### DESIGN NOTES:
- Designed in accordance with AASHTO LRFD Bridge Design Specifications.
- Prestress losses for the designed beam have been calculated for a relative humidity of 75%. Optional designs must likewise conform.
- Provide Grade 60 reinforcing steel bars.
- Grade 60 prestressed strands, each pretensioned to 75 percent of $f_{pu}$.
- Use low relaxation strands, each pretensioned to 75 percent of $f_{pu}$.
- When shown on this sheet, the Fabricator has the option of furnishing either the designed beam or an approved optional beam design. All optional design submittals and shop drawings must be signed, sealed and dated by a Professional Engineer registered in the State of Texas.
- Except for the designed beam as low as possible on the 2" grid system unless a non-standard strand pattern is indicated. Full row "9", then row "8", then row "7", etc. Half-length debonded strands are only permitted in positions marked "e".
- When shown on this sheet, the Fabricator has the option of furnishing either the designed beam or an approved optional beam design. All optional design submittals and shop drawings must be signed, sealed and dated by a Professional Engineer registered in the State of Texas.
- The perimeter columns and shop drawings must be signed, sealed and dated by a Professional Engineer registered in the State of Texas.
- The perimeter columns and shop drawings must be signed, sealed and dated by a Professional Engineer registered in the State of Texas.
- Optional designs must likewise conform.

### FABRICATION NOTES:
- Provide Grade H concrete.
- Shown in plan view, the perimeter columns and shop drawings must be signed, sealed and dated by a Professional Engineer registered in the State of Texas.
- When shown on this sheet, the Fabricator has the option of furnishing either the designed beam or an approved optional beam design. All optional design submittals and shop drawings must be signed, sealed and dated by a Professional Engineer registered in the State of Texas.
- Exception: Provide Steel Grade 42 reinforcing bars.
- Provide Grade 60 prestressed strands, each pretensioned to 75 percent of $f_{pu}$.
- Use low relaxation strands, each pretensioned to 75 percent of $f_{pu}$.
- Concrete must be provided as shown. Optional designs must likewise conform.
- Concrete must be provided as shown. Optional designs must likewise conform.
- Concrete must be provided as shown. Optional designs must likewise conform.
- Concrete must be provided as shown. Optional designs must likewise conform.

### HL93 LOADING
- Compression = 0.24 $f_{c}'$ (ksi)
- Tension = 0.65 $f_{c}'$ (ksi)

### DESIGN AND COMPLIANCE:
- Designed in accordance with AASHTO LRFD Bridge Design Specifications.
- Prestress losses for the designed beam have been calculated for a relative humidity of 75%. Optional designs must likewise conform.
- Provide Grade H concrete.
- Shown in plan view, the perimeter columns and shop drawings must be signed, sealed and dated by a Professional Engineer registered in the State of Texas.
- The perimeter columns and shop drawings must be signed, sealed and dated by a Professional Engineer registered in the State of Texas.
- Full-length debonded strands are only permitted in positions marked "e".
- Optional designs must likewise conform.

### PRESTRESSED CONCRETE BOX BEAM DESIGNS
- (NON-STANDARD SPANS)

#### BBND

<table>
<thead>
<tr>
<th>Structure</th>
<th>Beam Type</th>
<th>Span No.</th>
<th>Beam No.</th>
<th>Span Type</th>
<th>No. of Strand Pattern</th>
<th>Size</th>
<th>No. of Strands</th>
<th>Size</th>
<th>No. of Strands</th>
<th>Size</th>
<th>No. of Strands</th>
<th>Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>TxDOT B40 BOX BEAMS</td>
<td>Type 4B40</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TxDOT B34 BOX BEAMS</td>
<td>Type 5B34</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TxDOT B28 BOX BEAMS</td>
<td>Type 4B28</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TxDOT B20 BOX BEAMS</td>
<td>Type 5B20</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

---

1. Based on the following allowable stresses (ksi):
   - Compression = 0.24 $f_{c}'$ (ksi)
   - Tension = 0.65 $f_{c}'$ (ksi)

2. Optional designs must likewise conform.

3. Bottom corner chamfer required for 4B40 and 5B40 boxes when beam lengths are greater than 100 ft.

---

**Notes:**
- The use of this standard is governed by the "Texas Engineering Practice Act." No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.