BEAM NOTES:
1. All bar dimensions are out-to-out.
2. Place one (1) Bar 4K, or SZ 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, after detensioning cut wedge to recess Prestressing Strands at the end of the beam without damaging the surrounding concrete. See "STRAND CUTTING AND PROTECTING DETAIL" on Sheet 2.
5. For beams with ends not to be encased in permanent concrete diaphragms, protect end of recessed strands in accordance with Specification Section 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 SZ as shown on Sheet 4. Welded deformed wire reinforcement shall meet requirements of Specification Section 931.
8. End 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, bars 3D, 4K, and SZ 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 3D2 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 SZ parallel to the end of the beam. Progressively rotate remaining bars within the limits of Bars 3SZ 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 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 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). For welded deformed wire reinforcement, supplemental transverse bars are permitted to support Pieces K & S under the cross wires on the bottom row of strands or Strands N.
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

SCHEMATIC END ELEVATIONS OF BEAMS
(Showing Vertical Bevel of Beam End)
**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)

**SKewed BEAM END DETAILS FOR WIDENING EXISTING BRIDGES**

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**INSERT NOTES**

1. Provide 1/8", 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.

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**DETAILS AND NOTES**

**TYPICAL SECTION SHOWING CUT STRAND RECESS LIMITS**
(AASHTO Type II Beam)

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**TYPICAL SECTION AFTER PROTECTING**
(AASHTO Type II Beam)
SECTION A-A
FOR WELDED WIRE REINFORCEMENT

PIECE K & S
END VIEW

PIECE K-1
(Alined 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)

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 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 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 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.

LEGEND:
EF = Each Face
BF = Back Face
TYP. = Typical

REPORT NO.
SHEET NO.
INDEX NO.
DESCRIPTION:
REVISION
LAST
OF
DESIGN STANDARDS
2016
AASHTO TYPE II BEAM

STANDARD DETAILS