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 $\frac{1}{8}$".
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					
BEAM	SPAN	SUPPORT	A	B	C

Legend:
A - Width of Shim (in.)
B - Depth of Shim (in.)
C - Anchor Bolt diameter + $\frac{1}{4}$" (in.)

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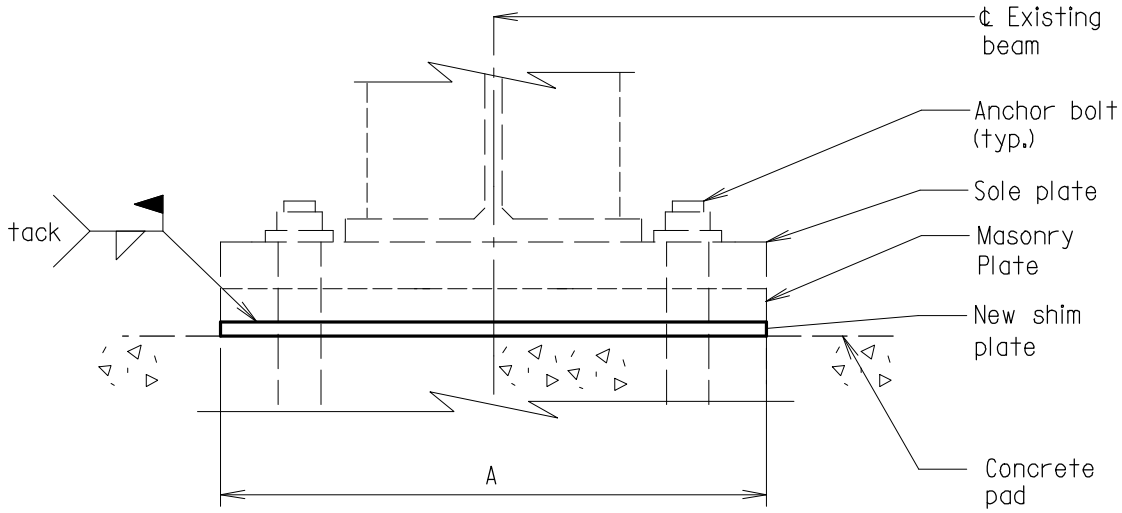
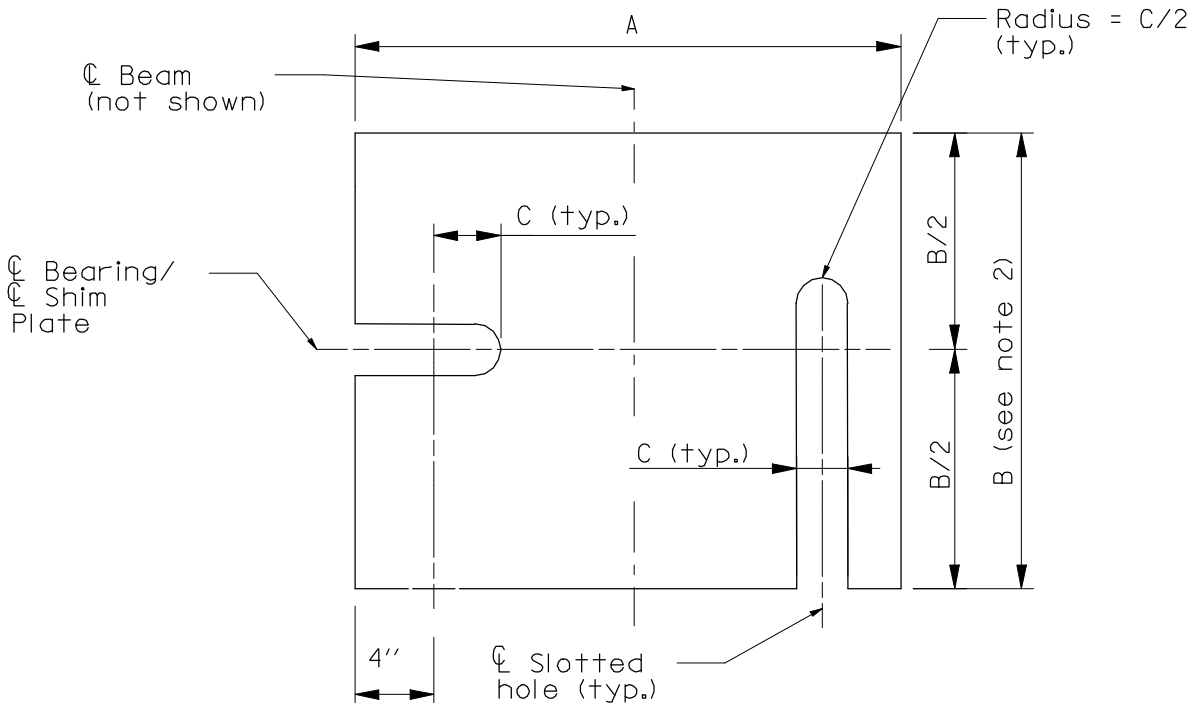
BEARING SHIM DETAILS
GENERAL NOTES

DETAIL NO. SR-BR-101 SHEET 1 OF 1



ELEVATION



PLAN

SHIM PLATE DETAILS

Scale: None

Note:
Refer to Detail No. SR-BR-101 for shim plate dimensions.

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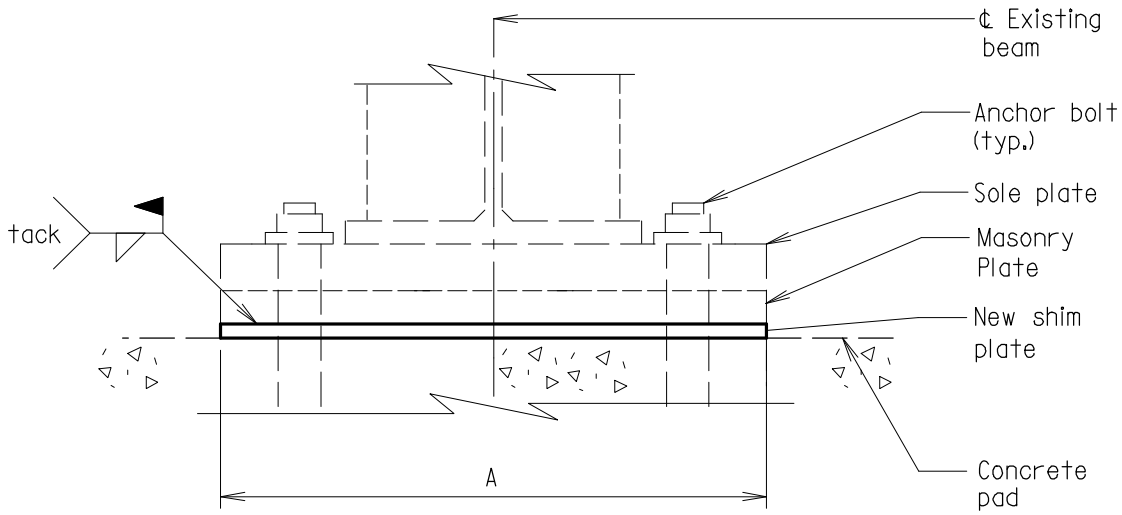
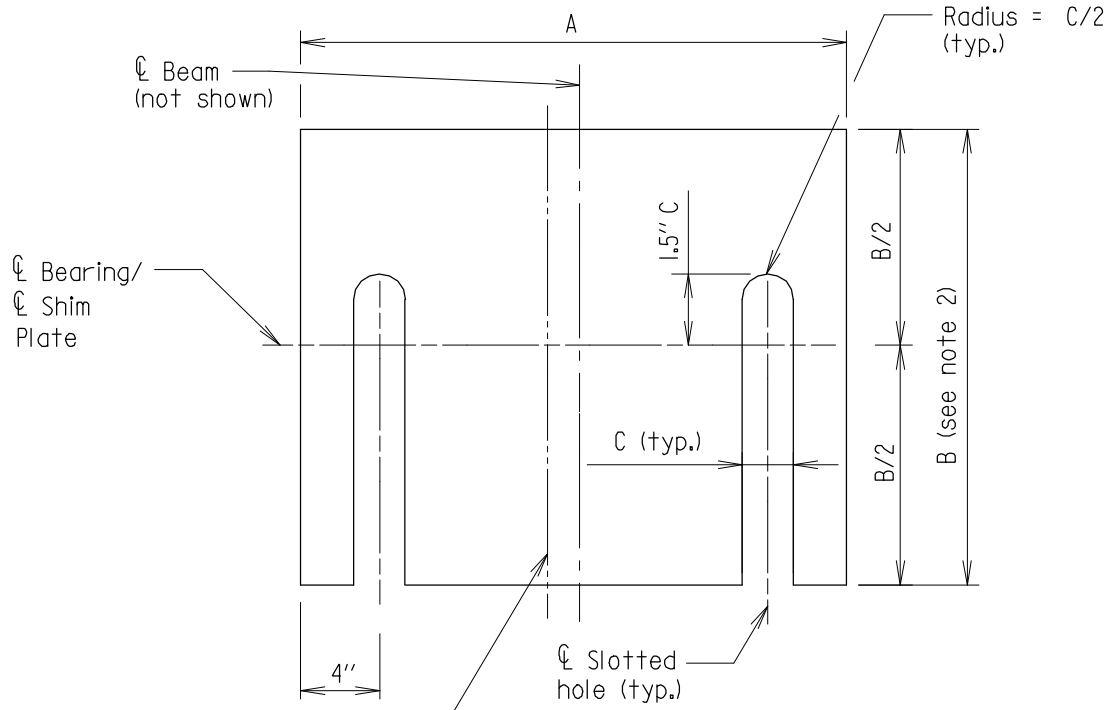
BEARING SHIM
SHIM PLATE DETAILS
ROTATION INSTALLATION

DETAIL NO. SR-BR-102 SHEET 1 OF 1



ELEVATION



PLAN

SHIM PLATE DETAIL

Scale: None

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.

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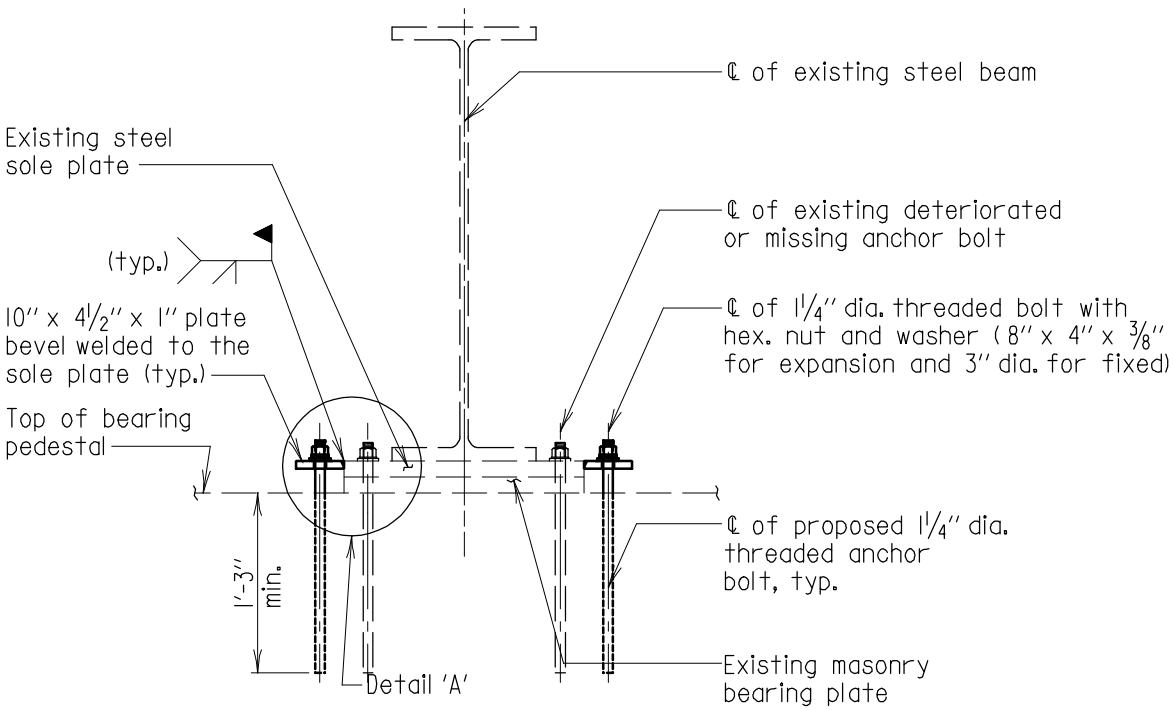
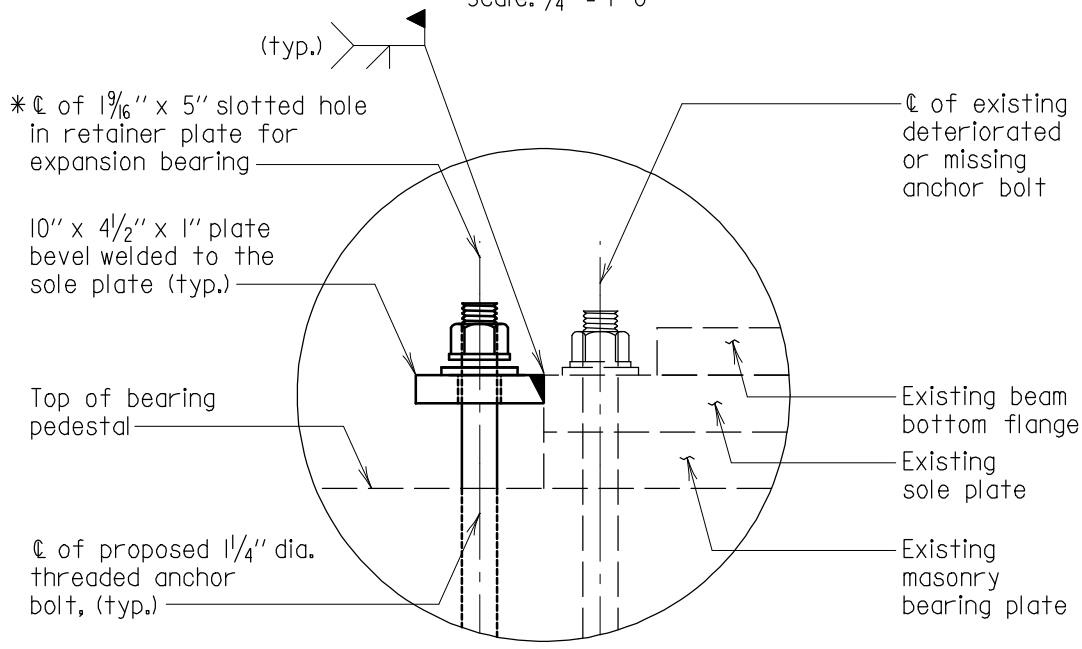
BEARING SHIM
SHIM PLATE DETAILS
DIRECT INSTALLATION

DETAIL NO. SR-BR-103 SHEET 1 OF 1



ELEVATION
Scale: ¾" = 1'-0"



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

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.

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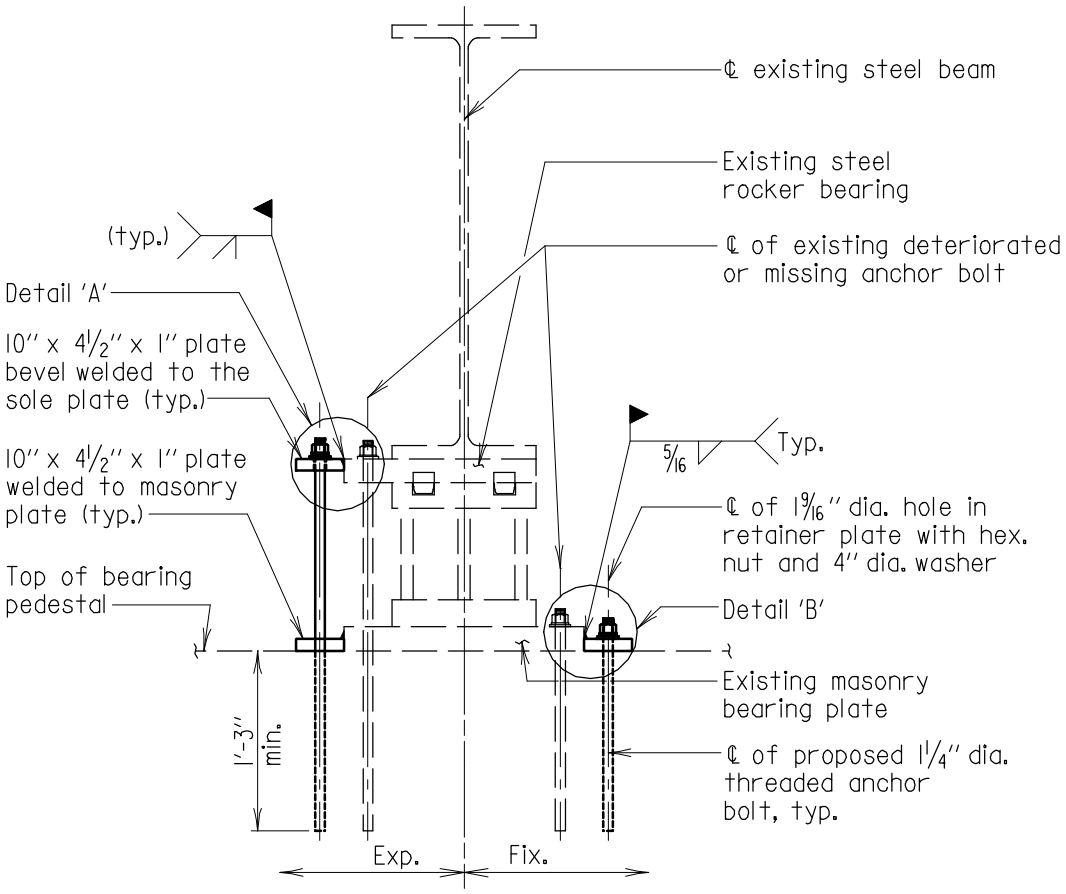
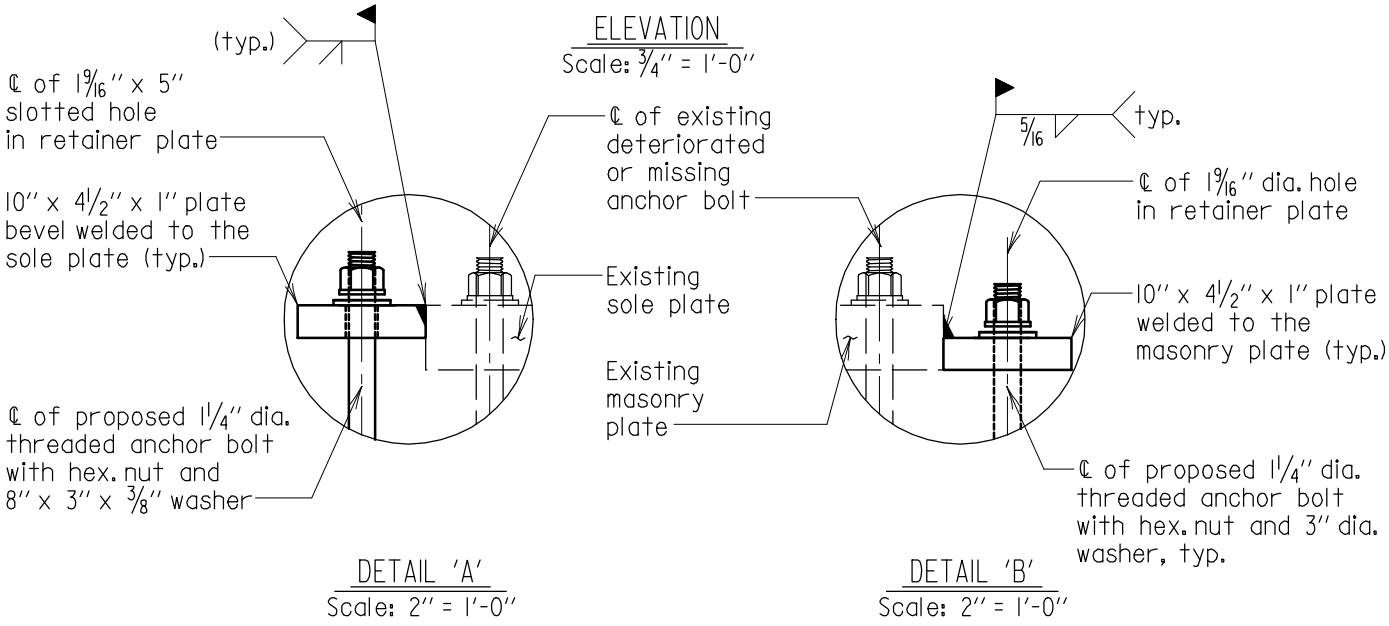
SLIDING PLATE BEARING SUPPLEMENTARY ANCHORAGE SYSTEM

DETAIL NO. SR-BR-201 SHEET 1 OF 1

STRUCTURAL REPAIRS



ELEVATION
Scale: ¾'' = 1'-0''



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

DETAIL 'B'
Scale: 2'' = 1'-0''

Notes:

1. Chip concrete to expose primary steel prior to drilling hole for new anchor bolt.
2. Anchorage plates to be ASTM A 709 Grade 50, steel painted to match finished bridge color.
3. 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.
4. All galvanized material shall be off-vented a minimum of 24 days before installation.

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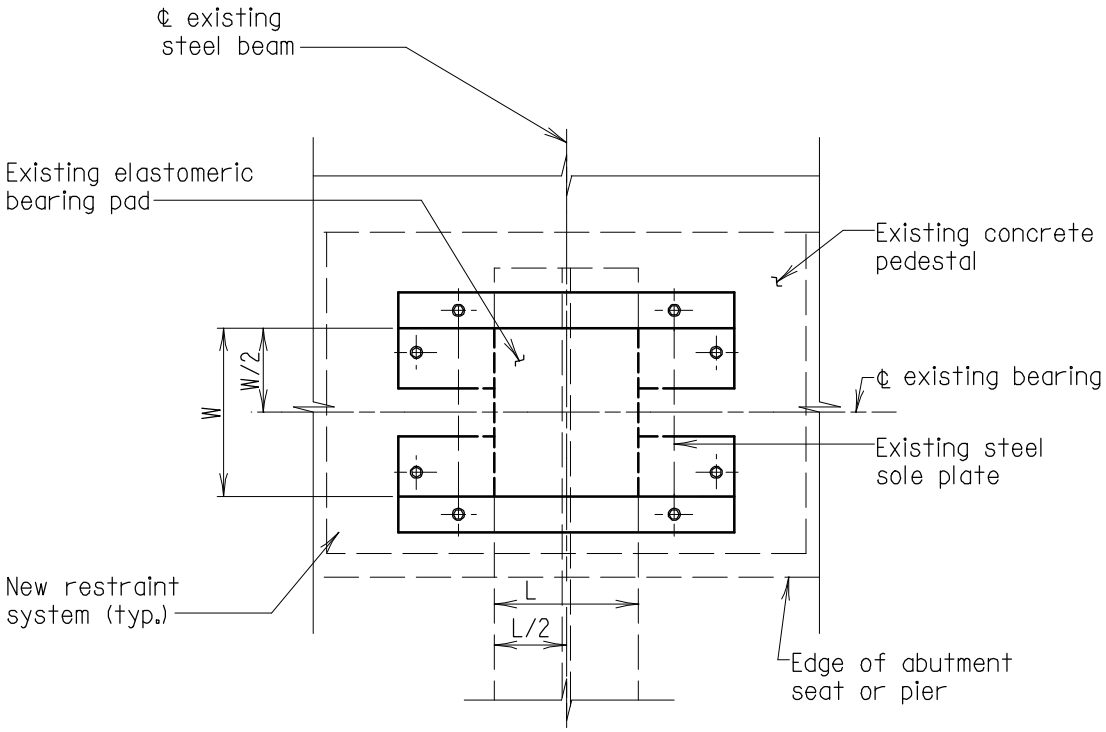
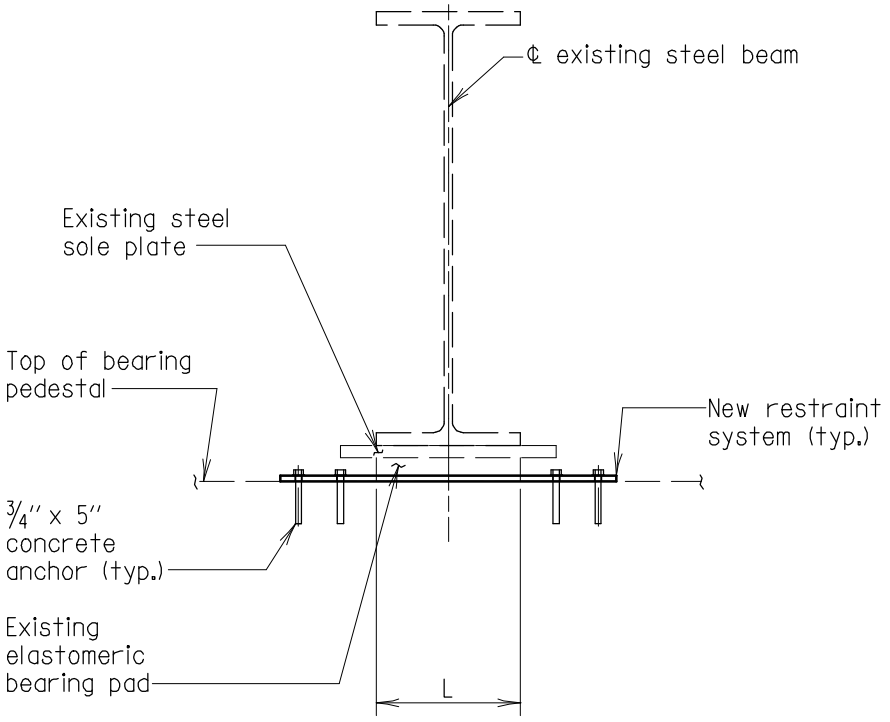
VERSION 1.0	DETAIL NO. SR-BR-202 SHEET 1 OF 1

STRUCTURAL REPAIRS



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



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

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.

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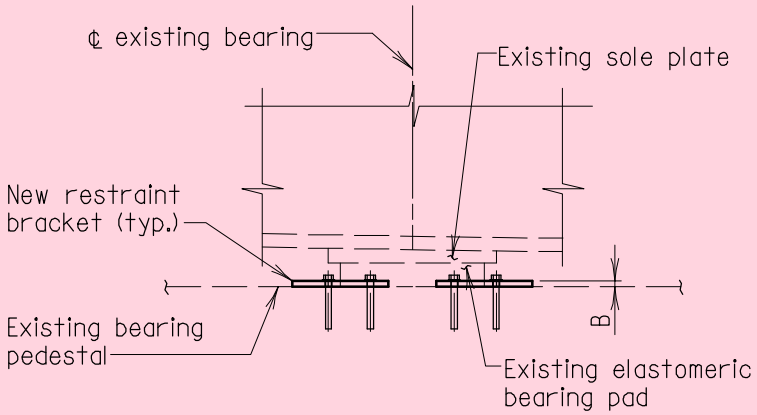
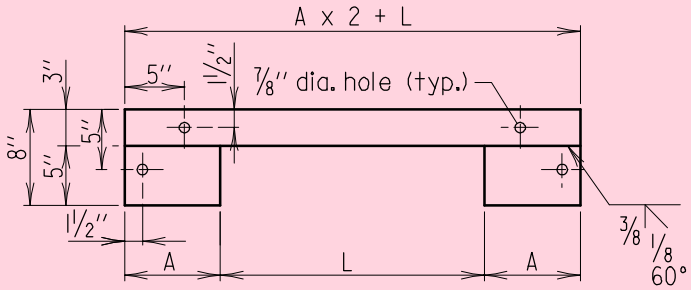
ELASTOMERIC RESTRAINT SYSTEM STEEL BEAM

DETAIL NO. SR-BR-301 SHEET 1 OF 2

STRUCTURAL REPAIRS



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



Note:
2 restraints required per bearing.

KEEPER PLATE DETAIL
Scale: 3/4" = 1'-0"

KEEPER PLATE DIMENSIONS			
EXPANSION BEARING			
L	W	A	B
FIXED BEARING			
L	W	A	B

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. 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 $\mu = 0.08$.

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)

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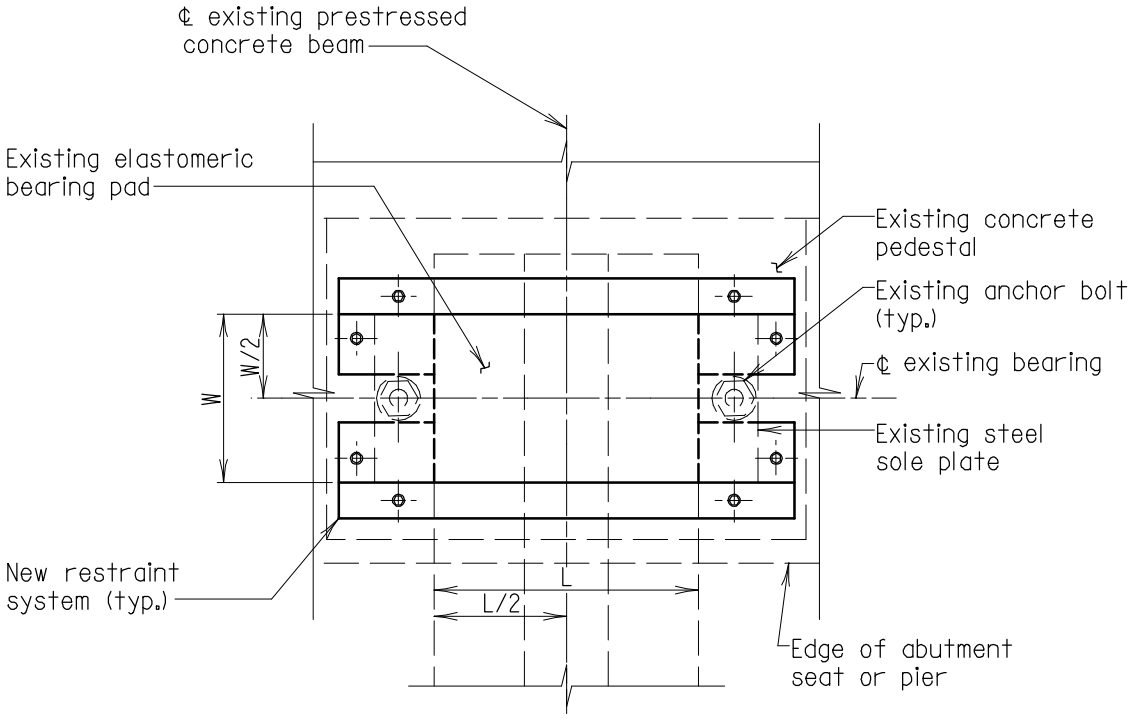
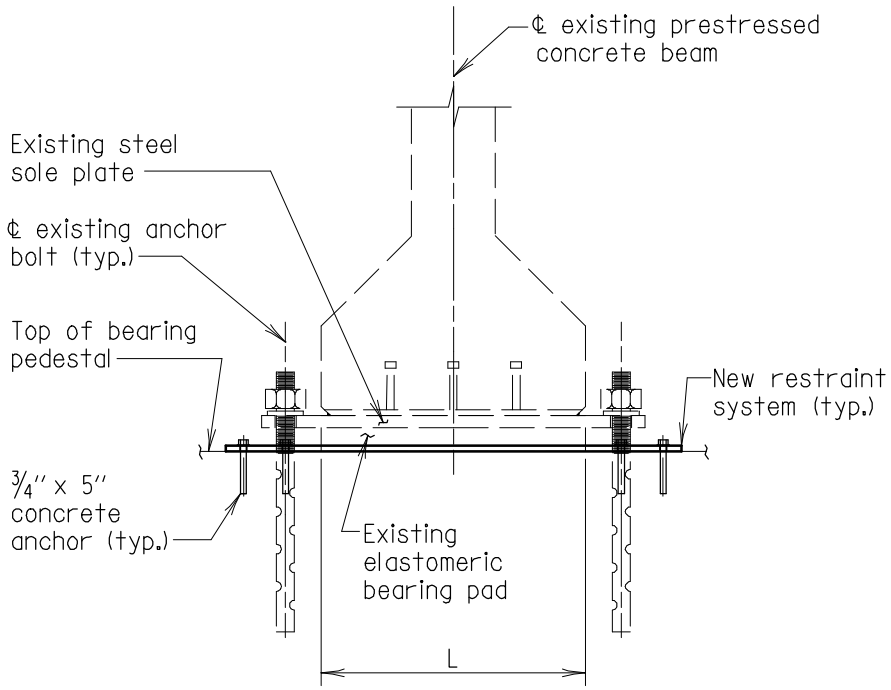
ELASTOMERIC RESTRAINT SYSTEM
STEEL BEAM

DETAIL NO. SR-BR-301 SHEET 2 OF 2

STRUCTURAL REPAIRS



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



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

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.

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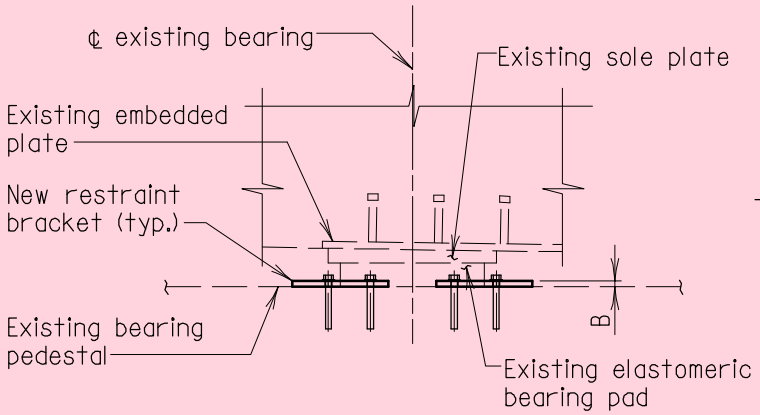
ELASTOMERIC RESTRAINT SYSTEM CONCRETE GIRDER

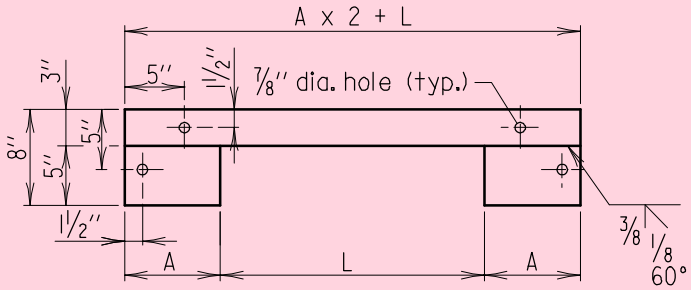
DETAIL NO. SR-BR-302 SHEET 1 OF 2

STRUCTURAL REPAIRS



Note:
Existing anchor bolt not shown for clarity.

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



Note:
2 restraints required per bearing.

KEEPER PLATE DETAIL
Scale: 3/4" = 1'-0"

KEEPER PLATE DIMENSIONS			
EXPANSION BEARING			
L	W	A	B
FIXED BEARING			
L	W	A	B

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:

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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)

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ELASTOMERIC RESTRAINT SYSTEM
CONCRETE GIRDER

DETAIL NO. SR-BR-302 SHEET 2 OF 2

STRUCTURAL REPAIRS