References:

Web:
NCat - http://www.teamsavage.com/ncat/
East Penn Traction Club - http://www.eastpenn.org/

Print:


Preparations for installing trolley wire:
1. Amount of track to be electrified
   a. will it be a simple loop or full layout
   b. simple wire work or complex (frogs, pans, crossings, pullovers)
2. Style of poles
3. Size of wire
   a. 32ga more realistic and harder to find
   b. 26ga more common and more durable
4. Location and number of poles
   a. see attached diagrams for spacing
   b. make extra!
5. Power feeder locations
   a. every 4’ to 6’ typical
   b. may need more for 32ga wire or heavily wired areas
6. Block wiring

Materials for making simple trolley poles:
1. K&S pieces are 12” long
   a. Main pole (3/32”)- 3 per stick
   b. diagonal & hanger (.020”) - 6 per stick
   c. large horizontal (1/32”) - 11 per stick
   d. small horizontal (.020”) - 11 per stick
2. To make 50 poles
   a. 3/32” - 17 pieces
   b. 1/32” - 5 pieces
   c. .020” - 13 pieces
   d. #65 drill bit
   e. Small drill press
   f. Drill jig
   g. Solder and flux
   h. Soldering iron
   i. Simple jig

Materials for making double and longer trolley poles:
1. Double poles
   a. double length of horizontals and center in pole when soldering
   b. double length of diagonal and bend one side.
   c. Install diagonal on one side then bend second side to fit
2. Longer poles
**Catenary:**
1. Build to fit
   a. In place (harder)
   b. with jig
   c. Single Wire
   d. Double wire (trolley & messenger)

**Installing trolley poles & wire:**
1. distance from centerline
   a. straight track
   b. curved track
   c. Special pole/wire configurations
2. Vertical angle
   a. wood poles
   b. metal poles
3. Securing poles
4. Adjusting Height
5. Attaching feeder
6. Attaching trolley wire
   a. Straight runs
   b. frogs
   c. crossings
7. Attaching guy wires
8. Attaching Pullovers (pull-offs)

**Installing Catenary:**
1. distance from centerline
   a. straight track
   b. curved track
   c. Special pole/wire configurations
2. Securing poles
3. Adjusting Height
4. Attaching feeder
5. Attaching wire
   a. Straight runs
   b. frogs
   c. crossings
7. Attaching guy wires
8. Attaching Pullovers (pull-offs)
Trolley Pole and Wirework Configurations
**Pole spacing.** Poles on tangents normally should be spaced not less than 90 feet nor more than 110 feet apart. Poles on curves should be set as near as practicable to the following table:

<table>
<thead>
<tr>
<th>Radius of curve (ft.)</th>
<th>Pole spacing (ft.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>40</td>
<td>35</td>
</tr>
<tr>
<td>50</td>
<td>40</td>
</tr>
<tr>
<td>60</td>
<td>45</td>
</tr>
<tr>
<td>70</td>
<td>50</td>
</tr>
<tr>
<td>80</td>
<td>55</td>
</tr>
<tr>
<td>90</td>
<td>60</td>
</tr>
<tr>
<td>100</td>
<td>65</td>
</tr>
<tr>
<td>125</td>
<td>70</td>
</tr>
<tr>
<td>150</td>
<td>75</td>
</tr>
<tr>
<td>200 to 500</td>
<td>80</td>
</tr>
<tr>
<td>750 and over</td>
<td>100</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Curve radius</th>
<th>Pull-over spacing</th>
<th>No. pulls between supports</th>
<th>Distance between supports</th>
</tr>
</thead>
<tbody>
<tr>
<td>40 ft.</td>
<td>7 ft.</td>
<td>4</td>
<td>35 ft.</td>
</tr>
<tr>
<td>50</td>
<td>8</td>
<td>4</td>
<td>40</td>
</tr>
<tr>
<td>60</td>
<td>9</td>
<td>4</td>
<td>45</td>
</tr>
<tr>
<td>70</td>
<td>10</td>
<td>4</td>
<td>50</td>
</tr>
<tr>
<td>80</td>
<td>11</td>
<td>4</td>
<td>55</td>
</tr>
<tr>
<td>90</td>
<td>12</td>
<td>4</td>
<td>60</td>
</tr>
<tr>
<td>100</td>
<td>13</td>
<td>4</td>
<td>65</td>
</tr>
<tr>
<td>125</td>
<td>14</td>
<td>4</td>
<td>70</td>
</tr>
<tr>
<td>150</td>
<td>15</td>
<td>4</td>
<td>75</td>
</tr>
<tr>
<td>200-500</td>
<td>20</td>
<td>3</td>
<td>80</td>
</tr>
<tr>
<td>750</td>
<td>25</td>
<td>3</td>
<td>100</td>
</tr>
<tr>
<td>1000</td>
<td>33.5</td>
<td>2</td>
<td>100</td>
</tr>
<tr>
<td>1500-2000</td>
<td>50</td>
<td>1</td>
<td>100</td>
</tr>
<tr>
<td>Over 2000</td>
<td>100</td>
<td>0</td>
<td>100</td>
</tr>
</tbody>
</table>

Pull-overs shown as solid lines are for track radius of 45 to 150 degrees

Pull-overs shown as dotted lines are for track radius of 200 to 750 degrees

Fig. 23 CURVE DRESSING

Curve dressing for irregular pole spacing

Fig. 22 STRAIN ANCHORS

Trolley Pole and Pull-off Spacing
Pull-off Configurations & Pole Construction
Fig. 1 Jig laid out on wooden block for making catenary.