Erection Sequence Example 1

**Step 1**
Construct Piers 45 through 48, erect temporary supports in Spans 45 & 47.

**Step 2**
Erect end span segments in Spans 45 & 47, once end spans are in place, erect pier segments & vertical uplift resistants (hold down device) at temporary supports. Install temporary lateral wind bracing between girders as adjacent girders are erected. Check alignment of girders and secure position. Temporarily lock bearings at Piers 45 & 46 in the longitudinal direction to prevent the girders from sliding longitudinally during construction. Loads after this sequence without construction loads:

- R1 = 96 kips
- R2 = 94 kips
- R3 = 8 kips
- R4 = 188 kips

Shear load per strongback: 108 kips.

**Step 3**
Attach strong backs to each drop-in segment, erect drop-in segments in Span 46 & secure strong backs to pier segments. Install lateral wind bracing between girders as adjacent girders are erected. Cast diaphragms at Piers 46 & 47. Cast closure pours in Spans 45 & 47 first, then cast closure pours in Span 46. Loads after this sequence without construction loads:

- R1 = 106 kips
- R2 = 99 kips
- R3 = 85 kips
- R4 = 401 kips

Span 46:

- R1 = 105 kips
- R2 = 93 kips
- R3 = 8 kips
- R4 = 189 kips

Shear load per strongback: 108 kips.

**Step 4**
First stage post-tensioning: After closure pours reach 4000 psi strength & after removal of bearing locking devices at Piers 46 & 48 stress tendon #2 to 100%. Stress the center girders first, & move outward to adjacent girders alternating to each side of centerline girder. Ending with the exterior girders. After tendon #2 has been stressed in all girders, release vertical uplift restraint at temporary supports. Do not remove or adjust temporary supports. Stress tendon #2 to 100% in the same order as tendon #1. Cast diaphragms at Piers 46 & 48 in the longitudinal direction to prevent the girders from sliding longitudinally during construction. Loads after this sequence without construction loads:

- R1 = 130 kips
- R2 = 81 kips
- R3 = 96 kips
- R4 = 419 kips

Shear load per strongback: 108 kips.

**Negative Indicates Restrainted Uplift.**
**POST-TENSIONING TENDON DATA TABLE**

<table>
<thead>
<tr>
<th>TENDON DESIGNATION</th>
<th>NO. REQUIRED</th>
<th>TENDON SIZE</th>
<th>TENDON LENGTH (FT--inch)</th>
<th>TENDON WEIGHT (lbs)</th>
<th>TOTAL WEIGHT (lbs)</th>
<th>HEAD-STATION STRESSING FORCE / TENDON (kips)</th>
<th>BACK-STATION STRESSING FORCE / TENDON (kips)</th>
<th>FORCE @ HEAD-STATION END AFTER ANCHOR SET (kips)</th>
<th>FORCE @ BACK-STATION END AFTER ANCHOR SET (kips)</th>
<th>*** STRESSING END</th>
<th>THEORETICAL ELONGATION @ HEAD-STATION END (in)</th>
<th>THEORETICAL ELONGATION @ BACK-STATION END (in)</th>
<th>*** TENDON PROFILE</th>
<th>** ANCHOR PROTECTION TYPE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 &amp; 6</td>
<td>12-06-050</td>
<td>5757</td>
<td>34545</td>
<td>562.5</td>
<td>562.5</td>
<td>494.9</td>
<td>454.8</td>
<td>446.9</td>
<td>All (back/ahead)</td>
<td>10.6</td>
<td>31.6</td>
<td>15</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>2 &amp; 6</td>
<td>12-06-050-150</td>
<td>5758</td>
<td>34548</td>
<td>562.5</td>
<td>562.5</td>
<td>494.9</td>
<td>454.8</td>
<td>446.9</td>
<td>All (back/ahead)</td>
<td>10.8</td>
<td>31.6</td>
<td>15</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>3 &amp; 6</td>
<td>12-06-050-250</td>
<td>5759</td>
<td>34554</td>
<td>562.5</td>
<td>562.5</td>
<td>494.9</td>
<td>454.8</td>
<td>446.9</td>
<td>All (back/ahead)</td>
<td>10.6</td>
<td>31.0</td>
<td>15</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>4 &amp; 6</td>
<td>12-06-050-600</td>
<td>5761</td>
<td>34566</td>
<td>562.5</td>
<td>562.5</td>
<td>465.4</td>
<td>454.8</td>
<td>446.4</td>
<td>All (back/ahead)</td>
<td>10.6</td>
<td>30.3</td>
<td>15</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

In general, for non-longitudinal tendons, ahead station denotes left anchor, back station denotes right anchor (looking ahead station). For mostly vertical tendons, ahead station denotes top anchor, back station denotes bottom anchor.

* See Post-Tensioning Vertical Profiles, Design Standards Index 21802.

** See Post-Tensioning Anchorage Protection, Design Standards Index 21801.

*** Stressing End Definitions:
- Ahead Station: Tendon Live/Stressing End is ahead station anchor.
- Back Station: Tendon Live/Stressing End is back station anchor.
- Alternate (ahead/back): Tendon Initial Live/Stressing End is ahead station anchor with associated elongation.
- Tendon Subsequent Live/Stressing End is back station anchor with associated elongation.
- Alternate (back/ahead): Tendon Initial Live/Stressing End is back station anchor with associated elongation.
- Tendon Subsequent Live/Stressing End is ahead station anchor with associated elongation.
- Double: Tendon Live/Stressing End is simultaneously the ahead station and back station anchor with respective elongations.

1. Reactions listed are per beam line.
2. Instruction to stress tendons to 100% of full jacking force in the tendon schedule on sheet BX-XX.
3. See Sheet BX-XX for slab pour details.
4. Contractor shall include anticipated construction loads for design of temporary support system.