1. The "PRESTRESSED BEAM TEMPORARY BRACING PLAN" is to be used in conjunction with the "TABLE OF TEMPORARY BRACING VARIABLES" in the Structures Plans. The brace locations and quantities shown in the plan view are schematic only, and the actual brace locations and quantities should be determined from the "TABLE OF TEMPORARY BRACING VARIABLES" in the Structures Plans.

2. The bracing members shown in the sections are schematic only, and are meant to show geometry in which bracing should be placed. The bracing members and connections shall be designed and detailed by the Contractor. Any of the geometric configurations shown in the bracing sections are acceptable. The bracing may be attached through the webs or to the flanges of the beam, as necessary. The bracing shall be positively and securely connected to each end of the beam and shall not be designed to exert any vertical force on the outer edge of the top flange. All bolt holes in beams are to be preformed and filled after use. All bracing is to be placed perpendicular to beams.

3. The anchor beam is a beam which has anchor bracing at its support locations. It is to be set first, and its location may vary. All subsequent beams are to be braced against the Anchor Beam sequentially. The Anchor Bracing may be located at an exterior girder provided that all required bolt clear distances are met and overhang bracing which does not cause excessive deflection or rotation of the exterior girder, or cause the girder stresses to exceed stress limits per the FDOT Structures Manual.

4. Overhang bracing requirements are neither specified here nor in the "TABLE OF TEMPORARY BRACING VARIABLES." It is the Contractor’s responsibility to design overhang bracing which does not cause excessive deflection or rotation of the exterior girder, or cause the girder stresses to exceed stress limits per the FDOT Structures Manual.

5. The Contractor shall submit documentation required by the Specifications for Road and Bridge Construction, Section 5 for "Beam and Girder Temporary Bracing." If the Contractor elects to use the bracing requirements shown in the "TABLE OF TEMPORARY BRACING VARIABLES," the documentation shall include signed and sealed certification that the construction loads do not exceed those shown in the "TABLE OF ASSUMED CONSTRUCTION LOADS" and signed and sealed design of bracing members and connections. If the Contractor elects to use a bracing scheme different from those shown in the "TABLE OF TEMPORARY BRACING VARIABLES," the documentation shall include signed and sealed calculation of the bracing requirements and design of bracing members and connections.
SCHEMATIC PLAN VIEWS AT BEAM ENDS

1. All bar dimensions are out-to-out.
2. Place one (1) Bar SK or SZ at each location as detailed alternating the direction of the ends for each bar (see “ELEVATION AT END OF BEAM”, Index Nos. 20036, 20045, 20054, 20063, 20072, 20078, 20084 and 20096).
3. Strands N shall be ASTM A416, Grade 270, seven-wire strands 1/8" or larger, stressed to 10,000 lbs. each.
4. For beams with ends not to be encased in permanent concrete diagonals, cut wedge to recess Prestressing Strands at the end of the beam after detensioning without damaging the surrounding concrete. See STRAND RECESS DETAIL on Sheet 2.
5. For beams with ends not to be encased in permanent concrete diagonals, protect end of recessed strands in accordance with Specification 450.
6. Unless otherwise noted, the minimum concrete cover for reinforcing steel shall be 2".
7. At the Contractor’s option, welded deformed wire reinforcement may be used in lieu of Bars 3D, 5K, 4M, and 5Z as shown on the Standard Details for each beam size. Welded deformed wire reinforcement shall conform to AASHTO M221, with a minimum yield strength of 75 ksi.
8. Safety Line Anchorage Devices or sleeves are required and permitted in the top flange only to accommodate fall protection systems used during construction. See shop drawings for details and spacing of any required embedments.
9. For beams with skewed end conditions, the end reinforcement, defined as Bars 3C1, 3C2, 3D1, 3D2, 5K, 5M, 5N and 5Z placed within the limits of the spacing for Bars SK in “ELEVATION AT END OF BEAM”, shall be placed parallel to the skewed end of the beam. Bars 3D3, 3Y and 4N located beyond the limits of Bars 3C shall be placed perpendicular to the longitudinal axis of the beam. Fan Bars as needed to avoid overlapping bars at the transition to Bars 3D3 and 4N, and field cut to maintain minimum cover.
10. Placement of Bars 3C1, 3D1 and 3M correspond to END 1, and Bars 3C2, 3D2 and 3M correspond to END 2. END 1 and END 2 are shown on the beam “ELEVATION”.
11. For Beams with vertically beveled end conditions, place first row of Bars 3C1, 3C2, 3D1, 3D2, 5K, 5Y 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". For welded deformed wire reinforcement, cut top cross wire and rotate bars as required or reduce end cover at top of the beam to minimum 1”.
12. For beams with skewed end conditions, welded deformed wire reinforcement shall not be used for end reinforcement (Bars 3M1, 3M2, 4N1 and 4N2).
13. Bars SK and SZ shall be placed and tied to the fully bonded strands in the bottom or center row (see “STRAND PATTERN” on the Table of Beam Variables in Structures Plans). At the Contractor’s option the length of the bottom legs of Bars SK and SZ may be extended to facilitate tying to the exterior strands. For welded deformed wire reinforcement, supplemental transverse #4 bars are permitted to support pieces 4 & 5 under the cross wires on the bottom row of strands.
14. At the Contractor’s option, Bars 3D1, 3M2 and 3D3 may be fabricated as a single bar with a 1-0’ minimum lap splice of the top legs, or the length of the bottom legs may be extended to facilitate tying to the exterior strands.
15. For referenced Dimensions, Angles and Case Numbers, see the Table of Beam Variables in Structures Plans.
SKEWED BEAM END DETAILS FOR WIDENING EXISTING BRIDGES
(Florida-I 36 Beam shown, others similar)

**REVISION**
C:\projects\standards\structures\current\ready4release\2014 BOOK\20010-2 of2.dgn

**DESCRIPTION:**
For number of Bars, spacing and position details see Index No. 20036 thru 20096. See Sheet 1 for Conventional Reinforcement, Sheet 2 for Welded Wire Reinforcement. Partial Plan View (showing top flange) (Bars S5, S4, & Strands not shown for clarity)

1. Provide 1½, zinc-electroplated, ferrule wing nut or coil inserts, UNC threads, 5/8 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. For inserts on both sides of beam webs, an assembly length equal to 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 13,400 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.

**INSERT NOTES**

1. 1-inch, 1½, zinc-electroplated, ferrule wing nut or coil inserts, UNC threads, 5/8 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. For inserts on both sides of beam webs, an assembly length equal to 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 13,400 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.

**INSERT DETAIL**

**TYPICAL SECTION**

**SHOWING STRAND RECESS LIMITS**

**TYPICAL SECTION**

**AFTER EPOXY COATING**

**STRAND RECESS DETAIL**
ALTERNATE REINFORCING STEEL (WELDED WIRE REINFORCEMENT) DETAILS

**PIECES M END VIEW**

- Pieces M-1 ties to Piece K-2
- Pieces M-1 ties to Piece M-3

**PIECES K & S END VIEW**

- Pieces M-1 ties to Piece K-2
- Pieces M-1 ties to Piece M-3

**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)

**PIECE D-1**

- (4 Required ~ 2 Pairs)

**PIECE D-2**

- (4 Required ~ 2 Pairs)

**PIECE D-3**

- (4 Required ~ 2 Pairs)

**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 & Strands not Shown for Clarity as shown on Sheet 1. Place additional Bars 5F as shown in Section A-A for Welded Wire Reinforcement. 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 No. 20010 SKEW Details and Note 9 for placement details. Shift Pieces K & Bars S5 to accommodate skewed end conditions and align with Bars C and D.
**Description:**

FLORIDA-I 54 BEAM - STANDARD DETAILS

**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 S5 & 3C as shown on Sheet 1. Place additional Bars S9 as shown in Section A-A for Welded Wire Reinforcement. Bars S9 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 No. 20010 for placement details.
- Shift Pieces K & Bars S9 to accommodate skewed end conditions and align with Bars C and D.
CONVENTIONAL REINFORCING
BAR BENDING DETAILS

BILL OF REINFORCING STEEL

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NOTES:
A. Work this Index with Index No. 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 No. 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.

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

END VIEW

BARS 5K, 4M1, 4M2,
4M3 & 5Y

BARS 3C1 & 3C2

BARS 5K & 5Z
BARS 3D1, 3D2 & 3D3

END 1

END 2

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

ELEVATION

DIM. L = Beam Casting Length

Direction of Stationing

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

Spacing Bars 5K (Symmetrical)
ALTERNATE REINFORCING STEEL (WELDED WIRE REINFORCEMENT) 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 Wires D31 shown as ( ) Typ. and Strands not Shown for Clarity on Sheet 1. Place additional Bars 5Y as shown in Section A-A for Welded Wire Reinforcement. 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 be used. See Index No. 20010 for additional details. Shift Pieces K & Bars 5Y to accommodate skewed end conditions and align with Bars C and D.
**ALTERNATE REINFORCING STEEL (WELDED WIRE REINFORCEMENT) DETAILS**

**PLAN VIEW**

**PIECE M-1**
- (2 Required)
- Match spacing of adjacent Piece S-1, S-2, S-3 or S-4

**PLAN VIEW**

**PIECE M-3**
- (2 Required)

**PIECE M-4**
- (4 Required ~ Each Piece)

**PIECE K-1**
- (Aligned EF)
- (FF Shown Solid, BF Shown Dashed)

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

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

**PIECE D-1**
- (4 Required ~ 2 Pairs)

**PIECE D-2**
- (4 Required ~ 2 Pairs)

**PIECE D-3**
- (4 Required ~ 2 Pairs)

**PARTIAL SECTION AT CENTER BEAM**

**FOR WELDED WIRE REINFORCEMENT**

- Pieces S (Single Mat) Tied to Strands at \( \perp \) Beam

**PARTIAL BEAM END VIEW**

- (Conventional Reinforcing Bars A, C, Y and Strands N not Shown for Clarity)

**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 6A & 3C as shown on Sheet 1. Place additional Bars 5F as shown in Section A-A for Welded Wire Reinforcement. 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 6A, 6B, C1, C2, M1 & M2 shall be used. See Index No. 20010 Skew Details and Note 9 for placement details. Shift Pieces K & Bars 5F to accommodate skewed end conditions and align with Bars C and D.
**BEAM NOTES**

1. All bar dimensions are out-to-out.
2. Place one (1) Bar 4K or 5Z at each location as detailed alternating the direction of the ends for each bar (see "ELEVATION AT END OF BEAM", Sheet 3).
3. Strands N shall be ASTM A416, Grade 270, seven-wire strands % Ø or larger, stressed to 10,000 lbs each.
4. For beams with ends not to be encased in permanent concrete diaphragms, cut wedge to recess Prestressing Strands at the end of the beam after detensioning without damaging the surrounding concrete. See "STRAND RECESS DETAIL" on Sheet 4.
5. For beams with ends not to be encased in permanent concrete diaphragms, protect end of recessed strands in accordance with Specification 450.
6. Unless otherwise noted, the minimum concrete cover for reinforcing steel shall be 2".
7. At the Contractor’s option, welded deformed wire reinforcement may be used in lieu of Bars 3D, 4K, and 5Z as shown on Sheet 4. Welded deformed wire reinforcement shall conform to AASHTO M221, with a minimum yield strength of 75 ksi.
8. Safety Line Anchorage Devices or sleeves are required and permitted in the top flange only to accommodate fall protection systems used during construction. See shop drawings for details and spacing of any required embedments.
9. For beams with skewed end conditions, the end reinforcement, defined as Bars 3D1, 3D2, 4K, 4Y and 5Z placed within the limits of Bars 3D in "ELEVATION AT END OF BEAM", shall be placed parallel to the skewed end of the beam. Bars 3D and 4K, located beyond the limits of Bars 3D shall be placed perpendicular to the longitudinal axis of the beam. For placement locations, see "SKEWED BEAM END DETAILS". Adjust the dimensions of Bars 3D1 and 3D2, as shown on the "BENDING DIAGRAM" for skewed end conditions.
10. Placement of Bars 3D1 correspond to END 1, and Bars 3C2, correspond to END 2. END 1 and END 2 are shown on the beam "ELEVATION".
11. For Beams with vertically beveled end conditions, place first row of Bars 3D1, 3D2, 4K, 4Y and 5Z parallel to the axis of the beam. For placement locations, see "SKEWED BEAM END DETAILS" and rotate bars as required or reduce end cover at top of the beam to minimum 1".
12. For beams with skewed end conditions, welded deformed wire reinforcement shall not be used for end confinement reinforcement (Bars 3D1 and 3D2).
13. Bars 4K and 5Z shall be placed and tied to the fully bonded strands in the bottom or center row (see "ELEVATION AT END OF BEAM", Sheet 3). Place one (1) Bar 4K, or 5Z at each location as detailed alternating the direction of the ends for each bar (see "ELEVATION AT END OF BEAM", Sheet 3).
14. At the Contractor’s option, Bars 3D1, 3D2 and 3D3 may be fabricated as a two-piece bar with a 1'-0" minimum lap splice of the bottom legs.
15. For referenced Dimensions, Angles and Case Numbers, see the Table of Beam Variables in Structures Plans.

**SCHEMATIC PLAN VIEWS AT BEAM ENDS**

(Showing Vertical Bevel of Beam End)
**Plan Section Thru Beam Web at Insert for Diaphragm Reinforcing**

(When Intermediate Diaphragms are Required by Design)

**Insert Notes**

1. Provide 1" Ø, zinc-electroplated, ferrule wing nut or coil inserts, UNC threaded, 1/10 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. in 4,000 psi concrete.

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.

**Insert Detail**

**Typical Section**

- **Showing Strand Recess Limits**
- **After Epoxy Coating**

**Strand Recess Detail**

**Sketches**

- **Partial Plan View (Showing Top Flange)**
  - (End 1 Shown, End 2 Similar)
  - (Bars 5A, 4Y & Strands N not shown for clarity)

- **Partial Section Thru Web (Showing Bottom Flange)**
  - (End 1 Shown, End 2 Similar)
  - (Bars 4Y & Strands not shown for clarity)

**Design Details and Notes**

**AASHTO Type II Beam**

**FDOT 2014 Design Standards**

**Revision**

- **07/01/13**

**Index No.**

- **20120**

**Sheet No.**

- **2 of 4**
### Section A-A

(Showing Bars 4K, 4Y & 5Z Only)

- **3½ Chamfer (Typ. bottom of bottom flange only)**
- **2½ Bars 5A**
- **Strand N**
- **Bars 301 or 302**
- **Bar 5A**
- **Bars 4Y (Bundled with Bars 4K & 5Z)**
- **Bars 3D (Typ.)**
- **Bars 5Z (Typ.)**
- **5 - Bars 301 or 302 sp. with Bars 4K (See Note 9)**
- **6 - Bars 301 or 302 Ø 6 max. (See Note 9)**
- **7 - Bars 301 or 302 @ 6” max.**

### End View

(Elevations at End of Beam (Flanges Not Shown For Clarity))

### Standard Details

- **AASHTO TYPE II BEAM**
- **07/01/13**
- **FDOT 2014**
- **DESIGN STANDARDS**
- **BILL OF REINFORCING STEEL FOR ONE BEAM ONLY**

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### Bending Diagrams

(See Note 1)

### Notes:

- Work this Index with the AASHTO Type II Beam - Table of Beam Variables in Structures Plans.
- For referenced notes, see Sheet 1.
- For Dimensions L, R, V1 thru V4 and number of spaces S1 thru S4, see AASHTO Type II Beam - Table of Beam Variables.

**DIM L** - Beam Casting Length

(Overall Length of Beam along Ó Beam including length increase as required for Beam placed on grade and DIM R to compensate for elastic and time dependent shortening effects)

**DIM R** - Beam Cast Length

(Direction of Stationing)

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- **3b" Chamfer**
- **2b" Bar**
- **1½ Clear**
- **1b" Clear**
- **1b" Clear to End**
- **6" 2" Clear**
- ** Bars 4Y (shown as Ø 4) **
- **Bar 5Z**
- **Bars 4K**
- **Bars 5A**
- **Bars 301 or 302**
- **Bars 3D1 or 3D2 @ 6" max.**
- **Bars 5A & Strands N**
- **Bars 4K (Typ.)**
- **Bars 5A & Strands N**
- **Bars 4K & 5Z**

### Elevation

- **ELEVATION AT END OF BEAM**
- **ELEVATION**

### Table of Beam Variables

- For Dimensions L, R, V1 thru V4 and number of spaces S1 thru S4, see AASHTO Type II Beam - Table of Beam Variables.
**PARTIAL SECTION AT CENTER BEAM**

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

**NOTES:**
- a. See Sheet 3 for placement details & Table of Beam Variables in Structures Plans for variables St, S2, S3, S4 & V1
- b. Place Conventional Reinforcement Bars S4 as shown on Sheet 3. Place additional Bars 4Y as shown in Section A-A for Welded Wire Reinforcement. Bars S2 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 New Details and Sheet 1 for placement details. Shift Pieces K & Bars 4Y to accommodate skewed end conditions and align with Bars D.

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

**DESCRIPTION:**
- Match spacing of adjacent Piece S-1, S-2, S-3 or S-4
- S1 = D16's @ 9" sp. (Piece S-1 shown)
- S2 = D16's @ 9" sp. (Piece S-2)
- S3 = D16's @ 7'-6" sp. (Piece S-3)
- S4 = D16's @ 7'-6" sp. (Piece S-4)

**NOTES TO SHEET:**
- BF Shown Dashed
- FF Shown Solid
- EF = Each Face
- EN = Each Face
- W4.4
- W12 (Piece K-1)
- W10 (Pieces K-2 & S)
- D11 (Piece K-1)
- D16 (Pieces K-2 & S)
- D1 (Piece K-2)
- W10 (Pieces K-2 & S)
- D1 (Piece K-2 & S)

**REFERENCES:**
- 07/01/13
- FDOT 2014 DESIGN STANDARDS

**STANDARD DETAILS**
- AASHTO TYPE II BEAM
**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 3 days prior to casting.

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

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

**DATA TABLE FOR FLORIDA-I AND AASHTO TYPE II BEAMS**

- **For Cases 1, 2 & 3 = DIM "C"**
- **For Case 4 = DIM "B" or DIM "D"**

* NOTE:
Work this Index with the Build-up and Deflection Data Table for Florida-I and AASHTO Type II Beams in Structures Plans.
1. All bar dimensions are out-to-out.
2. Strands N (Dormant Strands) shall be ASTM A416, Grade 270, seven-wire strands ø8 or larger, stressed to 10,000 lbs.
3. Unless otherwise noted in Structures Plans, the minimum concrete cover for reinforcing steel shall be 2 in.
4. At the option of the Contractor and with the Engineer's Approval, deformed wire may be used in lieu of Bars 6A1, 4A2, 4C, 3D, 5E, 4F, 4G, 4H, 5K, 5L, and 5M except as noted below in note 7, provided the wire sizes and spacing match those shown on the Standard Beam Detail sheets for these bars. Wire must consist of Deformed wire meeting the requirements of Specification Section 933.
5. Safety Line Anchorages or sleeves are required and permitted in the top flanges only to accommodate fall protection systems used during construction. See shop drawings for details and spacing of any required embedments.
6. For beams with vertically beveled end conditions when "Dim. P" exceeds 1", Bars 5K and the first Bars 4F and 5K shall be placed parallel to the end of the beam. The remaining Bars 4F and 5K within the limits of "Dim. B" shall be fanned at equal spaces.
7. Welded deflected wire reinforcement shall not be used for the end reinforcement of Bars 5K, 4F, 5E, 4F, 5K, and 5L for beams with skewed end conditions or vertically beveled end conditions when "Dim. P" exceeds 1".
8. Bars 5K shall be placed and tied to the fully bonded strands in the bottom row (see "STRAND PATTERN" in Structures Plans).
9. Strand Protection at beam ends shall consist of a 2" deep recess formed around all strands (including dormant) or strand groups. Extend recess to face of web and bottom of flange for bottom row of strands. After detensioning, cut strands ø8 from recessed surface and fill the recess with a Type F-2 or 0 Epoxy Compound in accordance with Section 926 of the Specifications.
10. Use Size No. 67 maximum sized aggregate.
11. Use Stay-in-Place metal deck forms inside the beams.
12. Prior to deck placement, based on the deck forming system and deck placement sequence, evaluate and provide, if necessary, temporary bracing between the U Beams. Also, 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 that occur during placement of the deck. Leave temporary blocking and bracing in place for a minimum of four days after the deck placement.
13. For referenced Dimensions, Angles and Case Numbers see Table of Beam Variables in Structures Plans.

NOTE: This Index with Florida-U Beam - Table of Beam Variables in Structures Plans.

TEMPORARY BLOCKING OF BEAM ENDS

TYPICAL STRAND BLOCKOUT DETAIL
NOTES:
1. Drains shall be placed adjacent to each web at each beam end (four drains per beam). Drain pipe shall be 2" nominal pipe size, Schedule 80 PVC. Provide removable pipe plugs to prevent concrete entrance during beam casting. Plugs to be removed from the inside after casting. Galvanized screen wire shall cover the end of the pipe and bend down around the sides of the pipe, a minimum of 1' and secured prior to casting.
2. Concrete face may be sloped with a maximum 1:24 draft to facilitate formwork removal.

END VIEW AT END DIAPHRAGM

TOP VIEW OF END DIAPHRAGM
(Bars 3D1 and 3D2 Not Shown For Clarity)

TOP VIEW OF SKEWED END DIAPHRAGM
AND STIRRUP TRANSITION ZONE
(Bars 3D2 Not Shown For Clarity)
FLORIDA-U 48 BEAM - STANDARD DETAILS

CONVENTIONAL REINFORCING STEEL BENDING DIAGRAMS

BILL OF REINFORCING STEEL FOR ONE BEAM ONLY

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NOTES:
1. Drains shall be placed adjacent to each web at each intermediate diaphragm (two drains per intermediate diaphragm). Drain Pipe shall be 2" Nominal Pipe Size, Schedule 80 PVC. Provide removable pipe plugs to prevent concrete entrance during beam casting. Plugs to be removed from the inside after casting.
2. Concrete face may be sloped with a maximum of 1:24 draft to facilitate formwork removal.
3. Intermediate diaphragms must be cast and concrete release strength obtained prior to removing beam from casting bed.
**FLORIDA-U 54 BEAM - STANDARD DETAILS**

**DESCRIPTION:**

- **Beam 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.
- **Direction of Stationing:**
  - **End Face:** (Typ.)
  - **Fold Face:** (Typ.)
  - **Intermediate Diaphragm:** (when required) **
  - **Intermediate Diaphragm:** (when required) **
- **Spacing Bars 5K:**
  - Bars 4M tied to Bars 5K, not shown
- **Spacing Bars 4F 2**
- **Spacing Bars 3D2**
- **Spacing Bars 3D1**
- **Spacing Bars 4A2** (Typ.)
- **Spacing Bars 3D1 and 3D2** ~ 14 sp. @ 6" sp. with Bars 5K as shown
- **Spacing Bars 6A1** (Typ.)
- **Spacing Bars 5L**
- **Spacing Bars 4C**
- **Spacing Bars 5K** (Typ.)
- **Spacing Bars 4M** (in Pairs)
- **Spacing Bars 5K (In Pairs)**
- **Spacing Bars 4F** 2
- **Spacing Bars 3D2**
- **Spacing Bars 3D1**
- **Spacing Bars 4A2**
- **Spacing Bars 5K** (Typ.)
- **Spacing Bars 4M** (Typ.)
- **Spacing Bars 6A1, 4A2** and Strand N
- **Spacing Bars 5L**
- **Spacing Bars 4C**
- **Spacing Bars 5E**
- **Pipe**: Drain

**NOTES:**

- Work this Index with Index No. 20210 - Typical Florida-U Beam Details and Notes and the Florida-D Beam - Table of Beam Variables in Structures Plans.
- For referenced notes see Index No. 20210.

**TYPICAL SECTION**

- **ELEVATION AT END OF BEAM**
  - **1 1/2" Chamfer (Typ.)**
  - **1 1/2" Chamfer (Typ. bottom of bottom flange only)**
  - **1 1/2" Chamfer (Typ.) (See Note 5)**
  - **Anchorage Device**
  - **Safety Line**
  - **Anchorage Device (Typ.) (See Note 5)**

**END 2**

- **End Diaphragm:** (Typ.)
  - **Varies**
  - **15'-0" Min. ~ 20'-0" Max.**

**END 1**

- **1 1/2" Chamfer (Typ.)**
  - **1 1/2" Chamfer (Typ. bottom of top flange only)**

**ELEVATION**

- **Direction of Stationing**
  - **23 sp. @ 3"**
  - **16 sp. @ 6"**
  - **51 sp. @ V1**
  - **52 sp. @ V2**
  - **53 sp. @ V3**
  - **Bars 5K (Typ.)**
  - **Bars 4M (Typ.)**

**INDEX NO.**

- **20254**

**sheet no.**

- **1 of 3**

**last revision**

- **07/01/12**

**07/01/12**

**description**

- **FDOT 2014 DESIGN STANDARDS**

- **Revision 07/01/12**

**Dimensions:**

- **FDOT 2014**
  - **Safety Line**
  - **Anchorage Device**
  - **1 1/2" Chamfer (Typ.)**
  - **1 1/2" Chamfer (Typ. bottom of bottom flange only)**
  - **1 1/2" Chamfer (Typ.) (See Note 5)**

**Beam Dimensions:**

- **15'-0" Min. ~ 20'-0" Max.**

**Spacing:**

- **23 sp. @ 3"**
  - **16 sp. @ 6"**
  - **51 sp. @ V1**
  - **52 sp. @ V2**
  - **53 sp. @ V3**
  - **Bars 5K (Typ.)**
  - **Bars 4M (Typ.)**

**Intermediate Diaphragms:**

- **Bars 4A2** (Typ.)
- **Spacing Bars 5K (In Pairs)**
- **Spacing Bars 4F 2**
- **Spacing Bars 3D2**
- **Spacing Bars 3D1**
- **Spacing Bars 4A2**
- **Spacing Bars 5K** (Typ.)
- **Spacing Bars 4M** (Typ.)
- **Spacing Bars 6A1, 4A2** and Strand N
- **Spacing Bars 5L**
- **Spacing Bars 4C**
- **Spacing Bars 5E**
- **Pipe**: Drain

**For referenced notes see Index No. 20210.**
**FLORIDA-U 54 BEAM - STANDARD DETAILS**

**DESIGN STANDARDS**

**FLORIDA-U 54 BEAM - STANDARD DETAILS**

**INDEX NO.** 20254  **SHEET NO.** 2 of 3

**DESCRIPTION:**

**LAST REVISION** 07/01/05

**SECTION C-C**

**NOTES:**

1. Drains shall be placed adjacent to each web at each beam end (four drains per beam). Drain Pipe shall be 2" Nominal Pipe Size, Schedule 80 PVC. Provide removable pipe plugs to prevent concrete entrance during beam casting. Plugs to be removed from the inside after casting. Galvanized screen wire shall cover the end of the pipe and bent down around the sides of the pipe, a minimum of 1" and secured prior to casting.

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

**END VIEW AT END DIAPHRAGM**

**TOP VIEW OF END DIAPHRAGM**

(Bars 3D1 and 3D2 Not Shown For Clarity)

**SECTION C-C**

**TOP VIEW OF SKEWED END DIAPHRAGM AND STIRRUP TRANSITION ZONE**

(Bars 3D2 Not Shown For Clarity)
FLORIDA-U 54 BEAM - STANDARD DETAILS

CONVENTIONAL REINFORCING STEEL BENDING DIAGRAMS

BILL OF REINFORCING STEEL FOR ONE BEAM ONLY

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N 3\"Ø Strand 2 Dim. L - 3\" |

NOTES:
1. Drains shall be placed adjacent to each web at each intermediate diaphragm (two drains per intermediate diaphragm). Drain pipe shall be 2\" Nominal Pipe Size Schedule 80 PVC. Provide removable pipe plugs to prevent concrete entrance during beam casting.
2. Concrete face may be sloped with a maximum 1:24 draft to facilitate formwork removal.
3. Intermediate diaphragms must be cast and concrete release strength obtained prior to removing beam from casting bed.
NOTE:
1. Drains shall be placed adjacent to each web at each beam end (four drains per beam). Drain Pipe shall be 2" Nominal Pipe Size, Schedule 80 PVC. Provide removable pipe plugs to prevent concrete entrance during beam casting. Plugs to be removed from the inside after casting. Galvanized screen wire shall cover the end of the pipe and bend down around the sides of the pipe, a minimum of 1" and secured prior to casting.
2. Concrete face may be sloped with a maximum 1:24 draft to facilitate formwork removal.

FLORIDA-U 63 BEAM - STANDARD DETAILS
07/01/05

TOP VIEW OF END DIAPHRAGM
(Bars 3D1 And 3D2 Not Shown For Clarity)
1. Drains shall be placed adjacent to each web at each intermediate diaphragm (two drains per intermediate diaphragm). Drain Pipe shall be 2” Nominal Pipe Size, Schedule 80 PVC. Provide removable pipe plugs to prevent concrete entrance during beam casting. Plugs to be removed from the inside after casting.

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

3. Intermediate diaphragms must be cast and concrete release strength obtained prior to removing beam from casting bed.
NOTES:

1. Drains shall be placed adjacent to each web at each beam end (four drains per beam). Drain Pipe shall be 2" Nominal Pipe Size, Schedule 80 PVC. Provide removable pipe plugs to prevent concrete entrance during beam casting. Plugs to be removed from the inside after casting. Galvanized screen wire shall cover the end of the pipe and bent down around the sides of the pipe, a minimum of 1" and secured prior to casting.

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

Spacing Bars SK (Along ε of Beam)
(Bars 4F and 4W are paired with Bars SK as shown)

3/4 Chamfer along the Vertical Face of the Top Flange and Web and Underside of the Top Flange (Typ.)

Spacing Bars SK and SE

FLORIDA-U 72 BEAM - STANDARD DETAILS

FDOT 2014 DESIGN STANDARDS

INDEX NO. 20272 SHEET NO. 2 of 3
CONVENTIONAL REINFORCING STEEL BENDING DIAGRAMS

FOR ONE BEAM ONLY

BILL OF REINFORCING STEEL

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FLORIDA-U 72 BEAM - STANDARD DETAILS

NOTES:

1. Drains shall be placed adjacent to each web at each intermediate diaphragm (two drains per intermediate diaphragm). Drain Pipe shall be 2" Nominal Pipe Size Schedule 80 PVC. Provide removable pipe plugs to prevent concrete entrance during beam casting. Plugs to be removed from the inside after casting.
2. Concrete face may be sloped with a maximum 1:24 draft to facilitate formwork removal.
3. Intermediate diaphragms must be cast and concrete release strength obtained prior to removing beam from casting bed.
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-U Beams in Structures Plans.