SECTION 6—FABRICATION

6.1 General

6.1.1 Workmanship

6.1.1.1 All work of fabricating API e.g. 650 tanks shall be done in accordance with this standard and with the permissible alternatives specified in the Purchaser's inquiry or order. The workmanship and finish shall be first class in every respect and subject to the closest inspection by the Manufacturer's inspector even if the Purchaser has waived any part of the inspection.

6.1.1.2 When material requires straightening, the work shall be done by pressing or another noninjurious method prior to any layout or shaping. Heating or hammering is not permissible unless the material is maintained at forging temperature during straightening.

6.1.1.3 Materials used to aid in the fabrication of tanks shall not have a detrimental effect on the structural integrity of the tank. Lubricants, crayons, adhesives, and anti-weld spatter compounds shall not contain materials that will be detrimental to the tank, e.g. sulfur and chloride compounds for stainless steel materials. Attachments that will be welded to the pressure boundary shall not have a zinc or cadmium coating in the weld area within 12 mm (0.5 in.) of the weld.

6.1.2 Finish of Plate Edges

The edges of plates may be sheared, machined, chipped, or machine gas cut. Shearing shall be limited to plates less than or equal to 10 mm ($^3/_8$ in.) thick used for butt-welded joints and to plates less than or equal to 16 mm ($^5/_8$ in.) thick used for lap-welded joints.

NOTE With the Purchaser's approval, the shearing limitation on plates used for butt-welded joints may be increased to a thickness less than or equal to 16 mm ($^5/_8$ in.).

When edges of plates are gas cut, the resulting surfaces shall be uniform and smooth and shall be freed from scale and slag accumulations before welding. After cut or sheared edges are wire brushed, the fine film of rust adhering to the edges need not be removed before welding. Circumferential edges of roof and bottom plates may be manually gas cut.

6.1.3 Shaping of Shell Plates

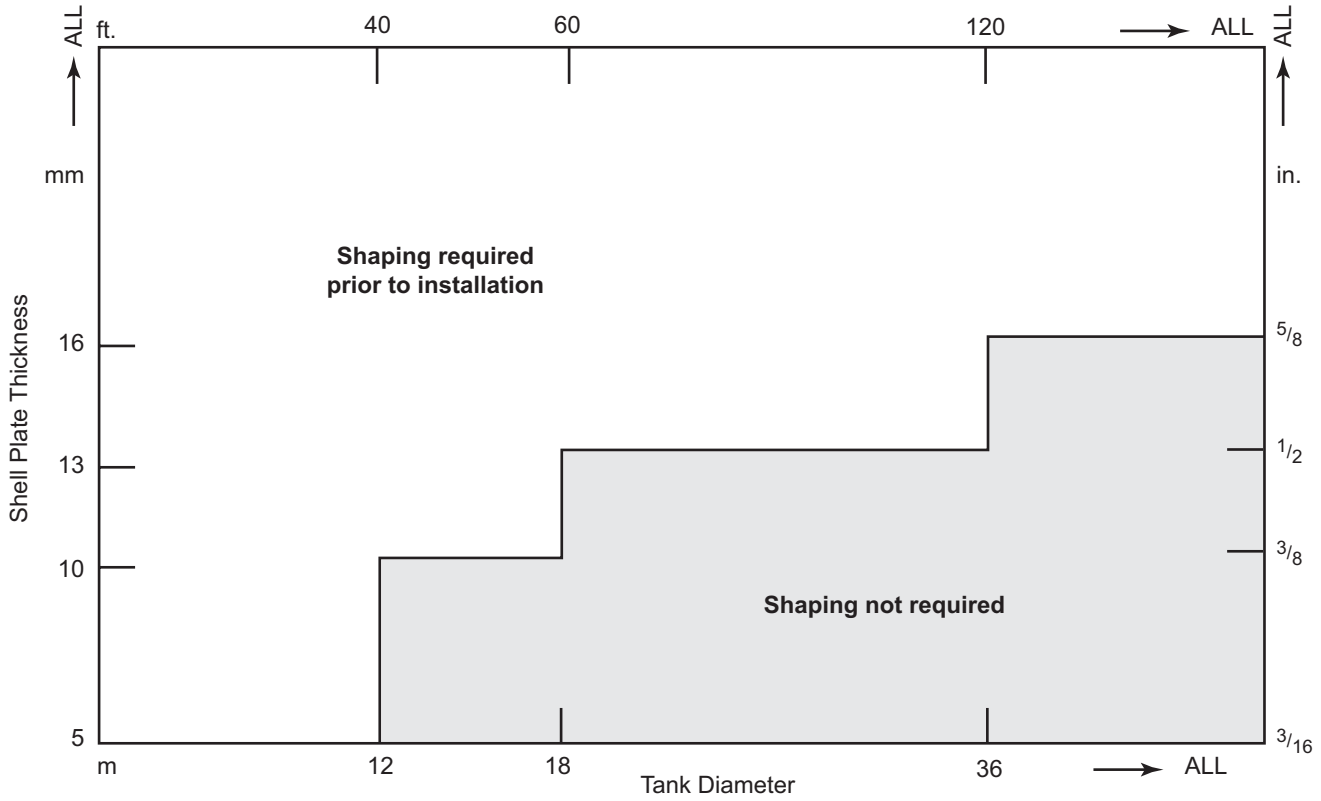
Figure 6.1 provides criteria for shaping of plates to the curvature of the tank prior to installation in the tank. Shaping of plates concurrently with installation in the tank shell is permitted if the tank diameter exceeds the limit in Figure 6.1 or if the Manufacturer's alternate procedure for any diameter has been accepted by the Purchaser.

6.1.4 Marking

All special plates that are cut to shape before shipment as well as roof-supporting structural members shall be marked as shown on the Manufacturer's drawings.

6.1.5 Shipping

Plates and tank material shall be loaded in a manner that ensures delivery without damage. Bolts, nuts, nipples, and other small parts shall be boxed or put in kegs or bags for shipment. All flange faces and other machined surfaces shall be protected against corrosion and from physical damage.



NOTE Any combination of diameter and thickness falling on or above the solid line requires shaping prior to installation.

Figure 6.1—Shaping of Plates

6.2 Shop Inspection

6.2.1 The Purchaser's inspector shall be permitted free entry to all parts of the Manufacturer's plant that are concerned with the contract whenever any work under the contract is being performed. The Manufacturer shall afford the Purchaser's inspector all reasonable facilities to assure the inspector that the material is being furnished in accordance with this standard. Also, the Manufacturer shall furnish samples or specimens of materials for the purpose of qualifying welders in accordance with 9.3.

Unless otherwise specified, inspection shall be made at the place of manufacture prior to shipment. The Manufacturer shall give the Purchaser ample notice of when the mill will roll the plates and when fabrication will begin so that the Purchaser's inspector may be present when required. The usual mill test of plates shall be deemed sufficient to prove the quality of the steel furnished (except as noted in 6.2.2). Mill test reports or certificates of compliance, as provided for in the material specification, shall be furnished to the Purchaser only when the option is specified in the original contract that they be provided.

6.2.2 Mill and shop inspection shall not release the Manufacturer from responsibility for replacing any defective material and for repairing any defective workmanship that may be discovered in the field.

6.2.3 Any material or workmanship that in any way fails to meet the requirements of this standard may be rejected by the Purchaser's inspector, and the material involved shall not be used under the contract. Material that shows injurious defects subsequent to its acceptance at the mill, subsequent to its acceptance at the Manufacturer's works, or during erection and inspecting of the tank will be rejected. The Manufacturer will be notified of this in writing and will be required to furnish new material promptly and make the necessary replacements or suitable repairs.

- **6.2.4.a** The Manufacturer shall visually inspect all edges of shell and roof plates before installing the plates in the tank or before inserting a nozzle into the plate to determine if laminations are present. If a lamination is visually detected, the Manufacturer shall ultrasonically examine the area to determine the extent of the laminations and shall reject the plate or make repairs in accordance with 6.2.4b.

- **6.2.4.b** For laminations found not exceeding 75 mm (3 in.) in length or 25 mm (1 in.) in depth, repairs may be made by edge gouging and rewelding to seal the lamination. The Manufacturer shall submit the edge repair procedure for Purchaser acceptance prior to the start of fabrication. For laminations exceeding these limits, the Manufacturer shall either reject the plate or repair the plate by entirely removing the lamination. Before making such repairs the Manufacturer shall document the extent of the lamination and submit a case-specific repair procedure for Purchaser approval.