

ORIGINATION FORM

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

Contact Information:

Date: July 12, 2018
Originator: **Cheryl Hudson**
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Email: cheryl.hudson@dot.state.fl.us

Standard Plans:

Index Number: **649-010**
Sheet Number (s): 1,2 of 3
Index Title: Steel Strain Pole

Summary of the changes:

Sheet 1: Note 5B add "including plate washers".
Sheet 2: Elevation Delete minimum threaded length for 'BC'; PLAN view: Delete "Size And" from #11 bar description; Deleted "Maximum Allowable Moment" column from table; Renamed table "Steel Strain Pole Data Table"

Commentary / Background:

As part of consistency and clarity. Washers for standard bolts with nuts and plate washers require different galvanizing. #11 is the bar size - only quantity in table. Threads on the anchor bolt vary, 8" is more than required at the bottom and not enough for some at the top of some anchors; fabricators calculate threaded length.

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

- | Yes | No | |
|--------------------------|-------------------------------------|-----------------------------|
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Other Standard Plans – |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | FDOT Design Manual – |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Basis of Estimates Manual – |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Standard Specifications – |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Approved Product List – |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Construction – |
| <input type="checkbox"/> | <input checked="" 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. Work with Index 634-001 for grounding and span wire details. See the Plans for clamp spacing, cable sizes and forces, signals and sign mounting locations and details.

2. Shop Drawings:

This Index is considered fully detailed, only submit shop drawings for minor modifications not detailed in the Plans.

3. Materials:

- A. Strain Pole and Backing Rings:
 - a. Less than 3/16": ASTM A1011 Grade 50, 55, 60 or 65
 - b. Greater than or equal to 3/16": ASTM A572 Grade 50, 55, 60 or 65
 - c. ASTM A595 Grade A (55 ksi yield) or Grade B (60 ksi yield)
- B. Steel Plates: ASTM A36
- C. Weld Metal: E70XX
- D. Bolts, Nuts and Washers:
 - a. High Strength Bolts: ASTM F3125, Grade A325, Type 1
 - b. Nuts: ASTM A563 Grade DH Heavy-Hex
 - c. Washers: ASTM F436 Type 1, one under turned element
- E. Anchor Bolts, Nuts and Washers:
 - a. Anchor Bolts: ASTM F1554 Grade 55
 - b. Nuts: ASTM A563 Grade A Heavy-Hex (5 per anchor bolt)
 - c. Plate Washers: ASTM A36 (2 per bolt). Split-lock washers and self-locking nuts are not permitted
- F. Handhole Frame: ASTM A709 or ASTM A36, Grade 36
- G. Handhole Cover: ASTM A1011 Grade 50, 55, 60 or 65
- H. Aluminum Pole Caps and Nut Covers: ASTM B26 (319-F)
- I. Stainless Steel Screws: AISI Type 316
- J. Threaded Bars/Studs: ASTM A36 or ASTM A307
- K. Concrete: Class IV (Drilled Shaft) for all environmental classifications.
- L. Reinforcing Steel: Specification Section 415

4. Fabrication:

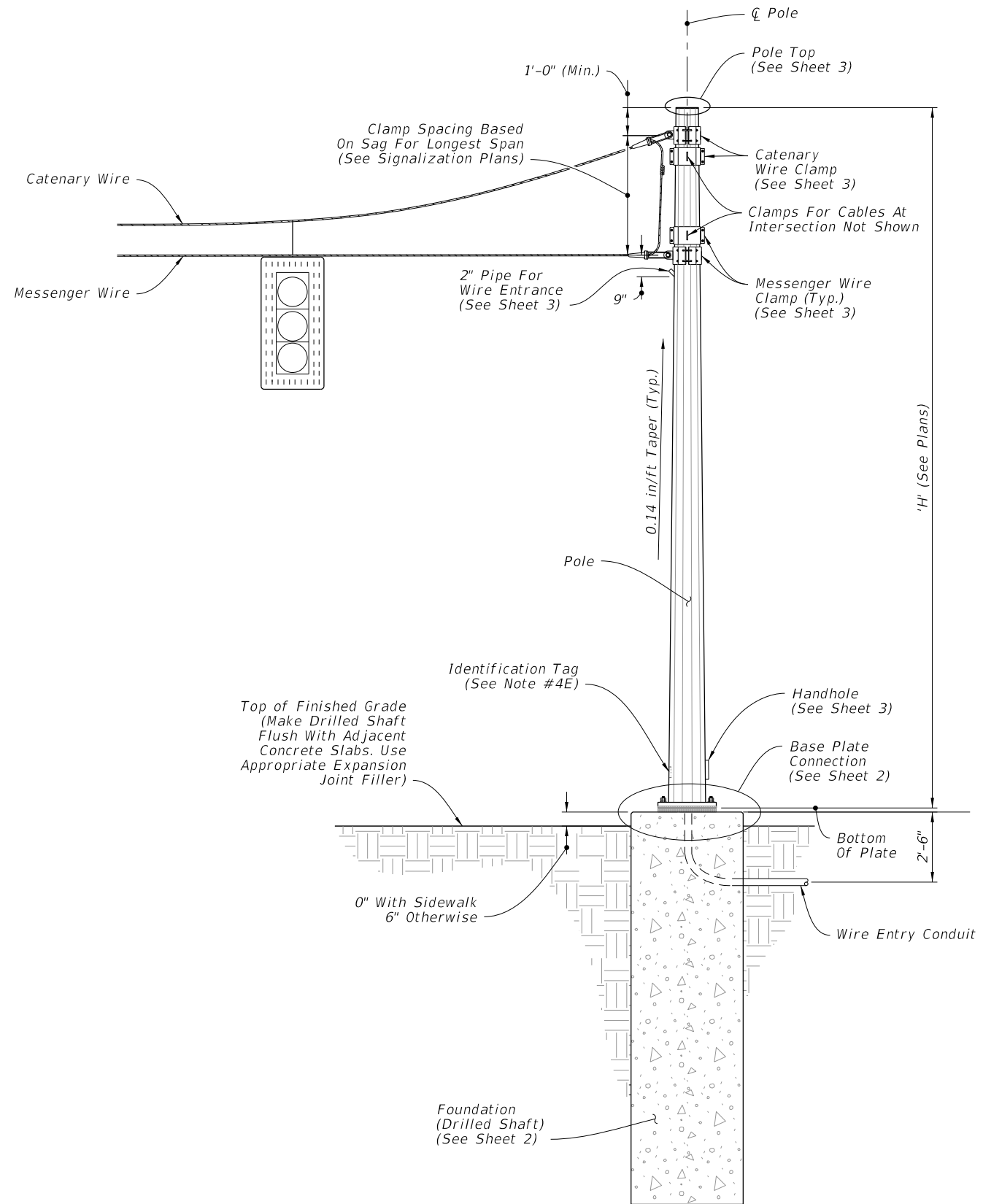
- A. Pole Taper: Change diameter at a rate of 0.14 inches per foot, round or 12-sided (Min.)
- B. Upright splices are not permitted. Transverse welds are only permitted at the base.
- C. Provide bolt hole diameters as follows:
 - a. Bolts (except Anchor Bolts): Bolt diameter plus 1/16", prior to galvanizing.
 - b. Anchor Bolts: Bolt diameter plus 1/2", maximum.
- D. Locate handhole 180° from 2" wire entrance pipe.
- E. Identification Tag: (Submit details for approval.)
 - a. 2"x 4" (Max.) aluminum identification tag.
 - b. Locate on the inside of the pole and visible from the handhole.
 - c. Secure to pole with 1/8" diameter stainless steel rivets or screws.
 - d. Include the following information on the ID Tag:
 - 1. Financial Project ID
 - 2. Pole Type
 - 3. Pole height
 - 4. Manufacturers' Name
 - 5. Fy of Steel
 - 6. Base Wall Thickness
- F. Provide a 'J' or 'C' hook at the top of the pole for signal wiring support (See Sheet 3).
- G. Perform all welding in accordance with Specification Section 460-6.4.
- H. Hot Dip Galvanize after fabrication.

5. Coatings:

- A. All Nuts, Bolts, Washers and Threaded Bars/Studs: ASTM F2329
- B. All other steel items ASTM A123

6. Construction:

- A. Foundation: Specification Section 455, except that payment is included in the cost of the strain pole.
- B. After installation, place wire screen between top of foundation and bottom of baseplate in accordance with Specification Section 649-6.



STRAIN POLE ASSEMBLY

ELEVATION AND NOTES

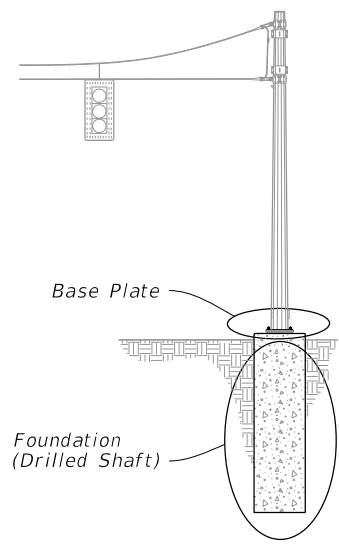
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LAST REVISION	DESCRIPTION:
11/01/17	
11/01/18	


**FY 2018-19
STANDARD PLANS**

STEEL STRAIN POLE

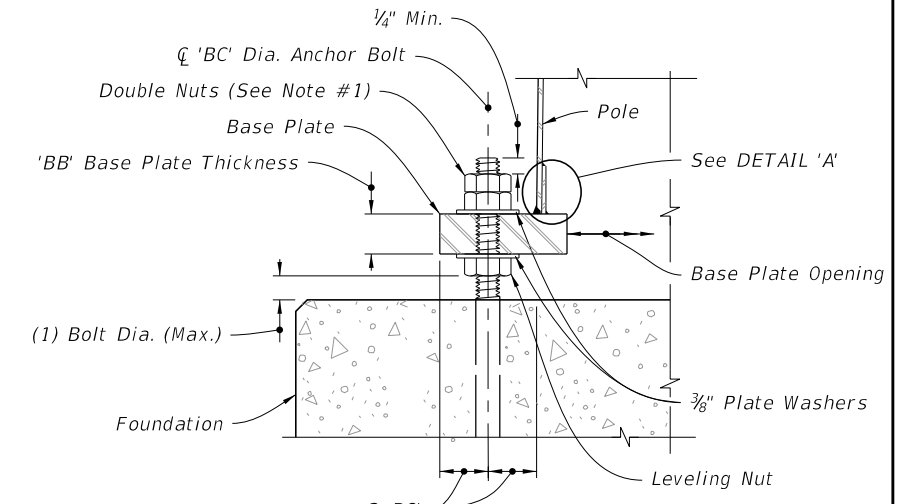
INDEX	SHEET
649-010	1 of 3



POLE ASSEMBLY

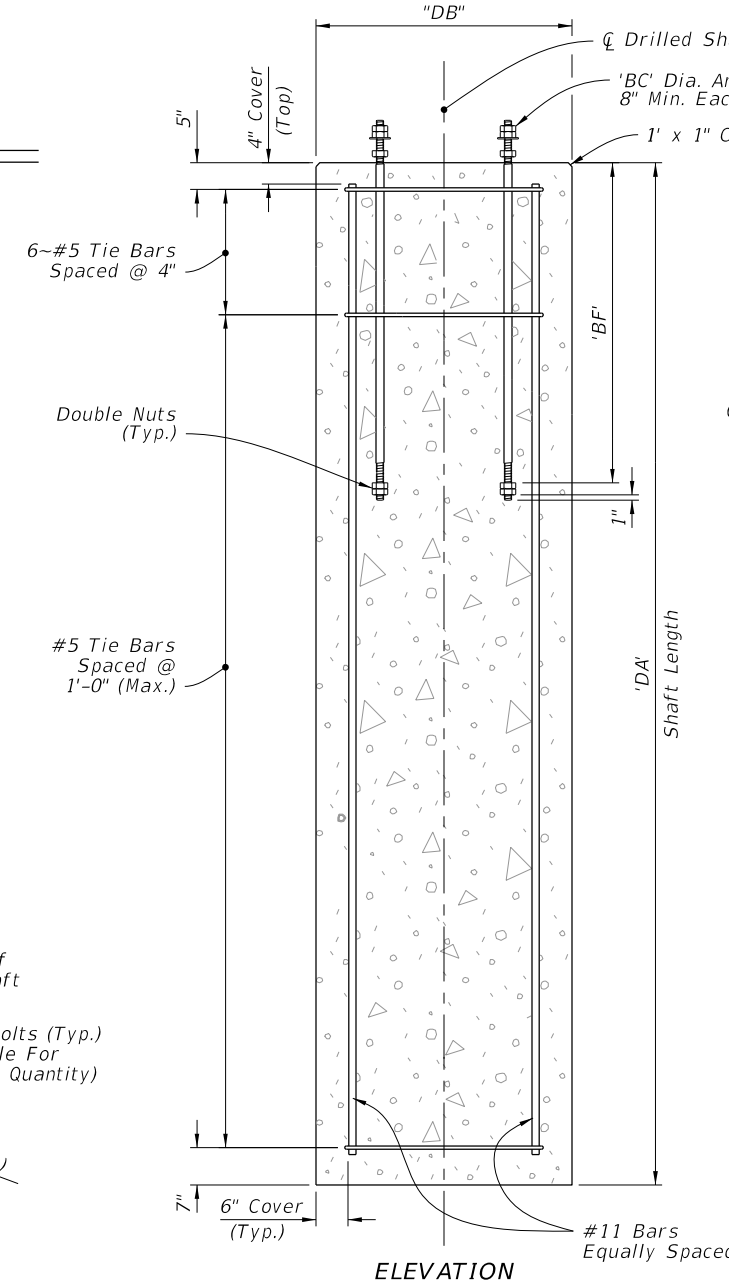
POLE TYPE	MAXIMUM ALLOWABLE MOMENT (k-ft)	TABLE OF FACTORED FLEXURAL RESISTANCE M_r									
		POLE		BASE CONNECTION				SHAFT			
		J (in)	K (in)	No. of Bolts	BA (in)	BB (in)	BC (in)	BF (in)	DA (FT)	DB (FT)	No. of #11 Bars
PS-I	172	0.250	14	8	25	2.50	1 3/8	60	14	4	14
PS-V	285	0.313	16	10	28	2.50	1 1/2	60	15	4	14
PS-VI	354	0.313	18	12	30	2.50	1 1/2	60	16	4	14
PS-VII	473	0.313	21	14	33	2.50	1 1/2	60	16	4.5	16
PS-VIII	561	0.313	23	16	35	2.50	1 1/2	60	17	4.5	16
PS-IX	657	0.313	25	12	39	3.00	1 3/4	60	17	5	18
PS-X	760	0.313	27	14	41	3.00	1 3/4	60	18	5	18

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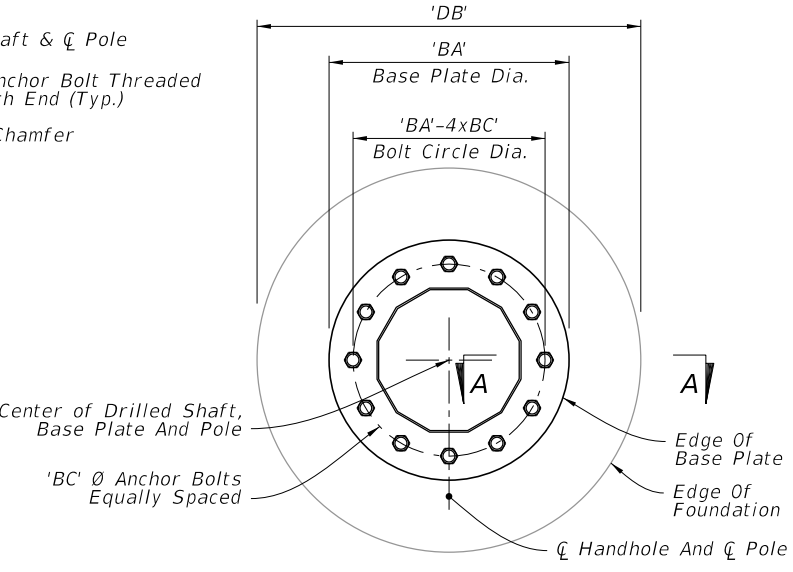


SECTION A-A

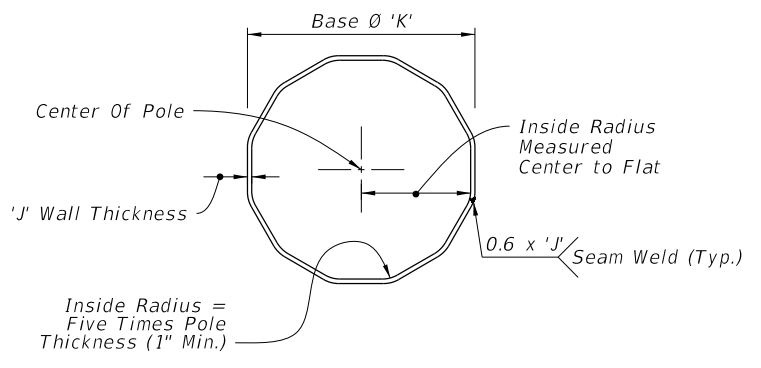
NOTE:
1. Double nuts: Bottom nut may be half height 'Jam' Nut. Provide individual nut covers (Not Shown) for each bolt.



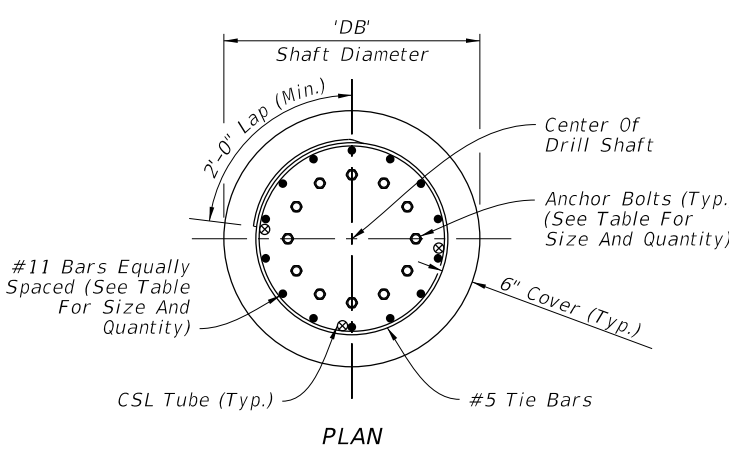
ELEVATION



PLAN

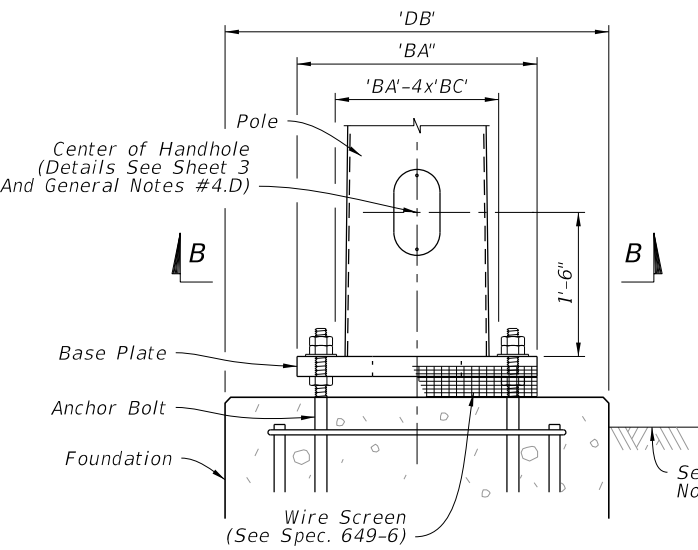


SECTION B-B



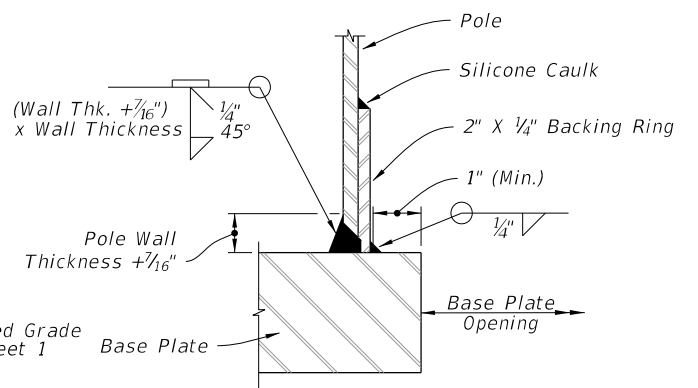
PLAN

FOUNDATION



ELEVATION

BASE PLATE



JOINT WELD DETAIL

DETAIL 'A'

FOUNDATON AND BASE DETAILS

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LAST REVISION	DESCRIPTION:
11/01/17	11/01/18

NOTES:

1. Work with Index 634-001 for grounding and span wire details. See the Plans for clamp spacing, cable sizes and forces, signals and sign mounting locations and details.

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- c. ASTM A595 Grade A (55 ksi yield) or Grade B (60 ksi yield)

B. Steel Plates: ASTM A36

C. Weld Metal: E70XX

D. Bolts, Nuts and Washers:

- a. High Strength Bolts: ASTM F3125, Grade A325, Type 1
- b. Nuts: ASTM A563 Grade DH Heavy-Hex
- c. Washers: ASTM F436 Type 1, one under turned element

E. Anchor Bolts, Nuts and Washers:

- a. Anchor Bolts: ASTM F1554 Grade 55
- b. Nuts: ASTM A563 Grade A Heavy-Hex (5 per anchor bolt)
- c. Plate Washers: ASTM A36 (2 per bolt). Split-lock washers and self-locking nuts are not permitted

F. Handhole Frame: ASTM A709 or ASTM A36, Grade 36

G. Handhole Cover: ASTM A1011 Grade 50, 55, 60 or 65

H. Aluminum Pole Caps and Nut Covers: ASTM B26 (319-F)

I. Stainless Steel Screws: AISI Type 316

J. Threaded Bars/Studs: ASTM A36 or ASTM A307

K. Concrete: Class IV (Drilled Shaft) for all environmental classifications.

L. Reinforcing Steel: Specification 415

4. Fabrication:

A. Pole Taper: Change diameter at a rate of 0.14 inches per foot, round or 12-sided (Min.)

B. Upright splices are not permitted. Transverse welds are only permitted at the base.

C. Provide bolt hole diameters as follows:

- a. Bolts (except Anchor Bolts): Bolt diameter plus 1/16", prior to galvanizing.
- b. Anchor Bolts: Bolt diameter plus 1/2", maximum.

D. Locate handhole 180° from 2" wire entrance pipe.

E. Identification Tag: (Submit details for approval.)

- a. 2" x 4" (Max.) aluminum identification tag.
- b. Locate on the inside of the pole and visible from the handhole.
- c. Secure to pole with 1/8" diameter stainless steel rivets or screws.

d. Include the following information on the ID Tag:

- 1. Financial Project ID
- 2. Pole Type
- 3. Pole height
- 4. Manufacturers' Name
- 5. Fy of Steel
- 6. Base Wall Thickness

F. Provide a 'J' or 'C' hook at the top of the pole for signal wiring support (See Sheet 3).

G. Perform all welding in accordance with Specification 460-6.4.

H. Hot Dip Galvanize after fabrication.

5. Coatings:

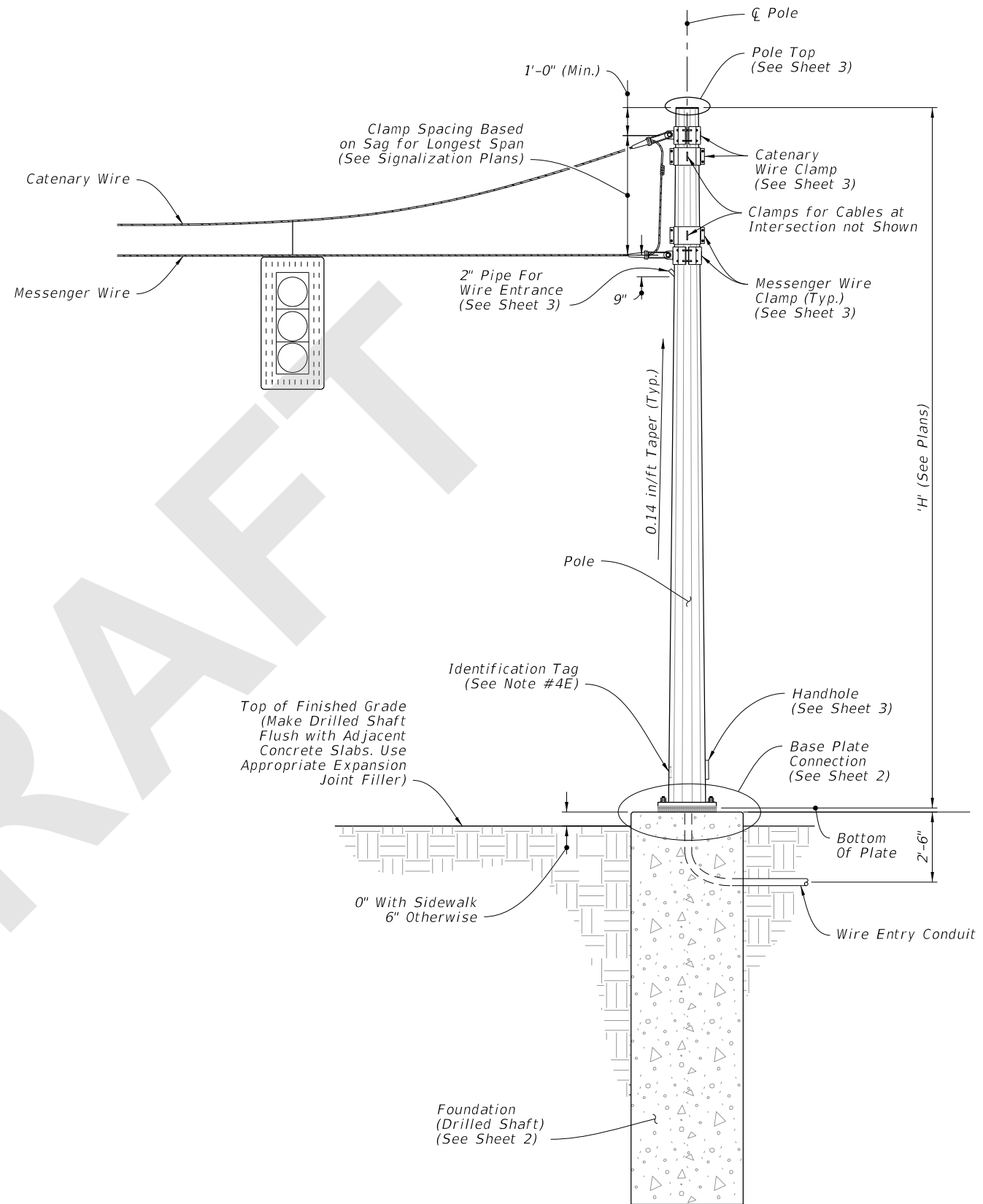
A. All Nuts, Bolts, Washers and Threaded Bars/Studs: ASTM F2329

B. All other steel items including plate washers: ASTM A123

6. Construction:

A. Foundation: Specification 455, except that payment is included in the cost of the strain pole.


B. After installation, place wire screen between top of foundation and bottom of baseplate in accordance with Specification 649-6.



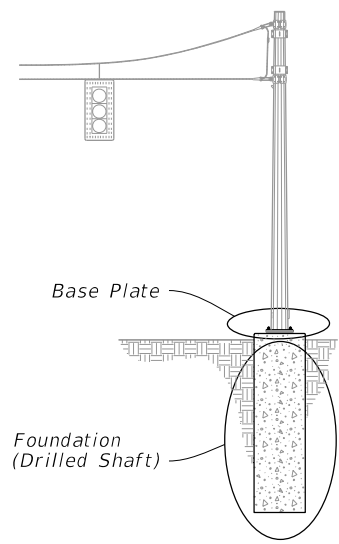
STRAIN POLE ASSEMBLY

ELEVATION AND NOTES

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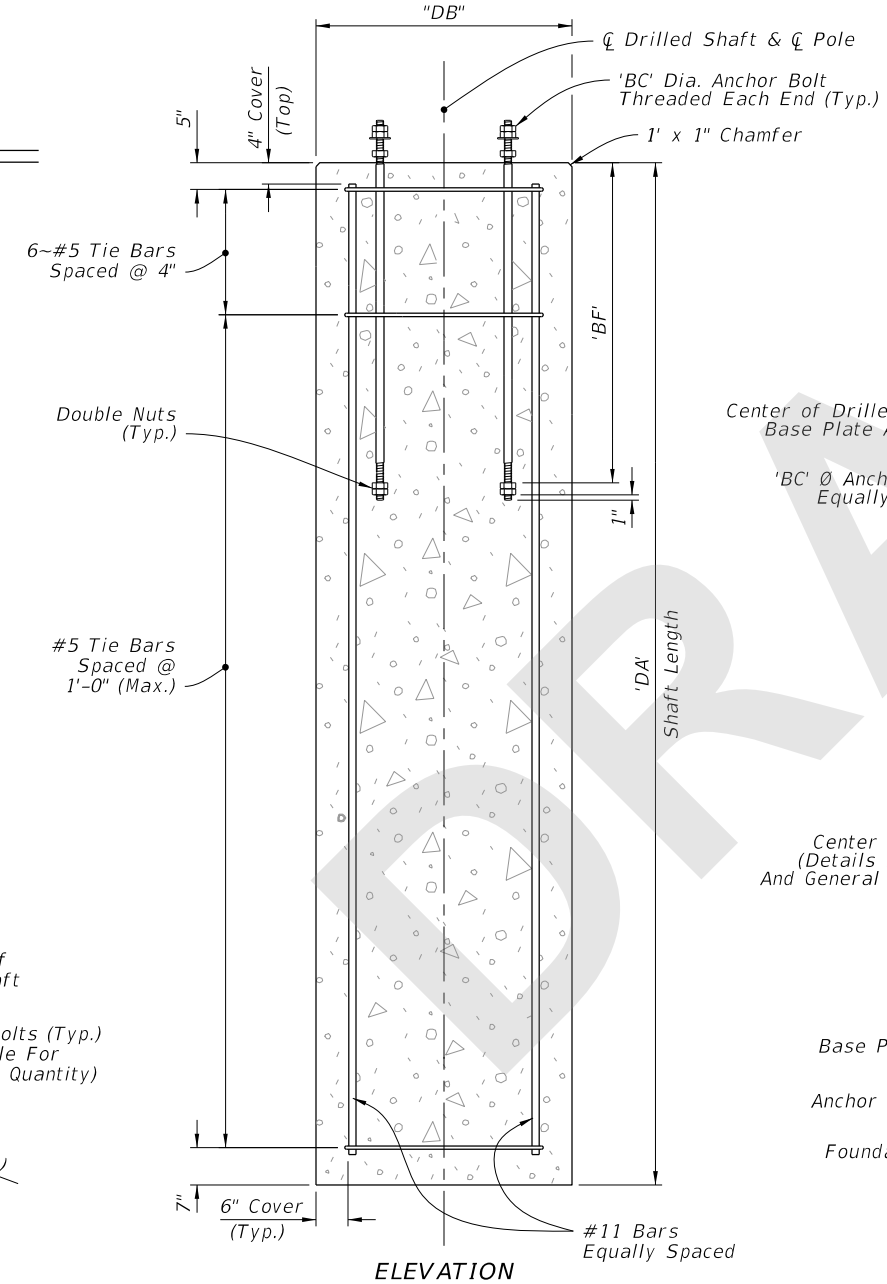
LAST REVISION 11/01/17	REVISION	DESCRIPTION:	 FY 2019-20 STANDARD PLANS	STEEL STRAIN POLE	INDEX 649-010	SHEET 1 of 3
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STEEL STRAIN POLE DATA TABLE										
POLE TYPE	POLE		BASE CONNECTION				SHAFT			
	J (in)	K (in)	No. of Bolts	BA (in)	BB (in)	BC (in)	BF (in)	DA (FT)	DB (FT)	No. of #11 Bars
PS-IV	0.250	14	8	25	2.50	1 3/8	60	14	4	14
PS-V	0.313	16	10	28	2.50	1 1/2	60	15	4	14
PS-VI	0.313	18	12	30	2.50	1 1/2	60	16	4	14
PS-VII	0.313	21	14	33	2.50	1 1/2	60	16	4.5	16
PS-VIII	0.313	23	16	35	2.50	1 1/2	60	17	4.5	16
PS-IX	0.313	25	12	39	3.00	1 3/4	60	17	5	18
PS-X	0.313	27	14	41	3.00	1 3/4	60	18	5	18



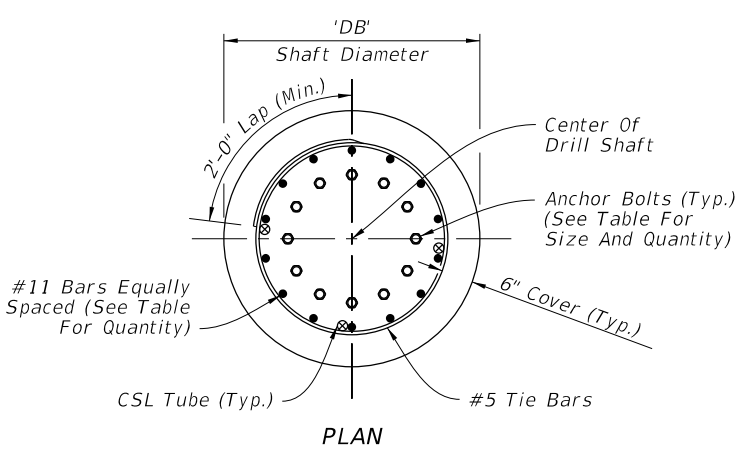
POLE ASSEMBLY

NOTE:
1. Double nuts: Bottom nut may be half height 'Jam' Nut. Provide individual nut covers (Not Shown) for each bolt.

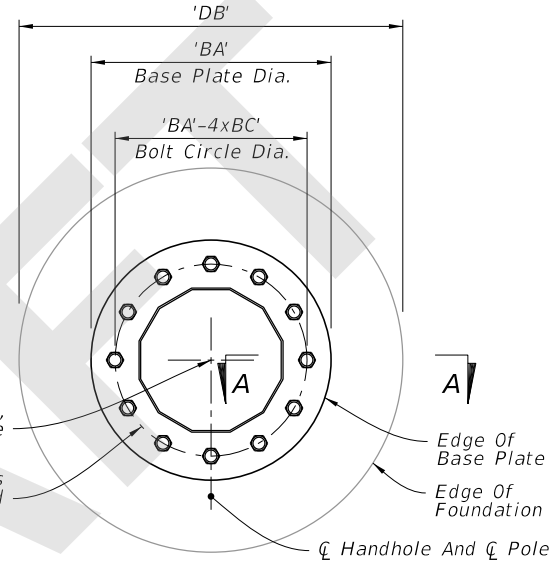


ELEVATION

FOUNDATION

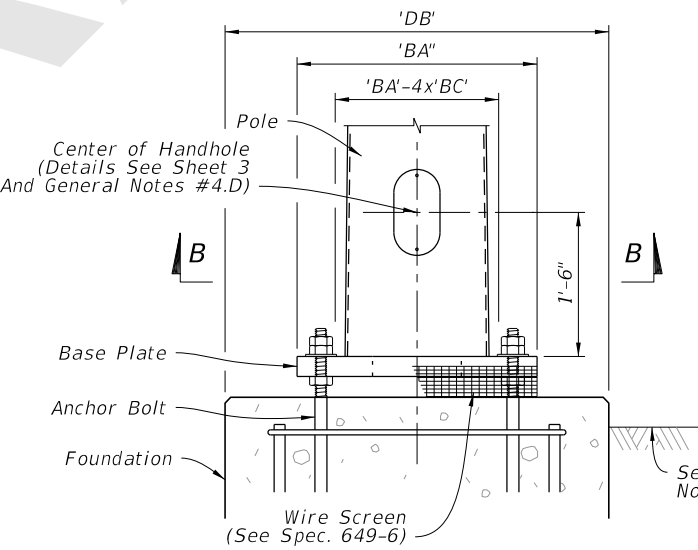


PLAN

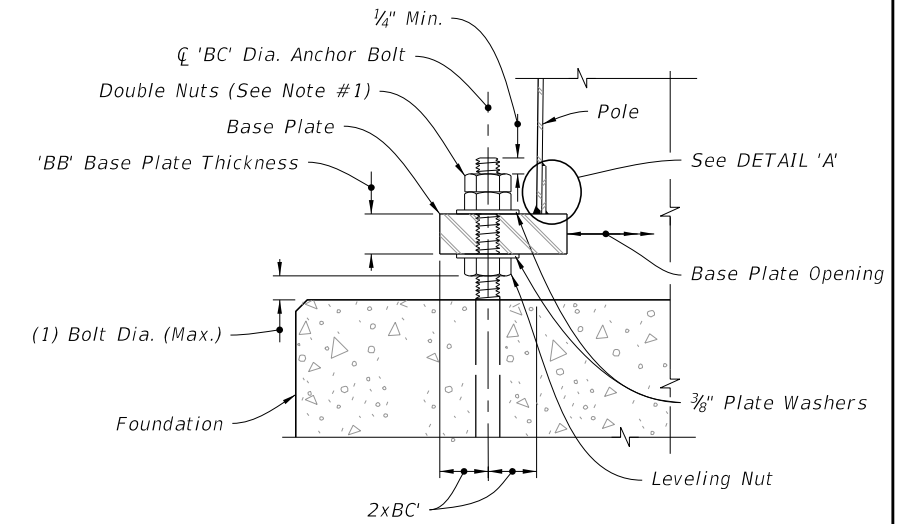


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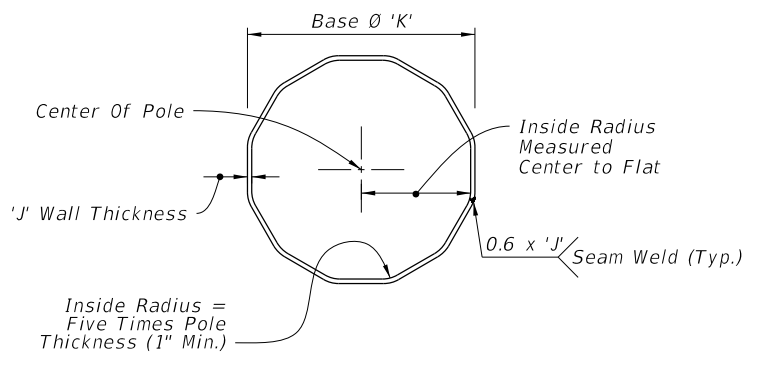
BASE PLATE



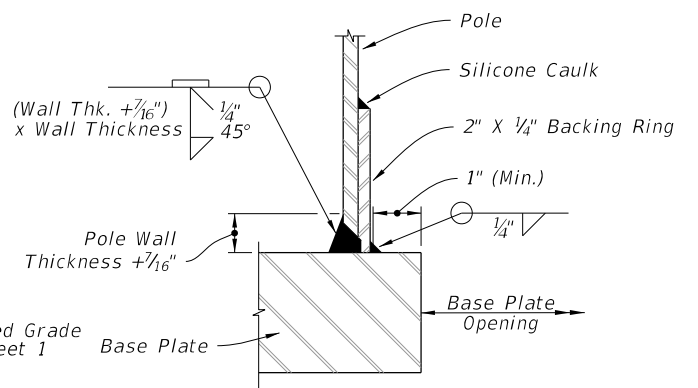
ELEVATION



SECTION A-A



SECTION B-B



JOINT WELD DETAIL

DETAIL 'A'

FOUNDATON AND BASE DETAILS

7/26/2018 3:59:53 PM

LAST REVISION	DESCRIPTION:
11/01/18	



FY 2019-20
STANDARD PLANS

STEEL STRAIN POLE

INDEX
649-010

SHEET
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