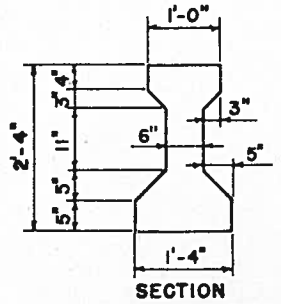
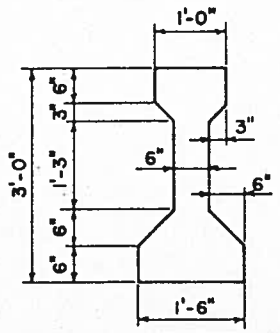
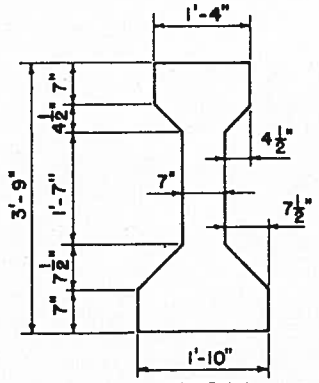
AASHO - PCI STANDARD BRIDGE BEAMS



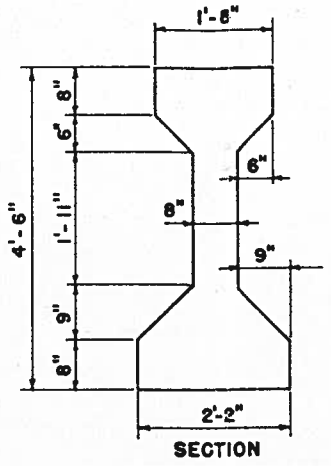
TYPE I BEAM
30 FT. TO 45 FT. SPANS



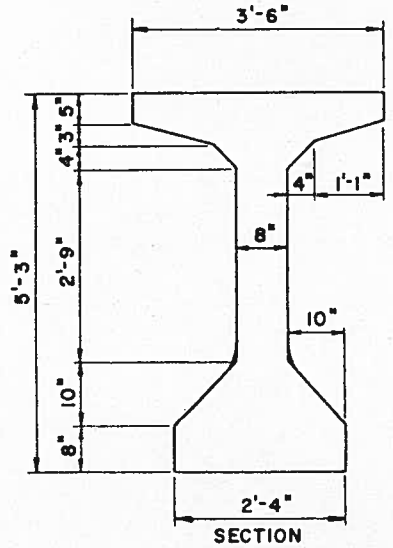
TYPE II BEAM
40 FT. TO 60 FT. SPANS



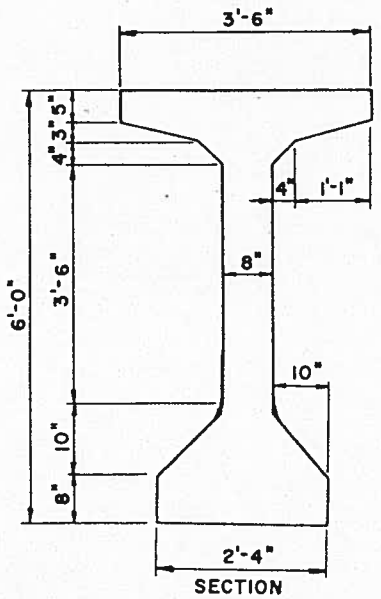
TYPE III BEAM
55 FT. TO 80 FT. SPANS



TYPE IV BEAM
70 FT. TO 100 FT. SPANS

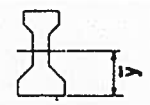


TYPE V BEAM
90 FT. TO 120 FT. SPANS



TYPE VI BEAM
110 FT. TO 140 FT. SPANS

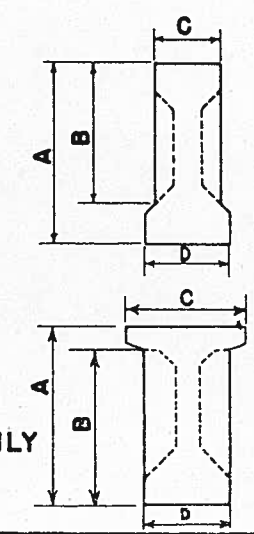
BEAM PROPERTIES



BEAM TYPE	AREA Inches²	ȳ Inches	Moment of Inertia Inches⁴
I	276	12.59	22,750
II	369	15.83	50,980
III	560	20.27	125,390
IV	789	24.73	260,730
V	1013	31.95	521,180
VI	1085	36.38	733,320

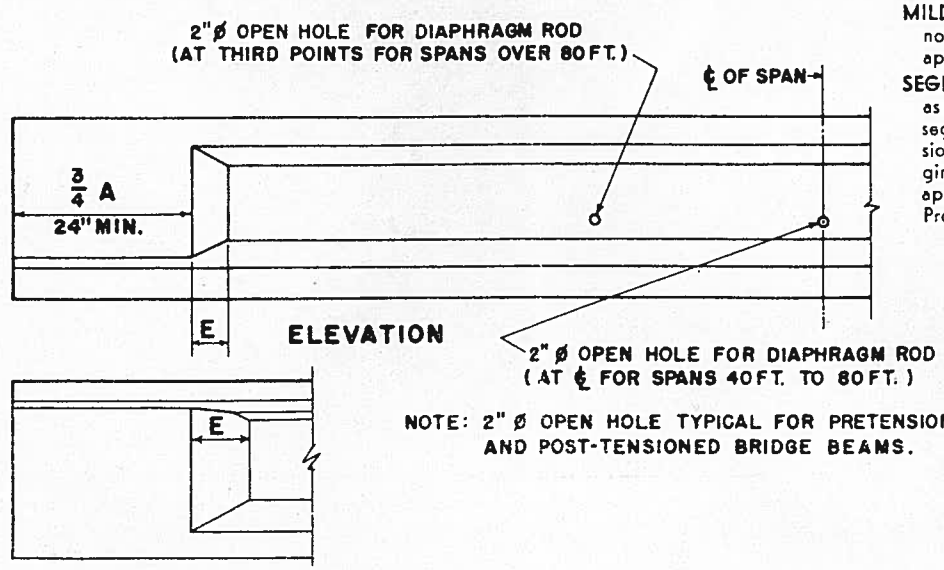
END BLOCK DIMENSIONS

BEAM TYPE	A	B	C	D	E
I	2'-4"	1'-9"	1'-0"	1'-4"	6"
II	3'-0"	2'-3"	1'-0"	1'-6"	6"
III	3'-9"	2'-11"	1'-4"	1'-10"	9"
IV	4'-6"	3'-7"	1'-8"	2'-2"	1'-0"
V	5'-3"	4'-8½"	3'-6"	2'-4"	1'-8"
VI	6'-0"	5'-5½"	3'-6"	2'-4"	1'-8"



END BLOCK DETAILS —

FOR POST-TENSIONED BEAMS ONLY



NOTE: 2" Ø OPEN HOLE TYPICAL FOR PRETENSIONED AND POST-TENSIONED BRIDGE BEAMS.

GENERAL NOTES

SPECIFICATIONS: AASHO Standard Specifications for Highway Bridges, latest edition, together with any tentative or supplemental specifications approved by the AASHO Committee on Bridges and Structures.

LIVE LOAD. All Highway Live Loads as specified in AASHO Standard Specifications for Highway Bridges.

PURPOSE: The purpose of the beams shown on this sheet shall be to establish a limited number of simple, practical beam sections leading to uniformity and simplicity of practice, forming, and production methods, and which are applicable to all conditions of highway bridge loading and to all spans within the approximate limits shown. Beams of similar cross sections but with minor dimensional differences, manufactured with presently established plant facilities and which comply with structural and geometric requirements for any particular project may be substituted upon submission by the Producer of data showing compliance with job requirements and approval by the Engineer.

SPAN LIMITS: The span limits shown on this sheet are approximate only and are not mandatory at either limit. Lateral spacing of beams shall be varied in keeping with the requirements of span and loading. The span limits shown contemplate the use of concrete weighing 150 pounds per cubic foot, HS 20-44 live load, simple span construction, cast-in-place deck slabs 6" to 8" thick composed of concrete with f'_c not less than 3000 psi and having elastic properties approximately equal to those of the beam concrete. All dead load is assumed to be carried by the beam alone with live load carried by the beam and slab composite section.

By using light weight concrete, continuous construction or live loadings lighter than HS 20-44, span limits may be increased.

CONCRETE: Recommended minimum strengths for concrete in beams are $f'_c = 5{,}000$ psi; at transfer of stressing force, $f'_c = 4{,}000$ psi. Concrete of greater compressive strength may be used in which case allowable working stresses and resulting utility of the beams will be based upon the actual concrete specifications for the particular project.

PRESTRESSING REINFORCEMENT: Prestressing reinforcement shall generally be designed for particular projects or for prevailing bridge practices and available manufacturing facilities.

The beams are applicable for use with any acceptable type of prestressing in current practice; namely, pretensioning with straight or deflected strands, post-tensioning or a combination of pretensioning and post-tensioning. Use of draped reinforcement will generally be required for the longer spans in each beam series. Materials for prestressing reinforcement shall be in accordance with the latest applicable designations of ASTM specifications for the particular type of tendons or subsequent developments by manufacturers which have generally been approved and accepted by member departments of AASHO.

Broken wires within individual strands will be permitted up to 2% of the total number of wires in each beam, providing that there is not more than one broken wire per strand. Two or more broken wires per strand will be cause for replacement of the strand even though the two broken wires are within the 2% limitation.

END ZONES: PRETENSIONED: Where all tendons are pretensioned 7-wire strands, the use of end blocks will not be required.

In pretensioned beams, vertical stirrups acting at a unit stress of 20,000 psi. to resist at least 4 per cent of the total prestressing force shall be placed within the distance of d/4 of the end of the beam, the end stirrups to be as close to the end of the beam as practicable. These vertical stirrups are to be provided in addition to those required as shear steel.

POST-TENSIONED: For beams with post-tensioning tendons, end blocks shall be used to distribute the concentrated prestressing forces of the anchorage.

End blocks shall have sufficient area to allow the spacing of the prestressing steel. Preferably, they shall be as wide as the narrow flange of the beam. Their length shall be at least three-fourths of the beam depth or 24 inches minimum. In post-tensioned members, a closely spaced grid of vertical and horizontal bars shall be placed near the face of the end block to resist crushing. Closely spaced horizontal and vertical bars shall be placed through the length of block.

DIAPHRAGMS: Diaphragms of precast or cast-in-place construction using prestressed or non-stressed reinforcement are recommended at span ends. Intermediate diaphragms are not required in spans up to 40 ft.; are recommended at mid-span for spans above 40 ft. and to 80 feet; and are recommended at span third points for spans in excess of 80 feet.

FORMS: The use of steel forms on concrete casting beds is recommended.

CHAMFERS & CORNERS: All exposed corners shall be chamfered not less than ¾" or rounded to ¾" radius. Angles of intersection between webs and flanges shall be rounded to not less than ¾" radius.

FINISH OF TOPS: Tops of all beams shall be left rough. At approximately the time of initial set, all laitance shall be removed with a coarse wire brush.

HANDLING: Beams must be maintained in an upright position at all times and must be picked up only by means of approved devices anchored within the end zones. Disregard of this requirement may result in damage of the member.

MILD STEEL REINFORCING, ELASTOMERIC BEARING PADS, SHOES AND MISCELLANEOUS DETAILS: All details not shown or specified hereon shall be designed for particular job requirements and shall be in accordance with applicable job specifications.

SEGMENTAL CONSTRUCTION: Beams may be built by segmental construction in lieu of full length construction as shown on the plans. In the event segmental construction is elected, the Producer shall, prior to casting any segments, submit to the Engineer for approval complete working drawings showing locations and details and dimensions of construction joints, materials and methods for making closures, and form and casting details. For exterior girders, the closures shall match the color and texture of the adjoining concrete. Working drawings shall be approved by the Engineer before any work involving the drawings is performed. Approval shall not relieve the Producer of responsibility for achieving the desired results.

JOINT COMMITTEE
AMERICAN ASSOCIATION OF STATE HIGHWAY OFFICIALS
COMMITTEE ON BRIDGES AND STRUCTURES AND
PRESTRESSED CONCRETE INSTITUTE

STANDARD PRESTRESSED CONCRETE
BEAMS FOR HIGHWAY BRIDGE SPANS
30 FT. TO 140 FT.

SUBMITTED	DATE	SCALE	REV. NO.	DRWG. NO.
AASHO PCI	FEB 1968		△	STD 101-68

STD-101