ANCHOR BOLT NOTES

FOR SPAN LENGTHS UP TO 50', USE A TYPE "D" MASONRY PLATE "D".
FOR SPAN LENGTHS FROM 51' TO 75', USE A TYPE "D" MASONRY PLATE "D".
FOR SPAN LENGTHS GREATER THAN 75', USE A TYPE "A" MASONRY PLATE "A".

CHECK THAT ANCHOR BOLTS PROVIDE DESIRED MASONRY CAPACITY.

MASONRY PLATE "D" PROVIDING ALLOWABLE CONCRETE CAP WIDTH, OR REDUCE WIDTH OF PLATE "D" TO MATCH CONCRETE CAP WIDTH.

BEVEL ROCKERS WITH GRADES GREATER THAN 3%.

CALCULATE THE REACTION AT THE BEARINGS DUE TO "TOTAL LOADS".
SEE STANDARD 40.08 FOR DETAILS.

BEARING NOTES

ALL BEARINGS ARE SYMMETRICAL ABOUT "X" OF GIRDER AND "Z" OF BEARING.

ALL BEARINGS SHALL HAVE "D" BEVELED CONCRETE PLATE/PLATES FOR ALL LOADS EXCEPT "D" BEVELED CONCRETE PLATE/PLATES FOR "TOTAL LOADS".

ALL BEARINGS SHALL HAVE "D" BEVELED CONCRETE PLATE/PLATES FOR ALL LOADS EXCEPT "D" BEVELED CONCRETE PLATE/PLATES FOR "TOTAL LOADS".

MASONRY PLATE "D" SHALL BE GALVANIZED.

BEVEL ROCKERS PRIOR TO THREADING.

PROVIDE 1' THICK BEARING PAD THE SAME SIZE AS MASONRY PLATE "D" FOR EACH BEARING.

CHECK THAT ANCHOR BOLTS PROVIDE DESIRED MASONRY CAPACITY.

MASONRY PLATE "D" PROVIDING ALLOWABLE CONCRETE CAP WIDTH, OR REDUCE WIDTH OF PLATE "D" TO MATCH CONCRETE CAP WIDTH.

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MASONRY PLATE "D" PROVIDING ALLOWABLE CONCRETE CAP WIDTH, OR REDUCE WIDTH OF PLATE "D" TO MATCH CONCRETE CAP WIDTH.

BEVEL ROCKERS WITH GRADES GREATER THAN 3%.
**STEEL GIRDER WITH FIXED SEAT**

- 54 BARS AT 3" CENTERS
- 1/2" FLANGE ALONG SKEW
- OPT. CONST. JOINT
- TOP OF DECK
- OPT. CONST. JT
- MAX.

**STEEL GIRDER WITH SEMI-EXPANSION SEAT**

- 44 BARS AT 3" CENTERS
- 1/2" FLANGE ALONG SKEW
- OPT. CONST. JOINT
- TOP OF DECK
- OPT. CONST. JT
- MAX.

**NOTES**

- FOR SKEWED STRUCTURES CAST END OF PRECAST GIRDER ON ABUTMENT.
- T = BRG. HEIGHT
- FILLER LENGTH OF ABUTMENT = 4" x T"
- PREFORMED JOINT FILLER
- ELASTOMERIC BRG. PADS USED.
- NO TOP PLANE
- CONCRETE OR OTHER WEARING SURFACE
- CONCRETE OR OTHER WEARING SURFACE

**DESIGNER NOTES**

- SEE STANDARD 12.01 FOR PRECAST GIRDER BEARING DETAILS.
- THE USE OF THIS OPT. CONST. JOINT IS RECOMMENDED FOR USE ON LARGE SPANS WHERE LARGE DEADLOAD END ROTATION IS ANTICIPATED.
- THE USE OF THIS OPT. CONST. JOINT IS RECOMMENDED FOR USE ON LARGE SPANS WHERE LARGE DEADLOAD END ROTATION IS ANTICIPATED.

**BRC. DETAILS FOR STEEL GIRDS. AND PRECAST UNITS ON A1 ABUTMENTS**

- SEE STANDARD 12.01 FOR PRECAST GIRDER BEARING DETAILS.
- THE USE OF THIS OPT. CONST. JOINT IS RECOMMENDED FOR USE ON LARGE SPANS WHERE LARGE DEADLOAD END ROTATION IS ANTICIPATED.
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**PREFAB Double TEE OR MULTI-STEM SECTION**

- PLACE ONE PAD UNDER EACH STEM.

**FILLER THK. = BRG. HEIGHT OF BRG. PAD (3" MIN.) UNDER GIRDER FLANGE IN FRONT OF PREFORMED JOINT FILLER.**

- T = BRG. HEIGHT
- FILLER LENGTH OF ABUTMENT = 4" x T"
- PREFORMED JOINT FILLER
- ELASTOMERIC BRG. PADS USED.
- NO TOP PLANE
- CONCRETE OR OTHER WEARING SURFACE
- CONCRETE OR OTHER WEARING SURFACE
NOTES (PERMANENT HOLD DOWN DEVICE)

ALL STRUCTURAL STEEL PLATES SHALL BE PLAIN ROLLED STEEL PLATES WITH ALL SURFACES SMOOTH AND FREE FROM WARP AND ALL EDGES SHARP, STRAIGHT AND VERTICAL.  ALL PLATE CUTS SHALL BE MACHINE OR MACHINE FLAME CUTS AND ALL MATERIAL SHALL BE TYPED.  PROVIDE ONE STANDARD ADHESIVE WASHER AND ONE HEX NUT PER BOLT.  CHAMFER TOP OF ANCHOR BOLTS PRIOR TO WELDING.

ANCHOR BOLTS, NUTS AND WASHERS SHALL CONFORM TO ASTM A490, CLASS C.  THE MATERIAL FOR THE HOLD-DOWN PLATES SHALL CONFORM TO ASTM A568 GRADE 50.

ALL MATERIAL MACHINED AT THE GIRDERS WHICH INCLUDES BEARING STIFFENERS, PLATES AND PIN BEARING PLATE, SHALL BE INCLUDED IN THE UNIT PRICE BID FOR "BEARING ASSEMBLIES EXPANSION JOINTS."  ALL MATERIAL WELDED TO THE GIRDERS, WHICH INCLUDES BEARING STIFFENERS, STIFFENER PLATE, AND PIN PINS AND ANCHOR BOLTS, SHALL BE INCLUDED IN THE UNIT PRICE BID FOR "BEARING ASSEMBLIES EXPANSION JOINTS."  ALL PLATES AND PLATE WASHERS SHALL CONFORM TO ASTM A709 GRADE 36 OR MATERIAL OF EQUIVALENT TENSILE STRENGTH.

ANCHOR BOLTS SHALL BE PROVIDED AS STATED IN STANDARD 24.02 FOR WELD DETAILS SHOWING BEARING STIFFENER CONNECTION TO WEB AND FLANGE.  SEE STANDARD 24.02 FOR TABLE OF FILLET WELD SIZES.  PROJECTS USING WELD PLATES TO REINFORCE A PRECAST ANCHOR PLATE IN CONCRETE AS DETAILED.

DRILLED HOLES FOR ANCHOR BOLTS SHALL BE 1/2" CLEAR (HOLE DIA. = BOLT DIA. + ").  FOR REPLACEMENT BEARINGS, ANCHOR BOLTS SHALL BE 5/8" X 3" LONG AND FULLY WELDED.  ADHESIVE ANCHOR BOLTS SHALL BE PAID FOR AS 'ADHESIVE ANCHOR 1 1/2-INCH'.

NOTES (PERMANENT HOLD DOWN DEVICE)

REVIEW MATERIALS.  ALL MATERIALS MUST BE FLAT ROLLED STEEL PLATES WITH ALL SURFACES SMOOTH AND FREE FROM WARP AND ALL EDGES SHARP, STRAIGHT AND VERTICAL.  ALL PLATE CUTS SHALL BE MACHINE OR MACHINE FLAME CUTS AND ALL MATERIAL SHALL BE TYPED.  PROVIDE ONE STANDARD ADHESIVE WASHER AND ONE HEX NUT PER BOLT.  CHAMFER TOP OF ANCHOR BOLTS PRIOR TO WELDING.

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PLAN VIEW

SECTION THRU ELASTOMERIC BEARING

END VIEW

CLEARANCE DIAGRAM

DESIGNER NOTES

See Chapter 40 Standards for use of elastomeric bearings on new and rehabilitated steel girder bridges. For all new bridges, the steel top plate shall have a minimum thickness of 7/8 inch. For bearings used in bearing replacement projects the steel top plate thickness may be reduced to a minimum of 1/2 inch to match the overall existing bearing height. When this thickness is required, the following note shall be located on the plans:

"STEEL PLATE THK. MAY BE REDUCED TO A MINIMUM OF 1/2-INCH TO MATCH THE TOP PLATE THICKNESS OF THE EXISTING BEARINGS."

Elastomeric laminated bearings shall not be placed at a temperature greater than 200°F (93°C).

BEARINGS SHALL NOT BE PLACED AT A TEMPERATURE GREATER THAN 200°F.

NOTES

BEARINGS SHALL NOT BE PLACED AT A TEMPERATURE GREATER THAN 200°F.

ALL MATERIAL USED FOR BEARINGS SHALL BE FREE FROM SCALE, RUST AND ALL FOREIGN MATERIALS.

ALL PLATE CUTS SHALL BE FLAME CUT. ALL PLATE CUTS SHALL BE MACHINE OR MACHINE AND VERTICAL.

ALL STRUCTURAL STEEL PLATES SHALL BE FLAT AND VERTICAL.

DO NOT INCLUDE PRESTRESSED CONCRETE BEARINGS FOR SPREAD SPANNERS IN DESIGNING BEARINGS FOR SPREAD SPANNERS PROJECTS.

WELDING PROCEDURES SHALL BE ENSURED BY THE CONTRACTOR TO MATCH THE REQUIREMENTS SET FORTH IN THE CONTRACT.

TO CLEAR PRESTRESSING STRANDS, USE EIGHT STUDS FOR 28 & 36-INCH GIRDER.<br/>USE SIX STUDS FOR 36W, 45W, 54W, 72W, & 82W-INCH GIRDER.
ANCHOR BOLTS 3" OF BEARING EXPANSION BEARING ASSEMBLY

EXPANSION BEARING ASSEMBLY

SECTION BI-BI

BEARING NOTES

All bearing are symmetrical about E of girder and E of bearing.

All materials in bearings, but excluding stainless steel plate, Teflon surface, rocker plate, nuts and washers shall conform to ASTM A709 Grade 36, Stainless steel plate shall conform to ASTM A479 Type 304.

Steel plates shall conform to ASTM A572 Grade 50, Type 50.

Anchor bolts, nuts and washers shall conform to ASTM A574 Grade 50, Type 50.

All structural steel bearing plates shall be flat, welded, steel plates with all surfaces smooth and free from warps and all edges straight, square and true.

All bearing surfaces shall be machine finished by an automatic process. Anchor bolts shall be threaded I/2" in diameter, provide one standard wrought washer and one I/2" nut per bolt. Project anchor bolts, Masonry Plate D, US 1/2" in diameter, above top of concrete.

Chamfer anchor bolts prior to finishing.

Masonry plate for rocker plate for anchor bolts nuts and washers shall be galvanized in accordance with ASTM A53 Grade A, steel plate US 1/2" in diameter, above top of concrete.

All materials in steel bearings for prestressed concrete girders, including bearing pads, shall be designed for at the point re-bar for bearing assemblies expansion B-.__. Each.

For expansion bearings use laminated Teflon bearings whenever possible. The standard 7.20 and 7.21 for clearance requirements and standard 7.22 for the use of laminated Teflon plate US 1/2" in diameter, above top of concrete. Height of bearing shown in expansion bearing assembly includes 1/2" bearing pad and the Teflon surface.

Adjust height of threaded rocker plate to "US only.

Anchor plate length to be designed, minimum length is 10", see 7.21, 7.22 for additional guidance.

Calculate the reaction of the bearing due to partial loads and added dead loads only.

Assume the bearing is rigidly fixed.

The bearing capacity of the bearing pad, and the Teflon surface, shall be determined by the load combination of the table bearing capacity only dead load of 400 psi and 400 psi live loads will including a 300 psi live allowance 4.5.

Either reaction exceeds the corresponding bearing capacity, the bearing detail shall be revised on the standard. The bearing capacity of the bearing pad, and the Teflon surface, shall be determined by the load combination of the table bearing capacity only dead load of 400 psi and 400 psi live loads will including a 300 psi live allowance 4.5.

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**Notes**

1. **Steel Expansion Bearings:** Use temperature setting table rather than centering bearings beneath bearing stiffeners for all temperatures.

2. **Prestressed Concrete Bearings:** Place bearings as shown on the structural plan. Adjusted for substructure location discrepancies, place each anchor centered between its given bearings.

**Design Notes**

1. **Top Plate 'A':** For steel girder bearings to be designed to account for thermal movement and construction tolerance, use greater of value from procedure below or top surface from standard table.

2. **Size/Select One:** For steel girder bearings to be designed to account for thermal movement and construction tolerance, use greater of value from procedure below or top surface from standard table.

**Procedure for Sizing Anchor Plates:**

- Thermal movement greater than 30°F
- Construction tolerance

**Calculation**

- **Anchor Plate Length:**
  
  - For Steel Girder:
    
    - **Top Plate 'A' Length:**
      
      - TEFLON PLATE 'B' LENGTH
      
      - SHRINKAGE = 0.0003'/'
      
      - THERMAL MOVEMENT (USE 60-(-30) = 90 DEGREES)
      
      - CONSTRUCTION TOLERANCE

  - **Top Plate 'A' Length Double This for Plate 'A' Length**

**Bearing Offset Table**

<table>
<thead>
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<th>Temperature</th>
<th>THL</th>
<th>THL + 1&quot;</th>
<th>THL + 1&quot; CONSTRUCTION TOLERANCE</th>
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<tr>
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<tr>
<td>90°F</td>
<td>0.9</td>
<td>1.8</td>
<td>1.8</td>
</tr>
</tbody>
</table>

**Adjustment for Substructure Location Discrepancies:**

Place bearings as shown on the substructure plan, providing for prestressed girder bearings:

- Beneath bearing stiffeners for all temperatures.

**Use Temperature Setting Table, Rather Than Centering Bearings for Steel Bearing:**

- For steel bearing offsets, the procedure outlined above should be used, with a load factor of 1.20 and 1" construction tolerance and TEFLON PLATE LENGTH.

**Steel Expansion Bearing Details**

- Standard 27.10

**Approved:**

- Bill Oliva

**Date:**

- 1-17

**Bureau of Structures**