

OPERATION AND MAINTENANCE MANUAL WITH INSTALLATION INSTRUCTIONS



Required Tools

Although the installation of the Retro-Grate™ is not difficult, it is highly recommended that all installing personnel be experienced in the use of drill motors, concrete anchors and hand tools commonly used when performing installation work. To safely and efficiently install the Retro-Grate™ a two man installation crew with the following tools will be required:

<u>Location 1, 2 & 3</u>	<u>Location 4</u>
1/2" Hammer Drill similar to DeWalt model D25303K	Standard 3/8" Drill Motor
3/8"x4" Masonry Drill Bit Carbide recommended	7/16" Drill Bit
Tape Measure	Tape Measure
Felt Tipped Marker	Felt Tipped Marker
Sharp Prick Punch	Sharp Prick Punch
Planking (See page 4 for Sizing)	Planking (See page 4 for Sizing)
Safety Harnesses with Lanyard*	Safety Harnesses with Lanyard*
Hammer	Hammer
Chisel for concrete	Chisel for concrete
Safety Glasses**	Safety Glasses**
Pliers	Pliers
Ratchet with 3/8" Socket	Ratchet with 3/8" Socket
#2 Phillips Screwdriver	#2 Phillips Screwdriver
Extension Cords	Extension Cords

**Required for ALL Installation Crew Members

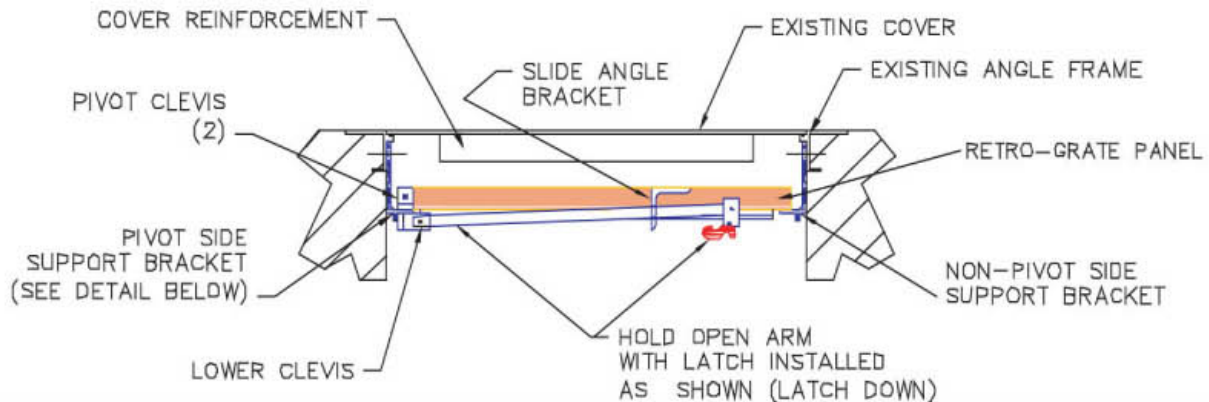
Items Provided

Qty	<u>Location 1, 2 & 3</u>	Qty	<u>Location 4</u>
1	Grating Panel with Lifting Handle	1	Grating Panel with Lifting Handle
1	Pivot Side Bracket	1	Pivot Side Bracket
1	Non Pivot Side Bracket	1	Non Pivot Side Bracket
2	3/8" x 1 1/2" Hex Head Bolts w/ lock washers for pivot side support bracket	2	3/8" x 1 1/2" Hex Head Bolts w/ lock washers for Pivot side support bracket
10	3/8" x 3" Flathead Anchors (2 extra) (3/8" x 4" anchors substituted when shims are required)	10	3/8" x 1 1/2" Flat Head Bolts w/ Nuts & Lock Washers (2 extra)
1	Stainless Steel Hold Open Arm with Red Latch	1	Stainless Steel Hold Open Arm with Red Latch
2	Stainless Steel Roll Pins (1 extra)	2	Stainless Steel Roll Pins (1 extra)
2	Stainless Steel Cotter Pins (1 extra)	2	Stainless Steel Cotter Pins (1 extra)

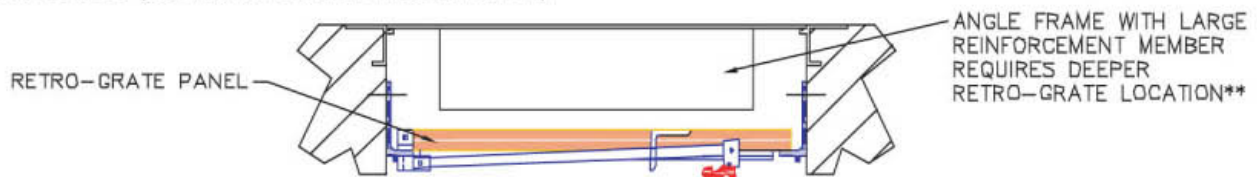
The above items & quantities are provided for each individual Retro-Grate™ panel.

ACCEPTABLE MOUNTING LOCATIONS

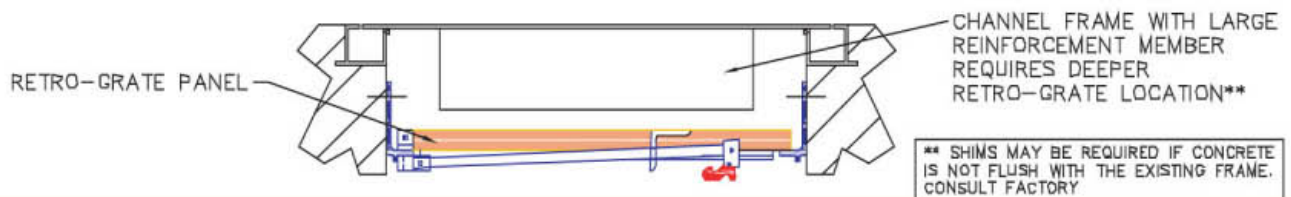
LOCATION 1 (USE ANCHOR BOLTS FOR ATTACHMENT)



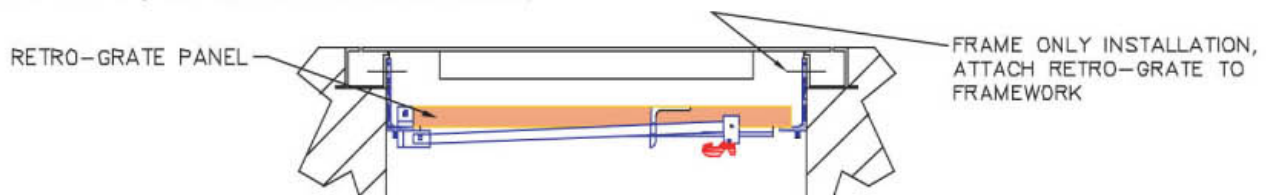
LOCATION 2 (USE ANCHOR BOLTS FOR ATTACHMENT)



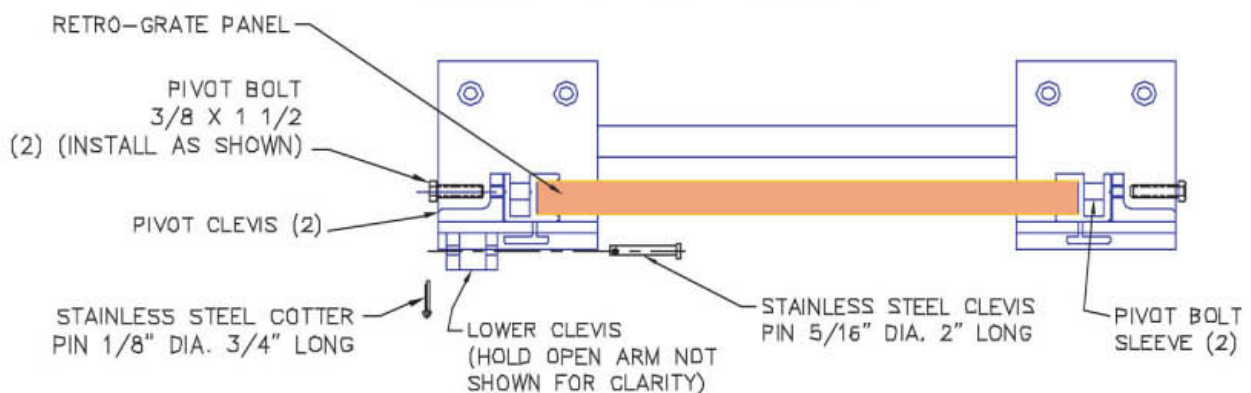
LOCATION 3 (USE ANCHOR BOLTS FOR ATTACHMENT)



LOCATION 4 (USE BOLTS & NUTS FOR ATTACHMENT)



PIVOT SIDE SUPPORT BRACKET





The installation will require the access cover to be in the open position with installation personnel very close to the opening. Great care should be given to securing the opening against an accidental fall. It is imperative that safety glasses be worn when drilling holes or chipping uneven concrete. In addition, all members of the installation crew must wear safety belts or safety harnesses with the lanyard secured to an adjacent structure capable of supporting 500 lbs. Safety lanyards and harnesses should be inspected to insure that they are in good working order. Frayed lanyards or harnesses must be replaced before proceeding.



When the cover is in the open position, cover the hole using 2" x 10" planking (cut at least 48" longer than the longest dimension of the opening). Example: If the opening measures 30" x 48" the planking should be cut 96" long with a minimum of two planks for an opening of this size. Larger openings will require additional planks. When the planks are laid across the opening, there must be a minimum of a 24" overlap onto the concrete at each end. The planks must be structurally sound grade-A lumber. Be sure to inspect them prior to installation to check for cracks or knots that would weaken the planks.



As stated above, all installation crew members must be wearing safety belts or harnesses with the lanyard secured to an adjacent structure capable of supporting 500 lbs. Open the access cover and determine which side of the opening would be the best location for the pivoting side of the Retro-Grate™. Determining factors include conditions within the opening such as hold open arms, cable holders or guide rail brackets and beam pockets. Obstructions outside the opening such as vent piping or control cabinets that would impede opening and closing of the Retro-Grate™ once it has been installed should also be considered.



Once it has been established which side of the opening would be best to mount the pivot side support bracket, the location of the bracket in the opening must be determined. From the "Mounting Locations" page determine which of the 4 locations conforms to your application. Once determined, hold the pivot side bracket at the determined location and use the felt tipped marker to mark one of the mounting holes. The remainder of the holes can be lined drilled later. **NOTE:** Locating and marking the bracket may require the removal of your safety planks. It is imperative the installer is harnessed & secured with the lanyard.



If the support bracket cannot be mounted on the framework because of an obstruction, the bracket must be mounted directly to the concrete slab below the framework. (See the Mounting Locations 2 & 4.) If required, remove any uneven concrete at the mounting bracket locations using a hammer and chisel. Note: The remaining non-pivot support bracket must be mounted on the opposite side of the opening on the same plane or level as the hinge side support bracket so that when the Retro-Grate™ has been installed, it will rest on the bracket in a level position. Note: Safety glasses must be worn when removing uneven concrete.



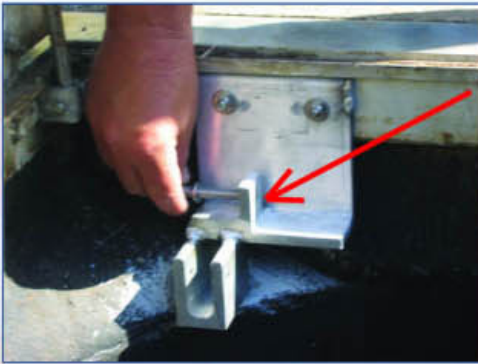
Place a sharpened prick punch in the center of the mark on the cover framework or concrete. Carefully hammer the prick punch until a deep dimple has been formed. Place a minimum of (2) 2" X 10" grade A planks cut at least 48" longer than the longest dimension of the opening, across the opening. Allow enough room between the planking and the cover framework to safely operate the drill. While lying on the 2" X 10" planking, locate the prick punched dimple and drill a 3/8" hole. Use a hammer drill for concrete installations or a standard drill when mounting the Retro-Grate™ to channel framework only. For concrete installations, the 3/8" hole can be drilled through the cover framework and into the concrete to a depth of at least 4 inches. Run the drill bit in and out several times to insure that all debris is removed from the hole. For channel framework only installations, use a standard drill to provide a 7/16" hole that will accept the flat head bolts that are supplied with the Retro-Grate™.



Align the hole in the pivot side mounting bracket with the just drilled mounting hole. Insert the appropriate bolt or anchor into the hole until the head is flush in the countersunk hole in the bracket. **IMPORTANT:** Do not tighten any of the anchors or bolts until it has been determined that both the pivot side and non-pivot side brackets are in the correct and final position. If the Retro-Grate™ is being installed directly to a channel frame only (See Location 4), insert a flat head bolt into the hole and finger tighten the nut and washer to keep the bracket attached to the framework. For concrete installations (See Locations 1-3), insert but do not tighten an anchor bolt to attach the bracket to the mounting surface. Level the bracket and line drill the remaining (3) holes placing anchor bolts or flat head bolts into the holes as they are drilled. Make sure the anchor bolts can be fully inserted into the hole, but do not tighten the bolts yet as they may need to be moved.



To insure the non-pivot side mounting bracket and the pivot side bracket are located in the proper position, measure from the front edge of the pivot bracket to the front corner of the framework and from the top of the bracket to the framework support ledge. Transfer these measurements to the opposite side of the opening and mount the non-pivot side support bracket on the same plane using the same steps as described above. Inspect the mounting brackets to insure the grating will not come in contact with any obstructions in the opening, (Guide rail brackets, hold open arms, beam pockets, etc.). When it is determined that the Retro-Grate™ will pivot up and down without any impediments, tighten the (4) anchor bolts or flat head bolts in each bracket until they cannot be tightened any further.



Install (2) 3/8" x 1 1/2" pivot bolts from the outside to inside of both pivot clevises until the end of the bolt is flush with the inside of each clevis. (Do not install the bolts past the inside edge of the clevis). The Retro-Grate™ will be positioned between the two pivot clevises and clearance for the grating structure must be maintained.



Two installation crew members will be required for the next step. Find the end of the Retro-Grate™ structure with the pivot bolt sleeves. With a crew member at each end of the grate, carefully lower the structure onto the support brackets making sure the end of the grate with pivot bolt sleeves is positioned between the two pivot clevises. Tighten both pivot bolts firmly, do not over tighten. Inspect the non-pivoting support bracket to insure the Retro-Grate™ structure is properly seated with the grating beams resting on or beyond the line that is located on the bracket seat. Consult factory if the Retro-Grate™ structure does not extend to the line on the bracket.

**BEAM MUST REST ON OR PAST RED LINE AFTER INSTALLATION.
ADD SHIMS IF REQUIRED.
FAILURE TO DO SO CAN RESULT IN GRATING FAILURE.**

↑ **BEAM MUST REST ON OR PAST THIS LINE.** ↑



Grasp the hold open arm with the red latch facing down. Place the end of the hold open arm through the slot in the slide angle that is located on the side of the Retro-Grate™ structure. Pull the hold open arm assembly through the slide plate angle all the way to the lower clevis located below the pivot side support bracket.



With the red latch facing down, position the hold open arm between the sides of the lower clevis. Align the holes in the clevis with the hole in the hold open arm and insert the lower clevis pin through the holes in both the lower clevis and the hold open arm. The pin must protrude through both legs of the lower clevis and the hold open arm. Insert the cotter pin through the hole in the end of the clevis pin to insure that the clevis pin remains in position. The clevis pin and cotter pin must be in place before the hold open arm can safely and automatically hold the Retro-Grate™ in the open position.



Grasp the spring loaded lifting handle and pull the Retro-Grate™ into the open and upright position. If the unit is installed properly, the red latch should move into a locked position beneath the slide angle and the grating structure cannot be lowered. If the latch does not move into the locked position, consult the factory. To lower the Retro-Grate™, grasp the lifting handle with one hand and with the other hand, simply pivot the red latch upward and lower the unit.



Open and close the unit several times to insure the hold open arm is working properly and that the Retro-Grate™ clears any obstacles. Consult the factory immediately if the Retro-Grate™ does not function properly or if the unit does not rest all the way to the line on the non-pivot side bracket. Perform a final check of all attaching hardware to insure that the hardware is fully inserted and tight. Close and lock both the Retro-Grate™ and the access cover to prevent any unauthorized access. The spring loaded lifting handle will retract when the access cover is in the closed position.

Periodic Inspection & Maintenance Procedures

Because the Retro-Grate™ protective grating system manufactured by Halliday Products, Inc. is of all aluminum and stainless steel construction, it requires minimal maintenance. For optimum product life the manufacturer recommends the following procedures be performed annually:

1. Inspect all stainless steel mounting hardware to insure the anchor bolts are completely inserted into the concrete and that they remain tight and secure. If any loose anchor bolts are discovered, replace them immediately. Consult the factory for replacement anchor bolts.
2. Inspect the grating beams to insure that they are seated at or beyond the line on the non-pivot support bracket. Consult factory if the grating beam isn't seated at least to the line.
3. Pivot the Retro-Grate™ to the open position to insure the hold open latch automatically locks the grate in the open position. Remove any debris that inhibits the latch from moving freely without binding. Consult factory if the latch does not lock the grate in the open position.
4. Inspect both pivot bolts to insure they are completely tightened into the pivot clevises.
5. Inspect for and remove any debris from the Retro-Grate™ and its support brackets.



PRODUCT GUARANTEE

HALLIDAY PRODUCTS, INC. guarantees the Retro-Grate™ protective grating system against defects in material and or workmanship for a period of three (3) years from the date of shipment from the factory. Unusual abuse or neglect is not covered.

Further, any modifications performed upon any Retro-Grate™ protective grating system by persons not authorized by the manufacturer, and without expressed and written permission of the manufacturer, will automatically void the product guarantee.

In the event that work is required under the guarantee, the Owner must give written notification to the manufacturer at the following address:

**Halliday Products, Inc
P.O. Box 609509
Orlando, FL 32860-9509**

To consult the factory, please call 800-298-1027 from 7:30 a.m. to 4:30 p.m. Eastern Standard time Mondays through Fridays.