Storm Water and Environmental Solutions

West Coast Storm Screen
Connector Pipe Screen (CPS)
Equipment Design and Specification Report

654 South Lincoln Avenue, San Bernardino, CA 92408
Telephone 909.890.5700 Facsimile 909.890.5988 Website www.wcstorm.net
California General A/HAZ Contractor License Number: 888152

West Coast Storm Connector Pipe Screen
Equipment Design and Specification Report
(Information provided to the City as requested in the RFQ documents under *Attachment A. Scope of Work*)

A. Description/Design/Engineering. The West Coast Storm Connector Pipe Screen (CPS) Device meets the full trash capture definition set forth by the Los Angeles Regional Water Quality Control Board. West Coast Storm, Inc. (WCS) has successfully performed three County of Los Angeles contracts requiring Connector Pipe Screen (CPS) installations. All CPS devices were fabricated and installed per the Los Angeles Regional Water Quality Control Board approved specifications for the County of Los Angeles Connector Pipe Screen Device Full Capture System. See Certifications at the end of this section.

Additionally, the West Coast Storm Connector Pipe Screen is San Francisco Bay Water Board Certified Device for full capture. See Certifications at the end of this section.

Description and Design Elements.
General. The CPS prevents trash and debris from entering the storm drain lateral system by keeping the trash and debris inside the catch basin.

West Coast Storm CPS Design. The CPS device is designed to retain all trash larger than 5 mm in the catch basin, thereby meeting the Regional Water Quality Control Board's definition of full capture in both Los Angeles and San Francisco Regions.

1) The CPS is designed and installed to maximize the trash capture volume of the catch basin.
2) The CPS bypass accommodates the catch basin design capacity if the screen becomes clogged.
3) The CPS does not interfere with the operation of the West Coast Storm Screen ARS devices.
4) The CPS is designed with a structural integrity to withstand a force of standing water ($62.4 lb/ft^3$) within the catch basin area if the screen is 100% clogged.
5) The center horizontal brace further secures the screen to the frame and add additional strength against severe water force.
6) The CPS is designed with a structural frame built to withstand a significant amount of force. The 5mm mesh is secured to the framework further enhancing the structural integrity of the unit.

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7) The CPS is located or configured with deflector plates or screens such that street flows will be prevented from falling between the screen and the connector pipe. Any deflector plate shall be able to support a constant load of 10 lbs per linear foot.
8) The bottom and sides of the CPS unit is fabricated to conform tightly to the catch basin with a maximum gap of 5mm
9) The CPS shall be able to retain the trash and debris and prevent it from scouring and discharging with subsequent rain events.
10) The perimeter of the CPS includes a structural frame for stiffness, designed keyhole slots to fasten the CPS to the wall of the catch basin enabling complete removal of the unit if needed.
11) All components of the CPS are designed to remain secure during foreseeable storm water and debris flows and cleaning. The CPS is removable solely by the removal of mounting screws/bolts.
12) All parts/components of the CPS are sized to fit through the catch basin's manhole opening when the unit is disassembled.
13) Keyhole mounting provides for easy removal.
14) Bypass access door allows vertical access to the outlet pipe for cleaning. The access opens 90 degrees allowing the unit to stay open during cleaning. Stop supports are built into the bypass hatch frame to prevent the door being forced inward by water pressure or debris.

Standard Design Elements (CPS): 5mm screen mesh, keyhole mounting slots, center and side extensions, 1 inch return flange, single wall mount unit, double wall mount, structural frame, bypass maintenance hatch.

Tailored Design Elements: Bypass top with height variable supports, corner mount unit, angles units, floor units, removable bypass screen tops, top deflector plate, and an entirely removable unit.

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Sizing. The smallest workable catch basin dimension are H18" by W18." There is no restriction on large catch basins.

Catch Basin Types & Configurations. Designed to address most types of catch basins: Types 300, 301, 302, 303, 305, 306, 307 to name a few. The CPS device is fabricated and installed to conform to the various configurations of the catch basin, keeping in mind the various layouts of the connector pipe, including designing a CPS with deflector plates or screen to prevent trash from falling between the screen and connector pipe.

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CAD Files for the
West Coast Storm Connector Pipe Screens

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DRAWINGS:

1. INDEX AND COVER SHEET
2. CPS FRAME UNIT AND OVERVIEW
3. CPS FRAME PARTS
4. CPS 2 WALL FRAME
5. CPS ACCESS BYPASS TOP
6. CPS HORIZONTAL PARTS
7. CPS VERTICAL PARTS
8. CPS BYPASS SUPPORTS
9. CPS BOTTOM EXTENSIONS
10. CPS XY AND XYZ CONFIGURATION
11. CPS UNIT CONFIGURATION

FEATURES AND ADVANTAGES:

1. THE 12GA STAINLESS STEEL FRAME PROVDES GREATER STRENGTH AND DURABILITY THAN THE TRADITIONAL PERFORATED SCREEN FRAME. VERTICAL PARTS, THE CENTER HORIZONTAL BRACE AND THE CENTER TOP HAVE A 90 DEGREE BEND WHICH PROVIDES A MINIMUM 4 TIMES STRUCTURAL STRENGTH.
2. THE CENTER HORIZONTAL BRACE FURTHER SECURES THE SCREEN TO THE FRAME AND ADDS ADDITIONAL STRENGTH AGAINST SEVERE WATER FORCE.
3. THE KEY HOLE MOUNTING PROVIDES FOR EASY REMOVAL.
4. THE BYPASS ACCESS DOOR ALLOWS VERTICAL ACCESS TO THE OUTLET PIPE FOR CLEANING. THE ACCESS OPENS 90 DEGREES ALLOWING THE UNIT TO STAY OPEN DURING CLEANING. THE DOOR IS SECURED CLOSED USING TWO 10-32 CRES SCREWS. STOP SUPPORTS ARE BUILT INTO THE FRAME TO PREVENT THE DOOR BEING FORCED INWARD BY WATER PRESSURE OR DEBRIS.
5. HEIGHT, LENGTH, DEPTH AND BYPASS HEIGHT ARE VARIABLE.

REVISIONS

ZONE	REV.	DESCRIPTION	DATE	APPROVED
	N/C	INITIAL DESIGN DRAWING	8/9/2010	VJ

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PATENT PENDING

UNLESS OTHERWISE SPECIFIED:
DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONALS
ANGULAR: MACH ± BEND ±
TWO PLACE DECIMAL ±
THREE PLACE DECIMAL ±
INTERPRET GEOMETRIC TOLERANCING PER:
MATERIAL

	NAME	DATE
DRAWN	VJ	8/9/10
CHECKED		
ENG APPR.		
MFG APPR.		
Q.A.		
COMMENTS:		

NEXT ASSY
USED ON
APPLICATION
FINISH NONE
DO NOT SCALE DRAWING

TITLE:
CPS
SHEET METAL FRAME
COVER SHEET

SIZE B
DWG. NO. CPS METAL FRAME
REV N/C
SCALE: N/A
SHEET 1 OF 11

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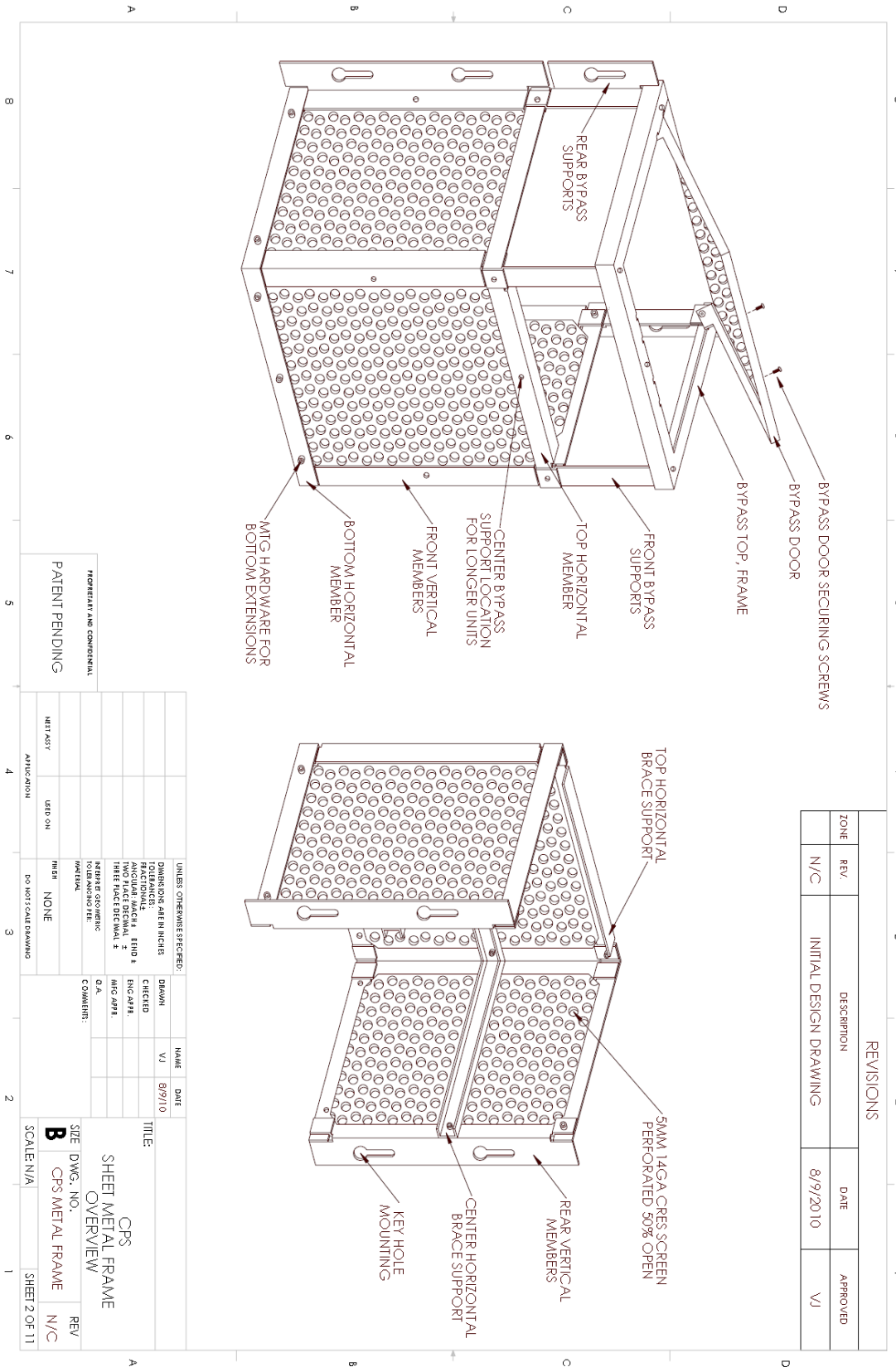

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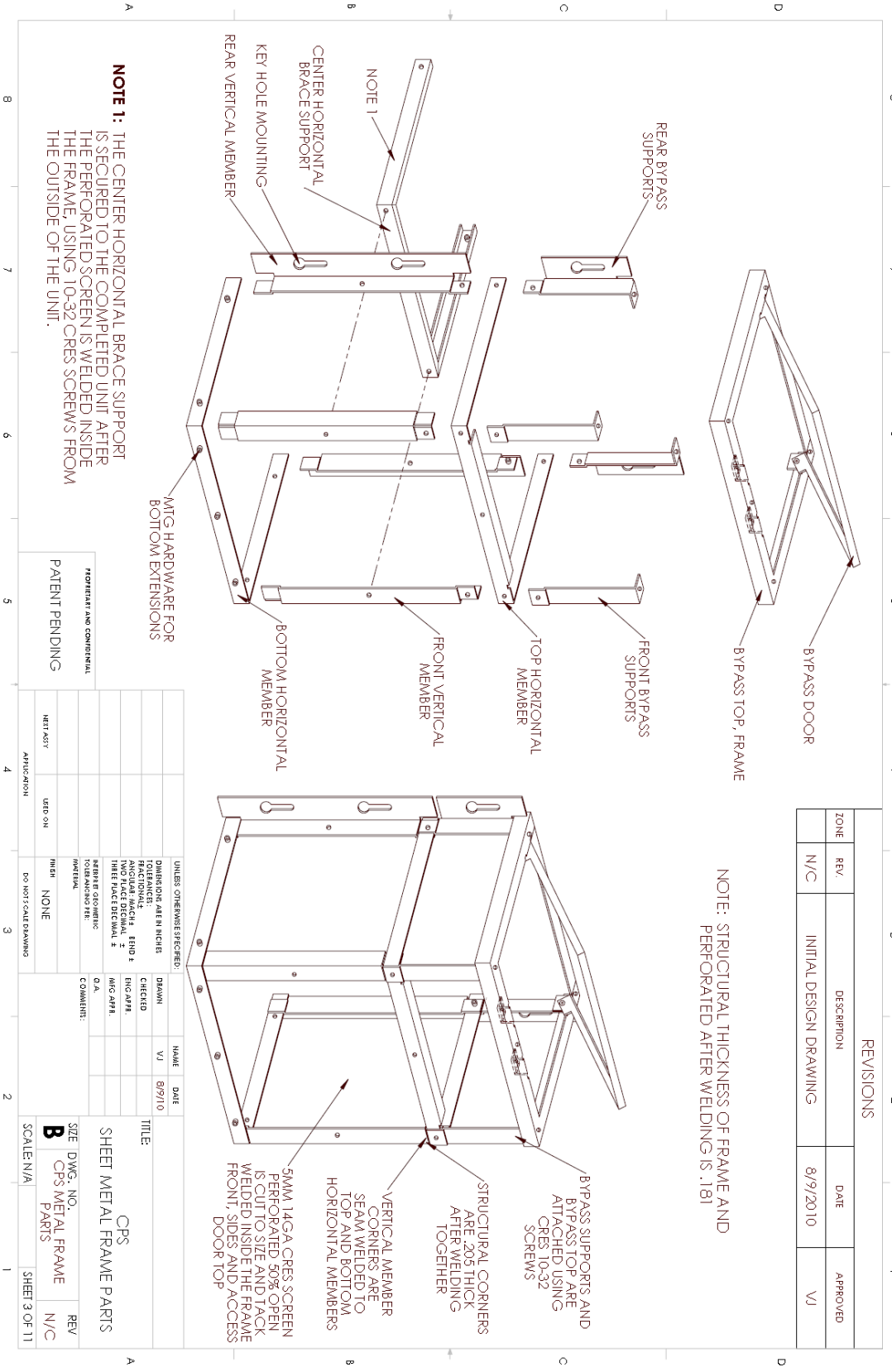

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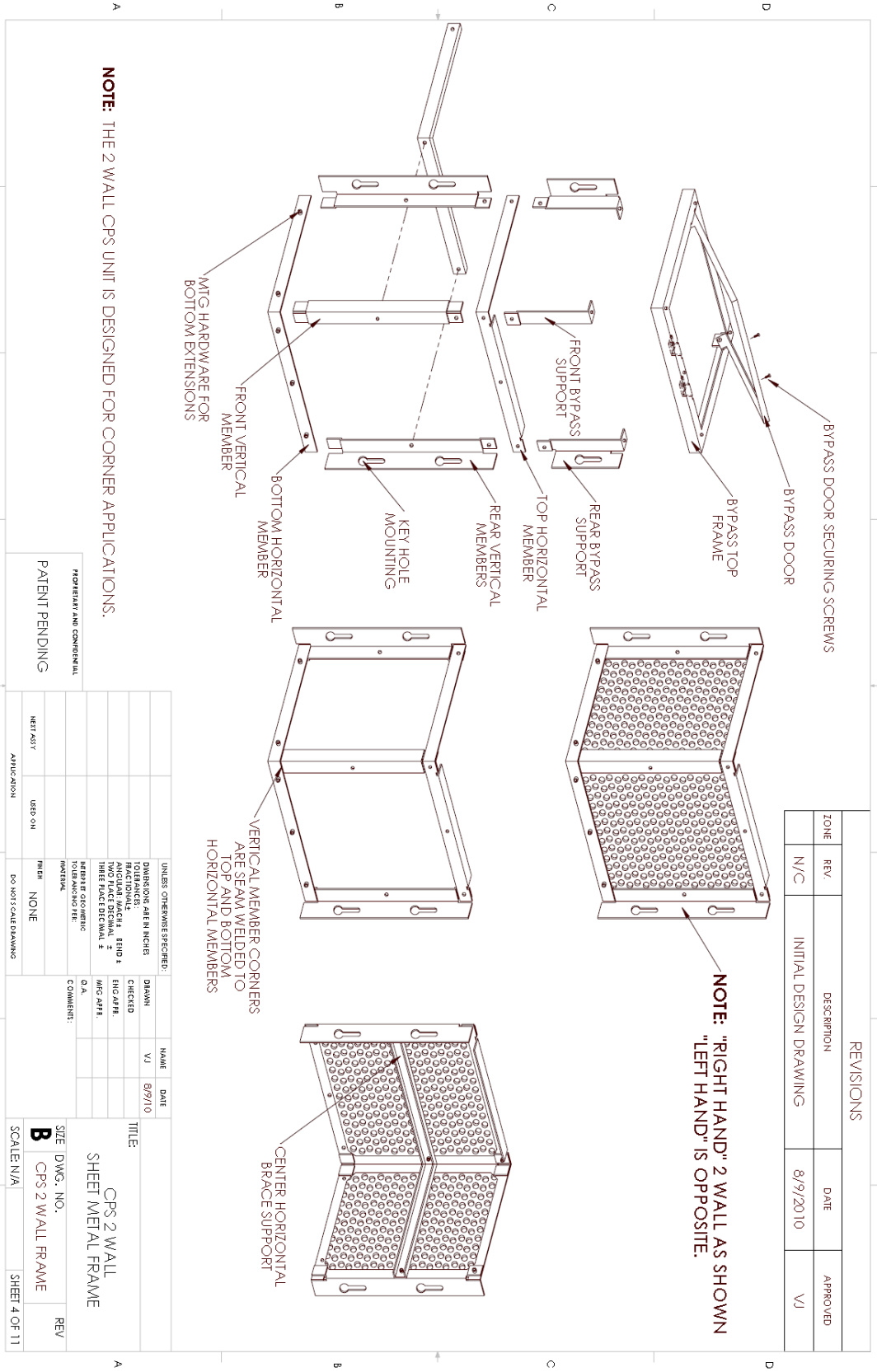

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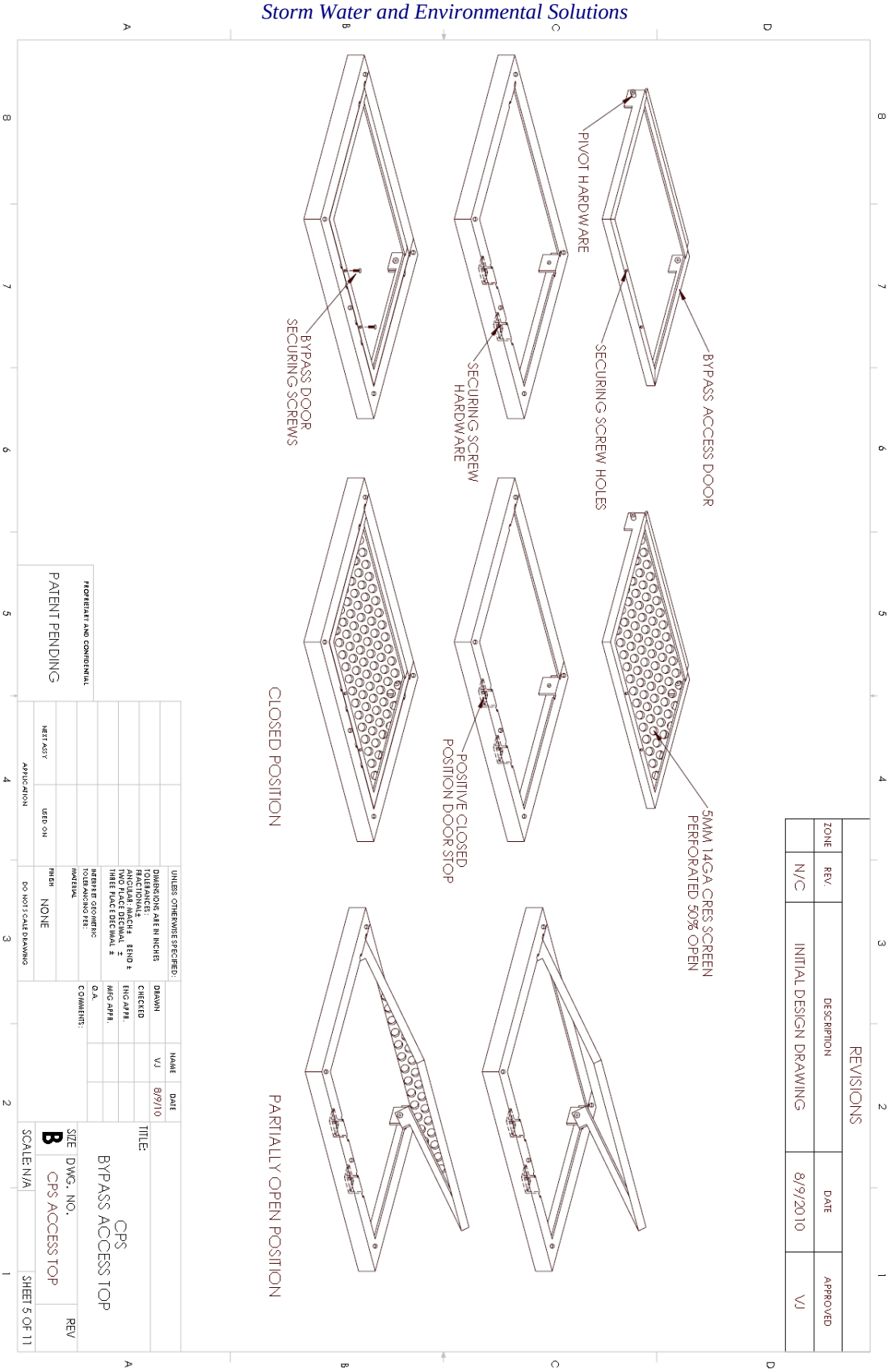

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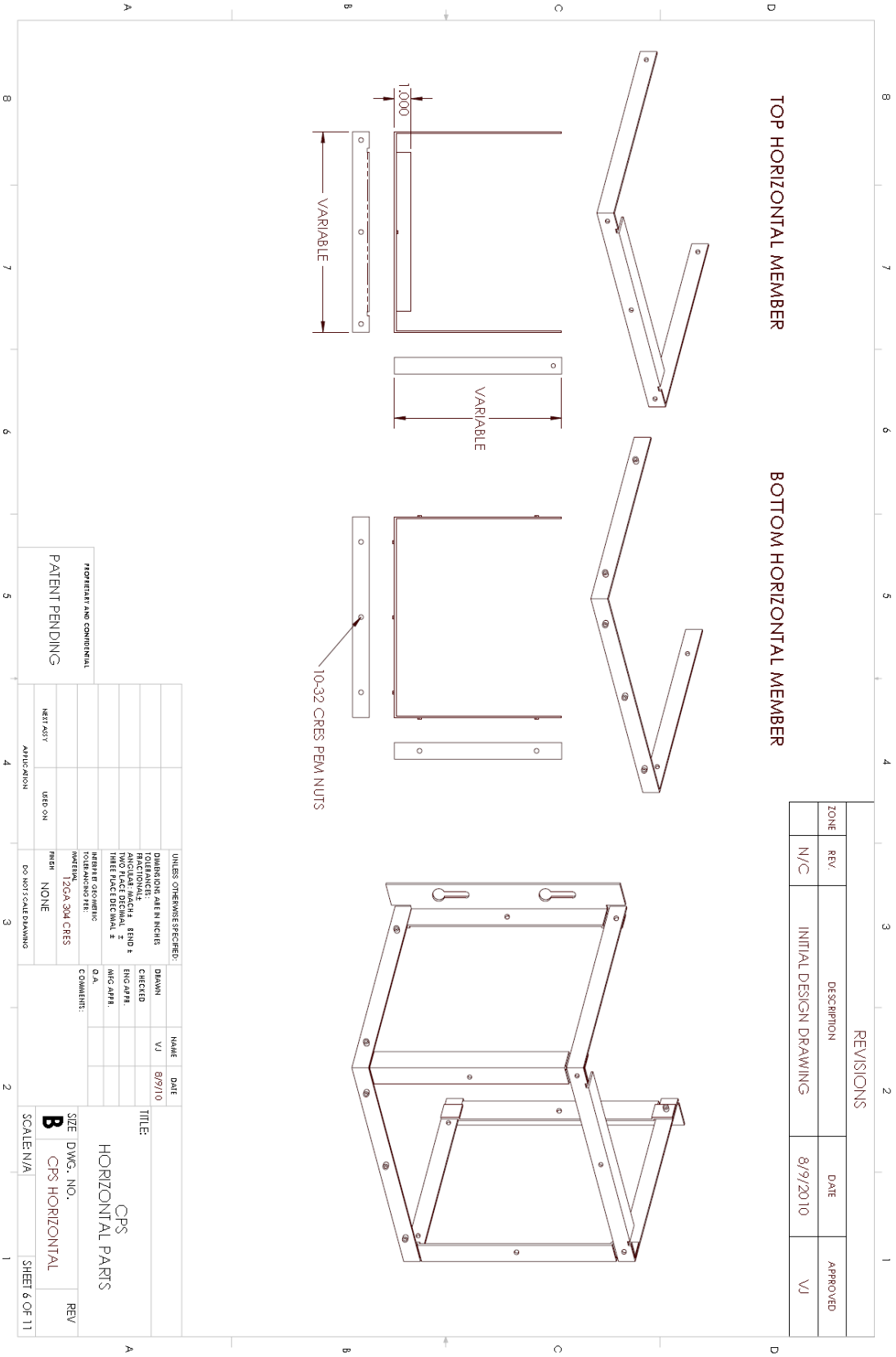

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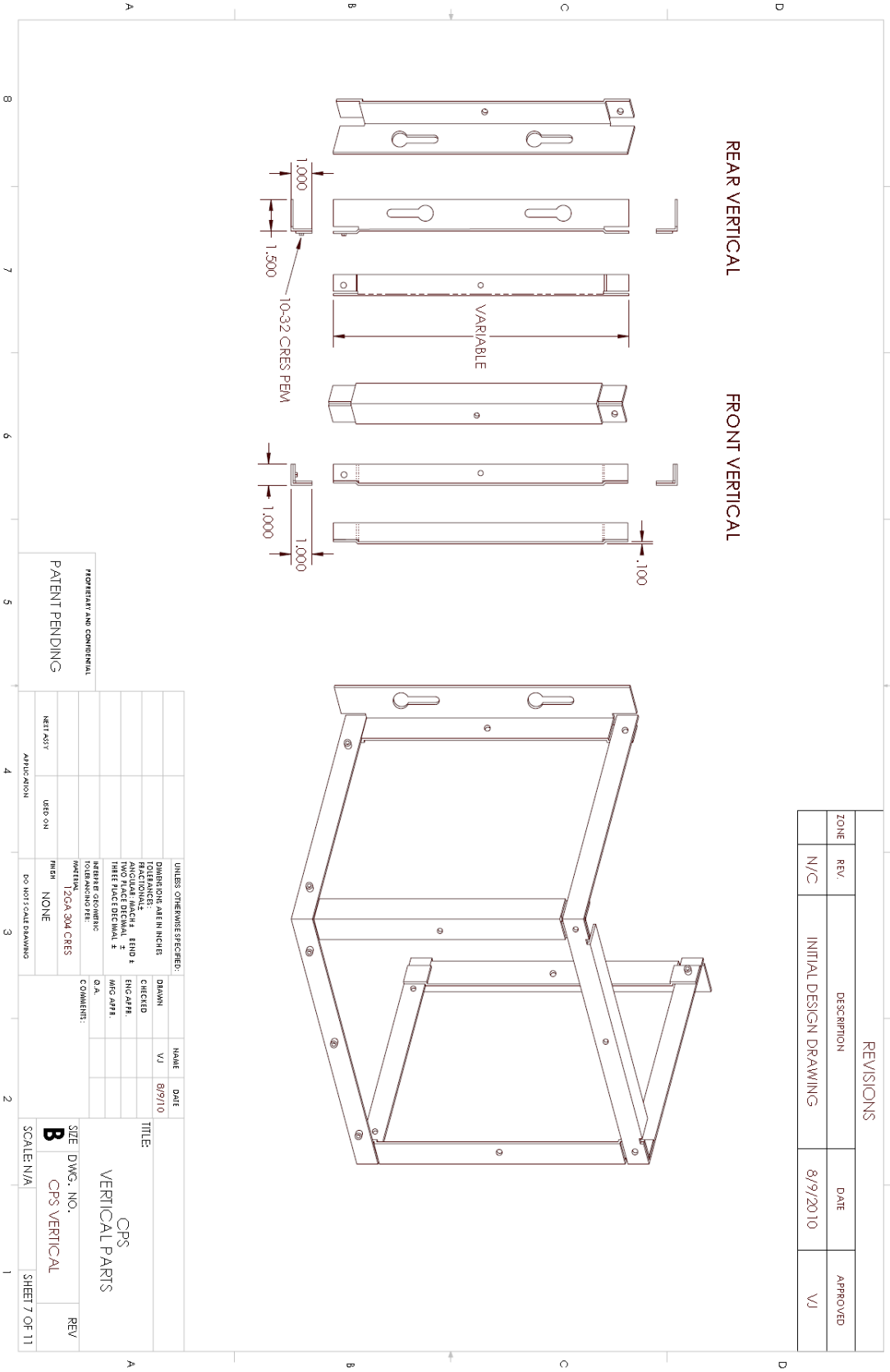

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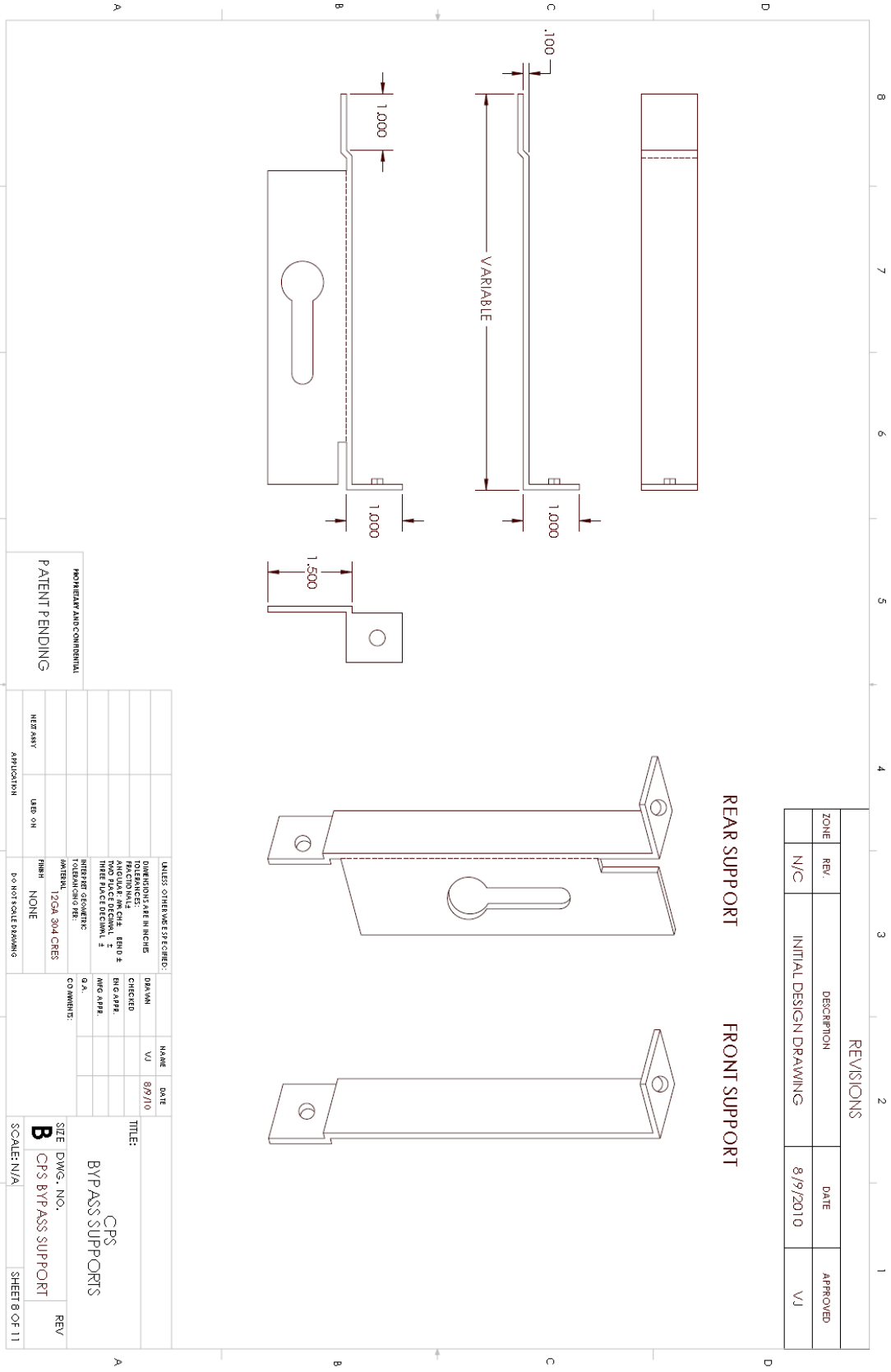

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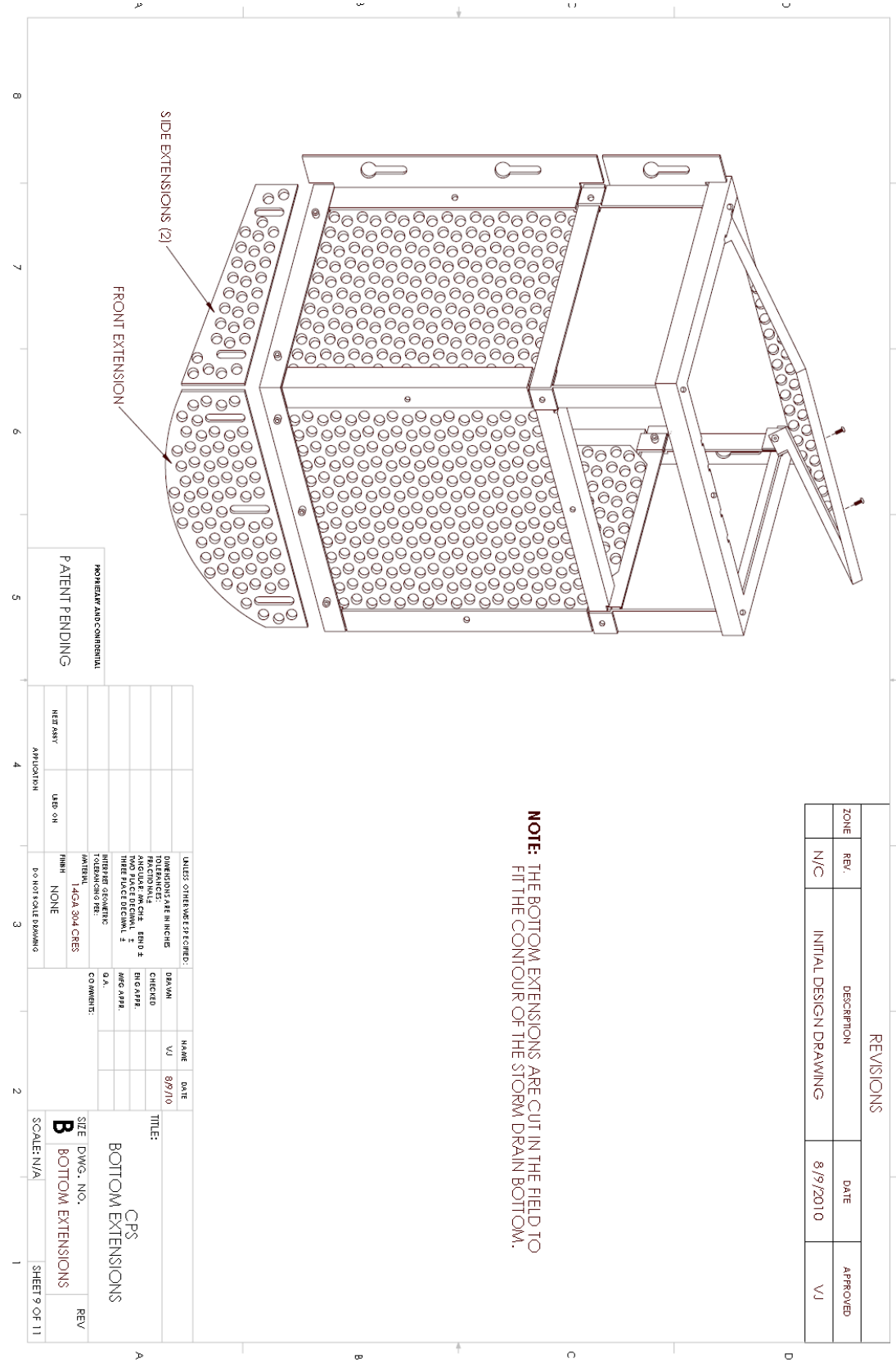

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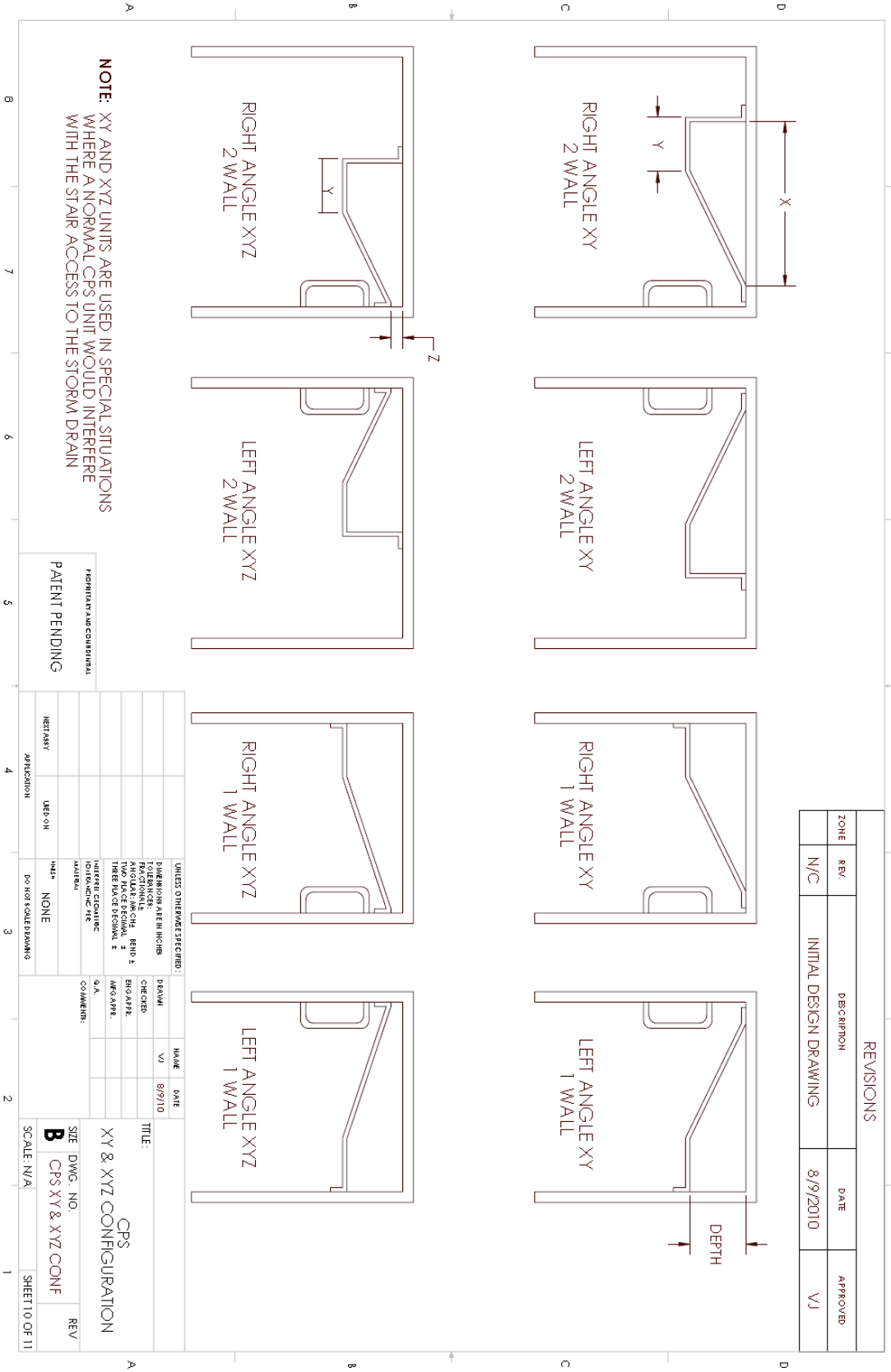

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GENERAL NOTES:

1. STANDARD UNIT WIDTHS SHALL BE 2 INCHES LONGER ON EACH SIDE OF THE OUTLET PIPE SIZE.
2. REMOVABLE BYPASS UNITS ARE USED WHENEVER THE ACCESS TO THE CATCH BASIN IS RESTRICTED BY THE CPS UNIT. THIS IS ESPECIALLY THE CASE IN GRATE INLETS WHERE THE OUTLET PIPE IS IN THE CENTER OF THE BASIN OR WHEN THE BOTTOM RUNG OF THE ACCESS LADDER INTERFERRES WITH THE CPS UNIT BYPASS.

STANDARD CURB INLET

STANDARD GRATE INLET

SPECIFIC NOTES ABOVE:

1. THE CPS HEIGHT SHALL BE 2 INCHES HIGHER THAN THE TOP OF THE OUTLET PIPE WHENEVER POSSIBLE. IN SOME CASES WHERE A LADDER RUNG INTERFERRES, THE HEIGHT SHOULD BE THE MAXIMUM POSSIBLE.
2. THE STAND BYPASS HEIGHT SHALL BE 8 INCHES. IN SOME CASES WHERE A LADDER RUNG INTERFERRES OR THE CATCH BASIN IS VERY SHALLOW, THE BYPASS HEIGHT WILL NEED TO BE SMALLER, IN NO CASE SHOULD THE BYPASS HEIGHT BE LESS THAN 3 INCHES. DEDUCT FROM THE CPS HEIGHT IF NECESSARY.
3. THE STANDARD CPS DEPTH SHALL BE 10 INCHES. IN SOME CASES WHERE A LADDER RUNG INTERFERRES THE DEPTH WILL HAVE TO BE SMALLER. IN NO CASE SHALL THE DEPTH BE LESS THAN 2 INCHES.
4. IN A GRATE INLET INSTALLATION THE BYPASS HEIGHT SHALL BE 8 INCHES WHEREVER POSSIBLE. IN SHALLOW CATCH BASINS THE HEIGHT SHALL BE 1 INCH LESS THAN THE BOTTOM OF THE GRATE.

1. 2 WALL UNIT WITH BYPASS
2. STANDARD UNIT WITH BYPASS
3. STANDARD UNIT, NO BYPASS
4. STANDARD UNIT, NO BYPASS
5. 2 WALL UNIT, NO BYPASS

REVISIONS

ZONE	REV.	DESCRIPTION	DATE	APPROVED
	N/C	INITIAL DESIGN DRAWING	8/9/2010	VJ

PROPRIETARY AND CONFIDENTIAL

PATENT PENDING

WEST COAST STORM INC.

TITLE: CPS UNIT CONFIGURATION

SIZE B | DWG. NO. CPS UNIT CONFIGURATION | REV B

SCALE: N/A | SHEET 7 OF 7

ID NO. | JOB NO. | DWG | SHEET 11 OF 11

CONNECTOR PIPE SCREEN UNIT

CPS UNIT CONFIGURATION

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Materials. The CPS device meets the following requirements:

1) The CPS frame is manufactured/fabricated from S-304 stainless steel. The structural members have a minimum thickness of 3/16 inches.
2) The CPS screen is manufactured/fabricated from perforated metal of Type 304 stainless steel. The geometrical opening shape is a diameter of 5mm.
3) The screen material used is at least 50% open area.
4) Any edge of the CPS that is not flush with the wall or floor of the catch basin shall be smooth with no prongs or jagged edges.
5) The assembly bolts, screws, nuts, and washers are fabricated entirely from S-304 stainless steel.

Fabrication. The CPS device meets the following requirements:

1) CPS devices are fabricated to individual field measurements.
2) Bypass height is specified with the field measurements.
3) The need for a bypass top is specified with the field measurements.
4) Horizontal and vertical members are modified to the necessary measurements, drawings, and CNC programs are released.
5) Parts are CNC punched to +/- 0.005 tolerance.
6) Parts are formed to +/- 0.015 tolerance.
7) Parts are assembled and welded to +/- 0.030 tolerance.
8) All parts are released for fabrication with applicable shop drawings and CNC programs.
9) CPS assembly is by seam welding.
10) Completed CPS devices are marked with location ID.
11) Completed CPS devices include all hardware and bottom extensions.
12) CPS devices are shipped completely assembled.

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Device Manufacturing Assembly. The CPS device is assembled according to following requirements:

1) CNC punch all individual parts.
2) Form (bend) all parts to the appropriate drawing.
3) Insert all necessary hardware into the required parts.
4) Seam weld the vertical members to the horizontal members making the frame.
5) Be sure frame is square.
6) Cut individual perforated screen for necessary areas.
7) Tack weld the perforated screen into the frame.
8) Using the 10-32 CREW screws, attach the appropriate bypass supports (if needed).
9) Using the 10-32 CREW screws, attach the appropriate bypass top (if needed).
10) Using the 10-32 CREW screws, attach the bottom extensions.
11) Mark the CPS device with the applicable location ID.
12) **CPS devices are shipped completely assembled.** Most CPS devices will fit through the man hole assembled. If they don't fit, the bypass top and supports can be removed and re-assembled in the storm drain.

Flow or range of flows for which device is rated (in cubic feet per second).

The table below provides an example of screen capacity in cubic feet per second based on a catch basin with a 3.5' V-depth.

V-depth (ft)	CB Width	Max 10-yr. flow rate (cfs)	Bypass Height (in)	Freeboard (in)	Screen Height (in)	Max 1-yr. flow rate (cfs)	Clearance (in)	Screen Length (ft)	Screen Capacity (cfs)
3.5	3.5	2.8	6.0	6.0	18	0.6	10.0	1.5	1.5
3.5	7.0	5.3	6.0	6.0	18	1.2	10.0	2.9	2.9
3.5	10.0	7.5	6.0	5.0	18	1.7	10.0	3.8	3.8
3.5	14.0	10.0	8.0	0	18	2.2	8.0	3.1	3.1
3.5	21.0	13.9	8.0	0	18	3.1	8.0	4.3	4.3
3.5	28.0	17.3	12.0	0	18	3.8	4.0	3.9	3.9

Note: Results were obtained from the California Regional Water Quality Control Board, Los Angeles Region Approved County of Los Angeles Connector Pipe Screen Design Technical Report, page 12.

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Estimated design life of equipment. Minimum 25 years.

B. Performance Effectiveness for Connector Pipe Screens and Catch Basin Inserts.

Performance. The purpose of the Connector Pipe Screen is designed to retain all trash larger than 5mm in the catch basin, it prevents trash and debris from entering the storm drain lateral keeping the trash inside the catch basin. When trash is prevented from entering the lateral system a reduction in clogged and standing trash and debris within drain laterals result. Trash reduction meets requirements approved by the County of Los Angeles Regional Water Quality Control Board. Capturing trash and enabling water flow keeps the storm drain system operating at its engineered design capacity.

Trash Capture. Capacity is determined by the dimensions of the catch basin, which is utilized as the receptacle to hold trash captured. For example, a three and a half foot catch basin "V-depth" will hold an eighteen inch tall screened device with a 6 inch bypass. The device is designed to capture trash up to the device's bypass within the catch basin.

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Overflow or bypass flow capacity. The bypass structure must pass the maximum catch basin flow in order to provide proper flow protection. The West Coast Storm CPS is designed to meet this requirement established by the California Regional Water Quality Control Board, Los Angeles Region Approved County of Los Angeles Connector Pipe Screen Design. For an example of maximum 10-year and 1-year flows see the table provided see below.

V-depth (ft)	CB Width	Max 10-yr. flow rate (cfs)	Bypass Height (in)	Freeboard (in)	Screen Height (in)	Max 1-yr. flow rate (cfs)	Clearance (in)	Screen Length (ft)	Screen Capacity (cfs)
3.5	3.5	2.8	6.0	6.0	18	0.6	10.0	1.5	1.5
3.5	7.0	5.3	6.0	6.0	18	1.2	10.0	2.9	2.9
3.5	10.0	7.5	6.0	5.0	18	1.7	10.0	3.8	3.8
3.5	14.0	10.0	8.0	0	18	2.2	8.0	3.1	3.1
3.5	21.0	13.9	8.0	0	18	3.1	8.0	4.3	4.3
3.5	28.0	17.3	12.0	0	18	3.8	4.0	3.9	3.9

Note: Results were obtained from the California Regional Water Quality Control Board, Los Angeles Region Approved County of Los Angeles Connector Pipe Screen Design Technical Report, page 12.

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C. Siting Operational, and Maintenance.

Installation Process.

1. Prior to installation, measuring information is input into the ACCESS database. The sharing municipality can look at the information provided. This reporting process gives the municipality the information it needs to decide whether to proceed with installing at sites specified or not.
2. Our Santa Ana location provides West Coast Storm, Inc. with the ability to get our products and crews to any location within the County of Orange in minutes, not hours.
3. Up to 25 Two-man installation crews are ready to begin work. Each Crew consists of a Supervisor responsible for completion of all paperwork, correct Confined Space Entry procedures and traffic control protocol. All crews are equipped with a Company marked van, all installation tools and equipment necessary to complete the job. All traffic control devices, confined space entry equipment including 4-gas meter, man-lift tripod and harness are kept in the van. Vans are equipped with storage of all installation parts, and spare parts as needed.
4. Crews must set up traffic control and confined space procedures prior to installation. All of West Coast Storm field personnel, including Project Managers, are annually confined space rescue, confined space entry, and traffic control trained.
5. Project Managers meet with crews prior to installations daily. The Project Manager oversees units staging and distribution, parts distribution, and leads the mandatory daily tailgate safety meeting according to OSHA requirements.
6. Installation crews are provided a scheduled list of drains for installation on a daily basis. Each crew must report all confined space entries on forms provided. Each installation is reported on a BMP report form to record all installation procedures and quality control tests.
7. Crews are required to call into the office upon completion of every drain installation: time spent at drain, ARS length, CPS type, and any additional information. This real-time dispatch enables health & safety tracking, OSHA logs for confined space entry, and maintain cost controls for labor.

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8. Paperwork from the day's installation includes BMP report forms on every install, work orders, time sheets, and confined space entry logs. When the paperwork arrives to the office the data from BMP report forms and the real-time dispatch is entered into the ACCESS database. Entering installation information on a daily basis ensures each drain is tracked and reported timely and accurately.
9. In addition to database input, a daily installation report of installs is sent to the municipality. Communication of daily installs ensures the job is progressing and continuing as scheduled.
10. Project Managers perform QAQC: Quality Assessment and Quality Control everyday. Managers are required to visit installations sites and perform health and safety checks. This process ensures public safety, workforce safety, no damage to property, as well as device installation ensuring it is complete and functioning properly.
11. Estimated time required to install each device is 20 minutes.

Connector Pipe Screen Device Installation Process.

1. Bring the CPS unit into the catch basin and set in front of outlet hole. The unit may require that you detach the bypass component depending on the size of the catch basin opening. Establish a definite location and then mark your holes for drilling. Make sure to mark in a spot that will allow for unit removal through the predrilled keyhole slots.
2. Remove the CPS unit from the installation wall. Drill 3/8" holes where you marked. Make sure to drill straight into the catch basin wall to avoid mounting difficulties.
3. Hammer 3/8"x3.75" stainless steel anchor bolts into the holes.
4. After all of the anchor bolts are hammered into place, attach the CPS onto the anchor bolts to assure a proper fit.
5. Remove the bypass top screen with bypass supports. Then position the drop down panels inside the body of the CPS unit to estimate for custom cuts. The drop- down panels are designed to bridge the gap between the bottom of the CPS unit and the bottom of the catch basin which is usually concave. Carefully mark onto the drop down panel where your custom cuts should go.
6. Make cuts using a compact grinder. Be sure to sand off any sharp edges.
7. Once the drop down panels are custom cut to conform with the catch basin surface, attach the panels to the body of the CPS unit using bolts provided.
8. Replace the bypass roof and vertical legs to the CPS body. Tighten with bolts provided.
9. Tighten the nuts on all of the anchor bolts and assure a tight fit.

Site-specific Measurements Required.
West Coast Storm, Inc. requires minimum information prior to measuring, only drain location. In the even there is not clear data on drain locations, we can locate them upon municipality approval. Information provided to municipalities will include GPS coordinates, address, as well as catch basin measurements. We can and will work with municipal staff to acquire the proper information needed to import into a GIS mapping layer database. Equipped with an industry leading ACCESS database helps us export the information to create GIS mapping layers.

Regulatory Permits Required for Installation. Confined space entry permitting is required on all drain installations. 40-hour HAZWOPER training is required for storm drain entry.

Maintenance Requirements.
Preventative Maintenance. Maintenance crews should regularly check catch basins and establish a maintenance schedule based on the level of debris collected. Some areas will require more frequent cleaning than others. Catch basins should be cleared of debris to allow for water to freely flow through the screens.

Pressure-washing the unit may additionally benefit but is not necessary.

Suggested Yearly Maintenance. Visual Inspection:
1. Built-up debris and foreign object debris can hinder the unit's operation. Remove any visible debris that may be on, in front of, and nearby the unit.
2. Look for any visible signs of vandalism or damage that may compromise the unit's ability to properly function. Attempted vandalism and slight damage should be inspected closely to ensure no future damage may result.

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Durability. The stainless steel structural framework (ecto-skeletal frame) provides structural integrity to withstand extreme amounts of water pressure. Installation within the catch basin ensures no external factors present to damage unit. The unit's stainless steel construction allows us to offer a ten year warranty without hesitation.

Availability of Replacement Parts and Life Expectancy. Manufacturing all components in-house is key, we are not subject to outside vendors or distributors out of inventory. In the event, replacement parts are needed, we will have your item readily available. Life expectancy is minimum 25 years. Stainless steel components should last the lifetime of the drain itself.

Waranty. All parts and labor is covered for 10 years.

Aesthetics and Safety. All manufacturing is performed with aircraft precision equipment. No manufacturing of units are performed in the field. Units are delivered assembled and ready for installation. All parts are put through a timesaver deburring rough edges, resulting in a product that has no sharp edges.

Uniqueness. The stainless steel structural framework (ecto-skeletal frame) provides structural integrity to withstand extreme amounts of water pressure. The bypass maintenance hatch is specially designed for ease of drain cleaning operations. Drop down extension plates enable conformity to the catch basin interior without compromising the unit's and structural strength.

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D. Vendor's Installation Background.

West Coast Storm, Inc. is a General A Engineering contractor with a hazardous substances removal certification combining storm water services and manufacturing in one company. Certified welders, certified fabrication machine operators,and up to 25 Two-man installation crews are ready to begin work. Our Santa Ana location provides West Coast Storm, Inc. with the ability to get our products and crews to any location within the County of Orange in minutes, not hours.

All of West Coast Storm, Inc. operations personnel are fully trained under the following minimum requirements:

- 40-Hour Hazardous Waste Operations Emergency Response (HAZWOPER) training in accordance with 29 Code of Federal Regulations (CFR) 1910.120
- 8-Hour Hazardous Waste Operations Refresher training in accordance with 29 CFR 1910.120
- Confined Space Rescue and Entry training in accordance with 29 CFR 1910

In Addition, every operating employee of West Coast Storm, Inc. is enrolled in the Department of Motor Vehicles (DMV) Employee Pull Notice (EPN) Program as well as a Department of Transportation (DOT) Approved Random Drug and Alcohol Testing Program.

All installation crews undergo rigorous installation training, emphasizing safety and quality control. Installers have hours of experience on many ARS & CPS installation projects performed countrywide.

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California General A/HAZ Contractor License Number: 888152

West Coast Storm Connector Pipe Screen
Equipment Design and Specification Report
(Information provided to the City as requested in the RFQ documents under *Attachment A. Scope of Work*)

West Coast Storm, Inc. (WCS) has extensive experience in projects similar to that called for by present RFP. WCS has worked with public and private entities. All operations for the measuring, manufacturing and installation of the products are handled solely by WCS, no subcontractors are needed. Experience in municipal ARS &CPS projects includes finding drain locations, measuring and compiling reports to municipalities on the status of drains measured, upon release of the measured drains by the municipality (Purchase Order) manufacturing operations begin as soon as measurements are released by WCS, shipments are sent daily from Santa Ana to install crews, meeting sites are coordinated by Project Managers to best accommodate installation areas, installations are performed with proper traffic control measures and confined space entry protocol, real-time dispatch reporting from field to WCS office upon completion of each drain, daily reports are comprised and sent to the municipality upon QC, direct contact liaison relationships are established between project managers, office personnel, and municipalities. Handling the job from beginning to finish had proven to clients we are a simple, effective, and efficient way to do business.

From 2009 to 2010, WCS was honored to perform under contract with the County of Los Angeles for multiple projects including the manufacturing and installation of over 1,800 Connector Pipe Screen (CPS) devices and 2,500 Automatic Retractable Screen (ARS) devices for the County of Los Angeles River Trash Total Maximum Daily Load Full Compliance, Catch Basin Retrofit-Phase 4; manufacturing and installation of over 1,000 Connector Pipe Screen (CPS) devices for the Los Angeles River Trash Full Capture City of Los Angeles High Trash Generation Area Catch Basin Retrofit; installation of 101 Connector Pipe Screen (CPS) devices for the Ballona Creek Trash TMDL Full Compliance Phase 2, Catch Basin Retrofit project in the unincorporated community of View Park.

Similar product installations of Connector Pipe Screen and/or Automatic Retractable Screen projects include the City of Los Angeles, City of Rancho Palos Verdes, City of Anaheim, City of Beverly Hills, City of San Bernardino, City of Perris, City of Burlingame, City of Oceanside, City of Pico Rivera, City of Torrance, City of Fort Worth, Texas, Richland County (South Carolina), the State of Florida Department of Transportation and many others.

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E. Operating Locations, References, and Certifications.

Install Locations.
City of Anaheim
Installation Site: Coronado Street and Blue Gum Street
Location: East South Corner

West Coast Storm Connector Pipe Screen
Equipment Design and Specification Report
(Information provided to the City as requested in the RFQ documents under *Attachment A. Scope of Work*)

City of Anaheim
Installation Site: Coronado Street and Blue Gum Street
Location: North East Corner

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West Coast Storm Connector Pipe Screen
Equipment Design and Specification Report
(Information provided to the City as requested in the RFQ documents under *Attachment A. Scope of Work*)

City of Rancho Palos Verdes
Installation Site: Hawthorne Blvd between Silver Spur and Palos Verdes Drive

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West Coast Storm Connector Pipe Screen
Equipment Design and Specification Report
(Information provided to the City as requested in the RFQ documents under *Attachment A. Scope of Work*)

City of Rancho Palos Verdes
Installation Site: Hawthorne Blvd between Silver Spur and Palos Verdes Drive

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West Coast Storm Connector Pipe Screen
Equipment Design and Specification Report
(Information provided to the City as requested in the RFQ documents under *Attachment A. Scope of Work*)

County of Orange
Installation Site: Buena Vista and Olive
Location: North East Corner

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West Coast Storm Connector Pipe Screen
Equipment Design and Specification Report
(Information provided to the City as requested in the RFQ documents under *Attachment A. Scope of Work*)

City of Torrance
Installation Site: Crenshaw and Blue Sepulveda
Location: North West Corner

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References.

County of Los Angeles
Contact: Akbar Gadim
Telephone: 818-786-9411
900 S. Fremont, 8th Floor, Alhambra, CA

County of Los Angeles River Trash Total Maximum Daily Load Full Compliance, Catch Basin Retrofit-Phase 4: drain cleaning, measuring, manufacturing, and installation of over 1,800 Connector Pipe Screen (CPS) devices and 2,500 Automatic Retractable Screen (ARS) devices.

1. Date of Service: 11/09/2009-05/01/2010
2. Contract Amount: $1,231,807

Los Angeles River Trash Full Capture City of Los Angeles High Trash Generation Area Catch Basin Retrofit: drain cleaning, measuring, manufacturing and installation of over 1,000 Connector Pipe Screen (CPS) devices.

1. Date of Service: 10/19/2009-05/01/2010
2. Contract Amount: $ 549,640

City of Rancho Palos Verdes
Contact: Andy Winje
Telephone: (310) 544-5249
30940 Hawthorne Boulevard, Rancho Palos Verdes, CA

Machado Lake Drainage Catch Basin Pipe Screen Installation Project - Phase 1: drain cleaning, measuring, manufacturing and installation of 24 Connector Pipe Screen (CPS) devices.

1. Date of Service: 10/07/2010-12/13/2010
2. Contract Amount: $ 8,104

West Coast Storm Connector Pipe Screen
Equipment Design and Specification Report
(Information provided to the City as requested in the RFQ documents under *Attachment A. Scope of Work*)

City of Ft. Worth
Contact: Don McChesney
Telephone: 817-392-7901
1000 Throckmorton St, Fort Worth, TX

Installation of Forty Six West Coast Storm Automatic Retractable Screens and Thirty Three Connector Pipe Screen systems in the Downtown District in the City of Ft. Worth: drain cleaning, measuring, manufacturing, and installation of over 33 Connector Pipe Screen (CPS) devices and 46 Automatic Retractable Screen (ARS) devices.

1. Date of Service: 10/25/2010 - 10/29/2010
2. Contract Amount: $30,000

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West Coast Storm Connector Pipe Screen
Equipment Design and Specification Report
(Information provided to the City as requested in the RFQ documents under *Attachment A. Scope of Work*)

Certifications

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COUNTY OF LOS ANGELES

DEPARTMENT OF PUBLIC WORKS

"To Enrich Lives Through Effective and Caring Service"

900 SOUTH FREMONT AVENUE
ALHAMBRA, CALIFORNIA 91803-1331
Telephone: (626) 458-5100
http://dpw.lacounty.gov

GAIL FARBER, Director

ADDRESS ALL CORRESPONDENCE T
P.O. BOX 1460
ALHAMBRA, CALIFORNIA 91802-14

February 10, 2010

IN REPLY PLEASE
REFER TO FILE: C-1

Mr. Alex Padilla
West Coast Storm, Inc.
654 South Lincoln Avenue
San Bernardino, CA 92408

Dear Mr. Padilla:

CONNECTOR PIPE SCREEN FULL CAPTURE SYSTEM
CATCH BASIN RETROFIT

The California Regional Water Quality Control Board approved the County of Los Angeles' (County) Connector Pipe Screen (CPS) design as a Full Capture System as indicated in the attached letter dated August 1, 2007. West Coast Storm, Inc. (WCS) is currently working on two contracts that require the fabrication and installation of CPS catch basin retrofit devices. WCS is performing the work in compliance with the County's specifications for the manufacturing and installation of the CPS devices.

If you have any questions, please contact Mr. Mario Rodriguez at mrodrigu@dpw.lacounty.gov or (626) 458-3147.

Very truly yours,

GAIL FARBER
Director of Public Works

for JAMES T. SPARKS
Assistant Deputy Director
Construction Division

MR:ss
O:\Projects\Programs - Flood\LARiverTrashFullCapture (FCC0001100)\Letters\CPS Letter.doc

Attach.

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California Regional Water Quality Control Board
Los Angeles Region
320 W. 4th Street, Suite 200, Los Angeles, California 90013
Phone (213) 576-6600 FAX (213) 576-6640 - Internet Address: http://www.waterboards.ca.gov/losangeles

Linda S. Adams
Cal/EPA Secretary

Arnold Schwarzenegger
Governor

August 1, 2007

Mr. Donald Wolfe, Director
County of Los Angeles
Department of Public Works
900 South Fremont Avenue
Alhambra, CA 90803-1331

CERTIFICATION OF THE CONNECTOR PIPE SCREEN DEVICE AS A FULL CAPTURE SYSTEM FOR TRASH REMOVAL UNDER THE BALLONA CREEK AND THE LOS ANGELES RIVER TRASH TOTAL MAXIMUM DAILY LOADS

Dear Mr. Wolfe:

We have reviewed the County of Los Angeles' (County) letter and report entitled, "Technical Report, Connector Pipe Screen Design, Full Capture TMDL Compliance, Screen And Bypass Sizing Requirements" dated October 17, 2006, and April 2007, and additional information provided by your staff in support of your request for "Full Capture Certification" for a trash capture device referred to as a "Connector Pipe Screen Design." The purpose of this letter is to inform you of our approval of the County's Connector Pipe Screen Design as a "Full Capture System" for use within catch basins as a trash capture device under the Ballona Creek and the Los Angeles River Trash Total Maximum Daily Loads.

A Connector Pipe Screen is a vertical stainless screen with 5 mm openings, installed inside a catch basin directly upstream of the connector pipe in such a manner that all water entering the basin must pass through the device. A vertical opening is provided around the perimeter of the screen to allow storm water to bypass in the event of a large storm or if the screen becomes clogged.

The definition of "full capture system" for the Ballona Creek Trash Total Maximum Daily Load (TMDL) was amended per Resolution No. 04-023 adopted on March 4, 2004 by the Los Angeles Regional Water Quality Control Board. It is likely that this definition will be applicable in future revisions of the Los Angeles River Trash TMDL. As a result, the Los Angeles Water Board staff have also analyzed your Report for compliance with the Ballona Creek Trash TMDL's full capture system definition. The definition of a "full capture system" as defined in the Resolution No. 04-023 as the following:

" A full capture system is any single device or series of devices that traps all particles retained by a 5 mm mesh screen and has a design treatment capacity of not less than the peak flow rate (Q) resulting from a one-year, one-hour, storm in the subdrainage area. Rational equation is used to compute the peak flow rate: Q = C x I x A, where Q = design flow rate (cubic feet per

second, cfs); C = runoff coefficient (dimensionless); I = design rainfall intensity (inches per hour, as determined per the rainfall isohyetal map in Figure A), and A = subdrainage area (acres)."

The Los Angeles Water Board's criterion for certification as a full capture device is that it must trap all particles retained by a 5-mm mesh screen, and have a treatment capacity exceeding peak flow rate resulting from a one-year, one-hour, storm in the subdrainage area. In addition, the following requirements must be met:

1. End-of-Pipe Configuration - Certain BMPs, which can create a pressure drop, must have an end-of-pipe configuration and not rely on diversion weirs;
2. Adequate Pipe Sizing - The pipes carrying the flows from the subdrainage area should be able to handle peak flows; and
3. Regular Inspections and Maintenance - The full capture system must be regularly inspected and serviced to continually maintain adequate flow through capacity.

Summary of the County of Los Angeles' Hydraulic Analysis

Staff from the County of Los Angeles Department of Public Works (Public Works) performed a hydrologic analysis to establish a method of calculating the maximum treatment flow resulting from a one-year, one-hour storm. With this information, extensive hydraulic analyses were conducted using different types and sizes of trash and debris to establish minimum sizing requirements for the CPS screen. Public Works engineers also established minimum sizes for the bypass opening to provide flood protection during large storm events.

Based on the County's Technical Report submitted on October 17, 2006 and revised in April 2007, (Report), the above-mentioned device meets the performance criteria for full capture certification.

Summary of the County of Los Angeles Information Submitted

Based on the County's Report, the Connector Pipe Screen has a 5 mm mesh screen and meets the particle capture criteria for a full capture system. The devices are designed for greater than a 1-year, 1-hour peak flow, and therefore satisfy the minimum 1-year, 1-hour design criteria;

The flow capacity of the devices is greater than the estimated flow rate, therefore the Connector Pipe Screens meet the design criteria for a full capture system;

The drainage criterion is not part of the definition for a full capture system. However, it is important to note that the inserts do not retain storm water and therefore avoid any vector issues; and

The Gross Solids Storage Capacity ranges depending on the size of each catch basin and its configuration. Some trash capture Connector Pipe Screens may require cleaning more frequently.

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Based on the above information, the County of Los Angeles' Connector Pipe Screens meet the definition of full capture system and are certified as a full capture system under the following conditions:

1. Adequate Pipe Sizing: The pipes carrying the flows from the subdrainage area must be able to handle peak flows.

2. Regular Inspections: The Connector Pipe Screens should be visually inspected before and after rain events to allow for cleaning for optimal performance.

3. Regular Maintenance: The Connector Pipe Screens shall be adequately maintained and cleaned to ensure full capture of trash during the design storm.

This letter serves as a determination that the vertical Connector Pipe Screens (as described and identified via photographs in the County's April 2007 Technical Report), when installed and maintained in appropriately sized catch basins, satisfy the full capture definition of the trash TMDL and will allow the systems to be used elsewhere in the region. However, all parties installing these devices will have an on-going obligation to demonstrate that the installation of a particular system is appropriately sized and meets the intent of this program. Likewise, dischargers will be responsible for on-going maintenance to ensure the systems perform to design specifications. The Regional Water Board will review and consider performance data on a continuing basis. In the event data demonstrate that the systems are not performing to the full capture design standard established by the trash TMDL, the Los Angeles Water Board Executive Officer reserves the right and ability to rescind the certification for subsequent installations deemed non-conforming or inappropriate.

If you should have any questions regarding this Full Capture Certification, you may call me at (213) 576-6609, or have your staff contact Carlos Urrunaga at (213) 620-2083 or via email at currunaga@waterboards.ca.gov.

Sincerely,

Deborah Smith
Interim Executive Officer

cc: Mr. Michael Levy, Office of the Chief Counsel, State Water Resources Control Board
Mr. Terry Fleming, Water Division, U.S. Environmental Protection Agency, Region 9
Mr. Eugene Bromley, U.S. Environmental Protection Agency, Region 9
Mr. Paul Thakur, Caltrans, District 7
Mr. Mark Pestrella, Los Angeles County Department of Public Works
Mr. Tom Leary, City of Long Beach
All Los Angeles County Municipal Storm Water Permittees
All Ventura County Municipal Storm Water Permittees

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Bay Area-wide Trash Capture Demonstration Project
Vendors and devices approved March 18, 2010

Small devices with San Francisco Bay Water Board certification for full trash capture

Device ID	Vendor	Device Name
AS-1	Advanced Solutions	Stormtek ST3
AS-2	Advanced Solutions	Stormtek ST3-G
BMP-1	Best Management Products, Inc.	SNOUT Oil-Debris Separator (with Trash Screen)
BC-1	Bio Clean Environmental Services, Inc.	Grate Inlet Skimmer Box (square design)
BC-2	Bio Clean Environmental Services, Inc.	High Capacity Round Grate Inlet Skimmer Box
BC-3	Bio Clean Environmental Services, Inc.	Modular Connector Pipe Screen
BC-4	Bio Clean Environmental Services, Inc.	Trash Guard
ECI-1	Ecology Control Industries (American Stormwater)	Debris Dam
G2-1	G2 Construction, Inc.	Collector Pipe Screen
G2-1R	G2 Construction, Inc.	Collector Pipe Screen Removable
GFI-1	Gentile Family Industries (Waterway Solutions)	*WAVY* GRATE Trash Catcher
KS-1	KriStar Enterprises, Inc.	Flo Gard Plus Catch Basin Filter Insert, combination inlet style – C3 (stainless steel)
KS-2	KriStar Enterprises, Inc.	Flo Gard Plus Catch Basin Filter Inserts, flat grated inlet style, rectangular or round – C3 (stainless steel)
KS-3	KriStar Enterprises, Inc.	FloGard Catch Basin Outlet Screen Insert
REM-1	Revel Environmental Manufacturing, Inc.	Triton Bioflex Drop Inlet Trash Guard
USW-1	United Stormwater, Inc.	Connector Pipe Screen
WCS-1	West Coast Storm, Inc.	Connector Pipe Screen
XP-1	Xeripave, LLP	Storm Grate Basket (revised design)

Devices not certified by the Water Board, but eligible for ordering by municipalities where they will be used in combination with full capture devices

Device ID	Vendor	Device Name
ECI-2	Ecology Control Industries (American Stormwater)	Surfgate

1515 Clay Street, Suite 1400 ◆ Oakland, CA 94612
510.622.2304
Fax: 510.622.5201
http://sfestuary.org

Device ID	Vendor	Device Name
G2-2	G2 Construction, Inc.	CamLock Debris Gate
G2-3	G2 Construction, Inc.	FS 10
GFI-2	Gentile Family Industries (Waterway Solutions)	ARS – automatic retractable screen
KS-4	KriStar Enterprises, Inc.	Trash and Debris Guard
USW-2	United Stormwater, Inc.	Clean Screen III
XP-2	Xeripave LLC	Infill existing grate
XP-3	Xeripave LLC	Storm Grate and Lintel
WCS-2	West Coast Storm, Inc.	ARS – automatic retractable screen

High Flow Capacity Devices with Water Board certification

Device ID	Vendor	Device Name
BC-5HF	Bio Clean Environmental Services, Inc.	Nutrient Separating Baffle Box
CCP-1HF	Contech Construction Products	Continuous Deflective Separator (CDS)
FCT-1HF	Fresh Creek Technologies, Inc.	Inline Netting Trash Trap
KS-5HF	KriStar Enterprises, Inc.	CleansAll
KS-6HF	KriStar Enterprises, Inc.	Downstream Defender
KS-7HF	KriStar Enterprises, Inc.	FloGard Dual-Vortex Hydrodynamic Separator
KS-8HF	KriStar Enterprises, Inc.	FloGard Perk Filter
KS-9HF	KriStar Enterprises, Inc.	FloGard Swirl-Flo Screen Separator
KS-10HF	KriStar Enterprises, Inc.	Nettech Gross Pollutant Trap - In Line
RMC-1HF	Roscoe Moss Company	Storm Flo Screen

Devices with Water Board certification to be approved on a case-by-case basis, pending the Water Board's determination that installation qualifies for CEQA Categorical Exemption 15302(c), "Replacement or reconstruction of existing utility systems and/or facilities..."

Device ID	Vendor	Device Name
FCT-2HF	Fresh Creek Technologies, Inc.	End of Pipe Netting Trash Trap
KS-11HF	KriStar Enterprises, Inc.	Nettech Gross Pollutant Trap- End of Line

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