

DYNAMIC MESSAGE SIGNS
 STP-A-000-S(351)--22-00

STATEWIDE

LETTING DATE
 12-18-07

STANDARD ROAD PLANS					
					105-4
					12-03-96
The following Standard Road Plans shall be considered applicable to construction work on this project.					
Number	Date	Number	Date	Number	Date
TC-01	10/17/2006				
TC-402	10/16/2007				
TC-451	10/16/2007				



Iowa Department of Transportation

Highway Division

PLANS OF PROPOSED IMPROVEMENT ON THE

INTERSTATE ROAD SYSTEM

STATEWIDE DYNAMIC MESSAGE SIGNS

Various Locations

SCALES: As Noted

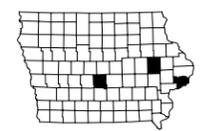
The Iowa Department of Transportation Standard Specifications for Highway and Bridge Construction, Series 2001, plus applicable General Supplemental Specifications, Developmental Specifications, Supplemental Specifications and Special Provisions, shall apply to construction work on this project.

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
18
PROJECT IDENTIFICATION NUMBER
05-00-000-010
PROJECT NUMBER
STP-A-000-S(351)--22-00
R.O.W. PROJECT NUMBER

INDEX OF SHEETS	
105-3	
10-18-05	
No.	Description
A.01	Title Sheet
A.02-A.04	Location Maps
B.01-B.06	Typical Details
C.01	Estimate of Quantities, Tabulations
N.01-N.03	Location Details
V.01-V.04	Sign Truss Details

INDEX OF SEALS		
SHEET NO.	NAME	TYPE
A.01	JEREMEY J VORTHERMS	Primary Signature Block
V.01	KENNETH A DUNKER	STRUCTURAL

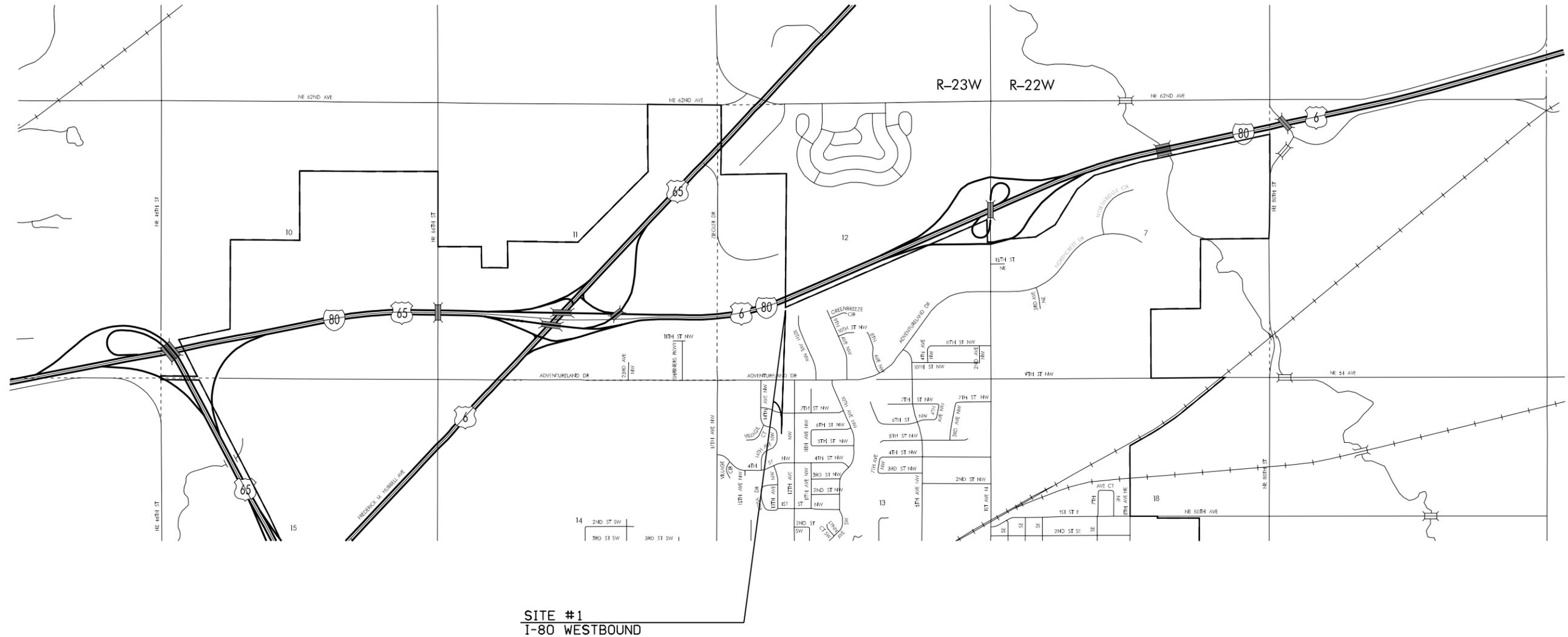
I hereby certify that this plan was prepared by me or under my direct personal supervision and that I am a duly licensed Professional Engineer under the laws of the State of Iowa.

Signature: *Jeremy J. Vorthems* Date: 10/1/2007

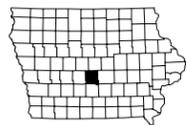
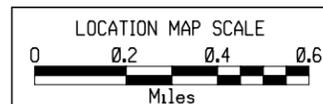
Printed or Typed Name: _____

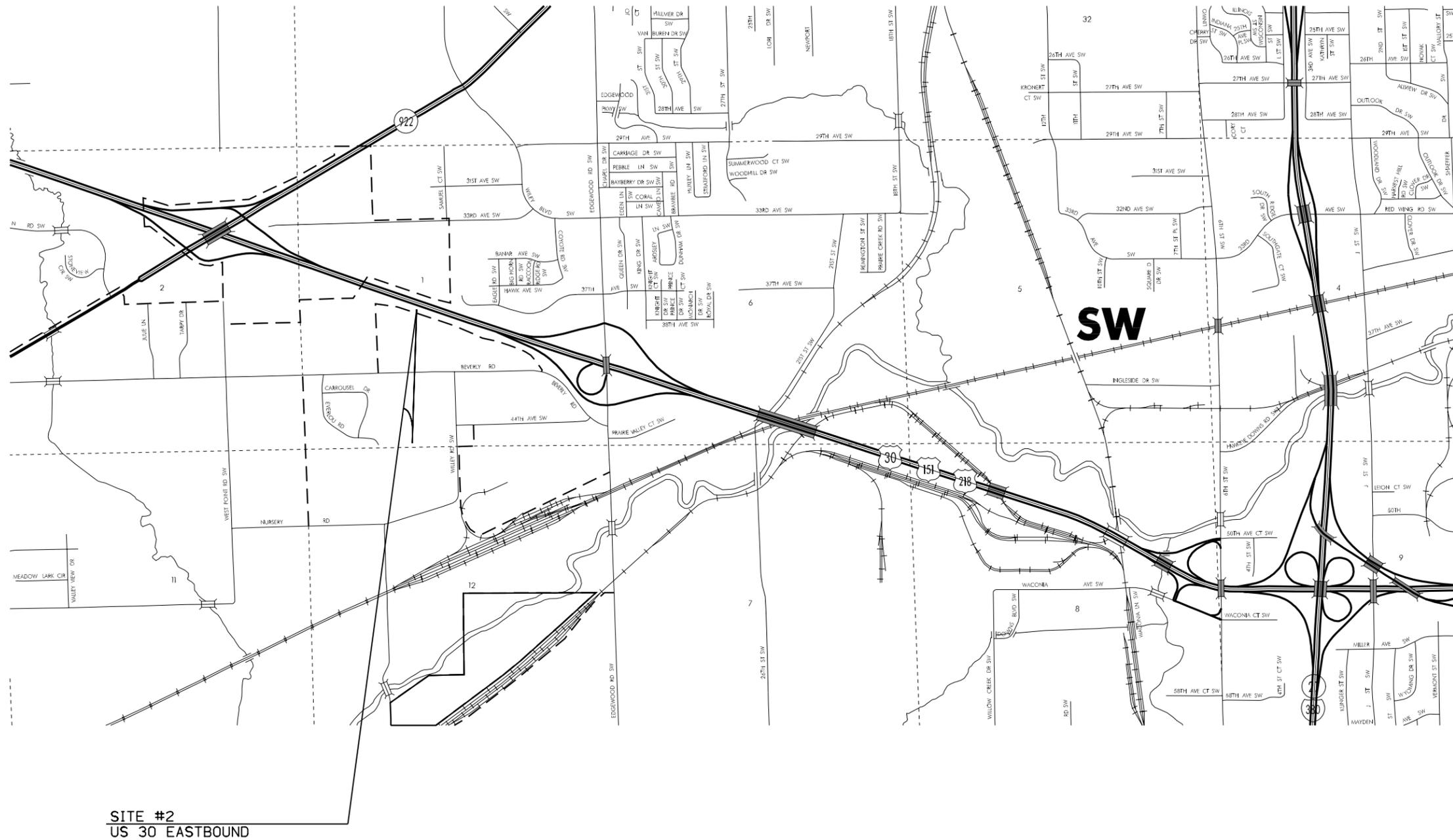
My license renewal date is December 31, 20__07__

Pages or sheets covered by this seal: A.01-A.04, B.01-B.06, C.01, N.01-N.03

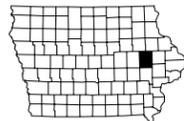
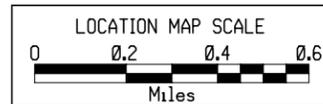


Altoona
Polk County





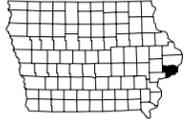
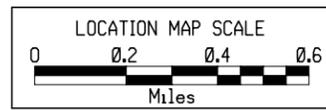
Cedar Rapids
Linn County

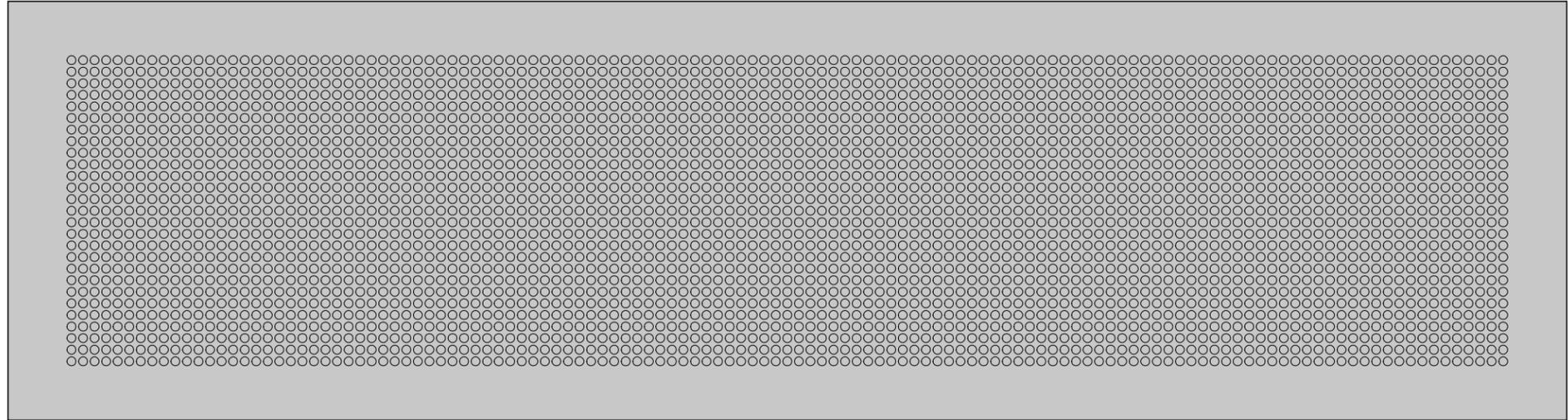




SITE #3
I-74 SOUTHBOUND

Davenport
Scott County





DIMENSIONAL INFORMATION

Site #1
I-80 westbound near Altoona

Manufacturer: Skyline
Model Number: VMSLED-W-3-18F-27X125-I
Height: 8'6"
Width: 30'8"
Depth: 3'9"
Weight: 4200 lbs

Site #2
US 30 eastbound near Edgewood Road in Cedar Rapids.

Manufacturer: Daktronics
Model Number: VF-1000-27X125-18-W
Height: 7'10"
Width: 29'3"
Depth: 3'11"
Weight: 3950 lbs

Site #3
I-74 eastbound south of Spruce Hills Dr in Davenport.

Manufacturer: Daktronics
Model Number: VF-1000-27X125-18-W
Height: 7'10"
Width: 29'3"
Depth: 3'11"
Weight: 3950 lbs

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.

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.

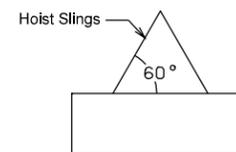
Before beginning, make sure that the crane is rated to lift the weight of the sign.

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 Signs ****

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 or support brackets on the top of the sign using the appropriate spreader bars and/or devices. The hoisting sling's length depends on the sign size. When hoisted, the slings should have a 60° inside angle with the sign.

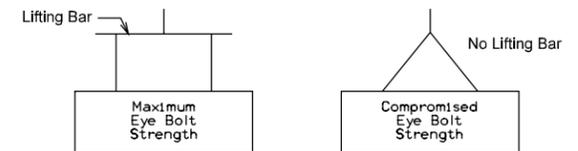


4. Lift the sign into position.

**** 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.

**DYNAMIC MESSAGE SIGN
GENERAL INFORMATION**

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.

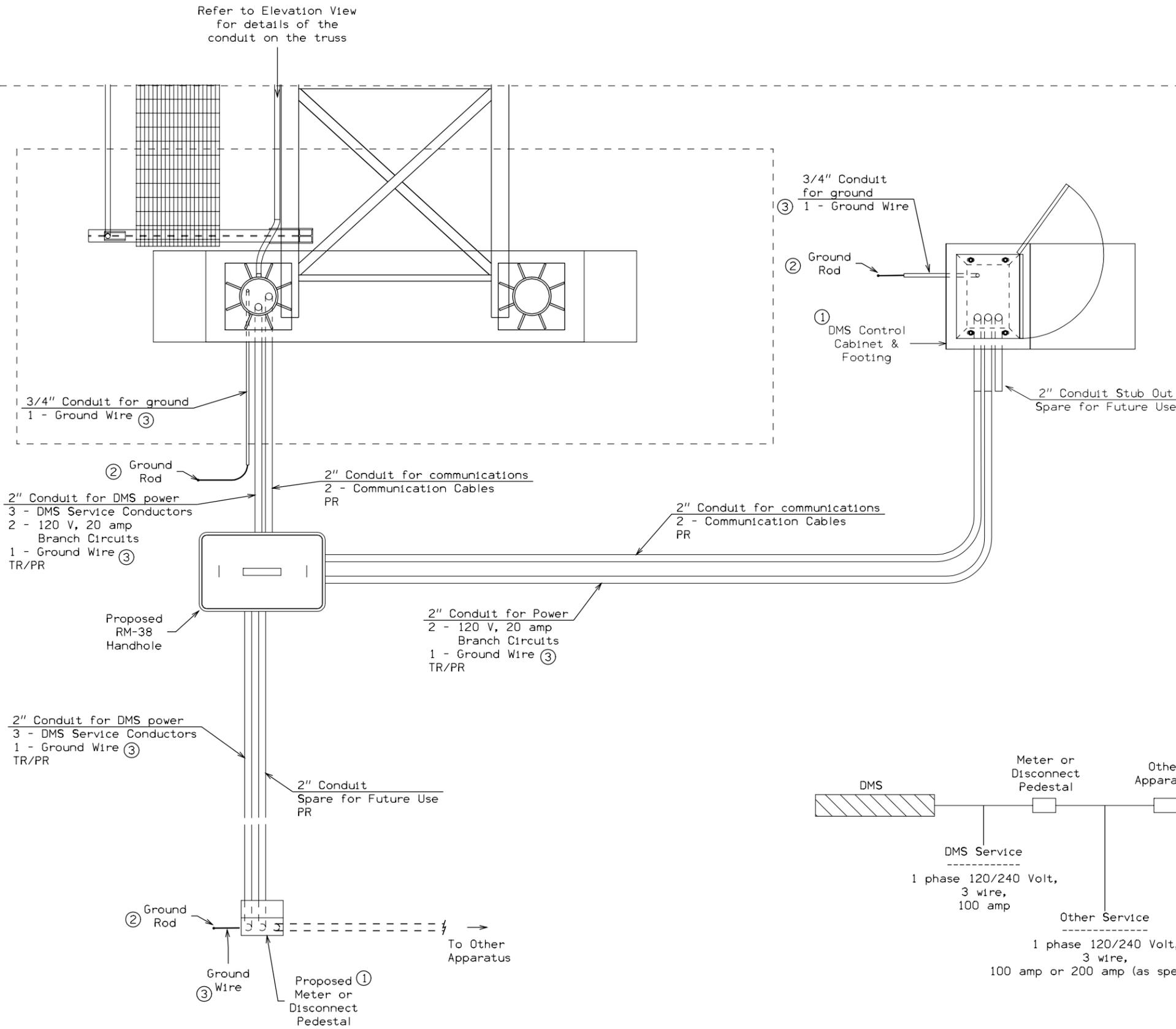
The DMS power supply wires, run from the disconnect pedestal to the DMS power supply, shall NOT pass through the DMS control cabinet.

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.

③ The grounding electrode conductor (Ground Wire) shall meet the following requirements:

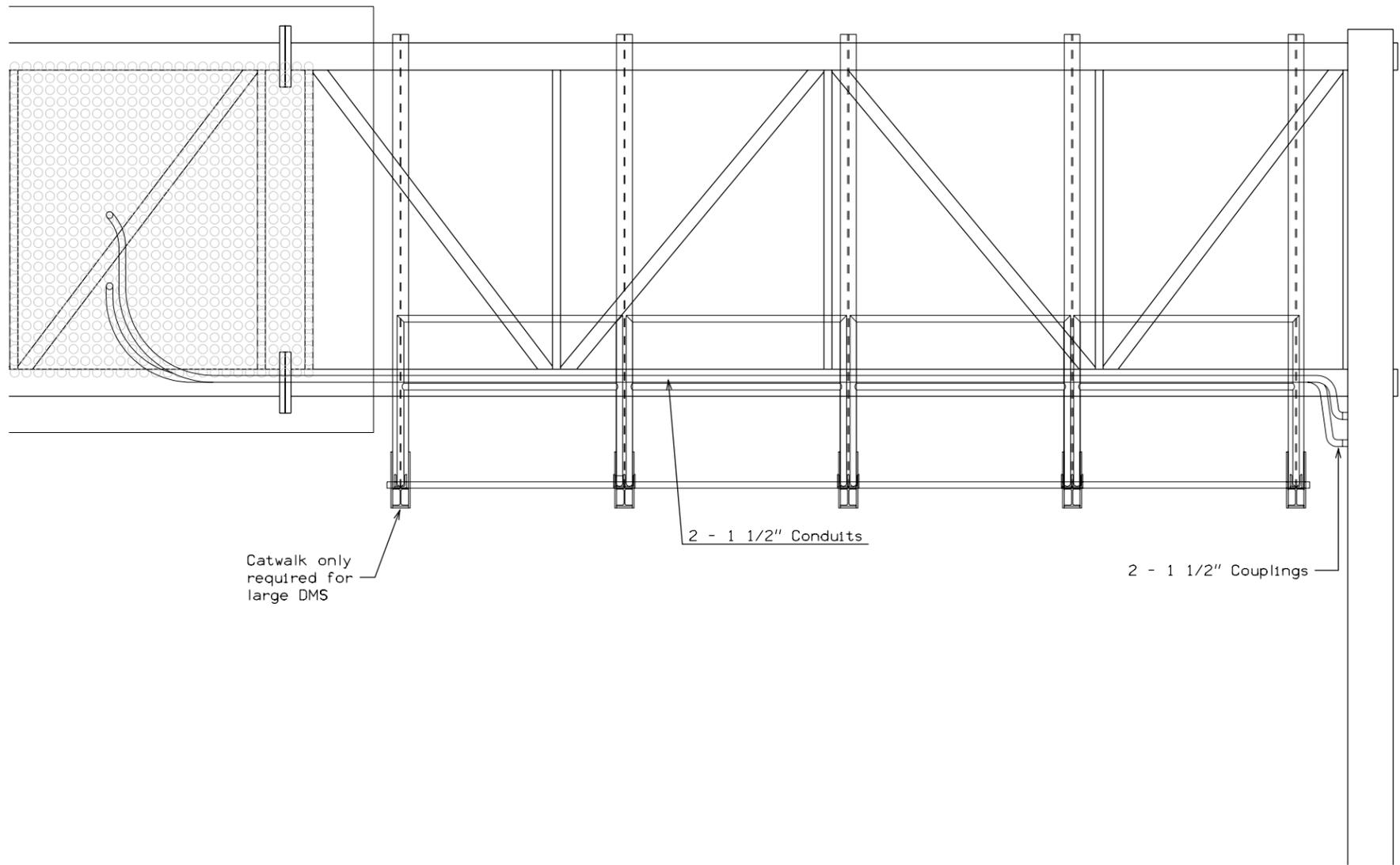
- it shall be copper and of the gauge appropriately matched to the largest service conductor,
- it shall be connected to the ground rod with a clamp suitable for direct burial (if applicable),
- it shall be bonded to the control cabinet ground nut (if applicable),
- it shall be bonded to the truss leg ground nut (if applicable), and
- it shall be connected to the neutral bus in the pedestal (if applicable).



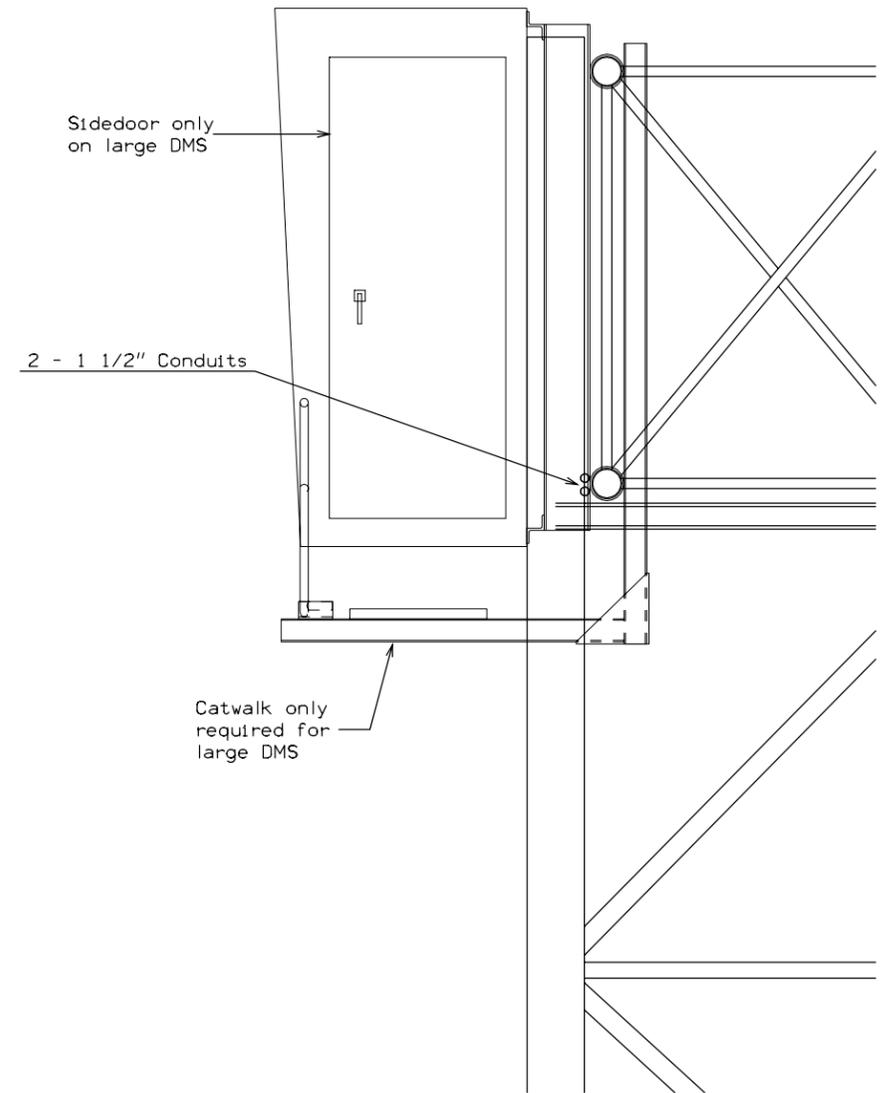
PLAN VIEW

POWER SERVICE SCHEMATIC

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



ELEVATION VIEW



SIDE VIEW

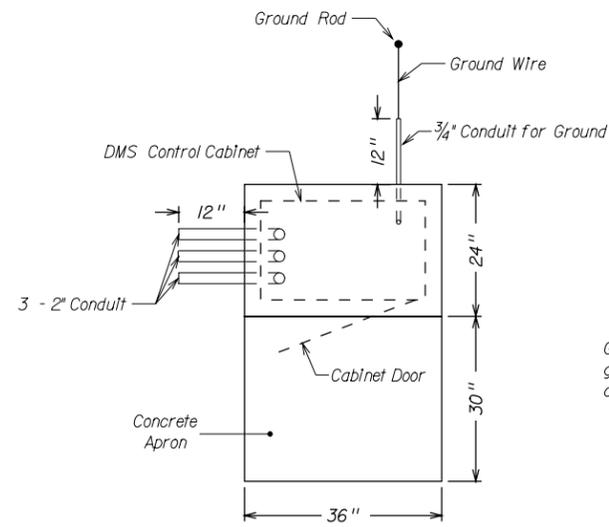
Conduit banded to the truss chord should be rigid. Conduit used to make connections to the truss or DMS couplings may be rigid or flexible.

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

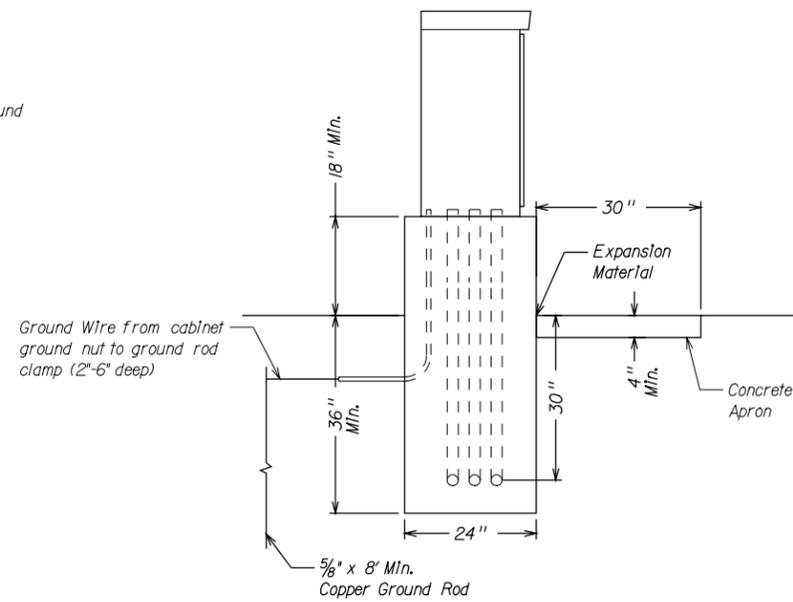
Banding material shall be stainless steel. Conduit shall be banded at regular intervals not to exceed 4 feet.

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.

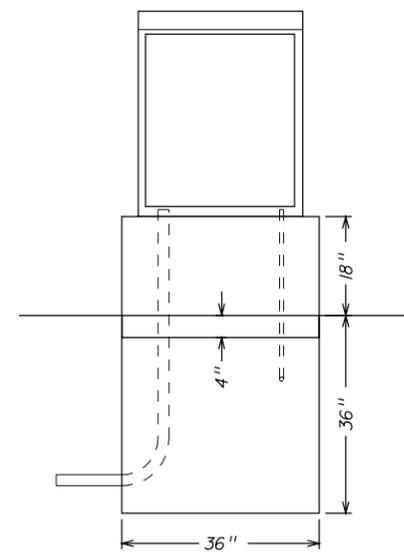
SITE WIRING DETAILS
FOR DMS INSTALLATION
ON A SIGN TRUSS
(SHEET 2 OF 2)



Top View



Side View



Front View

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

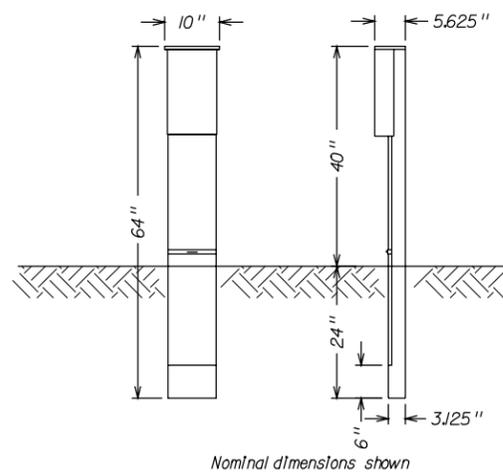
Conduits shall be positioned to fit inside the cabinet with a minimum clearance of 2" to all sides. Use the proposed cabinet to establish exact dimensions and placement.

DMS CONTROL CABINET FOOTING DETAILS

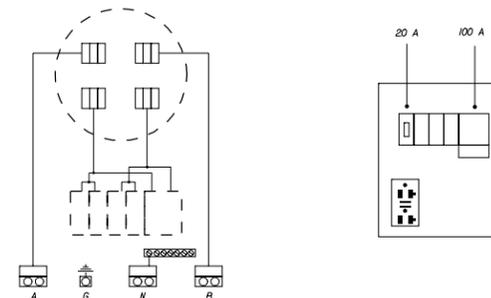
Service In:
 - 60 hertz AC, 1 phase, 120/240 Volt
 3 wire, 100 amp

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

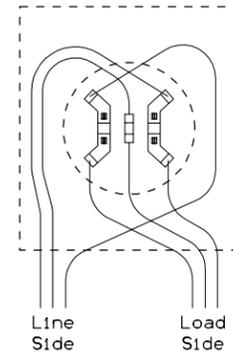
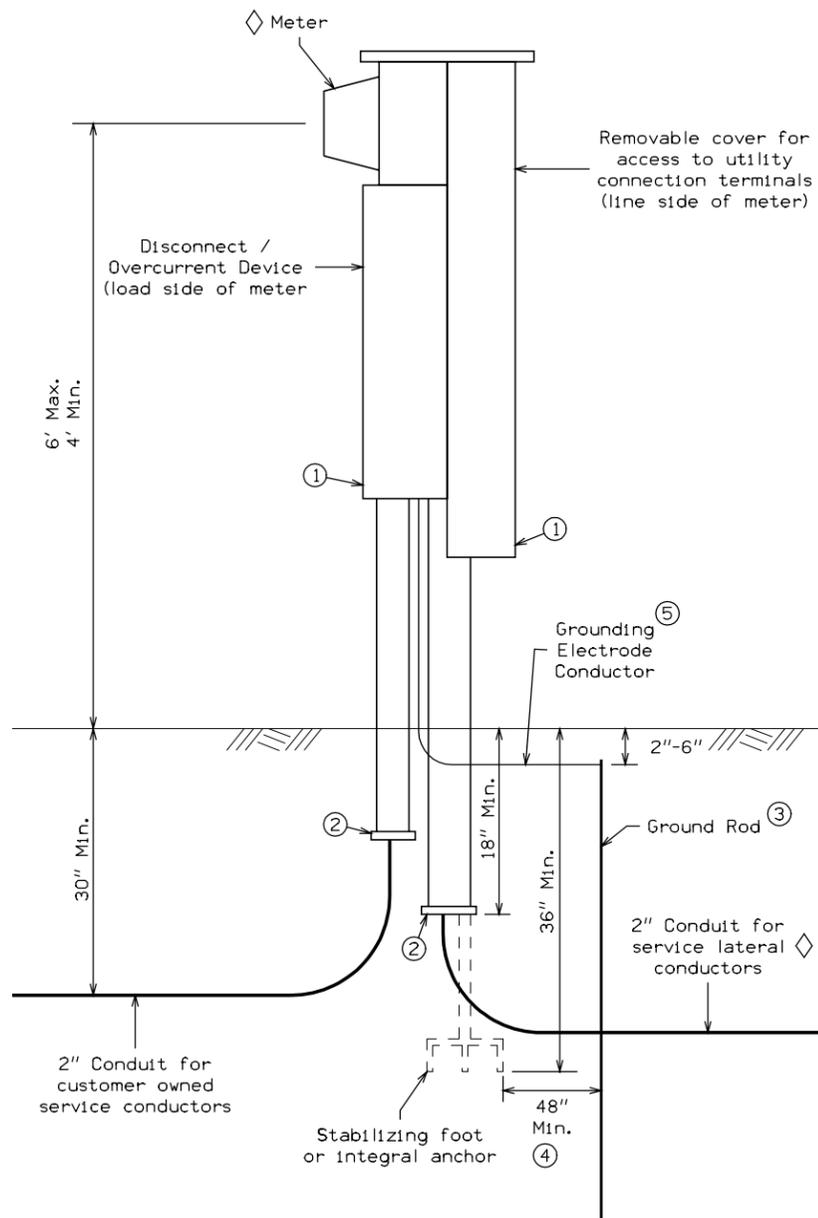
Features:
 - one 20 amp, 120 volt GFI receptacle
 - 100 amp, 120/240 volt circuit breaker (for DMS power)
 - 20 amp, 120 volt circuit breaker (for receptacle)



Nominal dimensions shown

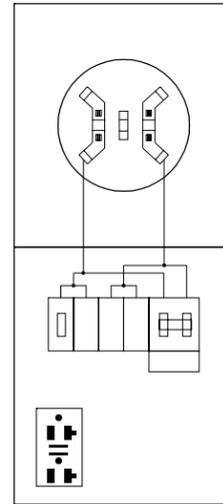


DETAILS OF STANDARD GROUND MOUNTED DISCONNECT PEDESTAL



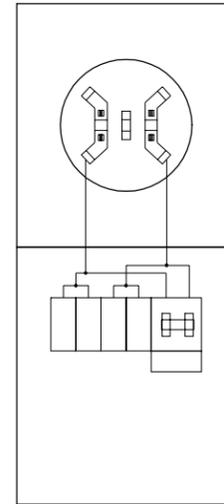
SELF-CONTAINED METER SOCKET WIRING DIAGRAM

for 1 phase 120/240 Volt, 3 wire, 100 amp or 200 amp service



OPTION A

- 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



OPTION B

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

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, 100 amp or 200 amp (as specified).

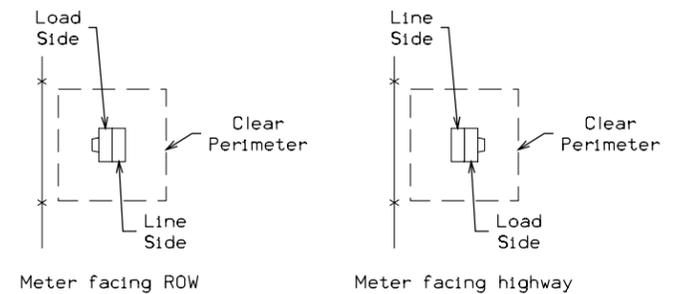
Load-side service shall be 60 hertz alternating current, 1-phase 120/240 volt, 3 wire, 100 amp.

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

Grounding system shall meet the requirements of 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

DETAILS OF STANDARD GROUND MOUNTED METER PEDESTAL

GENERAL NOTES

All electrical service supplied shall be:
 60 hertz alternating current
 1-phase 120/240 volt,
 3 wire,
 100 amp or 200 amp (as specified)

Details of power service shall be coordinated with the DOT contact (if specified) and the utility company.

The Contractor shall make each DMS available to the DOT for testing forty-eight hours after installing the DMS on its support structure (either a truss or steel posts). Thus, the final power connections shall be completed within 48 hours of installing the DMS.

The final service connections by the utility company shall be completed prior to installing the DMS.

The Contractor shall notify the utility company 60 days prior to the date power service is required at a site. At the time of notification, the Contractor shall have completed all work required by the utility company in order to make final service connections, and shall make the site available to inspection by the utility company.

UTILITY COMPANY INFORMATION		
LOCATION	DOT CONTACT	UTILITY CO CONTACT
Site #1 Altoona / I-80 WB	- -	MidAmerican Energy - -
Site #2 Cedar Rapids / US 30 EB	- -	Linn County REC - -
Site #3 Davenport / I-74 EB	- -	MidAmerican Energy - -

 OPTION A	60' ---  --- 10' --- 	[1]	[2]	CONTRACTOR TO TRENCH CONDUIT TO TRANSFORMER PAD AND COIL 10' OF WIRE AT THE EXISTING TRANSFORMER.
 OPTION A	135' ---  ---  --- EXISTING SERVICE WIRES @ ROW	[1]		CONTRACTOR TO RECONNECT THE EXISTING SERVICE WIRES THAT WERE FORMERLY ATTACHED TO A SERVICE POLE AT THE ROW
 OPTION A	NO CHANGE TO EXISTING SERVICE			

 DMS SIGN	OPTION A - LARGE DMS ON TRUSS OPTION B - SMALL DMS ON TRUSS OPTION C - SMALL DMS ON POSTS
 HANDHOLE	
 METER PEDESTAL	
 DISCONNECT PEDESTAL	[1] CONTRACTOR FURNISH [2] UTILITY COMPANY FURNISH
 PAD MOUNTED TRANSFORMER	
 METER POLE W/ METER SOCKET & DISCONNECT	
 EXISTING UTILITY POLE	

UTILITY COMPANY INFORMATION
& POWER APPURTENANCES

ESTIMATED PROJECT QUANTITIES

100-1A
07-15-97

Item No.	Item Code	Item	Unit	Total	As Built Quan.
1	2423-1010550	0'HD SIGN SUPPORT STRUCTURE, 55'	EACH	1	
2	2423-1010700	0'HD SIGN SUPPORT STRUCTURE, 70'	EACH	1	
3	2528-8445110	TRAFFIC CONTROL	LS	1	
4	2528-8445112	FLAGGER	DAY		
5	2528-9290004	CHANGEABLE MESSAGE SIGN, PORTABLE	CDAY	4	
6	2533-4980005	MOBILIZATION	LS	1	
7	2599-9999005	DMS INSTALLATION, 125 X 27 PIXEL	EACH	3	
8	2599-9999005	DMS REMOVAL, 125 X 27 PIXEL	EACH	1	

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.

TRAFFIC CONTROL PLAN

108-23
04-04-89

- Traffic will be maintained on the project at all times, except when installing a sign truss, or when removing or installing a DMS. A closure will be allowed for these activities. Closures shall be limited to 20 minutes in duration. Night work will be required to install a sign truss or DMS, or to remove a DMS. Closures will be allowed from 12:00 AM to 4:00 AM.
- Traffic control on this project shall be in accordance with the Standard Road Plans listed in Tab. 105-4 on the Title Sheet and/or appropriate Detail Sheets included in the plans. For additional complementary information, refer to Part 6 of the Manual on Uniform Traffic Control Devices and the current Standard Specifications.

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.

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.

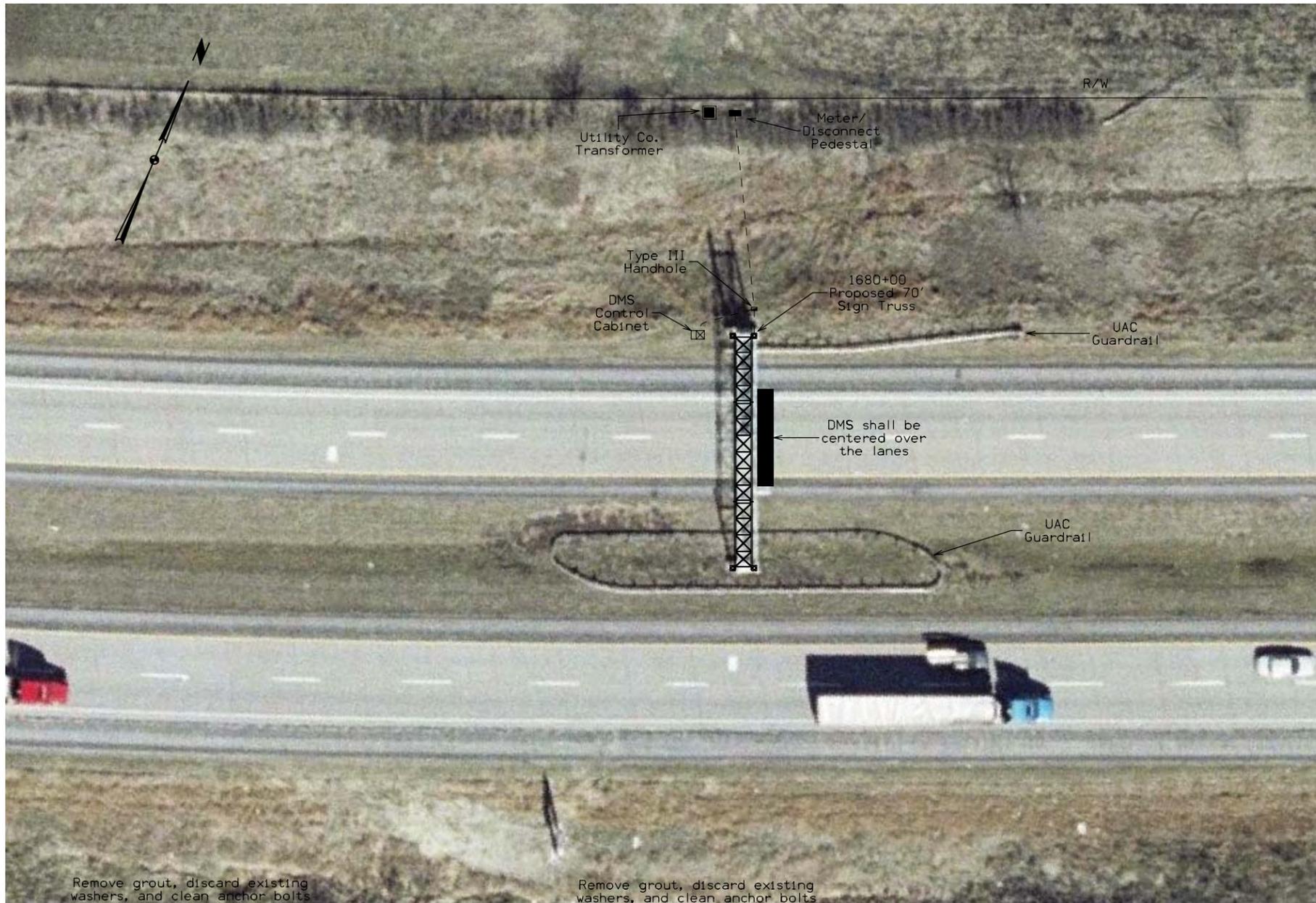
Submittals shall be coordinated with the Resident Construction Engineer.

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

ESTIMATE REFERENCE INFORMATION

100-4A
10-29-02

Item No.	Item Code	Description
1 2	2423-1010550 2423-1010700	0'HD SIGN SUPPORT STRUCTURE, ALUM 55' 0'HD SIGN SUPPORT STRUCTURE, ALUM 70' Items are for the installation of (2) new overhead sign trusses onto existing footings. Refer to the site detail sheets for specific site requirements.
3	2528-8445110	TRAFFIC CONTROL
4 5	2528-8445112 2528-9290004	FLAGGER CHANGEABLE MESSAGE SIGN, PORTABLE Items are for the traffic control installations required to install and/or remove both trusses and DMS's
6	2533-4980005	MOBILIZATION
5	2599-9999005	DMS INSTALLATION, 125 X 27 PIXEL 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. 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 dynamic message signs installed. PAYMENT: The Contractor shall be paid the contract unit price for each dynamic message sign installed.
6	2599-9999005	DMS REMOVAL, 125 X 27 PIXEL The work performed under this bid item shall consist of furnishing all labor, apparatus, and materials to remove an existing dynamic message sign (DMS). The Contractor shall For general purposes, the removal of the DMS includes, but is not limited to: <ul style="list-style-type: none"> - disconnecting the electrical service from the DMS, including the removal of conduit and wiring as specified in the plans; - disconnecting the communication cables between the DMS and ground control cabinet, including the removal of conduit and wiring as specified in the plans; - removing the DMS, attachment brackets, and hardware from the sign truss; - removal of the control cabinet footing, if required; - and transportation and storage of the DMS at the site specified in the plans. All arrangements to remove and transport the DMS to the site specified shall be coordinated with the Engineer. Delivery shall be witnessed by the Engineer, and proof of delivery shall be required for all items. Identified to be delivered with the DMS. Proof of delivery shall consist of an invoice that clearly identifies each item being delivered, initialed by the accepting party, and the delivering party. Before the Engineer will accept delivery of the DMS, the DMS and all appurtenances shall be properly stored at the specified site. Any damaged equipment shall be replaced at the Contractor's expense, without additional compensation. MEASUREMENT: Then Engineer will count the number of dynamic message signs removed. PAYMENT: The Contractor shall be paid the contract unit price for each dynamic message signs removed.



SITE NOTES

The existing DMS has been removed and is being stored. The existing truss has also been removed.

The existing guardrail and footings are to be used as constructed for the new sign truss. Remove grout, discard existing washers, and clean anchor bolts but do not remove galvanizing. See anchor bolt notes on sheet V.01.

The existing conduit in the outside footing shall be reused for this project. All other conduit in the ground may be abandoned in place. All existing wiring from the ROW to the footing shall be removed and shall not be reused. The existing grounding system shall not be reused.

Traffic control at this site shall be as follows:
 - TC-402 shall be used for work along the outside of the roadway
 - TC-451 shall be used to install the DMS and sign truss. Closures shall be limited to 20 minutes in duration.

Night work will be required for the installation of the truss and DMS. Closures will be allowed from 12:00 AM to 4:00 AM everyday.

The DMS sign to be installed can be picked up at the following location:
 Iowa DOT Maintenance Garage
 1530 NE 53rd Ave
 Des Moines, IA

Arrangements for pickup shall be made with RCE. The DOT will not furnish any equipment required to load, transport, or install the DMS.

The power service to this location is being provided by MidAmerican Energy. Arrangements for energization of the DMS shall be made by the Contractor.

The renovated site will have the following major pieces of equipment when complete:
 - a new sign truss
 - a reinstalled DMS
 - a new DMS control cabinet and footing
 - a new meter disconnect pedestal, and
 - new conduit, wiring, and handhole.

Remove grout, discard existing washers, and clean anchor bolts but do not remove galvanizing. See anchor bolt notes on V.01

Remove grout, discard existing washers, and clean anchor bolts but do not remove galvanizing. See anchor bolt notes on V.01

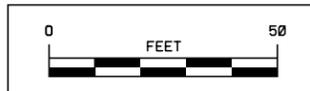


INSIDE FOOTING
[Looking Northeast]

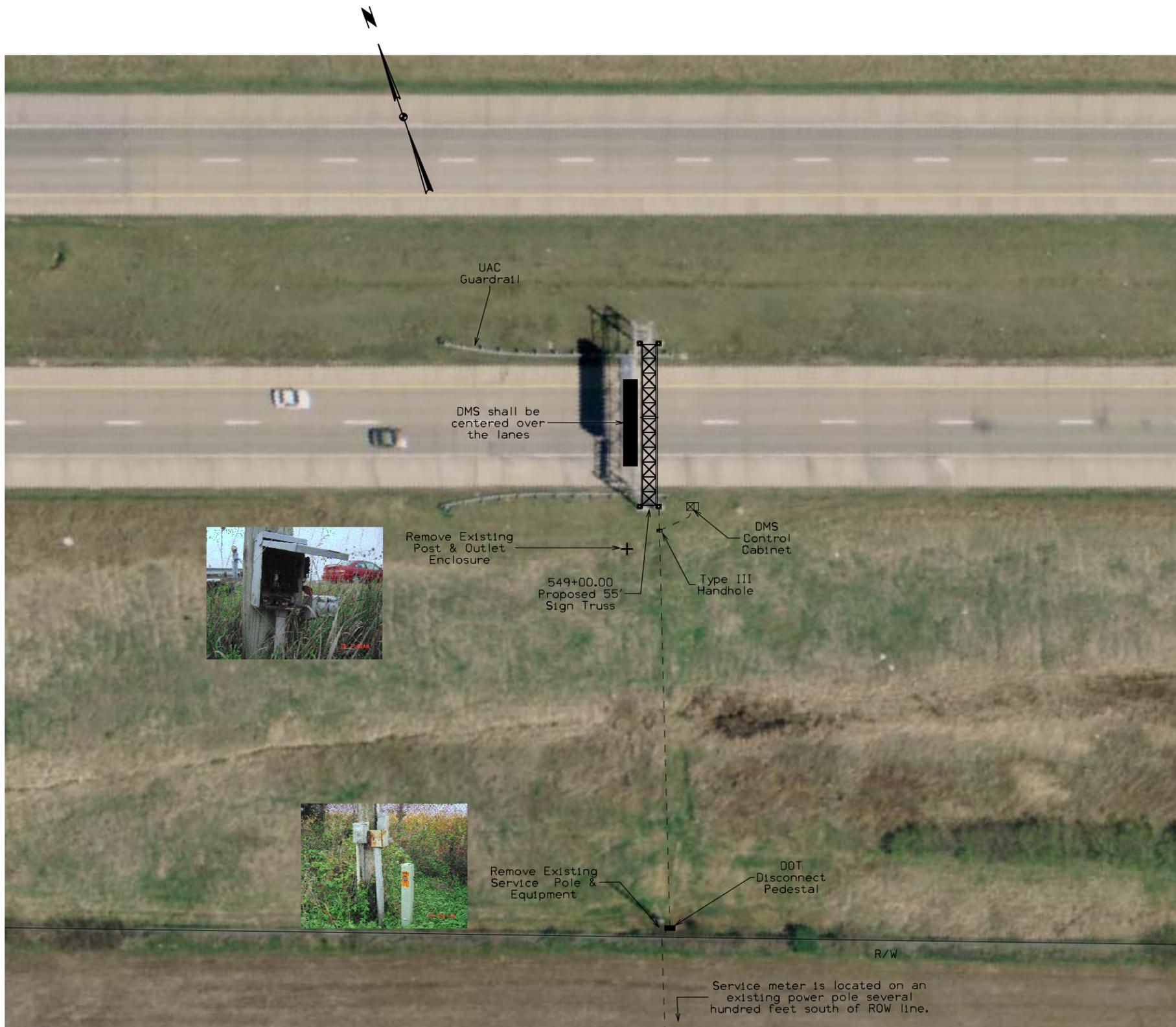


OUTSIDE FOOTING
[Looking West]

UAC Conduit & Remove Wiring



**PROPOSED LAYOUT
for SITE #1
I-80 WB - POLK COUNTY**



SITE NOTES

The existing DMS has been removed and is being stored. The existing truss has also been removed.

The existing guardrail and footings are to be used as constructed for the new sign truss. Remove grout and plate, discard existing nuts and washers, and clean anchor bolts but do not remove galvanizing. See anchor bolt notes on sheet V.01.

The existing conduit in the outside footing shall be reused for this project. All other conduit in the ground may be abandoned in place. All existing wiring from the ROW to the footing shall be removed and shall not be reused. The existing grounding system shall not be reused.

The existing service pole and attached enclosures shall be removed from the site. There is also an enclosure with outlets installed on a treated post near the outside footing that shall be removed as part of the site renovation.

The service lines entering the ROW shall be preserved and reconnected to the new DOT disconnect pedestal.

Traffic control at this site shall be as follows:
 - TC-402 shall be used for work along the outside of the roadway
 - TC-451 shall be used to install the DMS and sign truss. Closures shall be limited to 20 minutes in duration.

Night work will be required for the installation of the truss and DMS. Closures will be allowed from 12:00 AM to 4:00 AM everyday.

The DMS sign to be installed can be picked up at the following location:
 Iowa DOT Maintenance Garage
 5455 Kirkwood Blvd SW
 Cedar Rapids, IA

Arrangements for pickup shall be made with RCE. The DOT will not furnish any equipment to load, transport, or install the DMS.

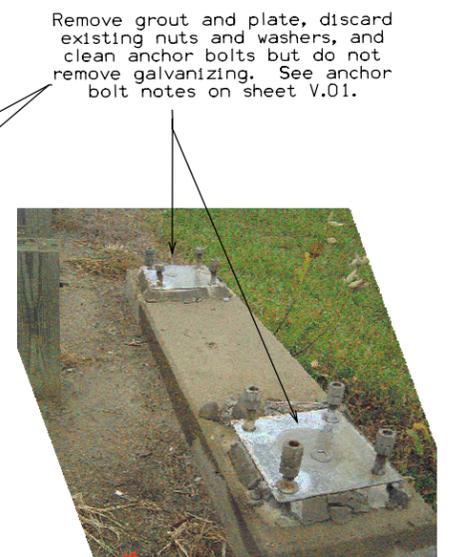
The power service to this location is being provided by Linn County RCE. Arrangements for energization of the DMS shall be made by the Contractor.

The renovated site will have the following major pieces of equipment when complete:

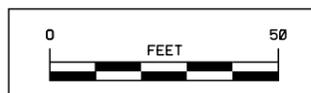
- a new sign truss
- a reinstalled DMS
- a new DMS control cabinet and footing
- a new DOT disconnect pedestal, and
- new conduit, wiring, and handhole.



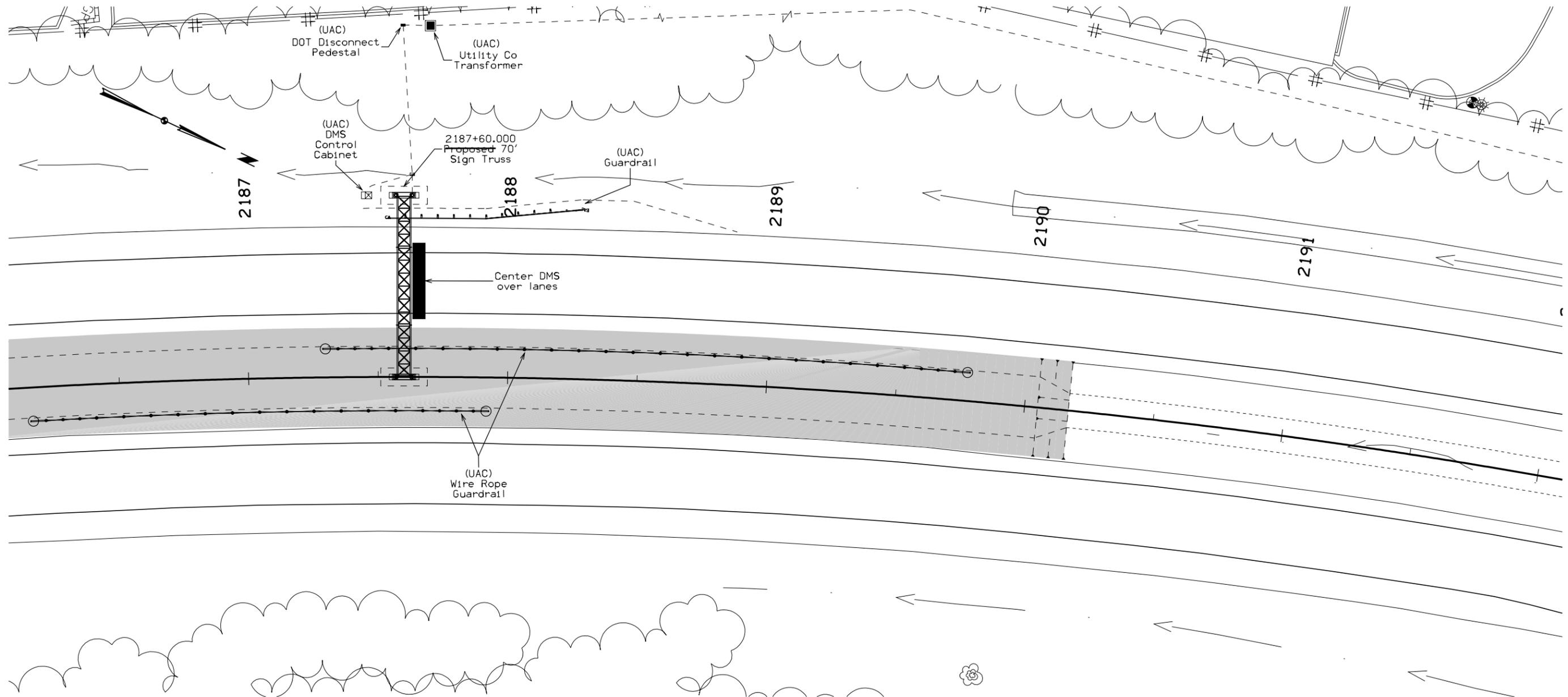
OUTSIDE FOOTING
[Looking West]



INSIDE FOOTING
[Looking West]



**PROPOSED LAYOUT
for SITE #2
US 30 EB - LINN COUNTY**



SITE NOTES

Work at this site involves the removal and storage of the existing DMS, and the installation of a new DMS. The new DMS will have a wider view angle to allow the sign to be visible further around the curve in the roadway.

The removal of the existing DMS shall involve the following steps:

- disconnect the power service at the sign,
- disconnect the communication cables at the sign,
- removal of the DMS from the truss,
- transportation of the DMS to the storage site, and
- unloading of the DMS at the storage site.

The existing attachment brackets and hardware shall be removed and delivered with the DMS. The new DMS shall be installed with new brackets and hardware. It shall be positioned the same as the previous DMS.

The existing conduit and wires for power and communications will need to be disconnected from the sign, but may not necessarily need to be pulled back to footing. If damage to the existing conduit and wires is possible during removal, these wires should be pulled back to the footing for safe keeping.

The existing wiring shall be reused when installing the new DMS unless damaged or malfunctioning.

The existing control cabinet and associated equipment, along with the existing power appurtenances shall remain as previously constructed.

Traffic control at this site shall be as follows:

- TC-402 shall be used for work along the outside of the roadway.
- TC-451 shall be used to remove and install the DMS. Closures shall be limited to 20 minutes in duration.

Night work will be required for the removal and installation fo the DMS. Closures will be allowed from 12:00 AM to 4:00 AM everyday.

The following location is where the existing DMS is to be delivered to, and where the new DMS may be picked up from:

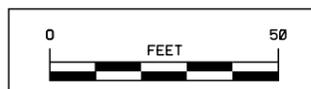
Iowa DOT Maintenance Garage
8721 Northwest Blvd
Davenport, IA

Arrangements for delivery and pickup shall be made with the RCE. The DOT will not furnish any equipment or materials required to load, transport, store, or install the DMS.

The power service at this location is provided by MidAmerican Energy. There are no new service connections required at this location.

The renovated site will have the following major pieces of equipment when complete:

- a newly installed DMS.



**PROPOSED LAYOUT
for DMS SITE #3
I-74 SB - SCOTT COUNTY**

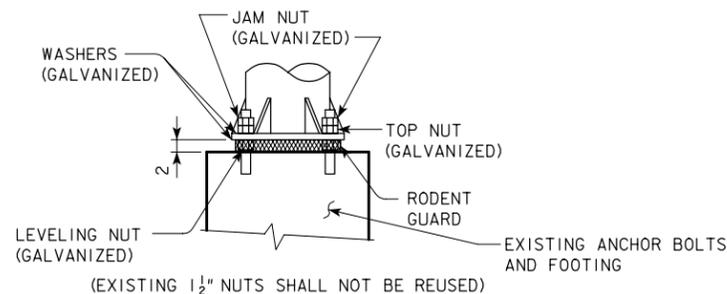
ANCHOR BOLT NOTES:

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 1/2" ϕ "	1/6 TURN	1/6 TURN	1/3 TURN
GREATER THAN 1/2" ϕ "	1/12 TURN	1/12 TURN	1/6 TURN

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



TRUSS SUPPORT CONNECTION DETAIL

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

THE COST OF FURNISHING AND INSTALLING 48 ANCHOR BOLT NUTS, 32 WASHERS, AND RODENT GUARD ARE TO BE INCLUDED IN THE UNIT PRICE BID FOR THE OVERHEAD TRUSS.

NUTS AND WASHERS SHALL COMPLY WITH THE REQUIREMENTS OF IOWA DOT MATERIALS I.M. 453.08.

STAINLESS STEEL BOLTING NOTES:

- 1) UNLESS OTHERWISE NOTED ON THE PLAN, ALL STAINLESS STEEL BOLTS AND U-BOLTS SHALL BE FURNISHED WITH STAINLESS STEEL REGULAR HEXAGONAL NUTS, JAM NUTS AND WASHERS UNDER BOTH HEADS AND NUTS.
- 2) IN CASE STAINLESS STEEL LOCK WASHERS ARE USED IN LIEU OF JAM NUTS, THE REGULAR WASHERS UNDER NUTS ARE TO BE OMITTED.

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. STAINLESS STEEL BOLTS SHALL COMPLY WITH ASTM A-320 OR F593 AS PER STANDARD SPECIFICATIONS.

ALL STEEL SECTIONS SHALL BE HOT DIPPED GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH ASTM A123. PROVIDE VENT HOLES FOR GALVANIZING IN 10 INCH PIPE FOR SUPPORTS AND IN 2 1/2 INCH AND 3 INCH PIPE FOR OVERHEAD TRUSS.

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 WITH 2002, 2003, AND 2006 INTERIMS; STATE STANDARD FATIGUE DESIGN. CONSTRUCTION: IOWA D.O.T. STANDARD SPECIFICATIONS, SERIES 2001 PLUS APPLICABLE GENERAL SUPPLEMENTAL SPECIFICATIONS, DEVELOPMENTAL SPECIFICATIONS, SUPPLEMENTAL SPECIFICATIONS AND SPECIAL PROVISIONS SHALL APPLY TO CONSTRUCTION WORK ON THIS PROJECT.

DESIGN STRESSES:

DESIGN STRESSES FOR MATERIALS ARE IN ACCORDANCE WITH A.A.S.H.T.O. STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGN, LUMINAIRES AND TRAFFIC SIGNALS, SERIES OF 2001 WITH 2002, 2003 AND 2006 INTERIMS.

GENERAL NOTES:

SIGN TRUSSES ARE DESIGNED FOR 30 lb/ft² WIND PRESSURE ON TRUSS MEMBERS AND 40 LB/FT² WIND PRESSURE ON 29'-3 x 7'-10 x 3'-11 DMS. 4000 POUND DMS IS CENTERED VERTICALLY ON TRUSS AND NO MORE THAN 5 FEET OFF CENTER ALONG TRUSS LENGTH.

ALL PIPES, SHAPES, AND PLATES FOR THE END SUPPORT FRAMES AND OVERHEAD TRUSSES 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.

COMPLETED STEEL STRUCTURE:

- 1) EACH TRUSS SUPPORT COLUMN SHALL BE PLUMB WITHIN 1/16 INCH PER FOOT OF VERTICAL IN TWO PERPENDICULAR DIRECTIONS.
- 2) STICK-OUT OF EACH TRUSS LOWER CHORD SHALL BE WITHIN 2 3/4 AND 5 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 1/16 INCH PER FOOT OF HORIZONTAL, AND VERTICAL LINE BETWEEN CHORDS SHALL BE PLUMB WITHIN 1/16 INCH PER FOOT OF VERTICAL.

DESIGN NUMBER	COUNTY	TRUSS LENGTH	STATION	ROUTE
1007	LINN	55'	549+00	E.B. US30
1907	POLK	70'	1680+00	W.B. I-80

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: Kenneth F. Dunker Date: 8-28-2007

Printed or Typed Name: Kenneth F. Dunker

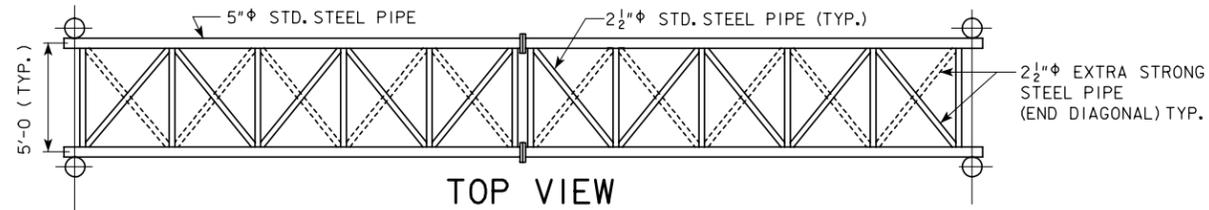
My license renewal date is December 31, 2008

Pages or sheets covered by this seal: V.01 THRU V.04

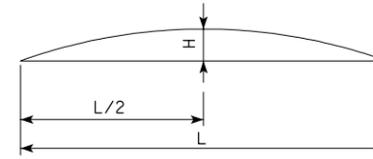
DESIGN FOR
**GALVANIZED STEEL OVERHEAD SIGN TRUSS
WITH GALVANIZED STEEL SUPPORTS**

INDEX AND NOTES STATEWIDE

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION
DESIGN SHEET NO. 1 OF 4 FILE NO. 30292 DESIGN NO. SEE TABLE

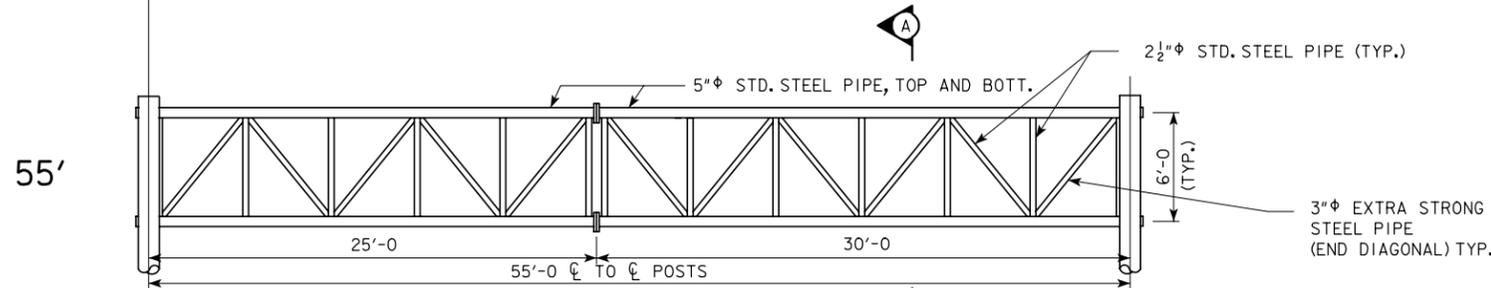


TOP VIEW
(GENERAL CONFIGURATION. SEE PART ELEVATION VIEW FOR PANELS AND SPLICES IN EACH TRUSS.)

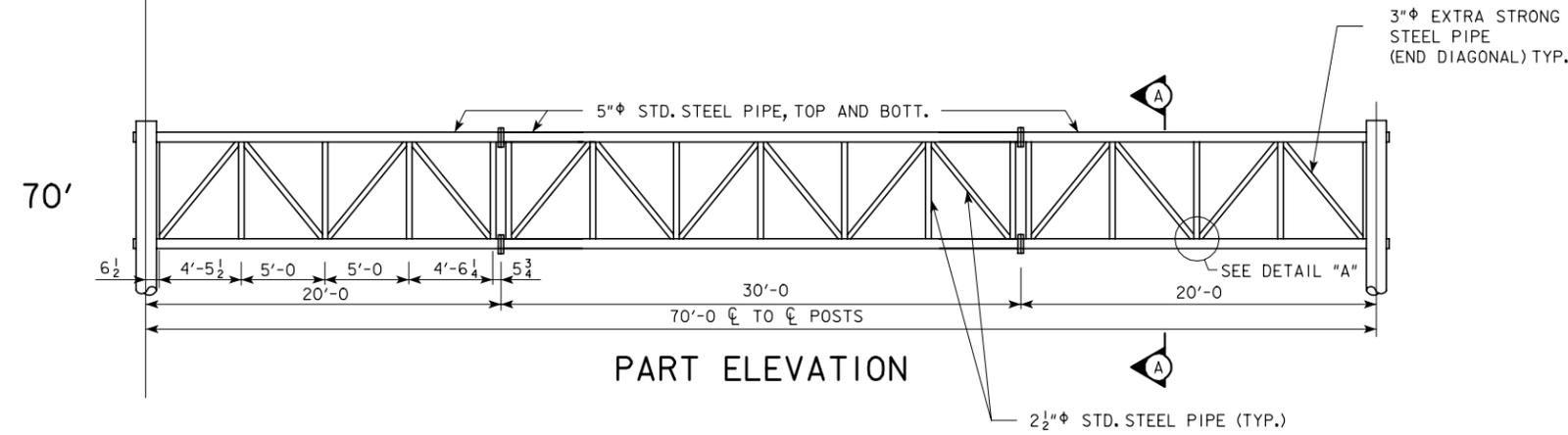


CAMBER DIAGRAM

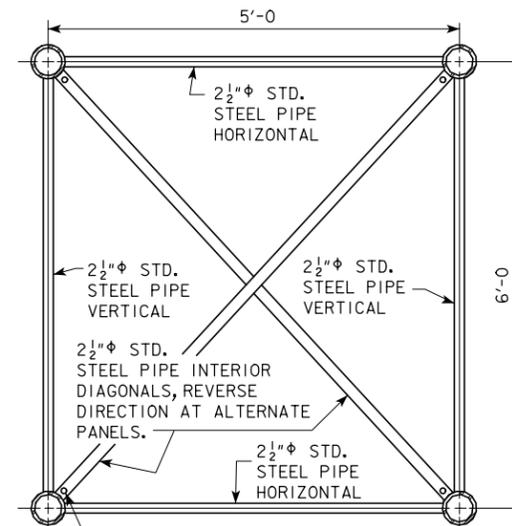
SPAN L	CAMBER H
55'	$\frac{7}{8}$
70'	$1\frac{3}{8}$



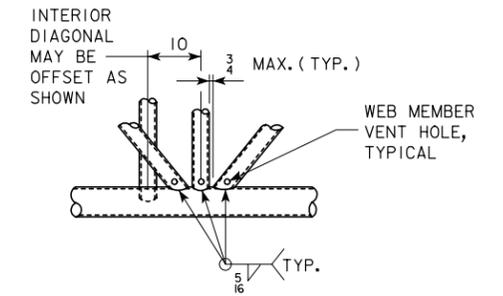
PART ELEVATION



PART ELEVATION



SECTION A-A



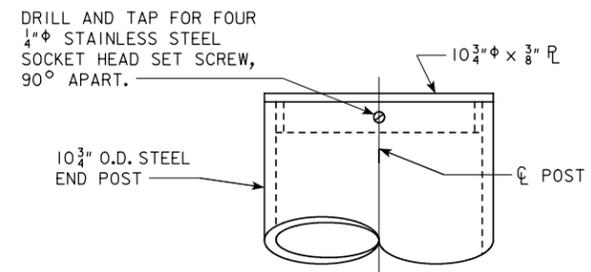
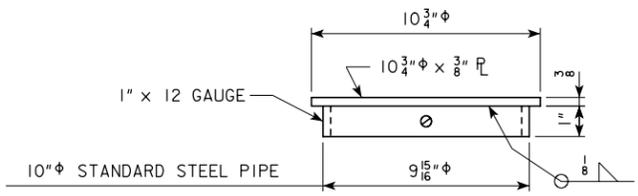
DETAIL "A"

DESIGN NUMBER	COUNTY	TRUSS LENGTH	STATION	ROUTE
1007	LINN	55'	549+00	E.B. US30
1907	POLK	70'	1680+00	W.B. I-80

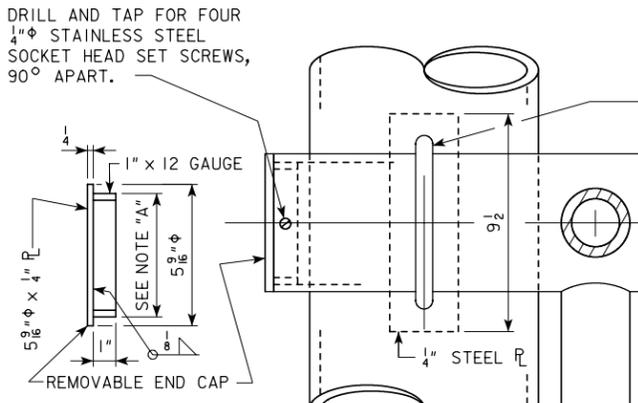
DESIGN FOR
**GALVANIZED STEEL OVERHEAD SIGN TRUSS
WITH GALVANIZED STEEL SUPPORTS**

**ELEVATION VIEWS
STATEWIDE**

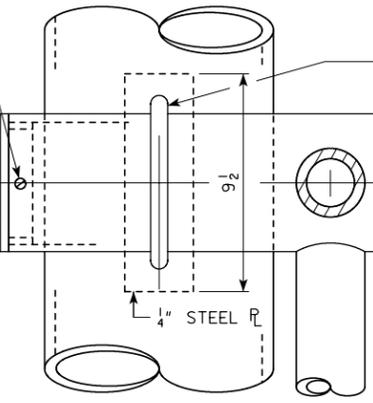
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION
DESIGN SHEET NO. 2 OF 4 FILE NO. 30292 DESIGN NO. SEE TABLE



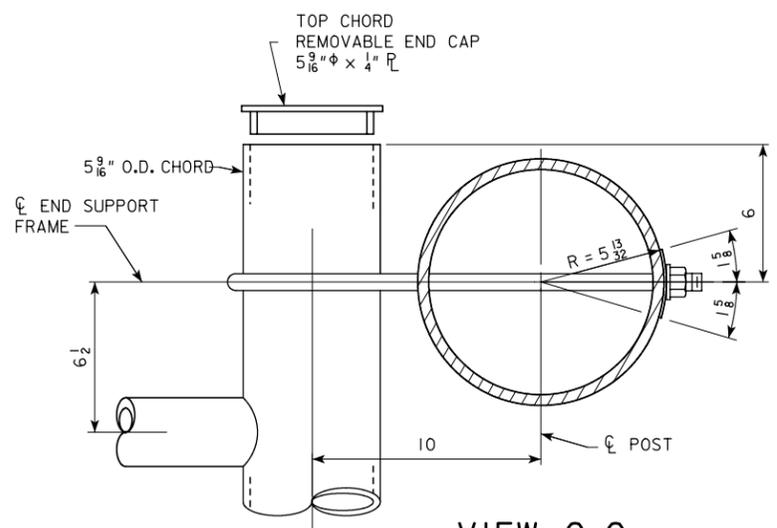
END POST TOP DETAIL



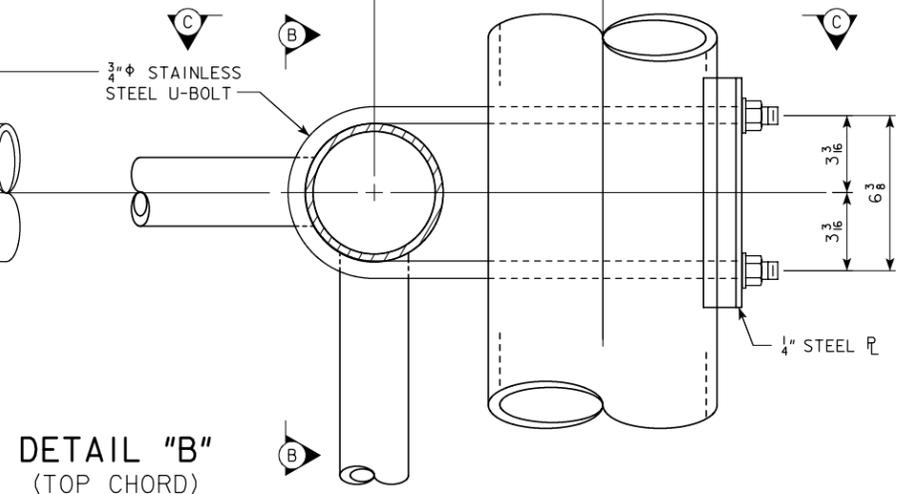
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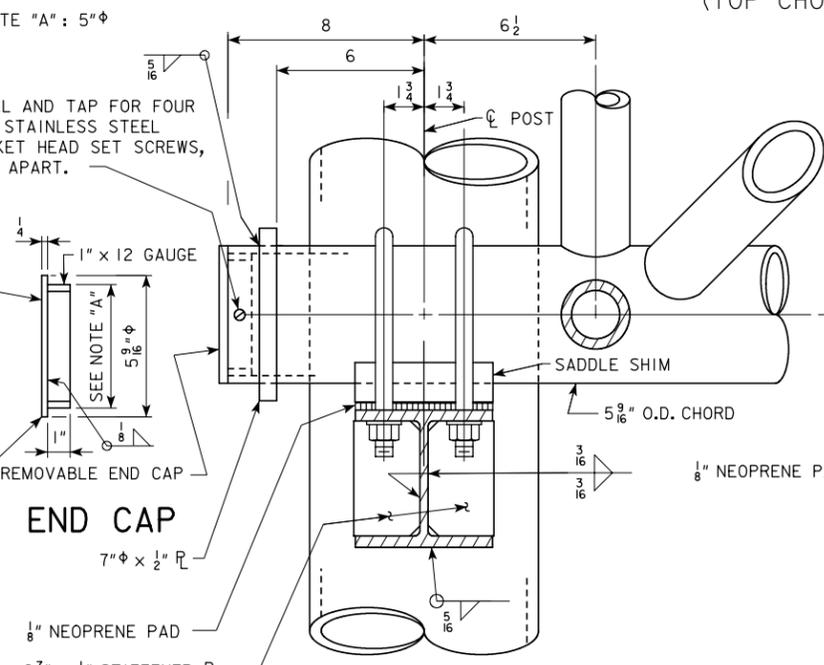
VIEW B-B



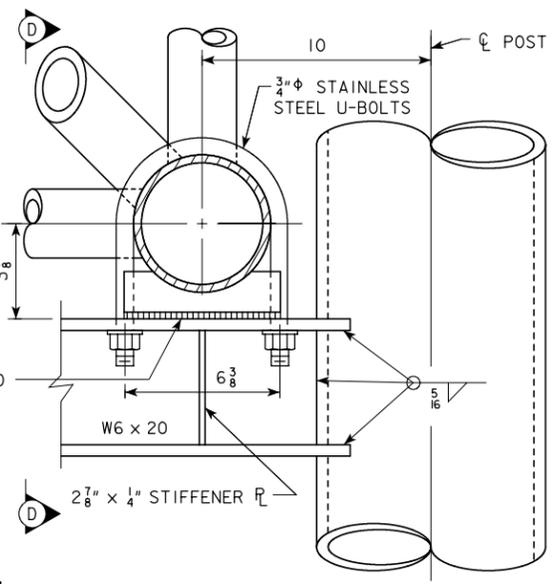
VIEW C-C



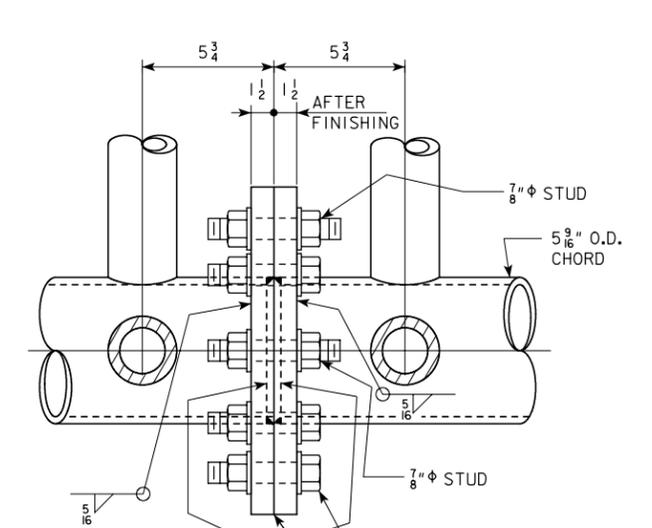
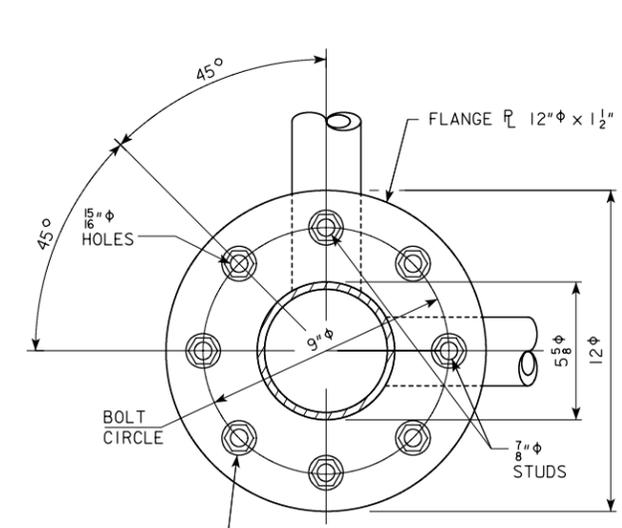
DETAIL "B"
(TOP CHORD)



VIEW D-D



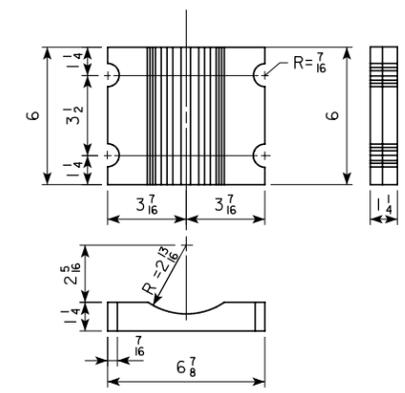
DETAIL "C"
(BOTTOM CHORD)



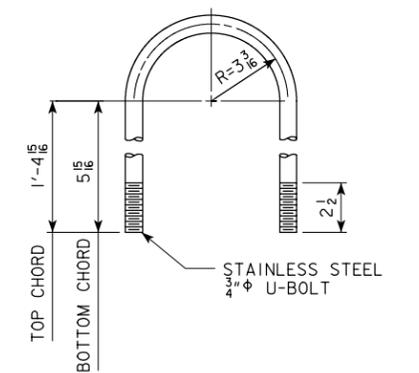
7/8" x 4 3/4" STAINLESS STEEL HEXAGONAL HEAD BOLTS, 24 REQUIRED PER TRUSS SPLICE, 7/8" x 6 1/4" STAINLESS STEEL STUDS THREADED 2" FROM EACH END, PLACED AT HORIZONTAL MEMBERS, 8 REQUIRED PER TRUSS SPLICE. 64 WASHERS REQUIRED PER TRUSS SPLICE. 44 STAINLESS STEEL 7/8" REGULAR HEX NUTS & JAM NUTS REQUIRED PER TRUSS SPLICE. DRILL EIGHT (8) 15/16" DIA. HOLES IN EACH FLANGE. TORQUE 7/8" BOLTS TO 200 ft-lb.

CHORD SPLICE

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



GALVANIZED STEEL SADDLE SHIM DETAIL

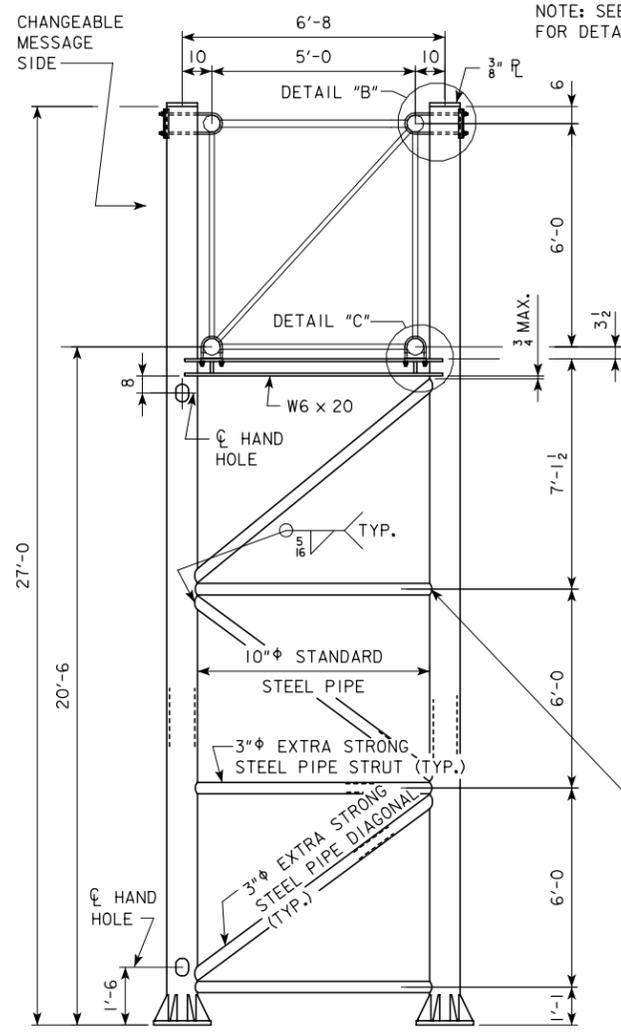


STAINLESS STEEL U-BOLT DETAIL

NOTE: SEE DESIGN SHEET 4 FOR LOCATION OF DETAILS "B" & "C".

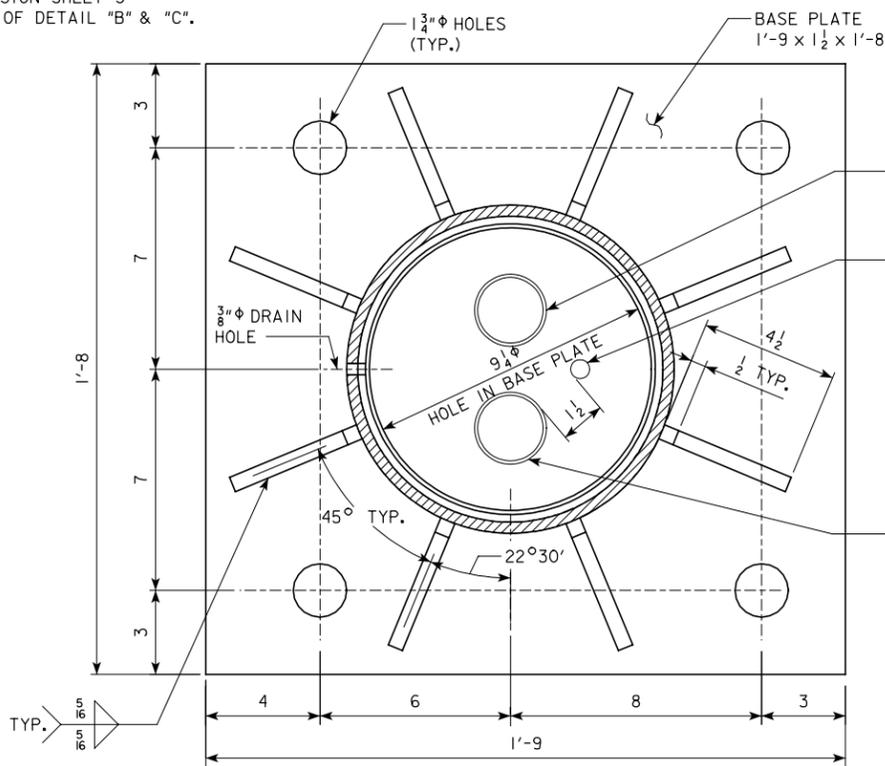
DESIGN NUMBER	COUNTY	TRUSS LENGTH	STATION	ROUTE
1007	LINN	55'	549+00	E.B. US30
1907	POLK	70'	1680+00	W.B. I-80

DESIGN FOR
GALVANIZED STEEL OVERHEAD SIGN TRUSS WITH GALVANIZED STEEL SUPPORTS
TRUSS SUPPORT AND CHORD SPLICE DETAILS
STATEWIDE
 IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION
 DESIGN SHEET NO. 3 OF 4 FILE NO. 30292 DESIGN NO. SEE TABLE



END VIEW OF TRUSS SUPPORT

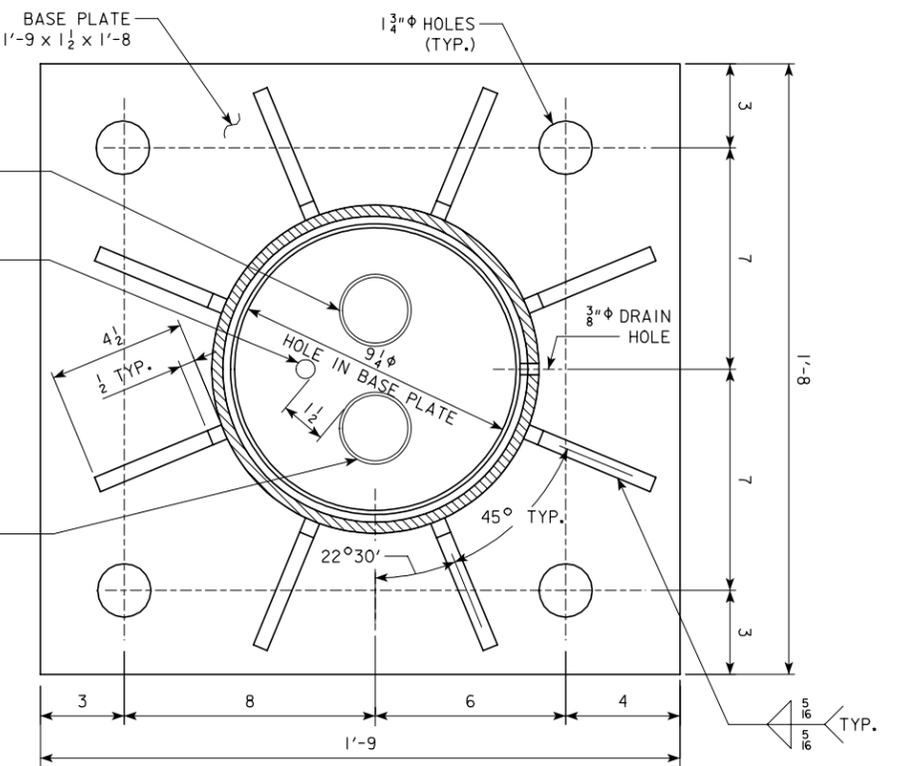
NOTE: SEE DESIGN SHEET 3 FOR DETAILS OF DETAIL "B" & "C".



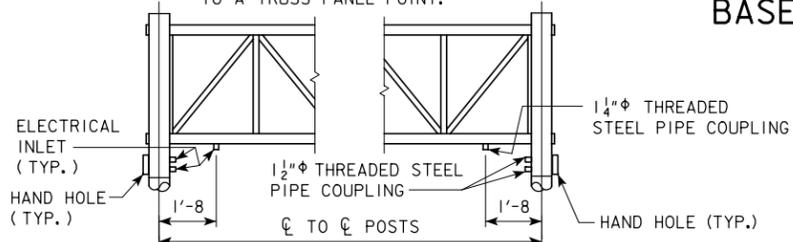
BASE PLATE PLAN

NOTE: BASE PLATES ARE INTENDED TO FIT EXISTING ANCHOR BOLT GROUPS CENTERED AT 6'-6".

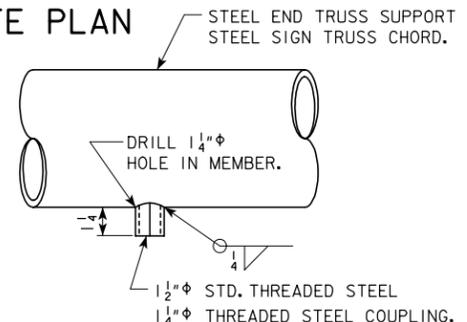
NOTE: PROVIDE ELECTRICAL INLETS AT DYNAMIC MESSAGE SIGN. INLETS SHALL BE NO CLOSER THAN 1'-2 TO A TRUSS PANEL POINT.



BASE PLATE PLAN



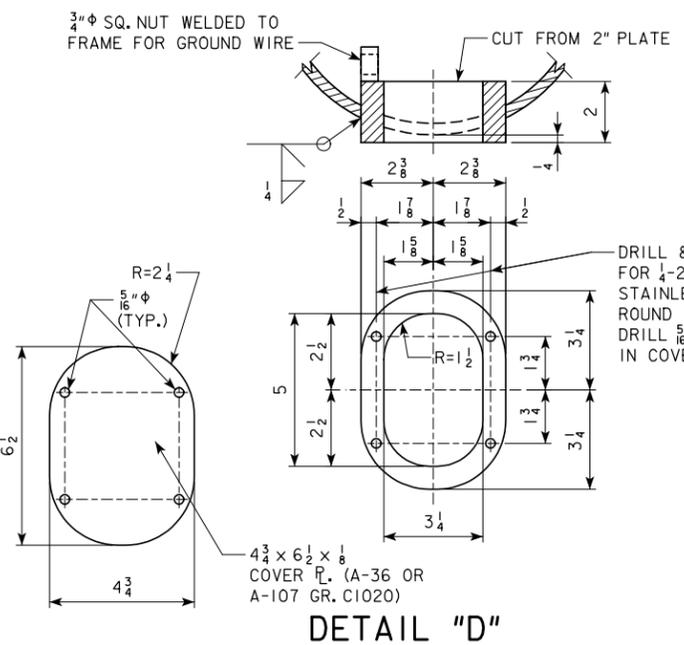
PART ELEVATION



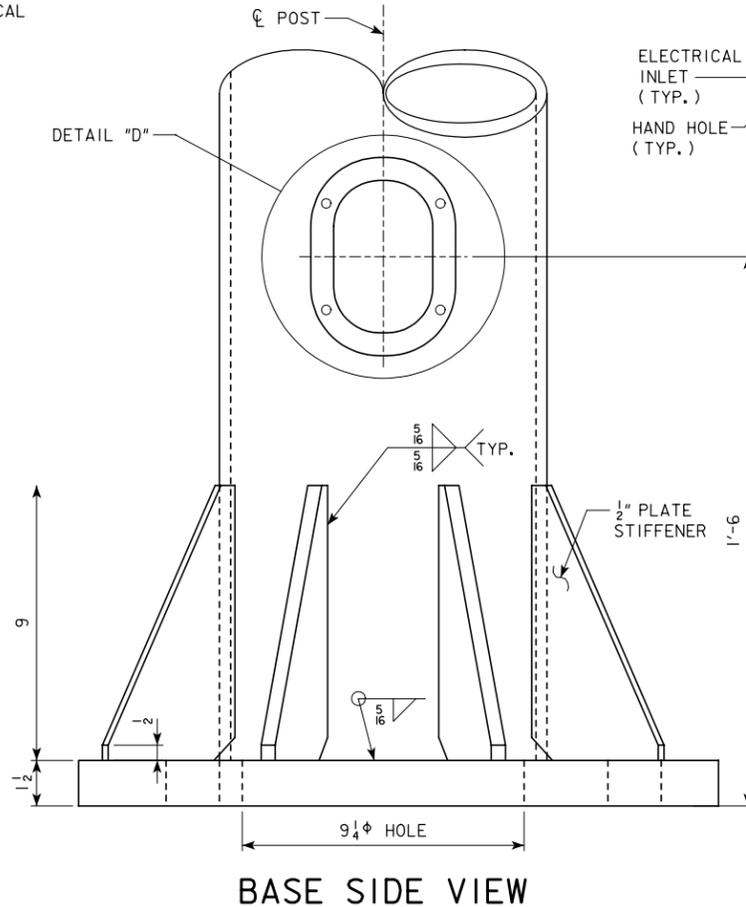
ELECTRICAL INLET

NOTE: INLET COUPLING IS TO BE STEEL AND SHALL BE FITTED WITH STANDARD PLUGS UNTIL CONDUIT IS INSTALLED.

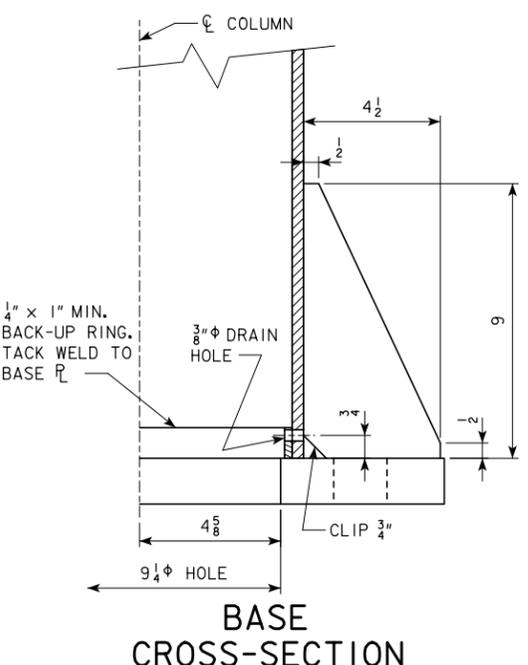
NOTE: HAND HOLES AND ELECTRICAL INLET HOLES SHALL BE IN BOTH END TRUSS SUPPORTS AND ELECTRICAL INLET HOLES IN BOTH END OVERHEAD TRUSS SECTIONS AND ON DYNAMIC MESSAGE SIDE ONLY.



DETAIL "D"



BASE SIDE VIEW



DESIGN NUMBER	COUNTY	TRUSS LENGTH	STATION	ROUTE
1007	LINN	55'	549+00	E.B. US30
1907	POLK	70'	1680+00	W.B. I-80

DESIGN FOR
GALVANIZED STEEL OVERHEAD SIGN TRUSS WITH GALVANIZED STEEL SUPPORTS
ELECTRICAL ACCESS & BASE PLATE DETAILS
STATEWIDE

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION
 DESIGN SHEET NO. 4 OF 4 FILE NO. 30292 DESIGN NO. SEE TABLE