Appendix A - Test Girder Drawings

Total prestress is based on 72.6% $f_s$, $f_s = 270$ ksi and $A_s = 0.217$ in$^2$

All prestressing strands shall conform to ASTM A416 Grade 270 Low Relaxation Strands
All beams are to be increased in length to compensate for elastic shortening, creep, and shrinkage

All concrete strengths shall not be greater than 1,000 psi
greater than the specified concrete strength

Rebar dimensions are taken from edge to edge, not centerline to centerline

Lifting points as measured from end of girder

<table>
<thead>
<tr>
<th>Girder</th>
<th>Distance* (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A34</td>
<td>13</td>
</tr>
<tr>
<td>BTC 60</td>
<td>20</td>
</tr>
<tr>
<td>BTE 70</td>
<td>25</td>
</tr>
</tbody>
</table>

Cracking will be detrimental to the girders, therefore girders shall be lifted at the points described in the Lifting points as measured from end of girder table

12 modulus of rupture cylinders shall be cast per girder and cured with the girder

Precaster provides girders, girder reinforcement (including hooks), and test cylinders (deck and deck reinforcement are not to be provided by the precaster)

Figure A.1 – RC and Pretensioned Girder Drawing Cover Page
Figure A.2 – A34 Test Unit Details

A 34 Specimen (75% AASHTO)
Use a minimum 28 day concrete compressive strength of 6,000 psi
All units are in inches
BTC 60 Specimen (75% AASHTO)
Use a minimum 28 day concrete
compressive strength of 6,000 psi
All units are in inches

Figure A.3 – BTC 60 Test Unit Details
Figure A.4 – BTE 70 Test Unit Details
Figure A.5 – Large and Small Inverted Tee Test Unit Details
### General Notes

All reinforcement bars are #4 unless noted otherwise.
The clear cover is 1 inch unless noted otherwise.

For UNB1 and UNB2, the maximum aggregate size is 1/2 inch. For UNB3 and BON2, the maximum aggregate size is 3/4 inch.

No concrete will enter the ducts during the pouring of the segments.
The 28 day compressive strength of the concrete will be at least 6 ksi and not more than 7 ksi.
The mild reinforcement used in the segments is A615 Grade 60 steel.

All transverse sections are symmetrical about their centerlines.

Short reinforcement bars may be placed to secure the tendon ducts.
Concrete will have a compressive strength of at least 2.5 ksi before the forms are stripped (AASHTO 5.14.2.4.2).
In addition to the needs of the precaster, provide 18 - 4.8 inch cylinders and 4 - 6 inch x 6 inch x 36 inch modulus of rupture beams for each pour.

All anchorage systems are Multiple Anchorages from DSI. UNB1: use two 5-0.6'. UNB2: use two 7-0.6'. UNB3: use two 9-0.6'. BON2: Use 12-0.5'.

The segments will be match cast to ensure proper geometric placement during testing.
Provide lifting hooks at equal distance longitudinally from the center of the segments. (See detail below)

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### Figure A.6 – Segmental Cover Sheet and Sheet List

<table>
<thead>
<tr>
<th>Sheet Number</th>
<th>Sheet Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>01</td>
<td>GENERAL NOTES</td>
</tr>
<tr>
<td>02</td>
<td>REBAR DETAILS</td>
</tr>
<tr>
<td>03</td>
<td>SEGMENTAL BEAMS</td>
</tr>
<tr>
<td>04</td>
<td>UNB1 TYPICAL SEGMENT</td>
</tr>
<tr>
<td>05</td>
<td>UNB1 END BLOCK</td>
</tr>
<tr>
<td>06</td>
<td>UNB1 DEVIATOR</td>
</tr>
<tr>
<td>07</td>
<td>UNB2 TYPICAL SEGMENT</td>
</tr>
<tr>
<td>08</td>
<td>UNB2 END BLOCK</td>
</tr>
<tr>
<td>09</td>
<td>UNB2 DEVIATOR</td>
</tr>
<tr>
<td>10</td>
<td>UNB3 TYPICAL SEGMENT</td>
</tr>
<tr>
<td>11</td>
<td>UNB3 END BLOCK</td>
</tr>
<tr>
<td>12</td>
<td>UNB3 DEVIATOR</td>
</tr>
<tr>
<td>13</td>
<td>BON2 TYPICAL SEGMENT</td>
</tr>
<tr>
<td>14</td>
<td>BON2 END BLOCK</td>
</tr>
<tr>
<td>15</td>
<td>DEVIATOR DETAILS</td>
</tr>
<tr>
<td>16</td>
<td>DEVIATOR SEGMENT ISOMETRIC</td>
</tr>
<tr>
<td>17</td>
<td>SHEAR &amp; ALIGNMENT KEY DETAILS</td>
</tr>
<tr>
<td>18</td>
<td>SHEAR &amp; ALIGNMENT KEY DETAILS 2</td>
</tr>
</tbody>
</table>
Figure A.7 – Mild Reinforcement Details
Figure A.8 – Segmental Elevations
Figure A.9 – UNB1 Typical Longitudinal and Transverse Section
Figure A.10 – UNB1 End Block Longitudinal and Transverse Section

Note:
The shear keys on the other end block will be the imprint of what is shown. See general notes for anchorage system.
Figure A.11 – UNB1 Deviator Segment Longitudinal and Transverse Section
Figure A.12 – UNB2 Typical Longitudinal and Transverse Section
Figure A.13 – UNB2 End Block Longitudinal and Transverse Section

Note:
The shear keys on the other end block will be the imprint of what is shown. See general notes for anchorage system.
Figure A.14 – UNB2 Deviator Segment Longitudinal and Transverse Section
Figure A.15 – UNB3 Typical Longitudinal and Transverse Section
Figure A.16 – UNB3 End Block Longitudinal and Transverse Section
Figure A.17 – UNB3 Deviator Segment Longitudinal and Transverse Section
Figure A.18 – BON2 Typical Longitudinal and Transverse Section
Figure A.19 – BON2 End Block Longitudinal and Transverse Section
Figure A.20 – Deviator Details

Notes:
- The unbonded spans utilize a diabolo void with the specified radius.
- All Deviators are located at the center of the segment.
- Deviator locations from the ends are symmetric.
- Provide duct extension to diabolos that will generate a groove of the outside radius (See sheet 21 for example).
Figure A.21 – Isometric View of Deviator Section
Figure A.22 – Shear and Alignment Key Details
Figure A.23 – Shear and Alignment Key Details for Bonded Segments