CONSTRUCTION, INC.

DBE & MBE Certified

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August 5, 2018

Mr. Leo Cosentini
California State Water Resources Control Board
Division of Water Quality
P.O. Box 100
Sacramento, CA 94812-100

RE: Updated Fact Sheet for FCS approved G2 CPS and Removable CPS (G2-1 and G1-R)

Mr. Cosentini,

G2 Construction (G2) is pleased to update our Fact Sheet with the State Water Board for G2's two full capture certified systems, the G2-1 CPS and G2-1R Removable CPS.

As we discussed at the Trash Devices & Mosquito Control Meeting in Reno, G2 organized this Fact Sheet to match the California State Water Resources Control Board's *Trash Treatment Control Device Application Requirements*. We've included the following information for the two devices:

1. Cover Letter
2. Table of Contents
3. Physical Description
4. Installation Information
5. Operation and Maintenance Information
6. Reliability Information
7. Field/Lab Testing Information and Analysis

Appendices

Thank you in advance for reviewing and updating this Fact Sheet for our G2-1 (CPS-Mod™) and removable G2-1R (Removable CPS-Mod™) devices. Please contact me with any questions or if additional information is needed.

Sincerely,

Eric H. Taylor, *LEED AP BD+C, PMP*
VP, Projects & Research
G2 Construction, Inc.

1. COVER LETTER

A. General Description of the Device.

The G2 CPS and Removable CPS (G2-1 and G2-1R) are connector pipe screens engineered as full capture systems. They are installed around the discharge pipes in storm water catch basins and trap all particles that are 5 mm or greater. G2's CPS are made of 100% stainless steel (type 304, 14-gauge) with 5 mm holes that filter storm water before it exits the catch basin. G2's CPS have a design treatment capacity that is: (a) greater than the peak flow rate of a one-year, one-hour storm or (b) sized and designed to carry more than the flows of the storm drain where it is installed.

G2 CPS are designed and fabricated to meet the needs of each catch basin. The CPS design configuration depends on the catch basin's dimensions, discharge pipe location and size, and designed flow rates. Standard configurations are shown in design drawings and tables in section 3.

The G2-1 and G2-1R CPS modular design allows it to function in catch basins of all types and sizes, and is easy to install for certified installers. The design and fabrication of these stainless steel devices help ensure long life use for G2's CPS, and expected life of 15 to 20 years.

G2's hinged deflector for mosquito and vector abatement is approved by Alameda County Mosquito Abatement District. This deflector is available for both the G2 CPS and removable versions (G2-1, G2-1R). G2's CPS deflectors prevent particles from falling inside the CPS from the street level. All G2 deflectors are made of 304 stainless steel with 5 mm perforations and screens flow from above. A bottom skirt, made of the same material, may be required at the bottom of the CPS and fitted to the slope of the catch basin floor to ensure there are no gaps 5 mm or greater.

Historical background

G2's CPS is approved as a Full Capture System by:

State Water Resources Control Board (State Water Board)
California Regional Water Quality Control Board, Los Angeles Region (RWQCB, Region 4)
California Regional Water Quality Control Board, San Francisco Region (RWQCB, Region 2)
Los Angeles County Dept. of Public Works (LACDPW)
Association of Bay Area Governments (ABAG)
Orange County Public Works (OCPW)
City of Los Angeles, and Cities throughout the State

As a brief history, G2's CPS devices were first installed in Southern California after it was evaluated and approved by the LACDPW and RWQCB, Region 4. LACDPW's *Connector Pipe Screen Design Technical Report* was approved by RWQCB, Region 4 in 2007. G2's CPS has continuously maintained approval as a full capture system.

G2's CPS devices were part of the 2010 San Francisco Estuary Partnership with ABAG. RWQCB, Region 2, identified G2's two approved Full Capture System devices (see Appendix A):

SFED ID	SFED Device Name	G2 Branded Name
G2-1	*Collector Pipe Screen*	*G2 CPS-Mod™*
G2-1R	*Collector Pipe Screen Removable*	*G2 CPS-Mod™ Removable*

Since 2010, G2 has improved both the CPS (G2-1) and Removable CPS (G2-1R) devices. The CPS improvements have increased filtered flow rates, improved flexibility to install unique catch basin conditions, improved vector control agency access, enabled easier and faster installation, and improved removal speeds for the Removable CPS.

This Fact Sheet provides updated information about G2's CPS devices.

B. The applicant's contact information and location;

G2 Construction, Inc.
1352 E. Borchard Ave.
Santa Ana, CA 92705
info@g2construction.com
714.448.4242

Contacts:
John R. Alvarado, President. 714.448.8080, jalvarado@g2construction.com
Eric H. Taylor, VP Project Mngt. 714.679.2550, etaylor@g2construction.com

C. The Devices' manufacturing location;

G2 Construction, Inc.
1352 E. Borchard Ave.
Santa Ana, CA 92705

D. A brief summary of any field/lab testing results that demonstrates the Device functions as described within the application;

G2's CPS (G2-1) has been lab tested in-house in simulated storm events to demonstrate that it functions fully as a Full Capture System (FCS), and as described in this application. Details about the methodology, results, and need for additional research are summarized in the answer number 7.

Good field testing requires resources and thousands of cubic feet of water. Unfortunately, tested water typically goes down the drain. A qualitative analysis of installed G2 CPS in the field strongly supports that they are fully functioning full capture systems. G2 has installed thousands of CPS for municipalities over the past 8 years over more than 70 separate projects. As of this writing, G2 has not received a single complaint or warranty request about CPS from any City or customer.

E. A brief summary of the Device limitations, and operational, sizing, and maintenance considerations;

Device limitations are related to lack of maintenance and catch basin cleaning, which can reduce the effectiveness due to screen blockage. Operating G2's CPS requires only that maintenance cleanings are performed to prevent captured trash and debris.

F. A description or list of locations, if any, where the Device has been installed. Include the name and contact information of as many as three municipality(s) purchasing the Device,

G2 has installed CPS in SoCal: Los Angeles County, City of Los Angeles, Culver City, City of Lakewood, City of Manhattan Beach, City of Bellflower, City of Lakewood, City of La Canada Flintridge, City of Simi

Valley, City of Irwindale, City of Paramount, City of Signal Hill, and others in LA County. Orange County, City of Anaheim, City of Buena Park, City of Placentia, City of Lake Forest, City of Laguna Hills, City of La Habra, and others in Orange County.
Bay Area installs in Contra Costa County and Suisun City.

Municipalities purchasing contacts:

City of Placentia, Masoud Sepahi	msepahi@placentia.org	714-993-8132
City of Lakewood, Sonya Vivanti	KVivanti@lakewoodcity.org	562.866.9771
City of Buena Park, Joe Hunt	jhunt@buenapark.com	714.562.3653
City of Simi Valley, Kay Allen	KAllen@simivalley.org	805.583.6400

G. The certification below:

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons that manage the system or those persons directly responsible for gathering the information, to the best of my knowledge and belief, the information submitted is, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

John R. Alvarado, President & CEO — Date: 10/5/18

Eric H. Taylor, VP, Projects & Research — Date: 10/5/18

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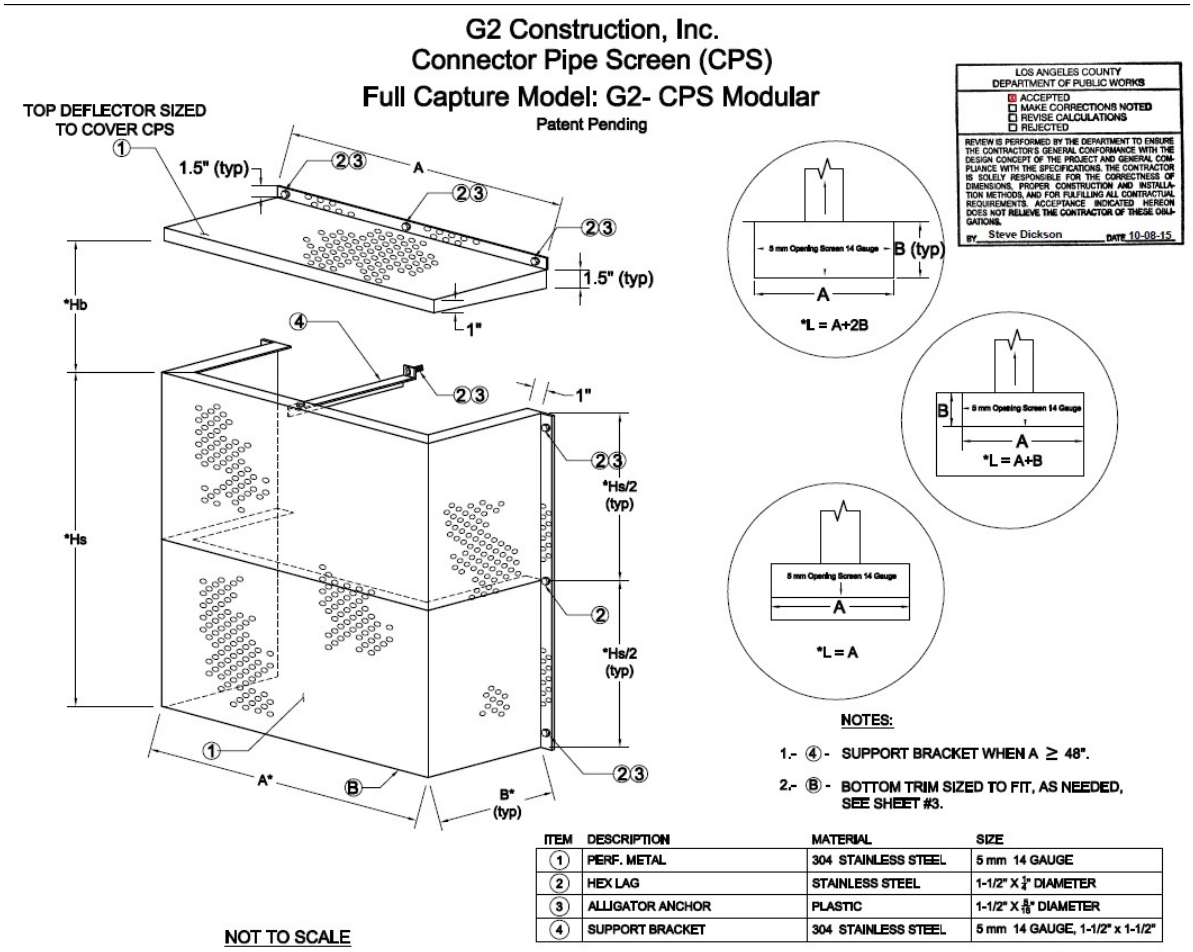
3. PHYSICAL DESCRIPTION.

A. Design drawings for all standard Device sizes including dimensions, and alternative configurations;

G2's CPS systems (G2-1 and G2-1R, known as CPS-Mod™) are designed to meet the specific needs of the catch basin where it will be installed. Design size is increased with increased catch basin depth, length, and discharge pipe size.

Drawing 1 shows the standard configuration when the discharge pipe is located on a wall (front, rear, side).

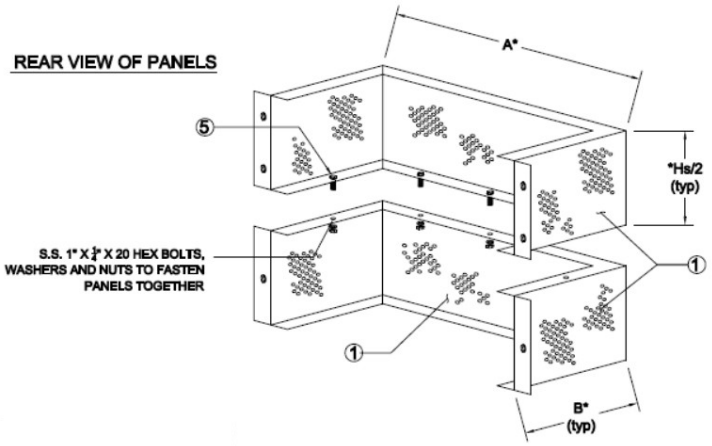


ITEM	DESCRIPTION	MATERIAL	SIZE
①	PERF. METAL	304 STAINLESS STEEL	5 mm 14 GAUGE
②	HEX LAG	STAINLESS STEEL	1-1/2" X ¼" DIAMETER
③	ALLIGATOR ANCHOR	PLASTIC	1-1/2" X ⅜" DIAMETER
④	SUPPORT BRACKET	304 STAINLESS STEEL	5 mm 14 GAUGE, 1-1/2" x 1-1/2"

G2 CPS-Mod™ has a patented modular design that allows for unlimited height expansion and flexibility. This modular design makes sizing and installation easy for catch basins of any depth.

G2 Construction, Inc.
Connector Pipe Screen (CPS)
Full Capture Model: G2- CPS Modular
Patent Pending

REAR VIEW OF PANELS



ITEM	DESCRIPTION	MATERIAL	SIZE
①	PERF. METAL	304 STAINLESS STEEL	5 mm 14 GAUGE
⑤	HEX BOLT, WASHER, NUT	STAINLESS STEEL	1" X ¼" DIAMETER

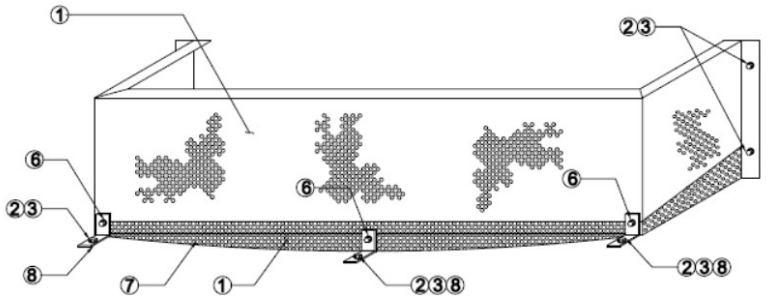
NOT TO SCALE

SHT 2 of 6

G2 CPS brackets and mounts ensure strong and rigorous connections to the catch basin, and the bottom skirt design ensures full-capture 5mm coverage when catch basins floors are sloped.

G2 Construction, Inc.
Connector Pipe Screen (CPS)
Full Capture Model: G2- CPS Modular
Patent Pending

BRACKET & MOUNTING DETAILS



NOTE:

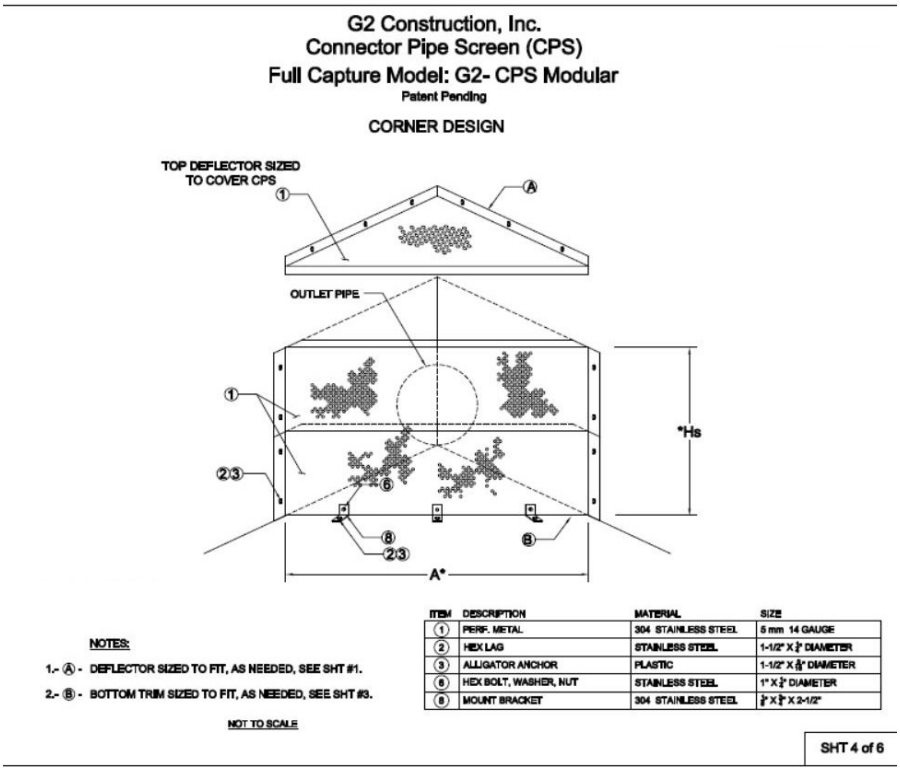
1.- ⑦- BOTTOM TRIM FOR IRREGULAR CATCH BASIN FLOOR SURFACE

ITEM	DESCRIPTION	MATERIAL	SIZE
①	PERF. METAL	304 STAINLESS STEEL	5 mm 14 GAUGE
②	HEX LAG	STAINLESS STEEL	1-1/2" X ¼" DIAMETER
③	ALLIGATOR ANCHOR	PLASTIC	1-1/2" X ⅜" DIAMETER
⑥	HEX BOLT, WASHER, NUT	STAINLESS STEEL	1" X ¼" DIAMETER
⑦	PERF METAL TRIM	304 STAINLESS STEEL	5 mm 14 GAUGE
⑧	MOUNT BRACKET	304 STAINLESS STEEL	¼" X ¼" X 2-1/2"

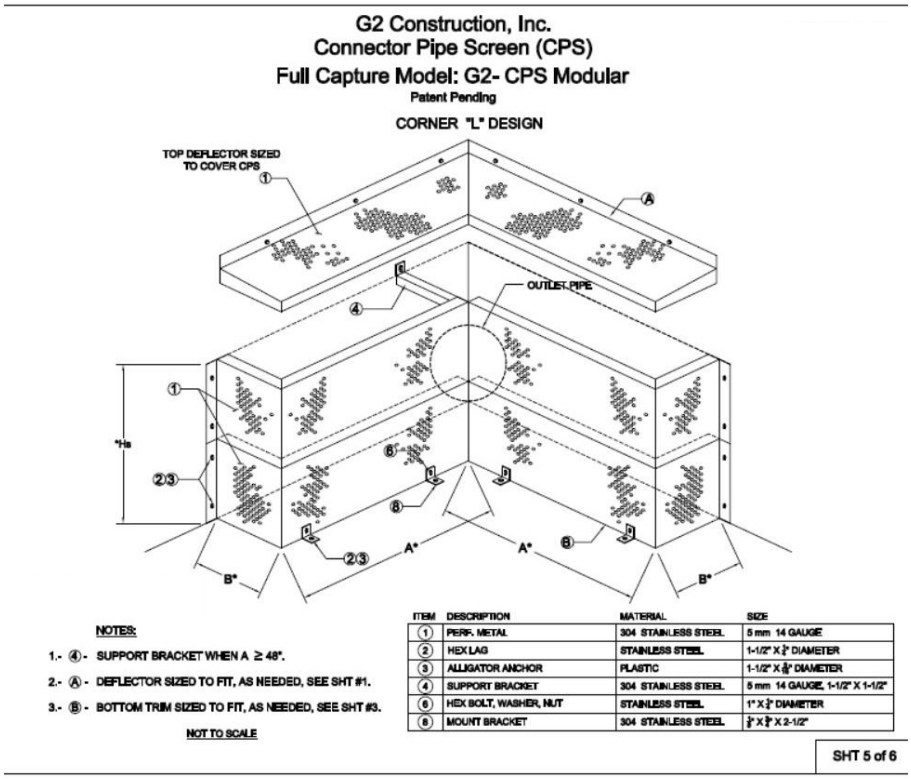
NOT TO SCALE

SHT 3 of 6

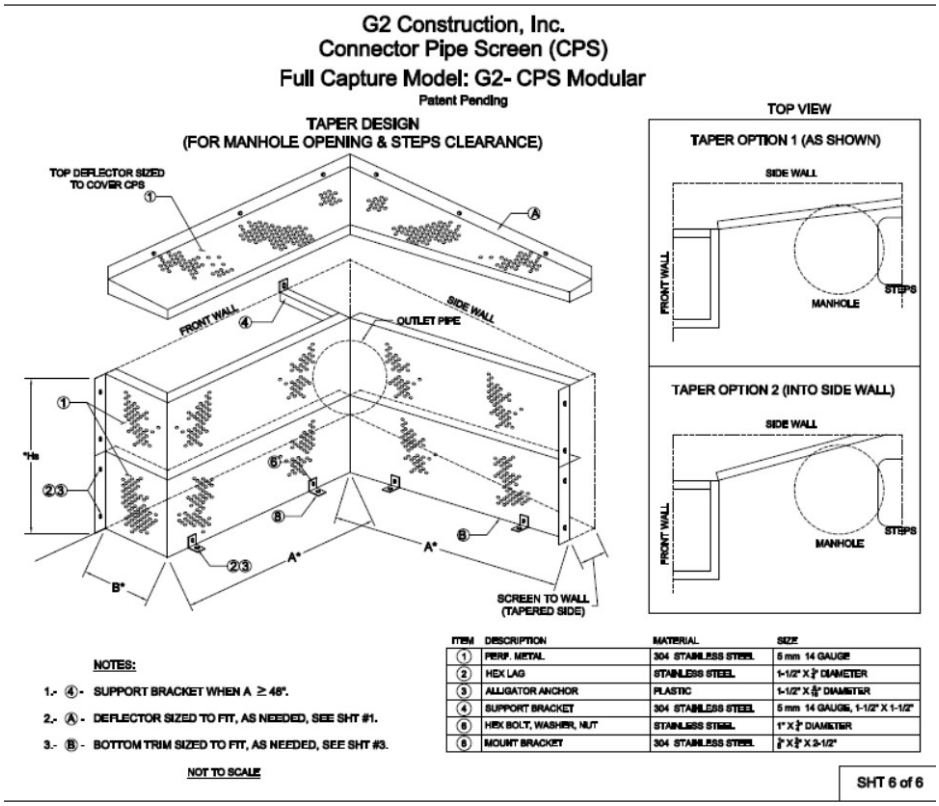
Drawing 4 shows a potential configuration when the discharge pipe is located in a corner.



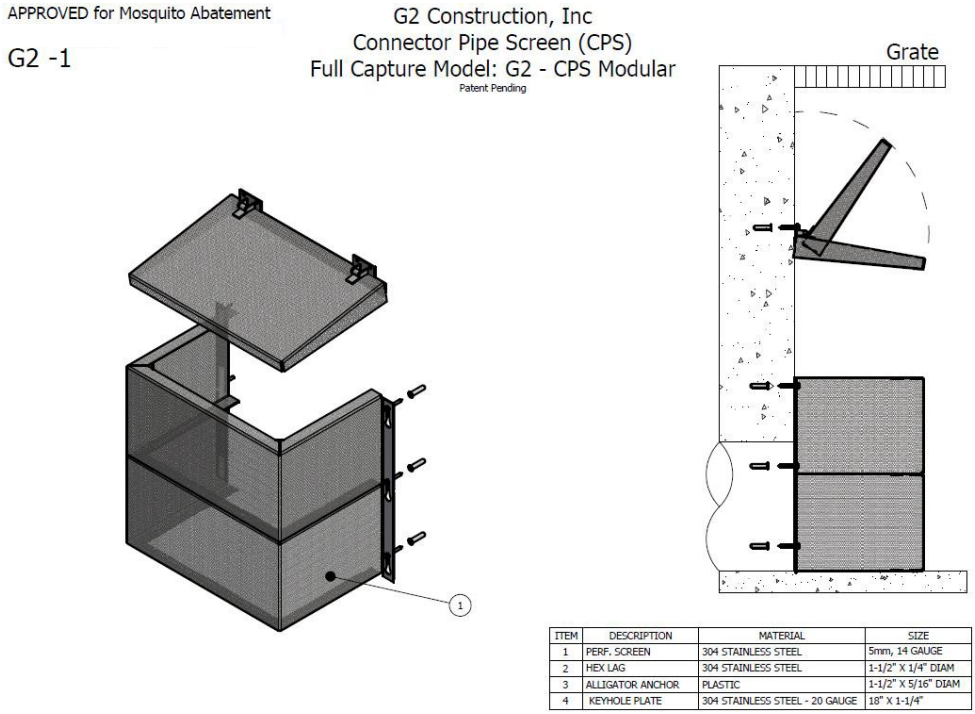
When a catch basin is large and deep, the CPS typically needs more surface area to meet the water filtration requirements. Drawing 5 shows the standard configuration when the discharge pipe is located in a corner and the CPS needs to be larger.



Sometimes the location of the discharge pipe is in conflict with the entry stairs or access manhole. G2's CPS has an approved Taper Design, shown in Drawing 6, that creates more room for safe entry into the catch basin.

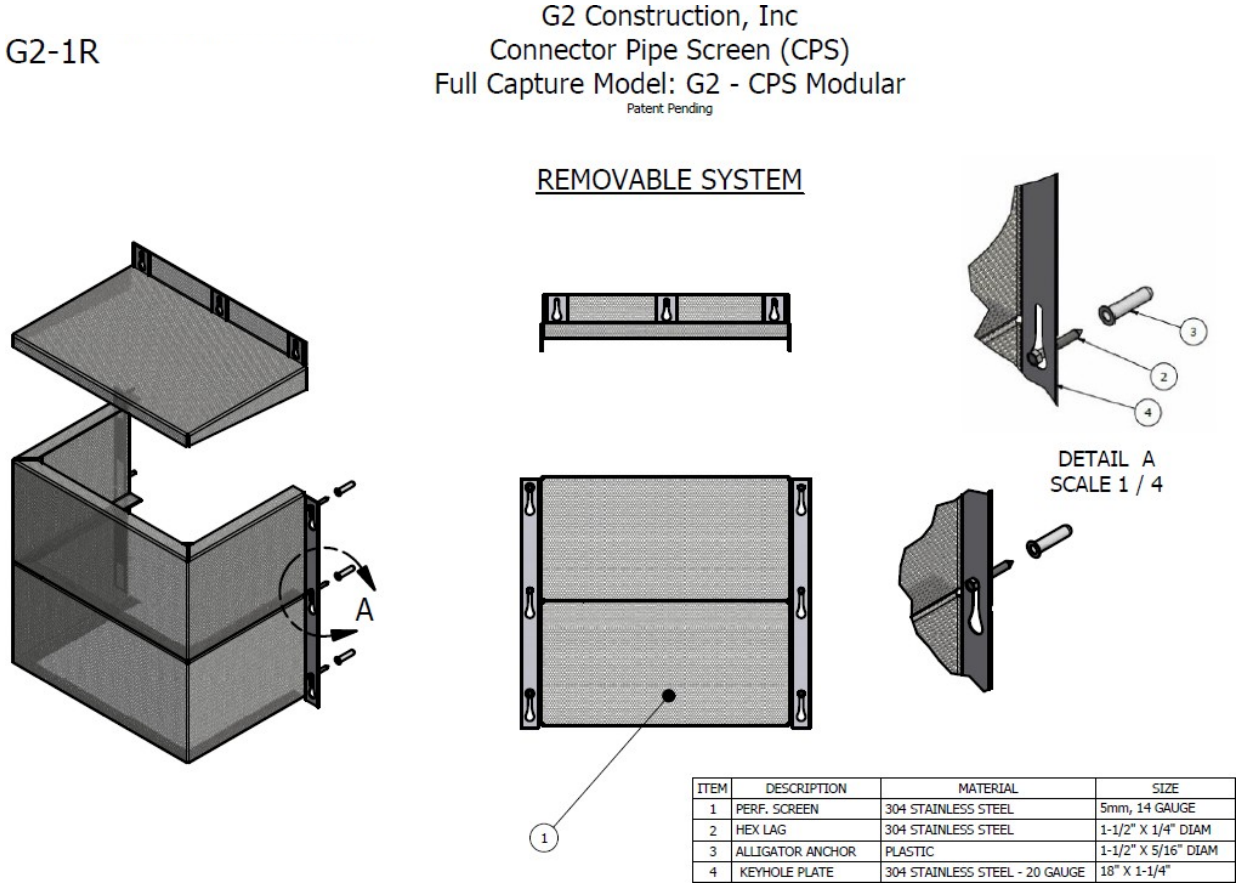


G2's Hinged Deflector for mosquito and vector abatement is approved by Alameda County Mosquito Abatement District. This is available for both the G2 CPS and removable version (G2-1, G2-1R).



3.A Design drawings for all standard Device sizes including dimensions, and alternative configurations;

The G2-1R, Removable CPS-Mod™, is the same device as G2-1, CPS-Mod™, shown above, except for the method of mounting to the catch basin. Keyhole fitting mounts are installed on the mounting flanges of the Removable CPS, instead of standard holes. Anchor bolts are installed in the catch basin walls to match the location of the keyhole fittings. The Removable CPS is installed by mounting it to the walls by aligning the keyholes with the anchor bolts, pressing the CPS against the wall, and sliding it to the end of the keyhole.



ITEM	DESCRIPTION	MATERIAL	SIZE
1	PERF. SCREEN	304 STAINLESS STEEL	5mm, 14 GAUGE
2	HEX LAG	304 STAINLESS STEEL	1-1/2" X 1/4" DIAM
3	ALLIGATOR ANCHOR	PLASTIC	1-1/2" X 5/16" DIAM
4	KEYHOLE PLATE	304 STAINLESS STEEL - 20 GAUGE	18" X 1-1/4"

B. Description on how the Device works to trap all particles that are 5 mm or greater in size and how it is sized for varying flow volumes;

G2's CPS full capture systems trap all particles that are 5 mm or greater because it's holes are 5 mm. G2's CPS height and length are variable, and product size is determined by the catch basin's dimensions and filtered flow rate volume requirements. At the very minimum, G2's CPS are sized to exceed that flow capacity of the discharge pipe opening.

C. The Device maximum trash capture capacity;

The maximum amount of trash captured by the G2-1 and G2-1R CPS-Mod™ can be measured as the catch basin volume up to the top of the screen. However, catch basin cleaning and maintenance should remove trash and debris before 25% of maximum. Please see Operations & Maintenance, section 5.

G2 CPS-Mod™ - Trash Capture Capacity

18" Screen Height (Models CPS-Mod x18)

Catch Basin Width (FT)	Max Trash Capture* (Cubic Ft)	Trash Capture 15%** (Cubic Ft)	Trash Capture 25%*** (Cubic Ft)
3.5	11.8	1.8	2.9
7	26.6	4.0	6.6
10	39.3	5.9	9.8
14	54.4	8.2	13.6
21	84.6	12.7	21.1
28	113.6	17.0	28.4

24" Screen Height (Models CPS-Mod x24)

Catch Basin Width (FT)	Max Trash Capture* (Cubic Ft)	Trash Capture 15%** (Cubic Ft)	Trash Capture 25%*** (Cubic Ft)
3.5	14.0	2.1	3.5
7	34.3	5.2	8.6
10	51.8	7.8	12.9
14	73.4	11.0	18.3
21	114.6	17.2	28.6
28	154.7	23.2	38.7

Assumptions:

* Catch basin is filled to top of screen.

** Catch basin is filled 15% up the screen.

*** Catch basin is filled 25% up the screen.

D. The Device hydraulic capacity (flow in cfs) at its maximum trash capture capacity for all standard Device sizes;

Standard Configurations, Dimensions, Max Treated Flows (CFS)

G2-1 CPS-Mod™ and G2-1R Removable CPS

G2 Model	Height (In)	Length Total (In)	Bypass Height (In)	Treatment Flows (CFS)		
				Maximum*	15%** Blockage	50%*** Blockage
CPS-3U-48x18	18	48	12	15.4	9.3	5.4
CPS-3U-48x24	24	48	12	21.0	12.7	7.4
CPS-3U-62x24	24	62	12	26.9	16.2	9.5
CPS-3U-62x30	30	62	12	34.2	20.6	12.0
CPS-4W-60x25	18	60	12	19.1	11.4	6.7
CPS-4W-60x26	24	72	12	30.9	18.6	10.9
CPS-2L-36x18	18	36	12	11.2	6.8	4.0
CPS-2L-48x18	18	48	12	14.9	8.9	5.2
CPS-2L-50x24	24	50	12	21.3	12.8	7.5
CPS-2L-60x24	24	60	12	25.3	15.2	8.9

Assumptions:

* Max CFS: 0% blockage, 0% downstream depth.

** 15% blockage, 50% downstream depth.

*** 50% blockage, 75% downstream depth.

Bypass Height may need to be adjusted to fit catch basin.

Bypass design volume capacity to be greater than discharge pipe capacity.

CFS Formula: $Q_{screen} = CA_{screen}*((2gh)^{0.5})$

Where: Qscreen= Max CFS filtered thru screen; C= Coeficent of the screen orifice for friction & turbulence.

A= Area of the screen; g= Gravity; h= Differential head of upstream vs. downstream side of screen.

E. Conditions under which the Device re-introduces previously trapped trash;

The only conditions where previously trapped trash is later allowed to discharge through the outlet pipe is during a storm event that exceeds the 1-year, 1-hour storm or when maintenance and cleaning is not performed and trash and debris is allowed to build up in the catch basin in excess of 25% of the screen height.

F. Each material and material grade used to construct the Device;

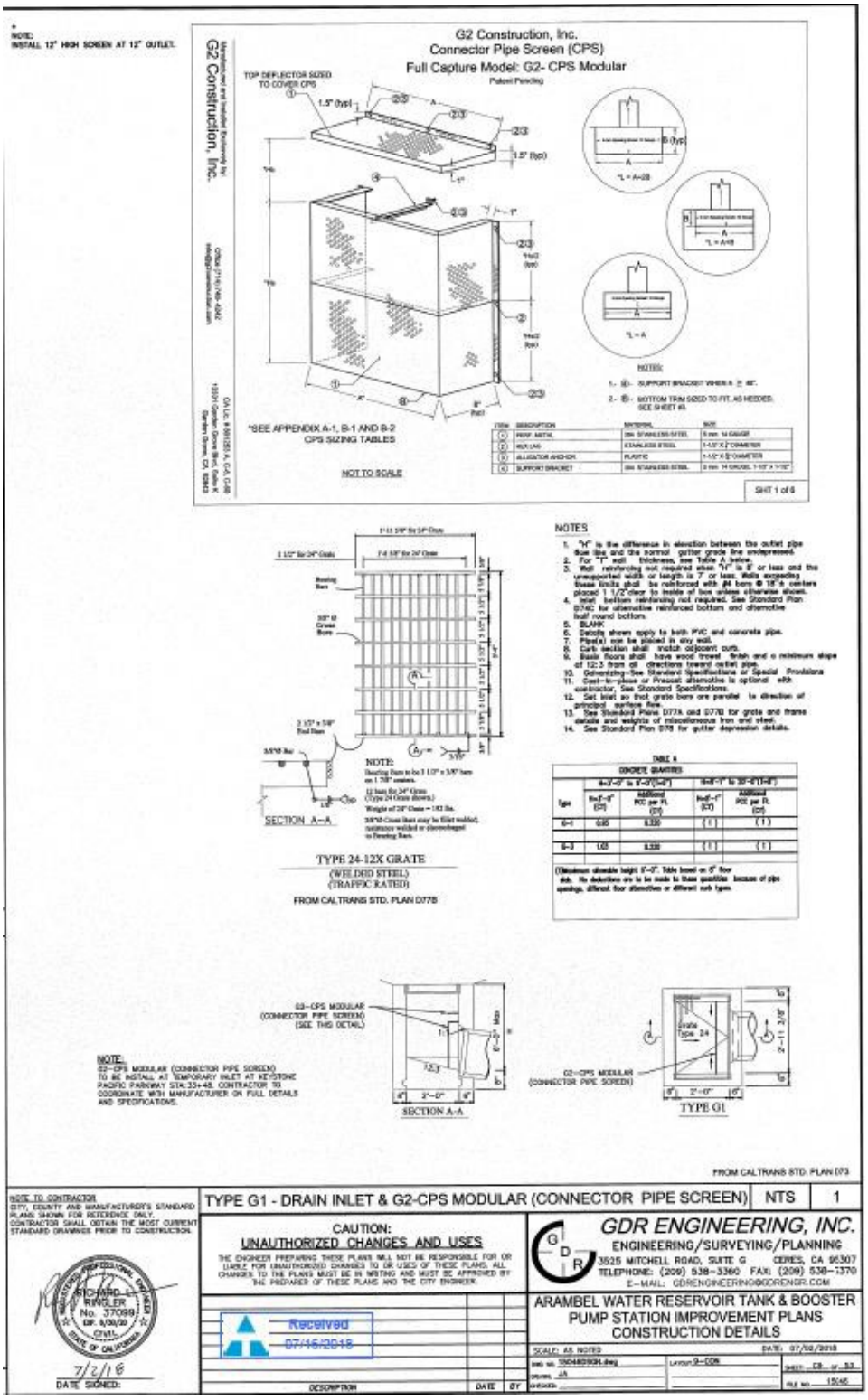
Type 304 stainless steel is the only material used for all components of G2's CPS (body, deflector, skirt, nuts, bolts, washer, anchor bolts). The only installed item not made of 304 stainless steel is the approved alligator anchor made of plastic.

G. Estimated design life of the Device;

Based on existing installations, the G2 CPS design, and the known properties of 304 stainless steel, the estimated design life of G2's CPS devices is 15 to 20 years.

H. Engineering plans/diagrams for a typical installation;

Example Engineering plan:



3.I Photographs, if any, of pre- and post-installation examples.

G2-1 CPS-Mod™ Pre-Installation Photos

G2-1 CPS-Mod™ Installation Photos

Front Wall discharge pipe - G2-1 CPS-Mod™

Back Wall discharge pipe - G2-1 CPS-Mod™

Side Wall discharge pipe - G2-1 CPS-Mod™

Access Issue / Taper Design - G2-1 CPS-Mod™

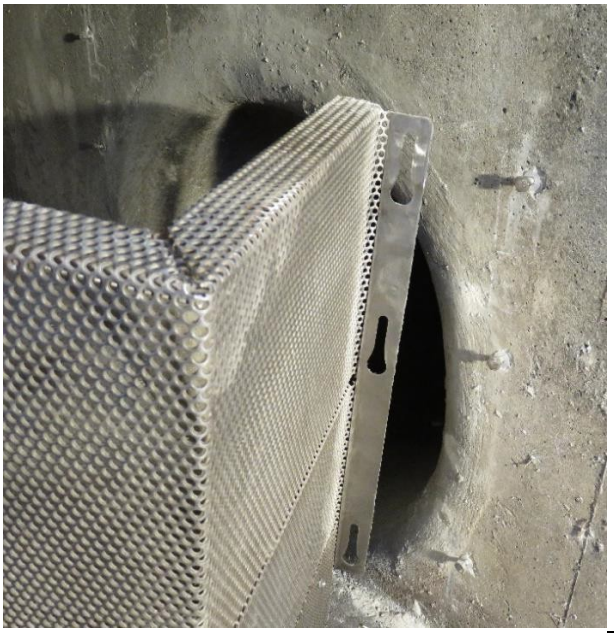
Corner discharge pipe - G2-1 CPS-Mod™

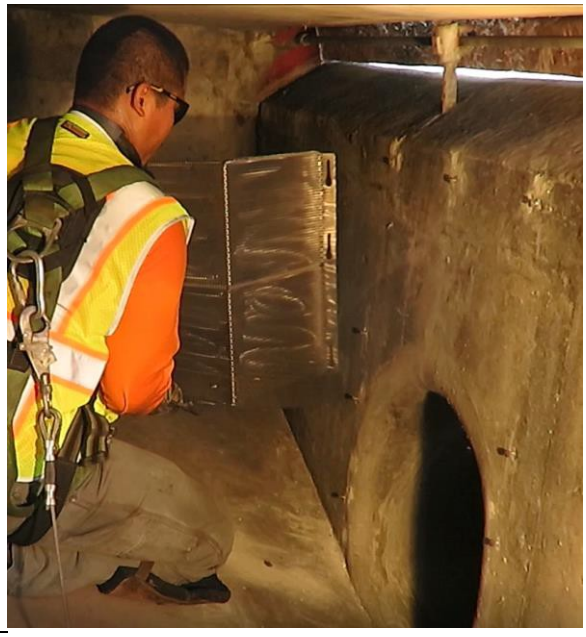
Floor discharge pipe - G2-1 CPS-Mod™

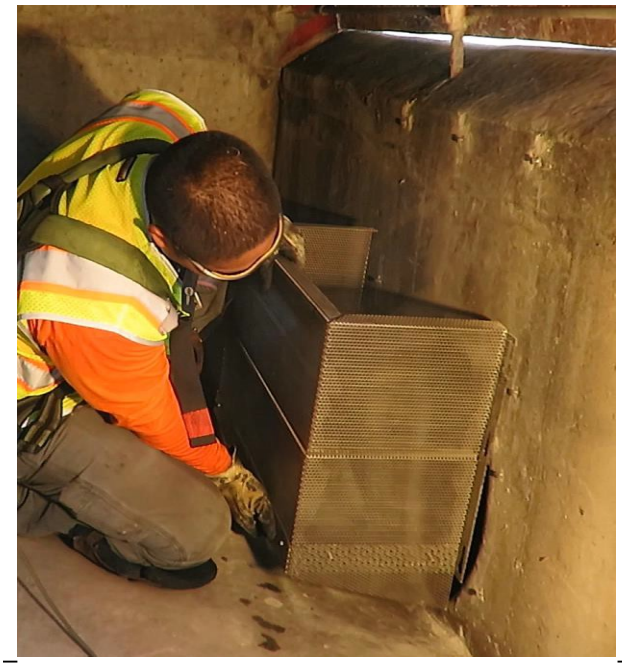
3.I Photographs, if any, of pre- and post-installation examples.

G2-1R Removable CPS-Mod™ Pre-Installation Photos

G2-1R Removable CPS-Mod™ Installation Photos







J. If the device is designed with an internal bypass, explain how the bypass only operates with flows greater than the design storm.

The bypass for the G2 CPS devices is the open space above the body of the screen. The open space only allows storm water to bypass 5 mm filtration if the design storm is exceeded, or the CPS screen is blocked due to trash and debris not yet removed during maintenance. .

4. INSTALLATION INFORMATION. Device installation description that includes the following:

A. Device installation procedures and considerations;

Prior to installation, the following steps will have been completed:

- Catch basin (CB) evaluation and measurements. Prior to CPS fabrication, ensure the CB is not located in a sump or disqualifying situation. Identify potential safety concerns for the public or installers. Identify traffic control requirements. Communicate potential concerns to the Customer.

- Identify the CB type and number of grates. Measure the CB's "V" depth, width, and front-to-back dimensions. Measure the diameter or dimensions of the discharge pipe(s), and the location of the discharge pipe (front, corner, side, back) relative to the street and the access point. Locate the access manhole and entry ladder.

- Identify or calculate the engineered CFS for the catch basin for the 1-year, 1-hour storm.

- Using the above information, select from standard CPS configurations or G2 will custom design the CPS for the CB. Then G2 fabricates the CPS and performs a quality check.

- G2 CPS is then either shipped to the installer or staged for G2's certified team to install.

- Project manager and/or Installers coordinates install details with the Customer and inspector(s) in advance. Required permits are obtained.

- Project manager and/or Installers coordinates the cleaning of the catch basin prior to installation.

<u>INSTALLATION</u>

A. Upon arrival at the install location, the install team will deploy all required safety measures and traffic control to ensure public safety. The install team should make observations and remove potential hazards in the field, and/or contact responsible parties to report the issues.

B. The team will remove the access manhole or grate cover, and survey the CB interior using a light. The CB should have been recently cleaned. Identify any potential obstacles in the CB, wet or slippery areas, and the stairs for safe entry. If there is standing water in the CB, then do not install until it has been pumped dry and the outlet pipe is confirmed to drain.

C. If pedestrians are near, installers will cease work until our work area is clear to proceed. Never leave a manhole open and un-attended for safety reasons, even if marked by cones and signage.

D. Use the required safety procedures whenever entering a CB, and use confined space safety gear (fan, harness / tripod) if installing in a location that is confined space. Use lighting to improve visual sight of the CB and installations.

E. The installer enters the CB, and tools are handed to him/her by a second crew member, and set on the CB floor in a safe and out of the way place (not directly under the access manhole / grate opening).

F. The CPS screen(s) are lowered through the access and set on the catch basin floor in a safe and out of the way place. Similarly, the CPS nuts, bolts, and anchor components are placed on the CB floor.

G. If the full size CPS does not fit through the manhole, then the pre-designed CPS panels should be bolted together using the pre-fabricated holes that align to make the CPS system. The fully assemble CPS is now ready for install.

H. The CPS is then dry-fitted around the discharge pipe, with the side connection flaps flush against the wall to the left and right of the discharge pipe, and the front of the CPS screen contacting the CB floor. A level is placed on top of the screen to make sure it is level. Once satisfied, the installer marks the CB walls through the pre-fabricated holes in the CPS mounting flange.

I. The CPS is removed and the holes are drilled and the anchors are set. The CPS is set back in place and the anchor bolts are screwed in to secure the CPS to the wall.

J. If there is a gap at the bottom greater than 5mm, then a skirt made of the same 5mm 304 stainless steel is added to the bottom of the screen. This ensures full-capture compliance.

K. The front bottom of the CPS is secured to the CB floor using L-bracket mounts. Use the same method as securing the CPS to the walls.

L. If the open top of the CPS can receive trash or debris falling in from above, then a top deflector must be installed (This will be part of the CPS system package, based on the original evaluation and order). The deflector is installed above the CPS with the minimum pre-designed bypass height. Installation methods are the same as for the CPS installation.

M. If the CPS is large and/or requires a brace component, then it should be installed by bolting to the CPS at the pre-designed area and anchoring to the CB wall.

N. Quality control. The installer should visually inspect the installed CPS to ensure there are no gaps greater than 5mm at the bottom or side or top of the installation. Only the bypass is greater than 5mm. Also, the bypass height and deflector angle should be confirmed. The installer should then apply force to the CPS front and both sides There should be very little to no movement of the screen. If there is, then the bolt should be tightened. Up to 10 pounds of pressure should be placed on the deflector to ensure it is secure.

O. The installation is now complete. The concrete dust from the drilling is swept up or vacuumed up. All tools are removed from the CB.

P. Photos. It is highly recommended that photos of the installed CPS be taken from inside the CB and/or looking through the access manhole. Including a small white board in the photo that identifies the CB# or location is recommended. This helps to document the installation for the CB owner and provides a "before" photo for any future maintenance needs.

Q. Access manhole or grates should be replaced securely, and any set screws re-installed (after cleaning and lubricating).

R. The installation area should be cleaned and double-checked. Finally, traffic control and safety measured should be removed just prior to departure.

S. G2 installers then perform a final quality check to ensure the installation was performed correctly, and the device is functioning as designed.

B. Methods for diagnosing and correcting installation errors.

Visual observation by installer is best. Visual review of uploaded photos by management or experts is a very good method for diagnosing any product install errors.

5. OPERATIONS AND MAINTENANCE INFORMATION. Include operation and maintenance information that includes the following:

A. Device inspection procedures and inspection frequency considerations;

Visual inspection of the G2-1 CPS-Mod™ and G2-1R should be made at least quarterly, and after significant rain events. Damaged or vandalized devices should be photographed and documented. Damaged devices should be repaired as soon as possible to ensure proper device function and prevent any possible flood hazard.

If trash or debris in the catch basin are at a height of 25% or more of the screen, then cleaning is recommended. Cleaning is mandatory if debris reaches 40% of the screen.

Catch basins that receive significant amounts of trash, debris, or leaves and vegetation should be checked more frequently and always before and after significant storm events.

B. Maintenance procedures, including a description of necessary equipment and materials;

The catch basin and CPS screen must be cleaned to prevent trash and debris build up, and to prevent blockage of screen. After the catch basin has been cleaned, then the screen should be cleaned with a small air compressor, brush or rag.

C. Maintenance frequency considerations, including effects of delay; and

Maintenance Frequency Requirements to keep the G2-1 and G2-1R working as a full capture system:

- 4x catch basin cleanings annually are required to remove trash, debris, and pollutants from the catch basin and the screen.
- Cleaning the catch basin prior to the rainy season is mandatory.

Additionally:

- Before significant rain events, trash and debris should be removed from the catch basin and CPS.
- After rain event, each CPS device should be visually inspected and cleaned if there is build up.
- Catch basins that receive significant amounts of trash, debris, or leaves and vegetation should be checked more frequently and always before and after significant storm events.

G2's CPS devices are highly effective at stopping all particles 5 mm or larger. Delayed maintenance and cleaning may result in trash and debris build up that results in trash bypassing the 5 mm filter. Extreme build up in the catch basin may result in flooding.

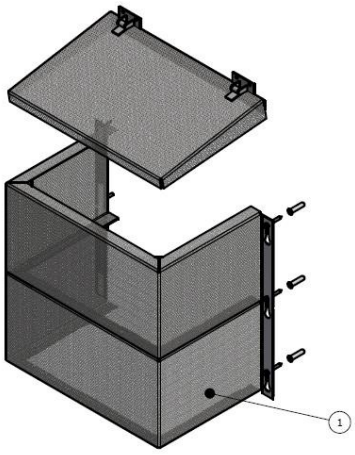
D.1 Device maintenance and Vector control accessibility.

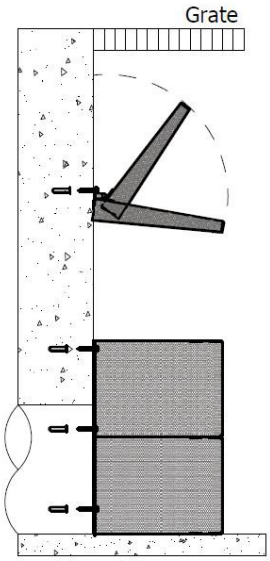
G2 worked with the Alameda County Mosquito Abatement District and then designed G2's hinged deflector for fast and easy access for vector control activities. G2's mosquito abatement deflector (MAD) was approved by ACMAD in 2017.

APPROVED for Mosquito Abatement

G2 -1

G2 Construction, Inc
Connector Pipe Screen (CPS)
Full Capture Model: G2 - CPS Modular
Patent Pending





ITEM	DESCRIPTION	MATERIAL	SIZE
1	PERF. SCREEN	304 STAINLESS STEEL	5mm, 14 GAUGE
2	HEX LAG	304 STAINLESS STEEL	1-1/2" X 1/4" DIAM
3	ALLIGATOR ANCHOR	PLASTIC	1-1/2" X 5/16" DIAM
4	KEYHOLE PLATE	304 STAINLESS STEEL - 20 GAUGE	18" X 1-1/4"

ACMAD approved G2's hinged CPS deflector for vector control access in October, 2017.

ALAMEDA COUNTY MOSQUITO ABATEMENT DISTRICT

Updated 10/3/17

Trash Capture Devices and Mosquito Control

Trash Capture Devices Approved by San Francisco Bay Regional Water Quality Control Board Staff

Curb Inlet / Catch Basin Insert	ACMAD Assessment
G2-1	Preferred after modifications

Serving Alameda County Residents Since 1930

ALAMEDA COUNTY MOSQUITO ABATEMENT DISTRICT
23187 Connecticut St.
Hayward, CA 94545
www.mosquitoes.org
Phone: (510)783-7744
Fax: (510)783-3903
E-mail: acmad@mosquitoes.org

6. RELIABILITY INFORMATION. Describe the following, if applicable:

A. Device sensitivity to loadings other than trash (i.e., leaves, sediment);

G2's CPS devices work effectively to stop all items that are 5mm or greater. Loadings other than trash, such as leaves or sediment, have a similar impact on the effectiveness of G2's CPS. G2's CPS is made of 304 stainless steel and there is very minimal impact due to water, sediment, vegetation, or other materials.

B. Warranty Information; and

G2 Construction provides a product warranty of 10 years for the G2-1 CPS-ModM and G2-1R. G2 guarantees the deviceds will be manufactured in accordance with the product drawings and specifications. If a CPS proves defective within ten years, then G2 agrees to provide replacement parts at no cost.

If G2 also installs the CPS, then G2 agrees to repair or replace any CPS device that proves defective in its workmanship or material within one year of the project acceptance date. Accidents, product modifications, vandalism, unusual use, or lack of standard cleaning and maintenance may nullify a product'swarranty.

Requests for warranty service must be made by the product Owner, and should include photos and details.

C. Applicant's customer support.

G2 has a very responsive customer support team that can be reached by phone or email.
714.448.4242
info@g2construction.com is distributed to multiple support staff and management.

G2 is typically able to answer all questions by phone or email. However, G2's field crew is ready to respond to any customer situation when needed. Service and repairs are available from G2 Construction.

7. FIELD / LAB TESTING INFORMATION AND ANALYSIS.

Lab testing of G2-1 CPS-ModM was performed to determine filtered flow rates (CFS) in a simulated in-house catch basin system. Results showed that an average sized G2 CPS (7.0 sqft screen) will filter more than 10 CFS of water when clean. This filtered flow rate exceeds the peak flowrate of the one-year, one-hour storm event for most catch basins with discharge pipe less than 24". Results also showed that when 25% of the screen is blocked it will continue to filter at least 8 CFS.

The primary limitation of the testing was due to limited supply of water (900 gallons), which was recycled during testing. For all tests the G2-1 CPS successfully filtered all water flows without overflowing the screen. If higher CFS flow rates were available during testing, then higher maximum filtered flow rates would have resulted.

Additional lab test information is provided in Appendix B.

APPENDIX A

Trash Capture Devices approved by San Francisco Bay Regional Water Quality Control Board staff

Devices listed with Device ID numbers are included in the Estuary Partnership's Bay Area-wide Trash Capture Demonstration Project. Other devices have also been approved by Water Board staff. SFEP will update this list as needed.

CATCH BASIN INSERTS		
SFEP Device ID	**Vendor**	**Device Name**
G2-1	G2 Construction, Inc.	Collector Pipe Screen
G2-1R	G2 Construction, Inc.	Collector Pipe Screen Removable

CURB INLET SCREENS – FOR USE IN COMBINATION WITH INSERTS		
SFEP Device ID	**Vendor**	**Device Name**
G2-2	G2 Construction, Inc.	CamLock Debris Gate
G2-3	G2 Construction, Inc.	FS 10

APPENDIX B

Filtered Flowrate (CFS) Testing for G2-1 CPS-Mod™

Summary: Lab testing of G2-1 CPS-Mod™ was performed to determine filtered flow rates (CFS) in a simulated in-house catch basin system. Results showed that an average sized G2 CPS (7.0 sqft screen) will filter more than 10 CFS of water when clean. This filtered flow rate exceeds the peak flowrate of the one-year, one-hour storm event for most catch basins with discharge pipe less than 24". Results also showed that when 25% of the screen is blocked it will continue to filter at least 8 CFS.

The primary limitation of the testing was due to limited supply of water (900 gallons), which was recycled during testing. For all tests the G2-1 CPS successfully filtered all water flows without overflowing the screen. If higher CFS flow rates were available during testing, then higher maximum filtered flow rates would have resulted.

Methodology: G2 built an in-house water flow system with three chambers:

1. Water Source Chamber holds up to 120 cubic feet of water (900 gallons).
2. Test Chamber is a simulated catch basin where the tested CPS was installed.
3. Recycle Tank collects tested water (120 cubic ft; 900 gal), where it is pumped back up to the source chamber.

Test Chamber Dimensions:

Catch Basin (Test Chamber)	
CB (SPPWC) Type:	300-
Width:	3.50 ft
Front to Back:	3.16 ft
V-Depth:	3.50 ft
Discharge Pipe:	2.00 ft. in diam

Tested G2-1 CPS-Mod™ device:

Test G2 CPS Dimensions	
Height:	1.88 ft
Length Total Screen:	4.00 ft
Length (Front, side 1):	2.00 ft
Length (Side 2):	1.00 ft
Length (Side 3):	1.00 ft
Fitting Loss:	-0.50 ft
Total Area of Screen:	7.00 sqft

This CPS was tested under two scenarios:

1. 0% screen blockage.
2. 25% blockage. The bottom 25% of the screen was tightly covered with impermeable plastic barrier.

For each test, up to 120 cubic feet flowed from the water source chamber, into the test chamber and through the CPS.

Test Results:

Tests	Tested Max Flow Rate	CPS Filtered Flow	1-Year, 1-Hour Storm
1. CPS: 0% Blockage	12.9 CFS	100%	Yes
2. CPS: 0% Blockage	13.6 CFS	100%	Yes
3. CPS: 25% Blockage	10.6 CFS	100%	Yes

In all test scenarios, the G2 CPS filtered 100% of the water without water rising and overflowing the screen.

Analysis: The CPS could have filtered more water, if it was available, without overflowing. The tested G2 CPS had a filtered flowrate that exceeded 1.5 CFS per square foot of screen.

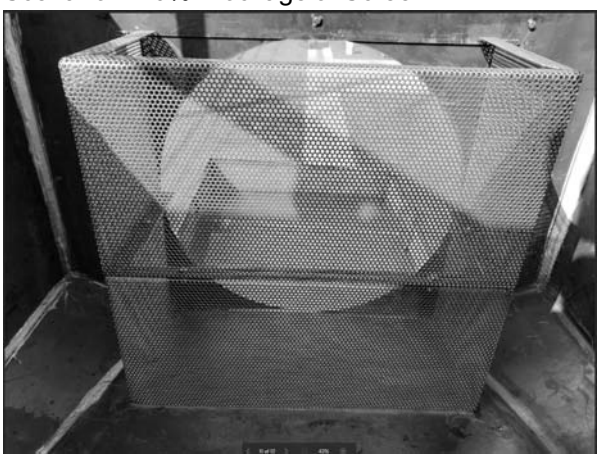
Conclusion: Testing showed that G2's CPS of average size (7 sqft screen) filters water in excess of 10 CFS. This rate exceeds the full capture requirements of most catch basins with a discharge pipe diameter less than 24". The primary limitation of this test was the inability to supply higher water volumes and flow rates. Further testing is recommended.

Photos of CFS Tests

G2 CFS Tester (3 chamber system)

Water Source Chamber (120 CF / 900 Gallons)

Scenario 1: 0% Blockage of Screen

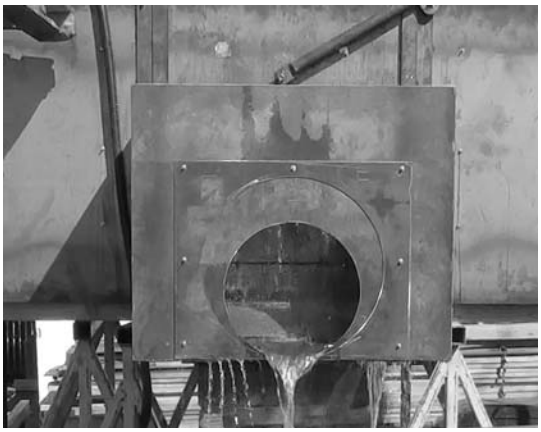


Scenario 2: 25% Blocked with plastic

Before Test

Test Chamber

Discharge Pipe



During Test

APPENDIX C

Design Drawings for Standard Device Sizes

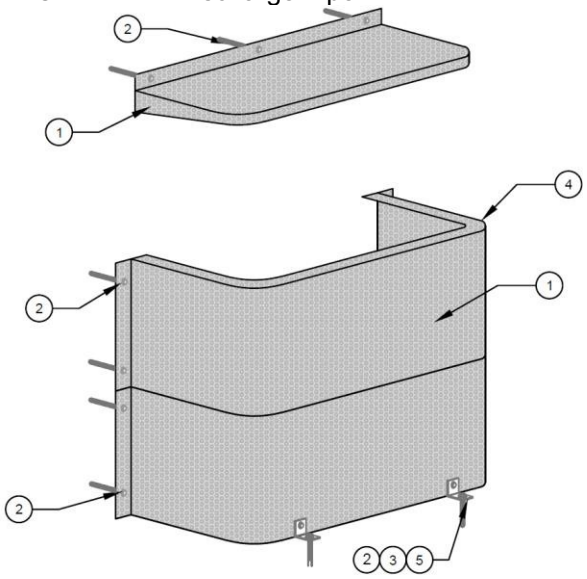
2019-20 Fact Sheet Supplement for FCS

approved G2 CPS and Removable CPS (G2-1 and G1-R)

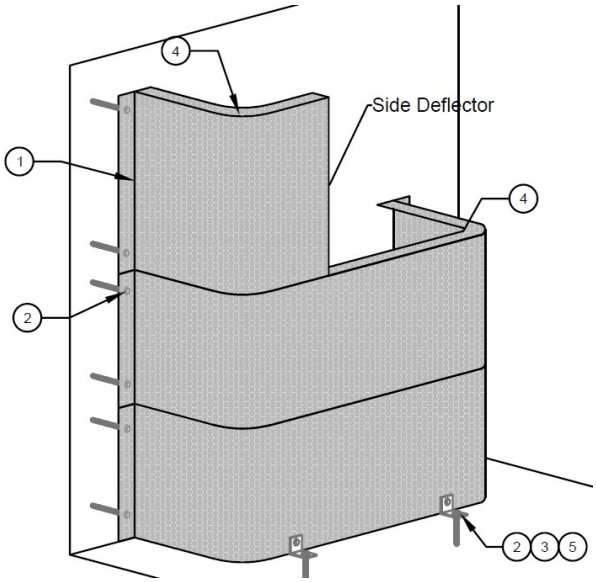
3.B. Design drawings for all standard Device sizes including dimensions, and alternative configurations;

G2's patented CPS systems (G2-1 and G2-1R, known as CPS-Mod™) are designed to meet the specific needs of the catch basin where it will be installed. Design size is increased or decreased with 1-year, 1-hour filtration requirements. Drawings show the standard configuration for different discharge pipe locations and stair conflicts.

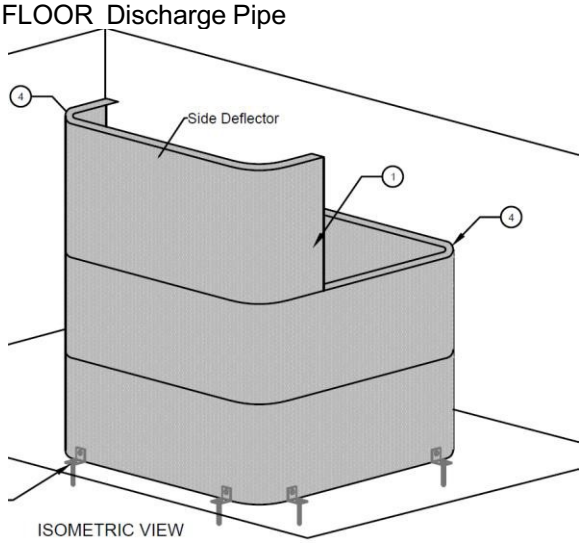
FRONT WALL Discharge Pipe



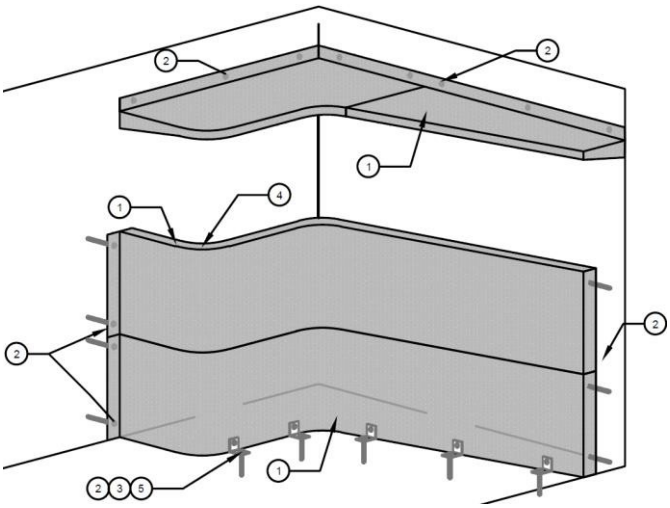
SIDE WALL Discharge Pipe



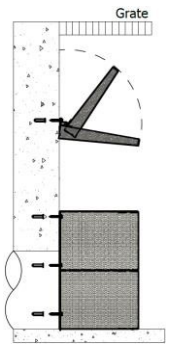
FLOOR Discharge Pipe



TAPER Design (ex. To avoid stair conflicts)



①	Type 304 S.S. 14 gauge with 5 mm perforated holes 50% open area
②	Type 304 S.S. $\frac{3}{8}$" dia. x 3" wedge anchor
③	Type 304 S.S. Floor mount bracket $\frac{1}{8}$" x 1-1/2" x 1-1/2"
④	Typical Round Corners at 4" radius
⑤	Type 304 S.S. Hex Bolt $\frac{1}{4}$ x 20 x 1" with flat washers and hex nuts

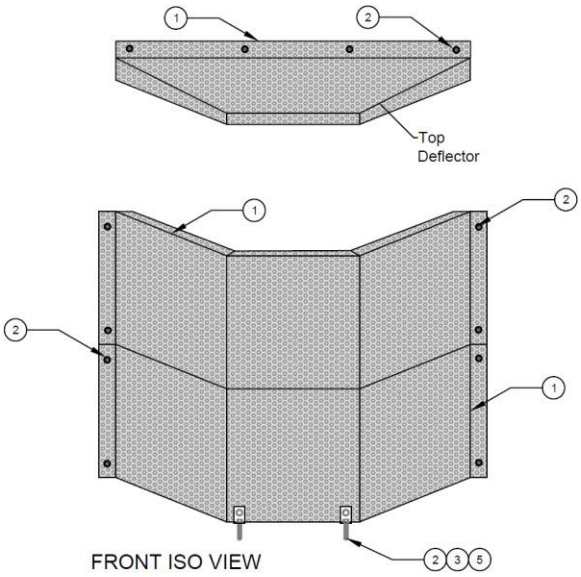


MVCAC Approved Deflector (where required)

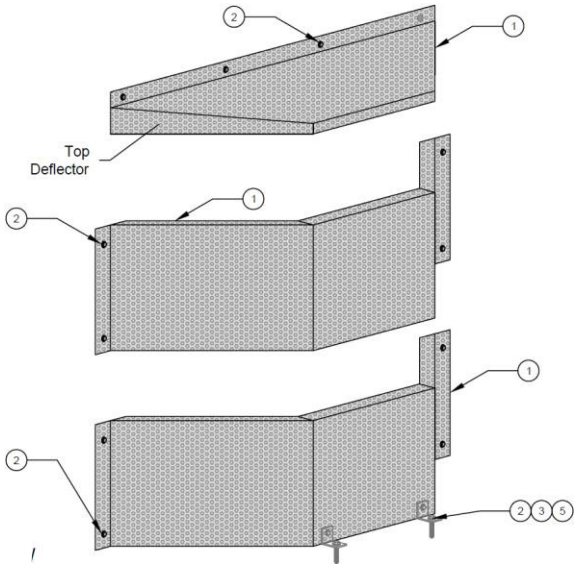
3.B. Design drawings for all standard Device sizes including dimensions, and alternative configurations;

G2's patented CPS systems (G2-1 and G2-1R, known as CPS-Mod™) are designed to meet the specific needs of the catch basin where it will be installed. Design size is increased or decreased with 1-year, 1-hour filtration requirements. Drawings show the standard trapezoidal CPS-Mod and sample dimensions.

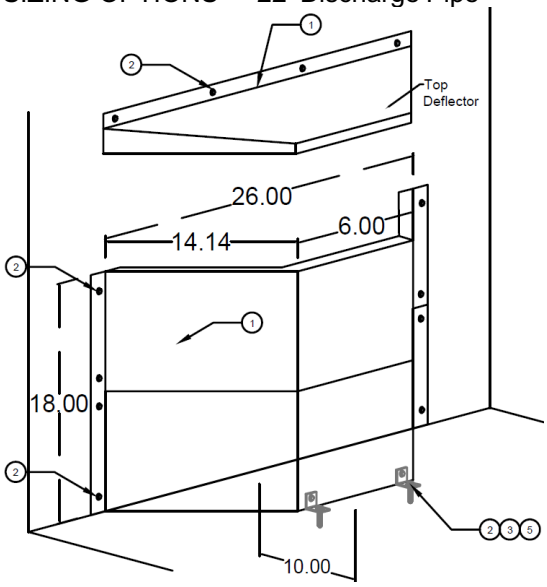
FRONT WALL Discharge Pipe



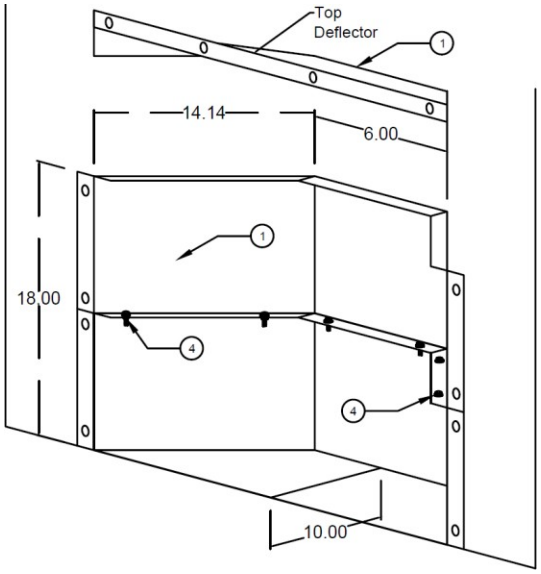
EXPLODED VIEW

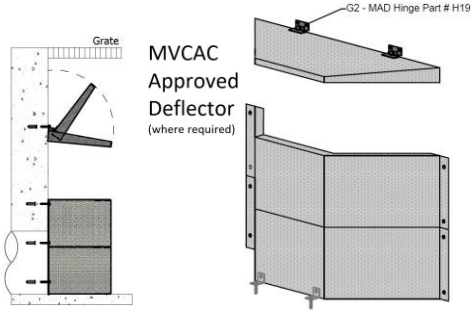


SIZING OPTIONS <=22" Discharge Pipe



Backside View

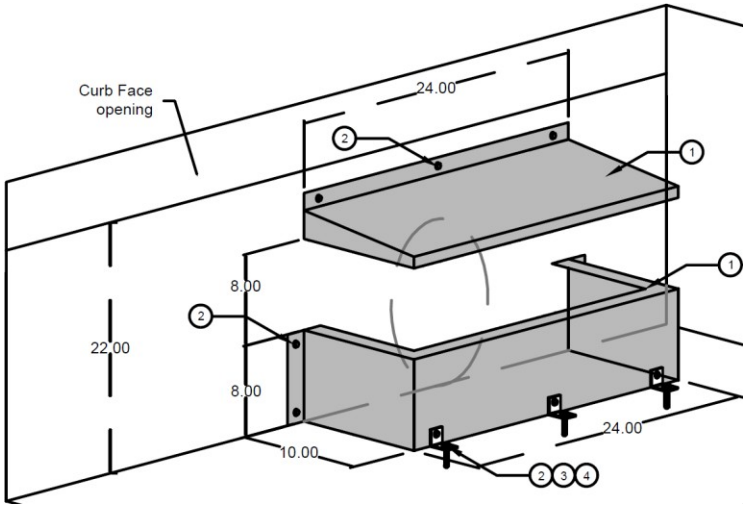




①	Type 304 S.S. 14 gauge with 5 mm perforated holes 50% open area
②	Type 304 S.S. Hex Lag $\frac{1}{4}$" x 1-1/2" with LACDPW Approved Alligator Anchor
③	Type 304 S.S. Floor mount bracket $\frac{1}{8}$" x 1-1/2" x 1-1/2"
④	Type 304 S.S. Hex Bolt $\frac{1}{4}$ x 20 x 1" with flat washers and hex nuts

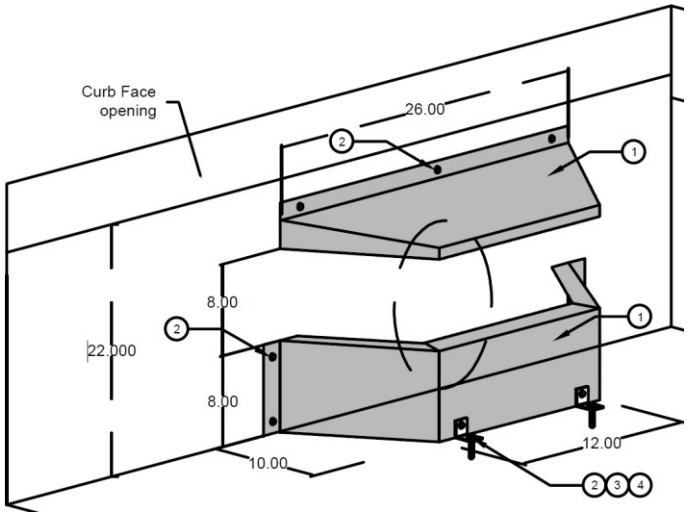
3.B. Design drawings for all standard Device sizes including dimensions, and alternative configurations;

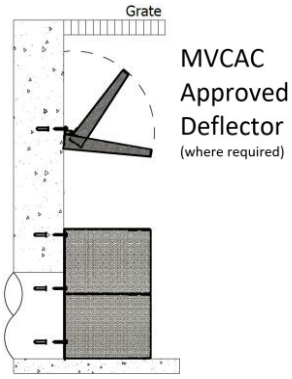
G2's patented CPS systems (G2-1 and G2-1R, known as CPS-Mod™) are designed to meet the specific needs of the catch basin where it will be installed.
Some catch basins have short vertical depths and require shorter CPS-Mod heights. For instance, LACDPW's sizing chart specifies device heights down to 8". While the device designs are not tall, they are designed to meet the Full Capture System requirements calculations. Examples shown below.

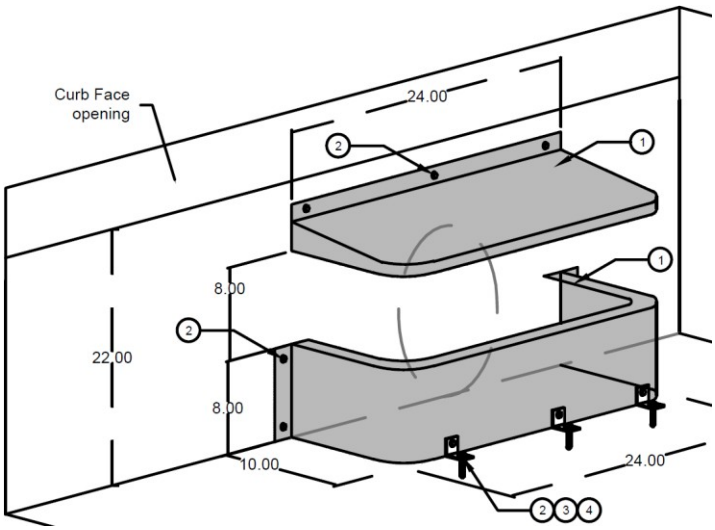


APPENDIX B - CPS SIZING TABLE
TABLE 1
CPS SIZING TABLE FOR NON-SUMP CONDITIONS

*V-depth (ft)	CB Width (ft)	Bypass Height H_b (in)	Screen Height H_s (in)	Screen Length L (ft)	G (in)
2.5 (30 inch)	3.5	8	8	3.0	4
	7			4.0	
	10			6.0	
	14			7.0	







①	Type 304 S.S. 14 gauge with 5 mm perforated holes 50% open area
②	Type 304 S.S. Hex Lag $\frac{1}{4}$" x 1-1/2" with LACDPW Approved Alligator Anchor
③	Type 304 S.S. Floor mount bracket $\frac{1}{8}$" x 1-1/2" x 1-1/2"
④	Type 304 S.S. Hex Bolt $\frac{1}{4}$ x 20 x 1" with flat washers and hex nuts