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, 55, 60 or 65 (less than 1½") or ASTM A372 Grade 50, 60 or 65 (greater than or equal to 1½") or ASTM A595 Grade A (55 ksi yield) or Grade B (60 ksi yield).
   B. Steel Plates and Pole Cap: ASTM A572 or ASTM A590 Grade 50.
   C. Weld Metal: E70XX.
   D. Bolts: ASTM F5832, Grade A325, Type 1.
   E. Washers: ASTM A491.
   F. Anchor Bolts: ASTM F1554 Grade 55 with ASTM A563 Grade A heavy nuts and ASTM A36 plate washers.
   G. Handhole Frame: ASTM A579 Grade 36 or ASTM A36.
   H. Handhole Cover: ASTM A1011 Grade 50, 55, 60 or 65.
   I. Stainless Steel Screws: AISI Type 316.
   J. Reinforcing Steel: ASTM A615 Grade 60.
   K. Galvanization: Bolts, nuts and washers: ASTM F3329. All other steel including plate waler: ASTM A123.
   L. Concrete: Class IV (Drilled Shaft) for all environment classifications.
4. Fabrication:
   A. Cutting:
      a. Specification Section 460-6.4 and
   B. Welding:
      a. Specification Section 460-6.4 and
   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 1/4" diameter stainless steel rivets or screws.
   D. Identification Tag:
      a. Include the following information on the Tag:
         i. Financial Project ID
         ii. Pole Type
         iii. Pole Height
         iv. Manufacturers' Name
         v. Yield Strength (FY) of Steel
         vi. Base Wall Thickness
      D. Except for Anchor Bolts, bolt hole diameters are bolt diameter plus 1/2" and anchor bolt holes are bolt diameter plus 1/2" (Max) prior to galvanizing.
5. Pole Installation:
   A. Do not install additional wire access holes (not shown in this Index) with a diameter that exceeds 1½" in diameter.
   B. Install Anchor Bolts in accordance with Specification 649-5
   C. Cable Guides: Electrical Cable Guides 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 guide 1" directly below the top of the tenon.
      d. Position Park Stands 2" below the top of the handhole.
   D. Except for Anchor Bolts, bolt hole diameters are bolt diameter plus 1/2" and anchor bolt holes are bolt diameter plus 1/2" (Max) prior to galvanizing.
6. Cabinet Installation:
   A. Splice fiber optic cables in cabinet to preterminator patch panel.
   B. Furnish and Install Surge Protection Devices (SPDs) on all cabling in cabinet.
   C. Furnish 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. Install the pole mounted cabinet with the hinges next to the pole.
   F. Ensure that equipment cabinet is bonded to CCTV pole grounding system.
   G. Sizes and types of conduits and inner ducts for network communications between the pullbox and cabinet are stated in the Contract Documents.
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 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.
**Steel CCTV Pole**

### SHAFT DESIGN TABLE

<table>
<thead>
<tr>
<th>Pole Overall Height (ft)</th>
<th>Shaft Diameter</th>
<th>Shaft Length</th>
<th>Longitudinal Reinforcement</th>
</tr>
</thead>
<tbody>
<tr>
<td>50</td>
<td>6'-0&quot;</td>
<td>1'-0&quot;</td>
<td>(14) #11</td>
</tr>
<tr>
<td>55</td>
<td>6'-0&quot;</td>
<td>1'-0&quot;</td>
<td>(16) #11</td>
</tr>
<tr>
<td>60</td>
<td>6'-6&quot;</td>
<td>1'-0&quot;</td>
<td>(16) #11</td>
</tr>
<tr>
<td>65</td>
<td>6'-6&quot;</td>
<td>1'-0&quot;</td>
<td>(16) #11</td>
</tr>
<tr>
<td>70</td>
<td>5'-0&quot;</td>
<td>1'-0&quot;</td>
<td>(18) #11</td>
</tr>
</tbody>
</table>

### ADDITIONAL BURIAL 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>0</td>
<td>3'-0&quot;</td>
<td>8'-0&quot;</td>
</tr>
<tr>
<td>0.25</td>
<td>3'-0&quot;</td>
<td>9'-0&quot;</td>
</tr>
<tr>
<td>0.50</td>
<td>3'-0&quot;</td>
<td>10'-0&quot;</td>
</tr>
<tr>
<td>0.75</td>
<td>3'-0&quot;</td>
<td>11'-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 values are based on level ground (Flatter than 1:5). For foundation within slopes 1:5 and greater, increase the foundation depth in accordance with the Additional Burial Depth Due To Ground Slope table. For values in-between those shown in the table, use the higher value.

### 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>Anchor Bolt Splice (in.)</th>
<th>Minimum Anchor Bolt Projection (in.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>50</td>
<td>27</td>
<td>2.5</td>
<td>0.75</td>
<td>0.25</td>
<td>0.25</td>
</tr>
<tr>
<td>55</td>
<td>28</td>
<td>2.5</td>
<td>0.75</td>
<td>0.25</td>
<td>0.25</td>
</tr>
<tr>
<td>60</td>
<td>29</td>
<td>2.5</td>
<td>0.75</td>
<td>0.25</td>
<td>0.25</td>
</tr>
<tr>
<td>65</td>
<td>33</td>
<td>2.5</td>
<td>0.75</td>
<td>0.25</td>
<td>0.25</td>
</tr>
<tr>
<td>70</td>
<td>40</td>
<td>2.5</td>
<td>0.75</td>
<td>0.25</td>
<td>0.25</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>Length</td>
<td>Wall Thickness (in.)</td>
<td>Base Diameter (in.)</td>
</tr>
<tr>
<td>50</td>
<td>36&quot;</td>
<td>0.25</td>
<td>14</td>
</tr>
<tr>
<td>55</td>
<td>38&quot;</td>
<td>0.25</td>
<td>16</td>
</tr>
<tr>
<td>60</td>
<td>40&quot;</td>
<td>0.25</td>
<td>18</td>
</tr>
<tr>
<td>65</td>
<td>42&quot;</td>
<td>0.25</td>
<td>20</td>
</tr>
<tr>
<td>70</td>
<td>44&quot;</td>
<td>0.25</td>
<td>22</td>
</tr>
</tbody>
</table>

Due to Ground Slope table. For values in-between those shown in the table, use the higher value.

---

Slope due to ground slope (ADDITIONAL BURIAL DEPTH DUE TO GROUND SLOPE)

<table>
<thead>
<tr>
<th>Slope</th>
<th>4'-0&quot; Shaft Diameter</th>
<th>5'-0&quot; Shaft Diameter</th>
</tr>
</thead>
<tbody>
<tr>
<td>1:5</td>
<td>3'-0&quot;</td>
<td>8'-0&quot;</td>
</tr>
<tr>
<td>1:4</td>
<td>3'-0&quot;</td>
<td>9'-0&quot;</td>
</tr>
<tr>
<td>1:3</td>
<td>3'-0&quot;</td>
<td>10'-0&quot;</td>
</tr>
<tr>
<td>1:2</td>
<td>3'-0&quot;</td>
<td>11'-0&quot;</td>
</tr>
</tbody>
</table>

For values in-between those shown in the table, use the higher value.

---

ASSEMBLY

**NOTE:**

Foundation Notes:

1. For shaft length, use the lower value of the table.
2. Due to ground slope, use the higher value of the table.
3. For values in-between those shown in the table, use the higher value.

---

ELEVATION

**NOTE:**

Pole and foundation details same as "Camera Lowering Device" detail.

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STANDARD PLANS

**DESCRIPTION:**

FA 2019-20

**INDEX**

649-020

**SHEET**

2 of 6
**ASSEMBLY**

- Handhole
- Base Plate And Pole
- Center of Drilled Shaft
- Anchor Bolt
- Base Plate
- Foundation
- CCTV Pole
- Finished Grade

**PLAN**

- Handhole Ring
- Anchor Bolts (Typ.)
- Edge Of Base Plate
- Edge Of Foundation
- Center Of Drilled Shaft, Base Plate And Pole

**ELEVATION**

- Handhole Cover Plate
- Handhole Ring
- CCTV Pole
- Anchor Bolt
- Base Plate
- Wire Screen (See Spec. 649)

**SECTION C-C**

- 1/4" Eye Bolt With 1" Inner Ø
- 1/4" Rod With 1" Inner Ø
- 1/4" Rod With 1 1/2" Inner Ø
- 1/4" Ø Drill & Tap Hole In Handhole Rim. Supplied With 1/4" X 2" Bolt
- 7" X 27" X 2" Handhole Frame

**NOTE:**

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 padlock tab.

**HANDHOLE LOCATION**

**PARK STAND DETAILS**

**CABLE GUIDE DETAIL**