

## Chapter 03 - Superstructure

### SECTION 09

# BEARINGS (SUP-BR)

## Chapter 03 - Superstructure

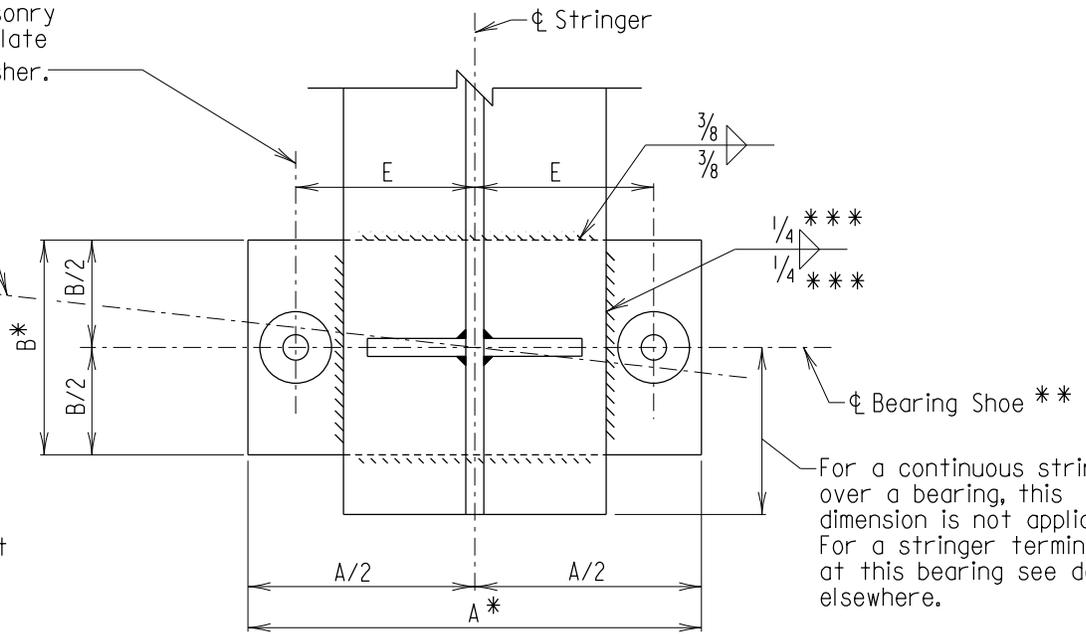
### Section 09 – Bearings

#### SUB-SECTION 01

# STEEL BEARINGS (SUP-BR(SB))

1 5/16"  $\phi$  hole in masonry plate and sole plate  
 1 1/16"  $\phi$  hole in washer.

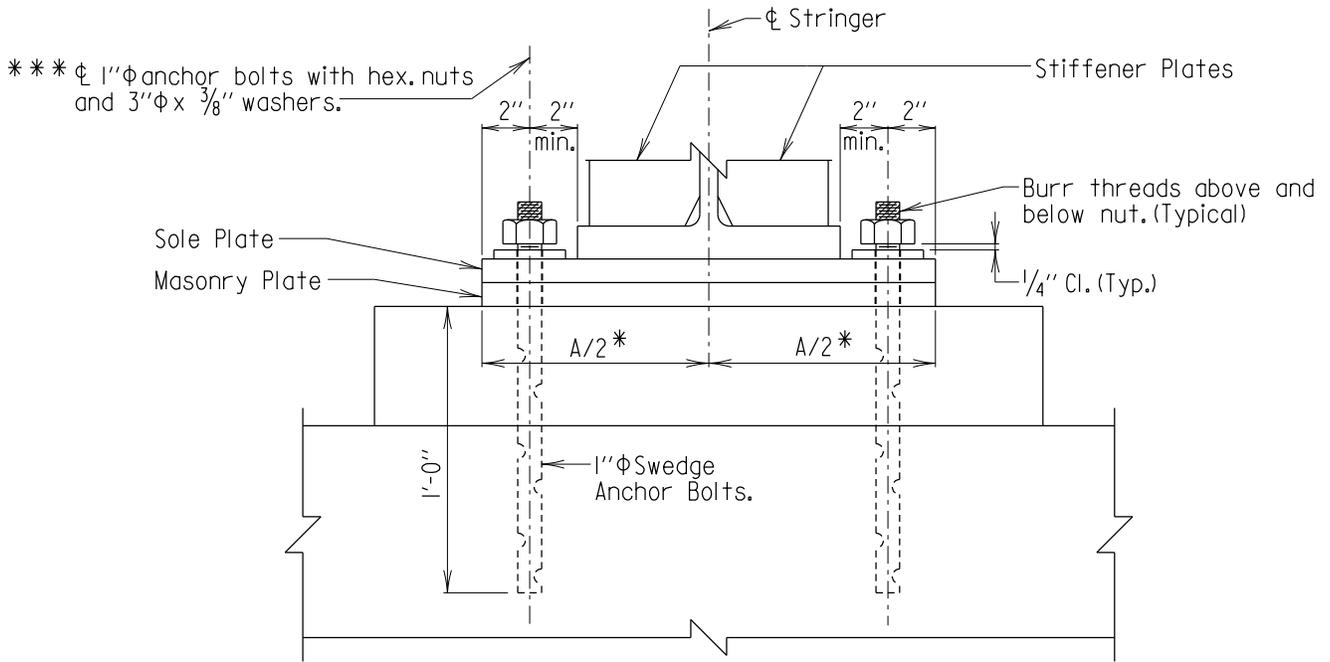
$\phi$  of Brg. \*\*



Note:  
 1. Nut not shown.  
 2. Pad and support not shown.

PLAN

Scale: 1 1/2" = 1'-0"



ELEVATION

Scale: 1 1/2" = 1'-0"

\* Edges may be left as cut or cast.

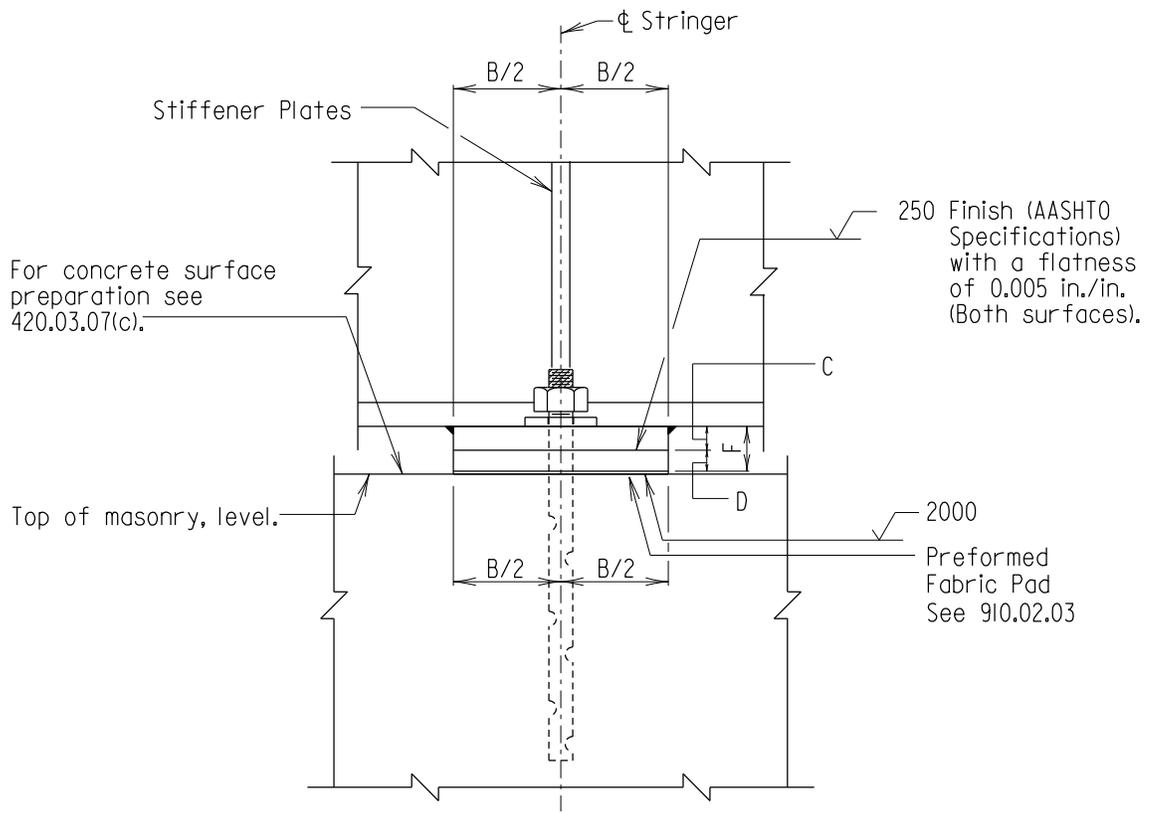
\*\* Where bridge is not skewed,  $\phi$  Brg. and  $\phi$  shoe are coincident.

\*\*\* Minimums shown. Engineer Shall Design.

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STATE OF MARYLAND DEPARTMENT OF TRANSPORTATION STATE HIGHWAY ADMINISTRATION OFFICE OF STRUCTURES	
<b>FIXED BEARING SHORT LENGTH SPANS (GRADE 50 STEEL)</b>	
DETAIL NO. SUP-BR(SB)-101	SHEET <u>1</u> OF <u>2</u>

SUPER - BEARINGS



**SIDE VIEW**  
Scale: 1/2" = 1'-0"

DATA SCHEDULE									
Type	Sole Plate			Masonry			Hole Loc. Hgt.		Service Loads (Kips)
	A	B	C	A	B	D	E	F	
SF50 - I	17	9	1	17	9	1	6 1/2	2	Vert. 70
SF50 - II	19	9	1	19	9	1	7 1/2	2	85
SF50 - III	21	9	1	21	9	1	8 1/2	2	100

**Note: All dimensions are in inches.**

**Note:**

1. Sole and masonry plates to be unpainted ASTM A 709 Grade 50 steel galvanized in accordance with A123. All areas that are to be welded shall be masked off prior to galvanizing and painted to match bridge color after welding.
2. Fill slots and holes around anchor bolts with nonhardening caulking compound or elastic joint sealer.
3. 1000 RMS (Finish all over) except where otherwise noted.
4. Top of sole plate must be beveled to fit grade of bottom flange. If sole plate must be beveled, dimension 'C' shall be measured at φ of bearing.
5. Unless otherwise noted, bearings shall be placed normal to φ of stringer.
6. Plates are to be shipped as units.
7. If more than one size bearing is called for, Contractor may furnish all bearings of the larger size provided the bearing pads are altered to accommodate same. No increase in any prices bid will be allowed if this option is selected.
8. This bearing for use on simple span steel stringer bridges less than 50'-0" long and/or comparable continuous span lengths.
9. All anchor bolts shall be unpainted ASTM F 1554 Grade 55 galvanized steel. All nuts shall be unpainted ASTM A 563 galvanized steel. All washers shall be unpainted ASTM F 436 galvanized steel.

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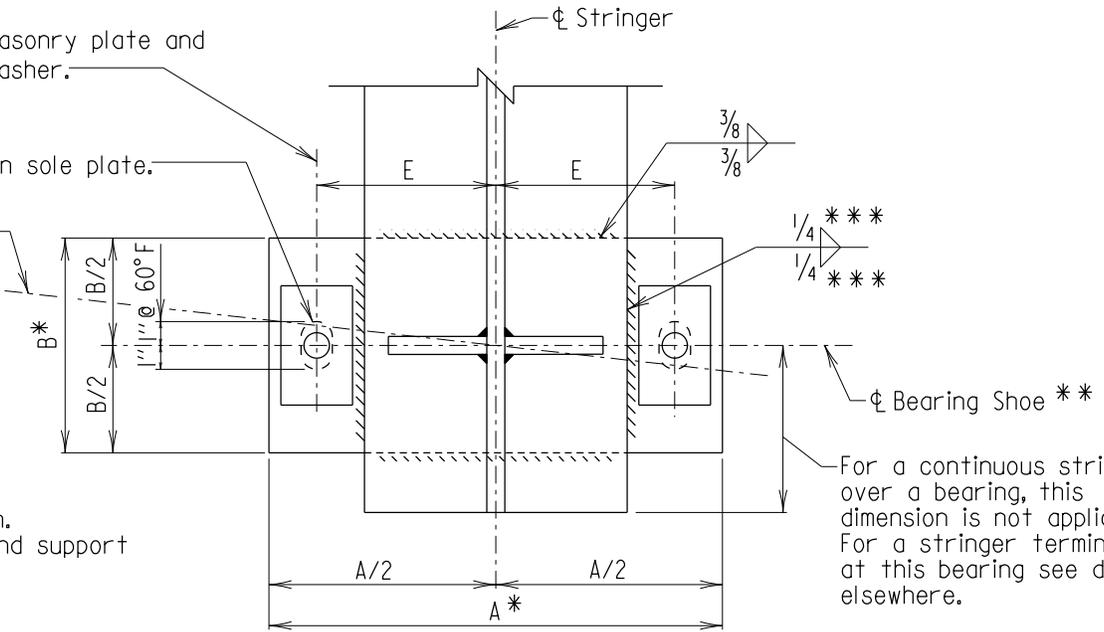
STATE OF MARYLAND DEPARTMENT OF TRANSPORTATION STATE HIGHWAY ADMINISTRATION OFFICE OF STRUCTURES	
<b>FIXED BEARING          SHORT LENGTH SPANS          (GRADE 50 STEEL)</b>	
DETAIL NO. SUP-BR(SB)-101	SHEET <u>2</u> OF <u>2</u>

SUPER - BEARINGS

$1\frac{5}{16}$ "  $\phi$  hole in masonry plate and  
 $1\frac{1}{16}$ "  $\phi$  hole in washer.

$1\frac{5}{16}$ " x 2" slot in sole plate.

$\phi$  of Brg.\*\*\*

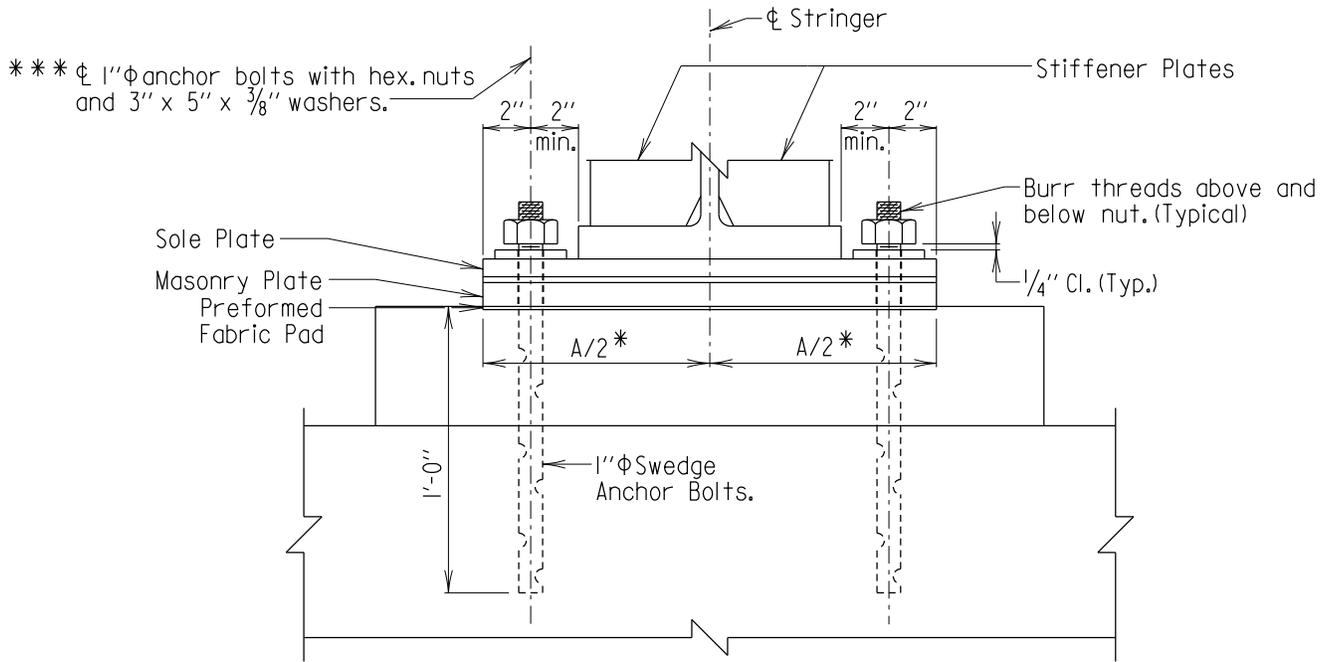


Note:  
 1. Nut not shown.  
 2. Bearing Pad and support not shown.

For a continuous stringer over a bearing, this dimension is not applicable. For a stringer terminating at this bearing see details elsewhere.

PLAN

Scale:  $1\frac{1}{2}$ " = 1'-0"



ELEVATION

Scale:  $1\frac{1}{2}$ " = 1'-0"

\* Edges may be left as cut or cast.

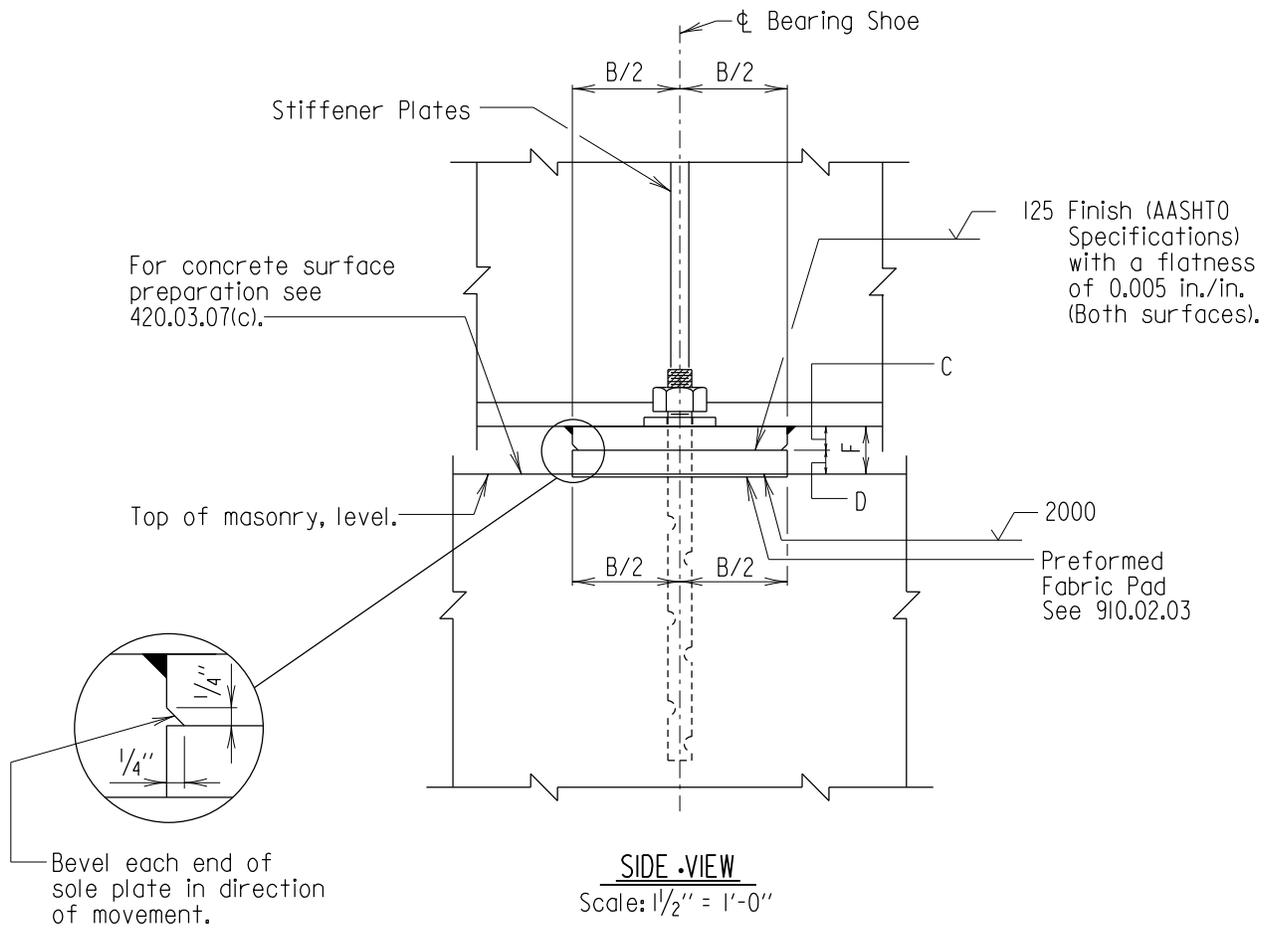
\*\* Where bridge is not skewed,  $\phi$  Brg. and  $\phi$  shoe are coincident.

\*\*\* Minimums shown. Engineer Shall Design.

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STATE OF MARYLAND DEPARTMENT OF TRANSPORTATION STATE HIGHWAY ADMINISTRATION OFFICE OF STRUCTURES	
EXPANSION BEARING SHORT LENGTH SPANS (GRADE 50 STEEL)	
DETAIL NO. SUP-BR(SB)-102	SHEET <u>1</u> OF <u>2</u>

SUPER - BEARINGS



DATA SCHEDULE									
Type	Sole Plate			Masonry $\phi$			Hole Loc. Hgt.		Service Loads (Kips)
	A	B	C	A	B	D	E	F	Vert.
SE50 - I	17	9	I	17	9	I	6 1/2	2	70
SE50 - II	19	9	1 1/4	19	9	1 1/4	7 1/2	2 1/2	85
SE50 - III	21	9	1 1/4	21	9	1 1/4	8 1/2	2 1/2	100

Note: All dimensions are in inches.

- Note:
- Sole and masonry plates to be unpainted ASTM A 709 Grade 50 steel galvanized in accordance with A123. All areas that are to be welded shall be masked off prior to galvanizing and painted to match bridge color after welding.
  - Fill slots and holes around anchor bolts with nonhardening caulking compound or elastic joint sealer.
  - 1000 RMS (Finish all over) except where otherwise noted.
  - Top of sole plate must be beveled to fit grade of bottom flange. If sole plate must be beveled, dimension 'C' shall be measured at  $\phi$  of bearing.
  - Unless otherwise noted, bearings shall be placed normal to  $\phi$  of stringer.
  - Plates are to be shipped as units.
  - If more than one size bearing is called for, Contractor may furnish all bearings of the larger size provided the bearing pads are altered to accommodate same. No increase in any prices bid will be allowed if this option is selected.
  - This bearing for use on simple span steel stringer bridges less than 50'-0" long and/or comparable continuous span lengths.
  - All anchor bolts shall be unpainted ASTM F 1554 Grade 55 galvanized steel. All nuts shall be unpainted ASTM A 563 galvanized steel. All washers shall be unpainted ASTM F 436 galvanized steel.

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STATE OF MARYLAND  
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**EXPANSION BEARING  
SHORT LENGTH SPANS  
(GRADE 50 STEEL)**

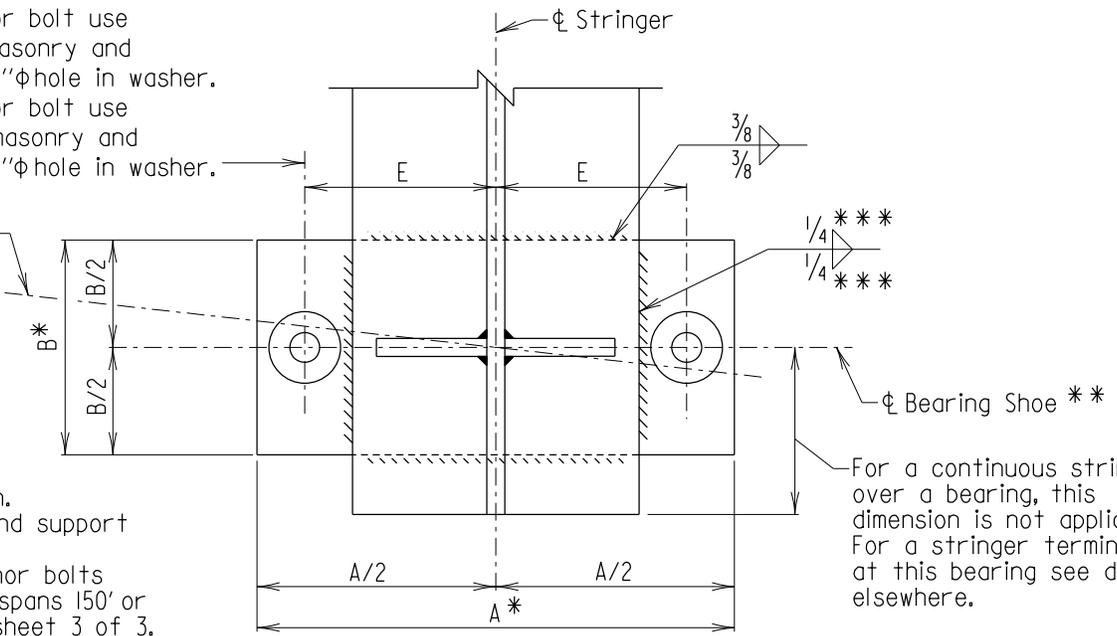
DETAIL NO. SUP-BR(SB)-102

SHEET 2 OF 2

SUPER - BEARINGS

For 1/4" φ anchor bolt use  
 1 9/16" φ hole in masonry and  
 sole plates 1 5/16" φ hole in washer.  
 For 1/2" φ anchor bolt use  
 1 13/16" φ hole in masonry and  
 sole plates 1 9/16" φ hole in washer.

φ of Brg. \*\*



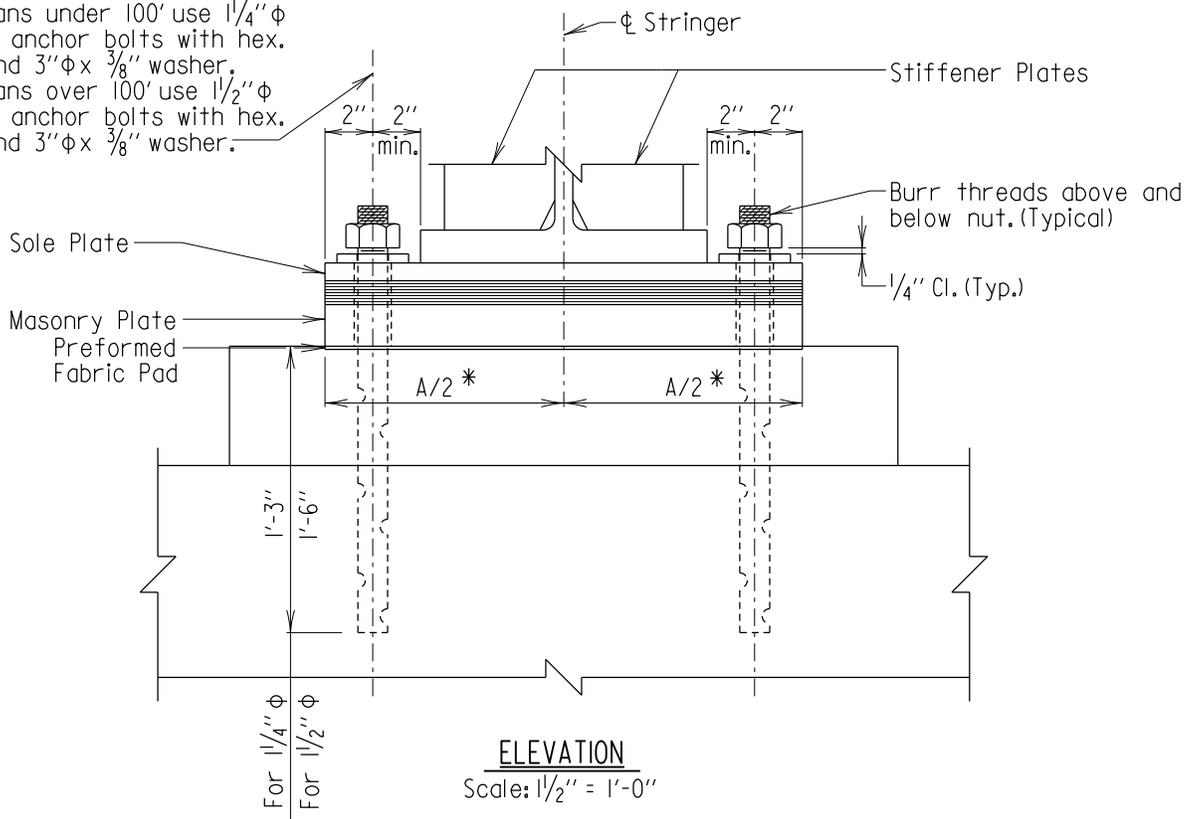
Note:  
 Nut not shown.  
 Bearing Pad and support  
 not shown.  
 Additional anchor bolts  
 required for spans 150' or  
 greater see sheet 3 of 3.

For a continuous stringer  
 over a bearing, this  
 dimension is not applicable.  
 For a stringer terminating  
 at this bearing see details  
 elsewhere.

**PLAN**

Scale: 1/2" = 1'-0"

For spans under 100' use 1/4" φ  
 swedge anchor bolts with hex.  
 nuts and 3" φ x 3/8" washer.  
 For spans over 100' use 1/2" φ  
 swedge anchor bolts with hex.  
 nuts and 3" φ x 3/8" washer.



**ELEVATION**

Scale: 1/2" = 1'-0"

\* Edges may be left as cut or cast.

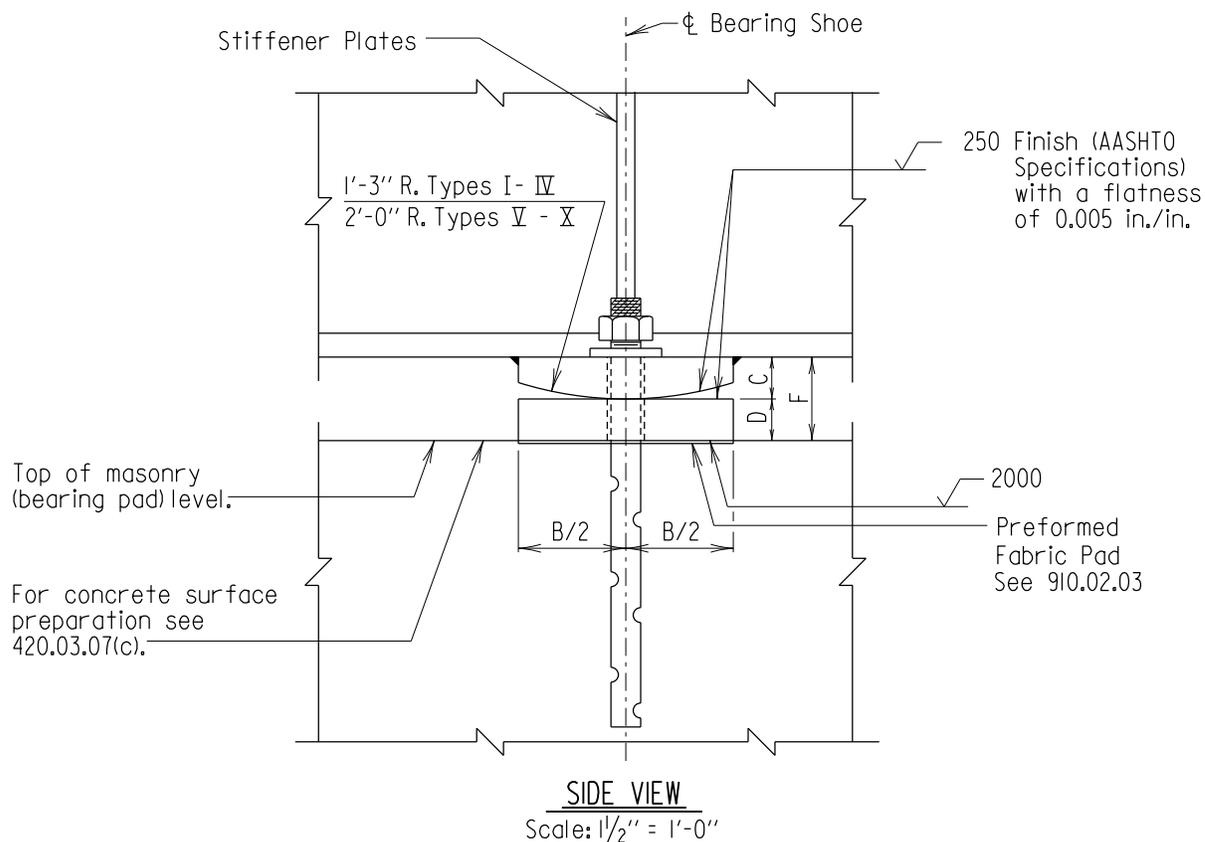
\*\* Where bridge is not skewed, φ Brg.  
 and φ shoe are coincident.

\*\*\* Minimums shown. Engineer Shall Design.

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STATE OF MARYLAND DEPARTMENT OF TRANSPORTATION STATE HIGHWAY ADMINISTRATION OFFICE OF STRUCTURES
<b>FIXED BEARING MEDIUM LENGTH SPANS (GRADE 50 STEEL)</b>
DETAIL NO. SUP-BR(SB)-103
SHEET 1 OF 3

SUPER - BEARINGS



### DATA SCHEDULE

Type	Sole Plate			Masonry P.			Hole Loc.		Hgt.	Max Bottom Fl. Width	Strength Limit State Loads	Service Limit State Loads
	A	B	C	A	B	D	E	F				
MF50 - I	20	9	1 3/4	20	9	1 3/4	8	3 1/2	12	300k	185k	
MF50 - II	22	11	1 7/8	22	11	1 7/8	9	3 3/4	14	400k	250k	
MF50 - III	24	12	2	24	12	2	10	4	16	500k	310k	
MF50 - IV	26	13	2 1/4	26	13	2 1/4	11	4 1/2	18	600k	375k	
MF50 - V	30	15	2 1/2	30	15	2 1/2	13	5	22	700k	440k	
MF50 - VI	32	16	2 3/4	32	16	2 3/4	14	5 1/2	24	800k	505k	
MF50 - VII	34	18	2 7/8	34	18	2 7/8	15	5 3/4	26	900k	570k	
MF50 - VIII	36	20	3	36	20	3	16	6	28	1000k	635k	
MF50 - IX	38	22	3 1/4	38	22	3 1/4	17	6 1/4	30	1100k	700k	
MF50 - X	40	24	3 3/4	40	24	3 3/4	18	7	32	1200k	760k	

**Note: All dimensions are in inches.**

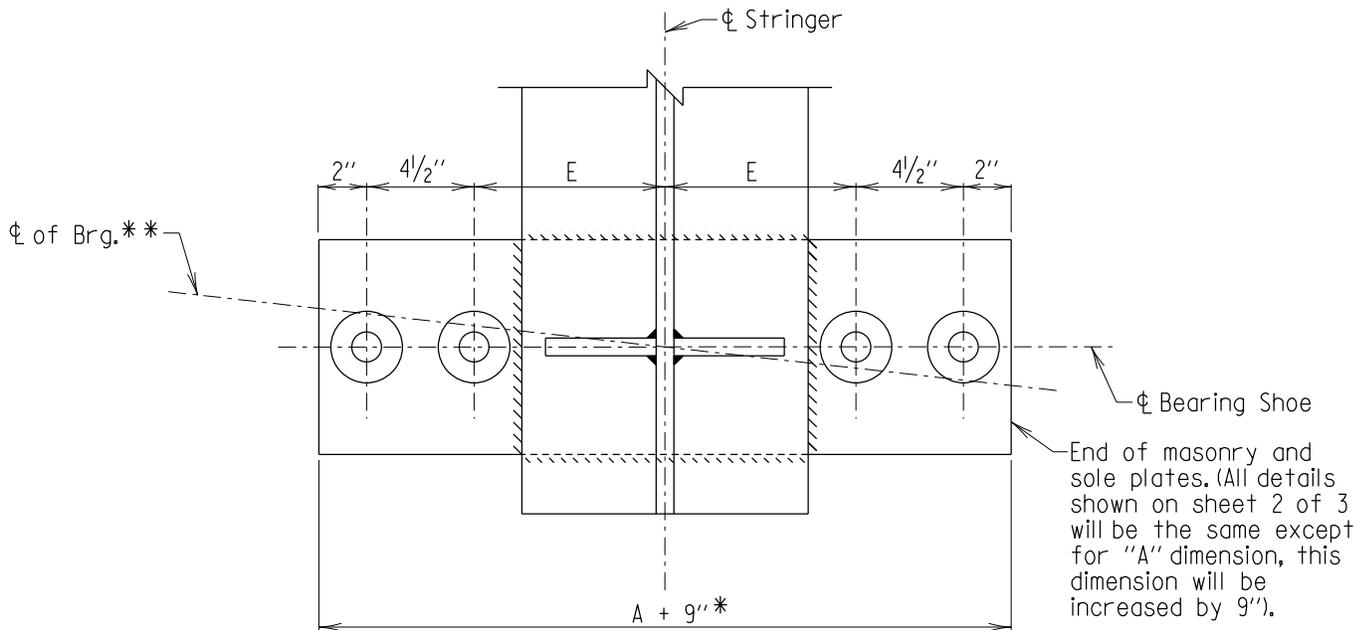
**Note:**

1. Sole and masonry plates to be ASTM A 709 Grade 50 steel painted to match finished bridge color.
2. Fill slots and holes around anchor bolts with nonhardening caulking compound or elastic joint sealer.
3. 1000 RMS (Finish all over) except where otherwise noted.
4. Compressive strength of concrete bearing area shall be 3.5 ksi or greater.
5. Top of sole plate must be beveled to fit grade of bottom flange.
6. Unless otherwise noted, bearings shall be placed normal to ϕ of stringer.
7. Plates are to be shipped as units.
8. If more than one size bearing is called for, Contractor may furnish all bearings of the larger size provided the bearing pads are altered to accommodate same. No increase in any prices bid will be allowed if this option is selected.
9. All anchor bolts and washers shall be unpainted ASTM F 1554 Grade 55 galvanized steel. All nuts shall be unpainted ASTM A 563 galvanized steel. All washers shall be unpainted ASTM F 436 galvanized steel.
10. The maximum design rotation due to strength load combinations ( $\theta_u$ ) = 0.75".

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<b>FIXED BEARING MEDIUM LENGTH SPANS (GRADE 50 STEEL)</b>
DETAIL NO. SUP-BR(SB)-103
SHEET <u>2</u> OF <u>3</u>

SUPER - BEARINGS



- Note:
1. Nut not shown.
  2. Bearing Pad and support not shown.

PLAN  
FOR ALL GIRDERS WITH SPAN LENGTHS (CONTRIBUTING TO EXPANSION)  
150' OR GREATER  
 Scale: 1/2" = 1'-0"

Note:  
 Bearings for girders with span lengths contributing to expansion of 150' or greater shall be extended to accommodate 2 additional bolts. Size and details of all 4 anchor bolts to be the same as that required for 2 bolt bearings.

\* Edges may be left as cut or cast.

\*\* Where bridge is not skewed, ϕ Brg. and ϕ shoe are coincident.

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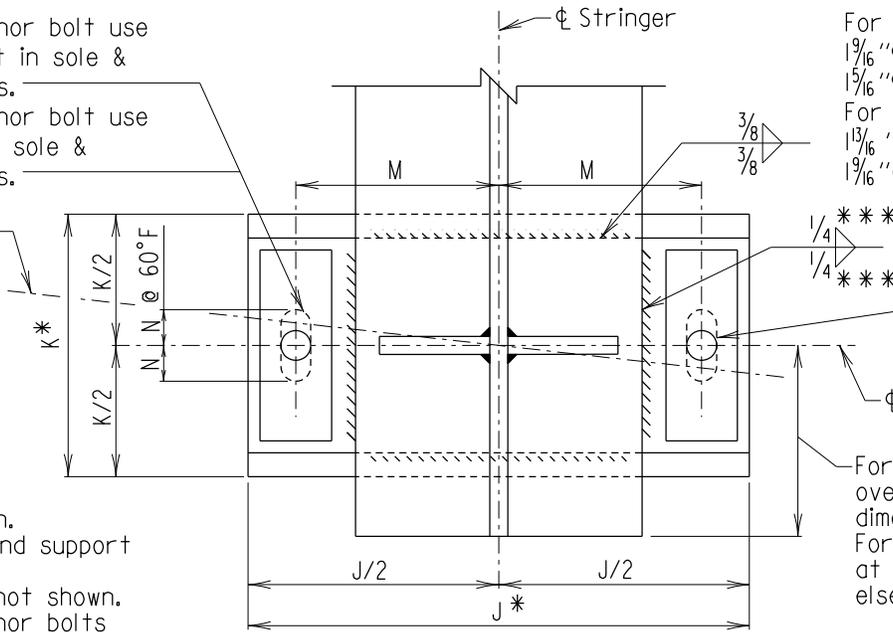
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FIXED BEARING MEDIUM LENGTH SPANS (GRADE 50 STEEL)
DETAIL NO. SUP-BR(SB)-103
SHEET <u>3</u> OF <u>3</u>

SUPER - BEARINGS

For 1/4"φ anchor bolt use 1 9/16" x 2N slot in sole & bronze plates.  
 For 1/2"φ anchor bolt use 1 13/16"φ x 2N in sole & bronze plates.

For 1/4"φ anchor bolt use 1 9/16"φ hole in masonry & 1 5/16"φ hole in washer.  
 For 1/2"φ anchor bolt use 1 13/16"φ hole in masonry & 1 9/16"φ hole in washer.

φ of Brg. \*\*



- Note:
1. Nut not shown.
  2. Bearing Pad and support not shown.
  3. Sliding plate not shown.
  4. Additional anchor bolts required for spans 150' or greater see sheet 3 of 3.

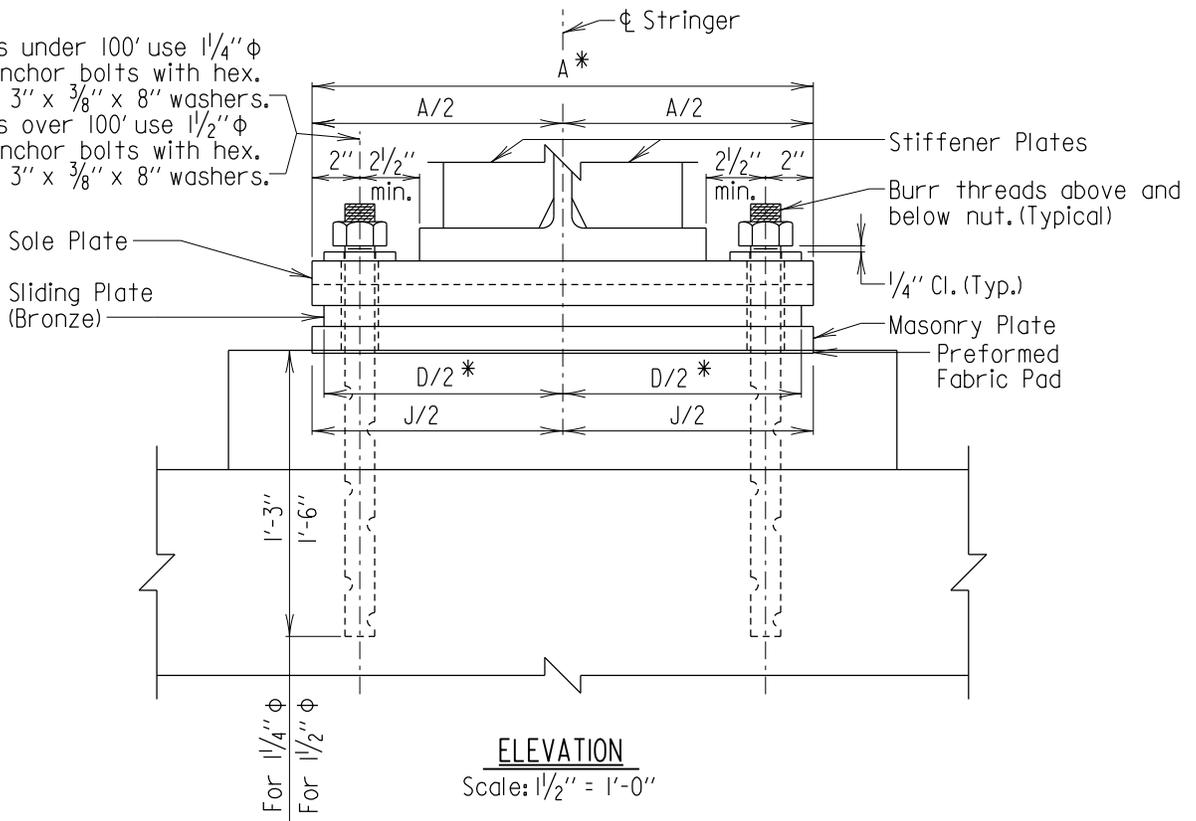
For a continuous stringer over a bearing, this dimension is not applicable. For a stringer terminating at this bearing see details elsewhere.

**PLAN**

Scale: 1/2" = 1'-0"

\*\*\*

For spans under 100' use 1/4"φ swedge anchor bolts with hex. nuts and 3" x 3/8" x 8" washers.  
 For spans over 100' use 1/2"φ swedge anchor bolts with hex. nuts and 3" x 3/8" x 8" washers.



**ELEVATION**

Scale: 1/2" = 1'-0"

\* Edges may be left as cut or cast.

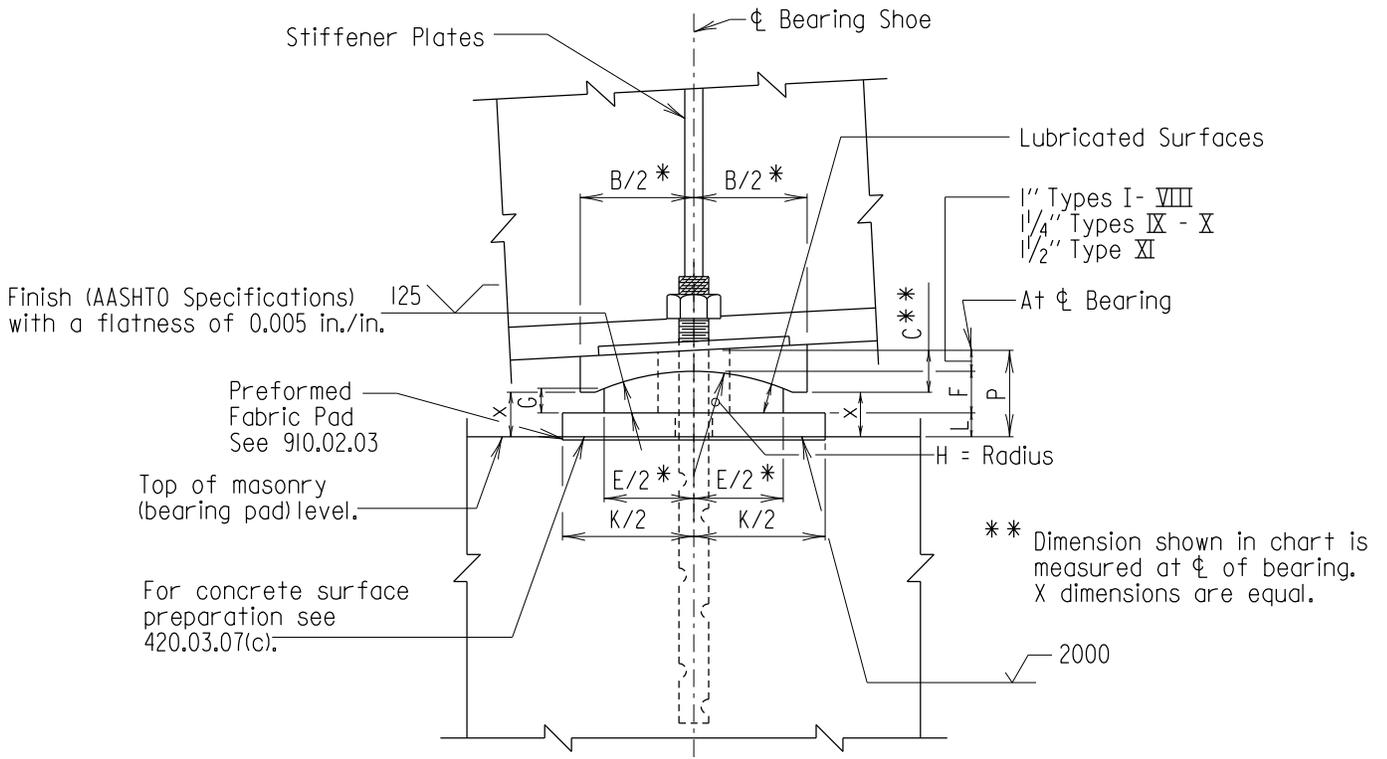
\*\* Where bridge is not skewed, φ Brg. and φ shoe are coincident.

\*\*\* Minimums shown. Engineer Shall Design.

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STATE OF MARYLAND DEPARTMENT OF TRANSPORTATION STATE HIGHWAY ADMINISTRATION OFFICE OF STRUCTURES
<b>BRONZE EXPANSION BEARING MEDIUM LENGTH SPANS (GRADE 50 STEEL)</b>
DETAIL NO. SUP-BR(SB)-104
SHEET <u>1</u> OF <u>3</u>

SUPER - BEARINGS



### DATA SCHEDULE

Type	Sole Plate			Sliding Plate				Radius H	Masonry				Hole Loc.			Hgt. P	Max. Bottom Fl. W.	Strength Limits State Loads	Service Limit State Loads	Allow Exp. (+/-) (Note 4)
	A	B	C	D	E	F	G		J	K	L	M	N							
ME50 - I	21	9 1/2	1 3/4	20	7 1/2	1 3/4	1 ±	11	21	11	1	8 1/2	1 1/2	3 3/4	12	200 k	120 k			
ME50 - II	23	10 1/2	1 7/8	22	8 1/2	1 3/4	1 ±	12	23	12	1	9 1/2	1 3/4	3 3/4	14	300 k	185 k	1		
ME50 - III	25	12 1/2	2	24	9 1/2	1 3/4	1 ±	15	25	13	1 1/4	10 1/2	2	4	16	400 k	250 k	1 1/4		
ME50 - IV	27	13 1/2	2 1/8	26	11	2	1 ±	16	27	16	1 1/4	11 1/2	2 1/4	4 1/4	18	500 k	310 k	1 1/2		
ME50 - V	29	15 1/2	2 3/8	28	13	2 1/4	1 ±	18	29	17	1 1/2	12 1/2	2 1/2	4 3/4	20	600 k	375 k	1 3/4		
ME50 - VI	31	17	2 1/2	30	14 1/2	2 3/8	1 ±	20	31	20	1 1/2	13 1/2	2 3/4	4 7/8	22	700 k	440 k	2		
ME50 - VII	33	18 1/2	2 1/2	32	15 1/2	2 3/8	1 ±	23	33	23	2	14 1/2	3	5 3/8	24	800 k	505 k	2 1/4		
ME50 - VIII	35	19	2 5/8	34	16 1/2	2 1/2	1 ±	23	35	24	2 1/2	15 1/2	3 1/4	6	26	900 k	570 k	2 1/2		
ME50 - IX	37	21	3	36	17 1/2	2 3/4	1 1/4 ±	26	37	25	2 1/2	16 1/2	3 1/2	6 1/2	28	1000 k	635 k	2 3/4		
ME50 - X	39	21	3	38	17 1/2	2 3/4	1 1/4 ±	26	39	26	2 3/4	17 1/2	4	6 3/4	30	1100 k	700 k	3 1/4		
ME50 - XI	41	22	3 1/4	40	18	3	1 1/2 ±	28	41	27	3	18 1/2	4 1/2	7 1/2	32	1200 k	760 k	3 3/4		

Note: All dimensions are in inches.

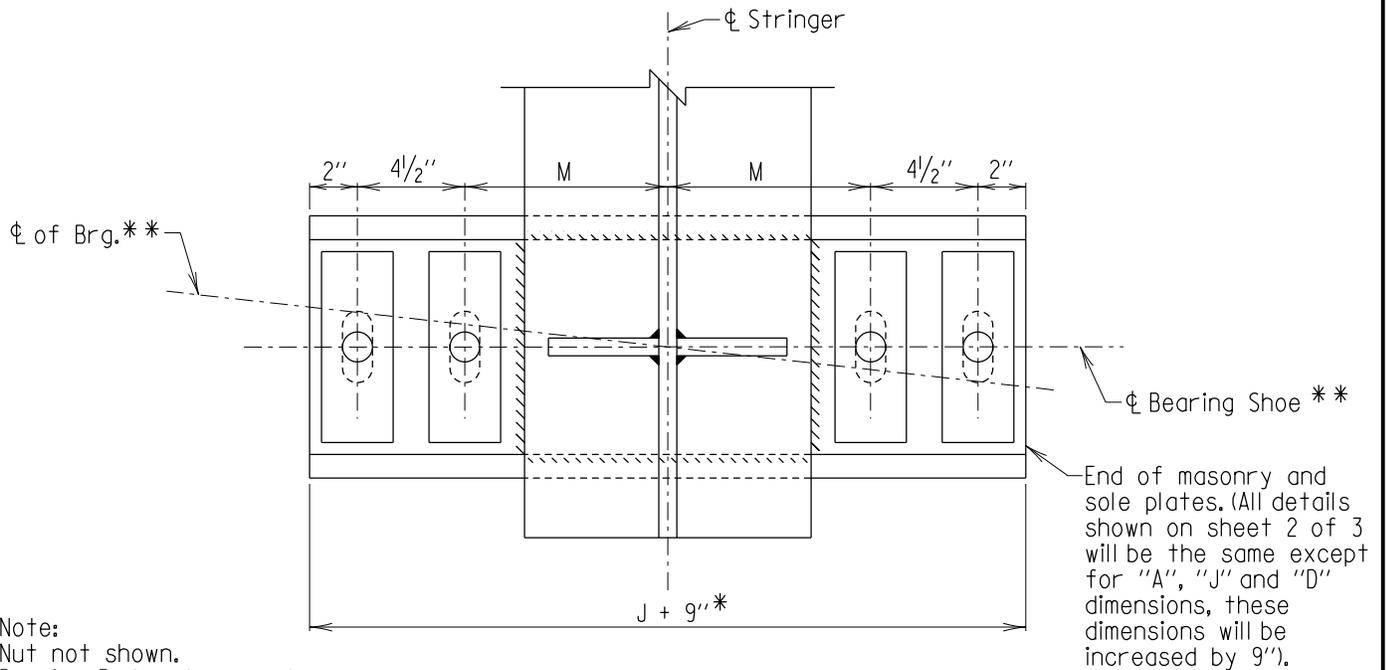
Note:

- Sole and masonry plates to be ASTM A 709 Grade 50, steel painted to match finished bridge color, convex plate shall be a self lubricating bronze bearing plate conforming to 910.01.
- Fill slots and holes around anchor bolts with nonhardening caulking compound or elastic joint sealer.
- 1000 RMS (Finish all over) except where otherwise noted.
- Allowable expansion is based on a 60°F. temperature change from center slot setting at 60°F.
- Compressive strength of concrete bearing area shall be 3.5 ksi or greater.
- Top of sole plate must be beveled to fit grade of bottom flange.
- Unless otherwise noted, bearings shall be placed normal to ϕ of stringer.
- Plates are to be shipped as units.
- If more than one size bearing is called for, Contractor may furnish all bearings of the larger size provided the bearing pads are altered to accommodate same. No increase in any prices bid will be allowed if this option is selected.
- All anchor bolts and shall be unpainted ASTM F 1554 Grade 55 galvanized steel. All nuts shall be unpainted ASTM A 563 galvanized steel. All washers shall be unpainted ASTM F 436 galvanized steel.
- The maximum design rotation due to strength load combinations (θ<sub>u</sub>) = 0.75°.

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STATE OF MARYLAND DEPARTMENT OF TRANSPORTATION STATE HIGHWAY ADMINISTRATION OFFICE OF STRUCTURES	
BRONZE EXPANSION BEARING MEDIUM LENGTH SPANS (GRADE 50 STEEL)	
DETAIL NO. SUP-BR(SB)-104	SHEET 2 OF 3

SUPER - BEARINGS



- Note:
1. Nut not shown.
  2. Bearing Pad and support not shown.
  3. Sliding plate not shown.

PLAN  
FOR ALL GIRDERS WITH SPAN LENGTHS (CONTRIBUTING TO EXPANSION)  
150' OR GREATER  
 Scale: 1 1/2" = 1'-0"

Note:  
 Bearings for girders with span lengths contributing to expansion of 150' or greater shall be extended to accommodate 2 additional bolts. Size and details of all 4 anchor bolts to be the same as that required for 2 bolt bearings.

\* Edges may be left as cut or cast.

\*\* Where bridge is not skewed, ϕ Brg. and ϕ shoe are coincident.

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STATE OF MARYLAND DEPARTMENT OF TRANSPORTATION STATE HIGHWAY ADMINISTRATION OFFICE OF STRUCTURES
<b>BRONZE EXPANSION BEARING MEDIUM LENGTH SPANS (GRADE 50 STEEL)</b>
DETAIL NO. SUP-BR(SB)-104
SHEET <u>3</u> OF <u>3</u>

SUPER - BEARINGS

## Chapter 03 - Superstructure

### Section 09 – Bearings

#### SUB-SECTION 02

# ELASTOMERIC BEARINGS (SUP-BR(EB))

GENERAL NOTES

1. Sole plates, masonry plates, keeper bars, embedded plates, studs and angles shall be A709 Grade 50 steel unpainted galvanized in accordance with ASTM A123. All areas that welding, cladding or vulcanizing is to occur shall be masked off prior to galvanizing. Areas damaged by welding, cladding or vulcanizing shall be touched up in the field. All edges shall be cut or cast.
2. Fill slots and holes around anchor bolts with non-hardening caulking compound or elastic joint sealer.
3. 1000  $\mu$ in R(a) (finish all over) except where otherwise noted on these details or in the contract specifications.
4. Top of sole plate to be beveled to fit grade of roadway. Dimension "B" shall be measured at centerline bearing. Mark the thicker end of beveled sole plates to identify thicker end in field.
5. Bearings shall be placed normal to centerline of girder.
6. Bearings are designed for a construction uncertainty tolerance [AASHTO 14.4.2.I]. The tolerance is 2 times the actual rotation up to a maximum of .005 rad.
7. All anchor bolts, nuts and washers shall be unpainted galvanized in accordance with ASTM A123. Anchor bolts shall be ASTM F1554, Grade 36; nuts - ASTM A563, and washers - ASTM F436.
8. Refer to 430.03.3I for setting anchor bolts in masonry.
9. Elastomeric bearings shall be 60 durometer hardness.
10. Internal steel sheets shall be stainless steel meeting ASTM A240, Type 304.
11. All centerline of bearings and centerline of shoes are the same.
12. Bearing shoes are to be shipped as units.
13. All concrete bearing areas shall meet the surface requirements of subsection 420.03.07(C).
14. During field welding, the temperature of the steel adjacent to the elastomer or PTFE shall not exceed 200° F. Temperature shall be controlled by welding procedures and temperature indicating wax pens or other devices approved by the Engineer.
15. Polytetraflouroethylene (PTFE) self lubricating bearing elements shall be composed of 100 percent virgin (unfilled) polytetraflouroethylene (PTFE) polymer.
16. The surface of the stainless steel in contact with the PTFE shall have a surface finish less than 20  $\mu$ in R(a) and be mirror finished. Material shall be ASTM A240 Type 304. The maximum coefficient of friction for the PTFE and bearing assembly shall be  $\mu=0.08$  at 68° F.
17. Expansion bearings are designed to first slip of the bearing assembly where friction force is computed as  $\mu \times \text{max. dead load}$  ( $\mu=0.08$ ).
18. For span lengths longer than 155' or locations with seismic coefficient  $A_s > 0.05$ , the designer is responsible for designing bearings and anchor bolts.

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<i>R. C. D.</i> DIRECTOR OFFICE OF STRUCTURES
DATE: 02/23/2017
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STATE OF MARYLAND DEPARTMENT OF TRANSPORTATION STATE HIGHWAY ADMINISTRATION OFFICE OF STRUCTURES	
BEARINGS FOR PRESTRESSED CONCRETE GIRDERS GENERAL NOTES	
DETAIL NO. SUP-BR(EB)-101	SHEET <u>1</u> OF <u>1</u>

5" x 3" x 3/8" angle washer galvanized, 10" long (typ.).  
 For 1/4" dia. anchor bolt provide  
 1 5/16" dia. hole. For 1/2" dia.  
 anchor bolt provide 1 9/16" dia. hole.

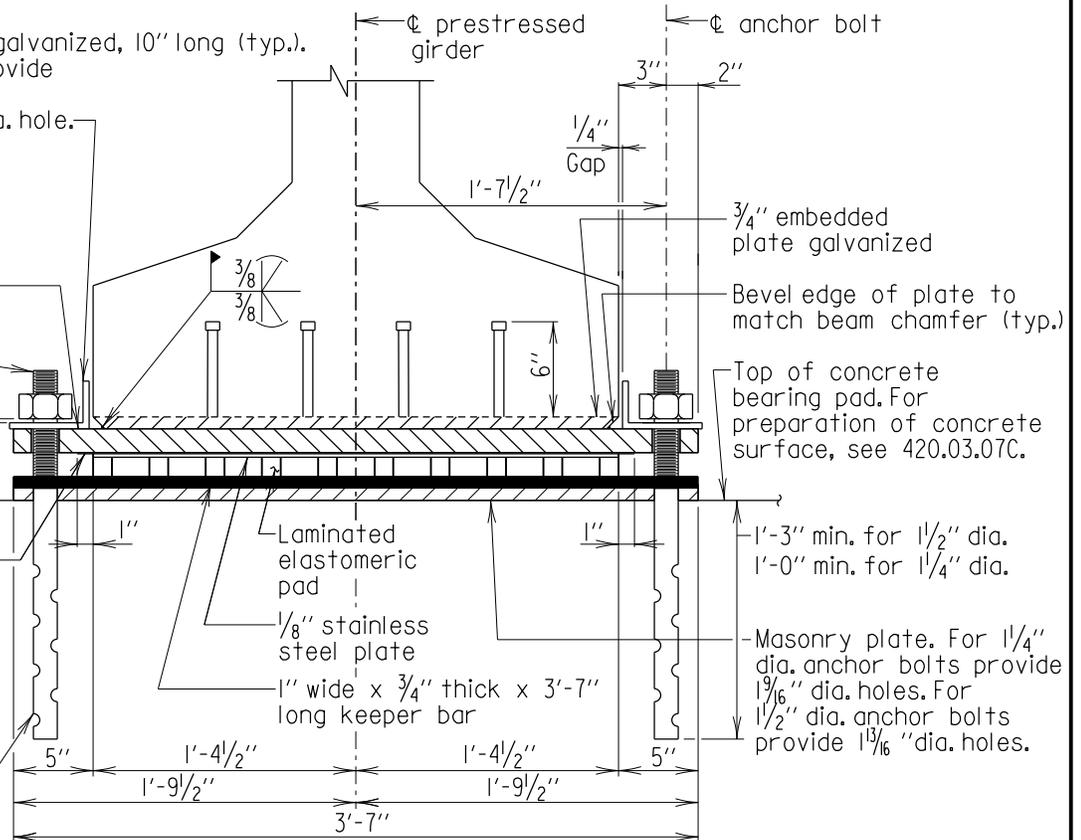
Beveled sole plate. For  
 1/4" dia. anchor bolt provide  
 1 9/16" x 2J slotted hole. For  
 1/2" dia. anchor bolt provide  
 1 13/16" x 2J slotted hole.

Burr threads above  
 and below nut

1/4" cl.

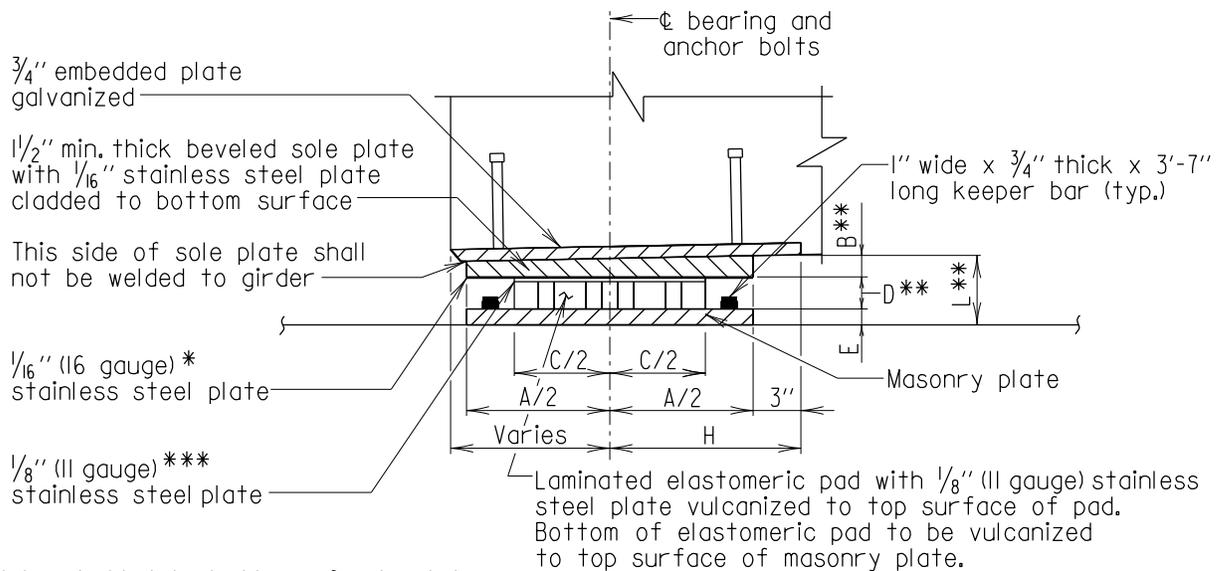
\* 1/16" (16 gauge)  
 stainless steel plate

For spans under 75' use  
 1/4" swedge anchor  
 bolts with hex. nuts. For  
 spans over 75' use 1/2"  
 dia. swedge anchor bolts  
 with hex. nuts.



**ELEVATION**

Scale: 1" = 1'-0"



\* Shall be cladded to bottom of sole plate.

\*\* Dimensions "B" and "D" do not include  
 stainless steel plates or PTFE  
 material. Dimension "L" includes all  
 plates and PTFE material. If dimpled  
 and lubricated PTFE is provided,  
 Contractor shall adjust bearing pad  
 elevations accordingly for bearing  
 height difference and silicone  
 grease shall comply with MIL-S-8660.

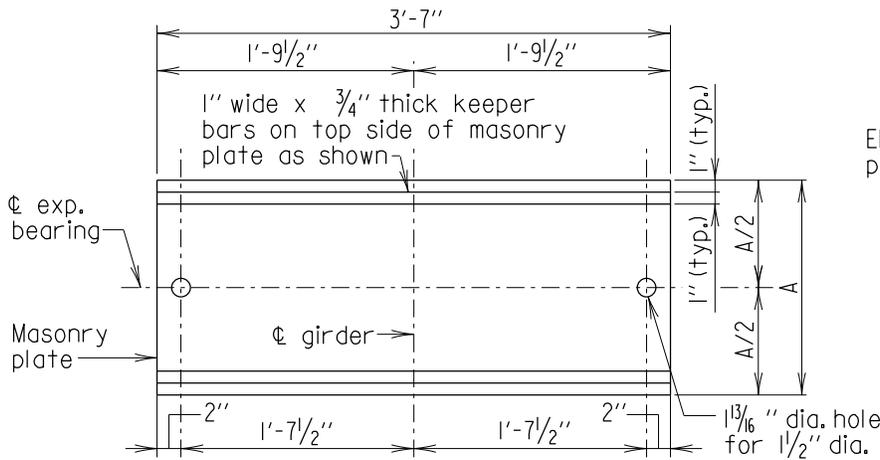
\*\*\* 3/32" PTFE material to be bonded to  
 top of 1/8" stainless steel plate.

**SIDE VIEW**  
 Scale: 1" = 1'-0"

Note:  
 Anchor bolt not  
 shown for clarity.

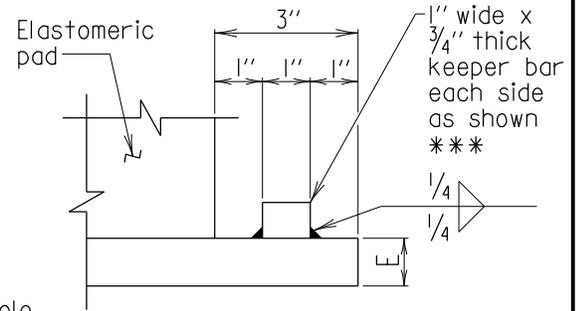
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DATE: 02/23/2017
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STATE OF MARYLAND DEPARTMENT OF TRANSPORTATION STATE HIGHWAY ADMINISTRATION OFFICE OF STRUCTURES	
<b>EXPANSION BEARINGS FOR PCEF BULB TEE          PRESTRESSED CONCRETE GIRDERS</b>	
DETAIL NO. SUP-BR(EB)-102	SHEET <u>1</u> OF <u>3</u>



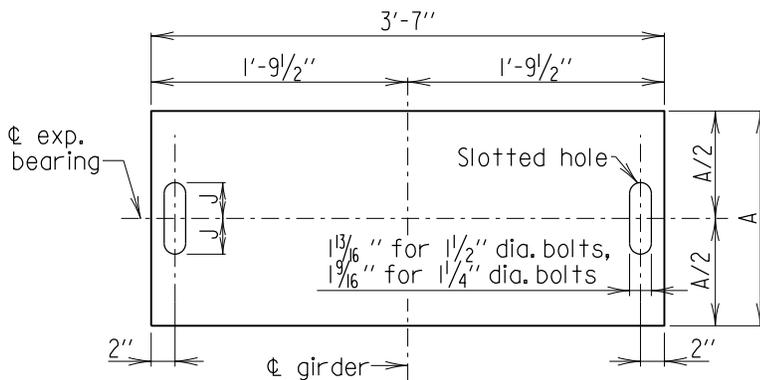
**MASONRY PLATE DETAIL - PLAN**

Scale: 3/4" = 1'-0"



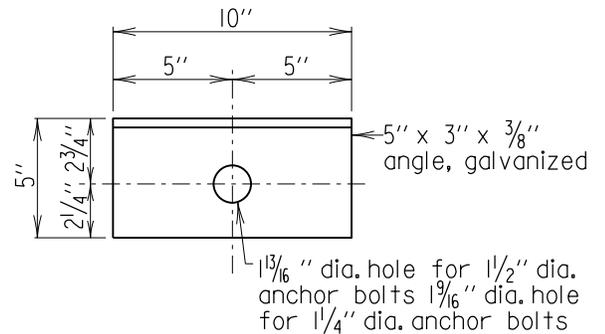
**KEEPER BAR DETAIL - SIDE VIEW**

Scale: 3" = 1'-0"



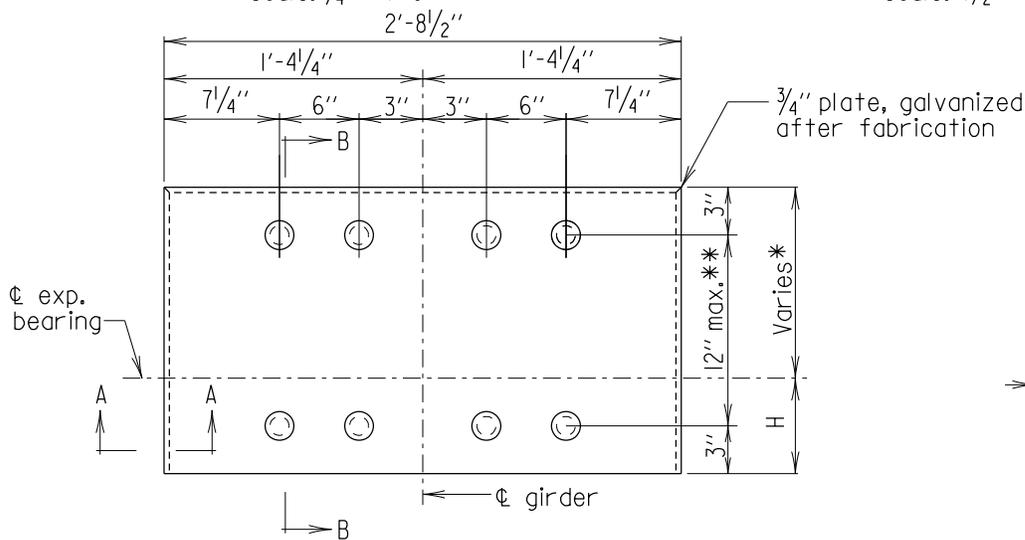
**SLOTTED SOLE PLATE DETAIL - PLAN**

Scale: 3/4" = 1'-0"  
2'-8 1/2"



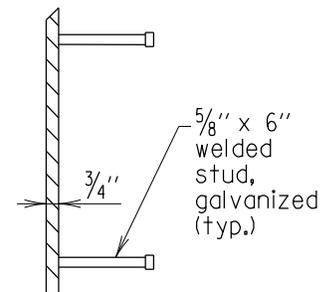
**EXPANSION BEARING ANGLE WASHER - PLAN**

Scale: 1/2" = 1'-0"



**EMBEDDED PLATE DETAIL - PLAN**

Scale: 1" = 1'-0"



**SECTION B-B**

Scale: 1" = 1'-0"

Note:  
Place studs normal to embedded plates.

\* See girder elevation for dimension.

\*\* Provide additional row(s) of studs for spacing larger than 12".

\*\*\* Keeper bar may be shop welded or milled from a thicker sole plate.

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EXPANSION BEARINGS FOR PCEF BULB TEE PRESTRESSED CONCRETE GIRDERS	
DETAIL NO. SUP-BR(EB)-102	SHEET 2 OF 3

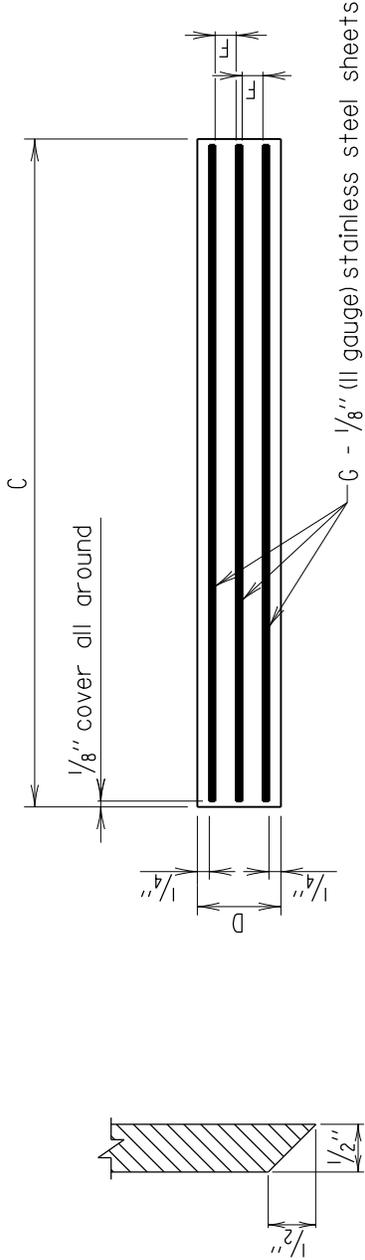
DATA SCHEDULE

Type	Sole Plate		Elastomeric Pad				Elastomeric layers		Embedded plate	Slotted hole	Hgt.	Masonry plate
	A	B	C	D	F	G	H	J				
PBE-I	11/2	3/4	5/2	3/4	7/16	3	8 3/4	3	5/16	1/4		
PBE-II	12	3/4	6	3/4	7/16	3	9	3	5/16	1/4		
PBE-III	13	3/4	7	3/4	7/16	3	9 1/2	3	5/16	1/4		
PBE-IV	13 1/2	2	7 1/2	2 5/16	7/16	4	9 3/4	3 1/2	6/8	1/2		
PBE-V	14	2	8	2 5/16	7/16	4	10	3 1/2	6/8	1/2		
PBE-VI	15	2	9	2 5/16	7/16	4	10 1/2	3 1/2	6/8	1/2		
PBE-VII	16	2	10	2 7/8	7/16	5	11	3 1/2	6 1/16	1/2		

DATA SCHEDULE (cont'd)

Type	Anchor bolt	Vertical Loads (Kips)		Thermal expansion	Rotation (radians)	PTFE Area (in <sup>2</sup> )	PTFE Max. DL Stress (ksi)
		Dead+Live (Max.)	Dead (Min.)				
PBE-I	1/4	135	50	± 2/4	0.002	181.5	0.275
PBE-II	1/4	180	80	± 2/4	0.003	198	0.404
PBE-III	1/4	205	95	± 2/4	0.004	231	0.411
PBE-IV	1/2	250	130	± 2 5/8	0.004	247.5	0.525
PBE-V	1/2	290	160	± 2 5/8	0.005	264	0.606
PBE-VI	1/2	340	200	± 2 5/8	0.005	297	0.673
PBE-VII	1/2	390	240	± 2 5/8	0.006	330	0.727

Notes: 1. All dimensions are in inches unless otherwise noted.  
 2. All loads are load combination Service I.



SECTION A-A

Scale: None

SIDE VIEW SECTION LAMINATED ELASTOMERIC BEARING PAD

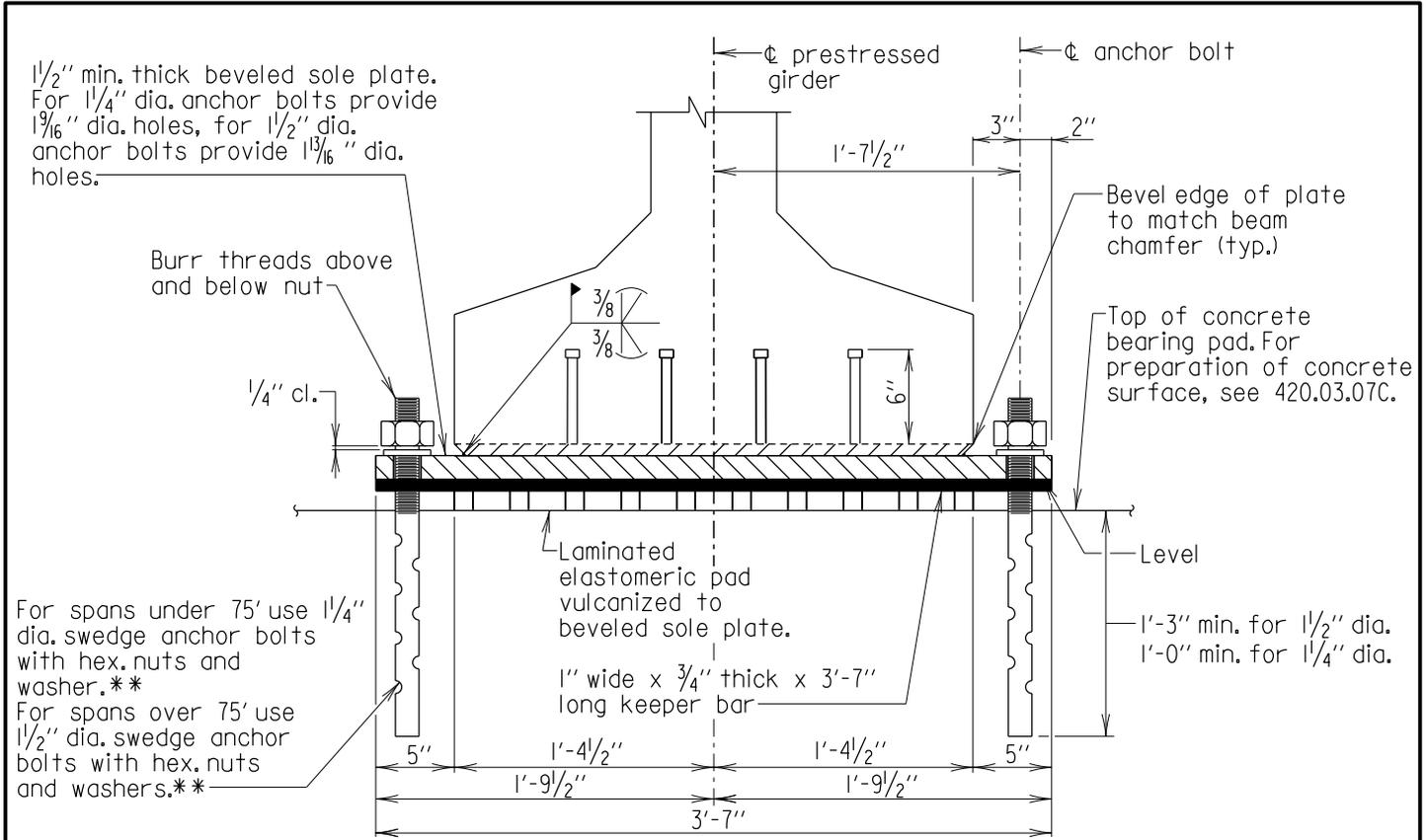
Scale: 3" = 1'-0"

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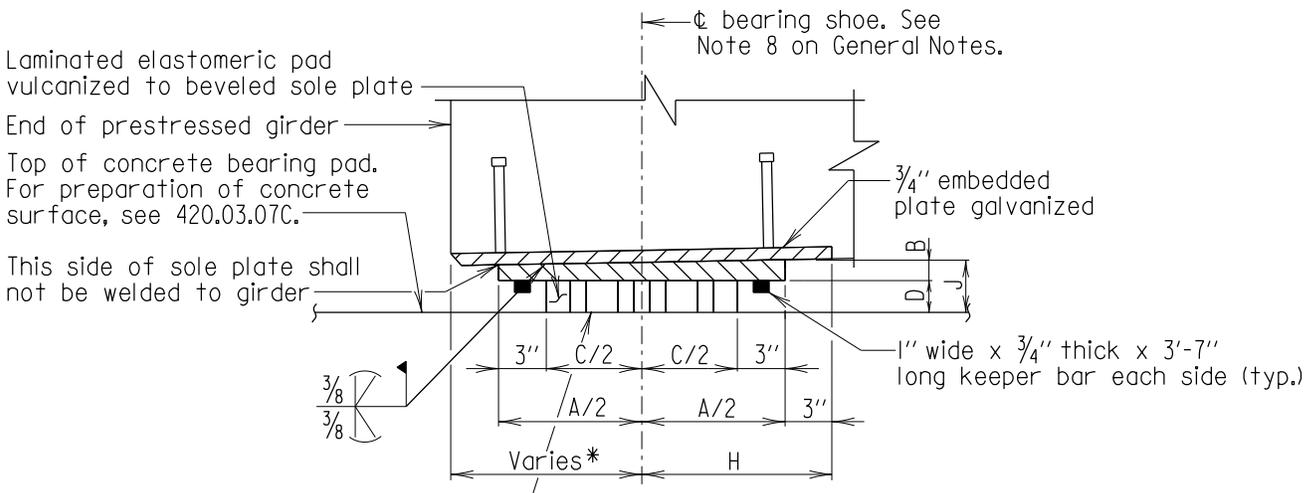
**EXPANSION BEARINGS FOR PCF BULB TEE  
 PRESTRESSED CONCRETE GIRDERS**

DETAIL NO. SUP-BR(EB)-102 SHEET 3 OF 3



**ELEVATION**

Scale: 1" = 1'-0"



**SIDE VIEW**

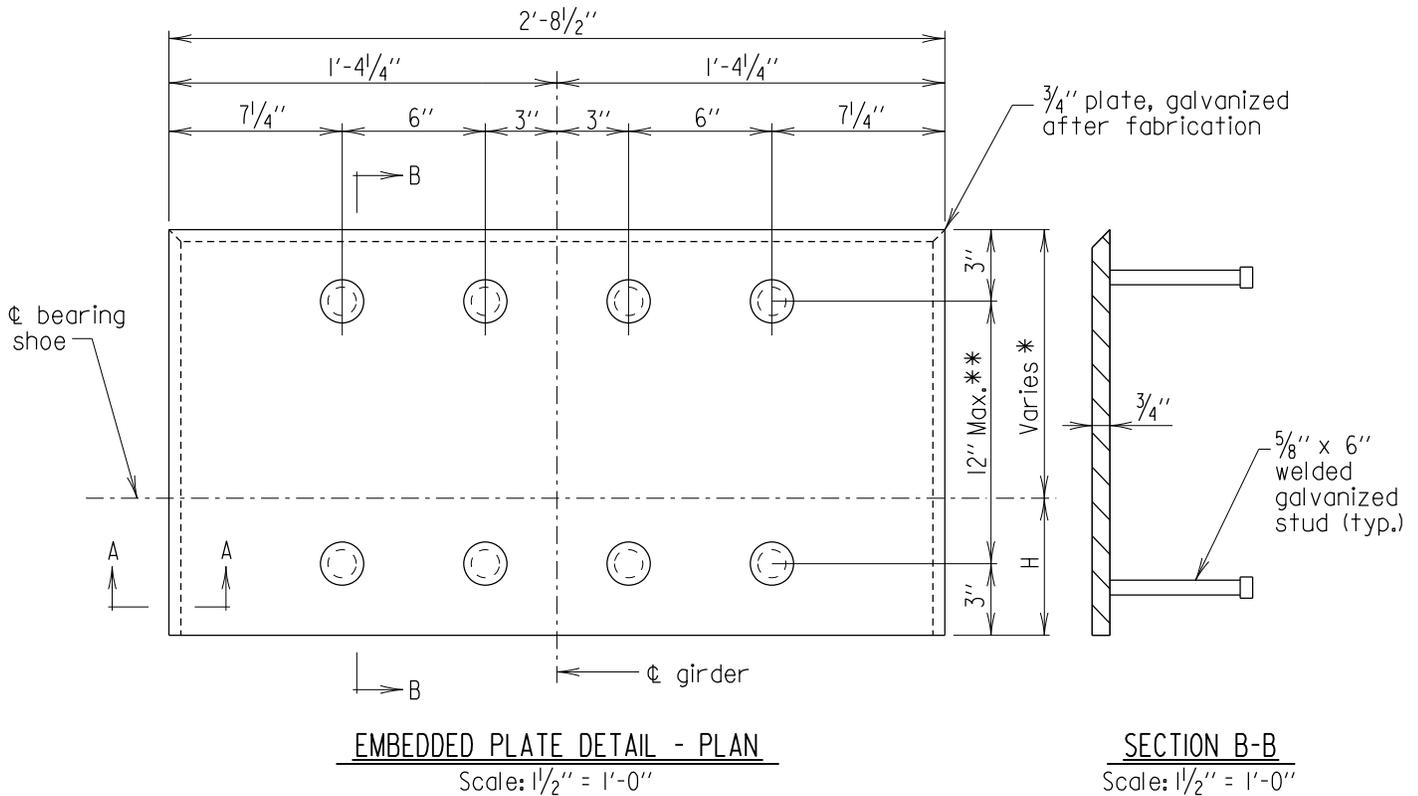
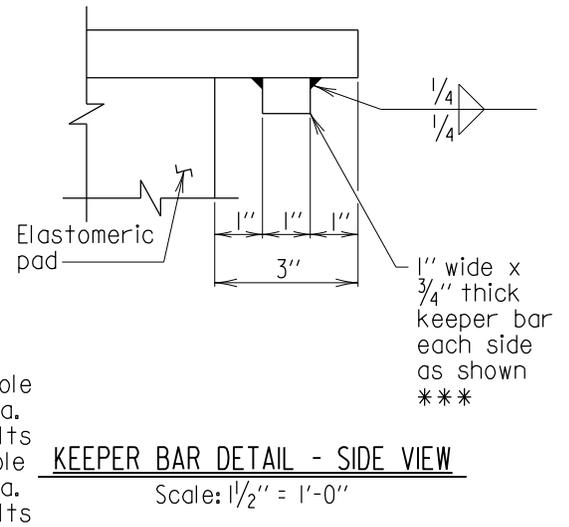
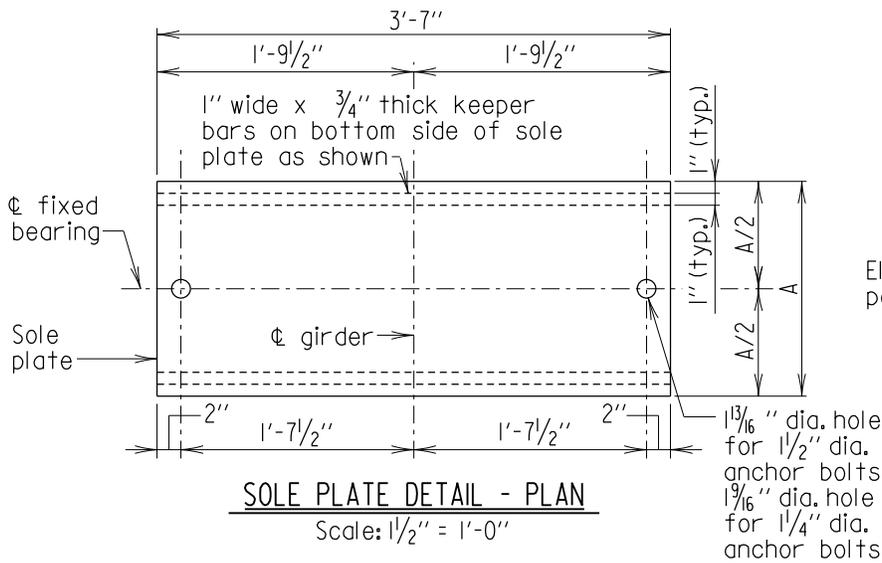
Scale: 1" = 1'-0"

Note:  
Anchor bolt not shown for clarity.

\* See girder elevation for details.  
\*\* Washers shall be ASTM F436.

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STATE OF MARYLAND DEPARTMENT OF TRANSPORTATION STATE HIGHWAY ADMINISTRATION OFFICE OF STRUCTURES	
FIXED BEARINGS FOR PCEF BULB TEE PRESTRESSED CONCRETE GIRDERS	
DETAIL NO. SUP-BR(EB)-103	SHEET <u>1</u> OF <u>3</u>



Note:  
Place studs normal to embedded plates.

\*See girder elevation for dimension.

\*\*Provide additional row(s) of studs for spacing larger than 12".

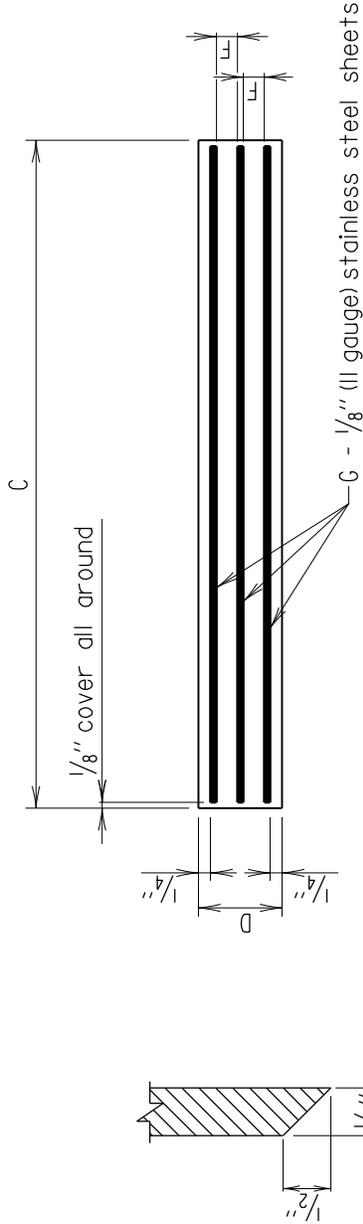
\*\*\*Keeper bar may be shop welded or milled from a thicker sole plate.

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STATE OF MARYLAND DEPARTMENT OF TRANSPORTATION STATE HIGHWAY ADMINISTRATION OFFICE OF STRUCTURES	
FIXED BEARINGS FOR PCEF BULB TEE PRESTRESSED CONCRETE GIRDERS	
DETAIL NO. SUP-BR(EB)-103	SHEET 2 OF 3

DATA SCHEDULE														
Type	Sole Plate		Elastomeric Pad		Elastomeric layers			Embedded plate		Hgt.	Anchor Bolt	Vertical Loads (Kips)		Rotation (radians)
	A	B	C	D	F	G	H	L	Dead+Live (Max.)			Dead (Max.)	Dead (Min.)	
PBF-I	1 1/2	1 3/4	5/2	1 3/4	7/16	3	8 3/4	3 1/2	1 1/4	135	50	20	0.002	
PBF-II	12	1 3/4	6	1 3/4	7/16	3	9	3 1/2	1 1/4	180	80	30	0.003	
PBF-III	13	1 3/4	7	1 3/4	7/16	3	9 1/2	3 1/2	1 1/4	205	95	35	0.004	
PBF-IV	13 1/2	2	7 1/2	2 5/16	7/16	4	9 3/4	4 5/16	1 1/2	250	130	45	0.004	
PBF-V	14	2	8	2 5/16	7/16	4	10	4 7/16	1 1/2	290	160	60	0.005	
PBF-VI	15	2	9	2 5/16	7/16	4	10 1/2	4 7/16	1 1/2	340	200	120	0.005	
PBF-VII	16	2	10	2 7/8	7/16	5	11	4 7/8	1 1/2	390	240	190	0.006	

Notes: 1. All dimensions are in inches unless otherwise noted.  
 2. All loads are load combination Service I.



SIDE VIEW SECTION LAMINATED ELASTOMERIC BEARING PAD

Scale: 3" = 1'-0"

SECTION A-A

Scale: None

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**FIXED BEARINGS FOR PCEF BULB TEE  
 PRESTRESSED CONCRETE GIRDERS**

DETAIL NO. SUP-BR(EB)-103 SHEET 3 OF 3