

ORIGINATION FORM

Proposed Revisions to a Standard Plans Index
(Please provide all information – Incomplete forms will be returned)

Contact Information:

Date: July 27, 2017
Originator: **Derwood Sheppard**
Phone: (850) 414-4334
Email: Derwood.Sheppard@dot.state.fl

Standard Plans:

Index Number: **18300**
Sheet Number (s): All
Index Title: Dynamic Message Sign Walk-In

Summary of the changes:

All Sheets: Redeveloped Index.

Commentary / Background:

Consolidated relevant information from Indexes 18100, 18101, 18102, 18104, 18105, 18107, and 18108, which were deleted for the Standards Plans for the FY 2018-19 release.

Other Affected Offices / Documents: (Provide name of responsible personnel)

- | Yes | No | |
|--------------------------|--------------------------|-----------------------------|
| <input type="checkbox"/> | <input type="checkbox"/> | Other Standard Plans – |
| <input type="checkbox"/> | <input type="checkbox"/> | FDOT Design Manual – |
| <input type="checkbox"/> | <input type="checkbox"/> | Basis of Estimates Manual – |
| <input type="checkbox"/> | <input type="checkbox"/> | Standard Specifications – |
| <input type="checkbox"/> | <input type="checkbox"/> | Approved Product List – |
| <input type="checkbox"/> | <input type="checkbox"/> | Construction – |
| <input type="checkbox"/> | <input type="checkbox"/> | Maintenance – |

Origination Package Includes: (Email or hand deliver package to Derwood Sheppard)

- | Yes | N/A | |
|-------------------------------------|-------------------------------------|---|
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | Redline Mark-ups |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Proposed Standard Plan Instructions (SPI) |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Revised SPI |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Other Support Documents |

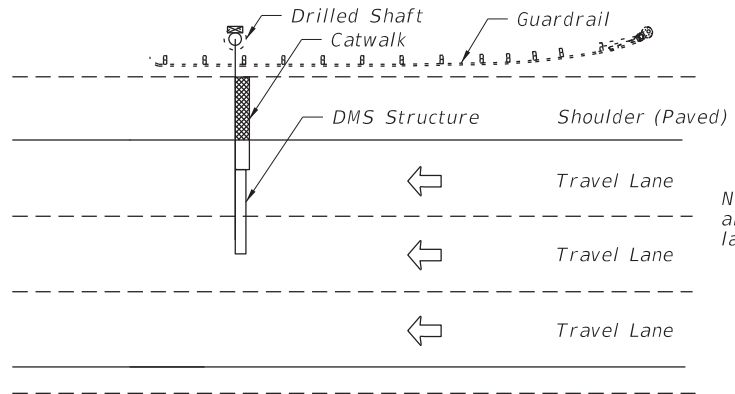
Implementation:

- Design Bulletin (Interim) DCE Memo Program Mgmt. Bulletin FY-Standard Plans (Next Release)

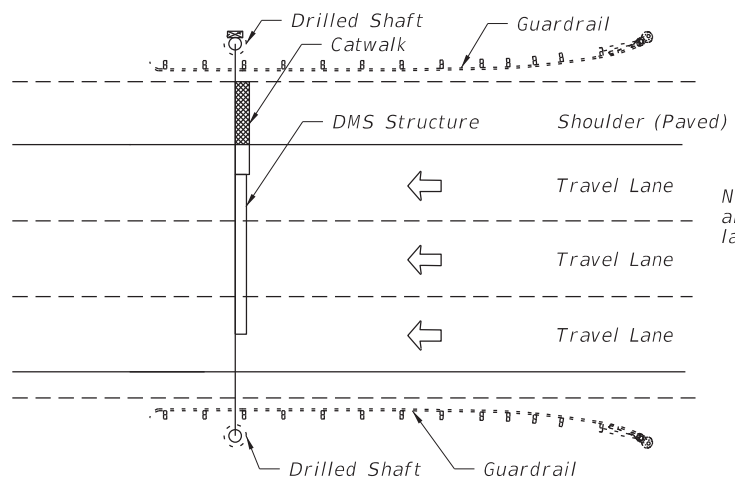
Contact the Roadway Design Office for assistance in completing this form

NOTES:

1. Install DMS Foundation at location shown in Plans.
2. Extend Catwalk from DMS to outer edge of paved shoulder but not less than four feet in length.
3. If included, Install guardrail at location show in Plans and in accordance with Design Standards Index 400.



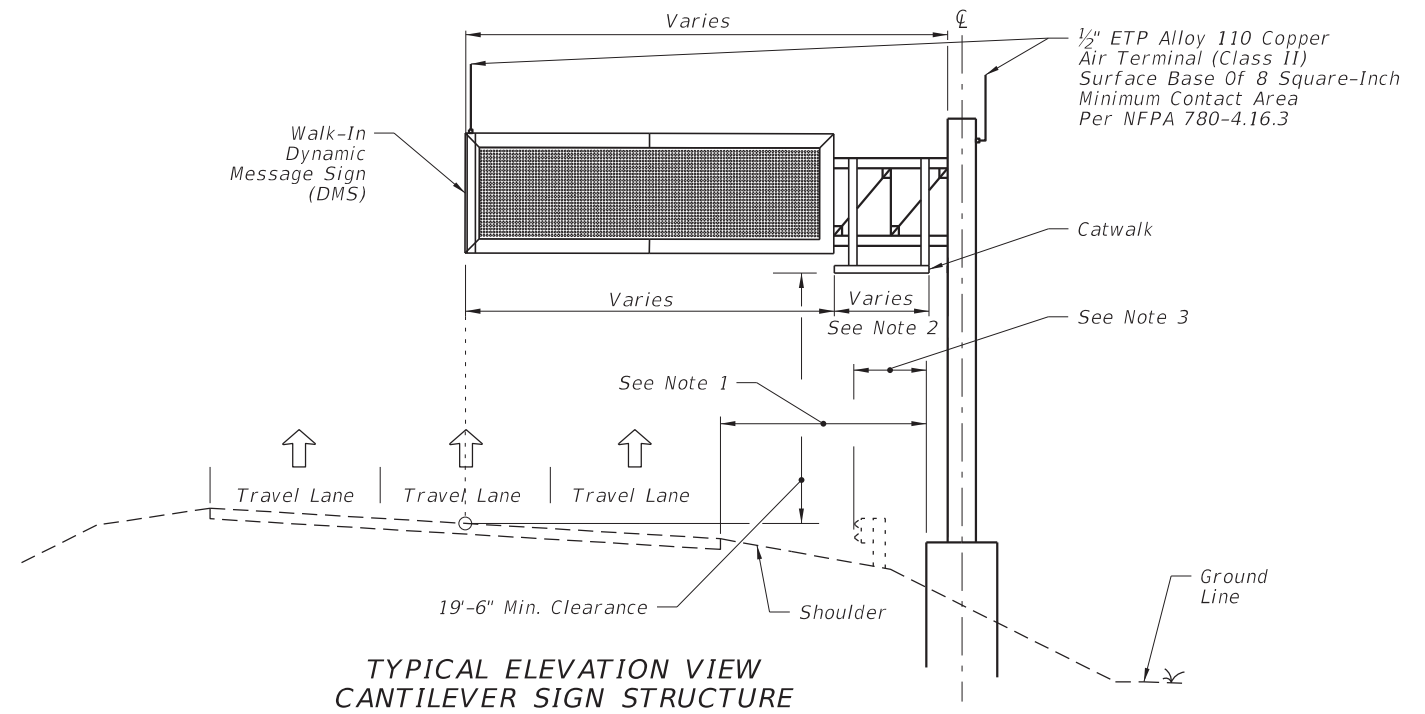
TYPICAL PLAN VIEW
DMS CANTILEVER SIGN STRUCTURE



TYPICAL PLAN VIEW
DMS SPAN SIGN STRUCTURE

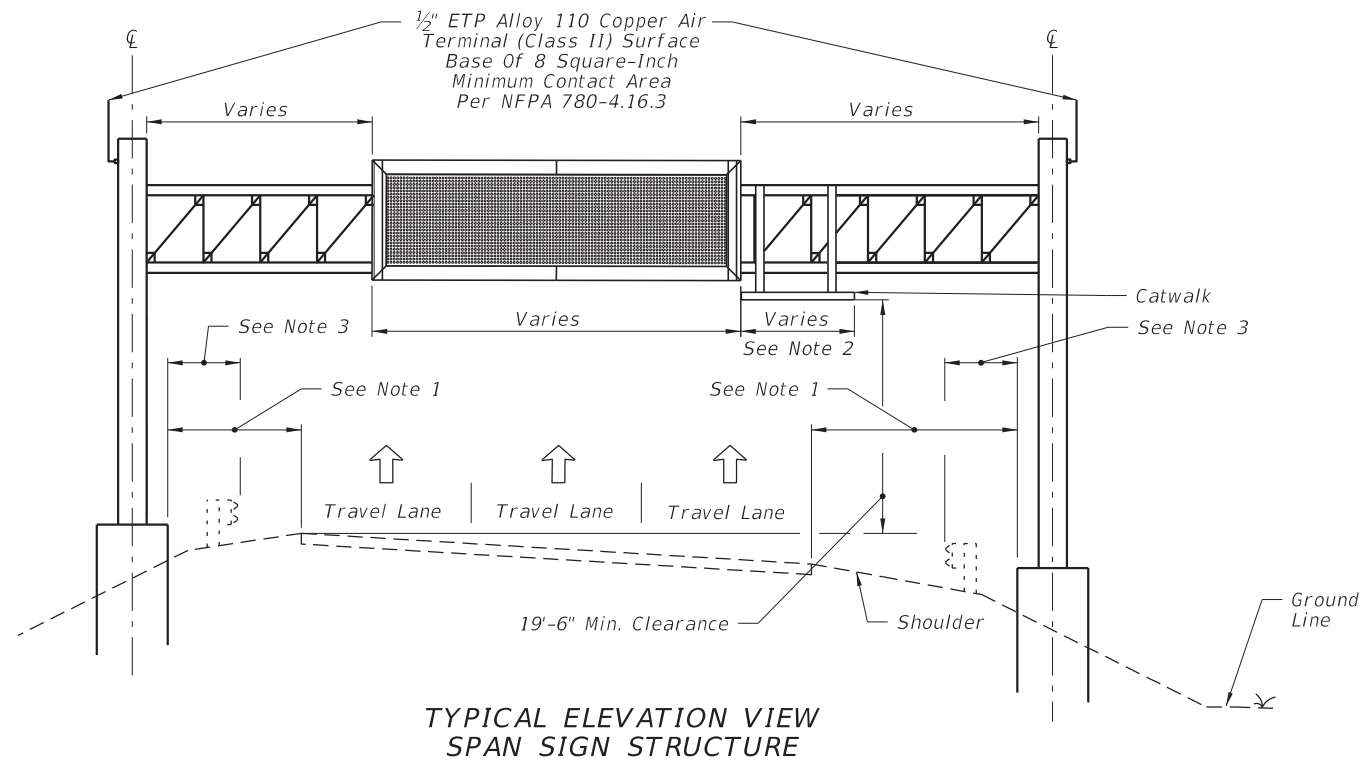
Note: Actual number and direction of travel lanes varies.

Note: Actual number and direction of travel lanes varies.



TYPICAL ELEVATION VIEW
CANTILEVER SIGN STRUCTURE

REDEVELOPED INDEX



TYPICAL ELEVATION VIEW
SPAN SIGN STRUCTURE

RENUMBERED ALL

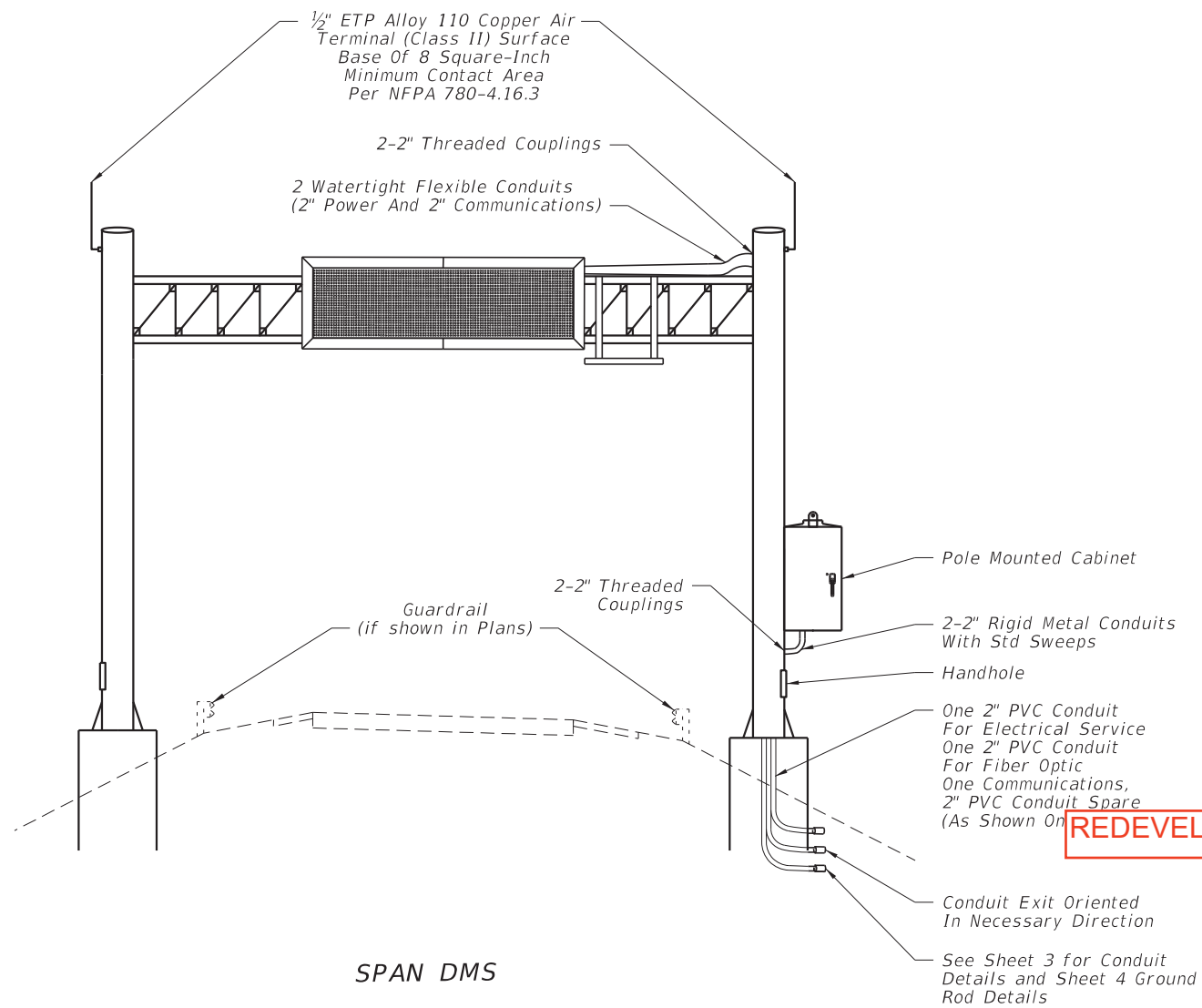
CHANGED ALL
11/01/17

CHANGED ALL
700-090

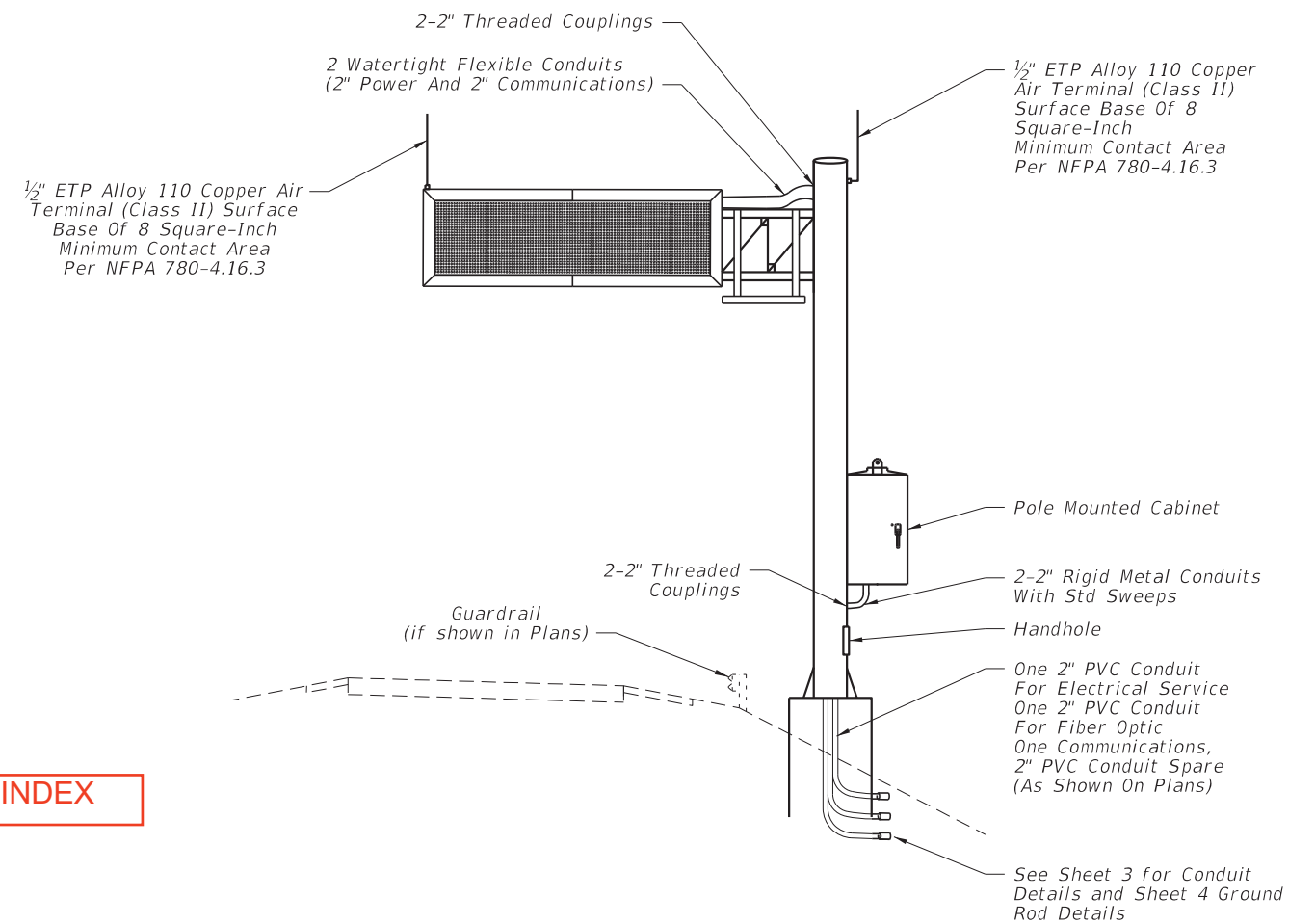
GENERAL LAYOUT

10/11/2016 8:46:36 AM

LAST REVISION 07/01/15	REVISION	DESCRIPTION:	FDOT	FY 2017-18 DESIGN STANDARDS	DYNAMIC MESSAGE SIGN WALK-IN	INDEX NO. 18300	SHEET NO. 1 of 9
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SPAN DMS



CANTILEVER DMS

REDEVELOPED INDEX

NOTES:

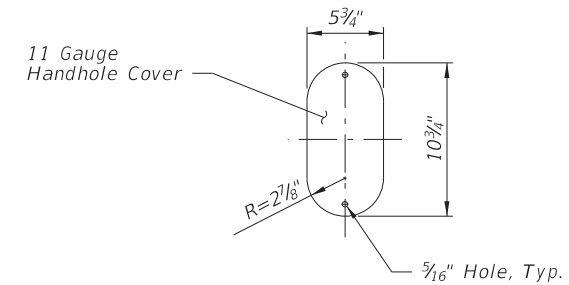
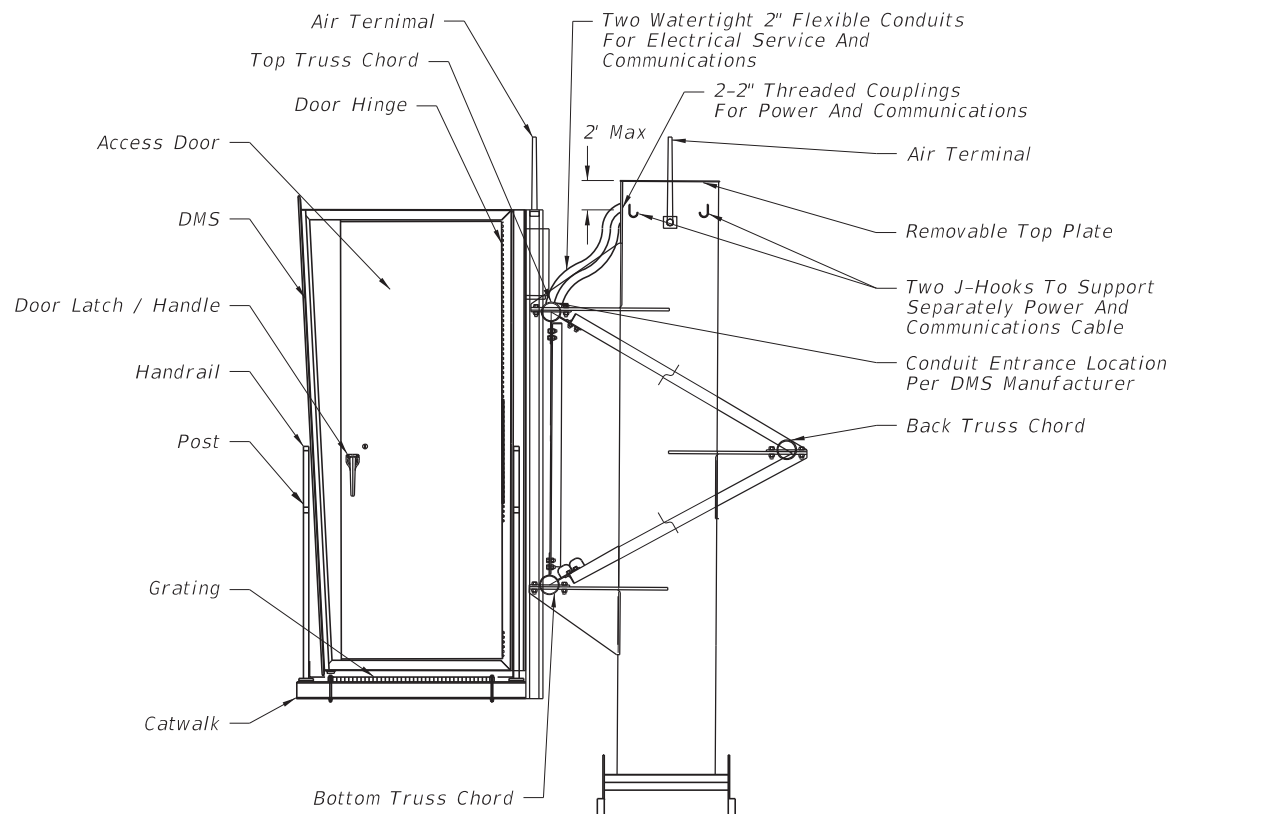
1. Conductors for grounding shall be connected to steel framework that has been cleaned to base metal by use of bonding plates having contact area of not less than 8 square inches or by welding or brazing. Drilling and tapping the steel structure to accept a threaded connector is also an acceptable method.
2. If steel framework is to be drilled and tapped to accept threaded connector, the threaded connector shall be galvanized and have at least 5 threads fully engaged and secured with a jam nut to the steel framework.
3. Bends in the conduit shall not be less than the minimum bending radius for the cable contained in the conduit.
4. Catwalk and handrail design and installation shall comply with AISC, AASHTO, and OSHA requirements as applicable.
5. All data, fiber optic and power cables for the DMS shall be completely encased within the sign structure or in conduit.
6. Permanently stamp/mark foundation to conduit locations.
7. Transition conduit in foundation to underground conduit with appropriate reducer outside the limits of the foundation.

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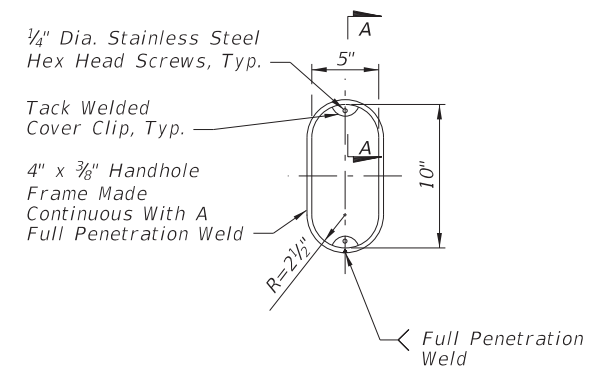
LAST REVISION 07/01/15	REVISION	DESCRIPTION:	 FY 2017-18 DESIGN STANDARDS	DYNAMIC MESSAGE SIGN WALK-IN	INDEX NO. 18300	SHEET NO. 2 of 9
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NOTES:

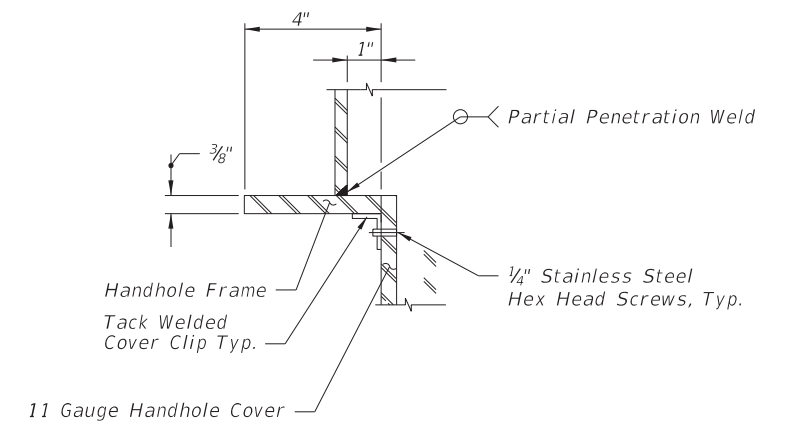
1. DMS Cabinet may be pole or ground mounted depending on project requirements.
2. See sheet 4 for additional conduits for grounding. The number and placement of conduits are approximate.
3. Field adjust pole-mounted DMS cabinet height to achieve best access for maintenance personnel given site conditions as directed by the Engineer. Avoid conflicts with stiffeners, handhole and maintenance of anchor bolts.



HANDHOLE COVER

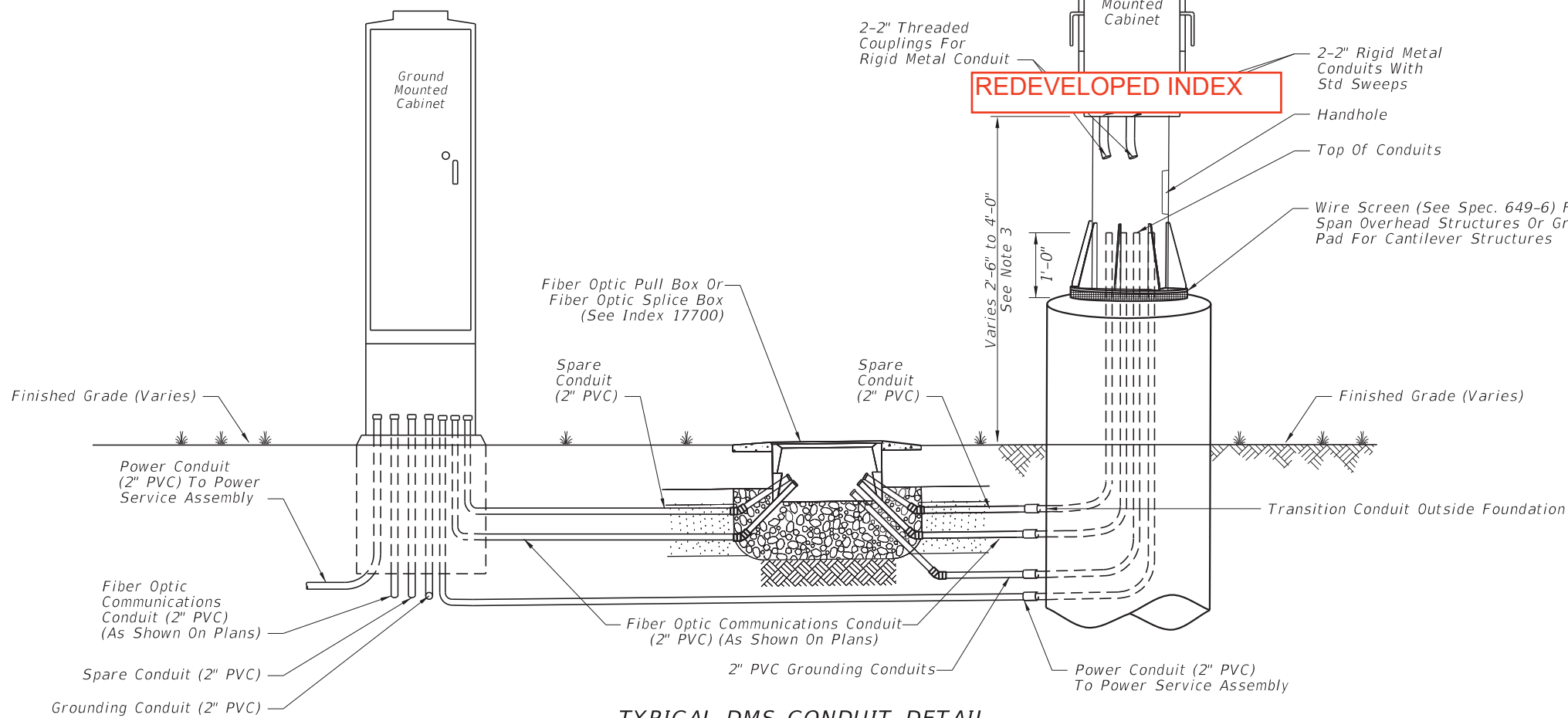


HANDHOLE FRAME



**SECTION A-A
(Thru Handhole)**

REDEVELOPED INDEX



**TYPICAL DMS CONDUIT DETAIL
CANTILEVER/SPAN SIGN STRUCTURE**

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1/2" ETP Alloy 110 Copper Air Terminal (Class II) Surface Base Of 8 Square-Inch Minimum Contact Area Per NFPA 780-4.16.3

Dynamic Message Sign (DMS)

Catwalk

#2 AWG Tin-Plated Bare Solid Copper Ground Wire. Bond To Air Terminal And Ground Rod With Exothermic Weld

Ground Wire From DMS Cabinet To Ground Rod

REDEVELOPED INDEX

#2 AWG Tin-Plated Bare Solid Copper Ground Wire To Air Terminal

Ground Wire to DMS Cabinet

Ground Rod A Primary Ground Rod Assembly (See Inset A)

Ground Rod B As Required

Pull Box

Exothermic Weld

#2 AWG To Ground Rod C As Required

#2 AWG To Ground Rod D As Required

3/8" Diameter By 20' Long Copper-Clad Steel Ground Rods Driven Into Undisturbed Earth

12" Min.
36" Max.

Power Conduit (2" PVC) To Power Service Assembly

Spare Conduit (2" PVC)

Fiber Optic Communication Conduit (2" PVC) (As Shown on Plans)

Grounding Conduit (2" PVC)

Finished Grade

Power Conduit (2" PVC) To Power Service Assembly

Fiber Optic Communications Conduit (2" PVC) (As Shown On Plans)

Spare Conduit (2" PVC)

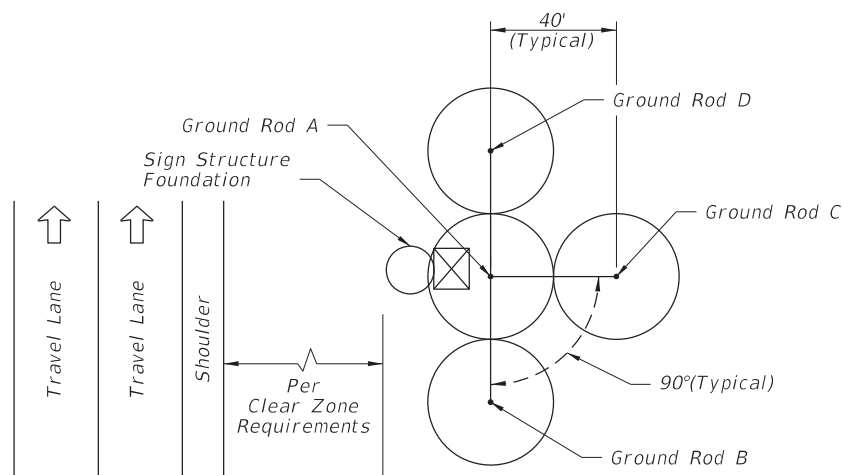
Grounding Conduit (2" PVC)

Ground Mounted Cabinet

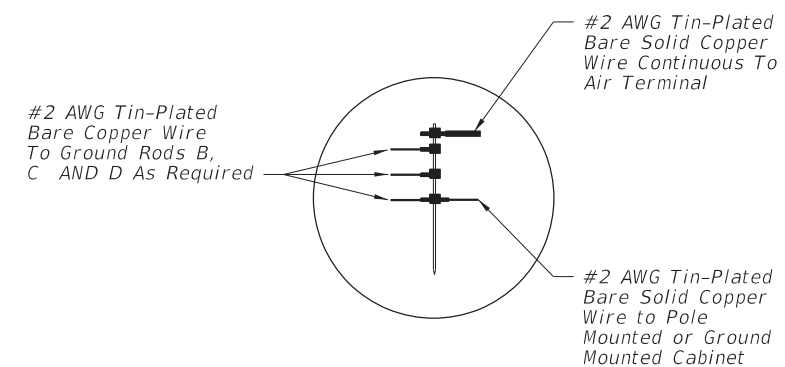
Pole Mounted Cabinet

TYPICAL GROUND ROD DETAIL

20' Radius Each "Sphere Of Influence"



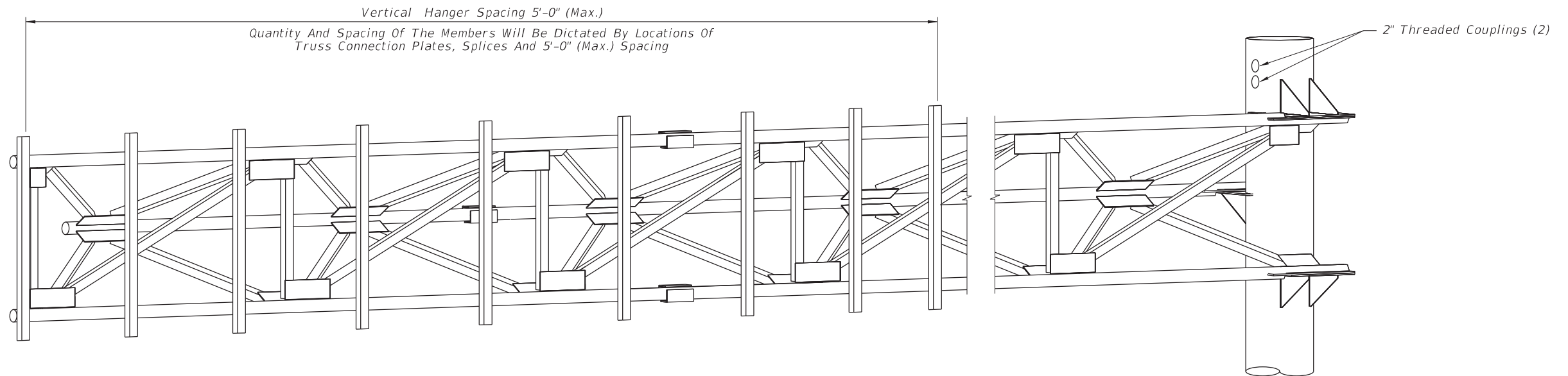
GROUND ROD PLACEMENT DETAIL (TYPICAL)



INSET 'A'

10/11/2016 8:46:45 AM

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HANGER LOCATION DETAIL


(Cantilever Sign Structure Shown, Span Sign Structure Similar)

REDEVELOPED INDEX

NOTES

1. Design Specifications: *FDOT Structures Manual* (current edition) and *AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals*.
2. DMS and Hanger Design Wind Speed: 150 miles per hour. Maximum DMS weight for design: 4500 lb.
3. Support Structure Design Wind Speed: See *Structures Manual*.
4. Shop drawings including the DMS connection are required and fabrication shall not begin until these shop drawings are approved.
5. Locate the sign horizontal on the structure as shown in the plans. Vertically center the sign enclosure with the centerline of the truss.
6. Before erection, after both the delivery of the DMS and the steel truss, the contractor shall carefully measure the exact locations for field drilling the 6" bolt holes in the vertical hangers and horizontal mounting member attached to the sign enclosure. Field locate holes to allow vertical hanger placement as shown on the plans with no conflicts with gusset or splice plates.
7. All steel items shall be galvanized as follows:
All nuts, bolts and washers ASTM F2329
All other steel items ASTM A123
8. All bolt holes shall be equal to the bolt diameter plus $\frac{1}{16}$ ", prior to galvanizing.
9. Cost of the installation of the DMS on truss including the vertical hanger, associated members, and hardware shall be incidental to the cost of the sign structure.
10. Threaded couplings shall be located on sign side of column above the sign truss.

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6061-T6 Structural Aluminum Zee 4x3 $\frac{1}{8}$ x3.58
Horizontal Member Attached To The Internal
Framework And Included With The DMS Sign

DMS Sign Enclosure

ASTM A709, Gr.36 Steel W6x9
Hanger @ 5' (Max.) Spacing

2 ~ $\frac{1}{2}$ " \varnothing U-Bolts ASTM F2329,
Grade A449 Or A193 B7,
Galvanized With double
Nuts and Washers

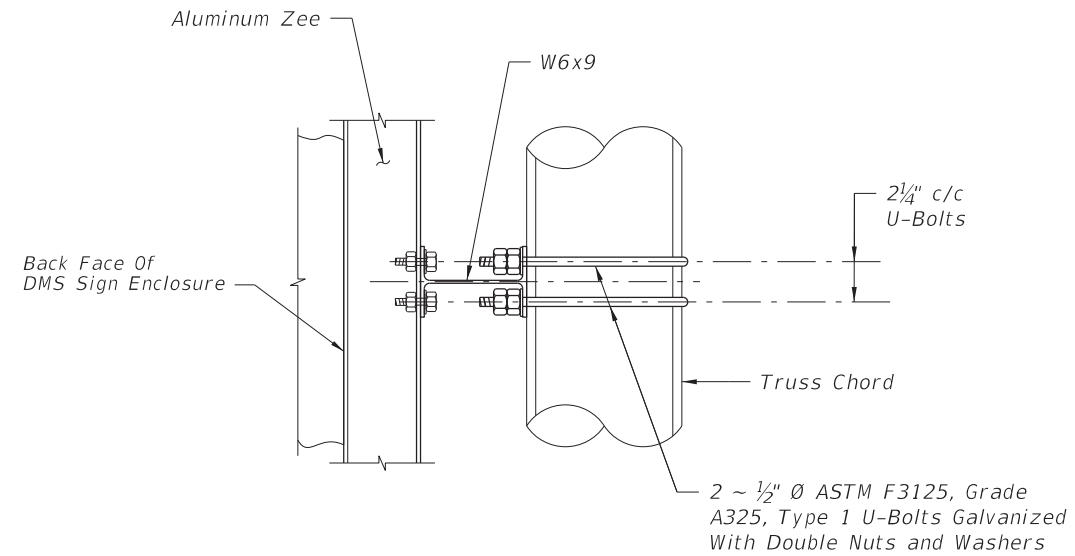
Truss Chord

3 Zee Beams Equally Spaced

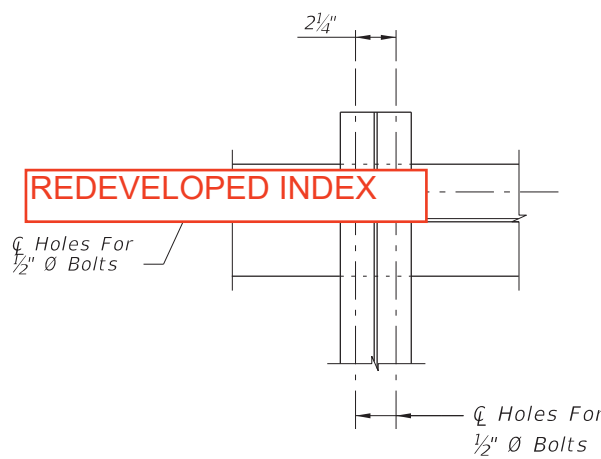
See Truss Data Sheet

Field Drill Holes And
Provide 2 ~ $\frac{1}{2}$ " \varnothing ASTM
F3125, Grade A325, Type 1

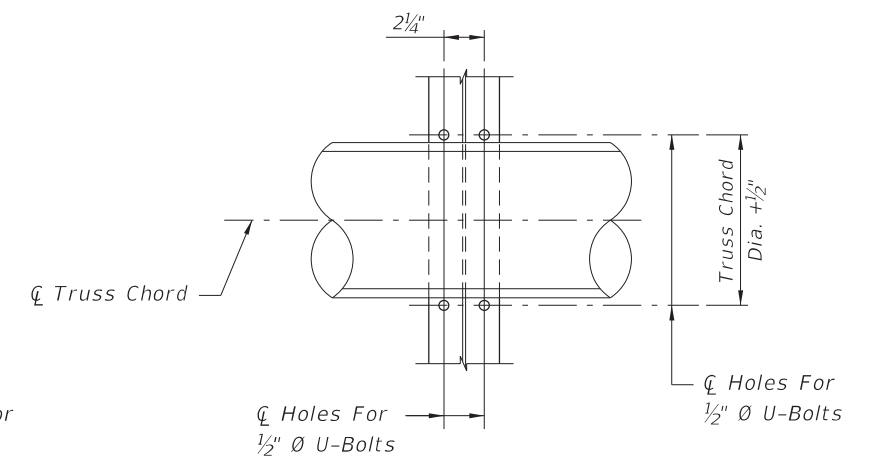
END VIEW



SECTION A-A



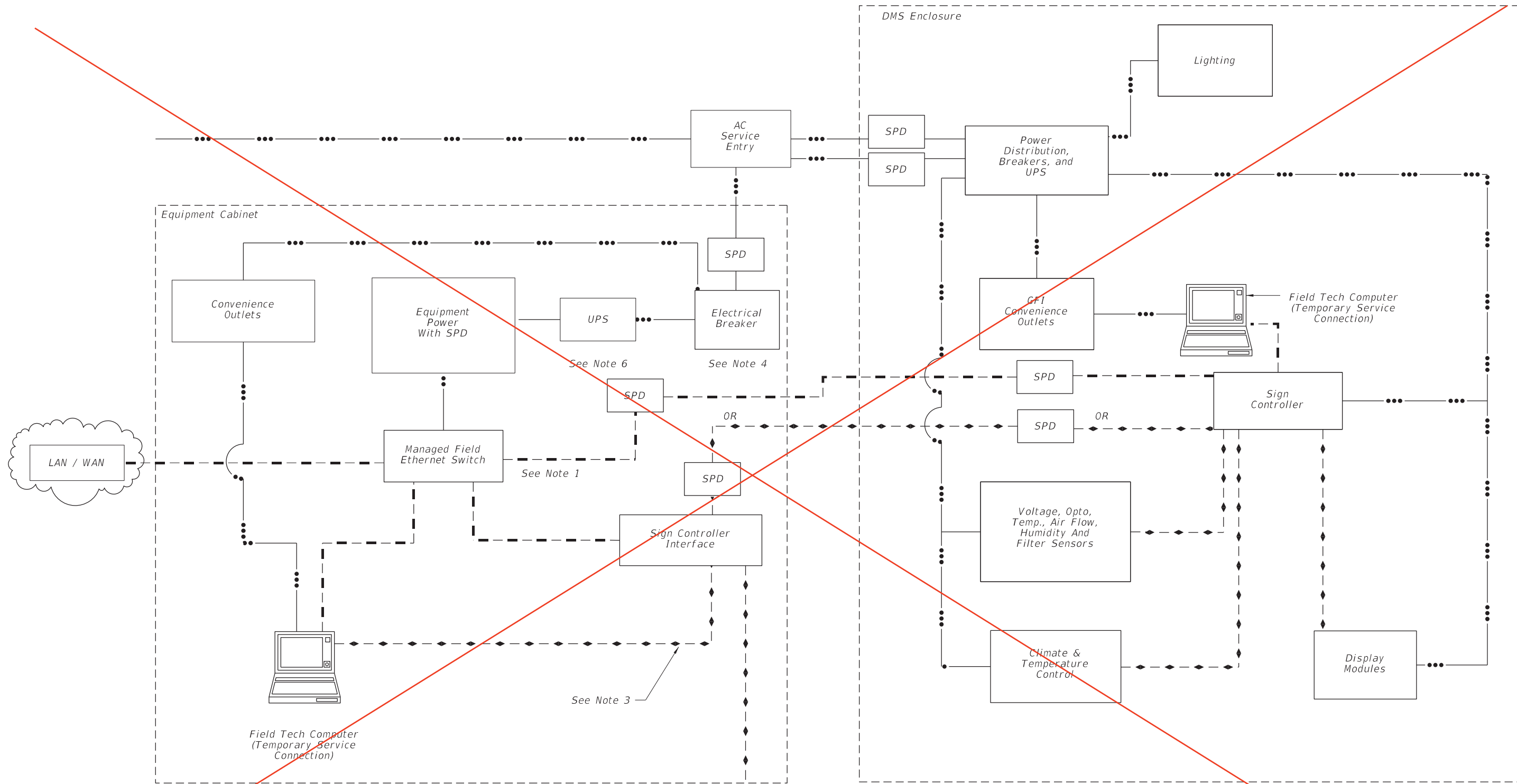
SECTION B-B



SECTION C-C

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<p>LAST REVISION 11/01/16</p>	<p>DESCRIPTION:</p>	<p>FDOT FY 2017-18 DESIGN STANDARDS</p>	<p>DYNAMIC MESSAGE SIGN WALK-IN</p>	<p>INDEX NO. 18300</p>	<p>SHEET NO. 6 of 9</p>
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NOTES:

1. Provide single ethernet connection from the managed field ethernet switch to either the sign controller interface in cabinet or sign controller in sign enclosure.
2. Locate cabinet as shown in plans.
3. Serial data link is for communications directly to the DMS controller.
4. Cabinet must include at least one breaker to control all cabinet power.
5. AC service entrance may be located in cabinet or sign housing.
6. UPS equipment location may vary. Diagram indicates functional requirements that uninterrupted power must be available in cabinet and sign housing.


SIGN AND CABINET WIRING DIAGRAM

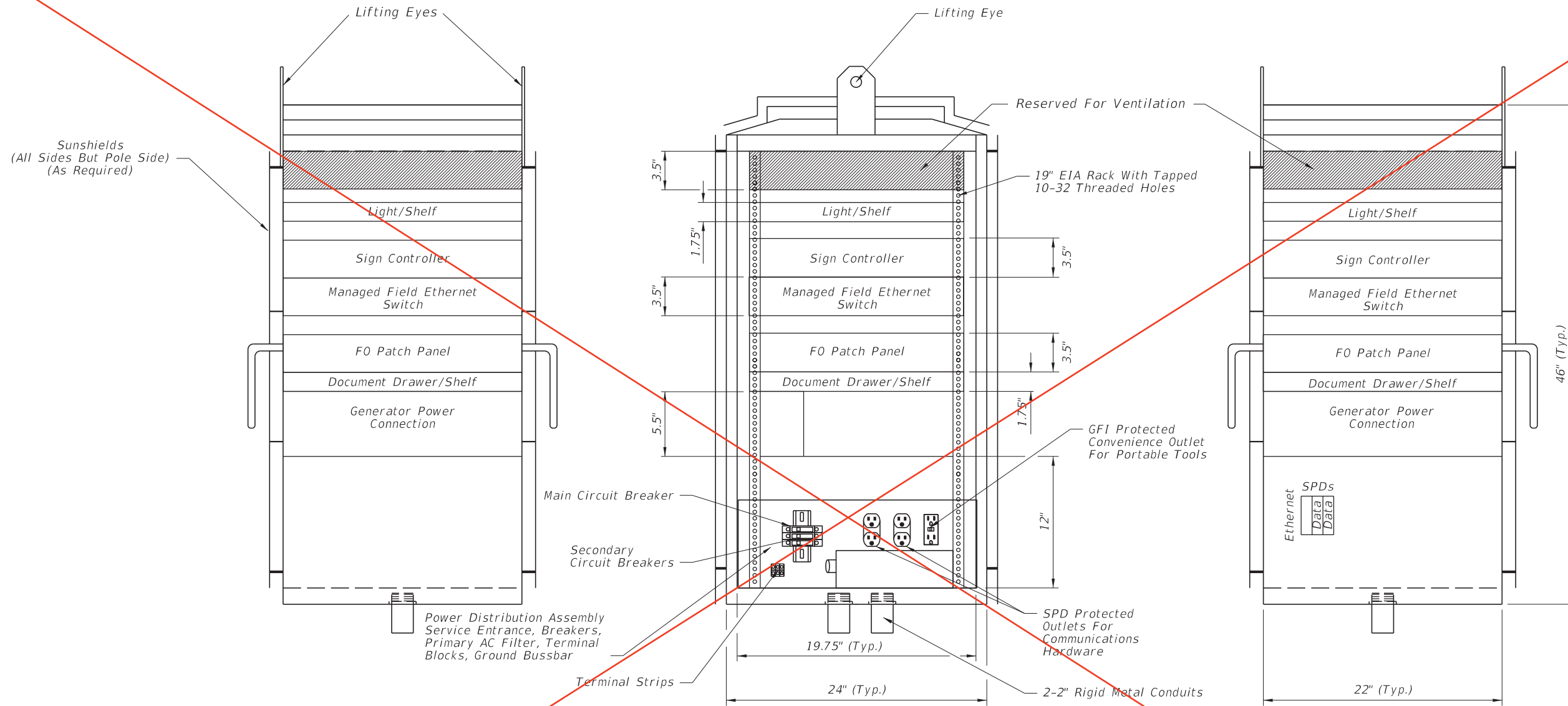
DELETED SHEET

LEGEND

- ◆ - - - ◆ - - - ◆ - - - ◆ Data
- - - Ethernet
- Power
- SPD Surge Protection Device

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LEFT SIDE VIEW

FRONT VIEW
POLE MOUNTED CABINET

RIGHT SIDE VIEW

NOTES:

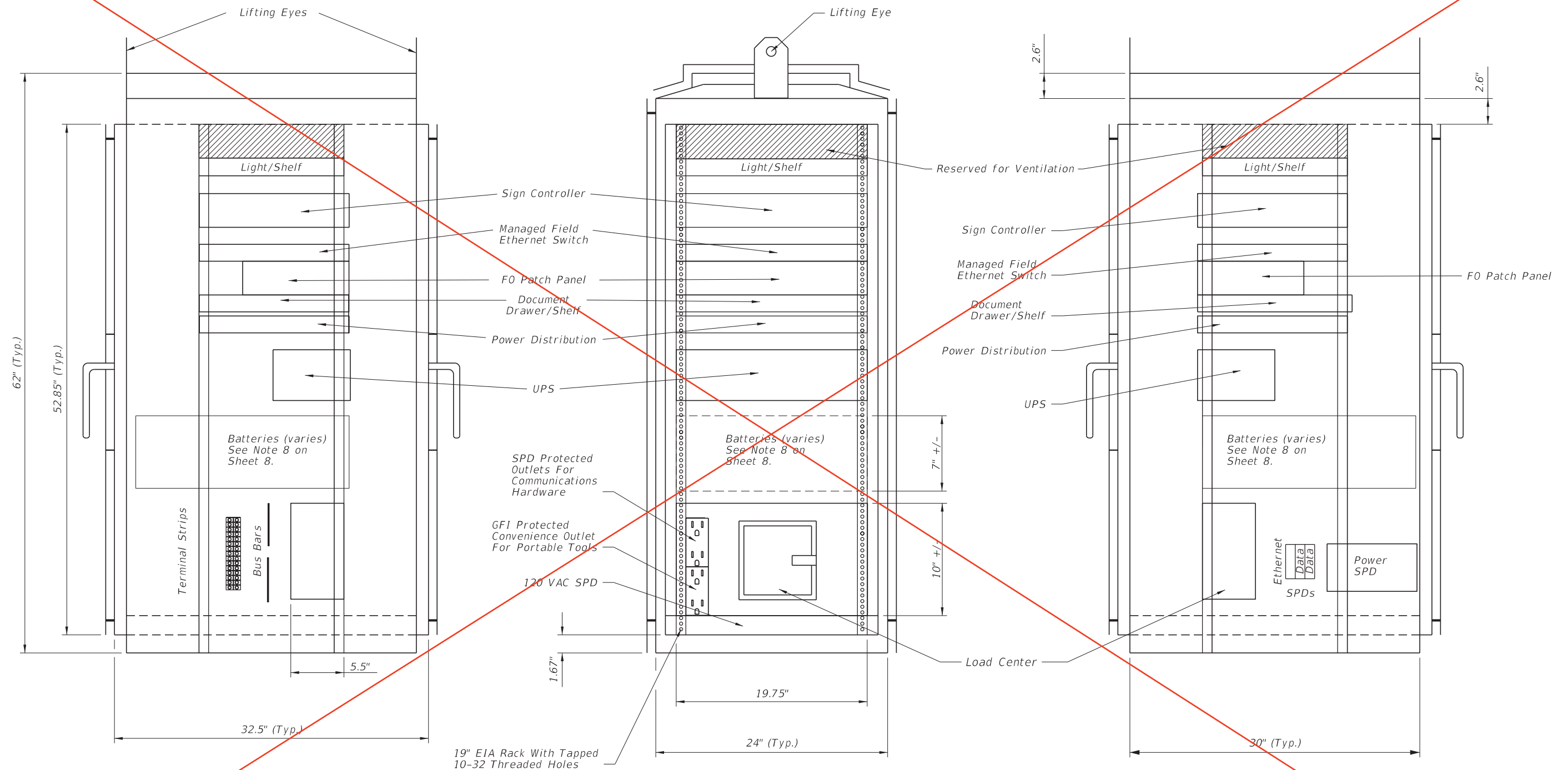
1. Cabinet layout is for pole or ground mounted installations.
2. All dimensions and equipment locations are approximate.
3. Conduit entrances are at bottom of cabinet.
4. Minimum number of duplex outlets is three, (2) SPD protected and (1) GFI protected.
5. Either an access controller or local access panel shall be provided to provide full access to DMS for control, programming and troubleshooting.
6. Load center shall be sized for connected equipment and convenience outlets with at least one main disconnect and three circuit breakers.
7. Batteries and UPS may be located in sign housing or cabinet.
8. Power Distribution Assembly component layout, orientation and location may vary.

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CABINET LAYOUT 1

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LEFT SIDE VIEW

FRONT VIEW
GROUND MOUNTED CABINET

RIGHT SIDE VIEW

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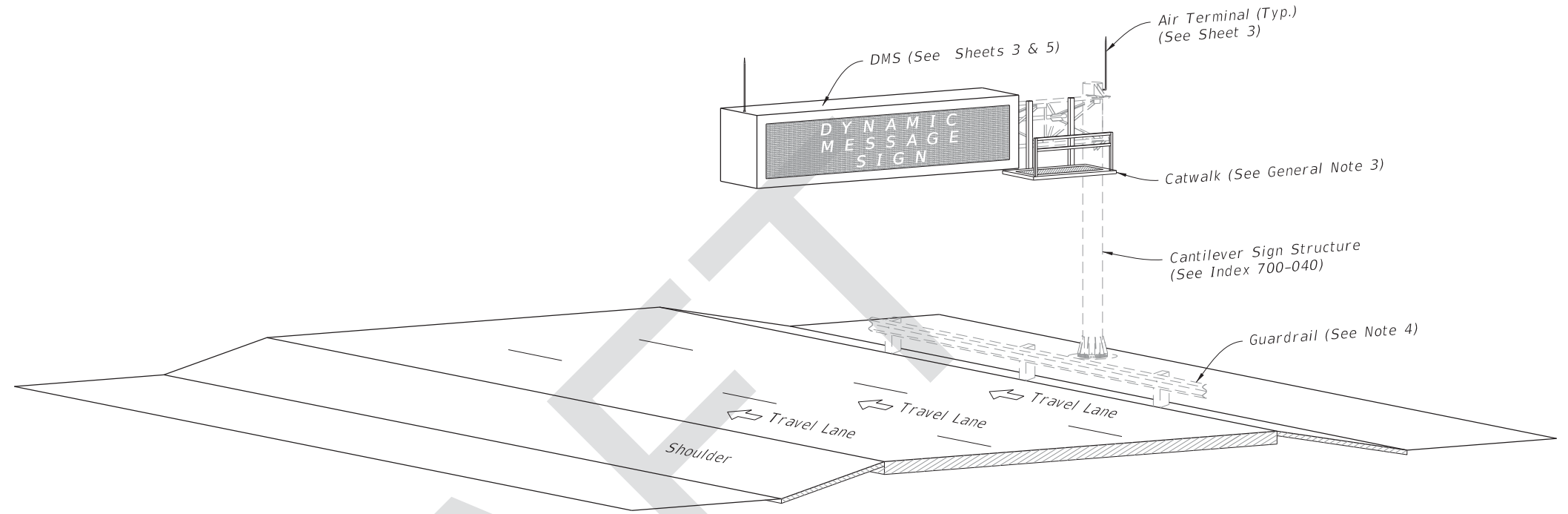
CABINET LAYOUT 2

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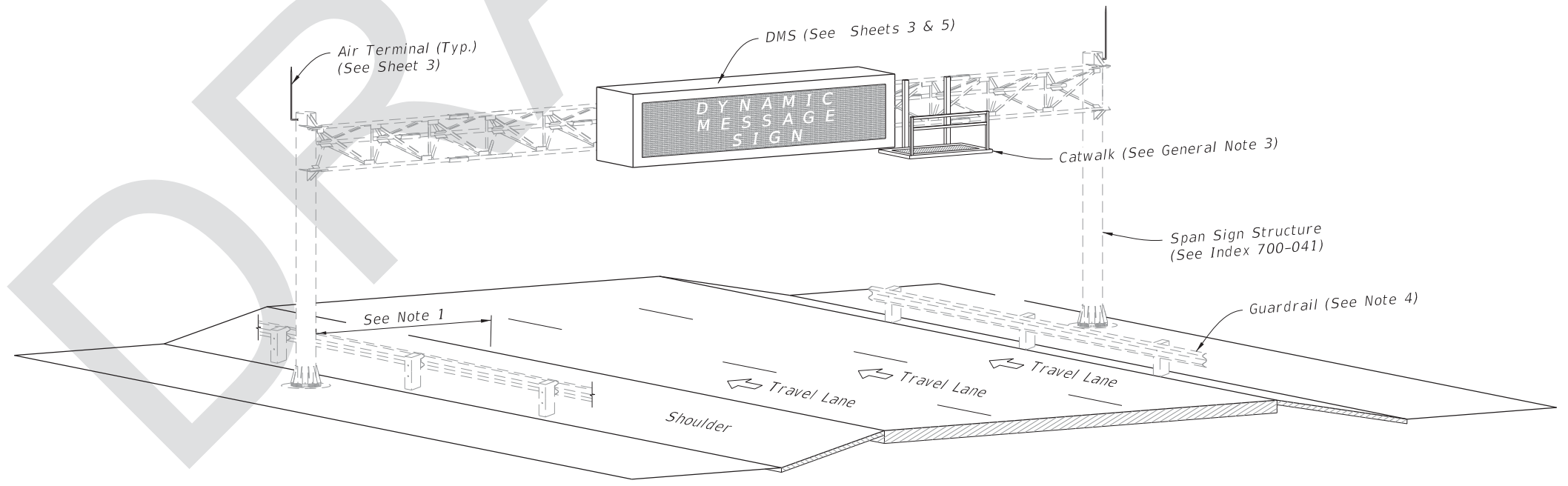
LAST REVISION 07/01/14	DESCRIPTION:	 FY 2017-18 DESIGN STANDARDS	DYNAMIC MESSAGE SIGN WALK-IN	INDEX NO. 18300	SHEET NO. 9 of 9
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GENERAL NOTES:

1. Work this Index with Specification 700.
2. Furnish and install the Dynamic Message Sign (DMS), sign structure in accordance with Index 700-040 or 700-041. Locate foundations at locations shown in the Plans.
3. Shop Drawings are required:
 - A. Include the DMS connection
 - B. Catwalk design in accordance with AISC, AASHTO, and OSHA requirements, as applicable
 - C. Do not start fabrication until the shop drawings are approved
4. Extend Catwalk from DMS to outer edge of paved shoulder and not less than 4 feet in length.
6. If required, install guardrail at location show in the Plans and in accordance with Index 536-001.
6. Materials:
 - A. Sign Mounting Components:
 - a. Aluminum Structural Shapes: ASTM B308, Alloy 6061-T6
 - b. Vertical Hangers: ASTM A704, Grange 36
 - c. U-Bolts: ASTM A449 or A193 B7
 - d. Steel Bolts, Nuts, and Washers:
 1. High Strength Bolts: ASTM F3125, Grade A325, Type 1
 2. Nuts: ASTM F563
 3. Washers: ASTM F463 (Flat Washer)
 - B. Coatings:
 - a. All nuts, bolts and washers ASTM F2329
 - b. All other steel items ASTM A123
 - c. Bolt hole Diameters: Bolt plus $\frac{1}{16}$ " before galvanizing
7. Installation:
 - A. See project requirements for location of DMS Cabinet.
 - B. Field Adjust pole-mounted DMS cabinet height to achieve best access for maintenance personnel given site condition as directed by the Engineer. Avoid conflicts with stiffeners, handhole and maintenance of anchor bolts.
 - C. Locate the sign horizontal on the structure as shown in the Plans. Vertically center the sign enclosure with the centerline of the truss.
 - D. Before erection, field drill the bolt holes in the vertical hangers and horizontal mounting member attached to the sign enclosure. Field locate holes to allow vertical hanger placement as shown on the Plans with no conflicts with gusset or splice plates.
 - E. Locate threaded couplings on sign side of upright above the sign truss
 - F. Connect grounding conductors to the steel framework that has been cleaned to base metal by use of bonding plates having contact area of not less than 8 square inches or by welding or brazing. Drilling and tapping the steel structure to accept a threaded connector is also an acceptable method
 - G. If steel framework is to be drilled and tapped to accept threaded connector, the threaded connector shall be galvanized and have at least 5 threads fully engaged and secured with a jam nut to the steel framework.
 - H. Bends in the conduit must be greater than the minimum bending radius for the cable contained in the conduit.
 - I. Completely encase all data, fiber optic and power cables for the DMS within the sign structure or in conduit.
 - J. Permanently stamp/mark foundation to indicate conduit locations.
 - K. Transition conduit in foundation to indicate underground conduit with appropriate reducer outside the limits of the foundation.




CANTILEVER ISOMETRIC VIEW

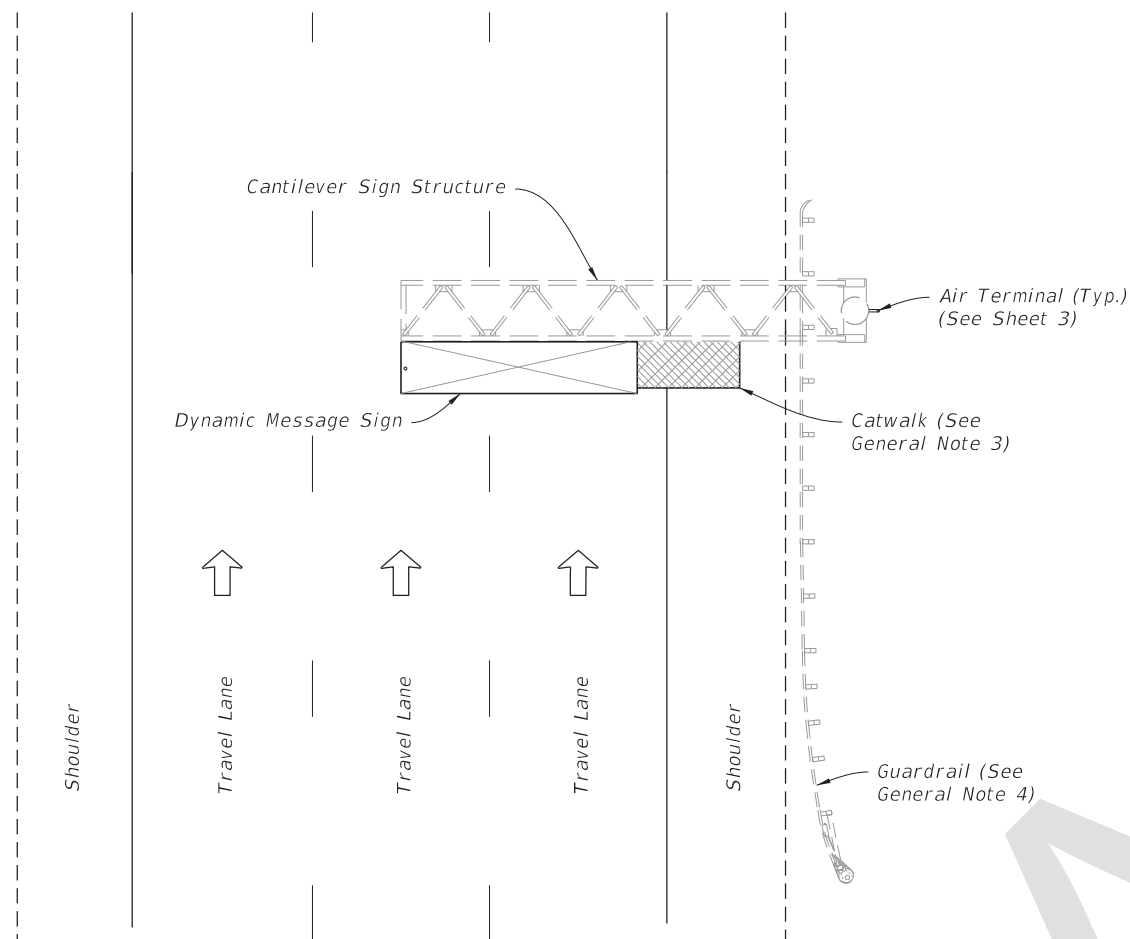


SPAN ISOMETRIC VIEW

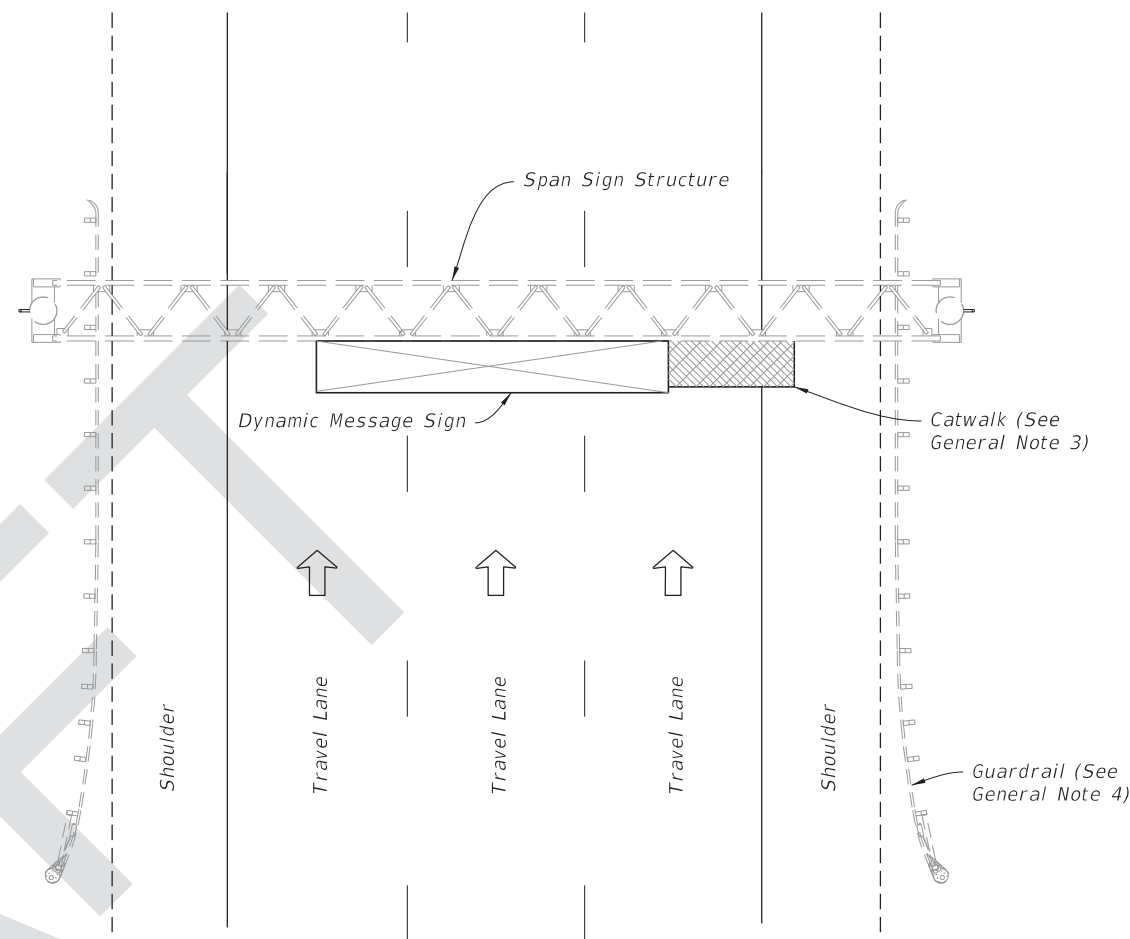
DYNAMIC MESSAGE SIGN ASSEMBLY

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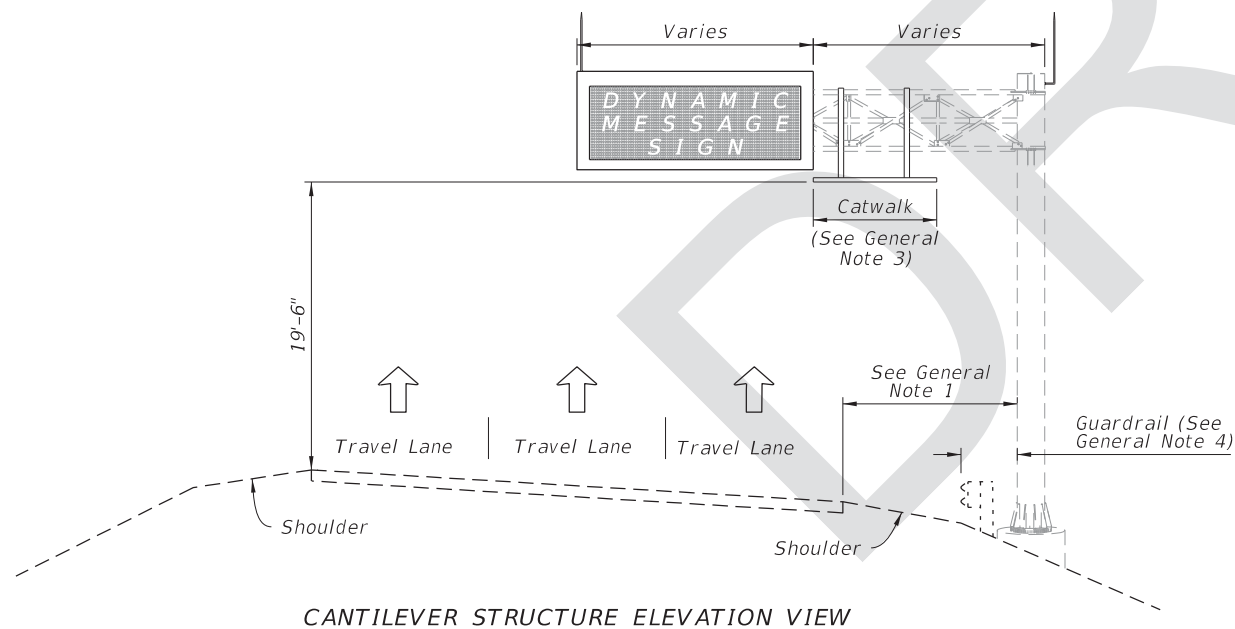
LAST REVISION 11/01/17	REVISION	DESCRIPTION:	 FY 2018-19 STANDARD PLANS	DYNAMIC MESSAGE SIGN WALK-IN	INDEX 700-090	SHEET 1 of 5
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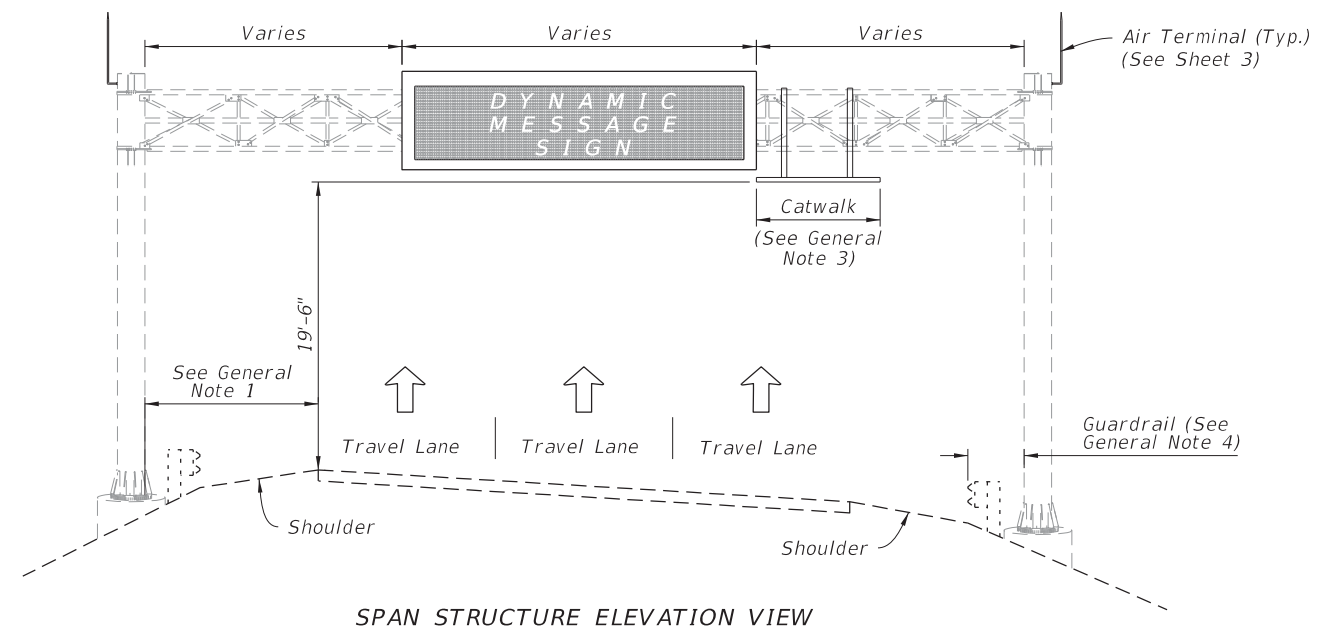
CANTILEVER STRUCTURE PLAN VIEW



SPAN STRUCTURE PLAN VIEW



CANTILEVER STRUCTURE ELEVATION VIEW




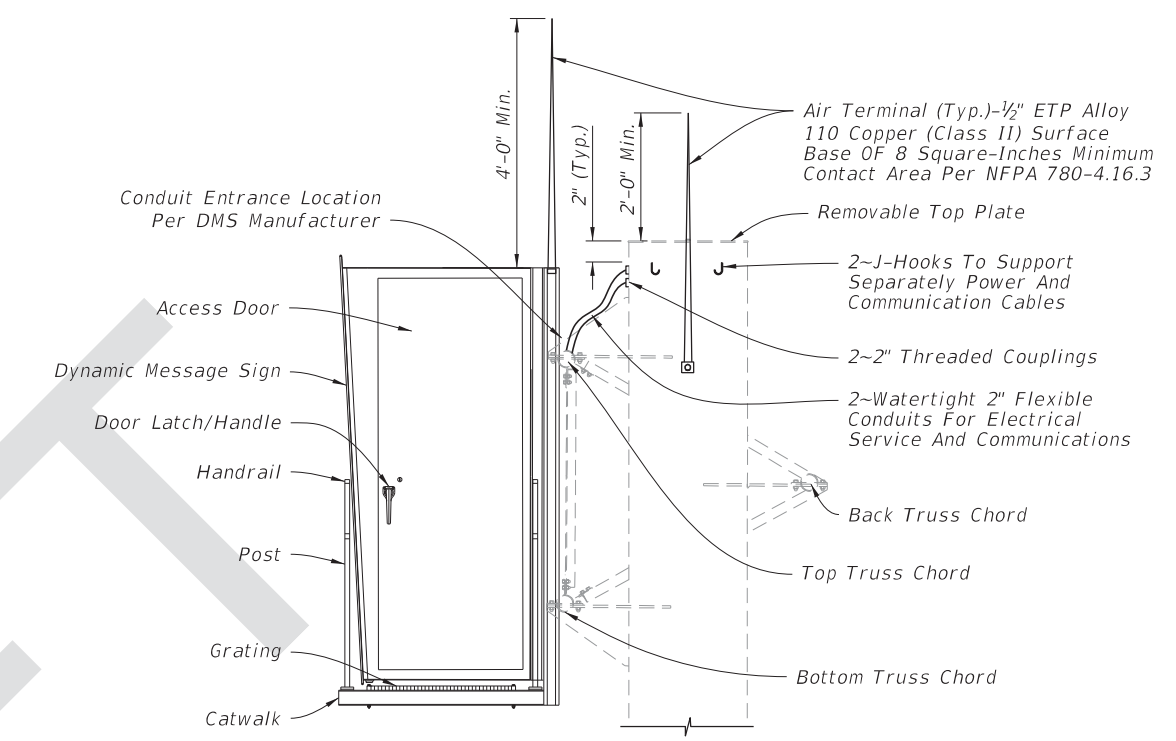
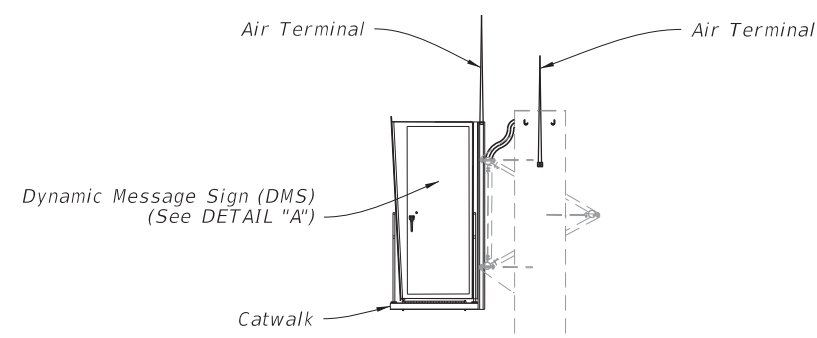
SPAN STRUCTURE ELEVATION VIEW

DYNAMIC MESSAGE SIGN GENERAL LAYOUT

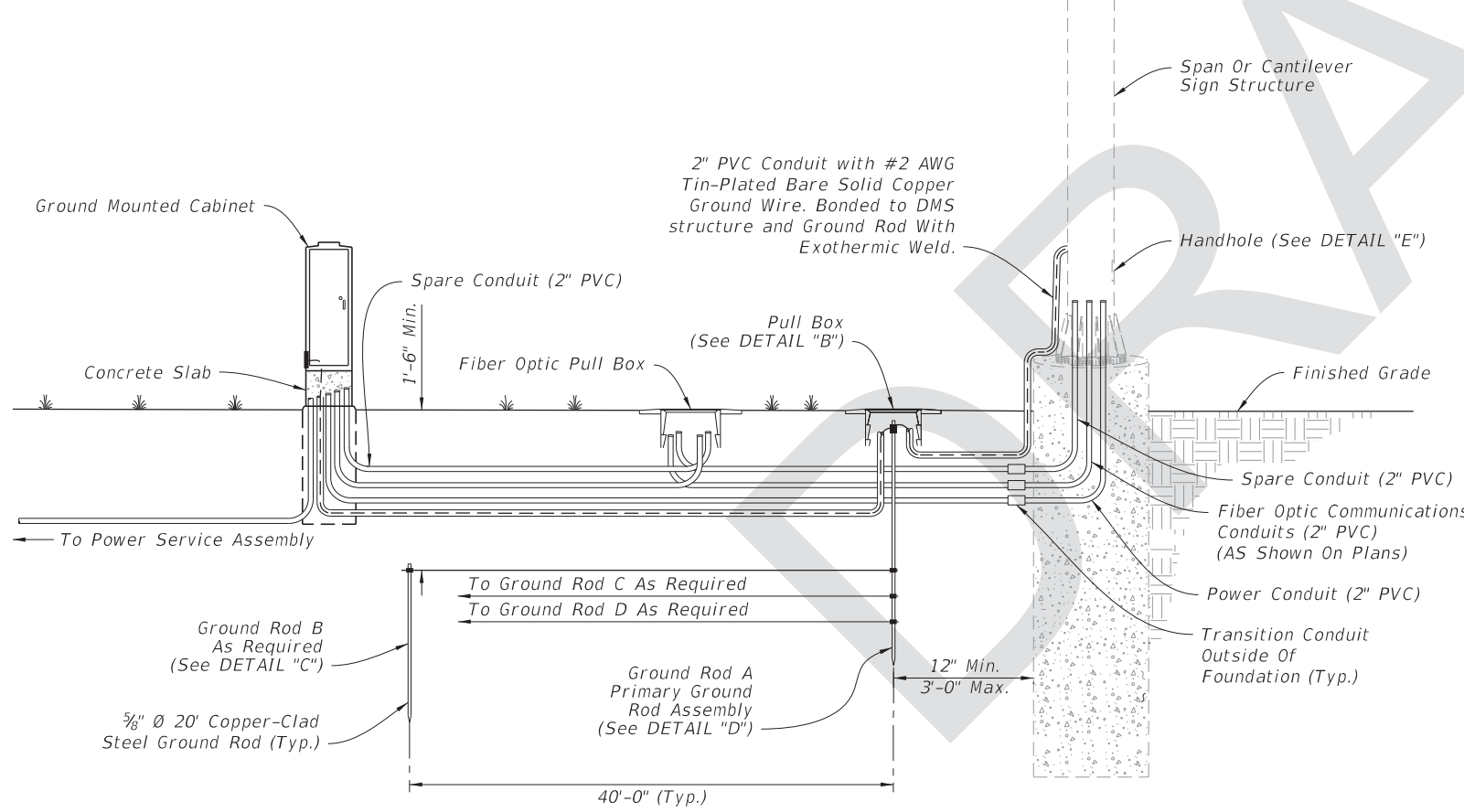
NOTE: Actual number and direction of travel lanes varies.

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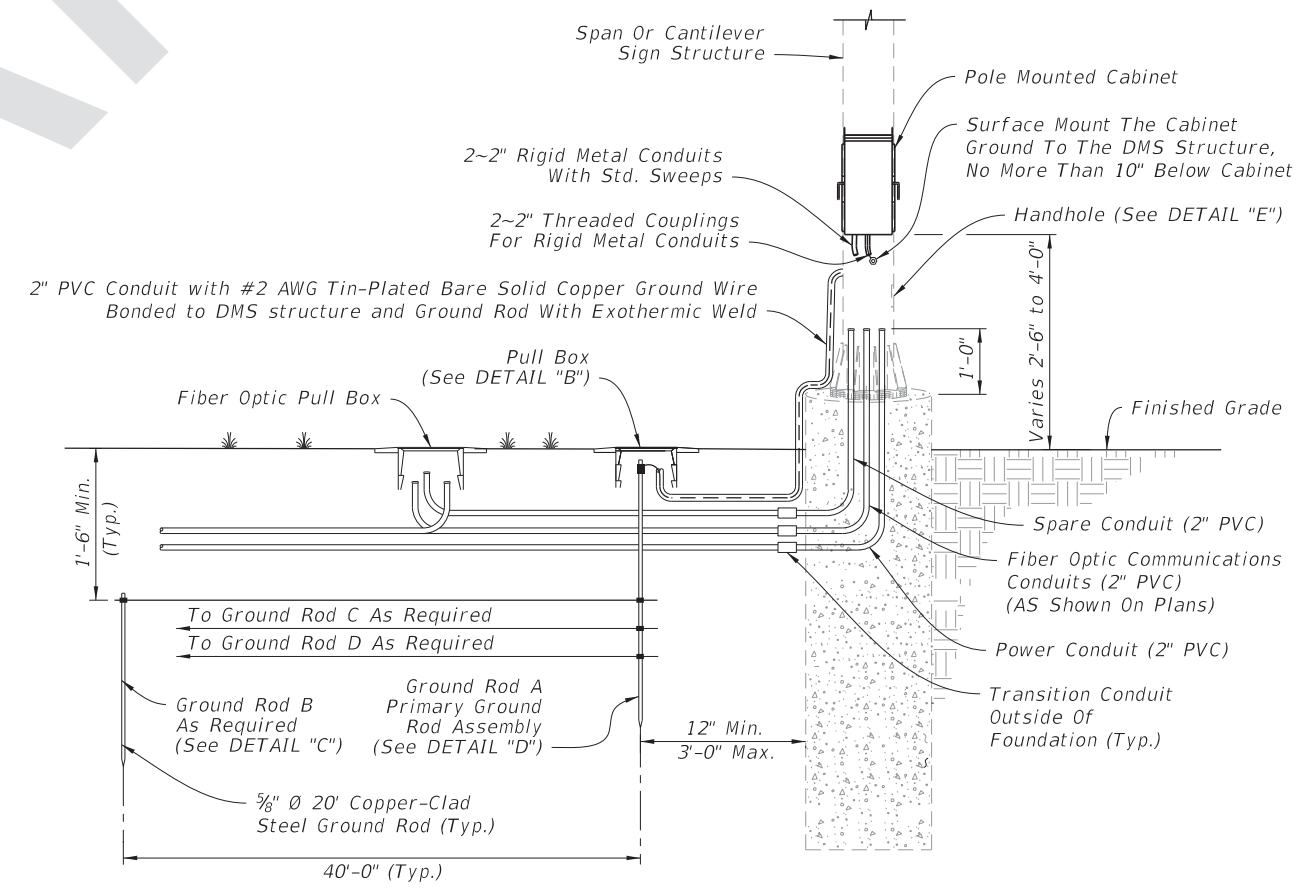
LAST REVISION 11/01/17	REVISION	DESCRIPTION:	 FY 2018-19 STANDARD PLANS	DYNAMIC MESSAGE SIGN WALK-IN	INDEX 700-090	SHEET 2 of 5
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DETAIL "A"




GROUND MOUNTED CABINET

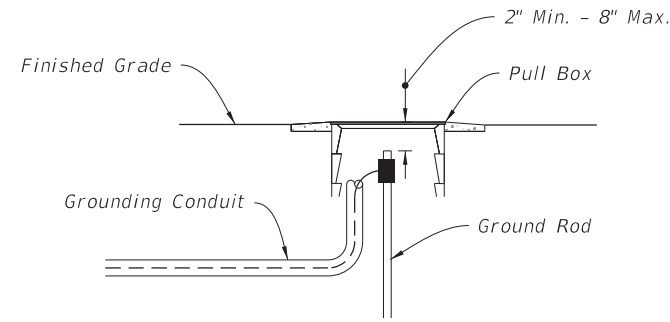


POLE MOUNTED CABINET

DYNAMIC MESSAGE SIGN GROUNDING AND CONDUIT DETAIL

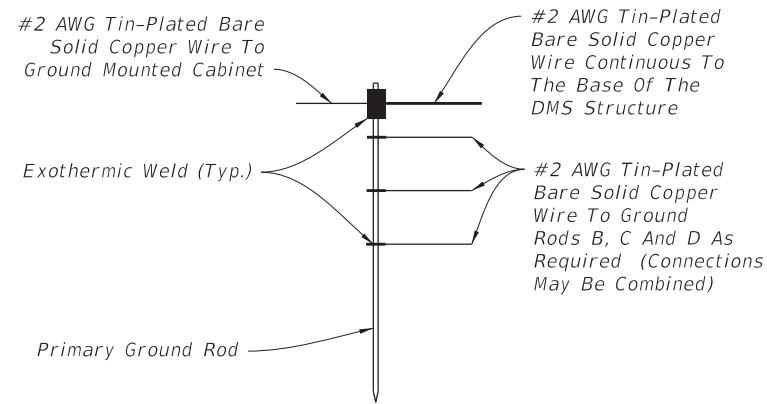
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LAST REVISION 11/01/17	REVISION	DESCRIPTION:	 FY 2018-19 STANDARD PLANS	DYNAMIC MESSAGE SIGN WALK-IN	INDEX 700-090	SHEET 3 of 5
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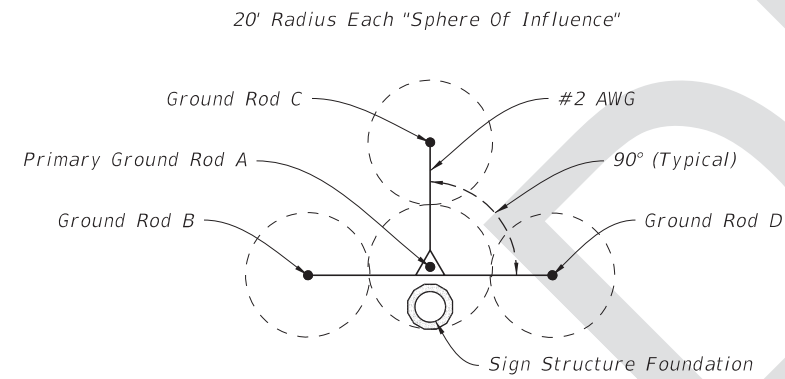


(Pole Mounted Cabinet Configuration Shown)

DETAIL "B"

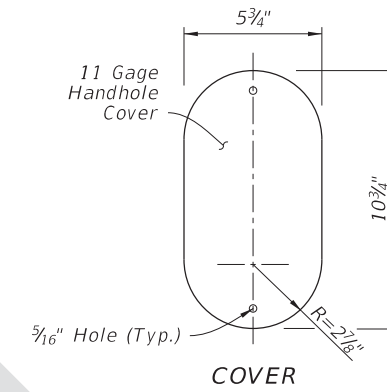


DETAIL "C"

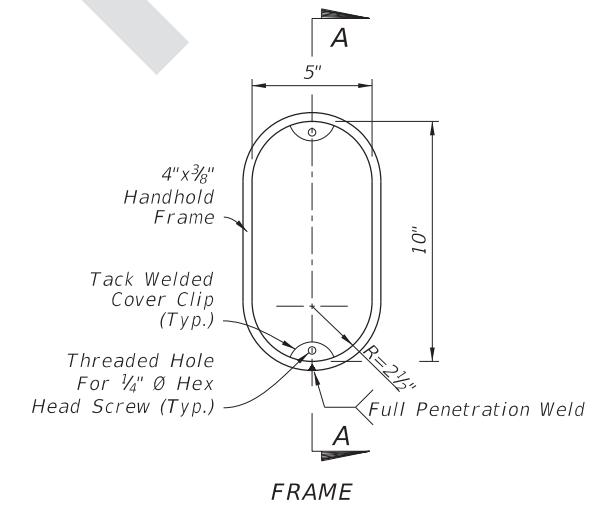


TYPICAL
(20' Rods, 40' Spacing)
GROUND ROD ARRAY DETAIL

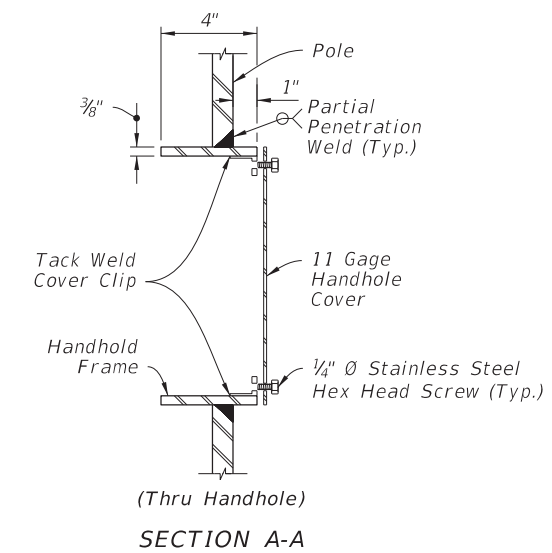
DETAIL "D"



COVER




FRAME

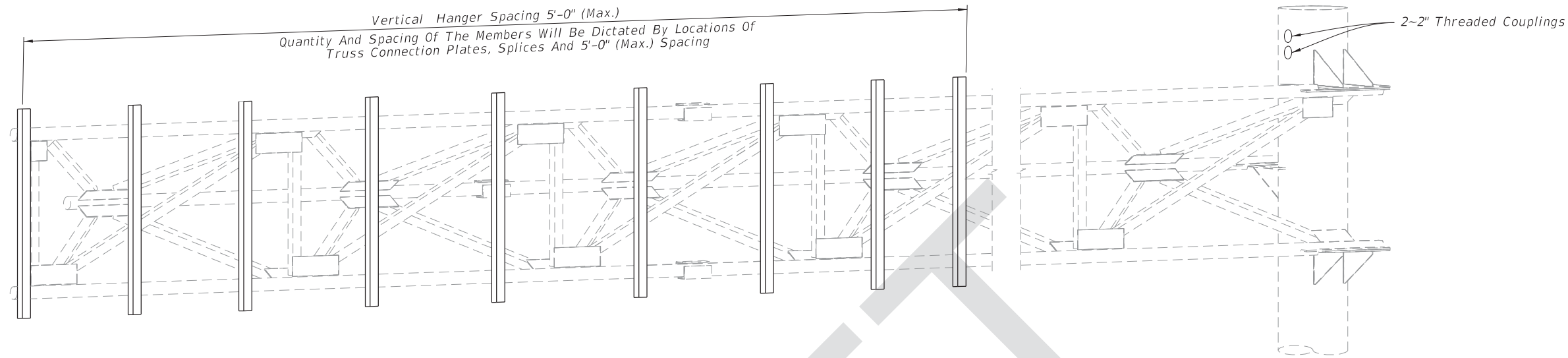


(Thru Handhole)
SECTION A-A

DETAIL "E"

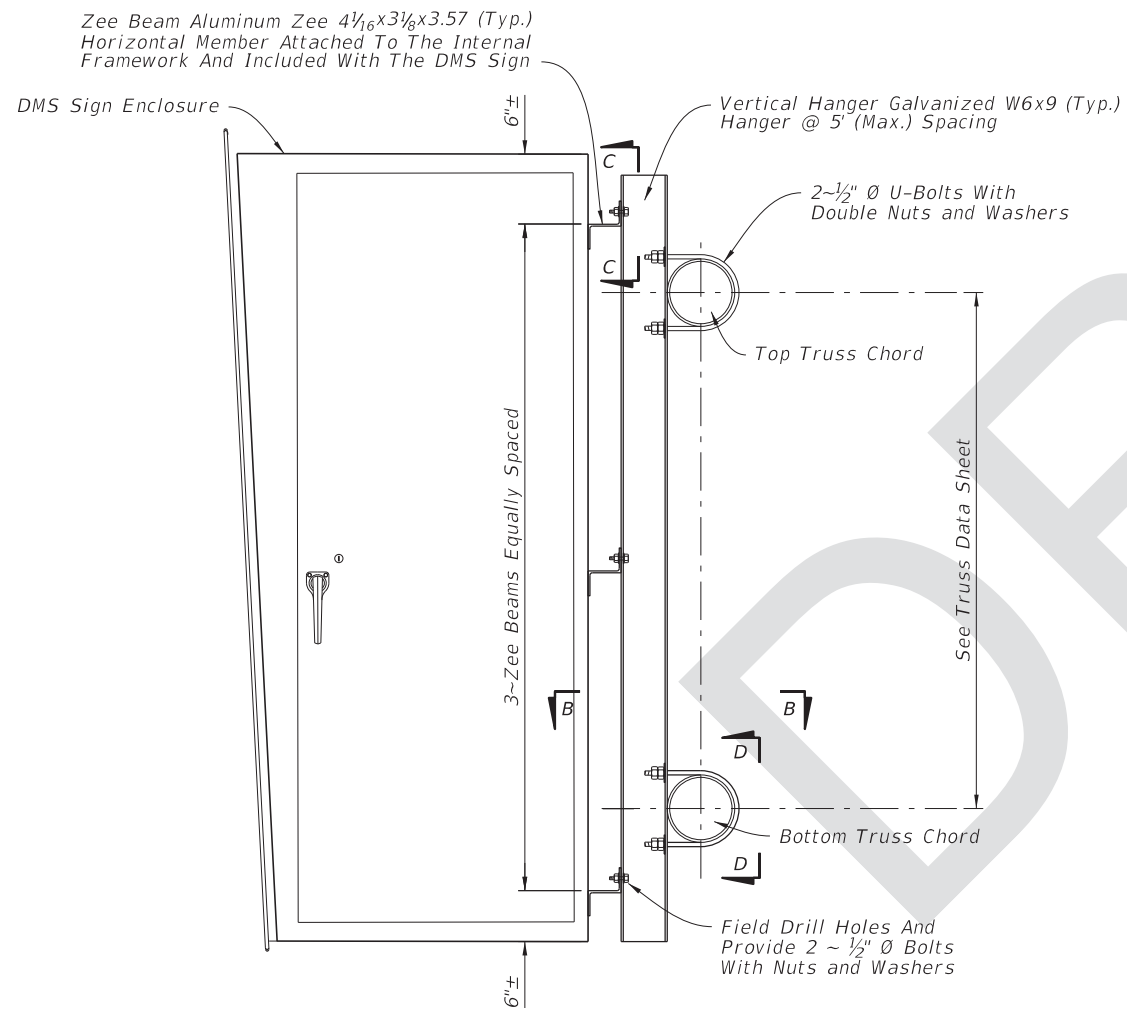
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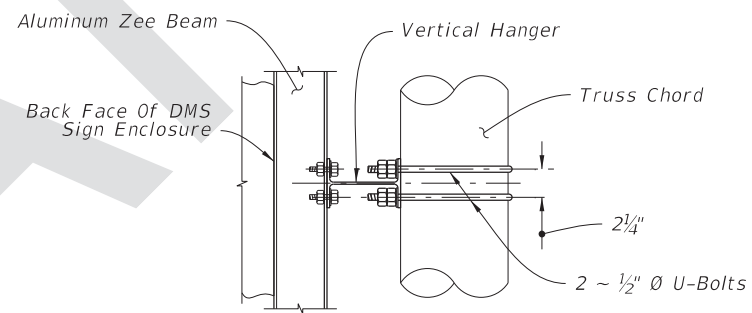


(Cantilever Sign Structure Shown, Span Sign Structure Similar)

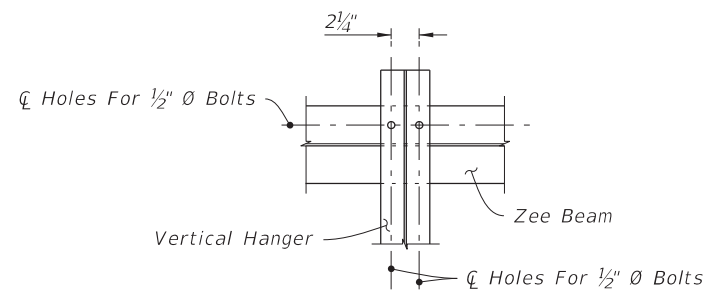
HANGER LOCATION DETAIL



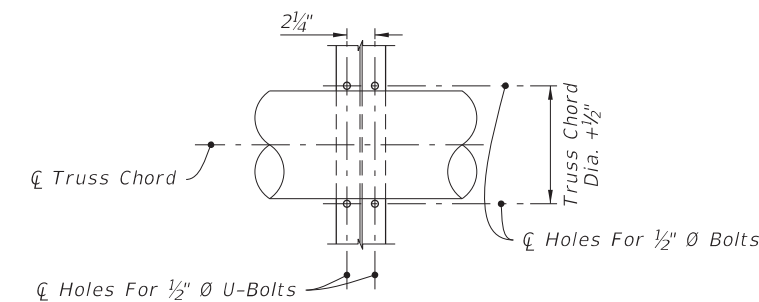
DYNAMIC MESSAGE SIGN END VIEW



SECTION B-B




SECTION C-C



SECTION D-D

8/22/2017 1:40:12 PM

LAST REVISION 11/01/17	REVISION	DESCRIPTION:	 FY 2018-19 STANDARD PLANS	DYNAMIC MESSAGE SIGN WALK-IN	INDEX 700-090	SHEET 5 of 5
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