GENERAL NOTES:

1. Work this Index with Specification 649.

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

3. Materials:
   - A. Pole: ASTM A1011 Grade 50, 60, or 65 (less than 50 ksi) or ASTM A572 Grade 50, 60, or 65 (greater than or equal to 50 ksi) or ASTM A363 Grade A (55 ksi yield) or Grade B (60 ksi yield).
   - B. Steel Plates and Pole Cap: ASTM A6 or ASTM A709 Grade 50.
   - C. Weld Metal: E70XX.
   - D. Bolts: ASTM F3125, Grade A325, Type 1.
   - Washers: ASTM F 436.
   - E. Anchor Bolts: ASTM F1554 Grade 55 with ASTM A563 Grade A heavy hex nuts and ASTM A36 plate washers.
   - F. Handhole Frame: ASTM A109 Grade 36 or ASTM A36.
   - G. Handhole Cover: ASTM A1011 Grade 50, 60, or 65.
   - H. Stainless Steel Screws: AISI Type 316.
   - I. Reinforcing Steel: ASTM A615 Grade 60.
   - J. Galvanization: Bolts, nuts, and washers: ASTM F 3328. All other steel including plate washer: ASTM A123.
   - K. Concrete: Class IV (Drilled Shaft) for all environment classifications.

4. Fabrication:
   - A. Sectioning:
     - a. Specification 440-6 and 441-6 for structural supports.
     - b. ANSI/RFI specification for structural supports.
   - B. Poles:
     - a. Round or 16-sided (Min.)
     - b. Taper pole diameter at 0.14 inches per foot.
     - c. Fabricate pole longitudinal seam welds (2 maximum) with 60 percent minimum penetration or fusion welds except as follows:
       - 1. Use a full-penetration groove weld within 6 inches of the circumferential tube-to-plate connection and
       - 2. Use full-penetration groove welds on the female end section of telescopic tubes that are slip type field splices for a minimum length of one and one-half times the inside diameter of the female section plus 6 inches.
     - d. Pole shall be either one or two sections (with telescopic field splices)
     - e. Circumferentially welded pole shafts and laminated pole shafts are not permitted
   - C. Identification Tag: (Submit details for approval)
     - a. 2' x 4' (Max.) aluminum tag
     - b. Locate on the inside of the pole and visible from the handhole
     - c. Secure with 6 gauge diameter stainless steel rivets or screws
     - d. Include the following information on the ID Tag:
       - 1. Financial Project ID
       - 2. Pole Type
       - 3. Pole Weight
       - 4. Manufacturers’ Name
       - 5. Yield Strength (Fy of Steel)
       - 6. Base Wall Thickness
     - D. Except for Anchor Bolts, bolt hole diameters are bolt diameter plus 1/8" and anchor bolt holes are bolt diameter plus 1/2" (Max) prior to galvanizing.
   - E. Pole Installation:
     - a. Do not install additional wire access holes (not shown in this Index) with a diameter that exceeds 1 1/2" in diameter.
     - b. Install Anchor Bolts in accordance with Specification 649-5
     - c. Cable Supports: Electrical Cable Glands and Eyebolts:
       - a. Locate top and bottom cable guides within the pole aligned with each other.
       - b. Position one cable guide 2" below the handhole.
       - c. Position other cable guides 1" directly below the top of the tenon.
       - d. Position Park Stands 2" below the top of the handhole.
       - e. Include the following information on the ID Tag:
         - 1. Financial Project ID
         - 2. Pole Type
         - 3. Pole Weight
         - 4. Manufacturers’ Name
         - 5. Yield Strength (Fy of Steel)
         - 6. Base Wall Thickness
   - F. Pole Installation:
     - a. Splice fiber optic cables in cabinet to preterminated patch panel.
     - b. Arrange and install Surge Protection Devices (SPDs) on all cabling in cabinet.
     - c. Fabricate and install secondary SPDs protection on outlets for equipment in cabinet.
     - d. Ensure that all electronic equipment power is protected and conditioned with SPDs.
     - e. Ensure that equipment cabinet is bonded to CCTV pole grounding system
     - f. Install the pole mounted cabinet with the hinges next to the pole.
     - g. Secure the cabinet to the pole with 4 or 6 carriage bolts (Min.)
     - h. Coordinate all lowering device hardware requirements (including Tenon, Tenon mounting plates, parking stands, etc.) with lowering device manufacturer.

7. Lowering Device Installation:
   - A. Place the lowering cable that moves within the pole in an interior conduit to prevent it from tangling or interfering with any electrical wire that is in the pole. Ensure that any electrical wire within the pole is routed securely and free from slack.
   - B. Mount the lowering device perpendicular to the roadway or as shown in the Plans. Position CCTV pole so that the camera can be safely lowered without requiring lane closures.
   - C. Coordinate all lowering device hardware requirements (including Tenon, Tenon mounting plates, parking stands, etc.) with lowering device manufacturer.
SHAFT DESIGN TABLE

<table>
<thead>
<tr>
<th>Pole Overall Height (ft)</th>
<th>Shaft Diameter</th>
<th>4'-0&quot; Shaft Length</th>
<th>5'-0&quot; Shaft Length</th>
<th>5'-0&quot; Shaft Diameter</th>
</tr>
</thead>
<tbody>
<tr>
<td>50</td>
<td>6'-0&quot;</td>
<td>11'-0&quot;</td>
<td>(16) #11</td>
<td></td>
</tr>
<tr>
<td>60</td>
<td>6'-0&quot;</td>
<td>13'-0&quot;</td>
<td>(16) #11</td>
<td></td>
</tr>
<tr>
<td>70</td>
<td>5'-0&quot;</td>
<td>14'-0&quot;</td>
<td>(18) #11</td>
<td></td>
</tr>
</tbody>
</table>

ADDITIONAL SHAFT DEPTH DUE TO GROUND SLOPE

<table>
<thead>
<tr>
<th>Ground Slope</th>
<th>4'-0&quot; Shaft Diameter</th>
<th>5'-0&quot; Shaft Diameter</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>6'-0&quot;</td>
<td>6'-0&quot;</td>
</tr>
<tr>
<td></td>
<td>9'-0&quot;</td>
<td>9'-0&quot;</td>
</tr>
<tr>
<td></td>
<td>12'-0&quot;</td>
<td>12'-0&quot;</td>
</tr>
<tr>
<td></td>
<td>15'-0&quot;</td>
<td>15'-0&quot;</td>
</tr>
</tbody>
</table>

FOUNDATION NOTES:
1. Shaft Length is based on 1'-0" height above the finished grade.
2. Shaft Design Table Shaft Length is based on level ground (flatter than 1:5). Increase the shaft depth in accordance with the additional shaft depth due to ground slope table for foundations with slopes 1:5 and steeper. Use the higher value for slope or diameter values that fall between those shown in the table.

BASE PLATE AND ANCHOR BOLT DESIGN TABLE

<table>
<thead>
<tr>
<th>Pole Overall Height (ft)</th>
<th>Base Plate Diameter (in.)</th>
<th>Base Plate Thickness (in.)</th>
<th>Anchor Bolt Diameter (in.)</th>
<th>Number of Bolts</th>
<th>Anchor Bolt Embedment (in.)</th>
<th>Minimum Anchor Bolt Projection (in.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>50</td>
<td>27 2.5</td>
<td>6</td>
<td>6</td>
<td>1.25</td>
<td>22</td>
<td>95</td>
</tr>
<tr>
<td>60</td>
<td>29 2.5</td>
<td>6</td>
<td>6</td>
<td>1.25</td>
<td>22</td>
<td>95</td>
</tr>
<tr>
<td>70</td>
<td>31 2.5</td>
<td>6</td>
<td>6</td>
<td>1.25</td>
<td>22</td>
<td>95</td>
</tr>
</tbody>
</table>

POLE DESIGN TABLE

<table>
<thead>
<tr>
<th>Pole Overall Height (ft)</th>
<th>Section 1 (Top)</th>
<th>Section 2 (Bottom)</th>
<th>Joint</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Wall Thickness (in.)</td>
<td>Base Diameter (in.)</td>
<td>Wall Thickness (in.)</td>
</tr>
<tr>
<td>50</td>
<td>15'-0&quot; 0.75</td>
<td>14</td>
<td>18'-0&quot; 0.25</td>
</tr>
<tr>
<td>60</td>
<td>17'-0&quot; 0.75</td>
<td>16</td>
<td>20'-0&quot; 0.25</td>
</tr>
<tr>
<td>70</td>
<td>19'-0&quot; 0.75</td>
<td>18</td>
<td>22'-0&quot; 0.25</td>
</tr>
</tbody>
</table>
NOTES:
1. Shaft Length is based on 1'-0" height above the finished grade.
2. Double Nuts: Bottom nut may be half-height (jam nut). Provide individual nut covers (not shown) for each bolt.
3. Conduit and CSL Tubes not shown for clarity.
4. Work these details with Data Table on Sheet 2.
**Description:**

To secure the cover plate, install a steel chain from the cover to the pole or by mounting the cover with hinges and install a pad lock tab.

**Handhole Detail**

- 3/8" x 3/8" x 1/2" Plate
- 5/16" x 13/16" Nut
- 1/4" Rod with 1" Inner Ø
- 5/16" Eye Bolt with 1" Inner Ø
- Wall Thickness
- 1/4" Hole
- Reinforcement

**Cable Guide Detail**

- 5/16" x 3/8" x 1/2" Plate
- 3/8" x 1/2" Eye Bolt
- Pole Wall
- Wall Thickness
- 1/4" Hole
- Reinforcement

**Steel CCTV Pole**

**Pole Details**

- 3/8" Rod with 1" Inner Ø
- Hole in Handhole
- Rod Option
- Eye Bolt Option

**Handhole Location**

- Handhole
- Anchor Bolts (Typ.)
- Center of Drilled Shaft, Base Plate and Pole
- Working Park Stand
- 2-Park Stands (Inside Pole Wall)
- Handhole Cover Plate
- Handhole Frame
- Identification Tag (See Pole Notes)
- Partial Penetration Weld (Typ.)
- Cable Guides

**Section C-C**

- 3/8" Stainless Steel Hex Head Screw (Typ.)
- Park Stand
- Handhole Frame
- Cover Clip

**Cover Plate**

- 5/16" Thick Handhole Cover
- 5/16" Hole (Typ.)
- 16 3/4" Thick
- 3/8" Rod With 1" Inner Ø
- Tenon Wall
- Eye Bolt Option

**Pole Details**

- 5/16" Ø Drill & Tap
- Handhole Ring
- Rim Supplied With 3/8" x 7/8" Bolt
- Identification Tag (See Pole Notes)
- Anchor Bolt
- Base Plate
- CCTV Pole
- Anchor Bolt
- Wire Screen (See Spec. 649)