

DYNAMIC MESSAGE SIGNS
LETTING DATE 4/15/2008
STP-A-080-5(271)163--0A-50

JASPER CO.



PLANS OF PROPOSED IMPROVEMENTS ON THE
INTERSTATE ROAD SYSTEM
JASPER COUNTY

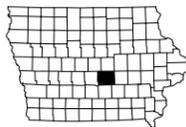
DYNAMIC MESSAGE SIGNS
 FOUR SITES ON I-80
 NEAR NEWTON

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
	41
	PROJECT IDENTIFICATION NUMBER
	05-00-000-010
	PROJECT NUMBER
STP-A-080-5(271)163--0A-50	
R.O.W. PROJECT NUMBER	

INDEX OF SHEETS	
No.	Description
A.01	TITLE SHEET
A.02	LOCATION MAP SHEET
B.01-B.13	TYPICAL DETAILS
C.01-C.05	QUANTITIES, ESTIMATE REFERENCE NOTES, TABS
N.01-N.14	SITE DETAILS
V.01-V.07	STRUCTURAL DETAILS

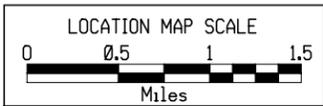
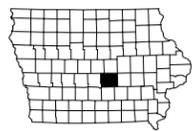
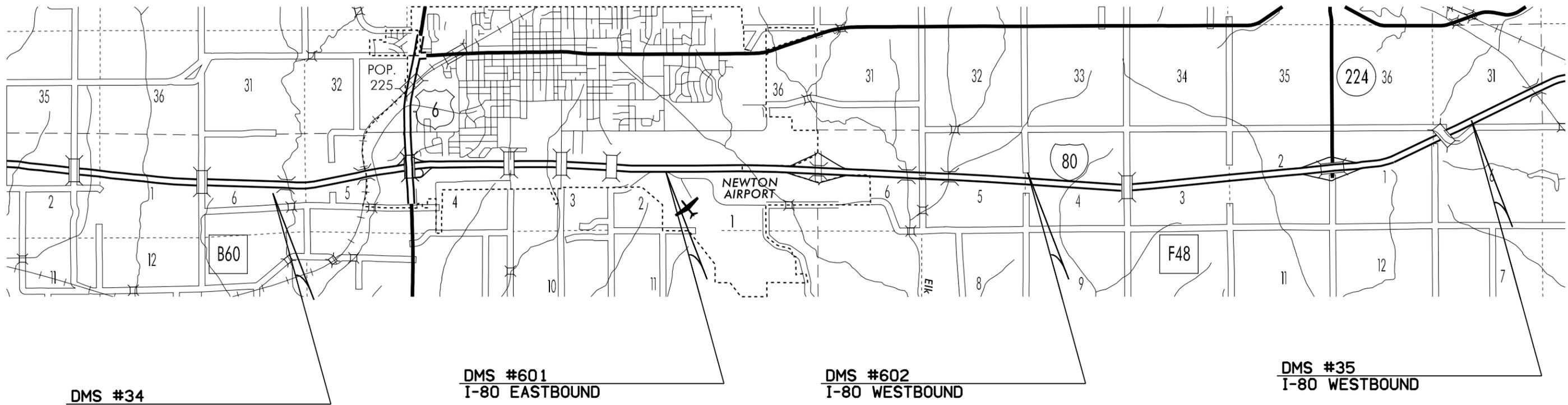
INDEX OF SEALS		
SHEET NO.	NAME	TYPE
A.01	Jeremy J. Vortherms	Primary Signature Block
V.01	William T. Tucker	Structural

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.

02/04/08
 Signature Date
 Jeremy J. Vortherms
 Printed or Typed Name

My license renewal date is December 31, 20 09.

Pages or sheets covered by this seal: _____
 A.01-A.02, B.01-B.13, C.01-C.05, N.01-N.14



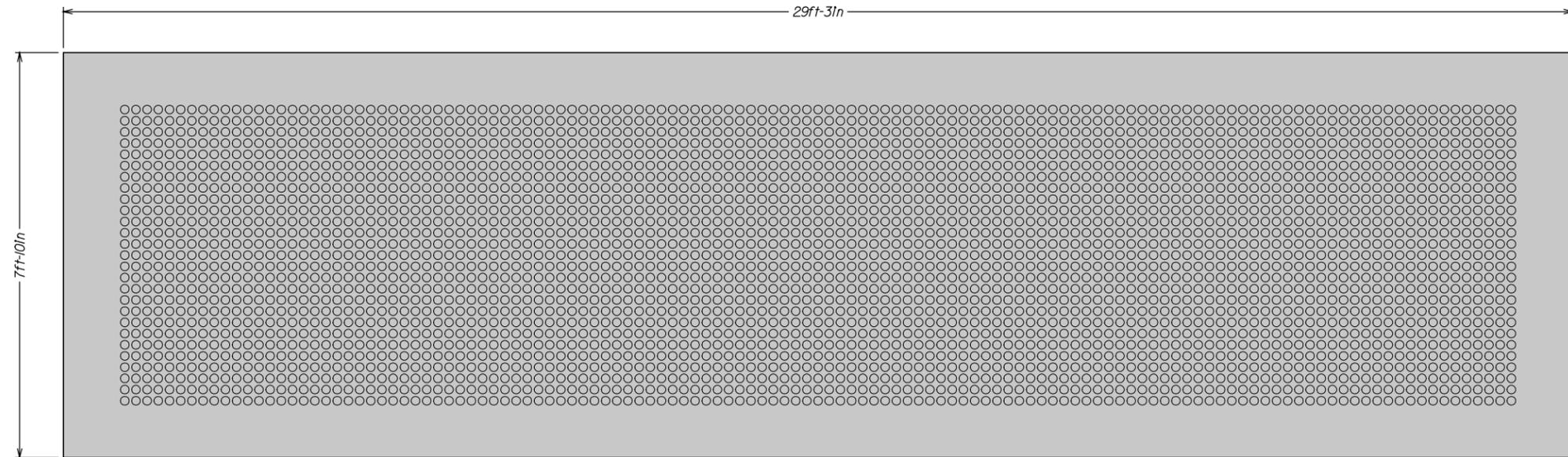
NEWTON AREA
JASPER COUNTY

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: 42,44,46



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.

ATTACHMENT HARDWARE

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

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.

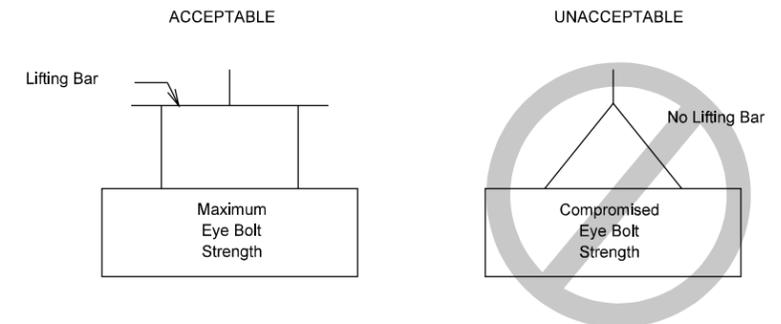
Before beginning, make sure that the crane is rated to lift the weight of the sign.

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.

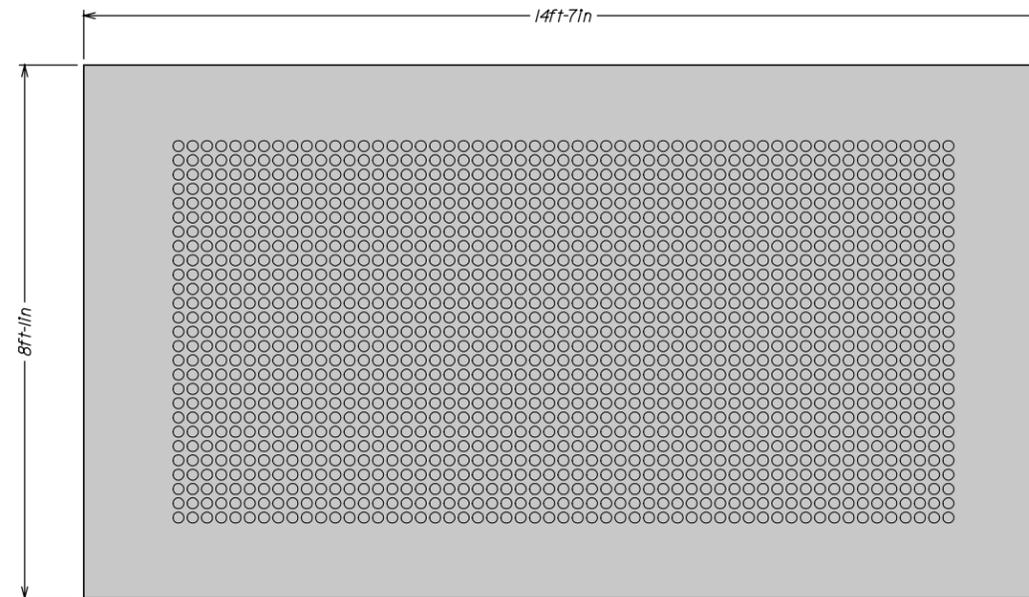
**LARGE
 DYNAMIC MESSAGE SIGN
 TYPICAL DIMENSIONS**

DIMENSIONAL INFORMATION

Manufacturer: Skyline
 Model Number: VMSLED-L-3-18F-27X55-I
 Type: Full Matrix
 Pixels: 55 x 27 (width x height)

Height: 8'2"
 Width: 14'7"
 Depth: 1'4"
 Weight: 2800 lbs

Locations: 301,302



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.

ATTACHMENT HARDWARE

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

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.

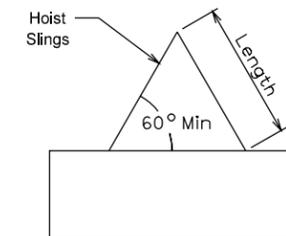
Before beginning, make sure that the crane is rated to lift the weight of the sign.

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.

**** Skyline Sign Lift Procedure ****

When removing an existing sign, the pick angles or lifting brackets may need to be furnished by the Contractor. Consult Skyline for specific information about the pick angle or lifting bracket requirements.

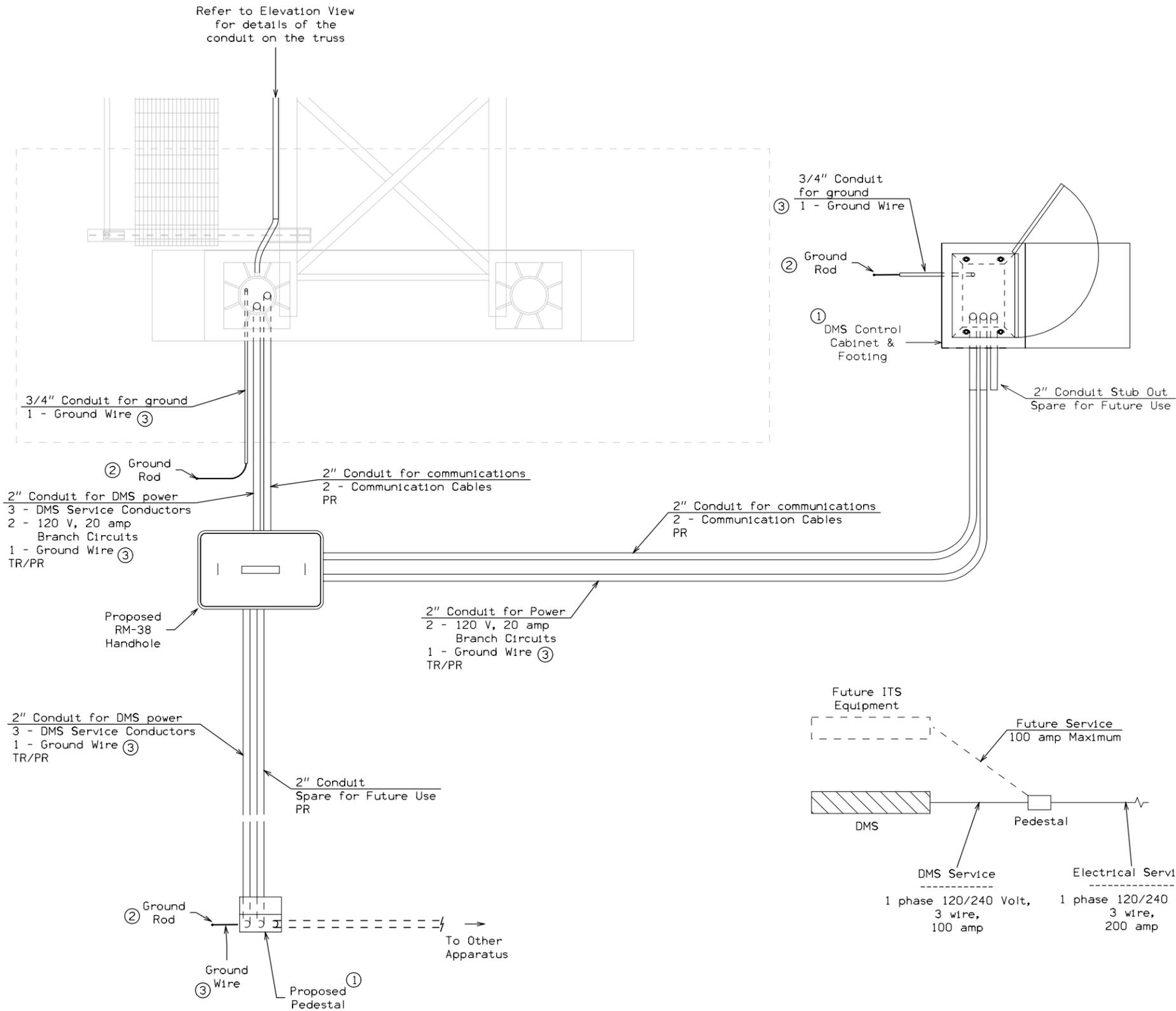
1. When the sign arrives, it should remain secured at all times, either to the trailer or to the crane, until fully mounted on the sign support structure or until secured to the ground.
2. Remove the strapping blocks from the top of the sign to free the brackets in order to attach the lifting sling.
3. Secure the crane's lifting slings to the sign using the appropriate sling length. Attach the slings to the pick angles on the top of the sign using the appropriate spreader bars and/or clevises. Calculate the hoisting sling's length by measuring the distance between the pick angles and a minimum 60° inside angle with the sign.



4. Lift the sign into position.

5. If applicable, remove any shipping support legs from the underside of the DMS, and lifting support angles from the top of the DMS. Plug and seal all openings as per the manufacturer's requirements. Any damage incurred by improperly sealed openings shall be the responsibility of the Contractor.

**SMALL
 DYNAMIC MESSAGE SIGN
 TYPICAL DIMENSIONS**



SITE WIRING NOTES:

High voltage and low voltage wires shall not be run in the same conduit. Use one conduit for power supply and branch circuit wires, and the other conduit for communication wires.

All wires shall be sized per NEC requirements when no size is indicated in the plans.

The DMS control cabinet and equipment will be furnished by others; and installed by the Contractor. The DMS control cabinet is designed to accommodate equipment to operate the DMS, including optional communication equipment. No other equipment shall be installed in the DMS control cabinet. The DMS power supply wires shall NOT pass through the DMS control cabinet.

The communication cables will be furnished by others; and installed by the Contractor. The Contractor shall leave 10 foot of slack on each end of each cable, coiled neatly in the DMS and in the DMS control cabinet.

The Contractor shall install the equipment and wiring from the Utility Company's service point to the DOT disconnect pedestal in accordance with the Utility Company's requirements. The DOT requires that all service wires inside the ROW be installed in conduit.

The DMS power supply wires, run from the disconnect pedestal to the DMS power supply, shall NOT pass through the DMS control cabinet.

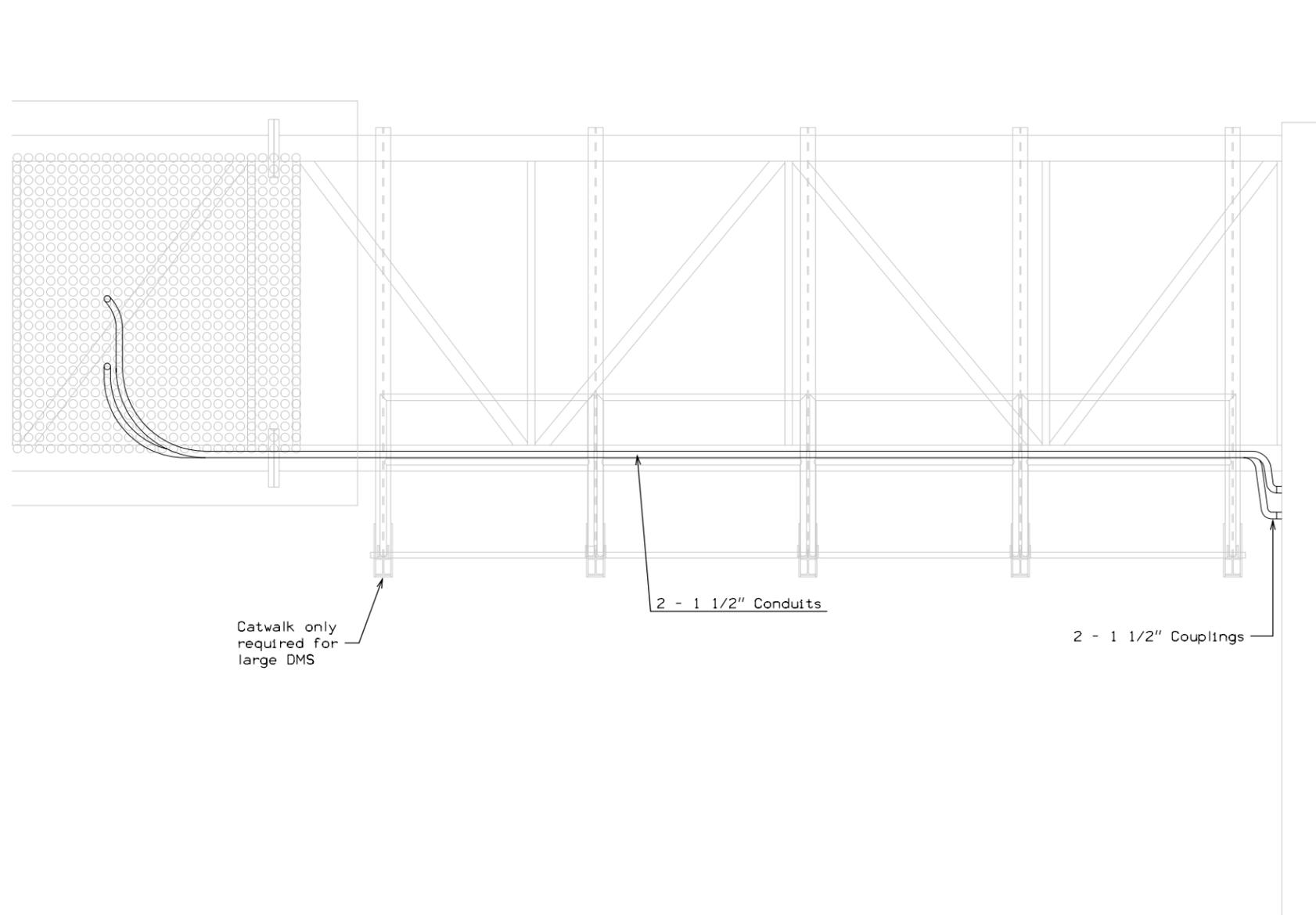
Grounding shall meet the requirements of DOT Specification 2523.04, and those outlined on this sheet. Testing of the ground system shall be completed prior to backfilling, and prior to the installation of any equipment. The Engineer will witness all testing, and will be provided neatly bound, test results.

- ① Refer to other drawings for specific details.
- ② Ground rods shall be copper, 5/8" diameter x 8' minimum length. Additional ground rods may be required per NEC Article 250. Install a Ground Rod Enclosure to allow visual inspection of the ground rod and clamp. Refer to other drawings for specific details.
- ③ The grounding electrode conductor (Ground Wire) shall meet the following requirements:
 - it shall be copper and of the gauge appropriately matched to the largest service conductor,
 - it shall be connected to the ground rod with a clamp suitable for direct burial (if applicable),
 - it shall be bonded to the control cabinet ground nut (if applicable),
 - it shall be bonded to the truss leg ground nut (if applicable), and
 - it shall be connected to the neutral bus in the pedestal (if applicable).

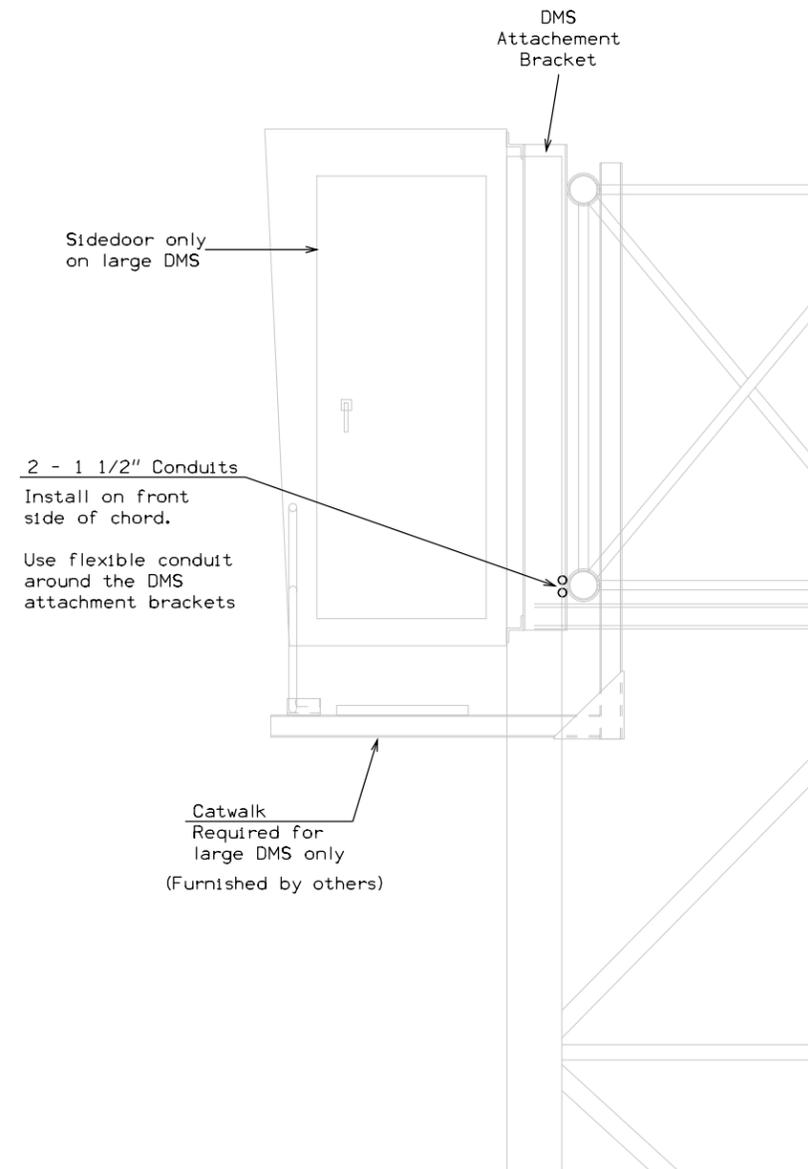
PLAN VIEW

ELECTRIC SERVICE SCHEMATIC

SITE WIRING DETAILS FOR DMS INSTALLATION ON A SIGN TRUSS (SHEET 1 OF 2)



ELEVATION VIEW



SIDE VIEW

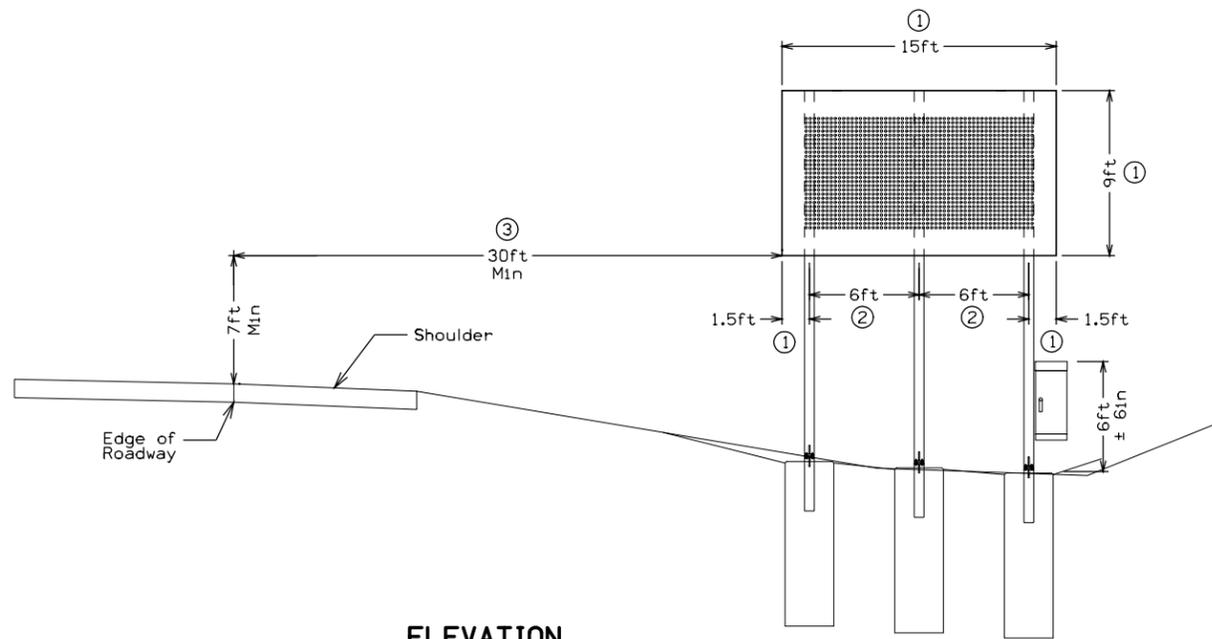
Conduit banded to the truss chord should be rigid. Conduit used to make connections to the truss or DMS couplings may be rigid or flexible.

All conduit, fittings, seals and gaskets shall be weatherproof as per NEC requirements.

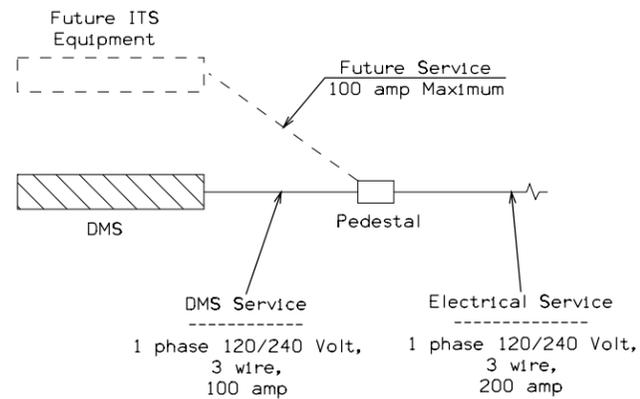
Banding material shall be stainless steel. Conduit shall be banded at regular intervals not to exceed 4 feet.

High voltage and low voltage wires shall not be run in the same conduit. Use one conduit for power supply and branch circuit wires, and the other conduit for communication wires.

**SITE WIRING DETAILS
FOR DMS INSTALLATION
ON A SIGN TRUSS
(SHEET 2 OF 2)**

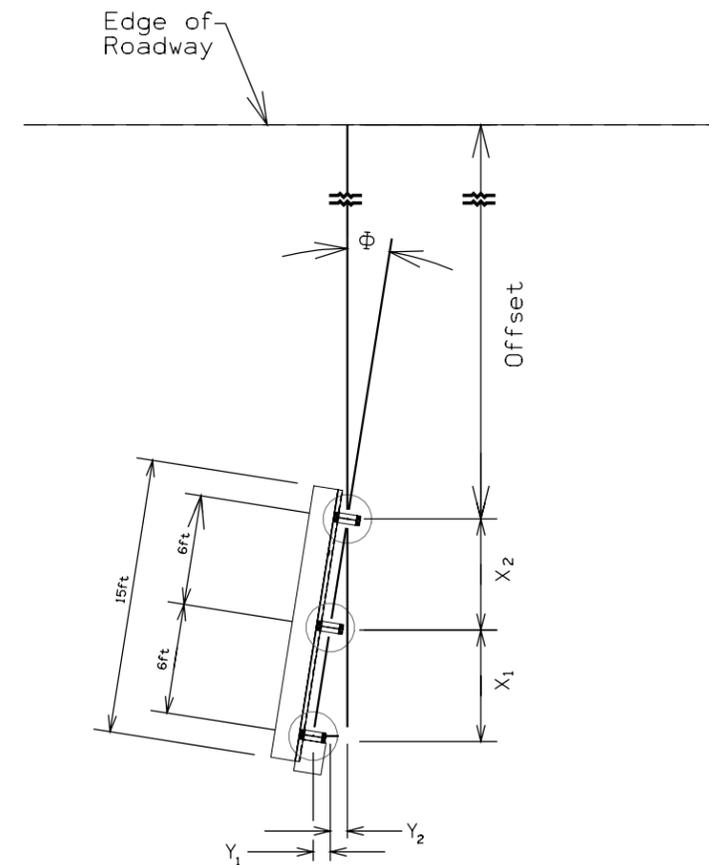


ELEVATION

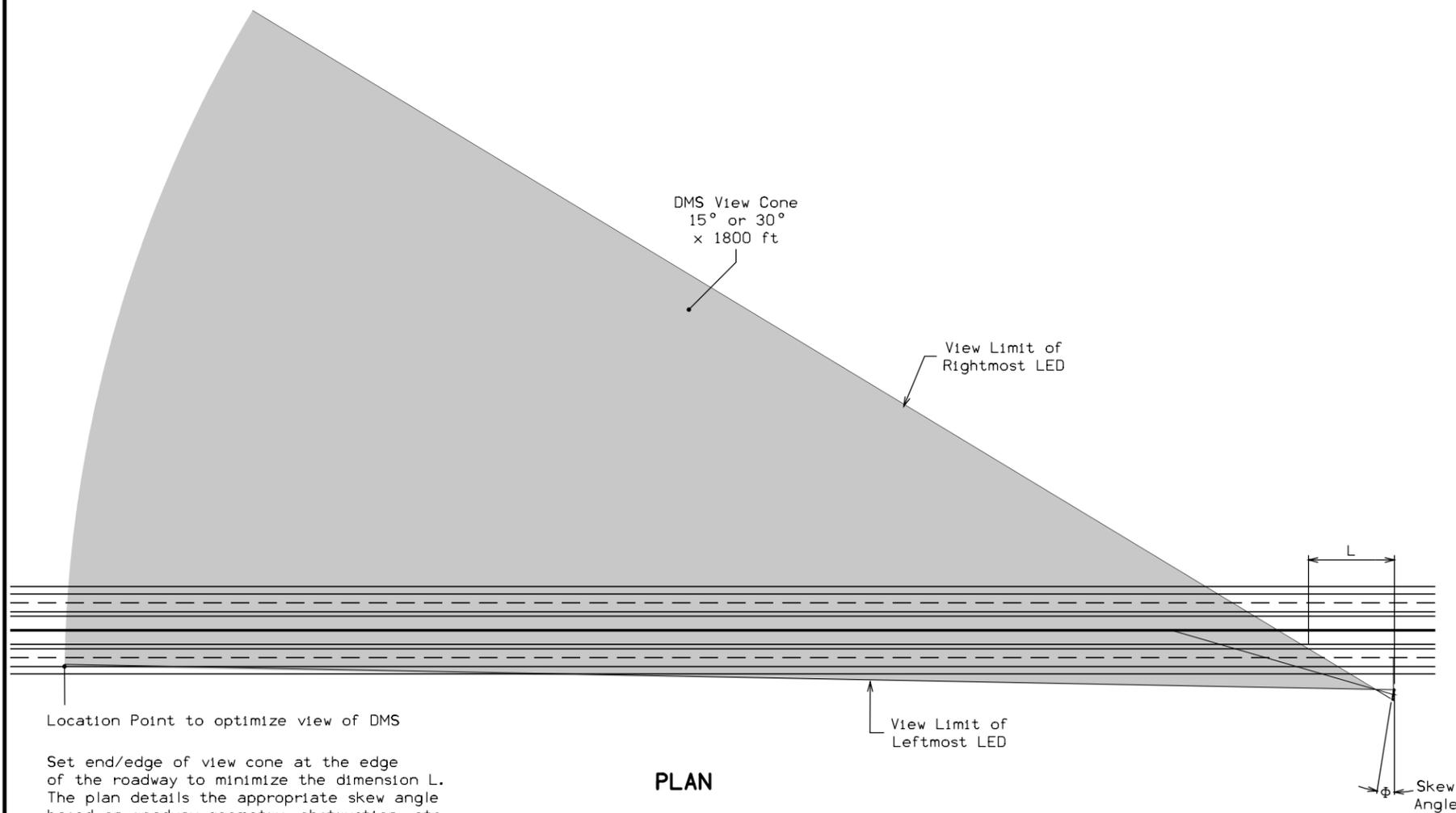


ELECTRIC SERVICE SCHEMATIC

- ① Nominal dimensions. Actual DMS to be installed as follows:
 - top of sign shall be flush with the top of posts, and
 - the sign shall be centered horizontally on the posts.
- ② Posts shall be installed 6 foot center-to-center, regardless of the actual DMS size.
- ③ Minimum offset is required to be 30 feet to meet clearzone requirements unless the DMS is protected by another measure. The steel posts are not considered breakaway for this installation because of the DMS weight, and because the control cabinet is installed on the leg.



FOOTING STAKING DIAGRAM



PLAN

Location Point to optimize view of DMS
 Set end/edge of view cone at the edge of the roadway to minimize the dimension L. The plan details the appropriate skew angle based on roadway geometry, obstruction, etc.

SITE INSTALLATION DETAILS FOR DMS INSTALLATION ON STEEL POSTS

SITE WIRING NOTES:

High voltage and low voltage wires shall not be run in the same conduit. Use one conduit for power supply and branch circuit wires, and the other conduit for communication wires.

All wires shall be sized per NEC requirements when no size is indicated in the plans.

The DMS control cabinet and equipment will be furnished by others; and installed by the Contractor. The DMS control cabinet is designed to accommodate equipment to operate the DMS, including optional communication equipment. No other equipment shall be installed in the DMS control cabinet. The DMS power supply wires shall NOT pass through the DMS control cabinet.

The communication cables will be furnished by others; and installed by the Contractor. The Contractor shall leave 10 foot of slack on each end of each cable, coiled neatly in the DMS and in the DMS control cabinet.

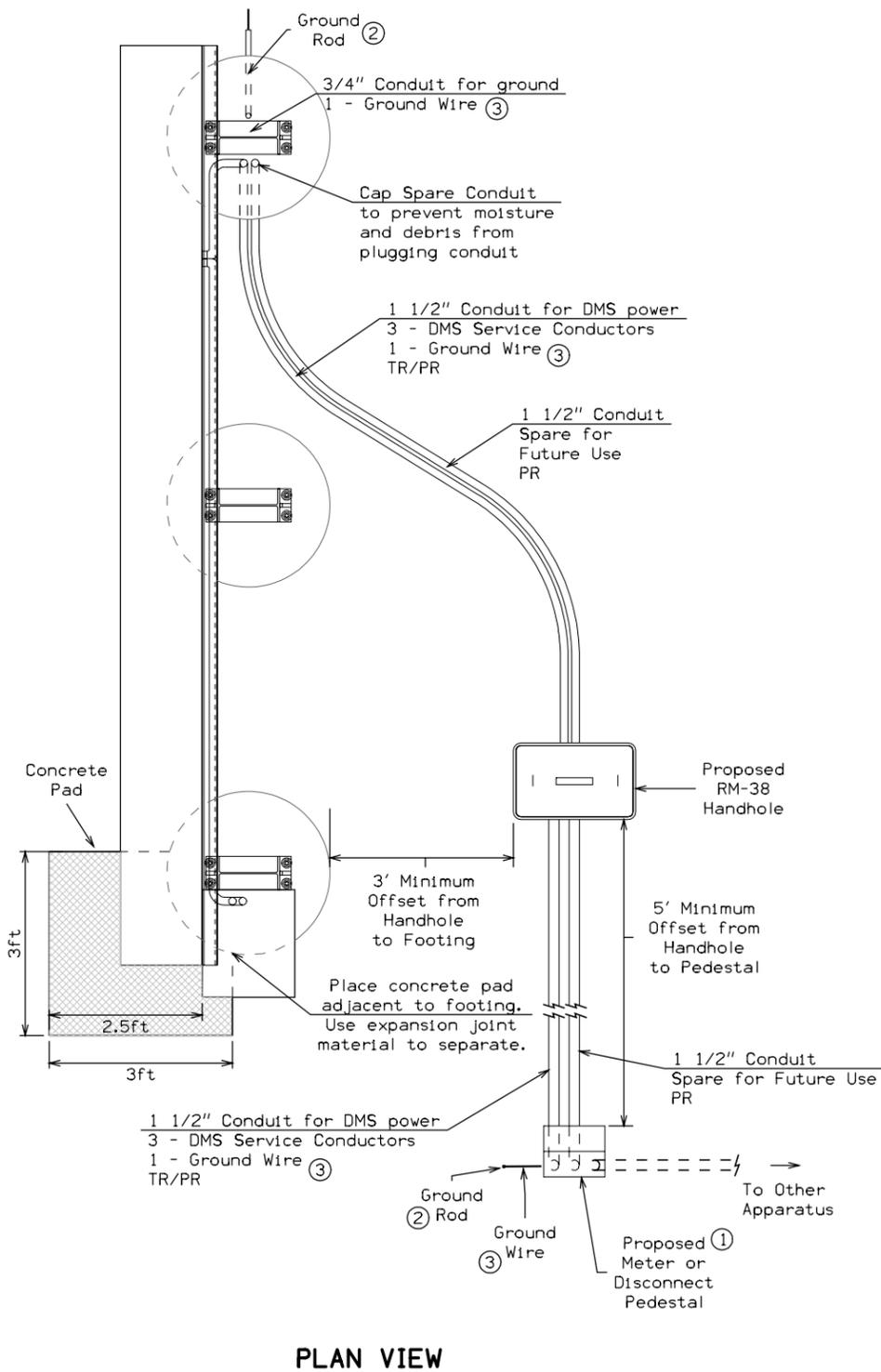
The Contractor shall furnish and install all materials for the branch circuits, and shall terminate all conductors at the control cabinet and at the DMS to provide a completed electrical system.

The Contractor shall install the equipment and wiring from the Utility Company's service point to the DOT disconnect pedestal in accordance with the Utility Company's requirements. The DOT requires that all service wires inside the ROW be installed in conduit.

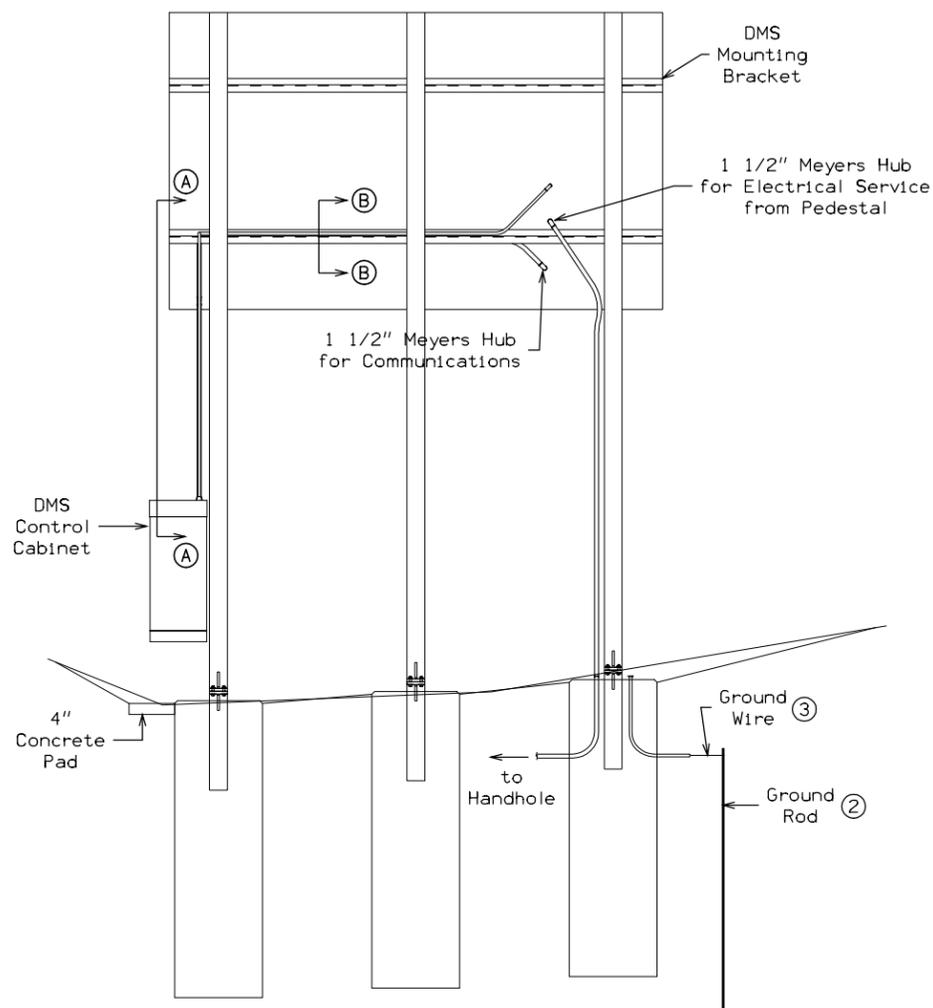
The DMS service conductors, which are installed between the pedestal and the DMS power supply, shall NOT pass through the DMS control cabinet.

Grounding shall meet the requirements of DOT Specification 2523.04, and those outlined on this sheet. Testing of the ground system shall be completed prior to backfilling, and prior to the installation of any equipment. The Engineer will witness all testing, and will be provided neatly bound, test results.

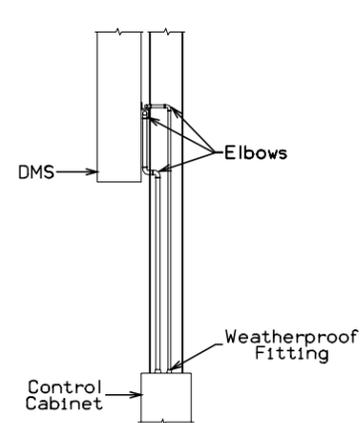
- ① Refer to other drawings for specific details.
- ② Ground rods shall be copper, $\frac{3}{4}$ " diameter x 8' minimum length. Additional ground rods may be required per NEC Article 250. Install a Ground Rod Enclosure to allow visual inspection of the ground rod and clamp. Refer to other drawings for specific details.
- ③ The grounding electrode conductor (Ground Wire) shall meet the following requirements:
 - it shall be copper and of the gauge appropriately matched to the largest service conductor,
 - it shall be connected to the ground rod with a clamp suitable for direct burial (if applicable),
 - it shall be bonded to the control cabinet ground nut (if applicable),
 - it shall be bonded to the truss leg ground nut (if applicable), and
 - it shall be connected to the neutral bus in the pedestal (if applicable).



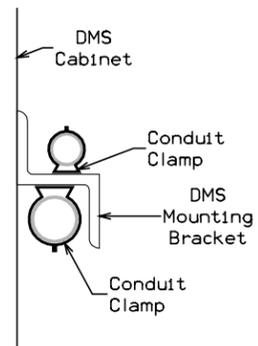
PLAN VIEW



REAR VIEW

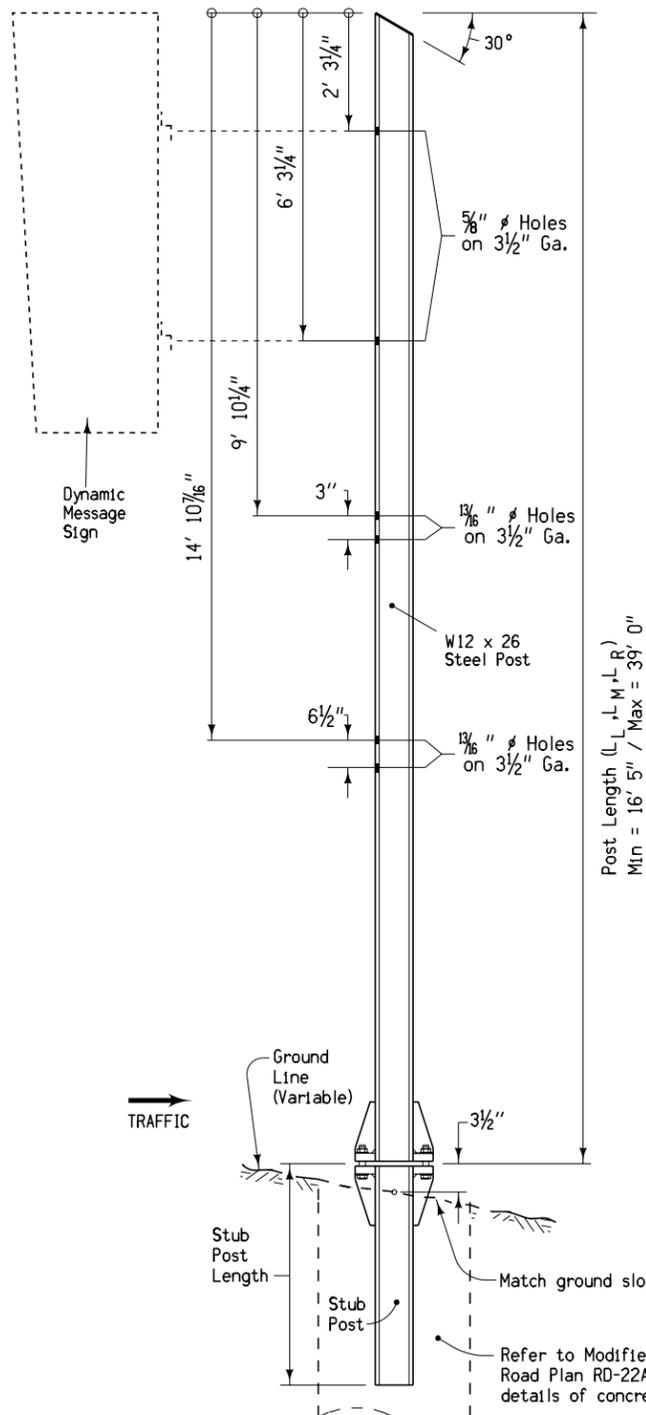


SECTION A-A



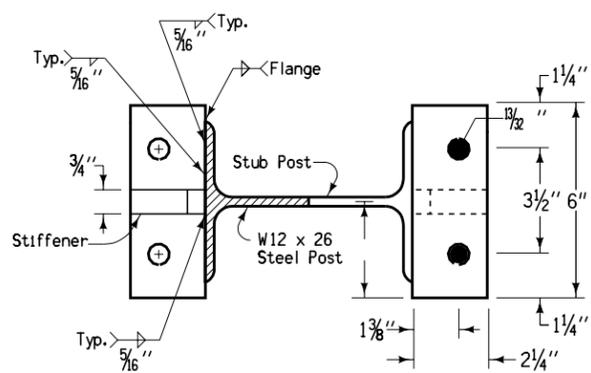
SECTION B-B

SITE WIRING DETAILS FOR DMS INSTALLATION ON STEEL POSTS

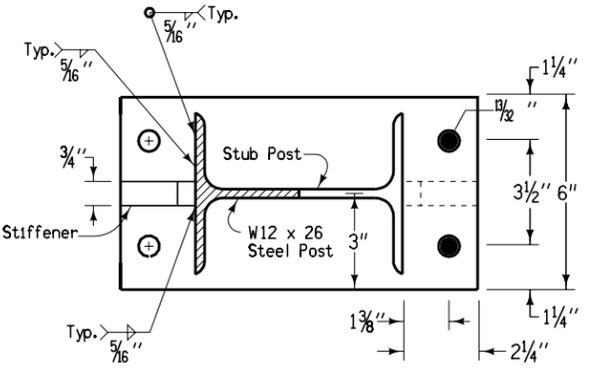


**Side View
TYPICAL SIGN INSTALLATION**

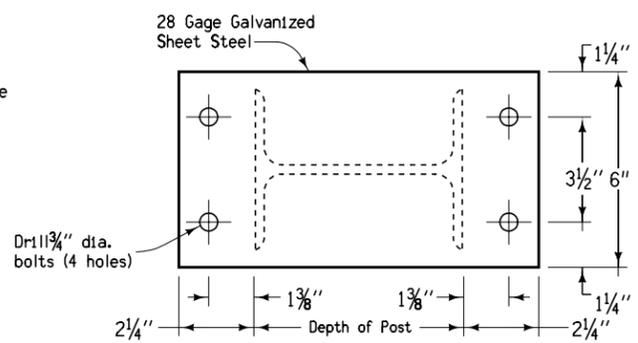
Post Length (L_L - L_M - L_R)
Min = 16' 5" / Max = 39' 0"



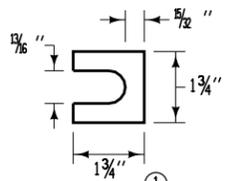
**Section A-A (Plan)
BASE ALTERNATE 1**



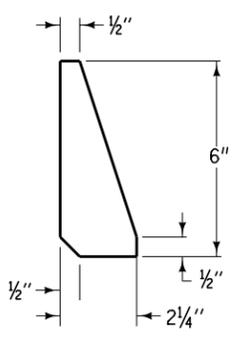
**Section A-A (Plan)
BASE ALTERNATE 2**



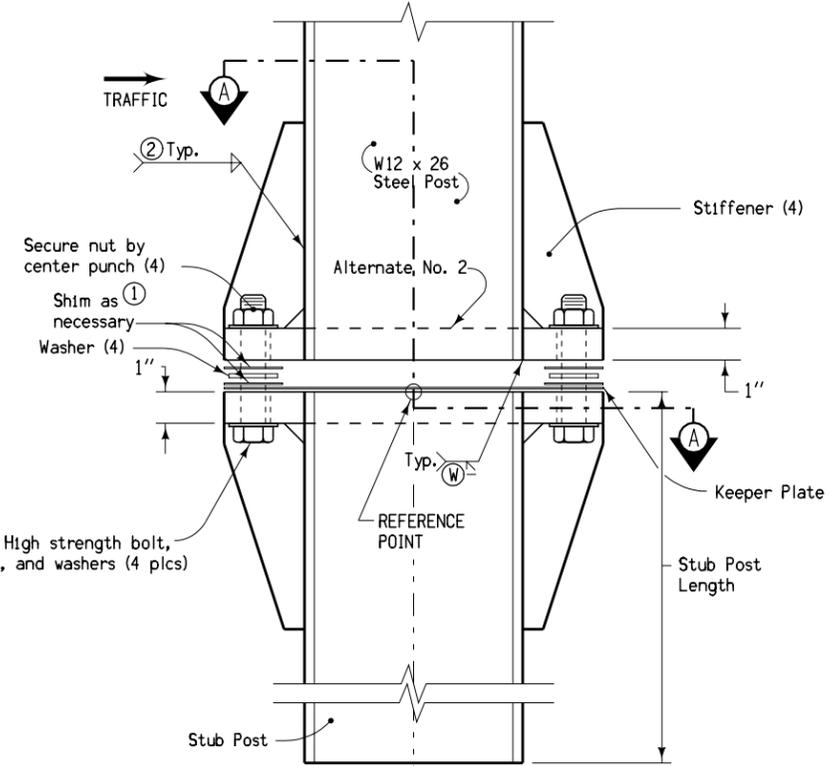
KEEPER PLATE



SHIM



STIFFENER



**Side View
BASE PLATE**

Details shown are for signs installed to the right of traffic. This shall be the default unless specified otherwise by the contract documents.

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.

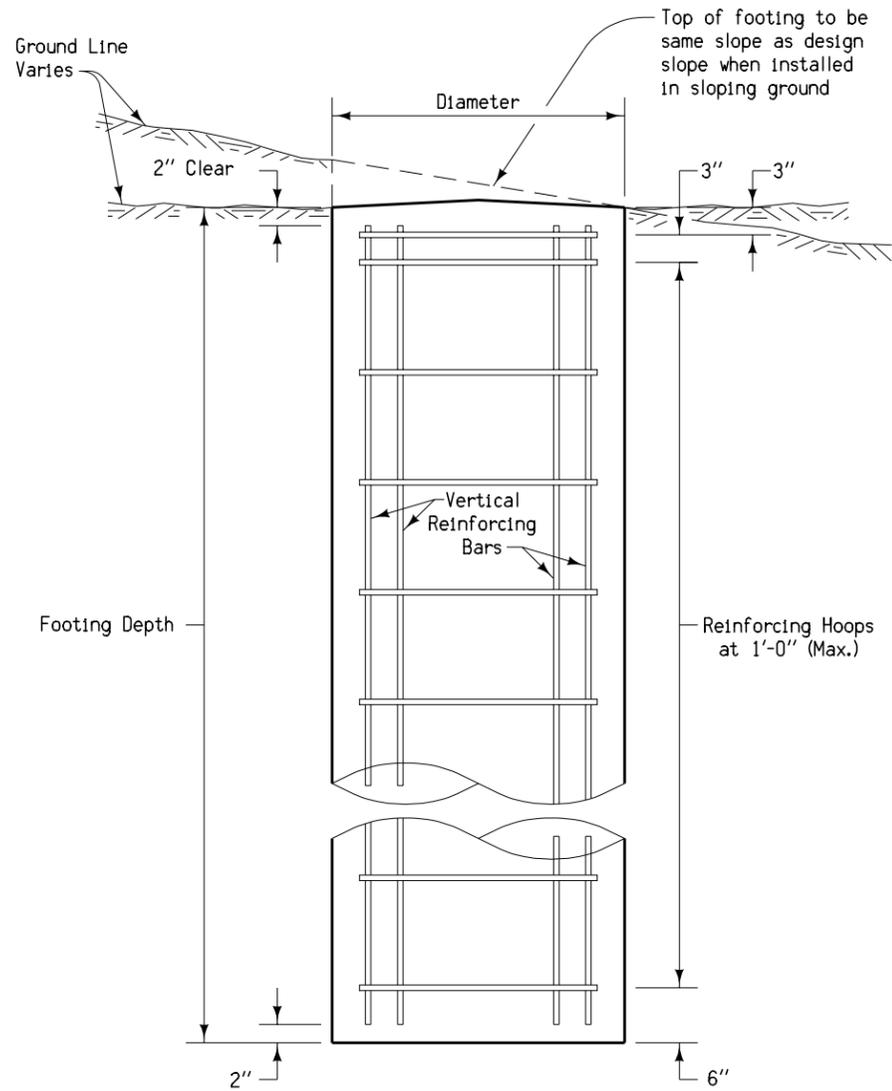
Steel posts shall be ASTM A709 GR 50.

Tighten nuts by Turn of Nut method as per Section 2408.39 E 2.

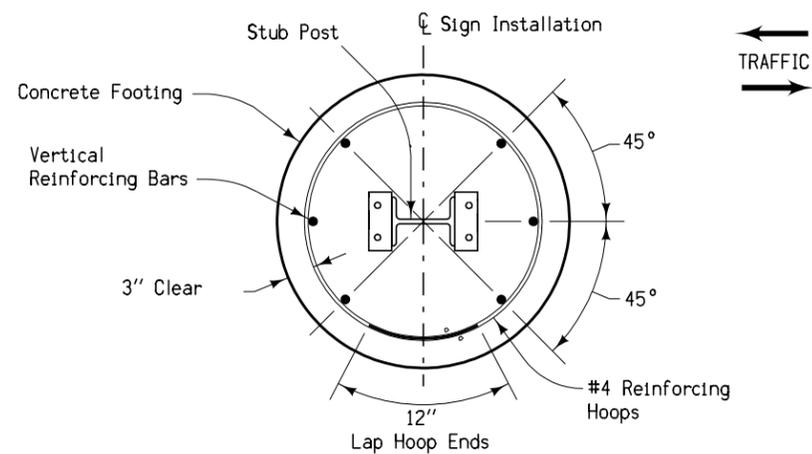
- ① Sign post shall be plumbed by installing shims. The Contractor shall furnish two shims each of 0.012" and 0.032" thickness (total of 4 per post). Shims shall be brass stock or strip conforming to ASTM B 36.
- ② Welds shall be continuous fillet welds and of a depth equal to the thickness of the flange for the post unless otherwise specified.

Contract Item:
Steel Posts for Dynamic Message Signs

MODIFIED STANDARD ROAD PLAN	REVISION
	RD-21A
SHEET 1 of 1	
REVISIONS:	
STEEL POSTS FOR DYNAMIC MESSAGE SIGNS	



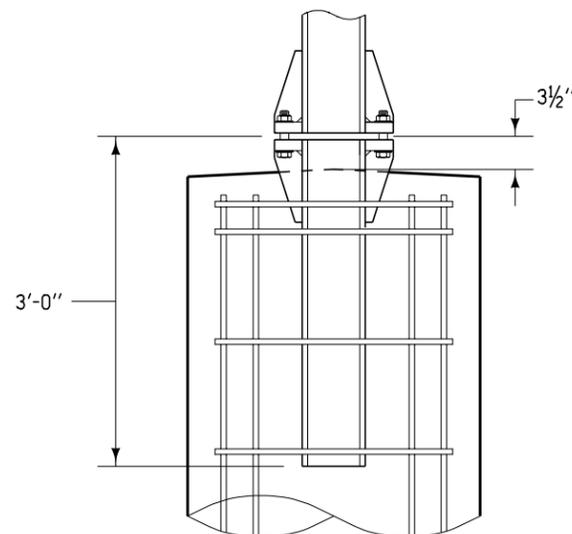
**TYPICAL INSTALLATION
NORMAL FOOTING IN EARTH**



PLAN VIEW

(REINFORCING PLACEMENT AND SIGN ORIENTATION)

Note: Refer to Modified RD-21A for details of sign post and stub.



TYPICAL BREAKAWAY POST INSTALLATION

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.

Steel post stubs shall be ASTM A709 GR 50.

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.

FOOTING REINFORCING DATA					
Post Size	Stub Length	Footing		Vertical Rein. Bar	
		Diameter	Depth	Size	Length ①
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.

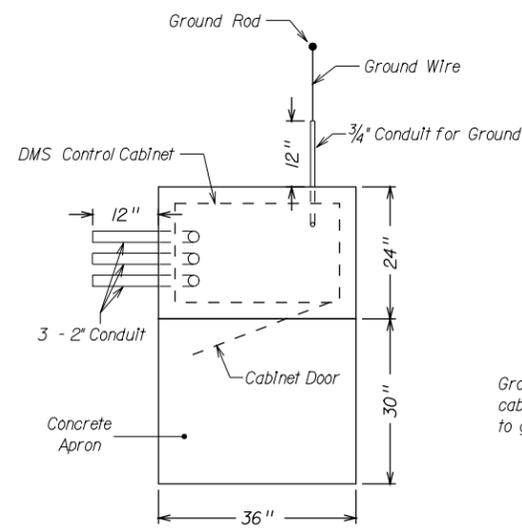
MODIFIED STANDARD ROAD PLAN	REVISION
	RD-22A
SHEET 1 of 1	

REVISIONS:

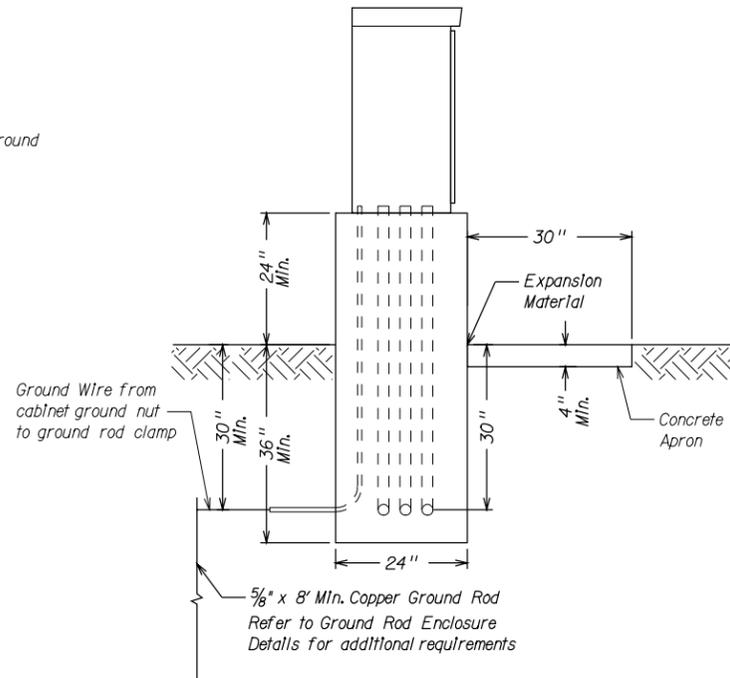
SIGN POST FOOTING DETAILS FOR DYNAMIC MESSAGE SIGNS
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Center DMS Cabinet on footing and attach with approved pull out anchors. Refer to IM 453.09.

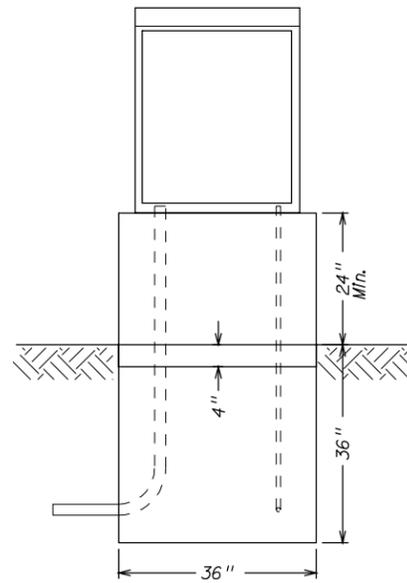
Conduits shall be positioned to fit inside the cabinet with a minimum clearance of 2" to all sides. Use the proposed cabinet to establish exact dimensions and placement.



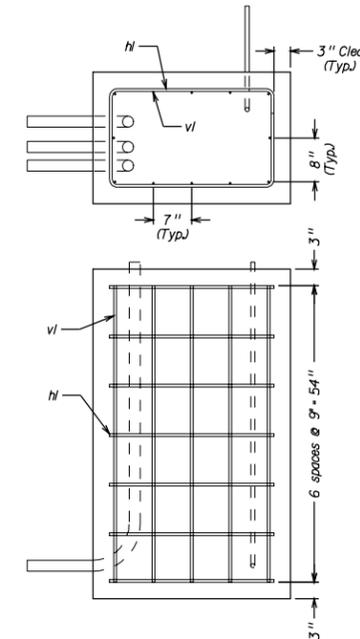
Top View



Side View



Front View

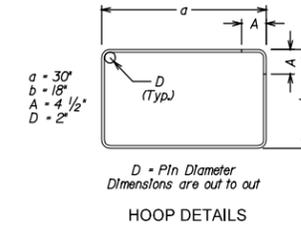


Epoxy reinforcement required to meet DOT specification section 2404

Reinforcing Details

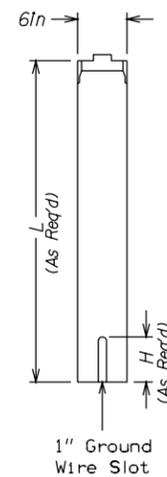
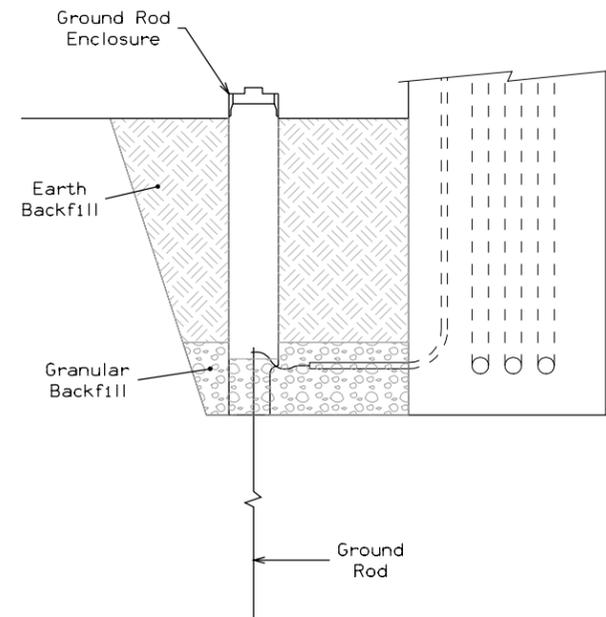
EPOXY REINFORCEMENT QUANTITIES per footing				
BAR	QTY	SIZE	LENGTH	WEIGHT
v1	12	#4	54	36.1
h1	7	#4	105	40.9
Total Weight				77.0

CONCRETE QUANTITIES per footing	
1.11 cu yd	



D = Pin Diameter
Dimensions are out to out
HOOP DETAILS

DMS CONTROL CABINET FOOTING DETAILS



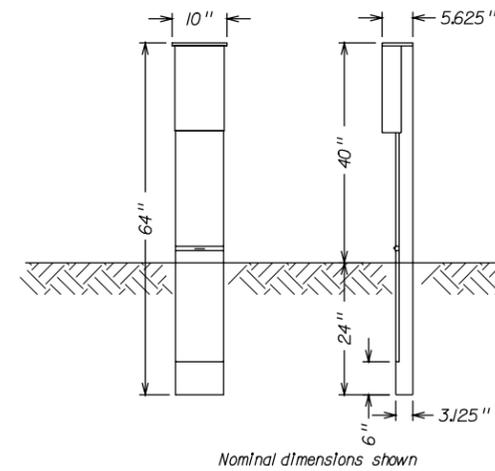
Use 6" Schedule 40 PVC and appropriate fittings for Ground Rod Enclosure. Secure all fittings to the standpipe with appropriate adhesive.

Install the ground rod, ground wire, clamp, and complete the testing prior to installing the the ground rod enclosure.

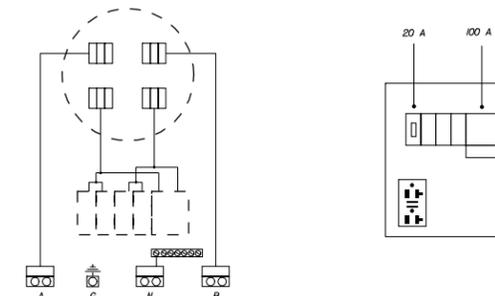
Fit the ground rod enclosure over the ground rod end prior to placing the backfill. The ground wire is to remain free and clear of the ground wire slot. Granular backfill is required for a depth equal to the ground wire slot length plus 3".

The enclosure shall protrude from the finished grade a minimum of 3" and a maximum of 6".

GROUND ROD ENCLOSURE DETAILS



Nominal dimensions shown

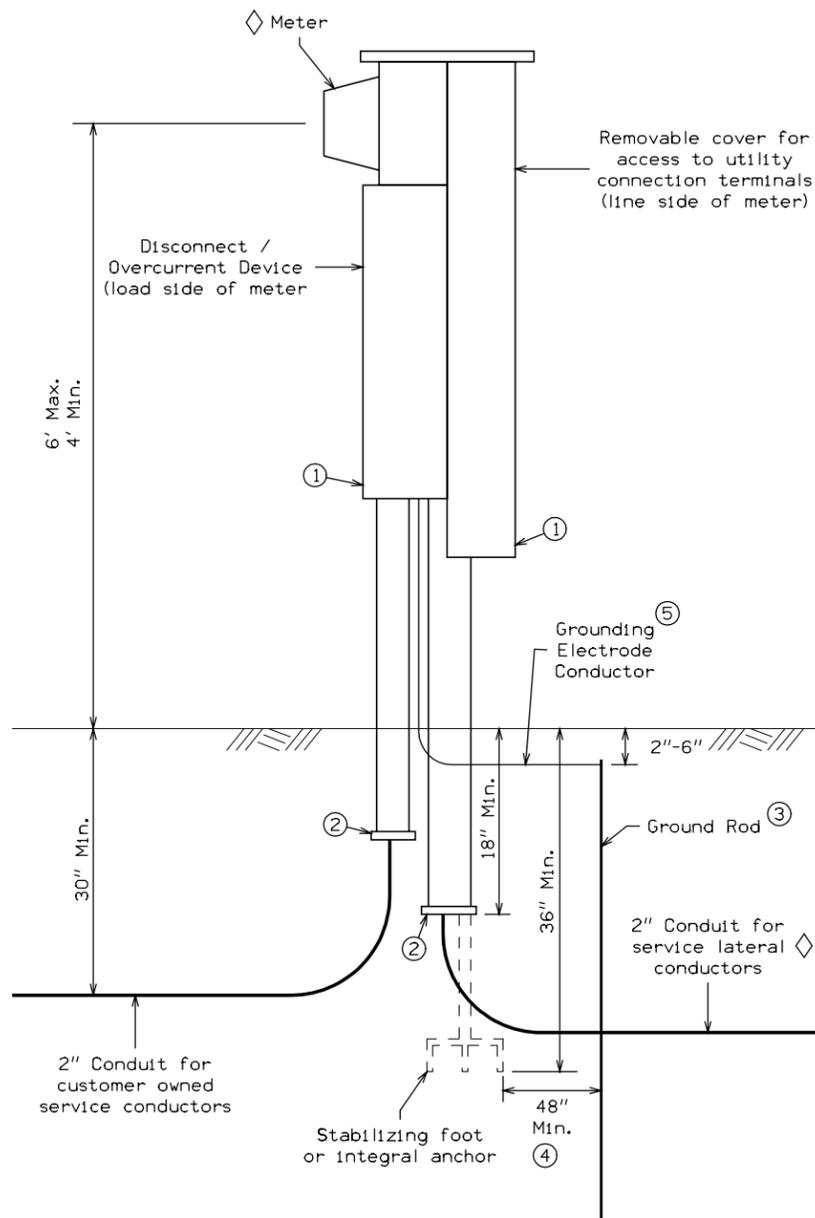


Service In:
- 60 hertz AC, 1 phase, 120/240 Volt
3 wire, 100 amp

Enclosure Details:
- Type 3R
- direct buried
- lockable, hinged cover
- 6 circuit interior to accept standard plug-in type circuit breakers

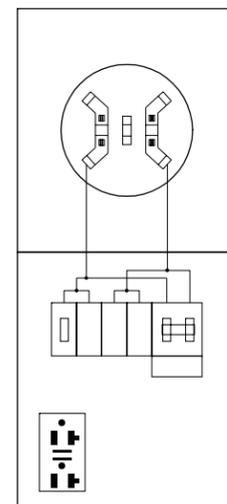
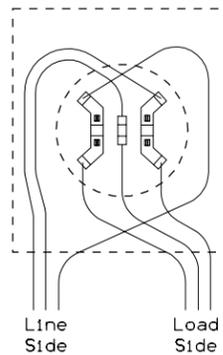
Features:
- one 20 amp, 120 volt GFI receptacle
- 100 amp, 120/240 volt circuit breaker (for DMS power)
- 20 amp, 120 volt circuit breaker (for receptacle)

DISCONNECT PEDESTAL DETAILS



SELF-CONTAINED METER SOCKET WIRING DIAGRAM

for 1 phase 120/240 Volt, 3 wire, 200 amp service



- Features:
- 6 circuit interior to accept standard plug-in type circuit breakers
 - 100 amp, 120/240 volt circuit breaker (for DMS power)
 - 20 amp, 120 volt circuit breaker (for receptacle)
 - one 20 amp, 120 volt GFI receptacle

DISCONNECT / OVERCURRENT DEVICE WIRING DIAGRAM

GENERAL NOTES:

The utility company will furnish and install all \diamond marked items. The Contractor shall be responsible for all other items.

An address shall be permanently posted on the outside of the pedestal, below the meter.

All pedestal materials shall be aluminum or steel. Steel shall be a minimum 14 gauge, and shall be plated or galvanized. The finish shall be tough, non-fading and have a long service life.

A clear working space of not less than 36 inches in front, and 30 inches left and right of the pedestal shall be maintained.

Backfill around the pedestal shall be well tamped along the full 36 inch minimum embedment length.

Line-side service shall be 60 hertz alternating current, 1-phase 120/240 volt, 3 wire, 200 amp.

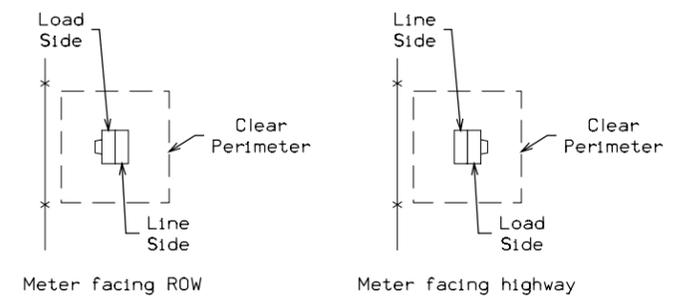
Load-side service shall be 60 hertz alternating current, 1-phase 120/240 volt, 3 wire, 100 amp.

All service equipment shall be UL listed, and shall meet the utility company specifications.

Grounding system shall meet the requirements of DOT Specification 2423.04, NEC Article 250, the utility company, and all other applicable codes.

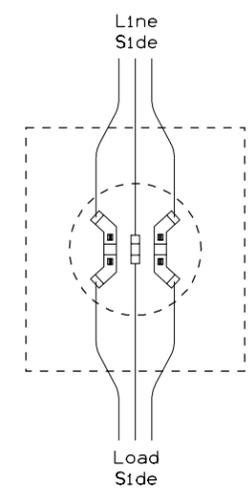
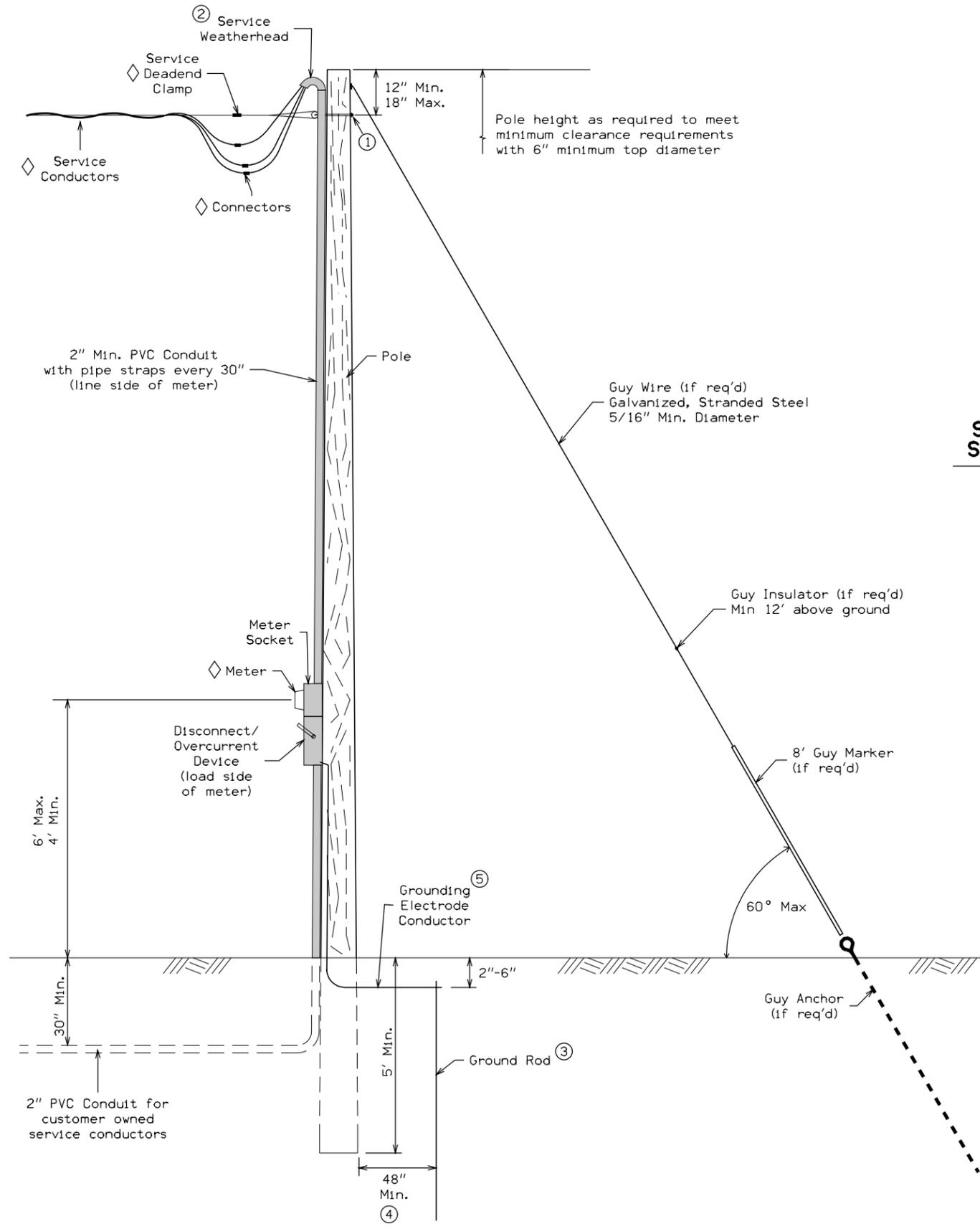
Pedestal shall be bonded to the neutral conductor. The neutral conductor shall be equipped with a lug for exclusive use of a copper ground wire.

- ① Provision to secure enclosure. Line-side provision shall be for either a seal, lock, or sealable bolt to secure the enclosure. Key locks will not be approved.
- ② Metal edges at cable entrances shall be equipped to prevent damage for cables.
- ③ Ground rod shall be copper, 5/8" diameter x 8' minimum length. Additional ground rods may be required per NEC Article 250.
- ④ The ground rod shall not be closer than 4 feet from the pedestal to prevent damage when the underground service lateral conductors are installed.
- ⑤ The grounding electrode conductor shall meet the following requirements
 - it shall be copper and of the gauge appropriately matched to the largest service conductor,
 - it shall be connected to the neutral bus in the disconnect/ overcurrent device,
 - it shall be connected to the ground rod with a clamp suitable for direct burial, and
 - it shall not be placed inside the service conduits.



METER ORIENTATION

METER PEDESTAL DETAILS



SELF-CONTAINED METER SOCKET WIRING DIAGRAM

for 1 phase 120/240 Volt, 3 wire, 200 amp service

GENERAL NOTES:

The utility company will furnish and install all \diamond marked items. The Contractor shall be responsible for all other items.

All disconnect and overcurrent device enclosure materials shall be aluminum or steel. Steel shall be a minimum 14 gauge, and shall be plated or galvanized. The finish shall be tough, non-fading and have a long service life.

A clear working space of not less than 36 inches in front, and 30 inches left and right of the meter shall be maintained.

Line-side service shall be 60 hertz alternating current, 1-phase 120/240 volt, 3 wire, 200 amp.

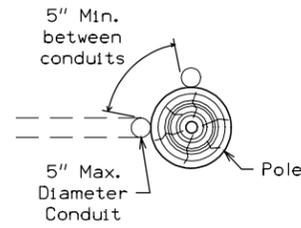
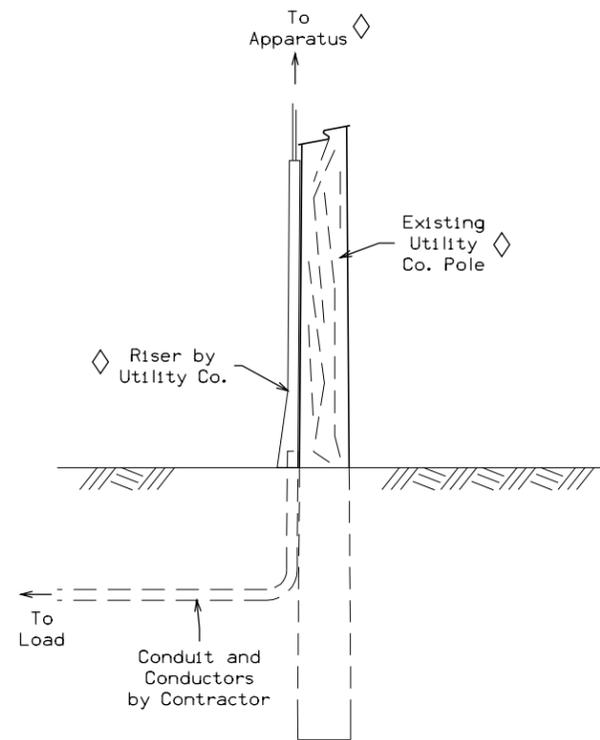
Load-side service shall be 60 hertz alternating current, 1-phase 120/240 volt, 3 wire, 100 amp.

All service equipment shall be UL listed, and shall meet the utility company specifications.

Grounding system shall meet the requirements of DOT Specification 2423.04, NEC Article 250, the utility company, and all other applicable codes.

- ① Insulated service bracket and eye bolt.
- ② Service weatherhead shall be located above the service attachment point to insure a positive drip loop.
- ③ Ground rod shall be copper, 5/8" diameter x 8' minimum length. Additional ground rods may be required per NEC Article 250.
- ④ The ground rod shall not be closer than 4 feet from the pole to prevent damage when the underground customer service conductors are installed.
- ⑤ The grounding electrode conductor shall meet the following requirements
 - it shall be copper and of the gauge appropriately matched to the largest service conductor,
 - it shall be connected to the neutral bus in the disconnect/ overcurrent device,
 - it shall be connected to the ground rod with a clamp suitable for direct burial, and
 - it shall not be placed inside the service conduits.

METER POLE DETAILS



GENERAL NOTES:

The utility company will furnish and install all \diamond marked items. The Contractor shall be responsible for all other items.

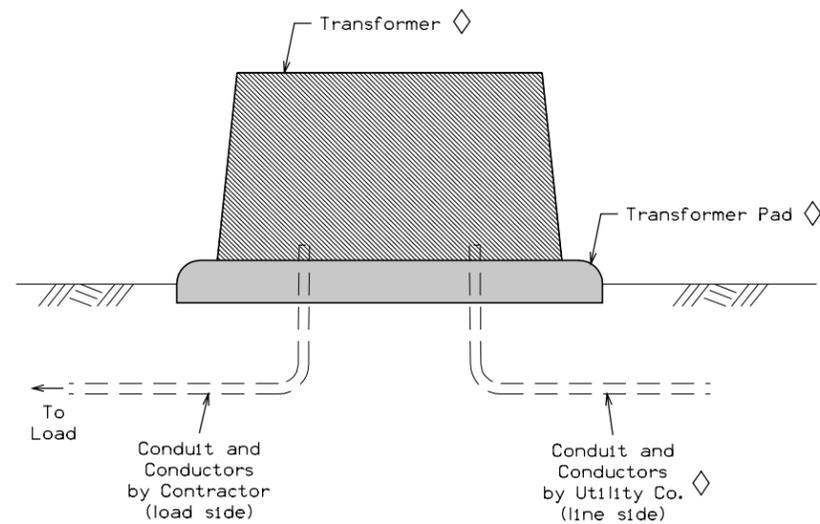
The Contractor shall contact the utility company prior to installation to identify an approved conduit position, and to determine how much conductor shall be coiled at the base of the pole in order to reach the apparatus.

When more than one conduit is installed on the riser, the conduits must have a minimum spacing of 5 inches, and be placed against the pole. This is in order to accommodate the utility company's cable guard.

Conduits shall be installed so that the top end is 4 to 6 inches above the final grade.

Where conduit is to be extended to a location where the utility company is installing a replacement pole or new pole, the conduit shall not be installed until the pole work has been completed by the utility company.

UNDERGROUND CONDUIT AT UTILITY COMPANY RISERS



GENERAL NOTES:

The utility company will furnish and install all \diamond marked items. The Contractor shall be responsible for all other items.

The Contractor shall contact the utility company to determine the following:

- an approved conduit location
- how much conduit to leave sticking out of the ground in order to make final connections
- how much conductor to leave coiled at the base of the transformer in order to make final connections

Where conduit is to be extended to a location where the utility company is installing a new transformer, coordinate with the utility company to determine if the transformer will be installed before or after the conduit extension.

UNDERGROUND CONDUIT AT PAD MOUNTED TRANSFORMERS

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	415.5	
2	2401-6745635	RMVL OF EXIST HANDRAIL	LS	1	
3	2402-2720000	EXCAVATION, CL 20	CY	227.4	
4	2403-0100000	STRUCT CONC (MISCELLANEOUS)	CY	78.6	
5	2404-7775005	REINFORC STEEL, EPOXY COATED	LB	7984	
6	2505-4008100	RMV G'RAIL	LF	262.5	
7	2505-4008200	INSTALL OF G'RAIL	LF	350	
8	2505-4021690	G'RAIL, END ANCHOR, BEAM, RE-69	EACH	2	
9	2505-4021762	G'RAIL TERMINAL, BEAM, FLARED, RE-76	EACH	2	
10	2505-6000111	HIGH TENSION CABLE G'RAIL	LF	623.5	
11	2505-6000121	HIGH TENSION CABLE G'RAIL, END ANCHOR	EACH	6	
12	2505-6000131	HIGH TENSION CABLE G'RAIL, SPARE PART KIT	EACH	1	
13	2509-0000016	TEMP CRASH CUSHION, SEVERE USE (SU)	EACH	8	
14	2526-8285000	CONSTRUCTION SURVEY	LS	1	
15	2528-8400048	TEMP BARRIER RAIL, CONC	LF	2125	
16	2528-8445110	TRAFFIC CONTROL	LS	1	
17	2528-9290004	CHANGEABLE MESSAGE SIGN, PORTABLE	CDAY	999	
18	2533-4980005	MOBILIZATION	LS	1	
19	2599-9999005	OVERHEAD SIGN SUPPORT STRUCTURE, 70'	EACH	1	
20	2599-9999005	OVERHEAD SIGN SUPPORT STRUCTURE, 75'	EACH	1	
21	2599-9999005	CONCRETE FOOTING FOR DMS STEEL POSTS	EACH	6	
22	2599-9999005	DMS INSTALLATION, LARGE	EACH	2	
23	2599-9999005	DMS INSTALLATION, SMALL	EACH	2	
24	2599-9999009	STEEL POST FOR DMS SIGNS	LF	144.4	
25	2599-9999018	HIGH TENSION CABLE G'RAIL, HMA MOW STRIP	SY	113.3	

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, guardrail, and temporary attenuators. HMA Mow Strip = 14.0 CY Guardrail Grading = 388.3 CY Attenuator Grading = 13.2 CY
2	2401-6745635	RMVL OF EXIST HANDRAIL Item is for the removal of the existing bridge end posts. Refer to sheet V.06 for details.
3	2402-2720000	EXCAVATION, CL 20 Item is for the excavation required to construction the footing for the overhead sign trusses. Refer to the tabulation OVERHEAD, and to the site detail sheets for locations and details.
4	2403-0100000	STRUCT CONC (MISCELLANEOUS) Item includes 76.8 CY for the installation of (2) new overhead sign trusses, and 1.8 CY for the installation of (2) retrofit bridge end posts. For the overhead truss locations, refer to tabulation OVERHEAD, and to the site detail sheets for locations and details. For the retrofit bridge end posts, refer to sheet V.06.
5	2404-7775005	REINFORC STEEL, EPOXY COATED Item includes 7676 LB for the installation of (2) new overhead sign trusses, and 308 LB for the installation of (2) retrofit bridge end posts. For the overhead truss locations, refer to tabulation OVERHEAD, and to the site detail sheets for locations and details. For the retrofit bridge end posts, refer to sheet V.06.
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 shall become the property of the Contractor.
7	2505-4008200	INSTALL OF G'RAIL
8	2505-4021690	G'RAIL, END ANCHOR, BEAM, RE-69
9	2505-4021762	G'RAIL TERMINAL, BEAM, FLARED, RE-76 Items are for new guardrail installations at Site #34. Refer to tabulation 108-8A for location details.
10	2505-6000111	HIGH TENSION CABLE G'RAIL
11	2505-6000121	HIGH TENSION CABLE G'RAIL, END ANCHOR Items are for new high tension cable guardrail at Site #35. Refer to tabulation 108-9A location 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 Newton.
13	2509-0000016	TEMP CRASH CUSHION, SEVERE USE (SU) Item is to attenuate temporary barrier rail locations. Refer to tabulation 108-30 for locations. Note that this quantity includes the reuse of several attenuators at Site #34. The bridge rail retrofit work will require lane closures and the TBR and attenuators should be relocated to protect that work.
14	2526-8285000	CONSTRUCTION SURVEY

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-2A	01-12-99	1	Formed Steel 'W' Beam Railing Terminal Sections
RE-2B	04-03-01	1	Formed Steel Beam Railing Transition and Terminal Sections (Thrie Beam)
RE-7	04-15-03	1	Delineators and Object Markers
RE-12A	10-19-04	1	Formed Steel Beam Guardrail and Posts for Blocked-Out Guardrail (W-Beam)
RE-12B	10-19-04	1	Formed Steel Beam Guardrail and Posts for Blocked-Out Guardrail (Thrie Beam)
RE-47	04-17-07	1	Type 3 Object Marker
RE-48A	10-19-04	1	Details of Marker and Delineator Placement (at Bridges)
RE-64B	04-19-05	1	Guardrail Installation (Bridge Ends) (less than Full Shoulder-Width Bridge)
RE-68	10-19-04	1	Steel Beam Guardrail Standard Transition Section (STS)
RE-69B	10-16-07	1	Guardrail Installation Connection to Retrofit Bridge Endpost
RE-71	04-15-08	4	Temporary Barrier Rail (Precast Concrete)
RE-76	10-16-07	1	Guardrail Terminal (FLEAT-350)
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-421	10-16-07	1	Lane Closure with TBR
TC-433	10-17-06	1	Pavement Marking Operations
TC-451	10-16-07	1	Temporary Road Closure on Divided Highway

ESTIMATE REFERENCE INFORMATION

100-4A
10-29-02

Item No.	Item Code	Description
15	2528-8400048	TEMP BARRIER RAIL, CONC Items are for traffic control at various locations. Refer to tabulations 108-33 for locations. Refer to site detail sheets for specific site requirements. Note that this quantity includes the reuse of TBR at Site #34. The bridge rail retro fit work will require lane closures and the TBR and attenuators should be relocated to protect that work.
16	2528-8445110	TRAFFIC CONTROL Traffic control notes and details are found on the site detail sheets.
17	2528-9290004	CHANGEABLE MESSAGE SIGN, PORTABLE The Contractor is to furnish any signs necessary for traffic control. Refer the Standard Road Plans for requirements.
18	2533-4980005	MOBILIZATION Incidental to this bid item is the seeding for site restoration of disturbed areas. Refer to note 232-3A for details.
19 20	2599-9999005 2599-9999005	OVERHEAD SIGN SUPPORT STRUCTURE, 70' OVERHEAD SIGN SUPPORT STRUCTURE, 75' Items are for the fabrication and installation of steel sign trusses. Refer to the V sheets for dimensions and details. These items are covered by Section 2423 of the DOT specifications.
21	2599-9999005	CONCRETE FOOTING FOR DMS STEEL POSTS Item is for the installation of a Small DMS on steel posts. Refer to site detail sheets for specific site requirements. This item is covered by Section 2524 of the DOT specifications.
22	2599-9999005	DMS INSTALLATION, LARGE 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. For general purposes, the installation of the DMS includes, but is not limited to: <ul style="list-style-type: none"> - attaching the DMS to the sign truss, - installation of the utility pole including conduit, meter socket, disconnect, and all incidental items appurtenant to the electrical service, - connection of the electrical service from the utility pole to the DMS master power panel including conduit and cabling, - construction of the control cabinet footing, - installation of the conduit between the sign truss footing and the control cabinet footing, - installation of the control cabinet and control cabinet equipment, - and installation of the wiring between the DMS and the control cabinet including two branch circuits and two communication cables. For this project, the Large DMS vendor is Daktronics, Inc. of Brookings, South Dakota. The following items will be provided by the DOT, or the DMS vendor: DMS, DMS-to-sign truss attachment brackets, control cabinet, control cabinet equipment, and communication cables to connect the DMS to the control cabinet equipment. 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, initialed by 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. MEASUREMENT: Then Engineer will count the number of Overhead DMS signs installed. PAYMENT: The Contractor shall be paid the contract unit price for each Overhead DMS sign installed.

ESTIMATE REFERENCE INFORMATION

100-4A
10-29-02

Item No.	Item Code	Description
23	2599-9999005	DMS INSTALLATION, SMALL 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. For general purposes, the installation of the DMS includes, but is not limited to: <ul style="list-style-type: none"> - attaching the DMS to the steel posts or sign truss, as specified in the plans, - installation of the utility pole including conduit, meter socket, disconnect, and all incidental items appurtenant to the electrical service, - connection of the electrical service from the utility pole to the DMS master power panel including conduit and cabling, - construction of the control cabinet footing, if required, - installation of the conduit between the sign truss footing and the control cabinet footing, if required, - installation of the control cabinet and control cabinet equipment, - and installation of the wiring between the DMS and the control cabinet including two branch circuits and two communication cables. For this project, the Small DMS vendor is Skyline Products, Inc. of Colorado Springs, Colorado. The following items will be provided by the DOT, or the DMS vendor: DMS, DMS-to-sign truss attachment brackets and/or DMS-to-Post attachment hardware, control cabinet, control cabinet equipment, and communication cables to connect the DMS to the control cabinet equipment. 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, initialed by 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. MEASUREMENT: Then Engineer will count the number of Side of Road DMS signs installed. PAYMENT: The Contractor shall be paid the contract unit price for each Side of Road DMS sign installed.
24	2599-9999009	STEEL POST FOR DMS SIGNS Items are for the installation of a Small DMS on steel posts. Refer to site detail sheets for specific site requirements. This item is covered by Section 2524 of the DOT specifications.
25	2599-9999018	HIGH TENSION CABLE G'RAIL, HMA MOW STRIP 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. The HMA mix shall conform to the requirements of temporary/detour pavement and shall be 6" thick unless otherwise indicated. Refer to typical 7199 for locations and details. Measurement: The Engineer shall measure the area of the HMA Mow Strip installed. 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.

TABULATION OF SPECIAL EVENTS

102-15
10-29-02

Event	Location	Date
Prairie Meadows 250	Iowa Speedway	4/19/08
ASA Late Model Race	Iowa Speedway	5/17/08 to 5/18/08
Indy Pro Series	Iowa Speedway	6/20/08 to 6/22/08
ASA Midwest Tour	Iowa Speedway	7/20/08
Casey's Koni Challenge	Iowa Speedway	8/10/08
Hooters Pro Cup Series	Iowa Speedway	9/20/08

SIGNING NOTES

SIGN-NOTE
09-25-02

SIGN INSTALLATION QUALITY CONTROL NOTES

Post lengths have been derived from the proposed grading cross sections and shall be field verified.

Slight differences between the design template and the actual field conditions should be expected. These variations should be resolved by doing some localized grading and shaping. Material needed to meet the site requirements of RD-21A and RD-22A should be obtained from the footing excavation and/or the area immediately adjacent to the footing. Any reshaping work shall not substantially change the foreslopes or the drainage in the vicinity of the sign.

Significant differences between the design template and the actual field conditions need to be resolved in this manner. The location shall be surveyed and the actual template drawn on the cross section. Each post length shall be recalculated and compared to the maximum allowable leg length. If all of the leg lengths are less than or equal to the maximum allowable leg length, then the proposed post design will be sufficient. If any leg is greater than the maximum allowable leg length, then the cross section with the actual template drawn (including offsets and elevation from the survey shown) shall be submitted to the Engineer. The Engineer may forward this information on to the design Engineer in order to complete a new post design.

The Contractor shall install the footings & stub posts, and posts in accordance with the following tolerances:

-the elevation difference from the edge of pavement to the bottom of the sign shall be ±6 inches (150 mm) the dimension shown.

-the elevation difference between the top of the highest post and the lowest post at a site shall be less than 2 inches (50 mm).

Footing construction is the controlling activity that substantially affects the quality of the site installation. It is imperative that the elevation difference between the stubs is exactly the same as the elevation difference between the post lengths. The Contractor shall, upon request by the Engineer, submit documentation detailing the site field shots in order to verify site installation.

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.

The DMS are being stored at the following locations:
Stoux City (Hamilton) Maintenance - two small DMS
Davenport Maintenance - one large DMS
Newton Maintenance - one large DMS
Please contact the Engineer to coordinate pickup from the storage facility.

Contractor shall lift the DMS into position with their own equipment. Use of DOT equipment shall not be allowed.

DMS shall not be installed if the work to be completed by the utility company is not one hundred percent complete. This will require that all activities by the Contractor necessary to commence utility work be completed in an appropriate time frame.

Contractor shall complete all electrical and communication work within 48 hours of installing the DMS on its support structure.

DMS shall be ready for testing 48 hours after installation on its support structure.

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

04-15-08 232-3A
EROSION CONTROL: (Rural Seeding)
Following completion of work in a disturbed area, the area shall be seeded, fertilized, and mulched as follows:
SEEDING:
3 lbs. of Fescue or Fawn per 1000 sq. ft.
FERTILIZER:
17 lbs. of 13-13-13 (or equivalent) commercial fertilizer per 1000 sq. ft.
MULCH:
70 lbs. of dry cereal straw per 1000 sq. ft. All mulch shall be consolidated into the soil with a mulch stabilizer.
The preparation of the seedbed and the furnishing and application of seed, fertilizer, and mulch shall be considered incidental to mobilization and no extra compensation will be allowed.

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)	FOUNDATION QUANTITIES			
	MILEPOST	STATION				MEDIAN (Ft)	OUTSIDE (Ft)		EXCAVATION (CLASS 20) (Cu Yd)	REINFORCING STEEL (Lb)	EPOXY-COATED STEEL (Lb)	STRUCTURAL CONCRETE (Cu Yd)
DMS #34 - 70'		2425+50	I-80 EB	0	70	1	3	SPREAD	121.4		3838	38.4
DMS #35 - 75'		1035+00	I-29 SB	0	75	1	3	SPREAD	106		3838	38.4
TOTALS									227.4	0	7676	76.8

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.

REMOVE or REMOVE & REINSTALL BEAM GUARDRAIL

110-7A
04-19-05

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

Location				Steel Beam Guardrail		Posts		End Anchorage		Remarks
No.	① Direction of Traffic	Station	Side	Remove (Lin. Ft.)	Remove & Reinstall (Lin. Ft.)	Remove (No.)	Remove & Reinstall (No.)	Remove (No.)	Remove & Reinstall (No.)	
#34	I-80 EB	2426+00	LT	225		38		1		
#34	I-80 EB	2426+00	RT	37.5		15		1		Old median bullnose
Total				262.5		53		2		

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

GRADING FOR GUARDRAIL INSTALLATIONS

107-23
04-15-08

A = Approach
T = Trailing

Refer to Standard Road Plans RL-14A, RL-14B, and Typical 4303

Location				Standard or Typical Number	Type	Dimensions (Feet)										Class 10 Excavation (Cu. Yds.)	Embankment In Place (Cu. Yds.)	Remarks		
No.	① Direction of Traffic	Station	Side			BY		Z		X1	Y1	X2	Y2	X3	Y3				X4	Y4
						A	T	A	T											
#34	EB	2424+00	LT	RL-14A	1	17.67		86		31.75	4			182	17.67	95.3	Extend existing 10:1 slope			
#34	EB	2424+00	RT	RL-14A	1	12		85		31.75	4			169.67	12	293				
																388.3				

STEEL BEAM GUARDRAIL AT BRIDGE END POST AND CONCRETE BARRIER

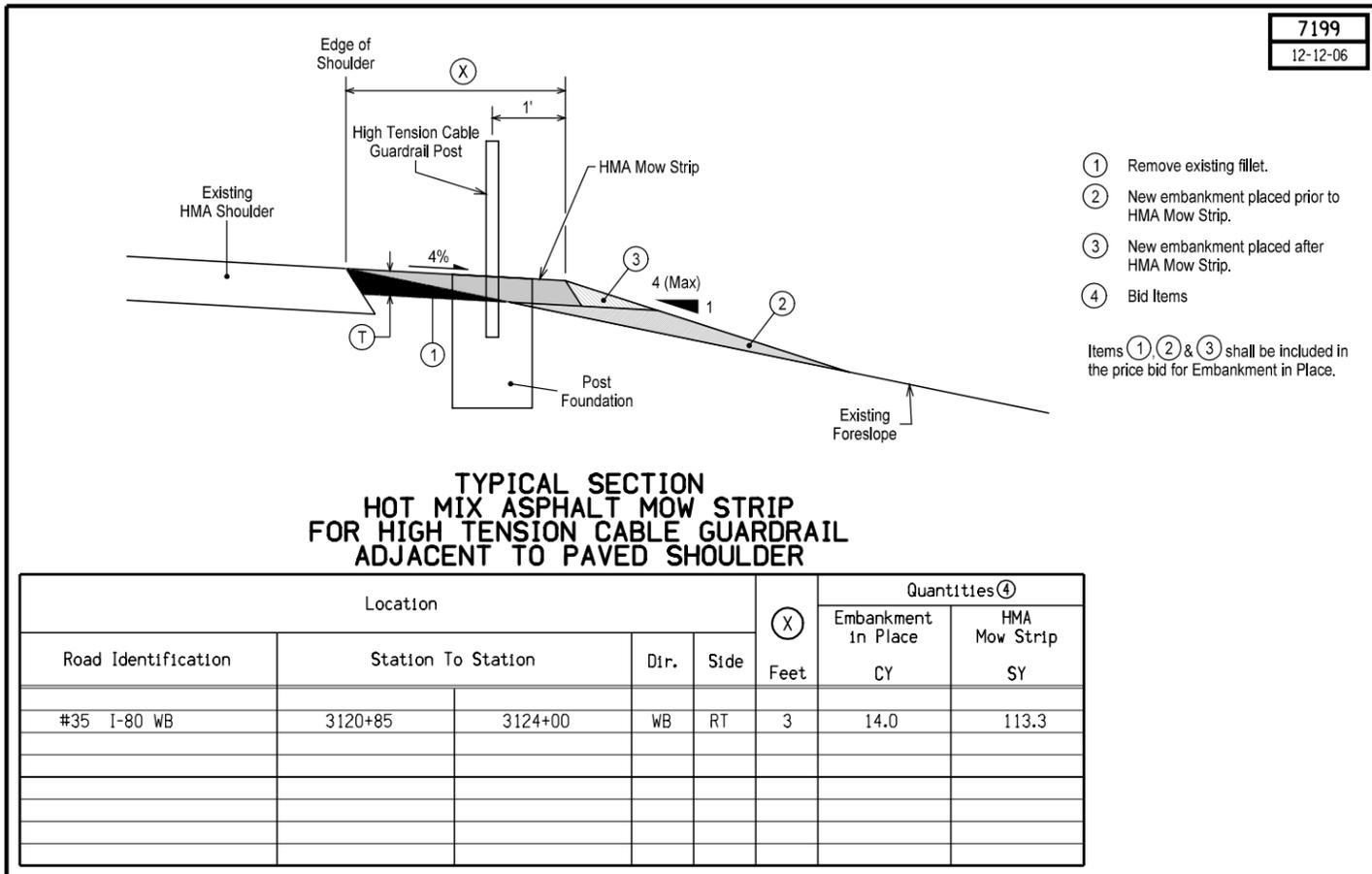
108-8A
04-19-05

Refer to Standard Road Plans RE-48A, RE-64A, RE-64B, and RE-65B

Location				Case	Standard Road Plan	Layout Lengths					Materials Required				Delineators and Object Markers				Bid Items				Remarks					
No.	① Direction of Traffic	End	Side			STB	VT1	VF	VT2	ET	STB	Transition Section	'W' Beam	Posts	Posts	CRT Posts	Delineator	Object Marker			Installation of Guardrail							
		A=Approach T=Trailing	O = Outside M = Median <td>(18.75')</td> <td>(18.75')</td> <td>(11.25')</td> <td>(11.25')</td> <td>(37.5')</td> <td>(25.0')</td> <td>(6.25')</td> <td>VT1 + VF + VT2 + ET</td> <td>6" x 8" x 7' with 6" x 8" Spacer Blocks (6 or 7)</td> <td>6" x 8" x 6' with 6" x 8" Spacer Blocks</td> <td>6" x 8" x 6' with 6" x 8" Spacer Blocks</td> <td>Type</td> <td>Single White</td> <td>Type 2</td> <td>Type 3</td> <td colspan="4">(STB + VT1) + VF + VT2 + ET</td>			(18.75')	(18.75')	(11.25')	(11.25')	(37.5')	(25.0')	(6.25')	VT1 + VF + VT2 + ET	6" x 8" x 7' with 6" x 8" Spacer Blocks (6 or 7)	6" x 8" x 6' with 6" x 8" Spacer Blocks	6" x 8" x 6' with 6" x 8" Spacer Blocks	Type	Single White	Type 2	Type 3	(STB + VT1) + VF + VT2 + ET							
						Lin. Ft.	Lin. Ft.	Lin. Ft.	Lin. Ft.	Lin. Ft.	Lin. Ft.	Lin. Ft.	Lin. Ft.	No.	No.	No.	No.	No.	No.	No.	No.	No.		No.	No.	No.		
#34	EB	A	M	2525+89.8	A	RE-64B	18.75	12.5	112.5	0	37.5	25	6.25	162.5	6	21	5	2		8	1			181.25				1
#34	EB	A	O	2426+03.2	A	RE-64B	18.75	12.5	100	0	37.5	25	6.25	150	6	19	5	2		7		1		168.75			1	1
TOTALS							50	12.5	312.5	12	40	10				15	1	1					350.0			2	2	

- ① Lane(s) to which the obstacle is adjacent.
- ② Includes (1) special 12.5' section of 'W' Beam, see RE-76.
- ③ (6) 6" x 8" x 7' posts required when RE-69C is specified.
- ④ The last two posts of the RE-76 Terminal section are included as part of that bid item.

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										
Location				Dimensions				Protection Length (C _A +C _O +C _T) Ft.	End Anchor No.	Remarks
No.	Direction of Traffic	Station	Side	Offset, D ₀ Ft.	Approach, C _A Ft.	Obstacle, C _O Ft.	Trailing, C _T Ft.			
#35	I-80 EB	3119+49.9 to 3121+55.7	LT	6	194	11.8		205.8	2	
#35	I-80 WB	3121+44.3 to 3123+50.1	LT	6	194	11.8		205.8	2	
#35	I-80 WB	3121+44.3 to 3123+56.2	RT	2	200.1	11.8		211.9	2	
TOTALS								623.5	6	



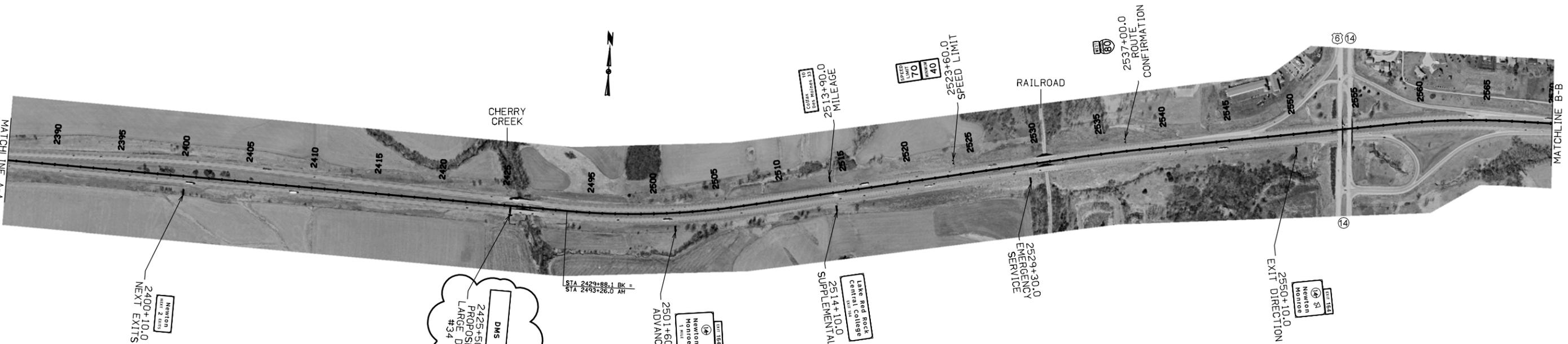
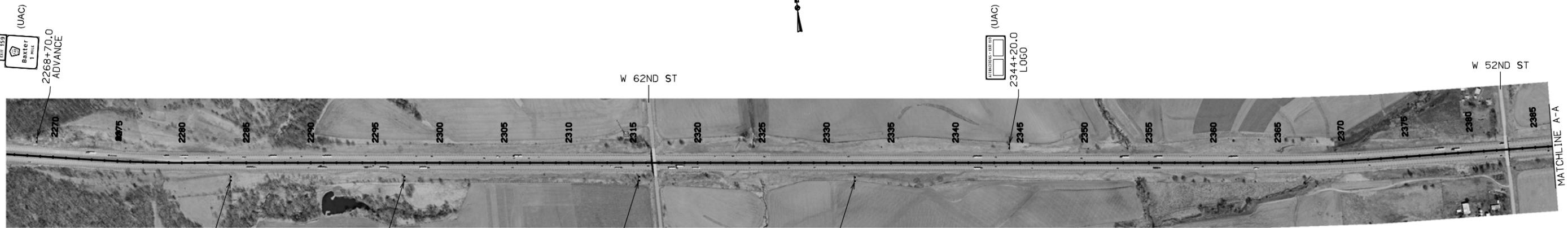
Location					Quantities ④		
Road Identification	Station To Station	Dir.	Side	Feet	Embankment in Place CY	HMA Mow Strip SY	
#35 I-80 WB	3120+85	3124+00	WB	RT	3	14.0	113.3

7199
12-12-06

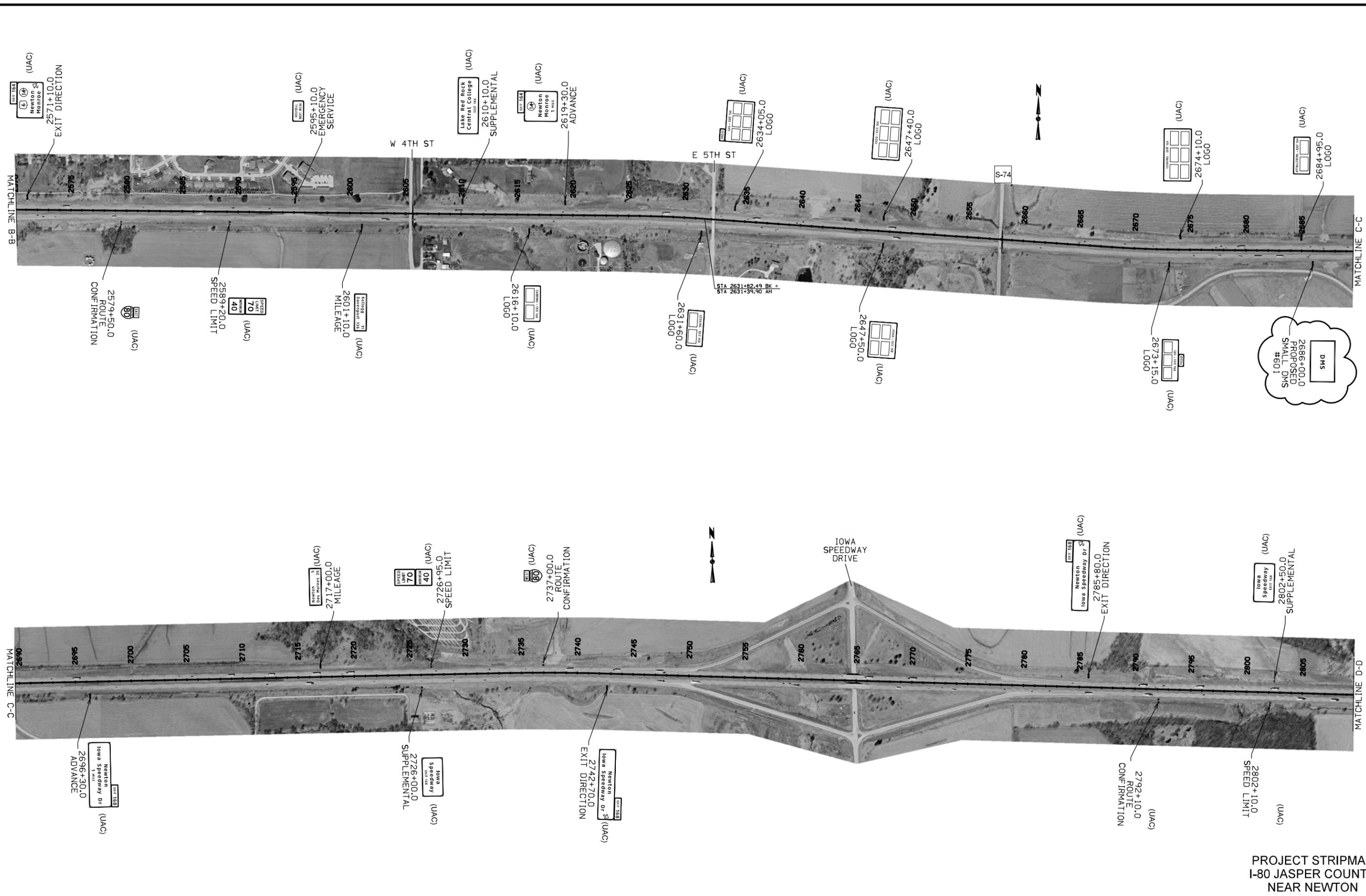
- ① Remove existing fillet.
 - ② New embankment placed prior to HMA Mow Strip.
 - ③ New embankment placed after HMA Mow Strip.
 - ④ Bid Items
- Items ① ② & ③ shall be included in the price bid for Embankment in Place.

TEMPORARY BARRIER RAIL									
108-33 04-15-08									
No.	Station To Station		Length Lin. Ft.	(Select One)		Remarks			
				Concrete RE-71	Steel RE-89				
#34	2423+25	2425+95	262.5	X		EB - MEDIAN (21 SECTIONS) -- FOR FOOTING WORK			
	2423+50	2426+05	250	X		EB - OUTSIDE (20 SECTIONS) -- FOR FOOTING WORK			
	2423+25	2426+70	337.5	X		EB LANE CLOSURE (27 SECTIONS) -- FOR LT BRIDGE END POST			
	2423+25	2426+70	337.5	X		EB LANE CLOSURE (27 SECTIONS) -- FOR RT BRIDGE END POST			
#35	3119+09	3122+16	300	X		EB - MEDIAN (24 SECTIONS)			
	3120+84	3123+91	300	X		WB - MEDIAN (24 SECTIONS)			
	3120+84	3124+30	337.5	X		WB - OUTSIDE (27 SECTIONS)			
TOTAL			2125						

① Lane(s) to which the installation is adjacent.																	
② Complete this section when using the Temporary Crash Cushion bid item. Refer to Standard Road Plan RE-85.																	
CRASH CUSHIONS																	
R - (Redirective) SU - (Severe Use)																	
108-30 10-16-07																	
No.	Direction of Traffic	Location Station	Side	Obstacle Width Feet	Bid Item(s)				Sand Barrel Details ②					Remarks			
					(Select one) Temporary	(Select one if applicable) Permanent	R	SU	V Length Feet	W Length Feet	X Length Feet	Y Length Feet	Z Length Feet		Embankment in Place Cu.Yds.		
#34	I-80 EB	2423+25	LT	2	X			X							4.4	AT EDGE OF SHOULDER	
#34	I-80 EB	2423+50	RT	2	X			X							0	ON SHOULDER	
#34	I-80 EB	2423+25	LT	2	X			X							0	ON SHOULDER - FOR LANE CLOSURE	
#34	I-80 EB	2423+25	RT	2	X			X							0	ON SHOULDER - FOR LANE CLOSURE	
#35	I-80 EB	3119+09	LT	2	X			X							4.4	AT EDGE OF SHOULDER	
#35	I-80 WB	3123+91	LT	2	X			X							4.4	AT EDGE OF SHOULDER	
#35	I-80 WB	3124+30	RT	2	X			X							0	ON SHOULDER	
8 SETUPS OF 5 ATTENUATORS																13.2	

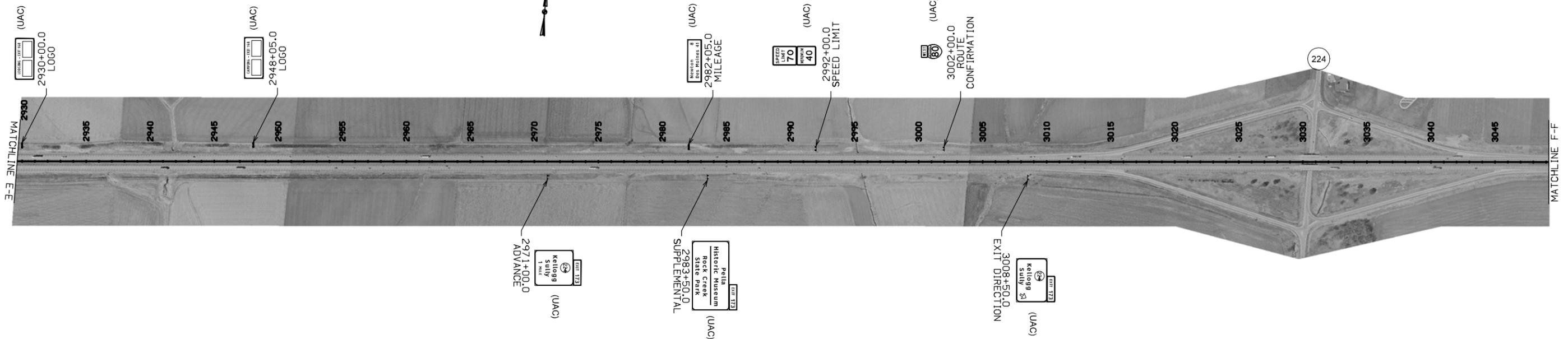
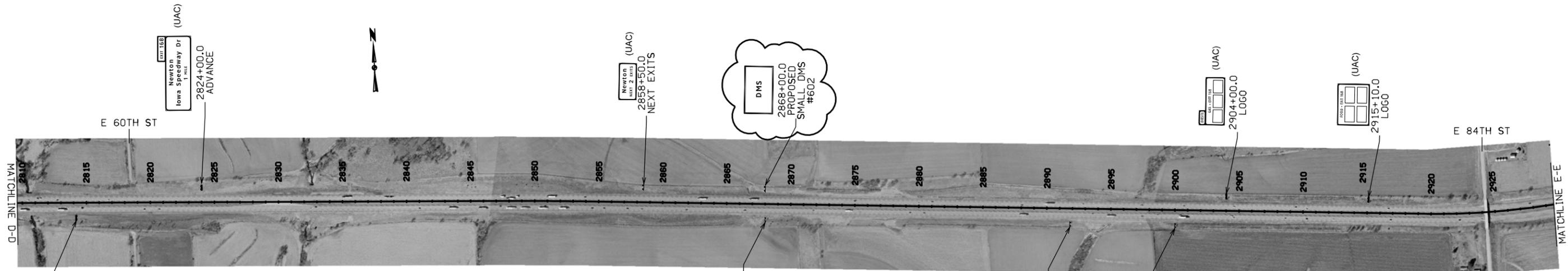


PROJECT STRIPMAP
I-80 JASPER COUNTY
NEAR NEWTON

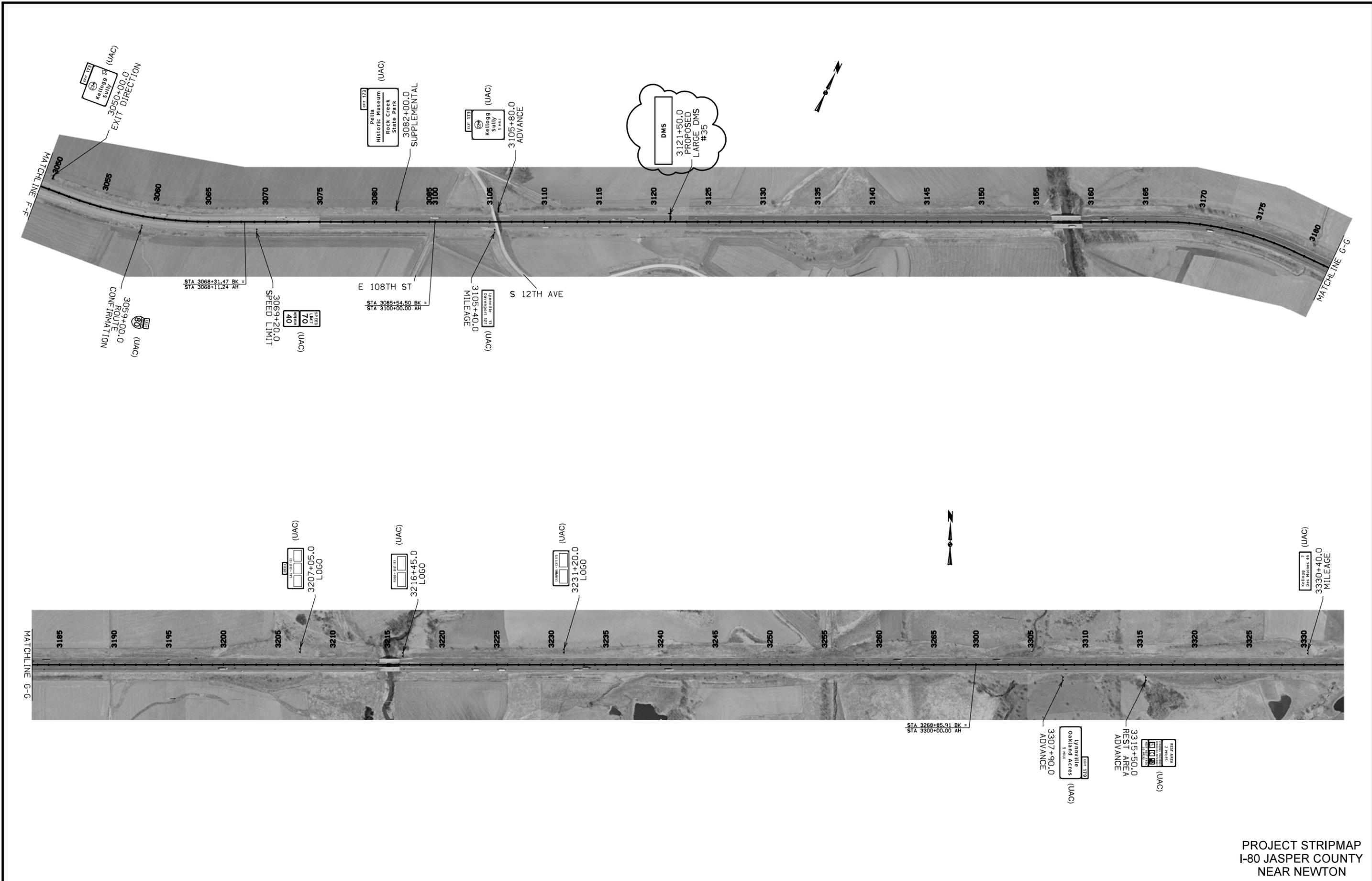


PROJECT STRIPMAP
I-80 JASPER COUNTY
NEAR NEWTON

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PROJECT STRIPMAP
I-80 JASPER COUNTY
NEAR NEWTON

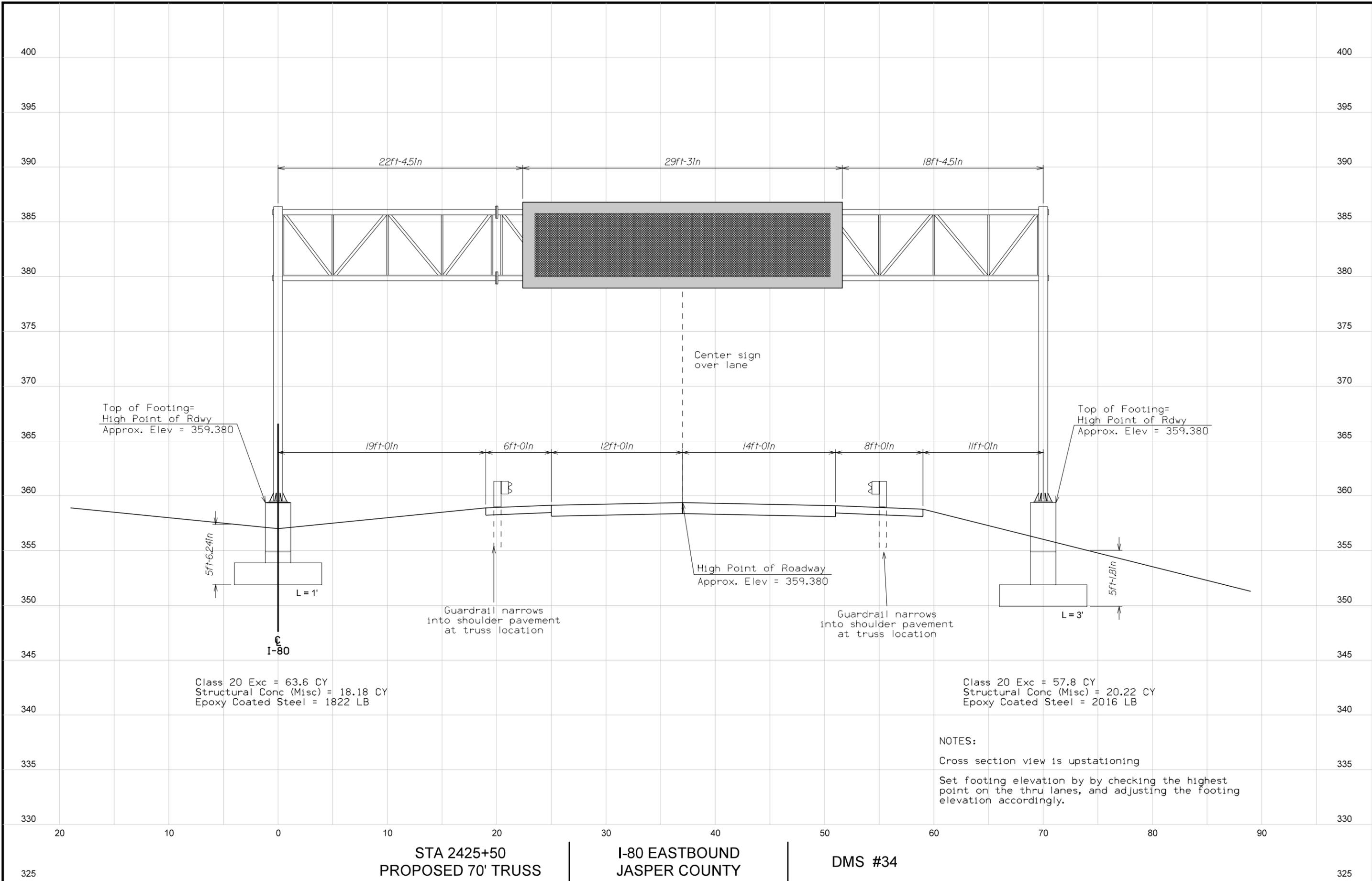


PROJECT STRIPMAP
I-80 JASPER COUNTY
NEAR NEWTON

29-FEB-2008 18:52 jvorthem w:\Projects\0000001005\TrafEng\50-0805-271\500805271.n04.sht



SITE DETAILS FOR DMS #34
ON I-80 EASTBOUND
IN JASPER COUNTY NEAR NEWTON



SAMPLE STAGING SEQUENCE

- Setup initial traffic control
- Guardrail removals
- Bridge end post retrofits
- Footing construction
- Guardrail grading
- Sign truss and DMS installation
- Guardrail installation
- Final site clean up and seeding



GENERAL

Through traffic will be maintained on the project at all times, except as noted:
 - a road closure (TC-451) is to be used to install the truss and DMS.

Lane closures (TC-418, 420 & 421) are allowed from Monday (beginning at 12:00 a.m.) to Friday (ending at 10:00 a.m.). Night work is allowed within this timeframe.

Lane closures between 6:00 a.m. and 9:00 p.m. will not be allowed between June 15, 2008 and September 1, 2008.

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 outside footing and work area with temporary barrier rail (TBR) at all times. Flare the TBR away from the roadway to provide the maximum offset possible. (As shown)

Bridge end post retrofit requires the TBR to be shifted for the TC-421 lane closure. (Not shown)

MEDIAN WORK AREA

Protect median footing and work area with temporary barrier rail (TBR) at all times. Flare the TBR away from the roadway to provide the maximum offset possible. (As shown)

Bridge end post retrofit requires the TBR to be shifted for the TC-421 lane closure. (Not shown)

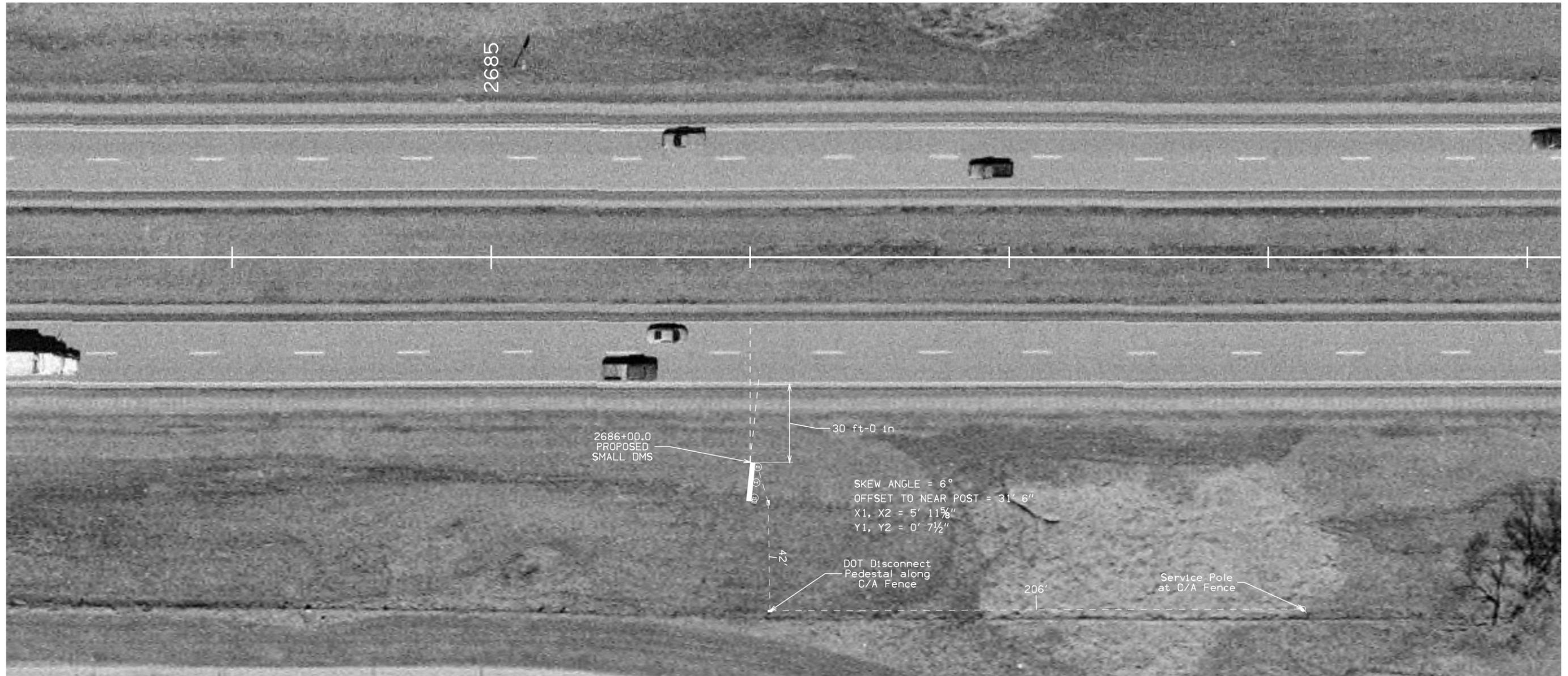
STANDARD ROAD PLANS

TC-1	RD-65
TC-402	RE-71
TC-418	RE-85
TC-420	
TC-421	
TC-433	
TC-451	

TRAFFIC CONTROL FOR DMS #34
 ON I-80 EASTBOUND
 IN JASPER COUNTY NEAR NEWTON

SAMPLE STAGING SEQUENCE

- Setup initial traffic control
- Footing construction
- Steel Post and DMS installation
- Final site clean up and seeding



GENERAL

Through traffic will be maintained on the project at all times.

Lane closures (TC-418 and TC-420) are allowed from Monday (beginning at 12:00 a.m.) to Friday (ending at 10:00 a.m.). Night work is allowed within this timeframe.

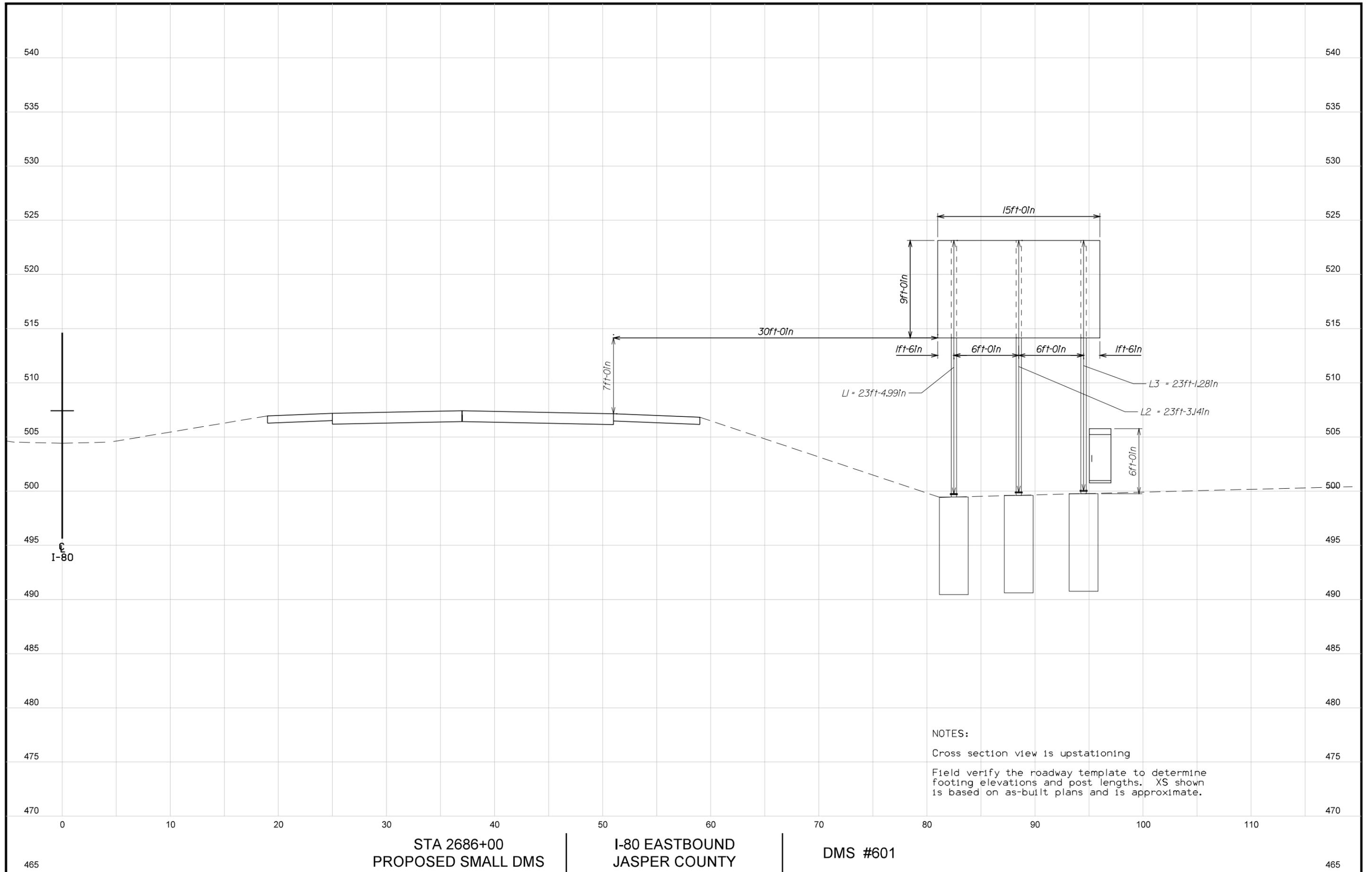
Lane closures between 6:00 a.m. and 9:00 p.m. will not be allowed between June 15, 2008 and September 1, 2008.

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.

STANDARD ROAD PLANS

- TC-1 RD-65
- TC-402
- TC-418
- TC-420
- TC-433

SITE DETAILS AND TRAFFIC CONTROL
FOR DMS #601 ON I-80 EASTBOUND
IN JASPER COUNTY NEAR NEWTON

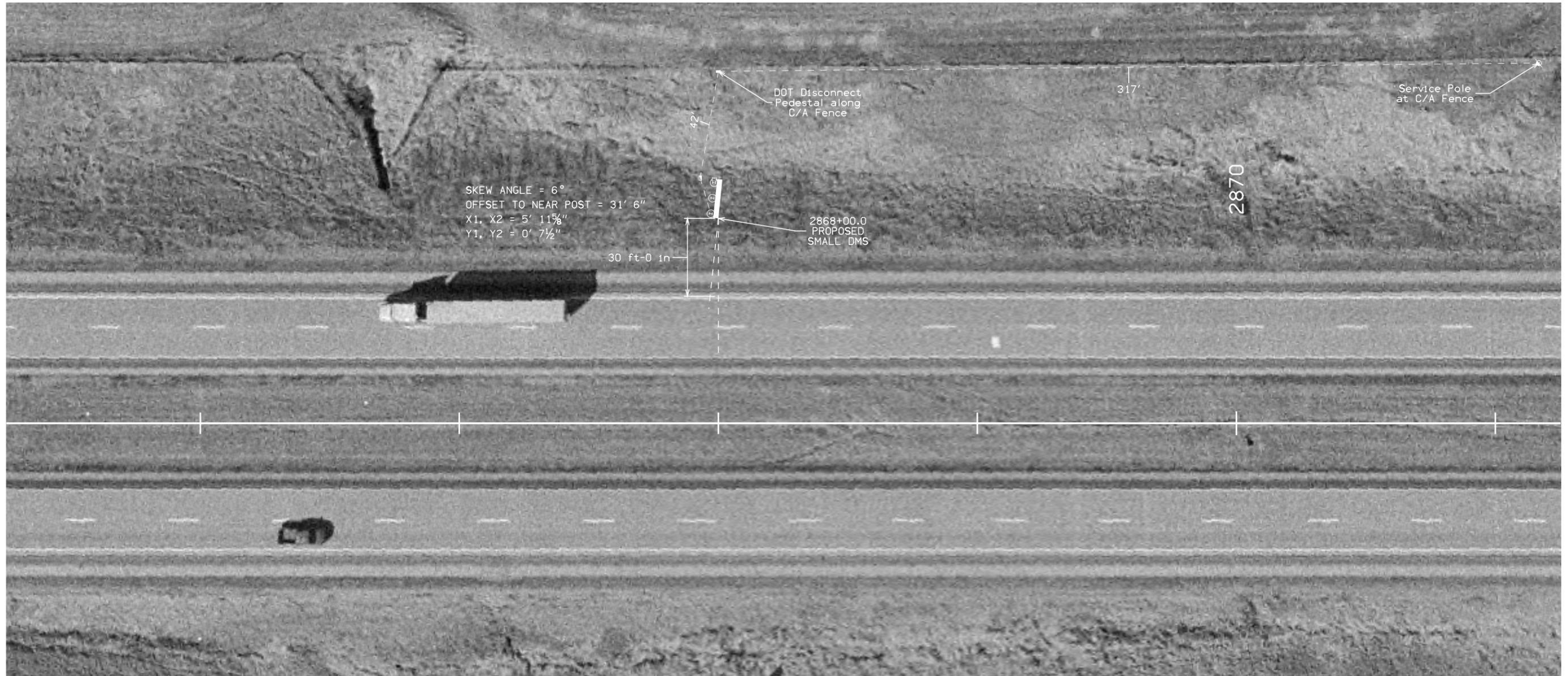


NOTES:
 Cross section view is upstationing
 Field verify the roadway template to determine footing elevations and post lengths. XS shown is based on as-built plans and is approximate.

STA 2686+00
 PROPOSED SMALL DMS | I-80 EASTBOUND
 JASPER COUNTY | DMS #601

SAMPLE STAGING SEQUENCE

- Setup initial traffic control
- Footing construction
- Steel Post and DMS installation
- Final site clean up and seeding



GENERAL

Through traffic will be maintained on the project at all times.

Lane closures (TC-418 and TC-420) are allowed from Monday (beginning at 12:00 a.m.) to Friday (ending at 10:00 a.m.). Night work is allowed within this timeframe.

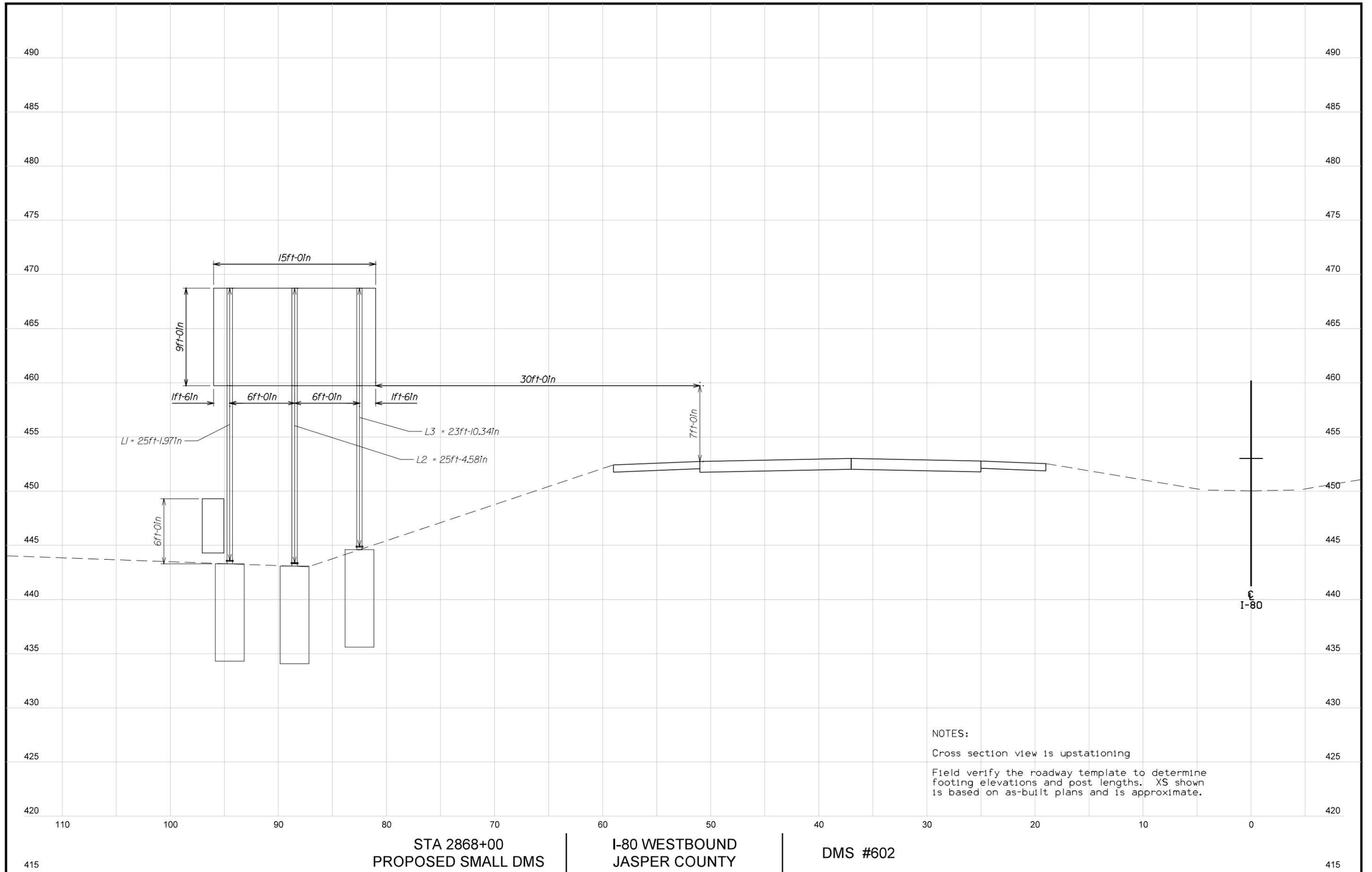
Lane closures between 6:00 a.m. and 9:00 p.m. will not be allowed between June 15, 2008 and September 1, 2008.

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.

STANDARD ROAD PLANS

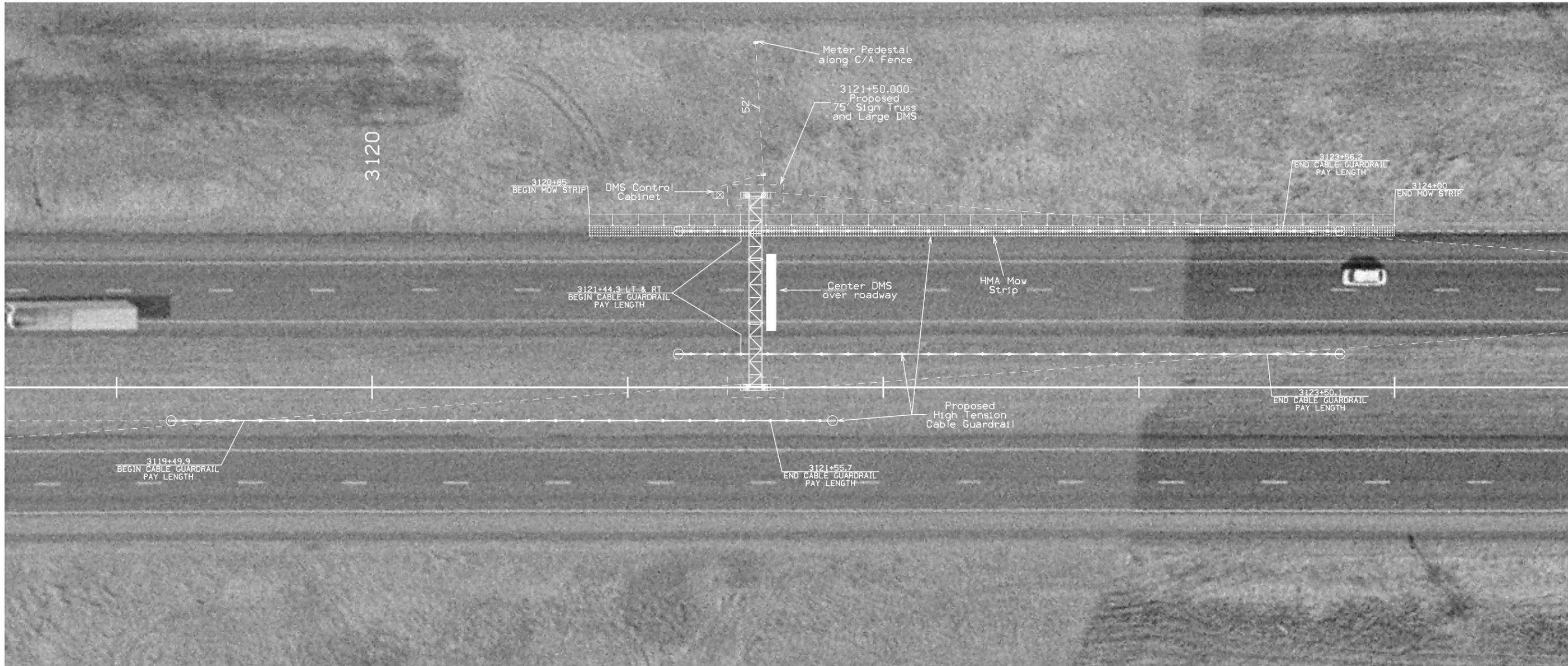
- TC-1 RD-65
- TC-402
- TC-418
- TC-420
- TC-433

**SITE DETAILS AND TRAFFIC CONTROL
FOR DMS #602 ON I-80 WESTBOUND
IN JASPER COUNTY NEAR NEWTON**

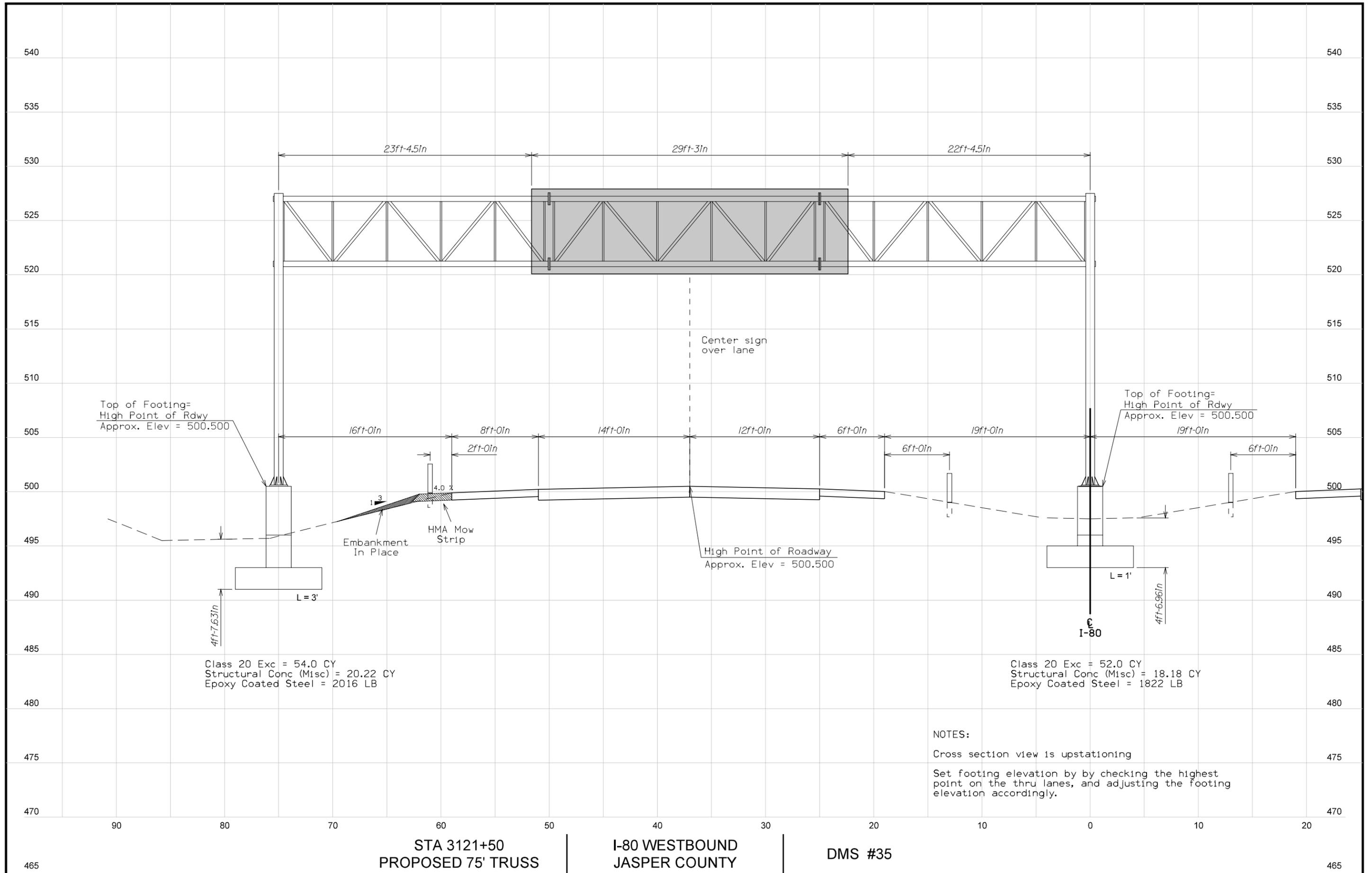


NOTES:
 Cross section view is upstationing
 Field verify the roadway template to determine footing elevations and post lengths. XS shown is based on as-built plans and is approximate.

STA 2868+00 | I-80 WESTBOUND | DMS #602
 PROPOSED SMALL DMS | JASPER COUNTY

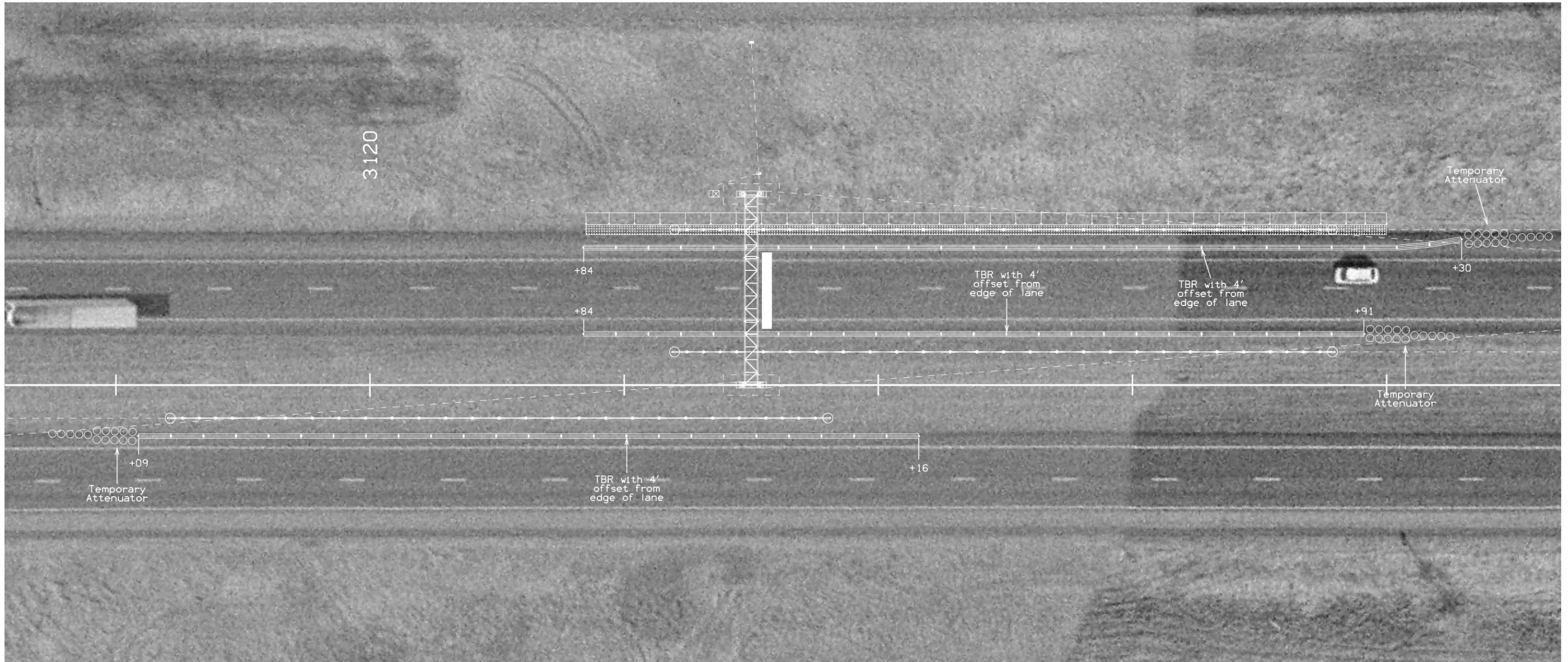


SITE DETAILS FOR DMS #35
ON I-80 WESTBOUND
IN JASPER COUNTY NEAR NEWTON



SAMPLE STAGING SEQUENCE

- Setup initial traffic control
- Guardrail removals
- Bridge end post retrofits
- Footing construction
- Guardrail grading
- Sign truss and DMS installation
- Guardrail installation
- Final site clean up and seeding



GENERAL

Through traffic will be maintained on the project at all times, except as noted:
 - a road closure (TC-451) is to be used to install the truss and DMS.

Lane closures (TC-418 & TC-420) are allowed from Monday (beginning at 12:00 a.m.) to Friday (ending at 10:00 a.m.). Night work is allowed within this timeframe.

Lane closures between 6:00 a.m. and 9:00 p.m. will not be allowed between June 15, 2008 and September 1, 2008.

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 outside footing and work area with temporary barrier rail (TBR) at all times.

MEDIAN WORK AREA

Protect median footing and work area with temporary barrier rail (TBR) at all times.

STANDARD ROAD PLANS

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

**TRAFFIC CONTROL FOR DMS #35
 ON I-80 WESTBOUND
 IN JASPER COUNTY NEAR NEWTON**

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.
- 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.

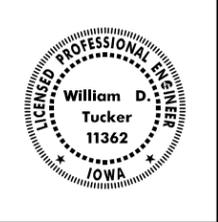
FOUNDATIONS AND ANCHOR BOLTS:

- 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 ALUMINUM AND 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
208	JASPER	70'-0	E.B. 1-80	2425+50
308	JASPER	75'-0	W.B. 1-80	3121+50

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.
	Signature: <u>William D. Tucker</u> Date: <u>3/3/08</u>
	Printed or Typed Name: <u>William D. Tucker</u>
	My license renewal date is December 31, <u>2009</u>
Pages or sheets covered by this seal: _____ SHEETS V.01 THRU V.07	

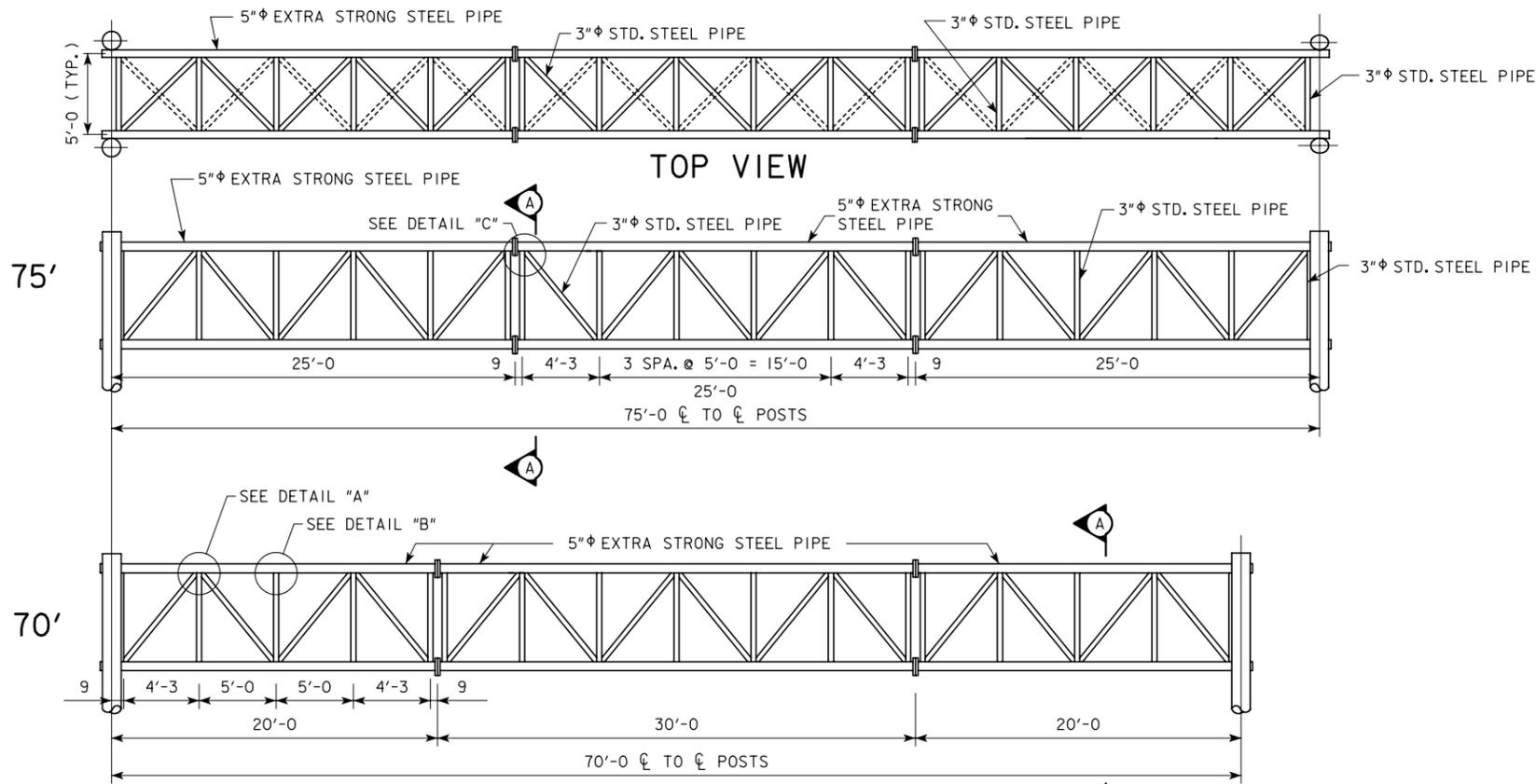
DESIGN FOR
**GALVANIZED OVERHEAD SIGN TRUSS
 WITH GALVANIZED STEEL SUPPORTS**

INDEX AND NOTES

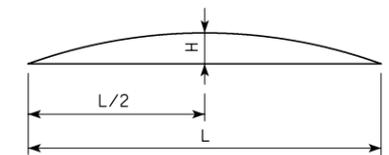
FEBRUARY, 2008

JASPER COUNTY

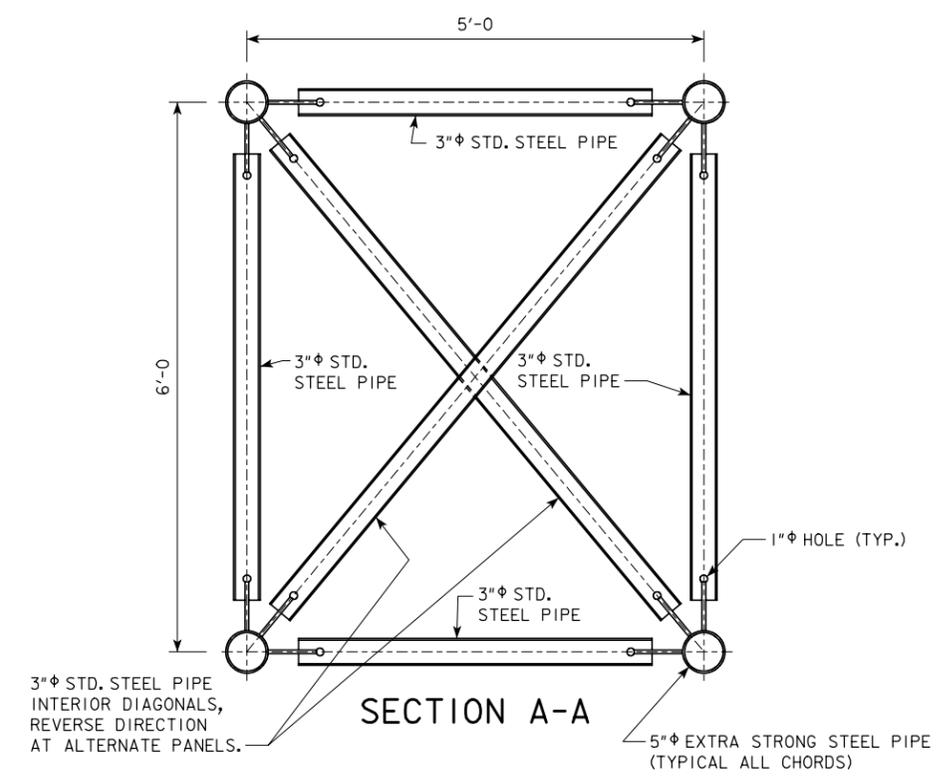
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION
 DESIGN SHEET NO. 1 OF 5 FILE NO. 30313 DESIGN NO. SEE TABLE



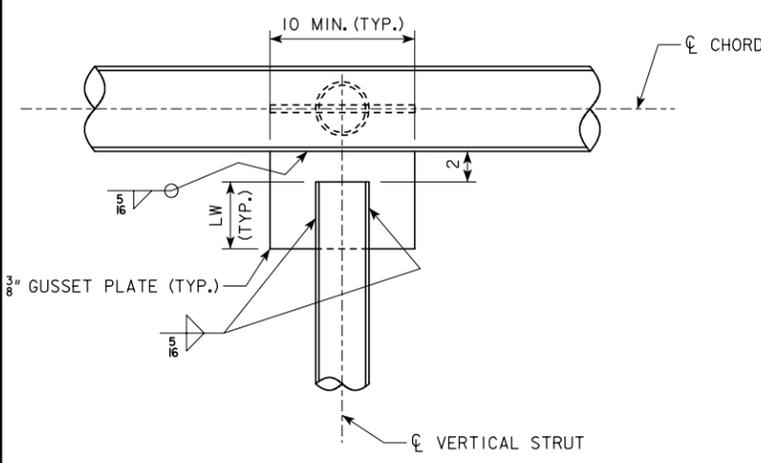
SPAN L	CAMBER H
75'	1 7/8
70'	1 3/8



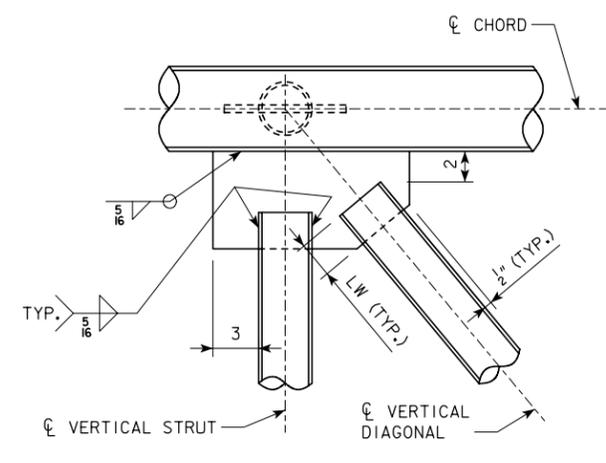
CAMBER DIAGRAM



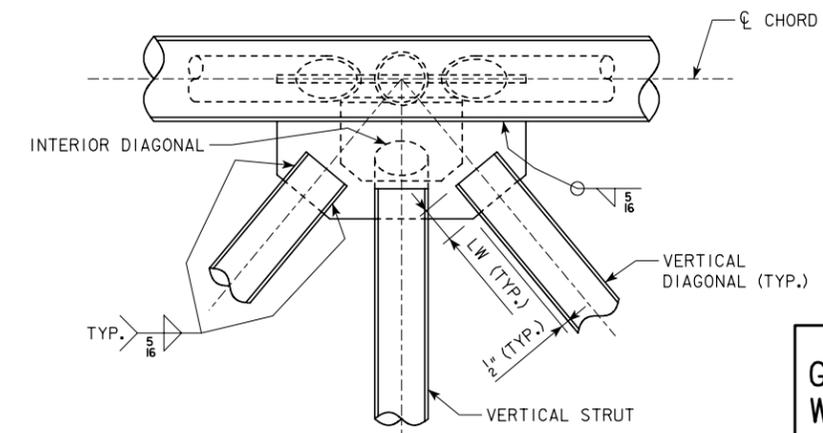
SECTION A-A



DETAIL "B"



DETAIL "C"

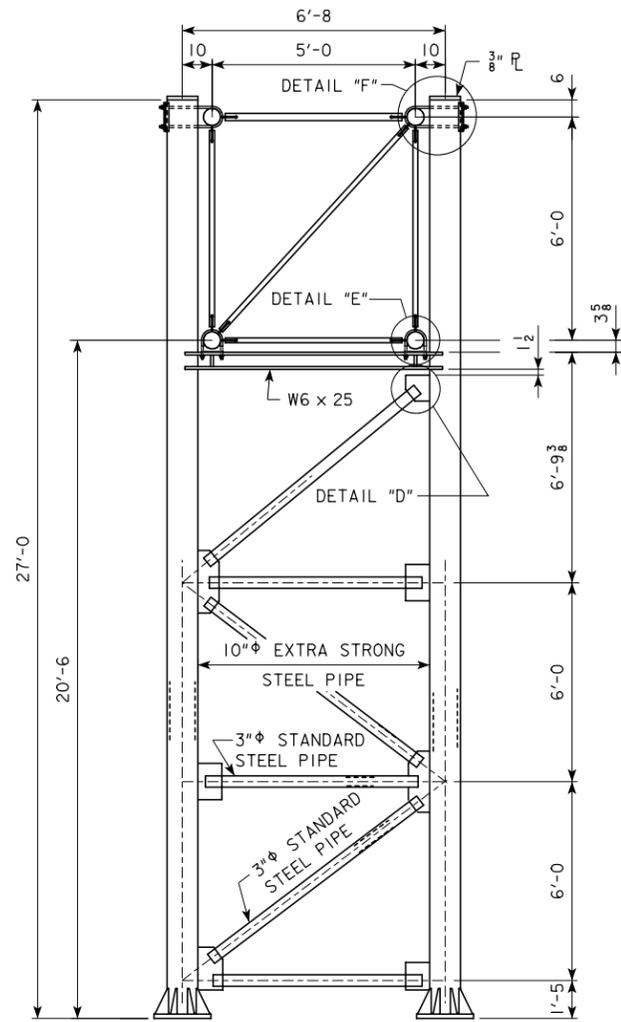


DETAIL "A"
FOR 3" STD. STEEL PIPE
LW (MIN.) = 3 1/2"

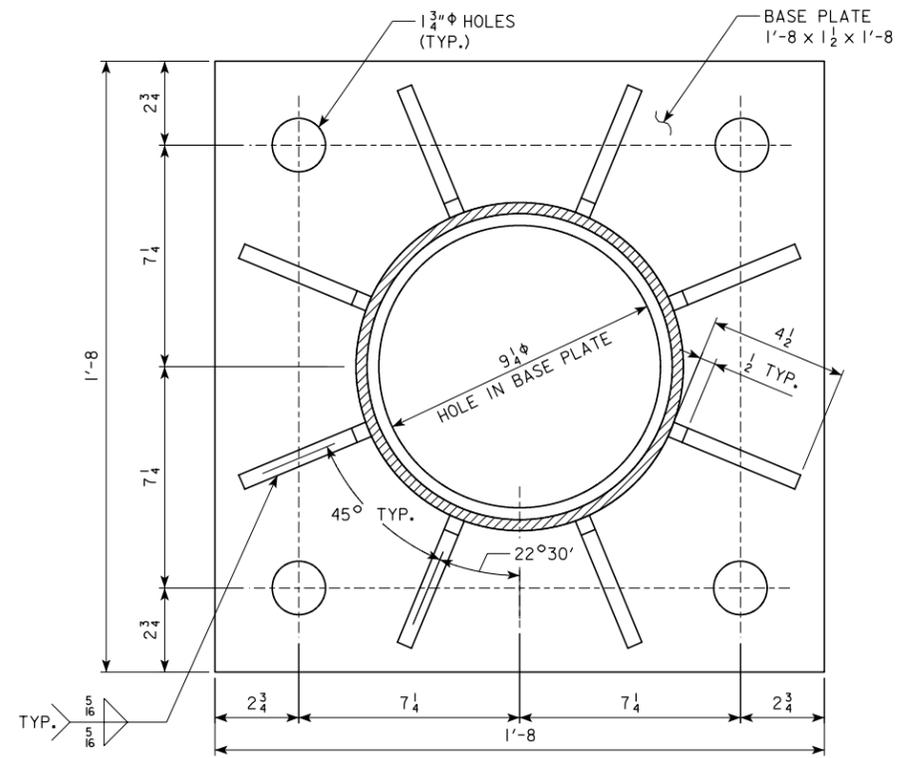
DESIGN #	COUNTY	TRUSS LENGTH	LOCATION	STATION
208	JASPER	70'-0	E.B. 1-80	2425+50
308	JASPER	75'-0	W.B. 1-80	3121+50

DESIGN FOR
**GALVANIZED OVERHEAD SIGN TRUSS
WITH GALVANIZED STEEL SUPPORTS**

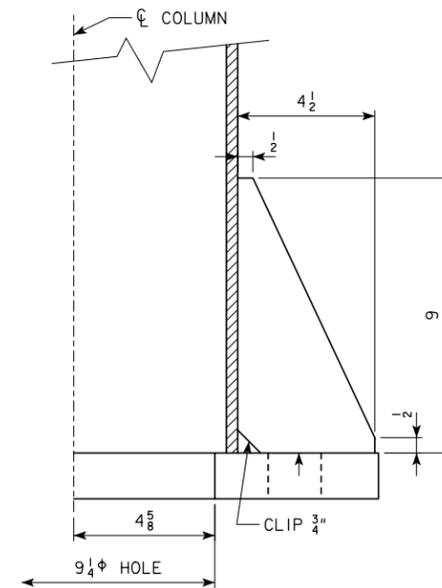
ELEVATION VIEWS
JASPER COUNTY
FEBRUARY, 2008
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION
DESIGN SHEET NO. 2 OF 5 FILE NO. 30313 DESIGN NO. SEE TABLE



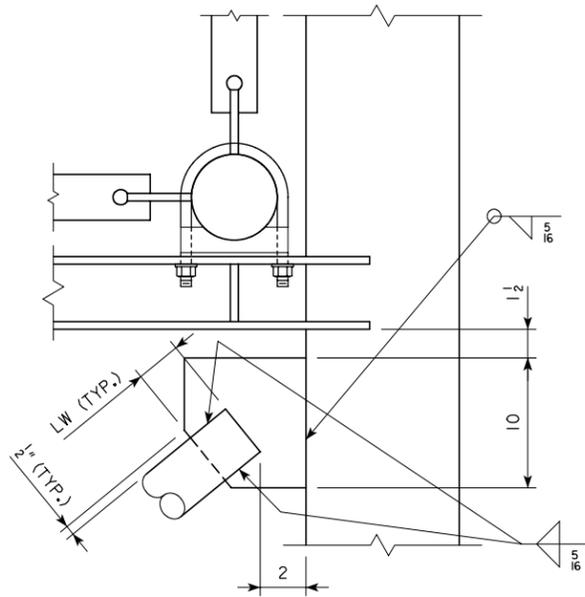
END VIEW OF TRUSS SUPPORT



BASE PLATE PLAN

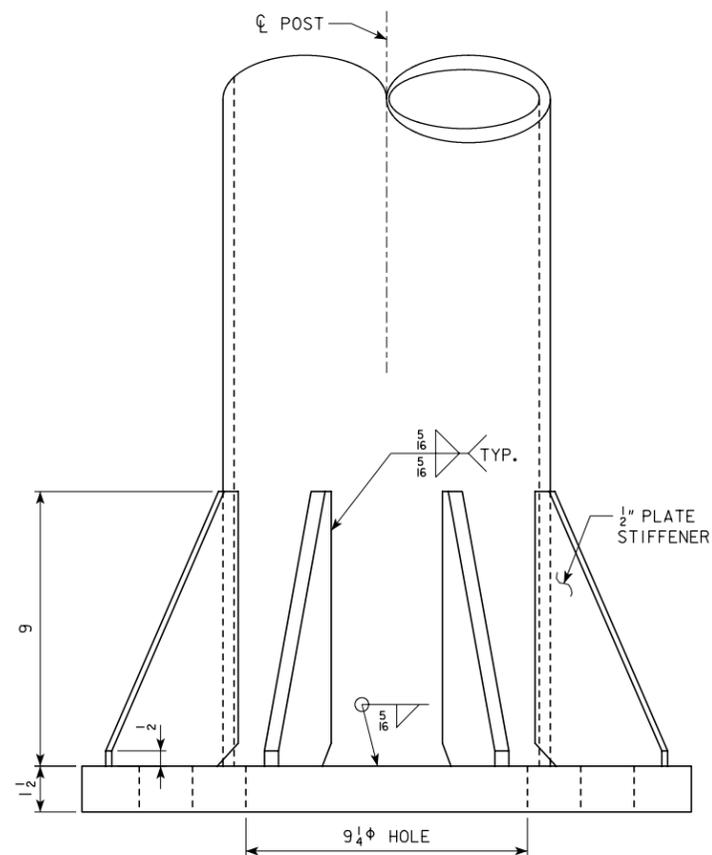


BASE CROSS-SECTION



DETAIL "D"

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



BASE SIDE VIEW

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

DESIGN #	COUNTY	TRUSS LENGTH	LOCATION	STATION
208	JASPER	70'-0	E.B. 1-80	2425+50
308	JASPER	75'-0	W.B. 1-80	3121+50

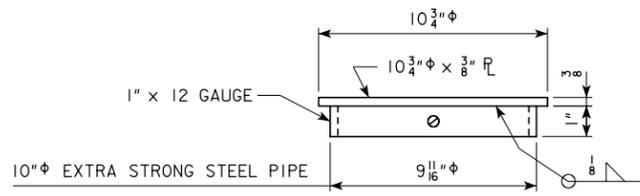
DESIGN FOR
GALVANIZED OVERHEAD SIGN TRUSS
WITH GALVANIZED STEEL SUPPORTS

BASE PLATE DETAILS

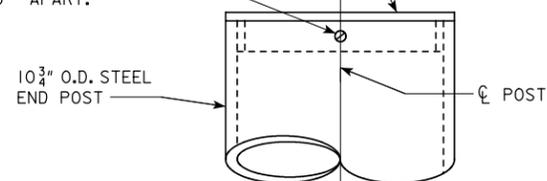
FEBRUARY, 2008

JASPER COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION
DESIGN SHEET NO. 3 OF 5 FILE NO. 30313 DESIGN NO. SEE TABLE

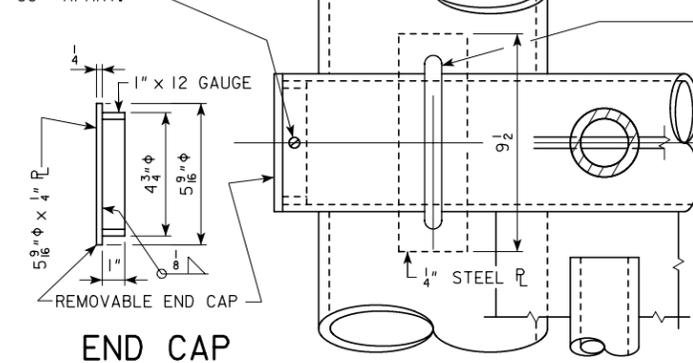


DRILL AND TAP FOR FOUR 1/4 inch diameter stainless steel socket head set screws, 90 degrees apart.



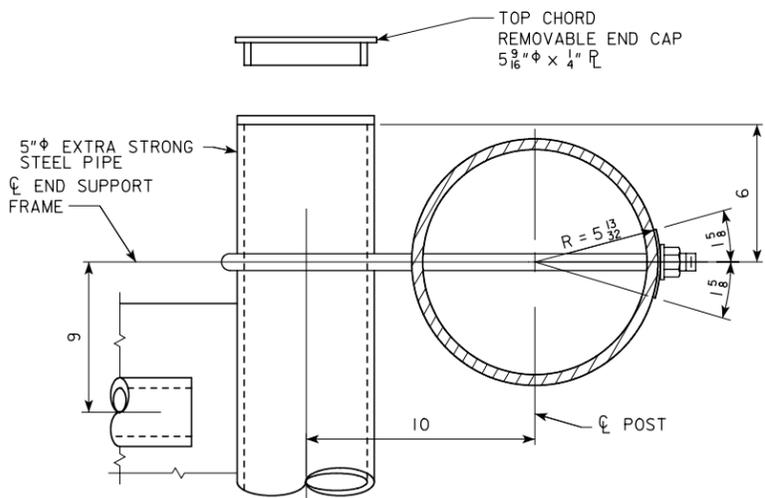
END POST TOP DETAIL

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

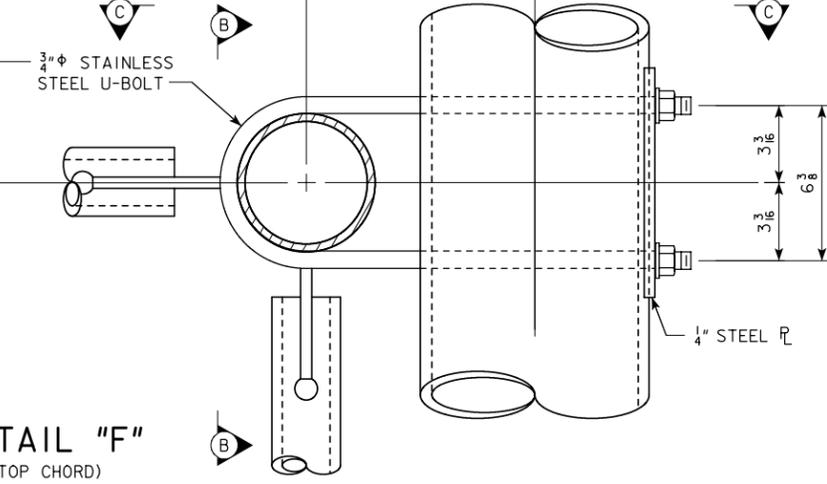


END CAP

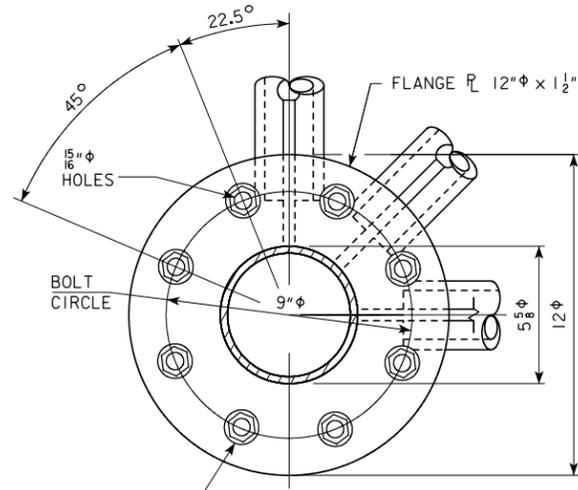
VIEW B-B



VIEW C-C



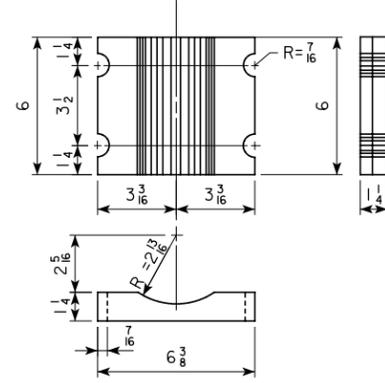
DETAIL "F" (TOP CHORD)



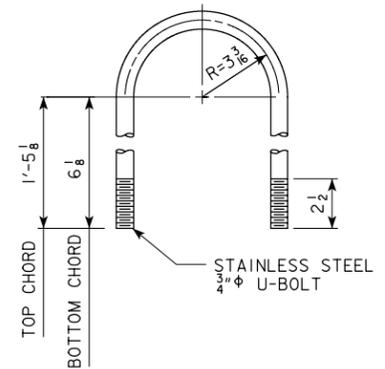
CHORD SPLICE

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.

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

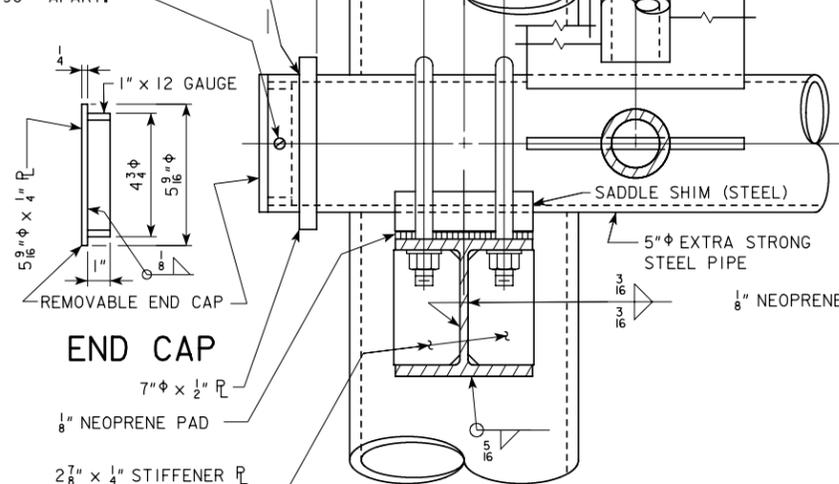


SADDLE SHIM DETAIL



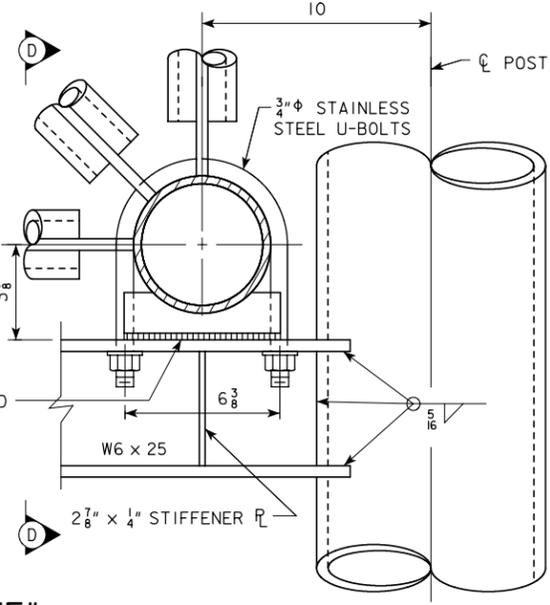
STAINLESS STEEL U-BOLT DETAIL

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



END CAP

VIEW D-D

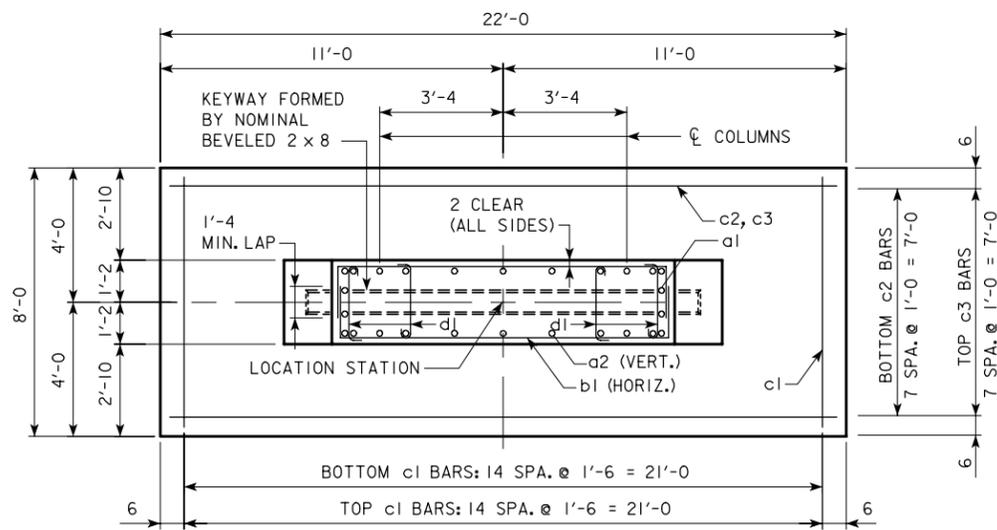


DETAIL "E" (BOTTOM CHORD)

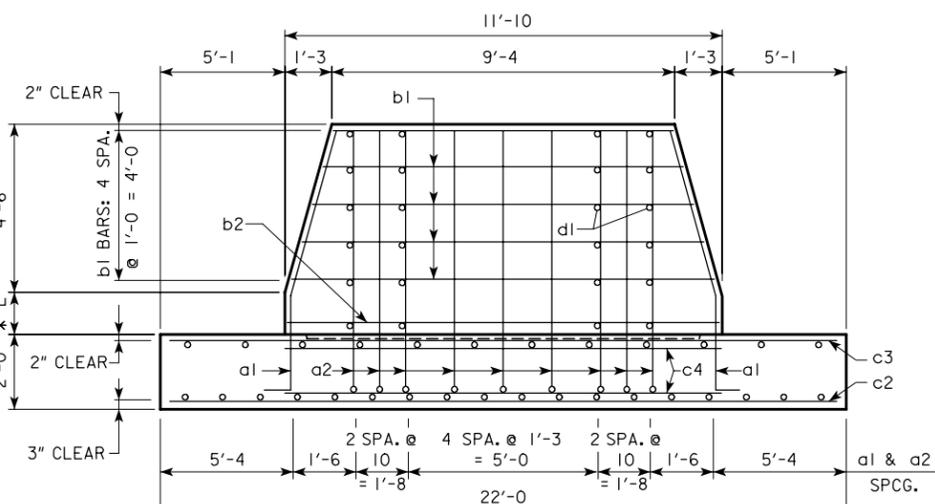
NOTE: SEE DESIGN SHEET 3 FOR LOCATION OF DETAILS "E" & "F".

DESIGN #	COUNTY	TRUSS LENGTH	LOCATION	STATION
208	JASPER	70'-0"	E.B. 1-80	2425+50
308	JASPER	75'-0"	W.B. 1-80	3121+50

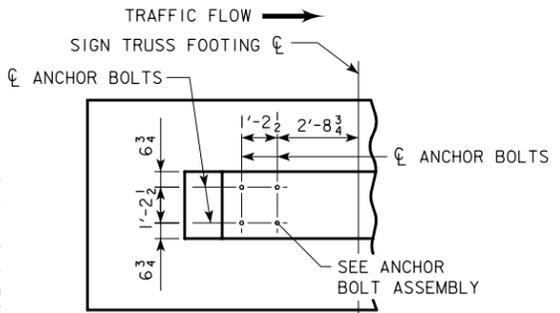
DESIGN FOR
GALVANIZED OVERHEAD SIGN TRUSS WITH GALVANIZED STEEL SUPPORTS
TRUSS SUPPORT & CHORD SPLICE DETAILS
 FEBRUARY, 2008
JASPER COUNTY
 IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION
 DESIGN SHEET NO. 4 OF 5 FILE NO. 30313 DESIGN NO. SEE TABLE



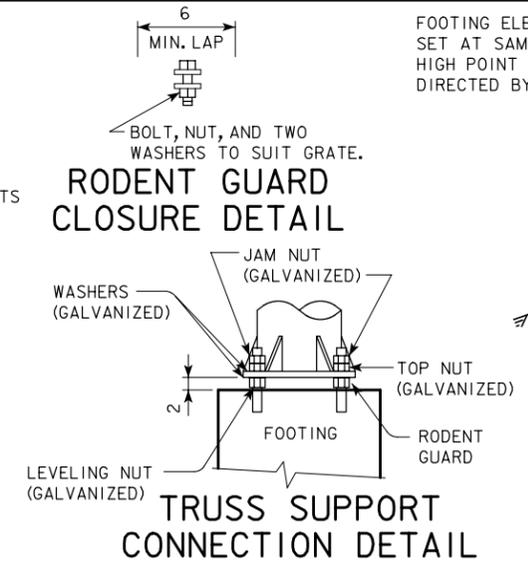
PLAN
(ANCHOR BOLT ASSEMBLIES NOT SHOWN.)



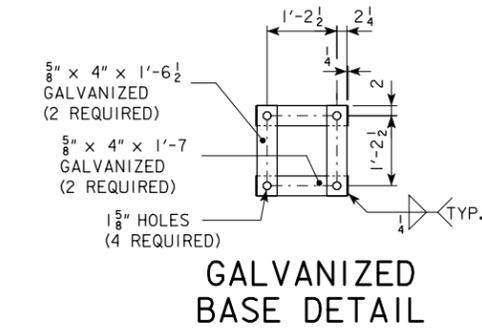
SIDE ELEVATION
(ANCHOR BOLT ASSEMBLIES NOT SHOWN.)
* 'L' SHALL NOT EXCEED 6'-0"



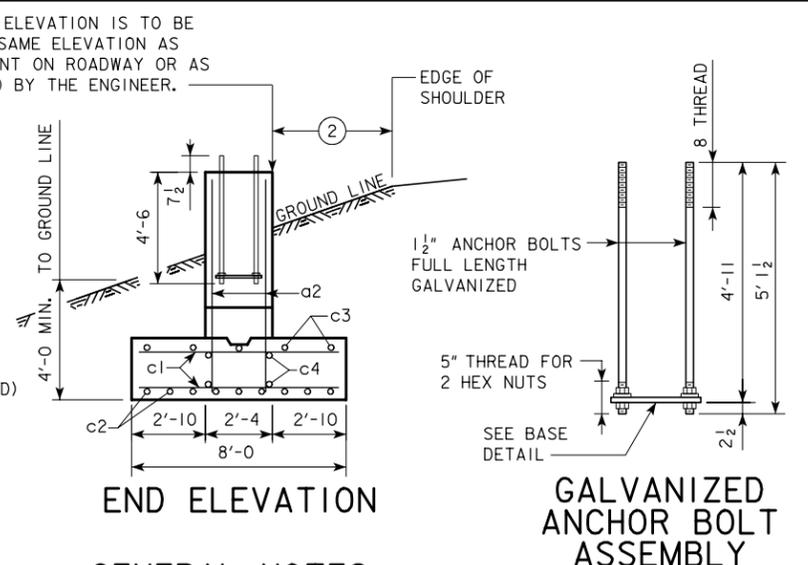
ANCHOR BOLT PLACEMENT DETAILS



TRUSS SUPPORT CONNECTION DETAIL



GALVANIZED BASE DETAIL



END ELEVATION
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.

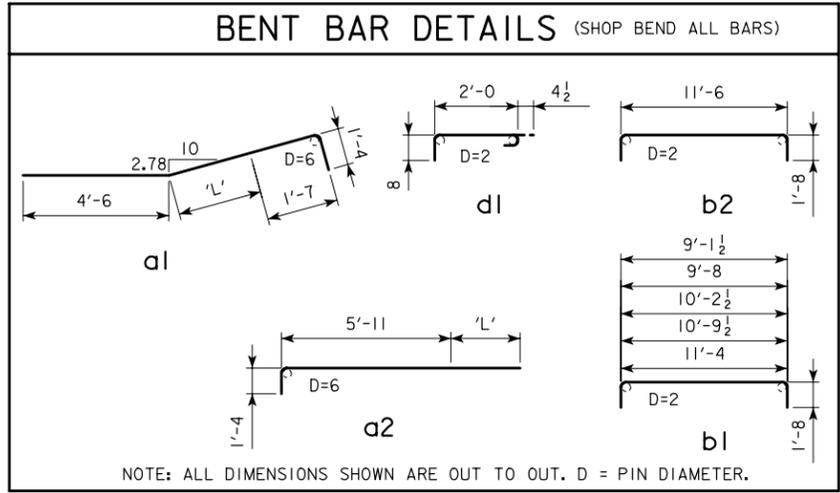
A RODENT GUARD SHALL BE PLACED BETWEEN THE CONCRETE FOOTING AND THE BASE PLATE, SEE MATERIALS I.M. 443.01.

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, AND RODENT GUARDS 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.

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

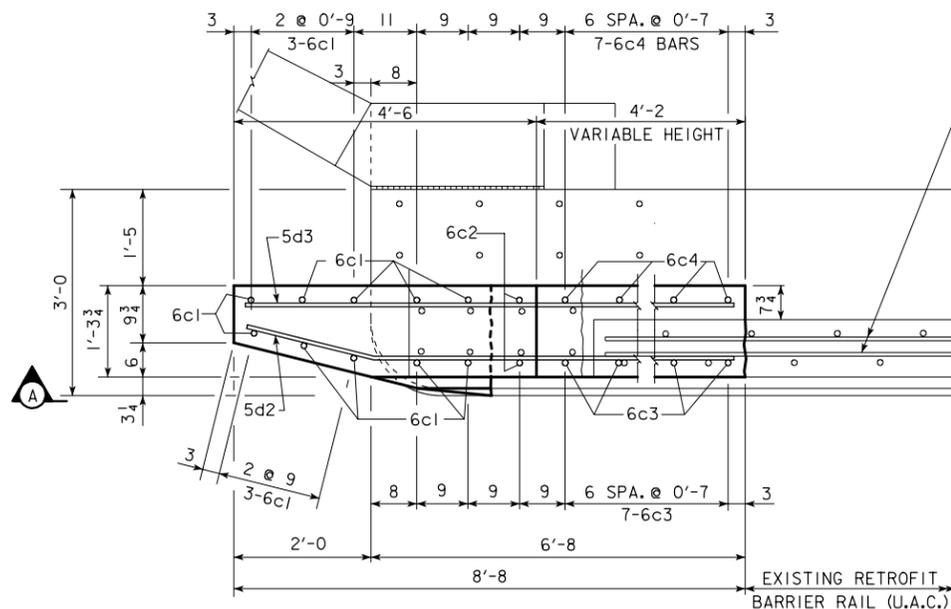


REINFORCING BAR LIST - EPOXY COATED (ONE FOOTING)									
	SIZE	SHAPE	'L' = 0			EACH 1'-0 OF 'L'			
			NO.	LENGTH	WEIGHT	NO.	LENGTH	WEIGHT	
a1	8		8	7'-5	158	SEE DETAIL	8	1'-0 (A)	21
a2	8		18	7'-3	348	SEE DETAIL	18	1'-0 (A)	48
b1	4		10	Varies	91	1'-0	---	---	---
b2	4		---	---	---	---	2 (B)	14'-10	20
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			

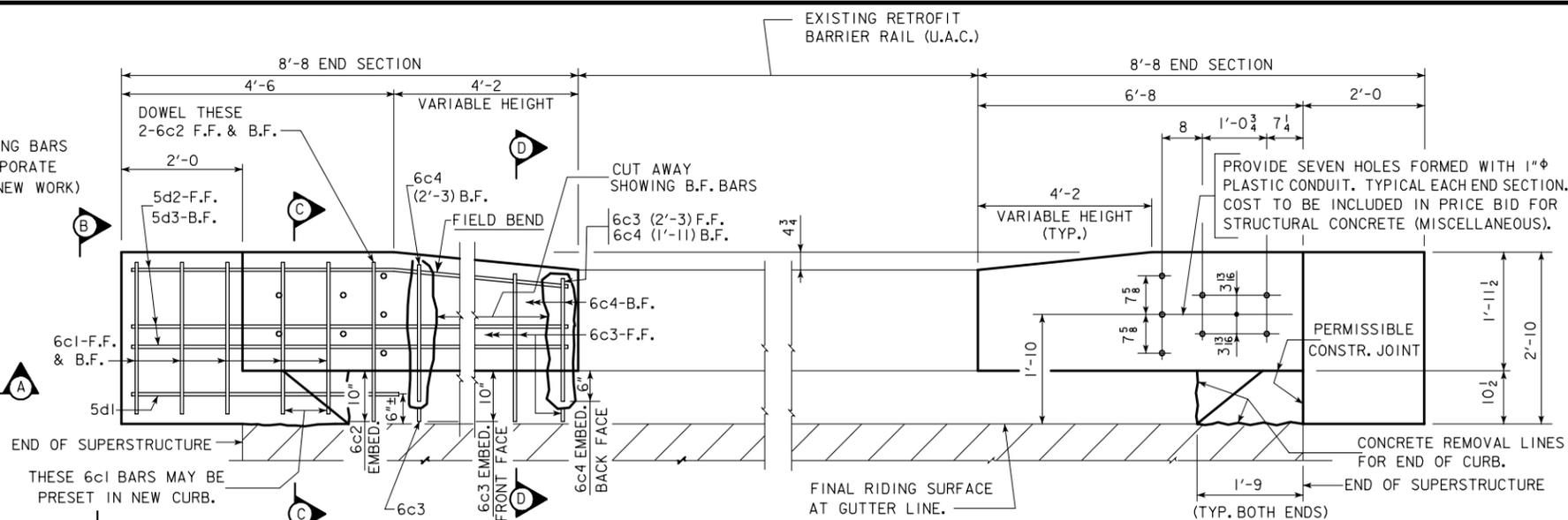
(A) ADDITIONAL LENGTH TO BAR a1 OR a2 FOR 'L' > 0 (C) FOUR IN EACH 1'-0 OF 'L'.
(B) TWO IN EACH 1'-0 OF 'L'.

DESIGN #	COUNTY	TRUSS LENGTH	LOCATION	STATION
208	JASPER	70'-0	E.B. 1-80	2425+50
308	JASPER	75'-0	W.B. 1-80	3121+50

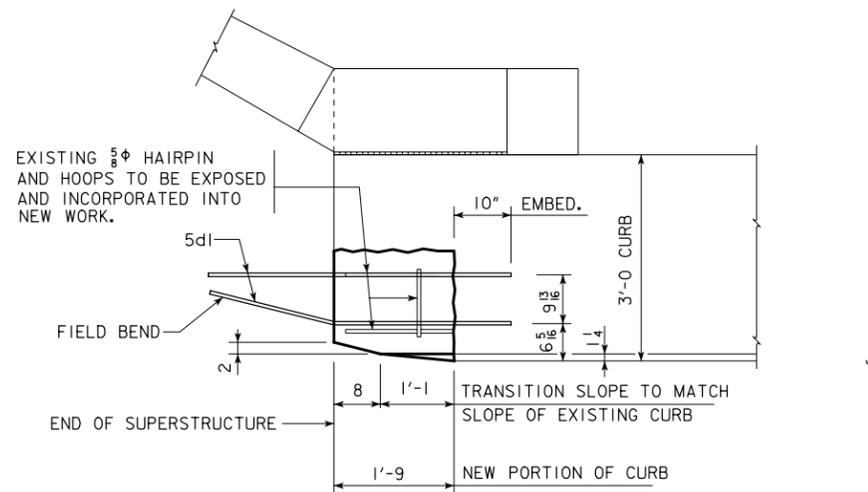
DESIGN FOR
GALVANIZED OVERHEAD SIGN TRUSS WITH GALVANIZED STEEL SUPPORTS
FOOTING DETAILS
FEBRUARY, 2008
JASPER COUNTY
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION
DESIGN SHEET NO. 5 OF 5 FILE NO. 30313 DESIGN NO. SEE TABLE



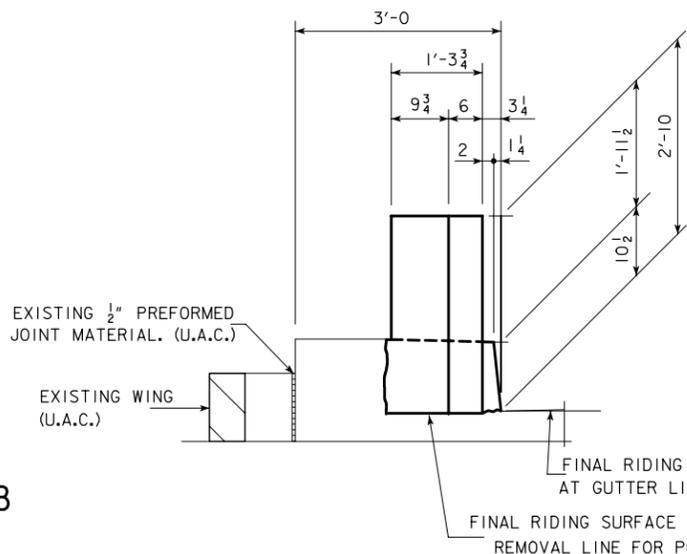
PLAN VIEW OF END SECTION



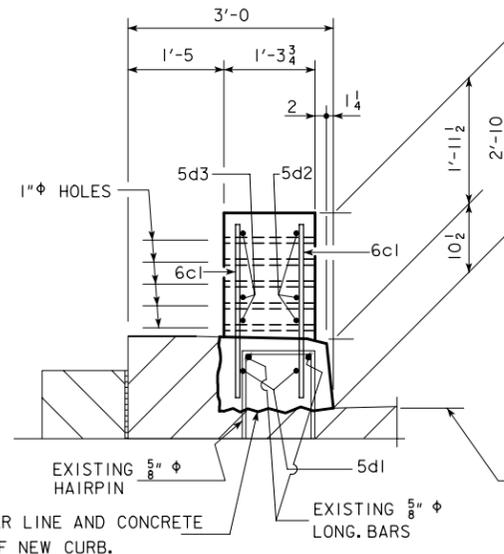
LONGITUDINAL VIEW A-A



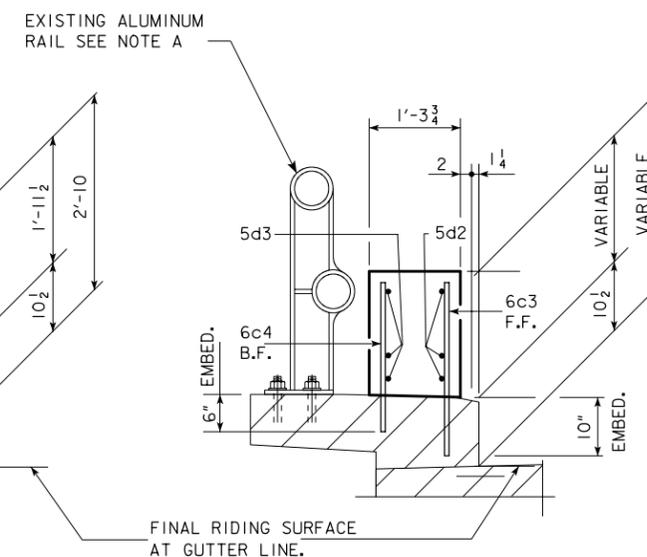
PLAN VIEW OF NEW PORTION OF CURB



END VIEW B-B

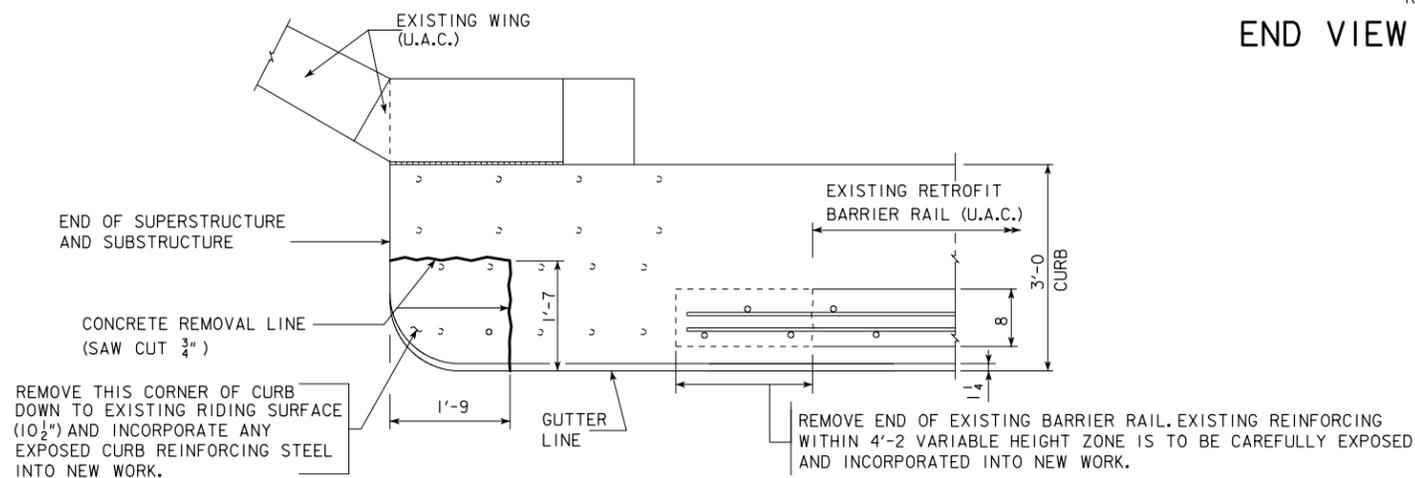


SECTION C-C



SECTION D-D

NOTE A:
 EXISTING RAIL IS TO BE REMOVED. ANCHOR BOLTS WHICH ARE NOT STAINLESS STEEL SHALL BE CUT OFF FLUSH WITH OR SLIGHTLY BELOW CURB SURFACE AND THE REMAINING EXPOSED ENDS PAINTED WITH 2 COATS OF ZINC RICH PAINT. IF THE EXISTING ANCHOR BOLTS ARE STAINLESS STEEL THEY MAY BE LEFT IN POSITION AT THE CONTRACTOR'S OPTION SUBJECT TO THE APPROVAL OF THE ENGINEER.



PART PLAN VIEW AT CORNERS OF BRIDGE
 (SHOWING EXISTING CONDITIONS AND REMOVAL DETAILS)

DESIGN FOR REPAIRS TO A 24° SKEW (R.A.)
154'-0" x 30'-0" CONTINUOUS I-BEAM BRIDGE
 47'-0" END SPANS 60'-0" CENTER SPAN
END SECTION DETAILS
 STA. 2426+55.73 (I-80) FEBRUARY, 2008
JASPER COUNTY
 IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION
 DESIGN SHEET NO. 2 OF 2 FILE NO. 30313 DESIGN NO. 408