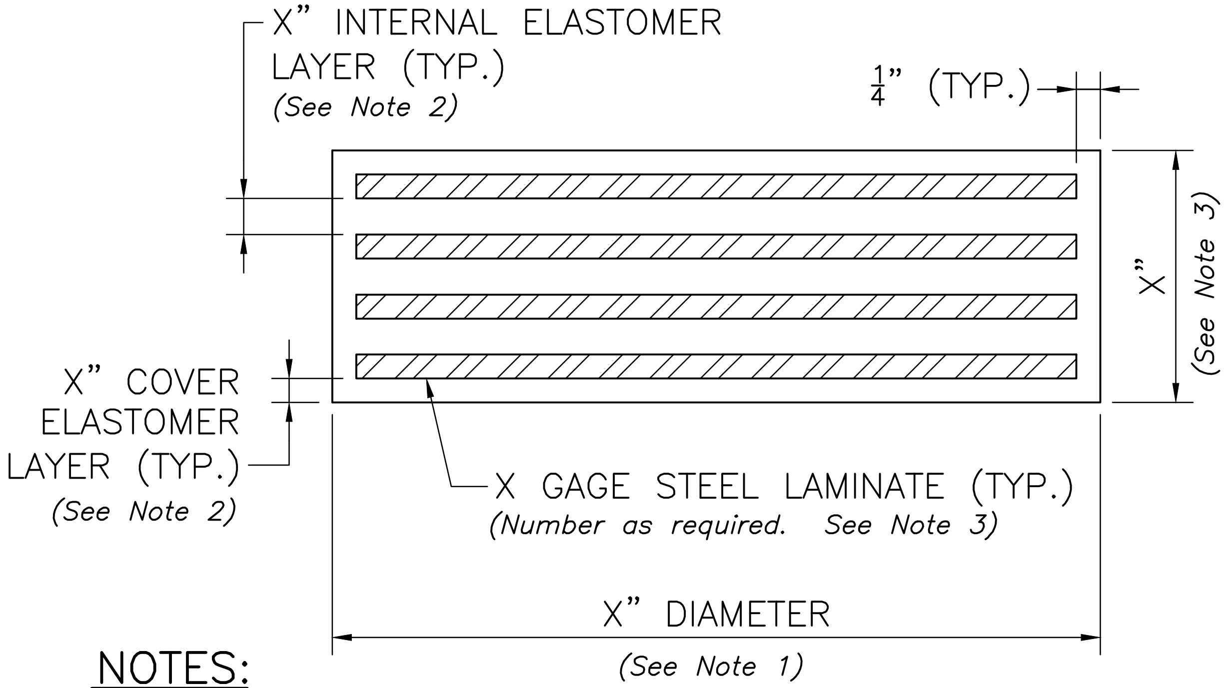


NOTES:

1. ELASTOMER SHALL HAVE A SHEAR MODULUS OF 0.160 KSI.

2. STEEL LAMINATES SHALL CONFORM TO ASTM A 1011 GRADE 36.

3. THE COMPRESSIVE DESIGN LOAD ON THE BEARING PAD IS XXX KIPS. THE COMPRESSIVE DESIGN STRESS IS THE RESULT OF DIVIDING THE COMPRESSIVE DESIGN LOAD BY THE AREA OF THE PAD AND IS EQUAL TO XXX KSI.

4. ELASTOMERIC BEARING PAD SHALL NOT BE VULCANIZED TO THE SOLE PLATE.

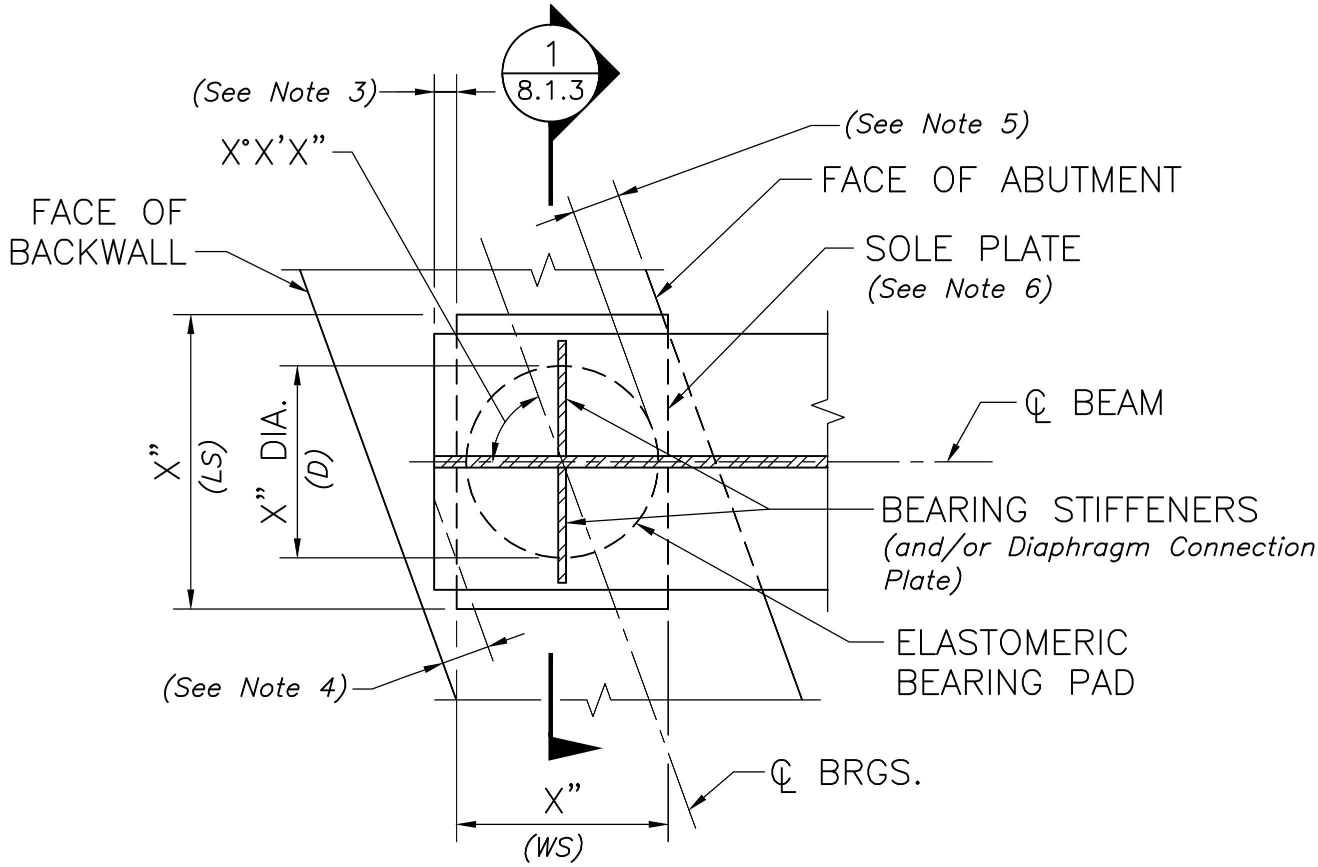
ELASTOMERIC BEARING PAD

NOT TO SCALE

NOTES:

1. *Bearing diameter shall be set to even increments of 1", for example: 6", 7", etc.*
2. *The minimum thickness of the individual internal elastomer layer shall be 3/8". Top and bottom cover layers shall be 1/4" for bearings with thickness less or equal to 5" and 1/2" for thicker bearings. Furthermore, cover layers shall be no thicker than 70% of the individual internal layer.*
3. *Steel laminates shall have a minimum thickness of 11 gage (0.1196"). Actual decimal thickness of steel laminates in inches shall be used to calculate total bearing thickness.*
4. *All elastomeric bearing pads for steel beams for a given structure shall have a constant thickness and shall be set level.*
5. *All elastomeric bearing pads on any substructure unit shall have the same nominal compressive stiffness.*
6. *See Chapters 3 and 5 of Part II of the Bridge Manual for additional guidelines on locating elastomeric bearings.*
7. *See Chapter 3, Part I of the Bridge Manual for bearing design requirements.*

massDOT Massachusetts Department of Transportation Highway Division LRFD BRIDGE MANUAL, PART II	ELASTOMERIC BEARING PAD STANDARD DETAIL ELASTOMERIC BEARINGS – STEEL BEAMS	DATE OF ISSUE JUNE 2013 DRAWING NUMBER **8.1.1**



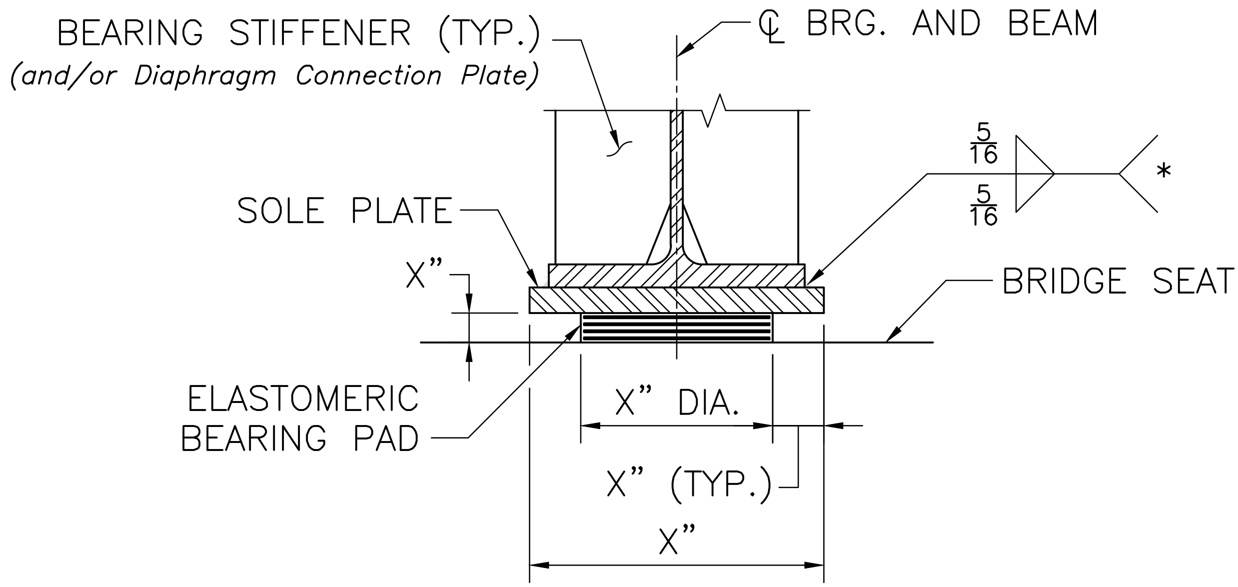
PLAN

SCALE: 1" = 1'-0"

NOTES:

1. Shown above is the standard MassDOT bearing assembly, which satisfies the standard MassDOT "bridge floating" concept, as discussed in Section 3.4 of Part I of this Bridge Manual, and shall be used wherever possible.
2. D = Diameter of Elastomeric Bearing Pad;
   LS = Length of Sole Plate = The greatest of: (D + 2") or (Width of bottom flange + 2");
   WS = Width of Sole Plate = D + 2".
3. The end of the beam and sole plate may be flush, however the sole plate cannot extend beyond the beam end. If required, increase the length of beam so that it stays flush with the sole plate.
4. If necessary, cope sole plate and beam bottom flange to maintain a minimum of 3" clearance.
5. Depending on the bearing pad size, the width of the bridge seat may need to be increased to maintain a minimum of 3" clearance.
6. Sole plate should be tapered if slope of beam bottom flange due to roadway grade and camber exceeds 1%. Provide detail of tapered sole plate as shown on Dwg. No. 8.1.6.
7. Minimum thickness of sole plate after beveling shall be 1½" if weld made in field is directly over elastomer. Beveled plates may be as thin as ¾" if there is a lateral separation between the weld and elastomer of 1½" thick or greater.

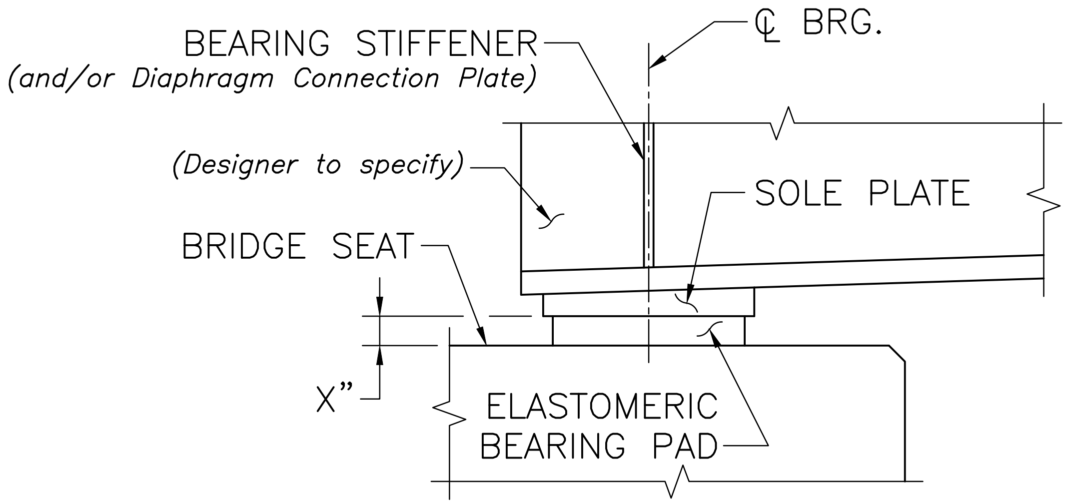
massDOT Massachusetts Department of Transportation Highway Division LRFD BRIDGE MANUAL, PART II	ELASTOMERIC BEARING PAD ASSEMBLY PLAN ELASTOMERIC BEARINGS – STEEL BEAMS	DATE OF ISSUE JUNE 2013 DRAWING NUMBER **8.1.2**



(*) – WELDS SHALL TERMINATE ¼" FROM EDGE OF PLATE.

SECTION 1

SCALE: 1" = 1'–0"



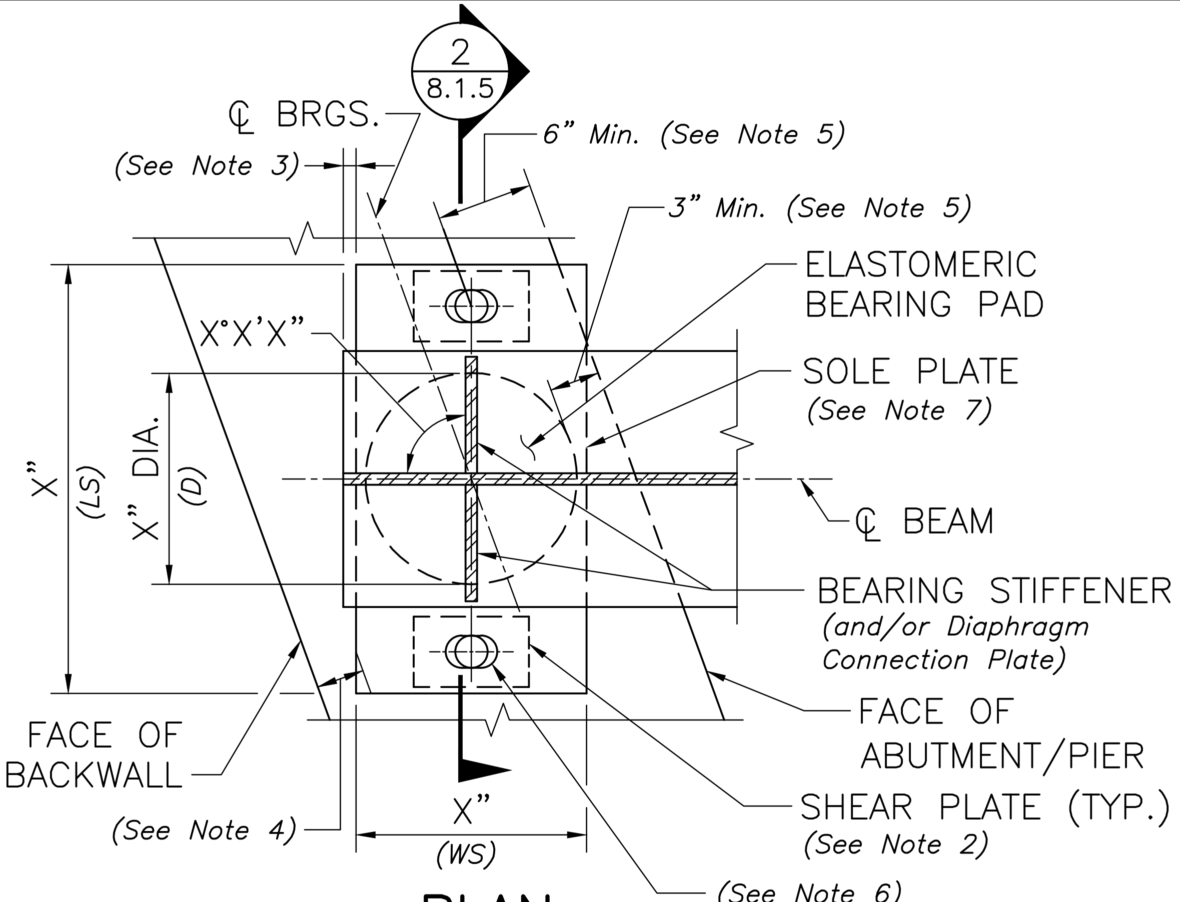
ELEVATION

SCALE: 1" = 1'–0"

NOTES:

For Designer Notes see Dwg. No. 8.1.2.
For Construction Notes see Dwg. No. 8.1.6.

massDOT Massachusetts Department of Transportation Highway Division LRFD BRIDGE MANUAL, PART II	STANDARD BEARING ASSEMBLY SECTION AND ELEVATION ELASTOMERIC BEARINGS – STEEL BEAMS	DATE OF ISSUE JUNE 2013 DRAWING NUMBER **8.1.3**



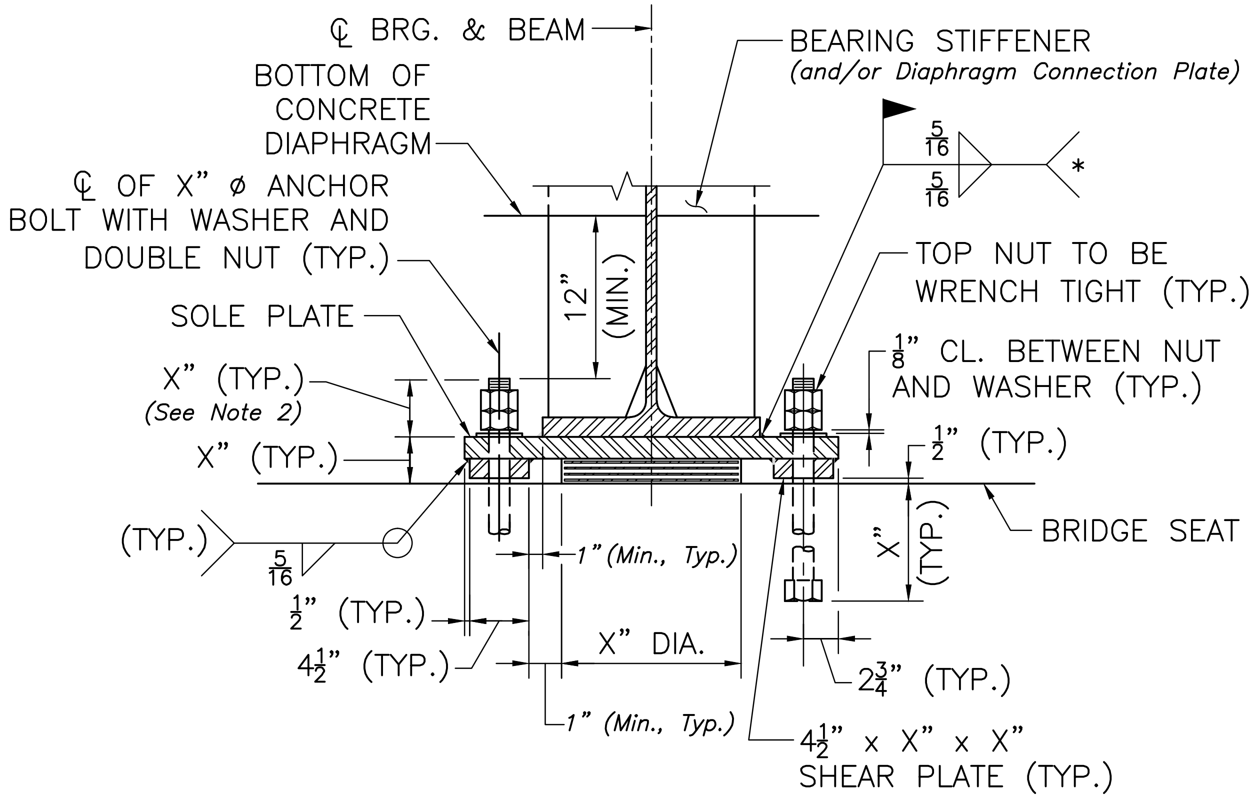
PLAN

SCALE: 1" = 1'–0"

NOTES:

1. *This bearing shall be used only in situations where the standard bearing assembly shown on Dwg. No. 8.1.2 cannot be used (i.e. some bridge retrofits, where no keeper blocks, keys and backwalls can be provided as longitudinal and/or transverse restraint to the superstructure). It must never be used with the full depth diaphragms detailed in Chapter 3 of Part II of this Bridge Manual, as well as to provide seismic restraint in situations where the seismic ground acceleration coefficient As ≥ 0.05.*
2. *D = Diameter of Elastomeric Bearing Pad; WS = D+2";*
   For anchor bolts not exceeding $1\frac{1}{2}$" ø, LS = (D or width of bottom flange, whichever is greater)+12"; For anchor bolts greater than $1\frac{1}{2}$" ø, LS shall be determined by Designer.
   Length of shear plate = (length of slot) + 3", or for oversized holes = WS/2.
3. *The end of the beam and sole plate may be flush, however the sole plate cannot extend beyond the beam end. If required, increase the length of beam so that it stays flush with sole plate.*
4. *If necessary, cope sole plate and beam bottom flange to maintain a minimum of 3" clearance.*
5. *Depending on the bearing size, the width of the bridge seat may need to be increased to maintain this clearance.*
6. *Use slotted hole where longitudinal expansion is required.*
   Width of slot = (bolt diameter x 1.25), rounded up to nearest $\frac{1}{4}$".
   Length of slot = (calculated total thermal movement range x 1.5) + (width of slot), rounded up to nearest $\frac{1}{4}$".
   Where a fixed bearing is required, substitute an oversized hole for a slot. Diameter of hole = (bolt diameter x 1.25), rounded up to nearest $\frac{1}{4}$".
7. *Sole plate must be tapered if slope of beam bottom flange due to roadway grade and camber exceeds 1%. Provide detail of tapered sole plate as shown on Dwg. No. 8.1.6.*

massDOT Massachusetts Department of Transportation Highway Division LRFD BRIDGE MANUAL, PART II	BEARING WITH ANCHOR BOLTS PLAN ELASTOMERIC BEARINGS – STEEL BEAMS	DATE OF ISSUE JUNE 2013 DRAWING NUMBER **8.1.4**



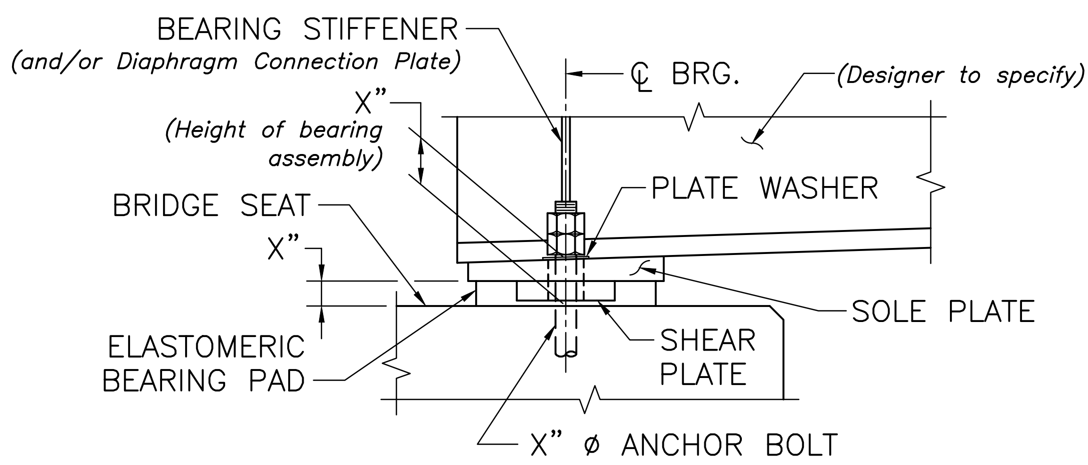
(*) – WELDS SHALL TERMINATE $\frac{1}{4}$" FROM EDGE OF PLATE, MASKING AND TOUCH–UP PER STANDARD SPECIFICATIONS.

NOTES:

1. *Typical dimensions shown are for anchor bolts no larger than $1\frac{1}{2}$" ø. For bolts of larger diameters these dimensions shall be adjusted accordingly.*
2. *Designer shall calculate this dimension to insure a minimum thread runout of $\frac{1}{2}$". Round up dimension to nearest $\frac{1}{2}$".*

SECTION 2

SCALE: 1" = 1'–0"

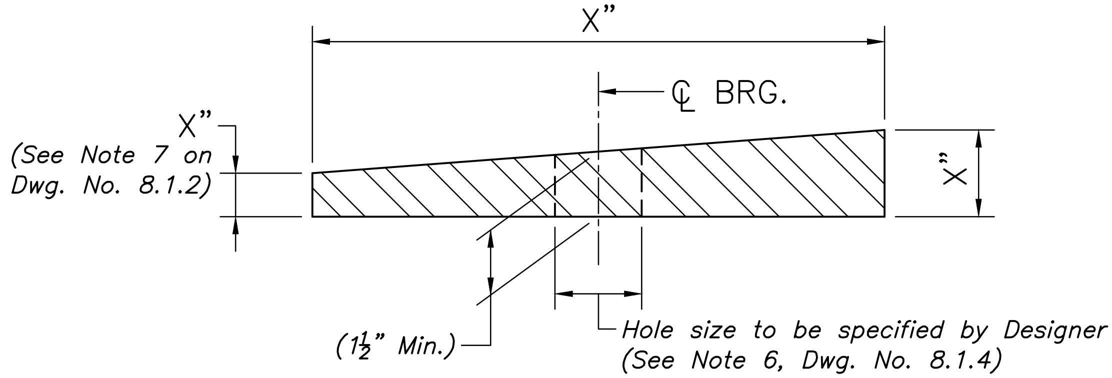


ELEVATION

SCALE: 1" = 1'–0"

NOTE:
For additional Designer Notes see Dwg. No. 8.1.4

massDOT Massachusetts Department of Transportation Highway Division LRFD BRIDGE MANUAL, PART II	BEARING WITH ANCHOR BOLTS SECTION AND ELEVATION ELASTOMERIC BEARINGS – STEEL BEAMS	DATE OF ISSUE JUNE 2013 DRAWING NUMBER **8.1.5**



SOLE PLATE DETAIL

SCALE: 3" = 1'-0"

BEARING NOTES: *(for use with details on Dwg. No.'s 8.1.2 and 8.1.3)*

1. STEEL SOLE PLATE SHALL CONFORM TO AASHTO M 270 GRADE 36 AND SHALL BE HOT-DIP GALVANIZED.

2. CENTER THE ELASTOMERIC PAD UNDER THE SOLE PLATE DURING BEAM ERECTION.

3. BEAMS SHALL BE ERECTED WHEN THE AMBIENT TEMPERATURE IS BETWEEN 50 °F AND 77 °F. IF BEAMS ARE ERECTED AT OTHER AMBIENT TEMPERATURES, THEY WILL HAVE TO BE JACKED AND THE ELASTOMERIC BEARINGS RECENTERED WHEN THE TEMPERATURE RETURNS TO THAT RANGE.

BEARING NOTES: *(for use with details on Dwg. No.'s 8.1.4 and 8.1.5)*

1. STEEL SOLE PLATE AND SHEAR PLATES SHALL CONFORM TO AASHTO M 270 GRADE 36 AND SHALL BE HOT-DIP GALVANIZED.

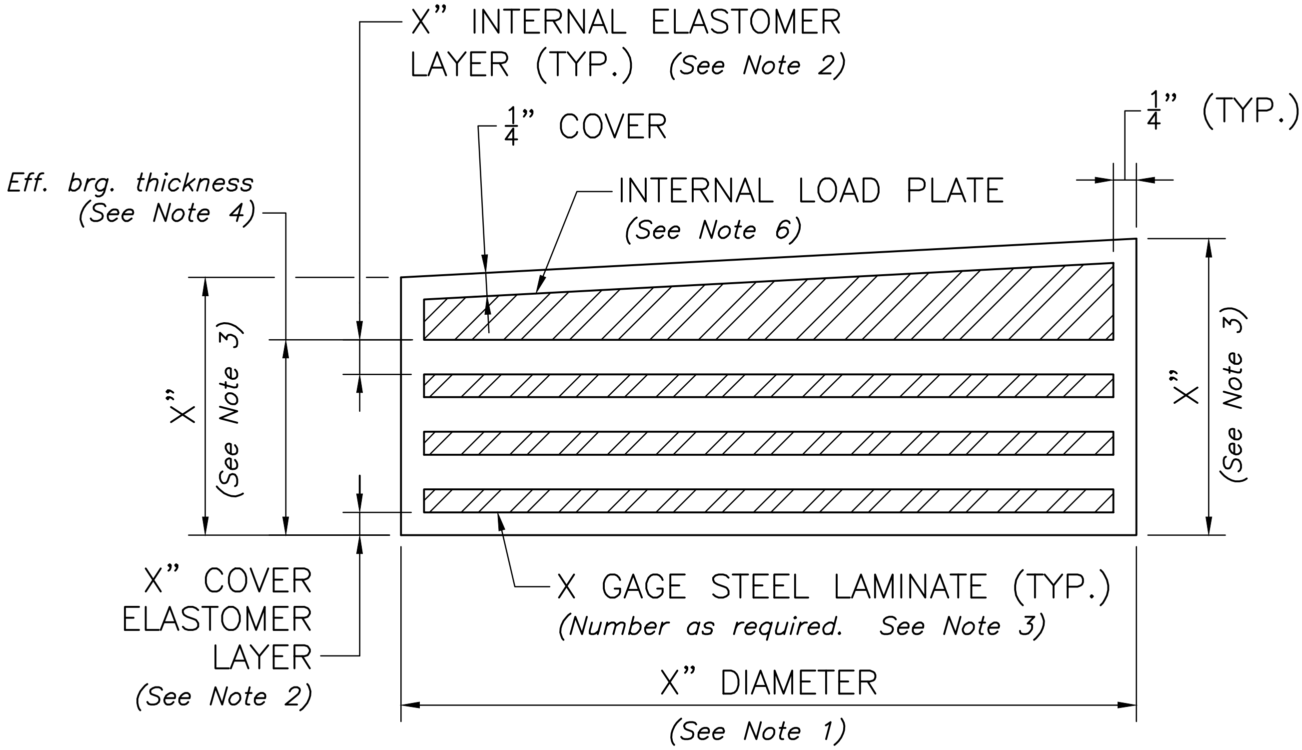
2. PLACE SOLE PLATE ASSEMBLY SO THAT IT IS CENTERED AROUND ANCHOR BOLTS. CENTER THE ELASTOMERIC PAD UNDER THE SOLE PLATE.

3. BEAMS SHALL BE ERECTED WHEN THE AMBIENT TEMPERATURE IS BETWEEN 50 °F AND 77 °F. IF BEAMS ARE ERECTED AT OTHER AMBIENT TEMPERATURES, THEY WILL HAVE TO BE JACKED AND THE SOLE PLATE ASSEMBLY AND ELASTOMERIC BEARINGS RECENTERED WHEN THE TEMPERATURE RETURNS TO THAT RANGE.

4. AFTER THE SOLE PLATE ASSEMBLY IS IN ITS FINAL POSITION, WELD IT TO THE BEAM BOTTOM FLANGE.

5. TEMPERATURE OF STEEL ADJACENT TO ELASTOMER DURING FIELD WELDING SHALL BE KEPT BELOW 250 °F.

6. ANCHOR BOLTS, NUTS, AND WASHERS SHALL CONFORM TO ASTM F 1554 GRADE 105 AND SHALL BE HOT-DIP GALVANIZED IN ACCORDANCE WITH AASHTO M 232.



NOTES:

1. ELASTOMER SHALL HAVE A SHEAR MODULUS OF 0.160 KSI.

2. STEEL LAMINATES SHALL CONFORM TO ASTM A 1011 GRADE 36 OR HIGHER.

3. THE COMPRESSIVE DESIGN LOAD ON THE BEARING PAD IS XXX KIPS. THE COMPRESSIVE DESIGN STRESS IS THE RESULT OF DIVIDING THE COMPRESSIVE DESIGN LOAD BY THE AREA OF THE PAD AND IS EQUAL TO XXX KSI.

4. TAPERED INTERNAL LOAD PLATE SHALL CONFORM TO AASHTO M 270 GRADE 36.

5. ALL BEARINGS SHALL BE MARKED PRIOR TO SHIPPING. THE MARKS SHALL INCLUDE THE BEARING LOCATION ON THE BRIDGE, AND A $\frac{1}{32}$" DEEP DIRECTION ARROW THAT POINTS UP-STATION. ALL MARKS SHALL BE PERMANENT AND BE VISIBLE AFTER BEARING IS INSTALLED.

ELASTOMERIC BEARING PAD

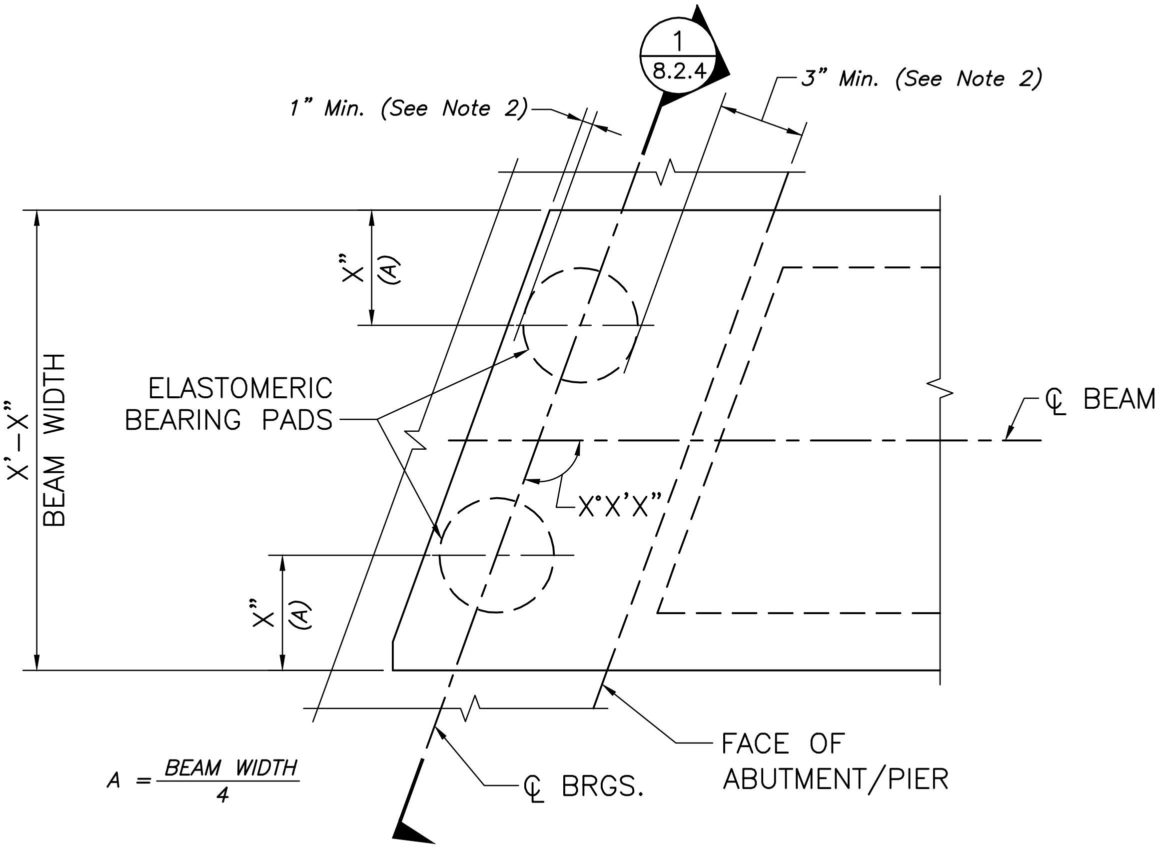
NOT TO SCALE

NOTE:
For Designer Notes see Dwg. No. 8.2.2.

massDOT Massachusetts Department of Transportation Highway Division LRFD BRIDGE MANUAL, PART II	ELASTOMERIC BEARING PAD STANDARD DETAIL ELASTOMERIC BEARINGS – CONCRETE BEAMS	DATE OF ISSUE JUNE 2013 DRAWING NUMBER **8.2.1**

NOTES: (for use with details on Dwg. No. 8.2.1)

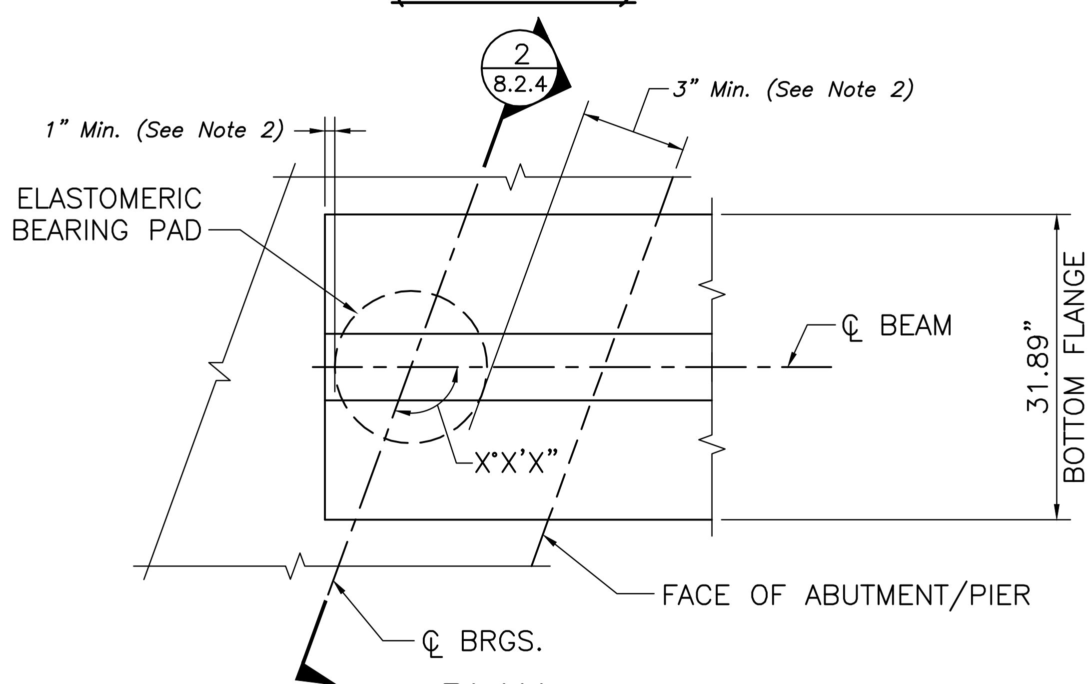
1. Bearing diameter shall be set to whole number increments of 1", for example: 6", 7", etc. For NEBT beams, minimum bearing diameter shall be set at 14" to aid beam stability during erection.
2. A minimum thickness of a single elastomer layer shall be $\frac{1}{4}$". Bottom cover layer shall be $\frac{1}{4}$" for bearings with thickness less or equal to 5" and $\frac{1}{2}$" for thicker bearings. Furthermore, it shall be no thicker than 70% of the individual internal layer.
3. Steel laminates shall have a minimum thickness of 11 gage ($\frac{1}{8}$"). Thickness of steel laminates in inches shall be used to calculate total bearing thickness.
4. Use only the elastomer layers below the tapered load plate for design. See Chapter 3, Part I of the Bridge Manual for bearing design requirements.
5. All bearings on any substructure unit shall have the same nominal compressive stiffness and shall be set level, except for adjacent beam bridges.
6. Provide tapered internal load plate if slope of beam bottom flange due to roadway grade and camber exceeds 1%, and provide detail of tapered internal load plate as shown on Dwg. No. 8.2.5. Otherwise, omit load plate, and delete Notes 4 and 5.



PLAN

SCALE: $\frac{3}{4}$" = 1'–0"

(BOX BEAMS)



PLAN

SCALE: $\frac{3}{4}$" = 1'–0"

(NEBT BEAMS)

massDOT Massachusetts Department of Transportation Highway Division

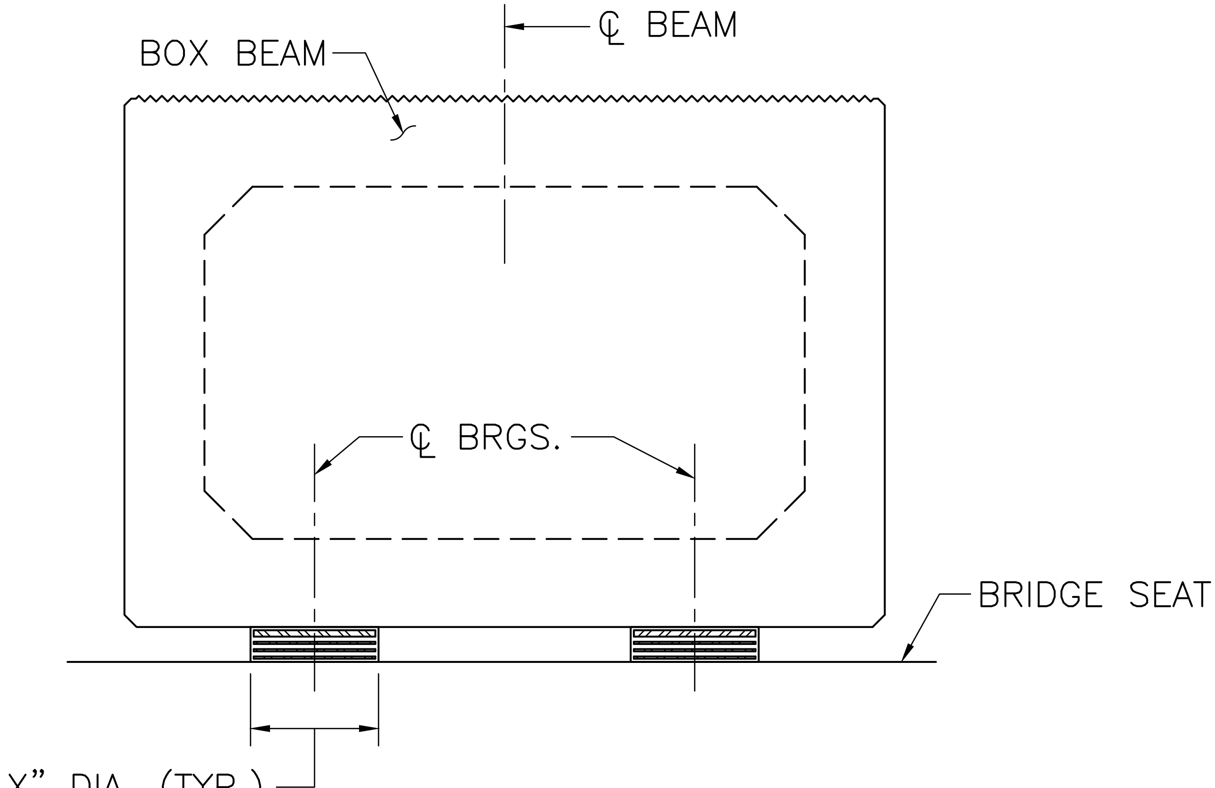
LRFD BRIDGE MANUAL, PART II

ELASTOMERIC BEARING PAD PLAN FOR BOX AND NEBT BEAMS

ELASTOMERIC BEARINGS – CONCRETE BEAMS

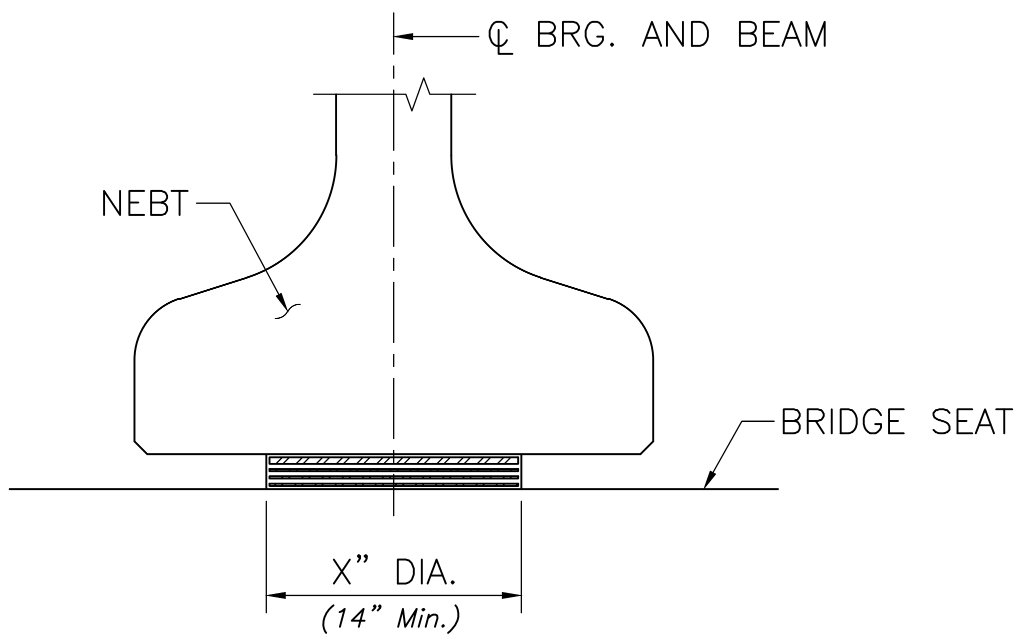
DATE OF ISSUE
JUNE 2013

DRAWING NUMBER
8.2.3



SECTION 1

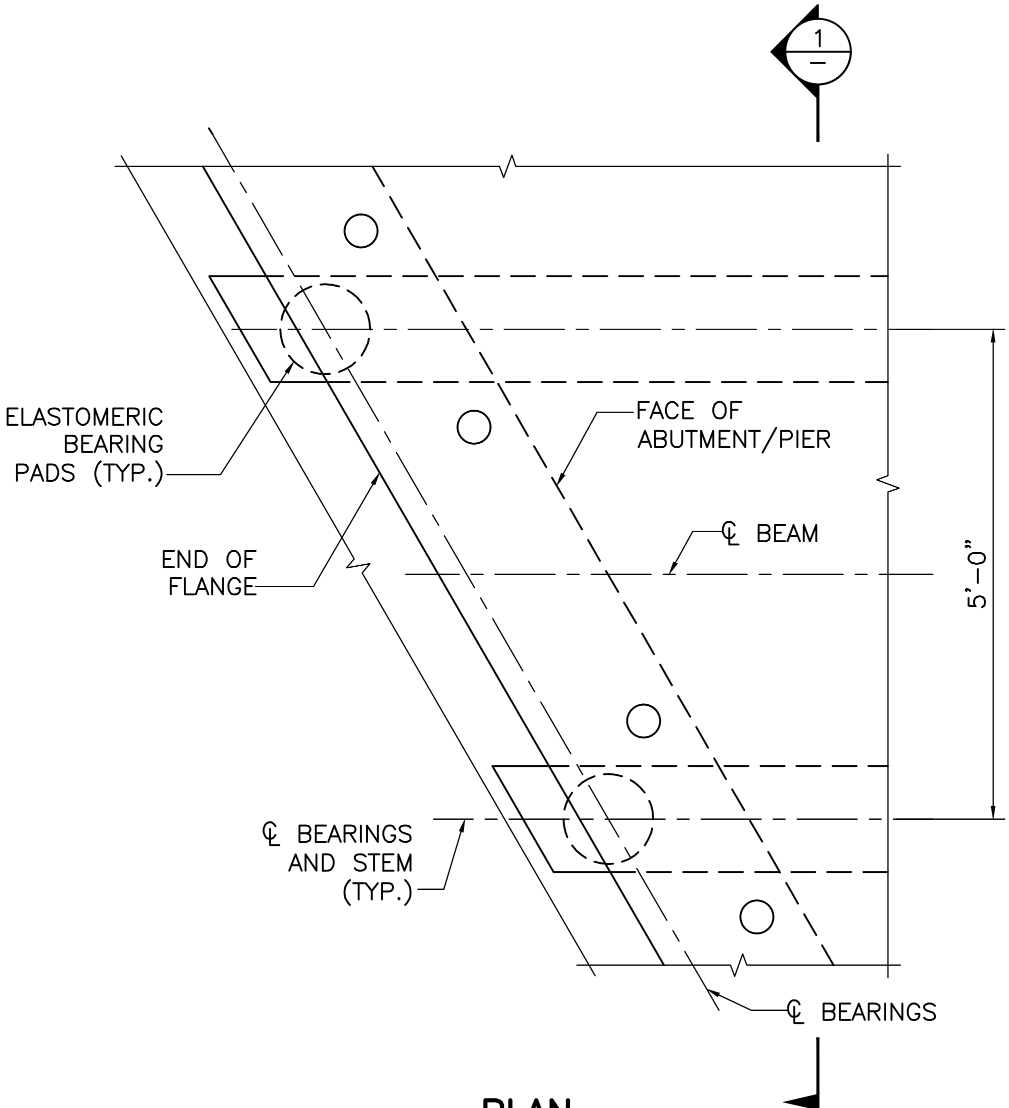
SCALE: 1" = 1'-0"



SECTION 2

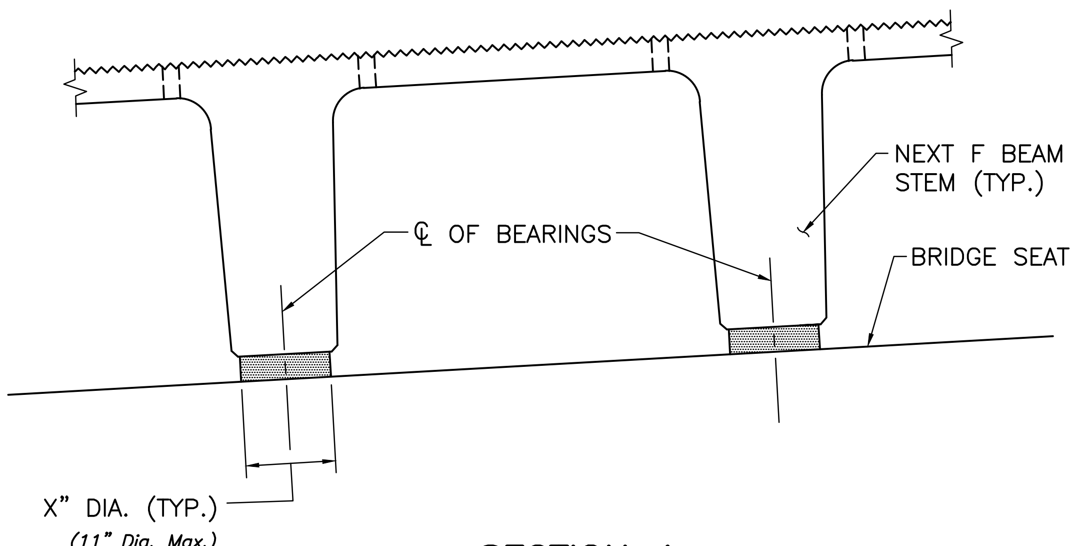
SCALE: 1" = 1'-0"

massDOT Massachusetts Department of Transportation Highway Division LRFD BRIDGE MANUAL, PART II	ELASTOMERIC BEARING PAD VERTICAL SECTION FOR BOX AND NEBT BEAMS ELASTOMERIC BEARINGS – CONCRETE BEAMS	DATE OF ISSUE JUNE 2013 DRAWING NUMBER **8.2.4**



PLAN

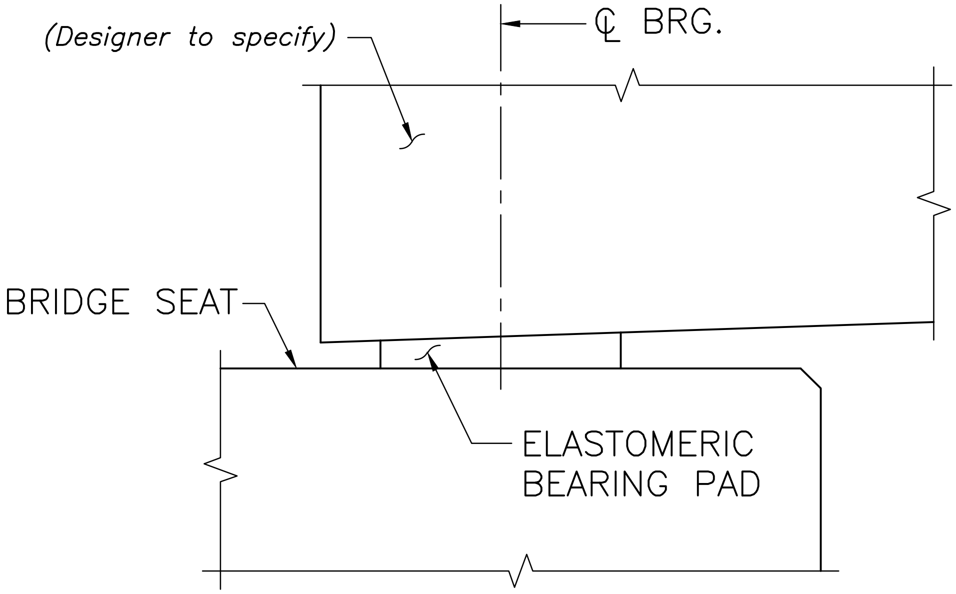
SCALE: ¾" = 1'–0"



SECTION 1

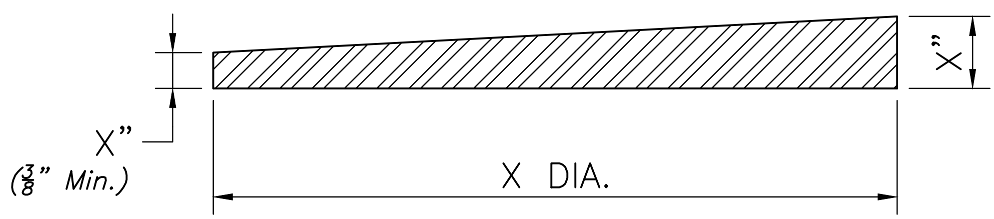
SCALE: ¾" = 1'–0"

massDOT Massachusetts Department of Transportation Highway Division LRFD BRIDGE MANUAL, PART II	ELASTOMERIC BEARING PAD PLAN AND VERTICAL SECTION FOR NEXT BEAMS	DATE OF ISSUE JUNE 2013
	ELASTOMERIC BEARINGS – CONCRETE BEAMS	DRAWING NUMBER **8.2.5**



ELEVATION

SCALE: 1" = 1'–0"



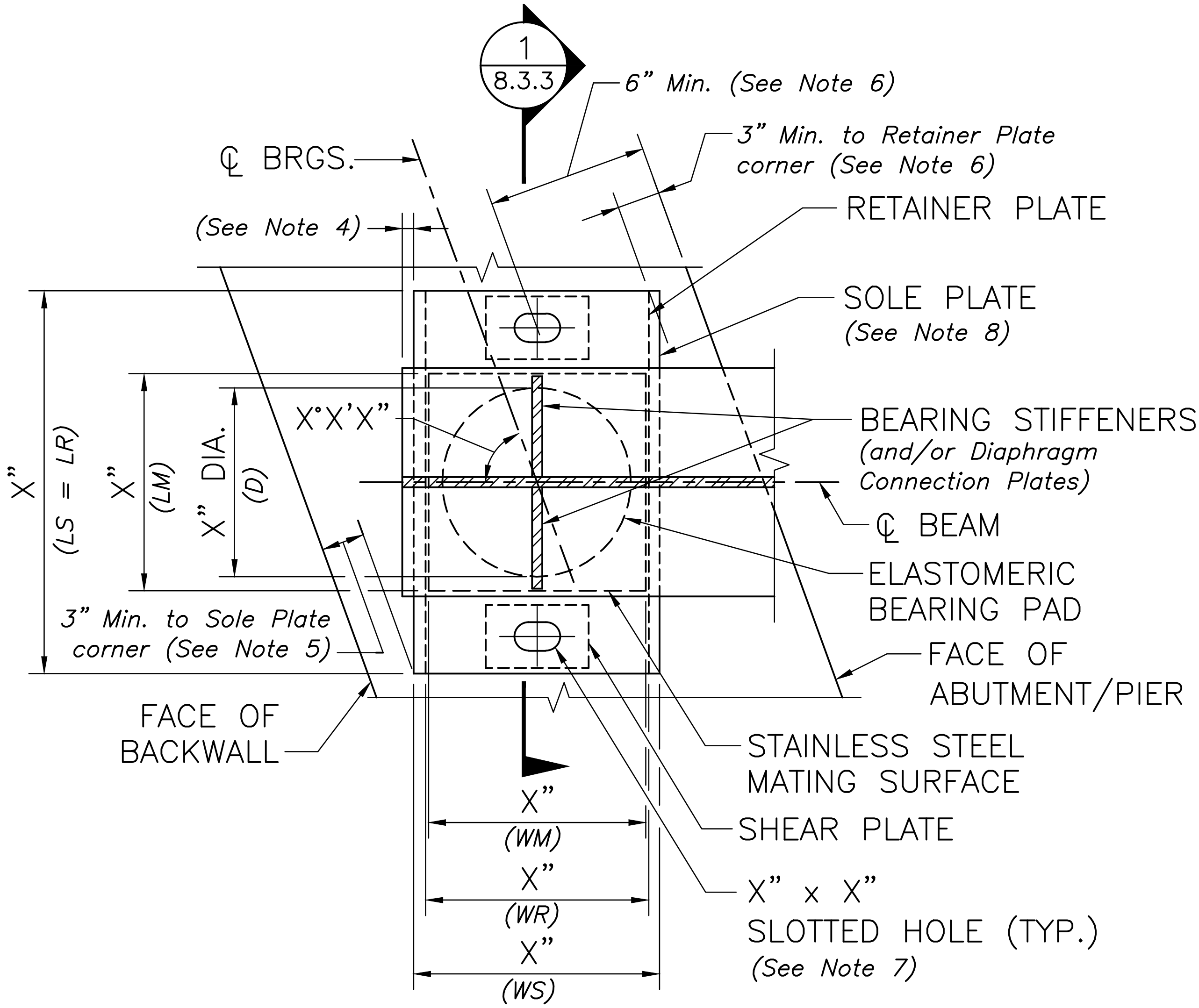
INTERNAL LOAD PLATE DETAIL

SCALE: 3" = 1'–0"

NOTES:

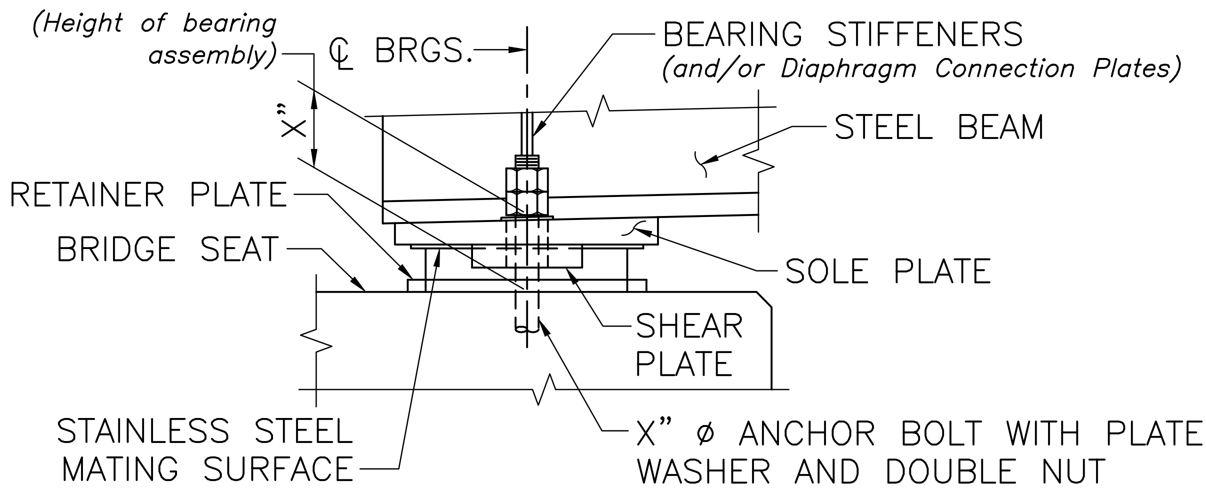
1. *These notes are to be used with plan views on Dwg. No. 8.2.3. Depending on the bearing pad size, the width of the bridge seat and the length of the beam may have to be increased to maintain the specified clearances.*
2. *See Chapters 3, 4 and 6 of Part II of the Bridge Manual for additional guidelines on locating elastomeric bearings and calculating bridge seat elevations for adjacent or spread box beams and NEBT's.*

massDOT Massachusetts Department of Transportation Highway Division LRFD BRIDGE MANUAL, PART II	ELEVATION VIEW, LOAD PLATE DETAIL AND DESIGNER NOTES ELASTOMERIC BEARINGS – CONCRETE BEAMS	DATE OF ISSUE JUNE 2013 DRAWING NUMBER **8.2.6**



PLAN

SCALE: 1" = 1'-0"



ELEVATION

SCALE: 1" = 1'-0"

massDOT Massachusetts Department of Transportation Highway Division

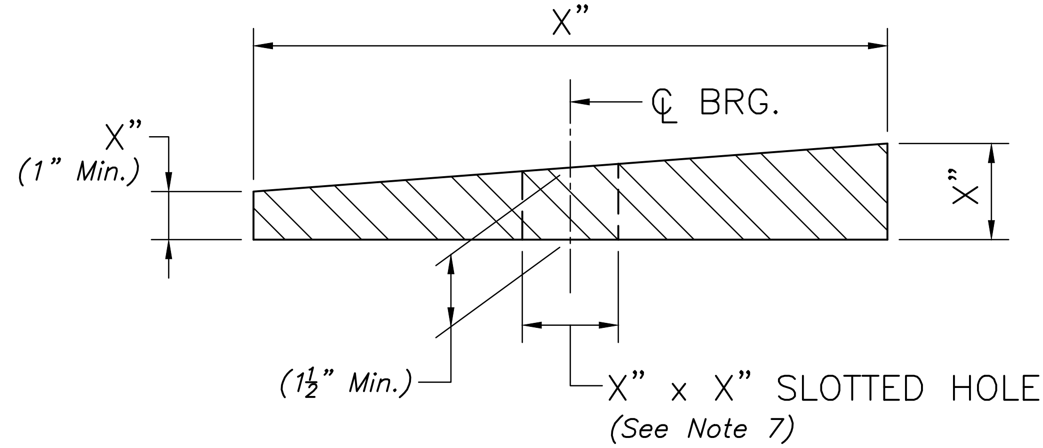
LRFD BRIDGE MANUAL, PART II

STANDARD BEARING ASSEMBLY PLAN AND ELEVATION

SLIDING BEARINGS – STEEL BEAMS

DATE OF ISSUE
JUNE 2013

DRAWING NUMBER
8.3.1

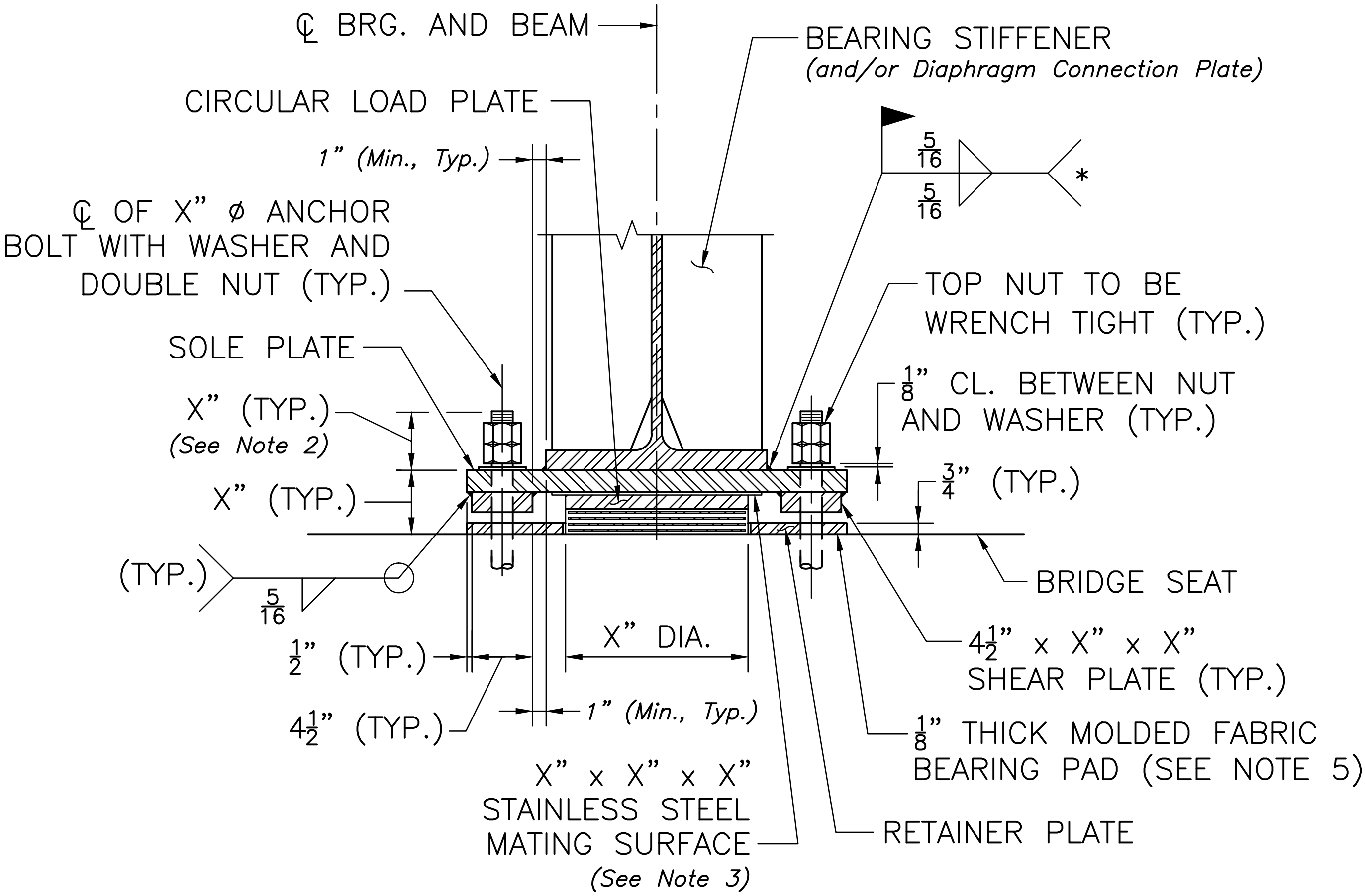


SOLE PLATE DETAIL

SCALE: 3" = 1'–0"

NOTES:

1. These notes are to be used with the details on Dwg. No. 8.3.1.
2. This type of sliding bearing shall be used where it is necessary to minimize the superstructure thermal or seismic forces on the substructure.
3. D = Diameter of Elastomeric Bearing Pad;
   LM = Length of Stainless Steel Mating Surface = D + 2";
   WM = Width of Stainless Steel Mating Surface = D + (calculated total thermal movement range x 1.5), rounded up to nearest ½";
   WS = Width of Sole Plate = WM + 1";
   LS = Length of Sole Plate =
   a) for anchor bolts not exceeding 1½" ø is equal to (LM or width of flange, whichever is greater) + 12";
   b) for anchor bolts greater than 1½" ø it shall be determined by Designer.
4. The end of the beam and sole plate may be flush, however the sole plate cannot extend beyond the beam end. If required, increase the length of beam so that it always stays flush with sole plate.
5. Width of bridge seat may need to be be increased to provide this clearance after the beam reaches its maximum thermal expansion length.
6. Width of bridge seat may need to be increased to maintain these clearances.
7. Size of slotted hole:
   Width = (bolt diameter) x 1.25, rounded up to nearest ¼".
   Length = (calculated thermal movement) x 1.5 + (width of slot), rounded up to nearest ¼".
8. Sole plate must be tapered if slope of beam bottom flange due to roadway grade and camber exceeds 1%. Provide detail of tapered sole plate as shown above.
9. Do not use the bearing assembly shown in Dwg. No. 8.3.3 with the full depth end diaphragms as shown in Section 3.7. Instead, use the bearing assebmbly shown in Dwg. No. 8.3.7.



(*) – WELDS SHALL TERMINATE $\frac{1}{4}$" FROM EDGE OF PLATE, MASKING AND TOUCH–UP PER STANDARD SPECIFICATIONS.

SECTION 1

SCALE: 1" = 1'–0"

NOTES:

1. *Typical dimensions shown are for anchor bolts no larger than $1\frac{1}{2}$" ø. For bolts of larger diameters these dimensions shall be adjusted accordingly.*
2. *Designer shall calculate this dimension to insure a minimum thread runout of $\frac{1}{2}$". Round up dimension to nearest $\frac{1}{2}$".*
3. *Minimum thickness of stainless steel mating surface shall be 14 gage if the maximum dimension of the surface is less than or equal to 12", otherwise, it shall be equal to 8 gage.*
4. *For Construction Notes and Bearing Installation Notes see Dwg. No. 8.3.4.*

massDOT Massachusetts Department of Transportation Highway Division

LRFD BRIDGE MANUAL, PART II

STANDARD BEARING ASSEMBLY – SECTION

SLIDING BEARINGS – STEEL BEAMS

DATE OF ISSUE
JUNE 2013

DRAWING NUMBER
8.3.3

These Notes shall be placed on Construction Drawings with details shown on Dwg. No's. 8.3.1, 8.3.2 and 8.3.3.

NOTES:

1. STAINLESS STEEL MATING SURFACE SHALL BE TYPE 304 CONFORMING TO ASTM A 167/A 240 WITH A SURFACE FINISH OF 8 MICRO–INCHES RMS OR BETTER. IT SHALL BE WELDED WITH AN ALL–AROUND WELD TO THE SOLE PLATE SO THAT IT REMAINS FLAT AND IN FULL CONTACT WITH THE SOLE PLATE.

2. STAINLESS STEEL MATING SURFACE SHALL BE PROTECTED FROM SCRATCHES, GOUGES OR OTHER DAMAGE DURING SHIPMENT AND STORAGE.

3. THE SOLE PLATE ASSEMBLY SHALL BE METALIZED, EXCEPT FOR THE STAINLESS STEEL MATING SURFACE AND FOR 1" WIDE STRIPS, WHERE THE SOLE PLATE SHALL BE WELDED TO THE FLANGE. AFTER WELDING, APPLY A GALVANIZING REPAIR PAINT (M7.04.11) WITH A MINIMUM DRY FILM THICKNESS OF 3 MILLS TO THESE STRIPS. THE RETAINER PLATE SHALL BE HOT–DIP GALVANIZED IN ACCORDANCE WITH AASHTO M 111.

4. STEEL SOLE PLATE, SHEAR PLATES AND RETAINER PLATE SHALL CONFORM TO AASHTO M 270 GRADE 36.

5. MOLDED FABRIC BEARING PAD SHALL CONFORM TO M9.16.2 AND SHALL BE CUT TO THE SAME SHAPE AS THE RETAINER PLATE. ELASTOMERIC BEARING PAD MUST SIT ON CONCRETE AND NOT ON FABRIC PAD.

6. ANCHOR BOLTS, NUTS, AND WASHERS SHALL CONFORM TO ASTM F 1554 GRADE 105 AND SHALL BE HOT–DIP GALVANIZED IN ACCORDANCE WITH AASHTO M 232.

BEARING INSTALLATION NOTES:

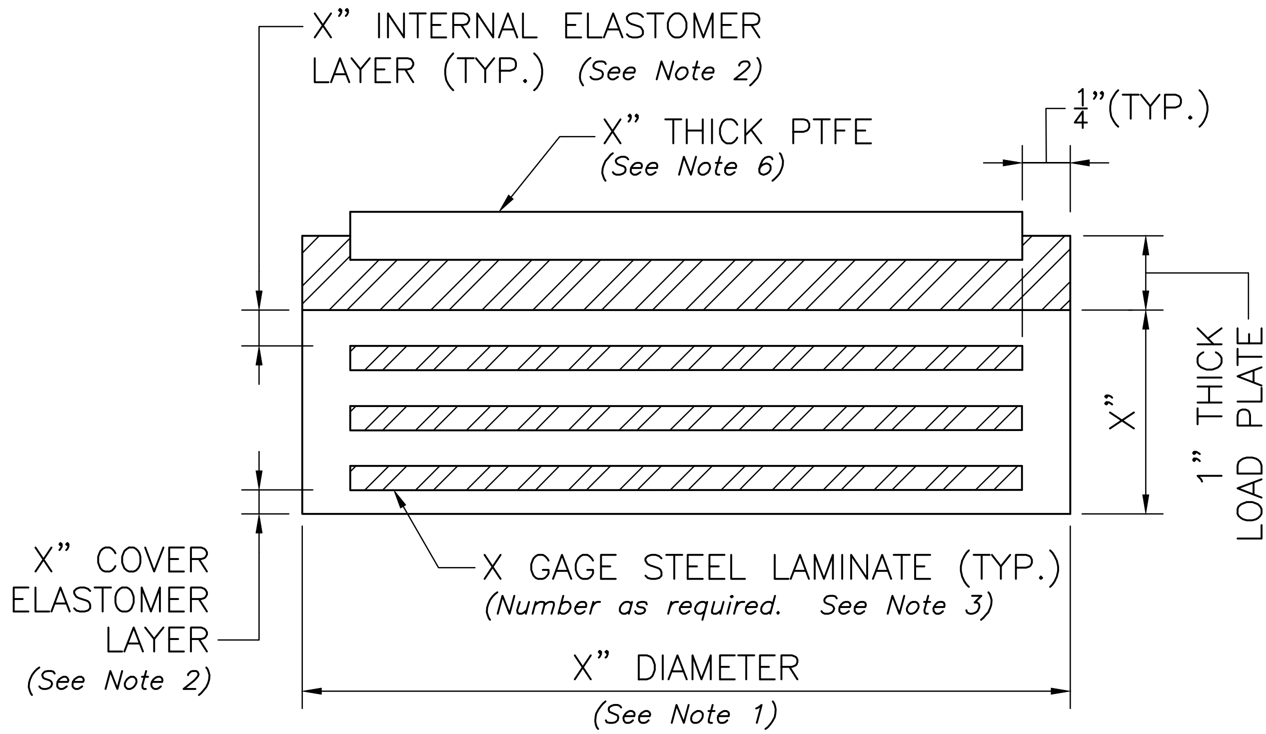
1. INSTALL RETAINER PLATE AND ELASTOMERIC BEARING PAD.

2. POSITION SOLE PLATE ASSEMBLY ON ELASTOMERIC BEARING PAD SO THAT THE SOLE PLATE IS CENTERED ON ANCHOR BOLTS @ 50 °F. ADJUST THE SOLE PLATE FOR ACTUAL AMBIENT TEMPERATURE AT BEAM ERECTION AS FOLLOWS: FOR EVERY 10 °F ABOVE/BELOW 50 °F MOVE SOLE PLATE X" *(Designer to calculate and specify)* TOWARD/AWAY FROM FACE OF ABUTMENT OR PIER.

3. ERECT BEAM TAKING CARE NOT TO DISLODGE SOLE PLATE.

4. AFTER BEAM HAS BEEN ERECTED, WELD SOLE PLATE TO THE BEAM BOTTOM FLANGE.

massDOT Massachusetts Department of Transportation Highway Division LRFD BRIDGE MANUAL, PART II	CONSTRUCTION NOTES AND BEARING INSTALLATION NOTES SLIDING BEARINGS – STEEL BEAMS	DATE OF ISSUE JUNE 2013 DRAWING NUMBER **8.3.4**



NOTES:

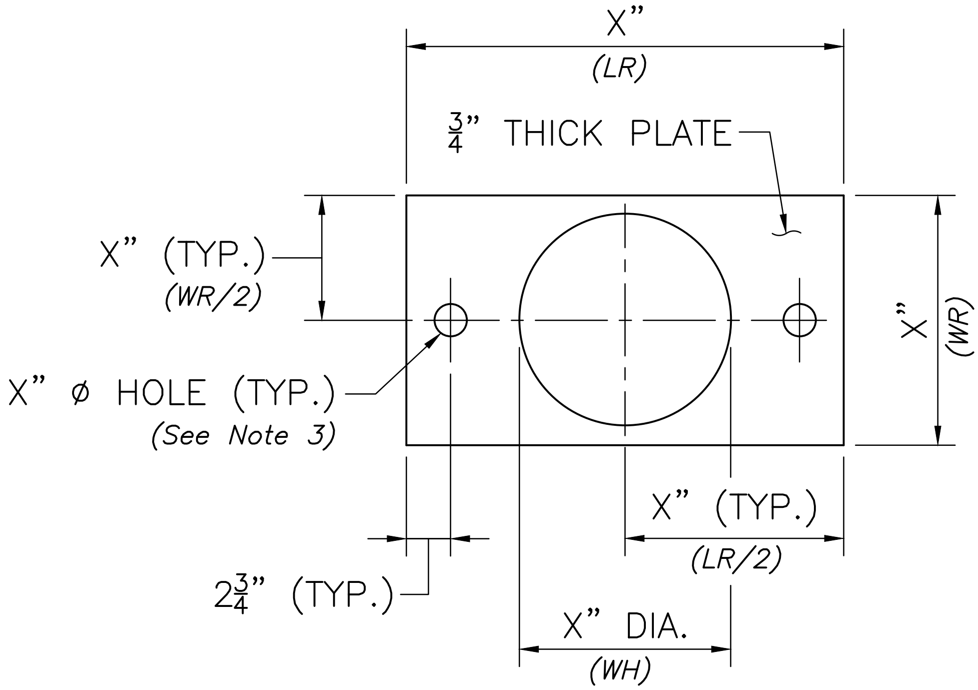
1. ELASTOMER SHALL HAVE A SHEAR MODULUS OF 0.160 KSI.
2. STEEL LAMINATES SHALL CONFORM TO ASTM A 1011 GRADE 36.
3. STEEL LOAD PLATE SHALL CONFORM TO AASHTO M 270 GRADE 36.
4. LOAD PLATE SHALL BE VULCANIZED TO THE ELASTOMERIC BEARING PAD. THE SIDES OF THE LOAD PLATE SHALL BE METALIZED AFTER VULCANIZATION.
5. PTFE SURFACE SHALL BE FABRICATED AS UNFILLED SHEET AND SHALL BE MADE FROM PTFE RESIN ALONE. IT SHALL CONTAIN DIMPLES TO ACT AS A RESERVOIR FOR LUBRICANT *(If required by design).*
6. THE MAXIMUM COEFFICIENT OF FRICTION BETWEEN THE PTFE AND STAINLESS STEEL MATING SURFACE SHALL BE XX AT 68 °F.

ELASTOMERIC BEARING PAD

NOT TO SCALE

NOTE:
For Designer Notes see Dwg. No. 8.3.6.

massDOT Massachusetts Department of Transportation Highway Division LRFD BRIDGE MANUAL, PART II	ELASTOMERIC BEARING PAD STANDARD DETAIL SLIDING BEARINGS – STEEL BEAMS	DATE OF ISSUE JUNE 2013 DRAWING NUMBER **8.3.5**



RETAINER PLATE DETAIL

SCALE: 1" = 1'–0"

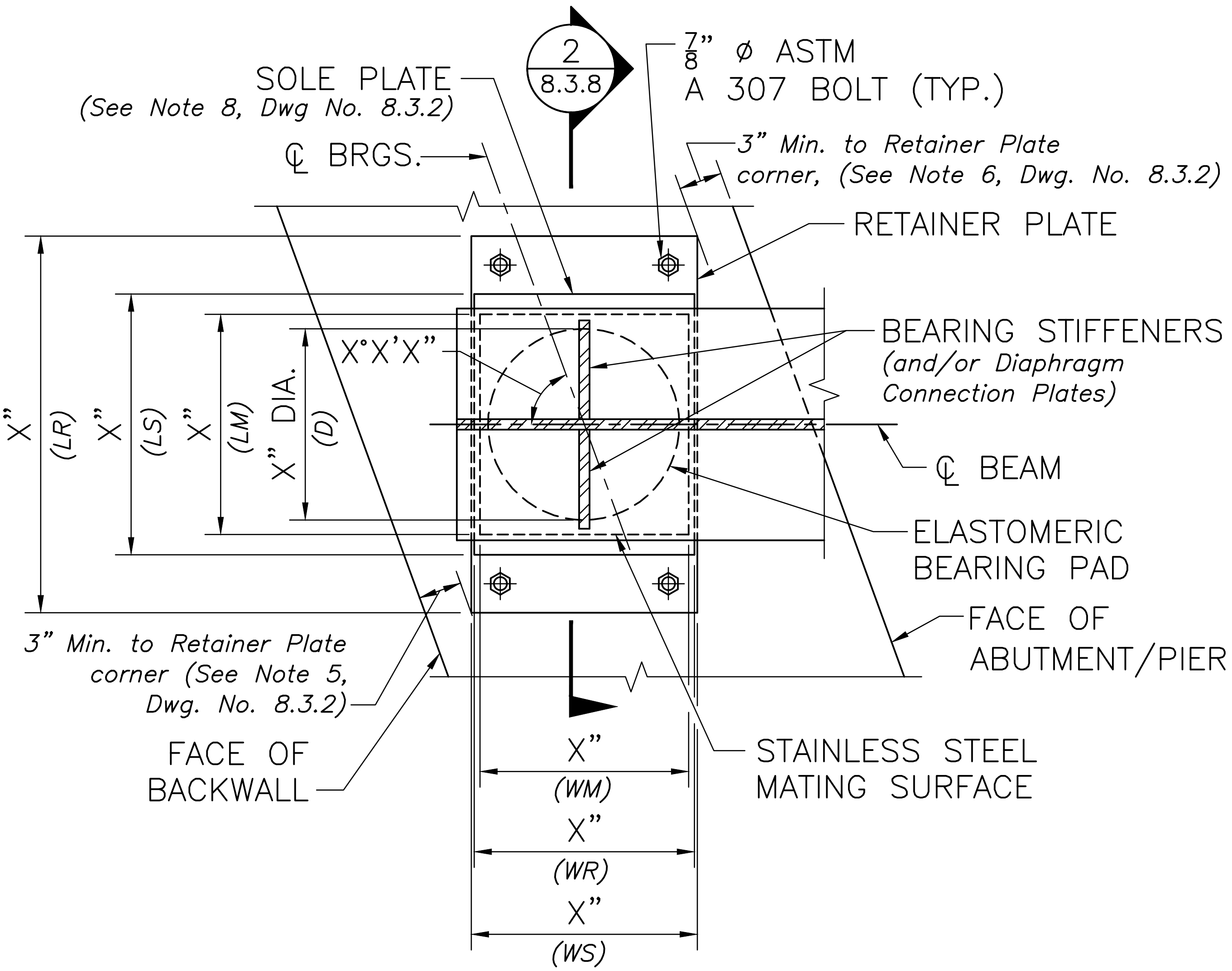
NOTES:

1. Retainer plate shall be used to prevent elastomeric bearing pad from walking.
2. WH = D +½";
   WR = D + 2½";
   For anchor bolts not exceeding 1½" ⌀, LR = LS = (LM or width of flange, whichever is greater) + 12";
   For anchor bolts greater than 1½" ⌀, LR shall be determined by Designer.
3. Diameter of hole = (bolt diameter x 1.25), rounded up to the nearest ¼".

NOTES: (for use with details on Dwg. No. 8.3.5)

1. Bearing diameters shall be set to even increments of 1", for example: 6", 7", etc.
2. A minimum thickness of a single elastomer layer shall be ¼". Cover layer shall be ¼" for bearings with thickness less or equal to 5", and ½" for thicker bearings. Furthermore, it shall be no thicker than 70% of the individual internal layer.
3. Steel laminates shall have a minimum thickness of 11 gage (⅛"). Thickness of steel laminates in inches shall be used to calculate total bearing thickness.
4. All bearings on any substructure unit shall have the same nominal compressive stiffness.
5. Elastomeric bearing pads shall have a constant thickness and shall be set level.
6. PTFE sheet has to be bonded to and be recessed into the load plate for at least one–half of its thickness. The minimum thickness of PTFE sheet shall be 3/16" when its diameter is less than or equal to 2'–0", and ¼" for larger sizes. Use of unfilled PTFE is preferred because it provides a lower coefficient of friction over filled PTFE. The use of dimples with or without lubricant will also affect the coefficient of friction. The Designer shall specify all of these variables in the Construction Notes as well as the coefficient of friction used in the design.
7. See Chapter 3, Part I of the Bridge Manual for additional information and bearing design requirements.

massDOT Massachusetts Department of Transportation Highway Division LRFD BRIDGE MANUAL, PART II	RETAINER PLATE DETAIL SLIDING BEARINGS – STEEL BEAMS	DATE OF ISSUE JUNE 2013 DRAWING NUMBER **8.3.6**



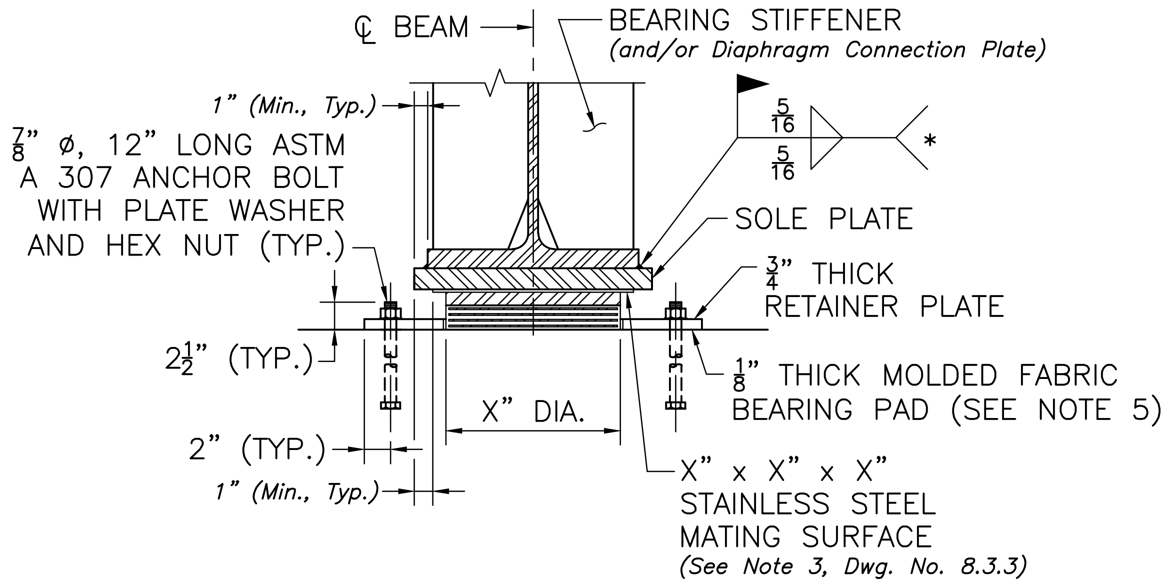
PLAN

SCALE: 1" = 1'–0"

NOTES:

1. *This alternate type of sliding bearing shall be used where the bearings are not required to provide lateral restraint to the superstructure.*
2. *D = Diameter of Elastomeric Bearing Pad;*
   LM = Length of stainless Steel Mating Surface = D + 2";
   WM = Width of Stainless Steel Mating Surface = D + (calculated total thermal movement range x 1.5), rounded up to the nearest ½";
   LS = Length of Sole Plate = (LM or width of bottom flange, whichever is greater) + 2";
   WS = Width of Sole Plate = WM + 1";
   LR = Length of Retainer Plate = LS + 8";
   WR = Width of Retainer Plate = D + 2½".
3. *See Dwg. No. 8.3.2 for additional applicable Designer Notes.*

massDOT Massachusetts Department of Transportation Highway Division LRFD BRIDGE MANUAL, PART II	BEARING WITHOUT ANCHOR BOLTS – PLAN SLIDING BEARINGS – STEEL BEAMS	DATE OF ISSUE JUNE 2013 DRAWING NUMBER **8.3.7**



(*) – WELDS SHALL TERMINATE 1/4" FROM EDGE OF PLATE, MASKING AND TOUCH–UP PER STANDARD SPECIFICATIONS.

NOTES:

1. STAINLESS STEEL MATING SURFACE SHALL BE TYPE 304 CONFORMING TO ASTM A 167/A 240 WITH A SURFACE FINISH OF 8 MICRO–INCHES RMS OR BETTER. IT SHALL BE WELDED WITH AN ALL–AROUND WELD TO THE SOLE PLATE SO THAT IT REMAINS FLAT AND IN FULL CONTACT WITH THE SOLE PLATE.

2. STAINLESS STEEL MATING SURFACE SHALL BE PROTECTED FROM SCRATCHES, GOUGES OR OTHER DAMAGE DURING SHIPMENT AND STORAGE.

3. THE SOLE PLATE ASSEMBLY SHALL BE METALIZED, EXCEPT FOR THE STAINLESS STEEL MATING SURFACE AND FOR 1" WIDE STRIPS, WHERE THE SOLE PLATE SHALL BE WELDED TO THE FLANGE. AFTER WELDING, APPLY A GALVANIZING REPAIR PAINT (M7.04.11) WITH A MINIMUM DRY FILM THICKNESS OF 3 MILLS TO THESE STRIPS. THE RETAINER PLATE SHALL BE HOT–DIP GALVANIZED IN ACCORDANCE WITH AASHTO M 111.

4. STEEL SOLE AND RETAINER PLATES SHALL CONFORM TO AASHTO M 270 GRADE 36.

5. MOLDED FABRIC BEARING PAD SHALL CONFORM TO M9.16.2 AND SHALL BE CUT TO THE SAME SHAPE AS THE RETAINER PLATE. ELASTOMERIC BEARING PAD MUST SIT ON CONCRETE AND NOT ON FABRIC PAD.

6. BOLTS, PLATE WASHERS AND NUTS SHALL BE HOT–DIP GALVANIZED IN ACCORDANCE WITH AASHTO M 232.

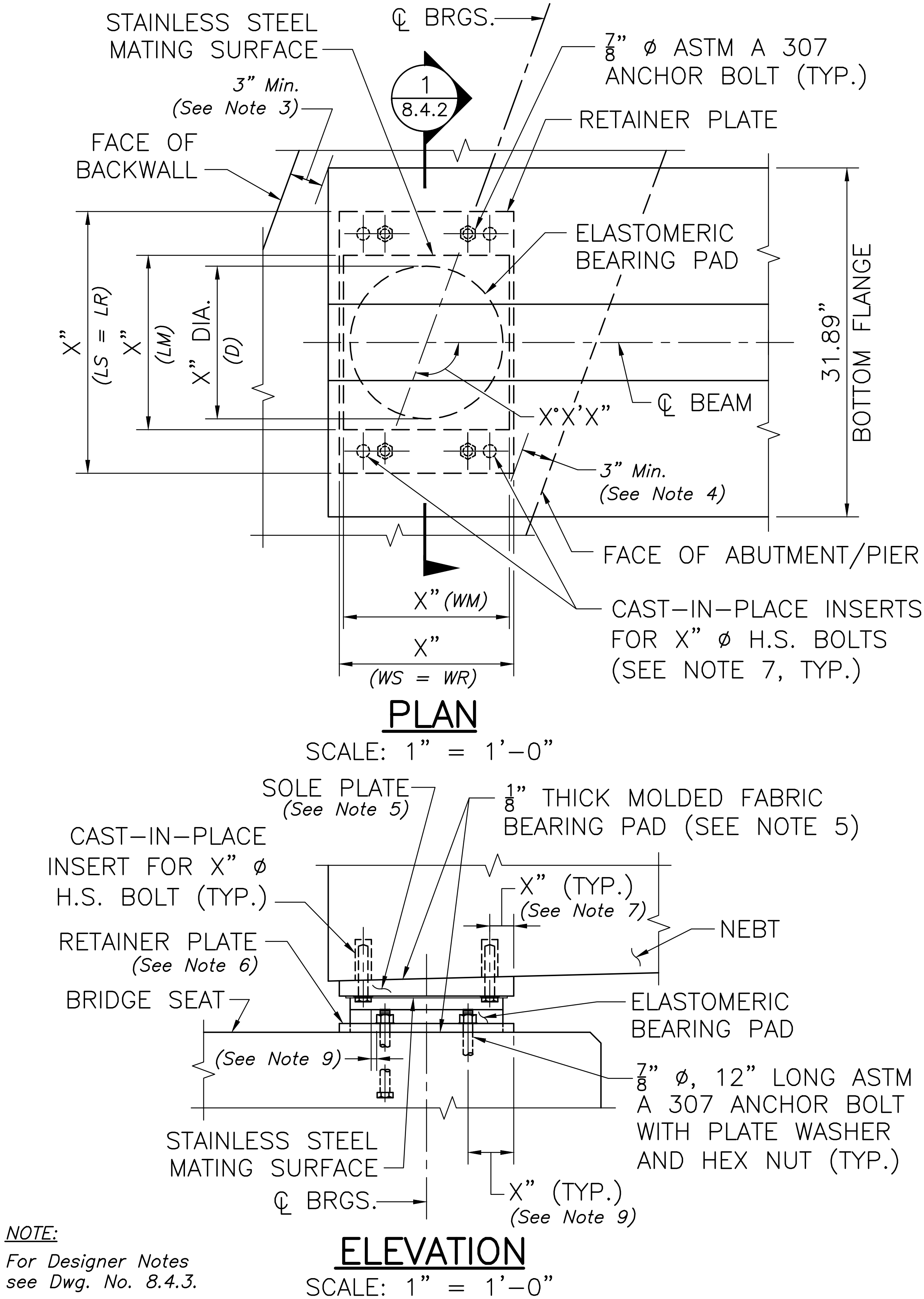
SECTION 2

SCALE: 1" = 1'–0"

NOTE:

Modify sole and retainer plates as required by Dwg's No. 8.3.7 and 8.3.8, and provide details, as shown on Dwg. No's. 8.3.2 and 8.3.6, respectively.

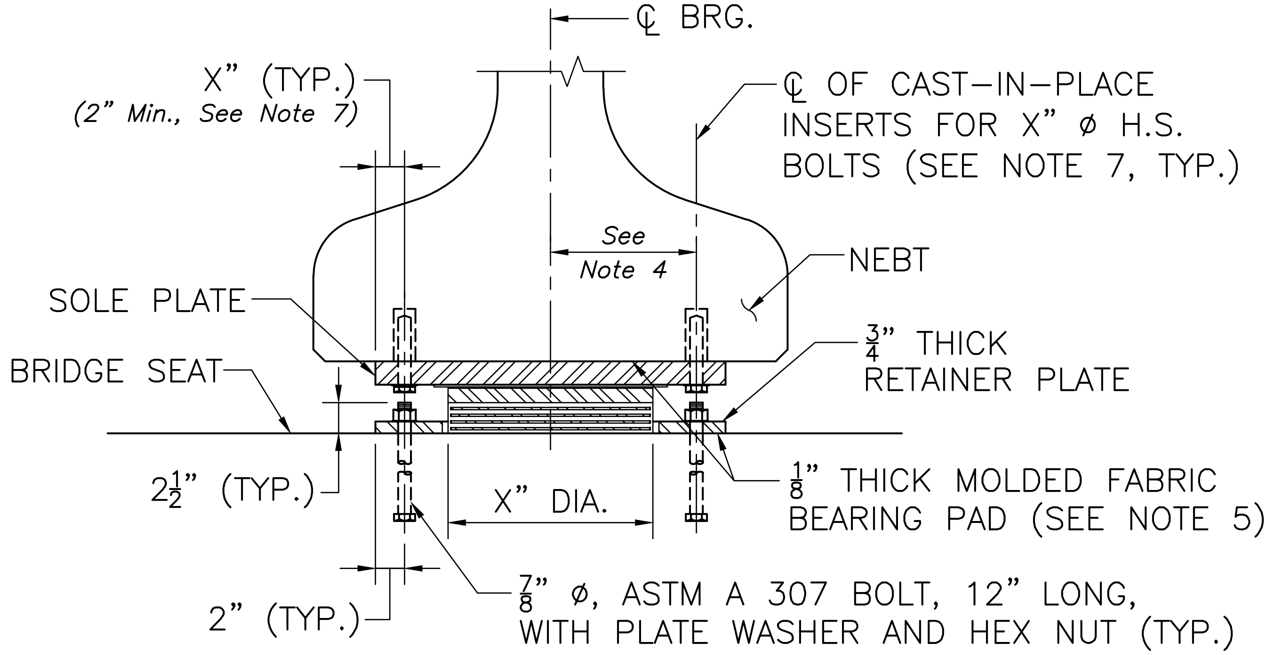
massDOT Massachusetts Department of Transportation Highway Division LRFD BRIDGE MANUAL, PART II	BEARING WITHOUT ANCHOR BOLTS – SECTION SLIDING BEARINGS – STEEL BEAMS	DATE OF ISSUE JUNE 2013 DRAWING NUMBER **8.3.8**



NOTE:

For Designer Notes see Dwg. No. 8.4.3.

massDOT Massachusetts Department of Transportation Highway Division LRFD BRIDGE MANUAL, PART II	STANDARD BEARING ASSEMBLY PLAN AND ELEVATION SLIDING BEARINGS – NEBT BEAMS	DATE OF ISSUE JUNE 2013 DRAWING NUMBER **8.4.1**



NOTES:

1. STAINLESS STEEL MATING SURFACE SHALL BE TYPE 304 CONFORMING TO ASTM A 167/A 240 WITH A SURFACE FINISH OF 8 MICRO-INCHES RMS OR BETTER. IT SHALL BE WELDED WITH AN ALL-AROUND WELD TO THE SOLE PLATE SO THAT IT REMAINS FLAT AND IN FULL CONTACT WITH THE SOLE PLATE.

2. STAINLESS STEEL MATING SURFACE SHALL BE PROTECTED FROM SCRATCHES, GOUGES OR OTHER DAMAGE DURING SHIPMENT AND STORAGE.

3. THE SOLE PLATE ASSEMBLY SHALL BE METALIZED, EXCEPT FOR THE STAINLESS STEEL MATING SURFACE. THE RETAINER PLATE SHALL BE HOT-DIP GALVANIZED IN ACCORDANCE WITH AASHTO M 111.

4. STEEL SOLE AND RETAINER PLATES SHALL CONFORM TO AASHTO M 270 GRADE 36.

5. MOLDED FABRIC BEARING PAD SHALL CONFORM TO M9.16.2. UNDERNEATH THE RETAINER PLATE IT SHALL BE CUT TO ITS SHAPE. THE BEARING PAD MUST SIT ON CONCRETE AND NOT ON FABRIC PAD.

6. BOLTS, PLATE WASHERS AND NUTS SHALL BE HOT-DIP GALVANIZED IN ACCORDANCE WITH AASHTO M 232.

7. CAST-IN-PLACE INSERTS SHALL HAVE AN ULTIMATE SHEAR CAPACITY OF XX KIPS.

SECTION 1

SCALE: 1" = 1'-0"

NOTE:
For Designer Notes see Dwg. No. 8.4.3.

massDOT Massachusetts Department of Transportation Highway Division

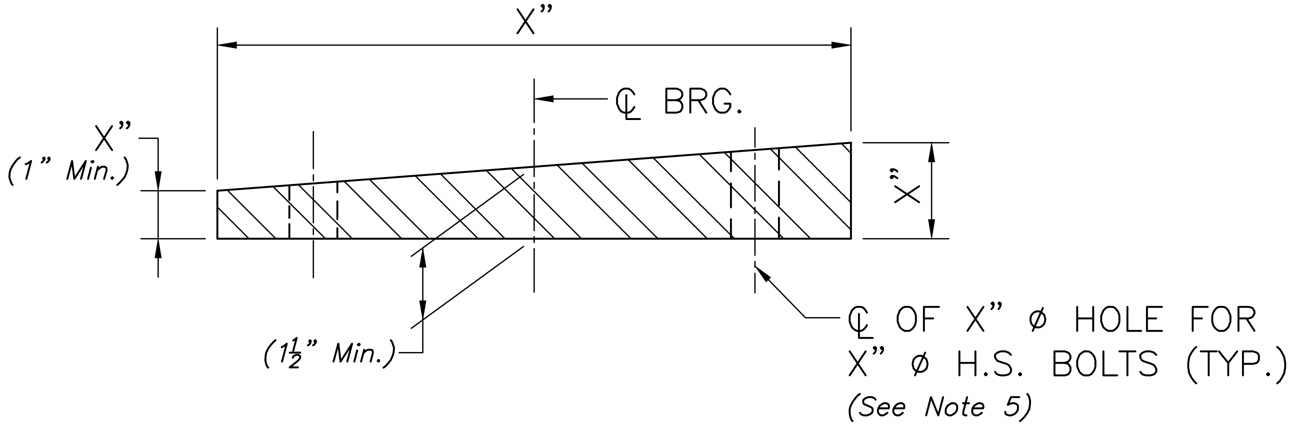
LRFD BRIDGE MANUAL, PART II

STANDARD BEARING ASSEMBLY SECTION

SLIDING BEARINGS – NEBT BEAMS

DATE OF ISSUE
JUNE 2013

DRAWING NUMBER
8.4.2



SOLE PLATE DETAIL

SCALE: 3" = 1'–0"

NOTES: (to be used with details shown on Dwg. No.'s 8.4.1 and 8.4.2)

1. *D = Diameter of Elastomeric Bearing Pad;*
   LM = Length of Stainless Steel Mating Surface = D + 2";
   WM = Width of Stainless Steel Mating Surface = D + (calculated total thermal movement range x 1.5), rounded up to the nearest ½";
   LS = Length of Sole Plate = LM + 8";
   WS = Width of Sole Plate = WM + 1";
   LR = Length of Retainer Plate = LS;
   WR = Width of Retainer Plate = WS.
2. *The end of the beam and sole plate may be flush, however the sole plate cannot extend beyond the beam end. If required, increase the length of beam so that it always stays flush with sole plate.*
3. *Width of bridge seat may need to be increased to provide this clearance after the beam reaches its maximum thermal expansion length.*
4. *Width of bridge seat may need to be increased to maintain these clearances.*
5. *Sole plate must be tapered if slope of beam bottom flange due to roadway grade and camber exceeds 1%. Provide detail of tapered sole plate as shown above. Diameter of hole = (bolt diameter x 1.25), rounded up to nearest ¼".*
6. *Modify retainer plate as required by Dwg. No. 8.4.1 and 8.4.2, and provide detail as shown on Dwg. No. 8.3.5.*
7. *Set centerline of cast–in–place inserts on strand location and omit those columns of strands for the specific strand pattern.*
8. *Designer must provide sufficient vertical clearance, which is based on the total height of the bearing assembly, for the bolts securing sole plate, to allow for their complete unscrewing and subsequent removal of the retainer plate and the bearing pad.*
9. *Designer must also provide sufficient horizontal clearance after maximum thermal movements between the centerlines of the cast–in–place inserts and the nuts securing retainer plate to avoid their interference during possible removal of the retainer plate and the bearing pad.*

massDOT Massachusetts Department of Transportation Highway Division — LRFD BRIDGE MANUAL, PART II	SOLE PLATE DETAIL AND DESIGNER NOTES — SLIDING BEARINGS – NEBT BEAMS	DATE OF ISSUE: JUNE 2013 — DRAWING NUMBER: **8.4.3**