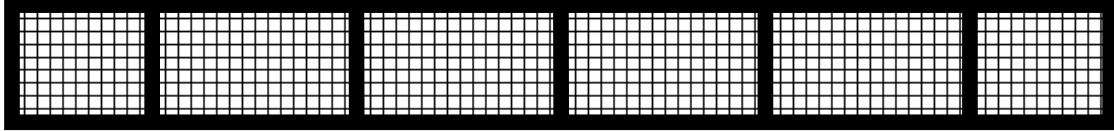


TRIDENT CurbScreens



INSTALLATION GUIDE



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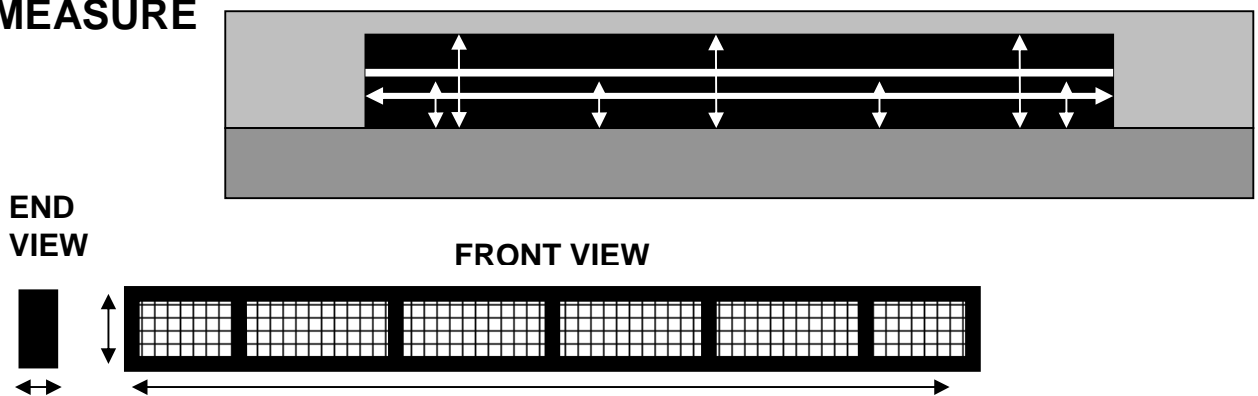
TRIDENT CurbScreen INSTALLTION GUIDE

SCOPE

The intent of this guide is to provide methods and options for installing the TRIDENT CurbScreen. While the methods are proven, keep in mind this is a guide, and experience as well as onsite evaluation and situational analysis will dictate the best way to install your TRIDENT CurbScreen.

The key to a successful TRIDENT CurbScreen installation is to insure that the TRIDENT CurbScreen is flush with the curb line. This will enable street sweepers to remove any debris that may be around the TRIDENT CurbScreen. It is also critical that the Trident CurbScreen is not sticking out of the curb face at any point so that damage is not caused to the CurbScreen or whatever might hit it.

MEASURE



There are three critical measurements needed to successfully install the TRIDENT CurbScreen. These measurements will be important for several reasons.

- 1] To determine how many TRIDENT CurbScreen sections will be needed and what size
- 2] To determine what type and how many mounting devices will be needed; E.G. TRIDENT BINDER(s), Concrete anchors....
- 3] If FITTING the TRIDENT CurbScreen is required (cut, notched...).

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Horizontal (end to end)

First define the curb line at the curb opening. You can simply take a chalk line and hold it 6" before the left curb opening and the other end 6" past the right curb opening in the curb corner where the horizontal street surface meets the vertical curb, this is referred to as the curb line. This is where the face (front) of the TRIDENT CurbScreen will reside.



The curb face opening should be measured from side to side, 2" inside the curb line, as the TRIDENT CurbScreen is 2" deep.



This is the point at which the installed curb screen will intersect the inside of the curb opening. Try to keep the face of the TRIDENT CurbScreen near flush (or slightly back) from the flush line to give the street sweeper a clear path without creating a trash trap.

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It is also critical that the Trident CurbScreen is not sticking out of the curb face at any point so that damage is not caused to the CurbScreen or whatever might hit it.

Once you have this measurement, you will know how many TRIDENT CurbScreens you will need for this site as standard TRIDENT CurbScreens are all 48" long from the factory. For example, if your horizontal measurement is 44", then you will need (1) TRIDENT CurbScreen; if your measurement was 56" you will need (2) TRIDENT CurbScreens; and if your measurement was 144" you would need (3) TRIDENT CurbScreens and so on.

HORIZONTAL CURB OPENING	NUMBER OF TRIDENT CurbScreens
1" to 48"	1
49" to 96"	2
97" to 144"	3
145" to 192"	4
193" to 240"	5

Vertical (top to bottom inside the curb inlet)

This measurement is important as to choose the best height TRIDENT CurbScreen. NOTE that the TRIDENT is designed to only cover about 50% or so of the curb opening height as to create an integral bypass to reduce the possibility of flooding. As such, TRIDENT comes in two standard heights, 4" (recommended as it will keep most trash and debris out while allowing the most bypass) and 6" (customs heights can be ordered or you may choose to modify a standard TRIDENT height.) This measurement is also taken 2" inside the curb line. As the curb inlet may be lower in the middle to promote drainage. Take this measurement at several points. Also note that if you are securing the TRIDENT to the existing horizontal safety bar you will need the height of the TRIDENT CurbScreen to be at least as high as the bar or you will need to add shims to each mounting point as to not pull the CurbScreen up off the street when binding to the horizontal bar.

Once this measurement is taken, the proper TRIDENT CurbScreen height can be chosen (STANDARD 6" or 4" or custom order).

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Depth (relationship to the curb line)

Taking into account the height of the TRIDENT CurbScreen you have chosen, E.G. 4" height, 6" height... as well as where the support members on the sections of the TRIDENT CurbScreen are located, measure if and where the safety bar (**many curb inlets have a metal rod installed, typically horizontally sometimes vertically through the middle of the curb inlet. This bar is to help prevent small children and animals from going in the curb inlet and down the storm drain**) will intersect the TRIDENT CurbScreen and how deep they will intersect. These are points that some of the TRIDENT CurbScreen material may have to be removed or shims added. NOTE: many times it is easier to lay the sections of the TRIDENT CurbScreen near where they will be installed and mark the intersection points where the TRIDENT CurbScreen touches the safety bar. From this point, you will only need to transcribe the depth of each of the intersection points of the safety bar.

CUT

Once you have completed measuring your curb opening and choosing the height of your TRIDENT CurbScreen, it may be necessary to cut your TRIDENT CurbScreen to length. This can be easily accomplished in several ways.

FIRST: Double check your measurements (The old adage measure twice cut once will save time, money and materials).

SECOND: Choose a saw. The TRIDENT CURBSCREEN is made of HDPE (High Density PolyEthylene). Even though this is a very durable material it is surprisingly easy to cut and can be cut with most saws. The choice of saws includes hand saws like hacksaws, wood cutting saws and PVC pipe saws. You may also consider electric saws like table saws, band saws, and cutoff saws. Finally, as easy as the material cuts you may want to consider battery powered saws.

THIRD: Always take CAUTION when working with saws. It is best to clamp the TRIDENT CurbScreen while cutting. If you are working in the shop, secure your work to a table or bench top surface. If cutting in the field, secure your work in the bed of a truck or other secure work surface.

When cutting the TRIDENT CurbScreen, be sure to cut as straight and clean as possible, this cut will affect the final fitting into the curb opening.

NOTE: when cutting, take precautions to contain the waste plastic shavings so they do not litter or blow away.

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RE-FINISHING:

Finally you will need to finish the cut end. This is best accomplished using a TRIDENT END RE-FINISHING KIT. The kit contains:



[a] 1 – END MEMBER (The correct size kit for your screen E.G. 6" Kit for 6" High Screen, the actual member is 4-½" tall replacement member)

[b] 1 – FACE PLATE MEMBER Same size height as the replacement end member)

[c] 10 – 1-1/2" TRIDENT Plastic spikes

Place [a] the END MEMBER flush on the cut end of the TRIDENT CurbScreen. The dado (recessed) edge should face the mesh and towards the middle as to hold the mesh.



If the mesh overlaps the dado, use scissors or clippers and cut the mesh so it will sit in the dado area of the END MEMBER. Make sure the edge of the end member fits flush with the outside edge of the TRIDENT CurbScreen; then secure the end member with (4) [c] 1-1/2" TRIDENT plastic spikes (two on the top and two on the bottom. The spikes are installed using a smooth face hammer. Next, place the [b] FACE PLATE MEMBER on the front as to cover the mesh and the new end member. Secure the FACE PLATE MEMBER with two [c] 1-1/2" TRIDENT plastic spikes. (USE (2) ADDITIONAL SPIKES ON THE TOP AND BOTTOM FACE PLATE TO SECURE IT TO THE FRAME)

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NOTE - YOU MAY FIND THE TRIDENT PLASTIC SPIKES EASIER TO HAMMER IN IF YOU FIRST MARK THE SPOT WHERE YOU WISH TO DRIVE YOUR SPIKE WITH A SHARPE POINTED AWL OR PRE-DRILL WITH A 5/32" DRILL.

YOU WILL ALSO FIND THE TRIDENT PLASTIC SPIKES WORK BETTER IF THEY ARE DRIVEN STRAIGHT AND NOT AT ANY SORT OF ANGLE. ONCE THE TRIDENT PLASTIC SPIKES ARE DRIVEN IN TO THE TRIDENT CurbScreen THEY FUSE WITH THE PLASTIC. IF YOU BREAK A TRIDENT PLASTIC SPIKE AND NEED TO DRIVE ANOTHER TRIDENT PLASTIC SPIKE IN THE SAME HOLE, YOU MAY NEED TO DRILL A SMALL PILOT HOLE THROUGH THE MIDDLE OF THE BROKEN TRIDENT PLASTIC SPIKE THEN USE THAT PILOT HOLE TO START THE NEW TRIDENT PLASTIC SPIKE.

STRING

If you required more than one TRIDENT CurbScreen SECTION I.E. your curb opening is more than 48" long, you will need to STRING the sections together. This simply means connect the sections together as one unit.

STRINGING can be done one of several ways.

BIND - Place the two sections of TRIDENT CurbScreens next to one another. Run a TRIDENT BINDER in the front top of one TRIDENT CurbScreen through the top of one end of one TRIDENT CurbScreen and around the back then to the front top of the other TRIDENT CurbScreen. Pull the TRIDENT BINDER tight and clip off the extra. Repeat this process on the bottom of the CurbScreen. If more than one section is needed for the curb opening, repeat this process on all other sections.



SCREW - Place the two sections of TRIDENT CurbScreens next to one another. Use (2) 1.25" #7 Stainless Steel wood screws (one coming from one screen one coming from the other screen) and screw the two sections of screens together.

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NOTE – Be sure the mesh on the two joining screens is facing the same way.

BOLT - Drill 2 matching 0.25” holes in the sides of the two end pieces of the TRIDENT CURBSCREENS you need to join. Place the two TRIDENT CurbScreens next to one another and slide a 0.25” X 2” stainless steel bolt through the hole. Place a 0.25” stainless steel nut on the screw and tighten.

NOTE – Be sure the mesh on the two joining screens is facing the same way.

NOTE – If the holes are made OVAL or OBLONG, the TRIDENT CurbScreen can be adjusted lower or higher in the middle as the curb inlet dictates.

FITTING

FITTING is the process by which you trim your TRIDENT CurbScreen to fit exactly in the curb opening. FITTING may require the use of saws, files or grinders to notch, groove, shave or edge to fit flush with the curb line. This may be necessary for several reasons but typically the existing safety bars make it necessary to notch the TRIDENT CurbScreens at a particular point that you had measured and marked in the MEASURE step. NOTE: Be sure when you notch, or groove that you leave at least 0.25” of the TRIDENT CurbScreen material intact. **(You can also use a drill and a spade bit to notch the section)**



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MOUNTING

MOUNTING is the final step to installation of the TRIDENT CurbScreen. MOUNTING can be done in several ways depending on the particular situation and requirements.

Several factors should go into your choice of MOUNTING method. As mentioned, is this a permanent installation or will you require frequent access? Is emergency access or vandalism a consideration?

NOTE: If you have more than one TRIDENT CurbScreen section installed in one curb inlet each section must be secured from moving backwards or twisting.

TRIDENT BINDERS



The TRIDENT BINDER MOUNTING method is quick and easy, especially if you have existing safety bars in your curb inlet. TRIDENT BINDERS are made of special polymers specifically engineered to stay supple and resist drying out as well as retard the effects of UV. Simply fit your TRIDENT CurbScreen in the curb inlet, take several TRIDENT BINDERS and loop them over the top of the TRIDENT CurbScreen and safety bar then back under the safety bar and through the mesh of the TRIDENT CurbScreen. Secure the TRIDENT BINDER to itself and cut off the excess. Repeat this process until the TRIDENT CurbScreen is secure (will not move up, down back and forth.....)

NOTE We recommend using at least (2) TRIDENT BINDERS on the top end of each 48" TRIDENT CurbScreen. We also recommend using at least (2) TRIDENT BINDERS when connecting two TRIDENT CurbScreens together.

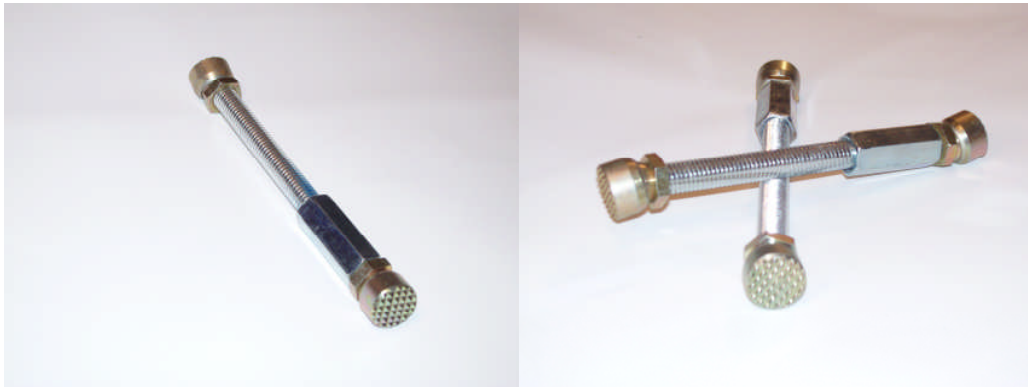
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TRIDENT UNIVERSAL MOUNTS



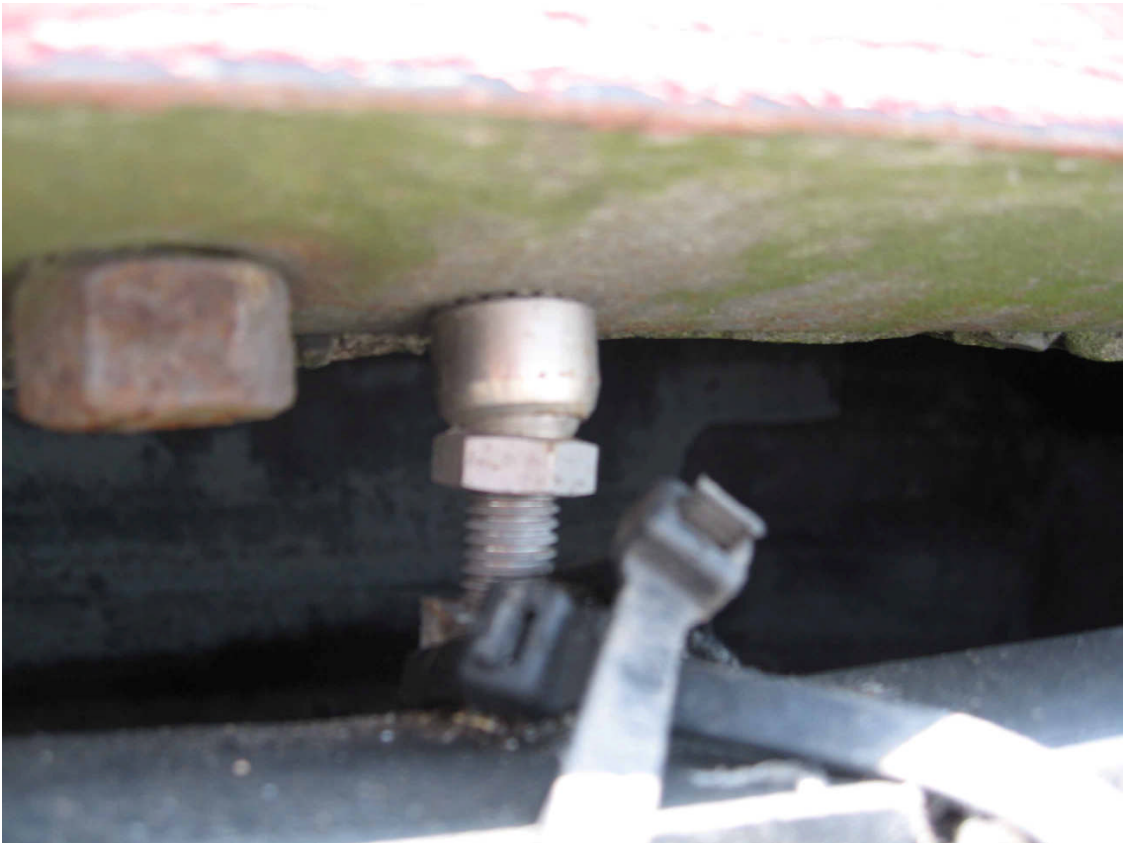
TRIDENT UNIVERSAL MOUNTS have teeth and universal swivel heads to allow mounting to a surface that is not flush on the top, bottom or both. Once you have FIT your TRIDENT CurbScreen, mark the points on which you need support. Remove the TRIDENT CurbScreen and place the TRIDENT UNIVERSAL MOUNTS in the desired position. By hand, turn the top hex counter clock wise. This will make the TRIDENT UNIVERSAL MOUNT expand in an upward motion. Continue turning until the TRIDENT UNIVERSAL MOUNT touches the top inside of the curb inlet. Take a wrench and continue turning in the same direction until the TRIDENT UNIVERSAL MOUNT top hex is very tight (50 FOOT POUNDS+)

Once you have established the TRIDENT UNIVERSAL MOUNTS replace the TRIDENT CurbScreen. Your TRIDENT CurbScreen can be secured to the TRIDENT UNIVERSAL MOUNT with TRIDENT BINDERS.

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CONCRETE ANCHOR AND BOLTS



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At points where you desire a solid mounting surface and one does not exist (such as a safety bar) CONCRETE ANCHOR AND BOLTS are a good solution. Simply fit your TRIDENT CurbScreen into the curb inlet. Take measurements where you will require solid mounts (at least 2 per 48" TRIDENT CurbScreen as to keep the CurbScreen from rotating). Mark the points for the holes in the curb opening on the cement. Drill the CONCRETE ANCHOR holes (in accordance with the direction on the CONCRETE ANCHOR package). Use the CONCRETE ANCHOR setting tool to permanently set the CONCRETE ANCHOR in the cement. Take the bolts and thread into the CONCRETE ANCHOR. Re-fit the TRIDENT CURBSCREEN in the curb opening. Finish with TRIDENT BINDERS from the CurbScreen frame to the bolt in the CONCRETE ANCHORS.

NOTE: IT IS ALSO POSSIBLE TO DRILL THROUGH THE END OF THE TRIDENT CurbScreen AND RUN THE BOLT THROUGH THE CurbScreen AND INTO THE CONCRETE ANCHOR. THIS WOULD ELIMINATE THE NEED FOR TRIDENT BINDERS AND MAKE VANDALISM AND THEFT LESS LIKELY

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BRACKETS SECURED WITH ROAD GRADE EPOXY

At points where you desire a solid mounting surface and one does not exist (such as a safety bar) TRIDENT BRACKETS are a good solution. Simply fit your TRIDENT CurbScreen into the curb inlet. Take measurements where you will require solid mounts (at least 1 on each end and 1 at each joint of 48" TRIDENT CurbScreen sections). Mark the locations to place brackets in either a horizontal (bottom or top of inlet) or vertical (sides of inlet) position. Remember that the typical Trident CurbScreen is 2" in width and the brackets are typically placed behind the CurbScreen, usually 2" inside the curb line as defined previously.

Next, mix 2 part epoxy on clean piece of cardboard or other. Apply the epoxy to the inlet surface, whether it be bottom, side or top in enough quantity to ensure a cement like seal. Place the TRIDENT BRACKETS in the proper locations in the mixed epoxy and let sit for the recommended set time with said epoxy. If installing many TRIDENT CurbScreens, epoxy all of the TRIDENT BRACKETS first giving maximum time for epoxy to set before mounting CurbScreens. Once the TRIDENT BRACKETS are mounted securely in the epoxy with sufficient time to set, simply place the CurbScreen against said BRACKETS and secure with TRIDENT BINDERS. Note: Binders tighten better through brackets if they are only brought through the bracket 1 time – if they are brought through the bracket twice, they tend to kink and be hard to pull through.



For longer runs more back support may be needed to prevent rotation:



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CONCRETE ANCHOR AND BRACKETS

At points where you desire a solid mounting surface and one does not exist (such as a safety bar) CONCRETE ANCHOR AND BRACKETS are a good solution. Simply fit your TRIDENT CurbScreen into the curb inlet. Take measurements where you will require solid mounts (at least 2 per 48" TRIDENT CurbScreen section). Mark the points for the holes in the curb opening on the cement for the CONCRETE ANCHOR (take into consideration, that the brackets will come from under the TRIDENT CurbScreen and up in front and should be 1" behind the TRIDENT CurbScreen to ensure the bolt head does not interfere with the TRIDENT CurbScreen installation). Try to make these points as close to a center or vertical post of the TRIDENT CurbScreen as possible. This will ensure you the maximum strength and longevity. Remove the TRIDENT CurbScreen from the curb opening. Drill the CONCRETE ANCHOR holes (in accordance with the direction on the CONCRETE ANCHOR package. Use the CONCRETE ANCHOR setting tool to permanently set the CONCRETE ANCHOR in the cement. Bolt the BRACKET to the CONCRETE ANCHOR. Re-fit the TRIDENT CurbScreen in the curb opening with the TRIDENT CurbScreen behind (on the inlet side) the BRACKETS. Take the screws and screw the BRACKET to the TRIDENT CurbScreen.

NOTE: YOU MAY WISH TO NOTCH THE BOTTOM OF THE TRIDENT CurbScreen WHERE THE BRACKET PASSES UNDER IT FOR A CLOSER FIT.

COMBINATION MOUNTING

This method (s) is as straight forward as it appears.
EXAMPLES:

CONCRETE ANCHOR AND BOLT(s) are installed then you fit the TRIDENT CURBSCREEN and TRIDENT BINDER BAND the SCREEN to the protruding bolt.

TRIDENT UNIVERSAL MOUNT(s) are installed then you fit the TRIDENT CURBSCREEN and TRIDENT BINDER BAND the SCREEN to the TRIDENT UNIVERSAL MOUNT(s)

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INSTALLATION CHECK LIST

INSTALLATION LOCATION LIST

_____ Specific locations, Location ID GIS....., Permits or any special considerations...

INSTALLATION PARTS LIST FOR

_____ TRIDENT CurbScreens, End Kits, TRIDENT Binders, Mounting Hardware, Epoxy, Brackets.....

HEALTH & SAFETY

- _____ Cones
- _____ Arrow Board
- _____ High Visibility Vest
- _____ Work Lights (Night)
- _____ Gloves
- _____ Knee Pads
- _____ Sun Screen
- _____ Anti-Microbial Hand cleaner
- _____ Broom & Dust pan
- _____ Trash Can/Bag
- _____ Grate/Manhole Hook (just in case)

SPECIAL _____

TOOLS

- _____ Tape Measure
- _____ Chalk Line (show the curb line in front of the curb inlet)
- _____ Sharpe Marker
- _____ Combination Square W/Scribe
- _____ Saw (Cordless or Corded w/power supply)
A Circular saw works best but it needs to cut through 2" of curb screen to be the most efficient so a min. 6" diameter blade is required)
(you can also use hand saw)
- _____ Drill (Cordless or corded w/power supply)
- _____ Spade Drill Bit 1.25"
(to notch the back of screen if needed to avoid obstacles)
- _____ Plastic Spikes
- _____ Stapler
- _____ Staples
- _____ Scissors (to cut the Gasket material)
- _____ Utility Knife
- _____ Hammer
- _____ Awl
- _____ Tie Wrap Gun
- _____ Needle nose pliers
(to pull staples if needed or to pull TRIDENT BINDERS through mesh)
- _____ Camera
- _____ GPS
- _____ Pry Bar (Small Thin)

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