<table>
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<th>CELL / MODEL NAME</th>
<th>DESCRIPTION</th>
<th>DATE</th>
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<tr>
<td>DFP-BT6372-0</td>
<td>Diaphragm Fixed Pier; Bulb T-Beam 63-72 inch beam depth; No skew</td>
<td>2/17/2017</td>
</tr>
<tr>
<td>DFP-BT6372-L</td>
<td>Diaphragm Fixed Pier; Bulb T-Beam 63-72 inch beam depth; Left skew</td>
<td>2/17/2017</td>
</tr>
<tr>
<td>DFP-BT6372-R</td>
<td>Diaphragm Fixed Pier; Bulb T-Beam 63-72 inch beam depth; Right skew</td>
<td>2/17/2017</td>
</tr>
<tr>
<td>DFP-I3642-0</td>
<td>Diaphragm fixed pier; I-Beam 36-42 inch beam depth; No skew</td>
<td>2/17/2017</td>
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<td>DFP-I3642-L</td>
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<td>2/17/2017</td>
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<tr>
<td>DFP-IL27-0</td>
<td>Diaphragm fixed pier; IL 27 inch beam depth; No skew</td>
<td>2/17/2017</td>
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<td>Diaphragm fixed pier; IL 27 inch beam depth; Left skew</td>
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<td>Diaphragm fixed pier; IL 27 inch beam depth; Right skew</td>
<td>2/17/2017</td>
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<td>Diaphragm fixed pier; IL 36 inch beam depth; Right skew</td>
<td>2/17/2017</td>
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<td>DFP-IL36N-0</td>
<td>Diaphragm fixed pier; IL 36 inch beam depth narrow top; No skew</td>
<td>2/17/2017</td>
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<td>Diaphragm fixed pier; IL 36 inch beam depth narrow top; Left skew</td>
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<td>DFP-IL4554-0</td>
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<td>2/17/2017</td>
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<td>Diaphragm fixed pier; IL 63-72 inch beam depth; No skew</td>
<td>2/17/2017</td>
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<td>DFP-IL6372-L</td>
<td>Diaphragm fixed pier; IL 63-72 inch beam depth; Left skew</td>
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<td>Diaphragm fixed pier; IL 63-72 inch beam depth narrow top; Right skew</td>
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</tr>
</tbody>
</table>
2-17-2017

DIAPHRAGM AT PIER

*Blended to sides of beams embedded into diaphragm.

PLAN AT PIER
(Showing bearing pads and PJF details)

SIDE RETAINER

(2 required each side of pier)

Equivalent rolled angle with stiffeners will be allowed in lieu of welded plates.
**DIAPHRAGM AT PIER**

*Bonded to sides of beams embedded into diaphragm.*

**PLAN AT PIER**

(Showing bearing pads and PJF details)

**DETAIL 'A'**

- Concrete brg. pad
- 2-17-2017

---

**SIDE RETAINER**

(2 required each side of beam)

Equivalent rolled angle with stiffeners will be allowed in lieu of welded plates.

---

Notes:

- Reinforcement bars in diaphragm are billed with superstructure on Sheet of
- Concrete in diaphragm is included with Concrete Superstructure on Sheet of
- Cost of 30 lb. roofing felt is included with Concrete Superstructure.
- Cost of side retainer and anchor bolts shall be included with Concrete Structures.
- For details of bar s20(E) see Sheet of
- The s20(E) bars shall be placed parallel to the beams.
- Spacing for these bars shall be at right angles to the beams.
- Anchor bolts and side retainers shall be according to Article 521.06 of the Standard Specifications. Side retainers shall be hot dip galvanized.
- Beams shall be braced for stability during erection and remain braced until deck is poured and cured.
- Anchor bolts and side retainers shall be installed as each exterior beam is erected unless an equivalent temporary means of lateral restraint is used.
DIAPHRAGM AT PIER

*Bonded to sides of beams embedded into diaphragm.

SECTION A-A

(Dimensions along e of beam, except as shown)

DIAPHRAGM DETAILS

will be allowed in lieu of welded plates.

Anchor bolts and side retainers shall be installed as each exterior beam is erected unless an equivalent temporary means of lateral restraint is used.

Notes:
- Reinforcement bars in diaphragm are billed with superstructure on sheet of 
- Concrete in diaphragm is included with Concrete Superstructure on sheet of 
- Cost of 30 Lb. roofing felt is included with Concrete Superstructure.
- Cost of side retainer and anchor bolts shall be included with Concrete Structures.
- For details of bar s20(E) see sheet of  .
- The v20(E) bars shall be placed parallel to the beams.
- Spacing for these bars shall be at right angles to the beams.
- Anchor bolts and side retainers shall be according to Article 521.06 of the Standard Specifications. Side retainers shall be hot dip galvanized.
- Beams shall be braced for stability during erection and remain braced until deck is poured and cured.
- Anchor bolts and side retainers shall be installed as each exterior beam is erected unless an equivalent temporary means of lateral restraint is used.

Notes:

Concrete in diaphragm is included with Concrete Superstructure on sheet of  .

Fabric Pad

Concrete Beam

Fabric Bridge Pad

Concrete Bridge Pad

DIAPHRAGM AT PIER

*Bonded to sides of beams embedded into diaphragm.

PLAN AT PIER

(Showing bearing pads and PJF details)
DIAPHRAGM DETAILS

1.6 will be allowed in lieu of welded plates.

Equivalent rolled angle with stiffeners (2 required each side of pier).

Typ.

Notes:
- Reinforcement bars in diaphragm are billed with superstructure.
- Concrete in diaphragm is included in Concrete Superstructure.
- Cost of 30 Lb. roofing felt is included in Concrete Superstructure.
- Sidewalks shall be hot dip galvanized. Beams shall be braced for stability during erection and remain braced until deck is poured and cured.
- Anchor bolts and side retainers shall be installed as each exterior beam is erected unless an equivalent temporary means of lateral restraint is used.

PLAN AT PIERS

DIAPHRAGM AT PIERS

SIDE RETAINER

(2 required each side of pier).

Equivalent rolled angle with stiffeners will be allowed in lieu of welded plates.

Concrete Structures.
**DIAPHRAGM AT PIER**

*Bonded to sides of beams embedded into diaphragm.*

**SECTION A-A**

(Dimensions along $\varnothing$ of beam except as shown)

**Notes:**
1. Reinforcement bars in diaphragm are billed with superstructure on sheet of.
2. Concrete in diaphragm is included with Concrete Superstructure on sheet of.
3. Cost of 30 Lb. roofing felt is included with Concrete Superstructure.
4. Cost of side retainer and anchor bolts shall be included with Concrete Superstructure.
5. For details of bar s20(E), see sheet of.
6. The v20(E) bars shall be placed parallel to the beams.
7. Spacing for these bars shall be at right angles to the beams.
8. Anchor bolts and side retainers shall be according to Article 521.06 of the Standard Specifications. Side retainers shall be hot dip galvanized.
9. Beams shall be braced for stability during erection and remain braced until deck is poured and cured.
10. Anchor bolts and side retainers shall be installed as each exterior beam is erected unless an equivalent temporary means of lateral restraint is used.

**PLAN AT PIER**

(Showing bearing pads and PJF details)
**DIAPHRAGM AT PIER**

*Bonded to sides of beams embedded into diaphragm.*

**SIDE RETAINER**

(2 required each side of pier)

Equivalent rolled angle with stiffeners will be allowed in lieu of welded plates.

**SECTION A-A**

(Dimensions along # of beam except as shown)

Notes:
- Reinforcement bars in diaphragm are billed with superstructure on sheet of.
- Concrete in diaphragm is included with Concrete Superstructure on sheet of.
- Cost of 30 lb. roofing felt is included with Concrete Superstructure.
- Cost of side retainer and anchor bolts shall be included with Concrete Structures.
- For details of bar s20(E) see sheet of Concrete Structures.
- The s20(E) bars shall be placed parallel to the beams.
- Spacing for these bars shall be at right angles to the beams.
- Anchor bolts and side retainers shall be according to Article 521.06 of the Standard Specifications. Side retainers shall be hot dip galvanized.
- Beams shall be braced for stability during erection and remain braced until deck is poured and cured.
- Anchor bolts and side retainers shall be installed as each exterior beam is erected unless an equivalent temporary means of lateral restraint is used.

Concrete in diaphragm is included with Concrete Superstructure on sheet of.

Anchor bolts and side retainers shall be included with Concrete Structures.

For details of bar s20(E) see sheet of Concrete Structures.

Anchor bolts and side retainers shall be according to Article 521.06 of the Standard Specifications.

Spacing for these bars shall be at right angles to the beams.

Anchor bolts and side retainers shall be installed as each exterior beam is erected unless an equivalent temporary means of lateral restraint is used.
will be allowed in lieu of welded plates. Equivalent rolled angle with stiffeners (2 required each side of pier).

Notes:
- Reinforcement bars in diaphragm are billed with superstructure on sheet of.
- Concrete in diaphragm is included with Concrete Superstructure on sheet.
- Cost of 30 lb. roofing felt is included with Concrete Superstructure. Cost of side retainer and anchor bolts shall be included with Concrete Structures.
- For details of bar s20(E) see sheet of Concrete Structures.
- Anchor bolts and side retainers shall be according to Article 521.06 of the Standard Specifications. Side retainers shall be hot dip galvanized.
- Beams shall be braced for stability during erection and remain braced until deck is poured and cured.
- Anchor bolts and side retainers shall be installed as each exterior beam is erected unless an equivalent temporary means of lateral restraint is used.

Fabric brg. pad bonded to sides of beams embedded into diaphragm.

Concrete in diaphragm is included with Concrete Superstructure on sheet of.
**Notes:**

- Reinforcement bars in diaphragm are billed with superstructure on sheet.
- Concrete in diaphragm is included with Concrete Superstructure on sheet.
- Cost of 30 lb. roofing felt is included with Concrete Superstructure.
- Cost of side retainer and anchor bolts shall be included with Concrete Structures.
- Fabric brg. pad shall be bonded to sides of beams embedded into diaphragm.
- Spacing for these bars shall be 12 in. centered between beams.
- Anchor bolts and side retainers shall be according to Article 521.06 of the Standard Specifications.
- Side retainers shall be hot dip galvanized.
- Beams shall be braced for stability during erection and remain braced until deck is poured and cured.
- Anchor bolts and side retainers shall be installed as each exterior beam is erected unless an equivalent temporary means of lateral restraint is used.

---

**DIAPHRAGM AT PIER**

- Bonded to sides of beams embedded into diaphragm.
- See Detail 'A'

**SIDE RETAINER**

- 2 required each side of pier
- Equivalent rolled angle with stiffeners will be allowed in lieu of welded plates

---

**PLAN AT PIER**

(Showing bearing pads and PJF details)
DIAPHRAGM AT PIER
*Bonded to sides of beams embedded into diaphragm.

SIDE RETAINER
(2 required each side of pier)
Equivalent rolled angle with stiffeners will be allowed in lieu of welded plates.

Reinforcement bars in diaphragm are billed with superstructure on sheet 1 of
Concrete in diaphragm is included with Concrete Superstructure on sheet 1 of
Cost of 30 lb. roofing felt is included with Concrete Superstructure.
Cost of side retainer and anchor bolts shall be included with
Concrete Structures.
For details of bar s20(E) see sheet 1 of
The s20(E) bars shall be placed parallel to the beams.
Spacing for these bars shall be at right angles to the beams.
Anchor bolts and side retainers shall be according to Article 521.06
of the Standard Specifications. Side retainers shall be hot dip galvanized.
Beams shall be braced for stability during erection and remain braced
until deck is poured and cured.
Anchor bolts and side retainers shall be installed as each exterior beam
is erected unless an equivalent temporary means of lateral restraint is used.

Notes:

Concrete Structures.
DIAPHRAGM AT PIER

*Bonded to sides of beams embedded into diaphragm.

Concrete beams

Fabric brg. pad

PD

SECTION A-A

Notes:
- Reinforcement bars in diaphragm are billed with superstructure on sheet of.
- Concrete in diaphragm is included with Concrete Superstructure on sheet of.
- Cost of 30 lb. roofing felt is included with Concrete Superstructure.
- Cost of side retainer and anchor bolts shall be included with Concrete Structures.

Side retainer and anchor bolts shall be according to Article 521.06 of the Standard Specifications. Side retainers shall be hot dip galvanized. Anchor bolts shall be for stability during erection and remain braced until deck is poured and cured.

Anchor bolts and side retainers shall be installed as each exterior beam is erected unless an equivalent temporary means of lateral restraint is used. Equivalent rolled angle with stiffeners will be allowed in lieu of welded plates.

Cost of side retainer and anchor bolts shall be according to Article 521.06 of the Standard Specifications. Side retainers shall be hot dip galvanized.

Anchor bolts and side retainers shall be installed as each exterior beam is erected unless an equivalent temporary means of lateral restraint is used.

Equivalent rolled angle with stiffeners will be allowed in lieu of welded plates.
DIAPHRAGM AT PIER
*Bonded to sides of beams embedded into diaphragm.

SECTION A-A
(Dimensions along $q$ of beam except as shown)

Notes:
- Reinforcement bars in diaphragm are billed with superstructure on sheet of.
- Concrete in diaphragm is included with Concrete Superstructure on sheet of.
- Cost of 30 Lb. roofing felt is included with Concrete Superstructure.
- Cost of side retainer and anchor bolts shall be included with Concrete Structures.
- For details of bar s20(E) see sheet of.
- The s20(E) bars shall be placed parallel to the beams.
- Spacing for these bars shall be at right angles to the beams.
- Anchor bolts and side retainers shall be according to Article 521.06 of the Standard Specifications. Side retainers shall be hot dip galvanized.
- Beams shall be braced for stability during erection and remain braced until deck is poured and cured.
- Anchor bolts and side retainers shall be installed as each exterior beam is erected unless an equivalent temporary means of lateral restraint is used.

PLAN AT PIER
(Showing bearing pads and PJF details)
**DIAPHRAGM AT PIER**

Bonded to sides of beams embedded into diaphragm.

**SIDE RETAINER**

2-17-2017
**DIAPHRAGM AT PIER**

*Bonded to sides of beams embedded into diaphragm.

**PLAN AT PIER**

(Showing bearing pads and PJF details)

---

**SIDE RETAINER**

(2 required each side of pier)

Equivalent rolled angle with stiffeners will be allowed in lieu of welded plates.

---

**Notes:**

- Reinforcement bars in diaphragm are billed with superstructure on sheet of.
- Concrete in diaphragm is included with Concrete Superstructure on sheet of.
- Cost of 30 lb. roofing felt is included with Concrete Superstructure.
- Cost of side retainer and anchor bolts shall be included with Concrete Structures.
- For details of bar s20(E) see sheet of.
- Anchor bolts and side retainers shall be accordance to Article 521.06 of the Standard Specifications. Side retainers shall be hot dip galvanized.
- Beams shall be braced for stability during erection and remain braced until deck is poured and cured.
- Anchor bolts and side retainers shall be installed at each exterior beam is erected unless an equivalent temporary means of lateral restraint is used.
STRUCTURE NO. 16
DIAPHRAGM DETAILS
(Showing bearing pads and PJF details)

Notes:
- Reinforcement bars in diaphragm are billed with superstructure on sheet of.
- Concrete in diaphragm is included with Concrete Superstructure on sheet of.
- Cost of 30 Lb. roofing felt is included with Concrete Superstructure.
- Cost of side retainer and anchor bolts shall be included with Concrete Structures.
- For details of bar s20(E) see sheet of.
- The s20(E) bars shall be placed parallel to the beams.
- Spacing for these bars shall be at right angles to the beams.
- Anchor bolts and side retainers shall be according to Article 521.06 of the Standard Specifications. Side retainers shall be hot dip galvanized.
- Beams shall be braced for stability during erection and remain braced until deck is placed and cured.
- Anchor bolts and side retainers shall be installed at each exterior beam.
- Diaphragm in diaphragm is included with Concrete Superstructure.
- Reinforcement bars in diaphragm are billed with superstructure on sheet of.
- Notes:

PLAN AT PIER
(Showing bearing pads and PJF details)

DIAPHRAGM AT PIER
*Bonded to sides of beams embedded into diaphragm.

SECTION A-A
(Dimensions along of beam except as shown)

SIDE RETAINER
(2 required each side of beam)
Equivalent rolled angle with stiffeners will be allowed in lieu of welded plates.

Concrete Structures.

Cost of side retainer and anchor bolts shall be included with
Concrete in diaphragm is included with Concrete Superstructure.

Notes:
- Reinforcement bars in diaphragm are billed with superstructure on sheet of.
- Concrete in diaphragm is included with Concrete Superstructure on sheet of.
- Cost of 30 Lb. roofing felt is included with Concrete Superstructure.
- Cost of side retainer and anchor bolts shall be included with
Concrete Structures.
- For details of bar s20(E) see sheet of.
- The s20(E) bars shall be placed parallel to the beams.
- Spacing for these bars shall be at right angles to the beams.
- Anchor bolts and side retainers shall be according to Article 521.06 of the Standard Specifications. Side retainers shall be hot dip galvanized.
- Beams shall be braced for stability during erection and remain braced
until deck is placed and cured.
- Anchor bolts and side retainers shall be installed at each exterior beam.
- Diaphragm in diaphragm is included with Concrete Superstructure.
- Reinforcement bars in diaphragm are billed with superstructure on sheet of.
- Notes:

PLAN AT PIER
(Showing bearing pads and PJF details)

DIAPHRAGM AT PIER
*Bonded to sides of beams embedded into diaphragm.

SECTION A-A
(Dimensions along of beam except as shown)

SIDE RETAINER
(2 required each side of beam)
Equivalent rolled angle with stiffeners will be allowed in lieu of welded plates.
Notes:

- Reinforcement bars in diaphragm are billed with superstructure on sheet of.
- Concrete in diaphragm is included with Concrete Superstructure on sheet of.
- Cost of side retainer and anchor bolts shall be included with Concrete Structures.
- For details of bar (20E) see sheet of.
- The (20E) bars shall be placed parallel to the beams.
- Spacing for these bars shall be at right angles to the beams.
- Anchor bolts and side retainers shall be according to Article 521.06 of the Standard Specifications. Side retainers shall be hot dip galvanized.
- Anchor bolts shall be installed as each exterior beam is erected unless an equivalent temporary means of lateral restraint is used.

2-17-2017
DIAPHRAGM AT PIER

*Bonded to sides of beams embedded into diaphragm.

SECTION A-A

Notes:
- Reinforcement bars in diaphragm are billed with superstructure on sheet A-1 of the Standard Specifications. Side retainer shall be hot dip galvanized. Beams shall be braced for stability during erection and remain braced until deck is poured and cured.
- Anchor bolts and side retainers shall be installed as each exterior beam is erected unless an equivalent temporary means of lateral restraint is used.
DIAPHRAGM AT PIER

* Bonded to sides of beams embedded into diaphragm.

SECTION A-A
(Dimensions along % length of beam except as shown)

Notes:
- Reinforcement bars in diaphragm are billed with superstructure on sheet of.
- Concrete in diaphragm is included with Concrete Superstructure on sheet of.
- Cost of 30 Lb. roofing felt is included with Concrete Superstructure.
- Cost of side retainer and anchor bolts shall be included with Concrete Structures.
- For details of bar s20(E) see sheet of Concrete Structures.
- The %20(E) bars shall be placed parallel to the beams.
- Spacing for these bars shall be at right angles to the beams.
- Anchor bolts and side retainers shall be bonded to sides of beams embedded into diaphragm.
- Equivalent rolled angle with stiffeners will be allowed in lieu of welded plates.
- Anchor bolts and side retainers shall be installed as each exterior beam is erected unless an equivalent temporary means of lateral restraint is used.

DIAPHRAGM DETAILS

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

DFP-IL36N-L

2-17-2017
Notes:

Reinforcement bars in diaphragm are billed with superstructure on sheet of.
Concrete in diaphragm is included with Concrete Superstructure.
Cost of 30 lb. roofing felt is included with Concrete Superstructure.
Cost of side retainer and anchor bolts shall be included with Concrete Structures.
For details of bar s20(E) see sheet of.
The s20(E) bars shall be placed parallel to the beams.
Spacing for these bars shall be at right angles to the beams.
Anchor bolts and side retainers shall be according to Article 521.06 of the Standard Specifications. Side retainers shall be hot dip galvanized.
Beams shall be braced for stability during erection and remain braced until deck is poured and cured.
Anchor bolts and side retainers shall be installed as each exterior beam is erected unless an equivalent temporary means of lateral restraint is used.
**DIAPHRAGM DETAILS**

1. Welded plates will be allowed in lieu of welded plates. Equivalent rolled angle with stiffeners (2 required each side of pier).

2. Extended prestressing strands (Showing bearing pads and PJF details)

3. Anchor bolts and side retainers shall be according to Article 521.06 of the Standard Specifications. Side retainers shall be hot dip galvanized. Anchor bolts and side retainers shall be installed as each exterior beam is erected unless an equivalent temporary means of lateral restraint is used.

**Notes:**

- Reinforcement bars in diaphragm are billed with superstructure on sheet of Concrete Structures.
- Concrete in diaphragm is included with Concrete Superstructure on sheet of Concrete Structures.
- Cost of side retainer and anchor bolts shall be included with Concrete Structures.
- For details of bar s20(E) see sheet of Concrete Structures. Anchor bolts and side retainers shall be installed as each exterior beam is erected unless an equivalent temporary means of lateral restraint is used.
DIAPHRAGM AT PIER

*Bonded to sides of beams embedded into diaphragm.

SECTION A-A

(Dimensions along 1/8 of beam except as shown)

Notes:
- Reinforcement bars in diaphragm are billed with superstructure on sheet of.
- Concrete in diaphragm is included with Concrete Superstructure on sheet of.
- Cost of 30 Lb. roofing felt is included with Concrete Superstructure.
- Cost of side retainer and anchor bolts shall be included with Concrete Structures.
- For details of bar s20(E) see sheet of.
- The s20(E) bars shall be placed parallel to the beams.
- Spacing for these bars shall be at right angles to the beams.
- Anchor bolts and side retainer shall be according to Article 521.06 of the Standard Specifications. Side retainers shall be hot dip galvanized.
- Beams shall be braced for stability during erection and remain braced until deck is poured and cured.
- Anchor bolts and side retainer shall be installed as each exterior beam is erected unless an equivalent temporary means of lateral restraint is used.
- Equivalent rolled angle with stiffeners will be allowed in lieu of welded plates.

PLAN AT PIER

(Showing bearing pads and PJF details)
Section A-A

Group bolts shall be fabricated with superstructure on sheet of concrete diaphragm as shown in sheet of Concrete Structures. Side retainers shall be hot-dip galvanized. Anchor bolts and side retainers shall be according to Article 521.06 of the Standard Specifications. Side retainers shall be placed parallel to the beams.

Spacing for these bars shall be at right angles to the beams. Reinforcement bars in diaphragm are billed with superstructure on sheet of of Concrete Structures.  Cost of 30 Lb. roofing felt is included with Concrete Superstructure. Concrete in diaphragm is included with Concrete Superstructure.

Notes:
- Reinforcement bars in diaphragm are billed with superstructure on sheet of Concrete Structures.
- Concrete in diaphragm is included with Concrete Superstructure on sheet of Concrete Structures.
- Cost of 30 Lb. roofing felt is included with Concrete Superstructure. Cost of side retainer and anchor bolts shall be included with Concrete Structures.
- For details of bar s20(E) see sheet of Concrete Structures. for details of bar s20(E) see sheet of Concrete Structures. The s20(E) bars shall be placed parallel to the beams. The s20(E) bars shall be placed parallel to the beams.
- Anchor bolts and side retainers shall be according to Article 521.06 of the Standard Specifications. Side retainers shall be hot-dip galvanized. Side retainers shall be hot-dip galvanized.
- Bars shall be placed for stability during erection and remain braced until deck is poured and cured.
- Anchor bolts and side retainers shall be installed as each exterior beam is erected unless an equivalent temporary means of lateral restraint is used.
- Dimensions along $a$ of beam except as shown.
- $1'-9"$ is erected unless an equivalent temporary means of lateral restraint is used.
- Anchor bolts and side retainers shall be installed as each exterior beam is erected.
- Beams shall be braced for stability during erection and remain braced until deck is poured and cured.
- $8'-0"$ is erected unless an equivalent temporary means of lateral restraint is used.

DIAPHRAGM AT PIER

*Bonded to sides of beams embedded into diaphragm.

Plan at Pier

(Sheeting pad and PJF details)

Fabric brg. pad

Concrete Pad

DETAIL 'A'

Fabric brg. pad

Concrete Pad

DIAPHRAGM AT PIER

*Bonded to sides of beams embedded into diaphragm.

SIDE RETAINER

(2 required each side of pier)

Equivalent rolled angle with stiffeners will be allowed in lieu of welded plates.

Notes:
- Reinforcement bars in diaphragm are billed with superstructure on sheet of Concrete Structures.
- Concrete in diaphragm is included with Concrete Superstructure on sheet of Concrete Structures.
- Cost of 30 Lb. roofing felt is included with Concrete Superstructure. Cost of side retainer and anchor bolts shall be included with Concrete Structures.
- For details of bar s20(E) see sheet of Concrete Structures. The s20(E) bars shall be placed parallel to the beams. The s20(E) bars shall be placed parallel to the beams.
- Anchor bolts and side retainers shall be according to Article 521.06 of the Standard Specifications. Side retainers shall be hot-dip galvanized. Side retainers shall be hot-dip galvanized.
- Bars shall be placed for stability during erection and remain braced until deck is poured and cured.
- Anchor bolts and side retainers shall be installed as each exterior beam is erected unless an equivalent temporary means of lateral restraint is used.
- Dimensions along $a$ of beam except as shown.
- $1'-9"$ is erected unless an equivalent temporary means of lateral restraint is used.
- Anchor bolts and side retainers shall be installed as each exterior beam is erected.
- Beams shall be braced for stability during erection and remain braced until deck is poured and cured.
- $8'-0"$ is erected unless an equivalent temporary means of lateral restraint is used.
- Dimensions along $a$ of beam except as shown.
- $1'-9"$ is erected unless an equivalent temporary means of lateral restraint is used.
- Anchor bolts and side retainers shall be installed as each exterior beam is erected.
**DIAPHRAGM AT PIER**

*Bonded to sides of beams embedded into diaphragm.*

**SECTION A-A**

*Notes:
Reinforcement bars in diaphragm are billed with superstructure on sheet of .
Concrete in diaphragm is included with Concrete Superstructure on sheet of .
Cost of 30 lb. roofing felt is included with Concrete Superstructure.
Cost of side retainer and anchor bolts shall be included with Concrete Structures.
For details of bar m20(E) see sheet .
Anchor bolts and side retainers shall be according to Article 521.06 of the Standard Specifications. Side retainers shall be hot dip galvanized.*

**SIDE RETAINER**

*(2 required each side of pier)*

Equivalent rolled angle with stiffeners will be allowed in lieu of welded plates.
Diaphragm Details

1. Equivalent rolled angle with stiffeners (2 required each side of pier).

2. Extended prestressing strands

3. Beams shall be braced for stability during erection and remain braced until deck is poured and cured.

4. Anchor bolts and side retainers shall be according to Article 521.06

5. Spacing for these bars shall be at right angles to the beams. Anchor bolts and side retainers shall be placed parallel to the beams.

6. Fabric brg. pad bonded to sides of beams embedded into diaphragm.

7. Concrete in diaphragm is included with Concrete Superstructure on sheet 1 of Concrete Structures.

8. Reinforcement bars in diaphragm are billed with superstructure on sheet 8 of the Standard Specifications.

9. Cost of 30 Lb. roofing felt is included with Concrete Superstructure.

10. Concrete in diaphragm is included with Concrete Superstructure on sheet 8 of Concrete Structures.

11. Cost of side retainer and anchor bolts shall be included with Concrete Structures.

12. For details of bar s20(E) see sheet 8 of Concrete Structures.

13. Anchors shall be hot dip galvanized.

14. Beams shall be braced for stability during erection and remain braced until deck is poured and cured.

15. Anchor bolts and side retainers shall be installed as each exterior beam is erected unless an equivalent temporary means of lateral restraint is used.

Notes:

1. Reinforcement bars in diaphragm are billed with superstructure on sheet 8 of the Standard Specifications.

2. Concrete in diaphragm is included with Concrete Superstructure on sheet 8 of Concrete Structures.

3. Cost of 30 Lb. roofing felt is included with Concrete Superstructure.

4. Cost of side retainer and anchor bolts shall be included with Concrete Structures.

5. For details of bar s20(E) see sheet 8 of Concrete Structures.

6. The s20(E) bars shall be placed parallel to the beams.

7. Spacing for these bars shall be at right angles to the beams.

8. Anchor bolts and side retainers shall be placed parallel to the beams.

9. Fabric brg. pad glued to sides of beams embedded into diaphragm.

10. Concrete in diaphragm is included with Concrete Superstructure on sheet 8 of Concrete Structures.

11. Cost of side retainer and anchor bolts shall be included with Concrete Structures.

12. For details of bar s20(E) see sheet 8 of Concrete Structures.

13. Anchors shall be hot dip galvanized.

14. Beams shall be braced for stability during erection and remain braced until deck is poured and cured.

15. Anchor bolts and side retainers shall be installed as each exterior beam is erected unless an equivalent temporary means of lateral restraint is used.
DIAPHRAGM AT PIER

*Bonded to sides of beams embedded into diaphragm

SECTION A-A

(Dimensions along $x$ of beam except as shown)

Notes:
- Reinforcement bars in diaphragm are billed with superstructure on sheet of
- Concrete in diaphragm is included with Concrete Superstructure on sheet of
- Cost of 30 lb. roofing felt is included with Concrete Superstructure.
- Cost of side retainer and anchor bolts shall be included with Concrete Structures.
- For details of bar s20(E) see sheet of
- The s20(E) bars shall be placed parallel to the beams.
- Anchor bolts and side retainers shall be according to Article 521.06 of the Standard Specifications. Side retainers shall be hot dip galvanized.
- Beams shall be braced for stability during erection and remain braced until deck is poured and cured.
- Anchor bolts and side retainers shall be installed as each exterior beam is erected unless an equivalent temporary means of lateral restraint is used.

SIDE RETAINER

(2 required each side of pier)
Equivalent rolled angle with stiffeners will be allowed in lieu of welded plates.

PLAN AT PIER

(Showing bearing pads and PJF details)

DIAPHRAGM DETAILS

16

Structural NO.

DIAPHRAGM AT PIER

*Bonded to sides of beams embedded into diaphragm

SECTION A-A

(Dimensions along $x$ of beam except as shown)

Notes:
- Reinforcement bars in diaphragm are billed with superstructure on sheet of
- Concrete in diaphragm is included with Concrete Superstructure on sheet of
- Cost of 30 lb. roofing felt is included with Concrete Superstructure.
- Cost of side retainer and anchor bolts shall be included with Concrete Structures.
- For details of bar s20(E) see sheet of
- The s20(E) bars shall be placed parallel to the beams.
- Anchor bolts and side retainers shall be according to Article 521.06 of the Standard Specifications. Side retainers shall be hot dip galvanized.
- Beams shall be braced for stability during erection and remain braced until deck is poured and cured.
- Anchor bolts and side retainers shall be installed as each exterior beam is erected unless an equivalent temporary means of lateral restraint is used.

SIDE RETAINER

(2 required each side of pier)
Equivalent rolled angle with stiffeners will be allowed in lieu of welded plates.

PLAN AT PIER

(Showing bearing pads and PJF details)
Notes:  
Reinforcement bars in diaphragm are billed with superstructure on sheet of  
Concrete in diaphragm is included with Concrete Superstructure on sheet of  
Cost of 30 lb. roofing felt is included with Concrete Superstructure.  
Cost of side retainer and anchor bolts shall be billed with Concrete Structures.  
For details of bar v20(E) see sheet of  
Anchor bolts and side retainers shall be according to Article 521.06  
of the Standard Specifications.  
Side retainers shall be hot dip galvanized.  
Bolts shall be placed for stability during erection and remain braced until deck is poured and cured.  
Anchor bolts and side retainers shall be installed as each exterior beam is erected unless an equivalent temporary means of lateral restraint is used.

Concrete in diaphragm is included with Concrete Superstructure on sheet of  
Reinforcement bars in diaphragm are billed with superstructure on sheet of  
Cost of 30 lb. roofing felt is included with Concrete Superstructure.  
Cost of side retainer and anchor bolts shall be billed with Concrete Structures.  
For details of bar v20(E) see sheet of  
Anchor bolts and side retainers shall be according to Article 521.06  
of the Standard Specifications.  
Side retainers shall be hot dip galvanized.  
Bolts shall be placed for stability during erection and remain braced until deck is poured and cured.  
Anchor bolts and side retainers shall be installed as each exterior beam is erected unless an equivalent temporary means of lateral restraint is used.
**DIAPHRAGM AT PIER**

*Bonded to sides of beams embedded into diaphragm.*

**SIDE RETAINER**

(2 required each side of pier) Equivalent rolled angle with stiffeners will be allowed in lieu of welded plates.

**PLAN AT PIER**

(Showing bearing pads and PJF details)

Notes:
- Reinforcement bars in diaphragm are billed with superstructure on sheet of.
- Concrete in diaphragm is included with Concrete Superstructure.
- Cost of 30 lb. roofing felt is included with Concrete Superstructure.
- Cost of side retainer and anchor bolts shall be included with Concrete Structures.
- For details of bar s20(E) see sheet of Concrete Structures.
- Concretes are placed parallel to the beams.
- Spacing for these bars shall be at right angles to the beams.
- Anchors bolts and side retainers shall be installed as each exterior beam is erected unless an equivalent temporary means of lateral restraint is used.
Reinforcement bars in diaphragm are billed with superstructure on Sheet of Concrete in diaphragm is included with Concrete Superstructure on Sheet of Cost of 30 lb. roofing felt is included with Concrete Superstructure. Cost of side retainer and anchor bolts shall be included with Concrete Structures.

For details of bar s20(E) see Sheet of the 300(E) bars shall be placed parallel to the beams. Spacing for these bars shall be at right angles to the beams. Anchor bolts and side retainers shall be according to Article 521.06 of the Standard Specifications. Side retainers shall be hot dip galvanized. Beams shall be braced for stability during erection and remain braced until deck is placed and cured. Anchor bolts and side retainers shall be installed at each exterior beam is erected unless an equivalent temporary means of lateral restraint is used.

Notes:

Concrete Structures.

Reinforcement bars in diaphragm are bonded to sides of beams embedded into diaphragm.

Extended prestressing strands

See Detail 'A'

DIAPHRAGM AT PIER

*Bonded to sides of beams embedded into diaphragm.

Concrete Structures.

Reinforcement bars in diaphragm are billed with superstructure on Sheet of Concrete in diaphragm is included with Concrete Superstructure on Sheet of Cost of 30 lb. roofing felt is included with Concrete Superstructure. Cost of side retainer and anchor bolts shall be included with Concrete Structures.

For details of bar s20(E) see Sheet of the 300(E) bars shall be placed parallel to the beams. Spacing for these bars shall be at right angles to the beams. Anchor bolts and side retainers shall be according to Article 521.06 of the Standard Specifications. Side retainers shall be hot dip galvanized. Beams shall be braced for stability during erection and remain braced until deck is placed and cured. Anchor bolts and side retainers shall be installed at each exterior beam is erected unless an equivalent temporary means of lateral restraint is used.

Notes:

Concrete Structures.

Reinforcement bars in diaphragm are bonded to sides of beams embedded into diaphragm.

Concrete Structures.

Reinforcement bars in diaphragm are bonded to sides of beams embedded into diaphragm.

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Reinforcement bars in diaphragm are bonded to sides of beams embedded into diaphragm.

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Reinforcement bars in diaphragm are bonded to sides of beams embedded into diaphragm.

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Reinforcement bars in diaphragm are bonded to sides of beams embedded into diaphragm.

Concrete Structures.

Reinforcement bars in diaphragm are bonded to sides of beams embedded into diaphragm.

Concrete Structures.

Reinforcement bars in diaphragm are bonded to sides of beams embedded into diaphragm.

Concrete Structures.
**DIAPHRAGM DETAILS**

1. Fabric Pad
2. See Detail 'A'
3. Concrete Pad
4. See Section A-A
5. Side Retainer
6. Washer under nut
7. Ø 1'-6" Anchor bolts
8. Grade #50 with 3" x 3" x 16"
9. Ø hole, typ.
10. 1'-9" Ø hole, typ.

**SIDE RETAINER**

(2 required each side of pier)

Equivalent rolled angle with stiffeners will be allowed in lieu of welded plates.

**Notes:**

- Reinforcement bars in diaphragm are billed with superstructure on sheet of.
- Concrete in diaphragm is included with Concrete Superstructure on sheet of.
- Cost of 30 lb. roofing felt is included with Concrete Superstructure.
- Cost of side retainer and anchor bolts shall be included with Concrete Structures.
- For details of bar (20E) see sheet of.
- Anchor bolts and side retainers shall be according to Article 321.06 of the Standard Specifications. Side retainers shall be hot dip galvanized.
- Beams shall be braced for stability during erection and remain braced until deck is poured and cured.
- Anchor bolts and side retainers shall be installed as each exterior beam is erected unless an equivalent temporary means of lateral restraint is used.

**PLAN AT PIER**

(Showing bearing pads and PJF details)

- 2-1/4" x 1-3/4" x 3'-0"
- 1'-9" x 1'-9"
- 1" x 1'-3" x 3'-0"

**DIAPHRAGM AT PIER**

*Bonded to sides of beams embedded into diaphragm.*

- 2-1/4" x 1-3/4" bars
equivalent to welded plates.
- Equivalent rolled angle with stiffeners (2 required each side of pier).
- See Section A-A

**SECTION A-A**

Extended prestressing strands

**DIAPHRAGM DETAILS**

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

DFP-16.6372N-0

2-17-2017
### Diaphragm Details

1. Welded plates will be allowed in lieu of welded plates. Equivalent rolled angle with stiffeners (2 required each side of pier).

2. Concrete in diaphragm is included with Concrete Superstructure.

3. Reinforcement bars in diaphragm are billed with superstructure on sheet of.

4. Cost of 30 lb. roofing felt is included with Concrete Superstructure.

5. Anchor bolts and side retainers shall be according to Article 521.06 of the Standard Specifications. Side retainers shall be hot dip galvanized.

6. Anchor bolts and side retainers shall be installed as each exterior beam is erected unless an equivalent temporary means of lateral restraint is used.

**Notes:**
- Reinforcement bars in diaphragm are billed with superstructure on sheet of.
- Concrete in diaphragm is included with Concrete Superstructure on sheet of.
- Cost of 30 lb. roofing felt is included with Concrete Superstructure.
- Anchor bolts and side retainers shall be according to Article 521.06 of the Standard Specifications. Side retainers shall be hot dip galvanized.
- Anchor bolts and side retainers shall be installed as each exterior beam is erected unless an equivalent temporary means of lateral restraint is used.

**Extended pre-stressing strands**

**Notes:**
- Concrete Superstructure.

**Fabric brg. pad**

**Notes:**
- Bonded to sides of beams embedded into diaphragm.
- Concrete Pad
- See Detail 'A'

**PJF**

**Notes:**
- Bonded to sides of beams embedded into diaphragm.
- Concrete Pad
- See Detail 'A'

**DIAPHRAGM AT PIER**

**Notes:**
- Bonded to sides of beams embedded into diaphragm.

**Notes:**
- Concrete Pad
- Side retainer
- See Detail 'A'

**PLAN AT PIER**

**Notes:**
- Bonded to sides of beams embedded into diaphragm.

**Notes:**
- Concrete Pad
- See Detail 'A'

**SIDE RETAINER**

**Notes:**
- (2 required each side of pier)
- Equivalent rolled angle with stiffeners will be allowed in lieu of welded plates.

**DIAPHRAGM DETAILS**

**Notes:**
- Concrete Pad
- See Detail 'A'

**PLAN AT PIER**

**Notes:**
- Bonded to sides of beams embedded into diaphragm.

**Notes:**
- Concrete Pad
- See Detail 'A'

**SIDE RETAINER**

**Notes:**
- (2 required each side of pier)
- Equivalent rolled angle with stiffeners will be allowed in lieu of welded plates.

**DIAPHRAGM AT PIER**

**Notes:**
- Bonded to sides of beams embedded into diaphragm.

**Notes:**
- Concrete Pad
- See Detail 'A'

**SIDE RETAINER**

**Notes:**
- (2 required each side of pier)
- Equivalent rolled angle with stiffeners will be allowed in lieu of welded plates.

**DIAPHRAGM DETAILS**

**Notes:**
- Concrete Pad
- See Detail 'A'

**PLAN AT PIER**

**Notes:**
- Bonded to sides of beams embedded into diaphragm.

**Notes:**
- Concrete Pad
- See Detail 'A'

**SIDE RETAINER**

**Notes:**
- (2 required each side of pier)
- Equivalent rolled angle with stiffeners will be allowed in lieu of welded plates.
DIAPHRAGM AT PIER

*Bonded to sides of beams embedded into diaphragm.

Concrete Structures.

DIAPHRAGM DETAILS

16

5

will be allowed in lieu of welded plates.

Equivalent rolled angle with stiffeners (2 required each side of pier).

typ.

"4

3

2

1

3

2

1

5

1" Pier

SIDE RETAINER

(Dimensions along $\xi$ of beam except as shown)

Fabric brg. pad

SIDE RETAINER

(2 required each side of pier)

Equivalent rolled angle with stiffeners will be allowed in lieu of welded plates.

Notes:

Reinforcement bars in diaphragm are billed with superstructure on sheet of
Concrete in diaphragm is included with Concrete Superstructure on sheet of
Cost of 30 lb. roofing felt is included with Concrete Superstructure.
Cost of side retainer and anchor bolts shall be included with Concrete Structures.
For details of bar s20(E) see sheet of
The s20(E) bars shall be placed parallel to the beams.
Spacing for these bars shall be at right angles to the beams.
Anchor bolts and side retainers shall be according to Article 521.06 of the Standard Specifications. Side retainers shall be hot dip galvanized.
Beams shall be braced for stability during erection and remain braced until deck is poured and cured.
Anchor bolts and side retainers shall be installed as each exterior beam is erected unless an equivalent temporary means of lateral restraint is used.

PLAN AT PIER

(Showing bearing pads and PJF details)