**GENERAL NOTES**

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

2. Prior to Fabrication: Verify the installed foundation elevation will result in the required signal elevation and adjust the Pole height as needed.

3. Details for Signal and Sign locations, Signal Head attachment, Sign attachment, Pedestrian Head attachment, and Foundation Conduit are not shown for simplicity.

4. Materials:
   - **A. Poles, Mast Arms and Backing Rings:**
     - Less than 1/4" ASTM A1011 Grade 50, 55, 60 or 65
     - Greater than or equal to 1/4" ASTM A72 Grade 50, 55, 60 or 65
   - **B. Steel Plates:** ASTM A26
   - **C. Weld Metal:** E70XX
   - **D. Bolts, Nuts and Washers:**
     - High Strength Bolts: ASTM F3125, Grade A335, Type 1
     - Nuts: ASTM A563 Grade A (55 ksi yield) or Grade B (60 ksi yield)
   - **E. Anchor Bolts, Nuts and Washers:**
     - Anchor Bolts: ASTM F1554 Grade 55
     - Nuts: ASTM A563 Grade A Heavy-Hex (3 per anchor bolt)
   - **F. Threaded Bars/Studs:** ASTM A36 or ASTM A307
   - **G. Handhole Frame:** ASTM A1090 or ASTM A260, Grade 36
   - **H. Handhole Cover:** ASTM A1011 Grade 50, 55, 60 or 65
   - **I. Aluminum Pole Caps and Nut Covers:** ASTM B26 (319-F)
   - **J. Stainless Steel Screws:** AISI Type 316
   - **K. Concrete:** Class IV (Drilled Shaft) for all environmental classifications.

5. Fabrication:
   - **A. Pole and Mast Arm Taper:** Change diameter at a rate of 0.14 inches per foot.
   - **B. Upright splices are not allowed. Transverse welds are only permitted at the base.**
   - **C. First and Second arm center angle = 2°.**
   - **D. Provide both hole diameters as follows:**
     - Bolts (except Anchor Bolts): Bolt diameter plus 0.5" (Max.)
     - Anchor Bolts: Bolt diameter plus 0.5" (Max.)
   - **E. Face handhole perpendicular from arm on single arm poles, perpendicular from first arm of double arm poles facing away from traffic or see special instructions on the Mast Arm Tabulation Sheet.**
   - **F. Seam weld on bottom side of arm. Seam weld under Arm 1 side of pole.**
   - **G. Provide a "C" or "O" hook at the top of the pole for signal wiring support (See Sheet 6).**
   - **H. Perform all welding in accordance with Specification 460-6.4.**
   - **I. Hot Dip Galvanize after fabrication.**

6. Coatings:
   - **A. All Nuts, Bolts, Washers and Threaded Bars/Studs:** ASTM A232
   - **B. All other steel items** ASTM A123

7. Construction:
   - **A. Fabrication:** Specification 455 Drilled Shaft, except that payment is included in the cost of the Mast Arm.
   - **B. Install Pole vertically.**
   - **C. Place structural grout pad with drain between top of foundation and bottom of plate in accordance with Specification 889-7.**
   - **D. Attach Sign Panels and Signals centered on the elevation of the Mast Arm.**
   - **E. Wire Access holes are 1/2" or less in diameter.**

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**ELEVATION AND NOTES**

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**Mast Arm Assembly**

**Financial Project ID:**

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**FY 2018-19**

**STANDARD PLANS**

**MAST ARM ASSEMBLIES**

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**LAST REVISION:**

**DESCRIPTION:**

**LAST:**

**REVISION:**

**01/01/17**

**FOOT**

**FY 2018-19**

**STANDARD PLANS**

**MAST ARM ASSEMBLIES**

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NOTES:

1. The Structural Grout Pad diameter may be reduced where the footprint of the Grout Pad does not provide adequate clearance for the sidewalk and/or accessibility considerations.

2. See Index 649-030 and the plans for actual quantity of bolts in the Base Plate Connection.

3. The bottom hex nut of the Double Nuts shown in Section A-A may be substituted by a half-height "jam" nut. Provide individual nut covers (not shown) for each bolt.

- The Structural Grout Pad diameter may be reduced where the footprint of the Grout Pad does not provide adequate clearance for the sidewalk and/or accessibility considerations.

- See Index 649-030 and the plans for actual quantity of bolts in the Base Plate Connection.

- The bottom hex nut of the Double Nuts shown in Section A-A may be substituted by a half-height "jam" nut. Provide individual nut covers (not shown) for each bolt.
MAST ARM ASSEMBLY

ARM SPLICE

SINGLE ARM CONNECTION

NOTE:
1. Install the 'Slip Joint' splice with a tight fit and no change in the Mast taper due to the splice.
2. Details shown on this sheet are for 12 sided pole sections. However, sections with more than 12 sides and round sections are permitted provided outside diameter and wall thickness are not reduced.
3. Match mark the Arm and Connection Plates to ensure proper assembly and the seam weld is in the proper location (seam located at the bottom side of the Arm).
**DOUBLE ARM CONNECTIONS & SPLICE DETAILS**

**NOTE:**

1. Install the 'Slip Joint' splice with a tight fit and no change in the Mast Arm taper due to the splice.

2. Details shown on this sheet are for 12 sided pole sections. However, sections with more than 12 sides and round sections are permitted provided outside diameter and wall thickness are not reduced.

3. Match mark the Arm and Connection Plates to ensure proper assembly and the seam weld is in the proper location (seam located at the bottom side of the Arm).

4. 'UF' measured counter clockwise from ¶ First Mast Arm Extension.

5. Adjust width of top and bottom Connection Plates to maintain minimum clearance shown.

**SECTION E-E**

- **Face Of Arm Base Plate At ¶ Arm**
- **Mast Arm**
- **Connection Bolt**
- **Second Arm Camber Angle**
- **Center Of First Mast Extension**

**SECTION F-F**

- **Side Connection Plate**
- **Edge Of Top Plate**
- **Opening**
- **Back Cover Ring**
- **Edge Of Mast Arm Extension**

**SECTION G-G**

- **Pole Connection Plate**
- **Mast Arm Extension Base Plate**
- **Bottom Connection Plate (Top Conn. Plate Similar)**

**DETAIL 'D'**

- **Mast Arm Extension Base Plate**
- **Top And Bottom Plates (Typ.)**

**DETAIL 'E'**

- **Side Connection Plate**
- **Mast Arm Extension Base Plate**

**DETAIL 'F'**

- **Full Penetration Weld (Typ.)**
- **Connection Bolt**
- **Pole Connection Plate**

**NOTE:**

1. Install the 'Slip Joint' splice with a tight fit and no change in the Mast Arm taper due to the splice.

2. Details shown on this sheet are for 12 sided pole sections. However, sections with more than 12 sides and round sections are permitted provided outside diameter and wall thickness are not reduced.

3. Match mark the Arm and Connection Plates to ensure proper assembly and the seam weld is in the proper location (seam located at the bottom side of the Arm).

4. 'UF' measured counter clockwise from ¶ First Mast Arm Extension.

5. Adjust width of top and bottom Connection Plates to maintain minimum clearance shown.

**DOUBLE ARM CONNECTIONS & SPLICE DETAILS**

**NOTE:**

1. Install the 'Slip Joint' splice with a tight fit and no change in the Mast Arm taper due to the splice.

2. Details shown on this sheet are for 12 sided pole sections. However, sections with more than 12 sides and round sections are permitted provided outside diameter and wall thickness are not reduced.

3. Match mark the Arm and Connection Plates to ensure proper assembly and the seam weld is in the proper location (seam located at the bottom side of the Arm).

4. 'UF' measured counter clockwise from ¶ First Mast Arm Extension.

5. Adjust width of top and bottom Connection Plates to maintain minimum clearance shown.
Mast Arm Assembly

NOTES:
1. Luminaire type and luminaire length may be found in the Lighting Plans.
2. Align Luminaire Arm with Single Mast Arm or First Arm of Double Mast Arm unless indicated otherwise in the plans.
3. The fabricator may substitute a 1/2" thick bent plate with the same flange width, height, and length as the MC 10x33.6 Channel section.
4. 'L' measure counter clockwise from First Mast Arm.

Luminaire Elevation

Luminaire Orientation

Luminaire Connection Elevation

Section H-H

Section I-I

Detail 'G'

Luminaire Arm and Connection Details

Luminaire Orientation
NOTES:
1. Handhole covers may be omitted when Terminal Compartment is provided.
2. See Mast Arm Tabulation sheet to see if Terminal Compartment is required and for locations.
3. Terminal Compartment Frame Height 2'-0" minimum to 2'-6" maximum. Align bottom of Terminal Compartment a minimum of 1" below the bottom of the Handhole Frame.
4. Any combination of Option 'a' or 'b' may be used, provided both lifting and wiring is accommodated.

MAST ARM ASSEMBLY

COVER

11 Gauge Mast Arm Handhole Cover

1/8" Ø Hole (Typ.)

5/8" OD x 1/4" Wall Thick Std. Mast Arm Handhole Frame

Threaded Hole For 1/2" Ø Hex Head Screw (Typ.)

Mast Arm Handhole Frame

FRAME

Tack Welded Cover Clip (Typ.)

SECTION J-J

HANDHOLE

11 Gauge Handhole Cover

1/8" Ø Hole (Typ.)

HEADSCREW (Typ.)

Pole Wall Partial Penetration Weld

Tack Weld Cover Clip

Mast Arm Handhole Frame

1/8" Ø Stainless Steel Hex Head Screw (Typ.)

SECTION K-K (Thru Handhole)

SECTION K-K (Terminal Compartment)

COVER

11 Gauge Handhole Cover

1/8" Ø Hole (Typ.)

HEADSCREW (Typ.)

Pole Wall Partial Penetration Weld

Tack Weld Cover Clip

Handhole Frame

1/8" Ø Stainless Steel Hex Head Screw (Typ.)

POLE TOP

Pole Cap Plate

Flange Bolt

Pole Cap Plate

CAST ALUMINUM

MAST ARM ASSEMBLIES

INDEX

FY 2018-19 STANDARD PLANS

REVISION

11/01/17

10:32:47 AM

10:32:47 AM

SEE NOTE #1

SEE NOTE #2 AND #3

HANDHOLE AND POLE TOP DETAILS

WATERPROOF GASKET.

Cover Installed With Terminal Compartment.