

DYNAMIC MESSAGE SIGNS
 LETTING DATE 06/16/2009
 ITS-080-5(278)--25-50

JASPER CO.



PLANS OF PROPOSED IMPROVEMENTS ON THE
INTERSTATE ROAD SYSTEM
JASPER COUNTY

DYNAMIC MESSAGE SIGNS
 TWO SITES ON I-80
 NEAR NEWTON

For Standard Road Plans
 Refer to Sheet No. C.04

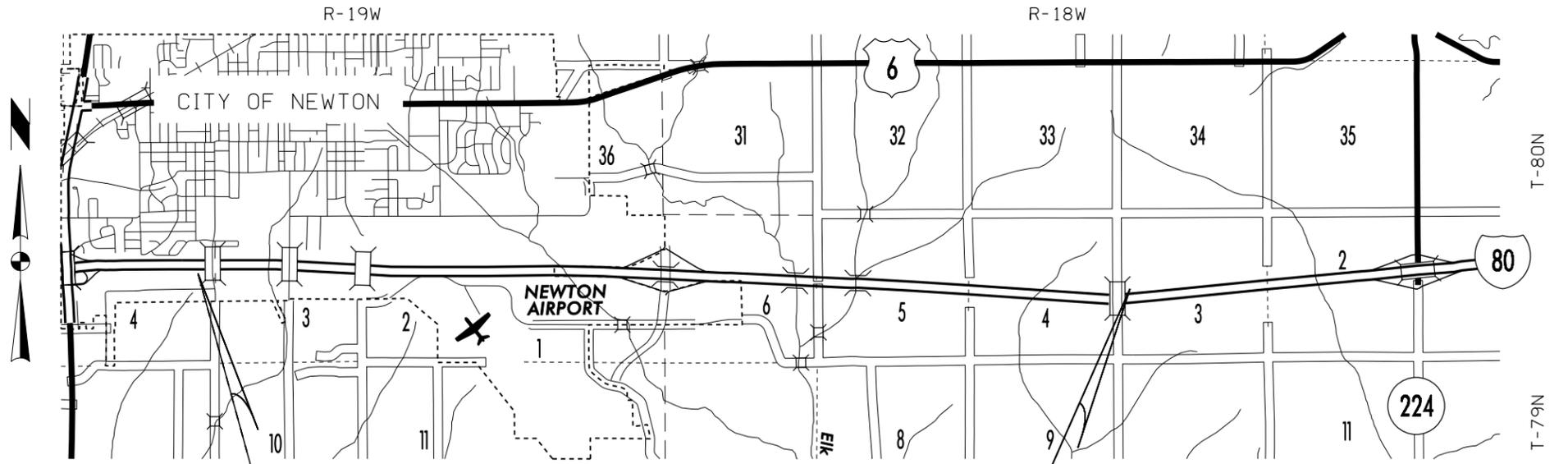
The Iowa Department of Transportation Standard Specifications for Highway and Bridge Construction, series 2001, plus General Supplemental Specifications; and applicable Supplemental Specifications, Developmental Specifications, and Special Provisions, shall apply to construction on this project.

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

NO MILEAGE SUMMARY

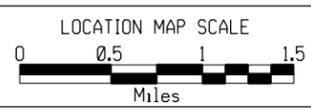
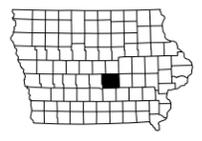
| | |
|-------------------------------|-----------------------|
| TOTAL | 19 |
| PROJECT IDENTIFICATION NUMBER | 05-00-000-010 |
| PROJECT NUMBER | ITS-080-5(278)--25-50 |

| INDEX OF SHEETS | |
|-----------------|--|
| No. | Description |
| A.01 | TITLE SHEET |
| B.01-B.03 | TYPICAL DETAILS |
| C.01-C.04 | QUANTITIES, ESTIMATE REFERENCE NOTES, TABS |
| N.01 | TRAFFIC SIGN DETAILS |
| V.1-V.5 | STRUCTURAL DETAILS |
| X.01-X.05 | SITE CROSS SECTIONS |



DMS #601
 I-80 EASTBOUND
 STA. 2604+00
 M.P. 165.3

DMS #602
 I-80 WESTBOUND
 STA. 2925+00
 M.P. 171.3



| INDEX OF SEALS | | |
|----------------|-----------------|-------------------------|
| SHEET NO. | NAME | TYPE |
| A.01 | John M. Narigon | Primary Signature Block |
| V.1 | James R. Hauber | 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: *John M. Narigon* Date: 04/05/09
 Printed or Typed Name: John M. Narigon

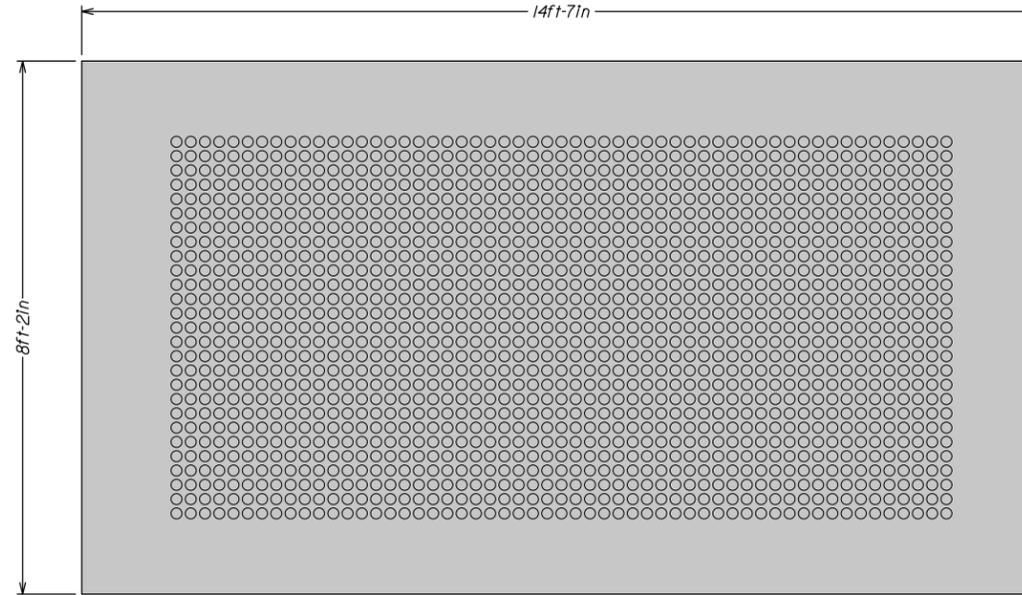
My license renewal date is December 31, 2009

Pages or sheets covered by this seal:
 A.01, B.01-B.03, C.01-C.04, N.01, X.01-X.05

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"



TRANSPORTATION REQUIREMENTS

All material and equipment necessary to transport the sign to or from the storage site and/or installation 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 shall be used to account for settlement.

Remove shipping support legs from the DMS after installation on the support structure.

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

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

ATTACHMENT HARDWARE

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

LIFTING REQUIREMENTS

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

The crane and lifting bar shall be rated to lift a minimum of 2000 pounds.

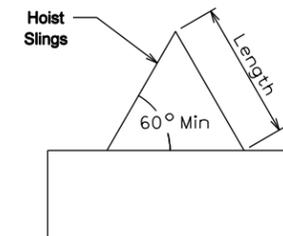
Any damage incurred during lifting shall be the responsibility of the Contractor.

The information presented below is from the literature provided by the manufacturer. Consult the manufacturer for complete lifting requirements.

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

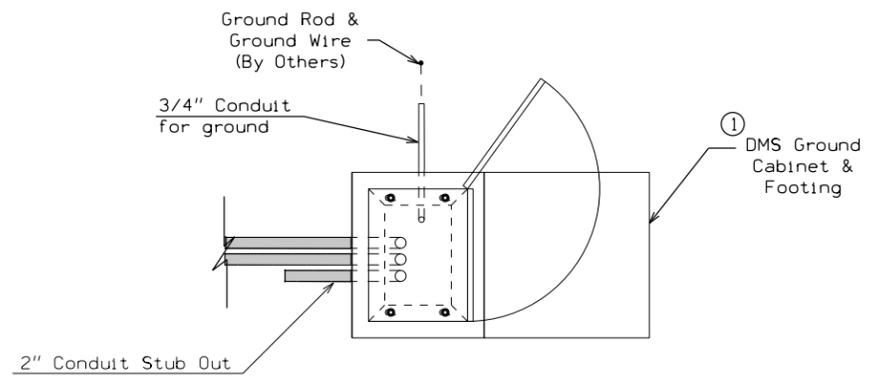
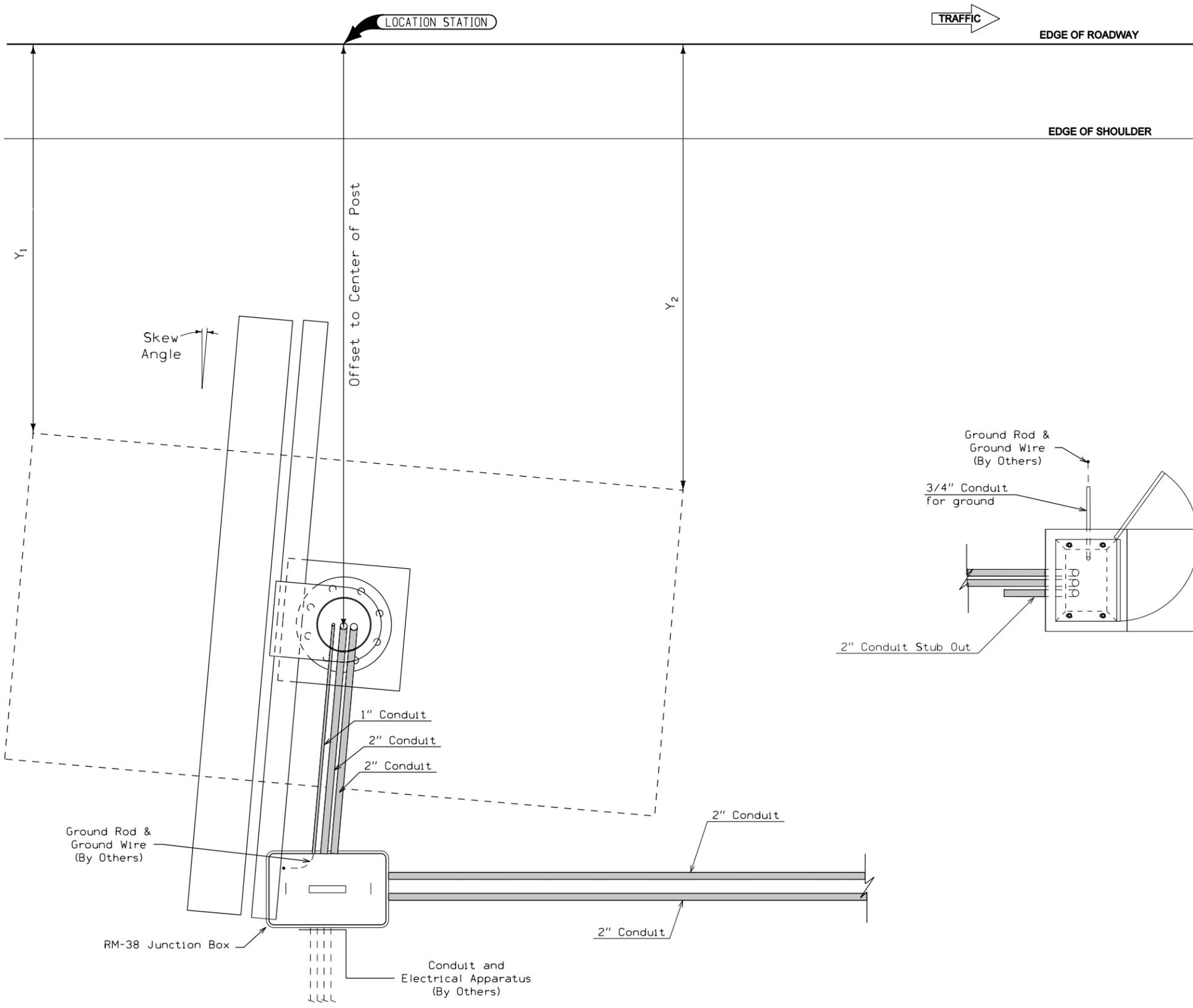
When removing an existing sign, the pick angles or lifting brackets may need to be furnished by the Contractor. Consult Skyline for specific information about the pick angle or lifting bracket requirements.

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 to 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.

DETAILS OF ROADSIDE DYNAMIC MESSAGE SIGN



SITE INSTALLATION NOTES:

Contractor is to install the sign footing, sign support structure, DMS, the ground cabinet footing, ground cabinet, RM-38 junction box, and conduit between the handhole and each footing.

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

The DOT will furnish the ground cabinet to be installed.

The ground cabinet footing shall be located within 25 feet of the RM-38 junction box, beside or behind the DMS and oriented as indicated relative to traffic. In locations with a ditch, the footing shall not be located within the ditch bottom, but should be located beyond the top of the backslope, if possible. The Engineer shall approve the location and orientation prior to placement of the footing.

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

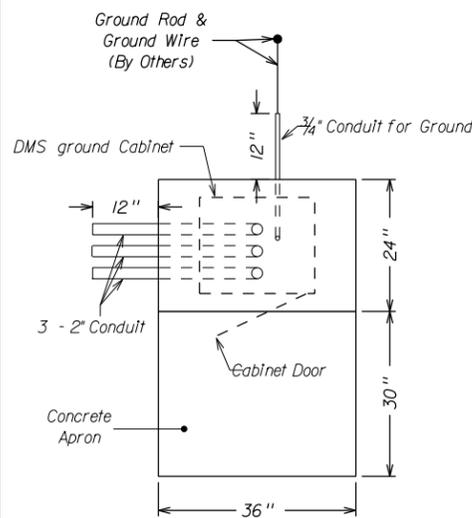
Mark the locations of all conduit entering the sign support structure footing and the ground cabinet footing. Locate marks on the side the conduit enters, near the top, to ensure visibility after backfilling and shaping.

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

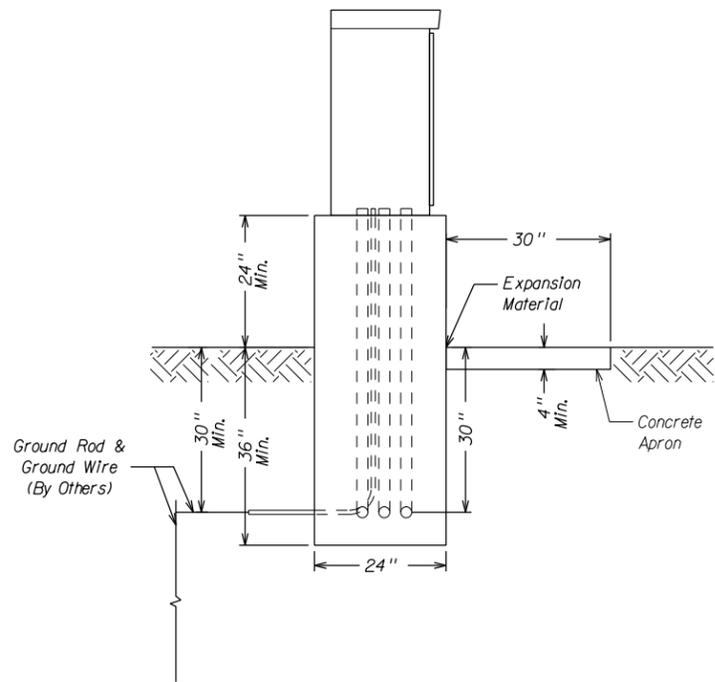
Complete site restoration as per section 2523.18.

PLAN VIEW

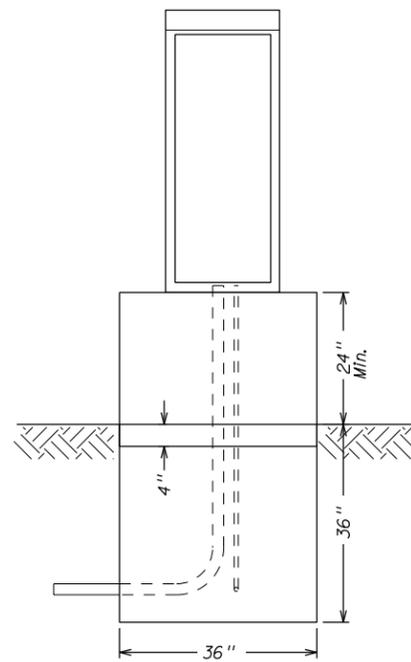
**SITE INSTALLATION
DETAILS FOR ROADSIDE
DYNAMIC MESSAGE SIGN**



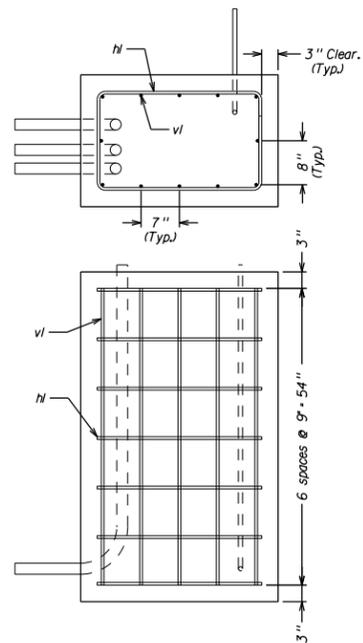
Top View



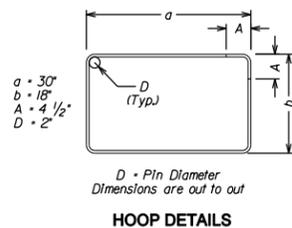
Side View



Front View



Reinforcing Details



HOOP DETAILS

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

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

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

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

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

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

Epoxy coated reinforcement to meet the requirements of section 2404.

Conduit to meet the requirements of section 2323.10.

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

| EPOXY COATED 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 location | |
| Footing | 1.11 cu yd |
| Pad | 0.09 cu yd |

DMS GROUND CABINET FOOTING DETAILS

ESTIMATED PROJECT QUANTITIES

100-1A
07-15-97

| Item No. | Item Code | Item | Unit | Total | As Built Quan. |
|----------|--------------|--|------|-------|----------------|
| 1 | 2401-6745355 | REMOVAL OF CONCRETE FOOTINGS OF HIGHWAY SIGNS | EACH | 6 | |
| 2 | 2401-6745910 | REMOVAL OF SIGN | EACH | 3 | |
| 3 | 2402-2720000 | EXCAVATION, CLASS 20 | CY | 92 | |
| 4 | 2403-0100000 | STRUCTURAL CONCRETE (MISCELLANEOUS) | CY | 23.0 | |
| 5 | 2404-7775005 | REINFORCING STEEL, EPOXY COATED | LB | 2240 | |
| 6 | 2524-9081275 | CONCRETE FOOTING FOR BREAKAWAY SIGN POST, 2'-8" DIA. X 7'-6" | EACH | 2 | |
| 7 | 2524-9081290 | CONCRETE FOOTING FOR BREAKAWAY SIGN POST, 2'-8" DIA. X 9'-0" | EACH | 4 | |
| 8 | 2524-9281210 | STEEL BREAKAWAY SIGN POSTS FOR TYPE A OR B SIGNS, W 8 X 21 | LF | 35.2 | |
| 9 | 2524-9281426 | STEEL BREAKAWAY SIGN POSTS FOR TYPE A OR B SIGNS, W 12 X 26 | LF | 73.8 | |
| 10 | 2524-9380001 | TYPE B SIGNS, EXTRUDED ALUMINUM STRUCTURAL PANELS | SF | 274 | |
| 11 | 2526-8285000 | CONSTRUCTION SURVEY | LS | 1 | |
| 12 | 2528-8445110 | TRAFFIC CONTROL | LS | 1 | |
| 13 | 2533-4980005 | MOBILIZATION | LS | 1 | |
| 14 | 2599-9999005 | DMS INSTALL, ROADSIDE | EACH | 2 | |
| 15 | 2599-9999005 | STEEL ROADSIDE DMS SIGN SUPPORT | EACH | 2 | |

ESTIMATE REFERENCE INFORMATION

100-4A
10-29-02

| Item No. | Item Code | Description |
|----------|--------------|--|
| 1 | 2401-6745355 | <p>REMOVAL OF CONCRETE FOOTINGS OF HIGHWAY SIGNS</p> <p>Refer to Tabulation REMOVAL and SIGN-NOTE.</p> <p>Concrete footings or parts of concrete footings removed shall become the property of the Contractor, and shall be removed in accordance with Article 1104.08. Where portions of the existing concrete footings lie wholly or in part within limits for a new structure (culvert, concrete footing, or other), they shall be removed as necessary to accommodate construction of the proposed structure.</p> <p>METHOD OF MEASUREMENT: The Engineer will count each concrete footing of highway sign removed.</p> <p>BASIS OF PAYMENT: For each concrete footing of highway sign removed, the Contractor shall be paid the contract unit price. This payment shall be full compensation for furnishing all material, equipment, and labor and for the performance of all work necessary for removal of the concrete footings from the project and for any backfilling made necessary by these operations.</p> |
| 2 | 2401-6745910 | <p>REMOVAL OF SIGN</p> <p>Refer to Tabulation REMOVAL and SIGN-NOTE.</p> <p>METHOD OF MEASUREMENT: The Engineer will count each sign removed.</p> <p>BASIS OF PAYMENT: For each sign removed, the Contractor shall be paid the contract unit price. This payment shall be full compensation for furnishing all material, equipment, and labor and for the performance of all work necessary for removal of the sign from the project.</p> |
| 3 | 2402-2720000 | <p>EXCAVATION, CLASS 20</p> <p>Refer to Tabulation 192-1.</p> |
| 4 | 2403-0100000 | <p>STRUCTURAL CONCRETE (MISCELLANEOUS)</p> <p>Refer to Tabulation 192-1 and "V" sheets for details.</p> |
| 5 | 2404-7775005 | <p>REINFORCING STEEL, EPOXY COATED</p> <p>Refer to Tabulation 192-1 and "V" sheets for details.</p> |

ESTIMATE REFERENCE INFORMATION

100-4A
10-29-02

| Item No. | Item Code | Description |
|----------|--------------|--|
| 6 | 2524-9081275 | CONCRETE FOOTING FOR BREAKAWAY SIGN POST, 2'-8" DIA. X 7'-6" |
| 7 | 2524-9081290 | CONCRETE FOOTING FOR BREAKAWAY SIGN POST, 2'-8" DIA. X 9'-0" |
| 8 | 2524-9281210 | STEEL BREAKAWAY SIGN POSTS FOR TYPE A OR B SIGNS, W 8 X 21 |
| 9 | 2524-9281426 | STEEL BREAKAWAY SIGN POSTS FOR TYPE A OR B SIGNS, W 12 X 26 |
| 10 | 2524-9380001 | TYPE B SIGNS, EXTRUDED ALUMINUM STRUCTURAL PANELS |
| | | Refer to Tabulation 192-1 and "V" sheets for details. |
| 11 | 2526-8285000 | CONSTRUCTION SURVEY |
| 12 | 2528-8445110 | TRAFFIC CONTROL |
| | | Refer to Tabulation 108-23. |
| 13 | 2533-4980005 | MOBILIZATION |
| 14 | 2599-9999005 | <p>ROADSIDE DMS, INSTALL</p> <p>Refer to Tabulation 192-1 and "V" sheets.</p> <p>Work shall consist of furnishing all labor, equipment, and materials to construct and dynamic message sign (DMS), generally including, but not limited to:</p> <ul style="list-style-type: none"> - attachment of the DMS to the support structure - construction of the ground cabinet footing - installation of an RM-38 junction box - installation of the conduit between the sign support structure footing and the ground cabinet footing - installation of the ground cabinet - transport DMS and associated appurtenances from storage area <p>The Roadside DMS vendor is Skyline Products, Inc. of Colorado Springs, Colorado.</p> <p>The following items will be provided by the DOT or the DMS vendor: DMS, DMS-to-sign support structure attachment hardware, and ground cabinet.</p> <p>The Contractor shall assume full responsibility for the DOT furnished materials prior to accessing them. This assumption of responsibility shall be documented with an itemized invoice clearly identifying each item and shall be signed and dated by the Contractor and the Engineer. Lacking a signed invoice, the default date of assumption of responsibility for these materials shall be the date the contract between the DOT and the Contractor is signed.</p> <p>Upon the assumption of responsibility for any and all materials, the Contractor shall be wholly liable for safe handling, storage, and installation of the equipment. Any damaged equipment shall be replaced at the Contractor's expense, without additional compensation.</p> <p>The signs and related equipment to be installed on this project will be made available at the Iowa DOT Maintenance Facility in Newton, IA.</p> <p>METHOD OF MEASUREMENT: The Engineer will count the number of Roadside DMS signs installed.</p> <p>BASIS OF PAYMENT: The Contractor shall be paid the contract unit price for each Side of Road DMS sign installed. This payment shall be full compensation for furnishing all material, equipment (except as noted above) and labor and for the performance of all work necessary, including transport of all provided materials from their present location, to provide the DMS installation.</p> |
| 15 | 2599-9999005 | <p>STEEL ROADSIDE DMS SIGN SUPPORT</p> <p>For the fabrication and installation of steel sign supports. Refer to the V sheets for dimensions and details. These items are covered by Section 2423 of the DOT specifications.</p> |

**ESTIMATE OF QUANTITIES,
ESTIMATE REFERENCE INFORMATION
AND STANDARD ROAD PLANS**

TABULATION OF MATERIALS FOR STEEL ROADSIDE DMS SIGN SUPPORT

Refer to Site Installation Details on Sheet B.02 and "V" Sheets.

192-1
03-17-09

| DMS NUMBER | LOCATION | | | | HORIZONTAL OFFSET TO CENTER OF POST (Ft) | SKEW ANGLE (Degrees) | OFFSETS TO NEAR CORNERS OF FOOTING | | LENGTH OF POST (Ft) | FOUNDATION QUANTITIES | | |
|------------|----------|---------|----------|---------------------|---|----------------------------|---------------------------------------|------------------------|------------------------------|-------------------------------------|---|-----------------------------------|
| | ROUTE | STATION | MILEPOST | DIR OF TRAVEL | | | Y ₁ (Ft) | Y ₂ (Ft) | | EXCAVATION (CLASS 20) (Cu Yd) | REINFORCING - EPOXY- COATED STEEL (Lb) | STRUCTURAL CONCRETE (Cu Yd) |
| | | | | | | | | | | | | |
| 601 | I-80 | 2604+00 | 165.3 | I-80 EB | 43.0 | 7 | 38.04 | 40.00 | 30.0 | 52 | 1120 | 11.5 |
| 602 | I-80 | 2925+00 | 171.3 | I-80 WB | 38.0 | 6 | 33.19 | 34.86 | 15.0 | 40 | 1120 | 11.5 |
| TOTALS | | | | | | | | | | 92 | 2240 | 23.0 |

TABULATION OF SPECIAL EVENTS

102-15
10-29-02

| Event | Location | Date * |
|---|-----------------------------|----------|
| ARCA Qualifying | Iowa Speedway - Newton | 7/10/09 |
| ARCA Re/Max Series | Iowa Speedway - Newton | 7/11/09 |
| NASCAR Nationwide Series | Iowa Speedway - Newton | 8/01/09 |
| NASCAR Camping World Series Truck Race | Iowa Speedway - Newton | 9/05/09 |
| UI Football | Kinnick Stadium - Iowa City | 9/19/09 |
| USAR Pro Cup Series/ASA Late Model Series | Iowa Speedway - Newton | 9/19/09 |
| Marshalltown Oktoberfest | Iowa Speedway - Newton | 9/26/09 |
| UI Football | Kinnick Stadium - Iowa City | 10/03/09 |
| UI Football | Kinnick Stadium - Iowa City | 10/10/09 |
| UI Football | Kinnick Stadium - Iowa City | 10/31/09 |
| UI Football | Kinnick Stadium - Iowa City | 11/07/09 |
| UI Football | Kinnick Stadium - Iowa City | 11/21/09 |

* Should construction extend beyond 2009, all events at the Iowa Speedway and all UI Football games, as well as other events as designated by the Engineer, shall be considered Special Events.

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.

TRAFFIC CONTROL PLAN

108-23
04-04-89

Through traffic will be maintained on the project at all times.
 The lane adjacent to the installation shall be closed per TC-418 at all times when workers are present on the site.
 Single lane closure per TC-418 will only be allowed on mainline I-80 from Monday beginning at 12:00 a.m. to Friday 10:00 a.m. Night work will be allowed within this time frame.
 No work requiring lane closures will be allowed on mainline I-80 between June 14, 2009 and September 7, 2009 between 6:00 a.m. and 9:00 p.m.

04-03-01 203-2
 During construction of this project, the contractor will be required to coordinate his operations with those of other contractors working within the same area. Other work in progress during the same period of the time will include construction of the following projects:

| Project | Type of Work |
|--------------------------|--------------|
| IMN-080-5(256)150--0E-50 | PCC Patching |
| _____ | _____ |
| _____ | _____ |
| _____ | _____ |
| _____ | _____ |
| _____ | _____ |
| _____ | _____ |
| _____ | _____ |

**PROJECT TABULATIONS,
TRAFFIC CONTROL AND STAGING
AND GENERAL NOTES**

SIGNING NOTES

SIGN-NOTE
09-25-02

GENERAL:

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

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

The following tolerances will be allowed on all signs:

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

The following tolerances will be allowed on each letter or numeral: (The measurements will be made to the nearest 1/8".)

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

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

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

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

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

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

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

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

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

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

SIGNING NOTES

SIGN-NOTE
09-25-02

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

Unless otherwise noted, auxiliary panels such as exit number panels shall remain or be reattached to the sign using the existing mounting hardware. Also, when replacing an existing logo sign with a new logo sign, the business logo panel(s) will be removed from the existing sign and attached to the new sign as directed by the Engineer. Care should be taken to prevent damage to the auxiliary or logo panels when removing and reattaching them. This work shall be included in the price bid for Type B signs.

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

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

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

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

For installation of new signs on existing posts:

- if the new sign is taller than the existing sign, the Contractor shall furnish the necessary hardware to extend the sign above the posts. Refer to Standard Road Plan RD-31.
- if the new sign is shorter than the existing sign,
 - for wood posts, the Contractor shall install the sign at the proper height and cut off the excess post length.
 - for steel posts, the Contractor shall install the sign at the top of the posts.

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

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

MB INSTALL SPECIAL MOUNTING BRACKET

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

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

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

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

SIGNING NOTES

SIGN-NOTE
09-25-02

RR REMOVE AND REINSTALL EXISTING SIGN:

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

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

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

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

REMOVAL OF SIGNS
RA REMOVE EXISTING TYPE A SIGN ASSEMBLY
RB REMOVE EXISTING TYPE B SIGN ASSEMBLY

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

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

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

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

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

Holes remaining from the removal of wood posts shall be backfilled and restored to the normal surrounding conditions.

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

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

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

RF REMOVE EXISTING CONCRETE FOOTING FOR STEEL POST

Existing concrete footings shall be removed to a depth of 1 ft below ground. The remaining holes shall be backfilled and restored to the normal surrounding conditions.

SIGNING INSTALLATION QUALITY

SIGN-QUAL
09-25-02

SIGN INSTALLATION QUALITY CONTROL NOTES

Post lengths shall be field verified.

Slight differences between the plan-indicated cross section and the actual field conditions may be encountered.

These variations should be resolved by localized grading and shaping. Material needed to meet the site requirements of SI-101 or SI-102 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 plan-indicated cross section and the actual field conditions need to be resolved in the following manner:

The location shall be surveyed and the ground surface 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 shall be utilized.

If any leg is greater than the maximum allowable leg length, then the crosssection with the actual ground surface drawn (including offsets and elevation from the survey shown) shall be submitted to the Engineer. The Engineer may forward this information to the design Engineer 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 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.

The elevation difference between the stubs shall be 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.

TABULATION OF MATERIALS FOR TYPE 'B' SIGNS

Refer to Standard Road Plans SI-102, 113, and 132.

TYPE-B
08-22-06

| NO. | SIGN NUMBER | | | | | DIR OF TRAVEL | SIGN LOCATION | | FAB INFO | SIGN WIDTH (ft) | SIGN HEIGHT (ft) | AREA (SQ. ft) | WOOD POSTS | | | STEEL BREAKAWAY POSTS | | | | | INSTALLATION | | | SEE SIGNING NOTES | REMARKS | | | | | | | | | | | |
|--------|-------------|-----|----------|---------------|----------|---------------|---------------|---------|----------|-----------------|------------------|---------------|------------|--------|--------|-----------------------|--------|--------|--------------------------|--------|---------------------|---------------------|--------|-------------------|---------|------------------------|------|----------|----------|--|--|--|--|--|--|--|
| | RTE. | CO. | EXIT NO. | ROAD ID M,R,S | SEQ. NO. | | M.P. | STATION | | | | | 4X6 | | | W8x21 | | | FOOTING 2'8"x7'6" (each) | W12x26 | | | | | | FOOTING 2'8"x9' (each) | TYPE | DIM | | | | | | | | |
| | | | | | | | | | | | | | L (ft) | M (ft) | R (ft) | L (ft) | M (ft) | R (ft) | | L (ft) | M ₁ (ft) | M ₂ (ft) | R (ft) | | | | | "X" (ft) | "Y" (ft) | | | | | | | |
| | 80 | 50 | 168 | M | | | 2594+00 | | new | 9 | 3 | 27 | | | | 16.8 | 0 | 18.4 | 2 | | | | | | 2 | 30 | 7 | IB/PB | | | | | | | | |
| | 80 | 50 | 168 | M | | | 2624+10 | | new | 13 | 9.5 | 123.5 | | | | | | | | | 19.1 | 0 | 0 | 16.0 | 2 | 2 | 36 | 7 | IB/PB | | | | | | | |
| | 80 | 50 | 168 | M | 108 | WB | 2936+00 | | new | 13 | 9.5 | 123.5 | | | | | | | | | 19.1 | 0 | 0 | 19.6 | 2 | 2 | 30 | 7 | IB/PB | | | | | | | |
| TOTALS | | | | | | | | | | | | | | | 274 | | | | | | 16.8 | 0 | 18.4 | 2 | 38.2 | 0 | 0 | 35.6 | 4 | | | | | | | |

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

TABULATION OF EXISTING SIGNS TO BE REMOVED

REMOVAL
08-24-06

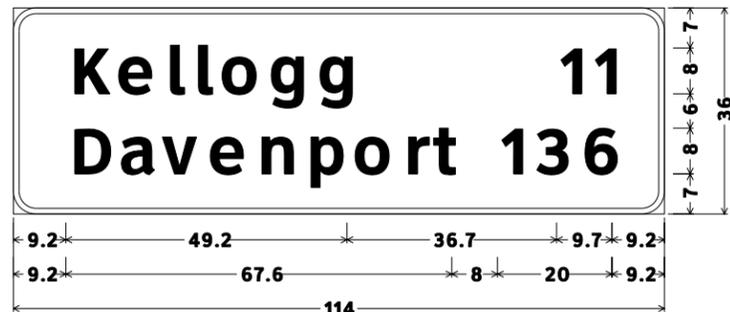
| SIGN NUMBER OR DESCRIPTION | LOCATION STATION (approximate) | DIR OF TRAVEL | TYPE "A" SIGN ASSEMBLY (each) | | TYPE "B" SIGN ASSEMBLY (each) | | REMOVE & REINSTALL EXISTING SIGNS | | CONCRETE FOOTING (each) | SUPPORT STRUCTURE & FOOTING (each) | APPLICABLE SIGNING NOTES | REMARKS |
|-----------------------------|--------------------------------|---------------|-------------------------------|------|-------------------------------|------|-----------------------------------|---|-------------------------|------------------------------------|-----------------------------|---------|
| | | | (RA) | (RB) | TYPE "A" TYPE "B" | | | | | | | |
| | | | | | (RR) | (RR) | | | | | | |
| DISTANCE (KELLOG/DAVENPORT) | 2594+00 | EB | | 1 | | | | 2 | | RB/RF | | |
| LODGING - EXIT 168 | 2624+10 | EB | | 1 | | | | 2 | | RB/RF | RE-USE EXISTING LOGO PANELS | |
| LODGING - EXIT 168 | 2930+00 | WB | | 1 | | | | 2 | | RB/RF | RE-USE EXISTING LOGO PANELS | |

STANDARD ROAD PLANS

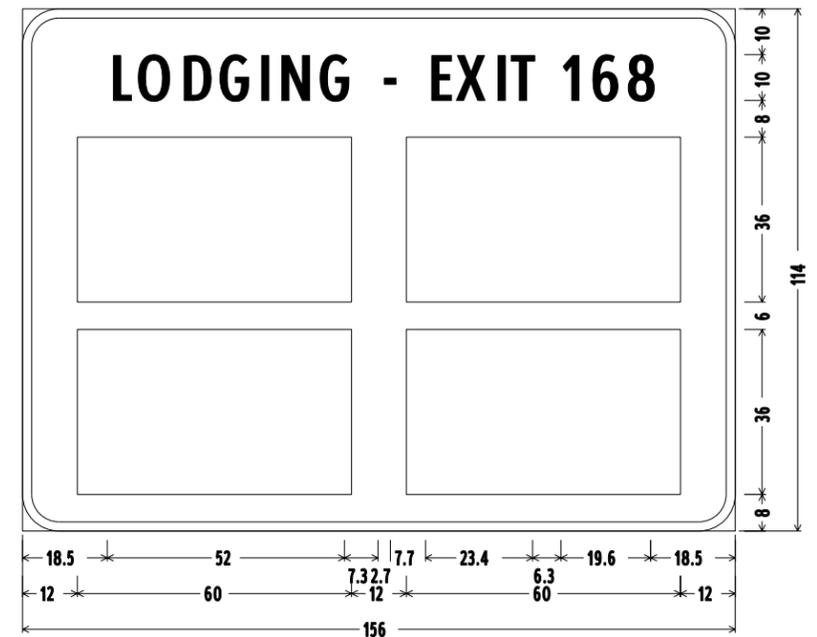
105-4
10-16-07

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

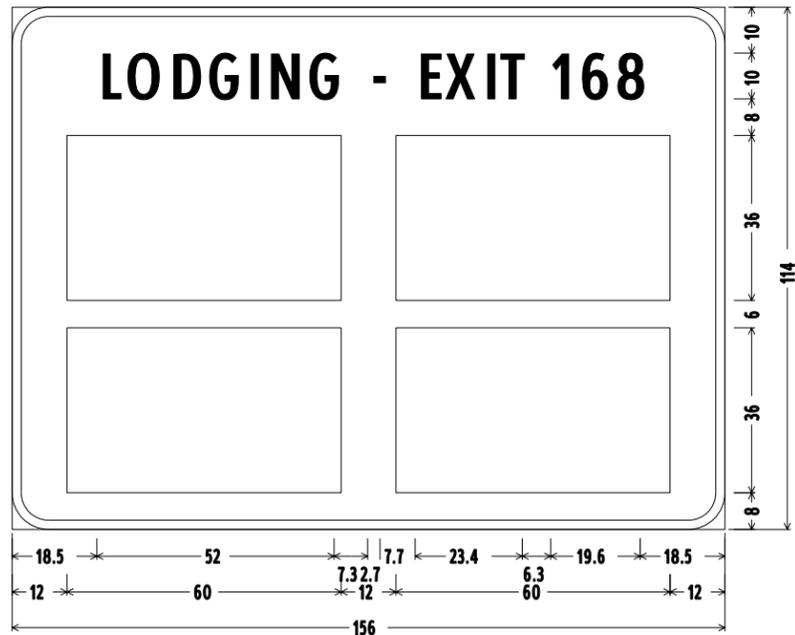
| Number | Date | Sheets | Title |
|--------|----------|--------|--|
| SI-101 | 04-21-09 | 1 | Locations - Type 'A' Signs |
| SI-102 | 04-21-09 | 2 | Locations - Type 'B' Signs |
| SI-113 | 04-21-09 | 3 | Support Structures - Steel Breakaway Posts |
| SI-121 | 04-21-09 | 4 | Fabrication - Sign Legend Components |
| SI-123 | 04-21-09 | 1 | Fabrication - Type 'B' Signs |
| SI-131 | 04-21-09 | 1 | Sign Installation - Type 'A' Signs |
| SI-132 | 04-21-09 | 2 | Sign Installation - Type 'B' Signs |
| TC-1 | 10-17-06 | 1 | Work not Affecting Traffic |
| TC-402 | 10-21-08 | 1 | Shoulder Closure |
| TC-418 | 10-21-08 | 1 | Lane Closure on Divided Highway |



4.0" Radius, 1.0" Border, White on Green;
 [Kellogg] ClearviewHwy-5-W; [11] ClearviewHwy-5-W;
 [Davenport] ClearviewHwy-5-W; [136] ClearviewHwy-5-W;



8.0" Radius, 2.0" Border, White on Blue;
 [LODGING - EXIT 168] ClearviewHwy-2-W;



8.0" Radius, 2.0" Border, White on Blue;
 [LODGING - EXIT 168] ClearviewHwy-2-W;

DETAILS OF
 TYPE B SIGNS

ANCHOR BOLT NOTES:

PROCEDURE FOR TIGHTENING ANCHOR BOLT NUTS ON STEEL ROADSIDE D.M.S. SUPPORT.

- 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 |

- 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 SIGNS, LUMINAIRES AND TRAFFIC SIGNALS, SERIES OF 2001 WITH CURRENT INTERIMS.

SPECIFICATIONS:

DESIGN: A.A.S.H.T.O. STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES AND TRAFFIC SIGNALS, SERIES OF 2001 WITH CURRENT INTERIMS.
 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.

STAINLESS STEEL BOLTING NOTES:

- 1) UNLESS OTHERWISE NOTED ON THE PLAN, ALL STAINLESS STEEL BOLTS AND U-BOLTS SHALL BE FURNISHED WITH STAINLESS STEEL REGULAR HEXAGONAL NUTS, JAM NUTS AND WASHERS UNDER BOTH HEADS AND NUTS.
- 2) IN CASE STAINLESS STEEL LOCK WASHERS ARE USED IN LIEU OF JAM NUTS, THE REGULAR WASHERS UNDER NUTS ARE TO BE OMITTED.
- 3) STAINLESS STEEL BOLTS SHALL COMPLY WITH ASTM A320 OR F593 AS PER STANDARD SPECIFICATIONS. STAINLESS STEEL PARTS SHALL COMPLY WITH ASTM A240, 300 SERIES.

STEEL NOTES:

ALL STEEL SHAPES, BARS, AND PLATES SHALL COMPLY WITH ASTM A36 EXCEPT MINOR PARTS APPROVED BY THE ENGINEER MAY COMPLY WITH ASTM A575 GRADE M1020. THE GALVANIZED METAL BAR GRATING INCLUDING BEARING BAR, CROSS BARS AND BANDING BARS SHALL COMPLY WITH THE REQUIREMENTS OF ASTM A1011 TYPE 2. ALL STEEL PIPE SHALL COMPLY WITH THE REQUIREMENTS OF ASTM A53 GRADE B, TYPE E OR S OR API 5L GRADE B. ALL ROUND HSS SHALL COMPLY WITH THE REQUIREMENTS OF ASTM A 500 GRADE B.

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

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

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

ULTRASONIC TESTING SHALL BE PREFORMED ON THE POST TO BASE PLATE WELDS.

THE 3/4"φ A325 GALVANIZED BOLTS SHALL BE TENSIONED BY TURN OF THE NUT METHOD.

GENERAL NOTES:

ALL D.M.S. SUPPORTS ARE DESIGNED FOR 40.2 lb/ft² WIND PRESSURE ON MEMBERS AND SIGN PANELS.

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

SHOP DRAWINGS SHALL BE SUBMITTED FOR APPROVAL.

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

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

THE FOOTING SHALL BE BACKFILLED PRIOR TO ERECTING SIGN SUPPORT.

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

ALL REINFORCING TO BE GRADE 60.

ALL CONCRETE TO BE CLASS "C" STRUCTURAL CONCRETE.

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

FOUNDATIONS AND ANCHOR BOLTS:

- 1) THE ELEVATION AT THE OF THE TOP OF THE FOUNDATION SHALL BE WITHIN 1 INCH OF PLAN ELEVATION.
- 2) ANCHOR BOLT GROUPS SHALL BE LOCATED ACCURATELY BY TEMPLATE OR OTHER POSITIVE MEANS, WITH CENTERS OF ADJACENT ANCHOR BOLT GROUPS WITHIN 3/16 INCH OF THE CORRECT DISTANCE APART.
- 3) ANCHOR BOLTS SHALL BE PLUMB WITHIN 1/4 INCH PER FOOT FROM VERTICAL.
- 4) ANCHOR BOLTS SHALL PROJECT ABOVE TOP OF FOUNDATION WITHIN 1/4 INCH OF THE PLAN DIMENSION.
- 5) WELDING OR BENDING OF ANCHOR BOLTS SHALL NOT BE ALLOWED. THE CONTRACTOR SHALL OBTAIN A TEMPLATE FROM THE MANUFACTURER / FABRICATOR FOR PROPER PLACEMENT OF THE ANCHOR BOLTS.

COMPLETED STEEL STRUCTURE:

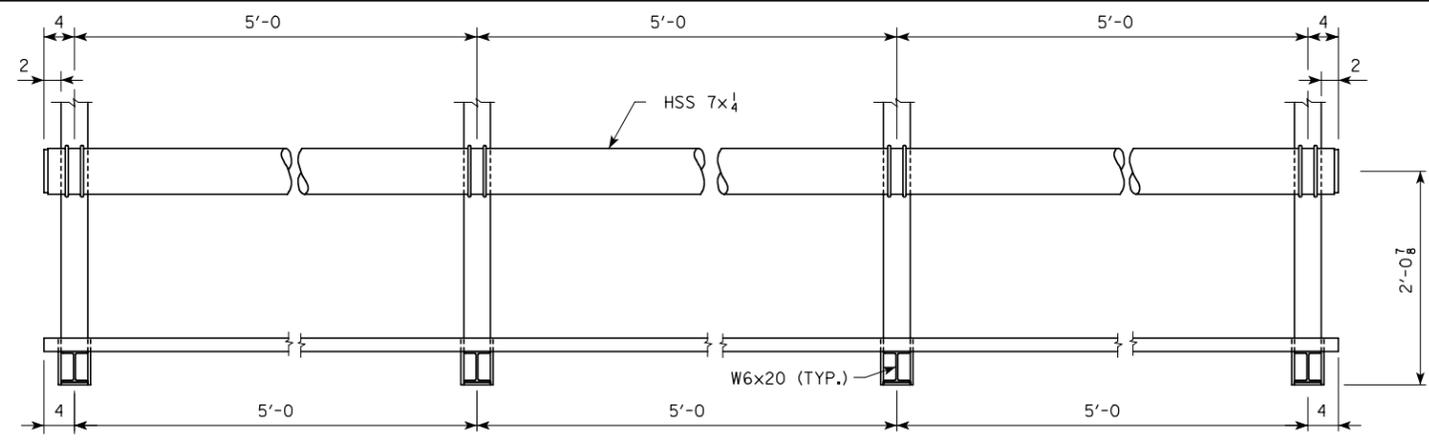
- 1) THE SUPPORT COLUMN SHALL BE PLUMB WITHIN 1/16 INCH PER FOOT OF VERTICAL IN TWO PERPENDICULAR DIRECTIONS.
- 2) HORIZONTAL LINE BETWEEN CHORDS SHALL BE LEVEL WITHIN 1/16 INCH PER FOOT OF HORIZONTAL.

STRUCTURAL DESIGN

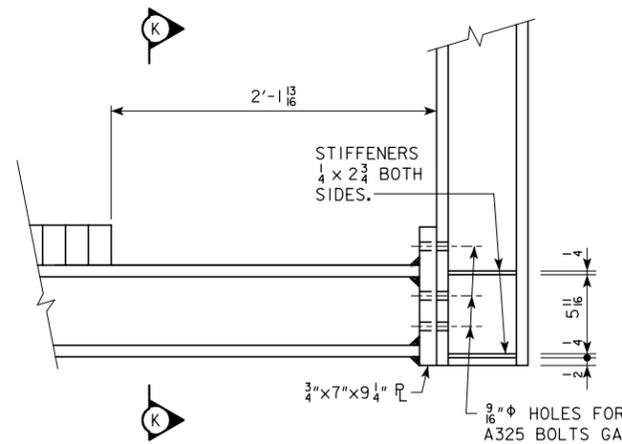
| | | |
|---|---|--------------------|
|  | I hereby certify that this engineering document was prepared by me or under my direct personal supervision and that I am a duly licensed Professional Engineer under the laws of the State of Iowa. | |
| | Signature <u>James R. Hauber</u> Printed or Typed Name | Date <u>4-1-09</u> |
| My license renewal date is December 31, <u>2010</u> | | |
| Pages or sheets covered by this seal: <u>V.1 THRU V.5</u> | | |

DESIGN FOR STEEL ROADSIDE D.M.S. SUPPORT GENERAL NOTES

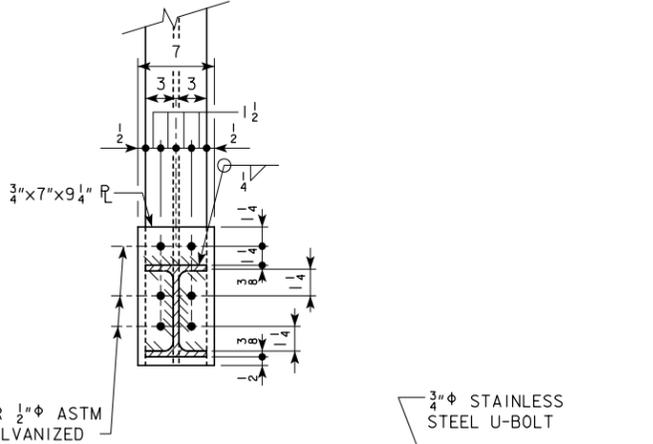
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION



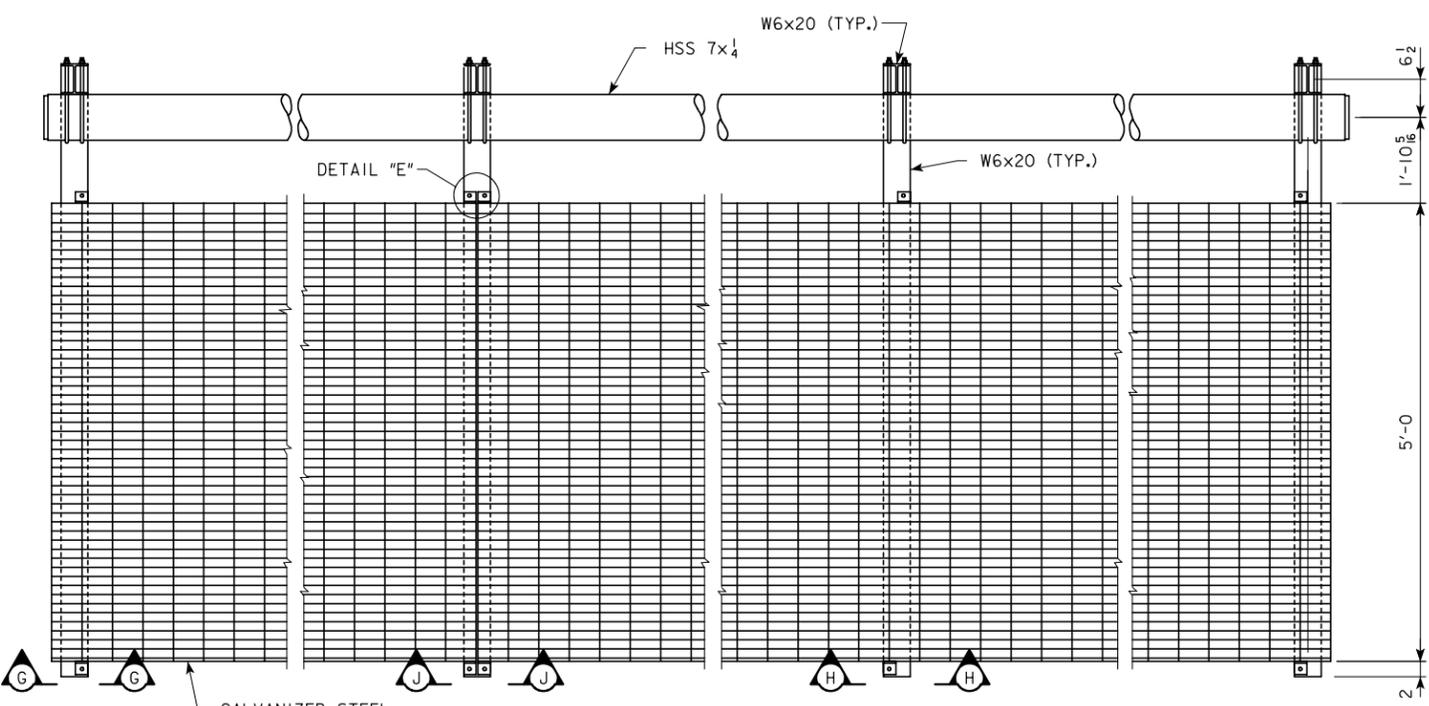
PART ELEVATION



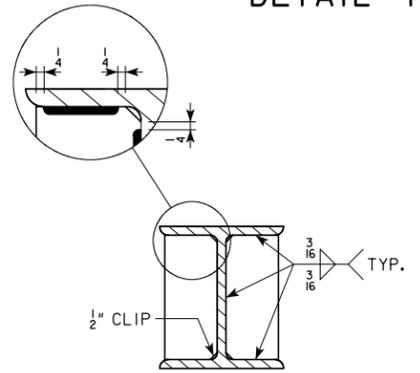
DETAIL "F"



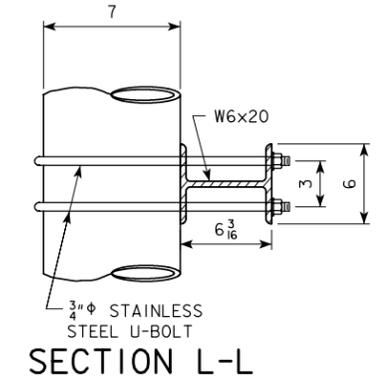
SECTION K-K



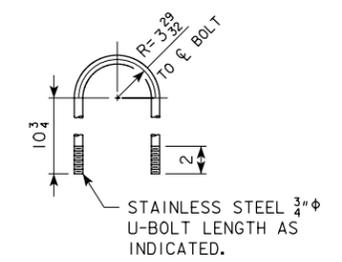
PART PLAN



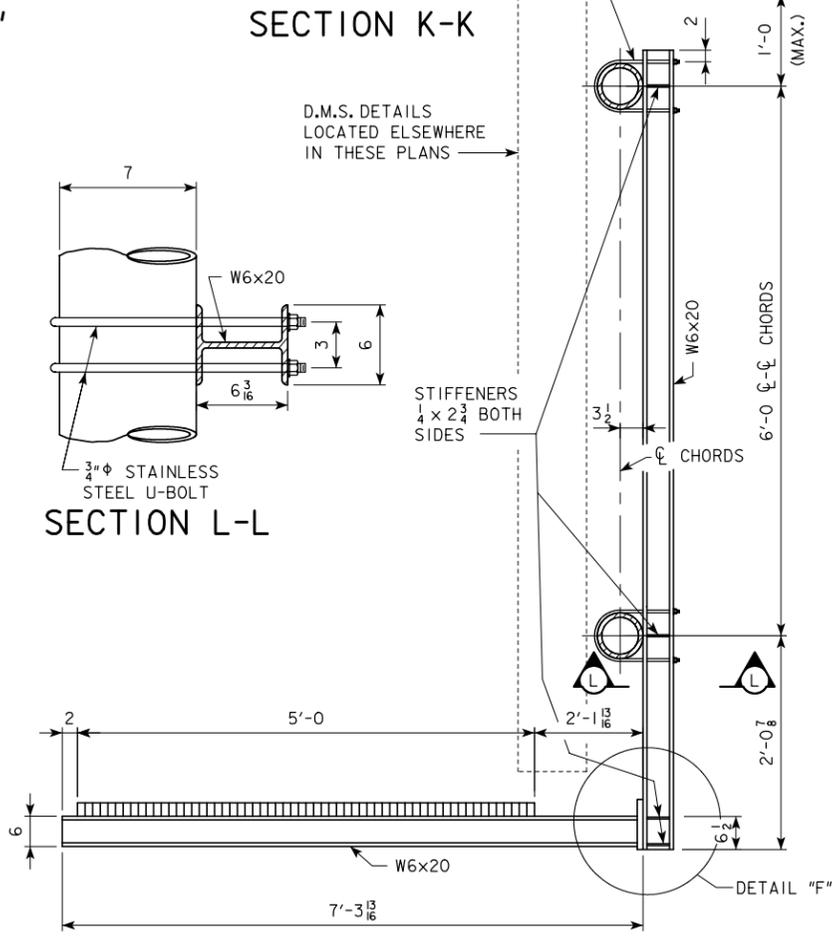
TYPICAL STIFFENER DETAIL



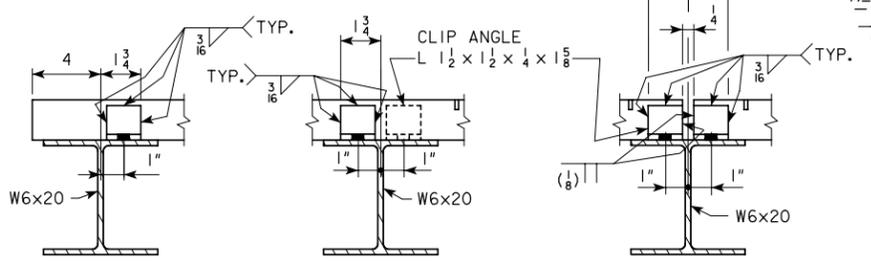
SECTION L-L



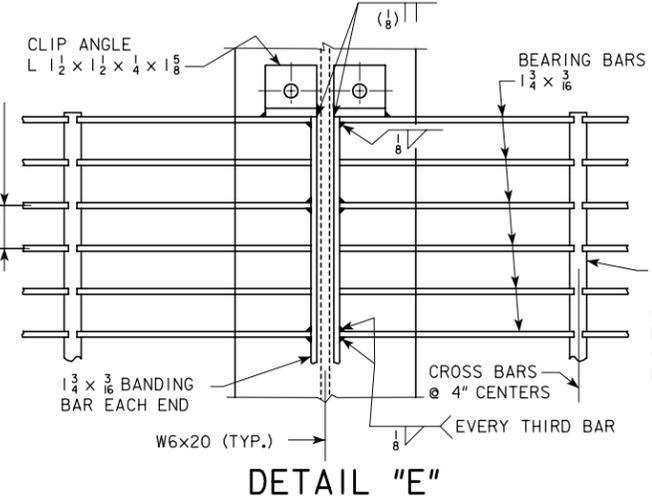
STAINLESS STEEL U-BOLT DETAIL



TYPICAL WORK PLATFORM SECTION



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

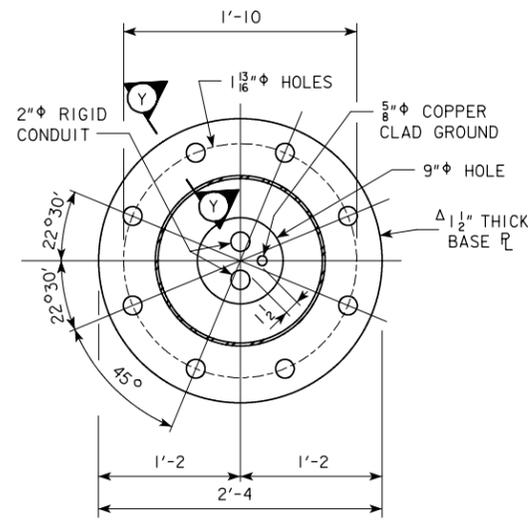


DETAIL "E"

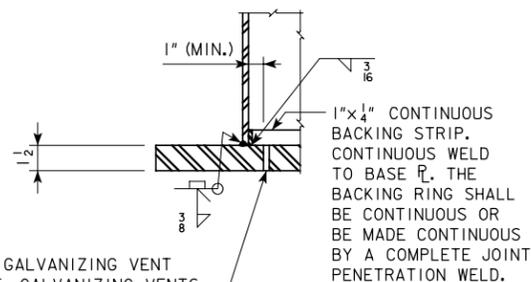
1/2 x 3/16 CROSS BARS OR APPROVED EQUAL. CROSS BARS ARE TO BE PRESSURE LOCKED OR WELDED TO BEARING BARS.

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

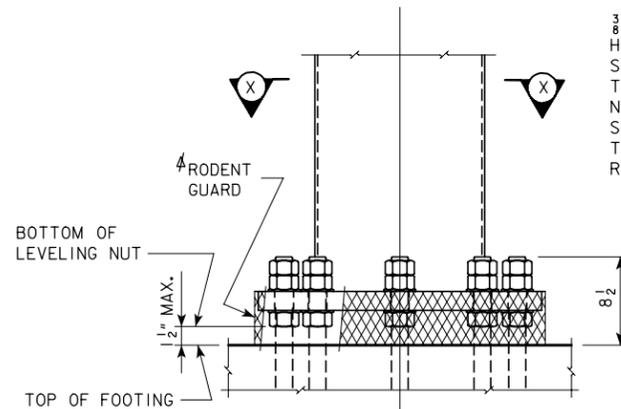
DESIGN FOR
STEEL ROADSIDE D.M.S. SUPPORT
WORK PLATFORM DETAILS
 IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION



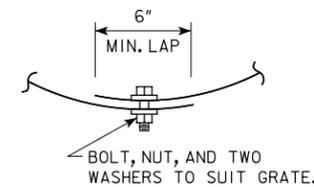
SECTION X-X



SECTION Y-Y



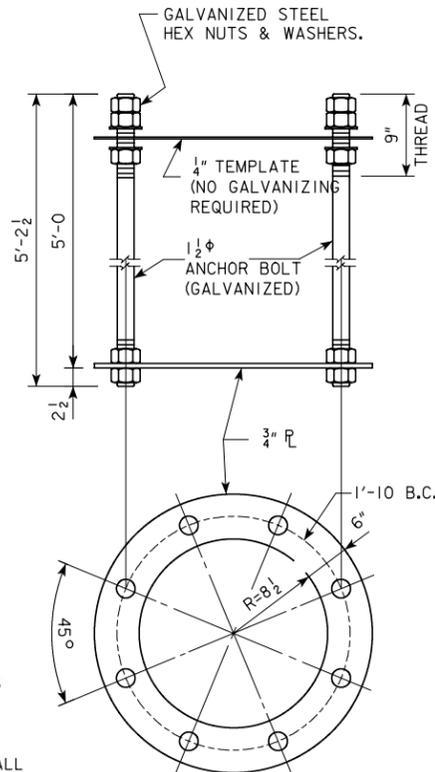
POST BASE DETAIL



RODENT GUARD CLOSURE DETAIL

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

AS AN ALTERNATE STAINLESS STEEL STANDARD GRADE WIRE CLOTH, 1/4" MAXIMUM OPENING WITH A MINIMUM WIRE DIAMETER OF AWG. NO. 16 WITH A MINIMUM 2" LAP. SECURE TO BASE PLATE AFTER ERECTION WITH 3/4" STAINLESS STEEL BANDING.

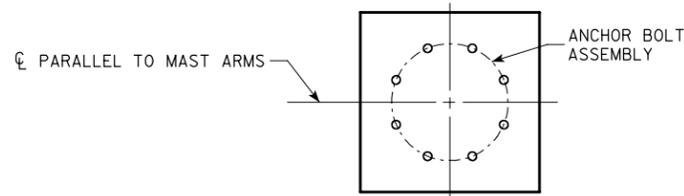


ANCHOR BOLT ASSEMBLY

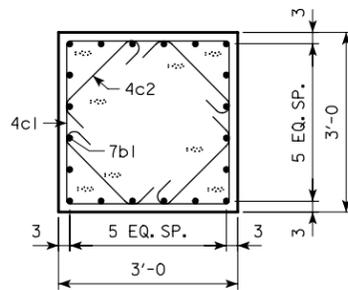
(ALL ANCHOR BOLT MATERIAL SHALL COMPLY WITH THE REQUIREMENTS OF IOWA DOT MATERIALS I.M. 453.08.)

DESIGN FOR
**STEEL ROADSIDE D.M.S.
 SUPPORT**
SIGN SUPPORT DETAILS

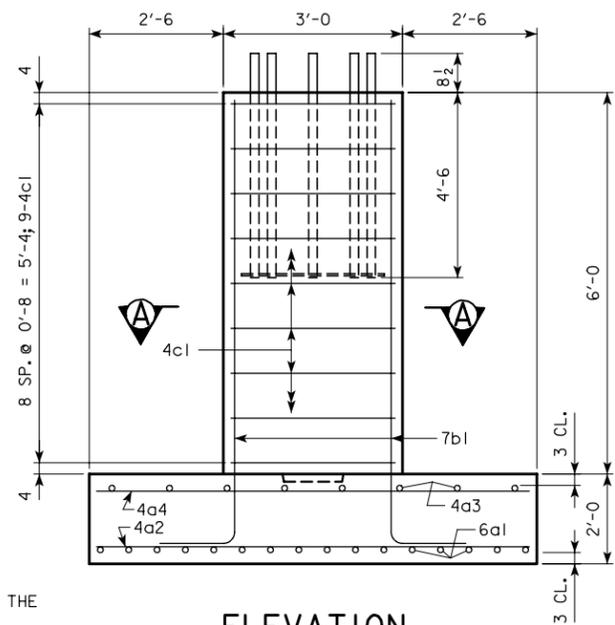
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION



TOP VIEW

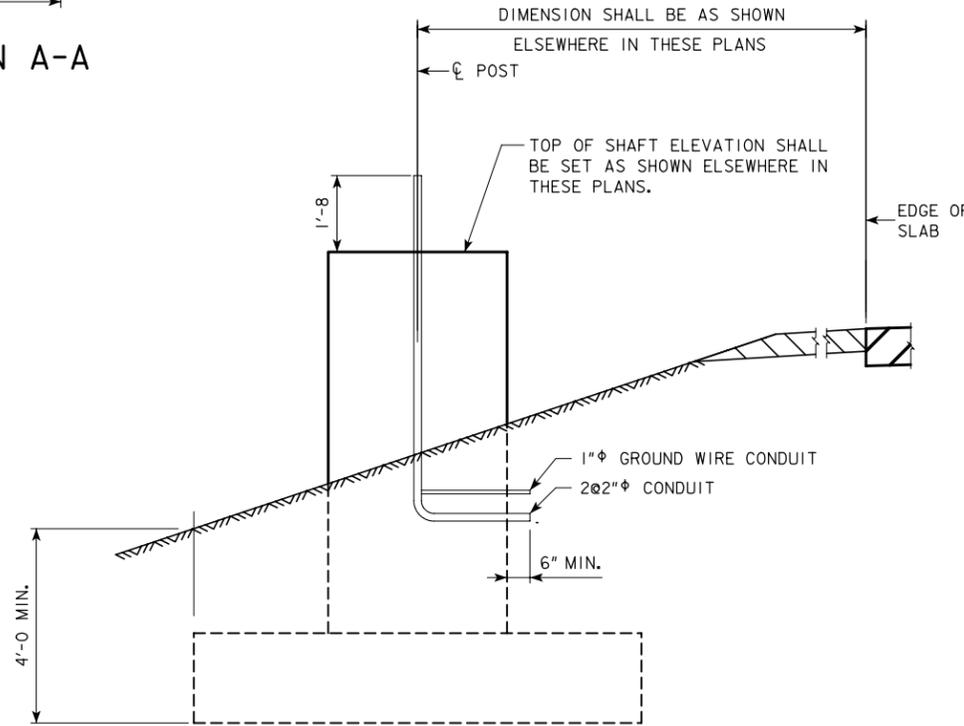


SECTION A-A

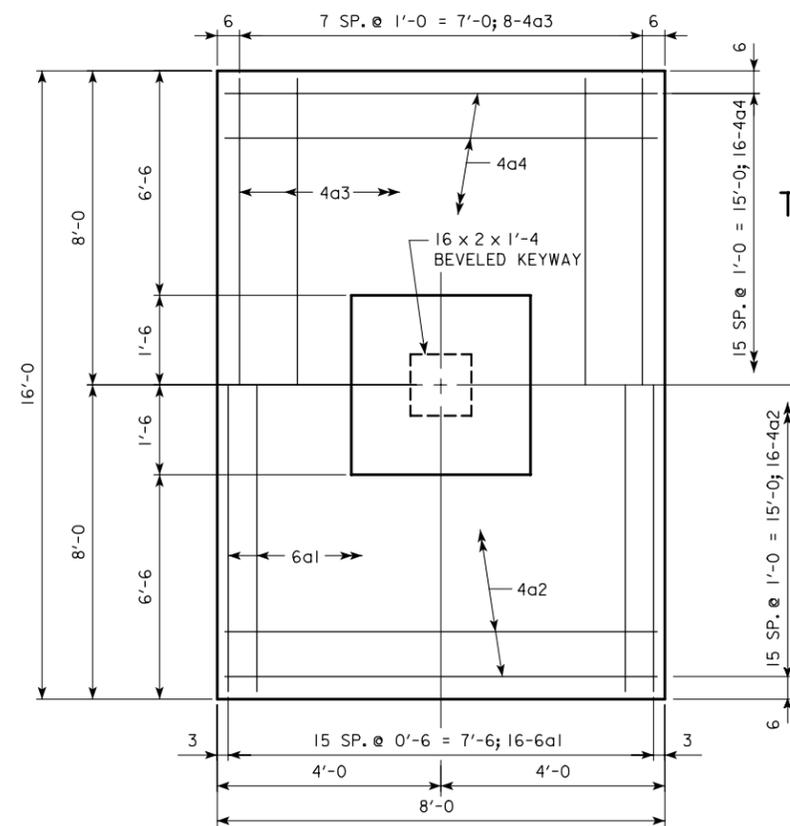


ELEVATION

THE JOINT BETWEEN THE SHAFT AND FOOTING SHALL BE ROUGH.



ELEVATION - TOP OF SHAFT AND BACKFILL

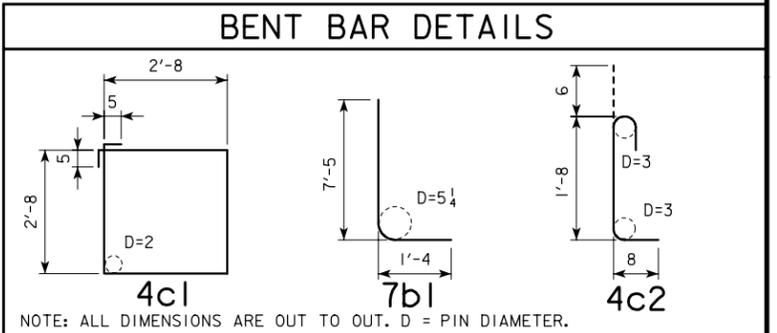


FOOTING PLAN

TOP REINFORCING STEEL

BOTTOM REINFORCING STEEL

| EPOXY-COATED REINFORCING BAR LIST | | | | | |
|---|------------------------|-------|-----|--------|--------|
| BAR | LOCATION | SHAPE | NO. | LENGTH | WEIGHT |
| 6a1 | FOOTING BOT., LONGIT. | — | 16 | 15'-8 | 377 |
| 4a2 | FOOTING BOT., TRANSV. | — | 16 | 7'-8 | 82 |
| 4a3 | FOOTING TOP, LONGIT. | — | 8 | 15'-8 | 84 |
| 4a4 | FOOTING TOP, TRANSV. | — | 16 | 7'-8 | 82 |
| 7b1 | FOOTING TO SHAFT DOWEL | L | 20 | 8'-9 | 358 |
| 4c1 | SHAFT HOOPS | □ | 9 | 11'-6 | 69 |
| 4c2 | SHAFT TIES | L | 36 | 2'-10 | 68 |
| REINFORCING STEEL - EPOXY COATED TOTAL (LBS.) | | | | | 1120 |

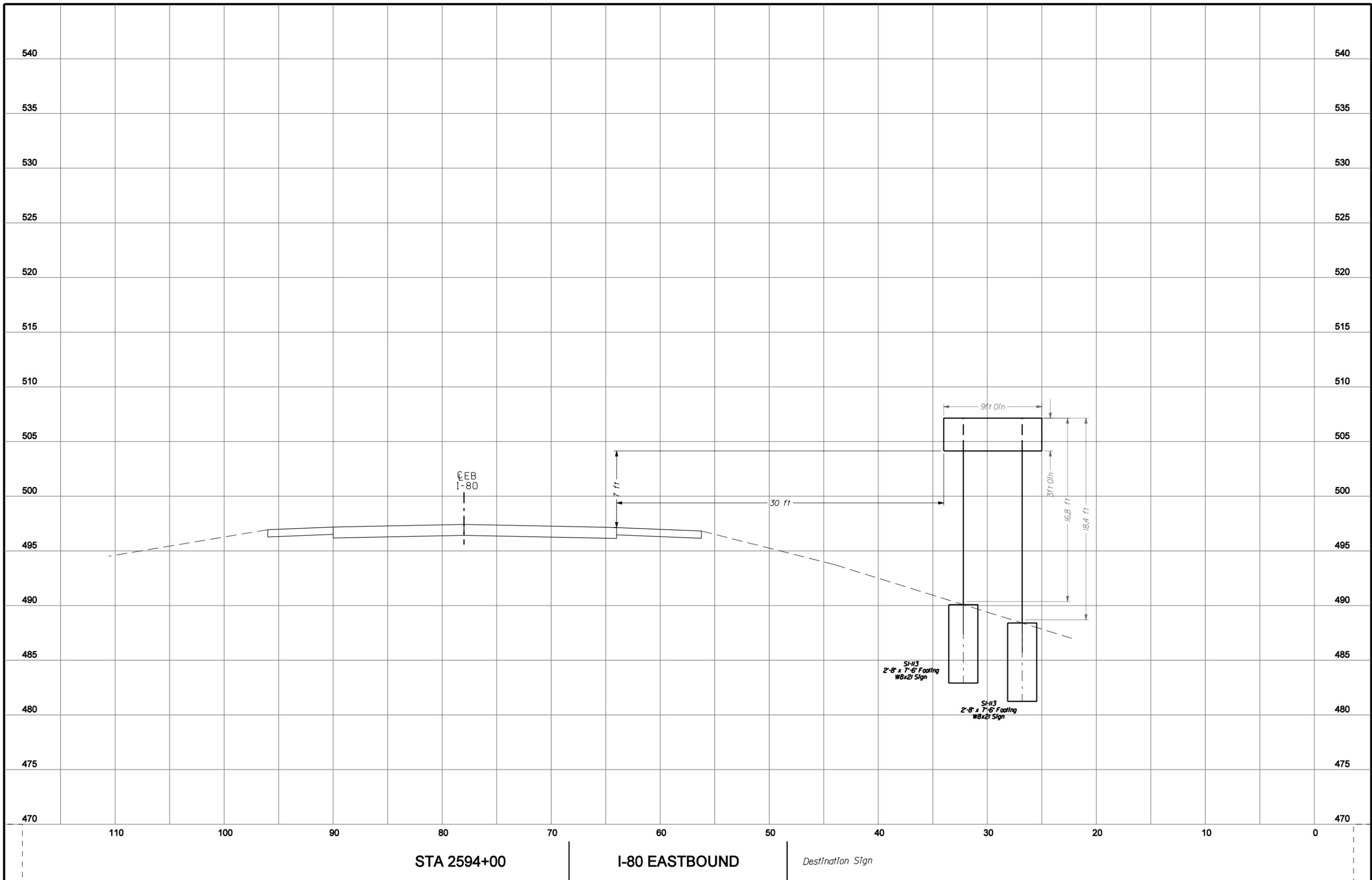


NOTE: ALL DIMENSIONS ARE OUT TO OUT. D = PIN DIAMETER.

| ESTIMATED CONCRETE QUANTITIES | |
|-------------------------------|------|
| SHAFT | 2.0 |
| FOOTING | 9.5 |
| TOTAL - CU. YDS. | 11.5 |

| FOOTING ESTIMATED QUANTITIES | | |
|--------------------------------|----------|----------|
| ITEM | UNIT | QUANTITY |
| STRUCTURAL CONCRETE | CU. YDS. | 11.5 |
| REINFORCING STEEL-EPOXY COATED | LBS. | 1120 |

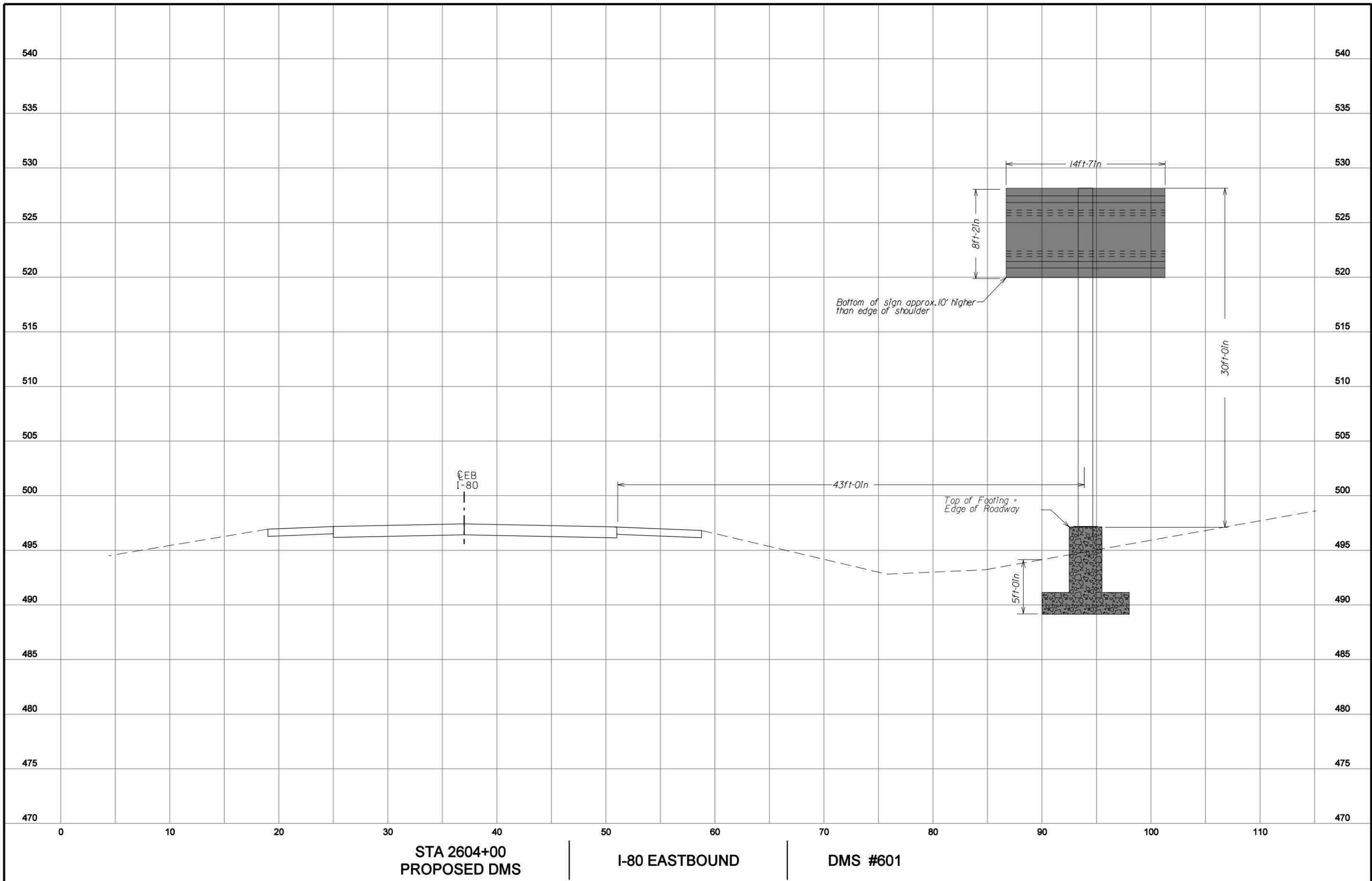
DESIGN FOR
STEEL ROADSIDE D.M.S. SUPPORT
 FOOTING DETAILS
 IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

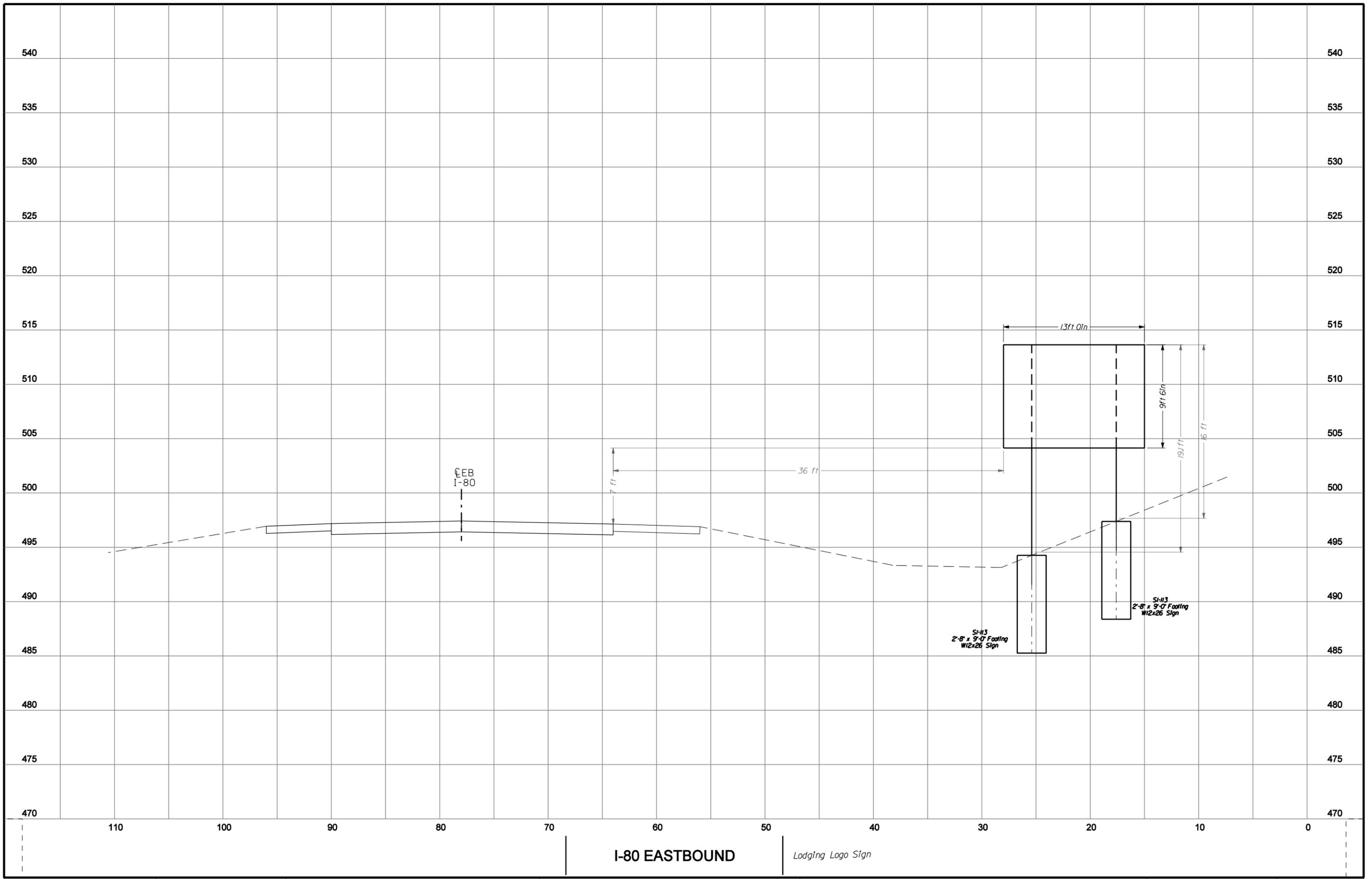


STA 2594+00

I-80 EASTBOUND

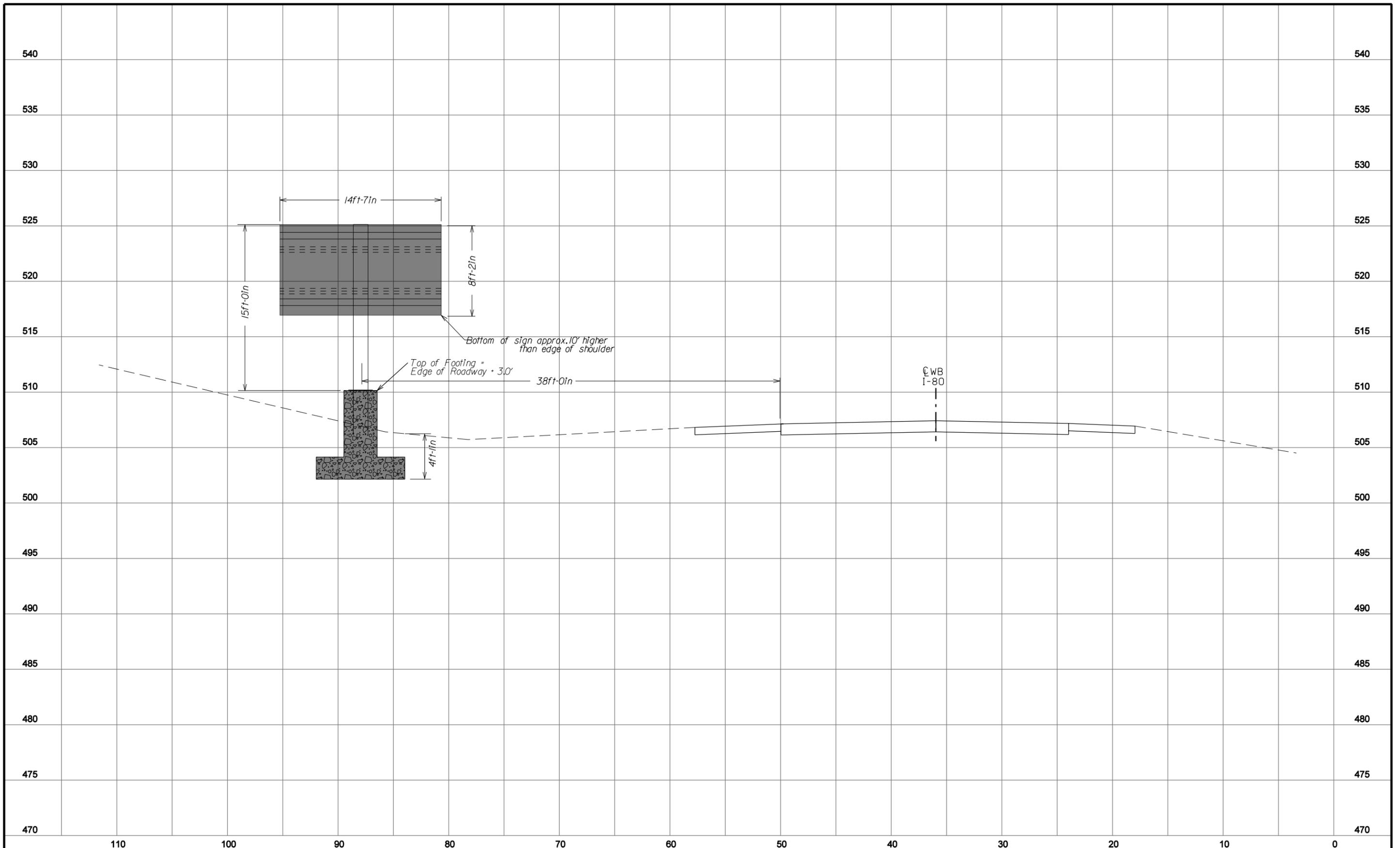
Destination Sign





I-80 EASTBOUND

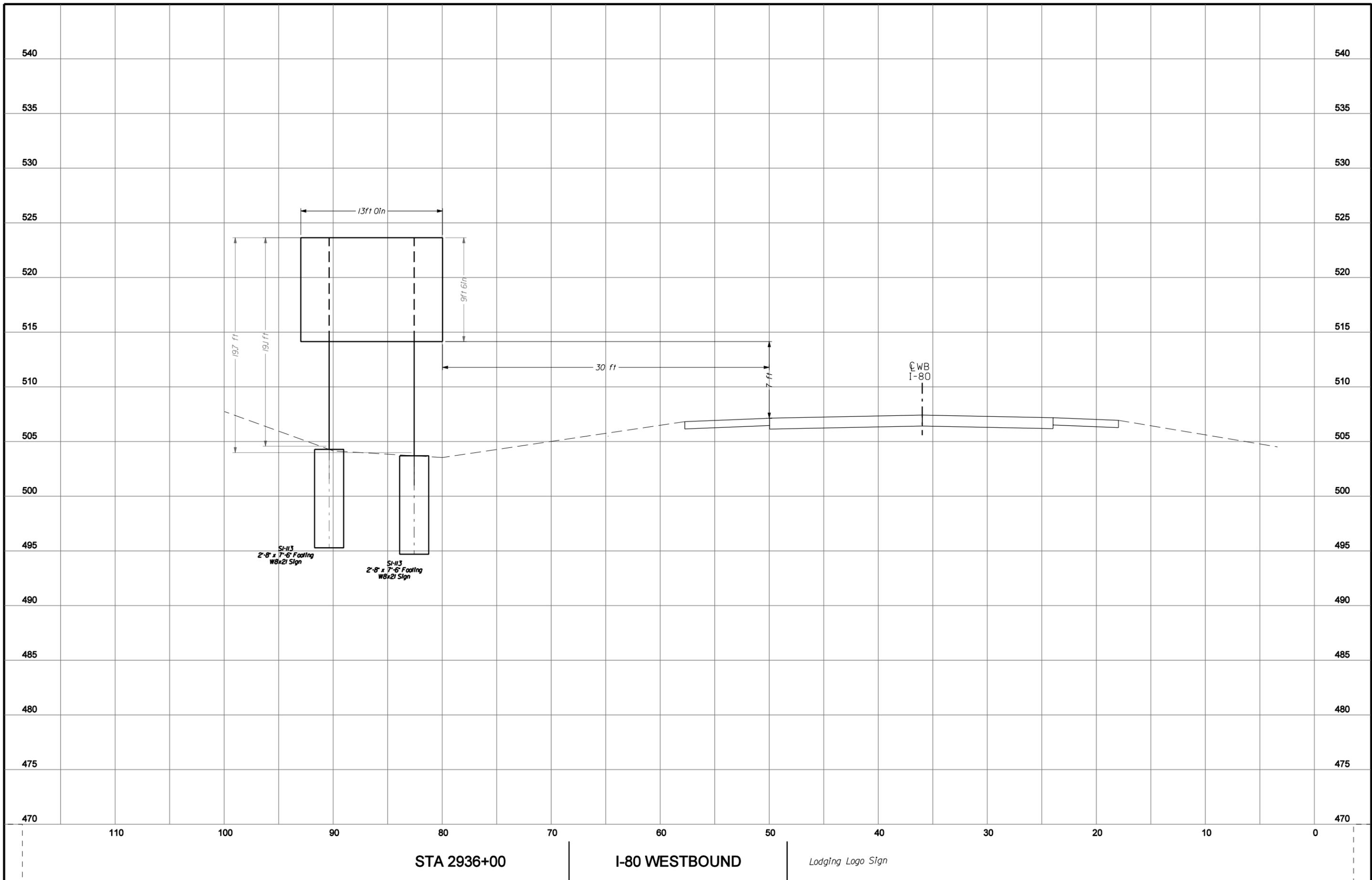
Lodging Logo Sign



STA 2925+00
PROPOSED DMS

I-80 WESTBOUND

DMS #602



SI-113
2'-8" x 7'-6" Facing
WB x 21 Sign

SI-113
2'-8" x 7'-6" Facing
WB x 21 Sign

CLWB
I-80

STA 2936+00

I-80 WESTBOUND

Lodging Logo Sign