1. Work this Index with the Florida-I Beam Standard Details (Index 20036, 20045, 20054, 20063, 20072, 20078, 20084 and 20096) and the Table of Beam Variables in Structures Plans.
2. All bar bend dimensions are out-to-out.
3. Concrete cover: 2 inches minimum.
4. Strands: N: 3/8" Ø minimum, stressed to 10,000 lbs. each.
5. Place one (1) Bar 5K or 5Z at each location. Alterate the direction of the ends for each bar (see "ELEVATION AT END OF BEAM" in Standard Details).
6. Tie Bars 5K and 5Z to the fully bonded strands in the bottom or center row. (see "STRAND PATTERN" on the Table of Beam Variables sheet in Structures Plans).
7. End reinforcement parallel to the skew end of the beam. End reinforcement is defined as Bars 3C1, 3C2, 3D1, 3D2, 5K, 4M1, 4M2, and 5Z placed within the limits of the spacing for Bars 3C in "ELEVATION AT END OF BEAM".
8. Beyond the limits of the spacing for Bars 3C, place Bars 3D3, 5K, and 5Z perpendicular to the longitudinal axis of the beam. Fan Bars as needed to avoid overlapping bars at the transition to Bars 3D3 and 5M3, and field cut to maintain minimum cover. Provide additional Bars 4M1, 4M2, 3D1 and 3D2 as required; additional bars are not included in the "BILL OF REINFORCING STEEL". For placement locations see Skewed Beam End Details for Widening Existing Bridges.
9. Adjust the dimensions of Bars 3C1, 3C2, 3D1, 3D2, 5K, 4M1, 4M2, 5Y and 5Z placed within the limits of Bars 5Z until vertical by adjusting the spacing at the top of beam up to a maximum of 1". For deformed WR, cut top cross wire and rotate bars as required or reduce end cover at top of the beam to 1" minimum.
10. Contractor Options:
A. At the Contractor's option, the length of the bottom legs of Bars 5K and 5Z may be extended to facilitate tying to the exterior strands.
B. For deformed WR, supplemental transverse #4 bars are permitted to support Pieces K & S under the cross wires on the bottom row of strands.
C. Embedment of Safety Line Anchorage Devices are permitted in the top flange to accommodate fall protection systems. See shop drawings for details and spacing of any required anchorage devices.
D. WWR is not permitted for end reinforcement Bars 3D1, 3D2, 4M1 and 4M2; use bar reinforcement.
E. Deformed WWR may be used in lieu of Bars 3D, 5K, 4M, and 5Z as shown on the Standard Details "LINE PATTERN" on the Table of Beam Variables sheet in Structures Plans.
F. Strands N: 3/8" Ø minimum, stressed to 10,000 lbs. each.
G. Concrete cover: 2 inches minimum.
**Insert Notes**

1. Provide 1/8" zinc-electroplated ferrule wing nut or coil inserts, UNC threads, 1/0 minimum gage wire, not more than 4" in depth with a minimum ultimate tensile strength of 11,400 lbs. in 4,000 psi concrete.

2. If inserts are needed on both sides (faces) of beam webs, an assembly as long as the thickness of the beam web, consisting of two (2) ferrule or coil inserts attached by two (2) or more struts may be utilized. The connecting struts shall have a minimum ultimate tensile strength of 11,400 lbs.

3. Inserts for diaphragm reinforcing are required at each end of each intermediate diaphragm shown on the Beam Framing Plan and may be required at the end of the beams when end diaphragms are shown. See Superstructure and Beam Framing Plans for longitudinal location of inserts for each face of beam.

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**Typical Section Showing Cut Strand Recess Limits**

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**Strand Cutting and Protecting Detail**

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**Skewed Beam End Details for Widening Existing Bridges**

(Flo-Rida-I 36 Beam shown, others similar)
**FLORIDA-I 36 BEAM - STANDARD DETAILS**

**SECTION A-A FOR CONVENTIONAL REINFORCING**
(Showing Bars 5K, 5Y & 5Z Only)

**END VIEW**

- **ELEVATION AT END OF BEAM**
  (Flanges Not Shown For Clarity)
  (End 1 Shown, End 2 Similar)

- **BILL OF REINFORCING STEEL**

<table>
<thead>
<tr>
<th>MARK</th>
<th>NOTE NUMBERS</th>
<th>SIZE</th>
<th>NUMBER REQUIRED</th>
<th>LENGTH (NOTE 2)</th>
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<td>3</td>
<td>15 (End 1)</td>
<td>Varies</td>
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<tr>
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<td>9, 10 &amp; 11</td>
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<td>11 (End 2)</td>
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<tr>
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<tr>
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<td>9 &amp; 11</td>
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<td>Z</td>
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**CONVENTIONAL REINFORCING BAR BENDING DETAILS**

- **BENDING DIAGRAMS** (See Note 2)

**NOTES:**
A. Work this Index with Index 20010 - Typical Florida-I Beam Details and Notes and the Florida-I Beam - Table of Beam Variables in Structures Plans.
B. For referenced notes, see Index 20010.
C. For Dimensions A, B, C, D, L, R & V1 and number of spaces S1 thru S4, see Florida-I Beam - Table of Beam Variables in Structures Plans.

**INDEX NO.**
20036

**SHEET NO.**
1 of 2
ALTERNATE REINFORCING STEEL (WWR) DETAILS

PLAN VIEW

PIECES M-1 TIES TO PIECE K-2 (2 REQUIRED)

PIECES M-1 (2 REQUIRED)

W12.4 (PIECE K-1)

W10 (PIECES K-2 & S)

D31 (PIECE K-1)

D25 (PIECES K-2 & S)

W12.4 (PIECE K-1)

W10 (PIECES K-2 & S)

D31 (PIECE K-1)

D25 (PIECES K-2 & S)

W12.4 (PIECE K-1)

W10 (PIECES K-2 & S)

PLAN VIEW

PIECE M-3 (2 REQUIRED)

Match spacing of adjacent Pieces S-1, S-2, S-3 or S-4.

S1 ~ D25's @ V1 sp. (PIECE S-1 shown)

S2 ~ D25's @ 9" sp. (PIECE S-2)

S3 ~ D25's @ 1'-0" sp. (PIECE S-3)

S4 ~ D25's @ 1'-6" sp. (PIECE S-4)

Wires D25 (shown as (O) Typ.)

Legend:

EF = Each Face

FF = Front Face

BF = Back Face

NOTES:

a. See Sheet 1 for placement details & Table of Beam Variables in Structures Plans for variables S1, S2, S3, S4 & V1.

b. Place Conventional Reinforcement Bars 5A & 3C as shown on Sheet 1. Place additional Bars 5Y as shown in Section A-A for WWR. Bars 5Z will not be used with the WWR option.

c. Pieces may be fabricated in multiple length sections.

d. For beams with skewed end conditions, Pieces D-1, D-2 & M-1 shall not be used; Conventional Reinforcement Bars D1, D2, C1, C2, M1 & M2 shall be used. See Index 20010 Skewed Beam End Details and Note 9 for placement details. Shift Pieces K & Bars 5Y to accommodate skewed end conditions and align with Bars C and D.

FLORIDA-I 36 BEAM - STANDARD DETAILS

INDEX NO.

20036

SHEET NO.

2 of 2
**SECTION A-A FOR CONVENTIONAL REINFORCING**

(Showing Bars 5K, 5Y & 5Z Only)

**END VIEW**

**ELEVATION AT END OF BEAM**

(End 1 Shown, End 2 Similar)

**BILL OF REINFORCING STEEL**

**CONVENTIONAL REINFORCING**

**BAR BENDING DETAILS**

**BENDING DIAGRAMS**
**ALTERNATE REINFORCING STEEL (WWR) DETAILS**

**PLAN VIEW**
- PIECE M-1 (2 Required)
  - M-1:ties to Piece K-2
- PIECE M-3 (2 Required)
  - M-3:ties to Piece K-2

**END VIEW**
- PIECE M (2 Required)
  - PIECE M-1
  - PIECE M-2

**END VIEW**
- PIECE K & S
  - PIECE K-1 (Aligned EF)
  - PIECE K-2 (FF Shown Solid, BF Shown Dashed)
  - PIECE S-1, S-2, S-3 or S-4 (2 Required Each Piece)

**PLAN VIEW**
- PIECE D-1 (4 Required ~ 2 Pairs)
- PIECE D-2 (4 Required ~ 2 Pairs)
- PIECE D-3 (4 Required ~ 2 Pairs)
- PIECE K-1 (Aligned EF)
- PIECE K-2 (FF Shown Solid, BF Shown Dashed)
- PIECE S-1, S-2, S-3 or S-4 (2 Required Each Piece)

**PARTIAL SECTION AT CENTER BEAM**
- PIECE M-3
  - PIECE M-1
  - PIECE M-2

**PARTIAL BEAM END VIEW**
- PIECE D-3
  - PIECE D-2
  - PIECE D-1

**FOR WELDED WIRE REINFORCEMENT**
- PIECE M-3
- PIECE M-1
- PIECE M-2

**LEGEND:**
- EF = Each Face
- FF = Front Face
- BF = Back Face

**NOTES:**
- See Sheet 1 for placement details & Table of Beam Variables in Structures Plans for variables S1, S2, S3, S4 & V1.
- Place Conventional Reinforcement Bars 5A & 3C as shown on Sheet 1. Place additional Bars 5Y as shown in Section A-A for WWR. Bars 5Z will not be used with the WWR Option.
- Pieces may be fabricated in multiple length sections.
- For beams with skewed end conditions, Pieces D-1, D-2 & M-1 shall not be used, Conventional Reinforcement Bars D1, D2, C1, C2, M1 & M2 shall be used. See Index 20010 Skewed Beam End Details for placement details. Shift Pieces K & Bars 5Y to accommodate skewed end conditions and align with Bars C and D.

**FLORIDA-1 54 BEAM - STANDARD DETAILS**

**INDEX NO.** 20054

**SHEET NO.** 2 of 2

**REV. NO.** 0

**DESIGN STANDARDS**

**FY 2017-18**

**LAST REV.** 01/01/16

**DESCRIPTION:** 11/01/16
ALTERNATE REINFORCING STEEL (WWR) DETAILS

PLAN VIEW

PIECE M-1
(2 Required)

PIECE M-3
(2 Required)

MATCH SPACING OF ADJACENT PIECE S-1, S-2, S-3 OR S-4

NOTES:

a. See Sheet 1 for placement details & Table of Beam Variables in Structures Plans for variables S1, S2, S3, S4 & V1.
b. Place Conventional Reinforcement Bars A, C, Y and Strands not shown for clarity on Sheet 1. Place additional Bars 5Y as shown in Section A-A for WWR. Bars 5Z will not be used with the WWR Option.
c. Pieces may be fabricated in multiple length sections.
d. For beams with skewed end conditions, Pieces D-1, D-2 & M-1 shall not be used; Conventional Reinforcement Bars D1, D2, C1, C2, M1 & M2 shall be used. See Index 20010 Skewed Beam End Details and Note 9 for placement details. Shift Pieces K & Bars 5Y to accommodate skewed end conditions and align with Bars C and D.

PLAN VIEW

PIECE K-2
(Aligned EF)
(4 Required ~ 2 Pairs)

PIECE S-1, S-2, S-3 or S-4
(2 Required Each Piece)

END VIEW

PIECES M
(2 Required)

PIECE M-1
(2 Required)

PARTIAL SECTION AT CENTER BEAM

CONVENTIONAL REINFORCING STEEL (WWR) DETAILS

NOTES:

a. See Sheet 1 for placement details & Table of Beam Variables in Structures Plans for variables S1, S2, S3, S4 & V1.
b. Place Conventional Reinforcement Bars A, C, Y and Strands not shown for clarity on Sheet 1. Place additional Bars 5Y as shown in Section A-A for WWR. Bars 5Z will not be used with the WWR Option.
c. Pieces may be fabricated in multiple length sections.
d. For beams with skewed end conditions, Pieces D-1, D-2 & M-1 shall not be used; Conventional Reinforcement Bars D1, D2, C1, C2, M1 & M2 shall be used. See Index 20010 Skewed Beam End Details and Note 9 for placement details. Shift Pieces K & Bars 5Y to accommodate skewed end conditions and align with Bars C and D.
PIECES K & S END VIEW

PIECE K-1 (Aligned EF) (4 Required - 2 Pairs)

PIECE K-2 (FF Shown Solid, BF Shown Dashed) (4 Required)

PIECE S-1, S-2, S-3 or S-4 (2 Required ~ Each Piece)

ALTERNATE REINFORCING STEEL (WWR) DETAILS

NOTES:

a. See Sheet 1 for placement details & Table of Beam Variables in Structures Plans for variables S1, S2, S3, S4 & V1.
b. Place Conventional Reinforcement Bars A, C, Y and Strands not shown for clarity.
c. Pieces may be fabricated in multiple length sections.
d. For beams with skewed end conditions, Pieces D-1, D-2 & M-1 shall not be used; Conventional Reinforcement Bars D1, D2, C1, C2, M1 & M2 shall be used. See Index 20010 Skewed Beam End Details and Note 9 for placement details. Shift Pieces K & Bars 5Y to accommodate skewed end conditions and align with Bars C and D.

SECTION A-A FOR WELDED WIRE REINFORCEMENT

PARTIAL SECTION AT CENTER BEAM

PARTIAL BEAM END VIEW (Conventional Reinforcing Bars A, C, Y and Strands not Shown for Clarity)

NOTES:

- Place additional Bars 5Y as shown in Section A-A for WWR. Bars 5Z will not be used with the WWR Option.
- Piecers may be fabricated in multiple length sections.
- For beams with skewed end conditions, Pieces D-1, D-2 & M-1 shall not be used; Conventional Reinforcement Bars D1, D2, C1, C2, M1 & M2 shall be used. See Index 20010 Skewed Beam End Details and Note 9 for placement details. Shift Pieces K & Bars 5Y to accommodate skewed end conditions and align with Bars C and D.
ALTERNATE REINFORCING STEEL (WWR) DETAILS

FLORIDA-1 78 BEAM - STANDARD DETAILS

NOTES:

a. See Sheet 1 for placement details & Table of Beam Variables in Structures Plans for variables S1, S2, S3, S4 & V1.

b. Place Conventional Reinforcement Bars A, C, Y and Strands N not Shown for Clarity.

c. Pieces may be fabricated in multiple length sections.

d. For beams with skewed end conditions, Pieces D-1, M-1 shall not be used; Conventional Reinforcement Bars D1, D2, C1, C2, M1 & M2 shall be used. See Index 20010 Skewed Beam End Details and Note 9 for placement details.

Shift Pieces K & Bars 5Y to accommodate skewed end conditions and align with Bars C and D.
ALTERNATE REINFORCING STEEL (WWR) DETAILS

PLAN VIEW
PIECE M-1
(2 Required)

PLAN VIEW
PIECE M-3
(2 Required)

End of Beam

Match spacing of adjacent Piece S-1, S-2, S-3 or S-4

Varies
1'-8" Max.

Varies 9' Max.

Optional W6.4

Optional W6.4

1" extension (Typ.)

5½" ±

6 - 15" @ 6" sp. = 7'-0"

15 - 15" @ 6" sp. = 7'-0"

Varies 1'-0" sp.

(2 Required)

PIECE M-1 tied to Piece K-2

 optional W6.4

PIECE S-1, S-2, S-3 or S-4
(2 Required ~ Each Piece)

1" extension (Typ.)

6 - D31's @ 6" = 9'-0"

3'-12" " ±

6 " " ±

1 " " ±

6 ~ D31's @ 3½" sp. = 1'-5½" 2½" offset (Typ.)

19 ~ D16's @ 6" sp. = 9'-0"

3'-8"

6"

1"

6"

1"

6 ~ D16's @ 3½" sp. = 1'-5½"

15 ~ D25's (BF) @ 6" = 7'-0"

15 ~ D25's (FF) @ 6" = 7'-0"

(2 Required ~ Each Pair)

PIECES K & S
END VIEW

Piece D-1 lies to Piece K-1

SPIECE K-1
(Aligned EF)
(4 Required ~ 2 Pairs)

PIECE K-2
(FF Shown Solid, BF Shown Dashed)
(4 Required ~ 2 Pairs)

PIECE S-1, S-2, S-3 or S-4
(2 Required ~ Each Pair)

PIECE S-1 shown

Note 9 for placement details.

Pieces shifted to accommodate skewed end conditions and align with Bars C and D.

NOTES:
a. See Sheet 1 for placement details & Table of Beam Variables in Structures Plans for variables S1, S2, S3, S4 & V1.
b. Place Conventional Reinforcement Bars A, C, Y and Strands N not Shown for Clarity.
c. Place additional Bars S9 as shown in Section A-A for WWR. Bars S2 will not be used with the WWR Option.
d. Pieces may be fabricated in multiple length sections.
e. For beams with skewed end conditions, Pieces D-1, D-2 & M-1 shall not be used; Conventional Reinforcement Bars D1, D2, C1, C2, M1 & M2 shall be used. See Index 20010 Skewed Beam End Details and Note 9 for placement details.

LEGEND:
EF = Each Face
FF = Front Face
BF = Back Face

ALTERNATE REINFORCING STEEL (WWR) DETAILS

NOTES:
a. See Sheet 1 for placement details & Table of Beam Variables in Structures Plans for variables S1, S2, S3, S4 & V1.
b. Place Conventional Reinforcement Bars A, C, Y and Strands N not Shown for Clarity.
c. Place additional Bars S9 as shown in Section A-A for WWR. Bars S2 will not be used with the WWR Option.
d. Pieces may be fabricated in multiple length sections.
e. For beams with skewed end conditions, Pieces D-1, D-2 & M-1 shall not be used; Conventional Reinforcement Bars D1, D2, C1, C2, M1 & M2 shall be used. See Index 20010 Skewed Beam End Details and Note 9 for placement details.

SHIFT Pieces K & Bars S9 to accommodate skewed end conditions and align with Bars C and D.
**BEAM NOTES**

1. Work this Index with the Table of Beam Variables in Structures Plans.
2. All bar bend dimensions are out to out.
3. Concrete cover: 2 inches minimum.
4. Strands N: \( \frac{3}{8} \) in minimum, stressed to 10,000 lbs. each.
5. Place one (1) bar 4K or 5Z at each location. Alternate the direction of the ends for each bar.
6. Tie Bars 4K and 5Z to the fully bonded strands in the bottom or center row (see "STRAND PATTERN" on the Table of Beam Variables sheet in Structures Plans).
7. Place Bars 3C1, 3D1 and 4M1 in beam END 1, and Bars 3C2, 3D2 and 4M2 in beam END 2.
8. For beams with vertically beveled end conditions:
   A. Place first row of Bars 3D1, 3D2, 4K, 4Y and 5Z parallel to the end of the beam. Progressively rotate remaining bars within the limits of Bars 5Z until vertical by adjusting the spacing at the top of beam up to a maximum of 1".
   B. For deformed WWR, cut top cross wire and rotate bars as required or reduce end cover at top of beam to minimum 1".
9. For beams with skewed end conditions:
   A. WWR is not permitted for bar reinforcement Bars 3D1, and 3D2 on skewed ends; use bar reinforcement.
   B. Place end reinforcement parallel to the skewed end of the beam. End reinforcement is defined as Bars 3D1, 3D2, 4K, 4Y and 5Z placed within the limits of the spacing for Bars 3D in "ELEVATION AT END OF BEAM".
   C. Beyond the limits of the spacing for Bars 3D, place Bars 3D3 and 4K perpendicular to the longitudinal axis of the beam. For placement see "SKEWED BEAM END DETAILS FOR WIDENING EXISTING BRIDGES" (Sheet 2).
10. Contractor Options:
    A. Deformed WWR may be used in lieu of Bars 3D, 4K, and 5Z as shown on Sheet 4; except at skewed ends (See Note 9).
    B. Bars 3D1 and 3D2 may be fabricated as a two-piece bar with a 1'-0" minimum lap splice of the bottom legs.
    C. For deformed WWR, supplemental transverse #4 bars are permitted to support Pieces K & S under the cross wires on the bottom row of strands or above Strands N.
11. Embedment of Safety Line Anchorage Devices are permitted in the top flange to accommodate fall protection systems. See shop drawings for details and spacing of required anchorage devices.
12. For beams with ends that will not be encased in concrete diaphragms, cut wedges and recess Prestressing Strands at the end of the beam without damaging the surrounding concrete. See "STRAND CUTTING AND PROTECTING DETAIL" on Sheet 2.
**PARTIAL PLAN VIEW (SHOWING TOP FLANGE)**
(End 1 Shown, End 2 Similar)
(Bars 5A, 4Y & Strands N not shown for clarity)

- Bars 4K spaced perpendicular to end of beam @ 3".
- Skewed Bars 5Z, placed with Bars 4K.

**PARTIAL SECTION THRU WEB (SHOWING BOTTOM FLANGE)**
(End 1 Shown, End 2 Similar)
(Bars 4Y & Strands not shown for clarity)

- Bars 4K spaced along Beam @ 3".
- Bars 3D1 or 3D2 placed with alternate Bars 4K.

**INSERT NOTES**
1. Provide 1"Ø, zinc-electroplated, ferrule wing nut or coil inserts, UNC threads, 1/8 minimum gage wire, not more than 4" in depth with a minimum ultimate tensile strength of 11,400 lbs. in 4,000 psi concrete.
2. If inserts are needed on both sides (faces) of beam webs, an assembly as long as the thickness of the beam web, consisting of two (2) ferrule or coil inserts attached by two (2) or more struts may be utilized. The connecting struts shall have a minimum ultimate tensile strength of 11,400 lbs.
3. Inserts for diaphragm reinforcing are required at each end of each intermediate diaphragm shown on the Beam Framing Plan and may be required at the end of the beams when end diaphragms are shown. See Superstructure and Beam Framing Plans for longitudinal location of inserts for each face of beam.

**STRAND CUTTING AND PROTECTING DETAIL**

**TYPICAL SECTION**
SHOWING CUT STRAND RECESS LIMITS

- Epoxy Coating (3/16 minimum thickness)

**WEB REINFORCING**
Begin WWR Option when applicable, Piece 5-1, see Sheet 4.
ALTERNATE REINFORCING STEEL WWR DETAILS

SECTION A-A
FOR WELDED WIRE REINFORCEMENT

PIECES K & S
END VIEW

PIECE K-1
(Aligned EF)
(4 Required ~ 2 Pairs)

PIECE K-2
(FF Shown Solid,
BF Shown Dashed)
(4 Required)

PIECE S-1, S-2, S-3 or S-4
(2 Required Each Piece)

NOTES:

a. See Sheet 3 for placement details & Table of Beam Variables in Structures Plans for variables S1, S2, S3, S4 & V1.
b. Place Conventional Reinforcement Bars 5A as shown on Sheet 3. Place additional Bars 4Y as shown in Section A-A for WWR. Bars 5Z will not be used with the WWR Option.
c. Pieces may be fabricated in multiple length sections.
d. For beams with skewed end conditions, Pieces D-1 & D-2 shall not be used; Conventional Reinforcement Bars D1 & D2 shall be used. See Sheet 2 Skew Details and Sheet 1 Note 9 for placement details. Shift Pieces K & Bars 4Y to accommodate skewed end conditions and align with Bars D.

PARTIAL SECTION AT CENTER BEAM

PARTIAL BEAM END VIEW

(AASHTO TYPE II BEAM)

STANDARD DETAILS

INDEX NO.
20120

SHEET NO.
4 of 4
BEAM CAMBER AND BUILD-UP NOTES:
The build-up values given in the Data Table* are based on theoretical beam cambers. The Contractor shall monitor beam cambers for the purpose of predicting camber values at the time of the deck pour. If the predicted cambers based on field measurements differ more than +/- 1/2" from the theoretical "Net Beam Camber @ 120 Days" shown in the Data Table*, obtain approval from the Engineer to modify the build-up dimensions as required. When the measured beam cambers create a conflict with the bottom mat of deck steel, notify the Engineer a minimum of 21 days prior to casting.

Dim. "A" includes the weight of the Stay-In-Place Formwork.

* NOTE:
Work this Index with the Build-up and Deflection Data Table for Florida-I and AASHTO Type II Beams in Structures Plans.
1. Work this Index with the Florida-U Beam Standard Details (Index 20248, 20254, 20263 and 20272) and the Table of Beam Variables in Structures Plans.

2. All bar bend dimensions are out-to-out.

3. Concrete cover: 2 inches minimum. Maximum aggregate size is a No. 77.

4. Concrete face may be sloped with a maximum 1:24 draft to facilitate formwork removal.

5. Strands N: \( \frac{3}{8} \)" Ø minimum, stressed to 10,000 lbs. each.

6. Tie Bars SK to the fully bonded strands in the bottom row (see "STRAND PATTERN" on the Table of Beam Variables sheet in Structures Plans).

7. For beams without skewed ends or vertically beveled end conditions (see Note B) the Engineer may approve the use of deformed WWR in lieu of Bars 6A1, 4A2, 5B, 4C, 3D, 5E, 4F, 4G, 5K, SK, SL and 4M. The spacing and sizes of deformed WWR must match the reinforcing sizes shown on the Florida-U Beam Standard Details sheets.

8. For beams with vertically beveled end conditions, where "Dim. P" exceeds 1", place Bars SE, and the First Bars 4F and 5K parallel to the end of the beam. Fan the remaining Bars 4F and 5K within the limits of "Dim. P" (End Diaphragm) at equal spaces until vertical.

9. Embedment of Safety Line Anchorages are permitted in the top flange to accommodate fall protection systems. See shop drawings for details and spacing of any anchorages or other required embedded hardware.

10. Intermediate diaphragms must be cast and concrete release strength obtained prior to removin the beam from casting bed.

11. Place drains pipes adjacent to each web at each beam end (four drains per beam).

A. Drain Pipe: 2" NPS Schedule 80 PVC.

B. Cover, wrap and secure wire screen around the end of the pipe prior to casting. Extend screen a minimum of 1" down the pipe sides.

C. Provide removable pipe plugs during casting. Remove plugs from the inside of pipes after casting.

12. Protection of Strands:

A. Provide a 2" deep recess around all strands (including dormant) or strand groups. Extend the recessed blockout to the web face and bottom of the flange for the bottom row of strands.

B. After detensioning, cut strands \( \frac{3}{2} \)" from recessed surface and fill the blockout to protect strands with Type F-2 or Type Epoxy Compound in accordance with Specification Section 926.

13. Use Stay-In-Place metal deck forms inside the beams.

14. Prior to deck placement, provide temporary blocking under each web at both ends of every beam. Ensure the temporary blocking is adequate to resist movements and rotations during deck placement. Leave temporary blocking and bracing in place for a minimum of four days after the deck is placed.

15. Based on the deck forming system and deck placement sequence, evaluate and provide any required temporary bracing between the U Beams.
TYPICAL FLORIDA-U BEAM DETAILS AND NOTES

CONDITION 1

(p = 0.0)

CONDITION 2

(condition 3

SCHEMATIC END ELEVATIONS OF BEAMS

(Showing Vertical Bevel of Beam End)

TYPICAL STRAND BLOCKOUT DETAIL

TEMPORARY BLOCKING OF BEAM ENDS

REVISION

FY 2017-18 DESIGNED STANDARDS

TYPICAL ROVIRA-U BEAM DETAILS AND NOTES

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TYPICAL SECTION

NOTES:

Work this Index with Index 20210 - Typical Florida-U Beam Details and Notes and the Florida-U Beam - Table of Beam Variables in Structures Plans.

For referenced notes see Index 20210.

WORK THIS INDEX WITH INDEX 20210 – TYPICAL FLORIDA-U BEAM DETAILS AND NOTES AND THE FLORIDA-U BEAM - TABLE OF BEAM VARIABLES IN STRUCTURES PLANS.

FOR REFERENCED NOTES SEE INDEX 20210.

Dim. L = Casting Length (Overall Length of Beam along Beam including length increase as required for beam placed on grade and Dim. R to compensate for elastic and time dependent shortening effects)

** Intermediate Diaphragms shall be provided:
(1) - At midspan.
(2) - At 20'-0" Max. from midspan when beam length (L) exceeds 60 Ft.

* Reinforcing steel is symmetrical about @ Beam for Half Sections A-A and B-B.

Omit these Bars 4A2 only as required when strands are provided at or above their locations (Typ.).

FLORIDA-U 48 BEAM - STANDARD DETAILS

LAST 
REVISION
DESIGN STANDARDS
FY 2017-18
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FLORIDA-U 48 BEAM - STANDARD DETAILS
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1 of 3
**FLORIDA-U 54 BEAM - STANDARD DETAILS**

**BILL OF REINFORCING STEEL FOR ONE BEAM ONLY**

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</tr>
<tr>
<td>A2</td>
<td>4</td>
<td>12</td>
<td>Dim. L - 4&quot;</td>
</tr>
<tr>
<td>B</td>
<td>5</td>
<td>12</td>
<td>4'-7&quot;</td>
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<tr>
<td>C</td>
<td>4</td>
<td>20</td>
<td>5'-3&quot;</td>
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<td>D1</td>
<td>3</td>
<td>180</td>
<td>1'-6&quot;</td>
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<td>4</td>
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<tr>
<td>I</td>
<td>5</td>
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<td>8'-6&quot;</td>
</tr>
<tr>
<td>L</td>
<td>5</td>
<td>24</td>
<td>18'-2&quot;</td>
</tr>
<tr>
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<td>4</td>
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</tr>
<tr>
<td>N</td>
<td>1/2 Ø Strand</td>
<td>2</td>
<td>Dim. L - 3&quot;</td>
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**DIMENSIONS**

- Bars 5K (Typ.): Bars A (Shown as ( ) Typ.)
- Bars 4G: Top of Bottom Flange of Beam
- Bars 5K (Typ.): 3" Chamfer
- Bars 4H: Top of Top Flange of Beam
- Bars 4G, 4H: 90° (Note 4)
- Bars 5K (Typ.): 10° (Note 10)
- Bars 4F: 3" Ø Pin
- Bars 4M, 4G, 4H, 4C: Field Bend as Required for Skew

**NOTES**

- For referenced note see Index 20210.
END VIEW AT END DIAPHRAGM

SECTION C-C

TOP VIEW AT END DIAPHRAGM

FLORIDA-U 63 BEAM - STANDARD DETAILS

NOTES:

For referenced note see Index 20210.
CONVENTIONAL REINFORCING STEEL BENDING DIAGRAMS

BILL OF REINFORCING STEEL FOR ONE BEAM ONLY

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NOTES:
- Referenced notes see Index 20210.
- Field Bend as Required for Skew.

FLORIDA-U 63 BEAM - STANDARD DETAILS

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**BEAM CAMBER AND BUILD-UP NOTES:**

The build-up values given in the Data Table are based on theoretical beam cambers. The Contractor shall monitor beam cambers for the purpose of predicting camber values at the time of the deck pour. If the predicted cambers based on field measurements differ more than 1/16" from the theoretical "Net Beam Camber @ 120 Days" shown in the Data Table, obtain approval from the Engineer to modify the build-up dimensions as required. When the measured beam cambers create a conflict with the bottom mat of deck steel, notify the Engineer a minimum of 21 days prior to casting.

* NOTE:

Work this Index with the Build-up and Deflection Data Table for Florida-U Beams in Structures Plans.

* Dimensions are along slope.

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**BUILD-UP DIAGRAM FOR TANGENT SPANS (ALONG Q FLANGE) (CASE 1)**

**BUILD-UP DIAGRAM FOR SAG VERTICAL CURVE & HORIZONTAL CURVE SPANS (ALONG Q FLANGE) (CASE 2)**

**BUILD-UP DIAGRAM FOR CREST VERTICAL CURVE SPANS - CONTROL AT Q SPAN (ALONG Q FLANGE) (CASE 3)**

**BUILD-UP DIAGRAM FOR CREST VERTICAL CURVE SPANS - CONTROL AT BEGIN OR END SPAN (ALONG Q FLANGE) (CASE 4)**