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 Condut are not shown for simplicity.

4. Materials:
A. Poles, Mast Arms and Backing Rings:
   a. Less than 3"; ASTM A1011 Grade 50, 55, 60 or 65
   b. Greater than or equal to 3"; ASTM A52 Grade 50, 55, 60 or 65
   c. ASTM A595 Grade 4 (53 ksi yield) or Grade 8 (60 ksi yield)
B. Steel Plates: ASTM A36
C. Weld Metal: E70XX
D. Bolts, Nuts and Washers:
   a. High Strength Hex Head Bolts: ASTM F3125, Grade A325, Type 1
   b. Nuts: ASTM A563 Grade A 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 (5 per anchor bolt)
   c. Plate Washers: ASTM A94 (2 per bolt)
F. Threaded Bars/Studs: ASTM A307
G. Handhole Frame: ASTM A1090 or ASTM A496, 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.
L. Reinforcing Steel: Specification 415
M. Hanger Bolts: ASTM A572 Grade 50, 55, 60 or 65

5. Fabrication:
A. Welding:
   a. Specification Section 460-6.4 and
   b. AASHTO LRFD Specification for Structural Supports for Highway Signs, Luminaries, and Traffic Signals Section 14.4.4
B. Poles and Mast Arms:
   a. Round or 12-sided (Min.)
   b. Taper pole diameter at 0.14 inches per foot
   c. Upright poles must be a single section. For arms and upright poles, circumferential welds and laminated sections are not permitted.
   d. Arms may be either one or two sections. See Sheet 4 for telescopic spool detail
   e. Fabricate longitudinal seam welds with 60 percent minimum penetration on fusion welds except:
      1. Use a full-penetration groove weld within six inches of the circumferential tube-to-plate connection.
      2. Use full-penetration groove welds on the female end of sections (i.e., slip type) field splices for a minimum length of one and one-half times the inside diameter of the female section plus 6 inches.
   f. Locate longitudinal seams weld along the:
      1. Lower quadrant of the arms.
      2. Same side of the pole as the arm connections
   g. Face handhole perpendicular from arm on single arm pole, perpendicular from the first arm of double arms poles facing away from traffic or see special instructions on the Mast Arm Tabulation Sheet
   h. Provide a 2" or 4" hook at the top of the pole for signal wiring support (See Sheet 6)
      i. First and Second arm camber angle = 2
      j. Bolt holes diameters as follows:
         1. Bolts (except Anchor bolts): Bolt diameter plus 1/16" prior to gapping
         2. Anchor Bolts: Bolt diameter plus 2/16 (Max.)
6. Coatings:
A. All Nuts, Bolts, Washers and Threaded Bars/Studs: ASTM F3239
B. All other steel items including plate washers ASTM A123

7. Construction:
A. Foundation: Specification 455 Drilled Shaft, except that payment is included in the cost of the Mast Arm
B. Install Pole vertically
C. Place structural grade pad with drain between top of foundation and bottom of baseplate in accordance with Specification 689-7
D. Attach Sign Panels and Signals centered on the elevation of the Mast Arm
E. Wire Access holes are 1/2" in diameter.
**SINGLE ARM CONNECTION & SPLICE DETAILS**

**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).

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).
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 Center of Pole".
5. Adjust width of top and bottom Connection Plates to maintain minimum clearance shown.

SECTION E-E

SECTION F-F

SECTION G-G

DOUBLE ARM CONNECTIONS & SPLICE DETAILS
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. 'LL' measure counter clockwise from First Mast Arm.

SECTION H-H

1/8" Luminaire Base Plate Thickness

3/32" Partial Penetration Weld Typ. for Ø < 60°

Weld Typ. for Ø ≥ 60°

Center Of Pole

SECTION I-I

1/4" Round Luminaire Shaft 0.14 in/ft Taper 0.01 Wall Thickness

NC 10x33.6 (See Note 3)

2 1/2" Connection Plate Wiring Hole

LUMINAIRE CONNECTION ELEVATION

DETAIL 'G'

LUMINAIRE ORIENTATION

LUMINAIRE CONNECTION ELEVATION

LUMINAIRE ELEVATION

LUMINAIRE ARM AND CONNECTION DETAILS

DESCRIPTION:

REV 01

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STANDARD PLANS

INDEX

MAST ARM ASSEMBLIES

649-031

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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.

Cover:

- 11 Gage Mast Arm Handhole Cover
- 5/8" OD x 1/8" Wall Thick Std. Mast Arm Handhole Frame
- 1/8" Ø Hole (Typ.)
- Tack Welded Cover Clip (Typ.)
- Threaded Hole For 1/8" Ø Hex Head Screw (Typ.)

Frame:

- 1/8" Ø Stainless Steel Hex Head Screw (Typ.)
- Partial Penetration Weld
- Tack Weld Cover Clip
- Mast Arm Handhole Frame
- Handhole Frame
- Full Penetration Weld

Section J-J:

- Pole Wall
- Partial Penetration Weld (Typ.)
- Tack Weld Cover Clip (Typ.)
- 11 Gage Mast Arm Handhole Cover
- 1/8" Ø Stainless Steel Hex Head Screw (Typ.)

Section K-K

- COVER
- MANHOLE FRAME
- HANDHOLE

Handhole:

- 11 Gage Handhole Cover
- 3/8" OD x 3/16" Wall Thick Std. Mast Arm Handhole Frame
- 1/8" Ø Hole (Typ.)
- Tack Welded Cover Clip (Typ.)
- Threaded Hole For 1/8" Ø Hex Head Screw (Typ.)

Pole Top:

- Flat Washer
- 5/8" Ø Min. Bolt
- Pole Cap Plate
- 1/2" Thick
- ISO VIEW
- TOP VIEW (Option 'a')
- POLE TOP
- CUT-AWAY (Option 'a')
- CUT-AWAY (Option 'b')
- POLE TOP
- POLE AND POLE TOP DETAILS

Handhole and Pole Top Details:

- 1/4" x 3" Lifting Bar With (Bolt Size + 5/32") Hole And Matching Nut Tack Weld To Underside Of Bar
- 1/4" Overhang (Min.)
- 1/8" Min. Thick.
- 1/8" Min. Bolt
- 1/8" Ø Commercial Grade Hot Rolled Bar Welded To Inside Of Pole
- C Hook For Wiring, 1/8" Ø Commercial Grade Hot Rolled Bar Welded To Inside Of Pole
- "J" Hook For Wiring, 1/8" Ø Commercial Grade Hot Rolled Bar Welded To Inside Of Pole

Mast Arm Assemblies:

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- DESCRIPTION: