Index 20511 Bearing Plates (Type 1) - Prestressed Florida-I Beams

Design Criteria

AASHTO LRFD Bridge Design Specifications, 6th Edition; ***Structures Design Guidelines (SDG)***

Design Assumptions and Limitations

This standard is intended for use on bridges where full depth end diaphragms are required and/or widenings where squared end beams are not feasible as determined by the EOR. For all other cases, use Index 20512 and its Instructions. Index 20512 may be used for all projects with squared end beams, with or without end diaphragms.

This standard contains generic details and notes for beveled and embedded bearing plates for prestressed concrete Florida-I Beams with or without skewed end conditions.

Use this standard with Indexes 20010, 20036, 20045, 20054, 20063, 20072, 20078, 20084, 20096 and 20510.

Embedded Bearing Plates A are required for all Florida-I Beams. Embedded Bearing Plates A and Beveled Bearing Plates B are required for beams on grades greater than 2%.

Plan Content Requirements

In the Structures Plans:

Bearing seats (pedestals) may be finished level for beam grades less than 0.5%. Use Embedded Bearing Plates A but do not use Beveled Bearing Plates B.

For beam grades between 0.5% and 2%, show the bearing seats (pedestals) to be finished parallel to the beam grade with no allowance for beam camber or deflection. Use Embedded Bearing Plates A but do not use Beveled Bearing Plates B.

For beam grades greater than 2%, show the bearing seats (pedestals) to be finished level and use Bearing Plates A and B.

See also instructions for Index 20510.

Complete the following "BEARING PLATE DATA TABLE" and include it in the plans. Fill in the table to correspond with data on the "FLORIDA-I BEAM TABLE OF BEAM VARIABLES" using inch units for Beveled Plate dimensions 'W', 'X', 'Y' & 'Z' rounded to 1/16th of an inch. If Beveled Bearing Plates B are not required, fill in the corresponding columns with "N/A". See Introduction I.3 for more information regarding use of Data Tables.

Use the following equations to determine the Beveled Bearing Plate B thicknesses for "PLAN VIEW CASES"' and "END ELEVATION CONDITIONS"' corresponding to those shown on Index 20010. The Slope parameter in these equations requires decimal units and correct sign convention:

END 1	END 2
(I) PLAN VIEW CASE 1:	
(a) END ELEVATION CONDITION 1 or 2 (Positive Slope)	
W = X = 0.5" + (C) x Slope	W = X = 0.5"
Y = Z = 0.5"	Y = Z = 0.5" + (C) x Slope
(b) END ELEVATION CONDITION 1 or 3 (Negative Slope)	
W = X = 0.5"	W = X = 0.5" - (C) x Slope
Y = Z = 0.5" - (C) x Slope	Y = Z = 0.5"
(II) PLAN VIEW CASE 2:	
(a) END ELEVATION CONDITION 1 or 2 (Positive Slope)	
W = 0.5" + (C / sin Φ + D / tan Φ) x Slope	W = 0.5" + (D / tan Φ) x Slope
X = 0.5" + (C / sin Φ) x Slope	X = 0.5"
Y = 0.5"	Y = 0.5" + (C / sin Φ) x Slope
Z = 0.5" + (D / tan Φ) x Slope	Z = 0.5" + (C / sin Φ + D / tan Φ) x Slope
(b) END ELEVATION CONDITION 1 or 3 (Negative Slope)	
W = 0.5"	W = 0.5" - (C / sin Φ) x Slope
X = 0.5" - (D / tan Φ) x Slope	X = 0.5" - (C / sin Φ + D / tan Φ) x Slope
Y = 0.5" - (C / sin Φ + D / tan Φ) x Slope	Y = 0.5" - (D / tan Φ) x Slope
Z = 0.5" - (C / sin Φ) x Slope	Z = 0.5"
(III) PLAN VIEW CASE 3:	
(a) END ELEVATION CONDITION 1 or 2 (Positive Slope)	
W = 0.5"+ (C / sin Φ) x Slope	W = 0.5"
X = 0.5" + (C / sin Φ + D / tan Φ) x Slope	X = 0.5" + (D / tan Φ) x Slope
Y = 0.5" + (D / tan Φ) x Slope	Y = 0.5" + (C / sin Φ + D / tan Φ) x Slope
Z = 0.5"	Z = 0.5" + (C / sin Φ) x Slope
(b) END ELEVATION CONDITION 1 or 3 (Negative Slope)	
W = 0.5" - (D / tan Φ) x Slope	W = 0.5" - (C / sin Φ + D / tan Φ) x Slope
X = 0.5"	X = 0.5" - (C / sin Φ) x Slope
Y = 0.5" - (C / sin Φ) x Slope	Y = 0.5"
Z = 0.5" - (C / sin Φ + D / tan Φ) x Slope	Z = 0.5" - (D / tan Φ) x Slope

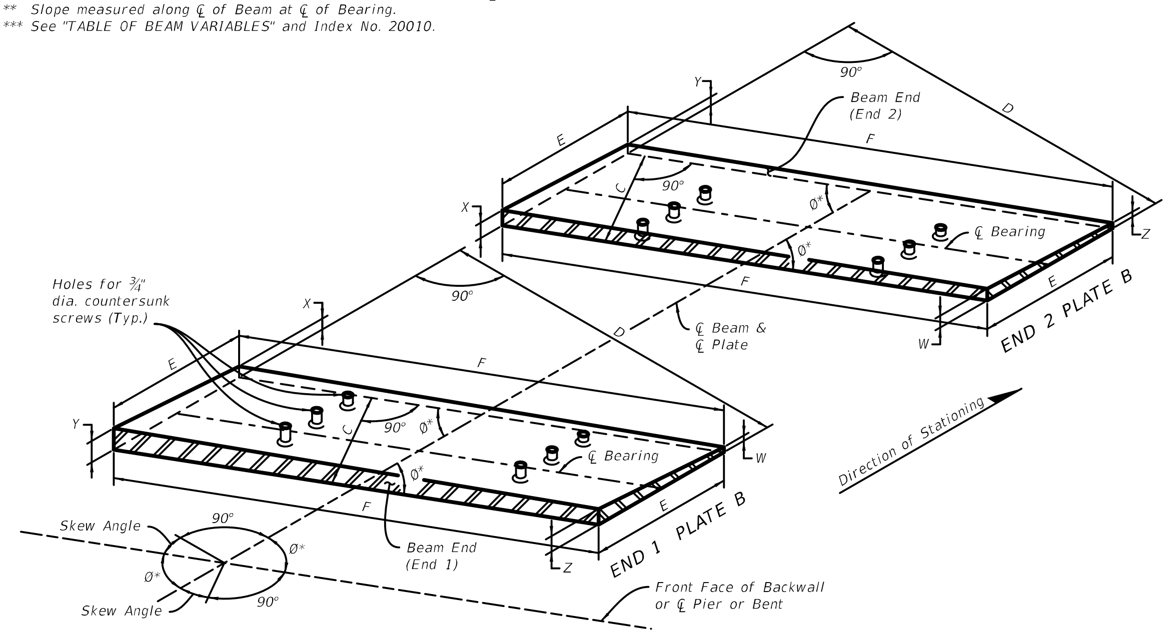
For all cases:

E = C / sin Φ

G = 13.5” / sin Φ

BEARING PLATE DATA TABLE - TYPE 1																		Table Date 1-01-12
GENERAL BEARING PLATE DATA								EMBEDDED PLATE DIMENSIONS (PLATE A) (inches)		BEVELED PLATE REQUIRED (Yes/No)	BEVELED PLATE DIMENSIONS (PLATE B) (inches)							
BRG. PLATE MARK ***	SPAN NO(s).	BEAM NO(s).	PAD TYPE	BEAM END	PLAN VIEW CASE	SLOPE (%) **	ANGLE Ø *	G	F		C	D	E	F	W	X	Y	Z

NOTES:
See Index No. 20511 for additional notes and details.
* Ø = Acute angle (≤ 90°) measured from left or right side of ℄ Beam as required.
** Slope measured along ℄ of Beam at ℄ of Bearing.
*** See "TABLE OF BEAM VARIABLES" and Index No. 20010.



ISOMETRIC VIEW OF BEVELED BEARING PLATES (TYPE 1) FOR FLORIDA I-BEAMS
(SKEWED PLATES SHOWN, NON-SKEWED PLATES SIMILAR)

Payment

The cost of beveled and embedded bearing plates is incidental to the cost of the prestressed beams they are used with. No separate payment is made.