member shall be removed by grinding. If these conditions appear during the blasting operation, they shall be removed by grinding and the area re-blasted to the required surface profile.

Structural steel permitted by these specifications may be flame cut, provided a smooth surface free from cracks and notches is secured and provided that an accurate profile is secured by the use of a mechanical guide. Rolled and flame cut surfaces shall meet the requirements of the AASHTO/AWS Bridge Welding Code, as amended by Supplement 1011. The surface finish of bearing and base plates and other bearing surfaces that are to come in contact with each other or with concrete shall meet the ANSI surface roughness requirements as defined in ANSI B46.1, Surface Roughness, Waviness and Lay, Part I:

ANSI

Steel slabs	50.0a μm (2000)
Heavy plates in contact in shoes to be welded	25.0a μm (1000)
Milled ends of compression members, milled or ground ends of stiffeners and fillers	12.5a μm (500)
Bridge rollers and rockers	6.4a μm (250)
Pins and pin holes	3.2a μm (125)
Sliding bearings	3.2a μm (125)

The QCFS shall document that material finish is performed per specification.

863.14 Stiffeners. The bearing ends of bearing stiffeners shall be flush and square with the web and shall have at least 75 percent of this area in contact with the inner surface of the flange. The other end of the stiffener shall have a tight fit as defined below. Bearing stiffeners shall be positioned to be vertical after erection. Intermediate stiffeners which are not used in pairs shall be welded to the compression flange. Intermediate stiffeners to which crossframe angles are connected shall be welded to the top and bottom flange. A tight fit is defined as one in which the stiffener and flange are in physical contact over some portion of the end of the stiffener and having no gap in excess of 1.6 mm (1/16 inch). Welds attaching stiffeners to the web plate shall not extend into the clip area. All stiffeners shall be clipped to clear flange-web welds and fillet or rolled shapes. The clip shall be 65 mm (2 ½ inches) along the web and 25 mm (1 inch) along the flange. The QCFS shall document that stiffener details are performed per specification.

863.15 Fillers. Fills shown on the shop drawings shall be dimensioned to the nearest 1.6 mm (1/16 inch) in thickness, but not less than 3 mm (1/8 inch) thick, based on the dimensions for detailing and intended relative position of the abutting elements to be spliced. However, in the final shop assembly, fills shall be furnished with thicknesses sufficient to compensate for any misalignment of abutting elements due to standard rolling mill tolerances or differences in thicknesses of flanges and webs at the splice location. The actual fills used shall be such as to compensate for differences in total thickness or relative positions of more than 1.6 mm (1/16 inch).

Fill plates in bolted joints shall be made flush with the perimeter of the splice plates and not be tack welded. The QCFS shall document that fills are performed per specification.

863.16 Horizontally Curved Beams and Girders. Beams and girders shall be heat curved as specified by AASHTO Standard Specifications for Highway Bridges, except that flanges for girders may be cut to shape. When members are to be heat curved, the detailed procedure including necessary calculations shall be submitted with the shop drawings for acceptance prior to starting work. The QCFS shall document heat curving procedures are submitted and performed per specification.

863.17 Joints and Splices. In bolted construction where tension or flexural members are spliced, not more than 6 mm (1/4 inch) clearance will be allowed between the abutting surfaces of spliced members. For spliced compression members, the abutting surfaces shall be truly faced so as to have a uniform bearing when properly aligned and completely bolted.

In welded construction, all abutting surfaces shall receive the proper joint preparation as shown on approved shop drawings. The preparation for field welded butt joints in main members shall be verified by a complete shop assembly as specified in 863.26. The opening in any joint, which is located in the finished structure so as to permit the entrance of water, shall be filled as directed by the Engineer with an approved caulking before paint is applied.

The QCFS shall document that joints and splices are performed per specification.

863.18 Pin Holes. Pin holes shall be bored true to size, at right angles to the axis of the member and parallel to each other. The boring shall be done after the member is completely fabricated. Pin holes for up to 127 mm (5 inch) diameter pins shall not exceed the pin diameter by more than 0.51 mm (0.020 inches); holes for larger pins shall not exceed the pin diameter by more than 0.79 mm (0.031 inches).The QCFS shall document that pin holes are performed per specification.

863.19 Pins and Rollers. Pins and rollers shall be of cold rolled steel and accurately turned to size; they shall be straight and smooth and entirely free from flaws. Pins over 230 mm (9 inches) in diameter shall be annealed. In pins larger than 230 mm (9 inches) in diameter, a hole not less than 50 mm (2 inches) in diameter shall be bored full length along the axis. One pilot and one driving nut shall be furnished for each size of pin. The QCFS shall document that pins and rollers are performed per specification.

863.20 Holes for High-Strength and Bearing Bolts. Holes shall be cylindrical, perpendicular to the member, clean cut, and free of ragged edges. All burrs shall be removed by countersinking not more than 1.6 mm (1/16 inch) or by grinding. The finished size of the holes for high-strength bolts shall be not larger than nominal diameter of the bolt plus 1.6 mm (1/16 inch), and for bearing type bolts, the holes shall provide a driving fit. The diameter shall not vary by more than 0.8 mm