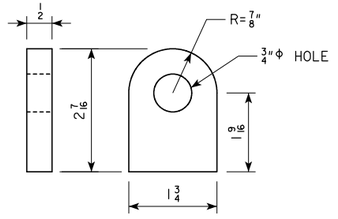

HASP PART #2

DESIGN FOR

GALVANIZED OVERHEAD SIGN TRUSS WITH GALVANIZED STEEL SUPPORTS

LADDER SECURITY DOOR DETAILS

STA. 618+00 FEB., 2010

WOODBURY COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 8 OF 10 FILE NO. 30237 DESIGN NO. 1109

DESIGN TEAM JRH / BDK	WOODBURY COUNTY	PROJECT NUMBER IM-029-8(38)150--13-97	SHEET NUMBER V.14

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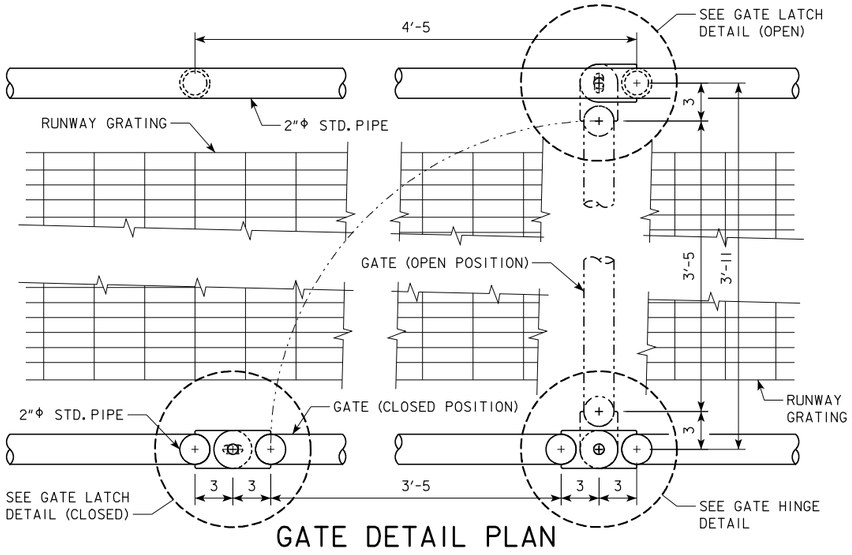
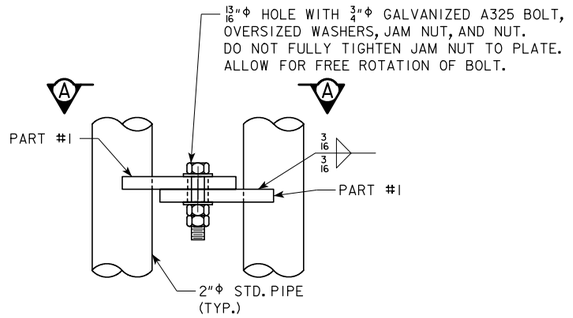
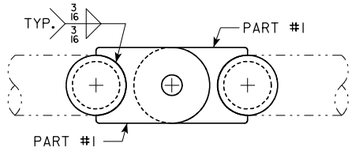


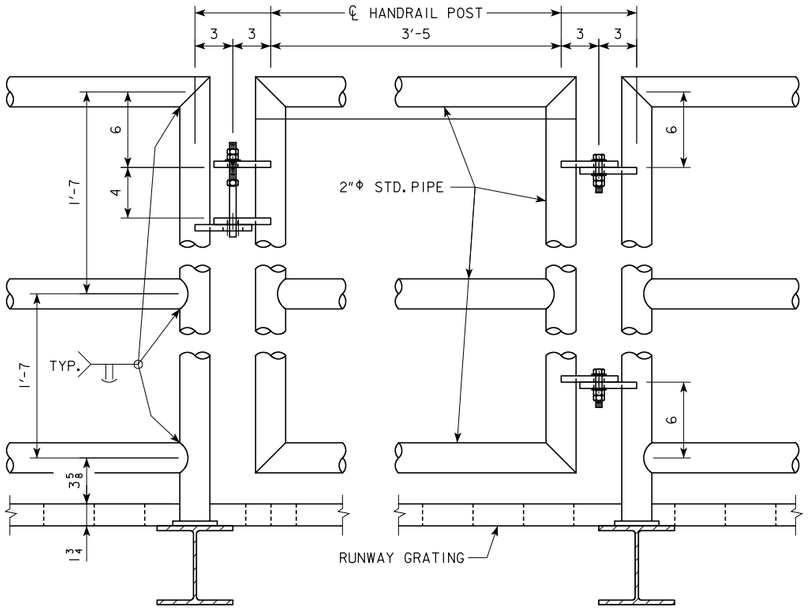
GATE DETAIL PLAN



GATE HINGE DETAIL

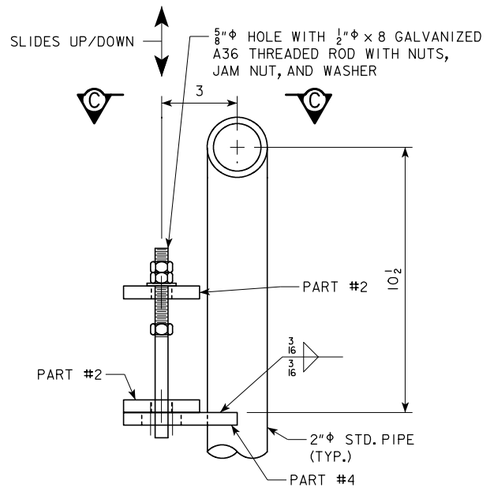


VIEW A-A

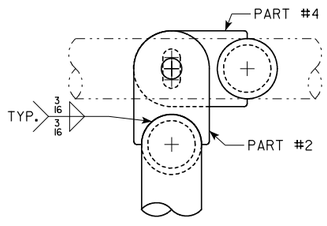


GATE DETAIL ELEVATION

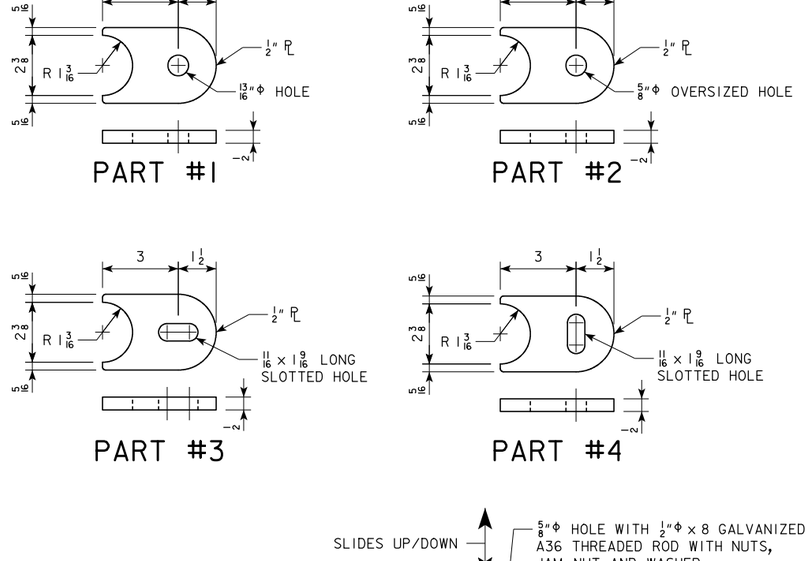
GATE LOCATED OVER SHOULDER OF ROADWAY



GATE LATCH DETAIL (OPEN)

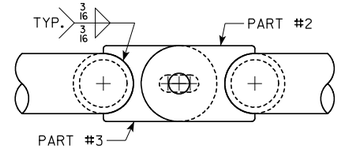


VIEW C-C



1/2"Φ A36 ROD

GATE LATCH DETAIL (CLOSED)



VIEW B-B

DESIGN FOR

GALVANIZED OVERHEAD SIGN TRUSS WITH GALVANIZED STEEL SUPPORTS

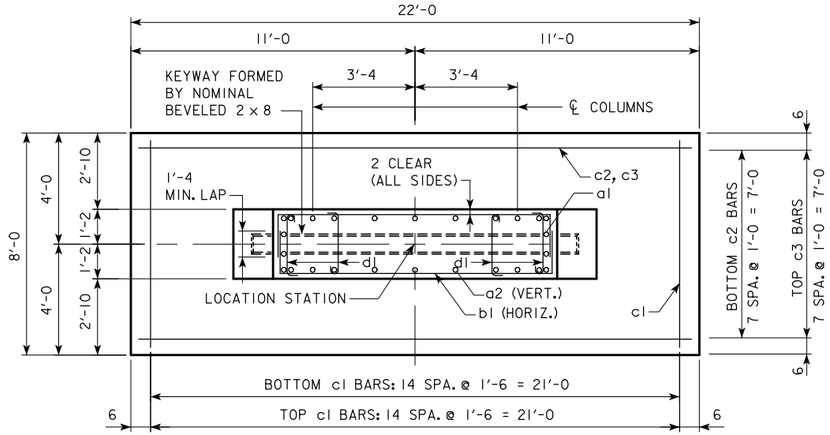
RUNWAY GATE DETAILS

STA. 618+00 FEB., 2010

WOODBURY COUNTY

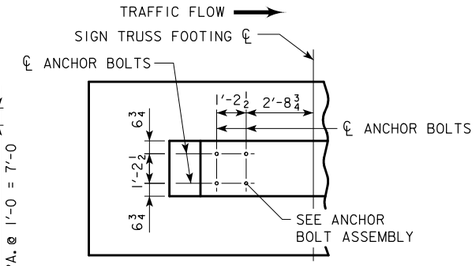
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 9 OF 10 FILE NO. 30237 DESIGN NO. 1109

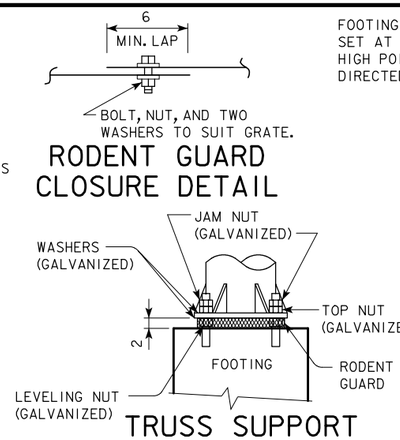


PLAN

(ANCHOR BOLT ASSEMBLIES NOT SHOWN.)

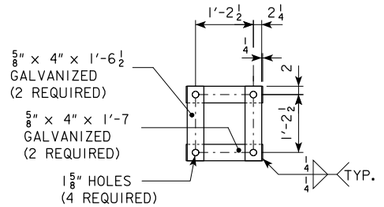


ANCHOR BOLT PLACEMENT DETAILS



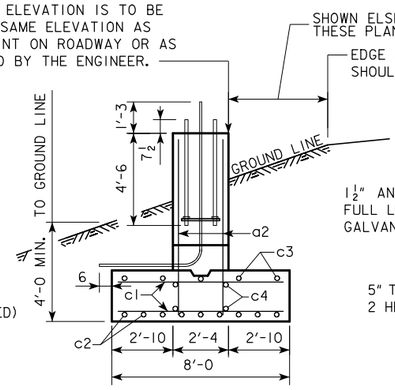
RODENT GUARD CLOSURE DETAIL

TRUSS SUPPORT CONNECTION DETAIL

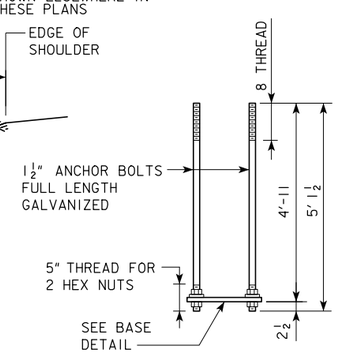


GALVANIZED BASE DETAIL

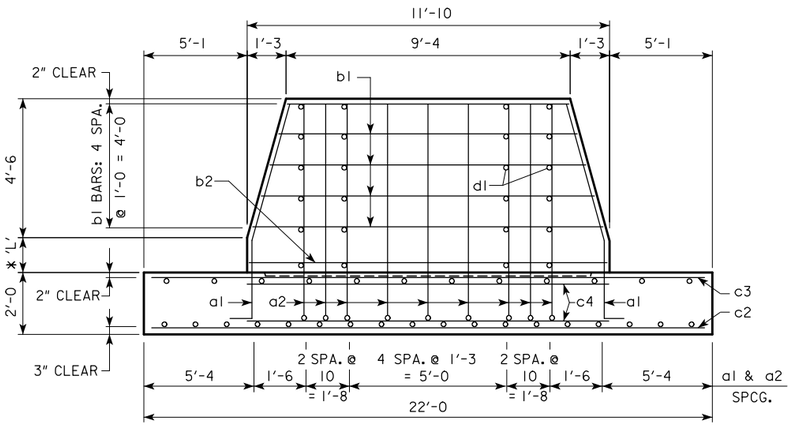
FOOTING ELEVATION IS TO BE SET AT SAME ELEVATION AS HIGH POINT ON ROADWAY OR AS DIRECTED BY THE ENGINEER.



END ELEVATION



GALVANIZED ANCHOR BOLT ASSEMBLY



SIDE ELEVATION

(ANCHOR BOLT ASSEMBLIES NOT SHOWN.)

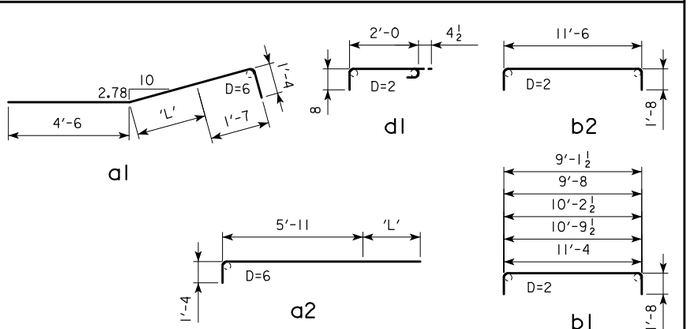
* 'L' SHALL NOT EXCEED 6'-0

CONCRETE PLACEMENT QUANTITIES

(ONE FOOTING)

ITEM	'L' = 0	EACH 1'-0 OF 'L'
WALL	4.12	1.02
FOOTING	13.04	
TOTAL (C.Y.)	17.16	1.02

BENT BAR DETAILS (SHOP BEND ALL BARS)



NOTE: ALL DIMENSIONS SHOWN ARE OUT TO OUT. D = PIN DIAMETER.

REINFORCING BAR LIST - EPOXY COATED

(ONE FOOTING)

	SIZE	SHAPE	'L' = 0 NO.	LENGTH	WEIGHT	SPACING	EACH 1'-0 OF 'L' NO.	LENGTH	WEIGHT
a1	8		8	7'-5	158	SEE DETAIL	8	1'-0 (A)	21
a2	8		18	7'-3	348	SEE DETAIL	18	1'-0 (A)	48
b1	4		10	Varies	91	1'-0	---	---	---
b2	4		---	---	---	---	2 (B)	14'-10	20
c1	6		30	7'-6	338	1'-6	---	---	---
c2	8		8	21'-6	459	1'-0	---	---	---
c3	6		8	21'-6	258	1'-0	---	---	---
c4	4		4	11'-10	32	SEE DETAIL	---	---	---
d1	4		20	3'-0 1/2	41	SEE DETAIL	4 (C)	3'-0 1/2	8
					TOTAL 1725 lbs				TOTAL 97 lbs

(A) ADDITIONAL LENGTH TO BAR a1 OR a2 FOR 'L' > 0

(B) TWO IN EACH 1'-0 OF 'L'.

(C) FOUR IN EACH 1'-0 OF 'L'.

GENERAL NOTES:

STRUCTURAL CONCRETE, CLASS C, SHALL BE USED FOR THE FOOTING.

EXCAVATION FOR FOOTING SHALL BE TO NEAT LINES AND CONCRETE SHALL BE PLACED AGAINST THE UNDISTURBED MATERIAL. ALL EXCAVATION FOR THE FOOTING SHALL BE DISPOSED OF IN THE AREA ADJACENT TO THE FOOTING AND SHAPED TO NORMAL GROUND CONTOUR, UNLESS OTHERWISE DIRECTED BY THE ENGINEER. MAXIMUM DESIGN BEARING CAPACITY IS 1.0 TONS PER SQUARE FOOT.

THE REQUIREMENTS PER FOOTING ARE TWO ANCHOR BOLT ASSEMBLIES INCLUDING SHIMS, NUTS (5 PER BOLT) AND WASHERS. REFER TO HARDWARE CLASSIFICATION TABLE FOR MATERIALS AND GALVANIZING REQUIREMENTS.

A RODENT GUARD SHALL BE PLACED BETWEEN THE CONCRETE FOOTING AND THE BASE PLATE, SEE MATERIALS I.M. 443.01.

PRICE BID FOR CONTRACT ITEMS SHALL INCLUDE ALL LABOR AND MATERIALS NECESSARY TO CONSTRUCT OVERHEAD SIGN FOOTING AS DETAILED HEREON. THE COST OF FURNISHING AND INSTALLING ANCHOR BOLT ASSEMBLIES, CONDUITS AND RODENT GUARD ARE TO BE INCLUDED IN THE UNIT PRICE BID FOR STRUCTURAL CONCRETE. CONTRACT ITEMS FOR OVERHEAD SIGN FOOTING CONSTRUCTION ARE:

- EPOXY COATED REINFORCING STEEL, POUNDS
- STRUCTURAL CONCRETE (MISCELLANEOUS), CUBIC YARDS
- EXCAVATION, CUBIC YARDS OF CLASS SPECIFIED

FOR FOOTINGS SUPPORTING SIGN TRUSSES WITH DYNAMIC MESSAGE SIGNS, PLACE 3/4" GROUND WIRE DUCT AND TWO 2" ACCESS DUCTS WITHIN THE ANCHOR BOLT CIRCLE CLOSEST TO THE DIRECTION OF THE APPROACHING TRAFFIC. EXTEND CONDUIT ENDS 6" PAST EDGE OF FOOTING ON SIDE AWAY FROM ROADWAY. LOCATION SHALL BE ON DETAIL PROJECT PLANS. ALL DUCTS SHALL MEET REQUIREMENTS FOR PLASTIC CONDUIT.

DESIGN FOR

GALVANIZED OVERHEAD SIGN TRUSS WITH GALVANIZED STEEL SUPPORTS

FOOTING DETAILS

STA. 618+00 FEB., 2010

WOODBURY COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 10 OF 10 FILE NO. 30237 DESIGN NO. 1109

DESIGN TEAM JRH / BDK | WOODBURY COUNTY | PROJECT NUMBER IM-029-8(38)150--13-97 | SHEET NUMBER V.16

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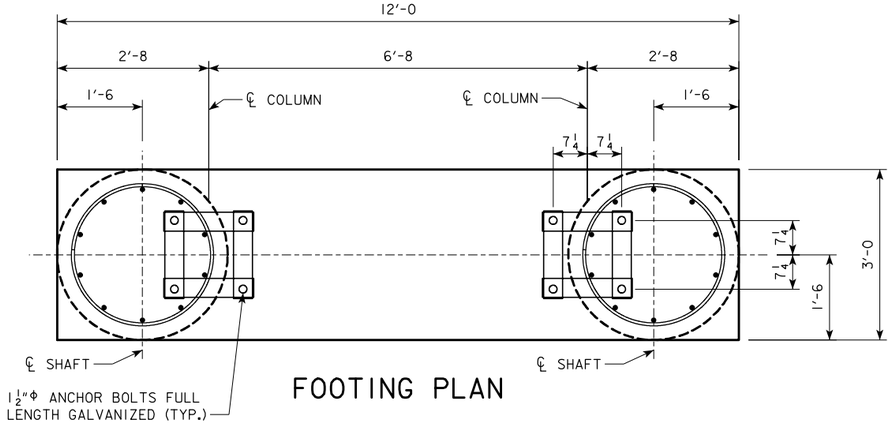
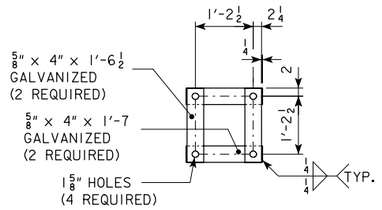
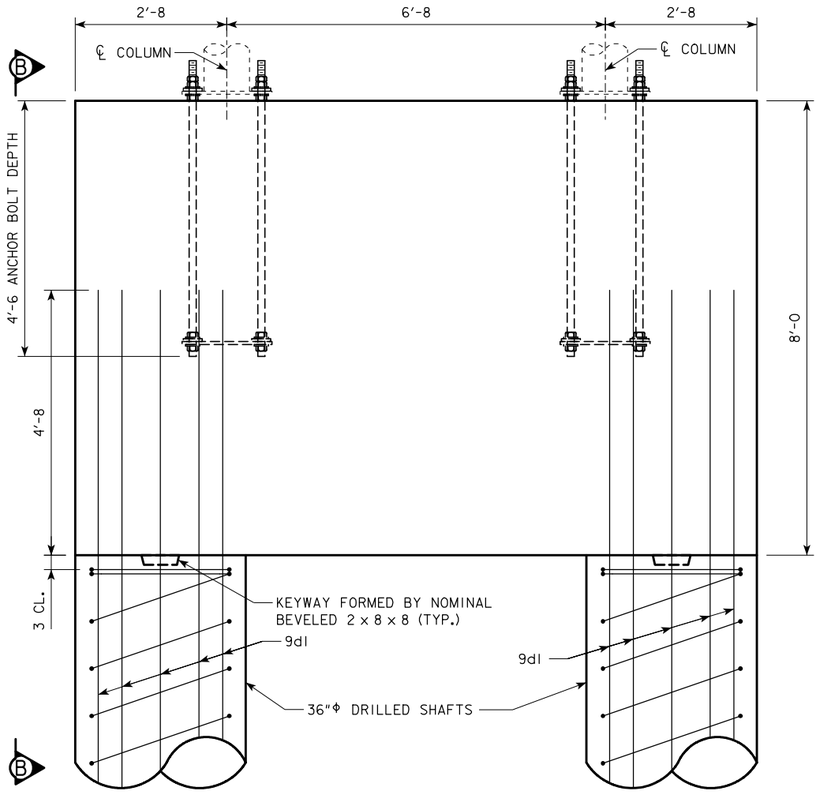


FOOTING PLAN

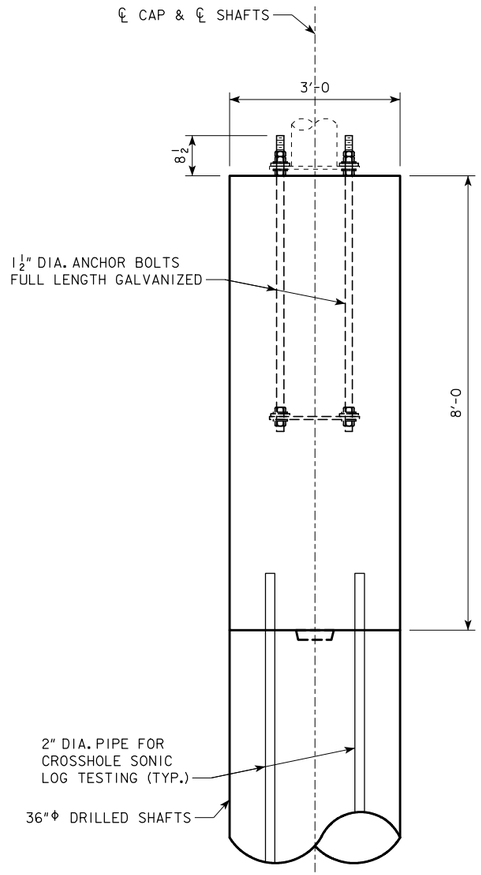


GALVANIZED BASE DETAIL



FOOTING ELEVATION

(2" DIA. PIPE FOR C.S.L. TESTING NOT SHOWN)



VIEW B-B

(SHAFT REINFORCING NOT SHOWN)

NOTES:

SIGN FOUNDATION CONCRETE FOR THE DRILLED SHAFTS SHALL BE CLASS D AND THE CAP CONCRETE SHALL BE CLASS C.

ALL REINFORCING STEEL SHALL BE EPOXY COATED.

THE PRECISE CONSTRUCTION OF THE SHAFTS FOR THE SIGN STRUCTURE SHALL BE CONSIDERED ESSENTIAL. THE CONTRACTOR SHALL SUBMIT DOCUMENTATION TO THE ENGINEER SHOWING THAT THE VARIOUS COMPONENTS HAVE BEEN MEASURED AND ARE LOCATED WITHIN THE TOLERANCES LISTED BELOW.

EACH FOUNDATION SHALL BE ACCURATELY LOCATED WITHIN THE CENTER OF THE TWO ANCHOR BOLT GROUPS NOT MORE THAN ONE INCH FROM THE PLAN LOCATION IN THE DIRECTION PARALLEL WITH AND PERPENDICULAR TO THE OVERHEAD TRUSS.

THE FOUNDATIONS FOR EACH OVERHEAD SIGN TRUSS SHALL BE ORTHOGONAL, WITH THE DISTANCES ALONG THE OVERHEAD TRUSS BETWEEN CENTERS OF FRONT AND REAR ANCHOR BOLT GROUPS DIFFERING BY NOT MORE THAN ONE INCH.

ELEVATIONS OF THE TOP OF EACH FOUNDATION SHALL BE WITHIN ONE INCH OF PLAN ELEVATION.

ANCHOR BOLTS SHALL BE PLUMB WITHIN ¼ INCH PER FOOT FROM VERTICAL.

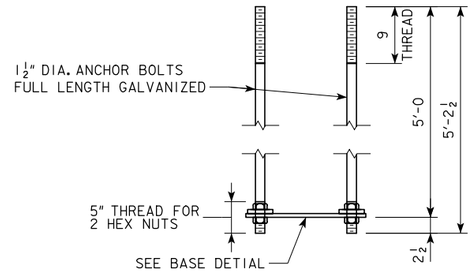
ANCHOR BOLTS SHALL PROJECT ABOVE TOP OF FOUNDATION WITHIN ¼ INCH OF THE PLAN DIMENSION.

WELDING OF ANCHOR BOLTS SHALL NOT BE ALLOWED. THE CONTRACTOR SHALL OBTAIN A TEMPLATE FROM THE MANUFACTURER / FABRICATOR FOR PROPER PLACEMENT OF THE ANCHOR BOLTS.

THE REQUIREMENTS PER CAP ARE TWO ANCHOR BOLT ASSEMBLIES INCLUDING SHIMS, NUTS (5 PER BOLT) AND WASHERS (4 PER BOLT). REFER TO HARDWARE CLASSIFICATION TABLE FOR MATERIALS AND GALVANIZING REQUIREMENTS.

PRICE BID FOR "SIGN TRUSS FOOTING" SHALL INCLUDE ALL LABOR AND MATERIALS NECESSARY TO CONSTRUCT THE FOUNDATIONS AS DETAILED HEREIN. THE COST OF FURNISHING AND INSTALLING ANCHOR BOLT, CONDUITS, EPOXY COATED REINFORCING STEEL, CLASS C AND D CONCRETE AND EXCAVATION ARE TO BE INCLUDED IN THE UNIT PRICE BID FOR "FOOTING".

ALL ANCHOR BOLT MATERIAL SHALL COMPLY WITH THE REQUIREMENTS OF IOWA DOT MATERIALS IM 453.08.



GALVANIZED ANCHOR BOLT ASSEMBLY

DESIGN FOR

DRILLED SHAFT DETAILS AND STEEL END POST

STA. 600+00.00 AUG., 2009

WOODBURY COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 1 OF 2 FILE NO. 30237 DESIGN NO.

DESIGN TEAM JRH / BDK | WOODBURY COUNTY | PROJECT NUMBER IM-029-8(38)150--13-97 | SHEET NUMBER V.17

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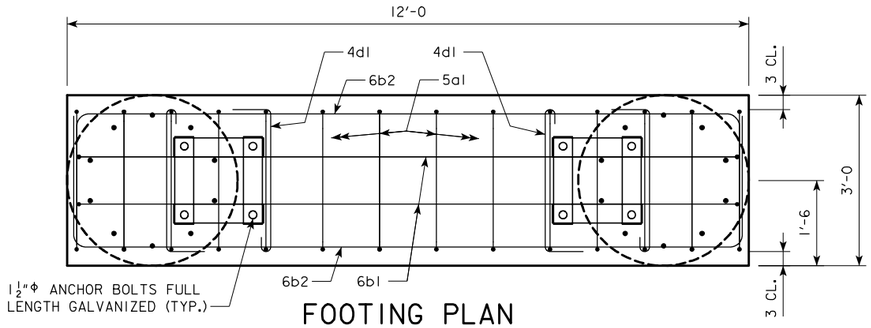
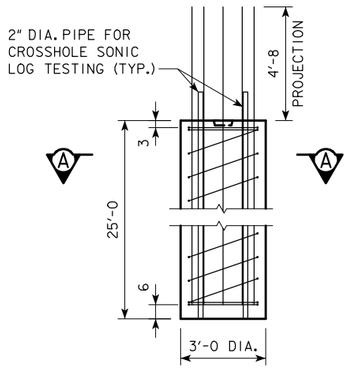
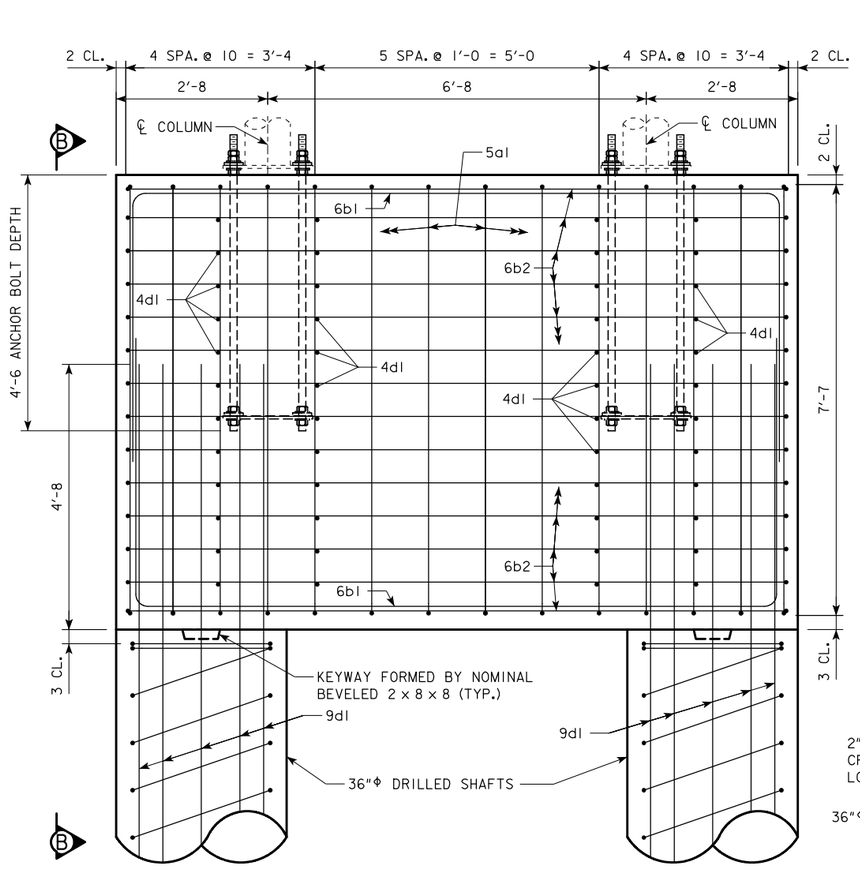


FOOTING PLAN

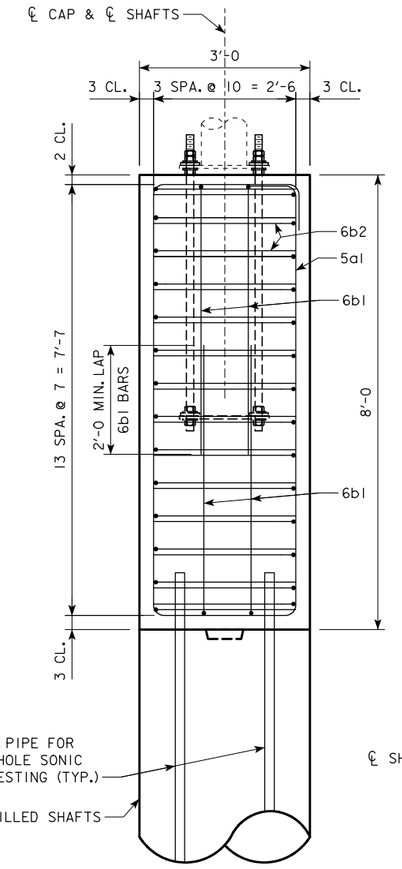


SHAFT ELEVATION



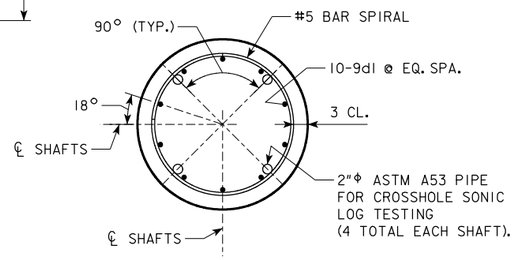
FOOTING ELEVATION

(2" DIA. PIPE FOR C.S.L. TESTING NOT SHOWN)



VIEW B-B

(SHAFT REINFORCING NOT SHOWN)



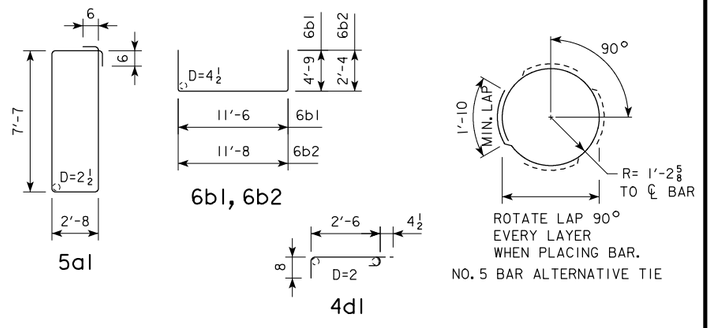
SECTION A-A

REINF. BAR LIST - ONE FOOTING

EPOXY REINF.

BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
5a1	FOOTING HOOPS, VERTICAL		14	21'-6	314
6b1	FOOTING LONGITUDINAL, VERTICAL		4	21'-0	126
6b2	FOOTING LONGITUDINAL, HORIZONTAL		28	16'-4	687
9d1	SHAFT VERTICAL		20	29'-2	1983
#5	SHAFT SPIRAL		2	248'-2	518
	SPIRAL SPACERS, L $\frac{7}{8} \times \frac{7}{8} \times \frac{1}{8}$		8	24'-3	135
4d1	FOOTING TIE		48	3'-6½	114
	REINFORCING STEEL EPOXY COATED - TOTAL (LBS)				3877

BENT BAR DETAILS



NOTE: ALL DIMENSIONS ARE OUT TO OUT. D=PIN DIAMETER

DRILLED SHAFT NOTES:

SPIRAL REINFORCING IS TO BE NO. 5 BAR WITH 29⅜" DIAMETER, 10" PITCH WITH 4 EQUALLY SPACED L $\frac{7}{8} \times \frac{7}{8} \times \frac{1}{8}$ SPACERS PUNCHED TO HOLD SPIRALS. SPIRALS ARE TO HAVE 1½ EXTRA TURNS AT TOP AND BOTTOM OF SHAFT.

THE SPIRAL REINFORCING MAY BE SPLICED BY LAPPING 2'-2. THE LENGTH OF THE SPIRAL SHOWN DOES NOT INCLUDE THE LAPPED LENGTH OF THE SPLICES. THE COST OF THE LAPS AT SPLICES IS TO BE INCLUDED IN THE PRICE BID FOR OTHER REINFORCEMENT.

COLUMN TIES SPACED AT 10" CENTERS MAY BE SUBSTITUTED FOR THE SPIRAL REINFORCEMENT. PAYMENT WILL BE BASED ON THE WEIGHT OF SPIRAL REINFORCEMENT. NO ADJUSTMENTS IN REINFORCING STEEL PAY WEIGHT WILL BE ALLOWED. SEE BENT BAR DETAILS FOR SPLICE LAP LENGTH.

ALL COSTS FOR THE CROSSHOLE SONIC LOG TESTING SHALL BE INCLUDED IN THE PRICE BID FOR DRILLED SHAFTS.

ALL EXPOSED CORNERS 90° OR SHARPER TO BE FILLETED WITH A ¾" DRESSED AND BEVELED STRIP.

ALL REINFORCING IS TO BE SECURELY WIRED IN PLACE BEFORE CONCRETE IS POURED.

ESTIMATED QUANTITIES

ITEM	QUANTITY	UNITS
DRILLED SHAFT - ONE FOOTING	50.0	LF

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DRILLED SHAFT DETAILS AND STEEL END POST

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IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 2 OF 2 FILE NO. 30237 DESIGN NO. _____

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