Chapter 11 - Structural Repairs

SECTION 05

BEARING REPAIRS (SR-BR)
**General Notes**

1. Refer to the applicable beam jacking notes and details.
2. The Contractor shall verify all dimensions, including but not limited to the width of the bearing, the diameter of the anchor bolts, the alignment of the anchor bolts, the size and location of pintels, height of gap between the sole and masonry plates, the slope between the sole and masonry plate, limits of section loss, etc., before any material is ordered or fabricated.
3. The Contractor shall be responsible for selecting the correct shim plate thickness that will satisfy the requirements of the standard.
4. The length of each shim plate shall be 1" longer than the width and its corresponding masonry plate.
5. Shim plates shall be ASTM A709 50 Steel.
6. The minimum shim plate thickness shall be 1/8".
7. Bearing shim plate shall be installed beneath existing masonry plate.
8. All new steel shall be painted in accordance to Section 430 with the color to match the existing beams.
9. As approved by the Engineer, all pack rust, debris, etc. shall be removed by the Contractor before installing the new shim plate.

---

**Shim Plate Location and Size Chart**

<table>
<thead>
<tr>
<th>Beam</th>
<th>Span</th>
<th>Support</th>
<th>A</th>
<th>B</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Legends:**

A - Width of Shim (in.)
B - Depth of Shim (in.)
C - Anchor Bolt diameter + 1/4" (in.)
Notes:
Refer to Detail No. SR-BR-101 for shim plate dimensions.
Notes:
1. Due to differing amounts of section loss in the masonry plate, the shim plate may have to be installed in sections with different thicknesses to properly fill the bearing gap. If required, the shim plate shall be a maximum of two sections and tack welded together.
2. Refer to Detail No. SR-BR-101 for shim plate dimensions.
Anchorage plates to be ASTM A 709 Grade 50, steel painted to match finished bridge color.

All anchor bolts and washers shall be unpainted ASTM A 709 Grade 50 galvanized steel. All nuts shall be unpainted ASTM A 307 galvanized steel.

All galvanized material shall be off-vented a minimum of 24 days before installation.

Notes:
1. Use 1 9/16" dia. hole in retainer bar for fixed bearings.
2. Chip concrete to expose primary steel prior to drilling hole for new anchor bolt at piers only.
3. Anchorage plates to be ASTM A 709 Grade 50, steel painted to match finished bridge color.
4. All anchor bolts and washers shall be unpainted ASTM A 709 Grade 50 galvanized steel. All nuts shall be unpainted ASTM A 307 galvanized steel.
5. All galvanized material shall be off-vented a minimum of 24 days before installation.
Anchorage plates to be ASTM A 709 Grade 50, steel painted to match finished bridge color. All anchor bolts and washers shall be unpainted ASTM A 709 Grade 50 galvanized steel. All nuts shall be unpainted ASTM A 307 galvanized steel.

All galvanized material shall be off-vented a minimum of 24 days before installation.

Notes:
1. Chip concrete to expose primary steel prior to drilling hole for new anchor bolt.
2. All anchor bolts and washers shall be unpainted ASTM A 709 Grade 50 galvanized steel. All nuts shall be unpainted ASTM A 307 galvanized steel.
3. Chip concrete to expose primary steel prior to drilling hole for new anchor bolt.
4. All anchor bolts and washers shall be unpainted ASTM A 709 Grade 50 galvanized steel. All nuts shall be unpainted ASTM A 307 galvanized steel.

DETAIL 'A'
Scale: 2" = 1'-0"

DETAIL 'B'
Scale: 2" = 1'-0"
Existing elastomeric bearing pad

Existing concrete pedestal

Existing steel sole plate

Edge of abutment seat or pier

New restraint system (typ.)

Top of bearing pedestal

3/4" x 5" concrete anchor (typ.)

Existing elastomeric bearing pad

Notes:
Expansion anchors shall be type 316 3/4" dia. x 5" stainless steel anchors with a single piece wedge. Nuts and washers shall conform to Type 18-8 stainless steel. Minimum safe working load of 3,75 kips.
1. Reset the existing elastomeric bearing pads to center line of beam. Use a Rubatex R-27730 adhesive or equal between elastomeric pad and masonry plate and elastomeric pad and stainless steel plate. Polytetrafluoroethylene (PTFE) self lubricating pad is to be attached to the sole plate using manufacturer's specific adhesive.

2. Care shall be taken to not damage the existing bearing components, stainless steel plates, teflon pad, etc. otherwise provide the following new components:

3. 3/32” PTFE material to be bonded to top of 1/8” stainless steel plate. Polytetrafluoroethylene (PTFE) self lubrication bearing elements shall be composed of 100 percent virgin (unfilled) polytetrafluoroethylene (PTFE) polymer.

4. Match existing stainless steel plate. The surface of the stainless steel sheets in contact with the PTFE shall have a surface finish less than 20 micro inches root mean square (RMS). The minimum coefficient of friction for the PTFE and bearing assembly shall be U = 0.06.

<table>
<thead>
<tr>
<th>KEEPER PLATE DIMENSIONS</th>
<th>EXPANSION BEARING</th>
<th>FIXED BEARING</th>
</tr>
</thead>
<tbody>
<tr>
<td>L</td>
<td>W</td>
<td>A</td>
</tr>
<tr>
<td>L</td>
<td>W</td>
<td>A</td>
</tr>
</tbody>
</table>

**Legend:**
- L - Length of Elastomeric or Steel Masonry Bearing Pad from bay to bay (in)
- W - Width of Elastomeric or Steel Masonry Bearing Pad from span side to support side (in)
- A - Length of restraint tab (in)
- B - Thickness of restraint plate (in)
Notes:
Expansion anchors shall be type 316 7/8" dia. x 5" stainless steel anchors with a single piece wedge. Nuts and washers shall conform to Type 18-8 stainless steel. Minimum safe working load of 3.75 kips.


**GENERAL NOTES**

1. Reset the existing elastomeric bearing pads to center line of beam. Use a Rubatex R-27730 adhesive or equal between elastomeric pad and masonry plate and elastomeric pad and stainless steel plate. Polytetrafluoroethylene (PTFE) self lubricating pad is to be attached to the sole plate using manufacturer's specific adhesive.

2. Care shall be taken to not damage the existing bearing components, stainless steel plates, teflon pad, etc. otherwise provide the following new components:

3. $\frac{3}{32}$ "PTFE material to be bonded to top of $\frac{1}{8}$" stainless steel plate. Polytetrafluoroethylene (PTFE) self lubrication bearing elements shall be composed of 100 percent virgin (unfilled) polytetrafluoroethylene (PTFE) polymer.

4. Match existing stainless steel plate. The surface of the stainless steel sheets in contact with the PTFE shall have a surface finish less than 20 micro inches root mean square (RMS). The minimum coefficient of friction for the PTFE and bearing assembly shall be $U = 0.06$.

**Notes:**

- Existing anchor bolt not shown for clarity.
- 2 restraints required per bearing.