



WACO ***Environmental*** ***Products***

General

The fabricated 6061-T6 aluminum or 304L or 316L stainless steel stop gates and frames shall be manufactured by WACO Products, Inc., Baltimore, Maryland or equal. Stop gates and frames shall be furnished with all necessary accessories and parts for a complete installation and shall be the latest standard product of a manufacturer regularly engaged in the production of equipment of this type. All stop gates and frames shall be furnished by the same manufacturer.

Design

Except as otherwise indicated by this specification, all stop gates and frames will be designed and manufactured to meet or exceed all design criteria of applicable AWWA Standard C561 or C562, most current edition, defining head and loading calculations, structural strength, deflection requirements, and material specifications including minimum dimensions.

Structural components shall have a minimum design safety factor of 4 with regard to ultimate tensile, compressive, and shear strength and a minimum safety factor of 2 with regard to tensile, compressive, and shear yield strength.

Stop Gate Plates

The structural portions of stop plates are to be fabricated from minimum 1/4" thickness 6061-T6 aluminum or 304L or 316L stainless steel plate and shapes, reinforced as required to meet the engineer's specified design head.

WACO Series 4004/6 **Stop Gates and** **Frames - Super Duty** **Specification**

Deflection under full design head will be no more than 1/720 of the span width of the gate. Stop gates will be fabricated so that gate plates will be interchangeable for all channels of equal dimension with the same frame type.

Stop gates shall have lift eyes or slots as specified for lifting purposes. Gate plates wider than 3 feet in width shall incorporate dual slots or lift eyes. Where drawings do not indicate otherwise, slots shall be provided. All slots shall have welded reinforcing plates on both sides of the slot unless otherwise indicated.

Stop Gate Guide Frames

The guide frame is to be fabricated from minimum 1/4" thickness 6061-T6 aluminum extrusions or 304L or 316L stainless steel fabricated shapes designed to resist the loads imposed by the design head upon the stop plate and into the frame. The frame shall have factory welded mitered corners where the side and invert frames meet. Embedded and end-of-wall mount frames shall be designed to allow for a flush bottom installation. Flush bottom frames will incorporate a countersunk invert seat or flush neoprene invert seal as indicated. Formed concrete inverts and stop plate mounted seals shall not be acceptable.

Side frame extrusions shall have a minimum weight of 4 pounds per foot for aluminum and 13 pounds per foot for stainless steel. Aluminum frames shall have a factory applied coating of bituminous paint on all surfaces to be in contact with concrete or grout.

Embedded frames shall be grouted in place within a blockout or embedded at the time of the channel concrete pour with adequate blocking installed by the Contractor to prevent distortion of the frame during installation.

Wall mount frame anchors are to be 300 series stainless steel and supplied by the gate manufacturer at a size, quantity and spacing sufficient for the design loads. Wall mounted frames shall have bolt holes factory drilled at the recommended locations for use as a template to locate anchors in the field. Wall mounted frames shall be designed for grouted or gasketed installation as indicated.

Gasket-type frames require that Installer/Contractor field verify channel dimensions, wall alignment and wall surface conditions for suitability with gasket use prior to start of submittal drawings.

All guide frames shall incorporate ultra high molecular weight polyethylene (UHMW) self-adjusting type seat/seals on both sides of the stop plate to reduce leakage, friction and wear between the plate and frame. Seat/seals shall be extruded from virgin UHMW ultraviolet resistant polymer and shall be held within the guide frame by integral retaining slots or tabs in the guide. Bearing bars or seat/seals that are glued or mechanically fastened to the frame or plate shall not be acceptable. Self-adjustment of side frame seat/seals shall be by means of a neoprene compression cord held within an integral recess in the seat/seal. Flat compression pads shall not be acceptable. Minimum UHMW seal seating surface width shall be ¾ inches. Seals shall be replaceable without special tools and without removing the frame from its installed position.

Super duty stop gate seals typically limit leakage to 0.1gpm/wfp, but are available with less than 0.05gpm/wfp design if an optional plate to frame compression system is specified.

Please note that larger Super Duty Stop Gates may not be operable by hand due to the combinations of plate weight, head pressure, and seal compression required to meet other design specifications herein for this type of gate. Please call WACO Products for product selection assistance.

Using this Specification:

All WACO Products' gates are made to order from approved drawings and our standard designs can be customized to fit virtually any specific head, mounting, or operating condition. Special lifting devices and hoists are available for stop gate applications where size/head makes manual operation impractical, but where slide gates with operators are not desirable. Super Duty stop gates can also be supplied in optional combination designs with stainless steel alloy frames and aluminum plates where corrosion or abrasion indicates their use for the frames but the plates are only occasionally exposed to the media. Please call WACO for design assistance in selecting optional alloys and constructions.

Specifying Style:

To specify 4000 Series Super Duty models, indicate the gate mounting type, nominal height and width dimensions for both the frame and stop plate (if different from the frame), and relevant elevations in the schedule or specification. Where the installation may require a combination of frame types (i.e. embedded side frame with channel mounted invert frame) or different materials for frames and plates, please call WACO Products Engineering Department for recommendations and model designation.

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