PART PLAN AT ABUTMENT

(STRUCTURE WITH LEFT FORWARD SKEW AND CONCRETE BRIDGE RAILING
ISFR=+20 SHOWN, ISFR=-20 SIMILAR)

SHOULDER BREAK LINE

NEOPRENE SHEETING

FACE OF APPROACH RAILING & TOE OF CURB

1" PEJF

EDGE OF DECK

TOE OF RAILING

SHAPED AREA INDICATES LIMITS OF DIAPHRAGM PROTRUSION UNDERNEATH RAILING (TYP.)

FACE OF APPROACH RAILING & TOE OF CURB

2" PEJF

EDGE OF DECK

TOE OF RAILING

SHAPED AREA INDICATES LIMITS OF DIAPHRAGM PROTRUSION UNDERNEATH RAILING (TYP.)

NEOPRENE SHEETING LIMITS SHALL BE SIMILAR TO THOSE SHOWN IN SECTION A-A ON SHEET 1/9.

C.J. = CONSTRUCTION JOINT, REFER TO BDW SECTION 304.2.3 FOR DESIGN REQUIREMENTS.

PEJF = PREFORMED EXPANSION JOINT FILLER

= SEE ROADWAY TYPICAL SECTION FOR LOCATION OF SHOULDER BREAK LINE.

= THE CONTRACTOR MAY ELECT TO SUBMIT AN ALTERNATE PROCEDURE THAT PLACES THE DIAPHRAGM AND DECK CONCRETE IN THE SAME POUR; HOWEVER, THIS REQUIRES APPROVAL OF THE ENGINEER.

= DIAPHRAGM WIDTH FOR SKEWED BRIDGES. SEE SHEET 1/9.

NEOPRENE SHEETING LIMITS SHALL BE SIMILAR TO THOSE SHOWN IN SECTION A-A ON SHEET 1/9.

SECTION B-B

APPLIES AT BOTH ENDS OF ABUTMENT (BEAM & APPROACH RAILING NOT SHOWN)
C.J. = Construction Joint. Refer to BDM Section 304.2.3 for design requirements.

PEJF = Preformed Expansion Joint Filler

2:1 = See roadway typical section for location of shoulder break line.

V = The contractor may elect to submit an alternate procedure that places the diaphragm and deck concrete in the same pour, however, this requires approval of the engineer.

N = Diaphragm width for skewed bridges. See Sheet 7/6.

Neoprene sheeting limits shall be similar to those shown in section A-A on Sheet 7/6.
PART PLAN AT ABUTMENT
(SKEWED STRUCTURE WITH TWIN STEEL TUBE BRIDGE RAILING)

FACE OF BRIDGE RAILING & EDGE OF DECK

FACE OF BRIDGE RAILING & EDGE OF DECK

FACE OF APPROACH RAILING & EDGE OF APPROACH SLAB

FACE OF APPROACH RAILING & EDGE OF APPROACH SLAB

SHOULDER BREAK LINE

NEOPRENE SHEETING

NEOPRENE SHEETING

1" PEJF

1" PEJF

2'-6"

2'-6"

SHOULDER BREAK LINE

NEOPRENE SHEETING

NEOPRENE SHEETING

2" PEJF

2" PEJF

1'-6"

1'-6"

C.J. (CONSTRUCTION JOINT)

PART PLAN AT ABUTMENT
(SKEWED STRUCTURE WITH TWIN STEEL TUBE BRIDGE RAILING)

(STRUCTURE WITH LEFT FORWARD SKEW SHOWN, STRUCTURE WITH RIGHT FORWARD SKEW SIMILAR)

SHOULDER BREAK LINE

NEOPRENE SHEETING

NEOPRENE SHEETING

1" PEJF

1" PEJF

2'-6"

2'-6"

C.J.

PART PLAN AT ABUTMENT
(SKEWED STRUCTURE WITH TWIN STEEL TUBE BRIDGE RAILING)

(STRUCTURE WITH LEFT FORWARD SKEW SHOWN, STRUCTURE WITH RIGHT FORWARD SKEW SIMILAR)

SHOULDER BREAK LINE

NEOPRENE SHEETING

NEOPRENE SHEETING

1" PEJF

1" PEJF

2'-6"

2'-6"

C.J.

SHOULDER BREAK LINE

NEOPRENE SHEETING

NEOPRENE SHEETING

1" PEJF

1" PEJF

2'-6"

2'-6"

C.J.

PART PLAN AT ABUTMENT
(SKEWED STRUCTURE WITH TWIN STEEL TUBE BRIDGE RAILING)

(STRUCTURE WITH LEFT FORWARD SKEW SHOWN, STRUCTURE WITH RIGHT FORWARD SKEW SIMILAR)

SHOULDER BREAK LINE

NEOPRENE SHEETING

NEOPRENE SHEETING

1" PEJF

1" PEJF

2'-6"

2'-6"

C.J.

PART PLAN AT ABUTMENT
(SKEWED STRUCTURE WITH TWIN STEEL TUBE BRIDGE RAILING)

(STRUCTURE WITH LEFT FORWARD SKEW SHOWN, STRUCTURE WITH RIGHT FORWARD SKEW SIMILAR)

SHOULDER BREAK LINE

NEOPRENE SHEETING

NEOPRENE SHEETING

1" PEJF

1" PEJF

2'-6"

2'-6"

C.J.

PART PLAN AT ABUTMENT
(SKEWED STRUCTURE WITH TWIN STEEL TUBE BRIDGE RAILING)

(STRUCTURE WITH LEFT FORWARD SKEW SHOWN, STRUCTURE WITH RIGHT FORWARD SKEW SIMILAR)

SHOULDER BREAK LINE

NEOPRENE SHEETING

NEOPRENE SHEETING

1" PEJF

1" PEJF

2'-6"

2'-6"

C.J.
WHERE STEEL PILES ARE USED,

PLACE VERTICAL BARS IN PILE CAP NORMAL TO BEARINGS, PLACE VERTICAL BARS IN DIAPHRAGM, INCLUDING #6 BARS, PARALLEL TO BEAMS. BAR SPACING, IN BOTH CASES, SHALL BE MEASURED PARALLEL TO #6 BARS.

APPROACH SLAB SEAT

S801 BARS, PARALLEL TO BEAMS. BAR SPACING, IN BOTH CASES, SHALL BE MEASURED INCLUDING #6 BARS, PARALLEL TO BEAMS.

PLACE VERTICAL BARS IN PILE CAP NORMAL TO BEARINGS. PLACE VERTICAL BARS IN DIAPHRAGM, NORMAL TO WEB.

APPROVAL OF THE ENGINEER.

CONCRETE IN THE SAME POUR; HOWEVER, THIS REQUIRES PROCEDURE THAT PLACES THE DIAPHRAGM AND DECK SLAB SEAT OF DRAINAGE PIPE (1'-0" DEEP) PROTECTION, S502, 2-S501 & 2-A501, WITH GEOTEXTILE POROUS BACKFILL AND BACKFILL AND LIMITS OF POROUS STRUCTURES, A LATERALLY SLOPING "TOP OF SLOPE" MAY BE USED TO AVOID EXCESSIVELY LONG WINGWALLS.

REINFORCING STEEL SHOWN IS MINIMUM DESIGNER SHALL PROVIDE THE REINFORCEMENT REQUIRED FOR THE INDIVIDUAL STRUCTURE. REFER TO THE SUPPLEMENT FOR THIS DESIGN DATA SHEET FOR DESIGN METHODOLOGY AND EXAMPLE CALCULATIONS.

MINIMUM LAP LENGTHS FOR #5 VERTICAL BARS FOR BEAMS 54" OR LESS IN HEIGHT.

3-S401 & S402 BARS MAY BE MOVED TO ACCOMODATE DRAPED STRANDS.

RF = FAR FACE

#8 BARS @ 1'-0" MAX. (N.F.)

S.O. = SERIES OF

#5 BARS @ 1'-0" MAX. (F.F.)

F.F. = FAR FACE

#6 BARS

N.F. = NEAR FACE

#8 BARS @ 1'-0" MAX. (E.F.)

S.O. = SERIES OF

PEJF = PREFORMED EXPANSION JOINT FILLER

ELEVATION

(SHOWN WITH CONCRETE PARAPET AND NO SKREW)

SECTION D-D (DIMENSIONS)

DIMENSIONS SHOWN ARE FOR NO SKREW, DIMENSIONS WILL VARY WITH SKREW, SEE SHEET 07-20-18

SECTION D-D (REINFORCING)

DIMENSIONS SHOWN ARE FOR NO SKREW, DIMENSIONS WILL VARY WITH SKREW, SEE SHEET 07-20-18

SECTION E-E

DIMENSIONS SHOWN ARE FOR NO SKREW, DIMENSIONS WILL VARY WITH SKREW, SEE SHEET 07-20-18
INTEGRAL ABUTMENT PARTIAL PLAN

(a) = FOR WF BEAMS AND MODIFIED AASHTO TYPE 4 BEAMS, THE TOP FLANGE MAY NOT BE CLIPPED. THE MAXIMUM CLIP DIMENSION, NORMAL TO | BEAM, SHALL BE 8".

(b) = FOR AASHTO TYPE 2, 3 & 4 BEAMS, DO NOT CLIP THE BOTTOM FLANGE.

(c) = 2-S401 & S402 BARS FOR BEAMS 54" OR LESS IN HEIGHT. 3-S401 & S402 BARS FOR BEAMS 60" OR GREATER IN HEIGHT. S401 & S402 BARS MAY BE MOVED TO ACCOMMODATE DRAPER STRANDS. ROTATE S401 & S402 BARS AS NEEDED TO PROVIDE 2" MINIMUM CLEAR TO BACK FACE OF DIAPHRAGM.

N = DIAPHRAGM WIDTH FOR SKEWED BRIDGES

\[
\frac{N}{2} = \text{LARGER OF } \left( \frac{1}{2} h^2 + \frac{1}{2} \text{tan} \theta \right) \times \cos \theta + \left( \frac{1}{2} \pi + \frac{1}{2} \text{tan} \theta \right) \times \cos \theta
\]

\[
\theta = \text{TOP FLANGE WIDTH FOR WF BEAMS AND MODIFIED AASHTO TYPE 4 BEAMS} \times \text{BOTTOM FLANGE WIDTH FOR AASHTO TYPE 2, 3 & 4 BEAMS}
\]

\[
\text{DISTANCE FROM } | \text{BEAM TO EDGE OF TOP FLANGE ACCOUNTING FOR CLIP, FOR WF BEAMS AND MODIFIED AASHTO TYPE 4 BEAMS, DISTANCE FROM } | \text{BEAM TO EDGE OF BOTTOM FLANGE FOR AASHTO TYPE 2, 3 & 4 BEAMS}
\]

\[
\text{CLIP ANGLE (TAKEN AS POSITIVE FOR LEFT FORWARD AND RIGHT FORWARD SKEWS)}
\]

\[
\text{SEE SHEET } \text{S40} \text{ FOR ELASTOMERIC BEARING ASSEMBLY DETAILS.}
\]
SLOPE

BEARING & SEAT DETAIL

BEARING & SEAT DETAIL

DETAILED VIEW OF CM'S SHEET 8 NOTES AND LEGEND:

1. **The bearing sizes shown on this drawing are based on a maximum service load reaction of 300 kips per bearing. The designer shall calculate the actual dead load reaction, not including future wearing surface.** In the actual dead load reaction calculations, the designer shall not make assumptions as to the location, size, number, or type of diaphragms. The designer shall provide a special design for the elastomeric bearings.

2. **Use the elastomeric bearing dimensions for L <= 290', regardless of actual total structure length.** A 290' diaphragm is placed one before the pier. Refer to Item 10.4.1 for guidance regarding placement of diaphragms and standard drawing PDD-100, Sheet 100/0, for guidance regarding placement of pier diaphragms.

3. **In order to allow for fit-up, the plate width may be decreased by 1/16". Dimension "a" shall be adjusted accordingly.**

4. **Cut the top of the H10x42 on a slope. The slope shall match the local tangent of the beam at the bearing prior to placement of the deck.**

5. **Thickness "d" of upper load plate shall be calculated as follows up to nearest 1/8":**

   \[ \frac{9 x (0.10 \times 1.10 \times 1.10)}{11.0} \]

6. **Upper load plate width normal to \( \theta \) beam (in.)**

7. **Upper load plate length parallel to \( \theta \) beam (in.)**

8. **Flange width of HP shape (in.)**

9. **Factored dead load reaction kips without FWS**

10. **Intended strength of \( \theta \) beam (in.)**

11. **End welded studs may be relocated in order to avoid interfering with reinforcing steel and prestressing strands. The designer shall show the exact location of the studs on the plans.**

12. **Elastomeric bearings: the elastomer shall have a hardness of 60 durometer. The bearings were designed in accordance with Section 4.1.6 Method B of the AASHTO LRFD Bridge Design Specifications.**

13. **Long-term compression proof load test gaseto standard specifications for highway bridges, Division II, Section 6.7.2.6 is not required.**

14. **Weld the steel lower load plate to the elastomer during the molding process.**

15. **If CMS 516.03, galvanize steel components of bearing assemblies.**

16. **Upper & lower load plates and HP shapes shall be considered components of the elastomeric bearing for payment.**

17. **The elastomeric assembly conforms to the "Eldo bridge design specifications" adopted by the American Association of State Highway and Transportation Officials, 6th edition and the ODOT bridge design manual, 2015.**

---

**Elastomeric Bearing Dimensions (a):**

<table>
<thead>
<tr>
<th>L (in.)</th>
<th>Elastomer Thickness (in.)</th>
<th>No. of External Elastomer Layers</th>
<th>No. of External Elastomer Layers</th>
<th>Steel Laminate Thickness (in.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>290' C L &lt;= 400'</td>
<td>0.265&quot;</td>
<td>3</td>
<td>3</td>
<td>0.074&quot;</td>
</tr>
<tr>
<td>400' C L &lt;= 500'</td>
<td>0.405&quot;</td>
<td>6</td>
<td>6</td>
<td>0.074&quot;</td>
</tr>
</tbody>
</table>

**Elastomeric Assembly Conformations:**

- **Sheets:** BDM Section 702.6.1 for guidance regarding placement of abutment diaphragms. Refer to Section 702.6.1 for guidance regarding placement of pier diaphragms.
GENERAL NOTES:

LIMITATIONS:

This standard drawing provides preferred and/or typical details for integral abutment details. The abutment dimensions, reinforcement requirements, and other data in the table below are minimum values and are provided to complete a design for the abutment. It is assumed that the designer has performed a complete design for the abutment. Do not assume that these drawings in the contract plans and do not use as standard construction drawings.

Details are intended for use on straight or curved alignments with Tangent Superstructure and I-Beam Bridges. The maximum permissible expansion length for integral precast I-Beam Bridges is 34% of the structure length for 1/3 movement in one direction and 7% for 1/1 movement in one direction. The maximum permissible expansion length for integral precast concrete I-Beam Bridges is not used. The total structure length, assuming 1/1 movement could occur in one direction, is the maximum permissible expansion length. Integral abutments shall be supported on a single row of piles. Allowable pile types and sizes, along with minimum values and a perform a complete design for the abutment. Do not assume that these drawings in the contract plans and do not use as standard construction drawings.

Pile types sizes other than those shown in the table above shall not be used unless approved by the department. The minimum allowable pile sizes shall be equal to the maximum permissible pile capacity of 2/3 pile diameters. This diameter shall be taken as the maximum permissible pile capacity.

The height of the pile cap shall not exceed 7'-6". Integral abutments shall be supported on at least 4 piles. For phased construction projects each phase shall be supported on at least 4 piles.

Integral abutments shall not be used where there are abutment with any segmental or differential settlement.

Design Specifications:

This structure shall conform to the latest "Standard Bridge Specifications" adopted by the American Association of State Highway and Transportation Officials and the "AASHTO Code of Practice". The requirements of the AASHTO LRFD Bridge Design Specifications. If the minimum length shown in the table above cannot be obtained, then the designer shall provide calculations to the Department for consideration. The pile caps of integral abutments shall conform to AASHTO LRFD Bridge Specifications. Pile types sizes other than those shown in the table above shall not be used unless approved by the department. The minimum allowable pile sizes shall be equal to the maximum permissible pile capacity of 2/3 pile diameters. This diameter shall be taken as the maximum permissible pile capacity.

The minimum values and a perform a complete design for the abutment. Do not assume that these drawings in the contract plans and do not use as standard construction drawings.

CONTRACTOR REQUIREMENTS:

Refer to standard drawing PSID-1-13, sheet 10/10, for temporary stability for deck placement:

Steel H-Piles - ASTM A572 - Yield Strength 50 KSI

Concrete Class QC1 - Compressive Strength 4.0 KSI

Concrete Class QC2 - Compressive Strength 4.5 KSI

Design Data:

Concrete Class QC2 - Compressive Strength 4.5 KSI

Concrete Class QC1 - Compressive Strength 4.0 KSI

Steel - Minimum Yield Strength 50 KSI

Structural Steel - ASTM A572 Grade 50 - Yield Strength 50 KSI

Reinforcing Steel - Minimum Yield Strength 60 KSI

Steel H-Piles - ASTM A572 - Yield Strength 60 KSI

Temporary Stability for Deck Placement:

Refer to standard drawing PSID-1-13, sheet 10/10, for contractor requirements.