

1/30/2009 jcorthe \\OFFICE\Projects\10000000\1005\TraffEng\00-0005-394\000005394.d01.sht

SCOTT COUNTY

DYNAMIC MESSAGE SIGNS
LETTING DATE 3/17/09
ITS-000-S(394)--25-00



PLANS OF PROPOSED IMPROVEMENTS ON THE INTERSTATE ROAD SYSTEM SCOTT COUNTY

DYNAMIC MESSAGE SIGNS

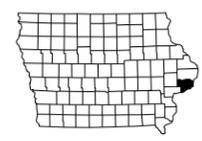
3 LOCATIONS ON I-74/80/280

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.

NO MILEAGE SUMMARY

For Project Location Map
Refer to Sheet No. A.02



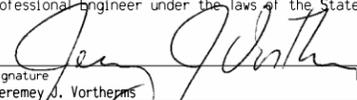
REVISIONS	
	TOTAL 31
PROJECT IDENTIFICATION NUMBER	
09-00-000-010	
PROJECT NUMBER	
ITS-000-S(394)--25-00	
R.O.W. PROJECT NUMBER	
ROW NUMBER	

INDEX OF SHEETS	
No.	Description
A.01	TITLE SHEET
A.02	LOCATION MAP SHEET
B.01-B.06	TYPICAL DETAILS
C.01-C.05	QUANTITIES, ESTIMATE REFERENCE NOTES, TABS
N.01-N.13	SITE DETAILS
V.01-V.05	STRUCTURAL DETAILS

INDEX OF SEALS		
SHEET NO.	NAME	TYPE
A.01	Jeremy J Vortherms	Primary Signature Block
V.01	James R. Hauber	Structural Details

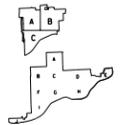
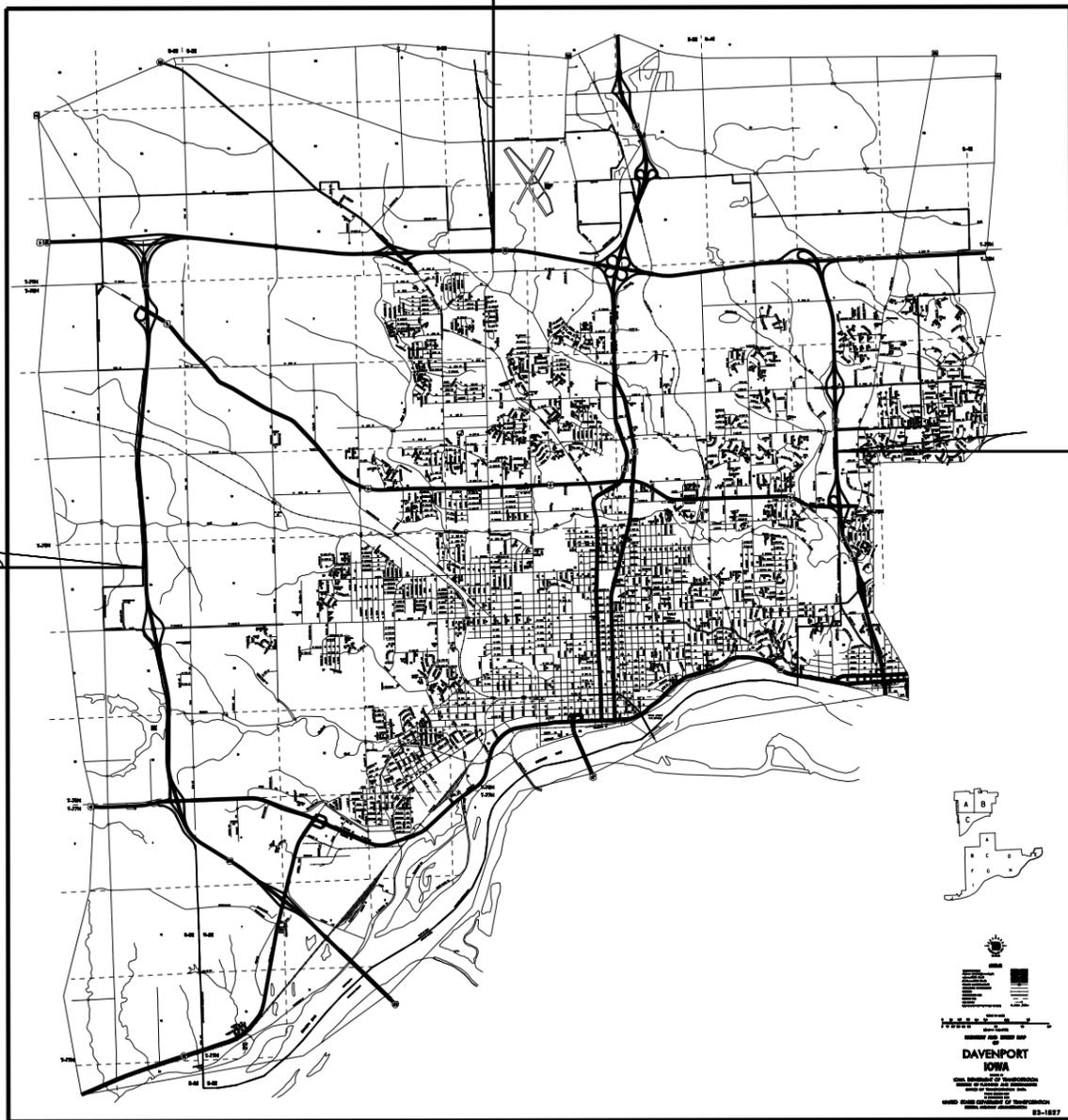


I hereby certify that this plan was prepared by me or under my direct personal supervision and that I am a duly licensed Professional Engineer under the laws of the State of Iowa.

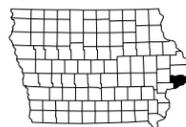
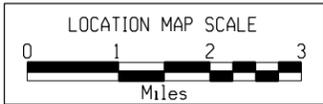

 Signature _____ Date 01/06/09
 Printed or Typed Name Jeremy J. Vortherms

My license renewal date is December 31, 20 09.

Pages or sheets covered by this seal: _____
A.01-A.02, B.01-B.06, C.01-C.05, N.01-N.13



DAVENPORT
IOWA



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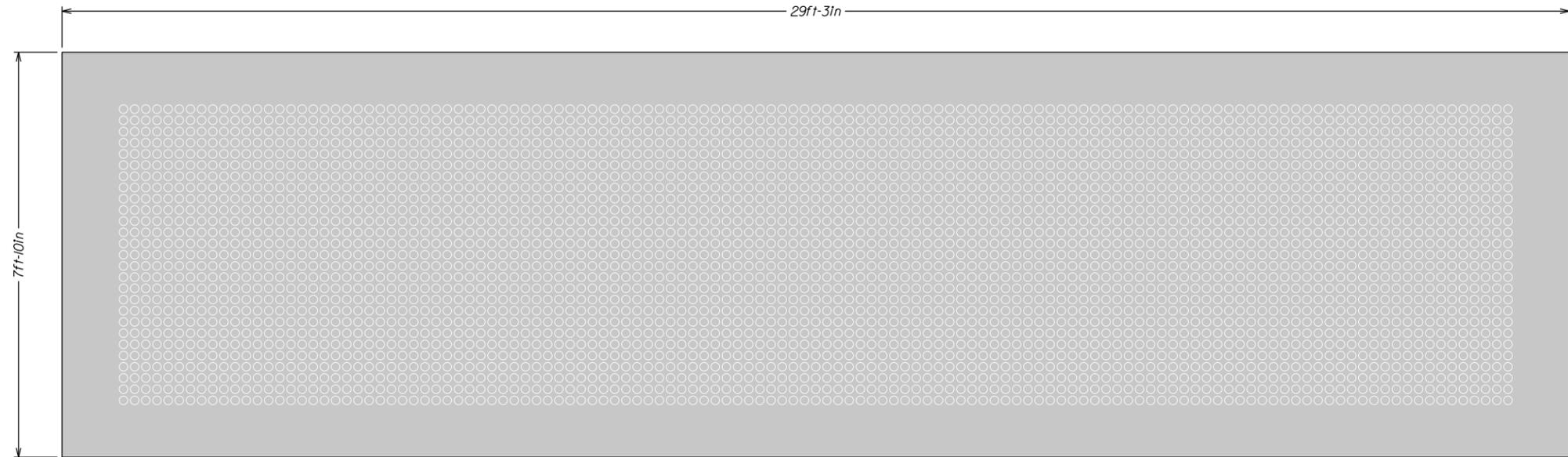
1/30/2009

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: 29'3"
 Depth: 3'11"
 Weight: 3950 lbs

Locations:
 107 - I-280
 106 - I-80
 108 - I-74



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 position. At no point in time shall the sign be laid on its side, front, or back.

To avoid damage to the sign during transport, consult the sign manufacturer to determine the correct method to secure the sign to the trailer. Any damage incurred during 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.

If the sign is to be transported and temporarily stored at the Contractor's site of choice, it needs to be secured at all times to prevent tipping. Secure the DMS with dead man anchors or other suitable methods. Ensure that the DMS is not marred by whatever method is chosen. 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.

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.

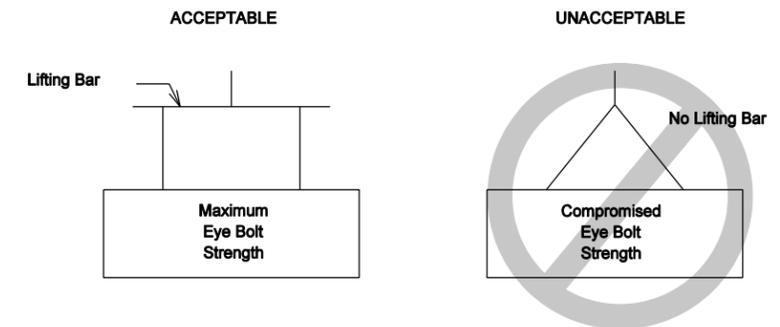
Before beginning, make sure that the crane is rated to lift the weight of the sign.

Any damage incurred during lifting shall be the responsibility of the Contractor. The information presented below is from the literature provided by each manufacturer. Consult the manufacturer for complete lifting requirements.

**** Daktronics Signs ****

When removing an existing sign, the eyebolts used to lift the sign will need to be furnished by the Contractor. New signs will arrive equipped with eyebolts to be used to lift the unit. Take special care to ensure that the rated load of the eyebolts is not exceeded. Consult Daktronics for specific information about the eyebolts.

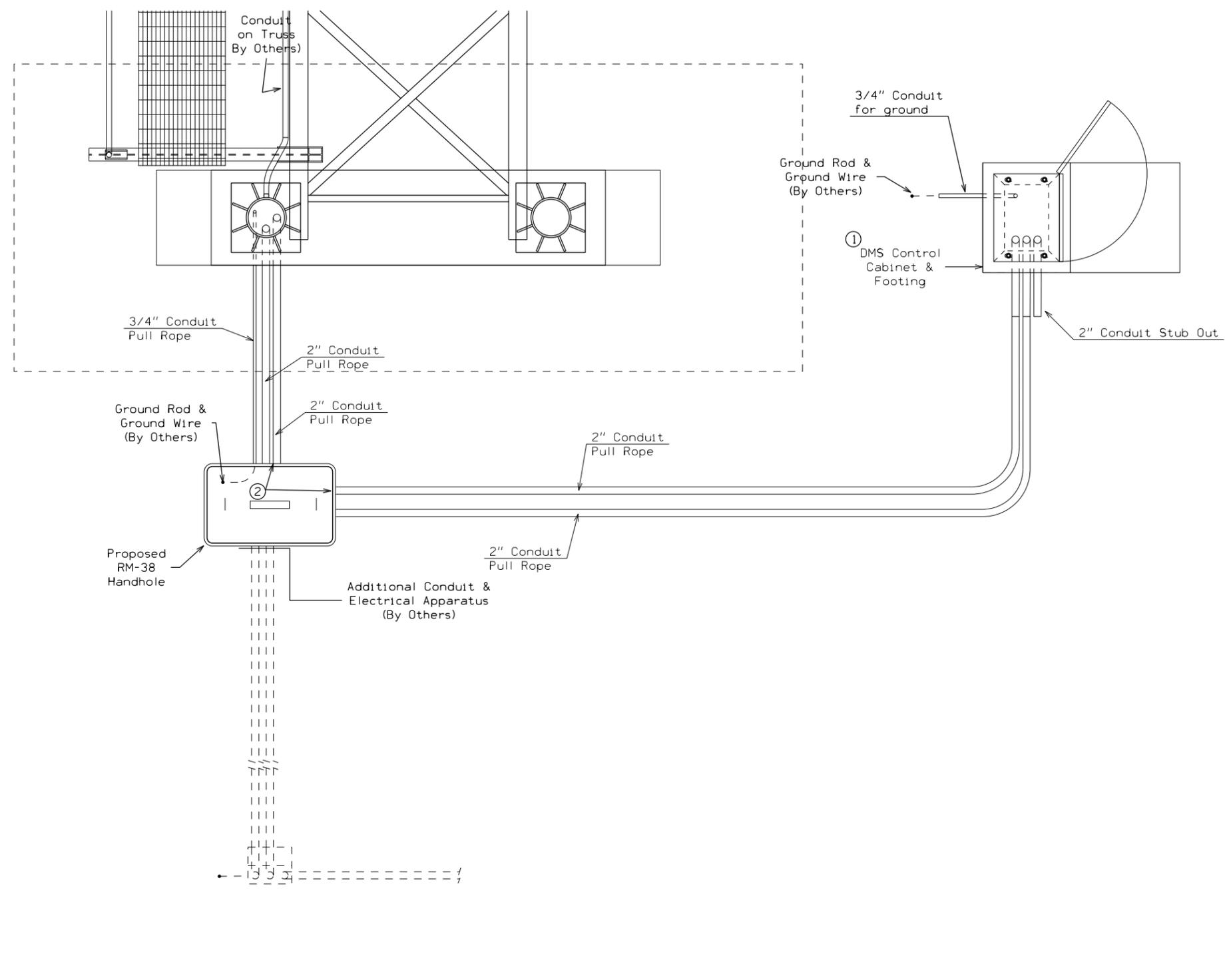
The figures below illustrate the correct (left example) and the incorrect (right example) method of lifting a sign. Lift the sign with the lifting bar as shown on the left. Use every lifting point (eyebolt) provided. Not doing so may cause the eyebolts to fail.



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**

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PLAN VIEW

SITE INSTALLATION NOTES:

In addition to the sign truss footing, the Contractor is to install the control cabinet footing, control cabinet, handhole, and conduit between the handhole and each footing.

All wiring for communications, electrical service, and grounding will be completed by the DOT.

The DOT will furnish the control cabinet which is to be installed.

For future reference, mark the locations of all conduit entering the sign truss footing and the control cabinet footing. Locate marks on the side which the conduit enters, near the top, to ensure visibility after backfilling and shaping.

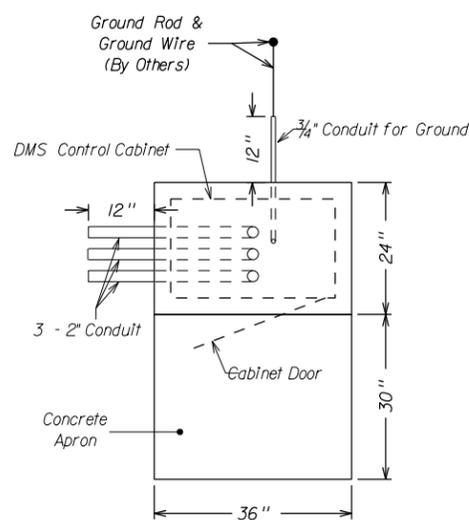
Install handhole and conduit as per sections 2523.01, 2523.09, 2523.10, 2523.11, and 2523.13.

Complete site restoration as per section 2523.18

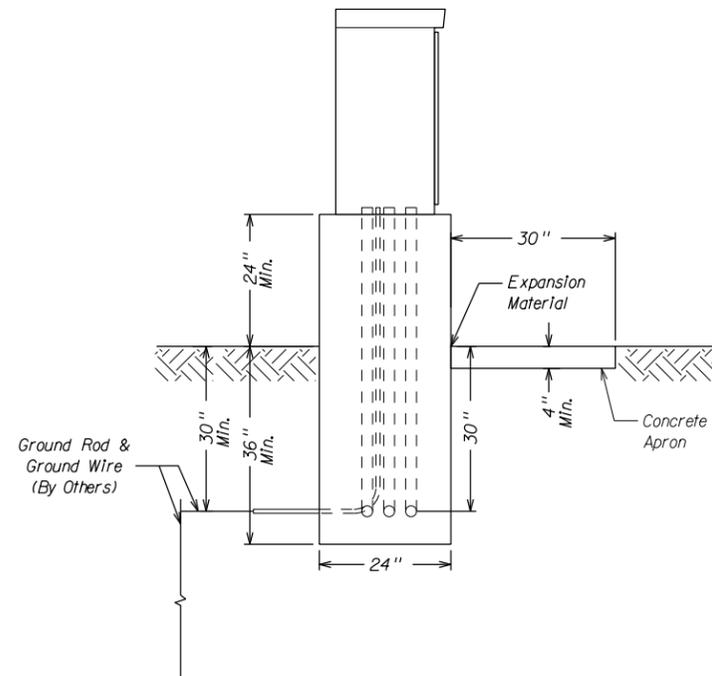
- ① Refer to other drawings for specific details of the footing.
- ② Install socket type, bell ends on all conduits entering the handhole.

SITE INSTALLATION DETAILS FOR DYNAMIC MESSAGE SIGNS

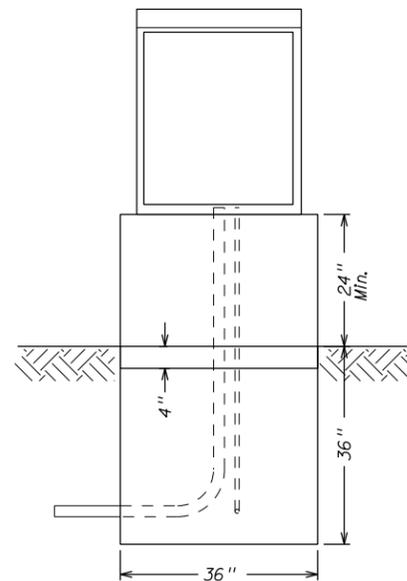
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Top View



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.

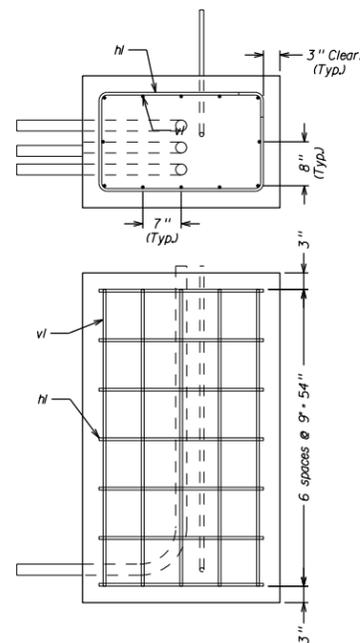
Use Class C Structural Concrete for the footing. Meet the requirements of section 2403 for placement of the concrete. The top of the footing is to be level, and the top edges rounded with an edge.

Provide forms of sufficient strength to prevent warping, bulging, of other deflections. Refer to Section 2403.07 E for additional requirements.

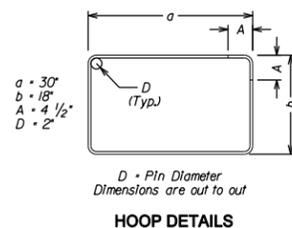
Epoxy reinforcement to meet the requirements of section 2404.

Conduit to meet the requirements of section 2323.10.

Excavation, backfilling, and site restoration to meet the requirements of sections 2523.09, 2523.13, and 2523.18, respectively.



Reinforcing Details



HOOP DETAILS

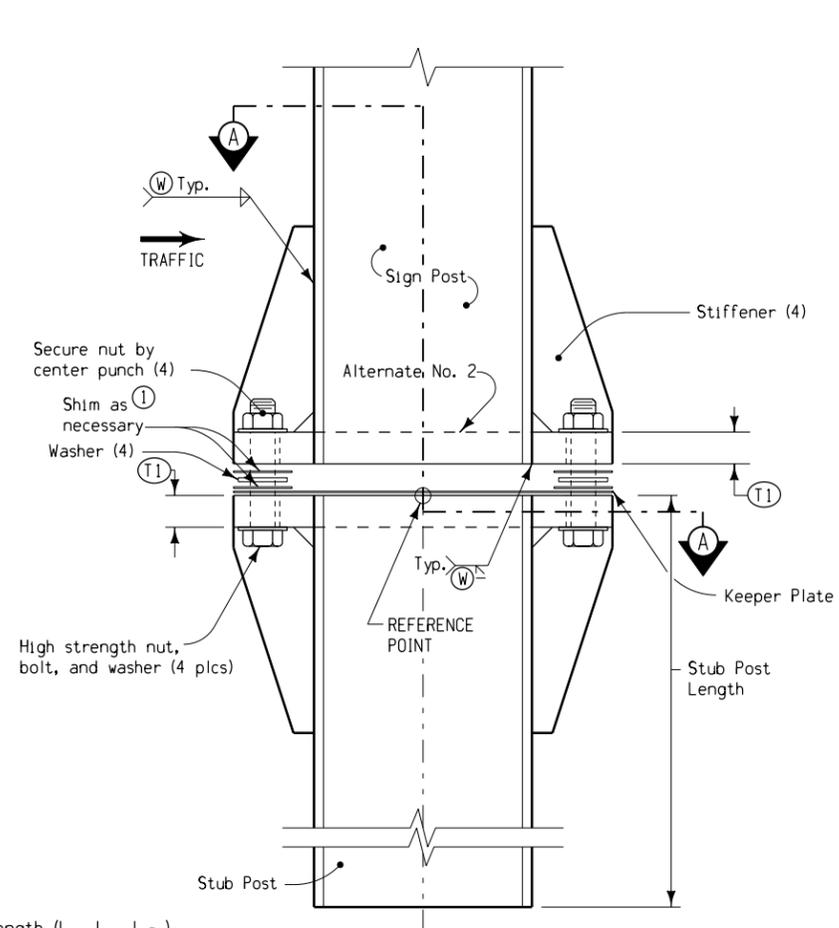
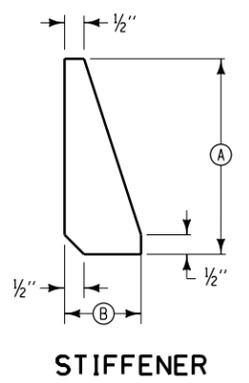
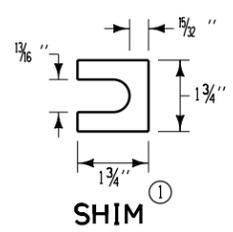
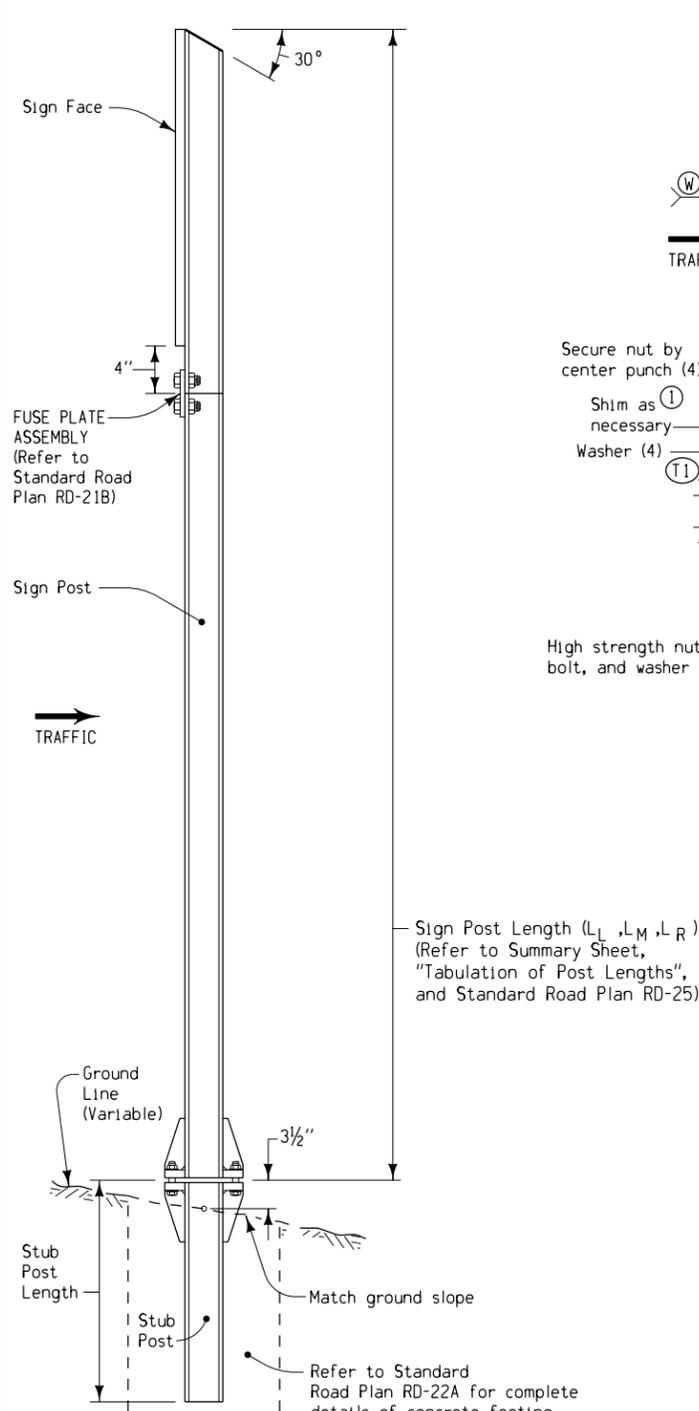
EPOXY REINFORCMENT QUANTITIES				
per footing				
BAR	QTY	SIZE	LENGTH	WEIGHT
v1	12	#4	54	36.1
h1	7	#4	105	40.9
Total Weight				77.0

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

DMS CONTROL CABINET FOOTING DETAILS

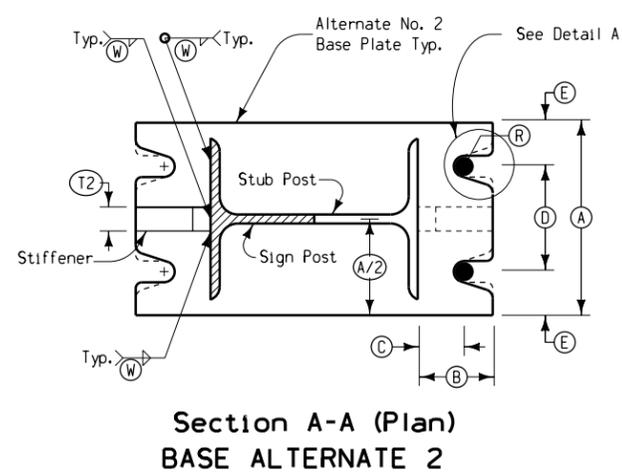
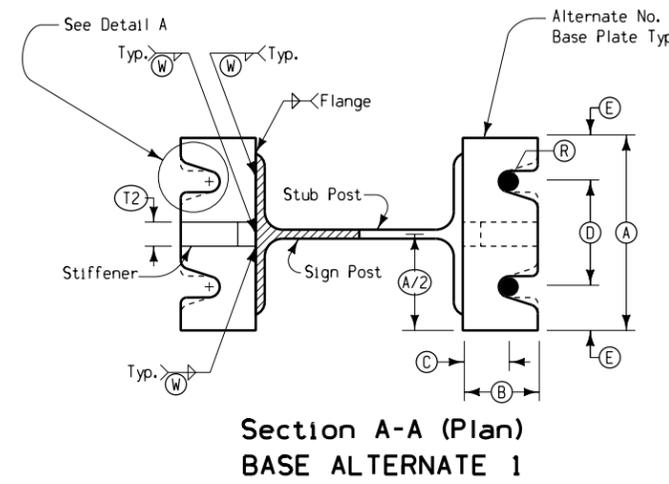
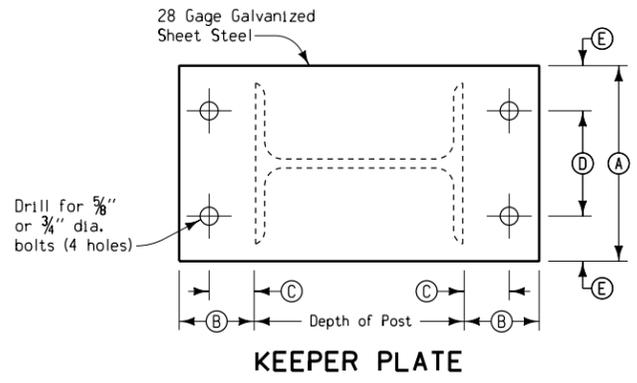
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 jcarthe



(W) Welds shall be continuous fillet welds and of a depth equal to the thickness of the flange for the post unless otherwise specified.

POST DATA	
Post Size	Stub Length
W 6 x 9	2'-6"
W 6 x 12	
W 6 x 15	
W 8 x 18	
W 8 x 21	3'-0"
W 10 x 22	
W 10 x 26	
W 12 x 26	



BREAKAWAY BASE DATA										
Post Size	Bolt Size & Torque	A	B	C	D	E	T1	T2	W	R
W 6 x 9	5/8" dia. x 2 3/4" Torque = 37.50 ft. lbs.	5"	2"	1 1/4"	2 3/4"	1 1/8"	3/4"	1/2"	1/4"	1 1/2"
W 6 x 12										
W 6 x 15										
W 8 x 18										
W 8 x 21	3/4" dia. x 3 1/2" Torque = 62.50 ft. lbs.	6"	2 1/4"	1 3/8"	3 1/2"	1 1/4"	1"	3/4"	5/16"	1 1/2"
W 10 x 22										
W 10 x 26										
W 12 x 26										

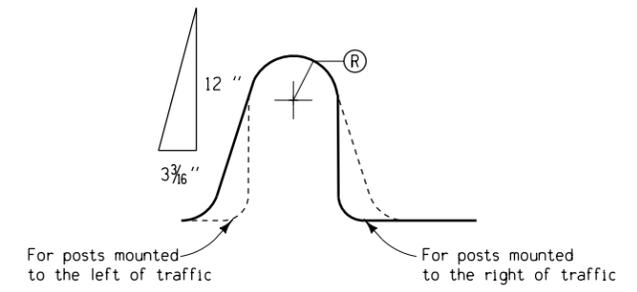
Details shown are for signs installed to the right of traffic. This shall be the default unless specified otherwise by the contract documents. For signs installed to the left of traffic, the notches in the breakaway base plate shall be beveled in the direction opposite of that shown (dashed lines).

Breakaway base shall be fabricated by either of two methods:

ALTERNATE NUMBER 1 - Base plates (2 each), shall be welded to sides of sign post and stub post flanges.

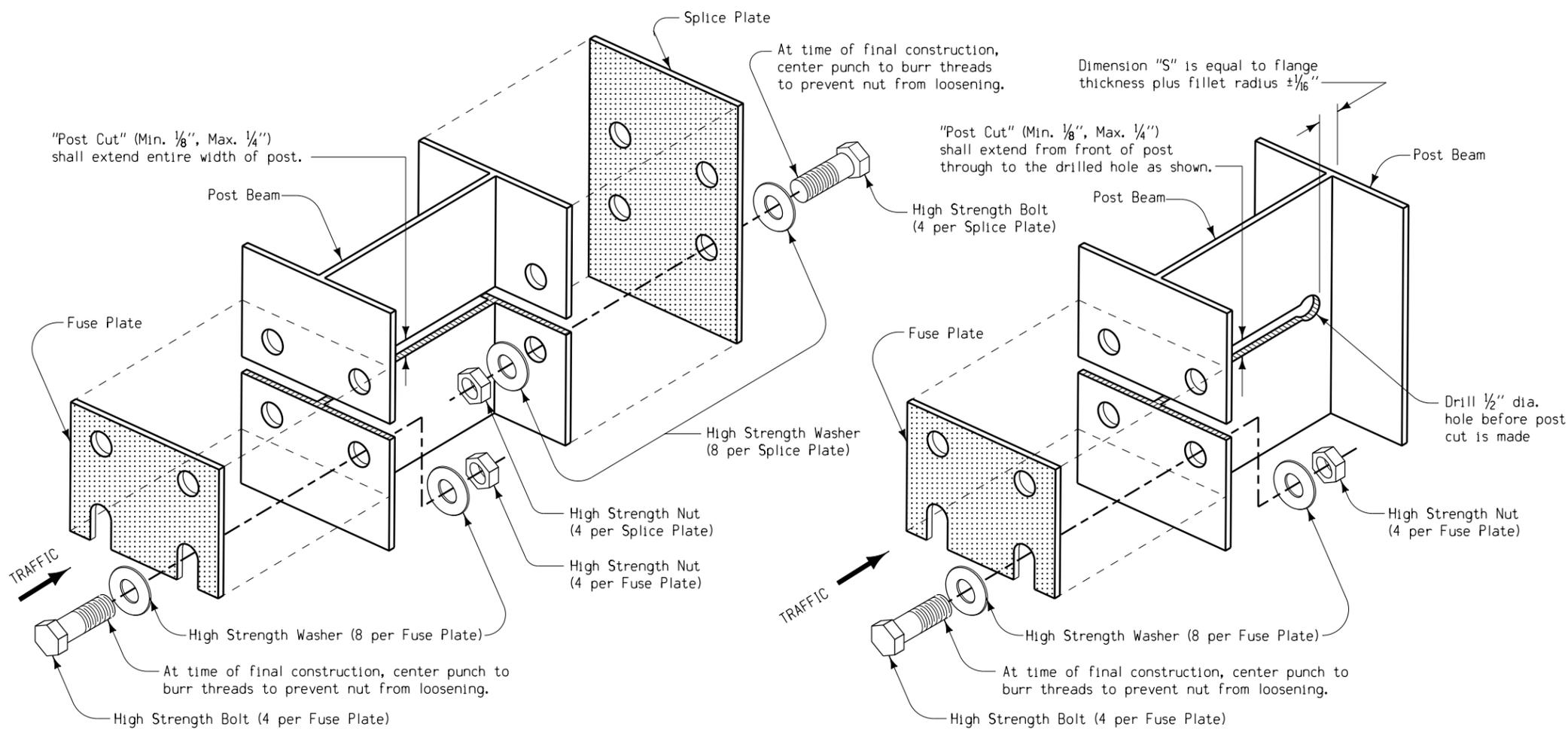
ALTERNATE NUMBER 2 - Base plate (1 each), shall be welded to end of sign post and stub post by continuous fillet weld. When fully assembled, the bolt holes and notches in the stub post plate and the sign post plate shall be properly matched and aligned.

(1) Sign post shall be plumbed by installing shims. The Contractor shall furnish two shims each of 0.012" and 0.032" thickness (total of 4 per post). Shims shall be brass stock or strip conforming to ASTM B 36.



Contract Item:
Steel Breakaway Post for Type A or B Signs

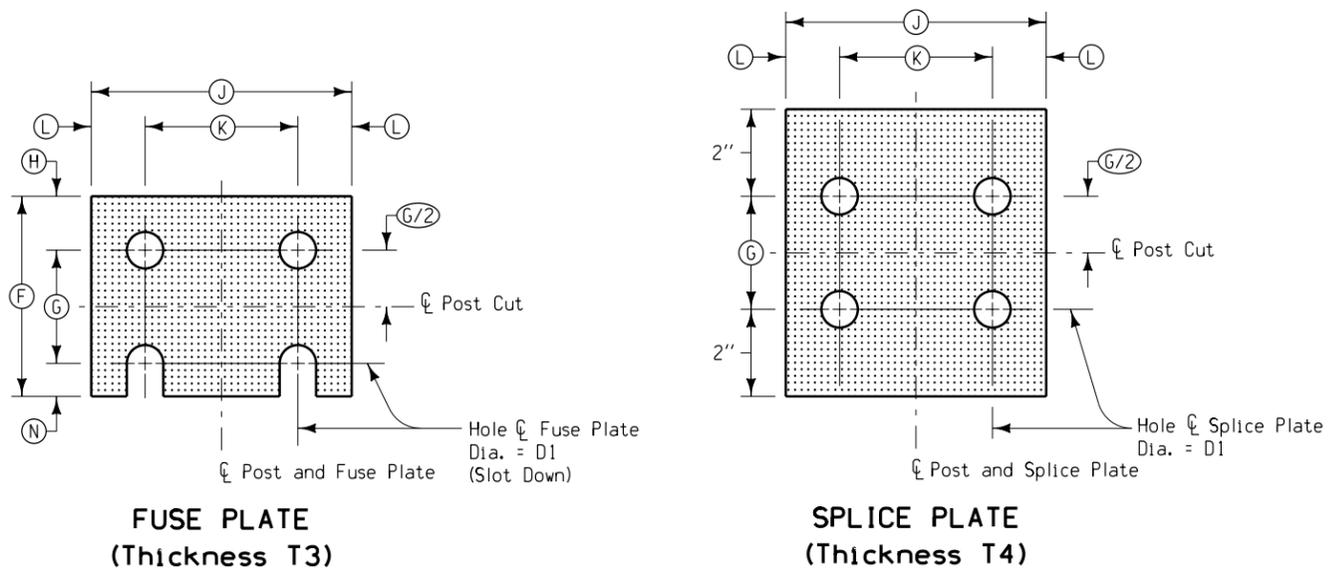
MODIFIED	RD-21A
STANDARD ROAD PLAN	
SHEET 1 of 1	
REVISIONS:	
STEEL BREAKAWAY POST FOR TYPE A OR B SIGNS	



**Alternate 1
(With Splice Plate)**

**Alternate 2
(One-Piece Post)**

DETAILS OF FUSE PLATE ASSEMBLY



Bolt Size	Torque
1/2"	100 Ft. Lbs.
5/8"	180 Ft. Lbs.
3/4"	320 Ft. Lbs.
7/8"	470 Ft. Lbs.

FUSE AND SPLICE PLATE DATA											
Post Size	Bolt Dia.	F	G	H	J	K	L	N	D1	T3	T4
W6x9	1/2"	3 5/8"	2"	1 1/8"	4"	2 1/4"	7/8"	1/2"	9 1/16"	1/4"	1/4"
W6x12	5/8"	3 3/4"	2"	1 1/8"	4"	2 1/4"	7/8"	5/8"	11 1/16"	3/8"	1/4"
W6x15	3/4"	4 1/2"	2 1/2"	1 1/4"	6"	3 1/2"	1 1/4"	3/4"	13 7/16"	1/2"	1/4"
W8x18	3/4"	4 1/2"	2 1/2"	1 1/4"	5 1/4"	2 3/4"	1 1/4"	3/4"	13 7/16"	1/2"	3/8"
W8x21	7/8"	4 7/8"	2 1/2"	1 1/2"	5 1/4"	2 3/4"	1 1/4"	7/8"	15 1/16"	5/8"	3/8"
W10x22	7/8"	5 3/8"	3"	1 1/2"	5 3/4"	2 3/4"	1 1/2"	7/8"	15 1/16"	5/8"	3/8"
W10x26	7/8"	5 3/8"	3"	1 1/2"	5 3/4"	2 3/4"	1 1/2"	7/8"	15 1/16"	5/8"	3/8"
W12x26	7/8"	5 3/8"	3"	1 1/2"	6 1/2"	3 1/2"	1 1/2"	7/8"	15 1/16"	5/8"	3/8"

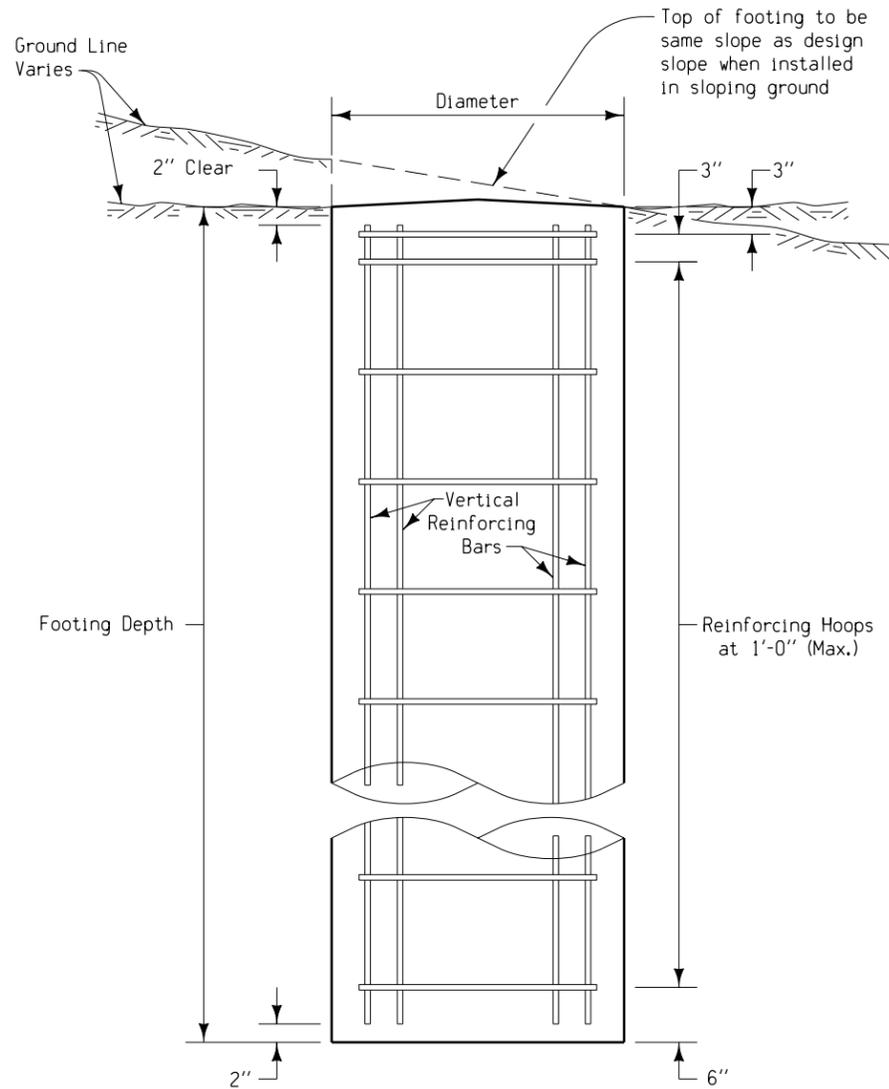
MODIFIED

STANDARD ROAD PLAN RD-21B

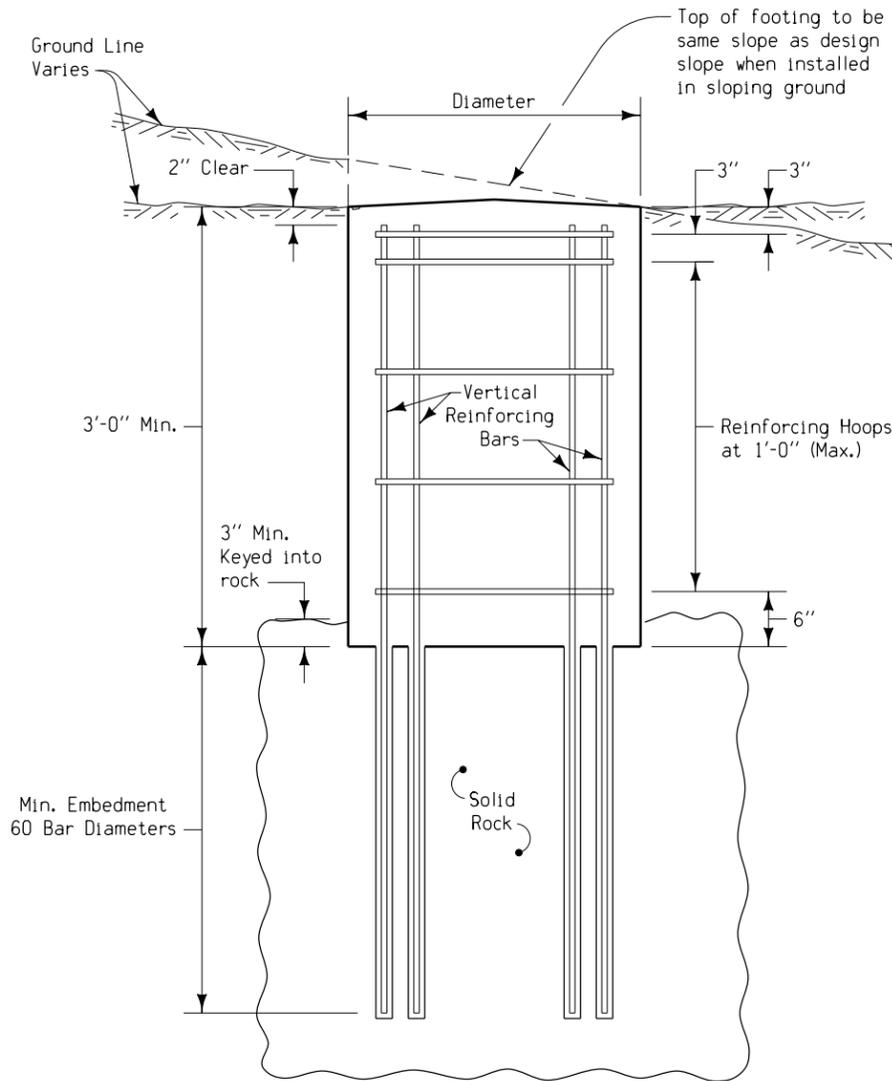
REVISION:	REVISION NO.
	REVISION DATE

**FUSE PLATE ASSEMBLY
(FOR BREAKAWAY SIGN POST)**

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**TYPICAL INSTALLATION
NORMAL FOOTING IN EARTH**



**ALTERNATE DESIGN
FOOTING IN SOLID ROCK**

GENERAL NOTES:

Material and methods for construction of concrete footings for breakaway sign posts detailed hereon shall be in conformance with current Standard and Supplemental Specifications.

The footing shall be constructed as shown for normal footing in earth. Where solid rock is encountered, the alternate design for footing in solid rock may be used with the approval of the Engineer.

All excavation for the footing shall be disposed of in the area adjacent to the footing and shaped to normal ground contour, unless directed otherwise by the Engineer.

The stub post shall be held in proper position by an approved device which will ensure that it remains in proper position upon completion of concrete placement.

Structural grade concrete shall be used for the footing.

The contract price for size of footing required shall be full compensation for construction of footing as detailed hereon, including all necessary excavation regardless of character.

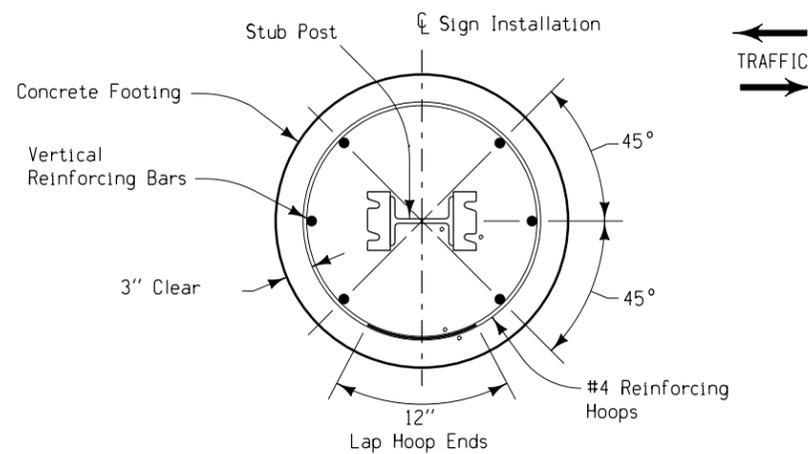
NOTE:

Vertical bars in solid rock shall be set as follows:

1. Drill holes twice bar diameter and fill with water.
2. When hole is fully saturated; blow water out and fill two-thirds depth with sand cement mortar.
3. Insert bar and consolidate mortar.
4. Fill hole to top with mortar.

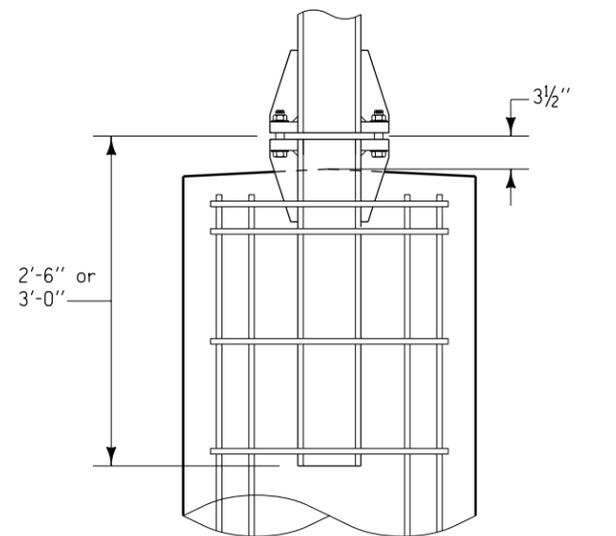
Post Size	Stub Length	Footing		Vertical Rein. Bar	
		Diameter	Depth	Size	Length ①
W6x12	2'-6"	2'-0"	6'-0"	No. 6	5'-8
W6x15	2'-6"	2'-0"	6'-6"	No. 6	6'-2
W8x18	2'-6"	2'-0"	7'-0"	No. 6	6'-8
W8x21	3'-0"	2'-8"	7'-6"	No. 8	7'-2
W10x22	3'-0"	2'-8"	8'-0"	No. 8	7'-8
W10x26	3'-0"	2'-8"	8'-6"	No. 8	8'-2
W12x26	3'-0"	2'-8"	9'-0"	No. 8	8'-8

① Lengths are for normal footings. Required length may vary where alternate rock design is used.



PLAN VIEW

(REINFORCING PLACEMENT AND SIGN ORIENTATION)
Note: Refer to RD-21A for details of sign post and stub.



TYPICAL BREAKAWAY POST INSTALLATION

MODIFIED	
STANDARD ROAD PLAN RD-22A	
REVISION:	REVISION NO.
	REVISION DATE
FOOTING DETAILS FOR BREAKAWAY SIGN POST	

1/30/2009 \\OFFICE\Projects\10000001005\Traffic\00-0005-394\000005394_b01.plt

ESTIMATED PROJECT QUANTITIES

100-1A
07-15-97

Item No.	Item Code	Item	Unit	Total	As Built Quan.
1	2102-2625000	EMBANKMENT-IN-PLACE	CY	200	
2	2401-6745355	RMVL OF CONC FOOTING OF HIGHWAY SIGN	EACH	2	
3	2402-2720000	EXCAVATION, CL 20	CY	334.9	
4	2403-0100000	STRUCT CONC (MISCELLANEOUS)	CY	113.16	
5	2404-7775005	REINFORC STEEL, EPOXY COATED	LB	11320	
6	2505-4008100	RMV G'RAIL	LF	387.5	
7	2505-4008200	INSTALL OF G'RAIL	LF	187.5	
8	2505-4021331	G'RAIL, END ANCHOR, BEAM, RE-33A	EACH	1	
9	2505-4021762	G'RAIL TERMINAL, BEAM, FLARED, RE-76	EACH	2	
10	2505-6000111	HIGH TENSION CABLE G'RAIL	LF	1558.7	
11	2505-6000121	HIGH TENSION CABLE G'RAIL, END ANCHOR	EACH	14	
12	2505-6000131	HIGH TENSION CABLE G'RAIL, SPARE PART KIT	EACH	2	
13	2509-0000012	TEMP CRASH CUSHION	EACH	9	
14	2524-9080290	CONC FOOTING-BRKWY SIGN POST, 2'8"x9'	EACH	3	
15	2524-9281426	STEEL BRKWY POST-TYPE A/B SIGN, W 12X26	LF	73.4	
16	2528-8400048	TEMP BARRIER RAIL, CONC	LF	2375	
17	2528-8445110	TRAFFIC CONTROL	LS	1	
18	2528-9290004	CHANGEABLE MESSAGE SIGN, PORTABLE	CDAY		
19	2533-4980005	MOBILIZATION	LS	1	
20	2599-9999005	OVERHEAD SIGN SUPPORT STRUCTURE, 75'	EACH	3	
21	2599-9999005	DMS INSTALLATION, 125 X 27 PIXEL SIGN (LARGE DMS)	EACH	3	
22	2599-9999005	REMOVE + REINSTALL TYPE B SIGN	EACH	1	
23	2599-9999018	HIGH TENSION CABLE G'RAIL, HMA MOW STRIP	SY	351.6	

ESTIMATE REFERENCE INFORMATION

100-4A
10-29-02

Item No.	Item Code	Description
1	2102-2625000	EMBANKMENT-IN-PLACE Item includes quantities associated with construction of an HMA Mow Strip, and Concrete Barrier Rail. Guardrail = 48.5 CY Crash Cushion = 26.4 CY HMA Mow Strip = 125.1 CY
2	2401-6745355	RMVL OF CONC FOOTING OF HIGHWAY SIGN This item shall consist of removal of concrete footings for steel breakaway sign support posts. Concrete footings or parts of concrete footings removed shall become the property of the Contractor, and shall be removed in accordance with Article 1104.08. Unless otherwise provided or ordered, concrete footings for steel breakaway sign support posts shall be removed 1 foot below natural ground surface. Where portions of the existing concrete footings lie wholly or in part within limits for a new structure (culvert, concrete footing, or other), they shall be removed as necessary to accommodate construction of the proposed structure. Holes remaining from the removal of concrete footings for steel breakaway sign support posts shall be backfilled with suitable earth to the original level or to the natural ground surface in accordance with Article 2402.09. Measurement: The Engineer will count each concrete footing for steel breakaway sign support post removed. Payment: For each concrete footing for steel breakaway sign support post removed, the Contractor shall be paid the contract unit price. This payment shall be full compensation for furnishing all material, equipment, and labor and for the performance of all work necessary for removal of the concrete footings from the project and for any backfilling made necessary by these operations.
3	2402-2720000	EXCAVATION, CL 20
4	2403-0100000	STRUCT CONC (MISCELLANEOUS)
5	2404-7775005	REINFORC STEEL, EPOXY COATED
		Items are for the installation of (3) new overhead sign trusses. Refer to tabulation OVERHEAD for locations and details. Refer to site detail sheets for specific site requirements.
6	2505-4008100	RMV G'RAIL Refer to tabulation 110-7A for locations and details. Requires the removal of posts and end anchorages which are incidental. All guardrail materials removed will become the property of the Contractor.
7	2505-4008200	INSTALL GUARDRAIL
8	2505-4021331	G'RAIL, END ANCHOR, BEAM, RE-33A
9	2505-4021762	G'RAIL TERMINAL, BEAM, FLARED, RE-76
		Refer to tabulations 108-8A and 108-8B for locations and details.
10	2505-6000111	HIGH TENSION CABLE G'RAIL
11	2505-6000121	HIGH TENSION CABLE G'RAIL, END ANCHOR
		Refer to tabulation 108-9A locations and details. Refer to site detail sheets for specific site requirements.
12	2505-6000131	HIGH TENSION CABLE G'RAIL, SPARE PART KIT Item is for furnishing repair parts to the DOT for the installed High Tension Cable Guardrail system. Spare Part Kits shall be delivered to the location specified by the Engineer, but will most likely be the nearest maintenance facility in Davenport.
13	2509-0000012	TEMP CRASH CUSHION Item is to attenuate temporary barrier rail locations. Refer to tabulation 108-30 for locations.

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
RD-65	10-17-06	1	Special Signs for Traffic Control
RE-71	04-15-08	4	Temporary Barrier Rail (Precast Concrete)
RE-85	04-17-07	2	Temporary Crash Cushions - Sand Barrel Details
RE-88	04-15-08	2	High Tension Cable Guardrail
RL-14A	10-17-06	2	Guardrail Grading
RM-33	10-03-00	1	Electrical Installation Details (Roadway Ducts)
RM-38	04-27-99	1	Junction Box (Fiber Reinforced Concrete)
TC-1	10-17-06	1	Work not Affecting Traffic
TC-402	10-16-07	1	Shoulder Closure
TC-418	10-16-07	1	Lane Closure on Divided Highway
TC-420	10-16-07	2	Lane Closure at Ramps
TC-451	10-16-07	1	Temporary Road Closure on Divided Highway

1/30/2009 \\OFFICE\B\Projects\1000001005\Traffic\00-0005-394\000005394_C01.dwg

ESTIMATE REFERENCE INFORMATION

100-4A
10-29-02

ESTIMATE REFERENCE INFORMATION

100-4A
10-29-02

Item No.	Item Code	Description	Item No.	Item Code	Description
14 15	2524-9080290 2528-8400048	<p>CONC FOOTING - BREAKAWAY SIGN POST, 2'8" X 9' STEEL BREAKAWAY POST - TYPE A/B SIGN, W 12 X 26</p> <p>Items are for new posts and foundations to reinstall a Type B guide sign. Refer to sheet N.13 for details.</p>	22	2599-9999005	<p>REMOVE + REINSTALL TYPE B SIGN</p> <p>This item shall consist of removal and reinstallation of Type B signs.</p> <p>The Contractor shall remove each Type B sign and the hardware used to secure the sign to another sign, posts, or sign support structure. For signs mounted directly to posts, removal of the sign shall include removal of the posts. Post may be either wood posts or steel breakaway sign posts. The removal of concrete footings for steel breakaway sign posts shall be paid for separately.</p> <p>All steel posts removed shall become the property of the Contractor.</p> <p>Unless otherwise noted, the existing Type B sign shall remain in place until the new posts or sign support structure is installed.</p> <p>The Contractor shall reinstall the Type B sign. The Contractor shall furnish all necessary hardware to install the signs as shown in the plans. When the new installation is similar to the original installation, unless otherwise noted, the existing hardware may be used to reinstall the sign.</p> <p>Signs damaged by the Contractor*s activities shall be replaced at the Contractor*s expense. Replacement materials shall be new. The DOT will furnish all details necessary for fabrication of the replacement materials.</p> <p>Measurement: The Engineer shall count each Type B sign removed and reinstalled.</p> <p>Payment: For each Type B sign removed and reinstalled, the Contractor shall be paid the contract unit price. This payment shall be full compensation for furnishing all material, equipment, and labor and for the performance of all work necessary for removal and reinstallation of each Type B sign, including all details necessary to provide the Type B sign complete and erected in place.</p>
16	2528-8400048	<p>TEMP BARRIER RAIL, CONC</p> <p>Item is for traffic control. Refer to tabulations 108-33 for locations. Refer to site detail sheets for specific site requirements.</p>			
17	2528-8445110	<p>TRAFFIC CONTROL</p> <p>Traffic control notes and details are found on the site detail sheets.</p>			
18	2528-9290004	<p>CHANGEABLE MESSAGE SIGN, PORTABLE</p> <p>The Contractor is to furnish any signs necessary for traffic control. Refer the Standard Road Plans for requirements.</p>			
19	2533-4980005	<p>MOBILIZATION</p> <p>Incidental to this bid item is the seeding for site restoration of disturbed areas. Refer to note 232-3A for details.</p>			
20	2599-9999005	<p>OVERHEAD SIGN SUPPORT STRUCTURE, 75'</p> <p>Item is for the fabrication and installation of a steel sign truss. Refer to the V sheets for dimensions and details. These items are covered by Section 2423 of the DOT specifications.</p>	23	2599-9999018	<p>HIGH TENSION CABLE G'RAIL, HMA MOW STRIP</p> <p>This item shall consist of installing a Hot Mix Asphalt pad along the installation line of a High Tension Cable Guardrail installation. The HMA mow strip is intended to prevent the accumulation of debris and vegetation which may interfere with the function and/or maintenance of the installation.</p> <p>The HMA mix shall conform to the requirements of detour pavement in Section 2304 of the specifications.</p> <p>Refer to typical 7199 for locations and details.</p> <p>Measurement: The Engineer shall measure the area of the HMA Mow Strip installed.</p> <p>Payment: The Contractor shall be paid the contract unit price for the area installed. This payment shall be full compensation for furnishing all material, equipment, and labor and for the performance of all work necessary to provide a finished mow strip.</p>
21	2599-9999005	<p>DMS INSTALLATION, 125 X 27 PIXEL, LARGE DMS</p> <p>The work performed under this bid item shall consist of furnishing all labor, apparatus, and materials to construct, install, and place in operation, a complete dynamic message sign (DMS) system. The Contractor shall furnish and install all components of the system not furnished by the DOT or utility company serving the DMS system, including all incidental items appurtenant to the operation of the system.</p> <p>For general purposes, the installation of the DMS includes, but is not limited to:</p> <ul style="list-style-type: none"> - attaching the DMS to the sign truss, - construction of the control cabinet footing, - installation of the control cabinet, - installation of the handhole, and - installation of the conduit between the handhole and each footing. <p>Note that no wiring or electrical service work is required. This work will be completed by the DOT.</p> <p>For this project, the Large DMS vendor is Daktronics, Inc. of Brookings, South Dakota.</p> <p>The following items will be provided by the DOT, or the DMS vendor: DMS, DMS-to-sign truss attachment brackets, and control cabinet.</p> <p>All arrangements to initiate and accept delivery of the DOT furnished equipment shall be coordinated with the Engineer. Delivery shall be witnessed by the Engineer, and proof of delivery shall be required for all items. Proof of delivery shall consist of an invoice that clearly identifies each item being delivered, signed by the following: the accepting party, the delivering party, and the witness. Upon acceptance of equipment, the Contractor shall be 100% liable for safe handling, storage, and installation of the equipment. Any damaged equipment shall be replaced at the Contractor's expense, without additional compensation.</p> <p>MEASUREMENT: Then Engineer will count the number of Overhead DMS signs installed.</p> <p>PAYMENT: The Contractor shall be paid the contract unit price for each Overhead DMS sign installed.</p>			

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TABULATION OF MATERIALS FOR OVERHEAD SIGN SUPPORT STRUCTURES

OVERHEAD
09-25-02

STRUCTURE TYPE/LENGTH	LOCATION		DIR OF TRAVEL	MEDIAN FOOTING OFFSET (Ft)	OUTSIDE FOOTING OFFSET (Ft)	DIMENSION 'L'		FOOTING TYPE (SEE ROAD STANDARD)	EXCAVATION (CLASS 20) (Cu Yd)	FOUNDATION QUANTITIES		STRUCTURAL CONCRETE (Cu Yd)
	MILEPOST	STATION				MEDIAN (Ft)	OUTSIDE (Ft)			STEEL (Lb)	EPOXY-COATED STEEL (Lb)	
DMS #107 - I-280		390+00	NB	0	75	1	1		106.4		3644	36.36
DMS #106 - I-80		844+70	WB	0	75	1	1		106.2		3644	36.36
DMS #108 - I-74		2240+00	NB	0	75	2	4		122.3		4032	40.44
TOTALS									334.9	0	11320	113.16

NOTE: The 'L' dimension and the quantities shown in the table above are for estimating purposes only. The Contractor will verify the 'L' dimension based on actual field conditions and foreslopes before ordering any material to construct the footings.

01-20-84 204-2
All holes resulting from operations of the contractor, including removal of guardrail posts, fence posts, utility poles, or foundation studies, shall be filled and consolidated to finished grade as directed by the engineer to prevent future settlement. The voids shall be filled as soon as practical - preferably the day created and not later than the following day. Any portion of the right-of-way or project limits (including borrow areas and operation sites) disturbed by any such operations shall be restored to an acceptable condition. This operation shall be considered incidental to other bid items in project.

10-22-93 204-4
All guardrail materials that are removed and not reused on this project shall become the property of the contractor. Any material to be used on this project that is damaged due to the carelessness of the contractor shall be replaced at the contractor's expense without cost to the State of Iowa.

06-22-84 251-2
The contractor is hereby notified that removal of any existing traffic markers, warning devices or guardrail barriers shall be scheduled subject to the approval of the Engineer. The contractor may be required to place temporary warning devices at certain locations where replacement features are not installed the same day during which any such removals take place.

REMOVE or REMOVE & REINSTALL BEAM GUARDRAIL

110-7A
04-19-05

① Lane(s) to which the installation is adjacent.

No.	Location		Side	Steel Beam Guardrail		Posts		End Anchorage		Type	Remarks
	① Direction of Traffic	Station		Remove (Lin. Ft.)	Remove & Reinstall (Lin. Ft.)	Remove (No.)	Remove & Reinstall (No.)	Remove (No.)	Remove & Reinstall (No.)		
#106	EB/WB	844+70	Med	350		56		2		RE-56	
	WB	845+00	Out	37.5		7		1		RE-76	Remove end terminal/UAC STS section

Contractor is to furnish equipment necessary to lift the DMS. DOT equipment is not permitted to be used.

Notify the Engineer in writing, either with a mailed letter or an email, when the work is complete. Upon notification, the Engineer will arrange for a final review.

Shop drawing submittals will be allowed to be made electronically in order to expedite material ordering, if desired.

Drawings shall be submitted via PDF if an electronic submittal is made. Drawings will be reviewed and returned in PDF format regardless of format submitted.

Submittals shall be coordinated with the Resident Construction Engineer.

Electronic drawings may be sent to:
Jeremy.Vortherms@dot.iowa.gov

① Lane(s) to which the installation is adjacent.

HIGH TENSION CABLE GUARDRAIL

Refer to Standard Road Plan RE-88.

108-9A
04-15-08

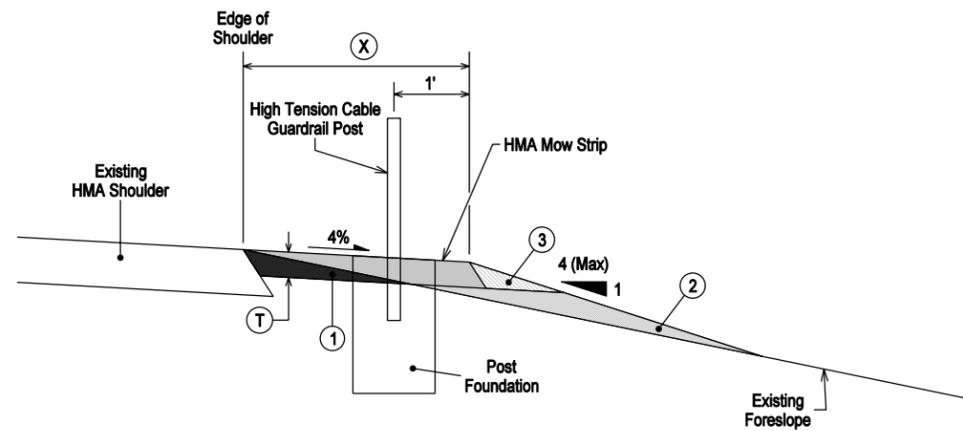
No.	Direction of Traffic	Station	Side	Dimensions				Protection Length (C _A +C ₀ +C _T) Ft.	End Anchor No.	Remarks
				Offset, D ₀ Ft.	Approach, C _A Ft.	Obstacle, C ₀ Ft.	Trailing, C _T Ft.			
#107	NB	388+30.4 to 390+05.9	Med	9	163.5	12		175.5	2	
	SB	389+94.1 to 391+69.6	Med	9	163.5	12		175.5	2	
#106	EB	842+40.1 to 844+75.9	Med	11	156	79.8		235.8	2	
	WB	843+96.1 to 846+39.6	Med	11	156	79.8		235.8	2	
#108	NB	2237+93.2 to 2240+05.7	Out	2	200.5	12		212.5	2	
	NB	2237+44.1 to 2240+05.7	Med	6	249.8	12		261.8	2	
	SB	2239+94.1 to 2242+55.9	Med	6	249.8	12		261.8	2	
							1558.7	14		

TEMPORARY BARRIER RAIL

108-33
04-15-08

No.	Station To Station	Length Lin. Ft.	(Select One)		Remarks
			Concrete RE-71	Steel RE-89	
#107	387+97.1 to 390+40	237.5	x		NB - Outside (19 sections)
	387+97.1 to 390+40	237.5	x		NB - Median (19 sections)
	389+60 to 392+02.9	237.5	x		SB - Median (19 sections)
#106	841+98.4 to 845+05.3	300	x		EB - Median (24 sections)
	843+82.9 to 846+89.9	300	x		WB - Median (24 sections)
	844+82.2 to 846+45.1	162.5	x		WB - Outside (13 sections)
#108	2237+59 to 2240+66	300	x		NB - Outside (24 sections)
	2237+59 to 2240+66	300	x		NB - Median (24 sections)
	2239+34 to 2242+41	300	x		SB - Median (24 sections)
		2375			

7199
12-12-06



- ① Remove existing fillet.
- ② New embankment placed prior to HMA Mow Strip.
- ③ New embankment placed after HMA Mow Strip.
- ④ Bid Items

Items ①, ② & ③ shall be included in the price bid for Embankment in Place.

TYPICAL SECTION
HOT MIX ASPHALT MOW STRIP
FOR HIGH TENSION CABLE GUARDRAIL
ADJACENT TO PAVED SHOULDER

Location				Quantities ④			
Road Identification	Station To Station	Dir.	Side	ⓧ	Ⓣ	Embankment in Place CY	HMA Mow Strip SY
				Feet	Inches		
#108 NB - Outside	2237+50 to 2240+65	NB	RT	3	8	37.3	105
#108 NB - Median	2236+95 to 2240+65	NB	LT	3	8	43.9	123.3
#108 SB - Median	2239+35 to 2243+05	SB	LT	3	8	43.9	123.3
						125.1	351.6

① Lane(s) to which the installation is adjacent.

CRASH CUSHIONS

R - (Redirective)
SU - (Severe Use)

108-30
10-16-07

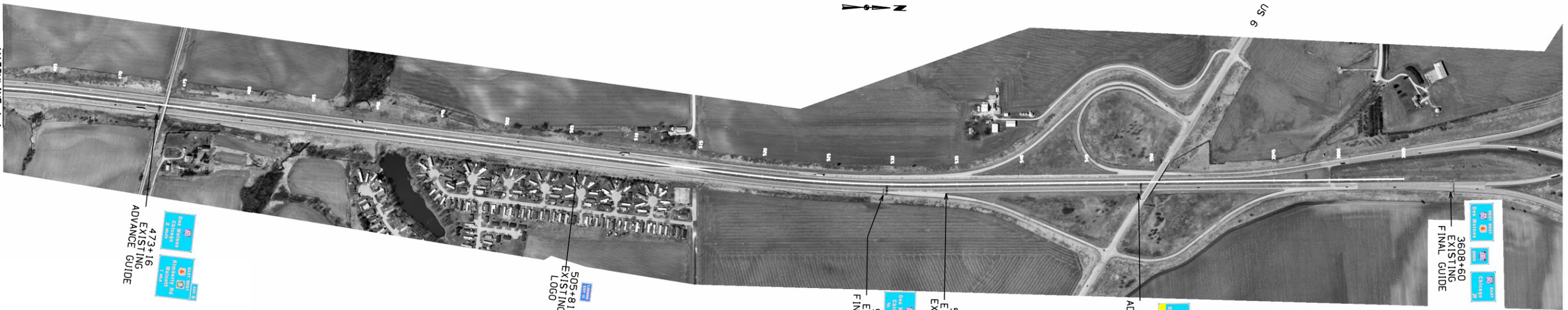
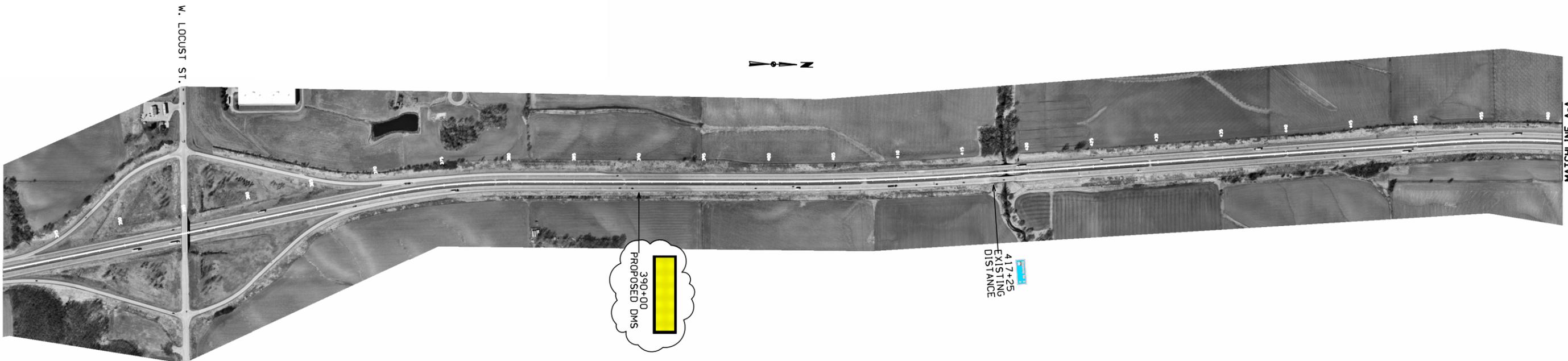
② Complete this section when using the Temporary Crash Cushion bid item. Refer to Standard Road Plan RE-85.

No.	Direction of Traffic	Location Station	Side	Obstacle Width Feet	Bid Item(s)				Sand Barrel Details ②					Embankment in Place Cu.Yds.	Remarks	
					(Select one)		(Select one if applicable)		Ⓥ	Ⓦ	ⓧ	Ⓨ	Ⓩ			
					Temporary	Permanent	R	SU	Length Feet	Length Feet	Length Feet	Length Feet	Length Feet			
#107	NB	397+97.1	Out	2	x					-2'	24'3"	3'3"	1'3"	11'6"		on shoulder
	NB	397+97.1	Med	2	x					-2'	24'3"	3'3"	1'3"	11'6"	4.4	at edge of shoulder
	SB	392+02.9	Med	2	x					-2'	24'3"	3'3"	1'3"	11'6"	4.4	at edge of shoulder
#106	EB	842+98.4	Med	2	x					-2'	24'3"	3'3"	1'3"	11'6"	4.4	at edge of shoulder
	WB	846+89.9	Med	2	x					-2'	24'3"	3'3"	1'3"	11'6"	4.4	at edge of shoulder
	WB	846+45.1	Out	2	x					-2'	24'3"	3'3"	1'3"	11'6"		on shoulder
#108	NB	2237+59	Out	2	x					-2'	24'3"	3'3"	1'3"	11'6"		on shoulder
	NB	2237+59	Med	2	x					-2'	24'3"	3'3"	1'3"	11'6"	4.4	at edge of shoulder
	SB	2242+41	Med	2	x					-2'	24'3"	3'3"	1'3"	11'6"	4.4	at edge of shoulder
														9		

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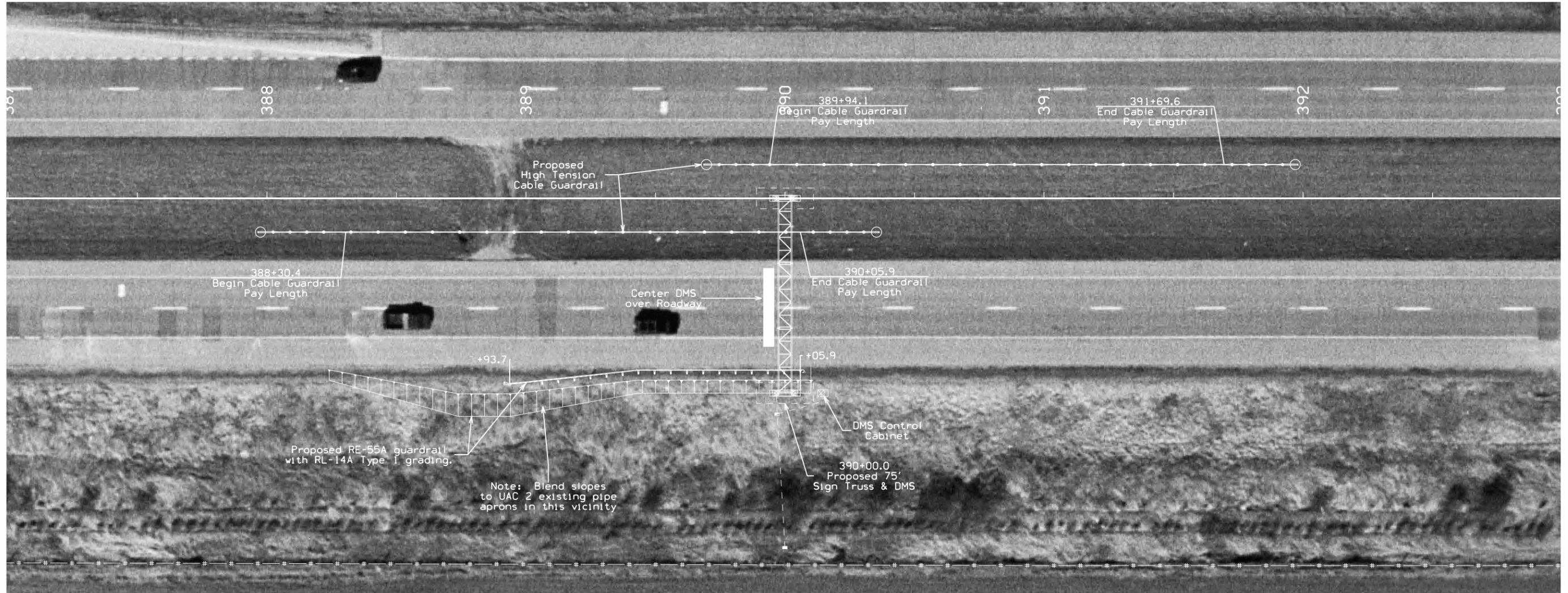
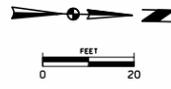
jcorthe

1/30/2009



**SIGNING STRIPMAP
ALONG I-280
IN SCOTT COUNTY**

1/30/2009 jearthe \\OFFICE\Projects\10000000\1005\Trail\Emp\00-0005-394\0000\05394_r01.sht

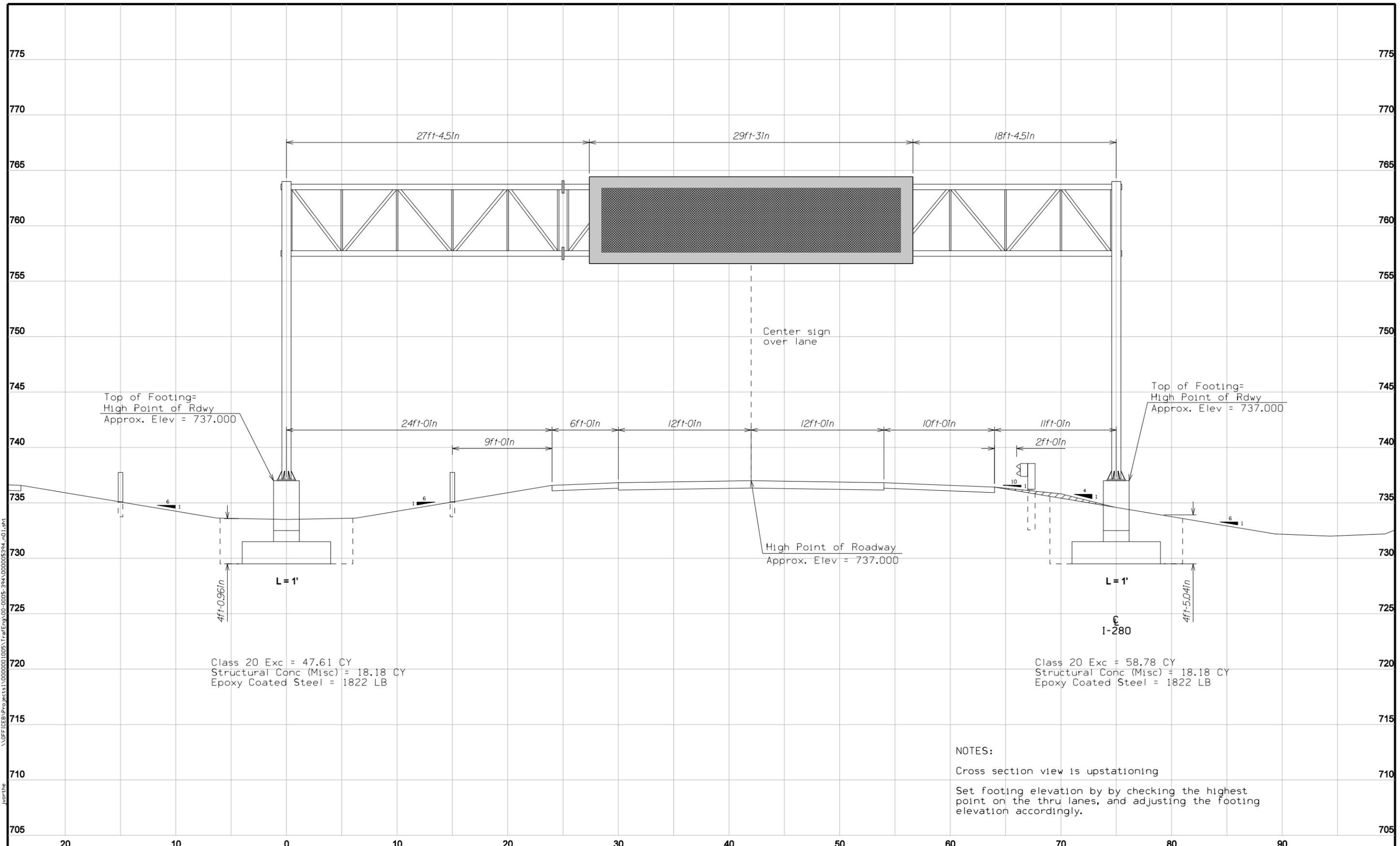


SITE DETAILS FOR DMS #107
ON I-280 NORTHBOUND
DAVENPORT - SCOTT CO.

\\OFFICE\Projects\10000000\1005\1\Trail\Eng\00-0005-394\000005394.d01.sht

juvthe

1/30/2009



STA 390+00
PROPOSED 75' TRUSS

I-280 NORTHBOUND
SCOTT COUNTY

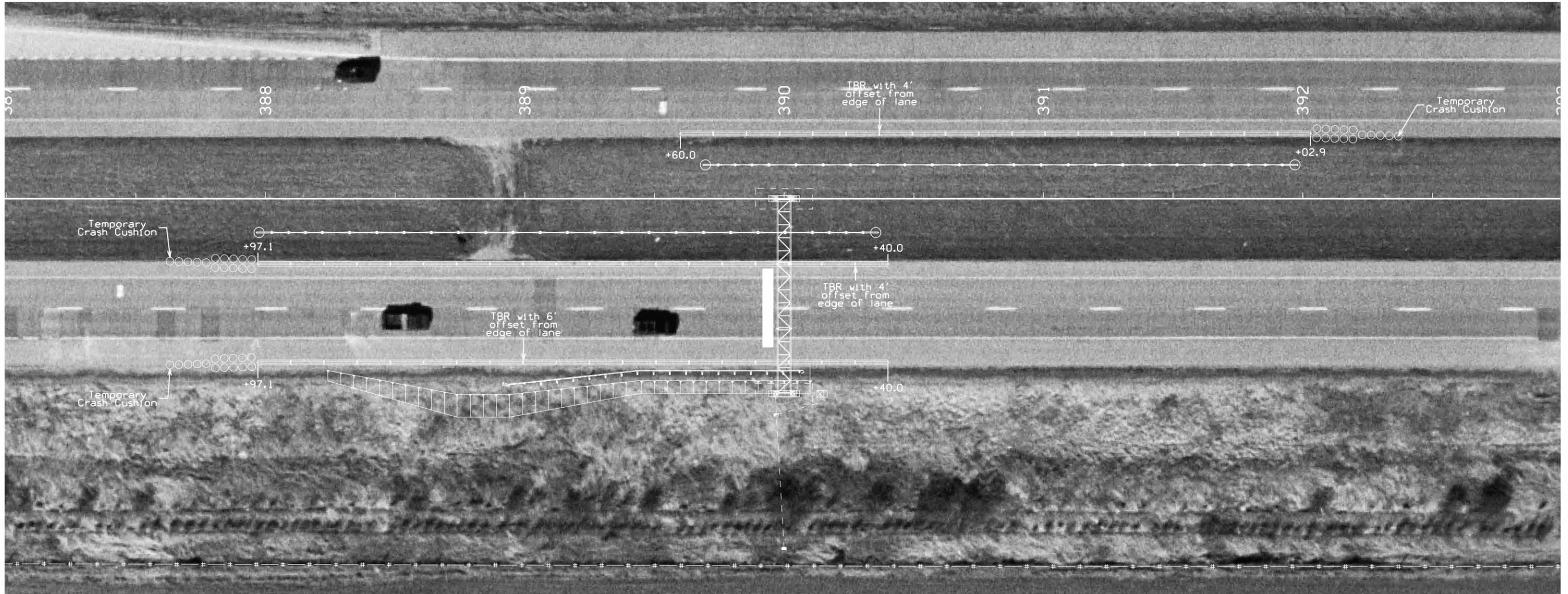
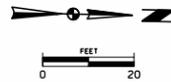
I-280 DMS #107

SAMPLE STAGING SEQUENCE

Median Footing
 Setup initial traffic control
 Footing construction
 Guardrail Installation

Outside Footing
 Setup initial traffic control
 Footing construction
 Control cabinet construction
 Conduit & handhole Installation
 Guardrail Installation

Sign truss and DMS installation
 Final site clean up and seeding



GENERAL

Through traffic will be maintained on the project at all times, except as noted.

Use road closure (TC-451) to install the truss and DMS. Road closures will be allowed from 11:00 pm to 5:00 am any night of the week.

Use lane closures (TC-418 & TC-420) to reduce the number of through lanes. Lane closures are not allowed between 6:00 am and 8:00 pm from Monday through Friday. All other times are permissible. Night work is permissible as well.

Install traffic control at this site in accordance with listed Standard Road Plans. For additional complementary information, refer to Part 6 of the Manual on Uniform Traffic Control Devices and to the current Standard Specifications.

OUTSIDE WORK AREA

Protect the outside work area with temporary barrier rail (TBR) before commencement of the following work activities:
 - construction of the footing, including excavation, forming, tying reinforcement, pouring concrete, and backfilling around the footing

After the footing is completed (including backfill), the TBR may be removed from the outside shoulder. Complete the installation of the permanent guardrail within 2 weeks of removing the TBR.

Without TBR, all remaining work activities will require a lane closure to be completed. Without TBR, a shoulder closure is required to protect the site when workers are not present.

After the W-Beam guardrail is installed, no additional traffic control will be required when workers are not present along the outside work area.

MEDIAN WORK AREA

Protect the median work area with temporary barrier rail (TBR) before commencement of the following work activities:
 - construction of the footing, including excavation, forming, tying reinforcement, pouring concrete, and backfilling around the footing

After the footing is completed (including backfill), the TBR may be removed from the outside shoulder. Complete the installation of the permanent guardrail within 2 weeks of removing the TBR.

Without TBR, all remaining work activities will require a lane closure to be completed. Without TBR, a shoulder closure is required to protect the site when workers are not present.

After the high tension cable guardrail is installed, no additional traffic control will be required when workers are not present within the median work area.

STANDARD ROAD PLANS

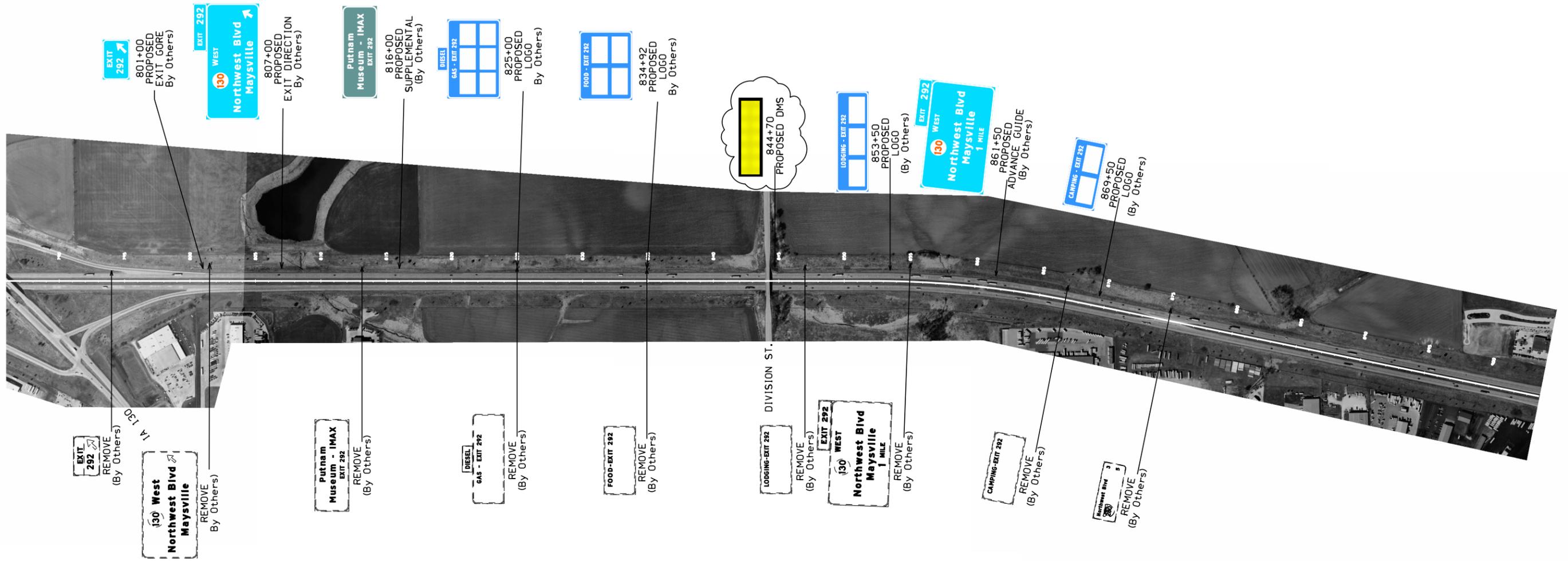
TC-1	RD-65
TC-402	RE-71
TC-418	RE-85
TC-420	
TC-451	

**TRAFFIC CONTROL FOR DMS #107
 ON I-280 NORTHBOUND
 DAVENPORT - SCOTT CO.**

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jcorthe

1/30/2009



There are other projects near this location. These projects are for the reconstruction of the WB exit ramp at the Ia 130 interchange just west of the DMS.

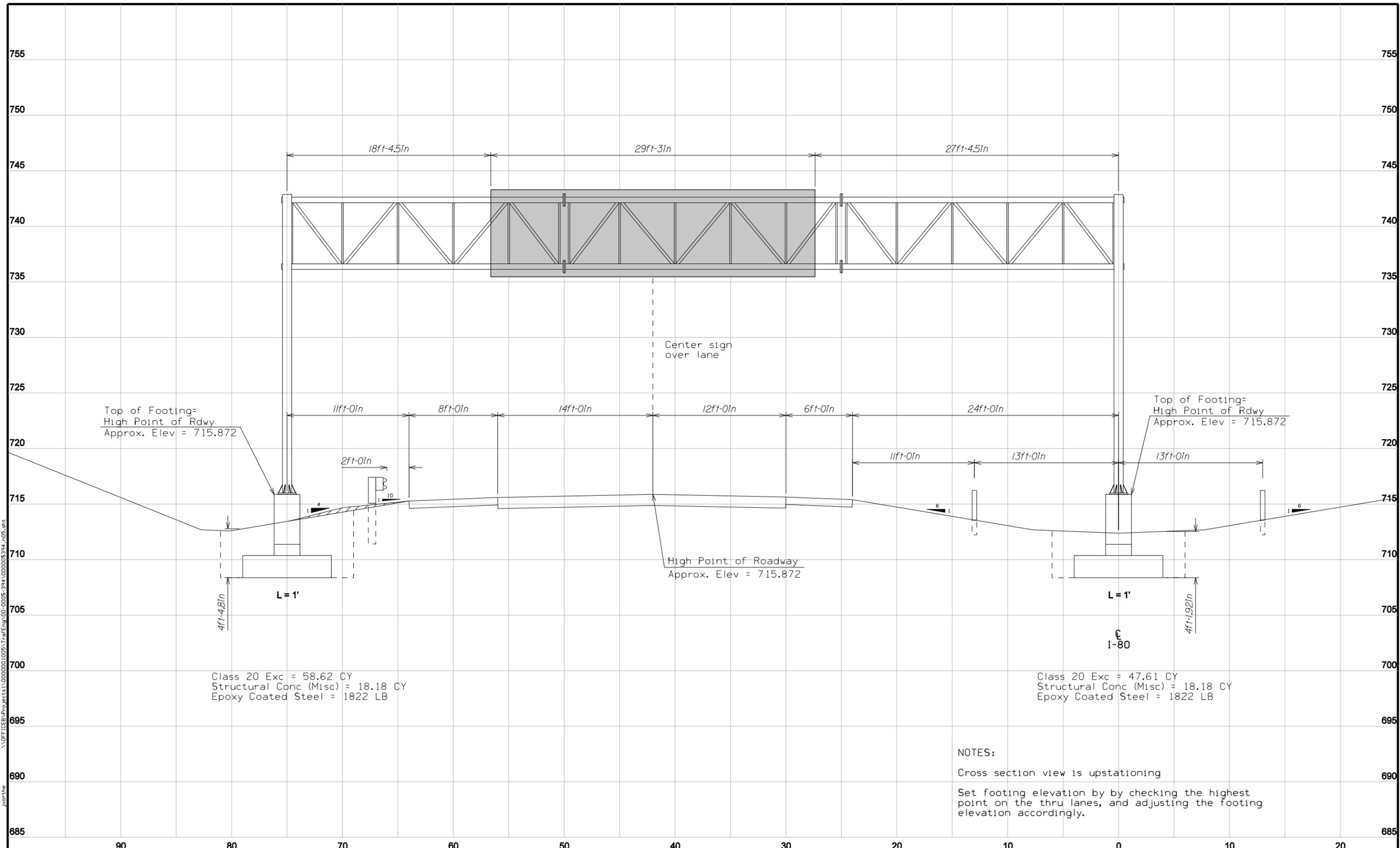
Since it is unknown how far along that project will be when this work commences, we have shown both the existing conditions and what is proposed with that work.

**SIGNING STRIPMAP
ALONG I-80
IN SCOTT COUNTY**



SITE DETAILS FOR DMS #106
ON I-80 WESTBOUND
DAVENPORT - SCOTT CO.

1/30/2009 jvw:the \\OFFICE\Projects\10000000\1005\TraffEng\00-0005-394\000005394_005.sht



STA 844+70
PROPOSED 75' TRUSS

I-80 WESTBOUND
SCOTT COUNTY

I-80 DMS #106

SAMPLE STAGING SEQUENCE

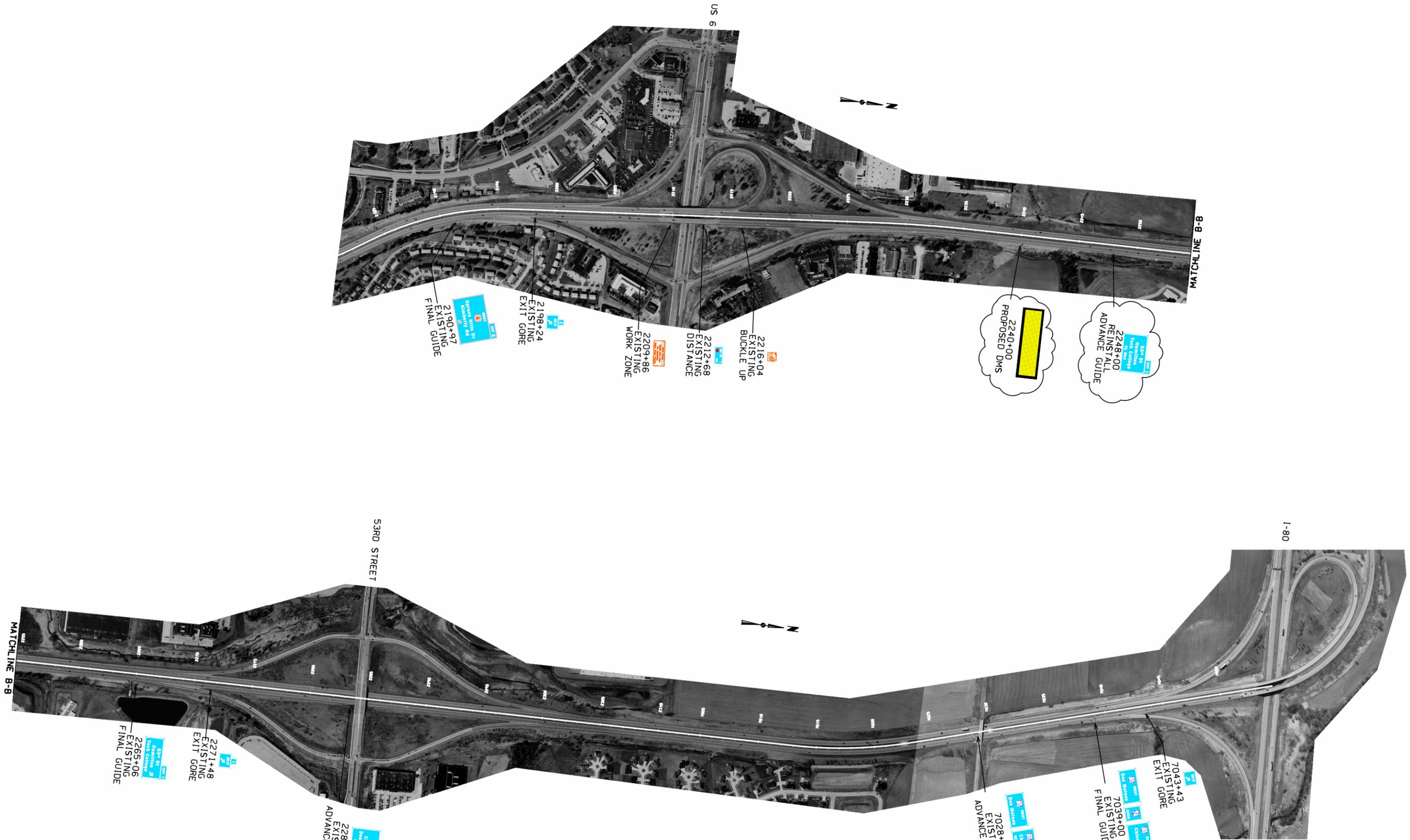


<p>GENERAL</p> <p>Through traffic will be maintained on the project at all times, except as noted.</p> <p>Use road closure (TC-451) to install the truss and DMS. Road closures will be allowed from 11:00 pm to 5:00 am any night of the week.</p> <p>Use lane closures (TC-418 & TC-420) to reduce the number of through lanes. Lane closures are not allowed between 6:00 am and 8:00 pm from Monday through Friday. All other times are permissible. Night work is permissible as well.</p> <p>Install traffic control at this site in accordance with listed Standard Road Plans. For additional complementary information, refer to Part 6 of the Manual on Uniform Traffic Control Devices and to the current Standard Specifications.</p>	<p>OUTSIDE WORK AREA</p> <p>Protect the outside work area with temporary barrier rail (TBR) before commencement of the following work activities:</p> <ul style="list-style-type: none"> - guardrail removal - construction of the footing, including excavation, forming, tying reinforcement, pouring concrete, and backfilling around the footing <p>After the footing is completed (including backfill), the TBR may be removed from the outside shoulder. Complete the installation of the permanent guardrail within 2 weeks of removing the TBR.</p> <p>Without TBR, all remaining work activities will require a lane closure to be completed. Without TBR, a shoulder closure is required to protect the site when workers are not present.</p> <p>After the W-Beam guardrail is installed, no additional traffic control will be required when workers are not present along the outside work area.</p>	<p>MEDIAN WORK AREA</p> <p>Protect the median work area with temporary barrier rail (TBR) before commencement of the following work activities:</p> <ul style="list-style-type: none"> - guardrail removal - construction of the footing, including excavation, forming, tying reinforcement, pouring concrete, and backfilling around the footing <p>After the footing is completed (including backfill), the TBR may be removed from the outside shoulder. Complete the installation of the permanent guardrail within 2 weeks of removing the TBR.</p> <p>Without TBR, all remaining work activities will require a lane closure to be completed. Without TBR, a shoulder closure is required to protect the site when workers are not present.</p> <p>After the high tension cable guardrail is installed, no additional traffic control will be required when workers are not present within the median work area.</p>	<p>STANDARD ROAD PLANS</p> <table border="0"> <tr> <td>TC-1</td> <td>RD-65</td> </tr> <tr> <td>TC-402</td> <td>RE-71</td> </tr> <tr> <td>TC-418</td> <td>RE-85</td> </tr> <tr> <td>TC-420</td> <td></td> </tr> <tr> <td>TC-451</td> <td></td> </tr> </table>	TC-1	RD-65	TC-402	RE-71	TC-418	RE-85	TC-420		TC-451	
TC-1	RD-65												
TC-402	RE-71												
TC-418	RE-85												
TC-420													
TC-451													

**TRAFFIC CONTROL FOR DMS #106
ON I-80 WESTBOUND
DAVENPORT - SCOTT CO.**

1/30/2009
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**SIGNING STRIPMAP
ALONG I-74
IN SCOTT COUNTY**



SHEET NUMBER N.09

PROJECT NUMBER ITS-000-S(394)--25-00

SCOTT COUNTY

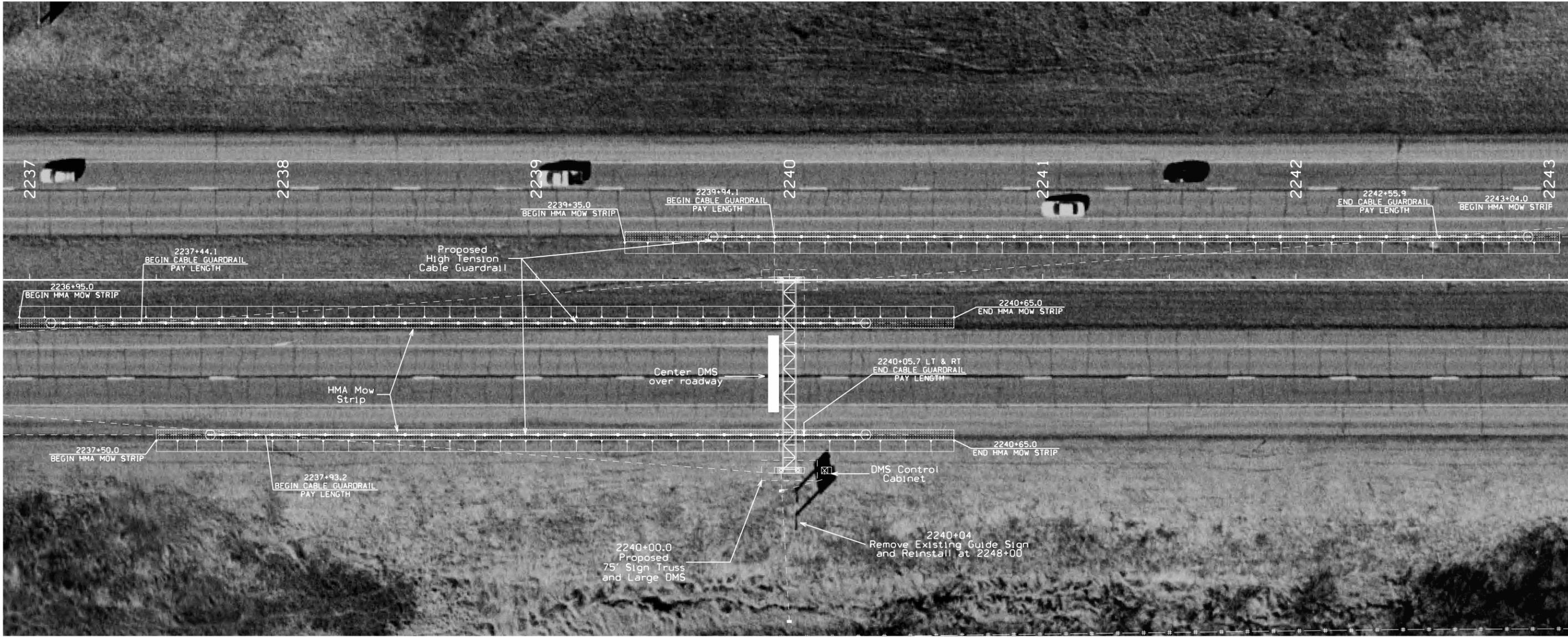
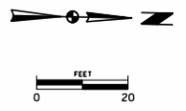
DESIGN TEAM VORTHERMS/JENSEN

OFFICE OF TRAFFIC & SAFETY



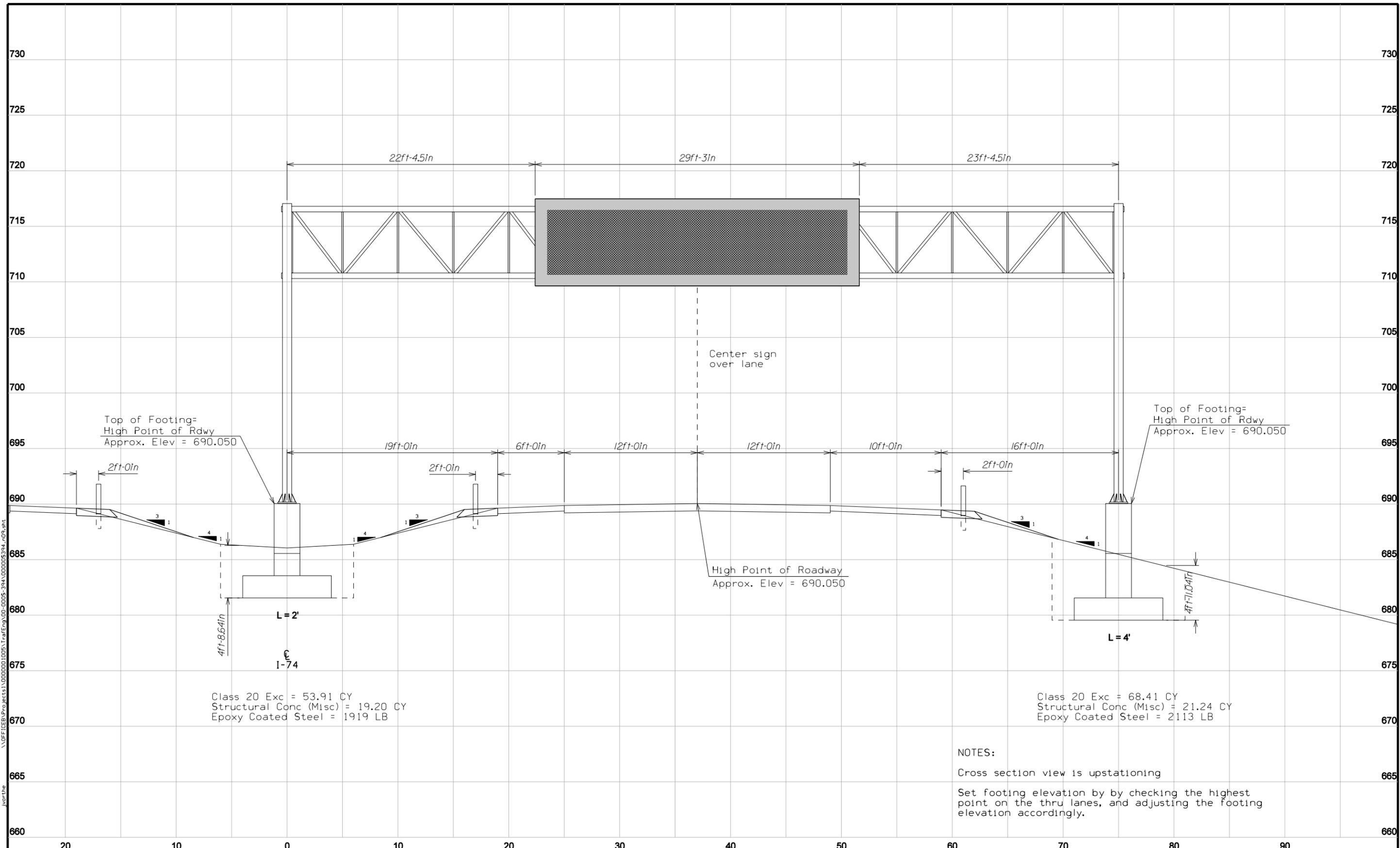
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SITE DETAILS FOR DMS #108
ON I-74 NORTHBOUND
DAVENPORT - SCOTT CO.

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Class 20 Exc = 53.91 CY
 Structural Conc (Misc) = 19.20 CY
 Epoxy Coated Steel = 1919 LB

Class 20 Exc = 68.41 CY
 Structural Conc (Misc) = 21.24 CY
 Epoxy Coated Steel = 2113 LB

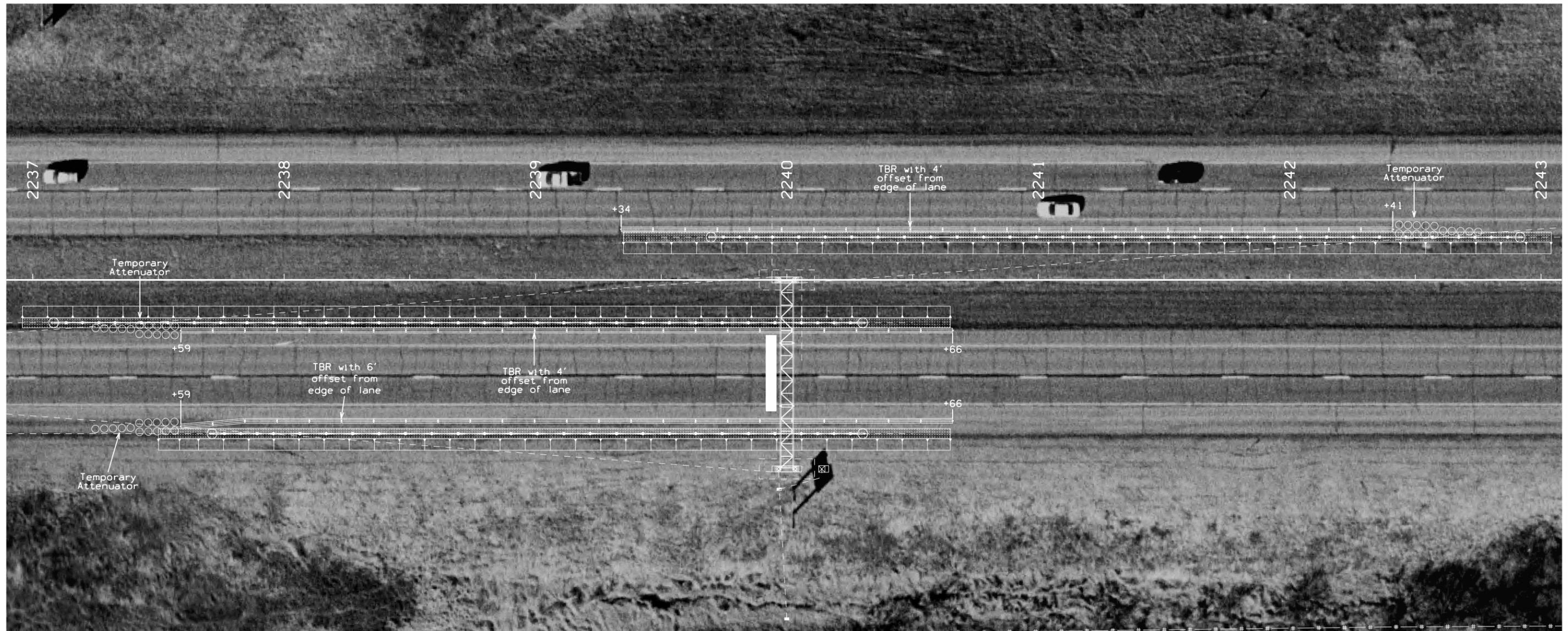
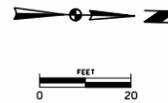
NOTES:
 Cross section view is upstationing
 Set footing elevation by by checking the highest point on the thru lanes, and adjusting the footing elevation accordingly.

STA 2240+00 | I-74 NORTHBOUND | I-74 DMS #108
 PROPOSED 75' TRUSS | SCOTT COUNTY

SAMPLE STAGING SEQUENCE

- Median Footing
 - Setup initial traffic control
 - Footing construction
 - Guardrail Installation
- Outside Footing
 - Setup initial traffic control
 - Footing construction
 - Control cabinet construction
 - Conduit & handhole Installation
 - Guardrail Installation

→ Sign truss and DMS installation
Final site clean up and seeding



GENERAL

Through traffic will be maintained on the project at all times, except as noted.

Use road closure (TC-451) to install the truss and DMS. Road closures will be allowed from 11:00 pm to 5:00 am any night of the week.

Use lane closures (TC-418 & TC-420) to reduce the number of through lanes. Lane closures are not allowed between 6:00 am and 8:00 pm from Monday through Friday. All other times are permissible. Night work is permissible as well.

Install traffic control at this site in accordance with listed Standard Road Plans. For additional complementary information, refer to Part 6 of the Manual on Uniform Traffic Control Devices and to the current Standard Specifications.

OUTSIDE WORK AREA

Protect the outside work area with temporary barrier rail (TBR) before commencement of the following work activities:
- construction of the footing, including excavation, forming, tying reinforcement, pouring concrete, and backfilling around the footing

After the footing is completed (including backfill), the TBR may be removed from the outside shoulder. Complete the installation of the permanent guardrail within 2 weeks of removing the TBR.

Without TBR, all remaining work activities will require a lane closure to be completed. Without TBR, a shoulder closure is required to protect the site when workers are not present.

After the high tension cable guardrail is installed, no additional traffic control will be required when workers are not present within the median work area.

MEDIAN WORK AREA

Protect the median work area with temporary barrier rail (TBR) before commencement of the following work activities:
- construction of the footing, including excavation, forming, tying reinforcement, pouring concrete, and backfilling around the footing

After the footing is completed (including backfill), the TBR may be removed from the outside shoulder. Complete the installation of the permanent guardrail within 2 weeks of removing the TBR.

Without TBR, all remaining work activities will require a lane closure to be completed. Without TBR, a shoulder closure is required to protect the site when workers are not present.

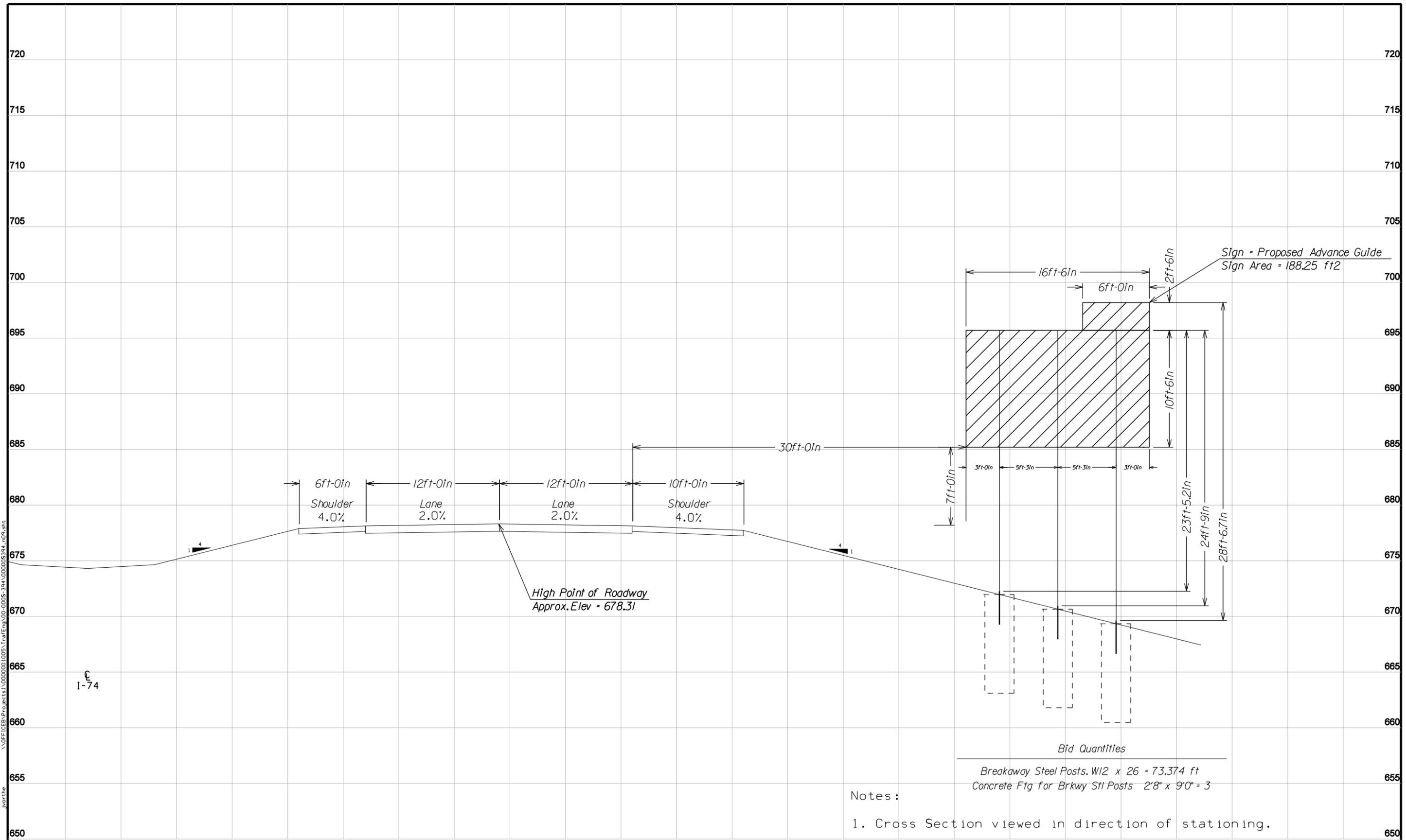
After the high tension cable guardrail is installed, no additional traffic control will be required when workers are not present within the median work area.

STANDARD ROAD PLANS

- TC-1 RD-65
- TC-402 RE-71
- TC-418 RE-85
- TC-420
- TC-451

**TRAFFIC CONTROL FOR DMS #108
ON I-74 NORTHBOUND
DAVENPORT - SCOTT CO.**

1/30/2009



Notes:
 1. Cross Section viewed in direction of stationing.

Bid Quantities
 Breakaway Steel Posts: W12 x 26 = 73.374 ft
 Concrete Ftg for Brkwy Stl Posts: 2'8" x 9'0" = 3

STA 2248+00 | I-74 NORTHBOUND | MAINLINE I-74
PROPOSED STEEL POSTS | SCOTT COUNTY | SIGN INSTALLATION DETAILS

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 $1\frac{1}{2}$ "	1/6 TURN	1/6 TURN	1/3 TURN
GREATER THAN $1\frac{1}{2}$ "	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:

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.

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 PERFORMED 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 EDITION. 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/ft² WIND PRESSURE ON TRUSS MEMBERS AND 40 PSF ON DMS.

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.

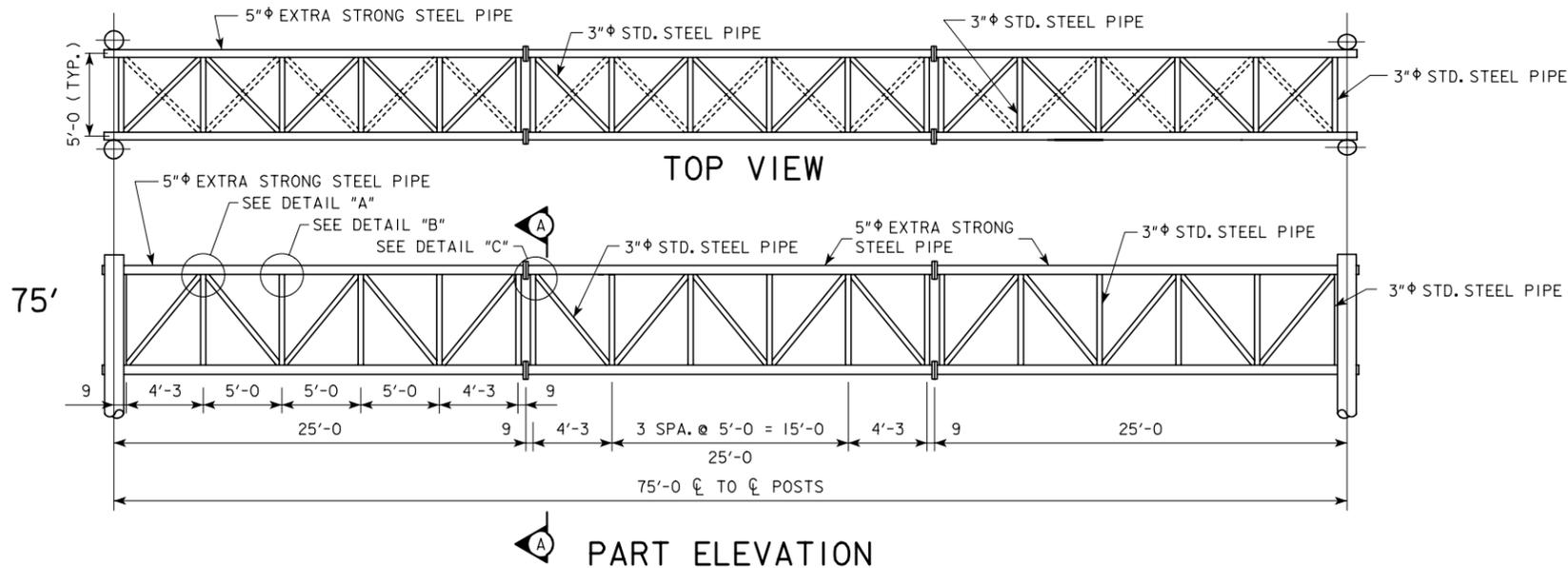
COMPLETED STEEL STRUCTURE:

- 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.

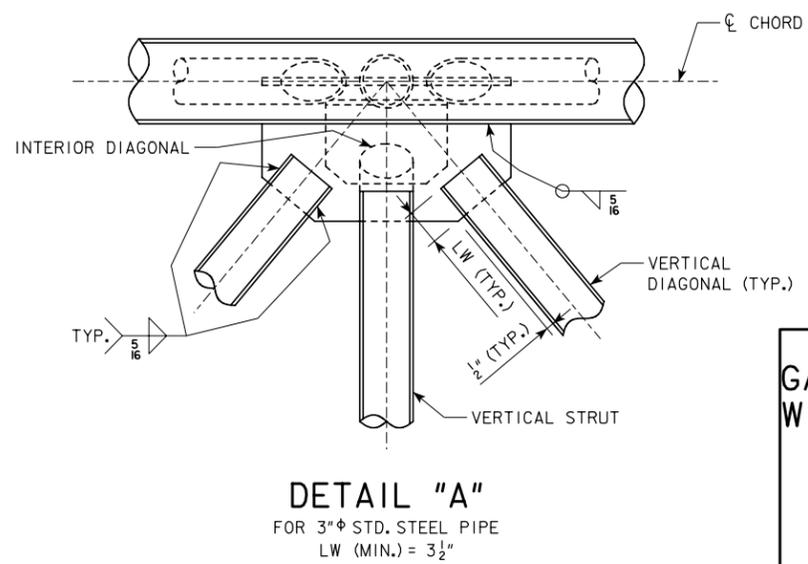
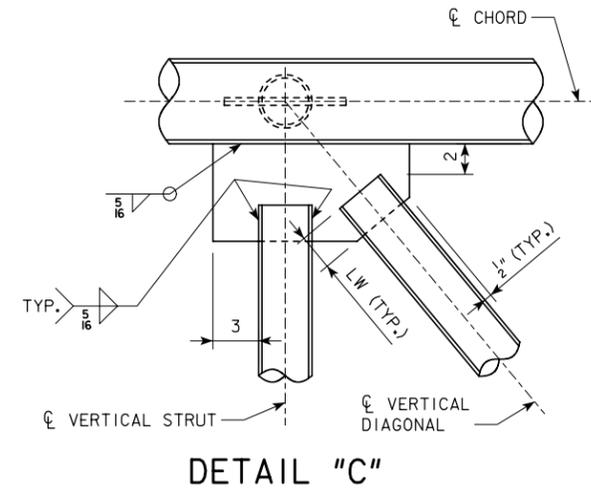
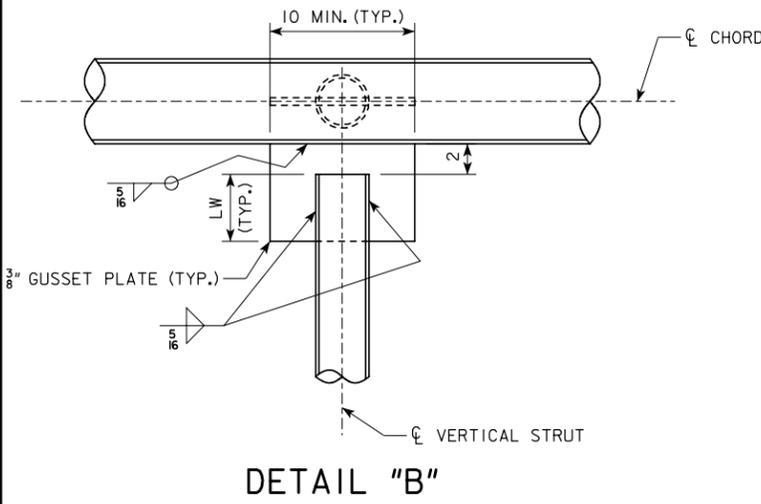
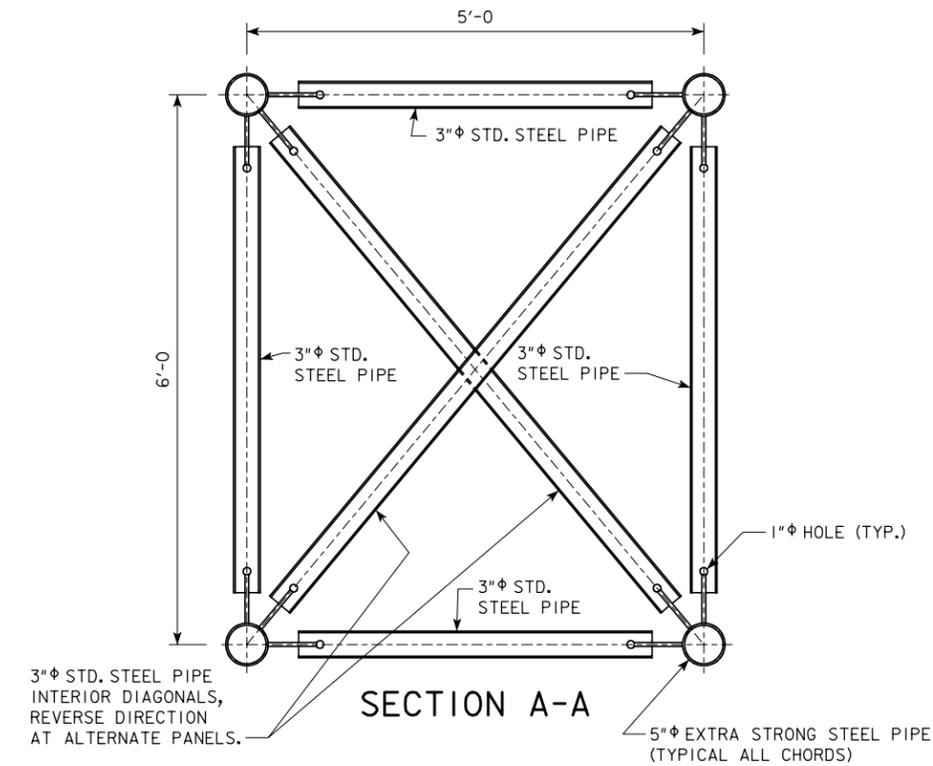
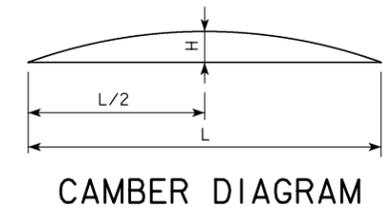
DESIGN #	COUNTY	TRUSS LENGTH	LOCATION	STATION
409	SCOTT	75'-0	N.B. 1-280	390+00
509	SCOTT	75'-0	W.B. 1-80	844+70
608	SCOTT	75'-0	N.B. 1-74	2240+00

STRUCTURAL DESIGN	
	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.
	 12-30-08 Signature _____ Date _____ Printed or Typed Name James R. Hauber
	My license renewal date is December 31, <u>2010</u>
	Pages or sheets covered by this seal: _____ V.1 THRU V.5

DESIGN FOR	
GALVANIZED OVERHEAD SIGN TRUSS WITH GALVANIZED STEEL SUPPORTS	
INDEX AND NOTES	
JANUARY, 2009	
SCOTT COUNTY	
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION	
DESIGN SHEET NO. <u>1</u> OF <u>5</u> FILE NO. <u>30392</u> DESIGN NO. <u>SEE TABLE</u>	

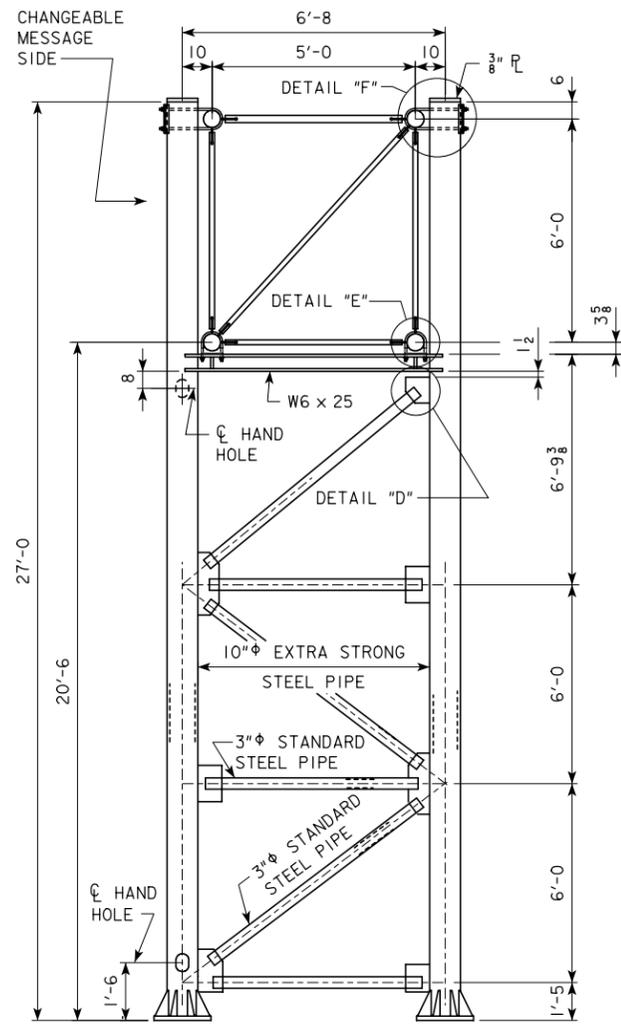


SPAN	CAMBER
L	H
75'	1 7/8"

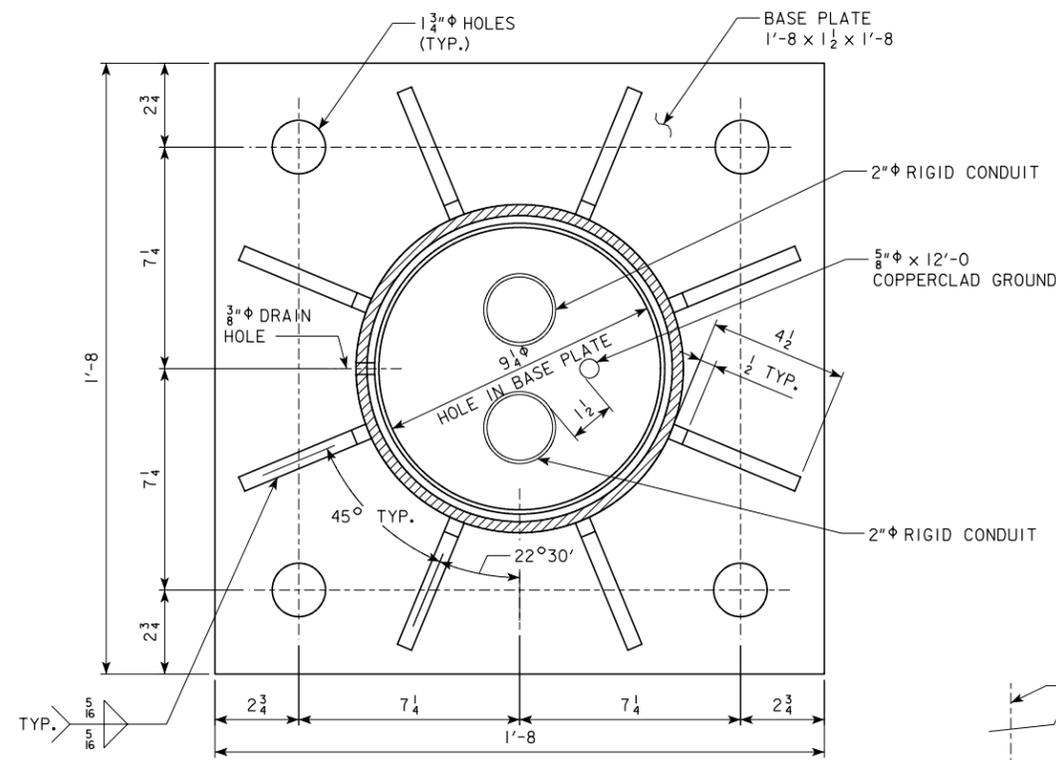


DESIGN #	COUNTY	TRUSS LENGTH	LOCATION	STATION
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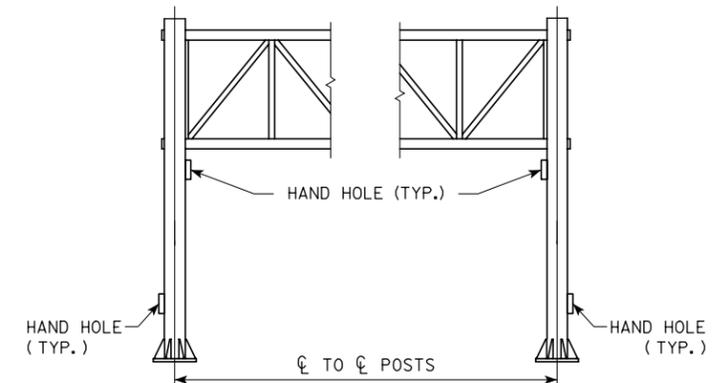
DESIGN FOR
**GALVANIZED OVERHEAD SIGN TRUSS
 WITH GALVANIZED STEEL SUPPORTS**
 ELEVATION VIEWS
 SCOTT COUNTY
 JANUARY, 2009
 IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION
 DESIGN SHEET NO. 2 OF 5 FILE NO. 30392 DESIGN NO. SEE TABLE



END VIEW OF TRUSS SUPPORT

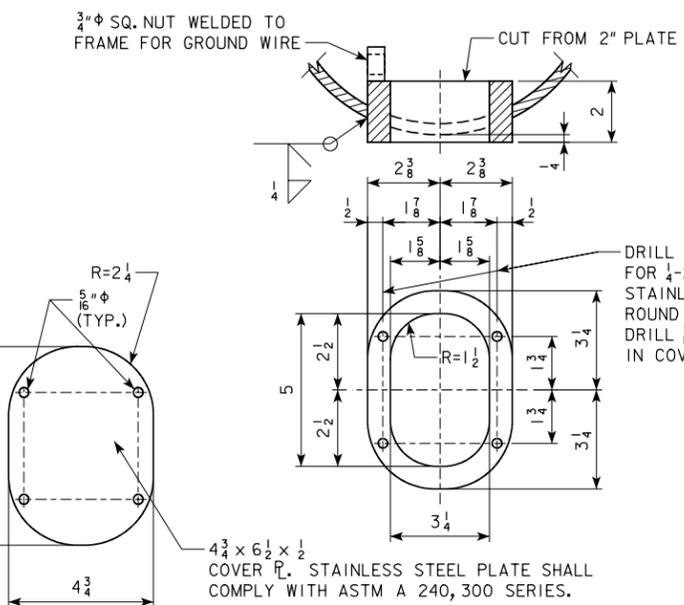


BASE PLATE PLAN

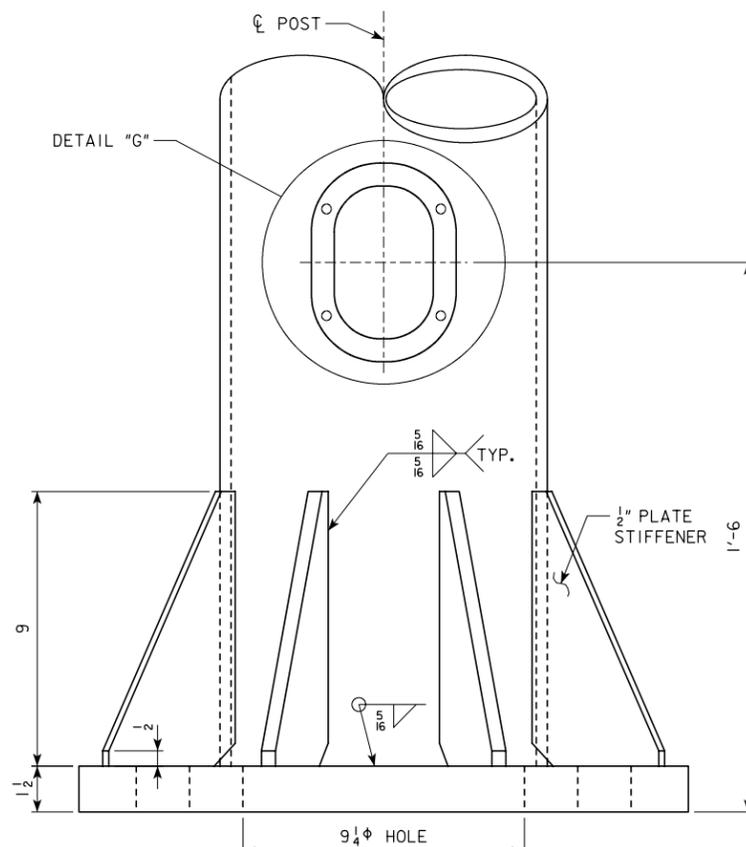


PART ELEVATION

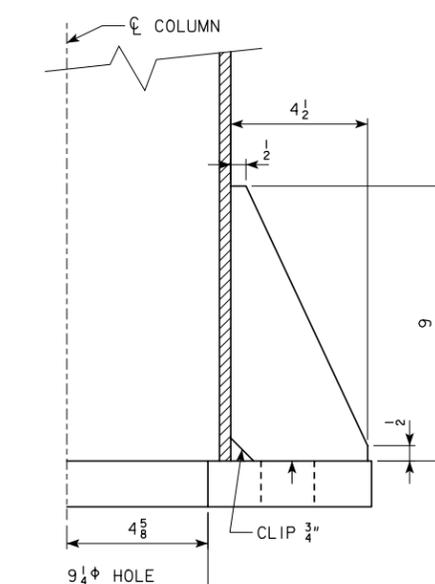
NOTE: HAND HOLES SHALL BE IN BOTH END TRUSS SUPPORTS AND ON DYNAMIC MESSAGE SIDE ONLY.



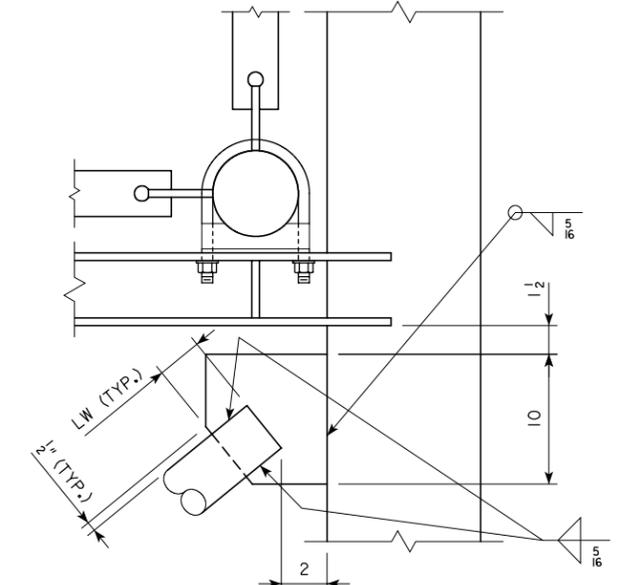
DETAIL "G"



BASE SIDE VIEW



BASE CROSS-SECTION



DETAIL "D"

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

DESIGN #	COUNTY	TRUSS LENGTH	LOCATION	STATION
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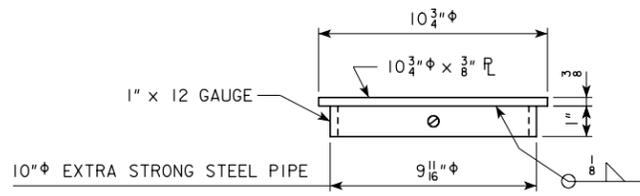
DESIGN FOR
**GALVANIZED OVERHEAD SIGN TRUSS
 WITH GALVANIZED STEEL SUPPORTS**

BASE PLATE DETAILS

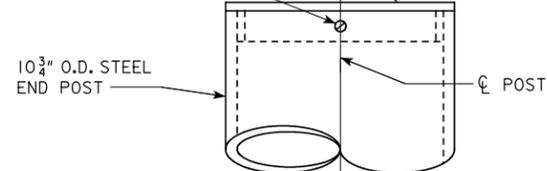
SCOTT COUNTY

JANUARY, 2009

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION
 DESIGN SHEET NO. 3 OF 5 FILE NO. 30392 DESIGN NO. SEE TABLE

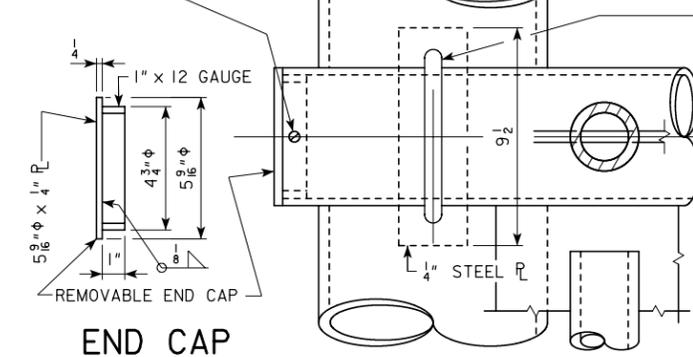


DRILL AND TAP FOR FOUR 1/4 inch diameter stainless steel socket head set screws, 90 degrees apart.



END POST TOP DETAIL

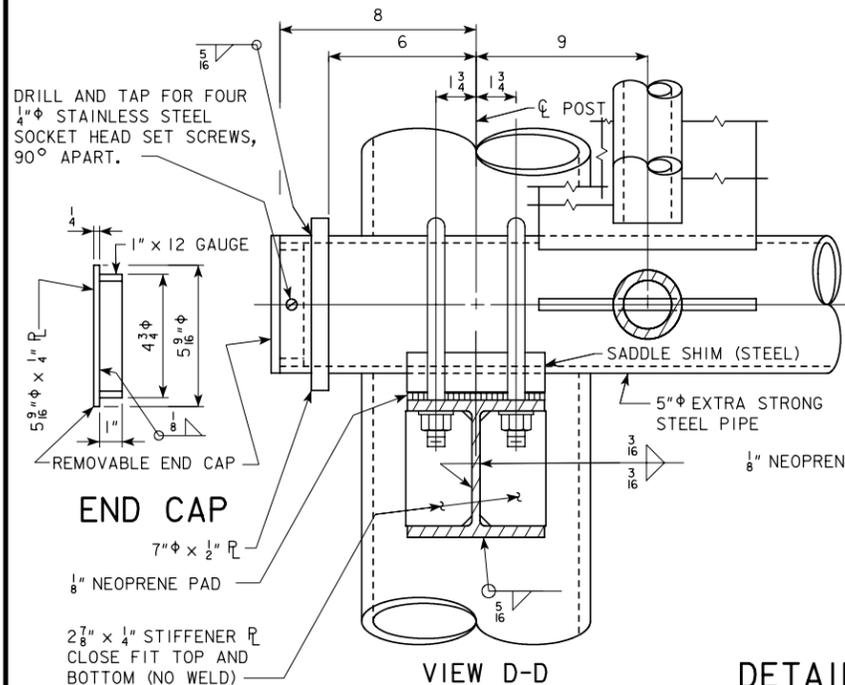
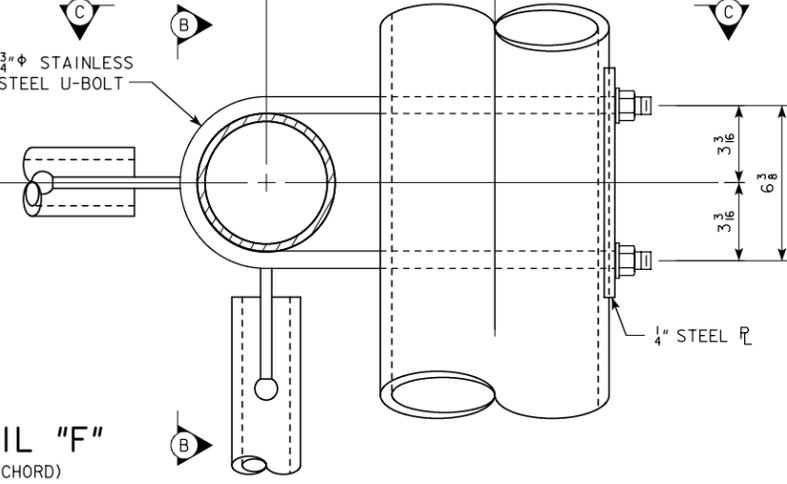
DRILL AND TAP FOR FOUR 1/4 inch diameter stainless steel socket head set screws, 90 degrees apart.



END CAP

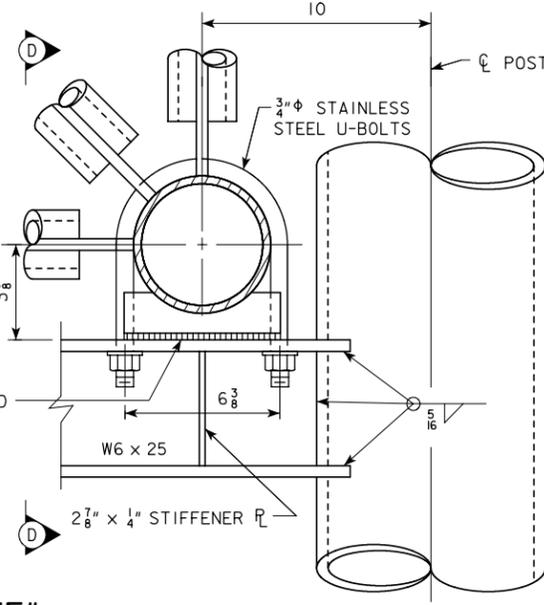
VIEW B-B

DETAIL "F" (TOP CHORD)



VIEW D-D

DETAIL "E" (BOTTOM CHORD)



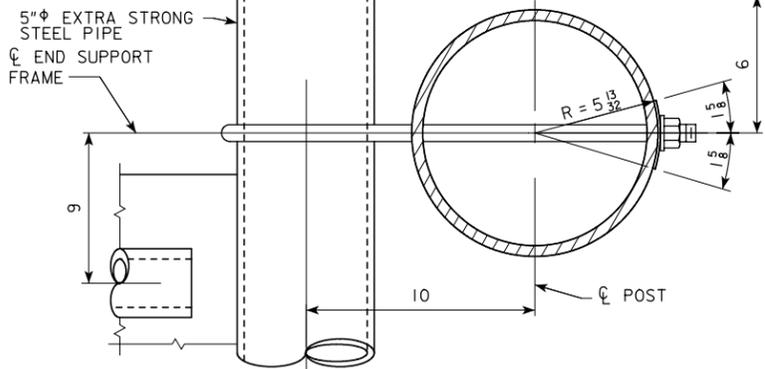
1/8 inch neoprene pad

W6 x 25

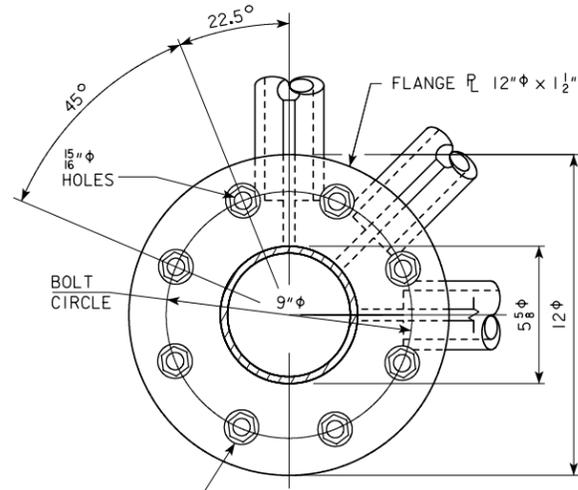
2 7/8 x 1/4 inch stiffener flange

1/8 inch neoprene pad

TOP CHORD REMOVABLE END CAP 5 9/16 inch diameter x 1/4 inch thick



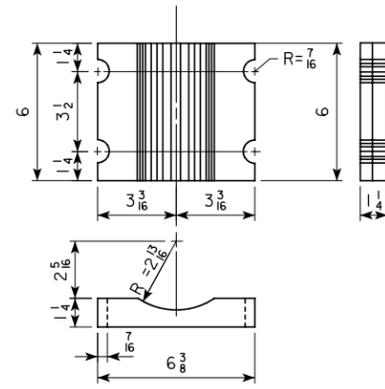
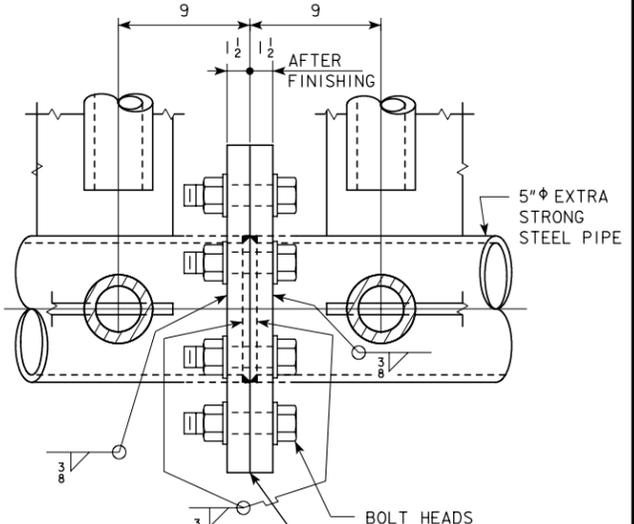
VIEW C-C



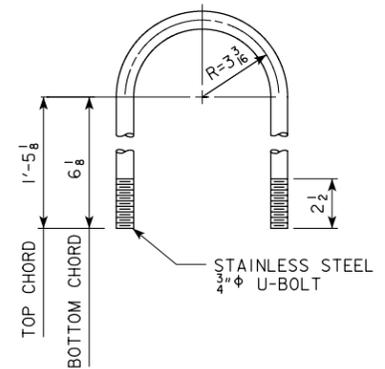
7/8 inch diameter x 4 3/4 inch A-325 galvanized high strength bolts, meeting the requirements of Article 2408.39. 32 required per truss splice, 64 hardened washers required per truss splice. Hardened washer will be provided under both head and nut of bolt. 32 - 7/8 inch diameter heavy hex nuts required per truss splice. Drill 8 - 15/16 inch diameter 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.



SADDLE SHIM DETAIL

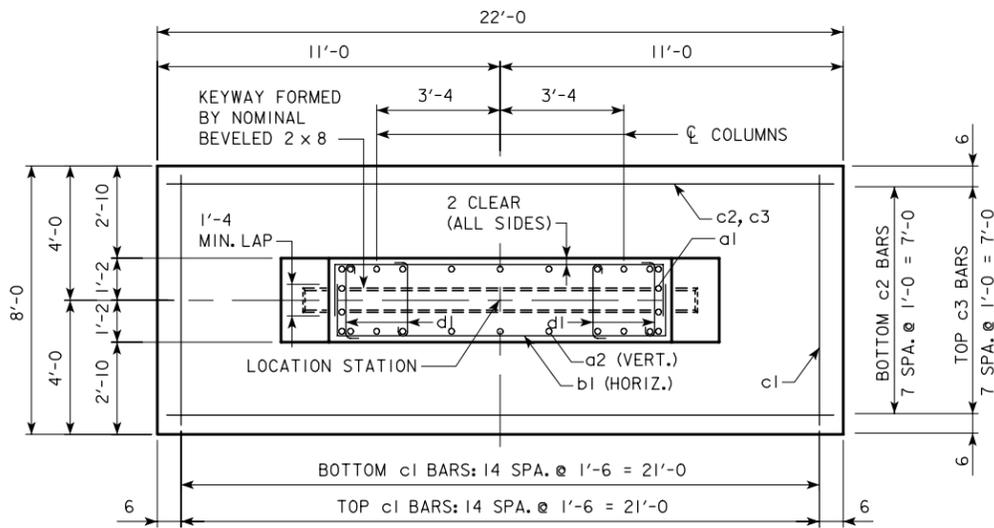


STAINLESS STEEL U-BOLT DETAIL

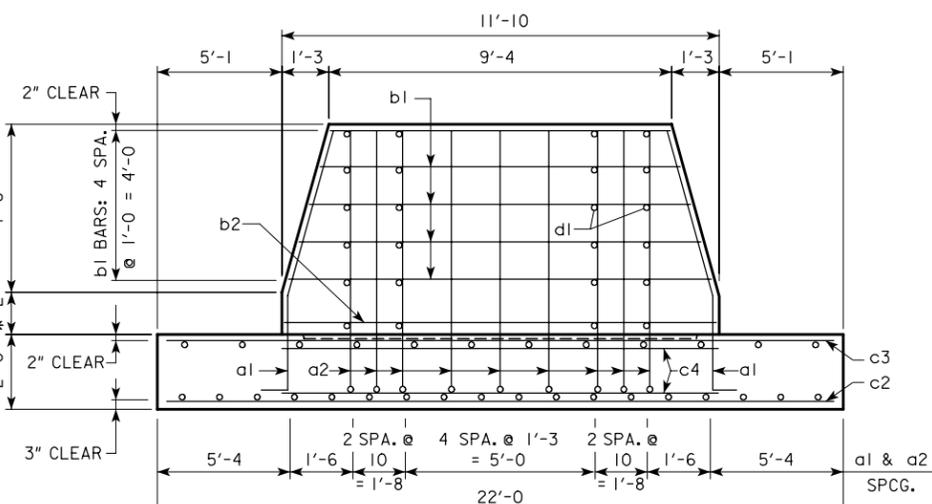
DESIGN #	COUNTY	TRUSS LENGTH	LOCATION	STATION
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DESIGN FOR
GALVANIZED OVERHEAD SIGN TRUSS WITH GALVANIZED STEEL SUPPORTS
TRUSS SUPPORT & CHORD SPLICE DETAILS
 JANUARY, 2009
SCOTT COUNTY
 IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION
 DESIGN SHEET NO. 4 OF 5 FILE NO. 30392 DESIGN NO. SEE TABLE

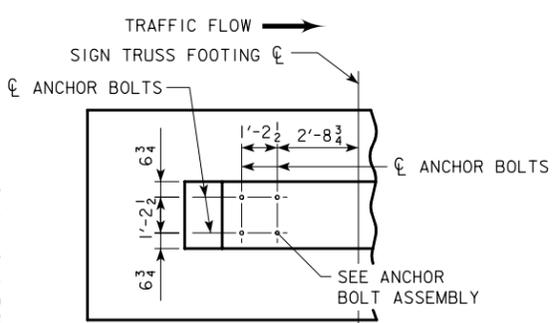
NOTE: SEE DESIGN SHEET 3 FOR LOCATION OF DETAILS "E" & "F".



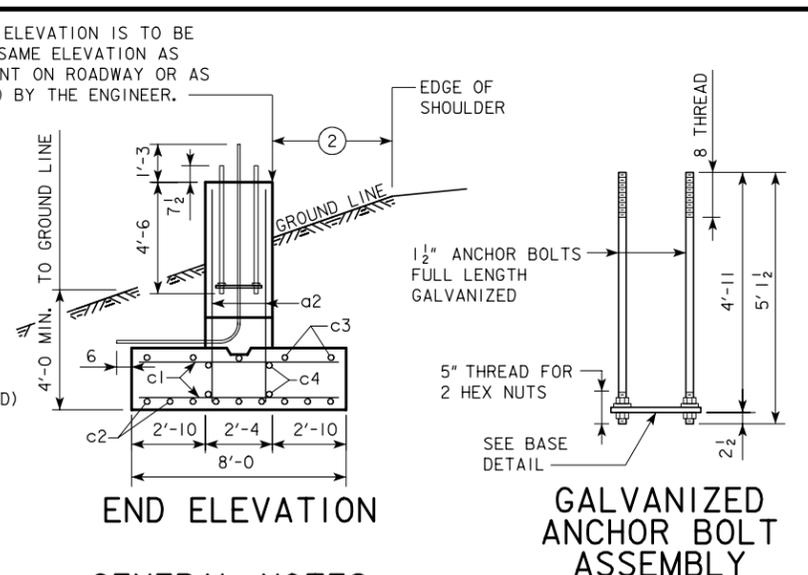
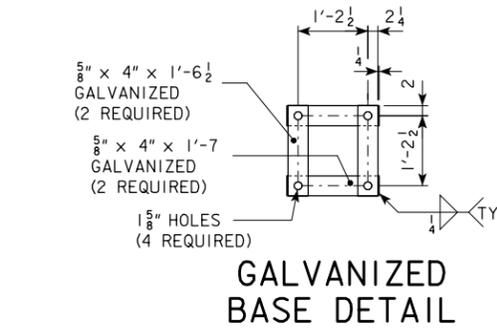
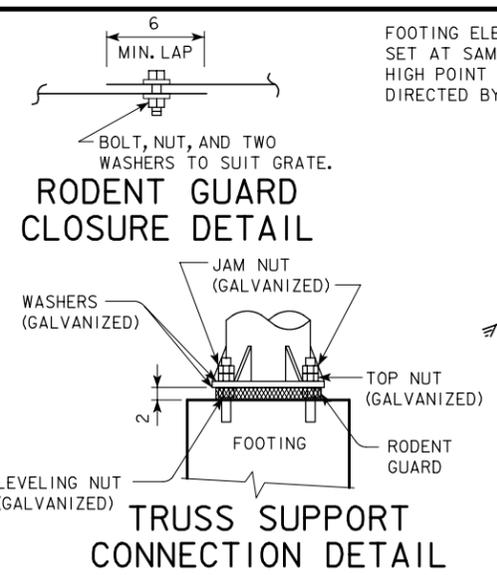
PLAN
(ANCHOR BOLT ASSEMBLIES NOT SHOWN.)



SIDE ELEVATION
(ANCHOR BOLT ASSEMBLIES NOT SHOWN.)
* 'L' SHALL NOT EXCEED 6'-0"



ANCHOR BOLT PLACEMENT DETAILS



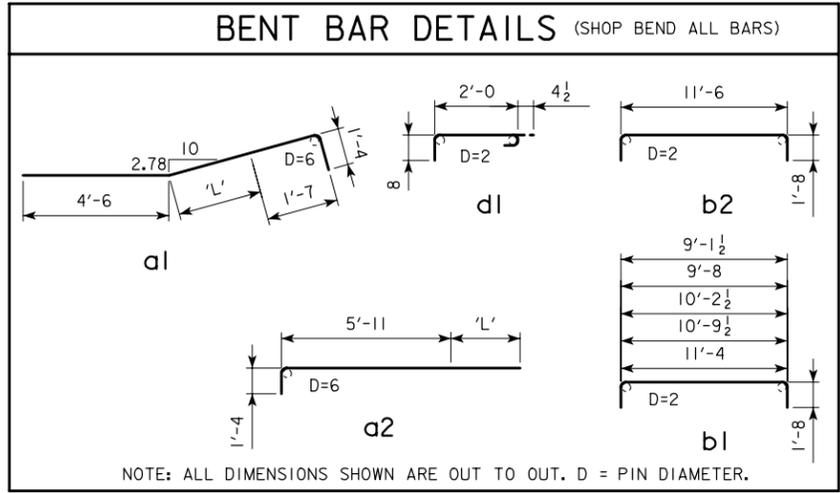
GENERAL NOTES:

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

- ① 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.
- ② SEE FOOTING TABULATION.

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



REINFORCING BAR LIST - EPOXY COATED
(ONE FOOTING)

	SIZE	SHAPE	'L' = 0			EACH 1'-0 OF 'L'				
			NO.	LENGTH	WEIGHT	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'

DESIGN #	COUNTY	TRUSS LENGTH	LOCATION	STATION
409	SCOTT	75'-0	N.B. 1-280	390+00
509	SCOTT	75'-0	W.B. 1-80	844+70
608	SCOTT	75'-0	N.B. 1-74	2240+00

DESIGN FOR
GALVANIZED OVERHEAD SIGN TRUSS WITH GALVANIZED STEEL SUPPORTS
FOOTING DETAILS
JANUARY, 2009
SCOTT COUNTY
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION
DESIGN SHEET NO. 5 OF 5 FILE NO. 30392 DESIGN NO. SEE TABLE