GENERAL: THIS DRAWING PROVIDES DESIGN AND CONSTRUCTION DETAILS. THE PROJECT PLANS SHALL SHOW THE LOCATION OF SPLICES PLUS A REFERENCE TO THIS DRAWING FOR PERTINENT DETAILS AND NOTES. FOR SPLICING BEAMS OF DIFFERENT SIZES OR WHERE SPLICES ARE LOCATED AT BEAM BEND POINTS, THE PROJECT PLANS SHALL INCLUDE SUFFICIENT DETAILS SUPPLEMENTING THIS DRAWING TO COMPLETELY DESCRIBE THE SPLICE.

DESIGN SPECIFICATIONS: THIS DRAWING CONFORMS TO "STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES" ADOPTED BY THE AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS, 1992, INCLUDING THE 1993 INTERIM SPECIFICATIONS, AND THE OHIO DEPARTMENT OF TRANSPORTATION BRIDGE DESIGN MANUAL, 1993.

DESIGN METHOD: LOAD FACTOR DESIGN

ALLOWABLE STRESSES:

STRUCTURAL STEEL	ASTM	A-709 GRADE 36	YIELD STRESS = 36 KSI
	ASTM	A-709, GRADE 50 OR 50W	YIELD STRESS = 50 KSI
HIGH STRENGTH BOLTS	ASTM	A-325	DESIGN SLIP RESISTANCE = 21 KSI

(DESIGN SLIP RESISTANCE IS BASED ON THE AASHTO CLASS A MINIMUM SLIP COEFFICIENT OF 0.33)

DESIGN: FOR EACH STRUCTURE THE DESIGNER SHALL CHOOSE A SPLICE LOCATION AND DETERMINE THE MAXIMUM TOTAL STRESSES (MOMENT AND SHEAR) AT THAT POINT. IN CONTINUOUS SPANS, SPLICES PREFERABLY SHALL BE MADE NEAR POINTS OF CONTRAFLEXURE. THE SPLICE SHALL BE DESIGNED FOR NOT LESS THAN (1) THE AVERAGE OF THE REQUIRED STRENGTH AT THE POINT OF SPLICE AND THE STRENGTH OF THE MEMBER AT THE SAME POINT. (2) THE MODIFIED MAXIMUM STRESS SPECIFIED IN THE FATIGUE UNIT STRESSES NOTE, OR (3) 75% OF THE STATIC STRENGTH OF THE BEAM. THE SPLICE DESIGNS SHOWN HEREON ARE DESIGNED FOR (3). SEE NOTE FOR DESIGN LOADS. IF STRESSES (1) OR (2) ARE MORE CRITICAL, THIS DESIGN SHALL NOT BE USED AND SUCH SPLICES SHOULD BE DESIGNED TO MEET THE ESTABLISHED REQUIREMENTS. THE STATIC BEAM STRENGTH AT THE SPLICE IS BASED ON THE NET SECTION FOR BENDING AND THE GROSS SECTION FOR SHEAR USING THE BASIC UNIT STRESSES. WHEN SPLICING BEAMS OF DIFFERENT SIZES, THE SPLICE DESIGN SHALL BE BASED ON THE LIGHTER WEIGHT BEAM.

DESIGN LOADS: DESIGN MOMENT [KIP-IN] = $0.75 \left(\frac{Fy\ I}{d/2} \right)$

DESIGN SHEAR [KIP] = 0.75 (0.58 Fy Tw (d - 2 Tf))

WHERE:
- I = MOMENT OF INERTIA BASED ON THE BEAM'S GROSS-SECTION OR ON THE NET-SECTION IF THE FLANGE AREA REMOVED EXCEEDING 15% OF THE GROSS-SECTION IS DEDUCTED [IN^4] (SEE AASHTO 10.18.1.1)
- Fy = YIELD STRESS [KSI]
- d = MEMBER DEPTH [IN]
- Tw = WEB THICKNESS [IN]
- Tf = FLANGE THICKNESS [IN]

FATIGUE STRESSES: THIS SPLICE STANDARD HAS NOT BEEN EVALUATED FOR FATIGUE STRESSES. THE DESIGNER IS REQUIRED TO CALCULATE THE MAXIMUM MOMENT RANGE AND EVALUATE THE ACTUAL STRESSES AGAINST ALLOWABLES GIVEN IN AASHTO TABLE 10.3.1A.

FASTENERS: FOR GRADE 36 STEEL, USE 1" DIAMETER HIGH STRENGTH BOLTS, 711.09 (ASTM A325)
FOR GRADE 50 OR 50W STEEL, USE 1⅛" DIAMETER HIGH STRENGTH BOLTS, 711.09 (ASTM A325)

VERTICAL CLEARANCE: FOR GRADE SEPARATION STRUCTURES AN ALLOWANCE OF ¾ INCHES PLUS THE THICKNESS OF THE OUTSIDE FLANGE SPLICE PLATE SHALL BE USED IN COMPUTING THE ACTUAL VERTICAL CLEARANCE UNDER A BEAM SPLICE.

DESIGN AGENCY
OFFICE OF
STRUCTURAL ENGINEERING

STATE OF OHIO DEPARTMENT OF TRANSPORTATION
ENGINEER OF BRIDGES — DATE 12-19-94

REVISIONS	DESIGNED	CHECKED	REVIEWED
07-19-02	GEA	SAM	
---------	DRAWN		
---------	SAM		

STANDARD
BOLTED BEAM SPLICE
FOR STEEL BEAM BRIDGES

BS-1-93