**Bill of Bars**

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<th>Length</th>
<th>No.</th>
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<tbody>
<tr>
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<td>X</td>
<td>3'-6&quot;</td>
<td>X</td>
<td>3'-9&quot;</td>
<td>10' &amp; 60' BASE</td>
</tr>
<tr>
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<td>6'-0&quot;</td>
<td>X</td>
<td>3'-6&quot;</td>
<td>X</td>
<td>3'-9&quot;</td>
<td>10' &amp; 60' BASE</td>
</tr>
<tr>
<td>P552</td>
<td>3'-0&quot;</td>
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<td>3'-6&quot;</td>
<td>X</td>
<td>3'-9&quot;</td>
<td>10' &amp; 60' BASE</td>
</tr>
</tbody>
</table>

Note: This Bill of Bars is shown for information only. Precast pier shop changes shall include all of bars for transverse reinforcement. Standards for all items associated with the optional precast piers shall be included in the cast-in-place concrete bid items.

**Contractor Notes**

- The contractor shall follow this standard when precast piers are used in lieu of the cast-in-place pier.
- The contractor may use cast-in-place bearing blocks in lieu of precast bearing block details. The contractor is responsible for the additional weight, which may cause pier cap segments to be in excess of 90 kips.
- See standard 7.07 for cast-in-place bearing block details and additional notes.

**Precast Concrete Details Notes**

Precast concrete details shall only be used when plans indicate allowance for precast piers.

- Precast bearings block details shall only be used when plans indicate allowance for precast piers.

**Pre-Cast Piers Option**

- Precast piers are a viable option for improving the performance of the pier. The contractor is responsible for the additional weight, which may cause pier cap segments to be in excess of 90 kips.
- The contractor shall follow this standard when precast piers are used in lieu of the cast-in-place pier.

**Approved:**

Bill Oliva

Date: 1-17

**Standard 7.06**

**Bureau of Structures**

**Plan**

**Elevation**
NOTES (ABUTMENTS)
- The upper limits of excavation for structures "X" shall be the existing groundline.
- Excavation pay limits. Excavation beyond the backfill pay limits shall be incidental to excavation for structures. Backfill beyond backfill pay limits shall be incidental to excavation for structures.
- All volume which cannot be placed before culvert construction shall be incidental to Excavation for Structures. Limits "R" shall be the existing groundline.
- The upper limits of "excavation for structures Bridges Thru Retaining Wall" shall be determined by the contractor.
- The contractor is responsible for base materials or other granular materials as approved by the Engineer. The contractor is responsible for base materials or other granular materials as approved by the Engineer. The contractor is responsible for base materials or other granular materials as approved by the Engineer.
- The Rodent Shield shall be a PVC grate similar to this detail. The grate is sized to fit into a pipe coupling. The grate shall be the existing groundline.
- Backfill pay limits. Excavation beyond the backfill pay limits shall be incidental to excavation for structures. Backfill beyond backfill pay limits shall be incidental to excavation for structures.

DESIGNER NOTES
- The design engineer shall provide all necessary backfill pay limits and notes in order to determine backfill pay limits. The design engineer shall provide all necessary backfill pay limits and notes in order to determine backfill pay limits. The design engineer shall provide all necessary backfill pay limits and notes in order to determine backfill pay limits. The design engineer shall provide all necessary backfill pay limits and notes in order to determine backfill pay limits. The design engineer shall provide all necessary backfill pay limits and notes in order to determine backfill pay limits.
TABLE A

DESIGNER NOTES

WING PILE REQUIRED

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WING HEIGHT

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BARS

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</tr>
</tbody>
</table>

LRFD DESIGN LOADS (WINGS)

IN PLACE.

ABOVE CONSTR. JT. AFTER THE TIMBER END POSTS ARE MANDATORY. THE WING CONCRETE SHALL BE PLACED WHEN TIMBER RAILING IS USED AS PER STANDARD 30.24, AND THE WING JOINT IS NOT USED.

FOR WINGS OVER 12'-0" LONG.

4-#6 "L" SHAPED BARS (1'-0" legs)

(see std. 12.01 for abutment body details)

1'-0" CTRS. #4 BARS AT 1'-0" FOR WING WALL.

*(2) 2:1 SLOPE (WHEN SUPPLIED)

SHOW ALL LONGITUDINAL BARS FOR CLARITY.

ALL WING BARS SHALL BE EPOXY COATED.

LIVE LOAD = 1'-0" SURCHARGE

2'-0" MIN.

WING LENGTH - 10'-0" MINIMUM

LOCATE NAME PLATE ON FIRST RIGHT TRAVELING UP STATION.

NAME PLATE (ONLY FOR TYPE "W", "M", NY3&4 OR TIMBER RAIL AS MASONRY WALL) ON ABUTMENT CENTERLINE. DO NOT USE FOR TYPE "W" WHEN TIMBER RAILING IS USED AS PER STANDARD 30.24), "M", NY3&4 OR TIMBER RAIL AS MASONRY WALL.

FORMED KEYED OR SLIP-FIT CEMENTitous JOINT.

OPTIONAL KEYED OR SLIP-FIT CEMENTitous JOINT.

"V" GROOVE ON BENCH MARK CAP OR EDGE OF DIAPHRAGM SIDE.

"V" GROOVE ON BENCH MARK CAP OR EDGE OF DIAPHRAGM SIDE.

PIPE UNDERDRAIN WRAPPED (6-INCH)

ALL WING BARS SHALL BE EPOXY COATED.

*USE 2:1 FOR THE UNSTABLE CLAYS WHICH ARE SOMETIMES ENCOUNTERED IN NORTHWEST WISC. (SUPERIOR AREA)

WEIGHT OF SOIL - HORIZ. EARTH LOAD BASED ON: 35 P.C.F. EQUIV. FLUID UNIT EXPOSURE CLASS 2, = 0.75 = 1.75 = 1.50 = 1.25

LOAD FACTORS:

LIVE LOAD = 1'-0" SURCHARGE

2'-0" MIN.

WING LENGTH - 10'-0" MINIMUM

LOCATE NAME PLATE ON FIRST RIGHT TRAVELING UP STATION.

NAME PLATE (ONLY FOR TYPE "W", "M", NY3&4 OR TIMBER RAIL AS MASONRY WALL) ON ABUTMENT CENTERLINE. DO NOT USE FOR TYPE "W" WHEN TIMBER RAILING IS USED AS PER STANDARD 30.24), "M", NY3&4 OR TIMBER RAIL AS MASONRY WALL.

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"V" GROOVE ON BENCH MARK CAP OR EDGE OF DIAPHRAGM SIDE.

"V" GROOVE ON BENCH MARK CAP OR EDGE OF DIAPHRAGM SIDE.

PIPE UNDERDRAIN WRAPPED (6-INCH)
**DESIGNER NOTES**

Structural approach slabs and parapets shall be used on all bridges carrying traffic volumes greater than 9,000 feet per design hour. These slabs can be considered with the approval of the chief structural design engineer.

Structural approach slabs to be part of the superstructure, are considered to be part of the superstructure, the heavy-duty vehicles, etc., and shall be designed in accordance with the Code and the specifications. The quantities of structural approach slabs shall be shown in a separate column within the total estimated quantities table in the final plans.

Concrete joint required when the width of the superstructure exceeds 90 feet. Run extension of approach slab, as per FDM 14-5 and Bridge Manual Figure 12.6-2 shall be utilized.

Construction joint required when the width of the parapet exceeds 90 feet. Run extension of approach slab, as per FDM 14-5 and Bridge Manual Figure 12.6-2 shall be utilized.

The designer shall be responsible for developing the structural approach slab footing design. The parapet shall be designed to resist the loads from the approach slab footing and the structural approach slab.

**DESIGN DATA**

Concrete strength: 4000 psi
Steel reinforcement: Grade 60, fy: 60,000 psi
Allowable soil bearing pressure: 2000 psi

For new structures or new alignments, base aggregate sizes 1/4 inch at 7,000 psi and shall be based on the area of the slab at 7,000 psi. For roadways or other structures replaced, the existing slab shall be placed in the new slab and the new slab shall be placed on top of the existing slab. The existing slab shall be placed in the new slab and the new slab shall be placed on top of the existing slab.

**BILL OF BARS**

<table>
<thead>
<tr>
<th>BAR</th>
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<td>APPROACH SLAB</td>
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</table>

**STANDARD ISSUE**

To be placed in the design plans as a reference for the structural engineer. The parapet shall be designed to resist the loads from the approach slab footing and the structural approach slab.
**Designer Notes**

The "Preferred MSE Wall at Abutment Configuration" is the preferred option as it separates the MSE wall from the abutment, providing a more detailed and straightforward design. This advice is more relevant as skew increases.

**Notes**

Seal all exposed horizontal and vertical surfaces of the MSE wall with non-staining, non-bituminous joint filler. Use cast-in-place coping and seal the joint below the surface of the concrete.

---

**Preferred MSE Wall at Abutment Configuration**

- Cast-in-place coping

---

**Alternate MSE Wall at Abutment with Wrapped MSE Wall**

- Wrapped MSE wall

---

**Plan View of Alternate MSE Wall at Abutment with Closure Wall**

- Closure wall
- Cast-in-place coping

---

**Front Elevation of Alternate MSE Wall at Abutment with Closure Wall**

- Top of coping
- Bottom of abutment

---

**Section A-A**

- #4 bars @ 1'-0" max.

---

**Approved:**

Bill Oliva

**Date:**

7-17

**Bureau of Structures**

**Standard:**

14.05
Notes:

- Transverse bars in slab shall be supported by individual bar chairs at approximately 1'-0" centers each way. Bottom longitudinal bars shall be supported by continuous bar chairs at approximately 10" centers.
- All slab reinforcement dimensions are nominal. Any tolerances necessary to correct construction deficiencies are to be plus-(+)
- Parapet spandrels and barriers placed on top of the slab shall be formed after parapet is placed before parapet is placed. A minimum of #5 bars at 1'-0" centers.
- Concrete structures are to be formed on top of slab. The construction joint shall be placed before the joint is taken place.
- The maximum allowable skew angle of structure shall be 30°.
- All bar splices to be based on "class C" tension lap splice. Use optional longitudinal joints when overall slab width is over 52'-0".
- Parapet spandrels or remote areas the optional transverse joint when four inches or less. Place header joint near point of dead load inflection.
- All transverse bar steel reinforcement shall be placed on the stem.
- Vertical splices are to be verified by the structures design section.
- Floor drains are to be omitted from slab structures while possible. If floor drains are required place perpendicular to the stem at 2'-0" and 8'-0".
- Use optional longitudinal joints when over 52'-0".
- Piers or wall type piers may be used on most structures. "column without cap" type piers shall be provided on the approvement of the structures design section.
- On the plans provide camber values at the crown of all structural elements and on crown and outside edges of slab at slab points.
- All reinforcement in slab must meet temperature and shrinkage requirements.
- **** WATERPROOFING RUBBERIZED MEMBRANE****
**DESIGNER NOTES**

Beams to be prestressed shall be designed type I-28-inch.

Concrete should be placed as required by the designer and be kept moist for at least 3 days. Concrete should be placed within 48 hours after mixing.

The steel reinforcement shall be epoxy coated and placed at the specified locations. Epoxy coated bars shall be used for all reinforcement.

Prestressing strands shall be 1/4-inch diameter, low-relaxation, 7-wire type. The strands shall be placed as shown on the drawings.

**REINFORCEMENT**

- **WELDED WIRE FABRIC (WWF)**
  - For non-epoxy coated bars, welded wire fabric shall be used. The minimum vertical wire area shall be 40% of the horizontal wire area.
  - Welded wire fabric shall be placed as shown on the drawings.

- **EPOXY COATED BARS**
  - Epoxy coated bars shall be used for all reinforcement.
  - Epoxy coated bars shall be placed at the specified locations.

**PRESTRESSING STRANDS**

- **MINIMUM SPACING**
  - For non-epoxy coated bars, the minimum spacing for prestressing strands shall be 1-inch.
  - For epoxy coated bars, the minimum spacing for prestressing strands shall be 0.5-inch.

**EPOXY COATED STRANDS**

- **MINIMUM DIA.**
  - Epoxy coated strands shall be a minimum of 0.5-inch in diameter.
  - Epoxy coated strands shall be placed at the specified locations.

**APPLICATION OF CONCRETE STAINING**

- No concrete sealer or epoxy shall be applied to any surface receiving concrete staining.
- Concrete staining shall be applied to the top of the girder as shown on the drawings.
- The area of the girder to be stained shall be marked prior to the application of the sealer.

**PRESTRESSING STRANDS**

- **MINIMUM STRENGTH**
  - Prestressing strands shall have a minimum strength of 68,000 psi.
  - Prestressing strands shall be placed as shown on the drawings.

**BEARING PLATES**

- **MAXIMUM SLOPE**
  - Maximum slope for bearing plates shall be 1/4-inch.
  - Bearing plates shall be located as shown on the drawings.

**GIRDER DETAILS**

- **SIDE VIEW**
  - Side view of girder shall be shown as required by the designer.
  - Girder details shall be shown as required by the designer.

**SECTION THRU GIRDER**

- **SECTION**
  - Section through girder shall be shown as required by the designer.
  - Section through girder shall be shown as required by the designer.

**NOTES**

- **TOP OF GIRDER**
  - Top of girder shall be shown as required by the designer.
  - Top of girder shall be shown as required by the designer.

- **SOIL SLOPE**
  - Soil slope shall be shown as required by the designer.
  - Soil slope shall be shown as required by the designer.

- **FIELD FLUSH**
  - Field flush shall be shown as required by the designer.
  - Field flush shall be shown as required by the designer.

**Detailed Notes**

- **DATE**
  - The date for the document shall be shown as required by the designer.
  - The date for the document shall be shown as required by the designer.

**Bill Oliva**

**DATE**

**STANDARD 19.01**

**BUREAU OF STRUCTURES**

**APPROVED**

**STATE: 7-17**
STANDARD STRAND PATTERNS FOR DRAPED STRANDS (0.5" DIA.)

<table>
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<th>NO. STRANDS</th>
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<tr>
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<td>160</td>
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STANDARD STRAND PATTERNS FOR UNDRAPED STRANDS (0.6" DIA.)

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<th>f (KIPS)</th>
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</tr>
<tr>
<td>12</td>
<td>-10.4</td>
<td>240</td>
<td>48.0</td>
</tr>
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</table>

DESIGNER NOTES

ON THE STRAND PATTERN SHEET PLACE A
BOX AROUND EACH STRAND PATTERN THAT
APPLIES TO THE STRAND STRUCTURE AND
LABEL THE SPAN IT IS USED IN.

28" PRESTRESSED
GIRDERS DESIGN DATA

STANDARD 19.02
GIRDER DETAILS

- **Location of Draped Strands**: Show the location of draped strands on the girder.

- **Plan View**: Diagram showing the plan view of the girder with labeled dimensions.

- **Side View of Girder**: Diagram showing the side view of the girder with labeled dimensions.

- **Section Thru Girder**: Diagram showing the section view of the girder with labeled dimensions.

**Design Notes**

- The design engineer determines the value based on the standard strand patterns listed in Table 19.04. The selection is made based on the requirements of the structure, including the span length and the required prestress levels.

- **Top of Order**: The top of order is shown with the appropriate symbol and dimension.

- **End of Girder**: The end of the girder is marked with the appropriate symbol and dimension.

- **Support with Steel or Elastomeric Brgs.**: Diagram showing the support configuration with labeled dimensions.

- **Support with 3/8" Elastomeric Brg. Pad**: Diagram showing the support configuration with labeled dimensions.

**Specifications**

- Concrete strength: Specify as required by design from a standard specification.

- Steel bars: Use ASTM A615 or A416, with nominal diameters of 3/4" to 2".

- Prestressed strands: Use 0.6" diameter strands, unless only 0.5" diameter work for the specified application. The maximum number of draped 0.5" diameter strands is 8, and they must be spaced as required for the specific case.

- Anchor plate: Use as specified with a minimum of 6,000 psi to a maximum of 8,000 psi. Maximum release force shall not exceed 10% of the applied prestress force.

- Decks: Embed decks of 3" 6" or min. or min. in the decks and not in the top flange.

- Elastomeric anchor plate: Use as specified.

**Notes**

- Concrete sealers or epoxies shall be applied to all smooth surfaces, including the outside of the top flange, to prevent dusting.

- Concretes shall be provided with 3/4" diam. reinforcing steel for 40 ksi to 60 ksi strength.

- Concrete shall be cast full length as shown.

- Concrete shall be cured for 14 days after placement.

- Concrete shall be cured for 7 days after placement.

- Concrete shall be cured for 3 days after placement.

- Concrete shall be cured for 1 day after placement.

- Concrete shall be cured for 1 hour after placement.

- Concrete shall be cured for 1 second after placement.

- Concrete shall be cured for 1 millisecond after placement.

- Concrete shall be cured for 1 picosecond after placement.

- Concrete shall be cured for 1 femtosecond after placement.

- Concrete shall be cured for 1 zeptosecond after placement.

- Concrete shall be cured for 1 attoseconds after placement.

- Concrete shall be cured for 1 petasecond after placement.

- Concrete shall be cured for 1 examsecond after placement.

- Concrete shall be cured for 1 zettasecond after placement.

- Concrete shall be cured for 1 yottasecond after placement.

- Concrete shall be cured for 1 femtosecond after placement.

- Concrete shall be cured for 1 picosecond after placement.

- Concrete shall be cured for 1 nanosecond after placement.

- Concrete shall be cured for 1 microsecond after placement.

- Concrete shall be cured for 1 millisecond after placement.

- Concrete shall be cured for 1 second after placement.

- Concrete shall be cured for 1 minute after placement.

- Concrete shall be cured for 1 hour after placement.

- Concrete shall be cured for 1 day after placement.

- Concrete shall be cured for 1 week after placement.

- Concrete shall be cured for 1 month after placement.

- Concrete shall be cured for 1 year after placement.

- Concrete shall be cured for 1 century after placement.

- Concrete shall be cured for 1 millennium after placement.

- Concrete shall be cured for 1 epoch after placement.

- Concrete shall be cured for 1 millennial epoch after placement.

- Concrete shall be cured for 1 great epoch after placement.

- Concrete shall be cured for 1 universe after placement.

- Concrete shall be cured for 1 eternum after placement.

- Concrete shall be cured for 1 chronon after placement.

- Concrete shall be cured for 1 cyclopianon after placement.

- Concrete shall be cured for 1 annal after placement.

- Concrete shall be cured for 1 calendar after placement.

- Concrete shall be cured for 1 era after placement.

- Concrete shall be cured for 1 period after placement.

- Concrete shall be cured for 1 epoch after placement.

- Concrete shall be cured for 1 millennium after placement.

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- Concrete shall be cured for 1 chronon after placement.

- Concrete shall be cured for 1 cyclopianon after placement.

- Concrete shall be cured for 1 annal after placement.
### 36" GIRDERS

- **Strands:** 8, 10, 12, 14, 16
- **Typical Strands Pattern:** 2" SPA @ 2" 2" 36" GIRDER

#### Standard Arrangements to Raise Center of Gravity

- **Purpose:** To avoid draping of 0.6" Dia. Strands
- **Condition:** 0.5" Dia. Strands may also be used

#### Design Data

- **Arrangement at 6' Span:** For Girders with draped 0.5" Dia. Strands

#### Designer Notes

- **Label the Span it is Used In.**
- **Apply to the Designed Structure and label the Span it is used in.**
GIRDER CL.

SECTION A-A

PLACE AS SHOWN

#3 BAR

23 PAIRS EACH END

#3 BARS IN PAIRS

#5 U-SHAPED BAR

EACH END

GIRDER END OF BEARING & STEEL BRGS.

ELASTOMERIC ANCHOR PLATE ON PALLET OR ELASTOMERIC SUPPORT

4 @ 3" = 1'-0"

1'-0" = 3' - 2½"

5 @ 4" = 1'-9"

3'-2½"

2'-6"

CURVE 6 BARS FULL LENGTH

2'-8"

END OF GIRDER

2'-6"

EACH END

END OF GIRDER

1½" C.L.

STIRRUP PAIRS. BETWEEN LIMITS OF #3 BAR, EPOXY COATED.

STIRRUP PAIRS.

BETWEEN LIMITS OF #3 BAR, EPOXY COATED.

STIRRUP PAIRS. BETWEEN LIMITS OF #3 BAR, EPOXY COATED.

STIRRUP PAIRS.

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BETWEEN LIMITS OF #3 BAR, EPOXY COATED.

STIRRUP PAIRS.

BETWEEN LIMITS OF #3 BAR, EPOXY COATED.

STIRRUP PAIRS.

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BETWEEN LIMITS OF #3 BAR, EPOXY COATED.

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STIRRUP PAIRS.

BETWEEN LIMITS OF #3 BAR, EPOXY COATED.

STIRRUP PAIRS.

BETWEEN LIMITS OF #3 BAR, EPOXY COATED.
**36W" PRESTRESSED GIRDER DESIGN DATA**

![Diagram of strand arrangements](image)

**STANDARD STRAND PATTERNS FOR UNDRAPED STRANDS**

<table>
<thead>
<tr>
<th>NO. STRANDS</th>
<th>(e_y) (inches)</th>
<th>PRE-TENSION (KIPS)</th>
<th>(f_y) (K/sq.in.)</th>
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<tbody>
<tr>
<td>16</td>
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<td>705</td>
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<tr>
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<td>36</td>
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**DESIGNER NOTES**

ON THE STRAND PATTERN SHEET, PLACE A BOX AROUND EACH STRAND PATTERN THAT APPLIES TO THE DESIGNED STRUCTURE AND LABEL THE SPAN IT IS USED IN.
### 45W" GIRDER

- **Area**: 692 SQ. IN.
- **r²**: 258,700 IN.²
- **y₁**: 24.26 IN.
- **y₂**: -20.74 IN.
- **S₁**: 178,671 IN.²
- **S₂**: -8,629 N²

**B** = 692 SQ. IN.  
**y** = 24.26 IN.  
**r** = 258.70 IN.  
**f** (init.) = $A f S$  
**f (init.)** = $\frac{45W"}{1,721 W/FT.}$

**PRE-TENSION**

- For low relaxation strands
- $f_0 = 0.75 \times 270,000 = 202,500$ P.S.I.

**STANDARD STRAND PATTERNS FOR UNDRAPED STRANDS**

<table>
<thead>
<tr>
<th>NO. STRANDS</th>
<th>A (inches)</th>
<th>PRE-TENSION (KIPS)</th>
<th>f (KPS)/ (K/sq.in.)</th>
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<tbody>
<tr>
<td>16</td>
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<td>703</td>
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<td>20</td>
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<td>879</td>
<td>2.852</td>
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**STANDARD STRAND PATTERNS FOR DRAPED STRANDS**

<table>
<thead>
<tr>
<th>NO. STRANDS</th>
<th>A (inches)</th>
<th>PRE-TENSION (KIPS)</th>
<th>f (KPS)/ (K/sq.in.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>16</td>
<td>-9.24</td>
<td>703</td>
<td>2.339</td>
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<td>40</td>
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<td>6.230</td>
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</table>

**DESIGNER NOTES**

- Approved by: Bill Oliva
- Date: 7-17

**STANDARD ARRANGEMENTS TO RAISE CENTER OF GRAVITY**

**TO AVOID DRAPEING OF 0.6" DIA. STRANDS**

**ARRANGEMENT AT 6 SPAN - FOR GIRDERS WITH DRAPE 0.6" DIA. STRANDS**

ON THE STRAND PATTERN SHEET, PLACE A BOX AROUND EACH STRAND PATTERN THAT APPLIES TO THE DESIGNED STRUCTURE AND LABEL THE SPAN IT IS USED IN.
GIRDER DETAILS

SECTION A-A

1.5 U-shaped bar
10 bars in pairs

4 bars as stirrups

Support with 1/2" elastomeric bearing pad

Support with steel or elastomeric brgs.

LOCATION OF DRAPED STRANDS

- 44 bars as stirrups
- 12 bars per pair
- 1 pair each end

54W" PRESTRESSED GIRDER DETAILS

5.5" bar epoxy coated, stirrup spacing desired

NOTES

- Top of order to be rough blasted and roughened transversely.
- Exposed concrete shall receive a smooth finish. All smooth surfaces received the order of finish.
- Do not apply concrete sealers or epoxy to exposed surfaces.
- Application of concrete staining.

54W" PRESTRESSED GIRDER DETAILS

Bill Oliva

Date: 7-17

STANDARD 19.15

BUREAU OF STRUCTURES
54" PRESTRESSED GIRDER DESIGN DATA

**54" GIRDER**

A = 798 sq.in.
\( r^2 = 402.41 \text{ in}^2 \)
\( f_y = 27,700 \text{ psi} \)
\( f_p = -26,30 \text{ in} \)
\( l = 321.049 \text{ in} \)
\( S_1 = 83,597 \text{ in}^2 \)
\( S_2 = -2,205 \text{ in}^2 \)
\[ W_f = 83 \text{ kips/ft} \]

**PRE-TENSION**

for low relaxation strands

\[ \frac{P_i}{P_{f \text{ init.}}} = 0.75 \times 27,000 + 202,500 \text{ psi} \]

**STANDARD STRAND PATTERNS FOR UNDRAPED STRANDS**

<table>
<thead>
<tr>
<th>NO. STRANDS</th>
<th>S (inches)</th>
<th>PRE-TENSION (Kips)</th>
<th>( \frac{S}{A_f} ) (kips/sq.in.)</th>
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<tbody>
<tr>
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<tr>
<td>42</td>
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<td>0.20</td>
<td>9.687</td>
</tr>
</tbody>
</table>

**STANDARD STRAND PATTERNS FOR DRAPED STRANDS**

**DESIGNER NOTES**

On the strand pattern sheet, place a box around each strand pattern that applies to the designed structure and label the span it is used in.
**GIRDER DETAILS**

**SECTION A-A**

- **Support with Steel or Elastomeric Brs.**
- **Support with 1/2 Elastomeric Bearing Pad**

**NOTES**

- **Top of Girder:** Be smooth and dry when concrete is placed. Ensure the outer 2" of concrete is removed to allow a smooth finish. Any rough surfaces on the concrete surface should be removed using a grinder. Ensure the concrete surface is free of any debris or contaminants.
- **Reinforcement:** Ensure all reinforcement is placed as specified. For stirrups, provide stirrups at the required spacing and embedment depth. Use stirrups of the required size and type as specified.
- **Concrete:** Use concrete of the required strength as specified. Ensure the concrete is properly mixed and placed.
- **Pre-Stressing Strands:** Use pre-stressing strands as specified. Ensure the strands are properly placed and embedded in the concrete.
- **Elastomeric Bearings:** Use elastomeric bearings as specified. Ensure the bearings are properly seated and sealed.
- **Lifting Device:** Ensure a suitable lifting device is provided for handling the girder.
- **Sealer:** Use a suitable sealer as specified. Ensure the sealer is properly applied.

**DESIGNER NOTES**

- All dimensions are shown in inches. All angles are shown in degrees.
- All reinforcing bars are shown in inches. All stirrups are shown in inches.
- All pre-stressing strands are shown in inches. All elastomeric bearings are shown in inches.
- All lifting devices are shown in inches. All sealers are shown in inches.

**Bill Oliva**

**Date:** 7-17

**STANDARD 19.17**

**BUREAU OF STRUCTURES**

** dances with steel or elastomeric brs.**

**support with 1/2 elastomeric bearing pad**

**location of draped strands**

**section thru order**

- **strands not shown**
- **section thru girder**

**7 1/2" prestressed girder details**

**approved**

**Bill Oliva**

**date:** 7-17

**standard 19.17**

**bureau of structures**
72W" PRESTRESSED GIRDER DESIGN DATA

PRE-TENSION

STANDARD STRAND PATTERNS FOR UNDRAPED STRANDS

STANDARD STRAND PATTERNS FOR DRAPED STRANDS

DESIGNER NOTES

ON THE STRAND PATTERN SHEET PLACE A BOX AROUND EACH STRAND PATTERN THAT APPLIES TO THE DESIGNED STRUCTURE AND LABEL THE SPAN IT IS USED IN.

BUREAU OF STRUCTURES

APPROVED: Bill Oliva

DATE: 7-17

STANDARD 7918
**PRE-TENSION**

for low relaxation strands

82W" GIRDER

**DESIGNER NOTES**

ON THE STRAND PATTERN SHEET, PLACE A BOX AROUND EACH STRAND PATTERN THAT APPLIES TO THE DESIGNED STRUCTURE AND LABEL THE SPAN IT IS USED IN.

82W" PRESTRESSED GIRDER DESIGN DATA

THERE IS CURRENTLY A MORATORIUM ON THE USE OF 82W" PRESTRESSED GIRDER.
PART TRANSVERSE SECTION AT DIAPHRAGM

SECTION AT INTERIOR GIRDERS THRU DIAPHRAGM FOR SKEW ANGLES > 10°

NOTES

- All dimension materials, not exposed in the concrete deck, shall be painted with a 0.2 mil coating of epoxy primer.
- All dimension materials, including bolts, nuts, and washers, shall be galvanized after fabrication.
- Exterior girder diaphragm shall be of ASTM A527 GRADE 36.
- Interior girder diaphragm shall meet the requirements for ASTM A325 or ASTM A449.
- Designer notes:
  - Designers should ensure that the diaphragm location is shown on the plans.
  - Diaphragm inserts/holes for stiffness and shear connection shall be placed at mid-length of the girder.

DETAILS

- Edge distance shall be 1½".
- Hole for cap screw to be made with pipe sleeve.
- 3" dia. hole for cap screw with 1½" dia. cap screw.
- Nut and one lockwasher to be tightened to 80 lb-ft.
- Exterior diaphragm shall be placed at 1/3 points from the ends of each girder.
- Interior diaphragm shall be placed at 1/3 points from the ends of each girder.
- Exterior girder diaphragm shall be of ASTM A527 GRADE 36.
- Interior girder diaphragm shall meet the requirements for ASTM A325 or ASTM A449.

B-24", each.

SHALL BE PAID FOR AT THE UNIT PRICE BID FOR "STEEL DIAPHRAGMS"

ALL DIAPHRAGM STRUCTURAL STEEL SHALL BE ASTM A709 GRADE 36.

EACH DIAPHRAGM BETWEEN GIRDERS SHALL CONSTITUTE ONE UNIT.

HOLE FOR ¾" DIA. BOLT.

SUPPORT & ANGLE CONNECTIONS

THE MINIMUM DISTANCE BETWEEN CENTERS OF FASTENERS FOR SUPPORT & ANGLE CONNECTIONS SHALL BE 1½" AND THE MINIMUM EDGE DISTANCE SHALL BE 1½".

WEB CONNECTIONS SHALL MEET THE REQUIREMENTS FOR ASTM A325 OR ASTM A449.

Oversized 1½" dia. holes in web with hex nut & two washers.

DIAPHRAGMS FOR 70", 72W" & 82W" Prestressed Girders

INTERMEDIATE STEEL DIAPHRAGMS FOR 70", 72W" & 82W" Prestressed Girders

Approved: Bill Oliva
Date: 7-17

Bureau of Structures
Standard 19.37

Plan for skew angles ≤ 10°

Plan for skew angles > 10°
TABLE "D"

<table>
<thead>
<tr>
<th>MEMBER &quot;C&quot; SIZE</th>
<th>WEB DEPTH</th>
<th>MEMBER &quot;C&quot;</th>
<th>NO. OF BOLTS</th>
<th>LENGTH OF &quot;D&quot;</th>
<th>MEMBER &quot;D&quot;</th>
<th>NO. OF BOLTS</th>
<th>LENGTH OF &quot;D&quot;</th>
</tr>
</thead>
<tbody>
<tr>
<td>MIN.</td>
<td>MAX.</td>
<td>3&quot;</td>
<td>4&quot;</td>
<td>5&quot;</td>
<td>6&quot;</td>
<td>7&quot;</td>
<td>8&quot;</td>
</tr>
<tr>
<td>12X6</td>
<td>12X6</td>
<td>6</td>
<td>8</td>
<td>6</td>
<td>8</td>
<td>6</td>
<td>8</td>
</tr>
<tr>
<td>16X6</td>
<td>16X6</td>
<td>8</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>12</td>
<td>12</td>
</tr>
<tr>
<td>20X6</td>
<td>20X6</td>
<td>12</td>
<td>14</td>
<td>14</td>
<td>14</td>
<td>16</td>
<td>16</td>
</tr>
</tbody>
</table>

NOTES:
- ALL BOLTED CONNECTIONS SHALL BE FRICTION TYPE USING 5/8" DIA. HIGH STRENGTH ASTM A325 BOLTS WITH DOUBLE WASHERS.
- THE NUMBER OF BOLTS REQUIRED IN MEMBER "C" OR THE NUMBER REQUIRED BETWEEN BEARING STIFFENERS AND LOWER CONNECTING PLATES EQUALS THE NUMBER OF BOLTS REQUIRED IN MEMBER "C" OR THE NUMBER REQUIRED IN THE LOWER HORIZONTAL MEMBER, MEMBER "C" OR "D".
- LOWER CROSS FRAME MEMBERS ARE SLOPED WHEN THE NUMBER OF BOLTS REQUIRED IN MEMBER "C" OR THE NUMBER REQUIRED BETWEEN BEARING STIFFENERS AND LOWER CONNECTING PLATES EQUALS THE NUMBER OF BOLTS REQUIRED IN MEMBER "C" OR THE NUMBER REQUIRED IN THE LOWER HORIZONTAL MEMBER, MEMBER "C" OR "D".
- USE "W" END CONNECTING PLATE FOR MEMBERS "C" OR "D".
- USE 6" MIN. FLAT WELD FOR LENGTHS > 13'-6".
PLAN VIEW - SHOWING PLACEMENT OF TRANSVERSE CONSTRUCTION JOINTS

SECTION THRU TRANSVERSE OR LONGITUDINAL JOINT

SLAB POURING SEQUENCE

Approved: Bill Oliva  Date: 1-17

STANDARD 24.11

NOTES

The rate of placing concrete shall be as follows:
- Small span: 30 cubic yards per hour
- Large span: 60 cubic yards per hour

If required construction joints are shown, provide two or more sequential pours on the same day, subject to the approval of the Structures Design Section.

The designer shall determine if transverse construction joints are optional or required.

Required construction joints shall be placed at the following points:
- Steel girder superstructures: 75% of the span length
- Prestressed girder superstructures: 60% of the span length

When the width of the slab is greater than 90 feet, a longitudinal construction joint shall be placed.

The next deck pour shall be made no less than 72 hours after the previous pour.

The contractor may submit an alternate pouring sequence subject to the approval of the Structures Design Section.

Optional construction joints shall be placed as required.

Ideal deck pour sequence:
- Continuous steel girder - 2 spans shown
- Continuous steel girder - 3 spans shown
- Continuous steel girder - Any number of spans shown

Designer notes:

The designer shall determine if transverse construction joints are optional or required.

Required transverse construction joints shall be detailed on the plans. The pour sequence shall be determined by the designer, and the plans may include a pour sequence for each span.

The contractor shall pour the entire deck per the above sequence.

When required construction joints are shown, the contractor may submit an alternate pouring sequence subject to the approval of the Structures Design Section.

The next deck pour shall be made no less than 72 hours after the previous pour.

Optional construction joints shall be placed as required.

Ideal deck pour sequence:
- Continuous steel girder - 2 spans shown
- Continuous steel girder - 3 spans shown
- Continuous steel girder - Any number of spans shown

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The designer shall determine if transverse construction joints are optional or required.

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The contractor may submit an alternate pouring sequence subject to the approval of the Structures Design Section.

The next deck pour shall be made no less than 72 hours after the previous pour.

Optional construction joints shall be placed as required.
SECTION THRU EXPANSION END
SHOWING EXISTING STEEL GIRDER
WITHOUT EXISTING STEEL DIAPHRAGM

SEE STAND. FOR ADDITIONAL DETAILS

DEFINITIONS

(See Bridge Manual Section 17.5.3.2 for guidance on required longitudinal reinforcing over piers.)

NOTE

TOLERANCES

ALL REPLACEMENT PAVING BLOCK DIMENSIONS SHALL MATCH EXISTING PLAIN DIMENSIONS UNLESS DESIGNER SPECIFIES OTHERWISE.

DEVELOPMENT PROGRESS

DIAPHRAGM SUPPORT ANGLES SHALL BE ASTM A709 GRADE 36.

ALL BOLTS, NUTS AND WASHERS SHALL BE HOT-DIPPED GALVANIZED IN ACCORDANCE WITH ASTM A153 CLASS C. GALVANIZED NUTS SHALL BE TAPPED OVERSIZED IN ACCORDANCE WITH THE REQUIREMENTS OF ASTM A153 CLASS C.

NOTES

FOR REHABILITATION PROJECTS

(See Bridge Manual Section 17.5.3.2 for guidance on required longitudinal reinforcing over piers.)

LEGEND

* DIMENSION IS TAKEN NORMAL TO E. ALIGNMENT

- BARS PLACED PARALLEL TO GIRDERS; SPACING PERPENDICULAR TO E. ALIGNMENT
1. Girder structures and slab structures with sidewalks should have a deflection joint over the pier. If there is a light standard at the pier, place a deflection joint approx. 1 ft. from the standard to avoid stress concentration.

2. Girder structures and slab structures without sidewalks should have no deflection joints in the parapets.

### Part Elevation of Rail Parapet
- Parapet should be poured continuously from end to end, and the joint shall be separated by a piece of V-groove to end of parapet over the pier.

### Part Plan of Rail Parapet
- Parapet should have a deflection joint approx. 4'-0" each at the piers and a deflection joint approx. 80'-0" long at the ends of the parapet. Non-ref. thru the joint, lap longitudinal reinforcing steel when parapets are poured continuously.

### Bill of Bars
- **S501** bars, **A501** bars,
- The bill of bars should be used for the reinforcement of the parapet, and the reinforcing bars should be placed in accordance with AASHTO M232 Class C.

### Joint Sealer
- The joint shall be sealed with a non-staining gray non-bituminous joint sealer. (Gray non-bituminous joint sealer)

###设计师笔记
- 注：凡在图中未具体说明的均按标准图集执行。

###标准
- **30.07**

**批准**
- **Bill Oliva**
- **日期:** 7-17

**注释**
- 在使用此图时，应按照标准图集中具体的说明进行。
DESIGNER NOTES

SEE STANDARD 30.07 FOR:
- DEFLECTION JOINT DETAILS AND NOTES
- BEAM GUARD ANCHOR ASSEMBLY DETAILS
- SIDEWALK REINFORCEMENT AND DETAILS

BASED ON 6'-3" POST SPA.

STEEL RAILING WEIGHT = 25 LB/FT

SIDEWALK

ROUGH. AND LEAVE OFF AS SHOWN

JOINT- STRIKE HORIZ. CONST.

SECTION THRU PARAPET ON BRIDGE

- Mark joint locations of bars to allow placement of сбору защитных элементов

- Mark joint locations of bars to allow placement of сбору защитных элементов

- Mark joint locations of bars to allow placement of сбору защитных элементов

END POST DETAIL

- Mark joint locations of bars to allow placement of сбору защитных элементов

- Mark joint locations of bars to allow placement of сбору защитных элементов

- Mark joint locations of bars to allow placement of сбору защитных элементов

BILL OF BARS

<table>
<thead>
<tr>
<th>BAR</th>
<th>LENGTH</th>
<th>LOCATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>#5</td>
<td>2'-8&quot;</td>
<td>PARAPET SUPER.</td>
</tr>
<tr>
<td>#5</td>
<td>1'-9&quot;</td>
<td>PARAPET SUPER.</td>
</tr>
</tbody>
</table>

END VIEW

- Mark joint locations of bars to allow placement of сбору защитных элементов

- Mark joint locations of bars to allow placement of сбору защитных элементов

- Mark joint locations of bars to allow placement of сбору защитных элементов

SECTION THRU PARAPET ON BRIDGE

- Mark joint locations of bars to allow placement of сбору защитных элементов

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- Mark joint locations of bars to allow placement of сбору защитных элементов

DESIGNER NOTES

SEE STANDARD 30.07 FOR ADDITIONAL RAILING DETAILS

- Mark joint locations of bars to allow placement of сбору защитных элементов

- Mark joint locations of bars to allow placement of сбору защитных элементов

- Mark joint locations of bars to allow placement of сбору защитных элементов

COMBINATION RAILING TYPE '3T'

STANDARD 3G08

Approved: Bill Oliva

Date: 7-17
ASSEMBLY OF ANCHOR FOR THE BEAM.

SECTION THRU PARAPET ON BRIDGE

INSIDE ELEVATION

PLAN

SECTION A

SECTION B

SECTION C

DESIGNER NOTES

PARAPET FOOTING

BUREAU OF STRUCTURES

STANDARD 30.10

Bill Oliva

3-17

Approved

Note:

Steel should be grouted with non-shrink commercial grout per the approved products list. Partially drilled holes abandoned in the deck shall be filled with non-shrink grout. Drilling or burning thru deck reinforcement shall be prohibited.

Adhesive anchor connection:

Parapet shall be detailed with construction of the Contractor, including expansion, contraction, and construction joints.

Notes:

Approved:

Date:

PARAPET FOOTING

SHALL CONFORM TO SECTION 502.2.12 OF THE STANDARD SPECIFICATIONS.

FINISH SURFACE NOT COVERED BY PARAPET SHALL BE THE SAME AS THE ROADWAY.

FINISH SURFACE NOT COVERED BY PARAPET SHALL BE THE SAME AS THE ROADWAY.

FINISH SURFACE NOT COVERED BY PARAPET SHALL BE THE SAME AS THE ROADWAY.

SECTION THRU PARAPET ON BRIDGE

CHAIN LINK FENCE MOUNTED ON DECK

SECTION THRU PARAPET ON BRIDGE

CHAIN LINK FENCE MOUNTED ON DECK

ADHESIVE ANCHOR CONNECTION

WITH CRASHWORTHY ADJACENT EXTERIOR PARAPET

ADHESIVE ANCHORS MAY BE OPTION OF THE CONTRACTOR, FOR REINFORCING REQUIREMENTS)

ANCHOR CONNECTION DETAIL ON THE PLAN. THE CONTRACTOR MAY REQUEST ADHESIVE ANCHOR CONNECTION (WHEN SUPPLIED)

STANDARD SPECIFICATIONS.

PARTIALS SLIDED HOLES ABANDONED IN THE DECK SHALL BE FILLED WITH NON-SHRINK COMMERCIAL GROUT PER THE APPROVED PRODUCTS LIST.

PARAPET SHALL BE DETAILED WITH CONSTRUCTION OF THE CONTRACTOR, INCLUDING EXPANSION, CONTRACTION, AND CONSTRUCTION JOINTS.

APPLICATIONS:

PRODUCTS LIST

REINFORCEMENT (AT THE CAST-IN-PLACE PARAPET SHALL BE DETAILED WITH CONSTRUCTION JOINTS.

FINISH SURFACE NOT COVERED BY PARAPET SHALL BE THE SAME AS THE ROADWAY. COVERED BY PARAPET FINISH SURFACE NOT COVERED BY PARAPET SHALL BE THE SAME AS THE ROADWAY.

SAME AS ROADWAY. COVERED BY PARAPET FINISH SURFACE NOT COVERED BY PARAPET SHALL BE THE SAME AS THE ROADWAY.

LINK FENCE MOUNTED ON DECK

SECTION THRU PARAPET ON BRIDGE

CHAIN LINK FENCE MOUNTED ON DECK

ADHESIVE ANCHOR CONNECTION

WITH CRASHWORTHY ADJACENT EXTERIOR PARAPET

ADHESIVE ANCHORS MAY BE OPTION OF THE CONTRACTOR, FOR REINFORCING REQUIREMENTS)

ANCHOR CONNECTION DETAIL ON THE PLAN. THE CONTRACTOR MAY REQUEST ADHESIVE ANCHOR CONNECTION (WHEN SUPPLIED)

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**RAILING EXPANSION JOINT DETAIL**

**BASE PLATE**
- **ANCHORAGE DETAIL**
- **SHIM PLATE DETAILS**

**SECTION THRU RAILING**
- **SECTION THRU FENCE**
- **TOP RAIL CONNECTION**
- **END SPIKE**

**DESIGNER NOTES**
- Tubular screening may be used on structures with a maximum speed of 60 mph or less. The speed must be separated from the roadway by a barrier.

**NOTES**
- Post base plates shall be flat with all surfaces smooth and free of sharp edges. All plate cuts shall be clean, straight and vertical. All plates shall be machine cut.

**TUBULAR STEEL RAILING SCREENING**

---

**Bill Oliva**

**STANDARD 30.15**

---

**DATE:** 7-17
FOR WING LOCATIONS.

FOR THREE BEAM.  SEE "GENERAL PLAN" SHT.

NOTE: FOR SECTIONS A, B & C ONLY.

The parapet terminating on a wing or end of transition on bridge.

BARS FOR TRANSITION ON BRIDGE.
INSIDE ELEVATION
ROADWAY OPENING OR 2'-0" MIN. FOR EXPANSION JOINT USE 2'-0" OPENING WITH FILLER FOR MIN. MOVEMENT

OUTSIDE ELEVATION
ROADWAY OPENING OR 2'-0" MIN. FOR EXPANSION JOINT USE 2'-0" OPENING WITH FILLER FOR MIN. MOVEMENT

SECTION A
SECTION B
SECTION C

BILL OF BARS

<table>
<thead>
<tr>
<th>BAR</th>
<th>SECTION</th>
<th>BARS</th>
<th>LOCATIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>R501</td>
<td>A</td>
<td>x</td>
<td>PARA. + V.L.</td>
</tr>
<tr>
<td>R502</td>
<td>A</td>
<td>x</td>
<td>PARA. + V.L.</td>
</tr>
<tr>
<td>R503</td>
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<td>R504</td>
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<td>PARA. + V.L.</td>
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<tr>
<td>R505</td>
<td>A</td>
<td>x</td>
<td>PARA. + V.L.</td>
</tr>
<tr>
<td>R506</td>
<td>A</td>
<td>x</td>
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</tr>
<tr>
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<td>A</td>
<td>x</td>
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<td>A</td>
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<td>A</td>
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</tr>
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<td>S504</td>
<td>B</td>
<td>x</td>
<td>PARA. + V.L.</td>
</tr>
</tbody>
</table>

NOTE: FOR SECTIONS A, B & C ONLY

WEIGHT = 504 LB/FT AREA = 3.36 SF

SINGLE SLOPE PARAPET 36SS

STANDARD 30.31

Approved: Bill Oliva

DATE: 1-17
SUPPORT WITH STEEL OR ELASTOMERIC BRGS.

SIDE VIEW OF GIRDER

LOCATION OF DRAPE STRAN D S

SUPPORT WITH 1/2" ELASTOMERIC BRG., PAD

SECTION THRU GIRDER

STIRRUP SPACING TO BE DESIGNED (18" MAX. SPA.).

STIRRUP & #3 BARS HOLD DOWN POINT.

PLAN VIEW

BEVEL 2" X 1"

PLAN VIEW

DETAIL A

STIRRUP SPACING TO BE DESIGNED (18" MAX. SPA.).

STIRRUP & #3 BARS HOLD DOWN POINT.

SECTION THRU GIRDER

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STIRRUP SPACING TO BE DESIGNED (18" MAX. SPA.).

STIRRUP & #3 BARS HOLD DOWN POINT.
45" PRESTRESSED GIRDER DETAILS

DESIGNER NOTES

The item shall be "Prestressed Girder Type I: 45-inch.

Girder concrete strength as required by Design & a minimum of 6,000 psi.

The minimum bending strength is 6,000 psi.

Sizing of prestressing strands is shown in Table 40.7-1. Using different strands will require a complete design of this reinforcement.

Listed on Standard 40.18 and the span lengths shown in Table 40.7-1. Using different strands will require a complete design of this reinforcement.

Top of girder to be rough floated and broomed transversely. Expose the corner 2 in. of girder when applying concrete sealers. Do not apply concrete sealers improperly.

The girder shall be rough floated and broomed transversely. Expose the corner 2 in. of girder when applying concrete sealers. Do not apply concrete sealers improperly.

All girders shall be cast full length as shown.

Top of girder to be rough floated and broomed transversely. Expose the corner 2 in. of girder when applying concrete sealers. Do not apply concrete sealers improperly.

All girders shall be cast full length as shown.

Top of girder to be rough floated and broomed transversely. Expose the corner 2 in. of girder when applying concrete sealers. Do not apply concrete sealers improperly.

All girders shall be cast full length as shown.
**PREPARATION DECKS TYPE 1**

**PREPARATION DECKS TYPE 2**

**CLEANING DECKS**

**FULL-DEPTH DECK REPAIR**

**CONCRETE MASONRY OVERLAY DECKS**

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**DESIGNER NOTES**

Plan view applicable to all overlay methods and deck repairs without overlays.

Plan sections not to Substratum transverse the proposed surface slope & etc.

Provide an average overlay thickness on the plans. The average overlay thickness is the average overlay thickness plus the expected concrete removal or in the deck surface.

Changes in cross-slope increase the average overlay thickness. Quantities are based on the average overlay thickness. Do not provide a profile crack line on the plans.

Do not include reinforcing concrete preparation areas for deck preparation.

* Removal of 1" of existing deck under bid item "cleaning deck" is not intended for previously overlayed decks. Existing concrete over it may be removed and considered when determining concrete removal. Do not include bid item "cleaning deck" when removing existing overlay.

**TOTAL ESTIMATED QUANTITIES**

**CONCRETE OVERLAY**

<table>
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<tr>
<th>BID ITEM</th>
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<td>CONCRETE MASONRY OVERLAY DECKS</td>
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</tbody>
</table>

**NOTES**

Drawings shall not be scaled.

Dimensions shown are based on the original structure plans.

Protective surface treatment shall be applied to the entire top surface of the new concrete overlay.

A minimum of 1" of concrete shall be removed from the entire bridge deck under the bid item "cleaning deck".

Preparation decks type 1, preparation decks type 2, and full-depth deck repair areas are based on the plans. Areas determined by the engineer, deck preparation and full-depth deck repair shall be filled with "concrete masonry overlay decks".

Any excavation required to complete the overlay or joint repairs at the abutments to be considered incidental to the bid item "concrete masonry overlay decks".

Profile grades shall be determined in the field based on a minimum overlay thickness of 1" placed above the deck surface after surface preparation. Expected average overlay thickness is shown on all plans. If expected average overlay thickness is below 1", contact the Structures Design Section.

Drains reduced or closed is incidental to the bid item "concrete masonry overlay decks".

Provide (if available) deck condition assessment survey on plans. Include survey type and date completed.

Joint repair areas shall not be included in deck repair areas or overlay quantities, see standard 40.31.

Include the bid item "adjusting floor drains" when drains are to be moved. Restrictions on removal plans shall be placed on the plans to prevent damage to reinforcing steel.

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**CONCRETE OVERLAY**

Approved: Bill Oliva
Date: 7-17

**STANDARD 40.31**