Whipps, inc.

Water Control Gates

Product Quality and Craftmanship

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WATER CONTROL GATES

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Contents

Whipps, inc.
WATER CONTROL GATES

Stainless Steel Gates

Series 900 AWWA® C561 Compliant

Contents

Introduction

Series 900 stainless steel gates are engineered for robust performance and extended lifespans, suitable for various mounting configurations and flow conditions. These gates feature rugged, reinforced stainless steel construction complemented by durable and flexible ultra-high molecular weight polyethylene (UHMW) seat/seals, ensuring a heavy-duty assembly. A resilient bottom seal enables a secure flush bottom closure. Whipps, Inc. offers rapid and cost-effective production of both standard gates and customized solutions for unique applications.

Advantages: Stainless Steel vs. Cast Iron

Superior Performance: Whipps, Inc. provides a leakage guarantee that surpasses the specifications outlined in AWWA C-501 for Cast Iron Sluice Gates or the most recent revision of AWWA C-560 for Cast Iron Slide Gates. Our commitment ensures leakage rates not exceeding 0.05 gpm/ft of seal perimeter under both seating head and unseating head conditions, even in high head service scenarios.

Cost: Fabricated stainless steel gates typically offer a cost advantage over cast iron gates. The manufacturing process for cast iron gates, which involves casting and subsequent machining, is more expensive. Consequently, as gate size increases, the price difference also increases.

Strength: Stainless steel boasts an ultimate strength that is more than twice than that of cast iron. Additionally, stainless steel possesses approximately double the modulus of elasticity compared to cast iron.

Durability: Stainless steel exhibits superior corrosion resistance compared to cast iron. Our stainless steel gates feature UV-stabilized UHMW seat/seals, which are field proven to maintain shape and integrity in challenging applications. Whipps, Inc. conducted rigorous testing on UHMW seat/seals. Subjecting them to 25,000 gate open/close cycles in an abrasive media to validate their ability to withstand continuous operation with minimal wear. (Test results available upon request.)

Reliability: Unlike cast iron gates, the slide will not ‘freeze’ to the frame after extended periods of inactivity. This is achieved through the inclusion of UHMW seat/seals, which effectively eliminate metal-to-metal contact between the slide and the frame.

Delivery: The fabrication process of crafting a stainless steel gate from raw materials is faster compared to the casting and machining process required for creating a cast iron gate.

Self-Adjusting Seals: Our stainless steel gates feature a self-adjusting seal system that eliminates the need for field adjustments, recognizing that many gates are installed in locations where such adjustments are impractical or unfeasible. This advanced system cannot be replicated by the imprecise method of adjusting wedges, which can lead to increased leakage, localized stress, and difficulty during gate operation. Our self-adjusting seal system combines durable UHMW seat/seals, contoured to reduce friction while maintaining a secure seal with the slide, along with a resilient static spring/seal. This spring/seal functions as a bulb seal between the frame and UHMW seat/seals, maintaining continuous pressure for consistent contact. Furthermore, the static spring/seal is safeguarded against wear or damage from the movable slide, thanks to the UHMW seat/seals. (Wedges can be provided, but highly discouraged.)

Low Maintenance: Stainless steel gates do not necessitate regular painting and demand less operator attention when compared to cast iron gates.

Ease of Repair: In the rare event of damage to the seat/seals, they can be easily replaced in the field using common tools, without the need to remove the gate from the wall. In contrast, if the seating surface of a cast iron gate is damaged, it necessitates the removal of the gate from the wall and shipping it back to the manufacturer for re-manufacturing.

Range of Sizes: The process of designing and manufacturing fabricated gates offers the flexibility of producing a wide range of sizes, nearly without limits. In contrast, cast iron gates require the creation of new patterns or modifications to existing patterns to accommodate uncommon sizes.

Mounting Configurations: Gate frames can be either embedded in channel walls or mounted to a wall, pipe flange, or wall thimble. Wall thimbles are recommended for applications with high unseating head conditions. We offer flanged frames or flat frames for gates designed to cover square, rectangular, or round openings in concrete structures.

Design Features

The chart below displays the gate features associated with each model number. These models encompass the most frequently utilized configurations. For applications that fall outside the scope of these standard models, we offer additional arrangements.

Table 1: Features vs Model Number (Model Number Key)

Gate Features		Gate Model Numbers							
		921 931 951	923 933 953	923-C 933-C 953-C	923-D 933-D 953-D	923-D-I 933-D-I 953-D-I	924 934 954	925 935 955	925-I 935-I 955-I
Guide Frame Style	Embedded	X							
	Wall Mounted		X		X	X	X	X	X
	Channel Mounted			X					
Seals	Slide & Invert	X	X	X	X	X			
	Slide, Invert, & Top						X	X	X
Actuator Mounting	Yoke	X	X	X	X	X	X		
	Pedestal							X	X

Optional Features

The gate configuration required for each application is determined by gate size and service conditions. The overall gate widths, side frame sections, and invert sections depicted in this literature showcase only a few examples of the numerous configurations available.

Downward Opening: Many gate models can be configured for downward opening service by simply adding a 'D' to the model number. These gates are ideal for situations with limited clearance where an upward opening gate is impractical, or when the gate is intended for use as an overflow weir. Downward opening gates may be supplied with or without a top seal.

Interconnected Actuators: All models can be equipped with two interconnected actuators by adding an 'I' to the model number. This setup is typically advisable for gates wider than 72" and with a width exceeding twice the height.

Non-Rising Stem: All models can be configured with non-rising stems by adding a 'N' to the model number. This operating stem arrangement is typically chosen for installations with limited headroom.

Wall Thimbles: All models equipped with top seals can be configured for wall thimble mounting. Wall thimbles are typically required only for applications with high unseating heads.

Gate Selection Criteria

Gate Size: In water and wastewater treatment plants, gates are typically sized to match pre-designed structures. In this respect, Whipps, Inc. stainless steel gates provide exceptional flexibility to accommodate any round, square, or rectangular opening.

Gate Mounting: Series 900 gate frames may be embedded in channel walls, mounted on the face of a wall, mounted inside of an existing channel, installed on a wall thimble, or affixed to a pipe flange.

Gate Material: Series 900 gates are typically constructed from either 304/304L or 316/316L stainless steel. Type 304/304L, being more cost-effective, can be specified for water or wastewater applications when residual chlorine levels are 2mg/l or lower. Type 316/316L is a more conservative choice, offering enhanced resistance to pitting and crevice corrosion. In both cases, the low carbon 'L' grade is recommended for welded components to minimize carbon precipitation in the welds. Various other alloys are also available.

Actuator Selection: The different types of actuators are detailed in the actuator section (page 51-53). Operating loads are calculated as illustrated in Figure 1 below. Manual operators are chosen to guarantee that operating the handwheel or hand crank requires no more than 40 pounds of effort. For information regarding the selection of powered actuators, consult the factory.

ENGLISH UNITS	METRIC UNITS
1. $P_1 = 35\ h$ where P_1 = operating load (pounds) h = gate height (inches)	$P_1 = 6129\ h$ where P_1 = operating load (pounds) h = gate height (inches)
2. $P_2 = 12.48 * A * H$ where P_2 = operating load (pounds) A = area of opening (sq. feet) H = head on gate centerline (feet)	$P_2 = 1961 * A * H$ where P_2 = operating load (pounds) A = area of opening (sq. feet) H = head on gate centerline (feet)

Figure 1: Operating Load Formula

Note: *Maximum operating loads occur in the initial few inches of gate travel during opening and the final few inches during gate closure. Loads diminish quickly from these extremes.*

Actuator Loads Transmitted to Structures: On non-self-contained gates, pedestal mounted actuators transmit stem thrust to the structure supporting the gate and actuator. The structure must be constructed to withstand the actuator's maximum output (e.g. electric actuator at motor stall) which is necessarily greater than the operating load, sometimes significantly so. Powered actuators employ various mechanisms to restrict maximum output. However, manual actuators have their maximum output limited by the operating personnel's effort.

Application Chart

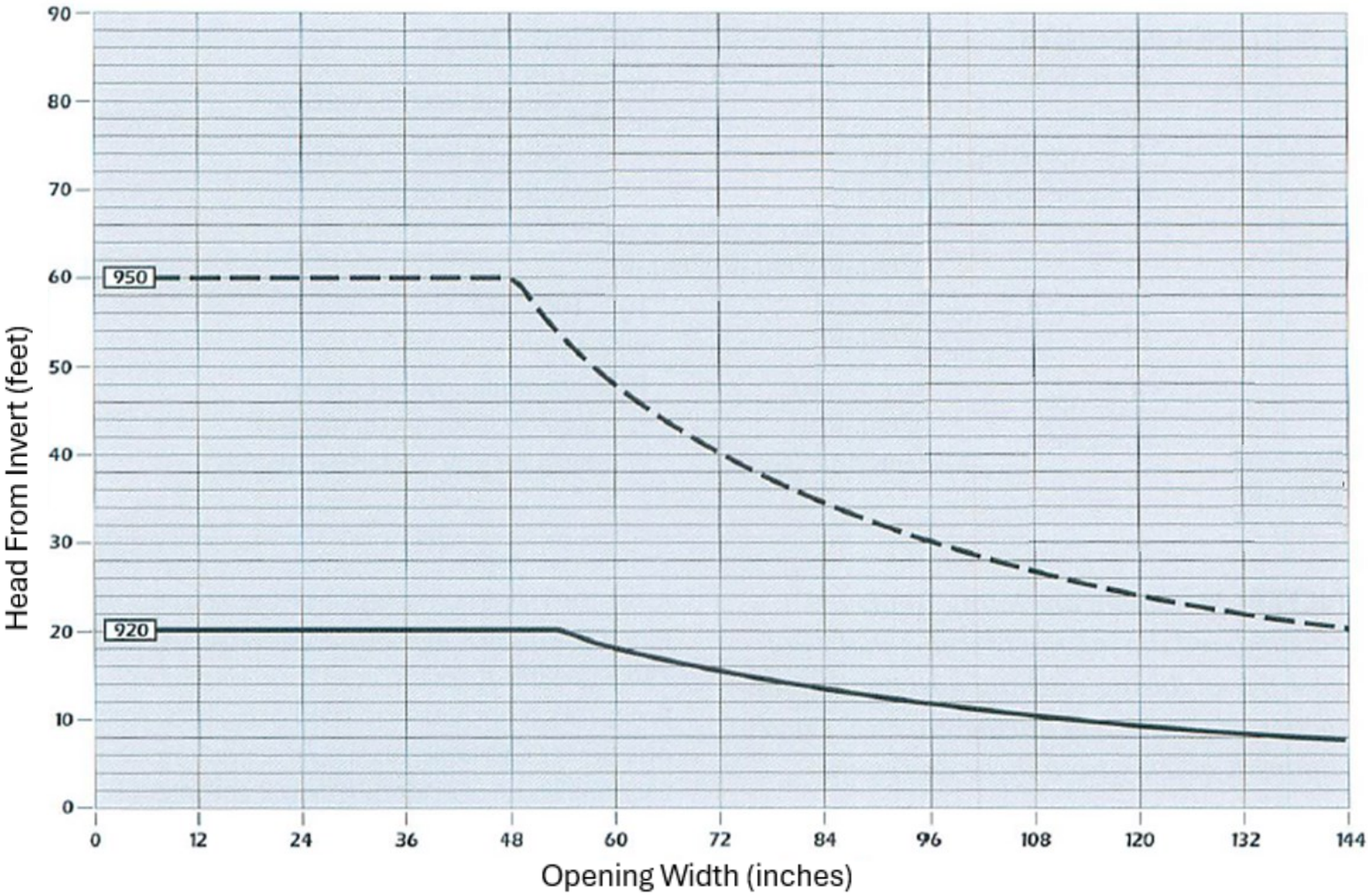


Figure 2: Seating and Unseating Head Limits

Note: *The chart above illustrates the typical maximum range of each stainless steel gate series. If higher ratings are required, please contact the factory for additional details.*

Sluice Gate Mounting

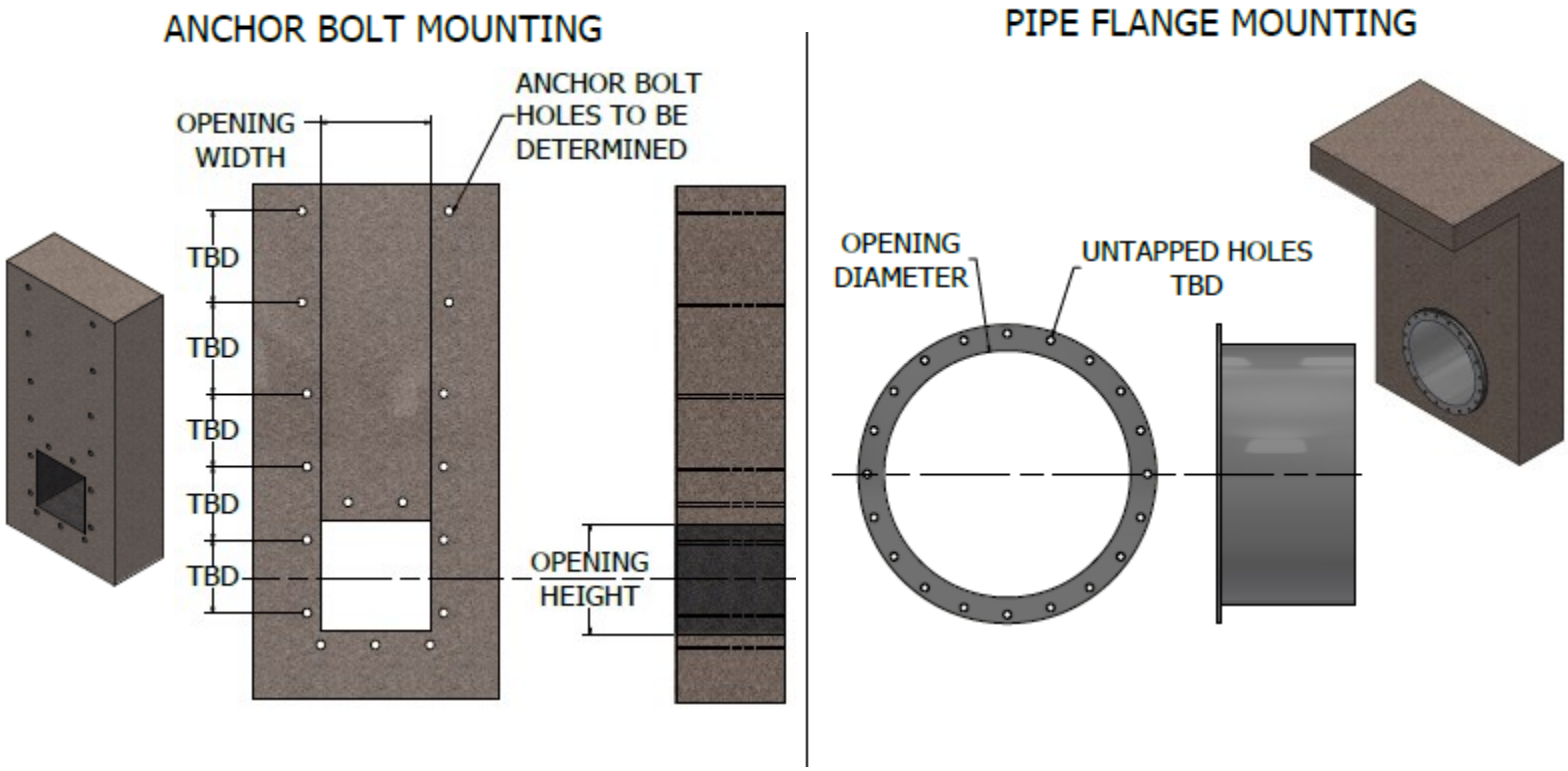


Figure 3: Wall and Pipe Flange Mounting Details

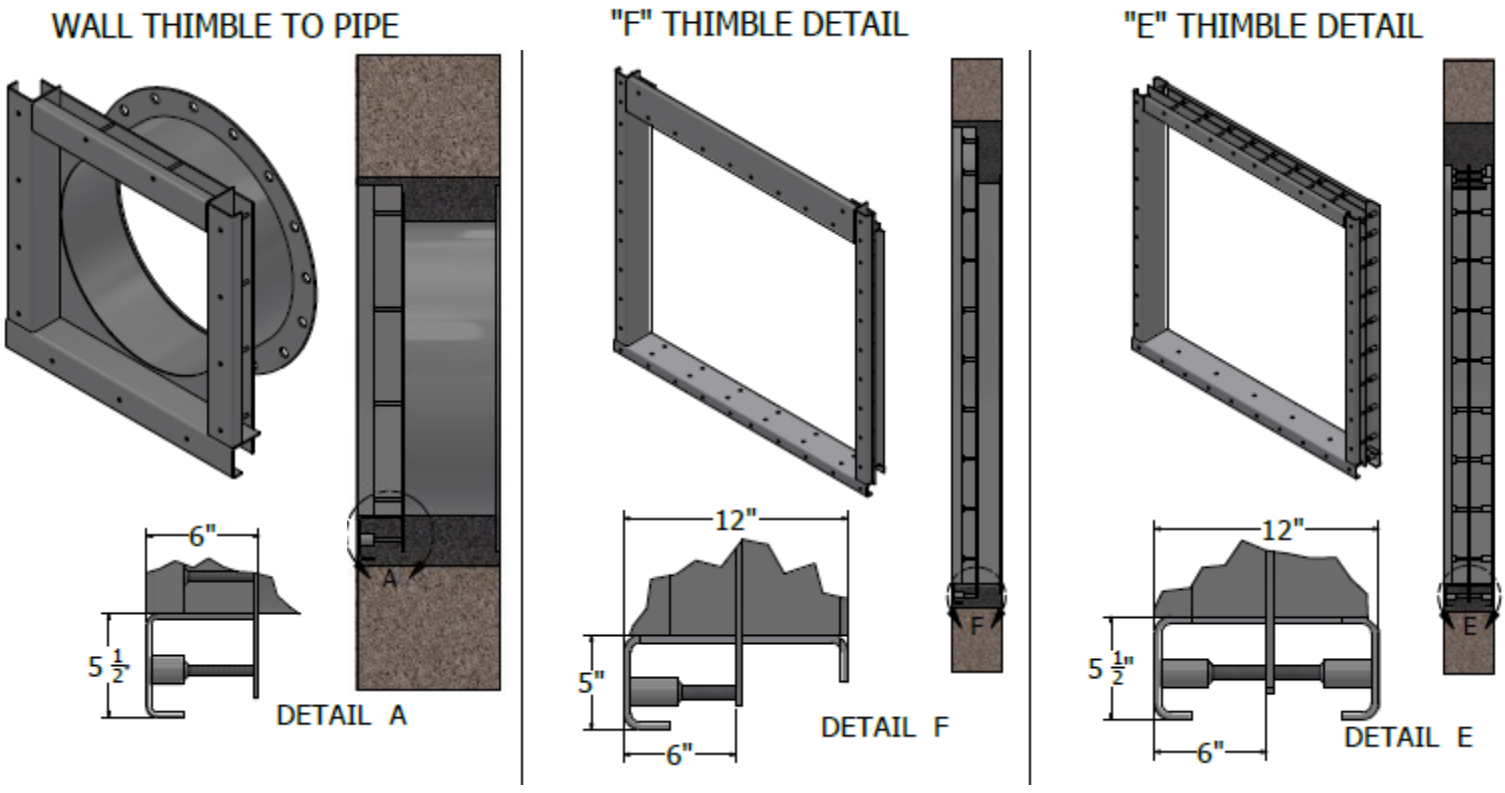
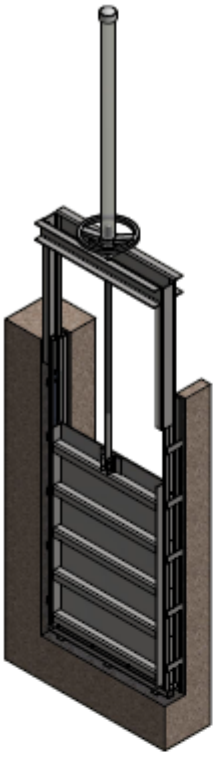
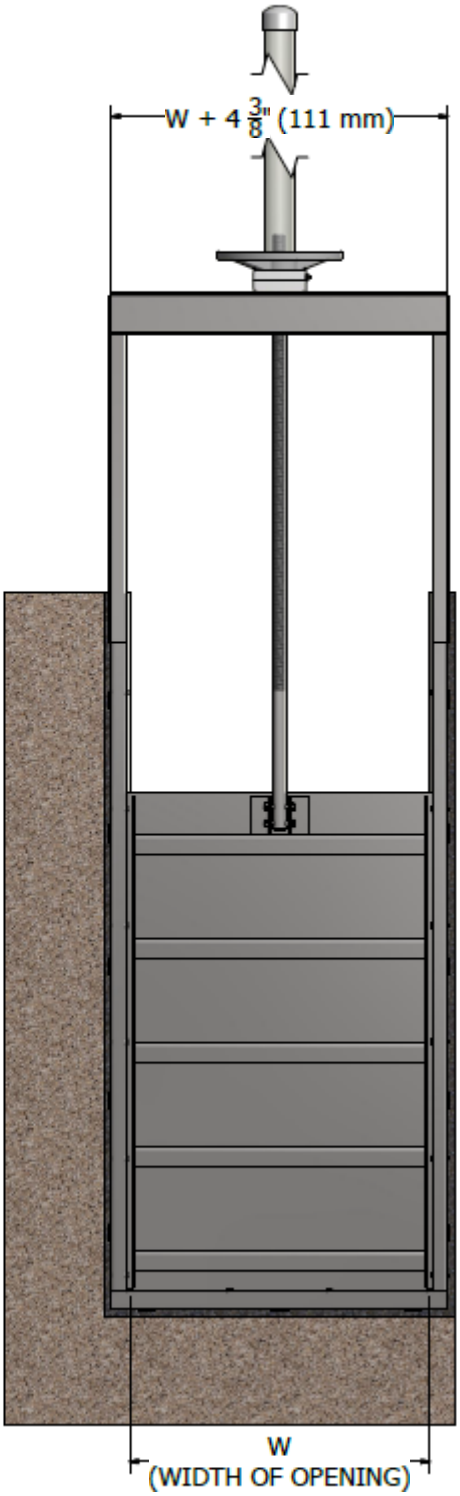
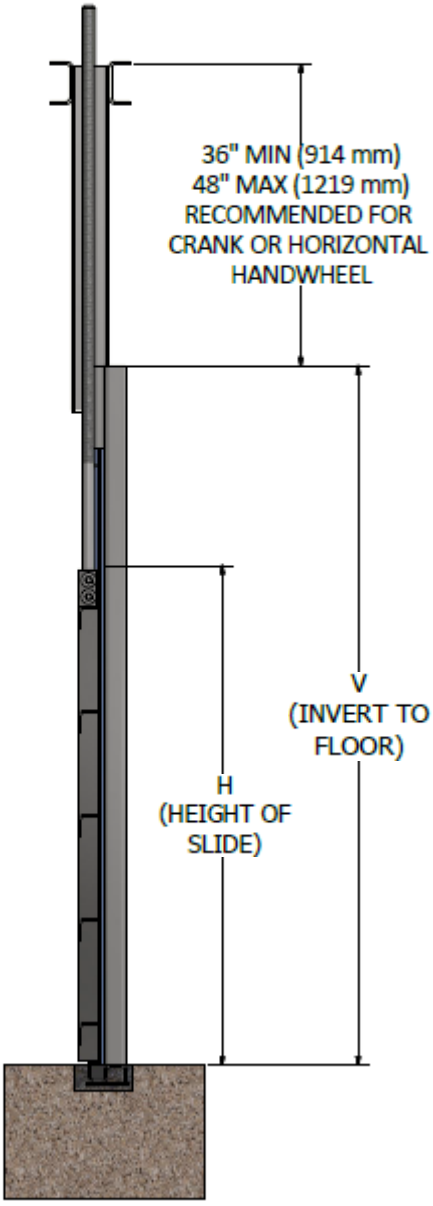


Figure 4: Wall Thimble Mounting Details

Model 921 Slide Gate



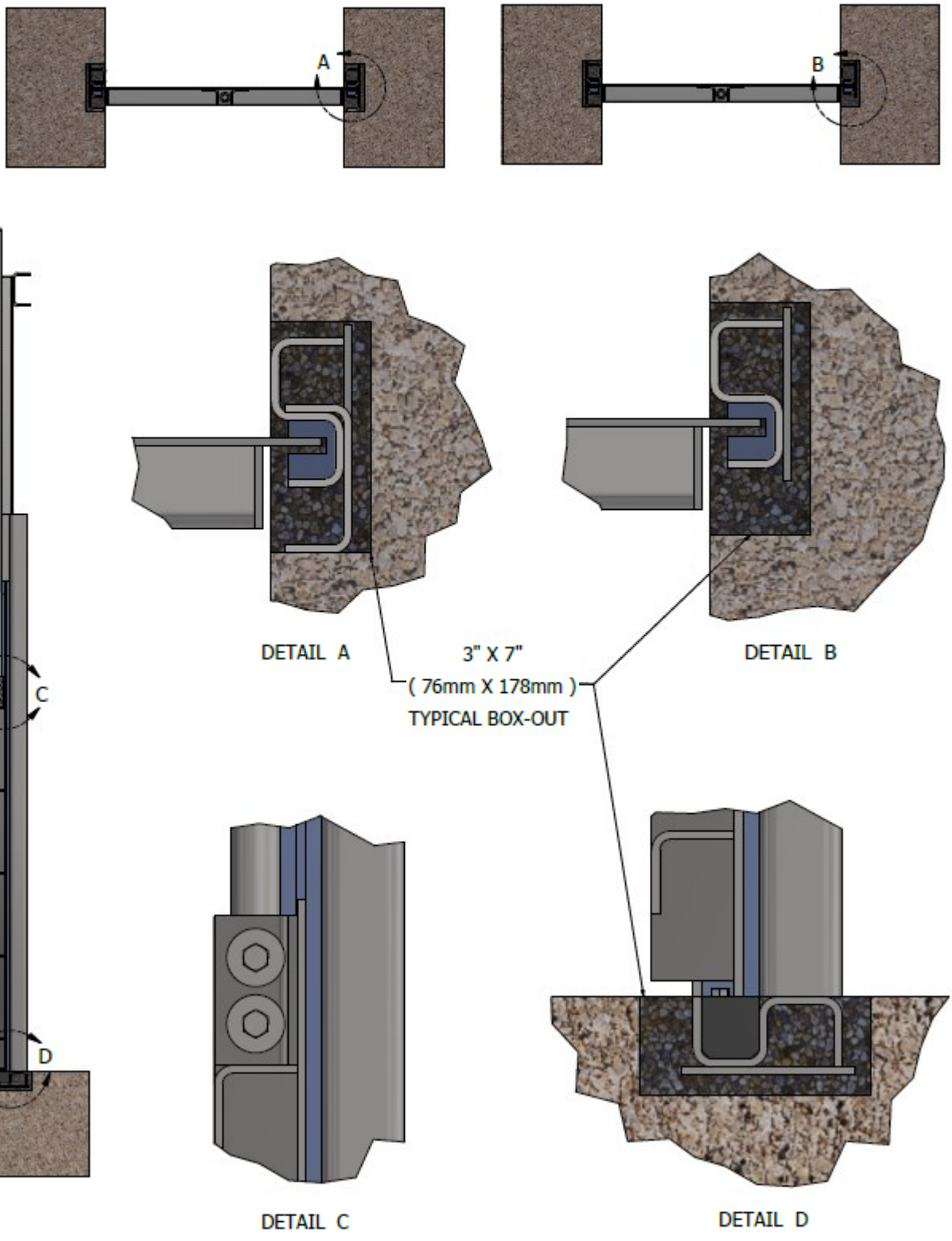




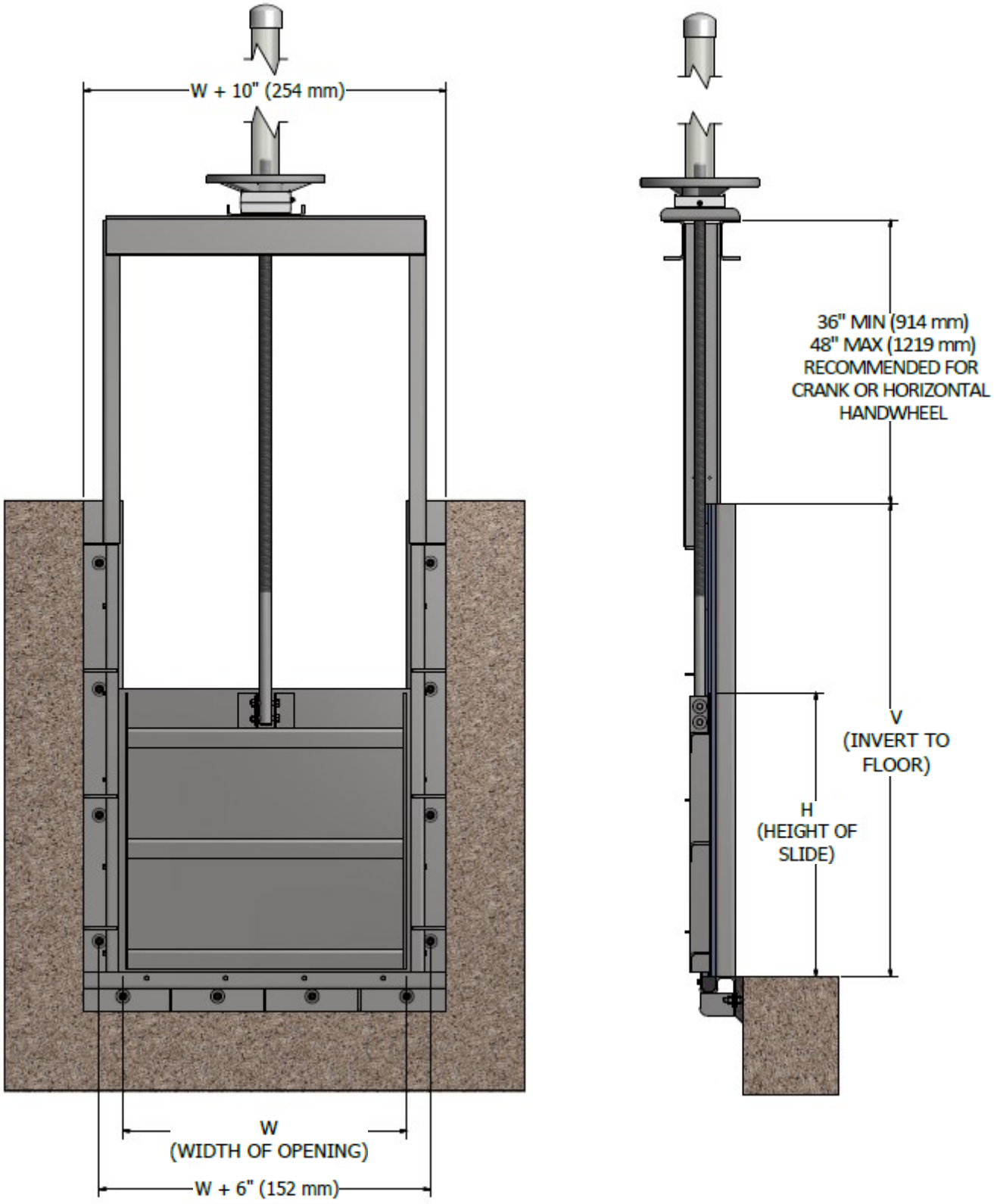
GATE ILLUSTRATED: 36" (W) x 96" (H) x 84" (V)
SEE ACTUATORS SECTION FOR OTHER ARRANGEMENTS

Model 921 Features

°UHMW SEAT/SEALS
°LEAKAGE 1/2 OF AWWA C-561
°EMBEDDED FRAMES
°OPEN CHANNEL - NO TOP SEAL
°YOKE MOUNTED ACTUATOR
°RESILIENT INVERT SEAL (FLUSH BOTTOM CLOSURE)



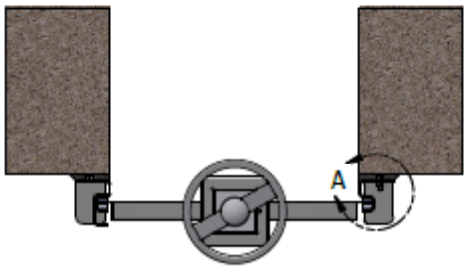
Model 923 Slide Gate

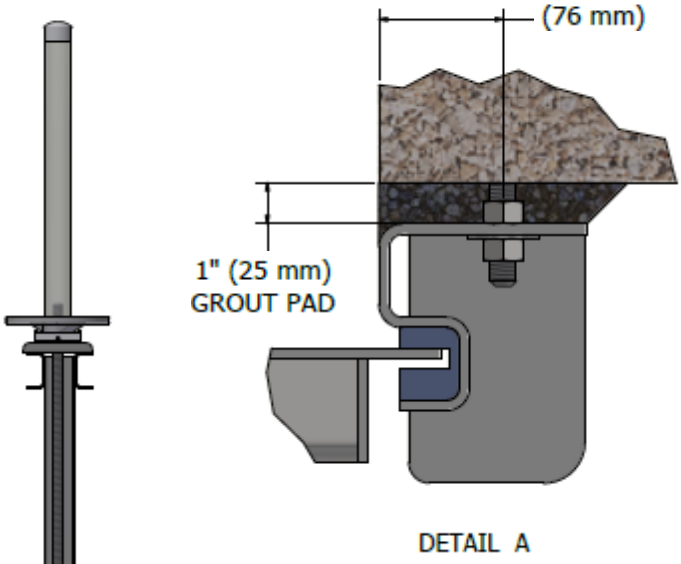


GATE ILLUSTRATED: 36" (W) x 36" (H) x 60" (V)
SEE ACTUATORS SECTION FOR OTHER ARRANGEMENTS

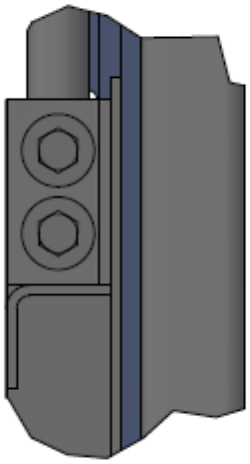
Model 923 Features

- UHMW SEAT/SEALS
- LEAKAGE 1/2 OF AWWA C-561
- WALL MOUNTED SIDE FRAMES
- OPEN CHANNEL - NO TOP SEAL
- YOKE MOUNTED ACTUATORS
- RESILIENT INVERT SEAL (FLUSH BOTTOM CLOSURE)

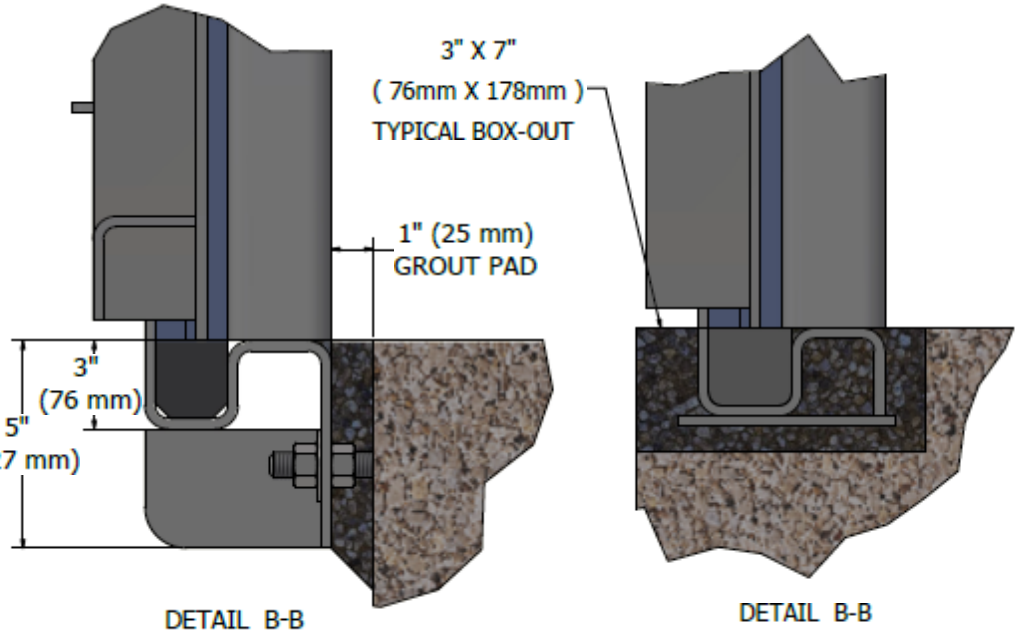




DETAIL A



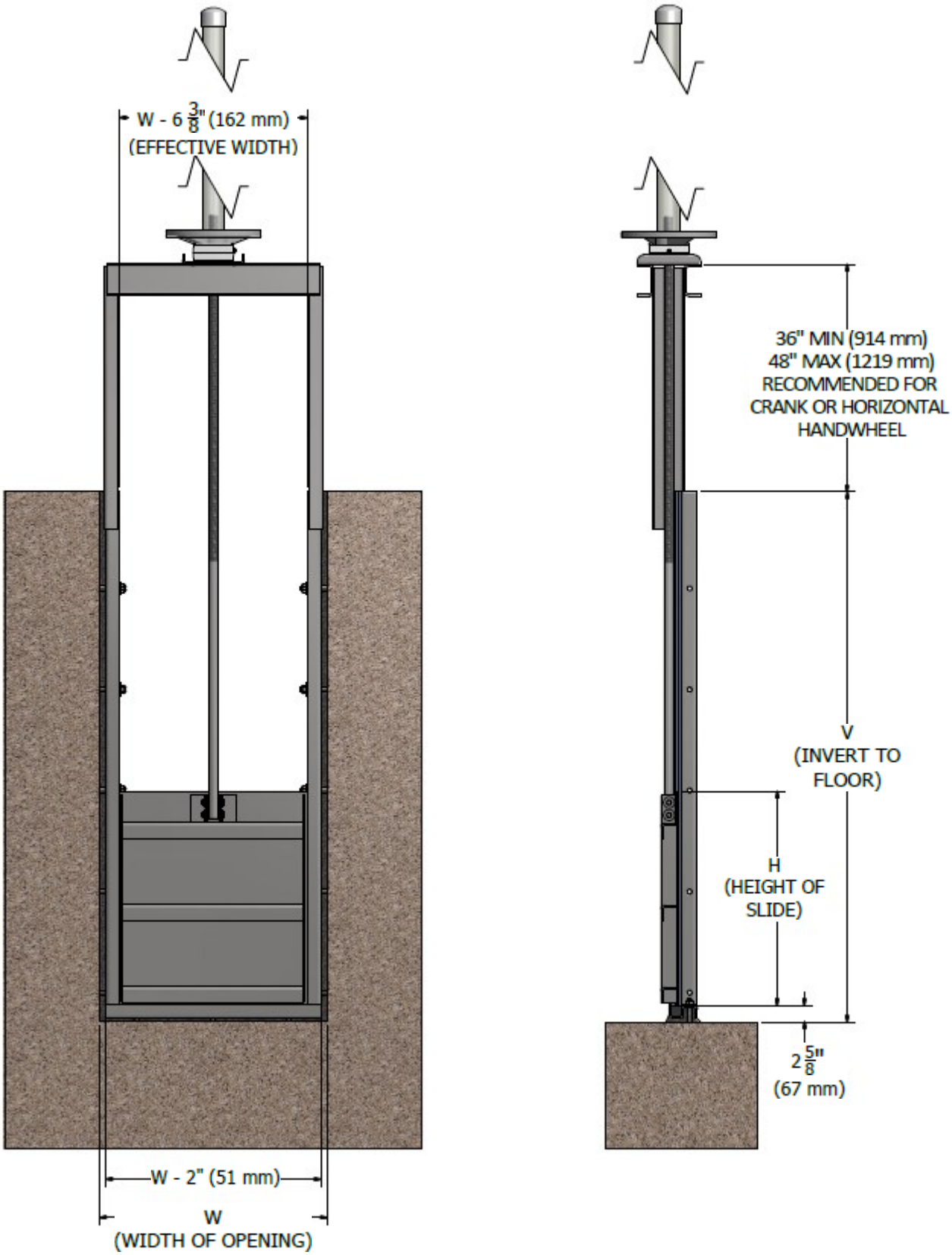
DETAIL B



DETAIL B-B

DETAIL B-B
EMBEDDED OPTION

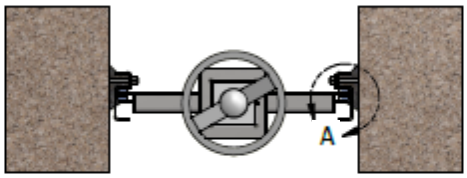
Model 923-C Slide Gate

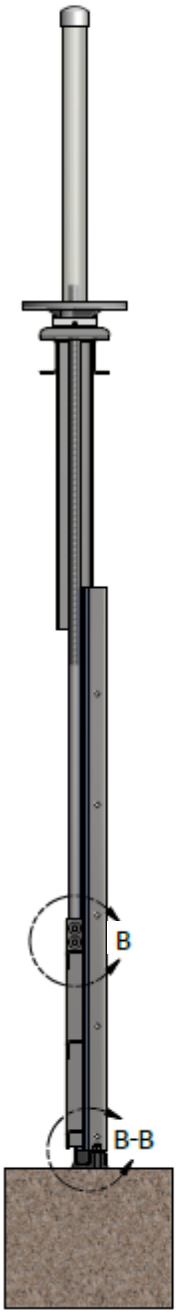


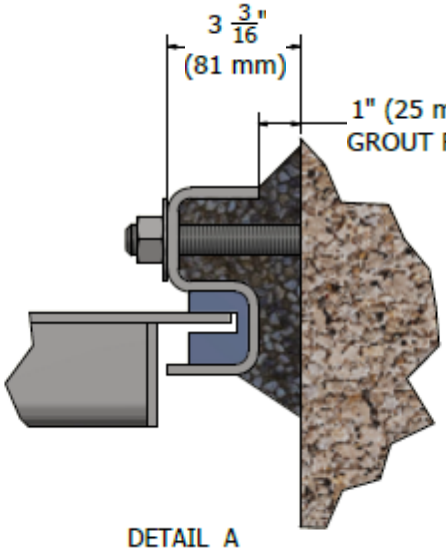
GATE ILLUSTRATED: 36" (W) x 36" (H) x 84" (V)
SEE ACTUATORS SECTION FOR OTHER ARRANGEMENTS

Model 923-C Features

°UHMW SEAT/SEALS
°LEAKAGE 1/2 OF AWWA C-561
°FRAME MOUNTS IN EXISITING CHANNEL
°OPEN CHANNEL - NO TOP SEAL
°YOKE MOUNTED ACTUATOR







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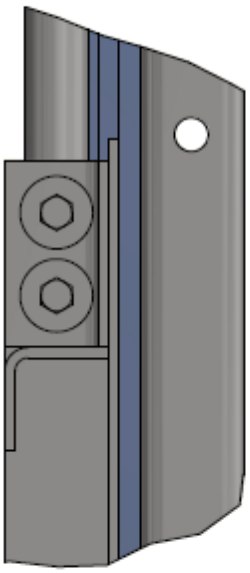
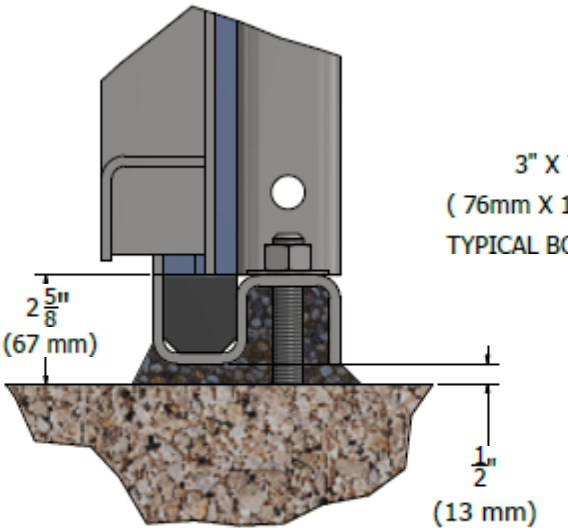
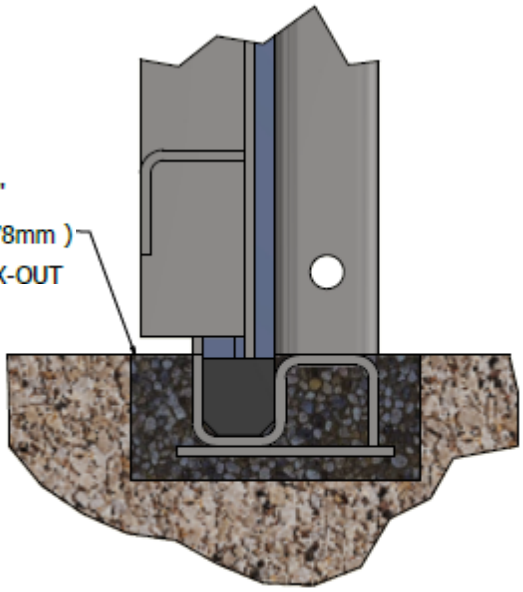


DETAIL B

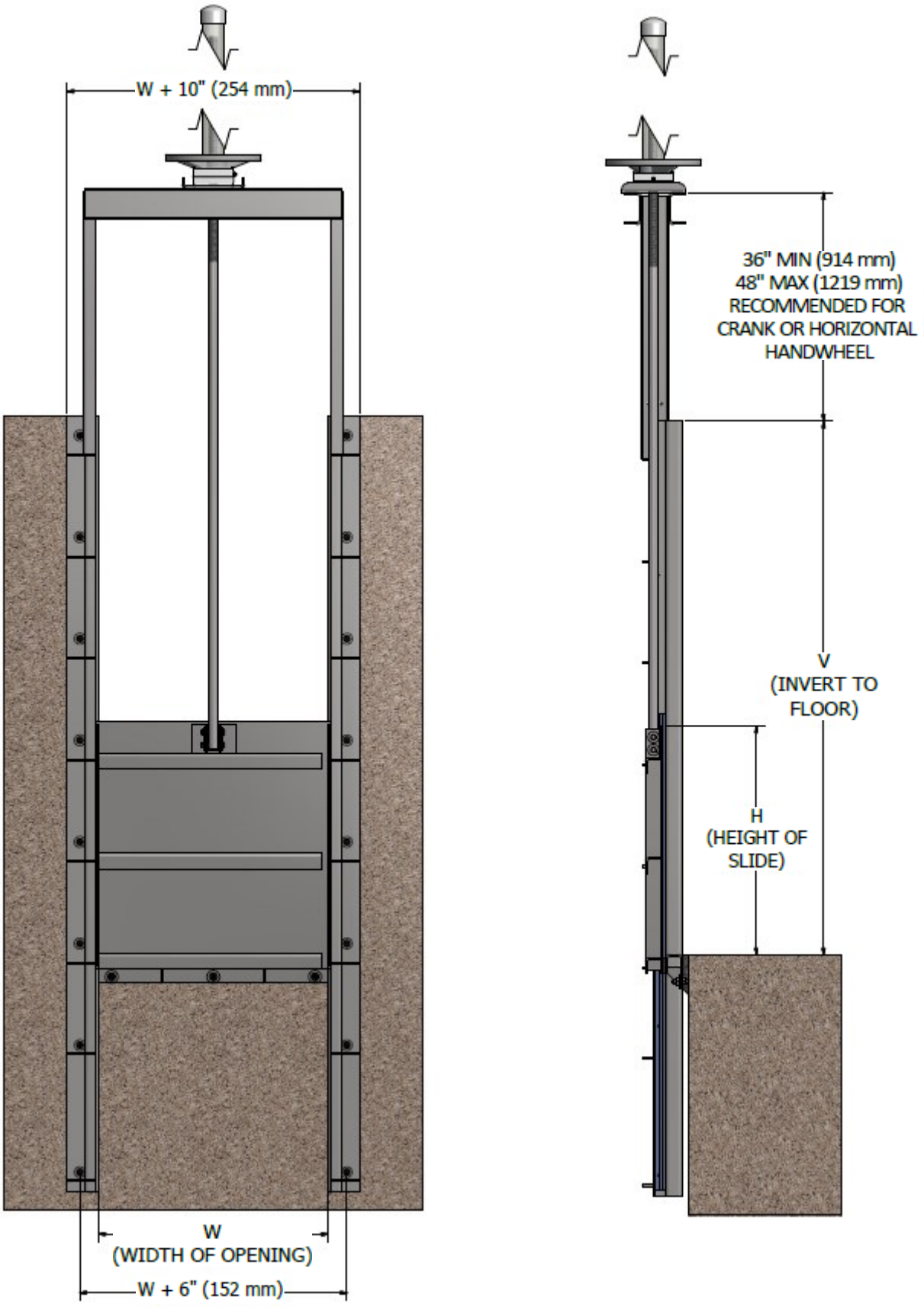


DETAIL B-B



DETAIL B-B
EMBEDDED OPTION

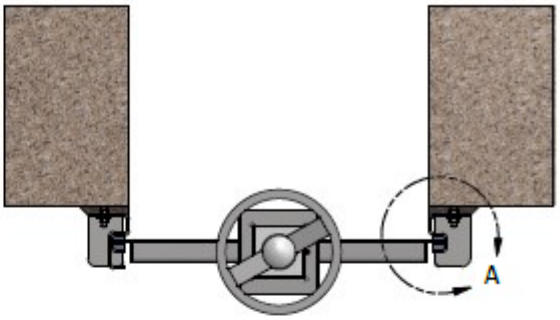
Model 923-D Slide Gate

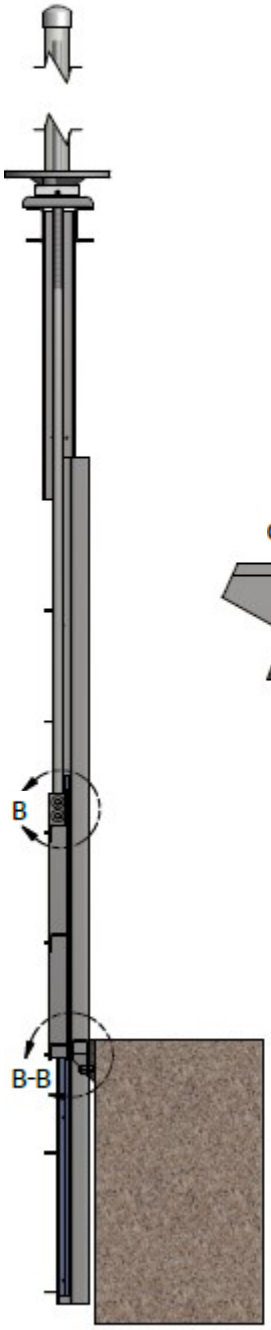


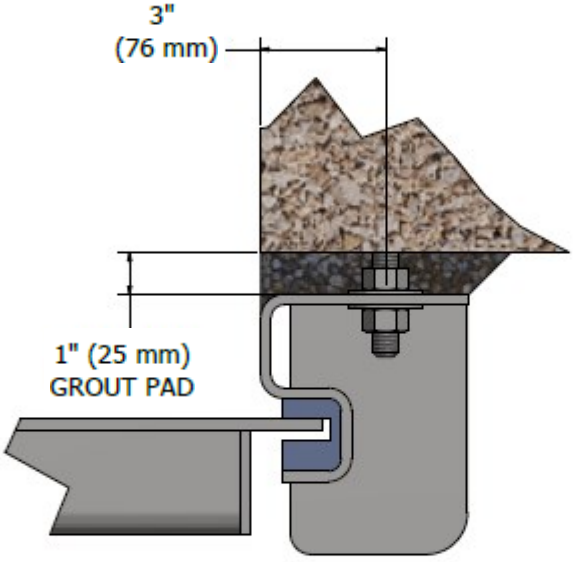
GATE ILLUSTRATED: 36" (W) x 36" (H) x 84" (V)
SEE ACTUATORS SECTION FOR OTHER ARRANGEMENTS

Model 923-D Features

- °UHMW SEAT/SEALS
- °LEAKAGE 1/2 OF AWWA C-561
- °WALL MOUNTED SIDE FRAMES
- °DOWNWARD OPENING
- °OPEN CHANNEL - OPTIONAL TOP SEAL
- °YOKE MOUNTED INTERCONNECTED ACTUATORS







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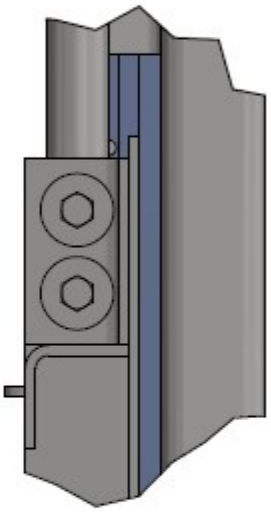
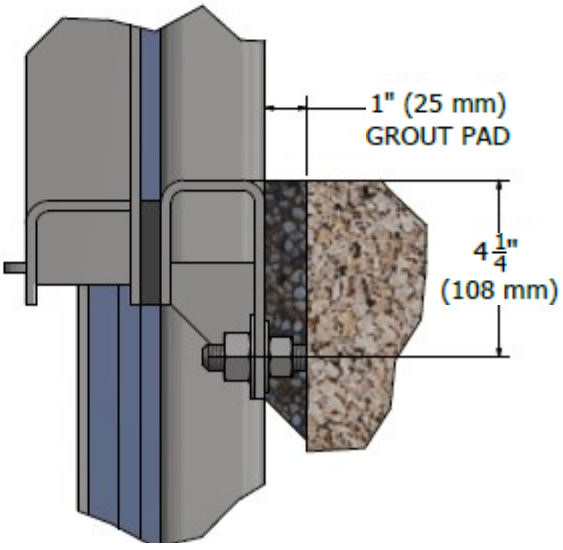
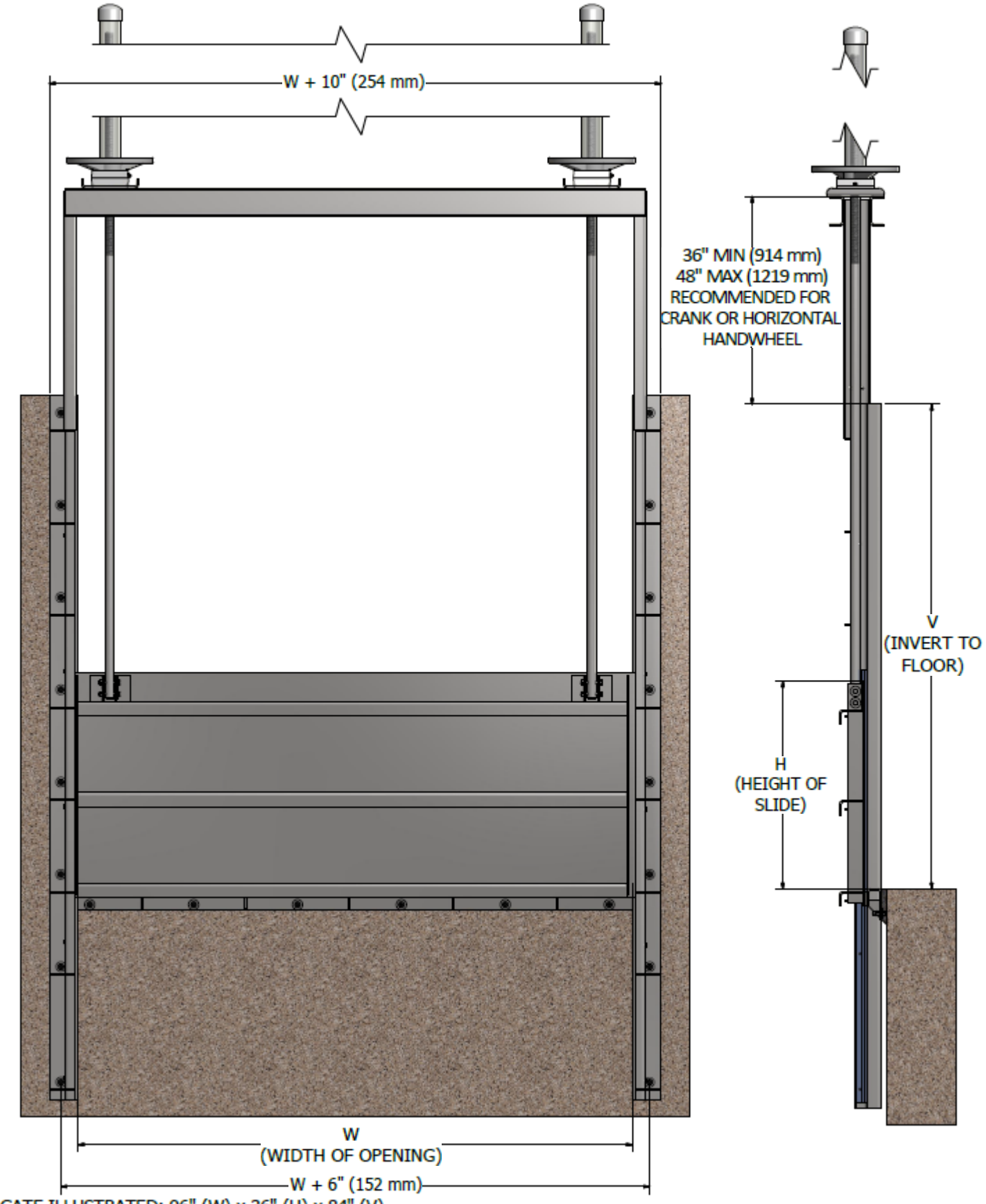


DETAIL B



DETAIL B-B

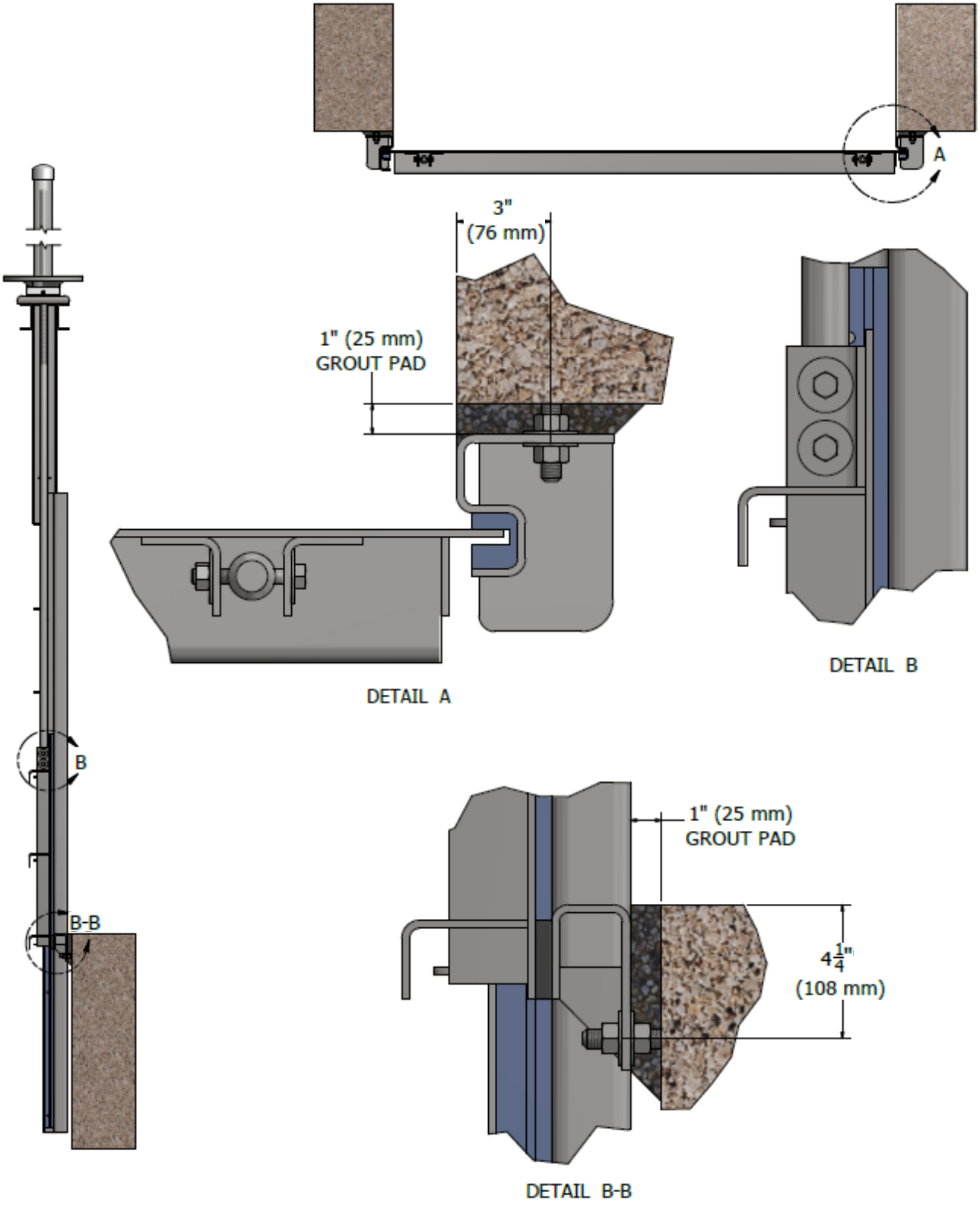
Model 923-D-I Slide Gate



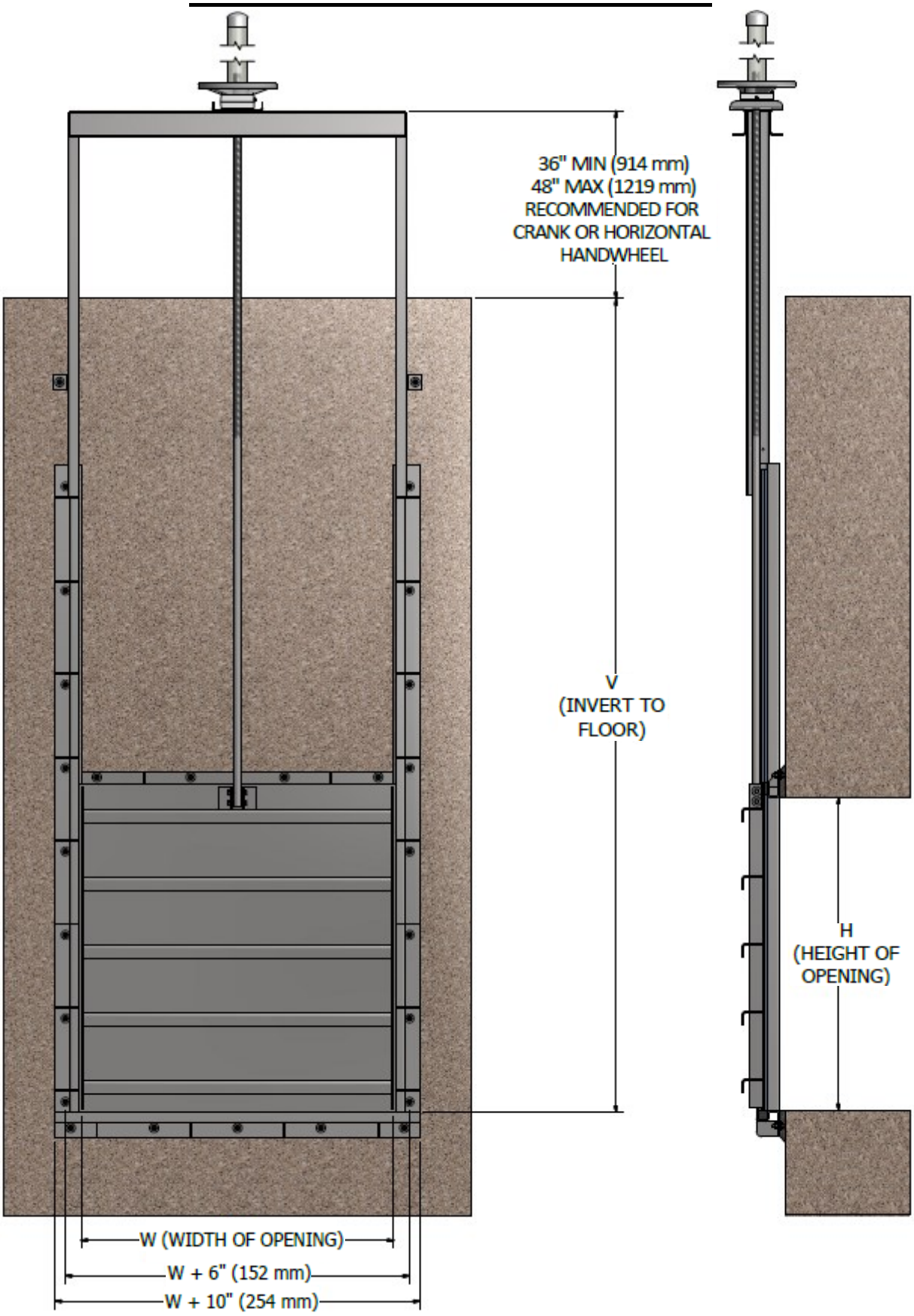
GATE ILLUSTRATED: 96" (W) x 36" (H) x 84" (V)
SEE ACTUATORS SECTION FOR OTHER ARRANGEMENTS

Model 923-D-I Features

- UHMW SEAT/SEALS
- LEAKAGE 1/2 OF AWWA C-561
- WALL MOUNTED SIDE FRAMES
- DOWNWARD OPENING
- OPEN CHANNEL - OPTIONAL TOP SEAL
- YOKE MOUNTED INTERCONNECTED ACTUATORS



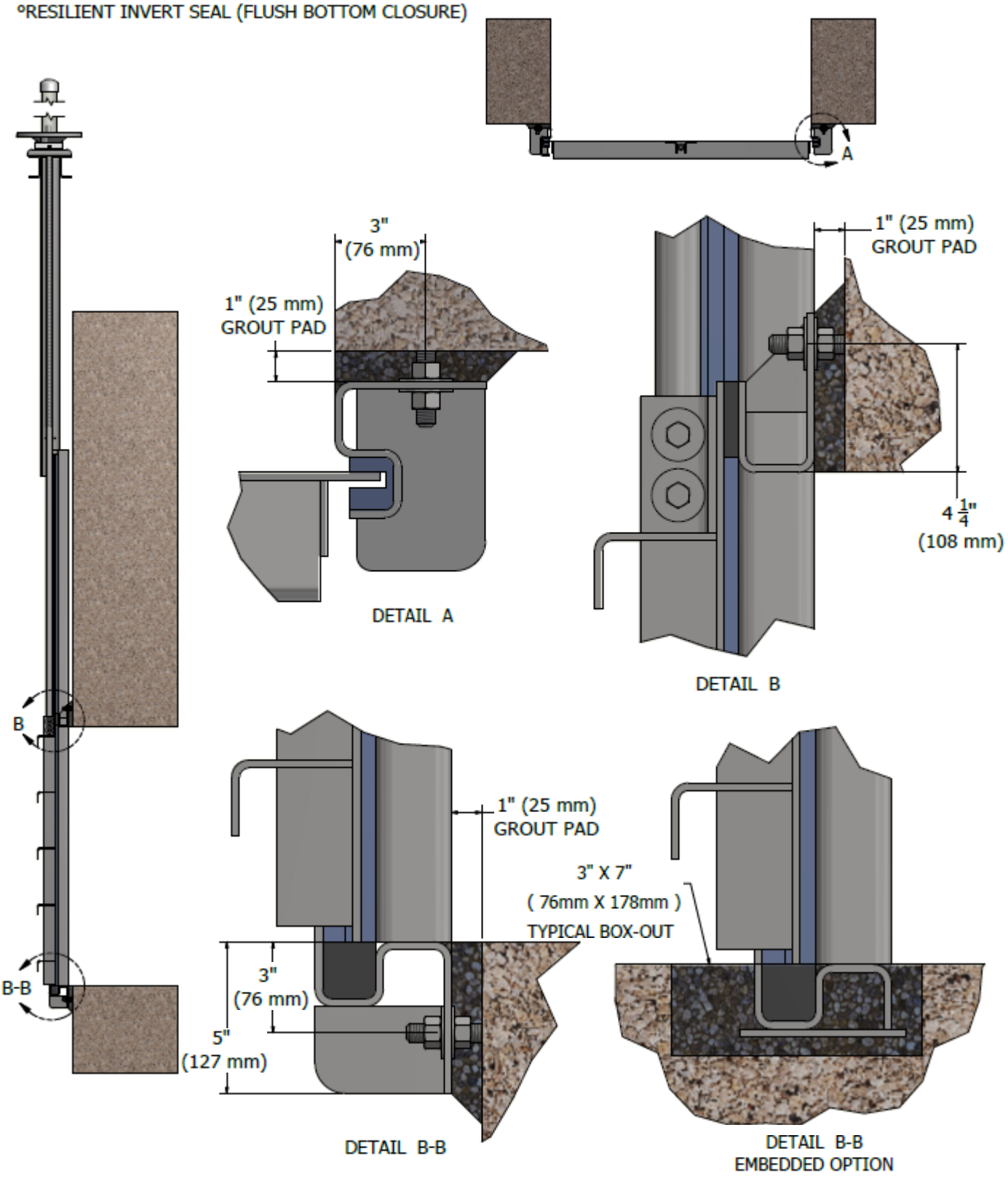
Model 924 Sluice Gate



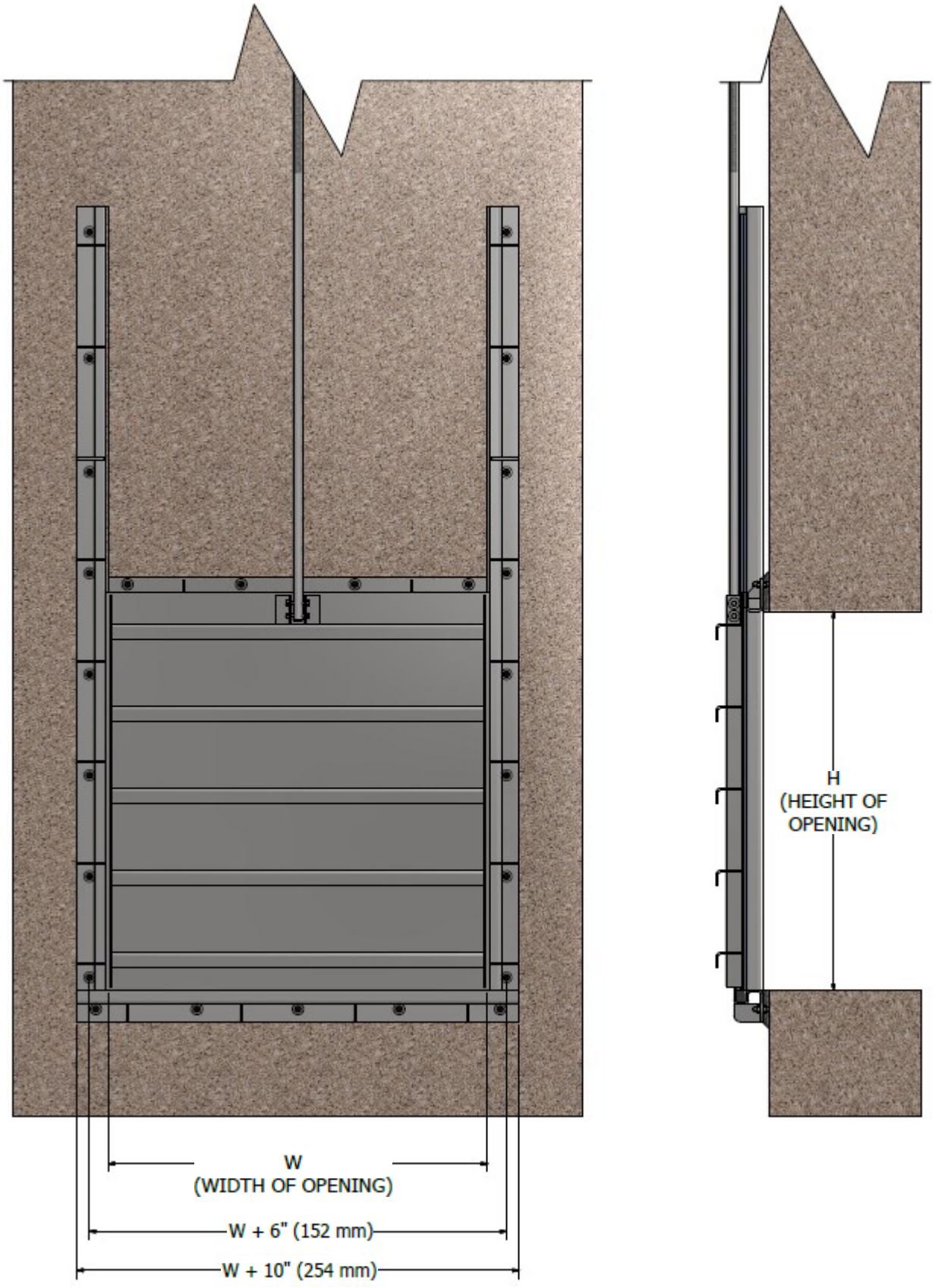
GATE ILLUSTRATED: 60" (W) x 60" (H) x 156" (V)
SEE ACTUATORS SECTION FOR OTHER ARRANGEMENTS

Model 924 Features

°UHMW SEAT/SEALS
°LEAKAGE 1/2 OF AWWA C-561
°WALL MOUNTED SIDE FRAMES
°FULL APERTURE SEALING
°YOKE MOUNTED ACTUATORS
°RESILIENT INVERT SEAL (FLUSH BOTTOM CLOSURE)



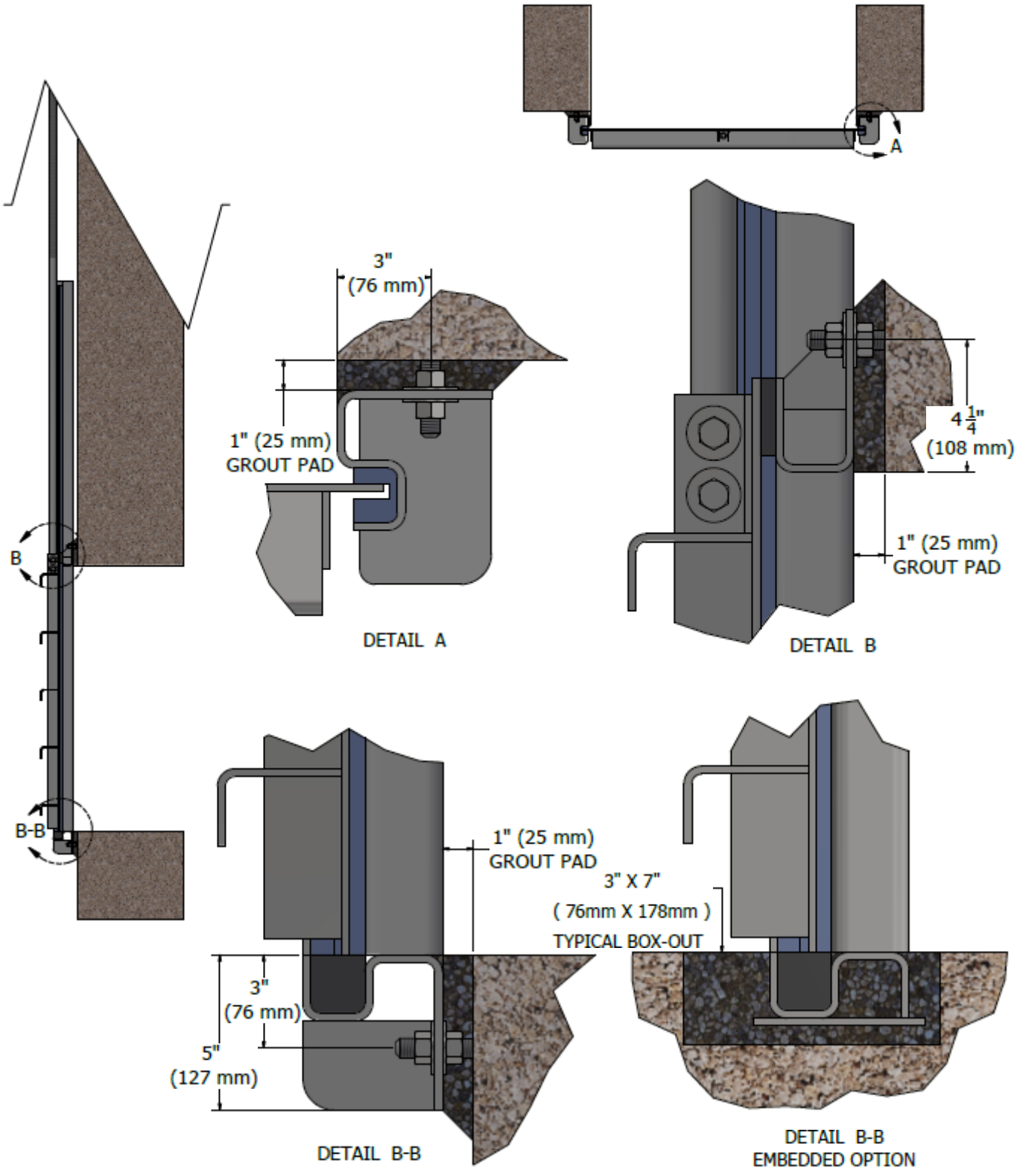
Model 925 Sluice Gate



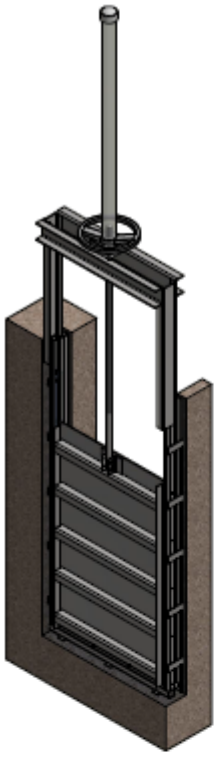
GATE ILLUSTRATED: 60" (W) x 60" (H)
SEE ACTUATORS SECTION FOR OTHER ARRANGEMENTS

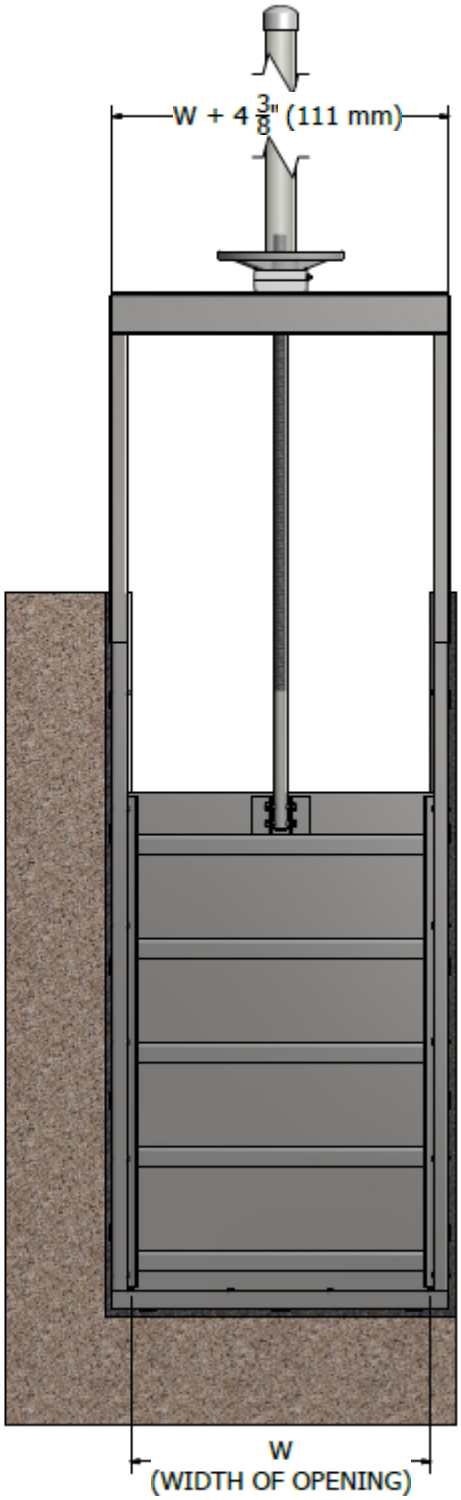
Model 925 Features

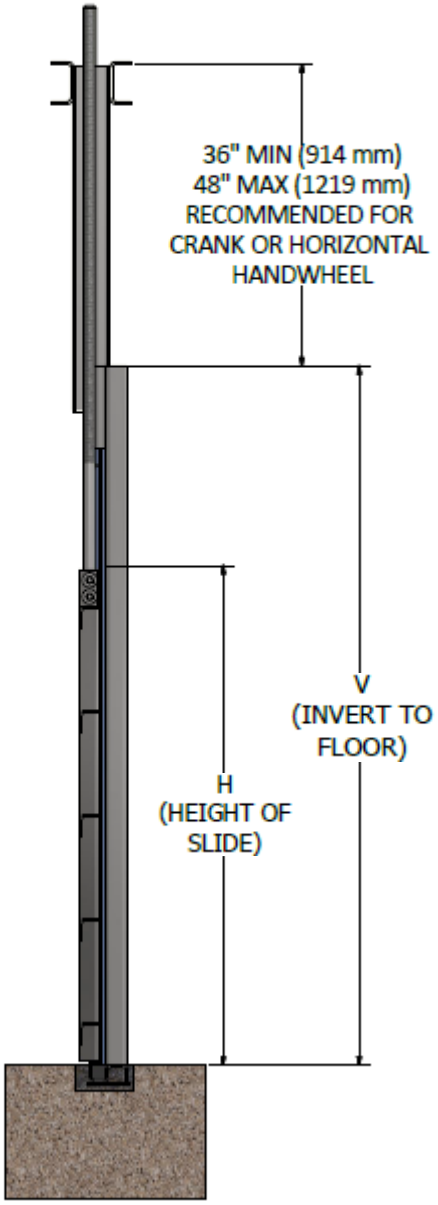
°UHMW SEAT/SEALS
°LEAKAGE 1/2 OF AWWA C-561
°WALL MOUNTED SIDE FRAMES
°FULL APERTURE SEALING
°PEDESTAL, WALL BRACKET OR FLOOR BOX MOUNTED ACTUATOR
°RESILIENT INVERT SEAL (FLUSH BOTTOM CLOSURE)



Model 931 Slide Gate



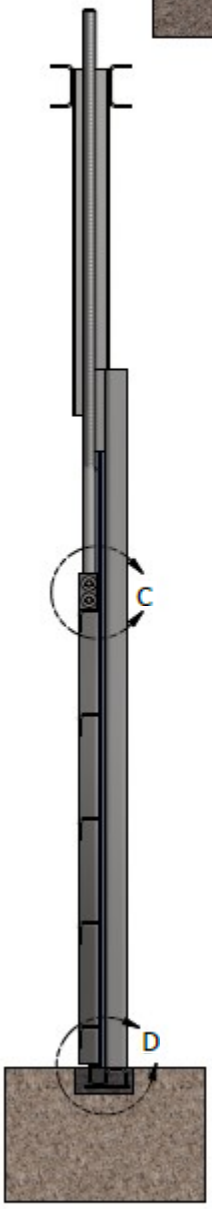


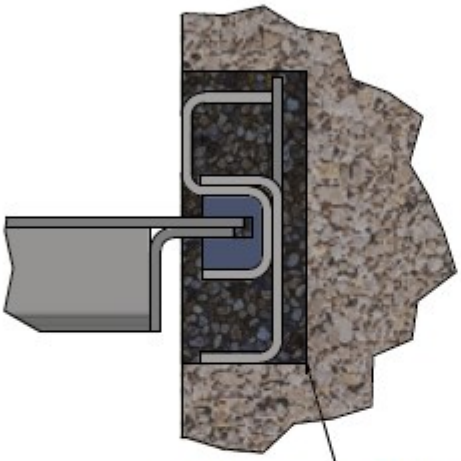


GATE ILLUSTRATED: 36" (W) x 96" (H) x 84" (V)
SEE ACTUATORS SECTION FOR OTHER ARRANGEMENTS

Model 931 Features

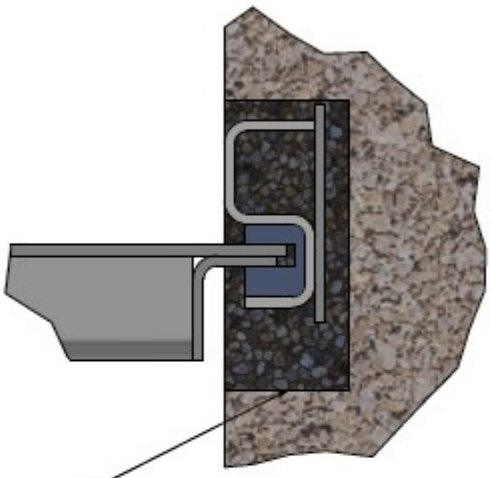
- UHMW SEAT/SEALS
- LEAKAGE 1/2 OF AWWA C-561
- EMBEDDED FRAMES
- OPEN CHANNEL - NO TOP SEAL
- YOKE MOUNTED ACTUATOR
- RESILIENT INVERT SEAL (FLUSH BOTTOM CLOSURE)



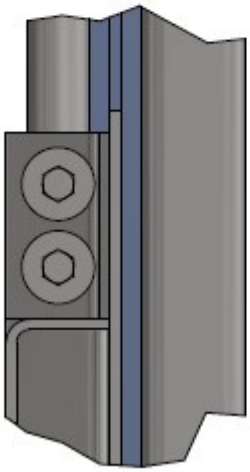


DETAIL A

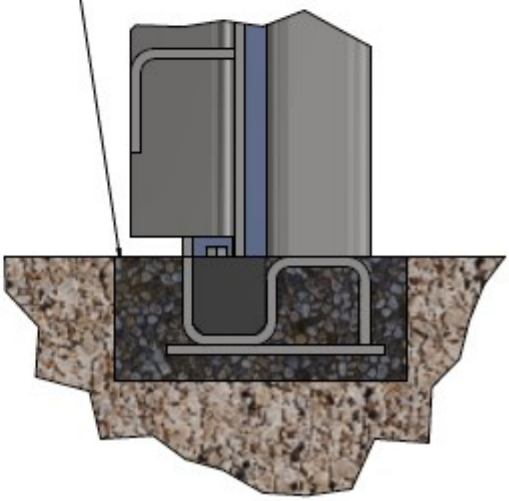
3" X 7"
(76mm X 178mm)
TYPICAL BOX-OUT



DETAIL B

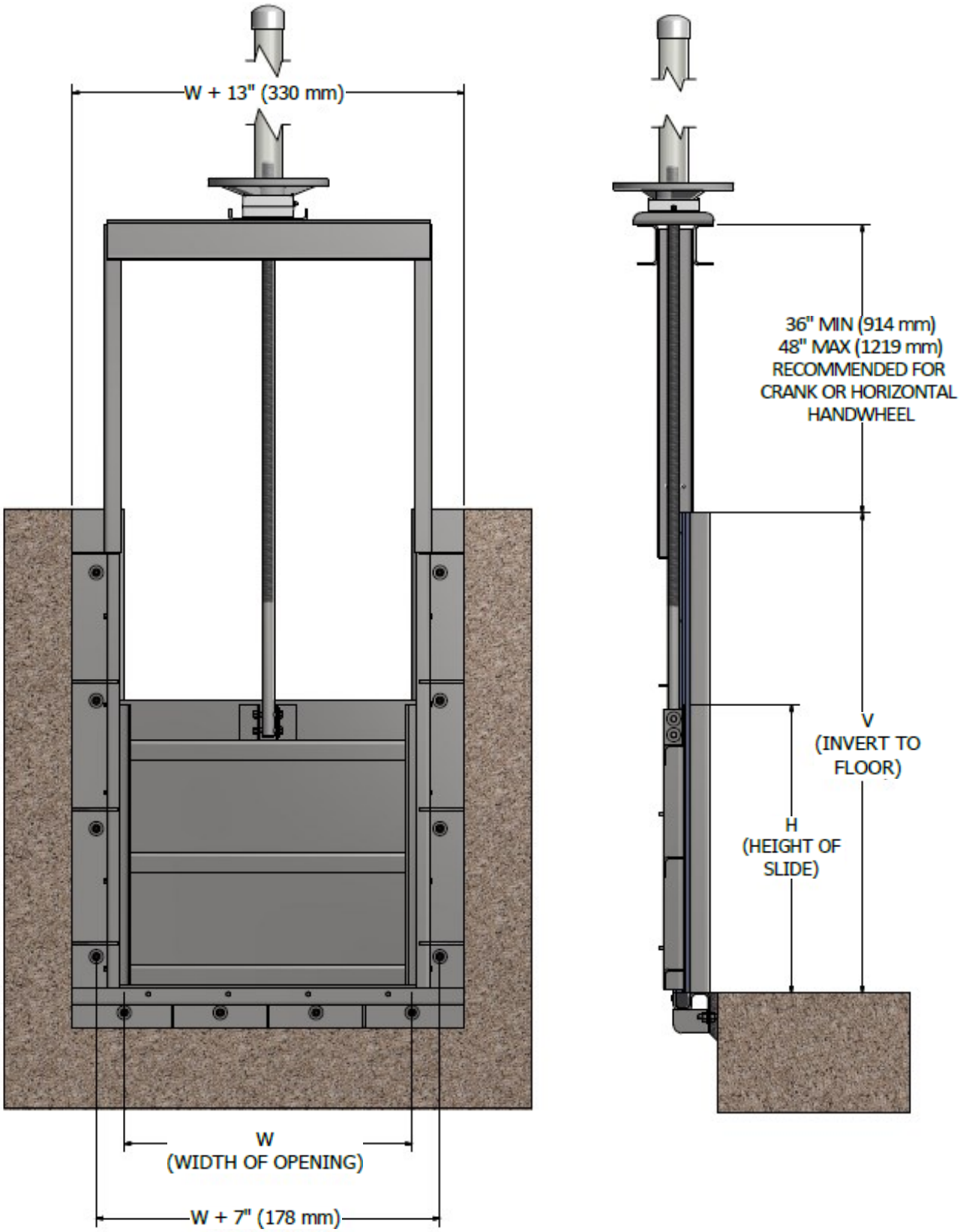


DETAIL C



DETAIL D

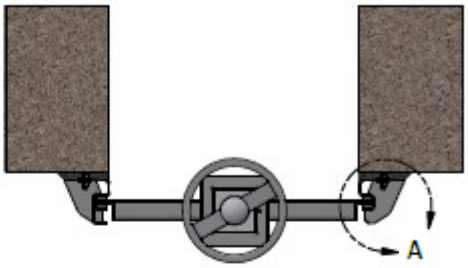
Model 933 Slide Gate

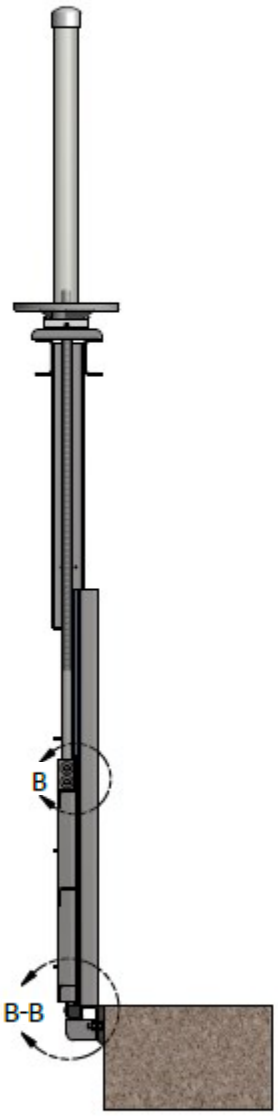


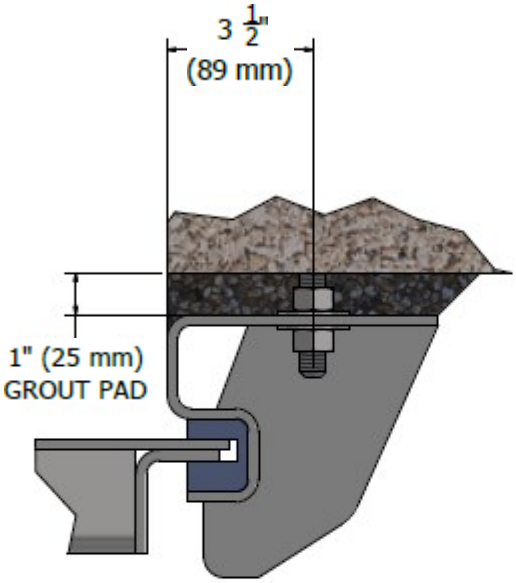
GATE ILLUSTRATED: 36" (W) x 36" (H) x 60" (V)
SEE ACTUATORS SECTION FOR OTHER ARRANGEMENTS

Model 933 Features

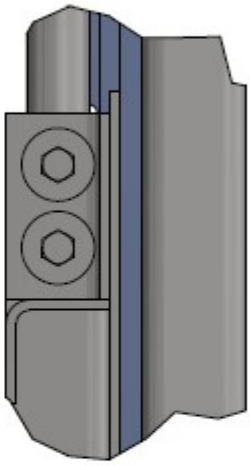
- UHMW SEAT/SEALS
- LEAKAGE 1/2 OF AWWA C-561
- WALL MOUNTED SIDE FRAMES
- OPEN CHANNEL - NO TOP SEAL
- YOKE MOUNTED ACTUATORS
- RESILIENT INVERT SEAL (FLUSH BOTTOM CLOSURE)



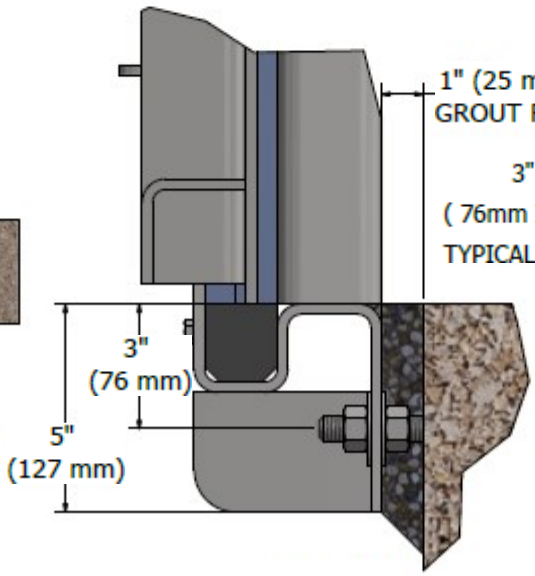




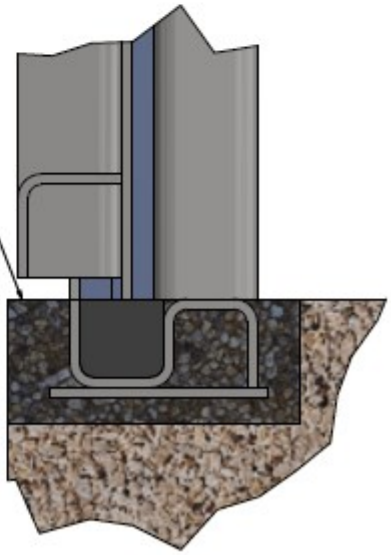
DETAIL A



DETAIL B

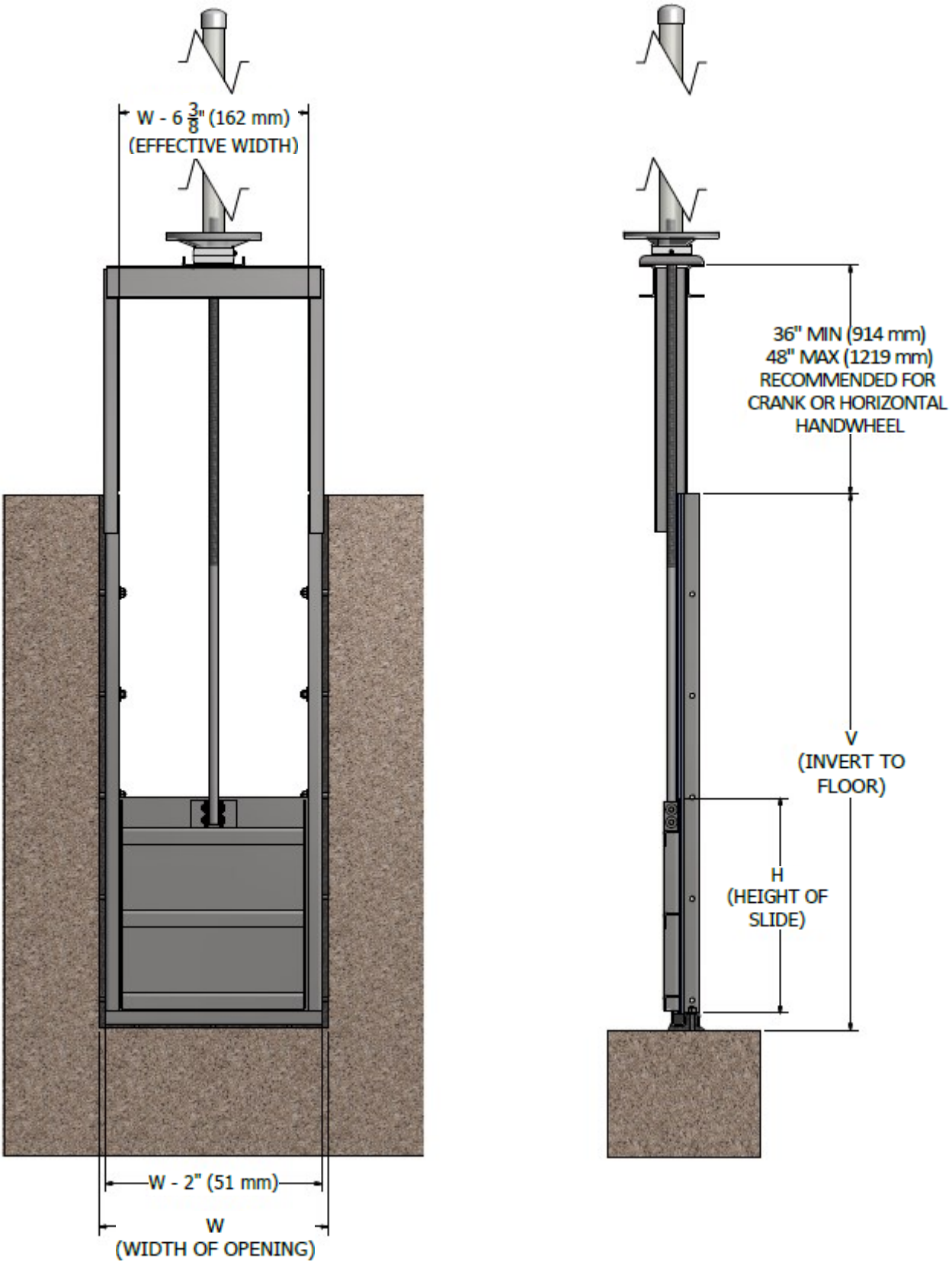


DETAIL B-B



DETAIL B-B
EMBEDDED OPTION

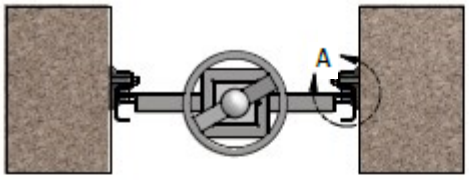
Model 933-C Slide Gate

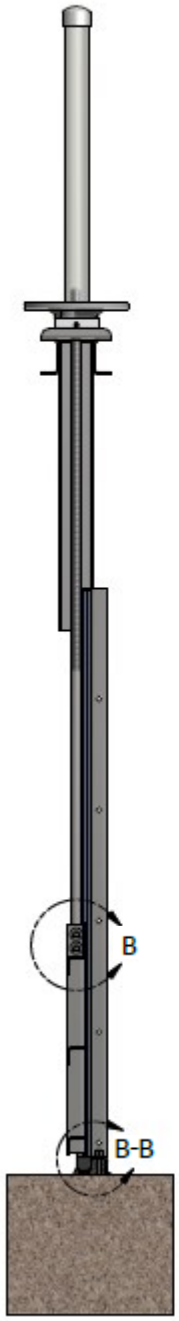


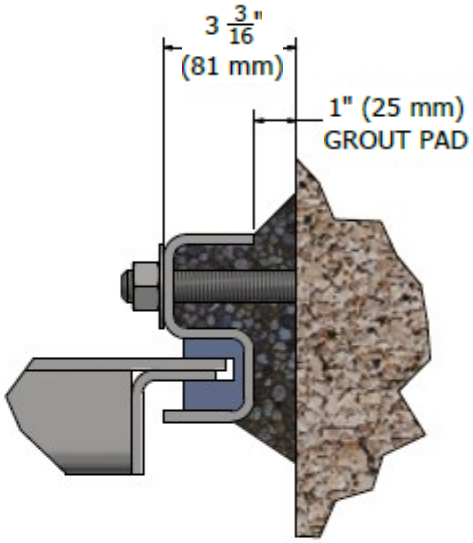
GATE ILLUSTRATED: 36" (W) x 36" (H) x 84" (V)
SEE ACTUATORS SECTION FOR OTHER ARRANGEMENTS

Model 933-C Features

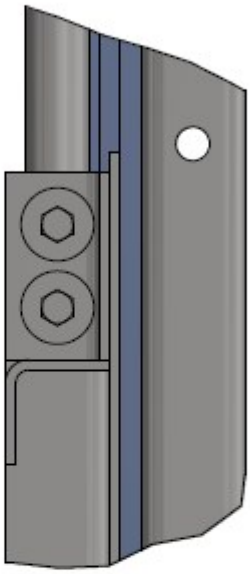
- UHMW SEAT/SEALS
- LEAKAGE 1/2 OF AWWA C-561
- FRAME MOUNTS IN EXISITING CHANNEL
- OPEN CHANNEL - NO TOP SEAL
- YOKE MOUNTED ACTUATOR



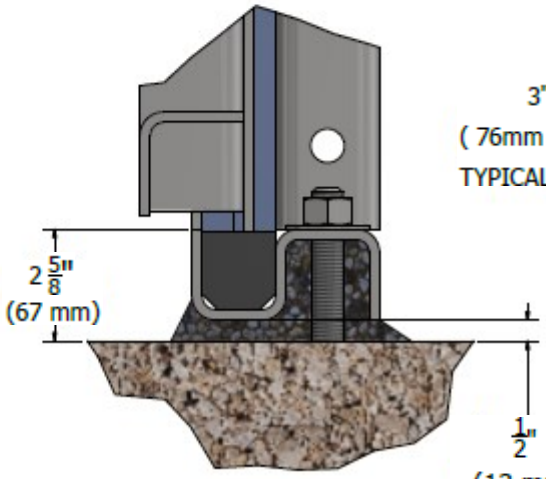




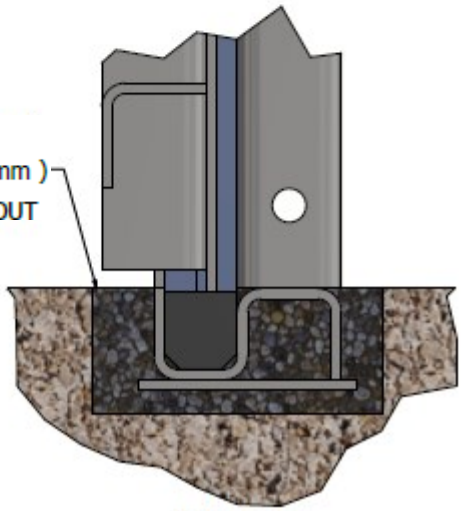
DETAIL A



DETAIL B

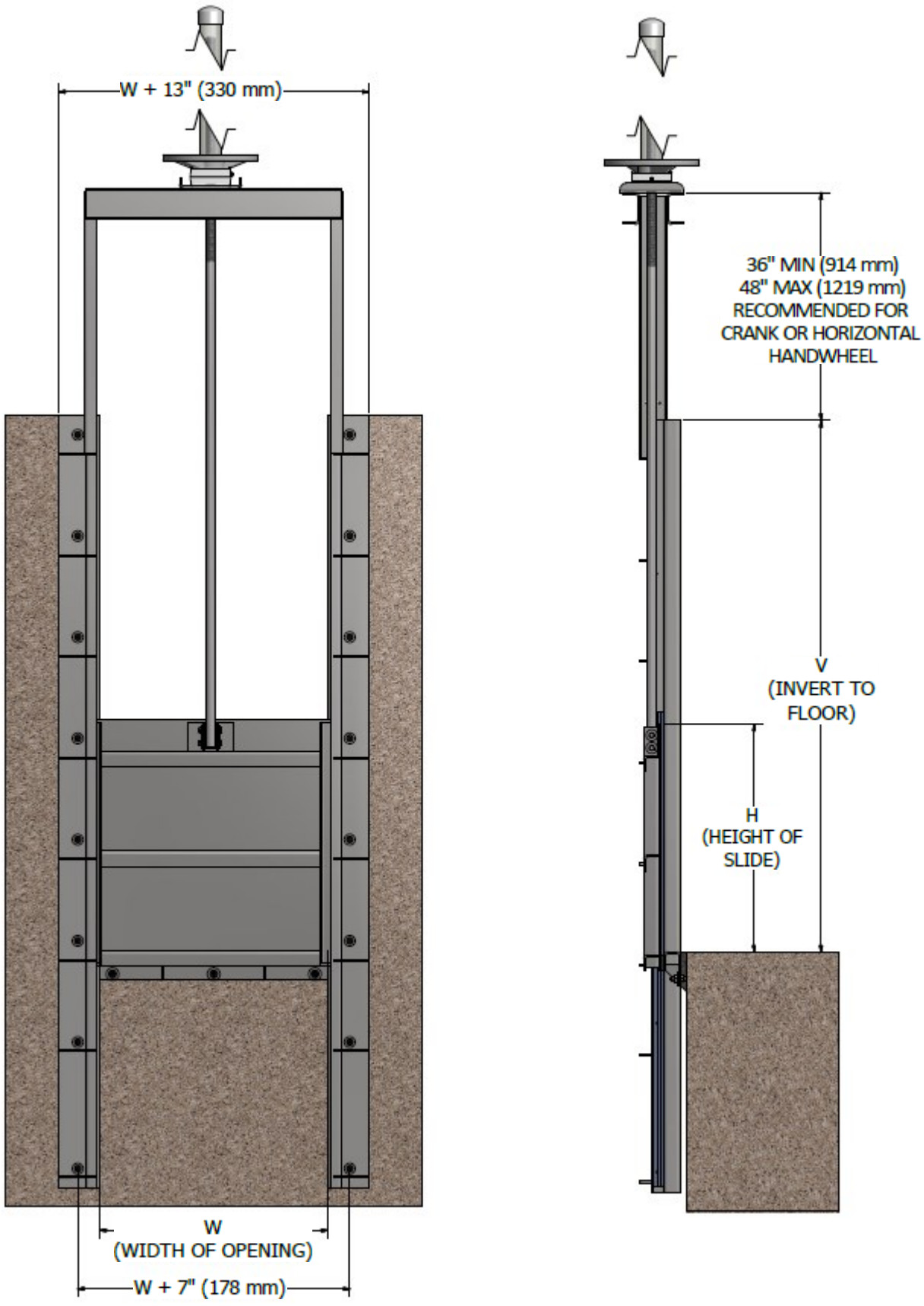


DETAIL B-B



DETAIL B-B
EMBEDDED OPTION

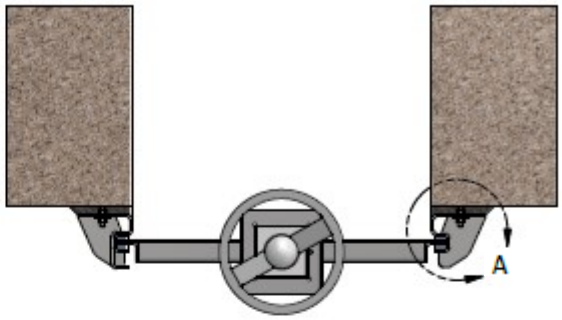
Model 933-D Slide Gate

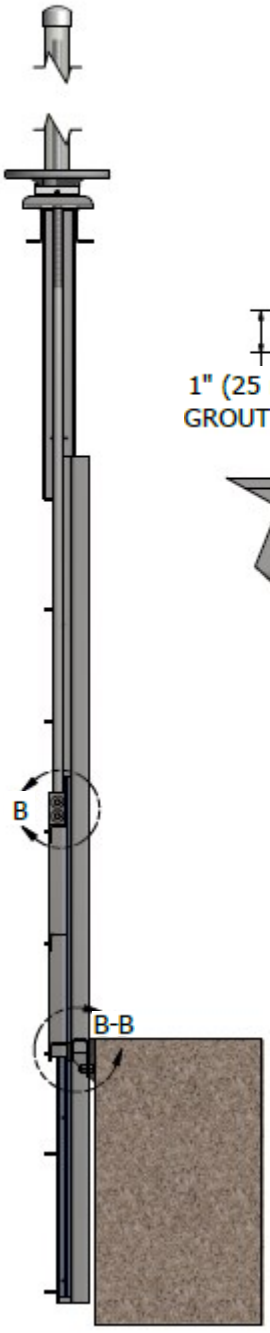


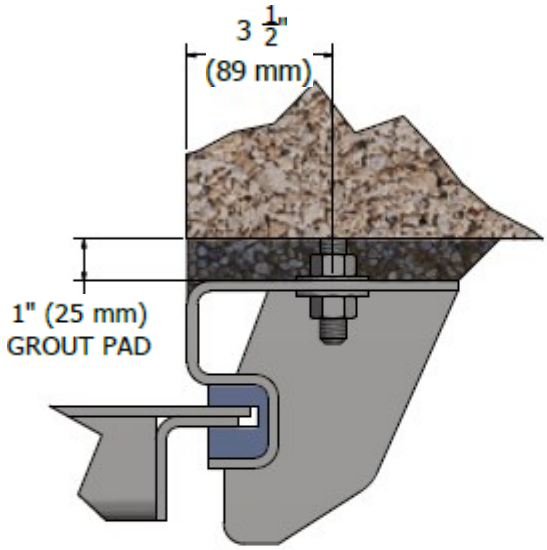
GATE ILLUSTRATED: 36" (W) x 36" (H) x 84" (V)
SEE ACTUATORS SECTION FOR OTHER ARRANGEMENTS

Model 933-D Features

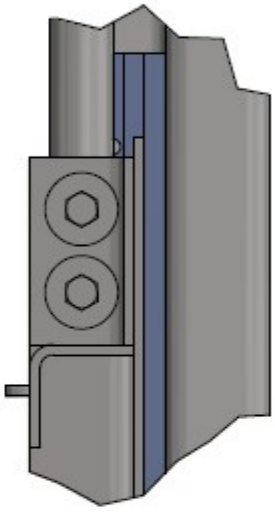
- °UHMW SEAT/SEALS
- °LEAKAGE 1/2 OF AWWA C-561
- °WALL MOUNTED SIDE FRAMES
- °DOWNWARD OPENING
- °OPEN CHANNEL - OPTIONAL TOP SEAL
- °YOKE MOUNTED INTERCONNECTED ACTUATORS



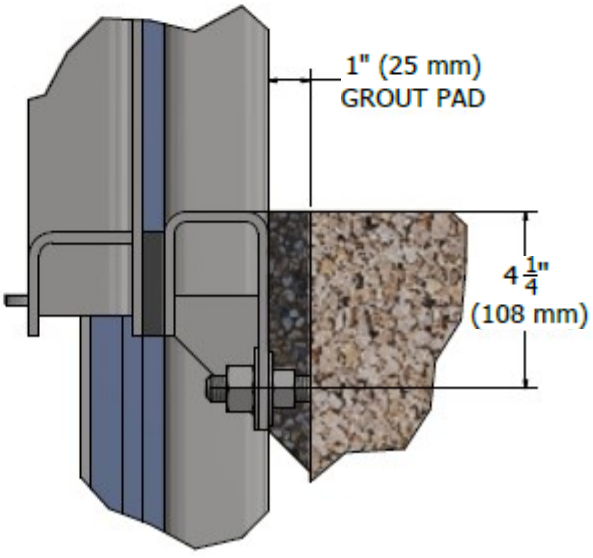




DETAIL A

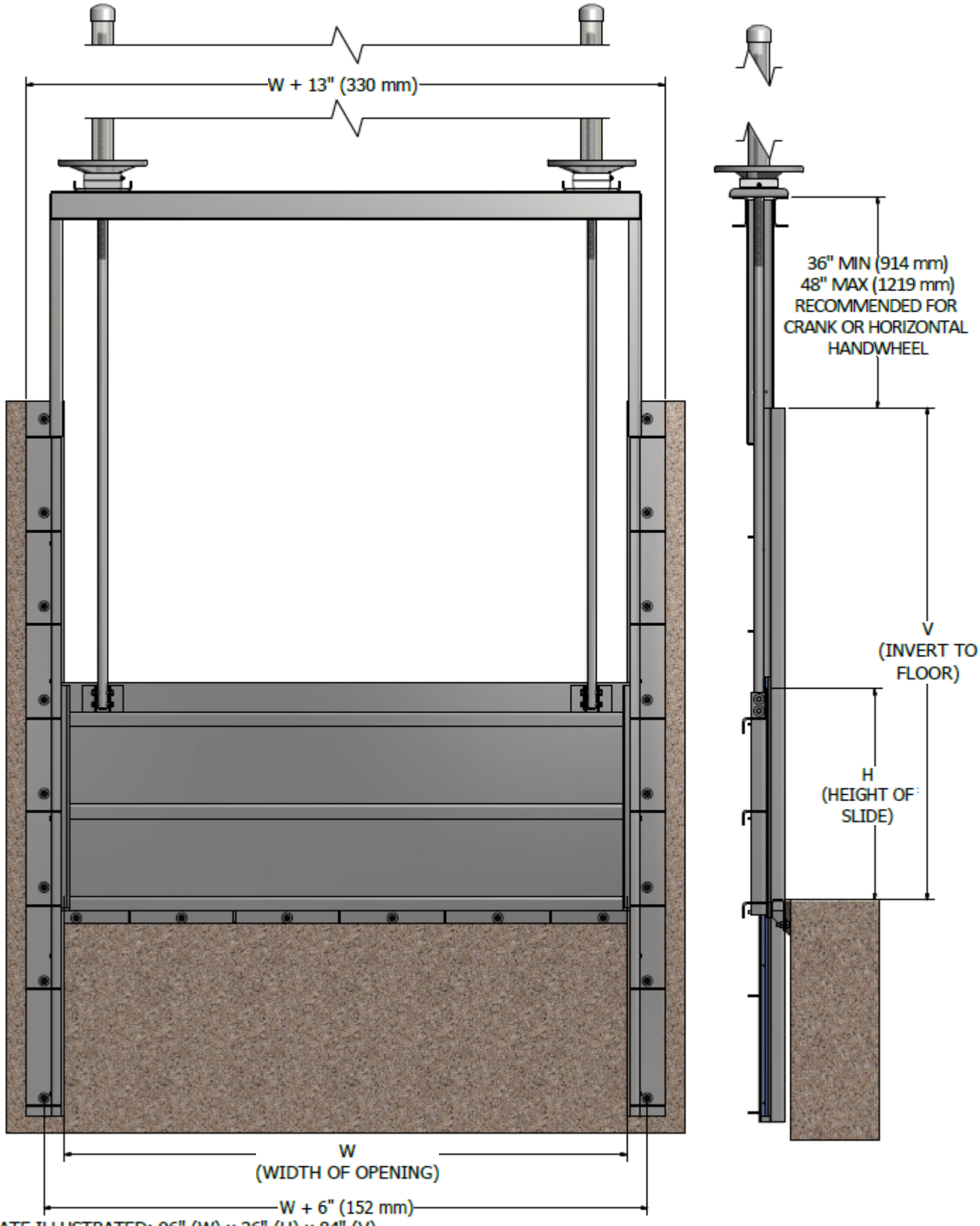


DETAIL B



DETAIL B-B

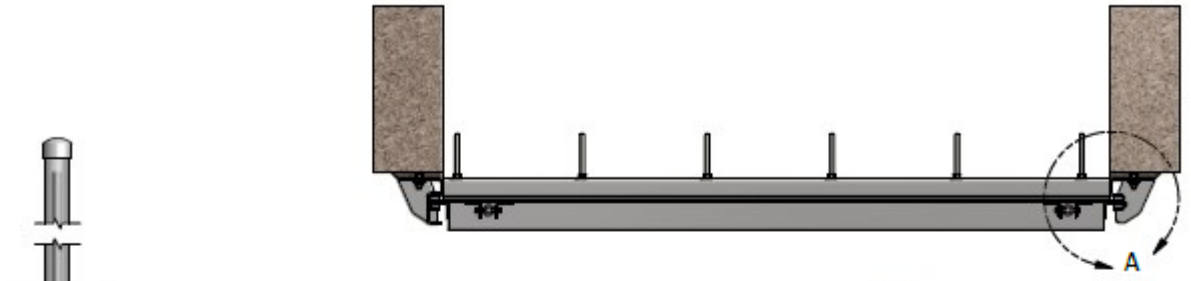
Model 933-D-I Slide Gate

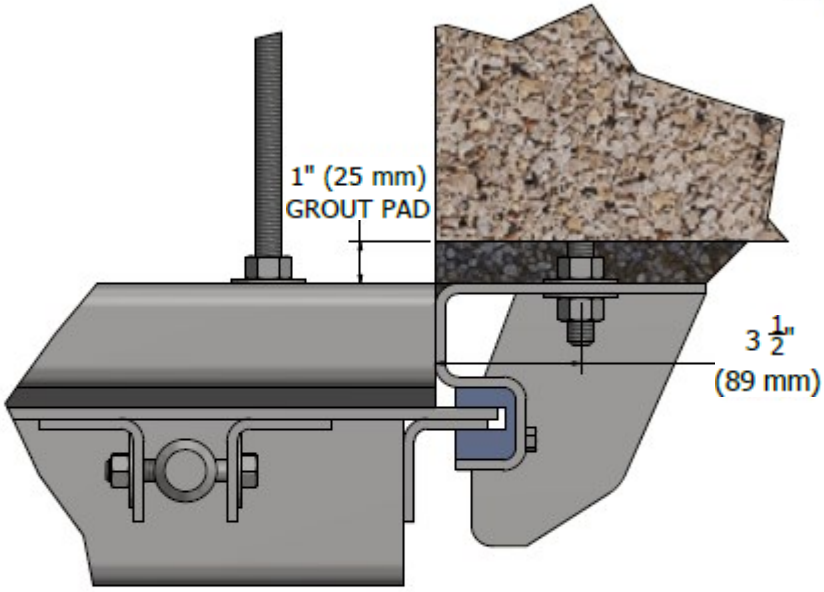


GATE ILLUSTRATED: 96" (W) x 36" (H) x 84" (V)
SEE ACTUATORS SECTION FOR OTHER ARRANGEMENTS

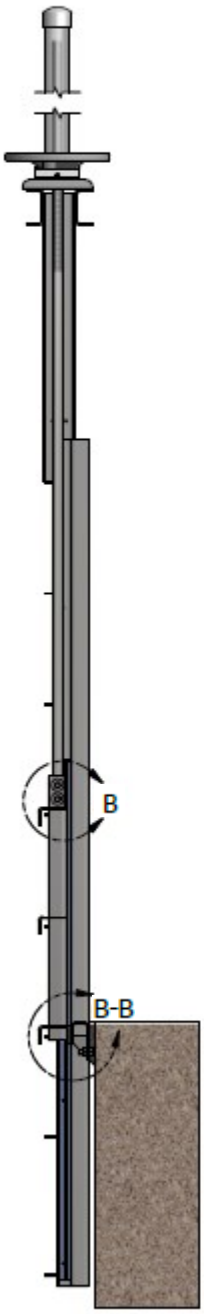
Model 933-D-I Features

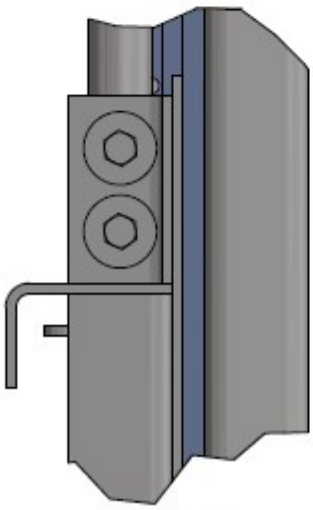
°UHMW SEAT/SEALS
°LEAKAGE 1/2 OF AWWA C-561
°WALL MOUNTED SIDE FRAMES
°DOWNWARD OPENING
°OPEN CHANNEL - OPTIONAL TOP SEAL
°YOKE MOUNTED INTERCONNECTED ACTUATORS



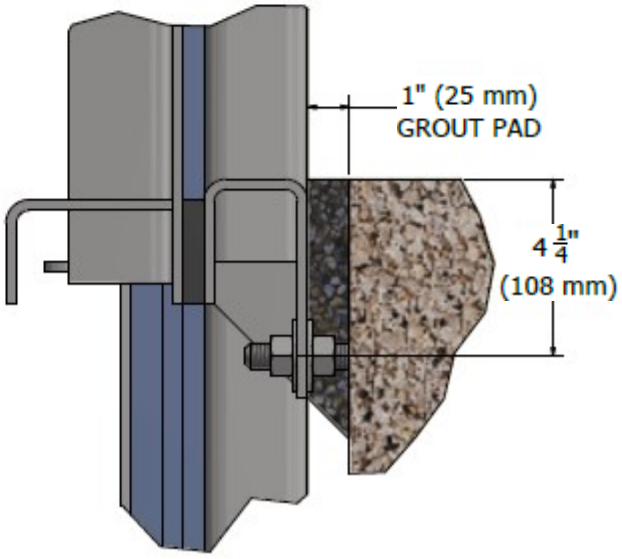


DETAIL A



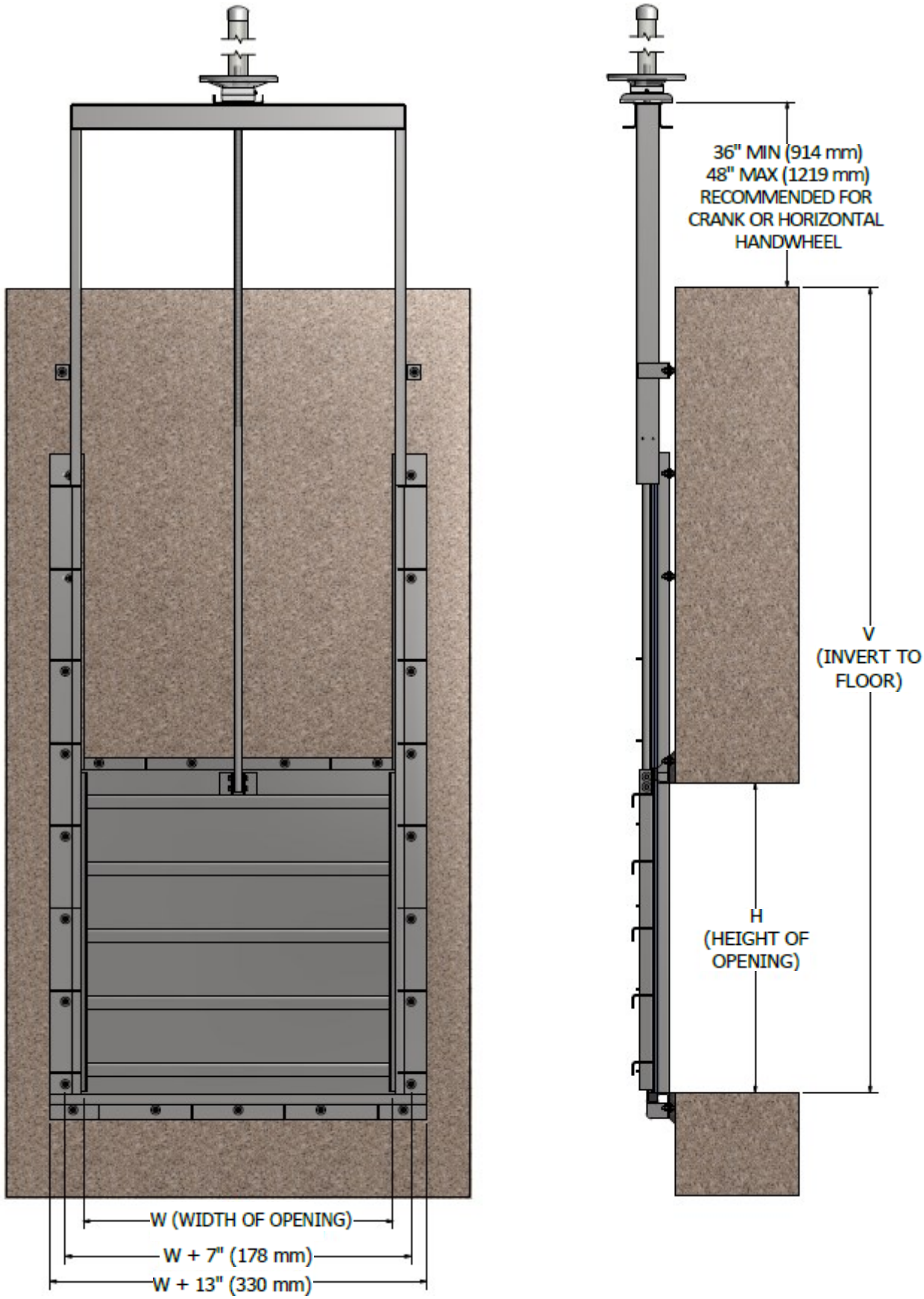


DETAIL B



DETAIL B-B

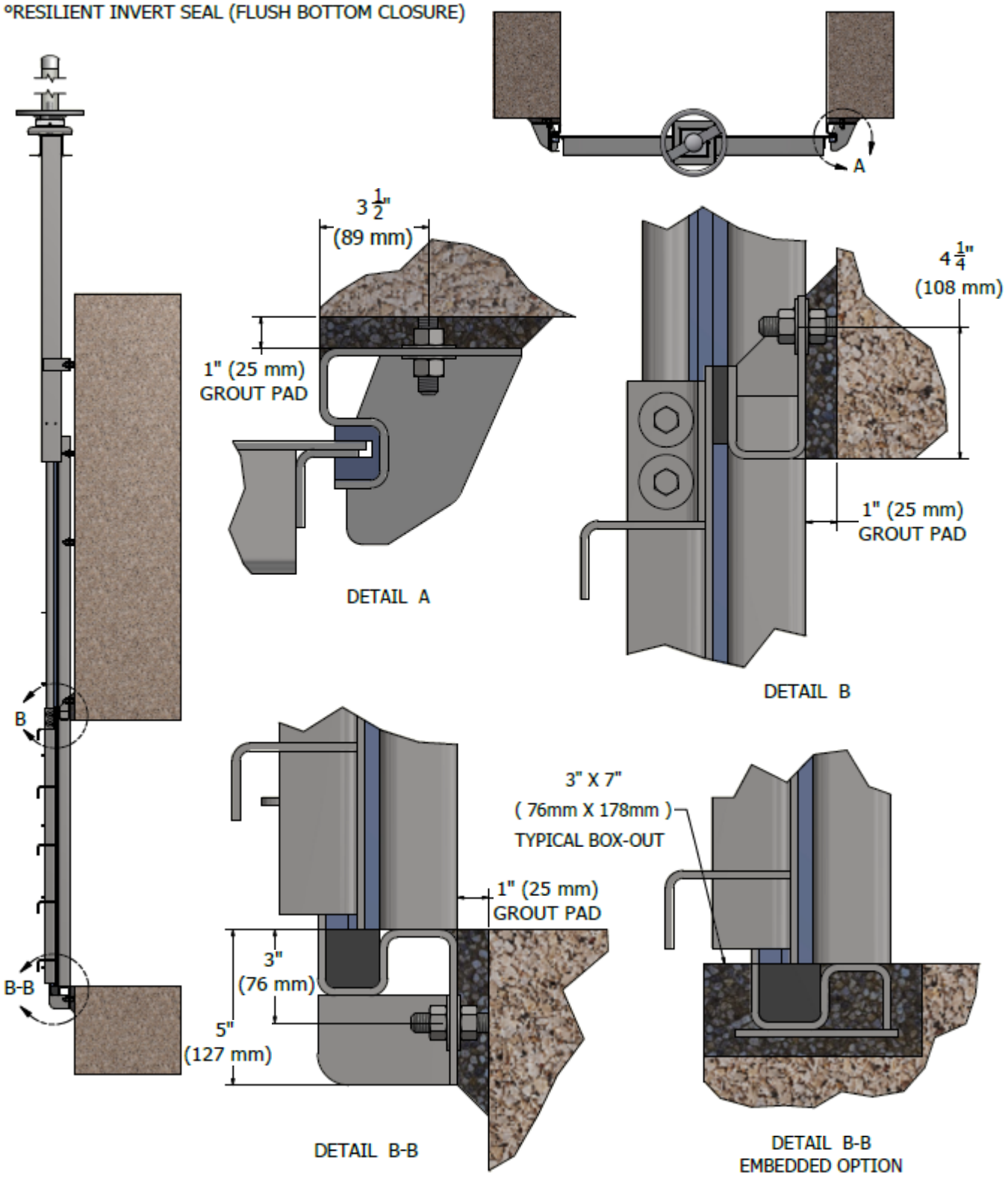
Model 934 Sluice Gate



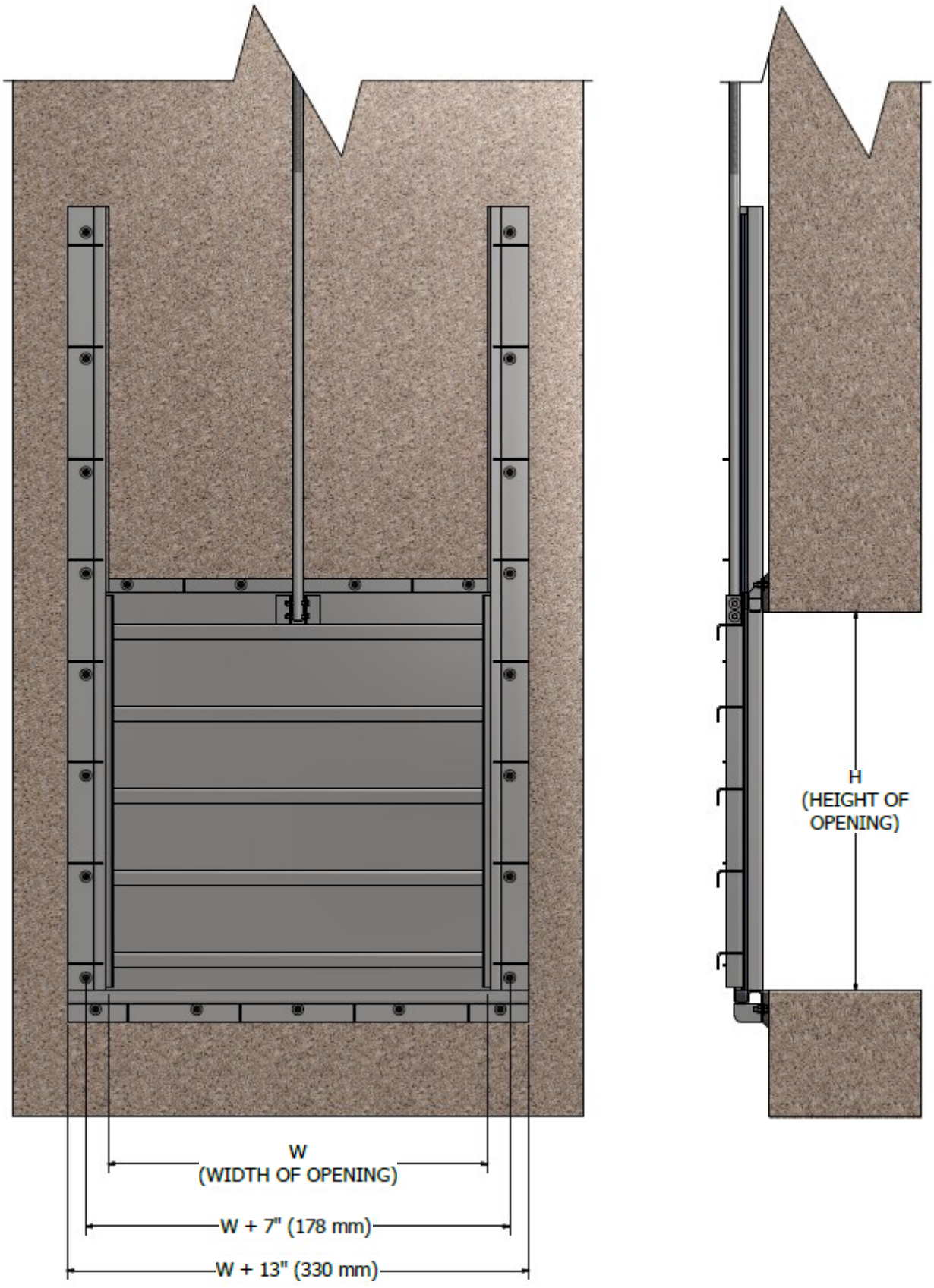
GATE ILLUSTRATED: 60" (W) x 60" (H) x 156" (V)
SEE ACTUATORS SECTION FOR OTHER ARRANGEMENTS

Model 934 Features

- °UHMW SEAT/SEALS
- °LEAKAGE 1/2 OF AWWA C-561
- °WALL MOUNTED SIDE FRAMES
- °FULL APERTURE SEALING
- °YOKE MOUNTED ACTUATORS
- °RESILIENT INVERT SEAL (FLUSH BOTTOM CLOSURE)



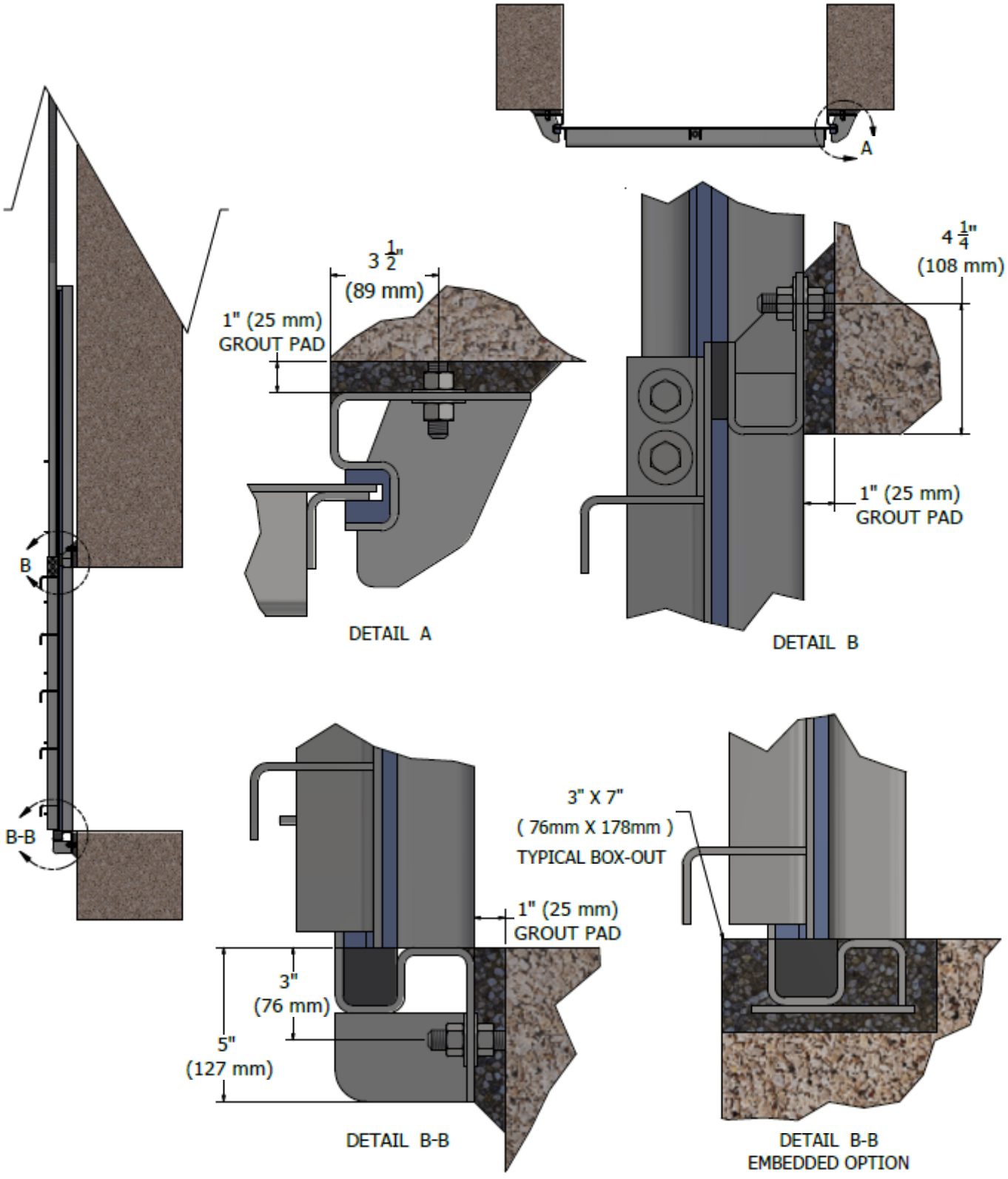
Model 935 Sluice Gate



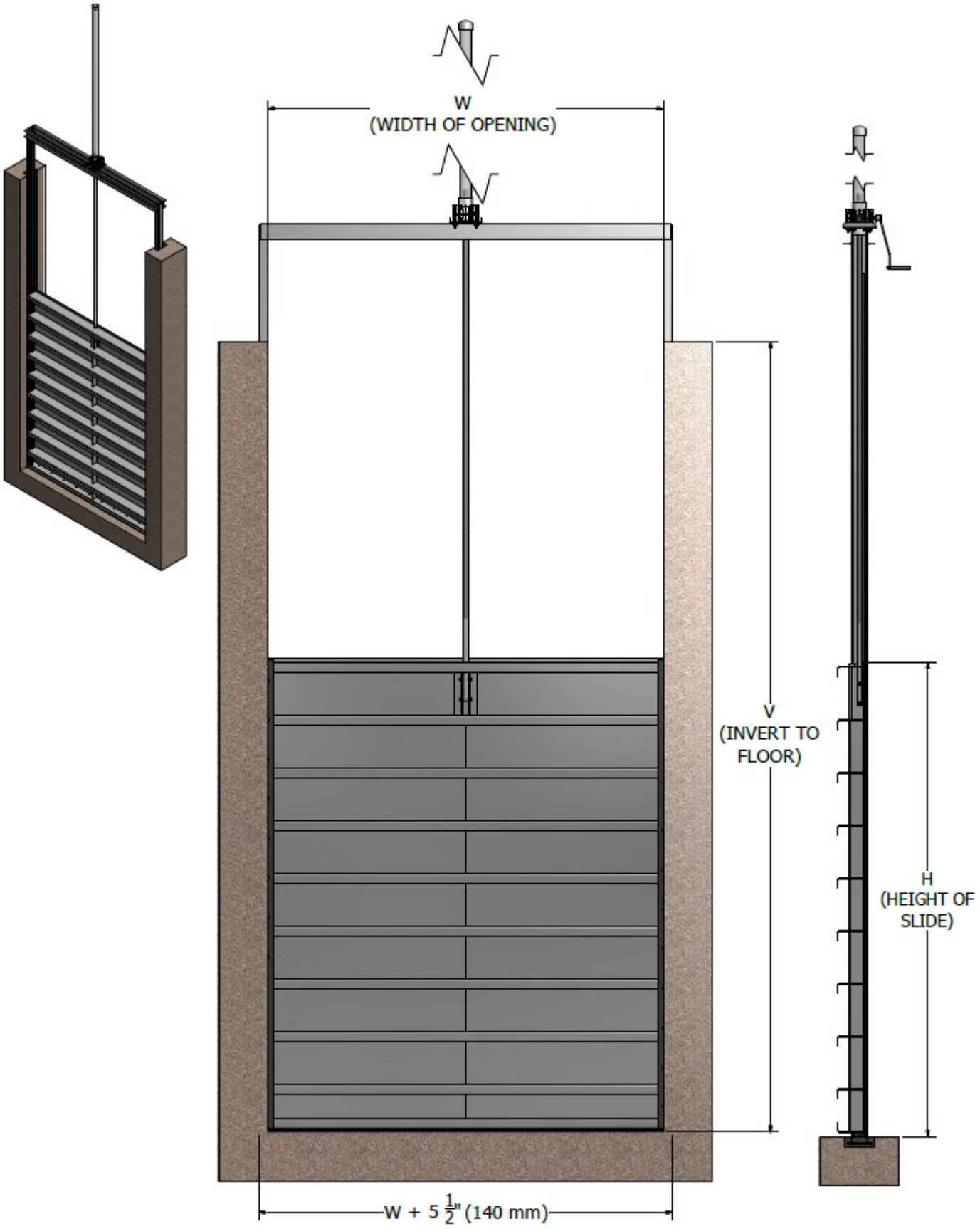
GATE ILLUSTRATED: 60" (W) x 60" (H)
SEE ACTUATORS SECTION FOR OTHER ARRANGEMENTS

Model 935 Features

- °UHMW SEAT/SEALS
- °LEAKAGE 1/2 OF AWWA C-561
- °WALL MOUNTED SIDE FRAMES
- °FULL APERTURE SEALING
- °PEDESTAL, WALL BRACKET OR FLOOR BOX MOUNTED ACTUATOR
- °RESILIENT INVERT SEAL (FLUSH BOTTOM CLOSURE)



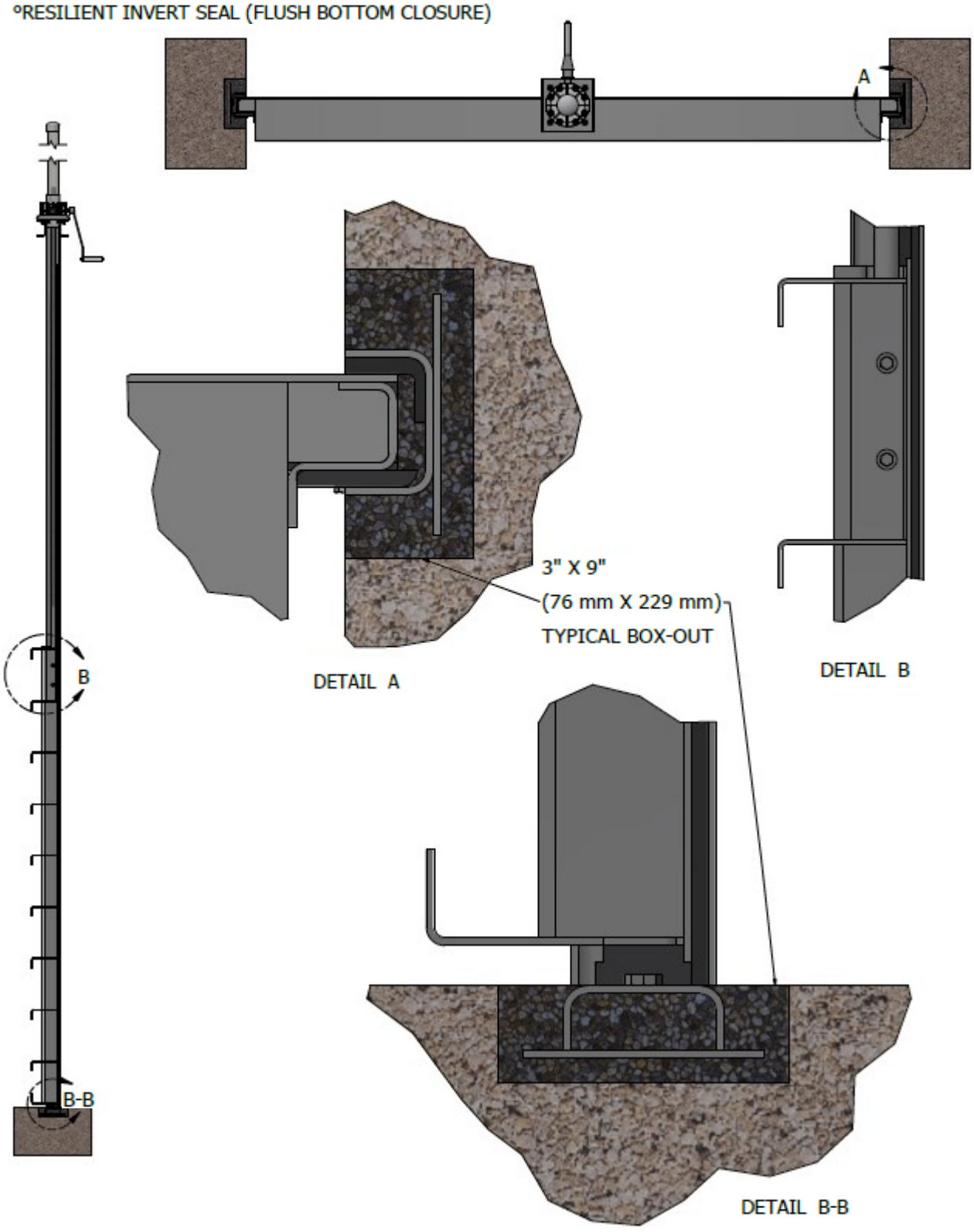
Model 951 Slide Gate



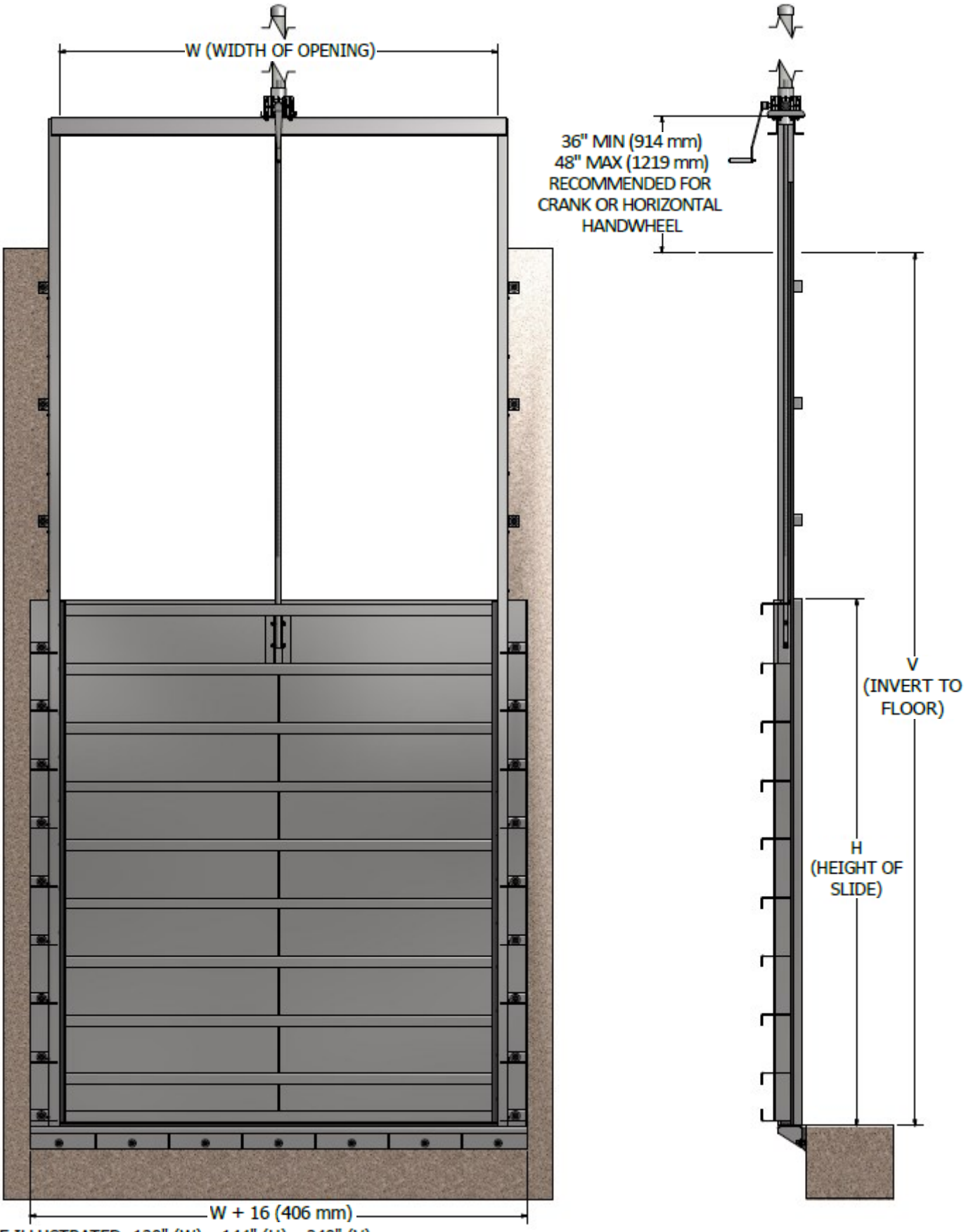
GATE ILLUSTRATED: 120" (W) x 144" (H) x 240" (V)
SEE ACTUATORS SECTION FOR OTHER ARRANGEMENTS

Model 951 Features

- UHMW SEAT/SEALS
- LEAKAGE 1/2 OF AWWA C-561
- EMBEDDED FRAMES
- OPEN CHANNEL - NO TOP SEAL
- YOKE MOUNTED ACTUATOR
- RESILIENT INVERT SEAL (FLUSH BOTTOM CLOSURE)



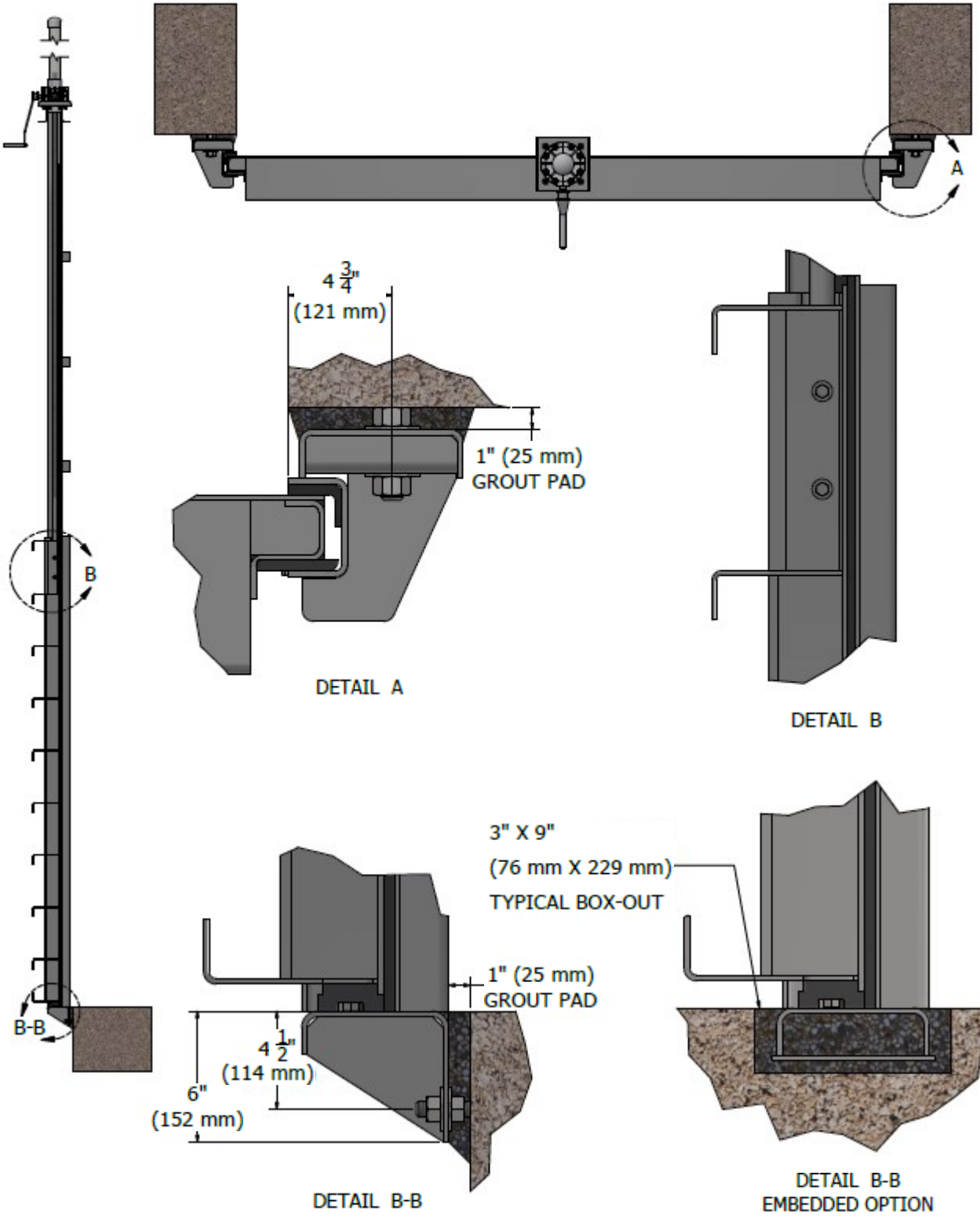
Model 953 Slide Gate



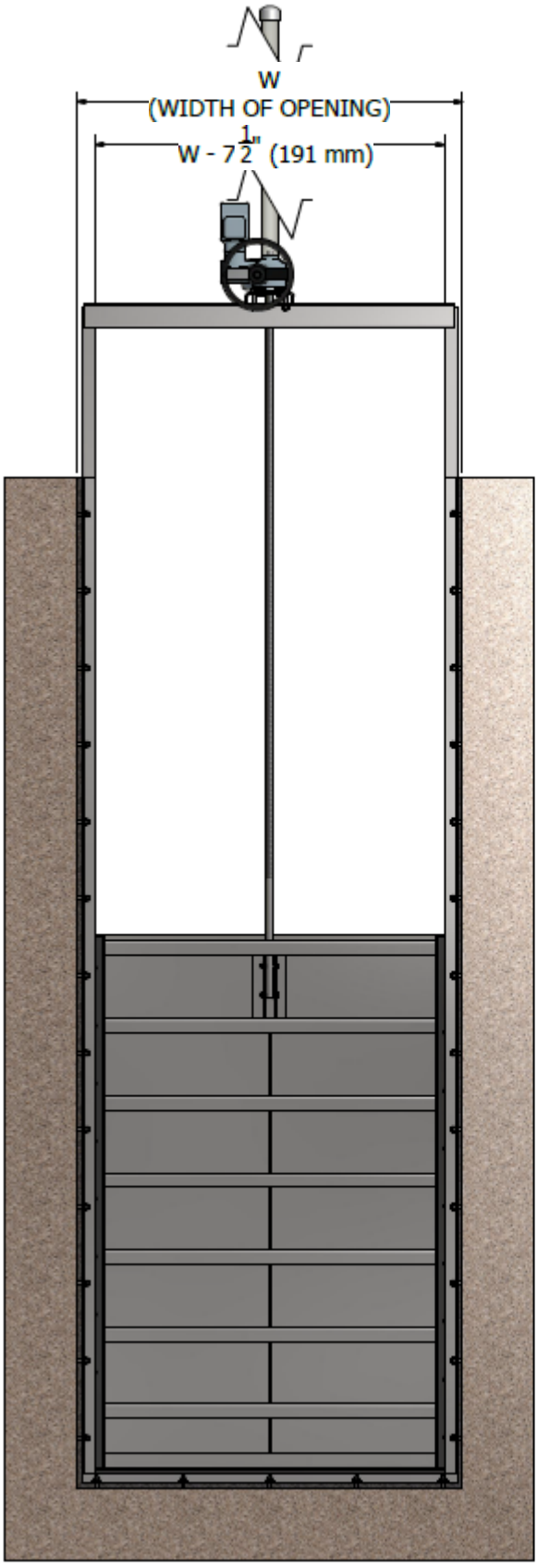
GATE ILLUSTRATED: 120" (W) x 144" (H) x 240" (V)
SEE ACTUATORS SECTION FOR OTHER ARRANGEMENTS

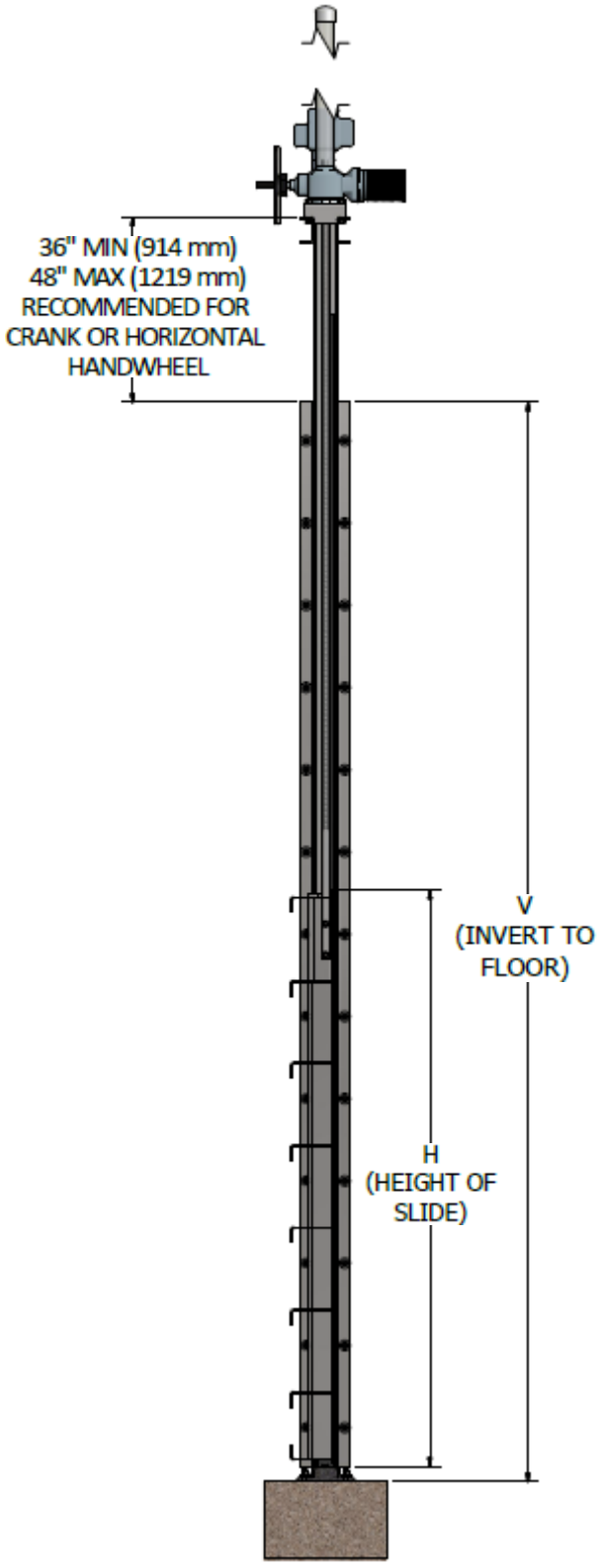
Model 953 Features

- UHMW SEAT/SEALS
- LEAKAGE 1/2 OF AWWA C-561
- WALL MOUNTED SIDE FRAMES
- OPEN CHANNEL - NO TOP SEAL
- YOKE MOUNTED ACTUATORS
- RESILIENT INVERT SEAL (FLUSH BOTTOM CLOSURE)



Model 953-C Slide Gate

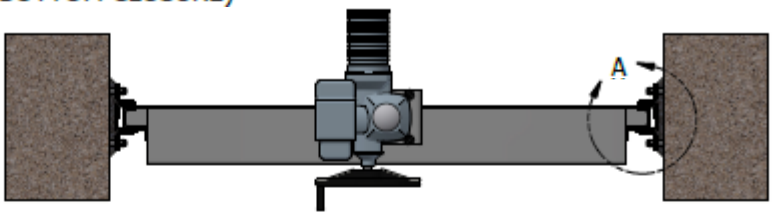


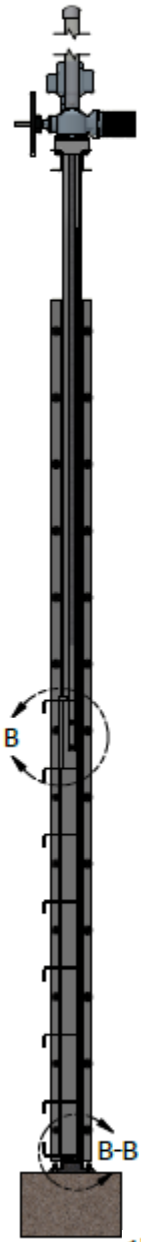


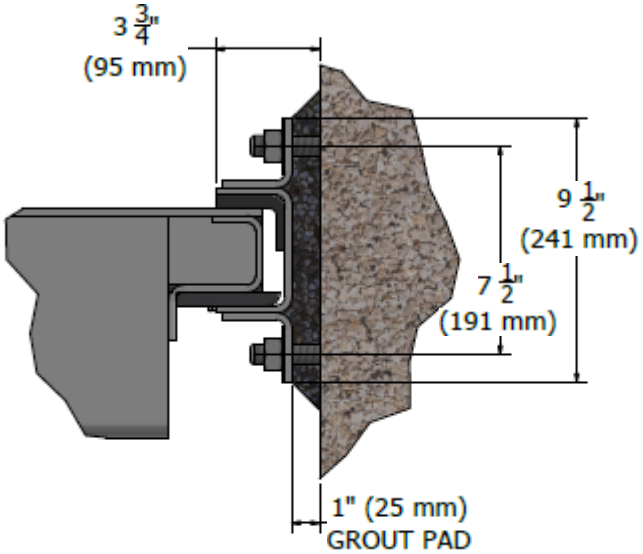
GATE ILLUSTRATED: 80" (W) x 112" (H) x 210" (V)
SEE ACTUATORS SECTION FOR OTHER ARRANGEMENTS

Model 953-C Features

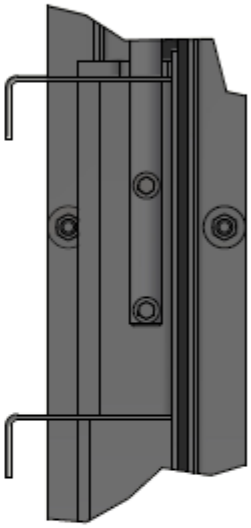
- UHMW SEAT/SEALS
- LEAKAGE 1/2 OF AWWA C-561
- WALL MOUNTED SIDE FRAMES
- OPEN CHANNEL - NO TOP SEAL
- YOKE MOUNTED ACTUATORS
- RESILIENT INVERT SEAL (FLUSH BOTTOM CLOSURE)



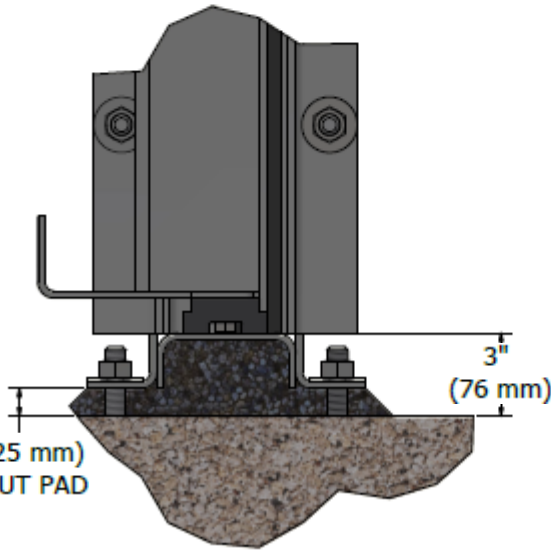




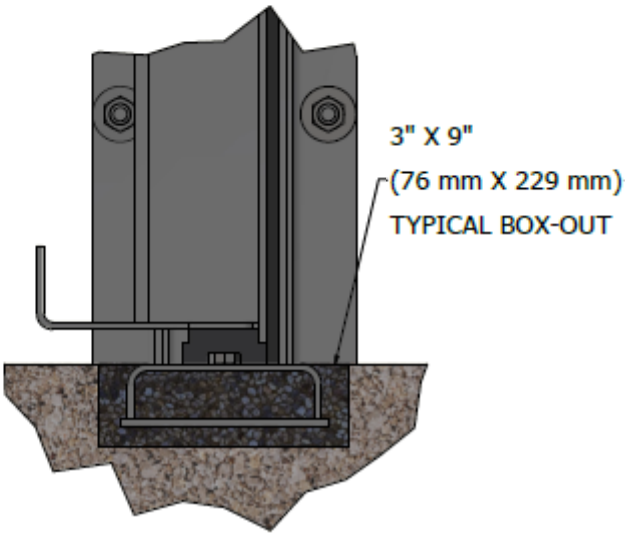
DETAIL A



DETAIL B

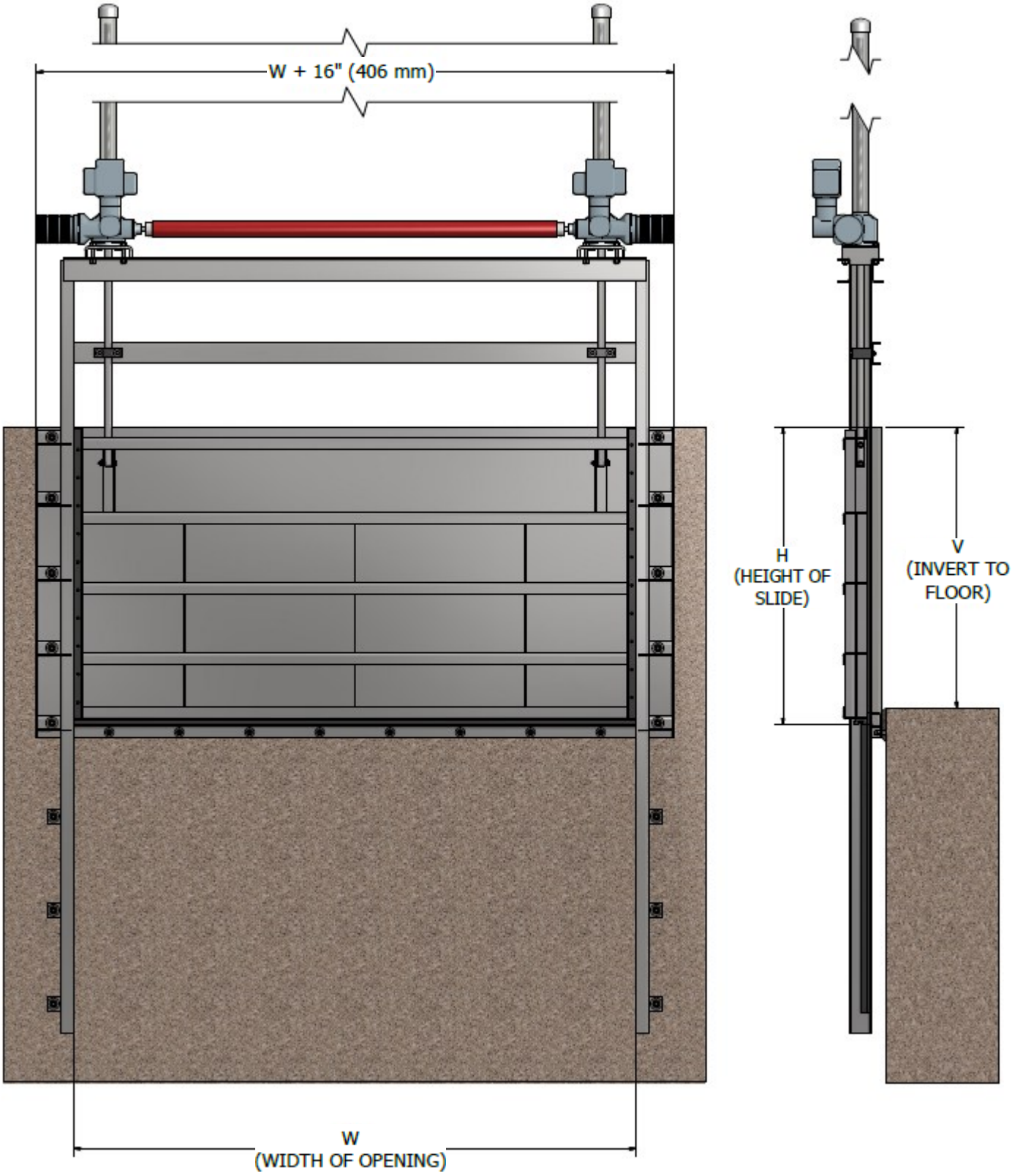


DETAIL B



DETAIL B-B
EMBEDDED OPTION

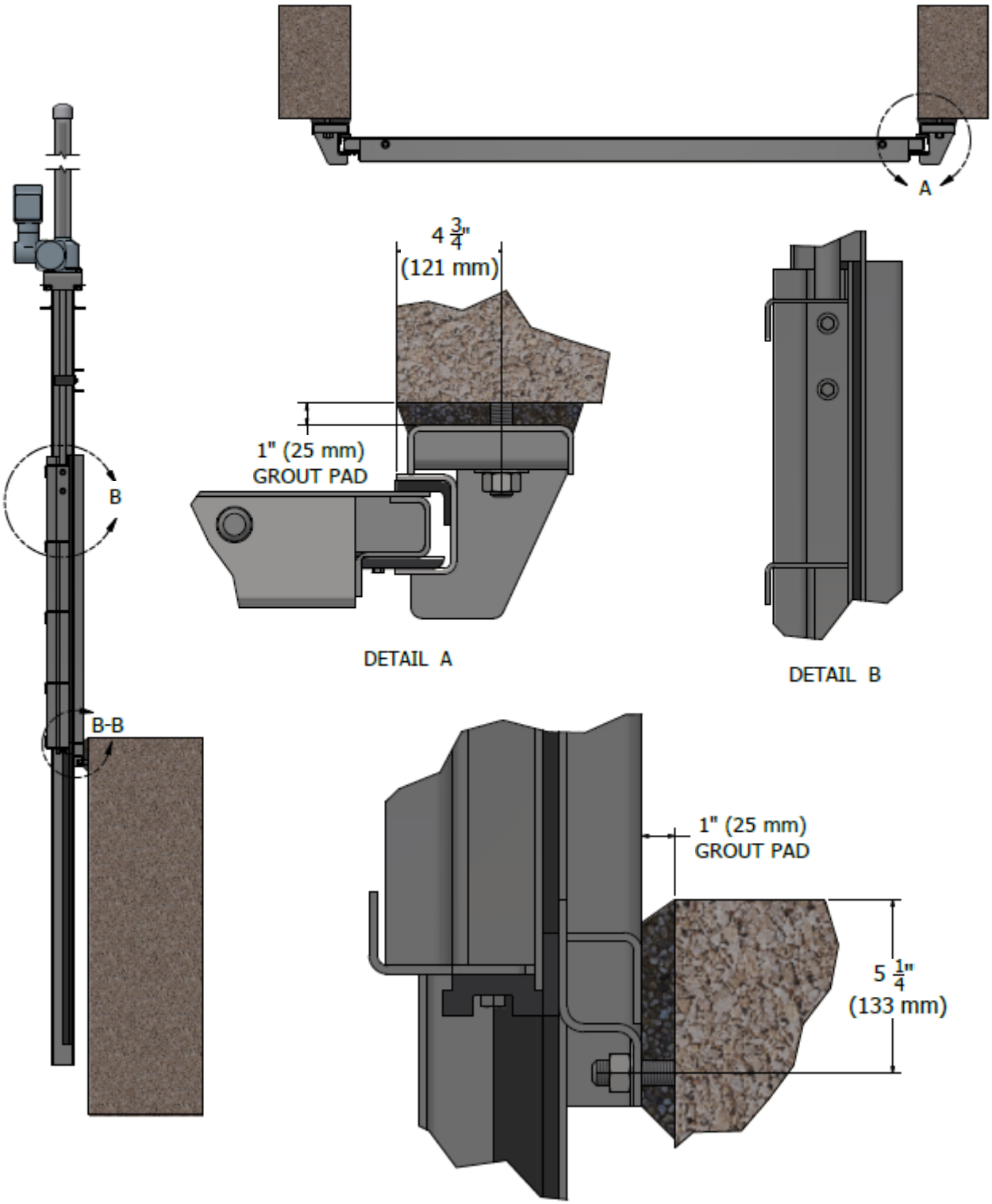
Model 953-D-I Slide Gate



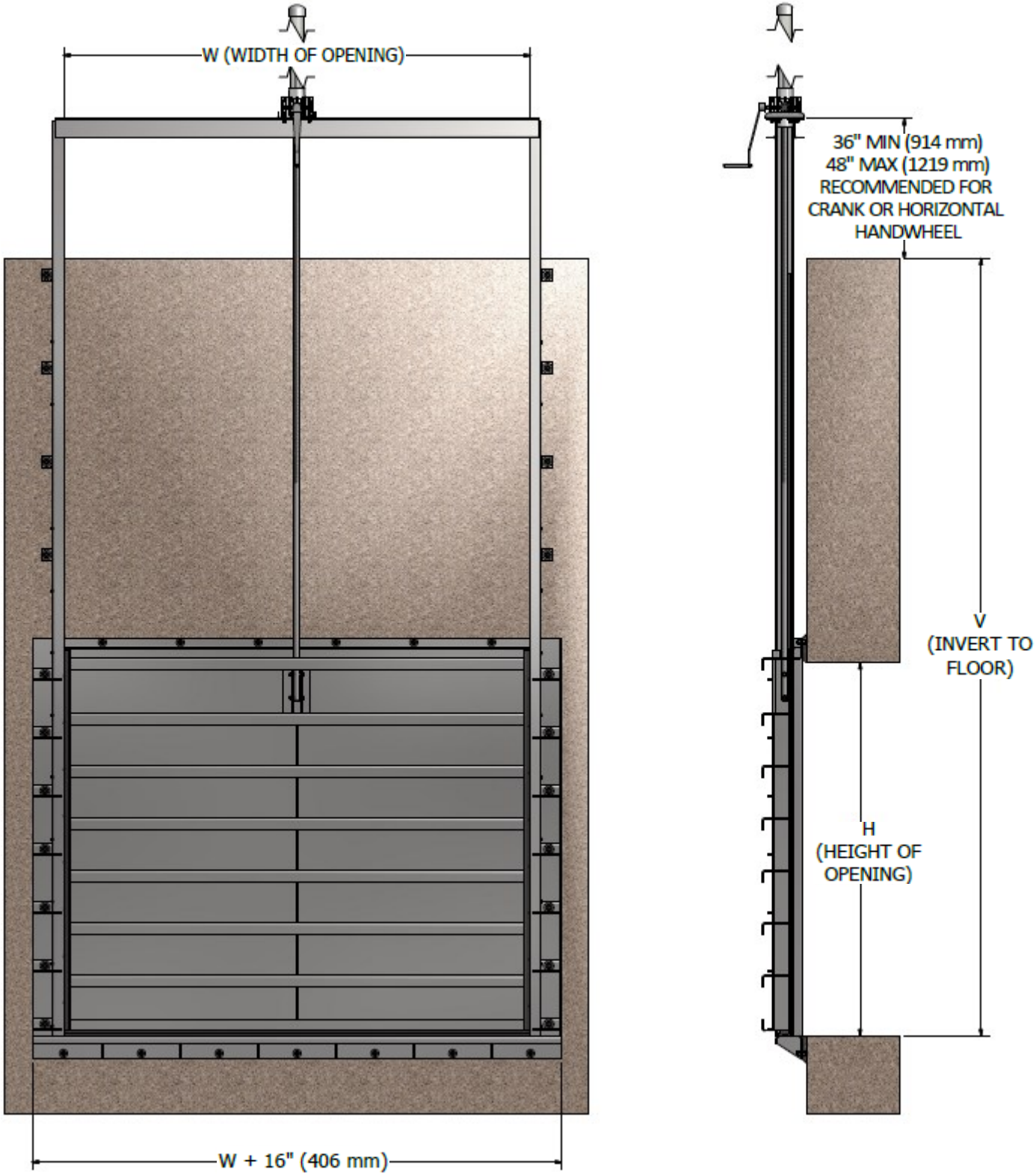
GATE ILLUSTRATED: 120" (W) x 63 $\frac{1}{2}$" (H) x 60" (V)
SEE ACTUATORS SECTION FOR OTHER ARRANGEMENTS

Model 953-D-I Features

°UHMW SEAT/SEALS
°LEAKAGE 1/2 OF AWWA C-561
°WALL MOUNTED SIDE FRAMES
°DOWNWARD OPENING
°OPEN CHANNEL - OPTIONAL TOP SEAL
°YOKE MOUNTED INTERCONNECTED ACTUATORS



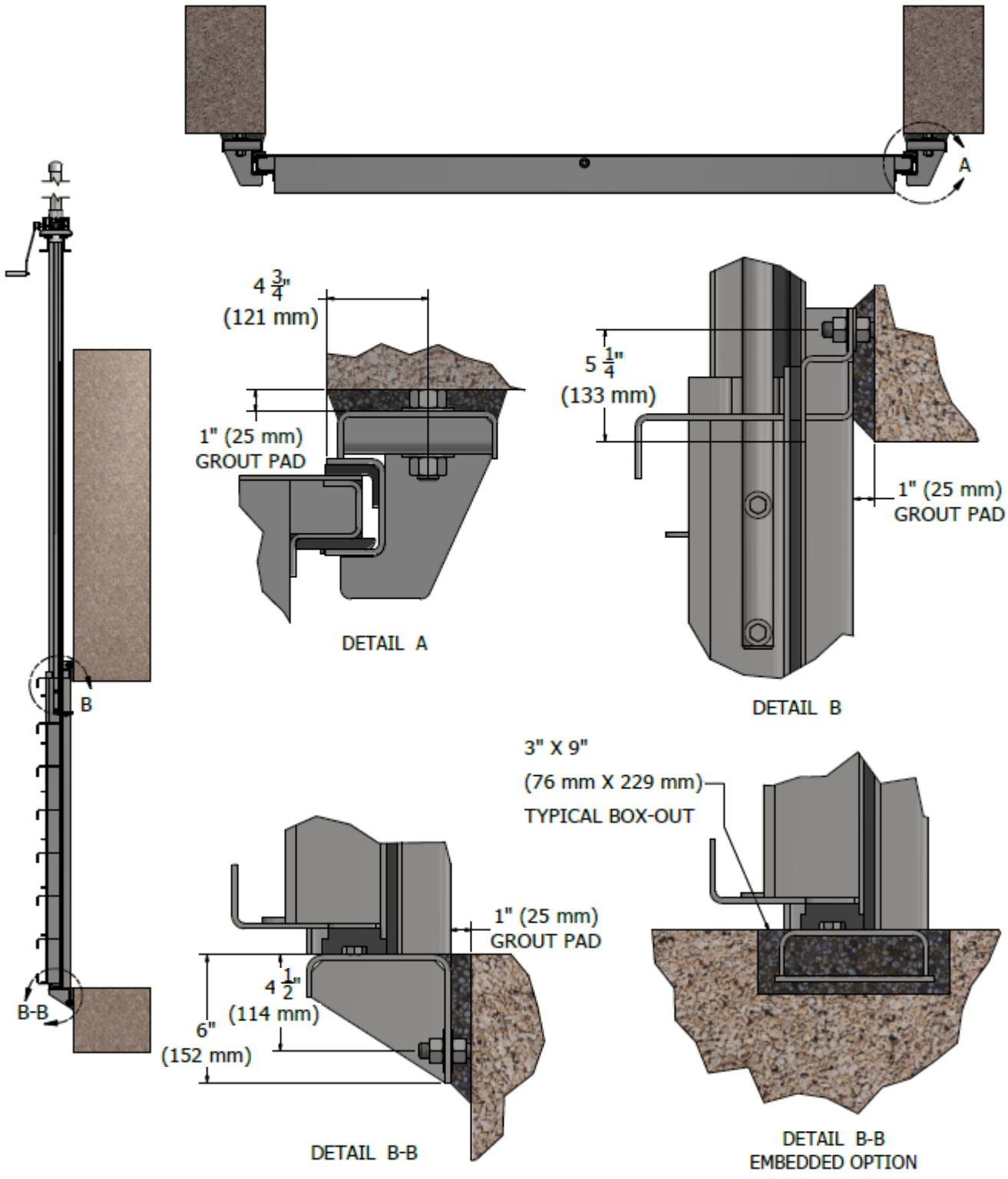
Model 954 Sluice Gate



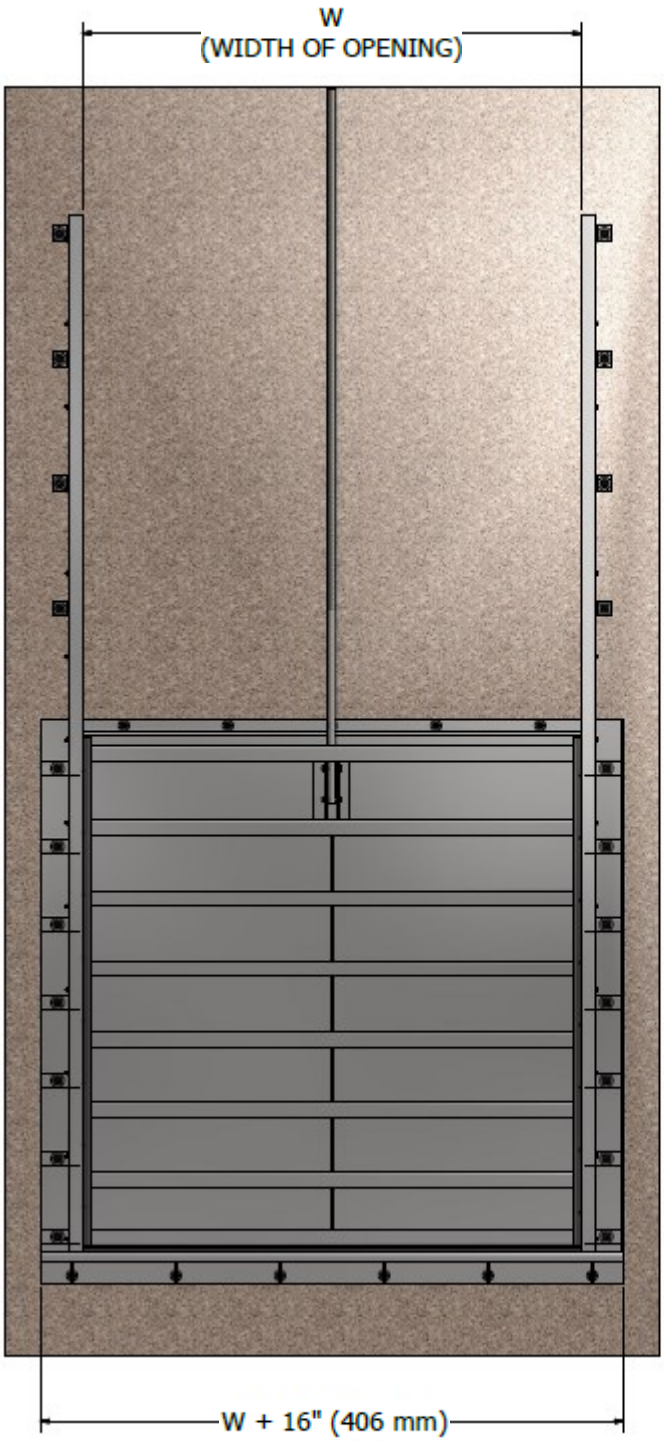
GATE ILLUSTRATED: 120" (W) x 96" (H) x 200" (V)
SEE ACTUATORS SECTION FOR OTHER ARRANGEMENTS

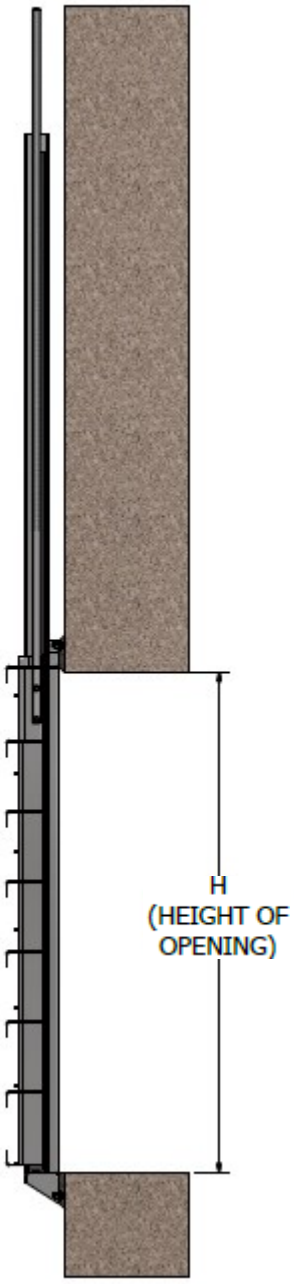
Model 954 Features

- UHMW SEAT/SEALS
- LEAKAGE 1/2 OF AWWA C-561
- WALL MOUNTED SIDE FRAMES
- FULL APERTURE SEALING
- YOKE MOUNTED ACTUATORS
- RESILIENT INVERT SEAL (FLUSH BOTTOM CLOSURE)



Model 955 Sluice Gate

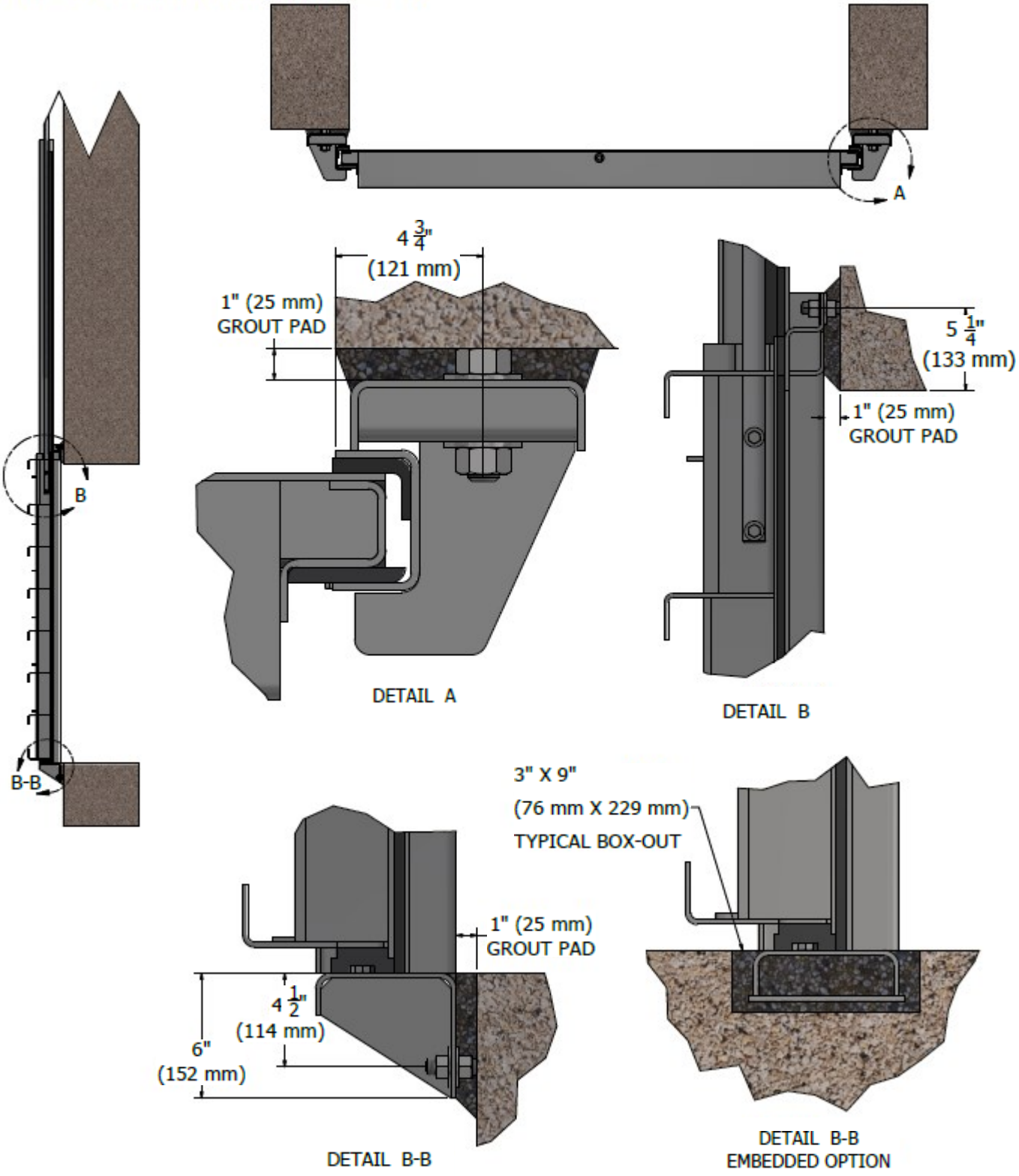




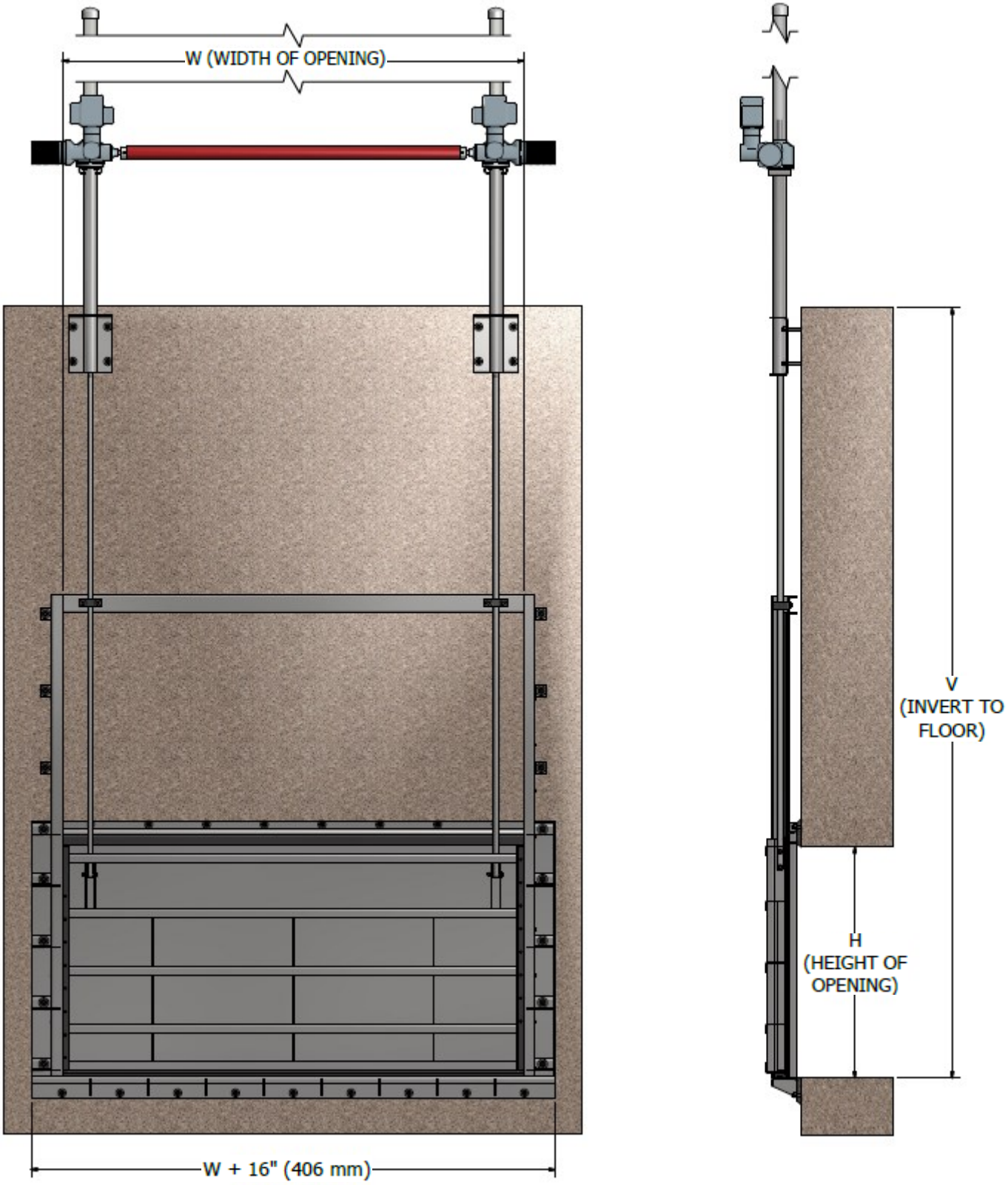
GATE ILLUSTRATED: 96" (W) x 96" (H)
SEE ACTUATORS SECTION FOR OTHER ARRANGEMENTS

Model 955 Features

- UHMW SEAT/SEALS
- LEAKAGE 1/2 OF AWWA C-561
- WALL MOUNTED SIDE FRAMES
- FULL APERTURE SEALING
- PEDESTAL, WALL BRACKET OR FLOOR BOX MOUNTED ACTUATORS
- RESILIENT INVERT SEAL (FLUSH BOTTOM CLOSURE)



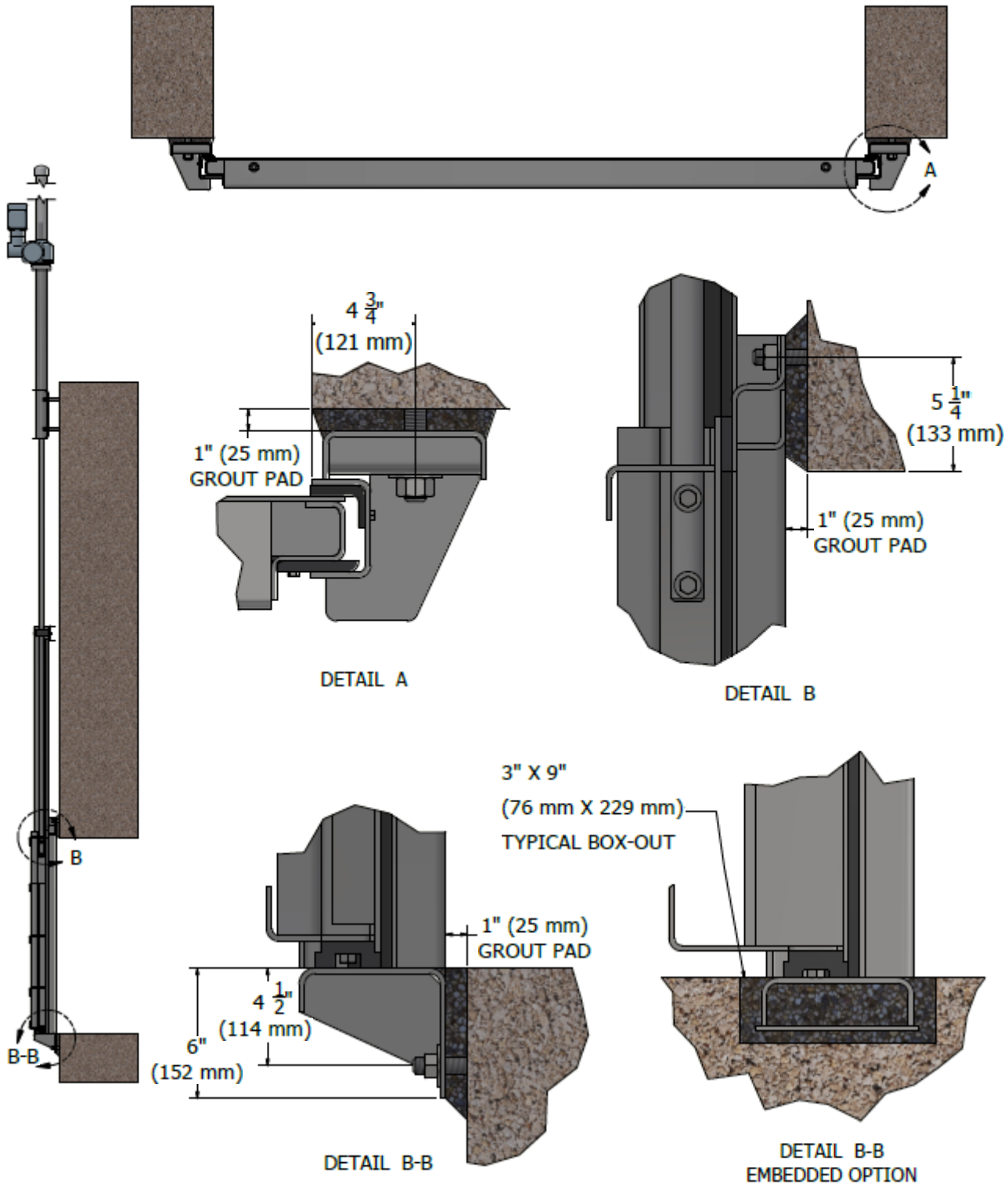
Model 955-I Sluice Gate



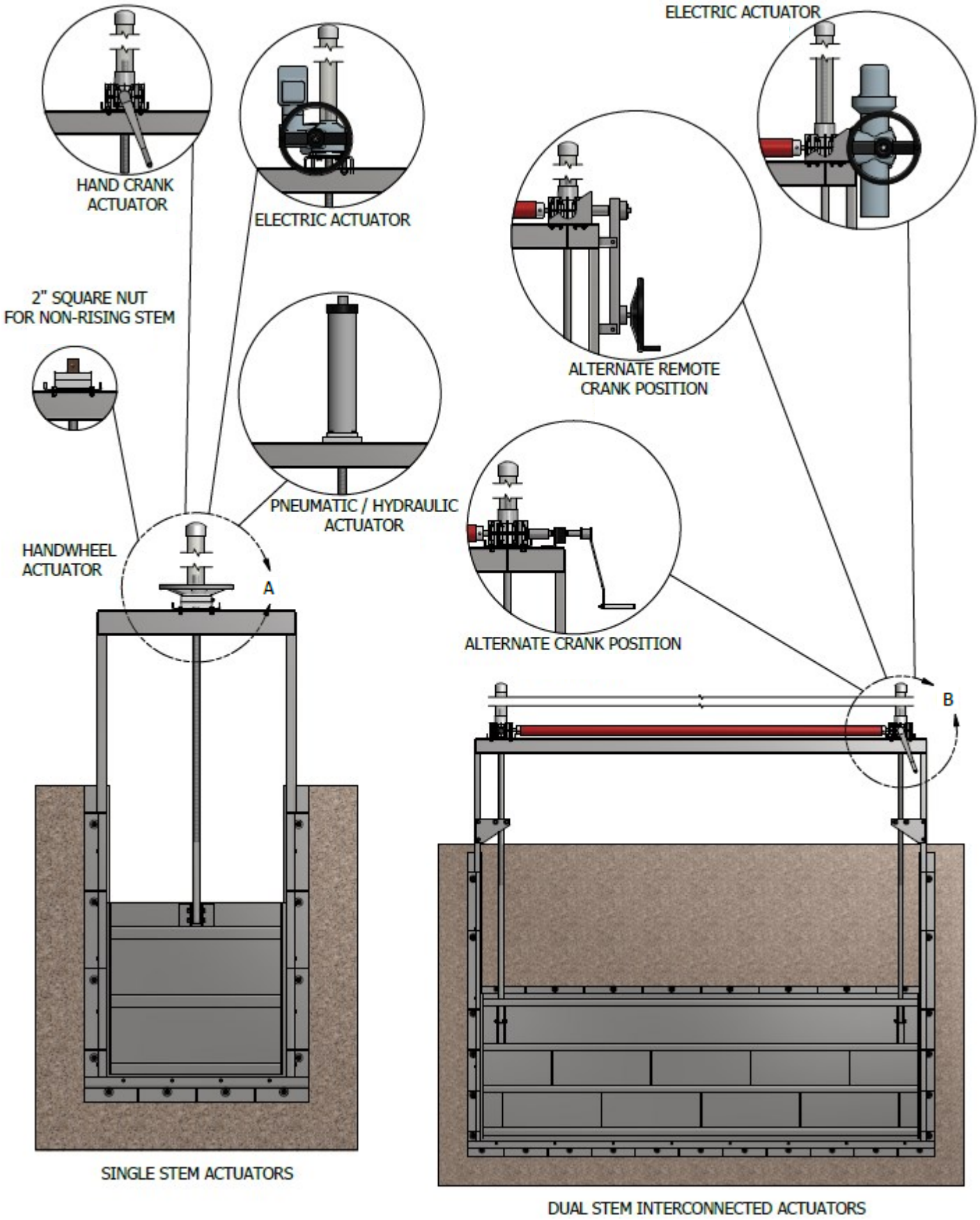
GATE ILLUSTRATED: 120" (W) x 60" (H) x 200" (V)
SEE ACTUATORS SECTION FOR OTHER ARRANGEMENTS

Model 955-I Features

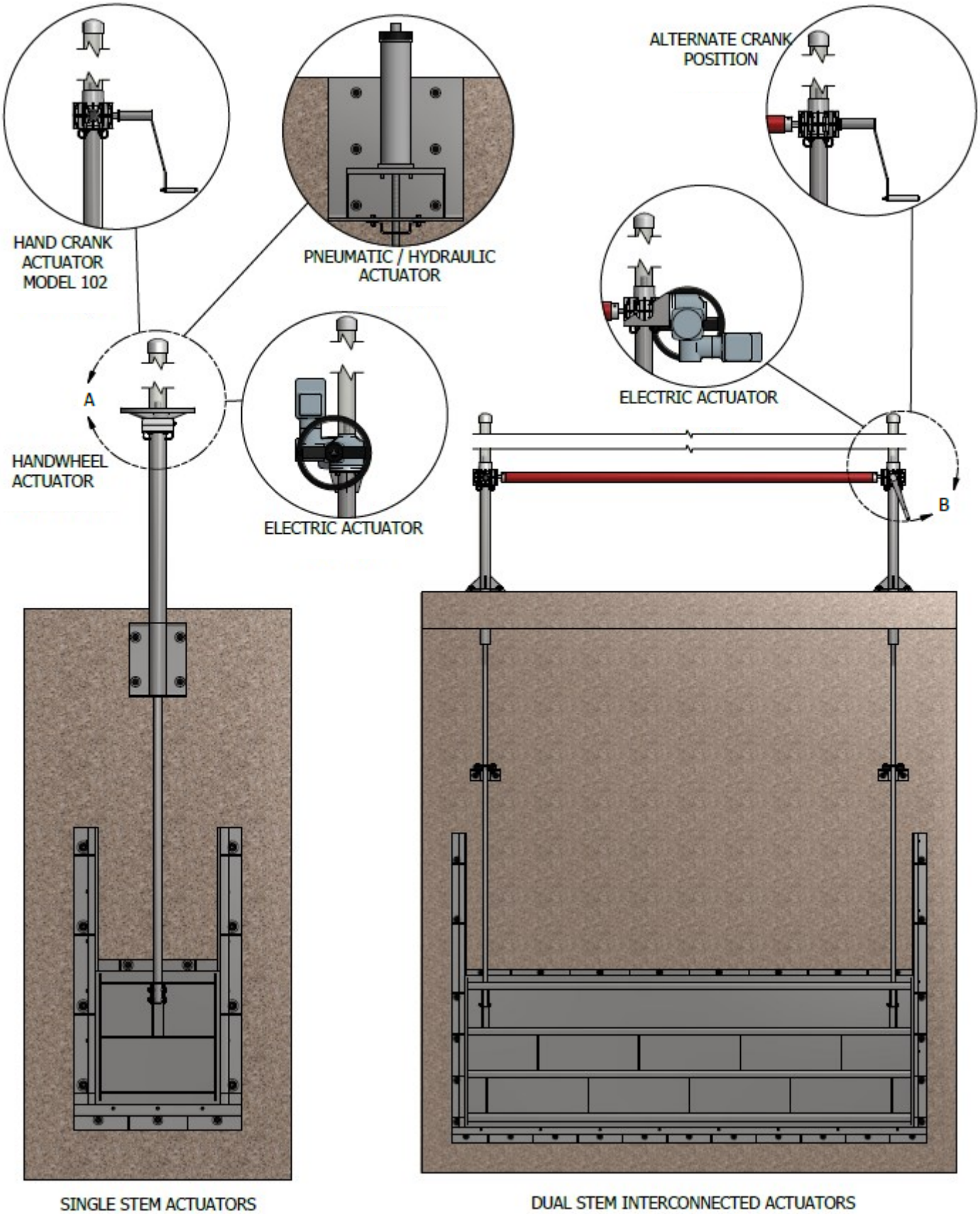
°UHMW SEAT/SEALS
°LEAKAGE 1/2 OF AWWA C-561
°WALL MOUNTED SIDE FRAMES
°OPEN CHANNEL - NO TOP SEAL
°YOKE MOUNTED ACTUATORS
°RESILIENT INVERT SEAL (FLUSH BOTTOM CLOSURE)



Actuators: Self Contained Gates



Actuators: Non-Self Contained Gates



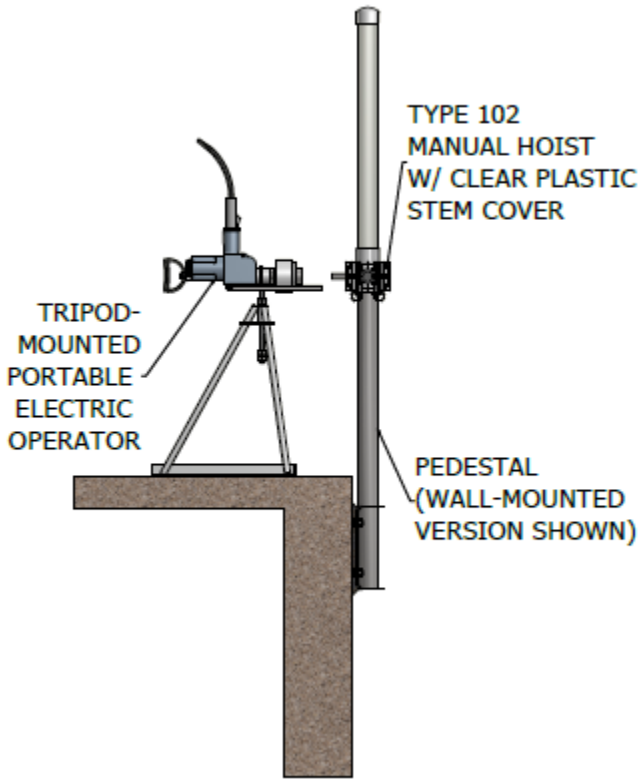
Actuators: General Information

Manual Actuators: Handwheel or hand crank actuators are appropriate when operating loads are relatively low, operation is infrequent, or electric power is unavailable. A handwheel actuator has a handwheel directly attached to the operating nut, concentric to the stem, providing a 1:1 drive ratio. Hand crank actuators have a horizontal input shaft that drives the operating nut through a right-angle gear set. Various drive ratios are available to operate virtually any gate. For high ratios (greater than 8:1), manually operating a large gate can be time-consuming and physically demanding. When hand crank manual actuators will be frequently used, or when they require numerous turns for full gate travel, portable operators should be considered.

Interconnected Actuators: For gates with a width significantly greater than their height, which is often the case with overflow weirs, interconnected crank actuators with a standard input provide accurate positioning and smooth operation. These assemblies may be operated manually or powered electrically.

Portable Operators: Portable operators powered by electricity or gasoline, available in various configurations, can be supplied to operate crank actuators. For further information, please contact the factory.

Electric Actuators: For increased loads, higher operating speeds (12" – 24" per minute), or gates that require frequent operation, electric actuators offer remote control of gate position and seamless integration into automatic control systems.



Hydraulic Cylinder Actuators: Hydraulic cylinders offer smooth and rapid operation, making them well suited for automatic control systems that require frequent gate cycling. They can also be designed to provide automatic gate positioning in the event of an electric power failure.

Whipps, inc.
WATER CONTROL GATES

Aluminum Gates

Series 800 AWWA® Compliant

Contents

Introduction

Series 800 aluminum gates are engineered for robust performance and extended lifespans, suitable for various mounting configurations and flow conditions. These gates feature rugged, reinforced aluminum construction complemented by durable and flexible ultra-high molecular weight polyethylene (UHMW) seat/seals, ensuring a heavy-duty assembly. A resilient bottom seal enables a secure flush bottom closure. Whipps, Inc. offers rapid and cost-effective production of both standard gates and customized solutions for unique applications. Series 800 aluminum gates are constructed of material 1/4” or 3/8” thick.

Advantages

Superior Performance: Whipps, Inc. provides a leakage guarantee that surpasses the specifications outlined in AWWA C-501 for Cast Iron Sluice Gates or the most recent revision of AWWA C-560 for Cast Iron Slide Gates. Our commitment ensures leakage rates not exceeding 0.10 gpm/ft of seal perimeter under both seating head and unseating head conditions, even in high head service scenarios.

Cost: Fabricated aluminum gates usually provide a cost advantage over cast iron gates. The manufacturing process for aluminum gates is generally less expensive than that of cast iron, stainless steel, and fiberglass gates.

Durability: Aluminum has proved to be a suitable material to use in most water and wastewater. Our aluminum gates feature UV-stabilized UHMW seat/seals, which are field proven to maintain shape and integrity in demanding applications. Whipps, Inc. conducted rigorous testing on UHMW seat/seals. Subjecting them to 25,000 gate open/close cycles in an abrasive media to validate their ability to withstand continuous operation with minimal wear. (Test results available upon request.)

Reliability: The slide of the aluminum gate will not ‘freeze’ to the frame after extended periods of inactivity. This is achieved through the inclusion of UHMW seat/seals, which effectively eliminate metal-to-metal contact between the slide and the frame.

Delivery: The process of fabricating an aluminum gate from raw materials is notably quick, particularly because Whipps, Inc. keeps most materials in stock.

Self-Adjusting Seals: The aluminum gates that Whipps, Inc. offer are equipped with a self-adjusting seal system that eliminates the need for field adjustments. A solution particularly advantageous for gates installed in locations where such adjustments are impractical or unfeasible. This advanced system cannot be replicated by the imprecise method of adjusting wedges, which can lead to increased leakage, localized stress, and difficulty during gate operation. Our self-adjusting seal system consists of UHMW, much more durable than rubber J or P seals. While rubber seals can crack, flatten, and/or adhere to the slide, our UV stabilized UHMW seat/seals will not. Furthermore, the seal system boasts a lower coefficient of friction compared to rubber, reducing the effort required to operate the gate.

Low Maintenance: Aluminum gates do not need periodic painting and require less operator attention when compared to cast iron or stainless steel gates.

Ease of Repair: In the rare event of the seat/seals experiencing damage, they can be readily replaced in the field using common tools, without the need to dismount the gate from the wall. In contrast, the damaged seating surface of a cast iron gate necessitates the removal of the gate from the wall and must be shipped back to the manufacturer for re-manufacturing.

Range of Sizes: The process of designing and manufacturing fabricated gates offers the flexibility of producing a wide range of sizes, nearly without limits. In contrast, cast iron gates require the creation of new patterns or modifications to existing patterns to accommodate uncommon sizes.

Mounting Configurations: Gate frames can be either embedded in channel walls or mounted to a wall, pipe flange, or wall thimble. Wall thimbles are recommended for applications with high unseating head conditions. We offer flanged frames or flat frames for gates designed to cover square, rectangular, or round openings in concrete structures.

Design Features

The chart below displays the gate features associated with each model number. These models encompass the most frequently utilized configurations. For applications that fall outside the scope of these standard models, we offer additional arrangements.

Table 1: Features vs Model Number (Model Number Key)

Gate Features		Gate Model Numbers							
		821	823	823-C	823-D	823-D-I	824	825	825-I
Guide Frame Style	Embedded	X							
	Wall Mounted		X		X	X	X	X	X
	Channel Mounted			X					
Seals	Slide & Invert	X	X	X	X	X			
	Slide, Invert, & Top						X	X	X
Actuator Mounting	Yoke	X	X	X	X	X	X		
	Pedestal							X	X

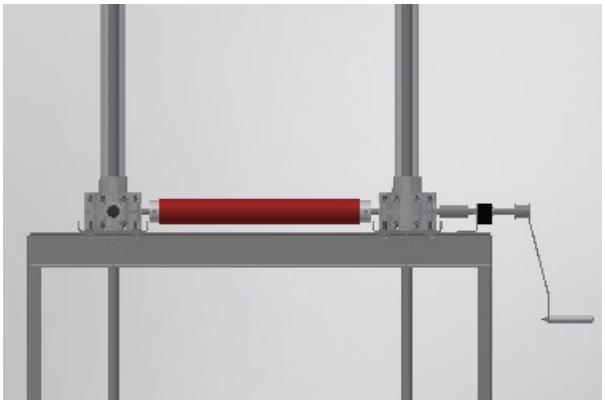
Optional Features

The gate configuration required for each application is determined by gate size and service conditions. The overall gate widths, side frame sections, and invert sections depicted in this literature showcase only a few examples of the numerous configurations available.

Downward Opening: Many gate models can be configured for downward opening service by simply adding a 'D' to the model number. These gates are ideal for situations with limited clearance where an upward opening gate is impractical, or when the gate is intended for use as an overflow weir. Downward opening gates may be supplied with or without a top seal.

Interconnected Actuators: All models can be equipped with two interconnected actuators by adding an 'I' to the model number. This setup is typically advisable for gates wider than 72" and with a width exceeding twice the height.

Non-Rising Stem: All models can be configured with non-rising stems by adding a 'N' to the model number. This operating stem arrangement is typically chosen for installations with limited headroom.



Gate Selection Criteria

Gate Size: In water and wastewater treatment plants, gates are typically sized to match pre-designed structures. In this respect, Whipps, Inc. aluminum gates provide exceptional flexibility to accommodate any round, square, or rectangular opening.

Gate Mounting: Series 800 gate frames may be embedded in channel walls, mounted on the face of a wall, mounted inside of an existing channel, installed on a wall thimble, or affixed to a pipe flange.

Gate Material: Series 800 gates are typically constructed from aluminum, alloy 6061-T6 with stainless steel steam and hardware.

Actuator Selection: The different types of actuators are detailed in the actuator section (page 74-76). Operating loads are calculated as illustrated in Figure 1 below.

Manual operators are chosen to guarantee that operating the handwheel or hand crank requires no more than 40 pounds of effort. For information regarding the selection of powered actuators, consult the factory.

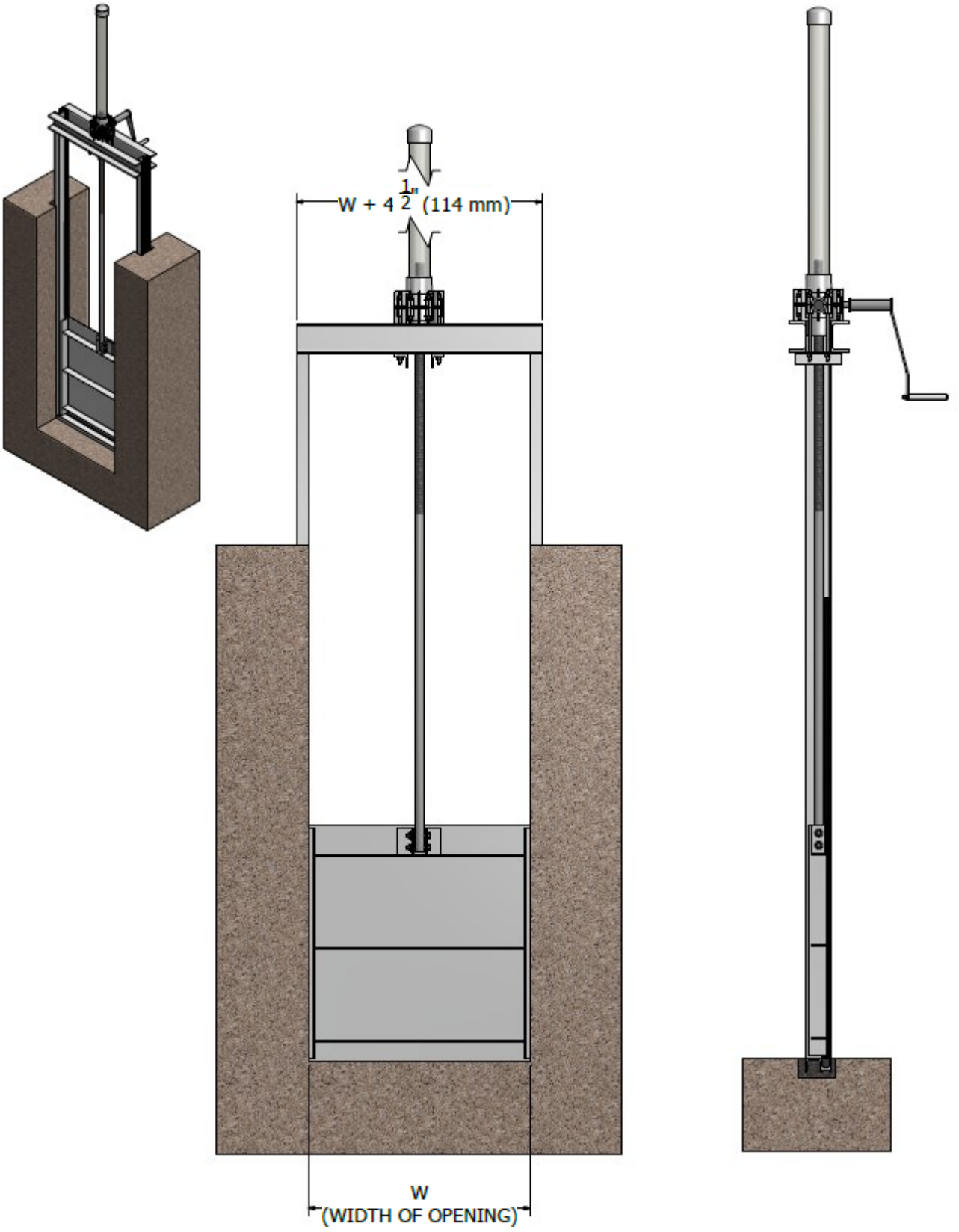
Actuator Loads Transmitted to Structures: On non-self-contained gates, pedestal mounted actuators transmit stem thrust to the structure supporting the gate and actuator. The structure must be constructed to withstand the actuator's maximum output (e.g. electric actuator at motor stall) which is necessarily greater than the operating load, sometimes significantly so. Powered actuators employ various mechanisms to restrict maximum output. However, manual actuators have their maximum output limited by the operating personnel's effort.

ENGLISH UNITS	METRIC UNITS
1. $P_1 = 35\ h$	$P_1 = 6129\ h$
where	where
P_1 = operating load (pounds)	P_1 = operating load (pounds)
h = gate height (inches)	h = gate height (inches)
2. $P_2 = 12.48 * A * H$	$P_2 = 1961 * A * H$
where	where
P_2 = operating load (pounds)	P_2 = operating load (pounds)
A = area of opening (sq. feet)	A = area of opening (sq. feet)
H = head on gate centerline (feet)	H = head on gate centerline (feet)

Figure 1: Operating Load Formula

Note: *Maximum operating loads occur in the initial few inches of gate travel during opening and the final few inches during gate closure. Loads diminish quickly from these extremes.*

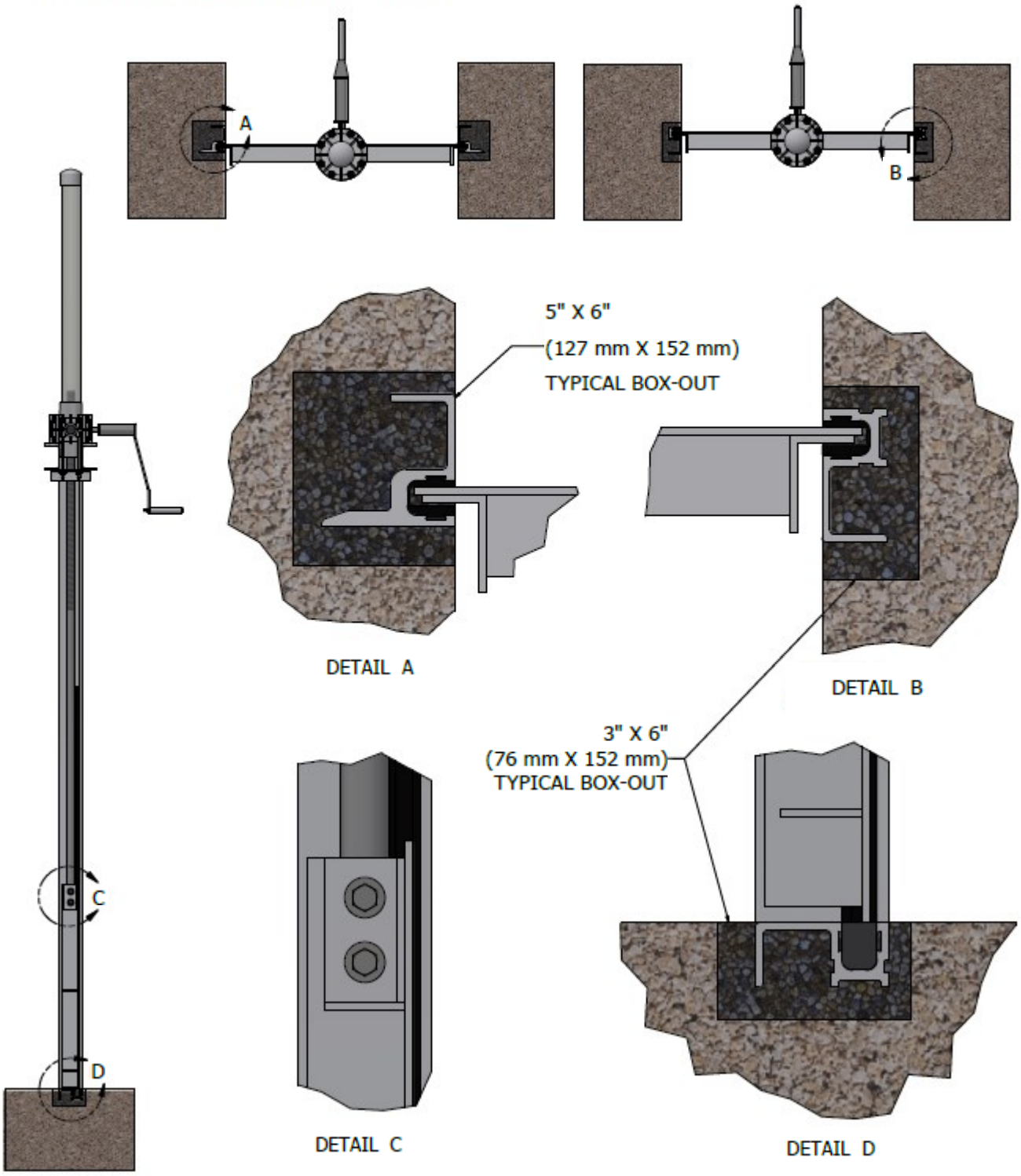
Model 821 Slide Gate



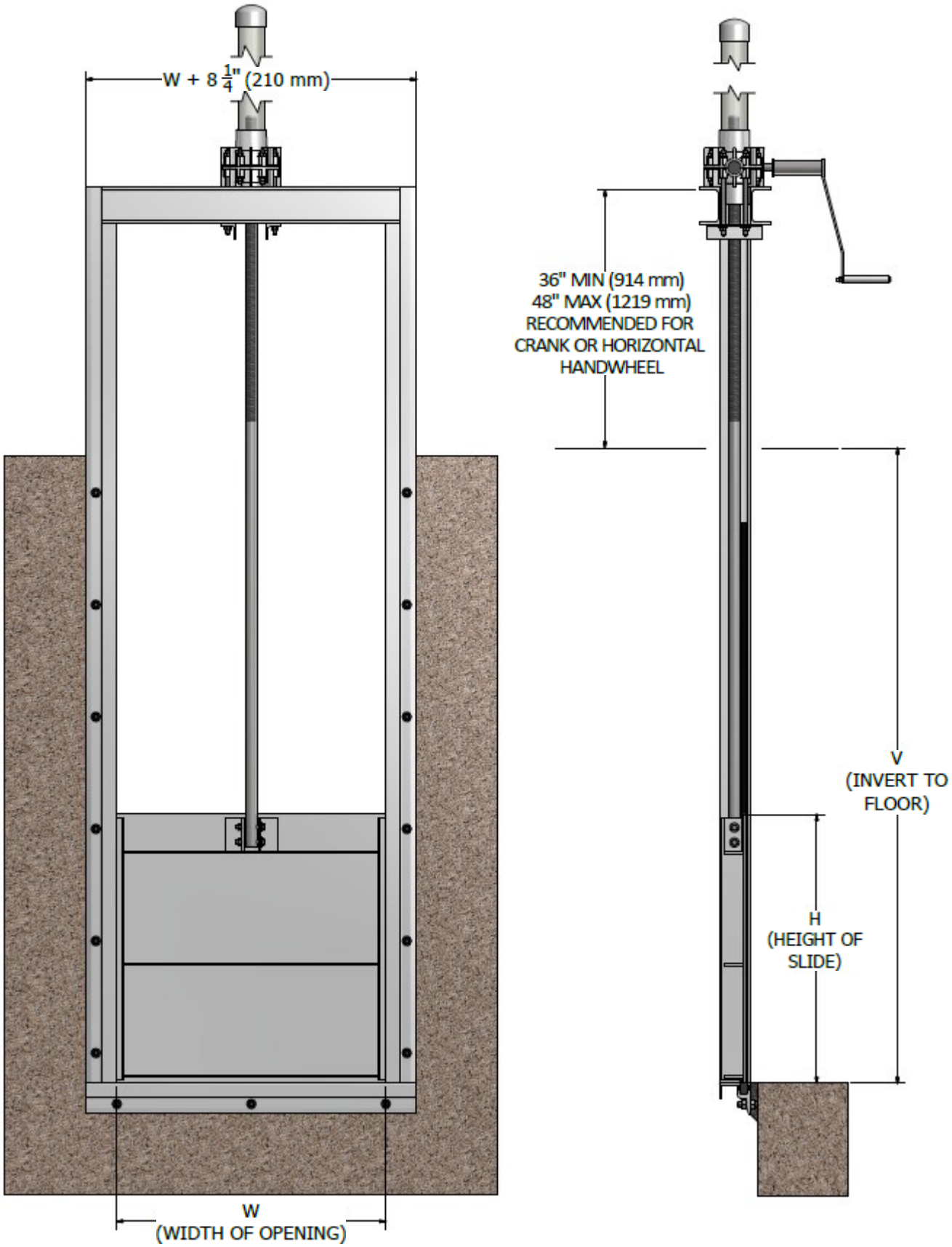
GATE ILLUSTRATED: 36" (W) x 36" (H) x 84" (V)
SEE ACTUATORS SECTION FOR OTHER ARRANGEMENTS

Model 821 Features

°UHMW SEAT/SEALS
°LEAKAGE ≤ AWWA SLIDE GATE STANDARDS
°EMBEDDED FRAMES
°OPEN CHANNEL - NO TOP SEAL
°YOKE MOUNTED ACTUATOR
°RESILIENT INVERT SEAL (FLUSH BOTTOM CLOSURE)



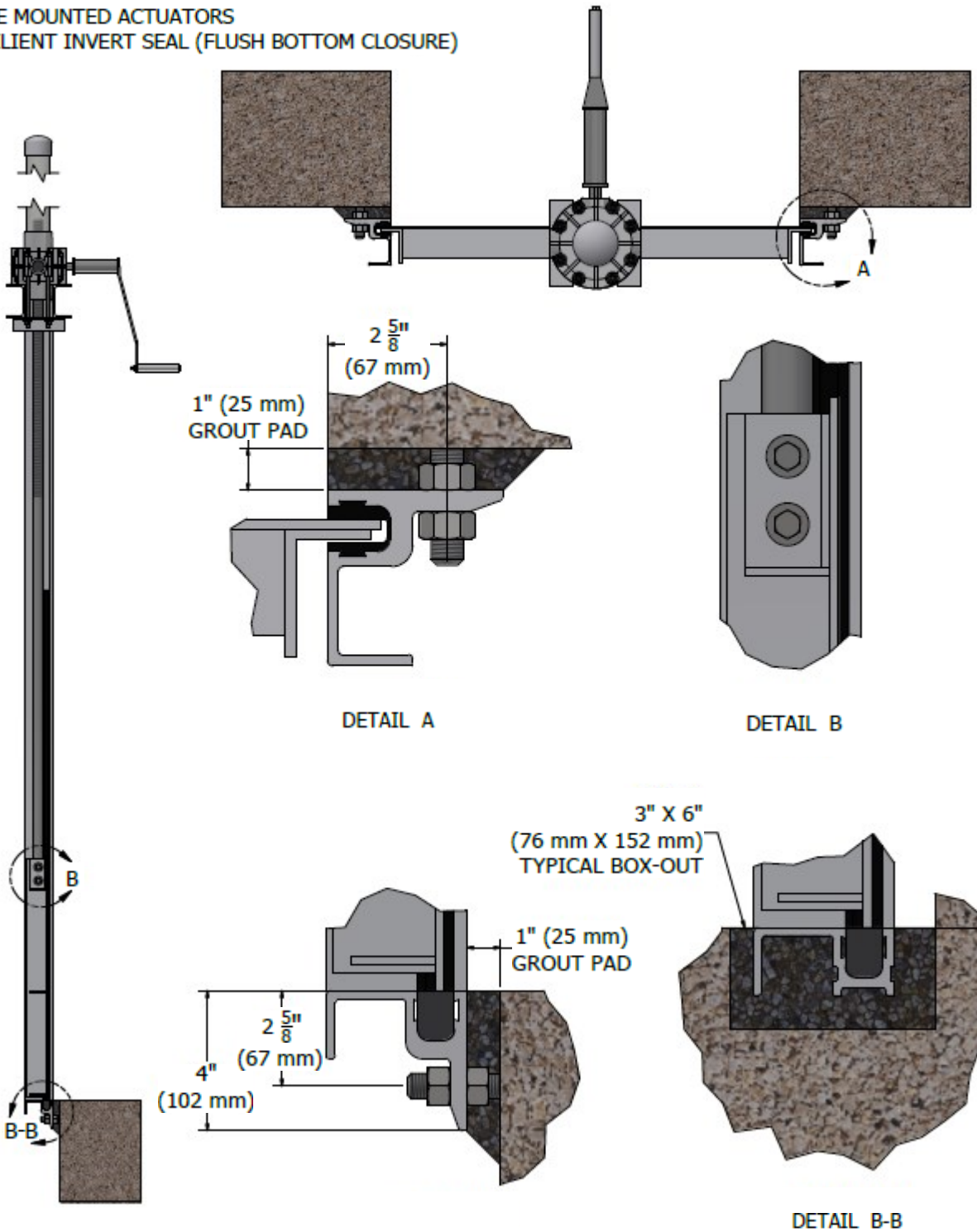
Model 823 Slide Gate



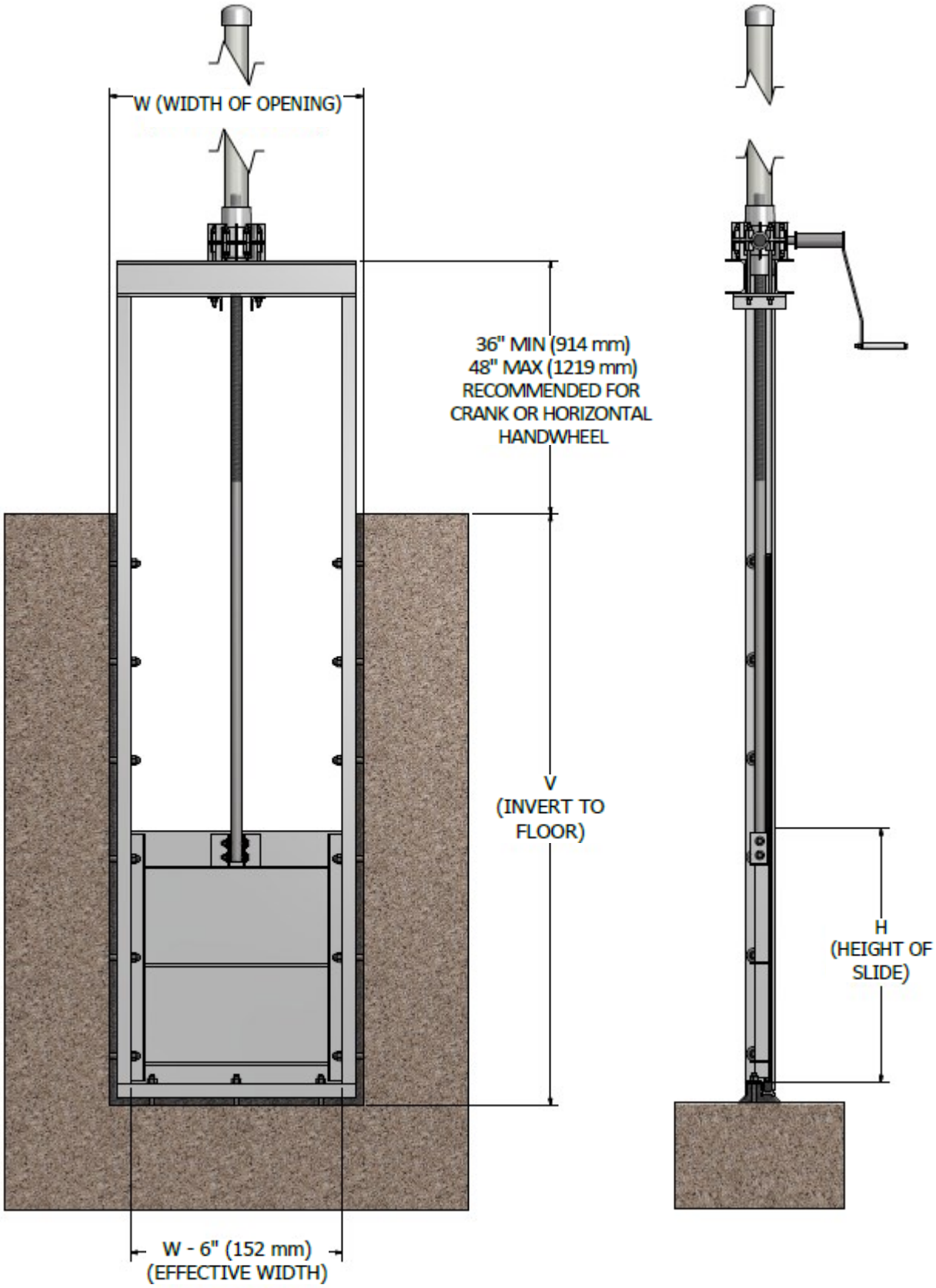
GATE ILLUSTRATED: 36" (W) x 36" (H) x 84" (V)
SEE ACTUATORS SECTION FOR OTHER ARRANGEMENTS

Model 823 Features

- UHMW SEAT/SEALS
- LEAKAGE ≤ AWWA SLIDE GATE STANDARDS
- WALL MOUNTED SIDE FRAMES
- OPEN CHANNEL - NO TOP SEAL
- YOKE MOUNTED ACTUATORS
- RESILIENT INVERT SEAL (FLUSH BOTTOM CLOSURE)



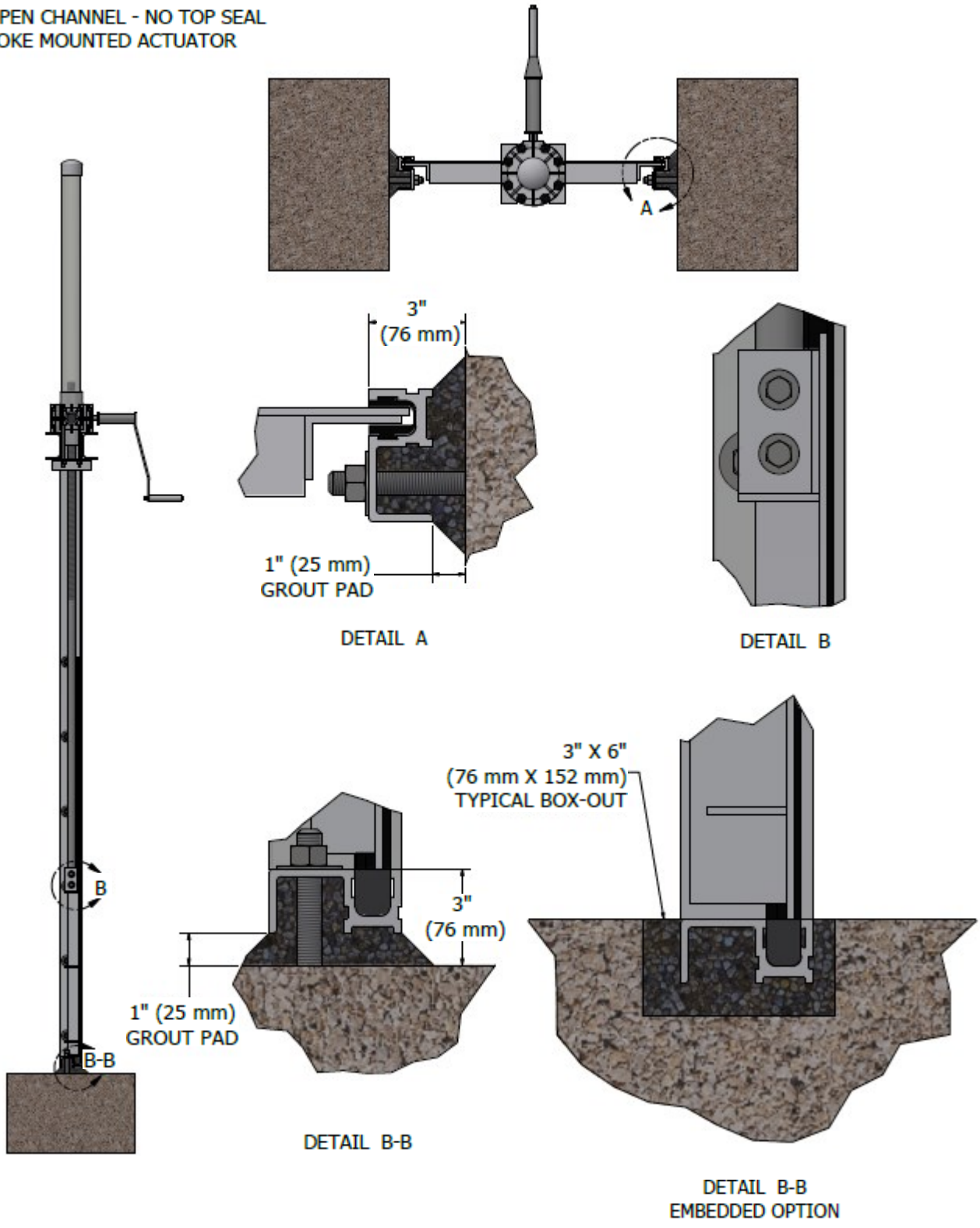
Model 823-C Slide Gate



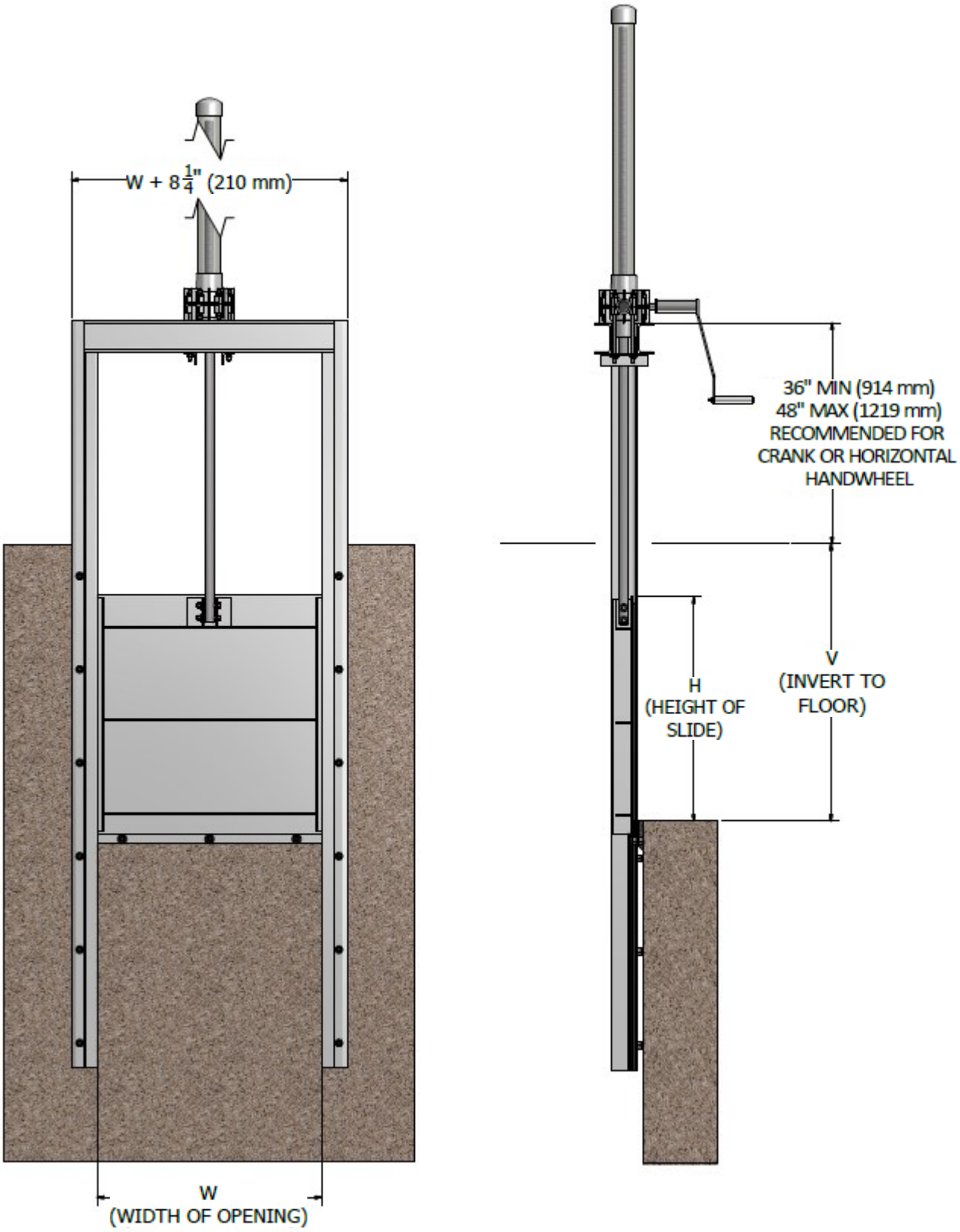
GATE ILLUSTRATED: 36" (W) x 36" (H) x 84" (V)
SEE ACTUATORS SECTION FOR OTHER ARRANGEMENTS

Model 823-C Features

- UHMW SEAT/SEALS
- LEAKAGE ≤ AWWA SLIDE GATE STANDARDS
- FRAME MOUNTS IN EXISITING CHANNEL
- OPEN CHANNEL - NO TOP SEAL
- YOKE MOUNTED ACTUATOR



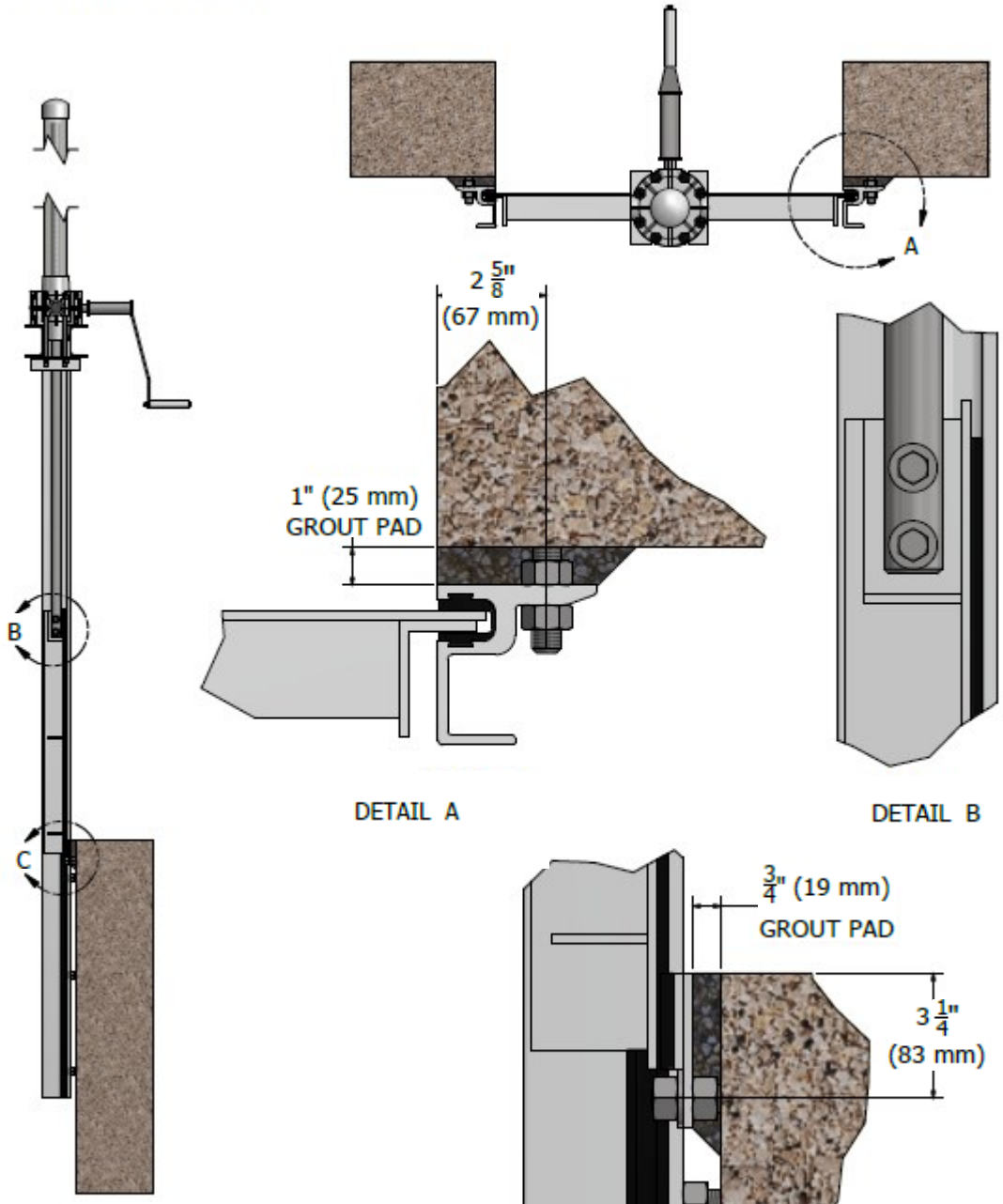
Model 823-D Slide Gate



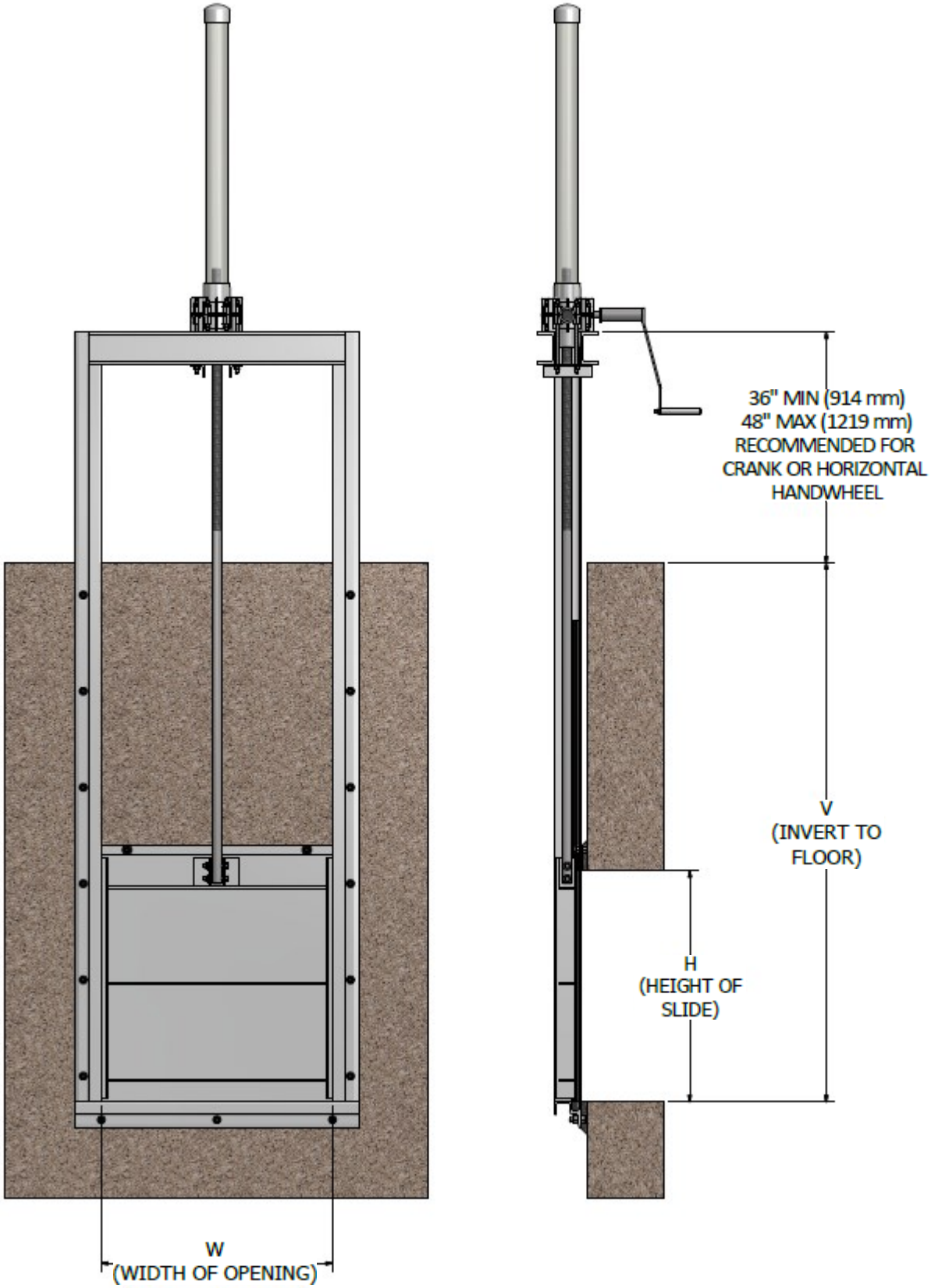
GATE ILLUSTRATED: 36" (W) x 36" (H) x 44" (V)
SEE ACTUATORS SECTION FOR OTHER ARRANGEMENTS

Model 823-D Features

°UHMW SEAT/SEALS
°LEAKAGE ≤ AWWA SLIDE GATE STANDARDS
°WALL MOUNTED SIDE FRAMES
°DOWNWARD OPENING
°OPEN CHANNEL - OPTIONAL TOP SEAL
°YOKE MOUNTED ACTUATORS



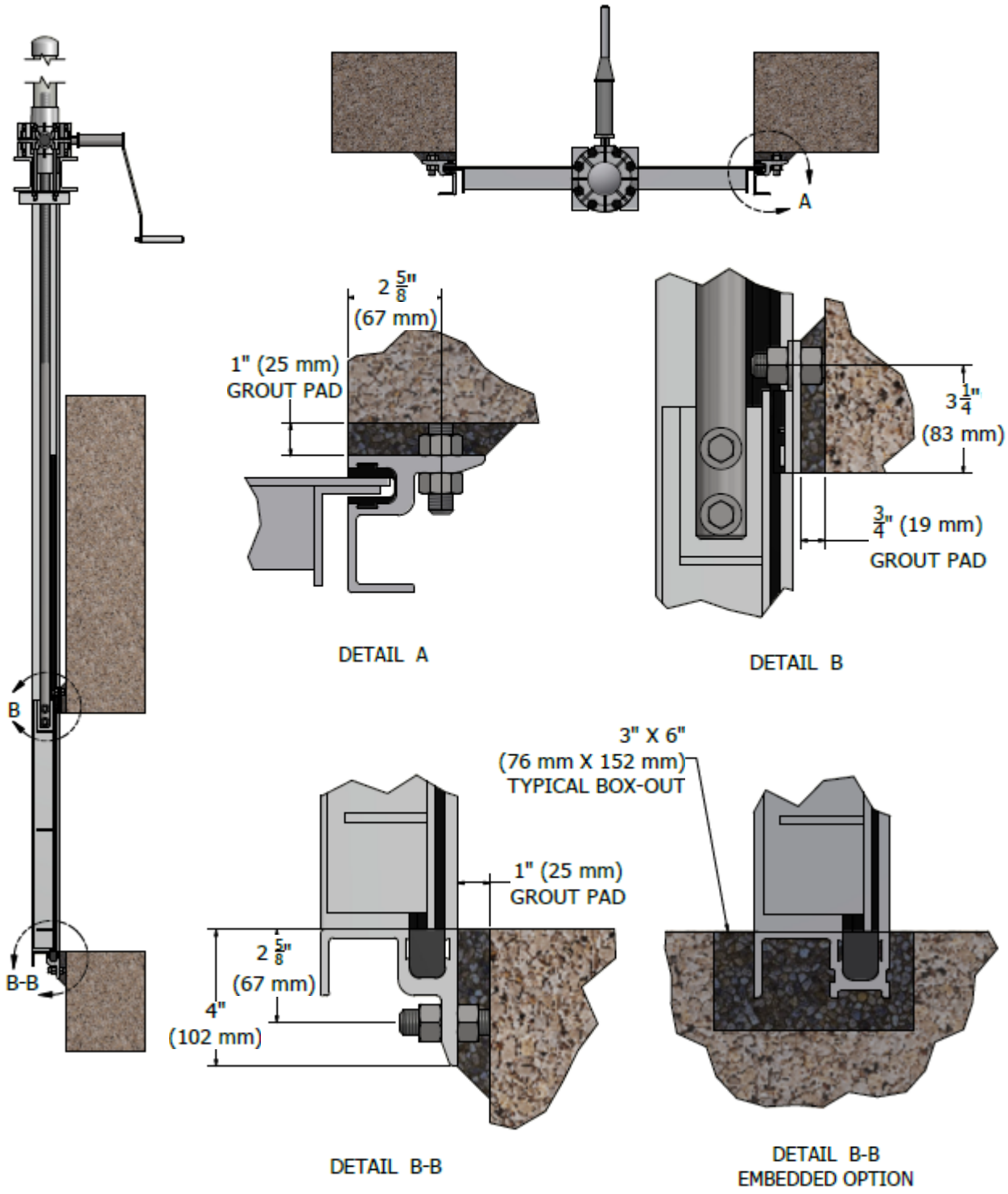
Model 824 Sluice Gate



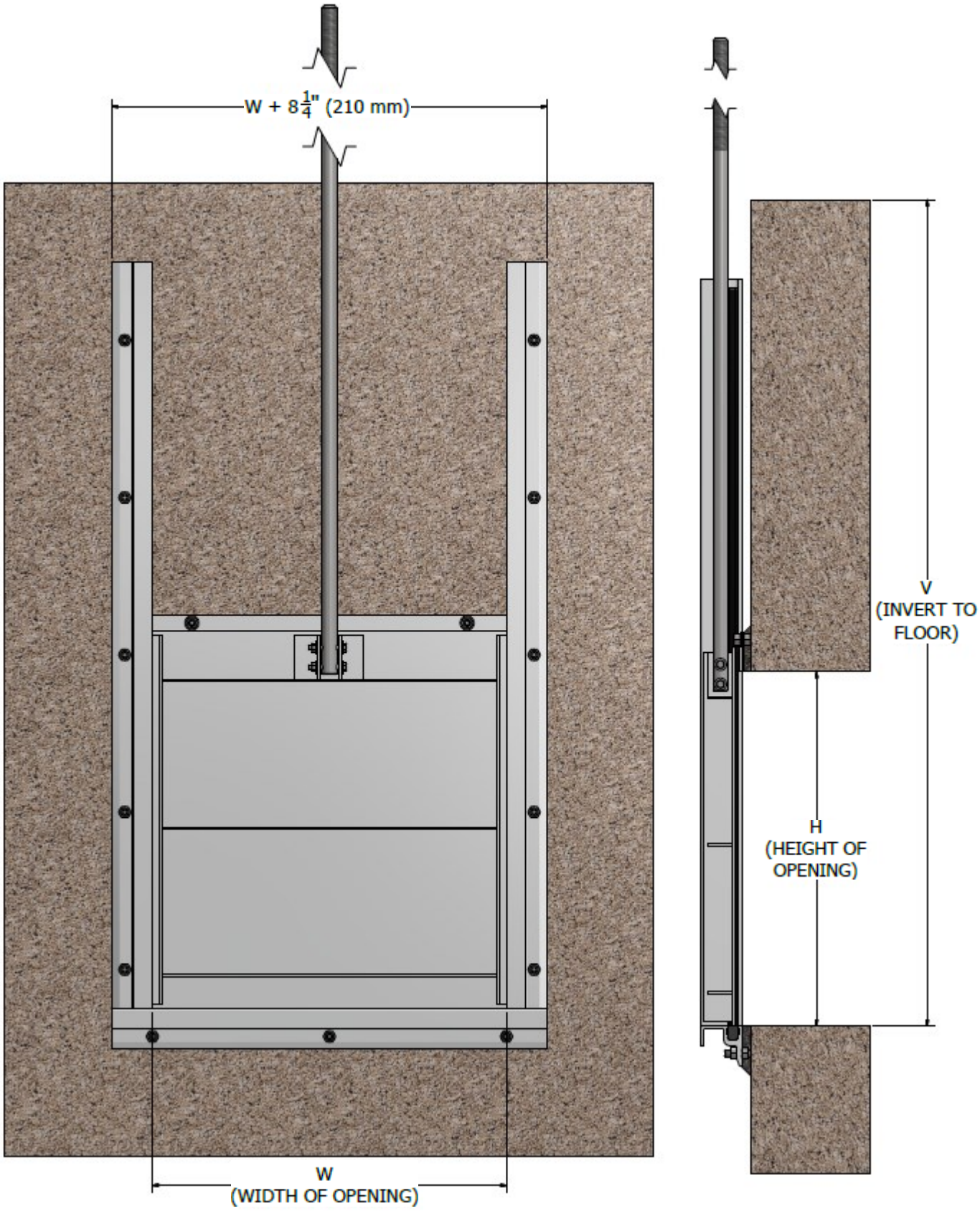
GATE ILLUSTRATED: 36" (W) x 36" (H) x 84" (V)
SEE ACTUATORS SECTION FOR OTHER ARRANGEMENTS

Model 824 Features

- UHMW SEAT/SEALS
- LEAKAGE ≤ AWWA SLIDE GATE STANDARDS
- WALL MOUNTED SIDE FRAMES
- FULL APERTURE SEALING
- YOKE MOUNTED ACTUATORS
- RESILIENT INVERT SEAL (FLUSH BOTTOM CLOSURE)



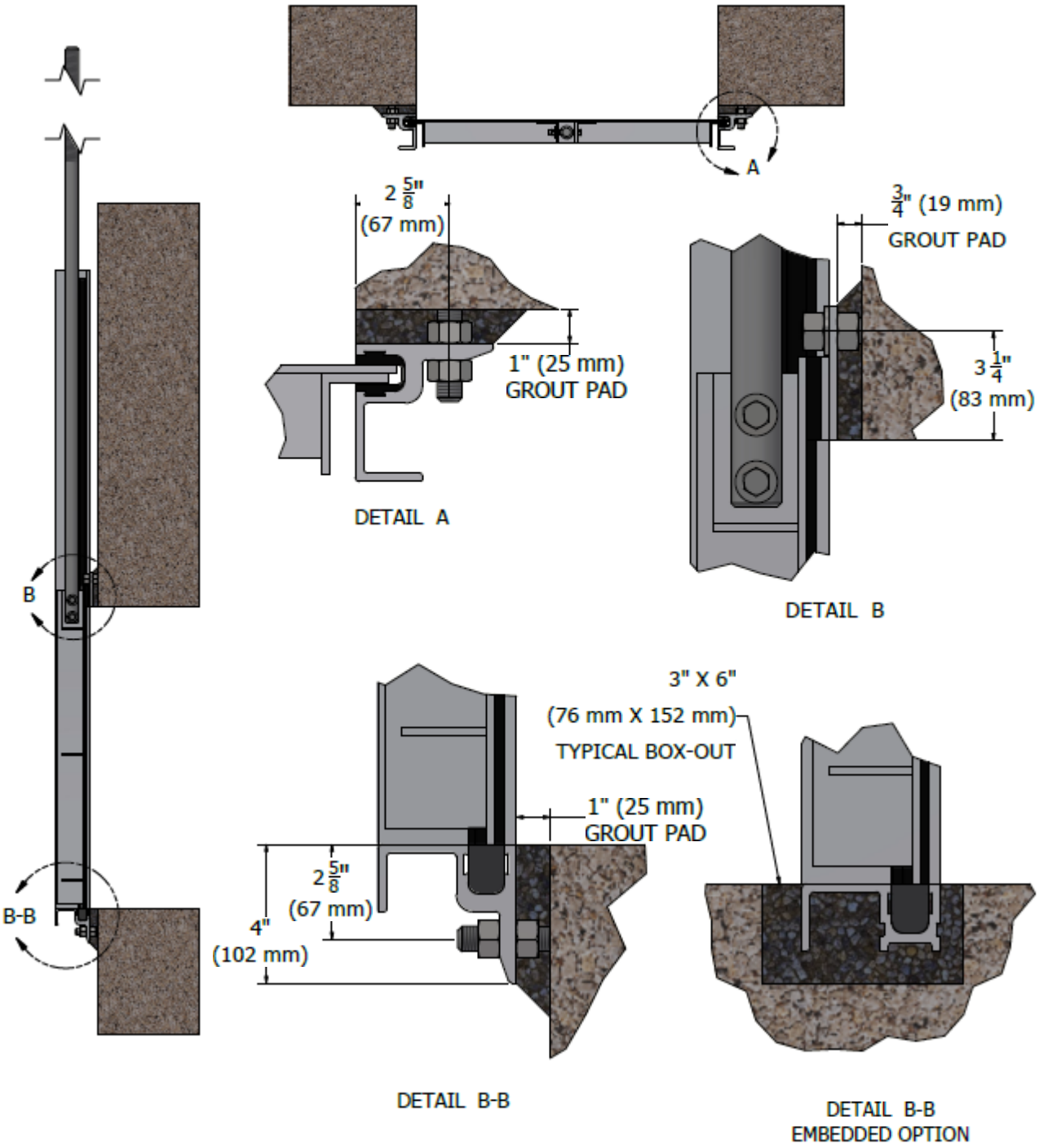
Model 825 Sluice Gate



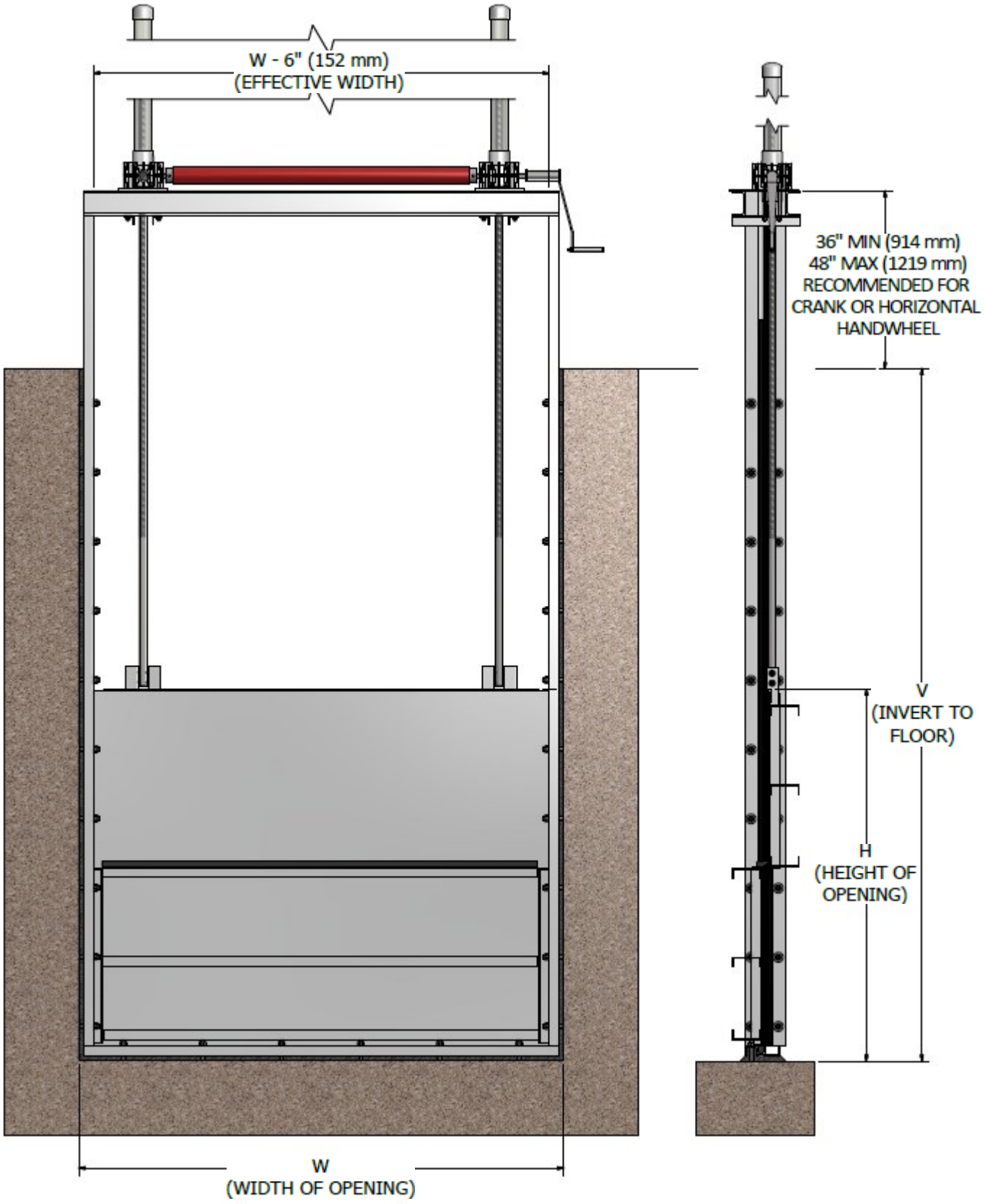
GATE ILLUSTRATED: 36" (W) x 36" (H)
SEE ACTUATORS SECTION FOR OTHER ARRANGEMENTS

Model 825 Features

°UHMW SEAT/SEALS
°LEAKAGE ≤ AWWA SLIDE GATE STANDARDS
°WALL MOUNTED SIDE FRAMES
°FULL APERTURE SEALING
°PEDESTAL, WALL BRACKET OR FLOOR BOX MOUNTED ACTUATOR
°RESILIENT INVERT SEAL (FLUSH BOTTOM CLOSURE)



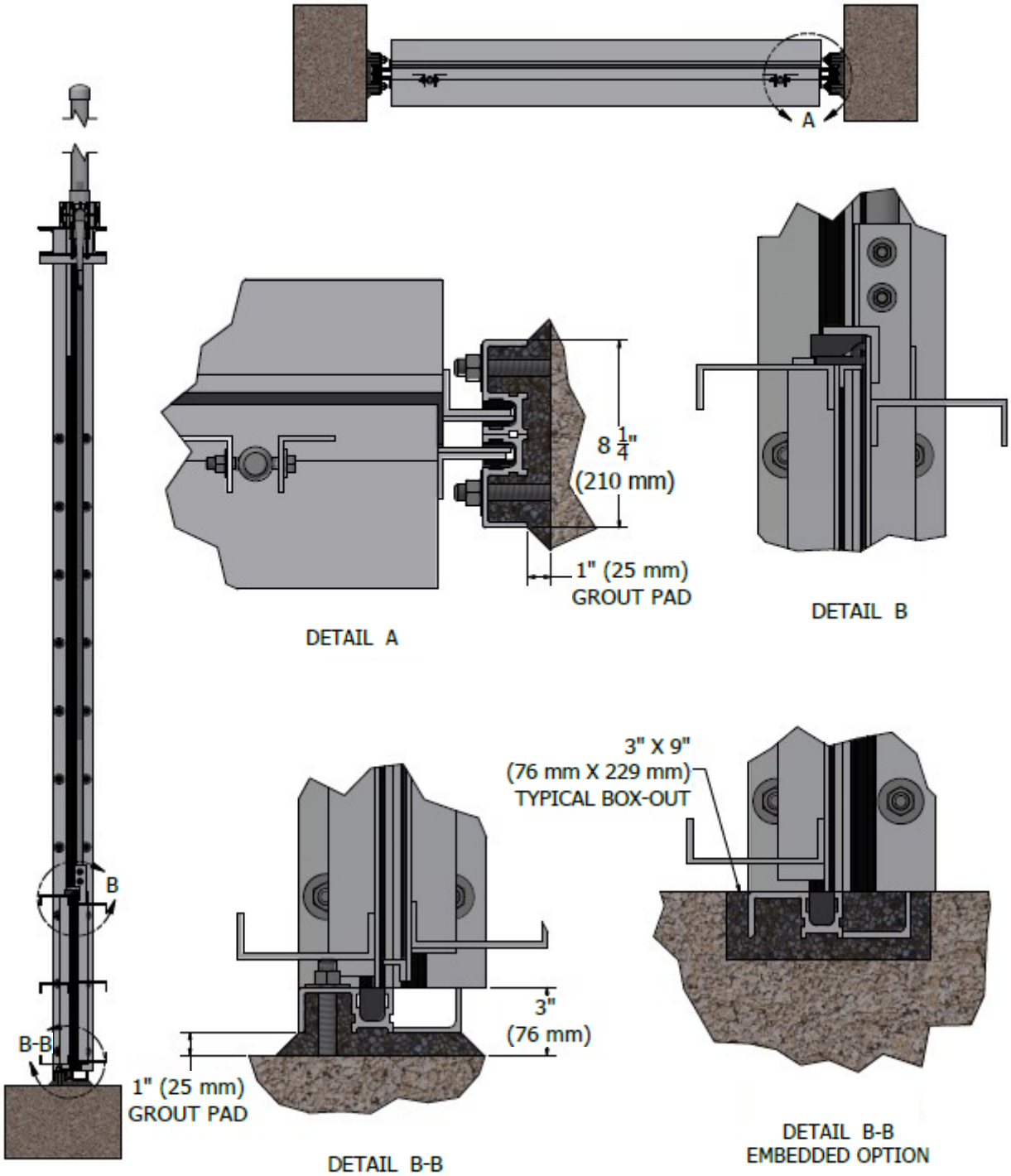
Model 823-C-I Multiple Disc Slide Gate



GATE ILLUSTRATED: 98" (W) x 75" (H) x 140" (V)
SEE ACTUATORS SECTION FOR OTHER ARRANGEMENTS

Model 823-C-I Multiple Disc Features

°UHMW SEAT/SEALS
°LEAKAGE ≤ AWWA SLIDE GATE STANDARDS
°FRAME MOUNTS IN EXISTING CHANNEL
°OPEN CHANNEL - NO TOP SEAL
°YOKE MOUNTED ACTUATOR
°RESILIENT INVERT SEAL (FLUSH BOTTOM CLOSURE)



Model 823-C-I Multiple Disc Positions

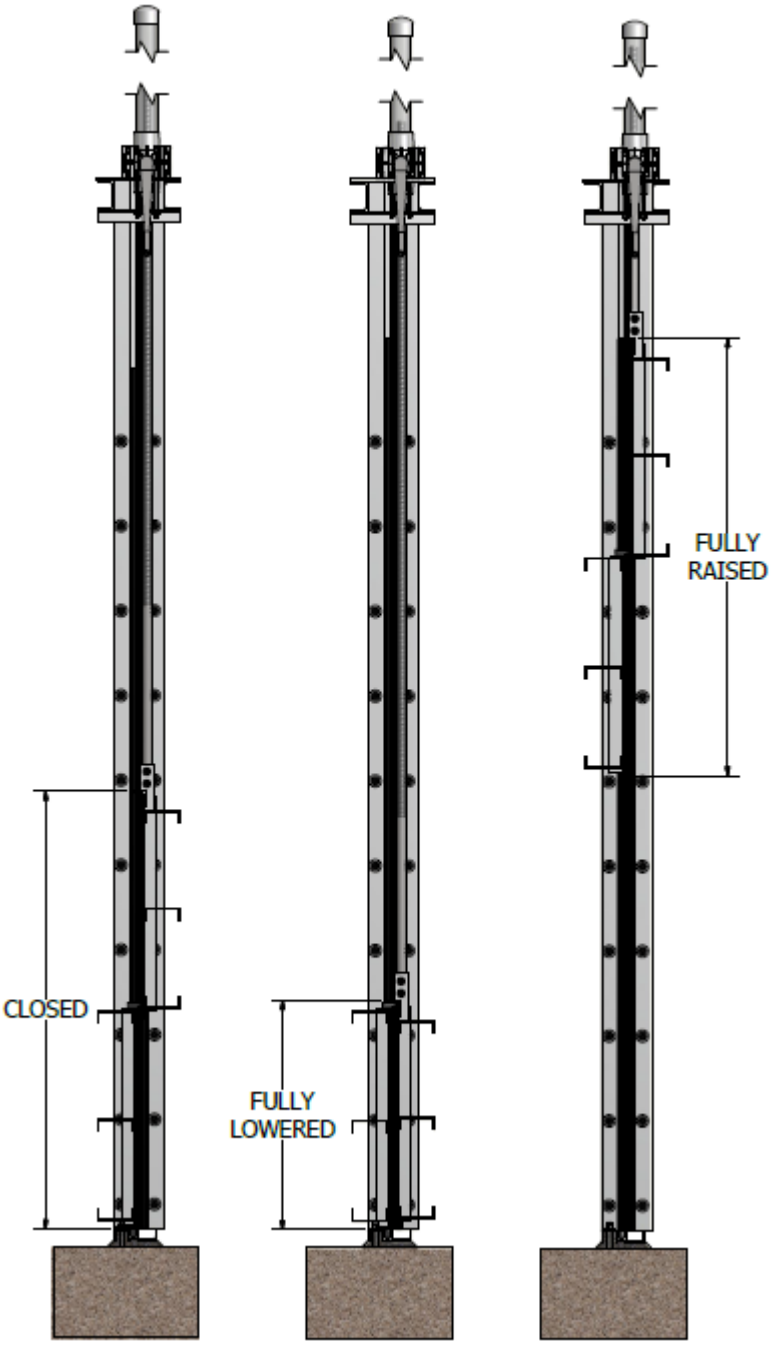
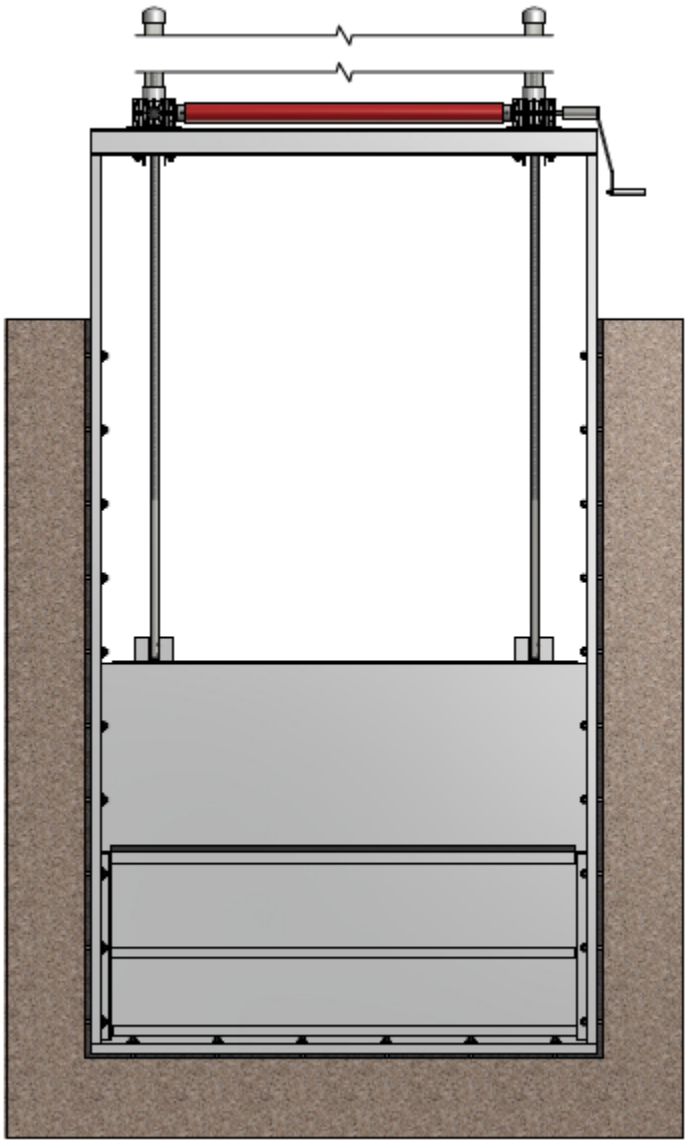


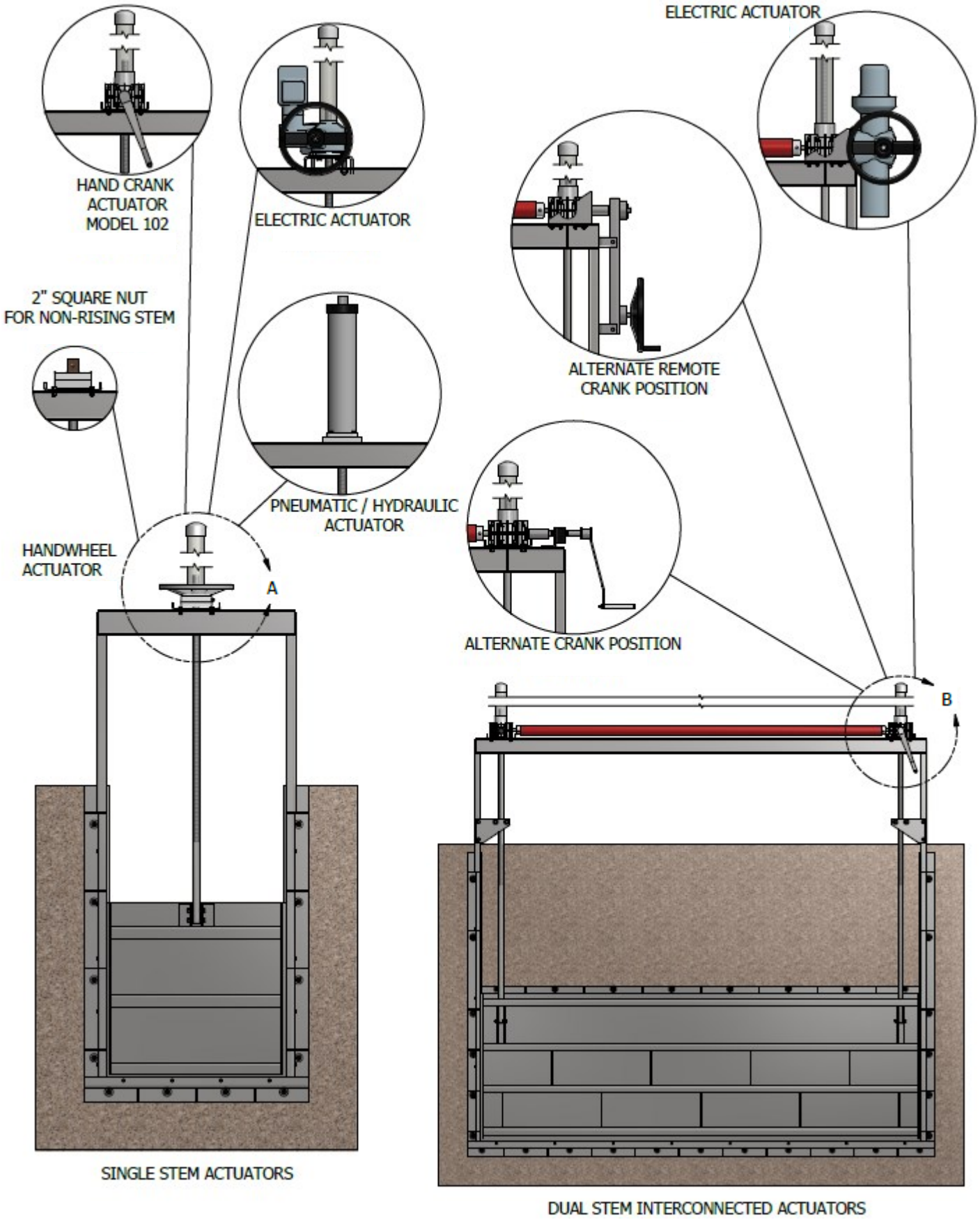
Figure 2: Disc Positions

Note: *Slide positions are illustrated by the stiffeners on each side.*

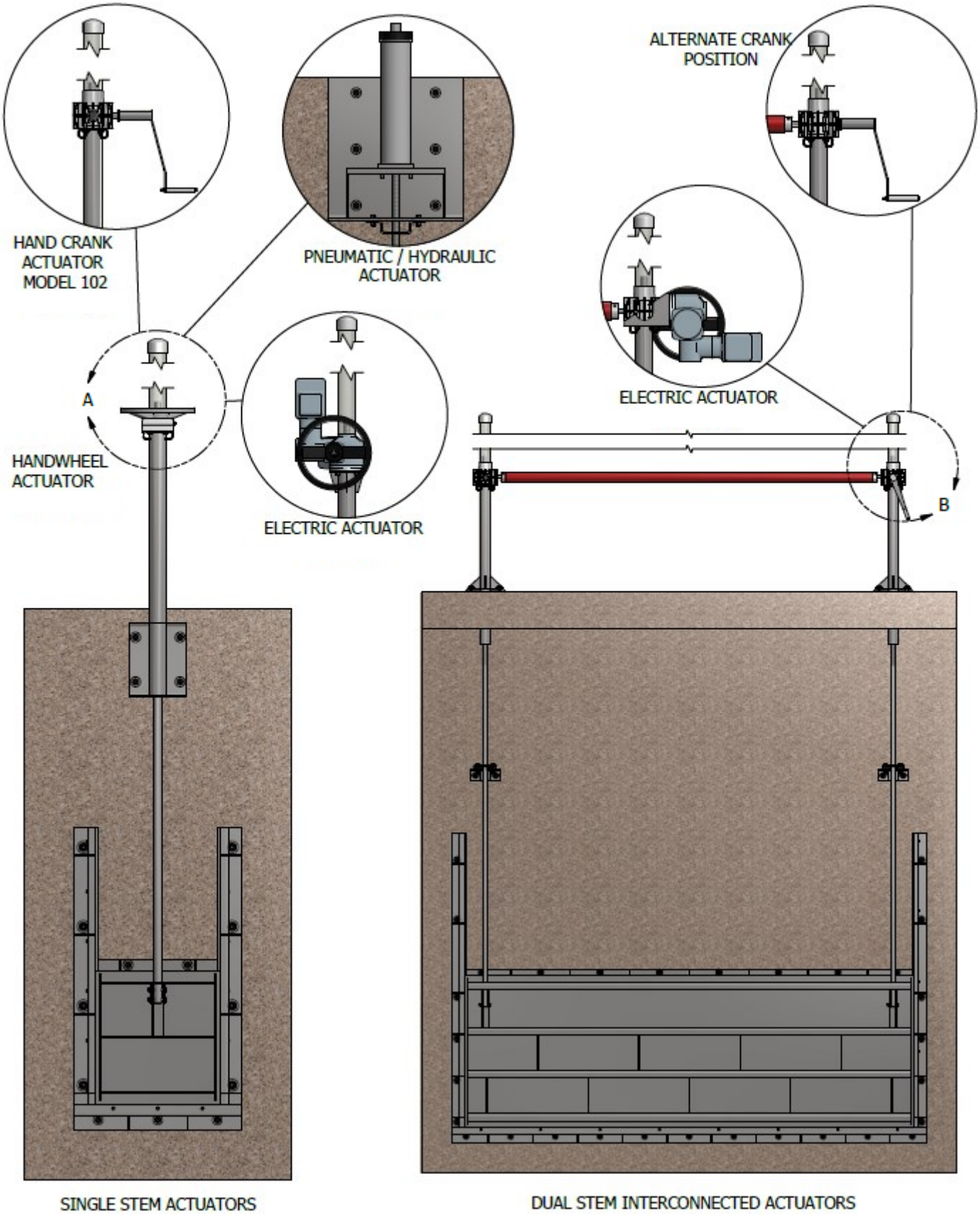
The multiple-disc slide gate is one example of our custom designs. This gate can serve two purposes. First, it can be used to control the level in a tank or pond. Second, both sides can be raised to flush the channel invert or completely drain the structure. Please consult the factory for assitance for gates designed for unusual applications.



Actuators: Self Contained Gates



Actuators: Non-Self Contained Gates



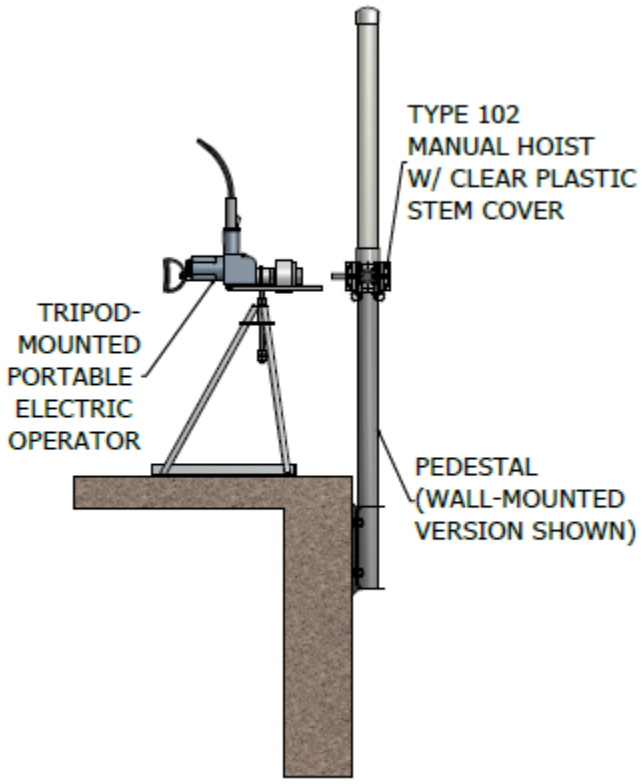
Actuators: General Information

Manual Actuators: Handwheel or hand crank actuators are appropriate when operating loads are relatively low, operation is infrequent, or electric power is unavailable. A handwheel actuator has a handwheel directly attached to the operating nut, concentric to the stem, providing a 1:1 drive ratio. Hand crank actuators have a horizontal input shaft that drives the operating nut through a right-angle gear set. Various drive ratios are available to operate virtually any gate. For high ratios (greater than 8:1), manually operating a large gate can be time-consuming and physically demanding. When hand crank manual actuators will be frequently used, or when they require numerous turns for full gate travel, portable operators should be considered.

Interconnected Actuators: For gates with a width significantly greater than their height, which is often the case with overflow weirs, interconnected crank actuators with a standard input provide accurate positioning and smooth operation. These assemblies may be operated manually or powered electrically.

Portable Operators: Portable operators powered by electricity or gasoline, available in various configurations, can be supplied to operate crank actuators. For further information, please contact the factory.

Electric Actuators: For increased loads, higher operating speeds (12" – 24" per minute), or gates that require frequent operation, electric actuators offer remote control of gate position and seamless integration into automatic control systems.



Hydraulic Cylinder Actuators: Hydraulic cylinders offer smooth and rapid operation, making them well suited for automatic control systems that require frequent gate cycling. They can also be designed to provide automatic gate positioning in the event of an electric power failure.

Whipps, inc.
WATER CONTROL GATES

Water Control Equipment

Series 700

Contents

Introduction

Series 700 gates are comprised of specialized water control equipment tailored for specific applications. Whipps, Inc. can economically produce customized water control equipment for both standard and non-standard applications. Our company offers shear gates and mud valves with high performance and longevity. The mud valves and shear gates manufactured by Whipps, Inc. are custom built using corrosion-resistant materials, meeting the requirements of each specific application. Both mud valves and shear gates can be operated using a T-wrench, allowing the water control equipment to operate manually. An electric actuator can be provided should the application call for it. Contact the factory for consultation.

Advantages

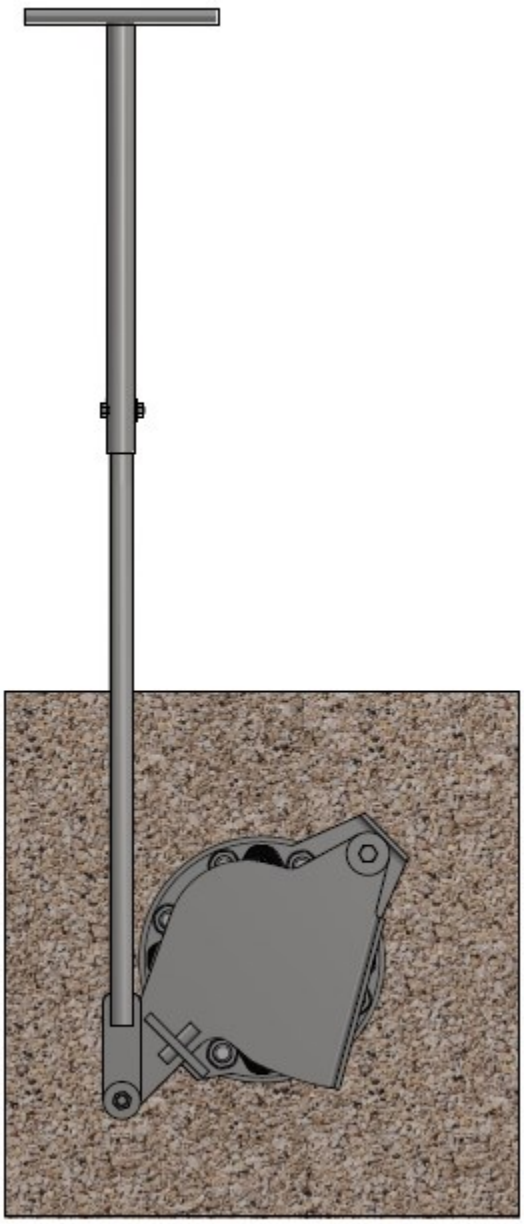
Performance: The use of compressible seals provides superior leakage performance compared to traditional cast iron water control equipment with bronze seating faces.

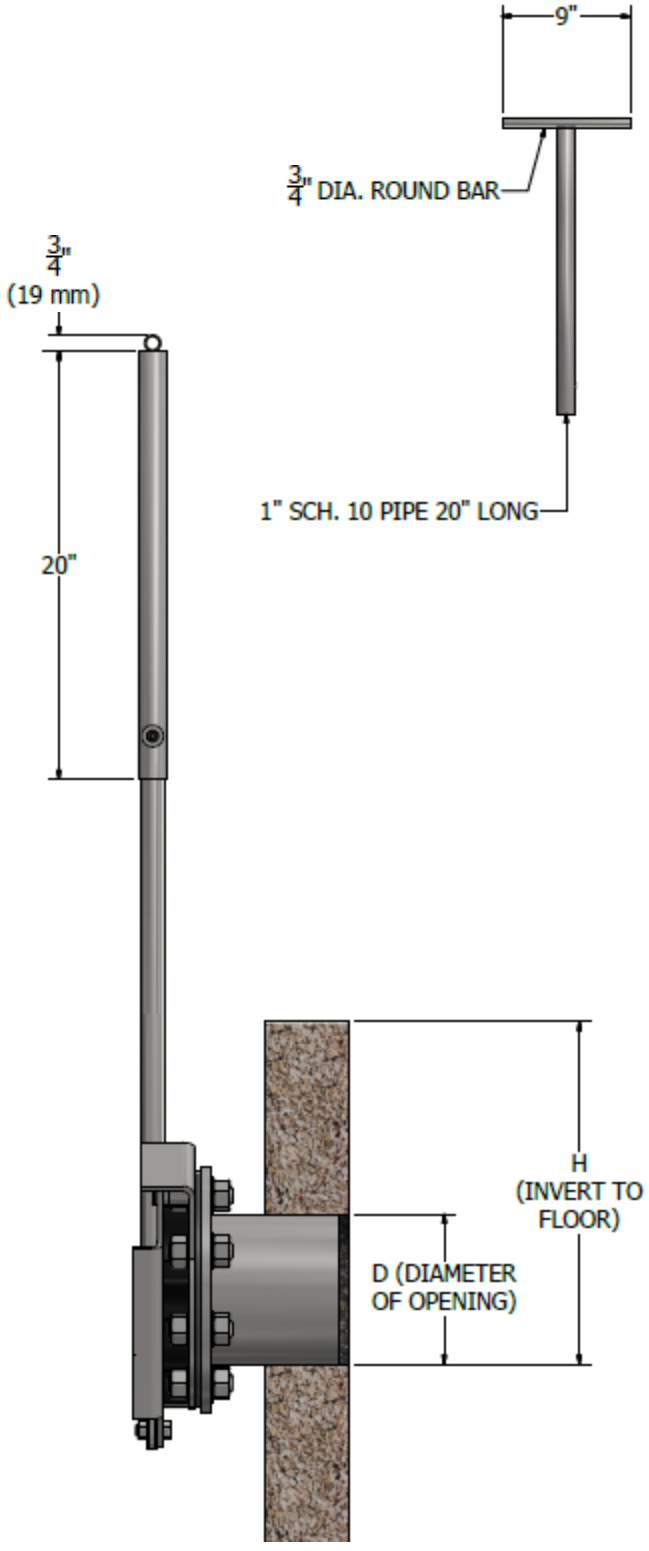
Design Flexibility: All series 700 gates are custom-built for each application, allowing various mounting arrangements and a nearly unlimited range of sizes.

Corrosion Resistance: Painting or recoating stainless steel is not required to resist corrosion in water and wastewater.

Field Replaceable Seals: If the seals were ever to become damaged, they are easily removable and replaceable. In contrast, the bronze seating faces on traditional cast iron water control equipment cannot be replaced in the field.

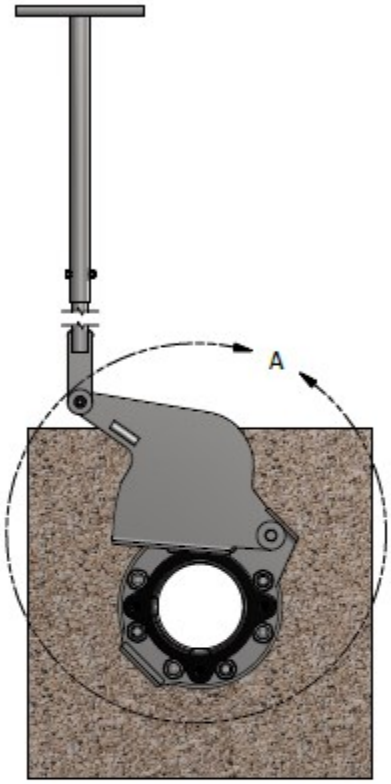
Model 703 Shear Gate

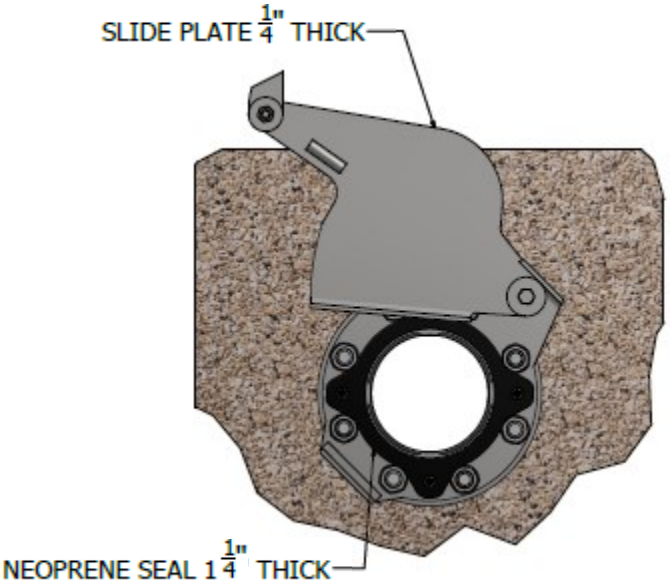




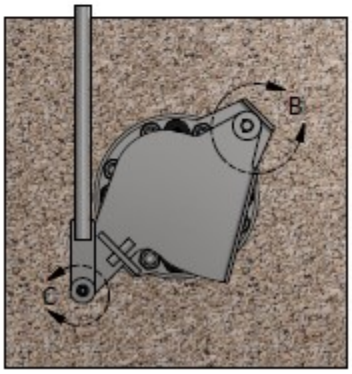
GATE ILLUSTRATED: 7" (D) x 16" (H)

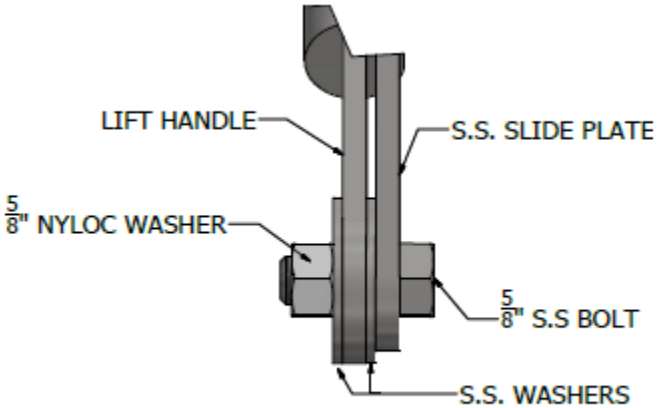
Model 703 Features



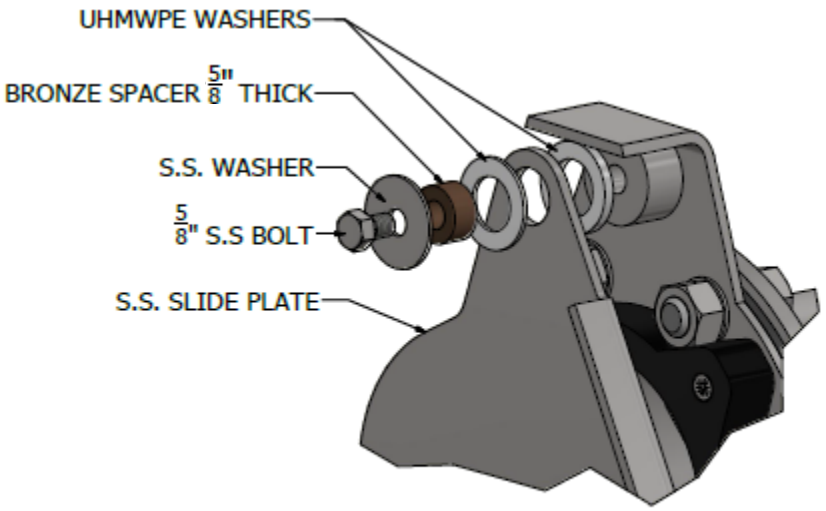


DETAIL A
OPEN POSITION



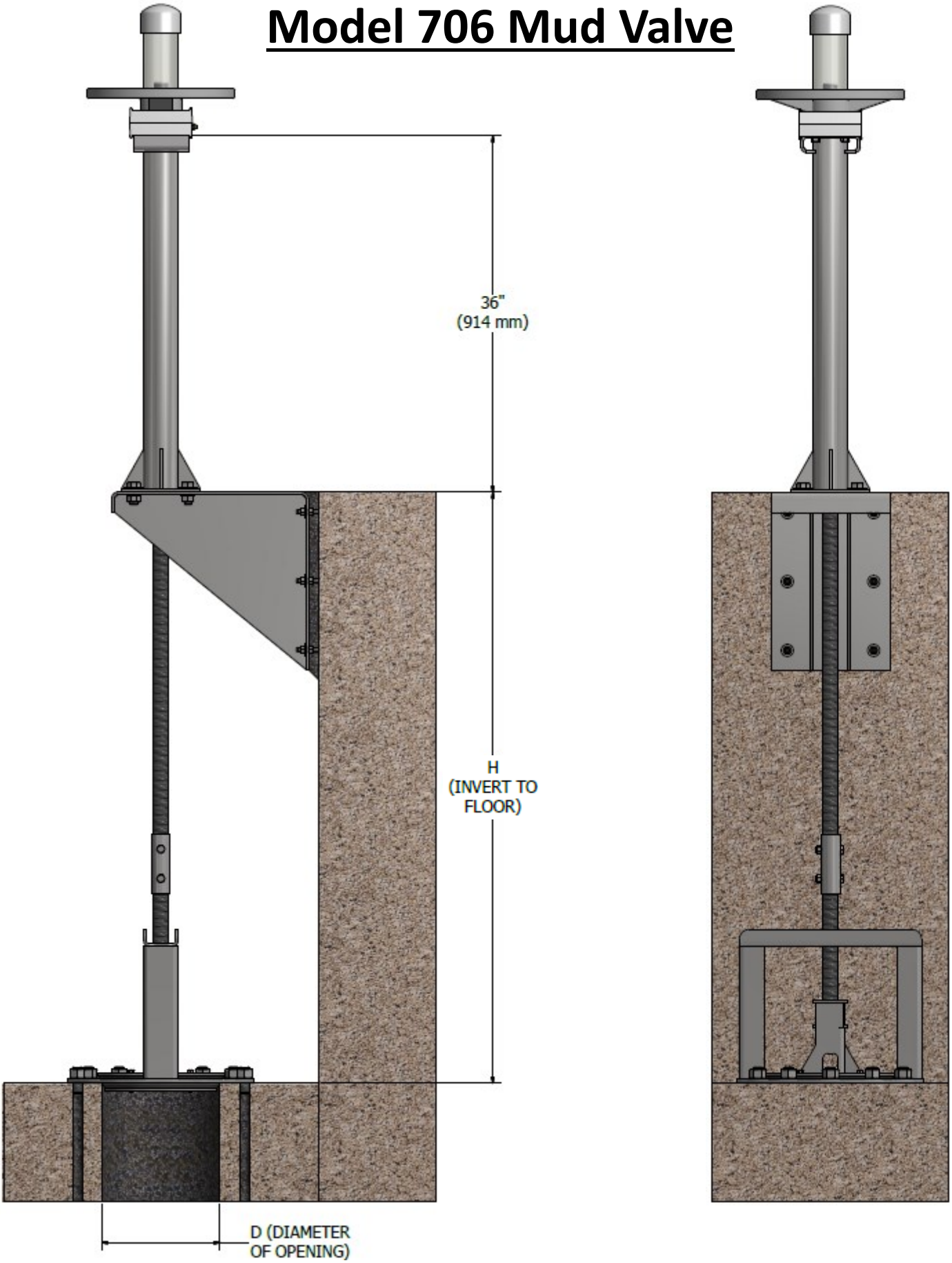


DETAIL C



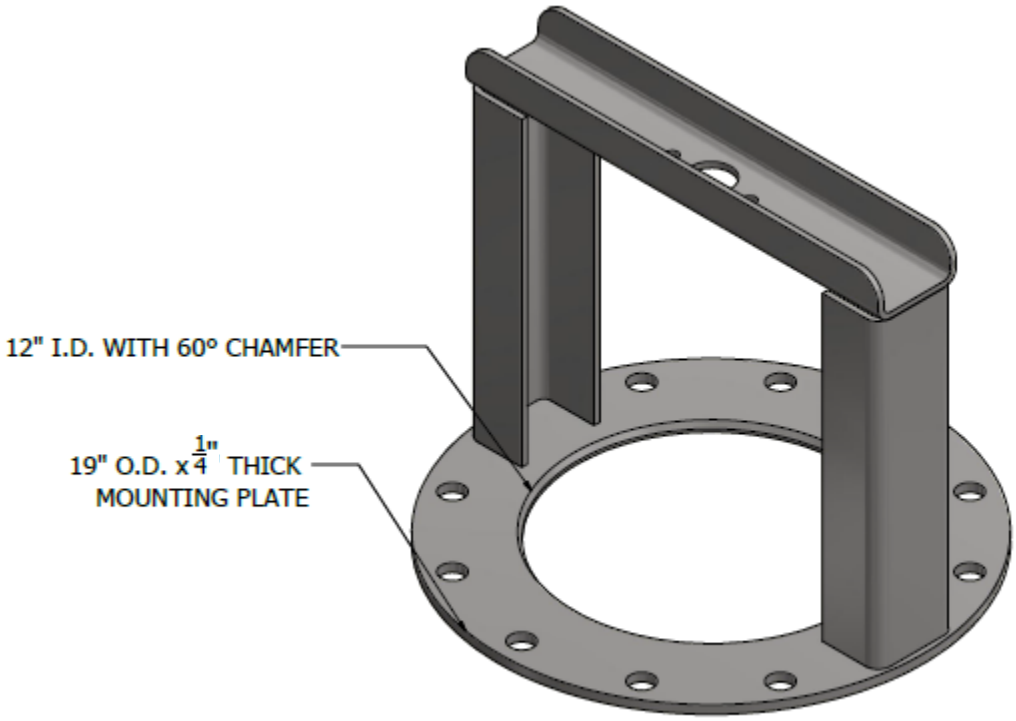
DETAIL B
PIVOT ASSEMBLY

Model 706 Mud Valve

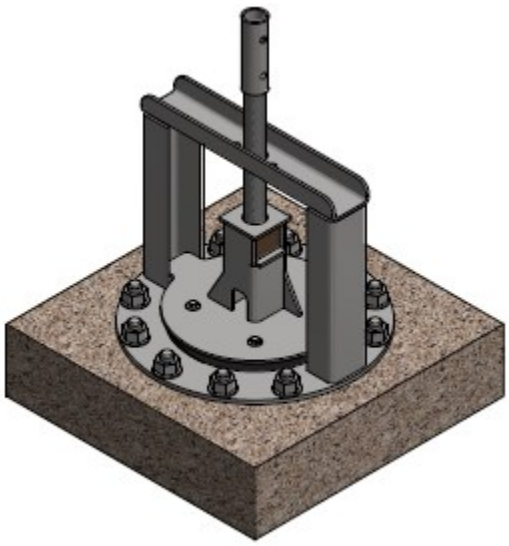


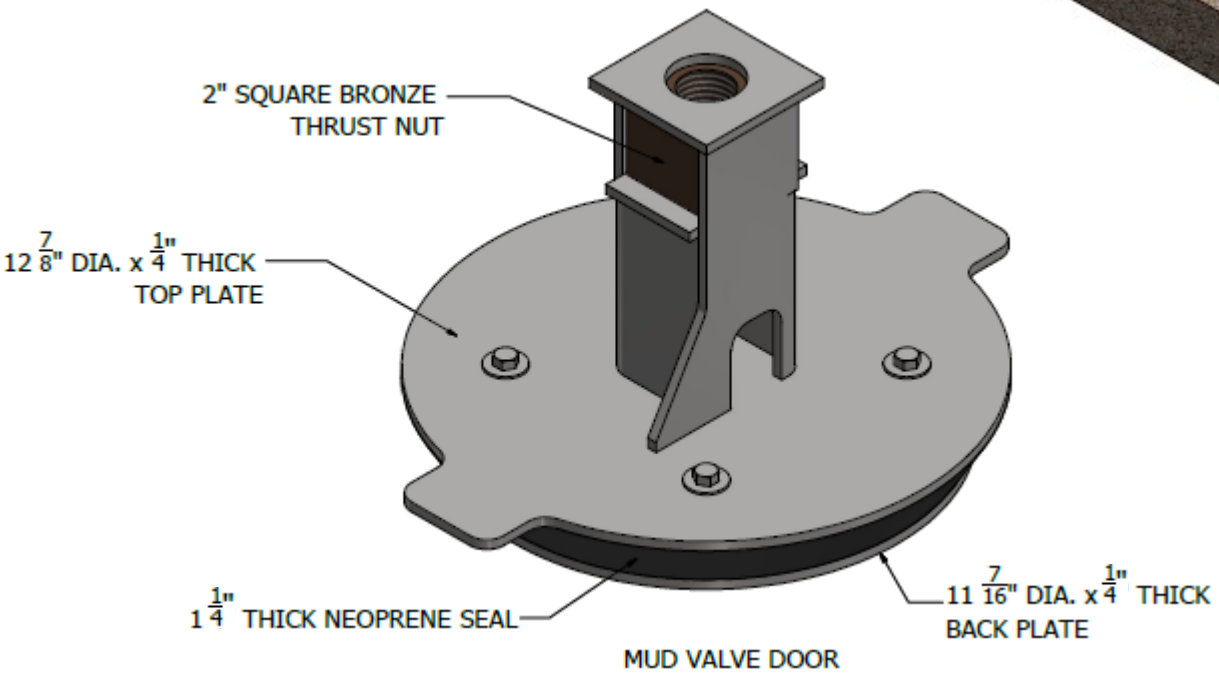
GATE ILLUSTRATED: 12" (D) x 60" (H)

Model 706 Features



MUD VALVE BODY





MUD VALVE DOOR

Whipps, inc.
WATER CONTROL GATES

Stop Gates and Stop Logs

Series 500 AWWA® Compliant

Contents

Stop Gate Introduction

The stop gates depicted in this section are the most commonly utilized designs. They feature rugged aluminum construction, complemented by durable and flexible ultra-high molecular weight polyethylene (UHMW) seat/seals. A resilient bottom seal guarantees a secure closure with minimal leakage. Stop gates are also available in stainless steel if the design requires a more durable, but heavier material.

Description

Frames: Stop gate frames are designed to be embedded, mounted on the face of a wall, and mounted inside of an existing channel. The slide guides consisted of sturdy aluminum extrusions with replaceable polymer seating or sliding liner. Aluminum has proved to be a suitable material for use in most water and wastewater. The polymer seats/seals are field proven to maintain shape and integrity in demanding applications.

Table 1: Mounting Option vs Model Number

Mounting Options		Gate Model Numbers		
		501	503	503-C
Guide	Embedded	X		
Frame	Wall Mounted		X	
Style	Channel Mounted			X

Slides: The slide is constructed from aluminum plate, sufficiently reinforced for the design head conditions. An appropriate lifting handle is attached near the top of the slide for manual installation and removal.

Leakage: Whipps, Inc. provides a leakage guarantee more favorable than the specifications outlined in AWWA C-501 for Cast Iron Sluice Gates or the most recent revision of AWWA C-560 for Cast Iron Slide Gates. Our commitment ensures leakage rates not exceeding 0.10 gpm/ft of seal perimeter under both seating head and unseating head conditions.

Stop Gate Specifications

Quality Assurance: The stop gate will be manufactured by a company with 10 years or more of successful experience in designing and producing low-leakage stop gates under similar design conditions. All welds will be executed by welders with AWS certification.

Performance: The maximum allowable leakage for the stop gates shall be 0.10 gallons per minute per linear foot of the wetted perimeter, regardless of the direction of the unbalanced head.

Technical Information: In addition to the submittal information required by other sections of these specifications, the stop gate manufacturer may need to submit design calculations and supporting data for all gates, illustrating stresses, loads, and deflection for critical parts under design head conditions. At a minimum, theses shall include operating load, slide deflection, slide bending stress, and shear stress in stiffener welds.

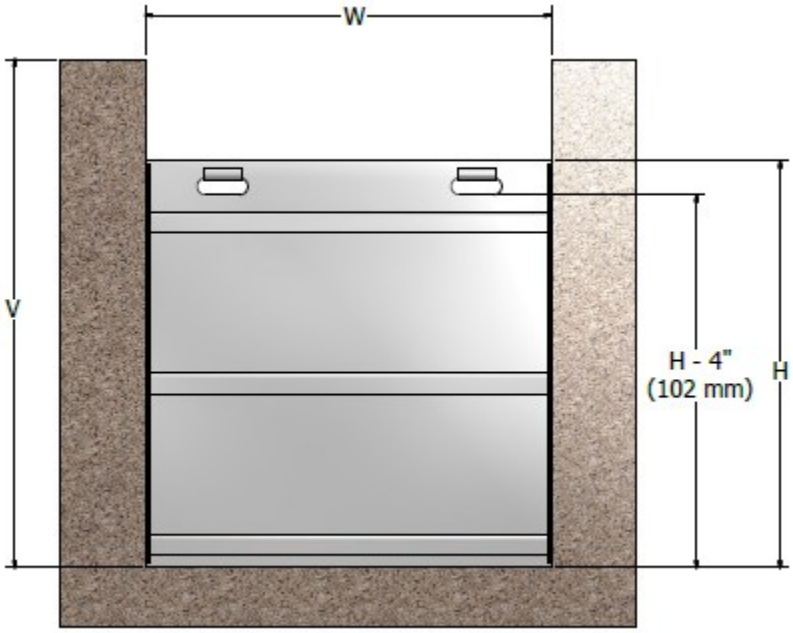
Frame: Constructed of 1/4" or thicker extruded aluminum (Alloy 6061-T6) incorporating ultra-high molecular weight polymer (UMHW) seat/seal facing on both the upstream and downstream sides of the slide. Each seat/seal is shaped to provide two bearing surfaces and two sealing edges. The gate side guides and invert shall weigh a minimum of 4lbs/ft for wall mounted and 3lbs/ft for embedded installation. The gate invert shall include a removable neoprene seal. Seals attached to the slide will not be acceptable. All necessary assembly and anchor bolts shall be type 304 (type 316 optional) stainless steel and provided by the gate manufacturer.

Slide: The slide shall be minimum thickness of 1/4" aluminum plate (Alloy 6061-T6) reinforced with stiffeners as required ensure that at the design head, the slide will not deflect more than 1/360 of its width and stress is limited to 7600 psi. Slide stiffeners shall have a minimum weight of 2.5lbs/ft. The slide shall be equipped with a cast aluminum offset lifting handle. Gates wider than 36 inches shall be provided with dual lifting handles.

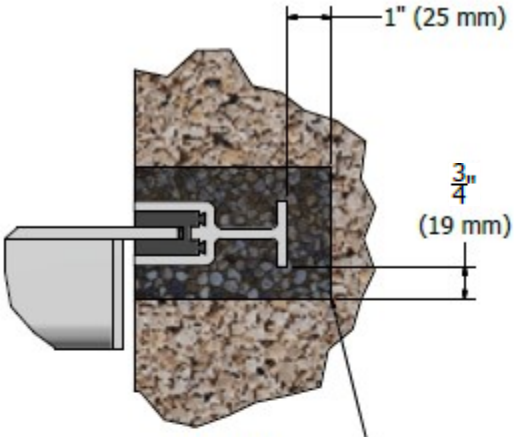
Painting: All aluminum in contact with concrete shall receive a heavy shop coat of bitumastic paint.

Anodizing (optional): All aluminum components can be anodized in accordance with Aluminum Association Specification AA-C22-A41. The anodizing shall be 0.7 mm thick with a nickel acetate sealer.

Model 501 Stop Gate

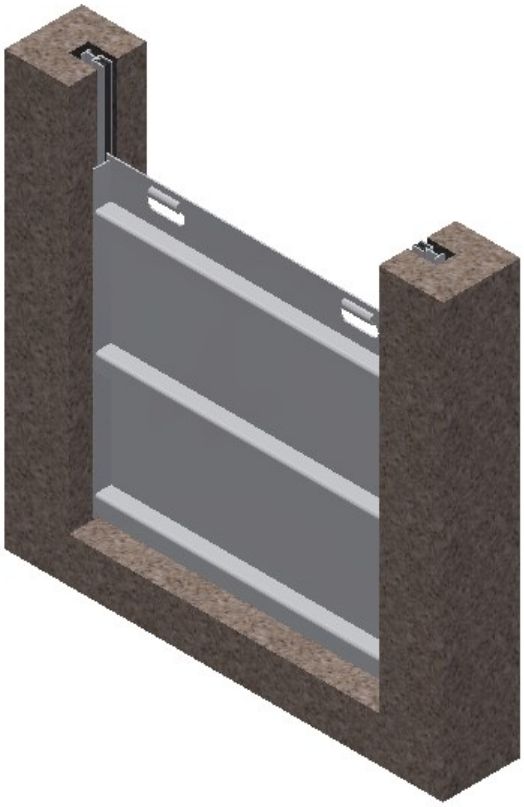


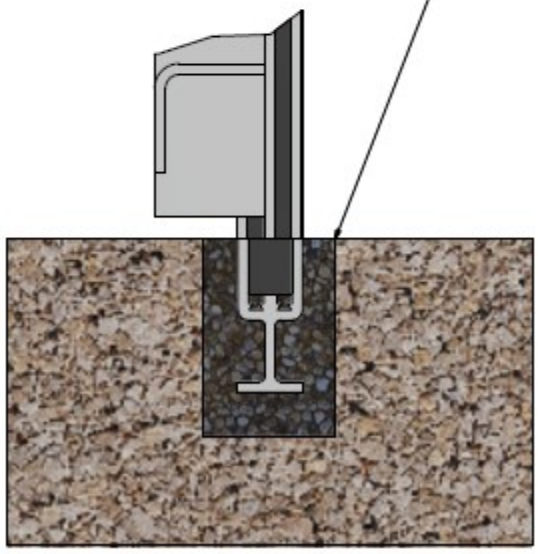
GATE ILLUSTRATED: 48" (W) X 48" (H) X 60" (V)



DETAIL A

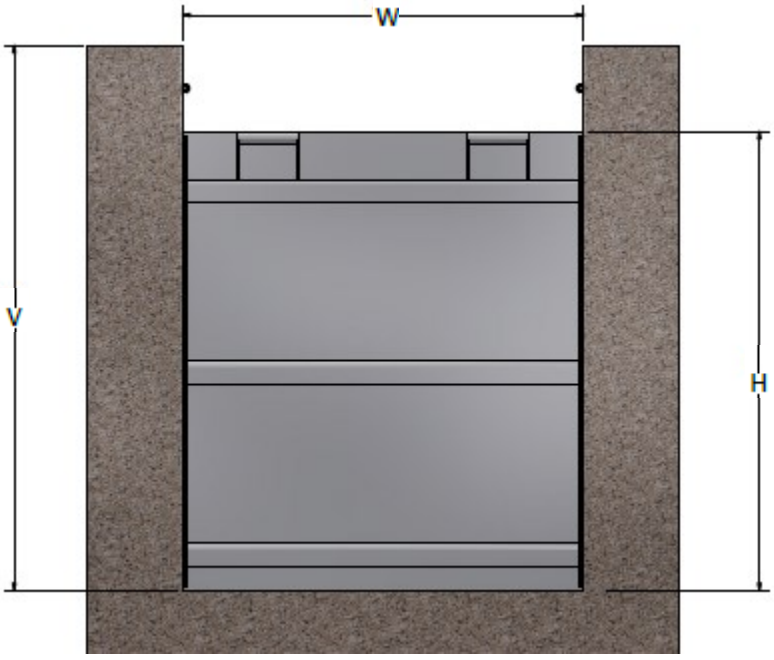
NOTE: All Aluminum in contact with concrete shall have a heavy shop coat of bituminous paint.



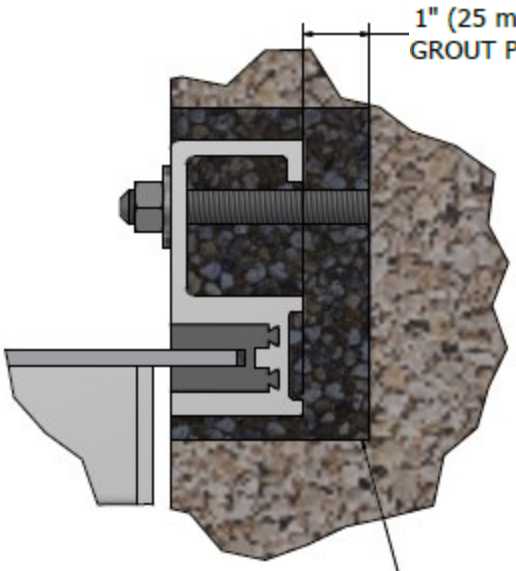


DETAIL B

Model 501 Stop Gate

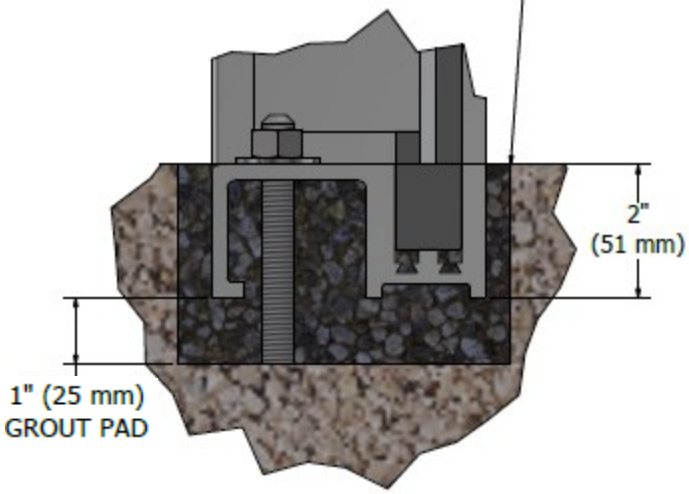


GATE ILLUSTRATED: 42" (W) X 48" (H) X 57" (V)

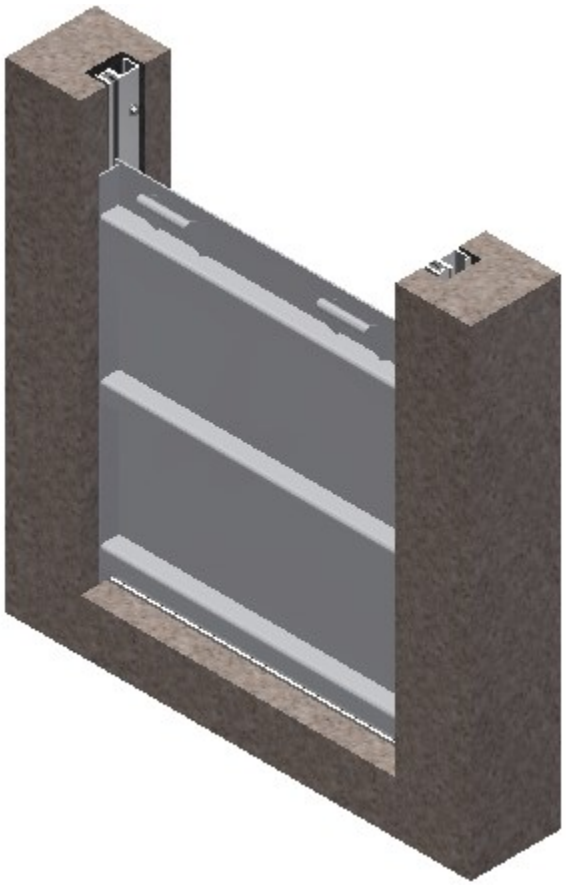


DETAIL A

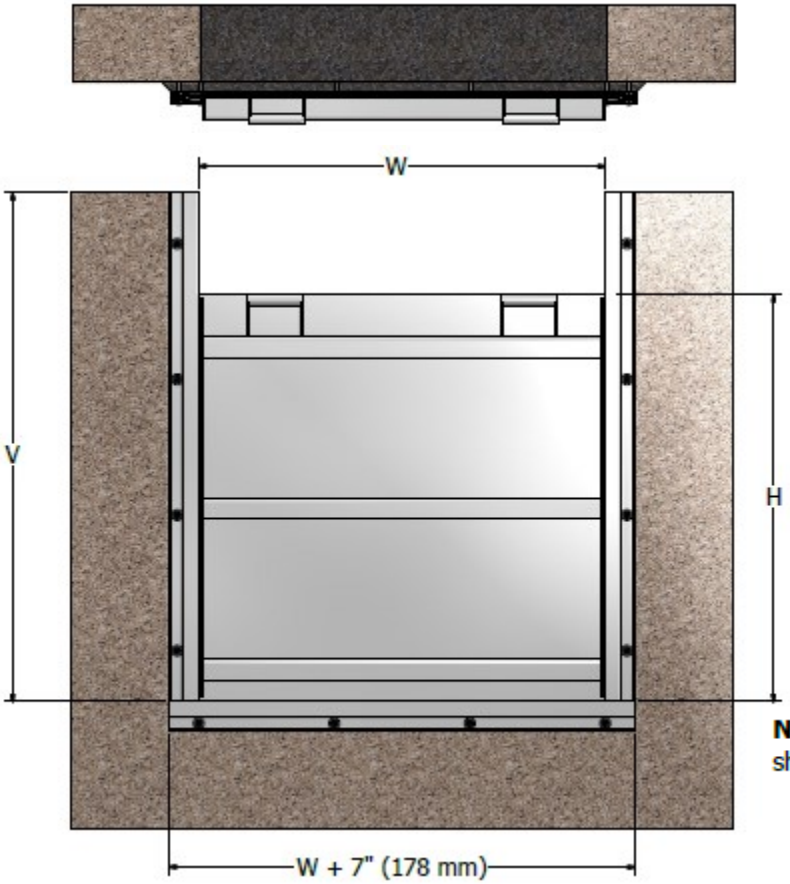
NOTE: All Aluminum in contact with concrete shall have a heavy shop coat of bitumastic paint.



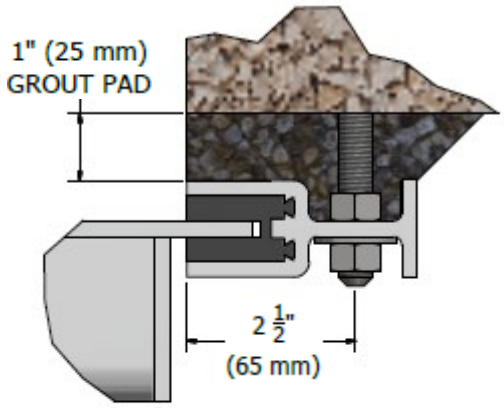
DETAIL B



Model 503 Stop Gate

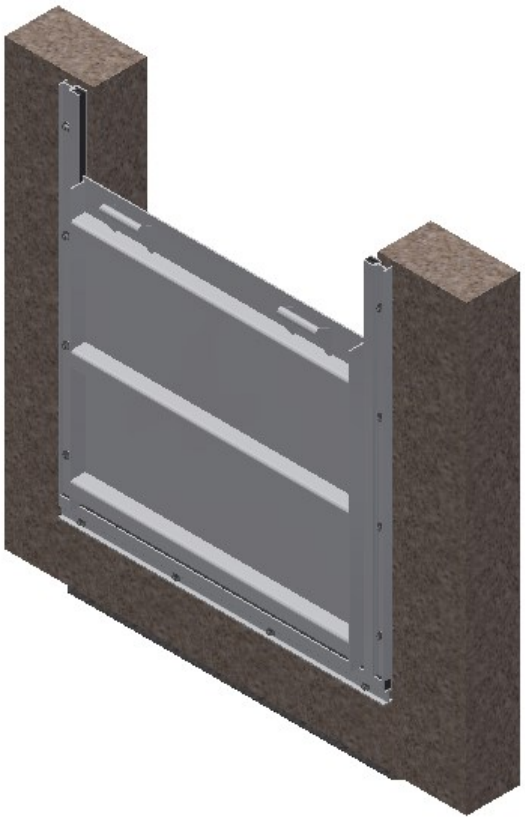


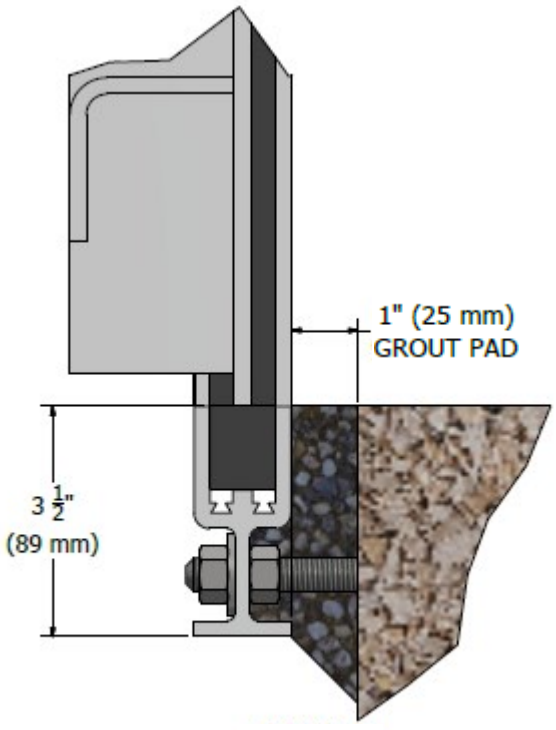
GATE ILLUSTRATED: 48" (W) X 48" (H) X 60" (V)



DETAIL A

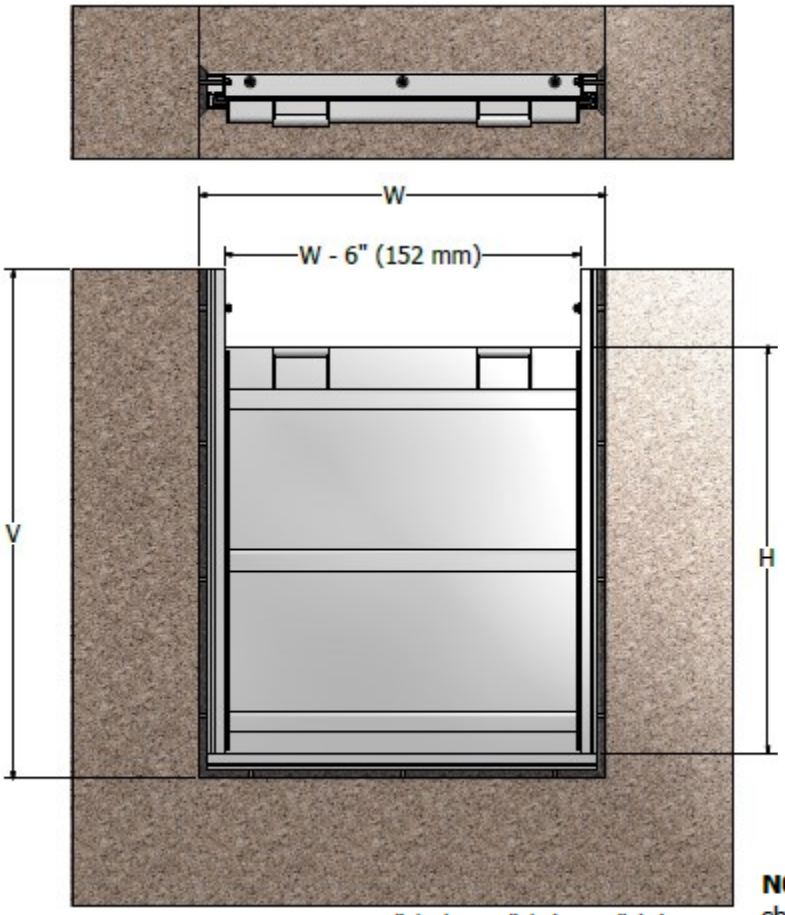
NOTE: All Aluminum in contact with concrete shall have a heavy shop coat of bitumastic paint.



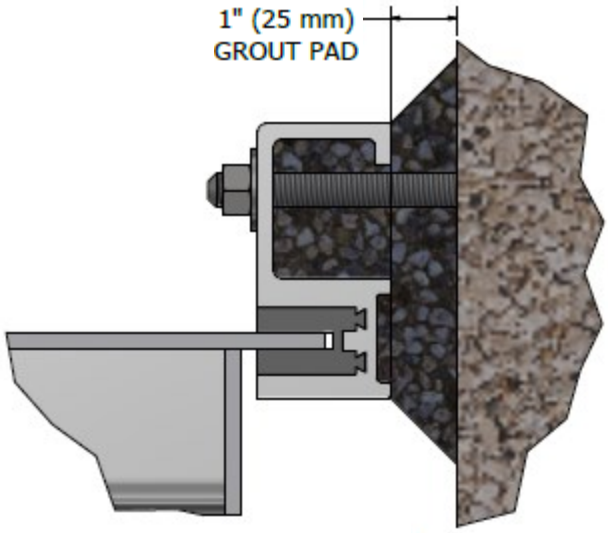


DETAIL B

Model 503-C Stop Gate

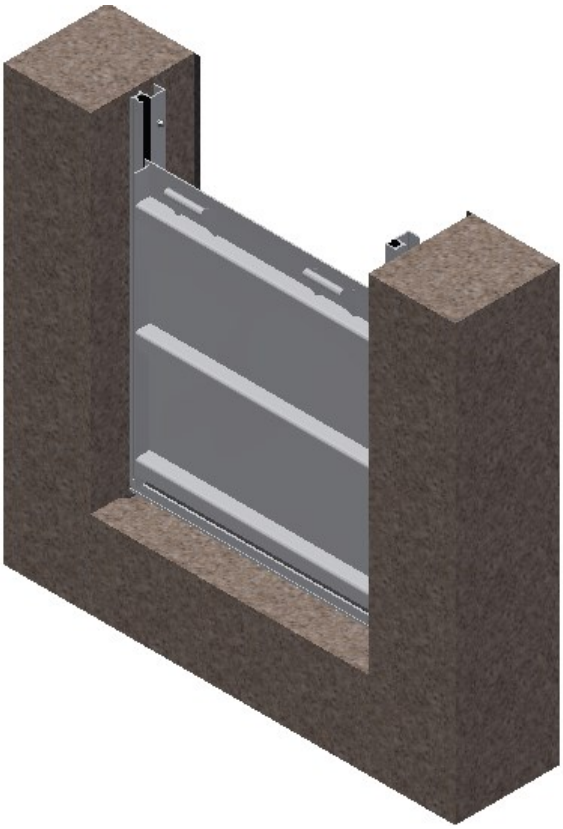


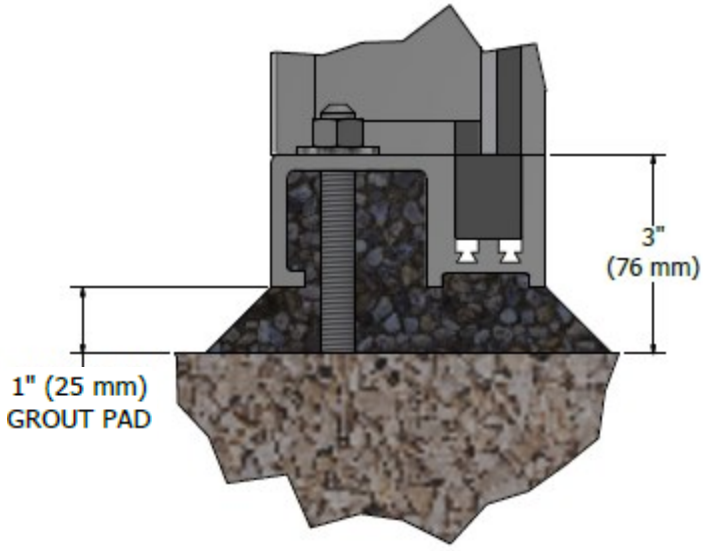
GATE ILLUSTRATED: 48" (W) X 48" (H) X 60" (V)



DETAIL A

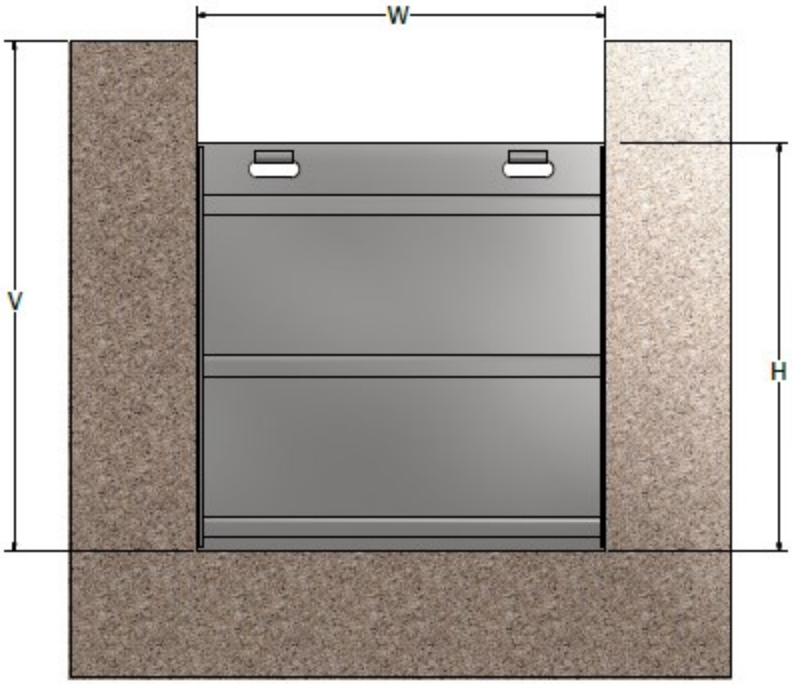
NOTE: All Aluminum in contact with concrete shall have a heavy shop coat of bitumastic paint.



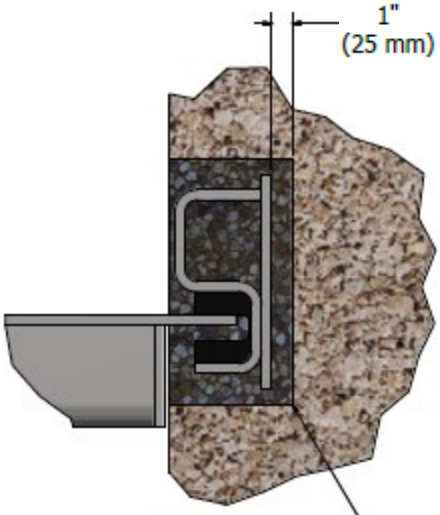


DETAIL B

Model 521 Stop Gate

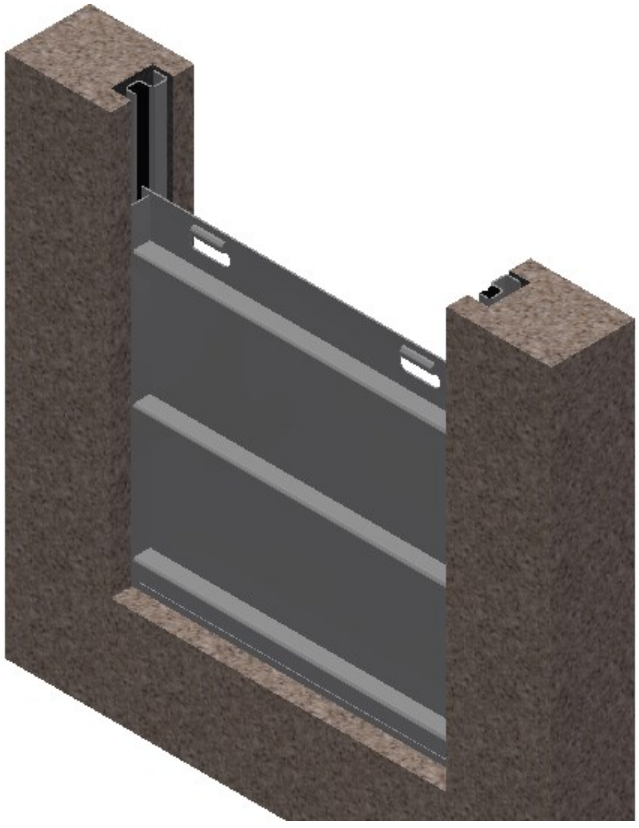


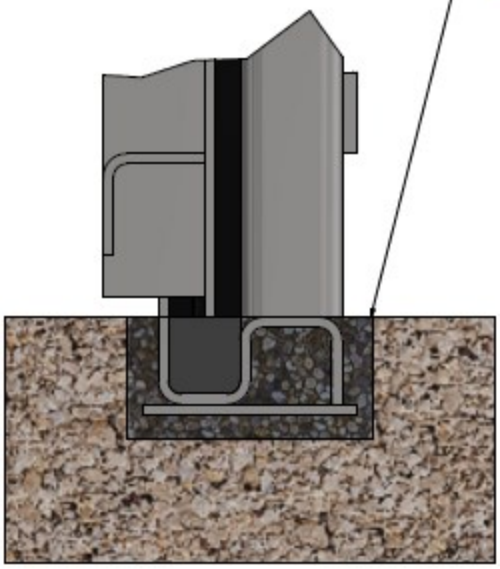
GATE ILLUSTRATED: 48" (W) X 48" (H) X 60" (V)



DETAIL A

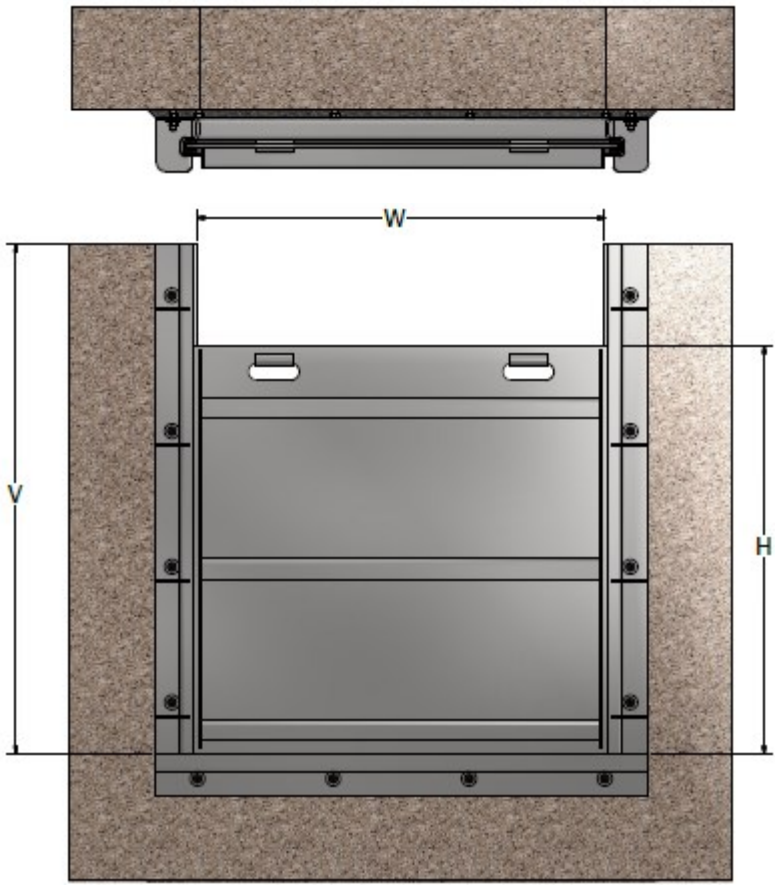
3" X 6"
BOX-OUT



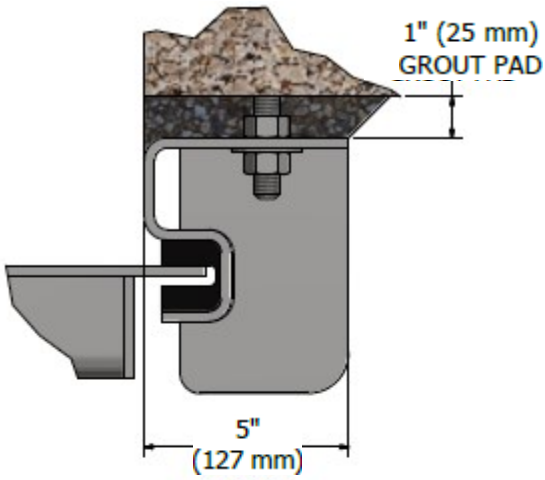


DETAIL B

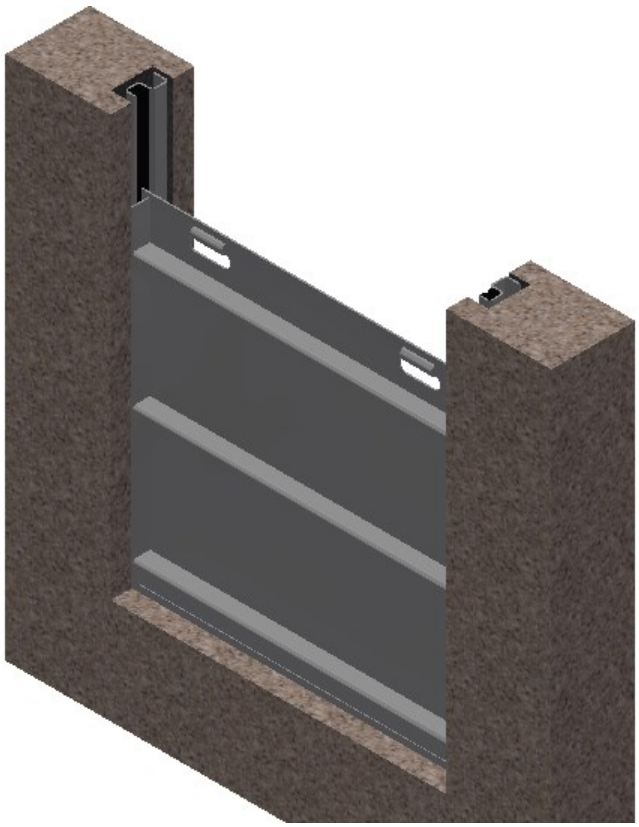
Model 523 Stop Gate

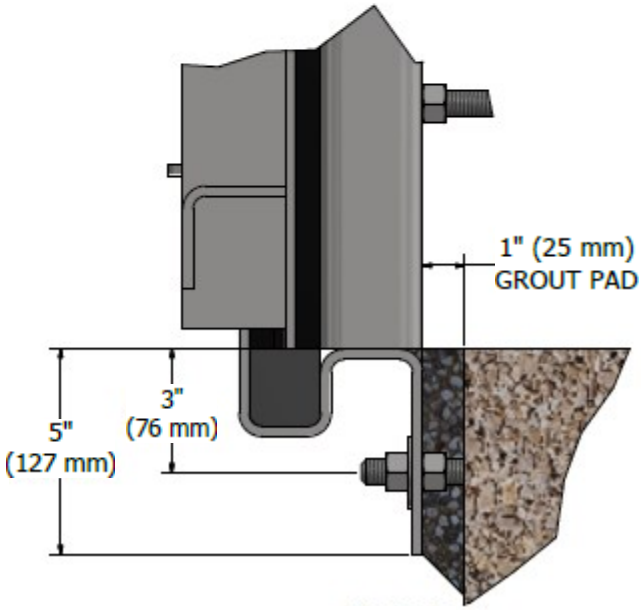


GATE ILLUSTRATED: 48" (W) X 48" (H) X 60" (V)



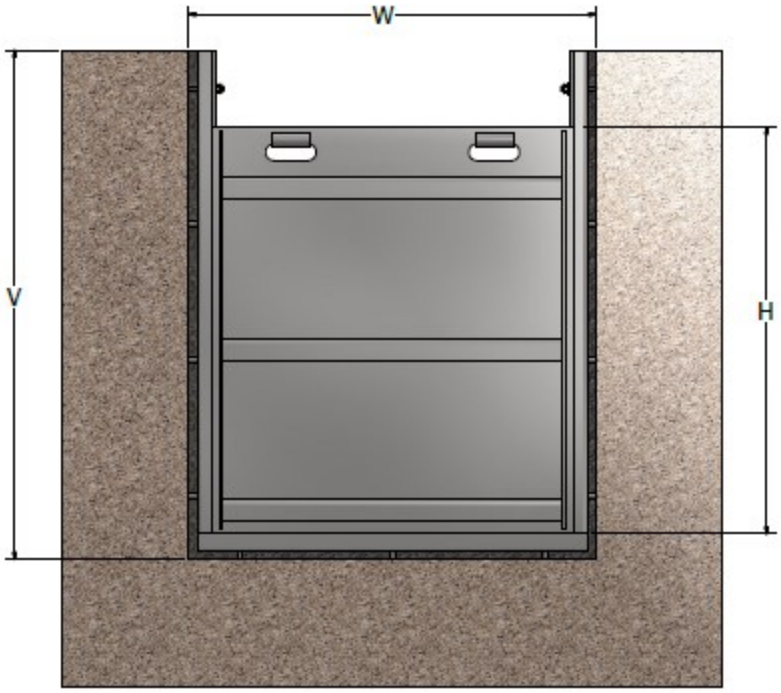
DETAIL A



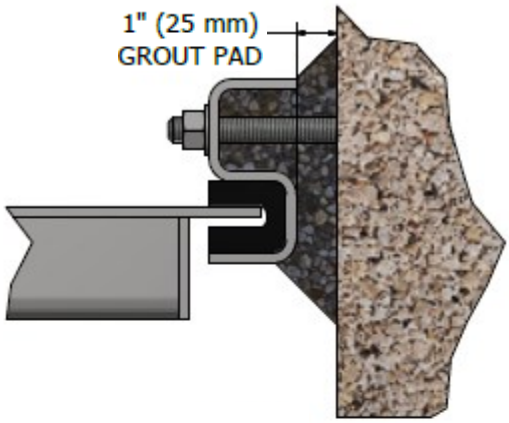


DETAIL B

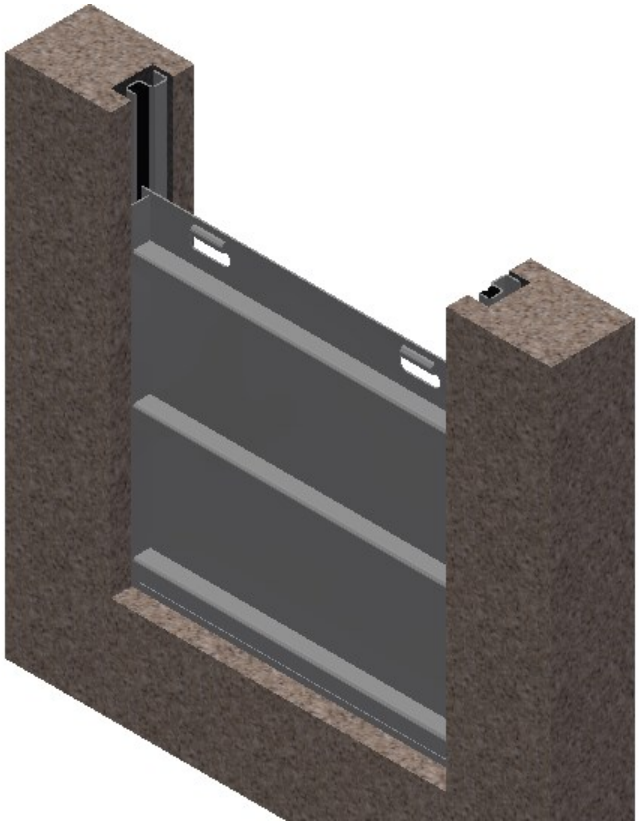
Model 523-C Stop Gate

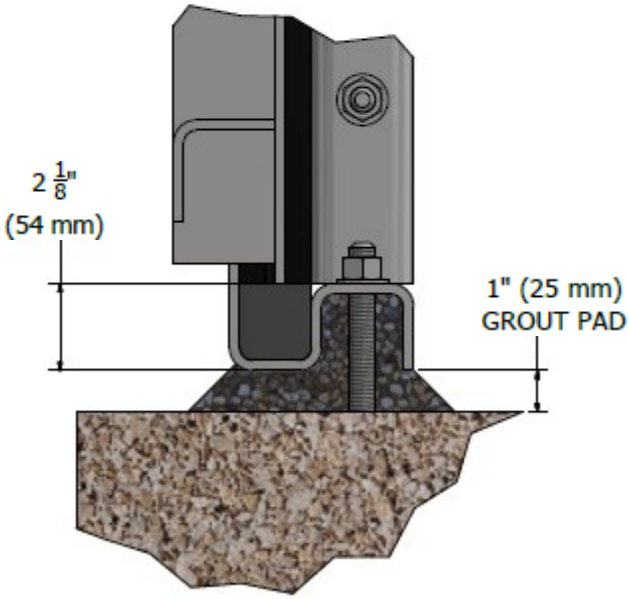


GATE ILLUSTRATED: 48" (W) X 48" (H) X 60" (V)



DETAIL A



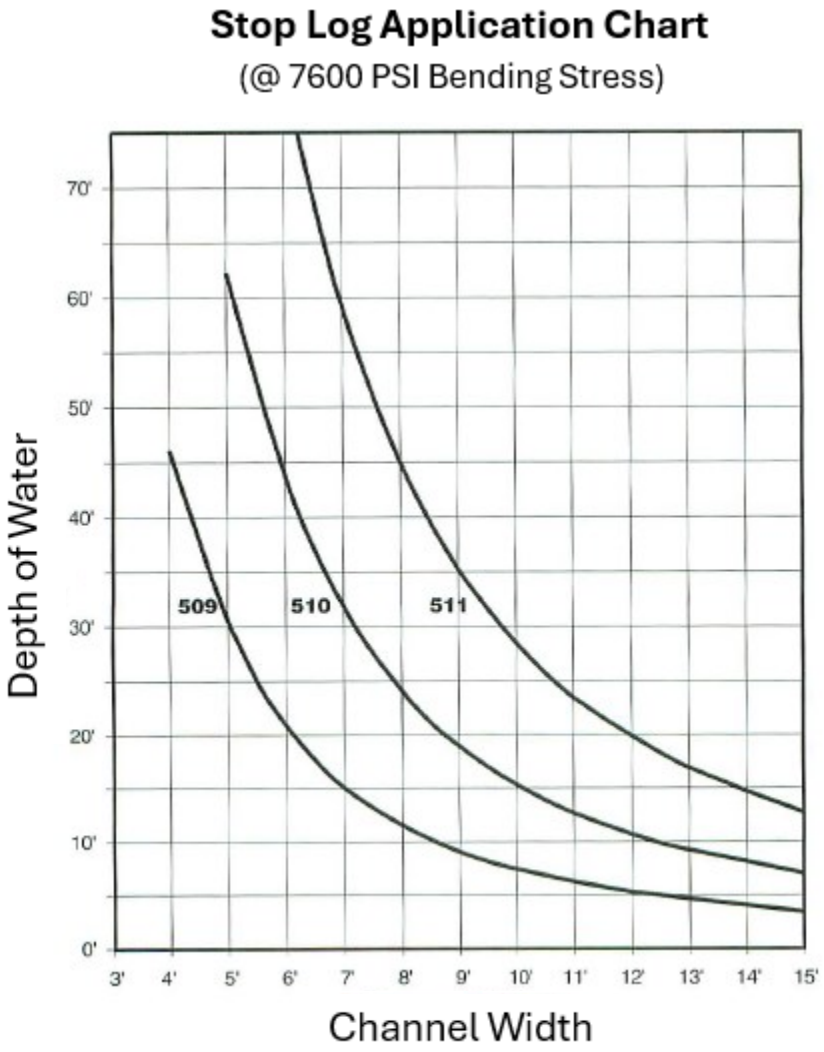


DETAIL B

Stop Log Introduction

Stop logs have been utilized for many years to contain water in ponds, tanks, or channels. They are used in applications where their installation or removal is required infrequently. Historically, stop logs were crafted from squared timbers, as their name suggests. However, obtaining wood in the required sizes, quality, and quantity for traditional stop logs has become increasingly challenging. The dimensional instability in wood also complicates providing timber stop logs with predictable leakage characteristics.

Whipps series 500 stop logs are suitable for a broad range of channel widths and water depths, guaranteeing a maximum leakage rate of 0.05 gallons per minute per linear foot of wetted seal. The series of aluminum stop logs has been in continuous production since 1980, offering an affordable and effective water flow control alternative for various projects.



Description

The Whipps Series of Proprietary Stop Log shapes are kept in stock, allowing for excellent delivery times for stop logs, including custom designs. Stop logs of this type have demonstrated outstanding service life in both water and waste treatment plant applications.

All seals are designed to offer 1/8" compliance with the groove sealing surface and also engineered to seal correctly when adjacent logs are laterally offset up to 1/2" apart. All seals are stop log mounted for ease of inspection and repair, eliminating the potential for damage from debris that is always possible when the side seals are mounted in the sides of the stop log grooves.

The following pages show the standard range of stop log heights, channel widths, and total water depths. Many other configurations can be designed to customize these stop logs for accommodating various stop log heights, channel widths, or total water depths.

Stop Log Specifications

Quality Assurance: The stop log, guide frames/grooves, and lifter shall be manufactured by a company with 10 or more years of experience in successfully designing and manufacturing low-leakage stop logs under similar conditions. All welds will be executed by welders with AWS certification.

Performance: The stop logs maximum allowable leakage shall be 0.05 gallons per minute per linear foot of the wetted perimeter, regardless of the direction of the unbalanced head.

Technical Information: In addition to the submittal information required by other sections of these specifications, the stop log manufacturer may be required to submit design calculations and supporting data for all logs. The supplementary information depicts stresses, loads, and deflection for critical parts under design head conditions.

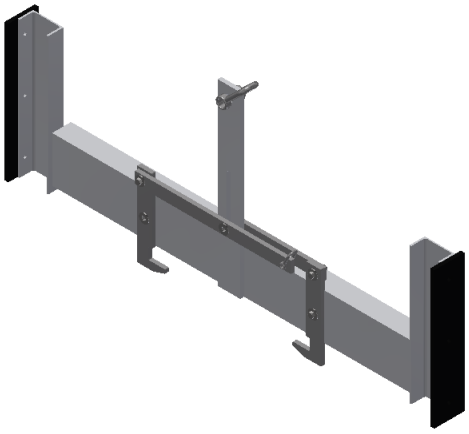
Stop Logs: Crafted from 5/16” thick aluminum (Alloy 6061-T6) extrusions. Maximum bending stress shall not exceed 7600 psi at the maximum head. Each stop log will be designed to be identical and stacked in any order. Resilient lip-type seals are attached along the sides and across the bottom with stainless steel fasteners for easy inspection and replacement. An engraved aluminum tag is welded to each log, providing information about installation location and size of the log.

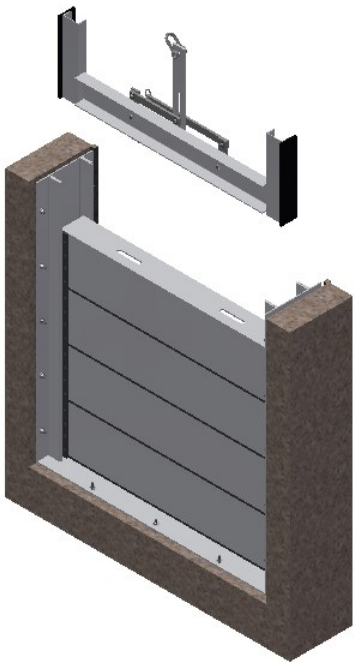
Stop Log Groove: Stop log grooves and frames are constructed of extruded aluminum (Alloy 6061-T6), with stainless steel designs available. The frame is comprised of two grooves and an invert member. Stainless steel fasteners are supplied for mounting to a wall or to an existing cannel. The invert member is designed to minimize flow interference along the bottom of the channel.

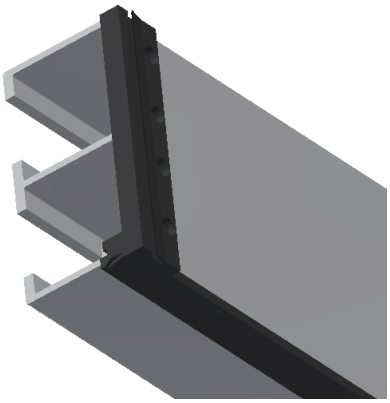
Stop Log Lifter: The lifter is constructed using aluminum or stainless steel, featuring UHMW guide bars and stainless steel fasteners. Capable of both installing and removing stop logs, the lifter easily latches and unlatches with a lanyard operated by personnel.

Painting: All aluminum in contact with concrete shall receive a heavy shop coat of bitumastic paint.

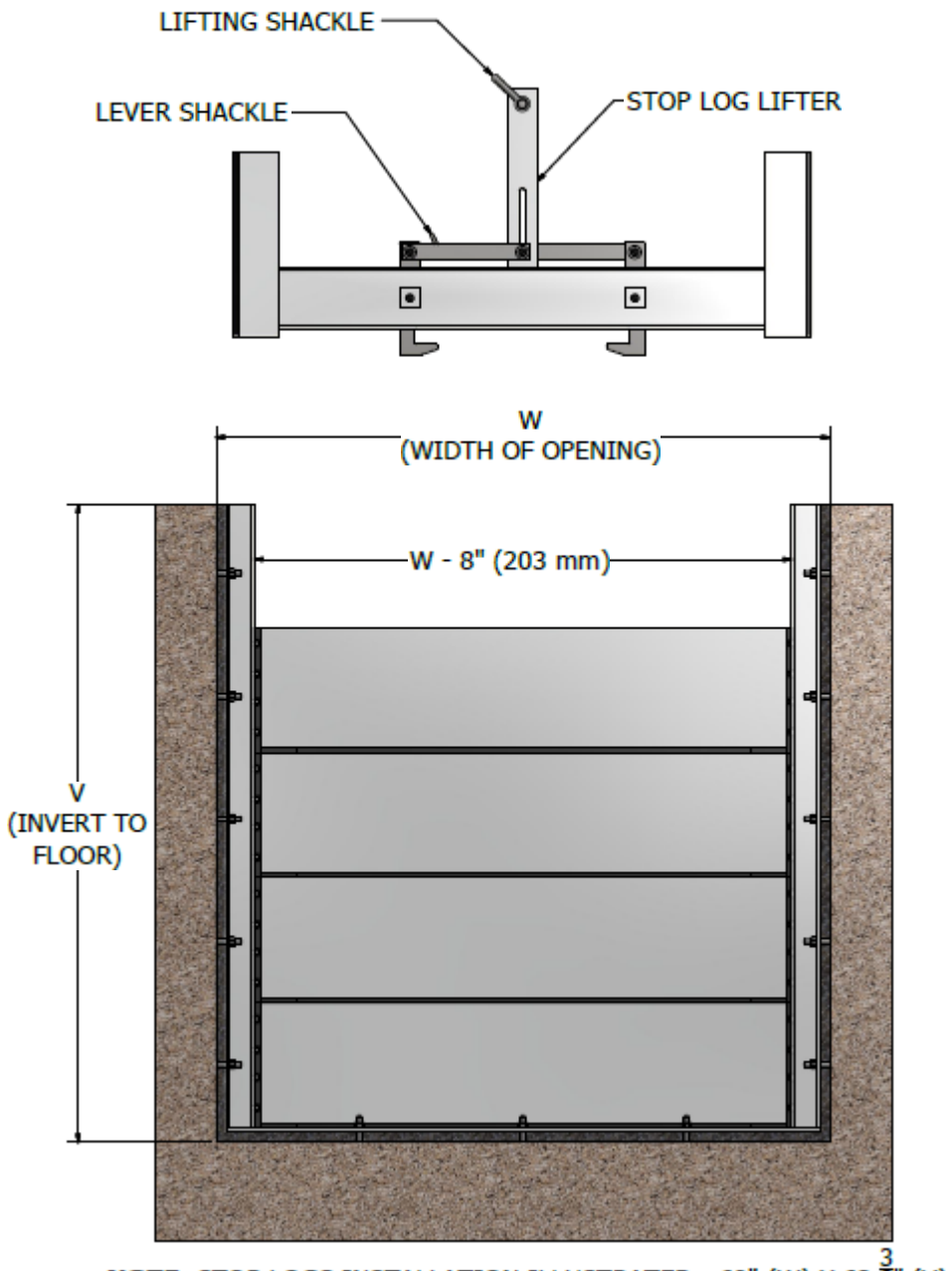
Anodizing (optional): All aluminum components can be anodized in accordance with Aluminum Association Specification AA-C22-A41. The anodizing shall be 0.7 mm thick with a nickel acetate sealer.





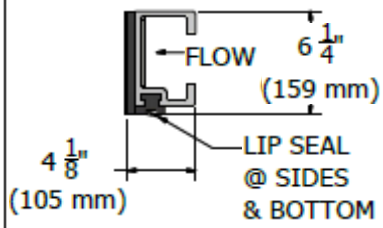


Model 509 Stop Log Gate

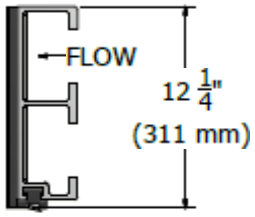


NOTE: STOP LOGS INSTALLATION ILLUSTRATED - 60" (W) X 62 3/8" (V) WITH (4) 12" HIGH MODEL 509 ALUMINUM LOGS AND LIFTER

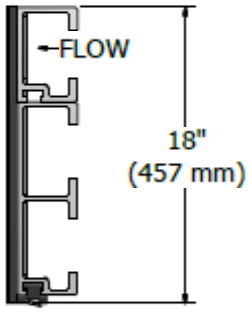
6" HIGH SECTION C-C
(OPTIONAL)



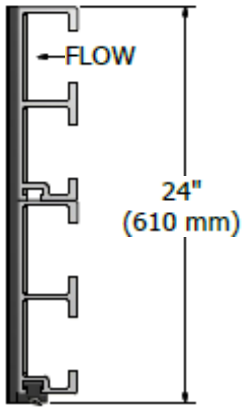
12" HIGH SECTION C-C
(ILLUSTRATED)



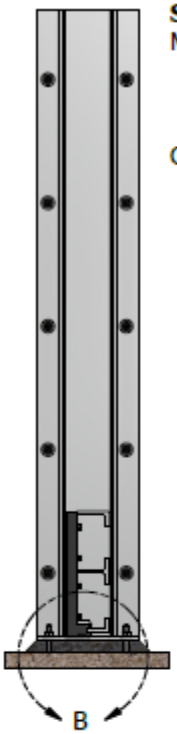
18" HIGH SECTION C-C
(OPTIONAL)



24" HIGH SECTION C-C
(OPTIONAL)

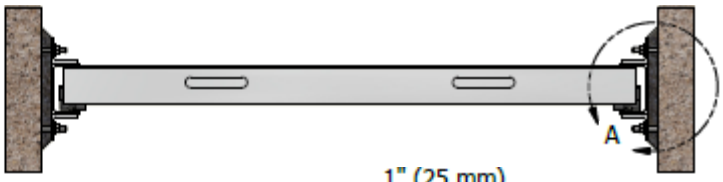


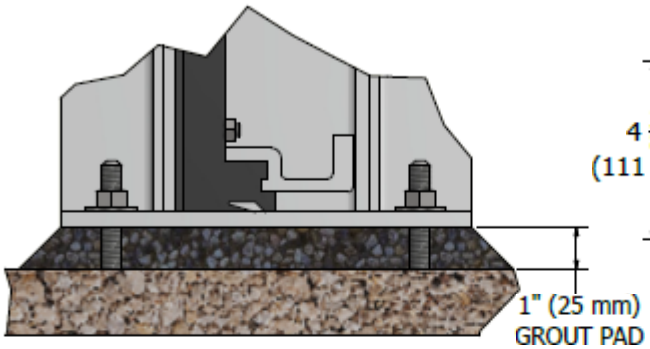
Model 509 Features



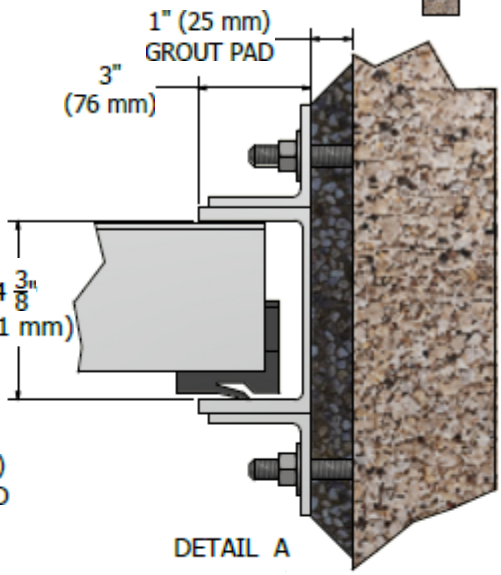
STOP LOG GROOVE FEATURES:
MATERIALS:
- EXTRUDED ALUMINUM
- FORMED STAINLESS STEEL

CONFIGURATIONS:
- EMBEDDED
- FACE-MOUNTED/WALL-MOUNTED
- CHANNEL MOUNTED



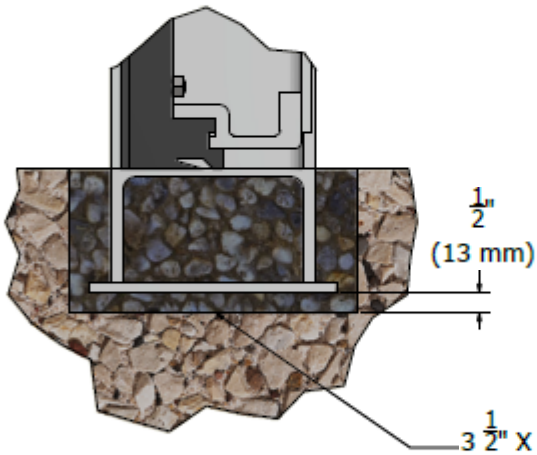


DETAIL B

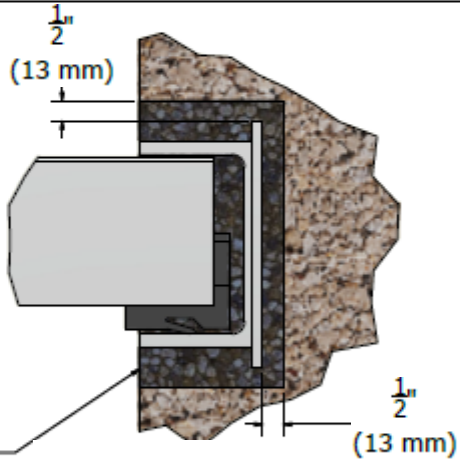


DETAIL A

EMBEDDED OPTION

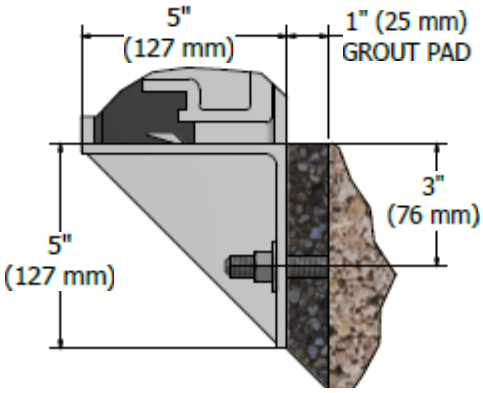


DETAIL B-B
OPTIONAL EMBEDDED INVERT

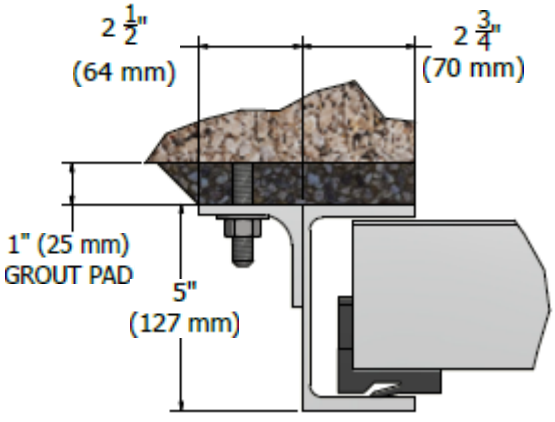


DETAIL A
OPTIONAL EMBEDDED GROOVE

WALL MOUNTED OPTION

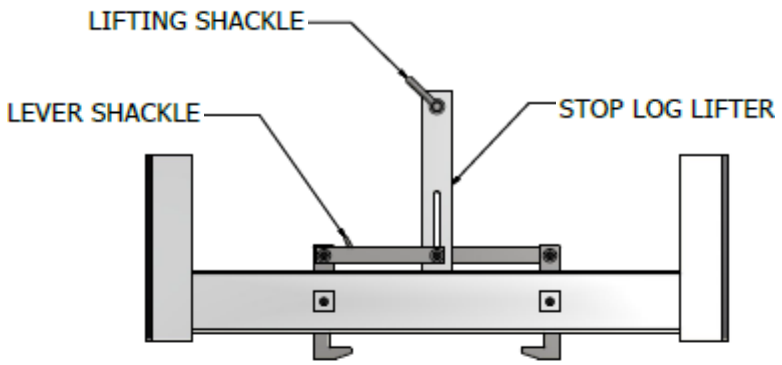


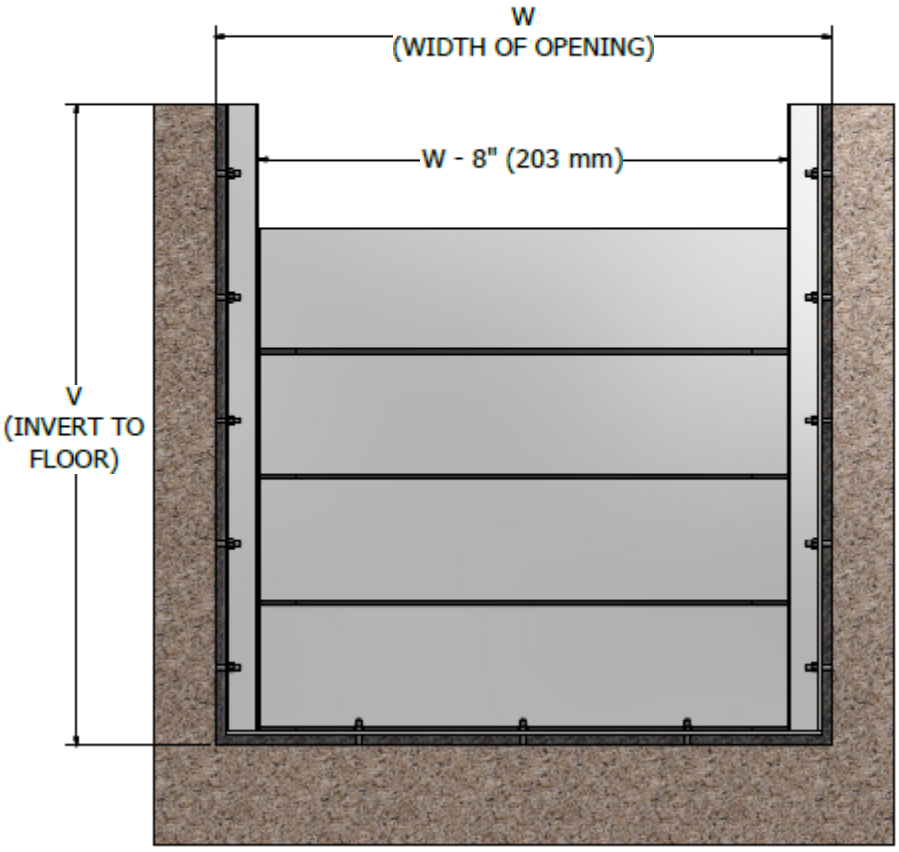
DETAIL B
OPTIONAL WALL MOUNTED INVERT



DETAIL A
OPTIONAL WALL MOUNTED GROOVE

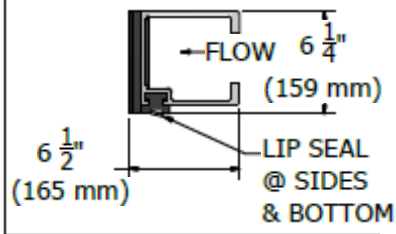
Model 510 Stop Log Gate



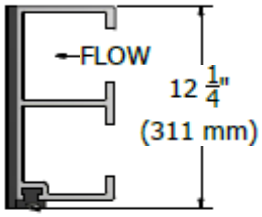


NOTE: STOP LOGS INSTALLATION ILLUSTRATED - 60" (W) X 62 $\frac{3}{8}$" (V)
WITH (4) 12" HIGH MODEL 510 ALUMINUM LOGS AND LIFTER

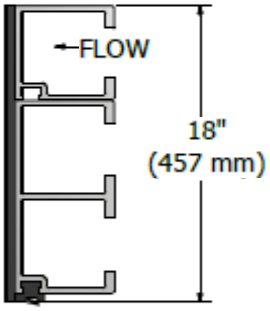
6" HIGH SECTION C-C
(OPTIONAL)



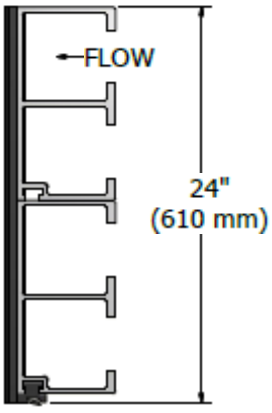
12" HIGH SECTION C-C
(ILLUSTRATED)



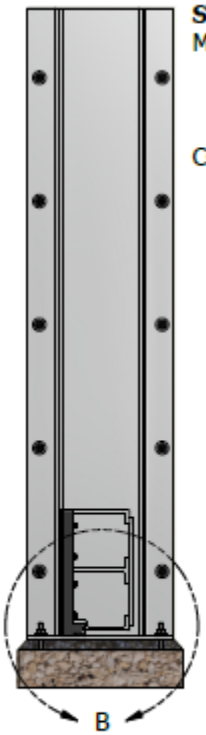
18" HIGH SECTION C-C
(OPTIONAL)



24" HIGH SECTION C-C
(OPTIONAL)

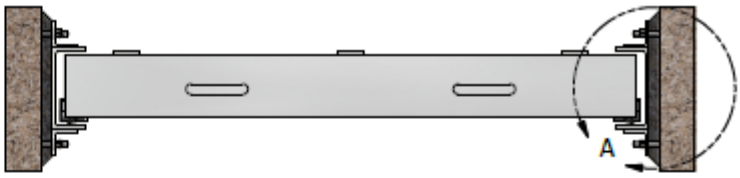


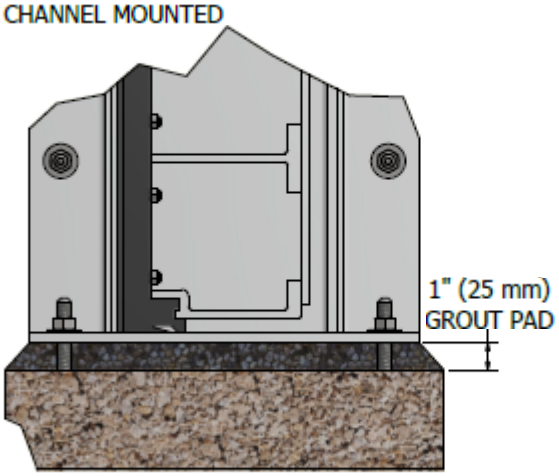
Model 510 Features



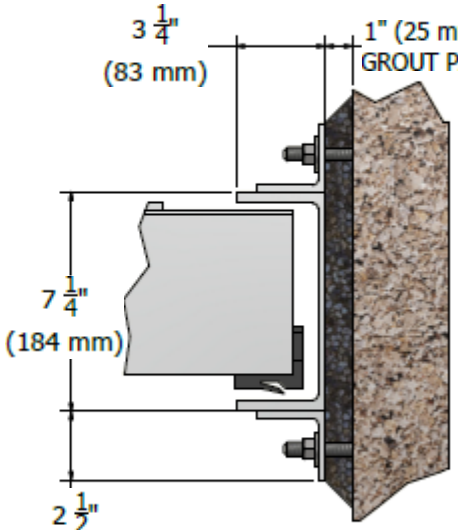
STOP LOG GROOVE FEATURES:
MATERIALS:
- EXTRUDED ALUMINUM
- FORMED STAINLESS STEEL

CONFIGURATIONS:
- EMBEDDED
- FACE-MOUNTED/WALL-MOUNTED
- CHANNEL MOUNTED



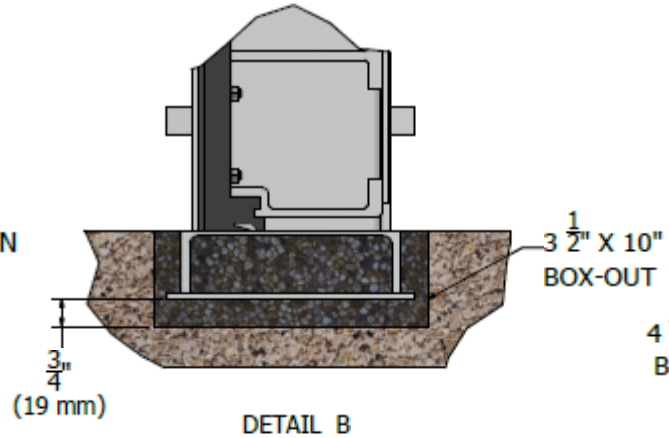


DETAIL B

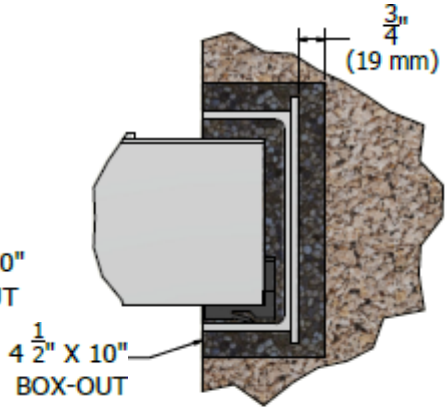


DETAIL A

EMBEDDED OPTION

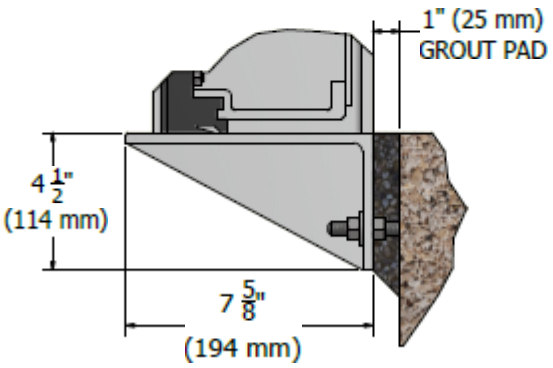


DETAIL B
OPTIONAL EMBEDDED INVERT

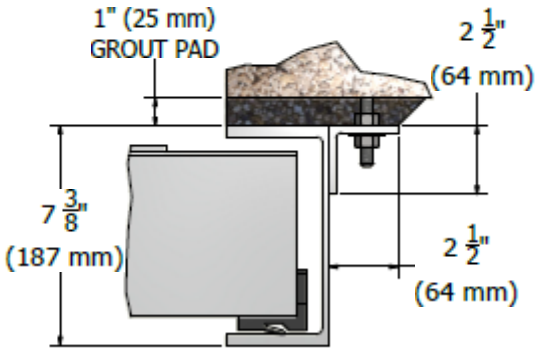


DETAIL A
OPTIONAL EMBEDDED GROOVE

WALL MOUNTED OPTION

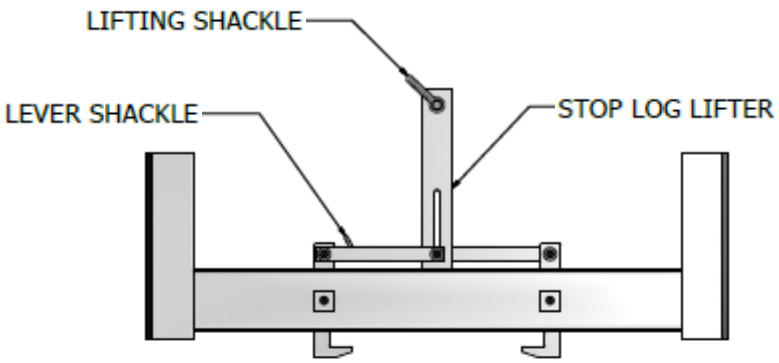


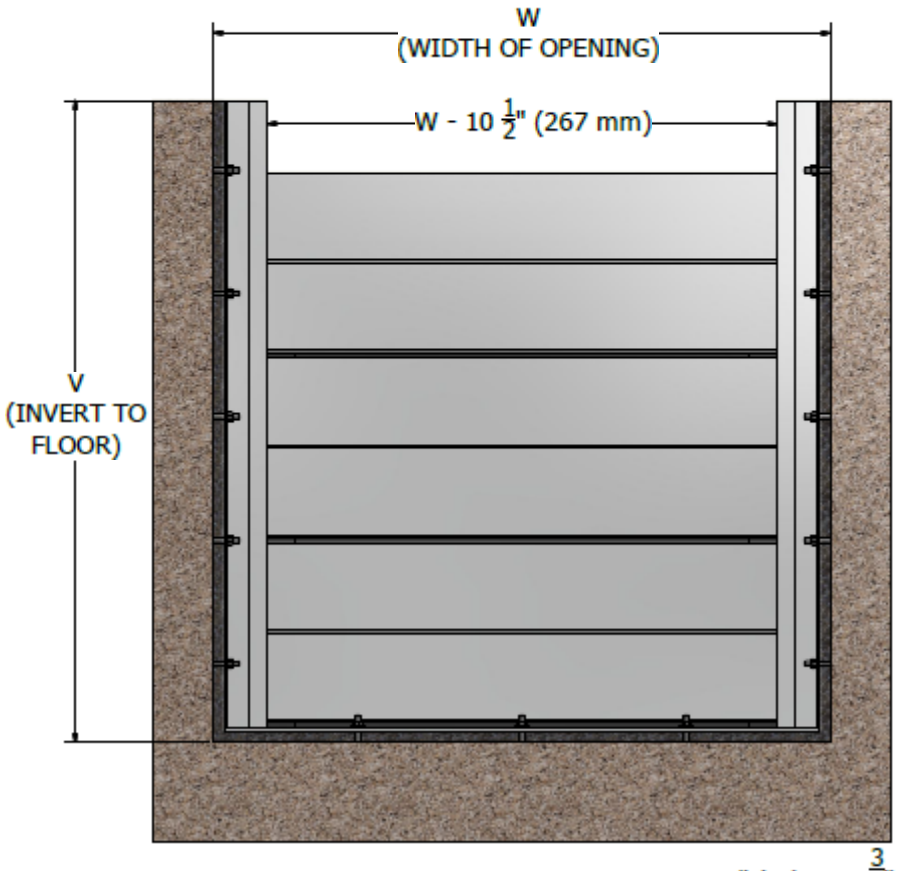
DETAIL B
OPTIONAL WALL MOUNTED INVERT



DETAIL A
OPTIONAL WALL MOUNTED GROOVE

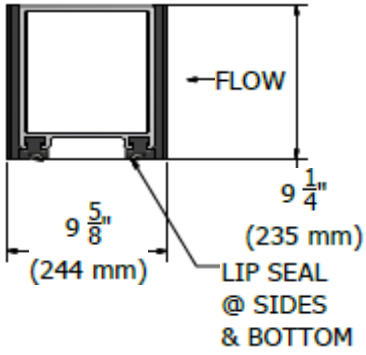
Model 511 Stop Log Gate



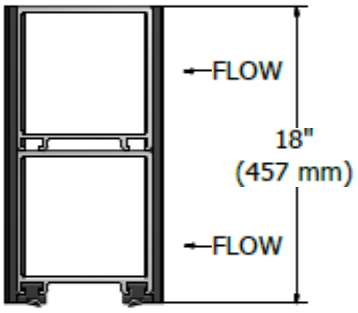


NOTE: STOP LOGS INSTALLATION ILLUSTRATED - 60" (W) X 62 3/8" (V)
WITH (3) 18" HIGH MODEL 511 ALUMINUM LOGS AND LIFTER

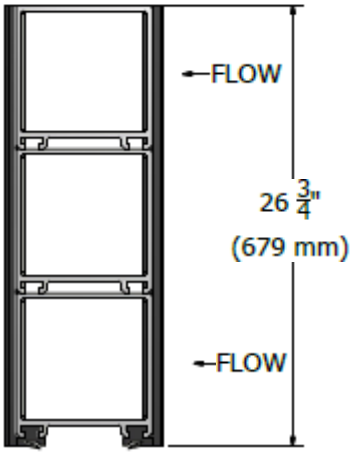
9" HIGH SECTION C-C
(OPTIONAL)



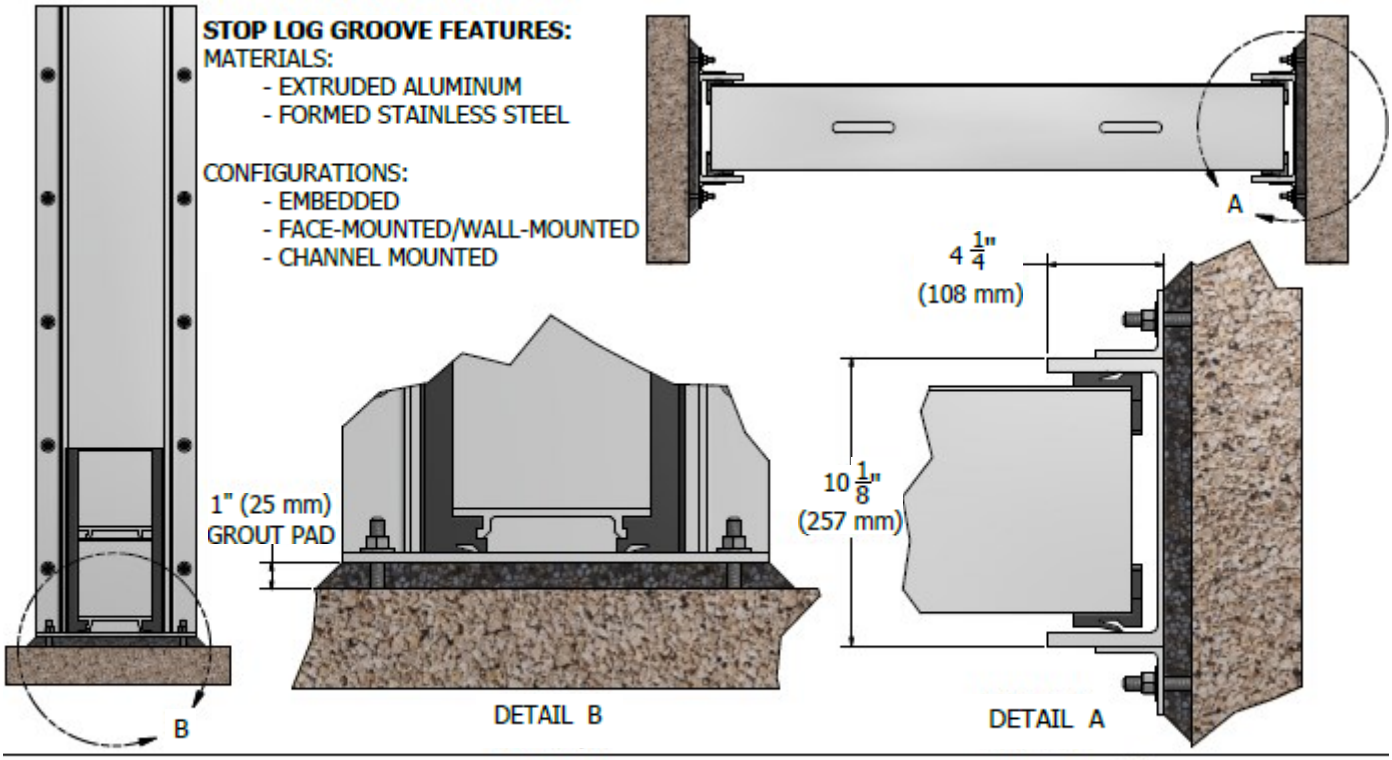
18" HIGH SECTION C-C
(ILLUSTRATED)

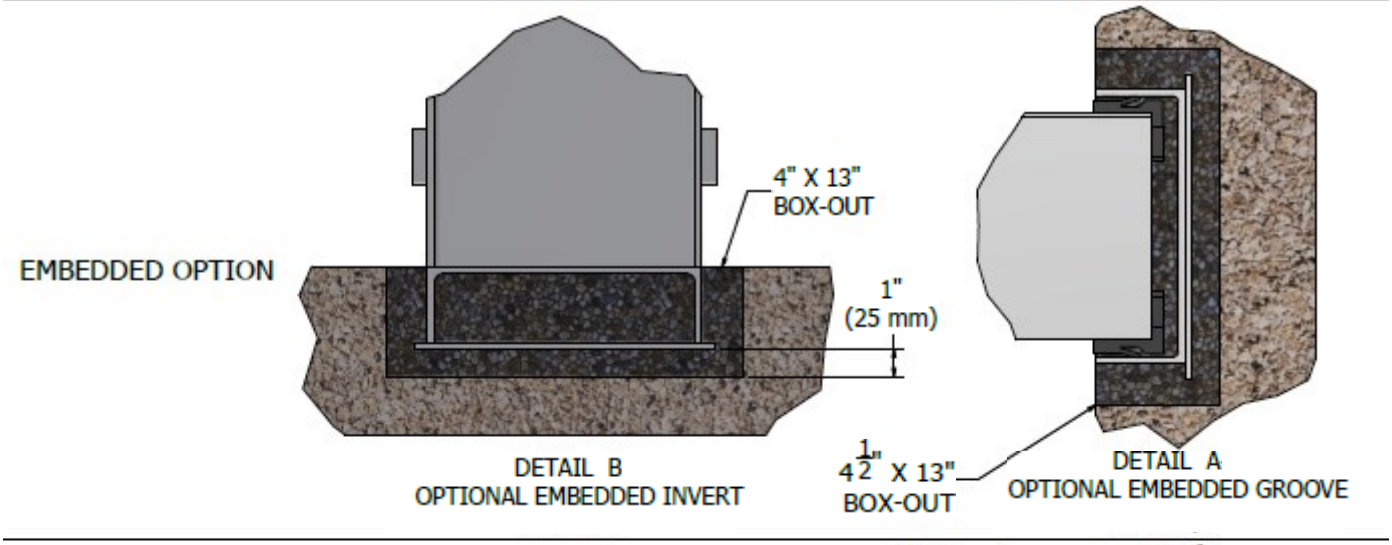


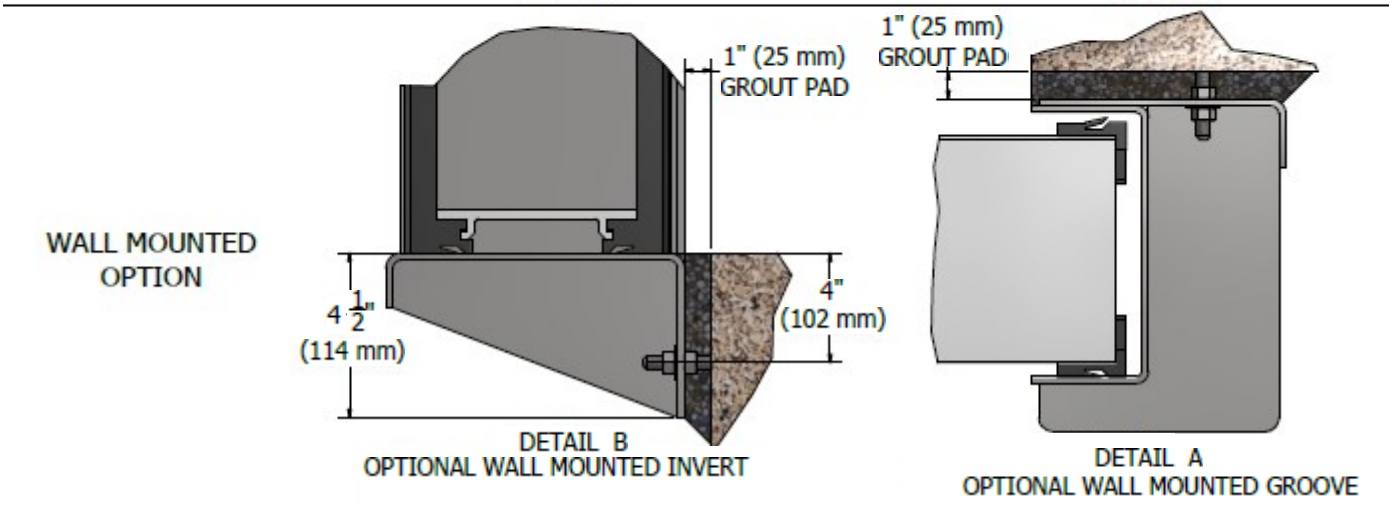
24" HIGH SECTION C-C
(OPTIONAL)



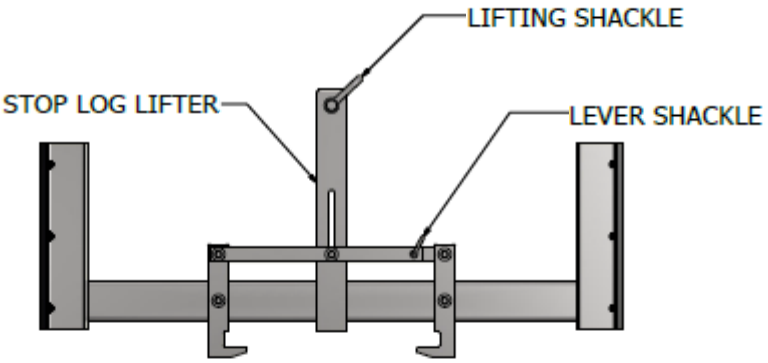
Model 511 Features

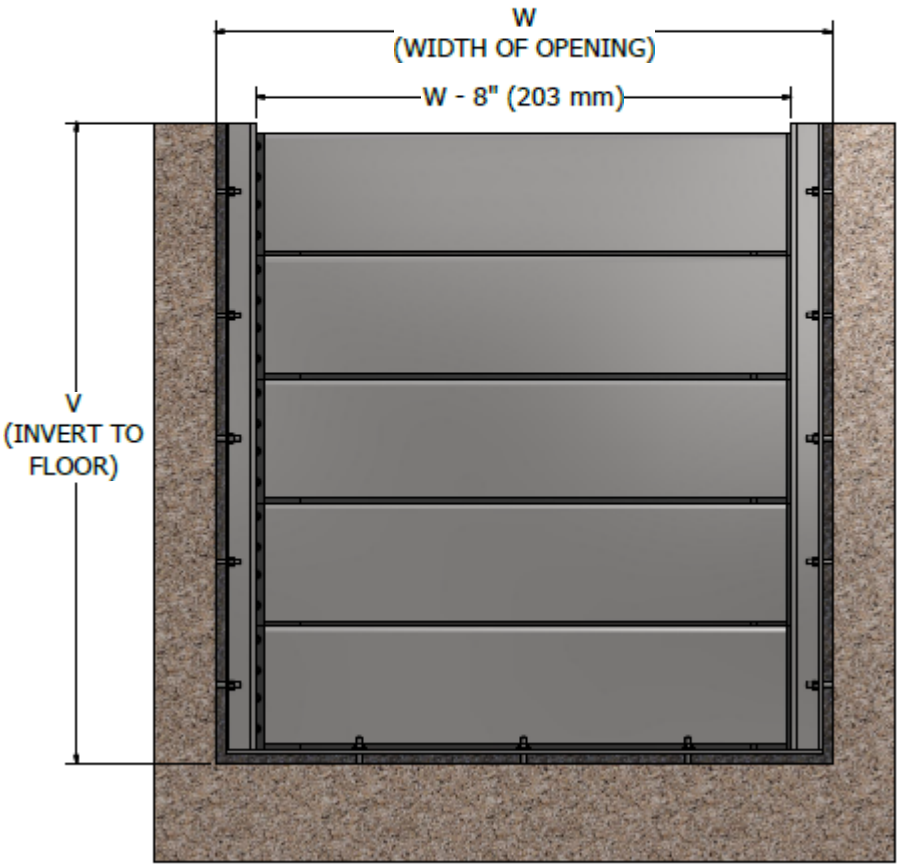






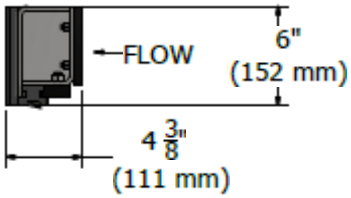
Model 529 Stop Log Gate





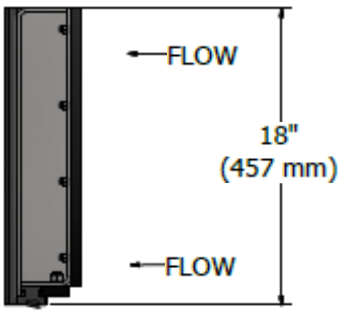
NOTE: BULKHEAD INSTALLATION ILLUSTRATED - 60" (W) X 62 $\frac{3}{8}$" (V) WITH (5) 12" HIGH MODEL 529 STAINLESS STEEL BULKHEADS AND LIFTER

6" HIGH SECTION C-C
(OPTIONAL)

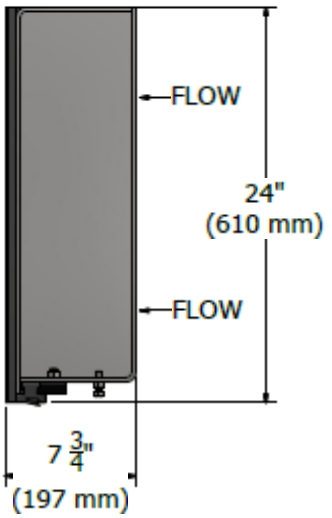


12" HIGH SECTION C-C
(ILLUSTRATED)

18" HIGH SECTION C-C
(OPTIONAL)



24" HIGH SECTION C-C
(OPTIONAL)

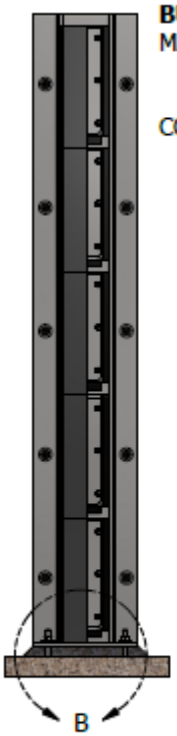


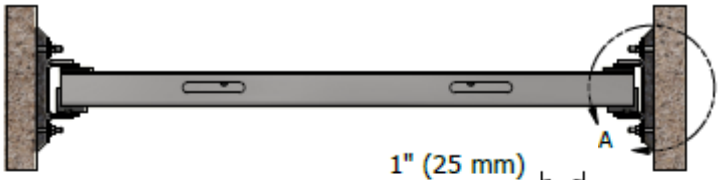
Model 529 Stop Log Features

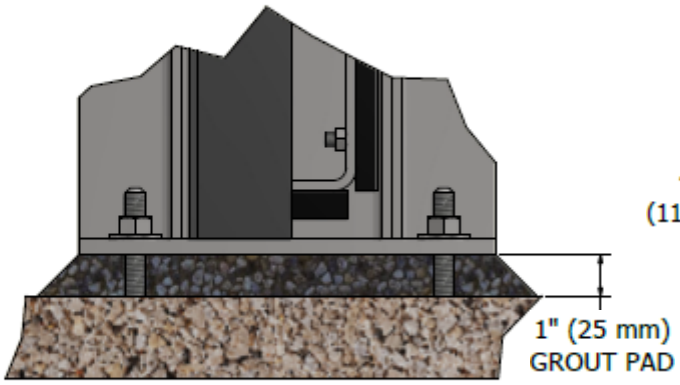
BULKHEAD GROOVE FEATURES:

MATERIALS:
- FORMED STAINLESS STEEL

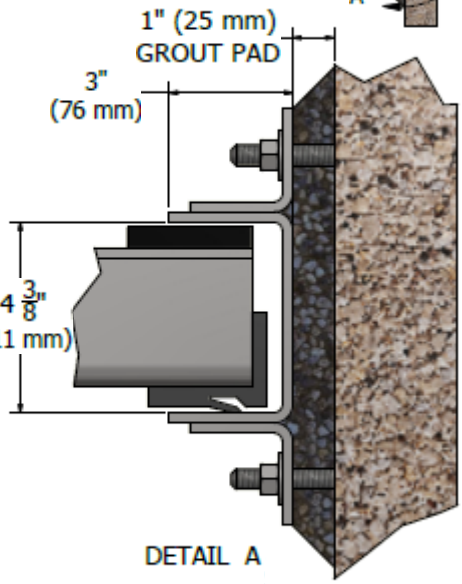
CONFIGURATIONS:
- EMBEDDED
- FACE-MOUNTED/WALL-MOUNTED
- CHANNEL MOUNTED





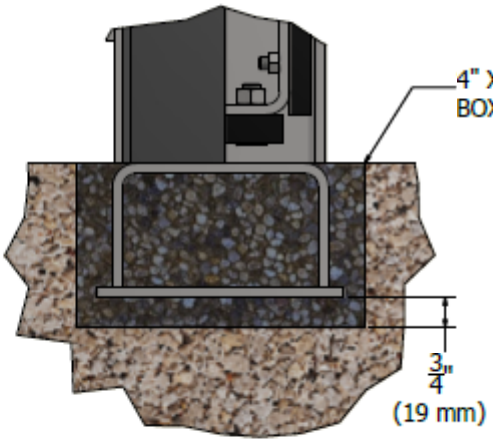


DETAIL B

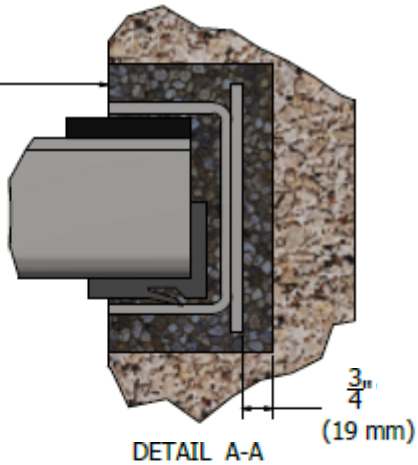


DETAIL A

EMBEDDED OPTION

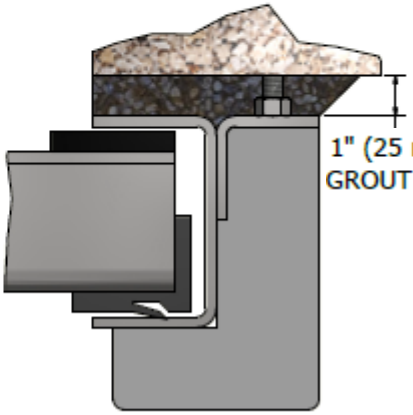


DETAIL B-B
OPTIONAL EMBEDDED GROOVE

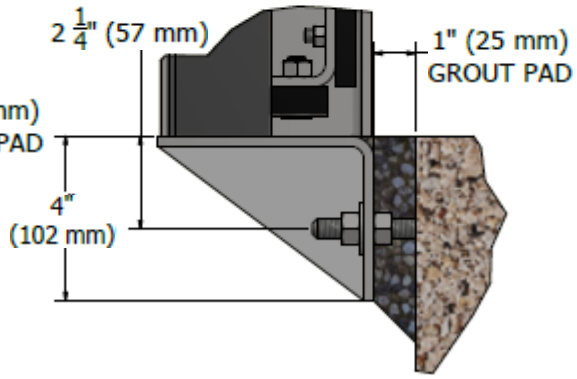


DETAIL A-A
OPTIONAL EMBEDDED GROOVE

WALL MOUNTED OPTION

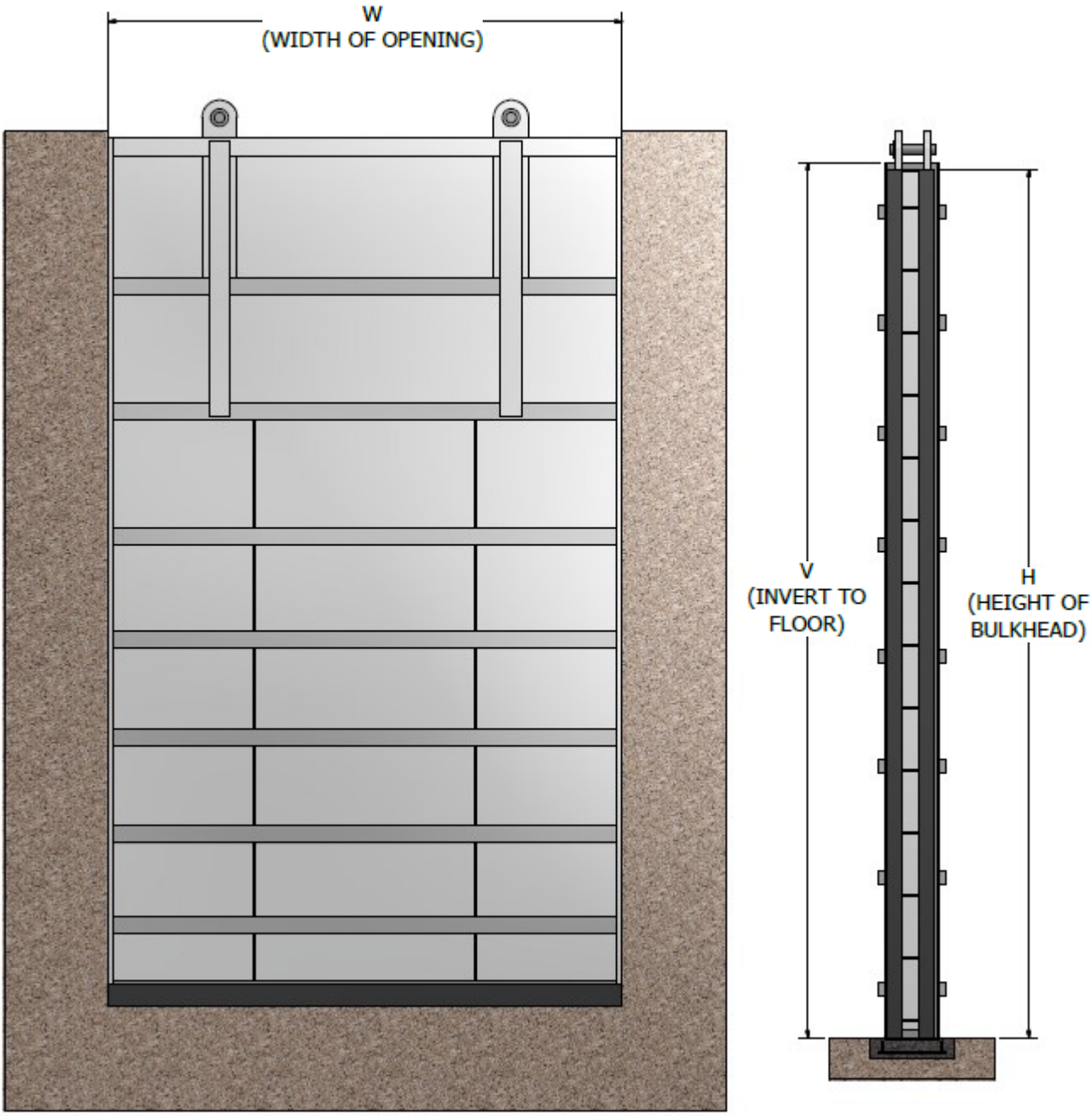


DETAIL A
OPTIONAL WALL MOUNTED GROOVE



DETAIL B-B
OPTIONAL WALL MOUNTED INVERT

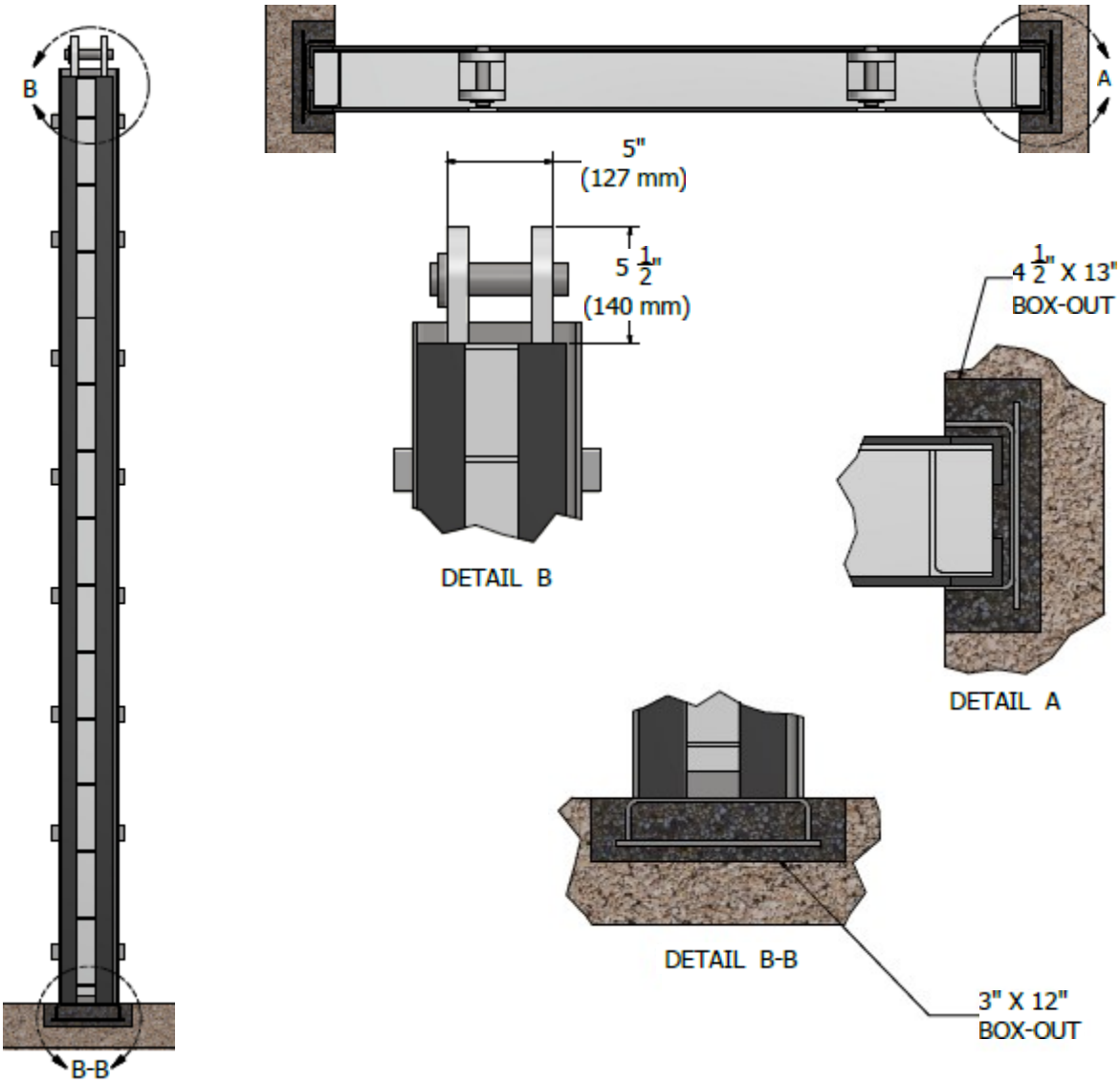
Model 519 Bulkhead Gate



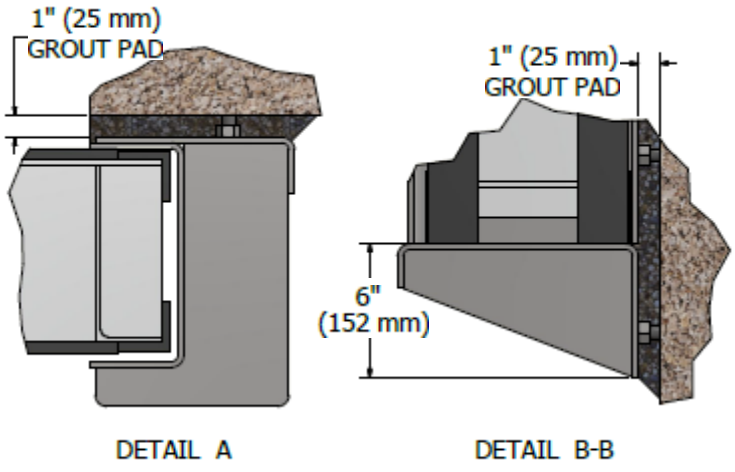
Bulkhead Gate: The 519 bulkhead gate comprises of a large slide produced from extruded aluminum (Alloy 6061-T6) with a maximum bending stress of 7600 psi at the maximum head. Resilient lip-type seals are attached along the sides and bottom of the slide. The frame, consisting of two grooves and an invert member, is manufactured from aluminum (Alloy 6061-T6) and shall be supplied with stainless steel anchor bolts or aluminum anchor straps. The invert member is designed to minimize flow interference.

GATE ILLUSTRATED: 74" (W) x 125" (H) x 126" (V)

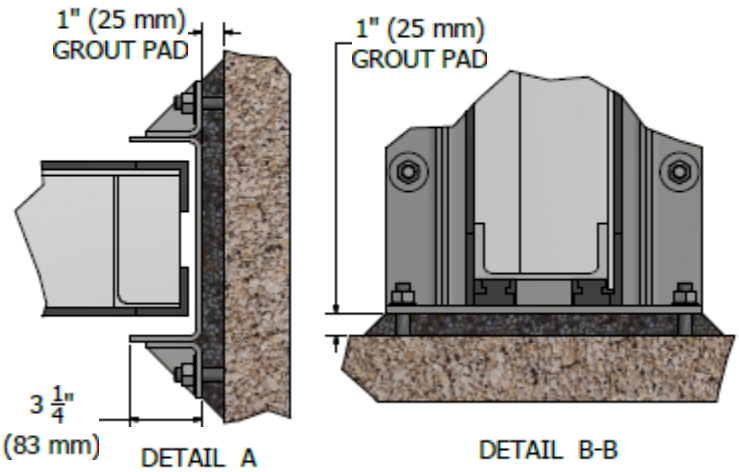
Model 519 Features



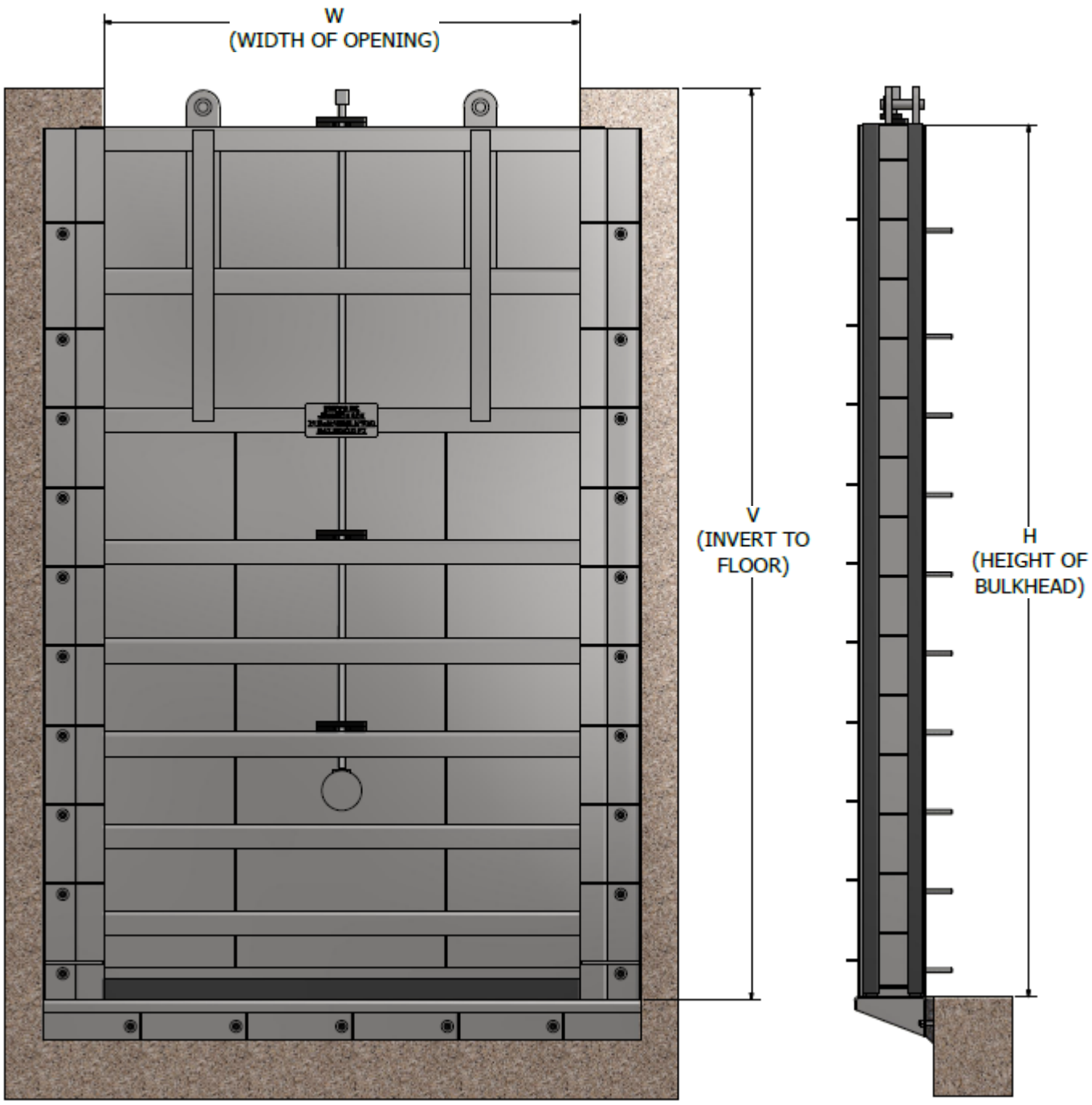
WALL MOUNTED OPTION



CHANNEL MOUNTED OPTION



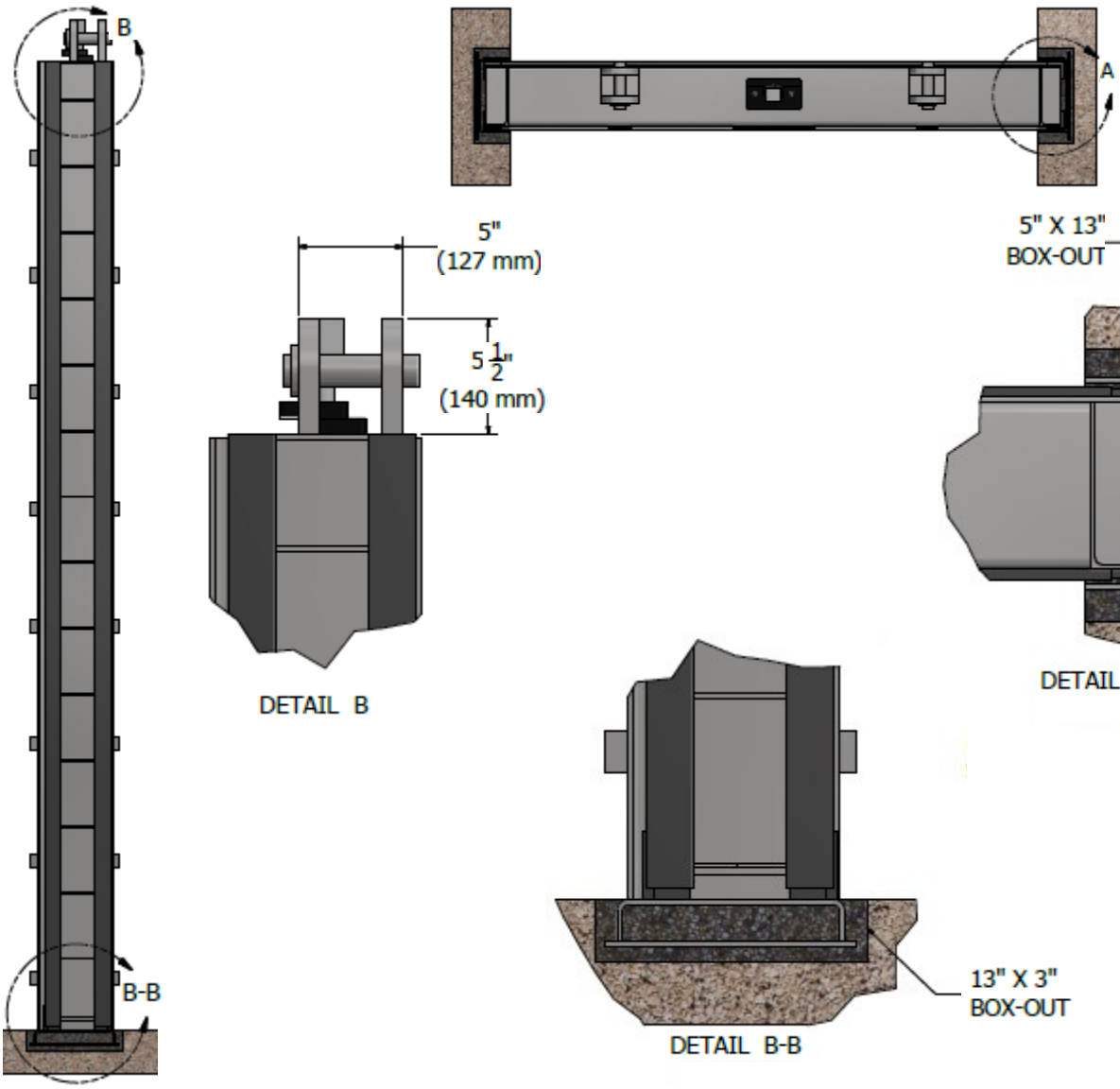
Model 529 Bulkhead Gate



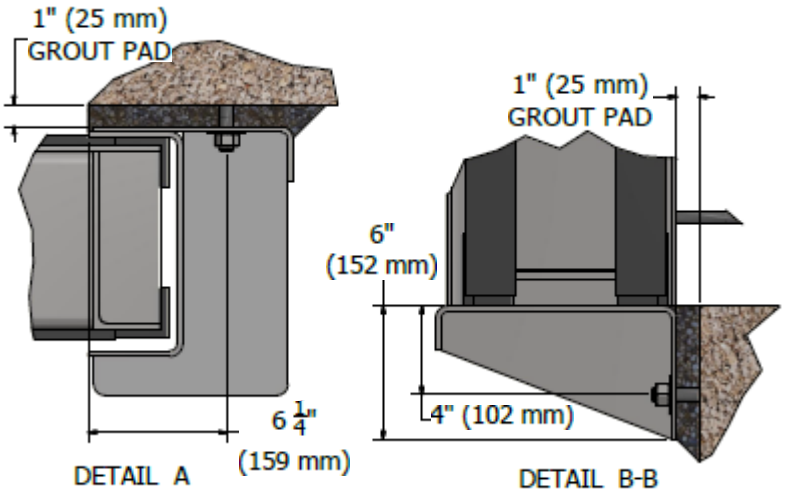
Bulkhead Gate: The 529 bulkhead gate consists of a large slide crafted from extruded stainless steel (type 304 or 316). Resilient lip-type seals are attached along the sides and bottom of the slide. The frame comprises of two grooves and an invert member, manufactured from stainless steel (type 304 or 316) and shall be supplied with stainless steel anchor bolts or anchor straps. The invert member is designed to minimize flow interference.

GATE ILLUSTRATED: 72" (W) x 132" (H) x 138" (V)

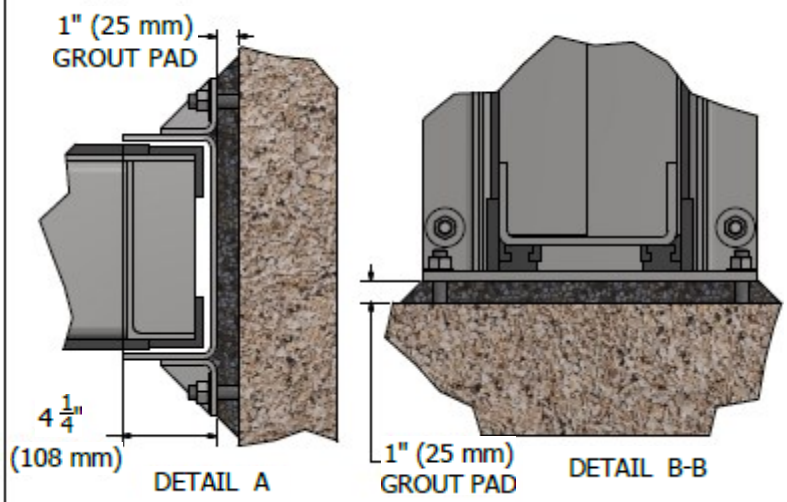
Model 529 Bulkhead Features



WALL MOUNTED OPTION



CHANNEL MOUNTED OPTION



Whipps, inc.
WATER CONTROL GATES

Flap Gates

Series 400

Contents

Introduction

Series 450 flap gates are utilized for backflow prevention in gravity flow, pump discharge, and tidal applications. The flap gates Whipps, Inc. fabricates offer high performance and long life, designed to accommodate a broad range of mounting arrangements and flow conditions. The rugged, reinforced construction is combined with a resilient seal to provide a heavy-duty, low-leakage flap gate. Whipps, Inc. can economically produce customized flap gates for both standard and non-standard applications. Fabricated flap gates are typically constructed of corrosion-resistant materials such as stainless steel, rubber, or aluminum. Cast iron, carbon steel, and timber flap gates are also available upon request.

Advantages

Performance: The use of compressible seals provides superior leakage performance compared to a traditional cast iron flap gate with bronze seating faces.

Design Flexibility: All flap gates are custom-built for each application, enabling various mounting arrangements and a nearly unlimited range of sizes.

Functionality: Our flap gates open under very low unseating heads, particularly with rubber flap gates.

Ease of Maintenance: If debris becomes wedged in the flap or accumulates behind it, personnel can easily lift and clear the debris, especially with rubber flap gates.

Quiet Operation: Due to the use of resilient seals, there is no slamming action between the flap and the frame, even in pump discharge applications.

Corrosion Resistance: Painting or recoating stainless steel is not required to resist corrosion in water and wastewater.

Field Replaceable Seals: If the seals were to ever become damaged, they are easily removable and replaceable. In contrast, the bronze seating faces on traditional cast iron flap gates cannot be replaced in the field.

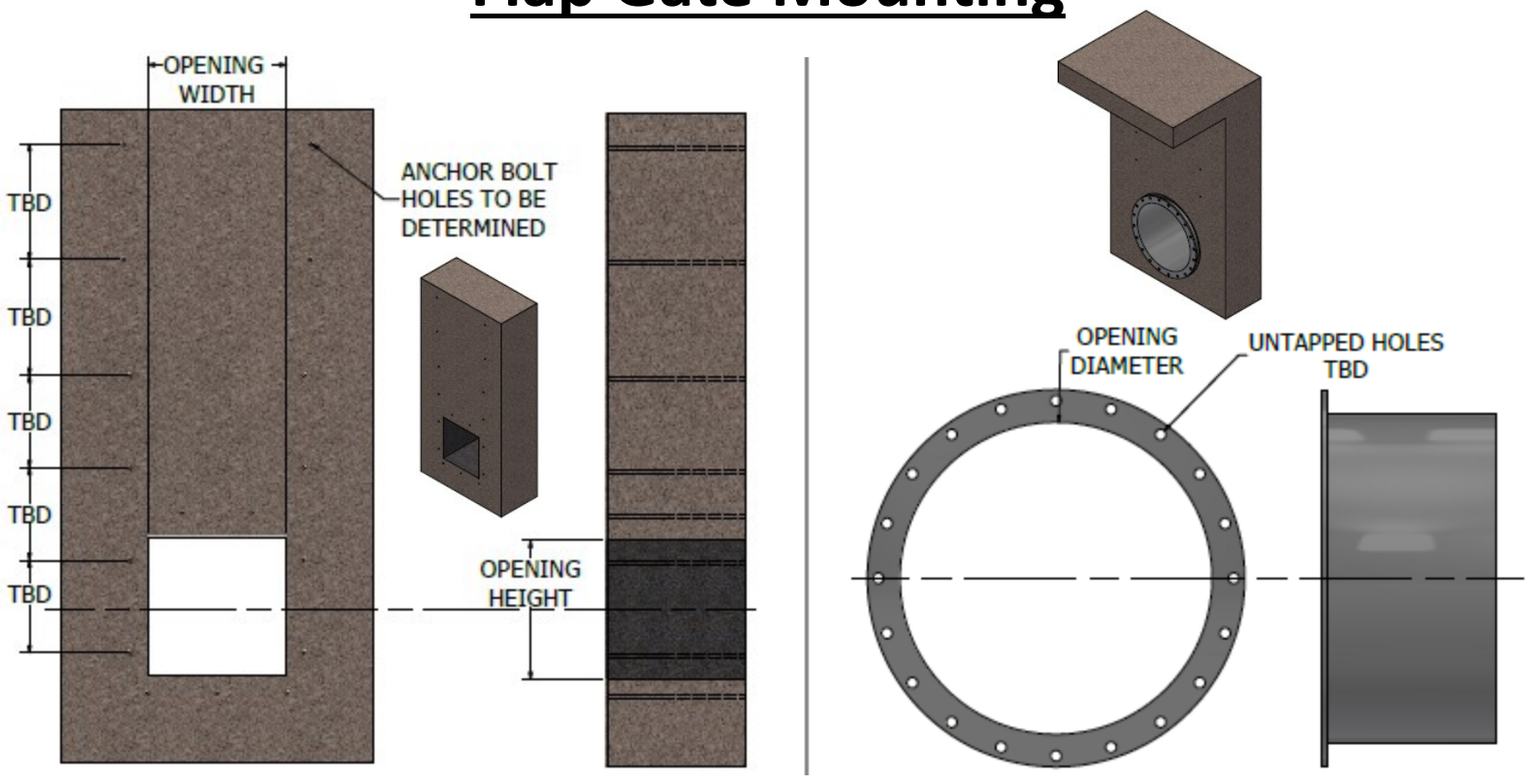
Gate Selection Criteria

Gate Size: Whipps, Inc. fabricated flap gates are custom-built to accommodate virtually any round, square, or rectangular opening.

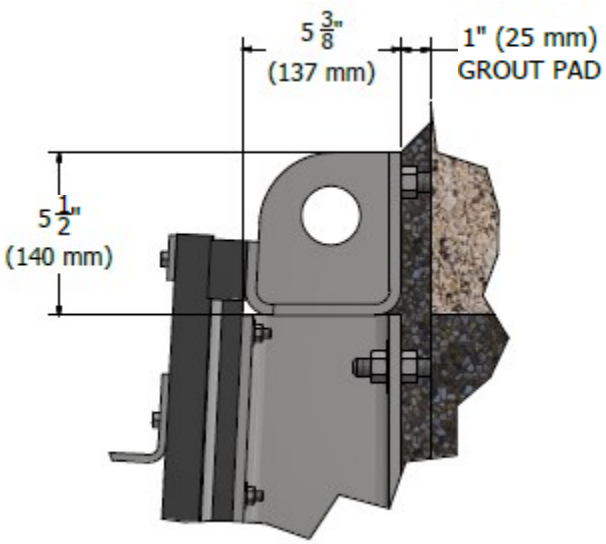
Gate Mounting: Our flap gates can be mounted directly to a wall, on a pipe flange, on the outside of a pipe, or on a wall thimble. While wall thimble mounting is possible, it is typically unnecessary.

Gate Material: The flap gates are usually constructed of type 304/304L or type 316/316L stainless steel. Alternatively, the flap can be provided in rubber, reinforced with stainless steel members. Type 304/304L, being less expensive, is generally safe for water or wastewater applications if residual chlorine is 200mg/l or less. Type 316/316L is a more conservative choice, offering greater resistance to pitting and crevice corrosion. In either case, the low carbon ('L') grade should be used for welded parts to minimize carbon precipitation in the welds. Different alloys are also available.

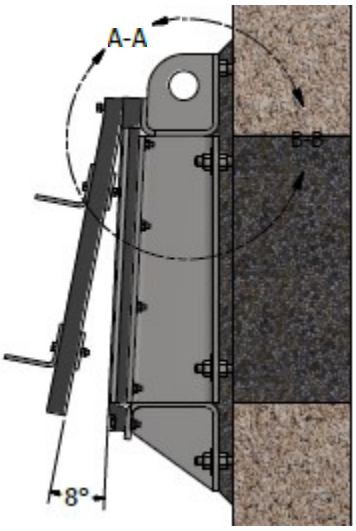
Flap Gate Mounting

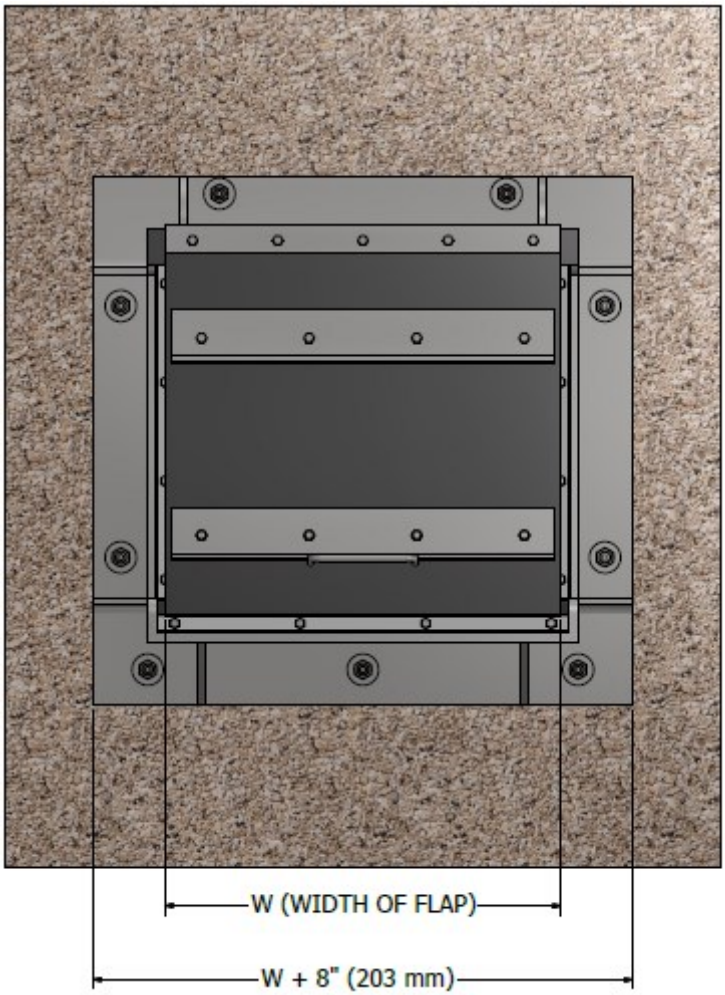


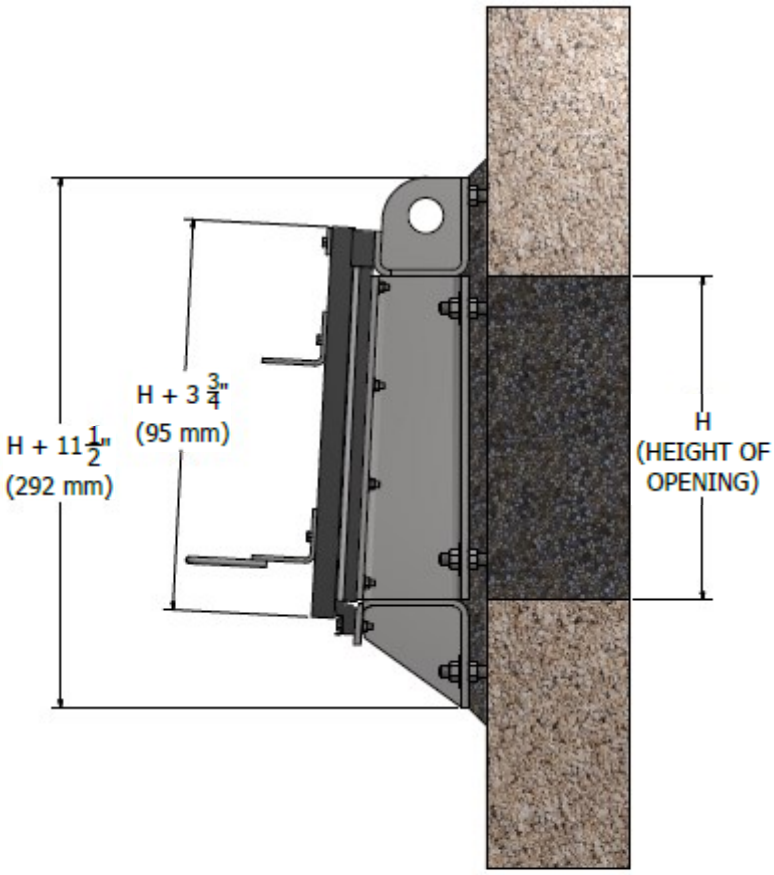
Model 451 Square Flap Gate



DETAIL A-A

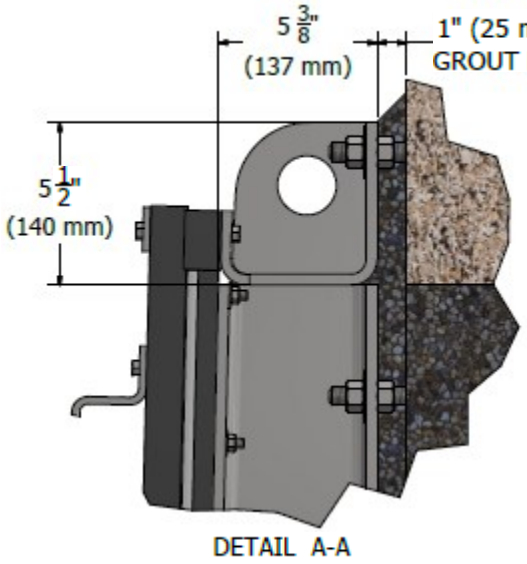


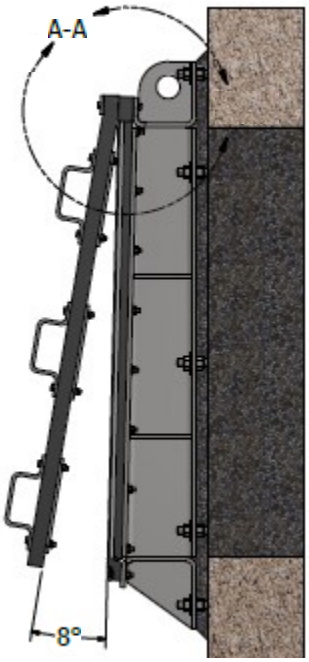


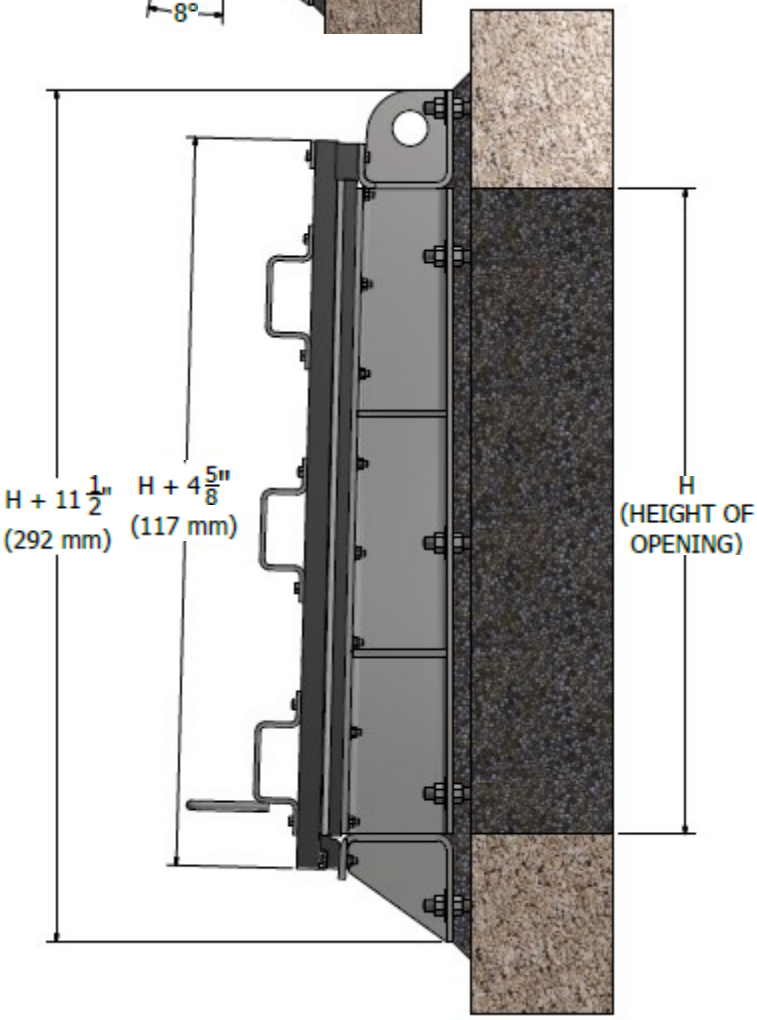


GATE ILLUSTRATED: 22" (W) x 18" (H)

Model 451 Flap Gate

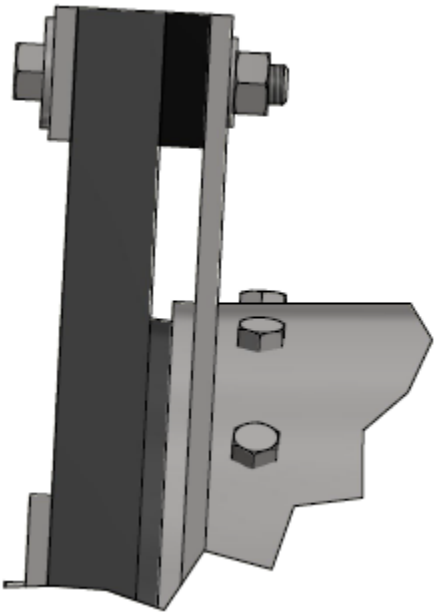




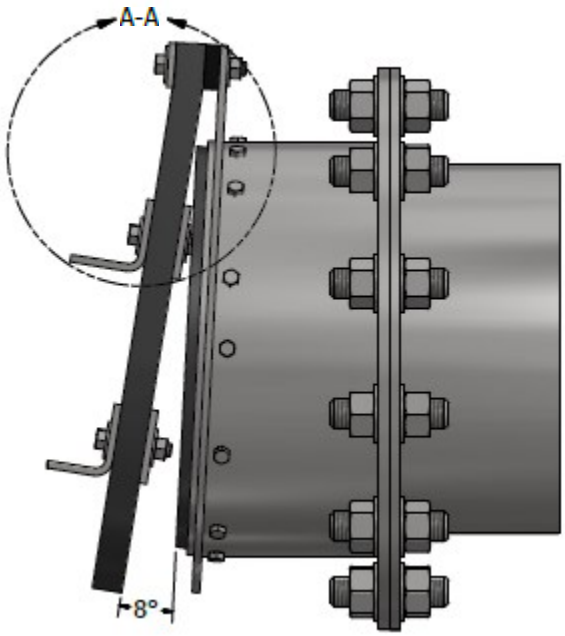


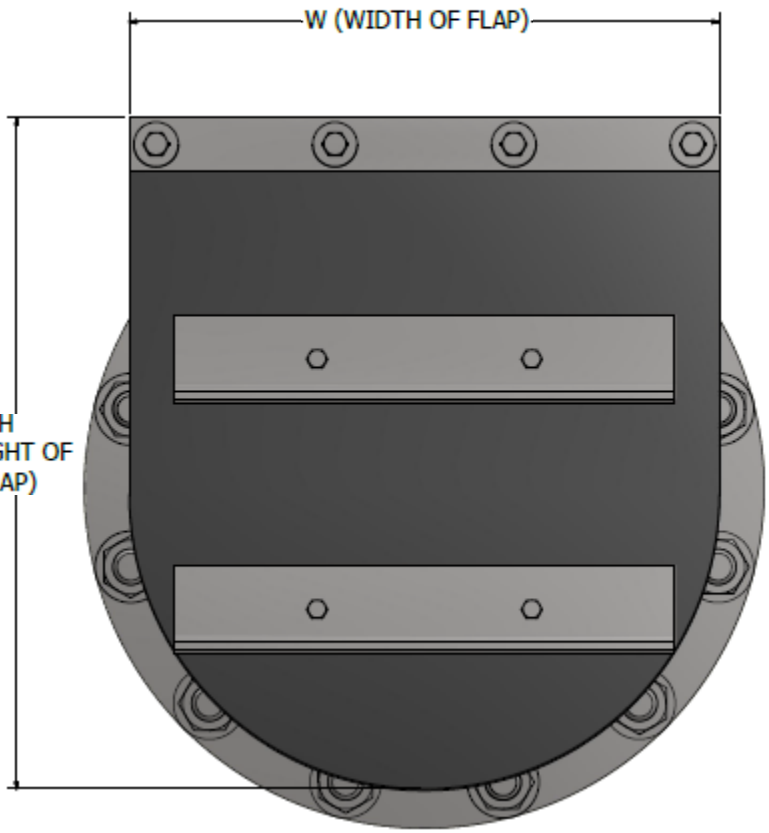
GATE ILLUSTRATED: 29" (W) x 36" (H)

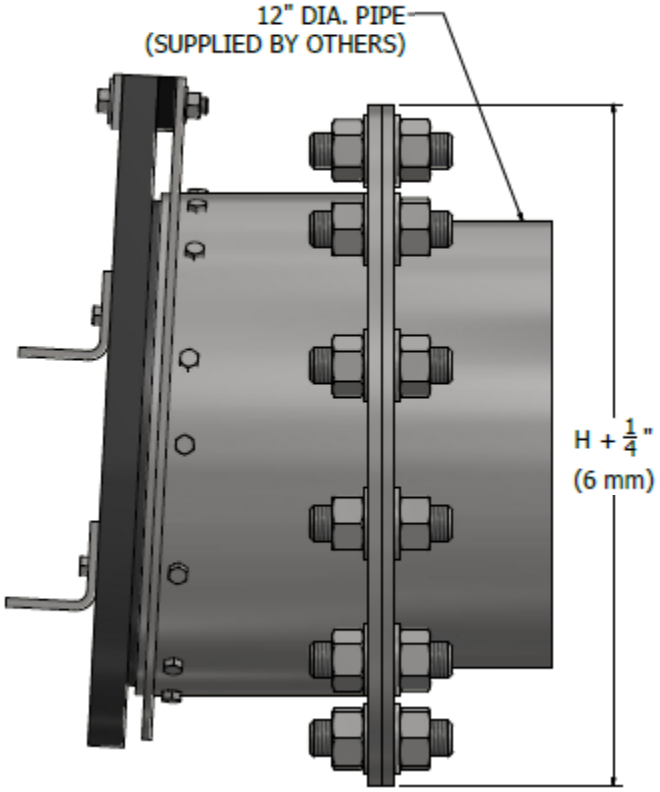
Model 451 Pipe Flange Flap Gate



DETAIL A-A

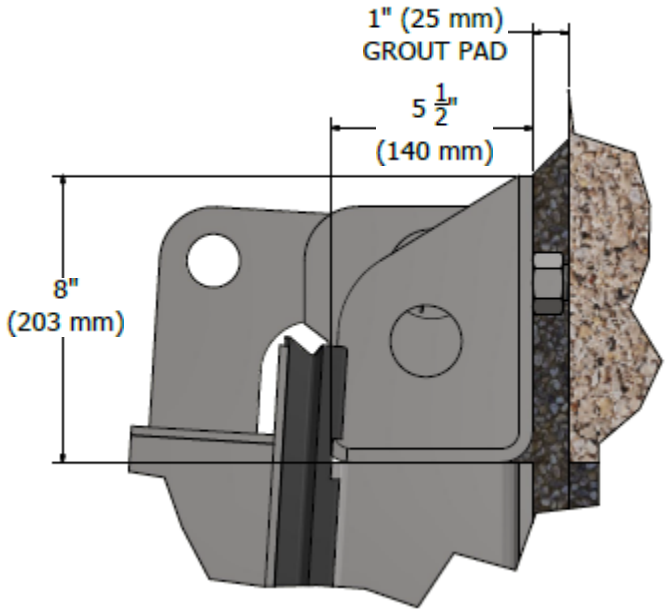




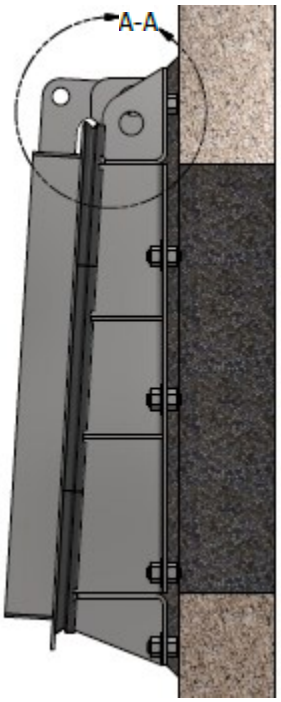


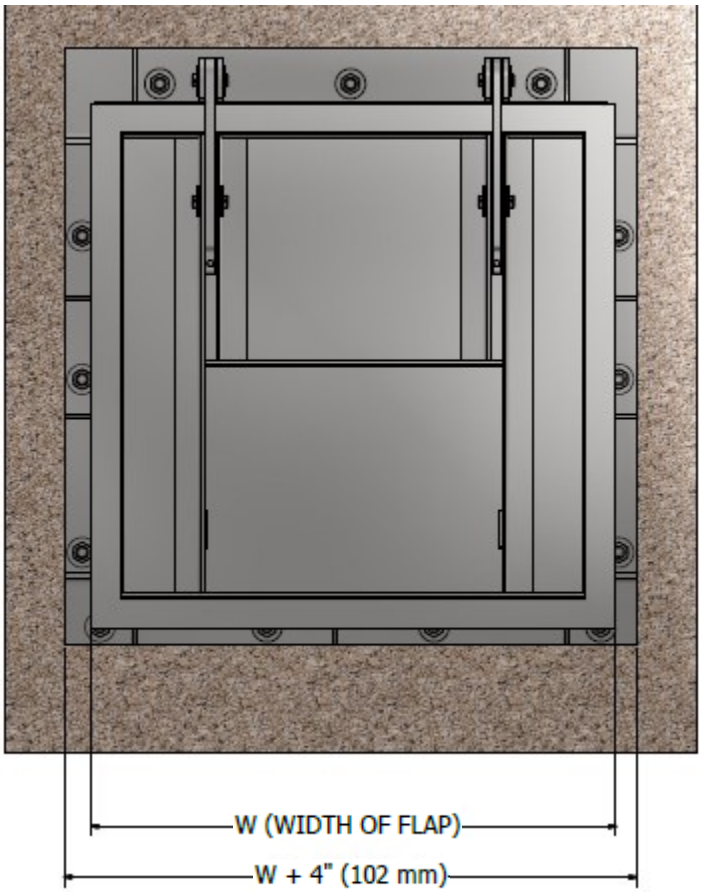
GATE ILLUSTRATED: $16\frac{1}{2}$" (W) x $18\frac{3}{4}$" (H)

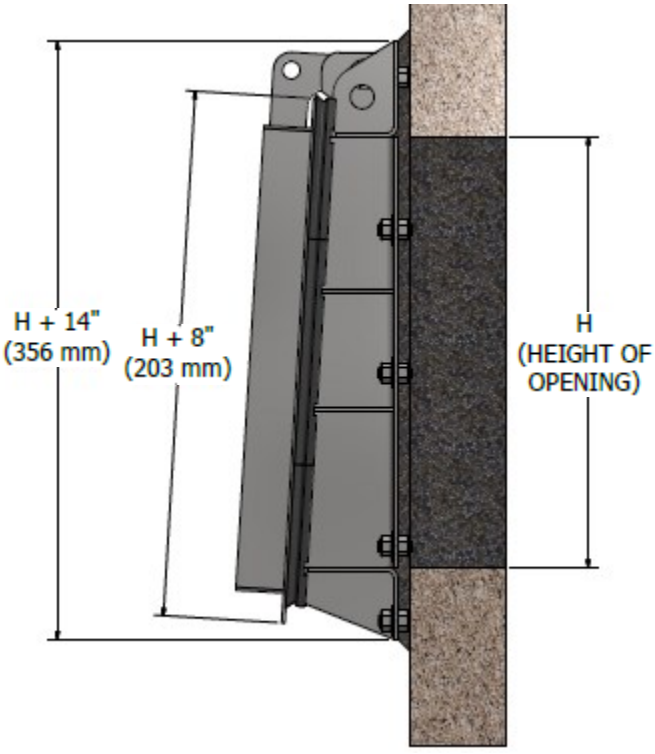
Model 452 Square Flap Gate



DETAIL A-A

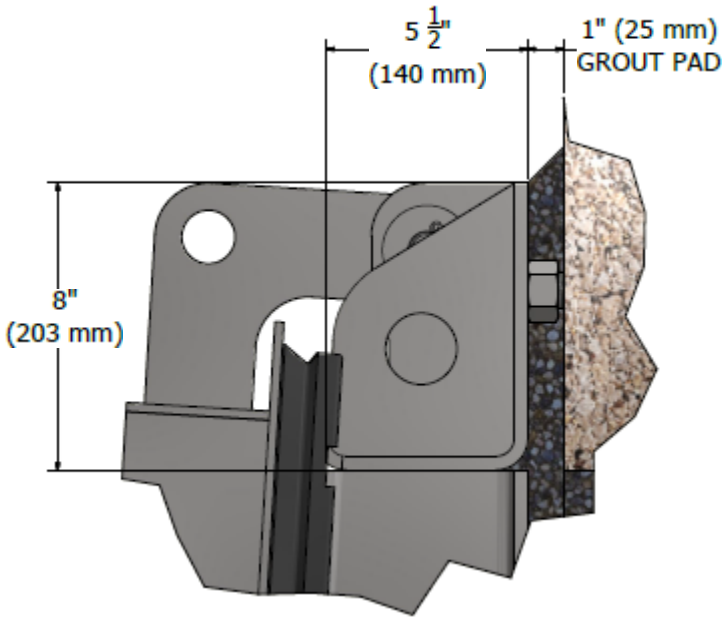




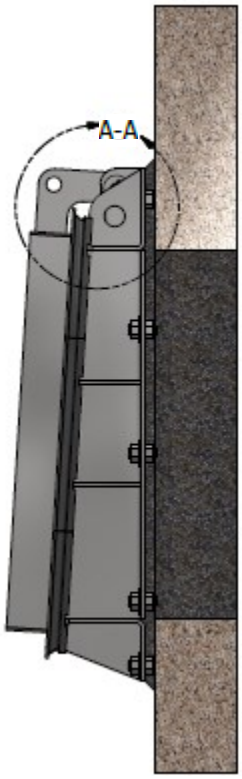


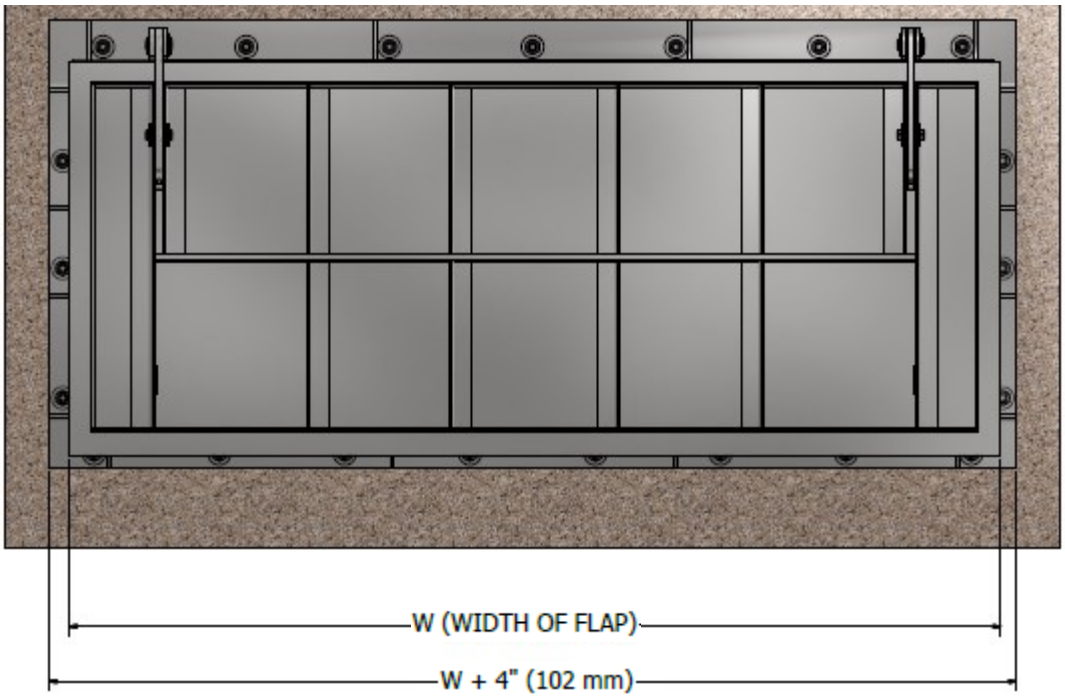
GATE ILLUSTRATED: 44" (W) x 36" (H)

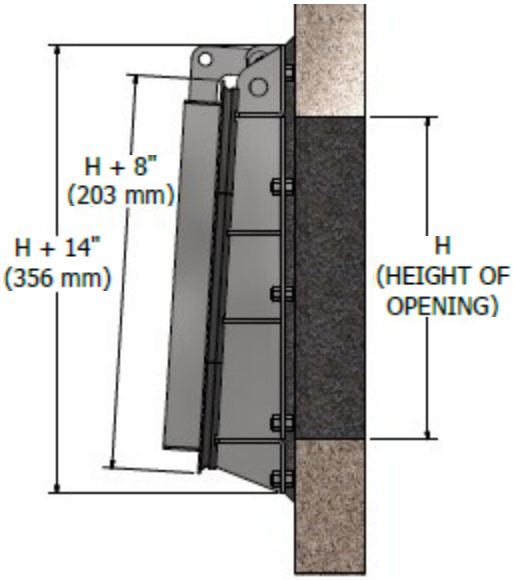
Model 452 Flap Gate



DETAIL A-A

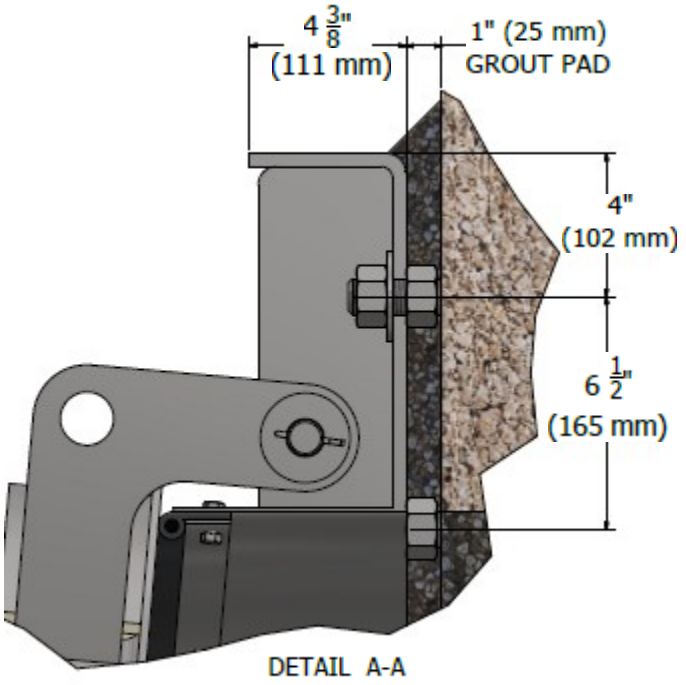


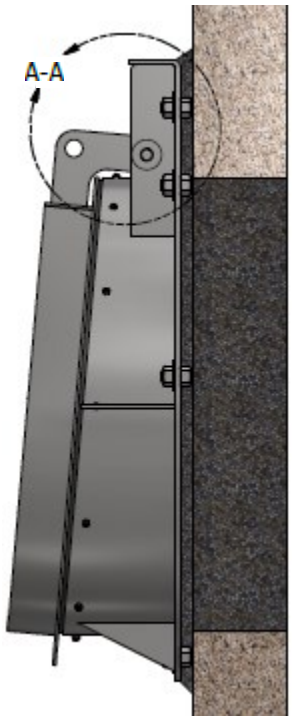


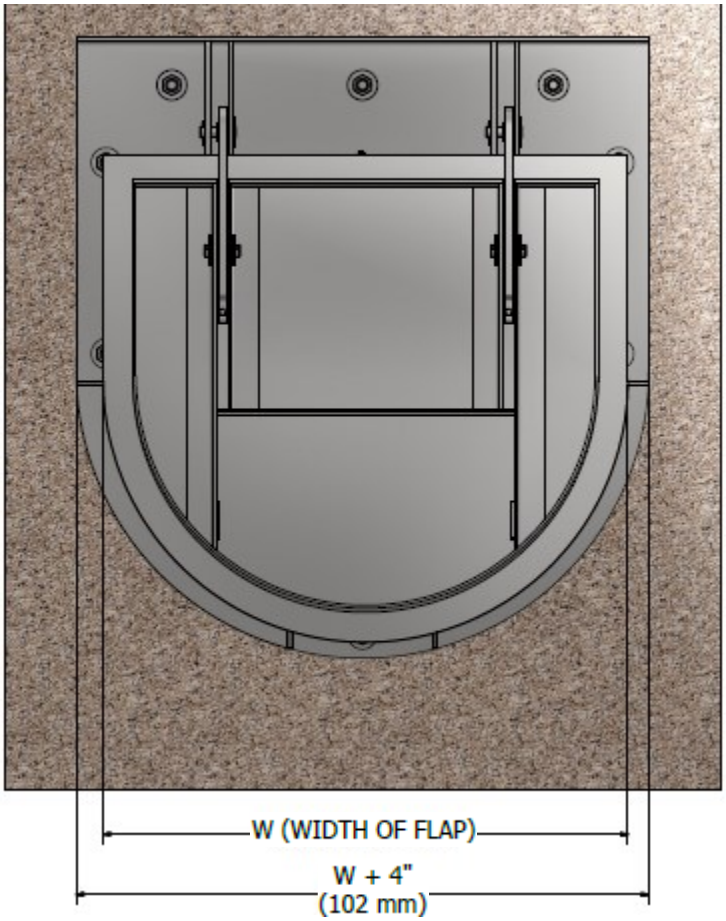


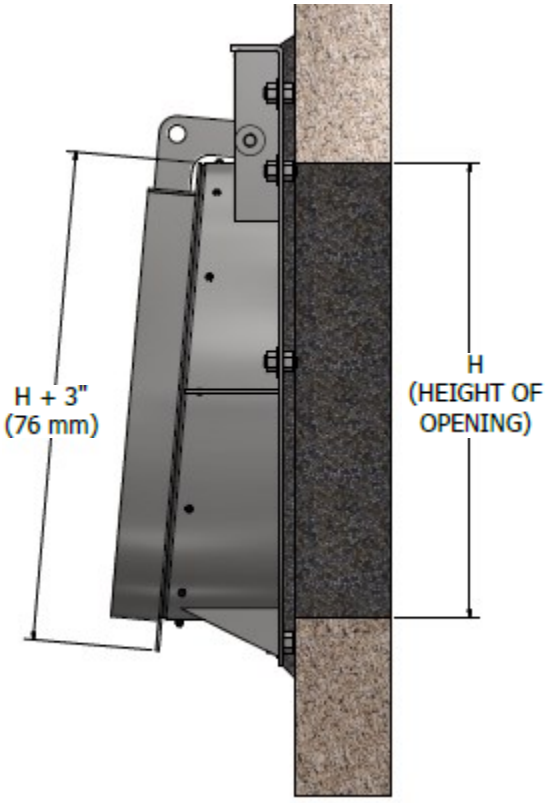
GATE ILLUSTRATED: 104" (W) x 44" (H)

Model 452 Pipe Flange Flap Gate



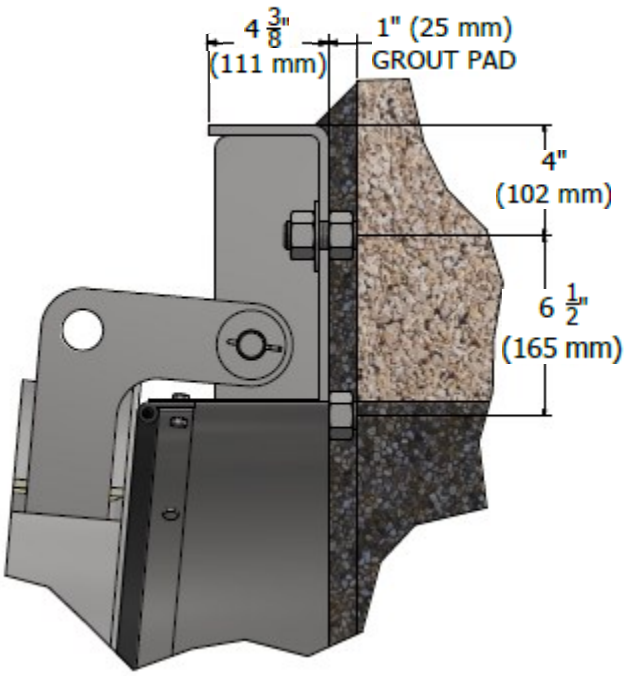




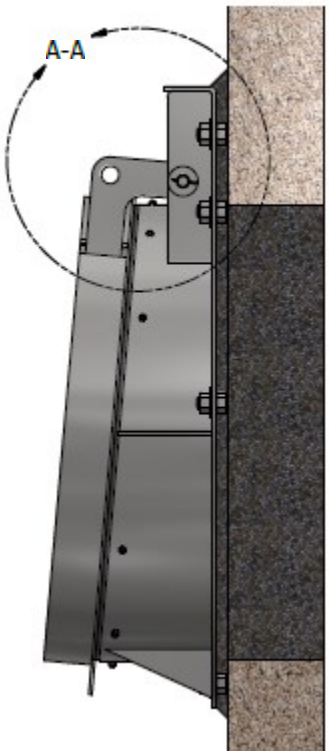


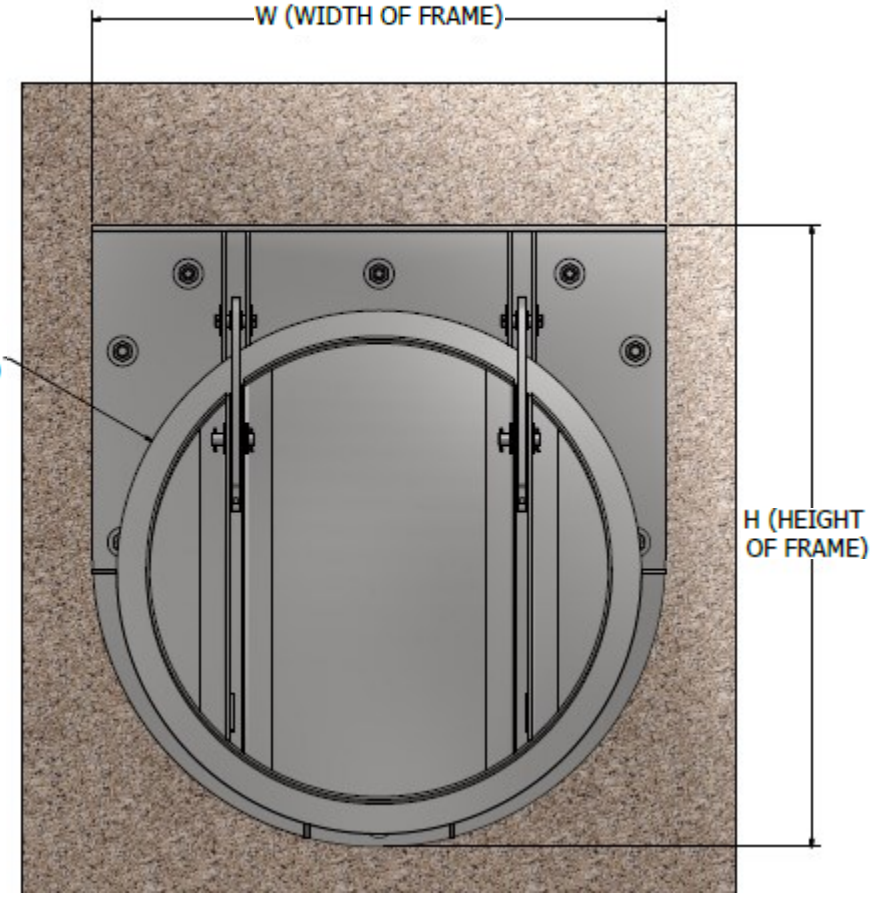
GATE ILLUSTRATED: 44" (W) x 38" (H)

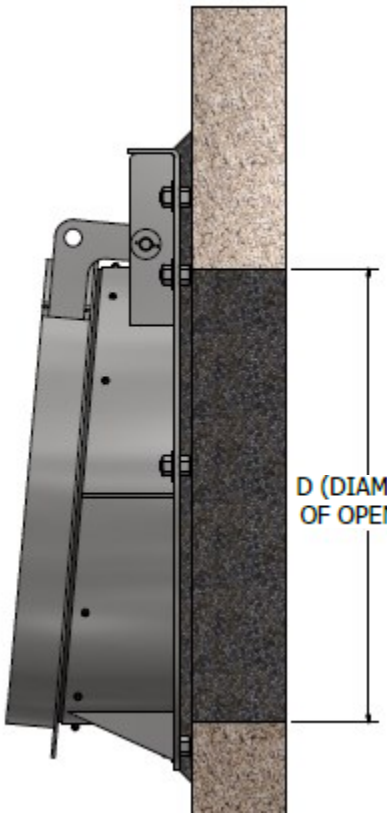
Model 452 Pipe Flange Flap Gate



DETAIL A-A

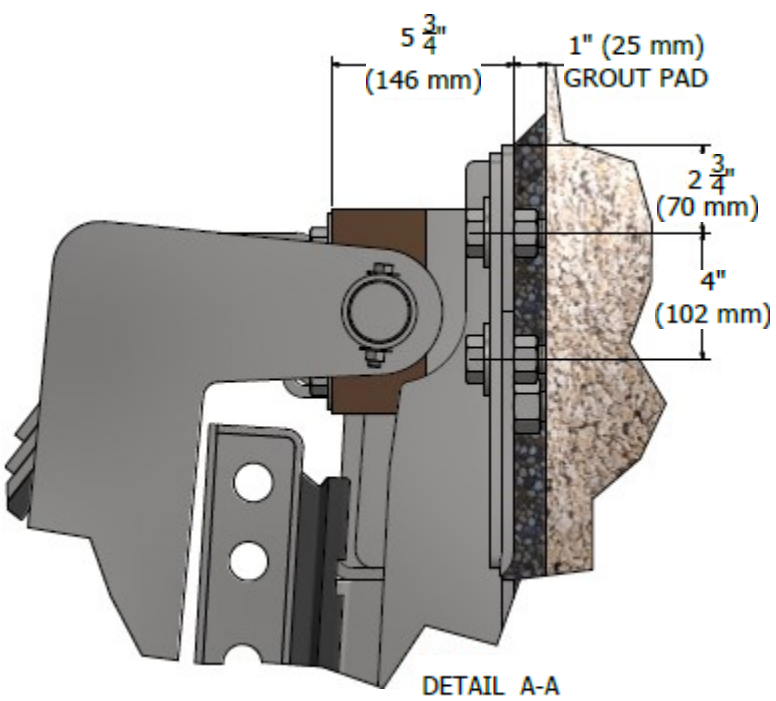




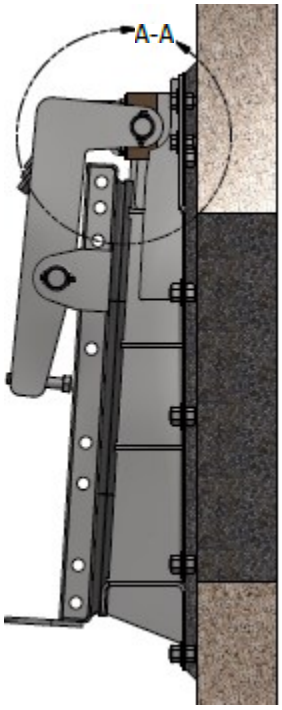


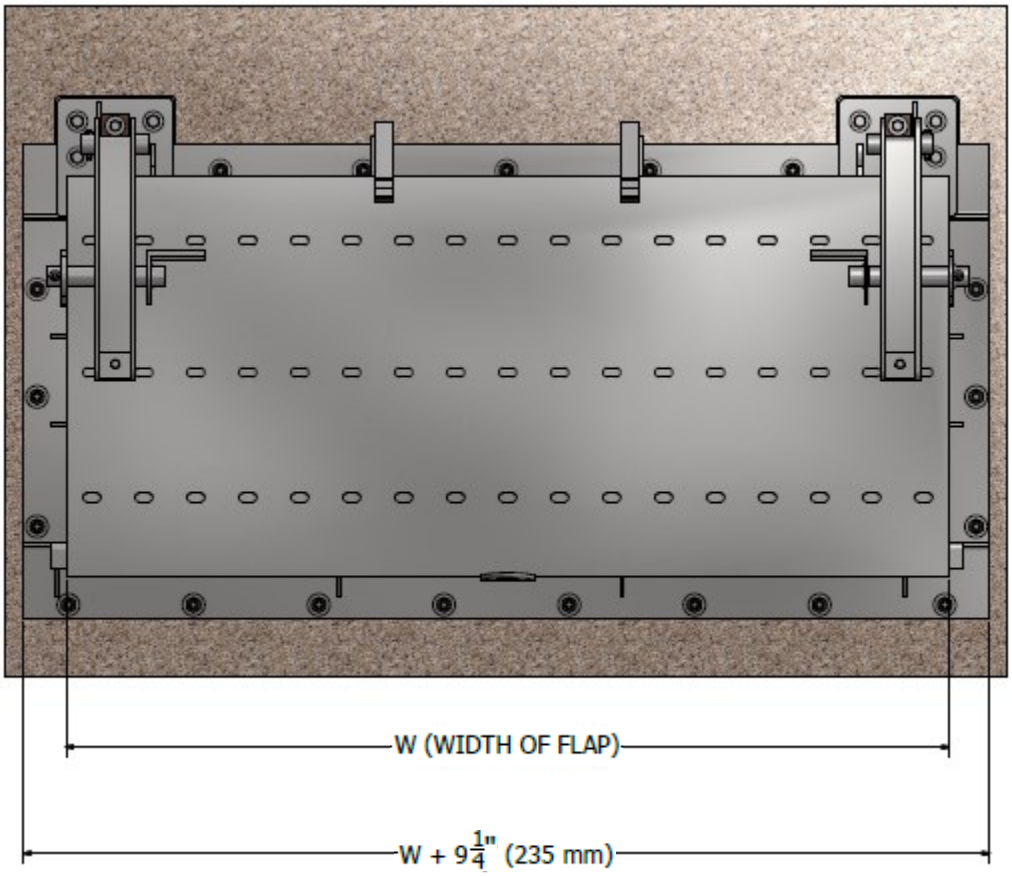
GATE ILLUSTRATED: 48" (W) x 38" (D) x 52" (H)

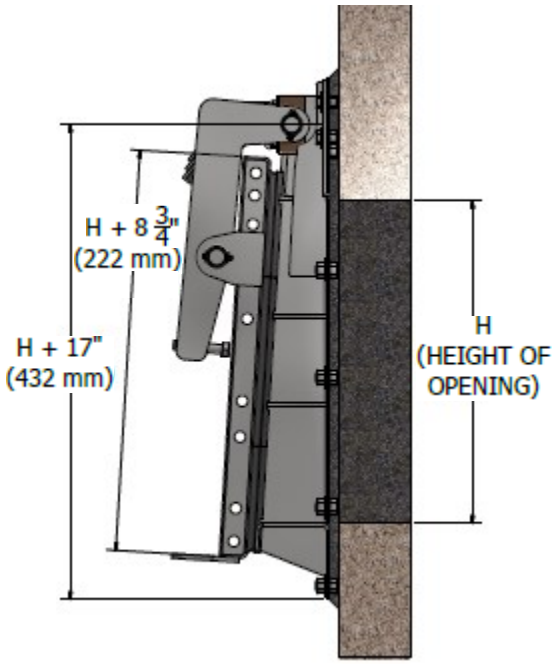
Model 452 Pontoon Flap Gate



DETAIL A-A







GATE ILLUSTRATED: 98 3/4" (W) x 36" (H)

Whipps, inc.
WATER CONTROL GATES

Water Control Equipment

Series 300

Contents

Introduction

Series 300 gates are comprised of specialized water control equipment tailored for specific applications. Whipps, Inc. can economically produce customized water control equipment for both standard and non-standard applications. Our company offers telescoping valves and butterfly gates with high performance and longevity, designed with rugged, reinforced construction combined with a heavy-duty, low-leakage seal. Our butterfly gates are sealed on all sides with UHMW/rubber seals, rotating around a thrust bearing 90 degrees to open and close with less effort required for slide gates the same size. The water control equipment manufactured by Whipps, Inc. is constructed of corrosion-resistant materials such as type 304/304L or type 316/316L stainless steel.

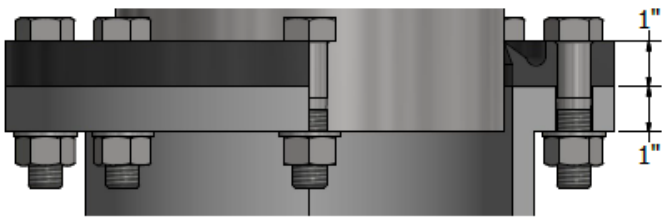
Advantages

Performance: Utilizing compressible seals provides superior leakage performance compared to traditional cast iron water control equipment with bronze seating faces.

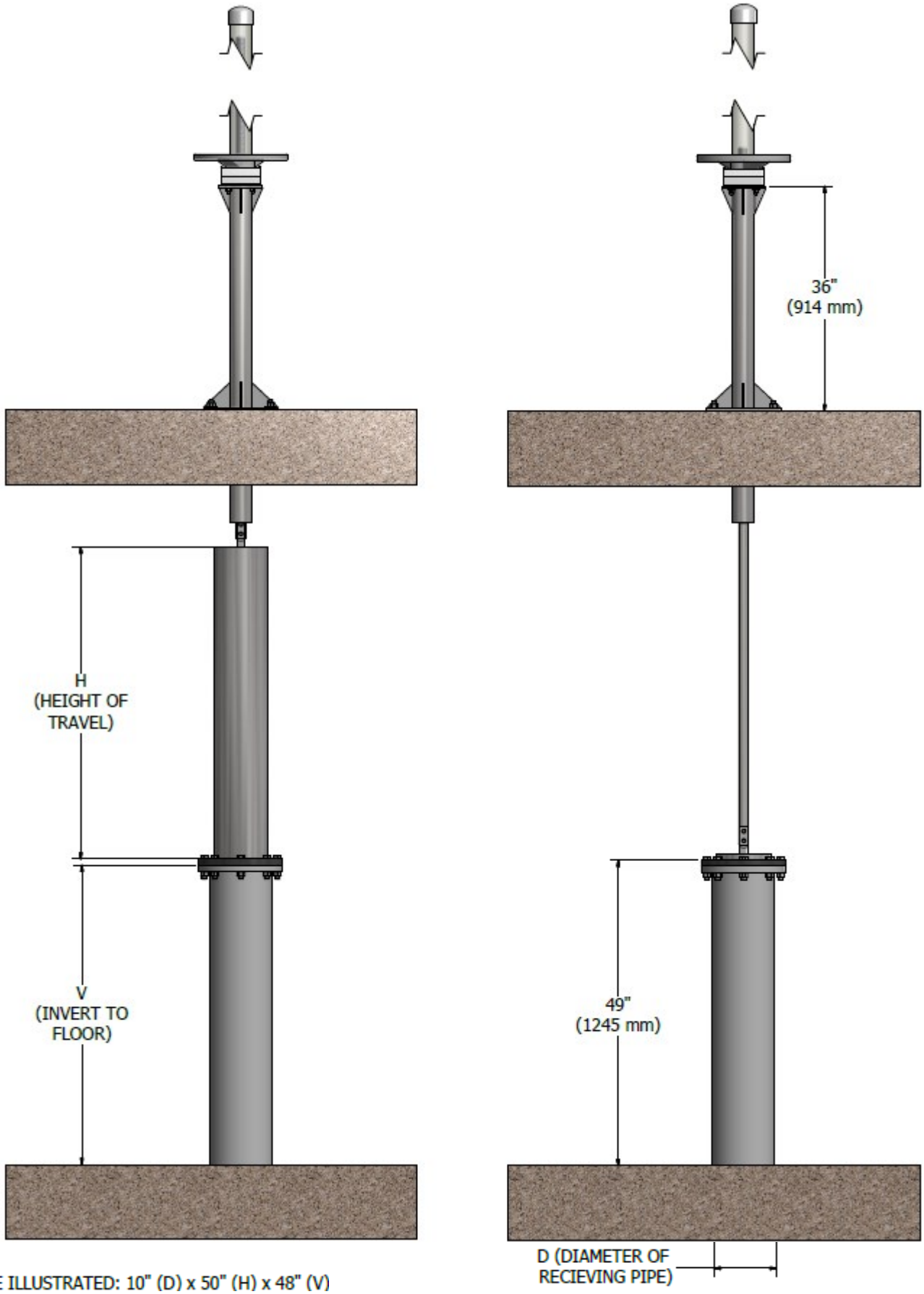
Design Flexibility: All series 300 gates are custom-built for each application, allowing various mounting arrangements and a nearly unlimited range of sizes.

Corrosion Resistance: Painting or recoating stainless steel is not required to resist corrosion in water and wastewater.

Field Replaceable Seals: If the seals were ever to become damaged, they are easily removable and replaceable. In contrast, the bronze seating faces on traditional cast iron water control equipment cannot be replaced in the field.

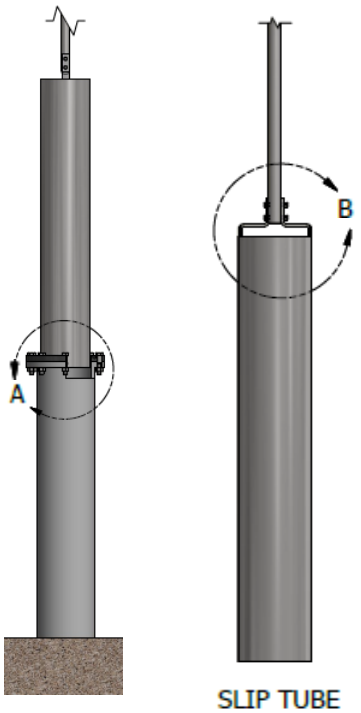


Model 310 Telescoping Valve



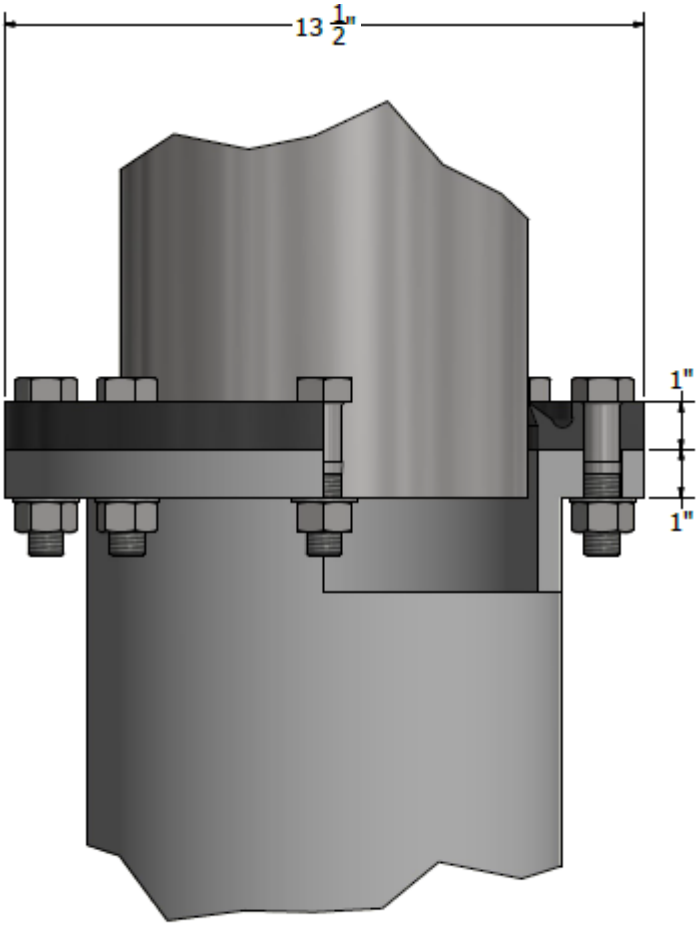
GATE ILLUSTRATED: 10" (D) x 50" (H) x 48" (V)

Model 310 Features

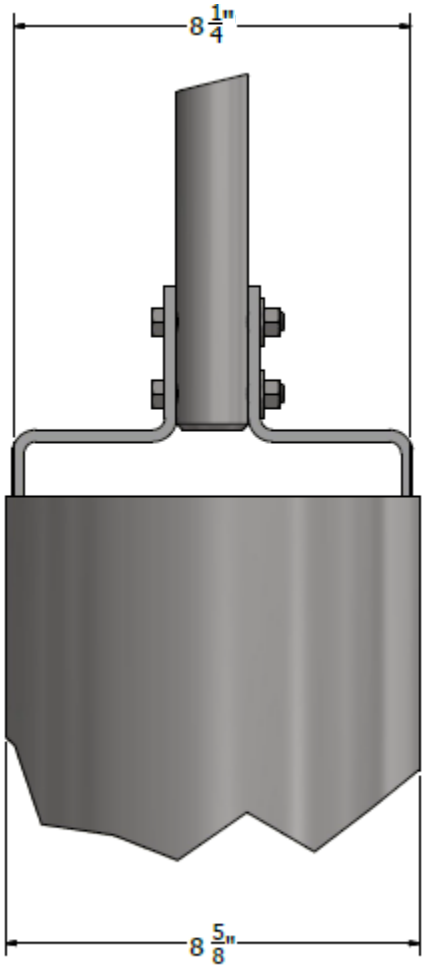


SLIP TUBE

Model 310 telescoping valves are typically designed with diameters between 4 and 18 inches. They feature slip tube construction in stainless steel, brass, or PVC with plain or v-notched tops. Operation is facilitated by a gear box that drives a threaded stem, which can either be rising or non-rising. Rack and pinion operators are an alternative option available upon consultation.

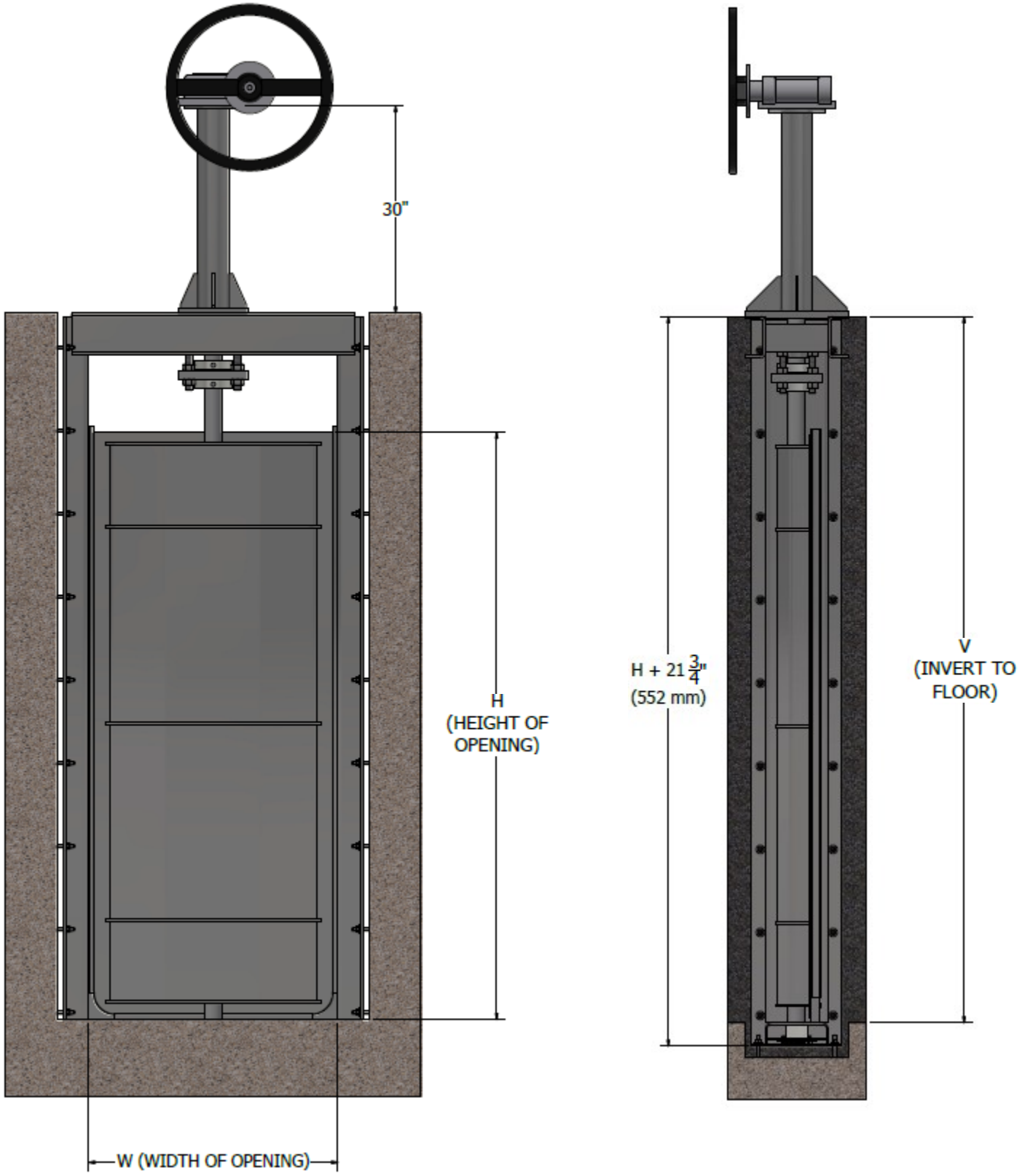


DETAIL A
FLANGE & SEAL



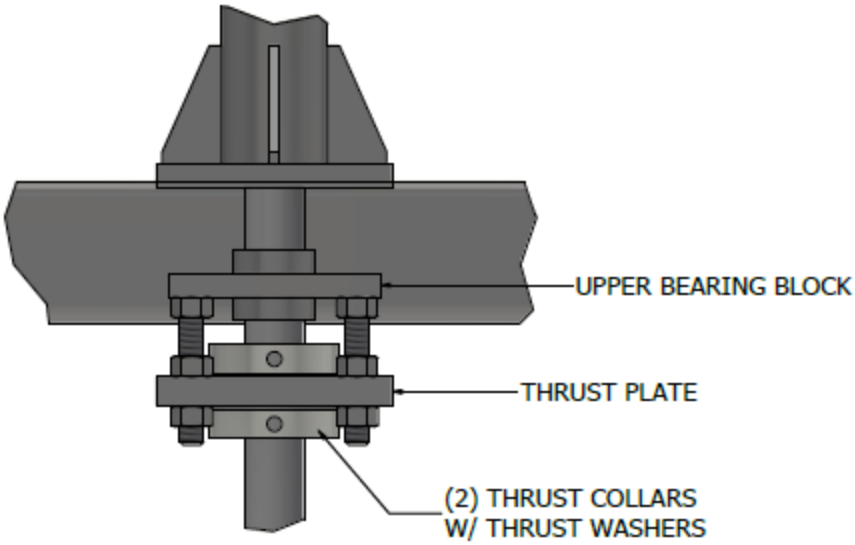
DETAIL B
VALVE BAIL

Model 340 Butterfly Gate

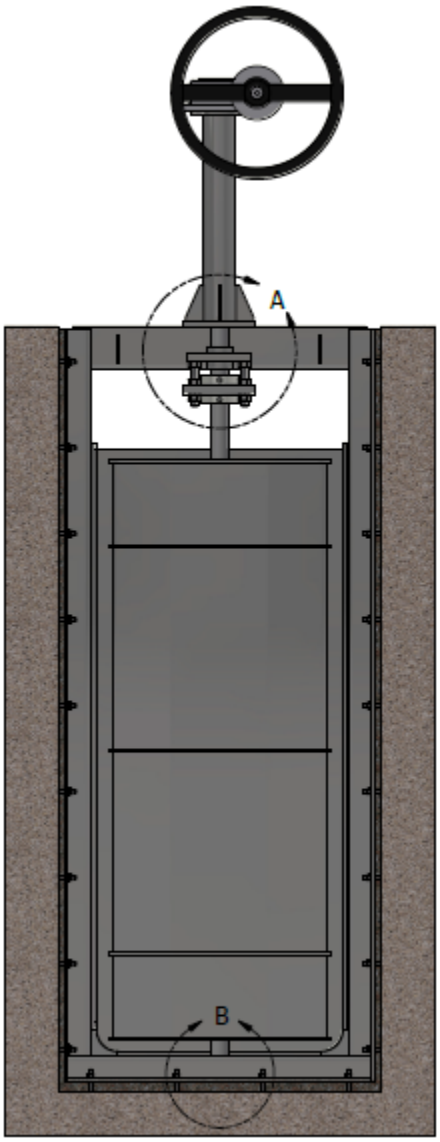


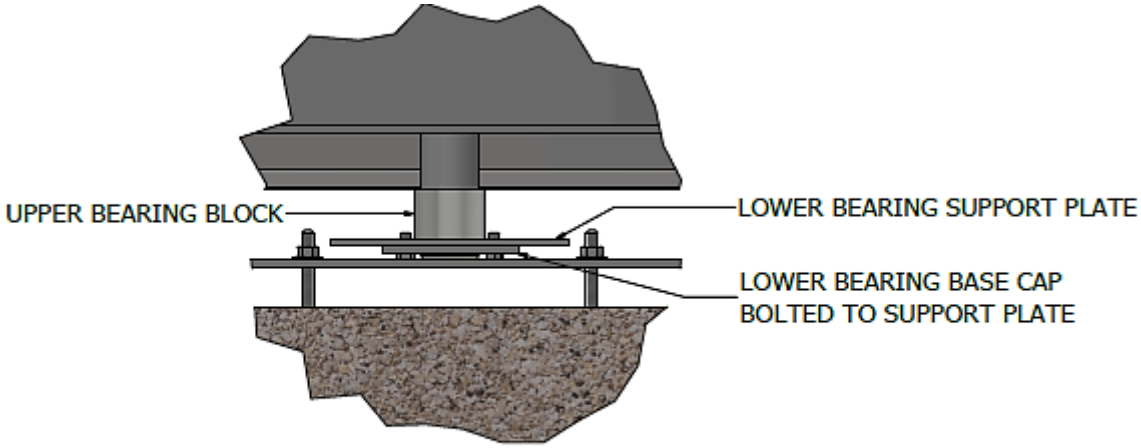
GATE ILLUSTRATED: 36" (W) x 84" (H) x 102" (V)

Model 340 Features



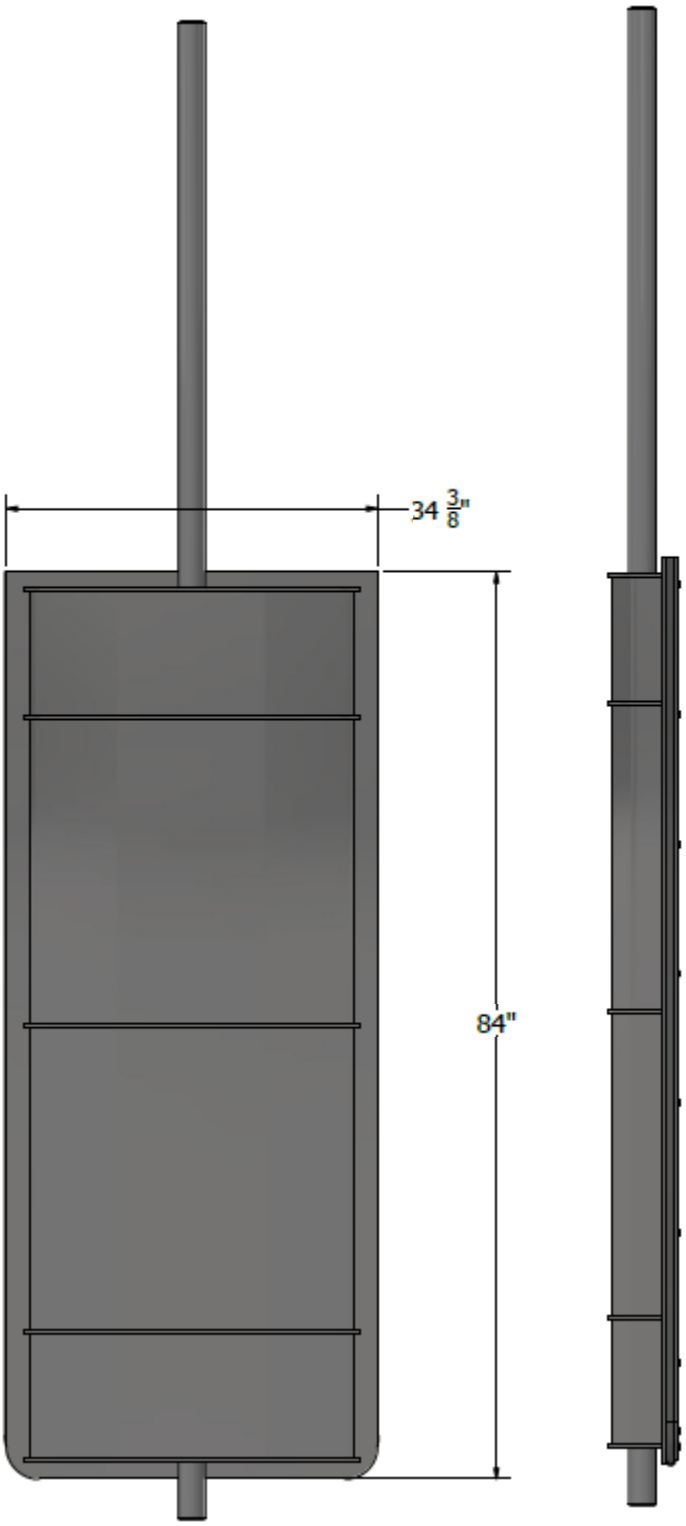
DETAIL A
UPPER THRUST BEARING



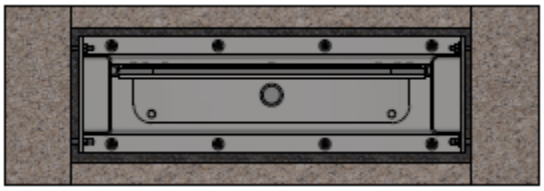


DETAIL B
LOWER BEARING

Model 340 Butterfly Gate Door



BUTTERFLY GATE TOP VIEW



BUTTERFLY GATE OPEN