

6 February 2024

Mr. Nicholas Wong

California State Water Resources Control Board

Division of Water Quality

P.O. Box 100

Sacramento, CA 95812

RE: Amended application for Oldcastle Infrastructure™ FloGard® Catch Basin Outlet Trash Screen – Connector Pipe Screen

Dear Mr. Wong,

Oldcastle Infrastructure™ is pleased to submit this amended application with minor revisions for the FloGard® Connector Pipe Screen for certification as a Full Capture System – Trash Treatment Control Device. The enclosed application has been compiled in conformance with the Trash Treatment Control Device Application Requirements and includes the following:

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

Thank you for your consideration of this application. If any additional information is needed please contact Patrick Dean, contact information provided below.

Respectfully,

Oldcastle Infrastructure™, A CRH Company

A handwritten signature in black ink that reads "Patrick J. Dean". The signature is written in a cursive, flowing style.

Patrick Dean
Regional Regulatory Manager – Stormwater
Patrick.Dean@oldcastle.com
209-401-6077

1. Cover Letter

A. General Description of Device

The FloGard® Connector Pipe Screen/Outlet Trash Screen is a specially engineered device designed to comply with Trash Capture regulations and requirements. It is installed at the discharge pipe opening within a catch basin. The screen prevents particles larger than 4.9mm from passing through, with bypass allowance at project specified height.

B. Applicant Contact Information and Location

Application Representative:	Patrick Dean Regional Regulatory Manager - Stormwater
Representative Mailing Address:	7100 Longe Ave., Suite 100 Stockton, CA 95206
Representative Telephone:	209-401-6077
Representative Email:	Patrick.Dean@oldcastle.com

C. Applicant Website

Not Available

D. Device Manufacturing Location

Manufacturer Name:	Oldcastle Infrastructure™
Manufacturer Address:	7100 Longe Street, Suite 100 Stockton, Ca 95206
Manufacturer Phone:	209-597-0864
Manufacturer Representative:	Eric Castellanos
Manufacture Rep. Email:	Eric.Castellanos@oldcastle.com

E. Brief Summary of Field/Lab Testing Results

FloGard® Connector Pipe Screens have been utilized throughout California. All trash and debris for designed storm event is captured within catch basin due to the screen's full capture maximum 4.9mm perforations.

F. Locations of Installation

FloGard® Connector Pipe Screens have been installed throughout California and nationally to meet trash capture demands. A few notable California locations include San Francisco, County of Alameda, County of Solana, City of Livermore, City of Brisbane, City of Poway, and City of San Diego. Please contact an Oldcastle Infrastructure™ representative for more detailed information.

G. System Flow Capacity

FloGard® Connector Pipe Screen is a versatile device designed for ease of use and compatibility with most catch basin and pipe configurations. This is not considered a high flow capacity system. Flow Capacity can be found in the table of Section 3-D and Appendix C.

H. Certification

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.

I. Brief Description of the Amended Component

The table in Section F has been updated to include flow with screen 50% blinded.

We are making a minor amendment to perforated material of the Connected Pipe Screen, the primary filtering mechanism to achieve Trash Capture Compliance. Previously specified as: 14 gauge Perforated Stainless Steel with Ø3/16" holes through, ¼" Staggered 53% open. We are revising the gauge of the material to 16 gauge Perforated Stainless Steel with Ø3/16" Holes through, ¼" Staggered 51% Open. The Connector Pipe Screen retains the same overall design. This is a minor change due to commercial availability of material. Updated drawings can be found in Appendix A.

We have also included a detail drawing illustrating potential custom configurations, constructed of the same 16ga Perforated Stainless Steel. Examples of potential custom solutions can be found in Appendix A.

Appendix B has been updated to include our verification letter from the Mosquito Vector Control Agency of California.



Patrick Dean
Regional Regulatory Manager
Patrick.Dean@oldcastle.com
209-401-6077

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3. Physical Description

A. Trash Capture

The FloGard® Connector Pipe Screen is configured with openings less than 4.9mm to ensure trash capture regulations and requirements are met. The screen design location within a catch basin is at the mouth of the discharge pipe ensuring all flows exiting the catch basin will be treated. The Connector Pipe Screen sizing is dependent on catch basin and discharge pipe size with bypass flows accounted for on all designs.

B. Peak Flows/Trash Capture Volumes

System is sized based on the outlet pipe diameter up to 30" standard. Custom solutions will be considered on a project by project basis. Peak flows are based on the Orifice Flow Equation of Water. See Appendix C for additional details and calculations.

Storage Capacity based on Catch Basin Size, Screen Area and Screen Height. The flexibility of FloGard Connector Pipe Screen allows for multiple configurations in varying catch basins can be designed. Storage Capacity provided in Section D Comparison Table based on 3' x 3' catch basin volume at the Screen Height. Please speak with an Oldcastle Infrastructure representative for more detailed information.

C. Hydraulic Capacity

FloGard Outlet Trash Screen - Hydraulic Capacities						
Model Number	Outlet Pipe Size (in)	Hydraulic Capacities				
		Max Filtered Flow ^(a) (cfs)	25% Blind Filtered Flow ^(b) (cfs)	50% Blind Filtered Flow ^(b) (cfs)	Bypass Flow H=4" ^(c) (cfs)	Bypass Flow H=12" ^(c) (cfs)
FG-OTS12	12	5.68	4.26	2.84	1.84	9.74
FG-OTS15	15	9.35	7.02	4.68	2.22	11.72
FG-OTS18	18	16.57	12.43	8.29	2.43	12.84
FG-OTS24	24	27.60	20.55	13.80	2.80	14.77
FG-OTS30	30	38.97	29.23	19.49	2.97	15.69

Assumptions:

Filtered Flow Calculations:

Use orifice equation to calculate filtered flow:

Safety Factor (no obstruction), SF:

Orifice Discharge Coefficient, C:

Area of openings, A:

Gravitational constant, g:

Head, h:

$$Q = CA(2gh)^{0.5} / SF$$

1.00

0.60

Screen surface area x 51% open

32.20 ft/s²

Height of screen in feet / 2 (i.e. half the screen height)

Calculations assume free discharge at outlet pipe. Additional Details available in Appendix C.

Bypass Flow Calculations:

Use weir equation (without end contractions) to calculate bypass flow:

$$Q = 3.33LH^{\frac{3}{2}}$$

Safety Factor (no obstruction), SF:

1.00

Coefficient for Sharp Crest Weir, C:

3.3

Length, L (Screen length):

Head, H (for lid placement at 4" above crest of screen):

4.00 in

Head, H (for lid placement at 12" above crest of screen):

12.00 in

Notes:

- (a) A safety factor should be applied by the engineer of record based on anticipated trash loading and maintenance frequency.
- (b) 50% available open screen blinded: A/2
- (c) Site specific Lid placement height determined based on outlet bypass flow capacity required.

Sample Calculations**No Obstruction**

$$A = 6.75 \text{ ft}^2 * 51\% \text{ Open} = 3.44 \text{ ft}^2$$

$$Q = \frac{(3.44 \text{ ft}^2) \sqrt{2 \left(32.20 \frac{\text{ft}}{\text{s}^2} \right) (1 \text{ ft})}}{1}$$

$$Q = (3.44 \text{ ft}^2) \sqrt{64.4 \frac{\text{ft}^2}{\text{s}^2}}$$

$$Q = 3.44 \text{ ft}^2 * 8.02 \frac{\text{ft}}{\text{s}}$$

$$Q = 27.60 \frac{\text{ft}^3}{\text{s}}$$

50% Blind Obstruction

$$A = 6.75 \text{ ft}^2 * 51\% \text{ Open} * 50\% \text{ Blind} = 1.72 \text{ ft}^2$$

$$Q = \frac{(1.72 \text{ ft}^2) \sqrt{2 \left(32.20 \frac{\text{ft}}{\text{s}^2} \right) (1 \text{ ft})}}{1}$$

$$Q = (1.72 \text{ ft}^2) \sqrt{64.4 \frac{\text{ft}^2}{\text{s}^2}}$$

$$Q = 1.72 \text{ ft}^2 * 8.02 \frac{\text{ft}}{\text{s}}$$

$$Q = 13.80 \frac{\text{ft}^3}{\text{s}}$$

D. Comparison Table

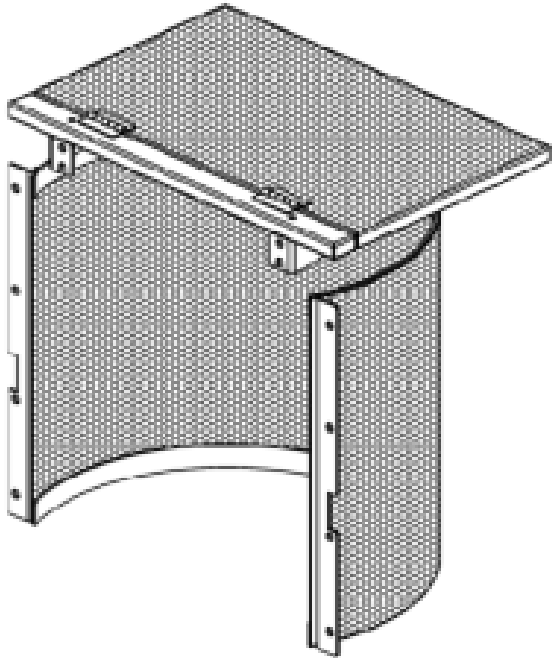
FloGard® Outlet Trash Screen – Hydraulic Capacities								
Model	Drawing	Outlet Pipe Size (in)	Screen Dimensions			Hydraulic Capacities		Storage Capacity
			Height (in)	Length (in)	Surface Area (sf)	Max Filtered Flow (cfs)	Bypass Flow (cfs)	3' x 3' Catch Basin (cf)
FG-OTS12	SK-0955-12	12	15.0	35.1	2.9	5.68	9.74	9.60
FG-OTS15	SK-0955-15	15	18.0	42.2	4.3	9.35	11.72	10.67
FG-OTS18	SK-0955-18	18	24.0	46.2	6.7	16.57	12.84	13.34
FG-OTS24	SK-0955-24	24	30.0	53.2	9.9	27.40	14.77	14.75
FG-OTS30	SK-0955-30	30	36.0	56.5	12.9	38.97	15.69	16.40

E. Design Drawings for Device

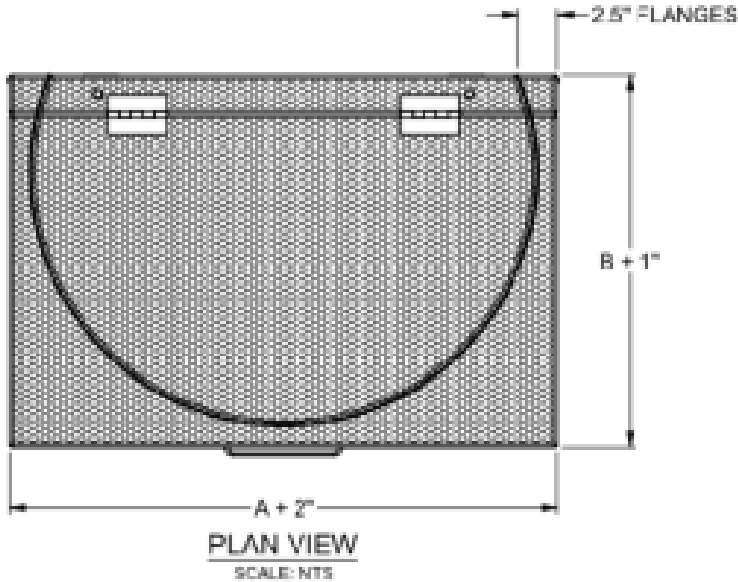
Refer to the following pages for design drawings of all standard device sizes including dimensions and configurations. Special and Custom alternatives will be considered on an individual basis, example of potential non-standard configurations can be found in the following pages and additionally in Appendix A.

Model Number	Max Outlet Pipe Size	A	B	C
FG-OTS12	12"	18"	12"	15"
FG-OTS15	15"	21"	15"	18"
FG-OTS18	18"	24"	18"	24"
FG-OTS24	24"	30"	18"	30"
FG-OTS30	30"	36"	18"	36"

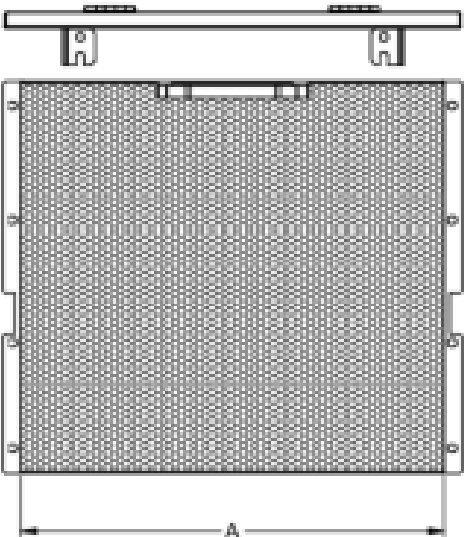
FloGard Outlet Trash Screen - Hydraulic Capacities							
Model Number	Outlet Pipe Size (in)	Screen Dimensions			Hydraulic Capacities		
		Height (in)	Length (in)	Surface Area (sf)	Max Filtered Flow ^(a) (cfs)	Bypass Flow H=4" ^(b) (cfs)	Bypass Flow H=12" ^(b) (cfs)
FG-OTS12	12	15.00	33.60	2.65	5.15	1.79	9.32
FG-OTS15	15	18.00	41.75	4.28	9.10	2.23	11.59
FG-OTS18	18	24.00	49.96	7.19	17.67	2.67	13.85
FG-OTS24	24	30.00	52.38	12.58	34.55	2.80	14.54
FG-OTS30	30	36.00	55.58	14.85	44.67	2.97	15.42



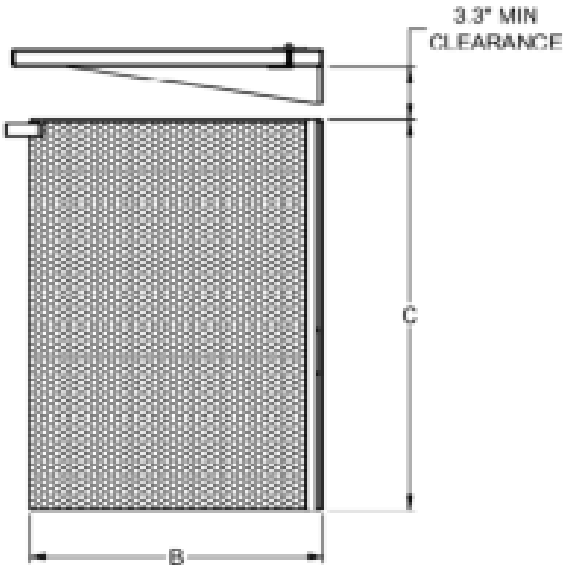
ISOMETRIC VIEW
SCALE: NTS



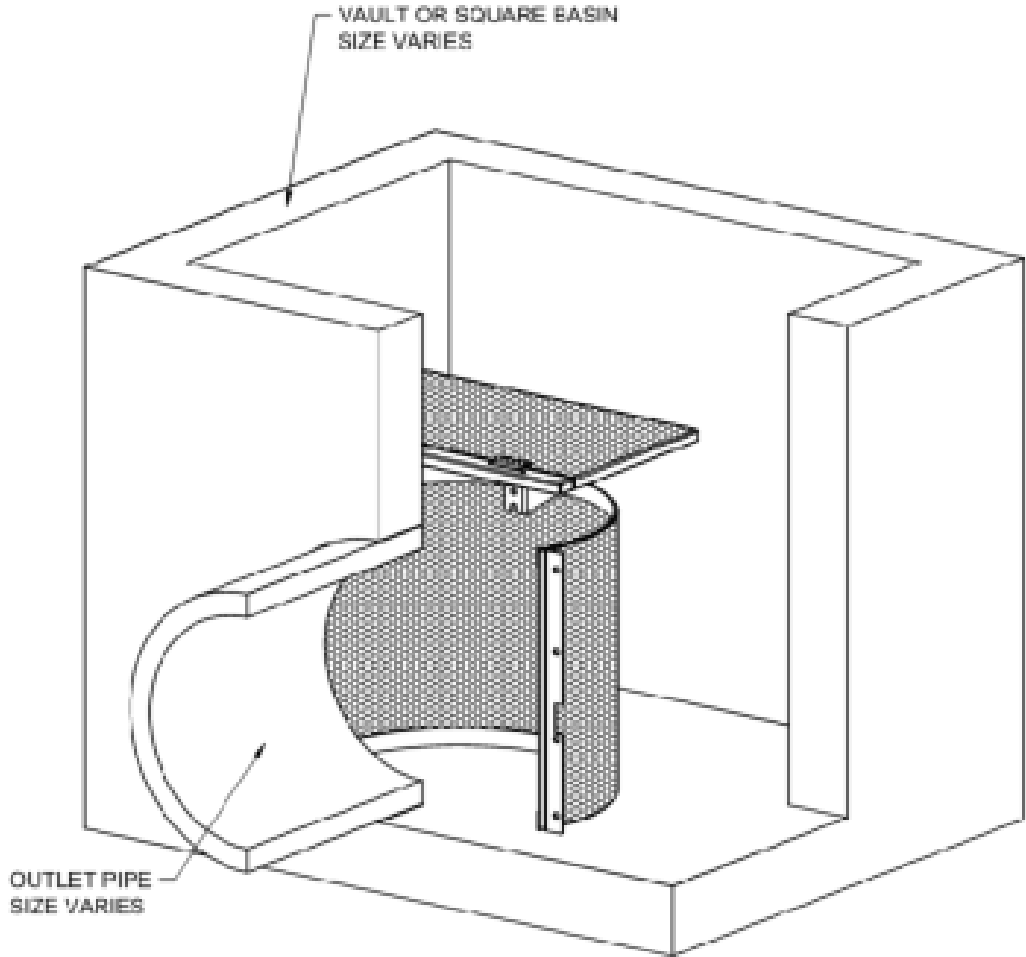
PLAN VIEW
SCALE: NTS



FRONT VIEW
SCALE: NTS



SIDE VIEW
SCALE: NTS



ISOMETRIC - AS SET
SCALE: NTS

- NOTES:
1. FRAME MATERIAL: 14/16 GA. 304 STAINLESS STEEL
 2. SCREEN MATERIAL: 14/16 GA. 304 STAINLESS Ø 3/16" THRU, 1/4" STAGGERED, 53% OPEN
 3. CA STATE WATERBOARD CERTIFIED FOR FULL TRASH CAPTURE AND VECTOR CONTROL

PROJECT NAME CITY, STATE		PFS		CDH	
PROJECT #:		DRAWN:		CHECKED:	
DATE		SALES ORDER		MFG:	
DESCRIPTION		REV		DATE	
ARC STYLE GENERIC DETAIL FLOGARD OUTLET TRASH SCREEN SK-0955		CUSTOMER		THIS DOCUMENT IS THE PROPERTY OF OLDCASTLE INFRASTRUCTURE, INC. IT IS CONFIDENTIAL, SUBMITTED FOR REFERENCE PURPOSES ONLY AND SHALL NOT BE USED IN ANY WAY INJURIOUS TO THE INTERESTS OF, OR WITHOUT THE WRITTEN PERMISSION OF OLDCASTLE INFRASTRUCTURE, INC. COPYRIGHT © 2015 OLDCASTLE INFRASTRUCTURE, INC. ALL RIGHTS RESERVED.	
SPECIFIER DRAWING		SHEET		1 OF 1	

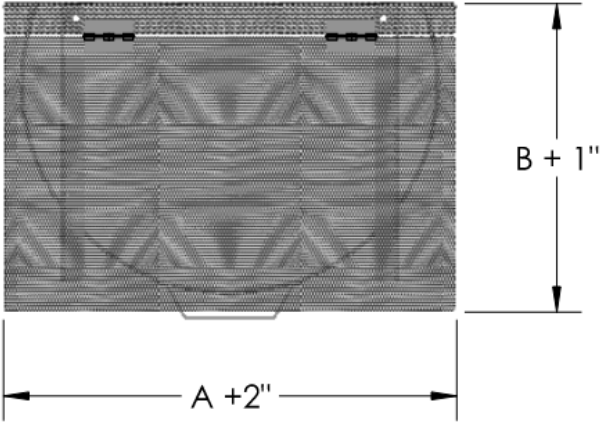
F.

VAULT OR SQUARE BASIN
SIZE VARIES

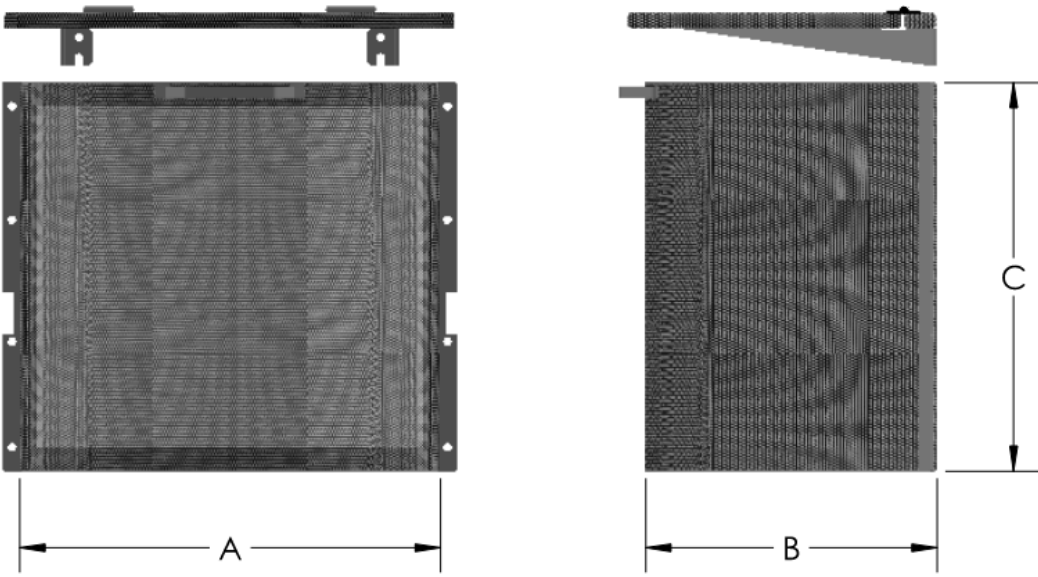
CUTAWAY FOR CLARITY

OUTLET PIPE
SIZE VARIES

SCREEN MATERIAL
16ga PERFORATED STAINLESS STEEL
Ø 3/16" THROUGH, 1/4" STAGGERED
51% OPEN



*SEE MOUNTING DETAILS ON SHEET 2



Unit	Max Outlet Pipe Size	A (Screen Width)	B (Screen Depth)	C (Screen Height)
SK-0955-12	12"	18"	12"	15"
SK-0955-15	15"	21"	15"	18"
SK-0955-18	18"	24"	18"	24"
SK-0955-24	24"	30"	18"	30"
SK-0955-30	30"	36"	18"	36"

THIRD ANGLE PROJECTION

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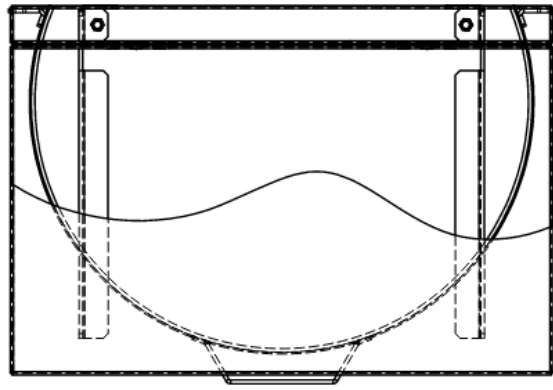
CUSTOMER:	DESIGN	-	-
UNLESS OTHERWISE SPECIFIED:	DRAWN	JLM	10/25/18
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL: ± 1/32 ANGULAR: ± 1.0 DEG HOLE: ± .003 .X : .060 .XX : .030 .XXX : .020	APPROVED	-	-
	MATERIAL:		
	FINISH:		
	DO NOT SCALE DRAWING		

DESCRIPTION:

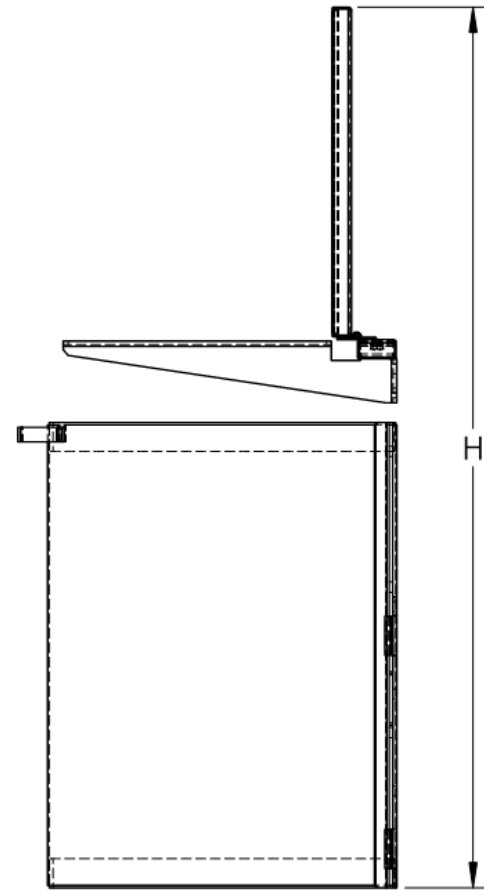
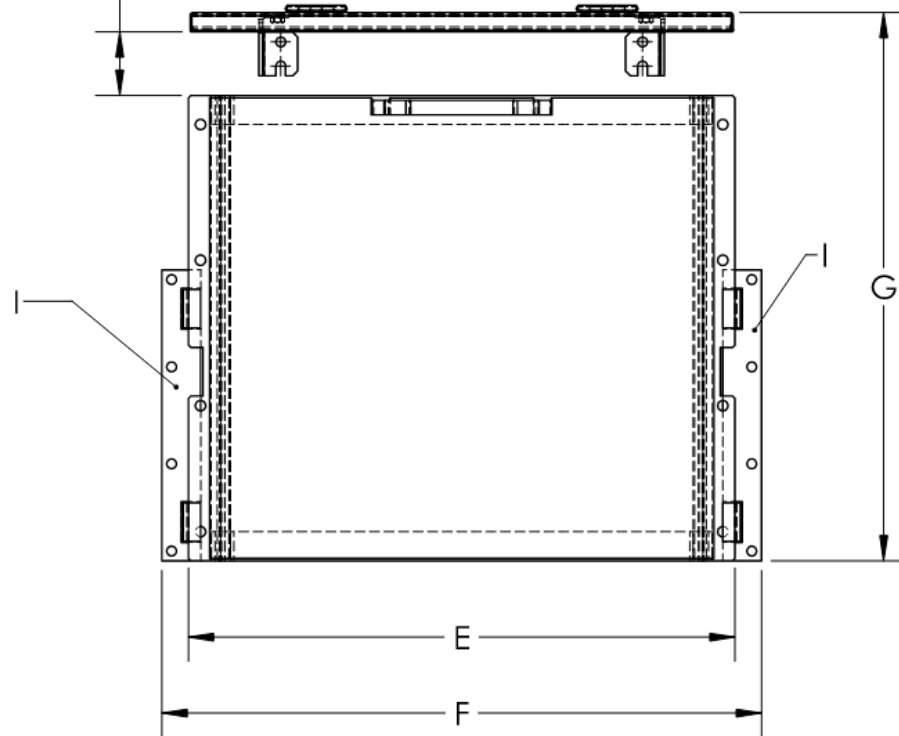
ARC STYLE GENERIC DETAIL
FLOGARD OUTLET TRASH SCREEN

PART NUMBER:	SK-0955	REV	1
SCALE: 1:14	WEIGHT:	SHEET 1 OF 2	

G.

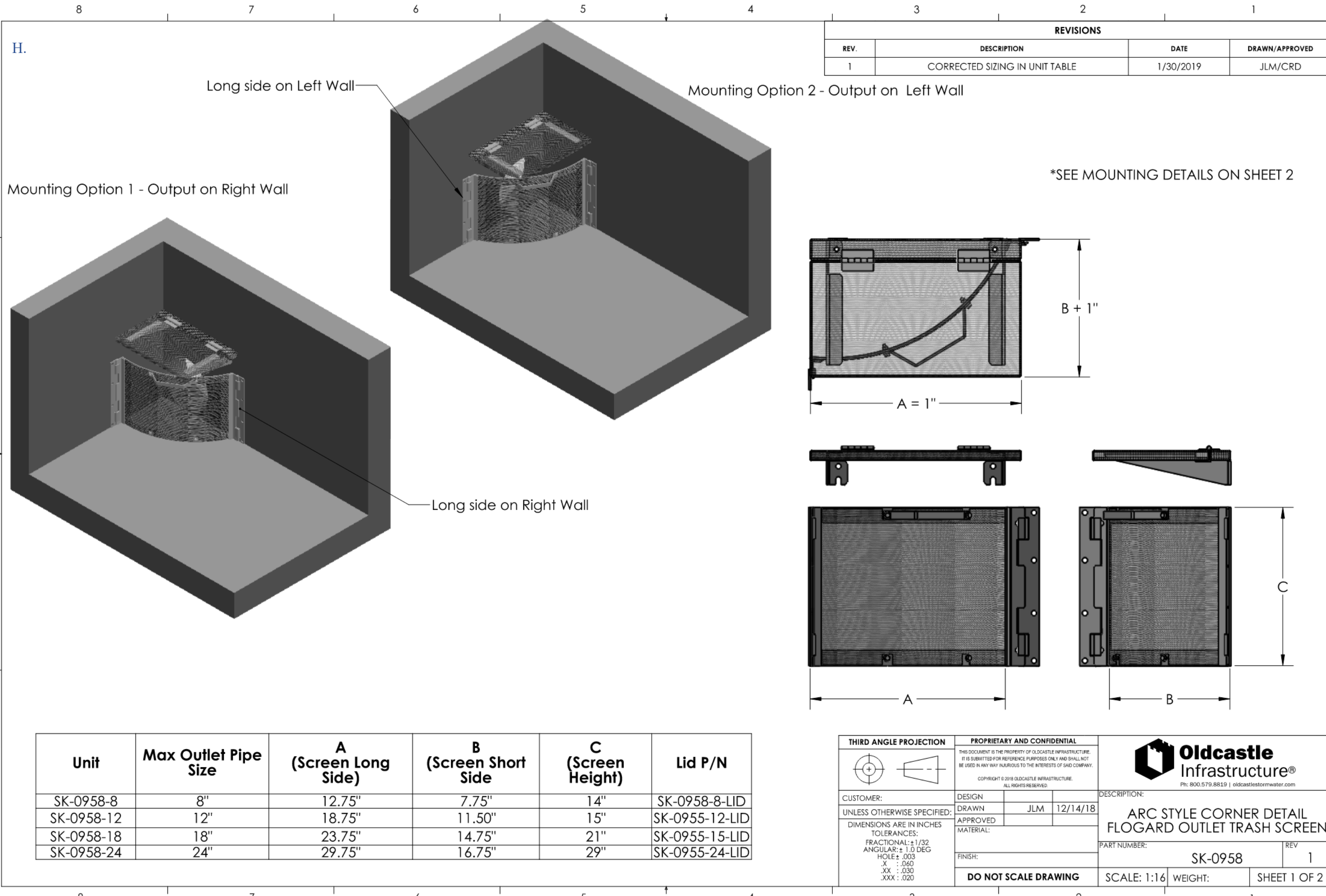


4.3"
MIN CLEARANCE



UNIT	E (SCREEN WIDTH - DIRECT MOUNT)	F (SCREEN w/ BRACKET WIDTH)	G (LID CLOSED OVERALL HEIGHT)	H (LID OPEN OVERALL HEIGHT)	I (MOUNTING BRACKET PART #)
SK-0955-12	22.25"	25"	15.7"	27"	SK-0956
SK-0955-15	25.25"	28"	18.2"	32.25"	SK-0956
SK-0955-18	28.25"	31"	19.7"	37"	SK-0956
SK-0955-24	34.25"	37"	23.7"	41"	SK-0957
SK-0955-30	40.25"	43"	27.6"	44.75"	SK-0957

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	CUSTOMER:	DESIGN: -
UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL: ± 1/32 ANGULAR: ± 1.0 DEG HOLE: .003 .X : .060 .XX : .030 .XXX : .020	DRAWN:	
	APPROVED:	-
	MATERIAL:	
FINISH:	DO NOT SCALE DRAWING	
	SCALE: 1:10	WEIGHT:
PART NUMBER: SK-0955		REV 0
DESCRIPTION: ARC STYLE GENERIC DETAIL FLOGARD OUTLET TRASH SCREEN		SHEET 2 OF 2



H.

Mounting Option 1 - Output on Right Wall

Mounting Option 2 - Output on Left Wall


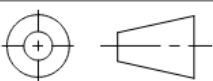
Long side on Right Wall

Long side on Left Wall

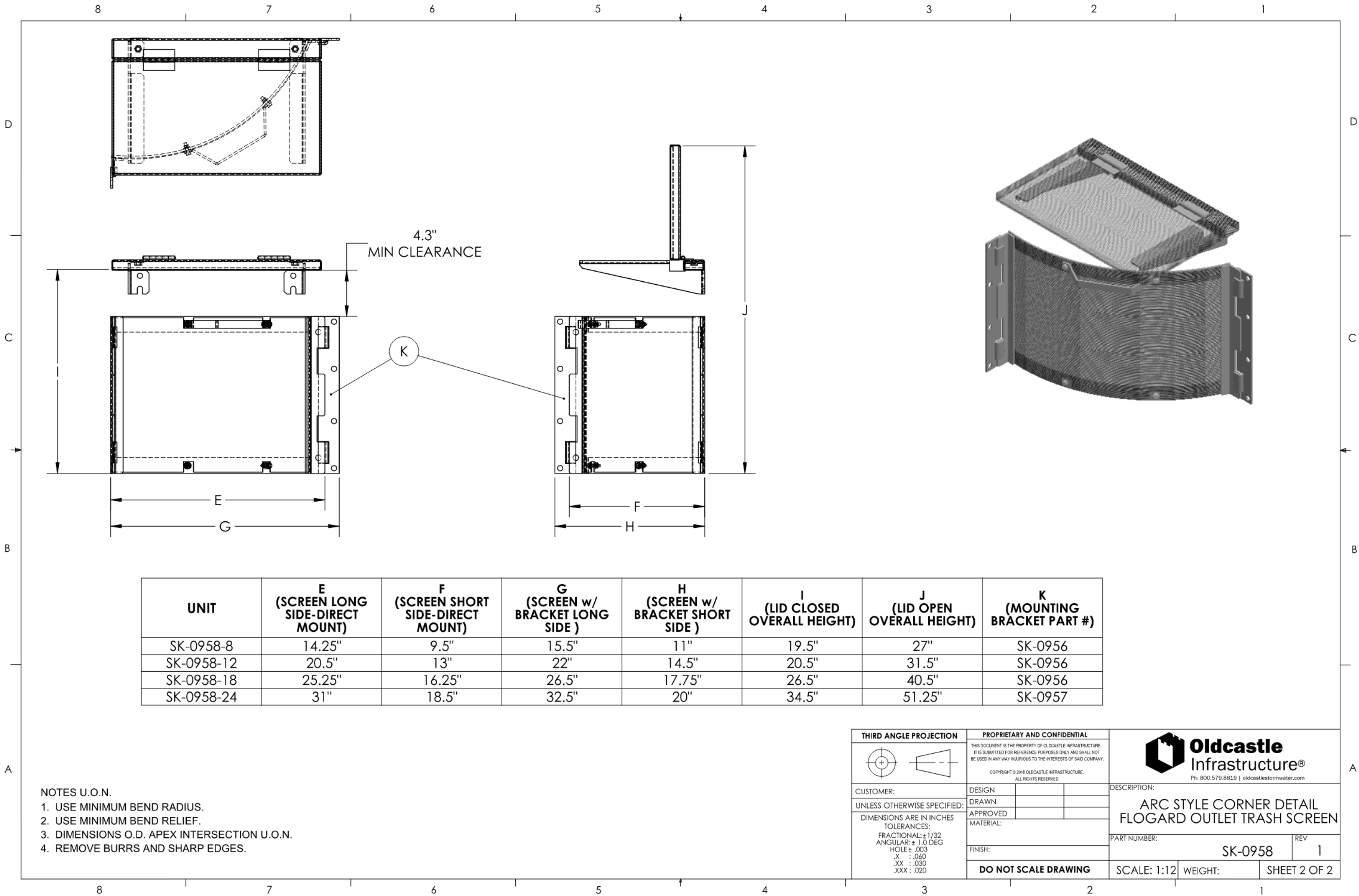
*SEE MOUNTING DETAILS ON SHEET 2

Unit	Max Outlet Pipe Size	A (Screen Long Side)	B (Screen Short Side)	C (Screen Height)	Lid P/N
SK-0958-8	8"	12.75"	7.75"	14"	SK-0958-8-LID
SK-0958-12	12"	18.75"	11.50"	15"	SK-0955-12-LID
SK-0958-18	18"	23.75"	14.75"	21"	SK-0955-15-LID
SK-0958-24	24"	29.75"	16.75"	29"	SK-0955-24-LID

REVISIONS			
REV.	DESCRIPTION	DATE	DRAWN/APPROVED
1	CORRECTED SIZING IN UNIT TABLE	1/30/2019	JLM/CRD

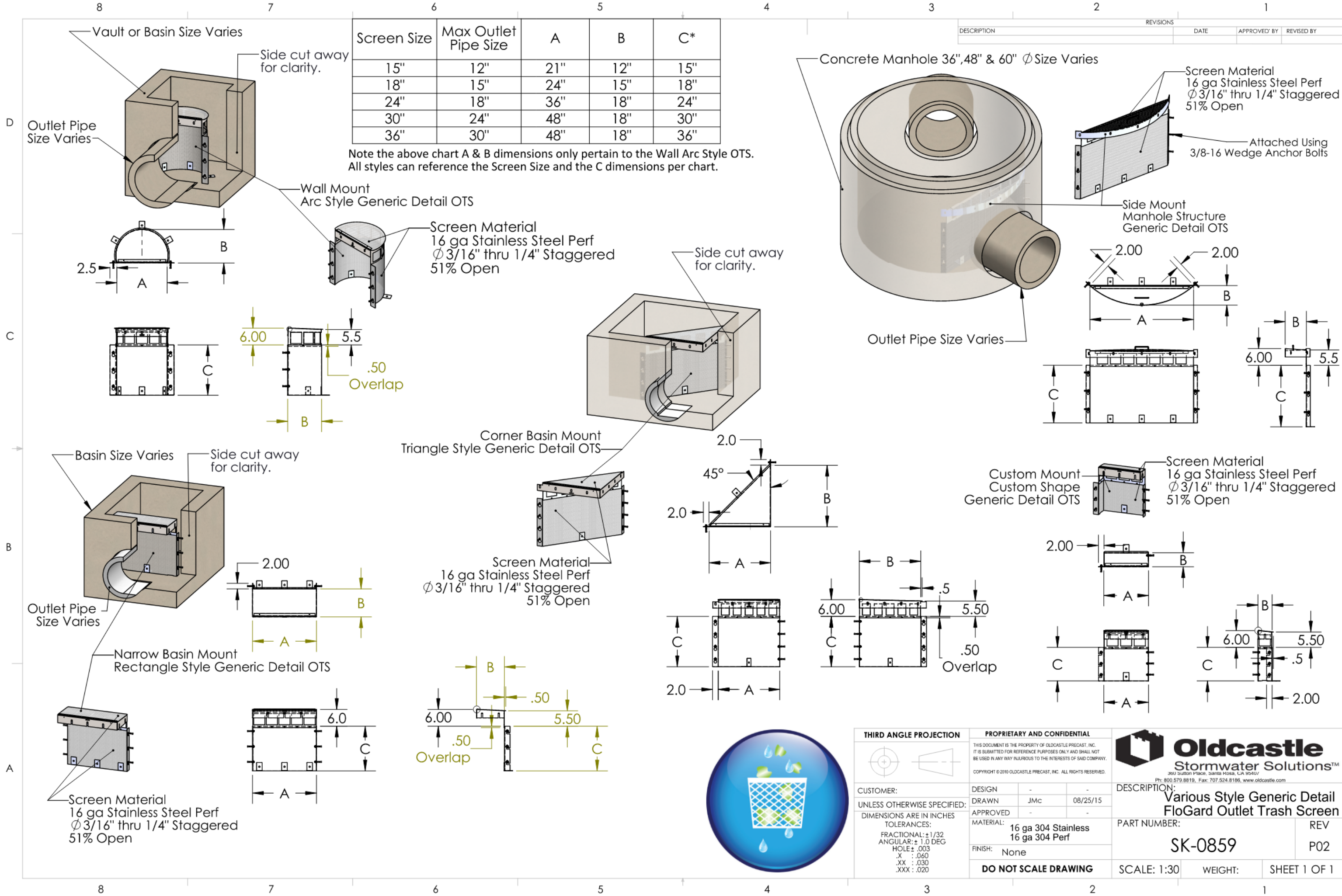
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CUSTOMER:	DESIGN			DESCRIPTION:	
UNLESS OTHERWISE SPECIFIED:	DRAWN	JLM	12/14/18	ARC STYLE CORNER DETAIL FLOGARD OUTLET TRASH SCREEN	
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL: ± 1/32 ANGULAR: ± 1.0 DEG HOLE ± .003 .X : .060 .XX : .030 .XXX : .020	APPROVED				
	MATERIAL:			PART NUMBER:	REV
	FINISH:			SK-0958	1
DO NOT SCALE DRAWING				SCALE: 1:16	SHEET 1 OF 2
				WEIGHT:	

ARC STYLE CORNER DETAIL
FLOGARD OUTLET TRASH SCREEN



- NOTES U.O.N.
1. USE MINIMUM BEND RADIUS.
 2. USE MINIMUM BEND RELIEF.
 3. DIMENSIONS O.D. APEX INTERSECTION U.O.N.
 4. REMOVE BURRS AND SHARP EDGES.

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CUSTOMER:	DESIGN	DESCRIPTION: ARC STYLE CORNER DETAIL FLOGARD OUTLET TRASH SCREEN		
UNLESS OTHERWISE SPECIFIED:	DRAWN		PART NUMBER: SK-0958	
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL: ± 1/32 ANGULAR: ± 1.0 DEG HOLE: ± .003 .X : .060 .XX : .030 .XXX : .020	APPROVED			REV 1
MATERIAL:		SCALE: 1:12	WEIGHT:	SHEET 2 OF 2
FINISH:		DO NOT SCALE DRAWING		



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CUSTOMER:

UNLESS OTHERWISE SPECIFIED:

DIMENSIONS ARE IN INCHES

TOLERANCES:

FRACTIONAL: ± 1/32

ANGULAR: ± 1.0 DEG

HOLE: ± .003

.X : .060

.XX : .030

.XXX : .020

DESIGN:

DRAWN: JMc

APPROVED:

MATERIAL: 16 ga 304 Stainless

FINISH: None

DO NOT SCALE DRAWING

Oldcastle Stormwater Solutions™

300 Sullivan Place, Santa Rosa, CA 95403

Ph: 800.579.8819, Fax: 707.524.8186, www.oldcastle.com

DESCRIPTION: Various Style Generic Detail FloGard Outlet Trash Screen

PART NUMBER: SK-0859

SCALE: 1:30

WEIGHT:

SHEET 1 OF 1

F. Optional Components

The FloGard Connector Pipe Screen is designed with an optional hinged lid for installations with requirement for overhead trash capture (i.e. grated inlet over connector pipe, a high inlet from untreated source, etc.) The lid is recommended to be installed minimum 4" up to 12" above the top of the Connector Pipe Screen. The lid is designed to hinge over 90° and remain in the upright position until lowered. Refer to previous section I. Drawings SK-0955 & SK-0958 or Appendix A for detail drawings.

The FloGard Connector Pipe Screen can be used with optional Quick Release Brackets, where tool free removal is required. Brackets are secured to the wall, the FloGard Connector Pipe Screen slots into the optional brackets. Brackets are illustrated in SK-0955 and in Appendix A.

G. Device Bypass Design

The FloGard® Connector Pipe Screen (CPS) enters bypass only when the device is hydraulically overloaded or the device is at maximum capacity. The FloGard® CPS is designed for a specified flow rate or design storm event and may become hydraulically overloaded if the storm event is larger than the design intended to process. The FloGard® CPS should be maintained regularly based on specific site criteria and loading to ensure maximum capacity is not attained.

H. Feeder Troughs

The FloGard Connector Pipe Screen does not utilize Feeder Troughs.

I. Calibration Feature

The FloGard Connector Pipe Screen does not require Calibration.

J. Conditions Device Re-introduces Previously Captured Trash

The FloGard® Connector Pipe Screen has been designed to retain all trash and debris over 4.9mm. Conditions under which said device may reintroduce previously captured trash are listed below:

- Device has achieved maximum capacity. Oldcastle Infrastructure™ recommends regular maintenance; cycles are site dependent but no less than three (3) cleanings per year. Ideal maintenance ensures device remains at 50-60% capacity or below.
- Damage caused to screens, mounting frames, or hardware could cause an adverse effect that might reintroduce trash contaminants into the storm flow stream and storm sewer system. Visual inspection during routine maintenance should ensure structural stability during storm events.
- Floating trash may be reintroduced during bypass events.

K. Device Photographic Installation Examples



*Figure 1. City of Poway - Location 1
1 Month Post Installation*



*Figure 2 City of Poway - Location 1
1 Month Post Installation*



*Figure 3. City of Livermore - Location 2
3 Months Post Installation*



*Figure 4. City of Livermore - Location 2
3 Months Post Installation*

L. Device Required Material and Material Grade

The FloGard® Connector Pipe Screen is constructed of high strength, durable materials, and hardware components to ensure a long service life for each device. The following list details material types and grades for each component.

Material Type & Grade

- Screen: Screen is manufactured from 16ga 304 Stainless Steel with openings equal to or less than 4.9mm.
- Screen Frame and Brackets: Screen frame and mounting brackets are manufactured from Type 304 Stainless Steel of 14ga or greater.

M. Design Life

The estimated design life for the FloGard Connector Pipe Screen is 20+ years. Design life span of devices is dependent on the proper care and maintenance of said devices.

4. Installation Information

A. Device Installation Procedures

Installation procedures outlined below are applicable to all FloGard® Connector Pipe Screen models and sizes. Lid assembly instructions are optional and only applicable to units requiring overhead trash capture, i.e. Grated Inlet near the outlet.

Prior to Installation:

1. Clear all debris from catch basin.
2. Conduct a thorough inspection for any defects in the catch basin.
3. Clean all mounting surfaces

FloGard® Connector Pipe Screen

4. Clean area around and on top of the catch basin access.
5. Remove access cover/grate.
6. Clean catch basin floor.
7. Lower Screen into catch basin.
8. Center outlet screen on outlet pipe.
9. Mark mounting hole locations.
10. Drill mounting holes using appropriate 3/8" bit for material.
11. Install 3/8" x 2 1/2" anchor bolts.
12. Attach outlet screen to face of wall with anchor bolts.
13. Secure using nuts and washers for anchor bolts.

Optional Lid Assembly Instructions:

14. Center lid assembly (lid and 2 mounting brackets) above outlet screen at required height. Min 4".
15. Check level and mark mounting hole locations.
16. Drill mounting holes using appropriate 3/8" bit for material.
17. Install 3/8" x 2 1/2" stainless steel anchor bolts.
18. Attach lid assembly to face of wall with anchor bolts.
19. Secure using nuts and washers for anchor bolts.
20. Re-install access cover/grate.

FloGard® Connector Pipe Screen – Quick Release Option

1. Clean area around and on top of the catch basin access.
2. Remove access cover/grate.
3. Clean catch basin floor.
4. Lower Screen and mounting brackets into catch basin.
5. Center outlet screen on outlet pipe.
6. Slot the mounting brackets on the Left and Right sides of the screen.
7. Mark the mounting holes for the bracket onto catch basin wall.

8. Drill mounting holes using appropriate 3/8" bit for material.
9. Install 3/8" x 2 1/2" anchor bolts.
10. Attach mounting bracket to catch basin wall.
11. Secure using nuts and washers for anchor bolts.
12. Attached Outlet screen to brackets by placing screen against bracket while raised approximately 3" above the bottom of the wall bracket. When screen mounting tabs are aligned with bracket slots, slide screen down to set on floor of catch basin.

Optional Lid Assembly Instructions:

13. Center lid assembly (lid and 2 mounting brackets) above outlet screen at required height.
14. Check level and mark mounting hole locations.
15. Drill mounting holes using appropriate 3/8" bit for material.
16. Install 3/8" x 2 1/2" stainless steel anchor bolts.
17. Attach lid assembly to face of wall with anchor bolts.
18. Secure using nuts and washers for anchor bolts.
19. Re-install access cover/grate.

B. Installation Limitations

An Oldcastle Infrastructure™ representative will assist during design to ensure the appropriate FloGard® Connector pipe Screen is selected for the project.

For catch basins with irregular floor or channel an additional piece of perforated can be provided to be cut to shape during the installation.

For catch basins with large outlet pipe and narrow access opening, inserting a standard Connector Pipe Screen into the basin may not be possible, custom solutions are available. Contact Oldcastle Representative for additional information.

C. Methods for Diagnosing and Correcting Installation Errors

Oldcastle Infrastructure™ FloGard® Connector Pipe Screen are designed for quick and easy installation. Once installed, ensure a proper fit by performing a visual inspection of configuration and all parts. If screen is not fit securely to wall, remove and reinstall by following Section **4A Device Installation Procedures**. If questions during or after installation, please contact Oldcastle Infrastructure™ for project specific assistance.

5. Operation and Maintenance Information

A. Device Inspection

Oldcastle Infrastructure™ recommends that installed FloGard® Connector Pipe Screen be serviced on a recurring basis. Ultimately, the frequency depends on the amount of runoff pollutant loading and interference from debris (leaves, vegetation, cans, paper, etc.); however, it is recommended that each installation be serviced a minimum of three times per year.

B. Recommended Frequency

Federal, State and Local Clean Water Act regulations and those of insurance carriers require that stormwater filtration systems be maintained and serviced on a recurring basis. The intent of the regulations are to ensure that systems, on a continuing basis, efficiently remove pollutants from stormwater runoff thereby preventing pollution of the nation's water resources. These specifications apply to the FloGard® Connector Pipe Screen.

Guidelines for the timing of inspection/service are as follows:

1. For areas with definite rainy season:
 - a. Prior to, during and following the rainy season.
2. For areas subject to year-round rainfall:
 - a. On a recurring basis at least 3 times per year.
3. For areas with winter snow and summer rain:
 - a. Prior to and just after the snow season and during the summer rain season.
4. For installed devices not subject to the elements (wash racks, parking structures, etc.)
 - a. On a recurring basis, no less than three times per year.

C. Maintenance Procedure

Guidelines for maintenance service procedures are as follows:

1. Remove access cover from the catch basin.
2. Remove of sediment and debris. (litter, leaves, papers, cans, etc.) Recommended use of Vacuum truck or shop vacuum.
3. The Screen and frame shall be visually inspected for defects. Minor damage or defects found shall be corrected on-the-spot and notation made on the Maintenance Record. More extensive deficiencies that affect the efficiency of the filter, document and contact an Oldcastle representative.
4. If removed, the filter device (frame and screen) shall be replaced.

D. Essential Equipment for Maintenance

The FloGard Pipe Connector Screen is designed to be maintained in the same way it would be maintained without the device installed, through removal of the trash & debris through the access. Essential and recommended equipment found below.

- Gloves
- Safety Glasses
- Pick Hook
- Shop Vacuum

Recommended Equipment

- Vacuum Truck
- High Pressure Sprayer

E. Effects of Delayed Maintenance

As with all Best Management Practices (BMPs), delayed maintenance can lead to numerous complications not accounted for in the original design. In cases where maintenance is delayed, debris build-up can alter hydrology, create odors, and affect treatment capabilities. Inspection and maintenance are key functions that keep BMPs performing at optimal design capacities.

F. Device Repair Procedure

The FloGard Pipe Connector Screen is designed for a long-life cycle. If it appears to not be working correctly refer to section 4 A Device Installation. If damage suspected, contact an Oldcastle Infrastructure representative.

6. Vector Control Accessibility

A. Description of Access for Vector Control Personnel

Vector Control Access for FloGard® Connector Pipe Screen is simple and user friendly. Once the catch basin cover has been removed, the FloGard® Connector Pipe Screen is accessible on the trash capture and discharge sides of the screen. A typical unit does not have a lid; therefore, both sides of the unit are accessible from above without any impediments to block inspection or treatment.

The FloGard® Connector Pipe Screen shown below includes the optional hinged lid. Circumstances that warrant use of the optional hinged lid include any projects in which the connector pipe screen is below a trash inlet (i.e. grated catch basin, high elevation inlet pipe from untreated source). The optional hinged lid eliminated the possibility of trash and debris falling into the discharge side of the screen.

Vector Control access to units installed with the optional hinged lid was designed for ease of use. Once the grate has been lifted off the catch basin (at street level), the grate lifting tool or vector control issued scooper can be used to catch the edge of the lid and lift. The lid swings easily on 2 stainless steel hinges and rotates over 90° to remain open during inspections and closes manually at users' discretion.

B. System Sight Lines

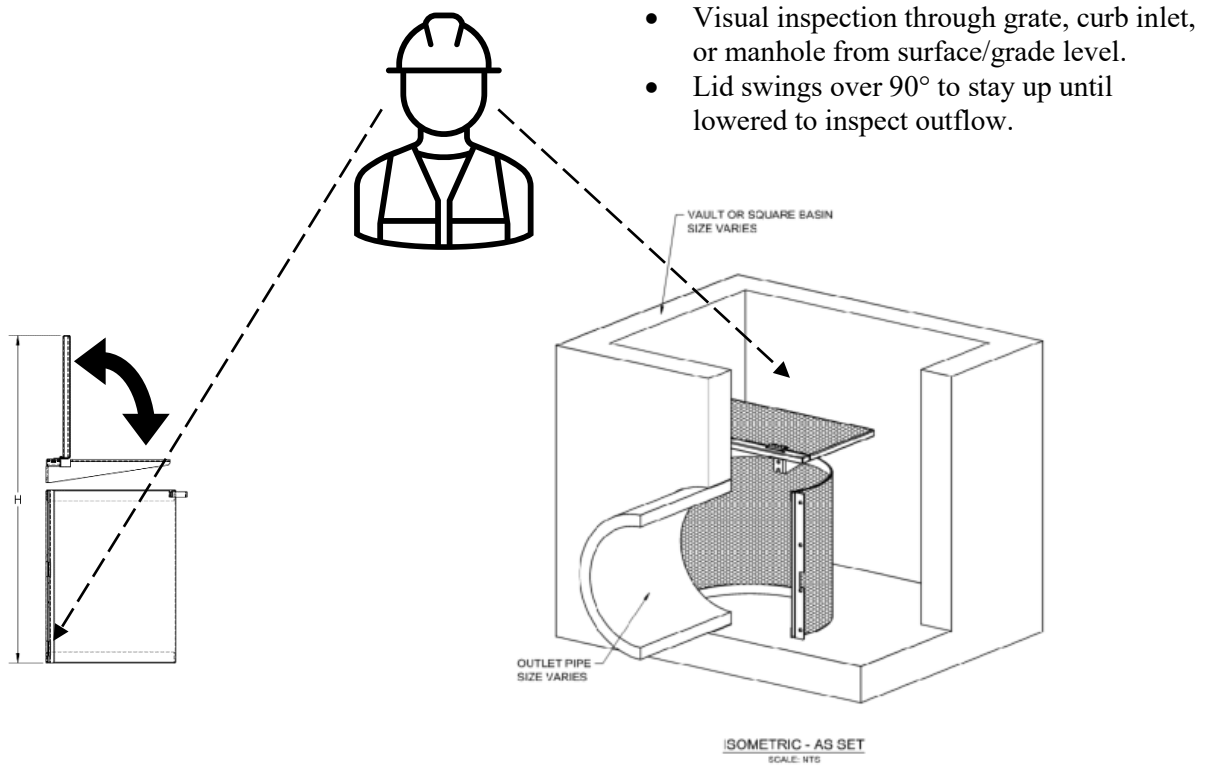
The FloGard Connector Pipe Screen is designed to be observed through the grate or by removing the catch basin access. Lid easily lifts to reveal discharge side for inspection.



Figure 5. Optional lid due to grated inlet



Figure 6. Lid lifted for access



C. Date of Application Submittal to Mosquito Vector Control Association

Application for FloGard® Connector Pipe Screen Submitted to Mosquito and Vector Control Association of California (MVCAC) on 26 November 2019. Submitted Concurrently with initial California Water Boards Trash Treatment Control Device Application.

D. Vector Control Response

See Appendix B letter from Mosquito and Vector Control Association of California response to review of application, confirming inspection and vector control actions are possible with the FloGard Connector Pipe Screen.

7. Reliability

A. Estimated Design Life of Device Components before Major Overhaul

Assuming standard operating conditions, the estimated design life for the FloGard® Connector Pipe Screen is 20+ years. Design life span of device is dependent on the proper care and maintenance of said device.

B. Warranty Information

Oldcastle Infrastructure™ warrants FloGard® Connector Pipe Screen to be free from manufacturing defects for a period of five (5) years from the date of purchase. Abusive treatment, neglect or improper use of the FloGard® Connector Pipe Screen will not be covered by this warranty.

C. Customer Support Information

Please contact the following representative for general support:

Oldcastle Infrastructure™ Service & Maintenance

7100 Longe St., Suite 100

Stockton, CA 95206

888-950-8826

www.Oldcastleinfrastructure.com/Maintenance-infrastructure-services/

Northern California:

Rebecca Valencia

Oldcastle Infrastructure™

Inside Sales

(559) 767-0918

Rebecca.Valencia@oldcastle.com

Southern California:

Dave Schlomer

Oldcastle Infrastructure™

Inside Sales

(619)-240-8026

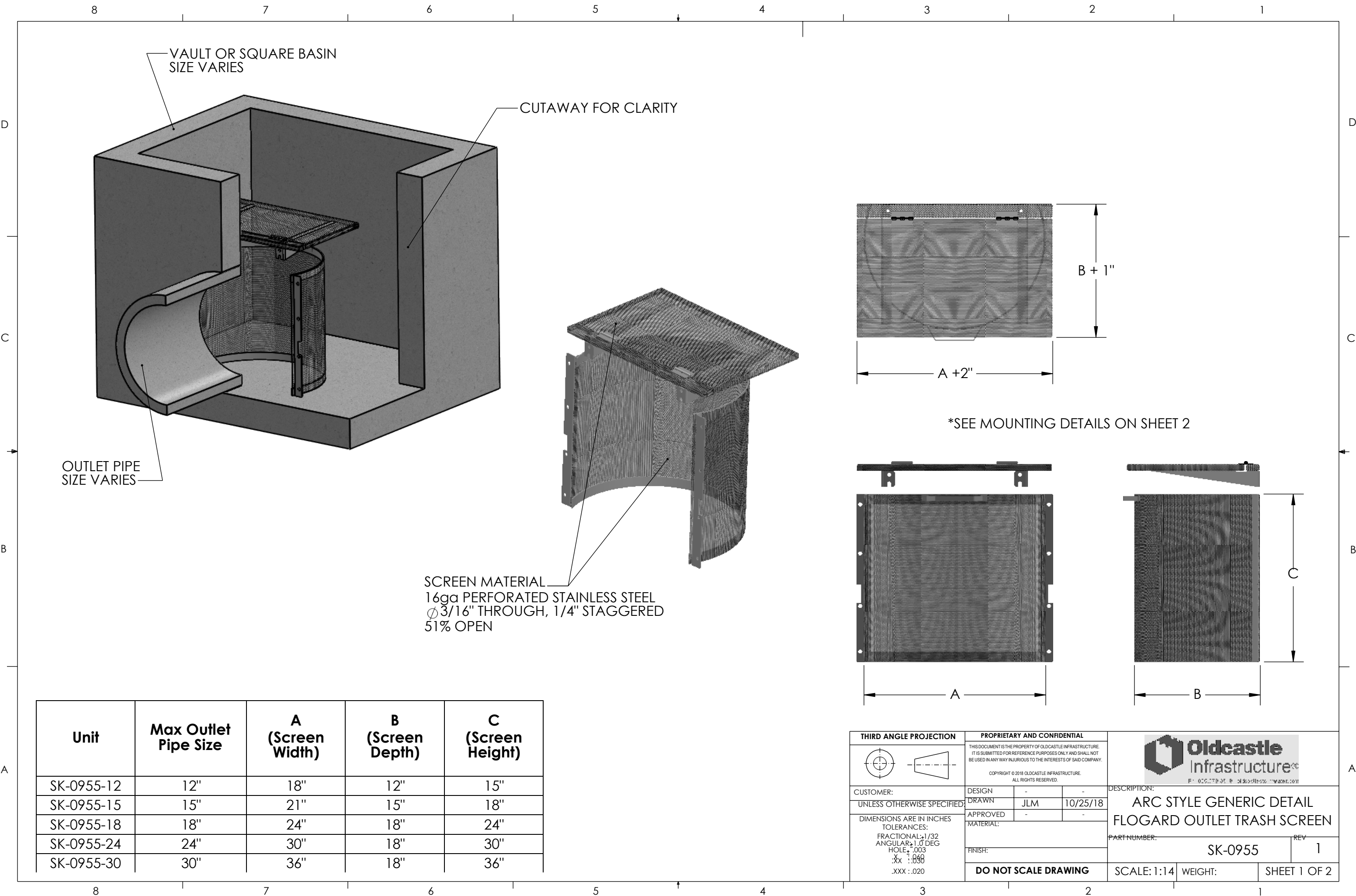
Dave.Schlomer@oldcastle.com

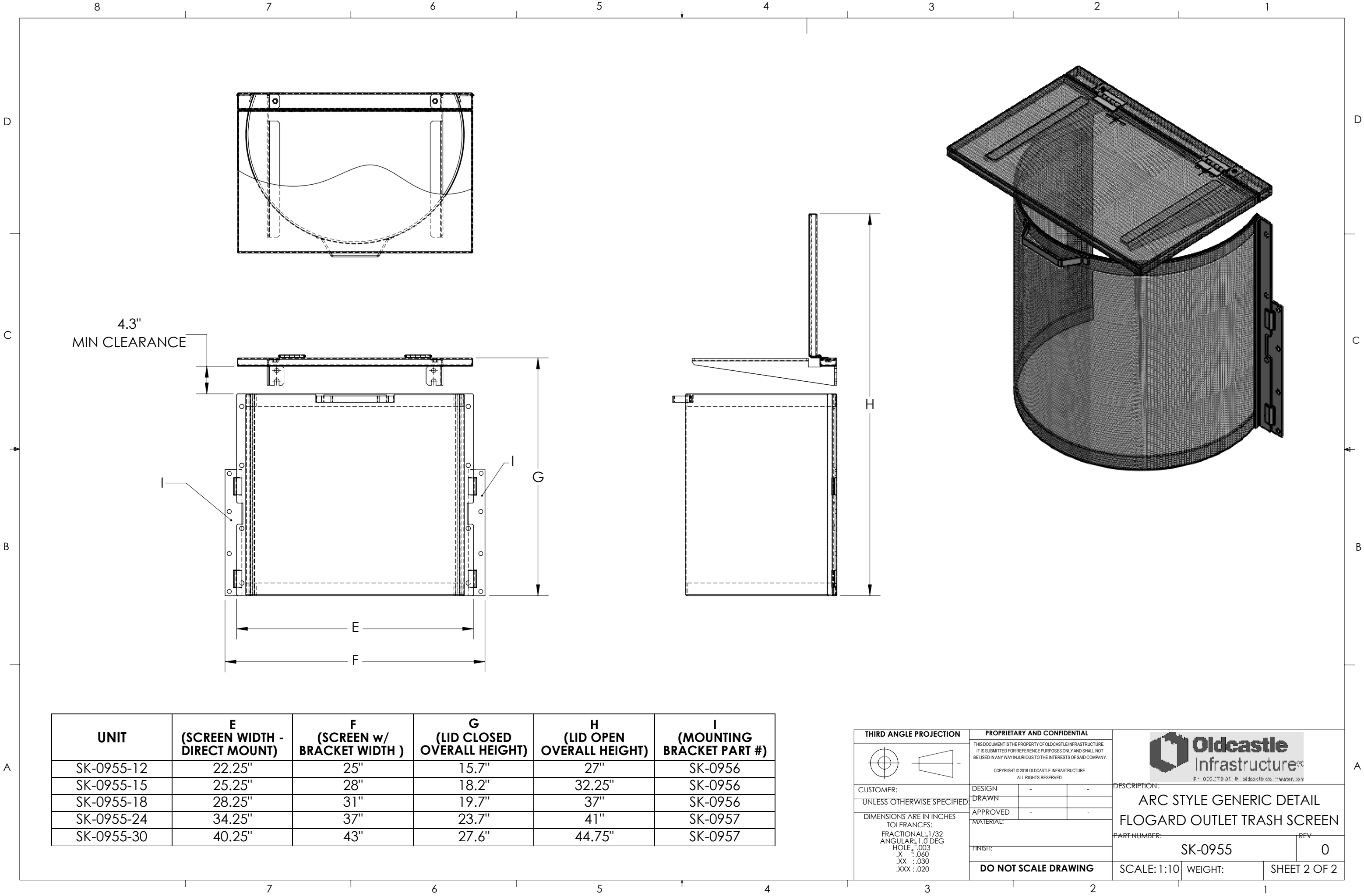
8. Field/Lab Testing Information and Analysis

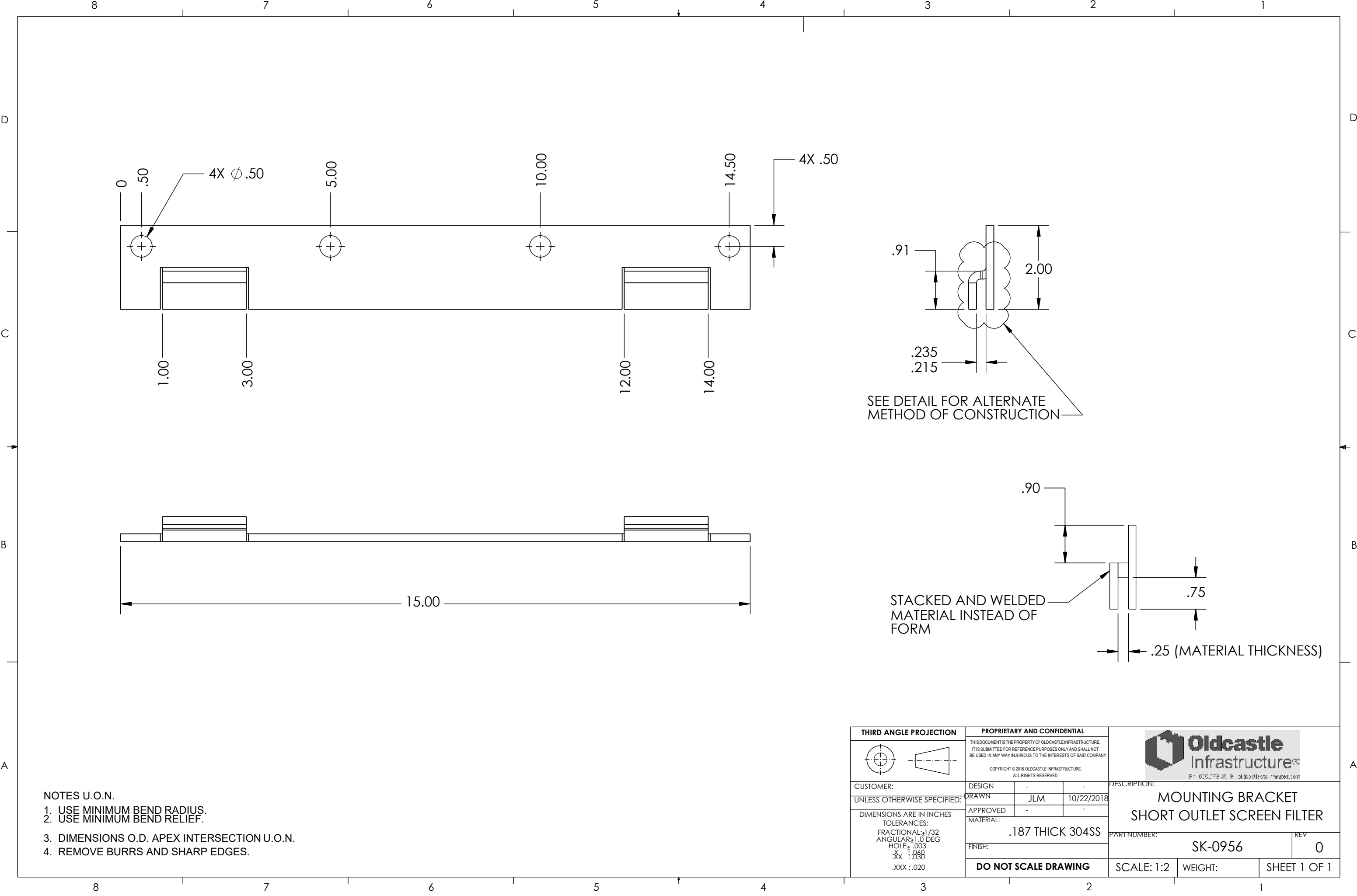
FloGard® Connector Pipe Screen units have been installed nationally and have been observed to capture all trash and debris larger than 4.9mm due to the screen aperture size. With regular cleaning and maintenance, units that have been in the field over 10 years are still working at optimal levels. Please contact an Oldcastle Infrastructure™ representative for more information.

APPENDIX A

Detail Drawings


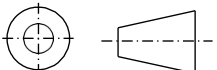




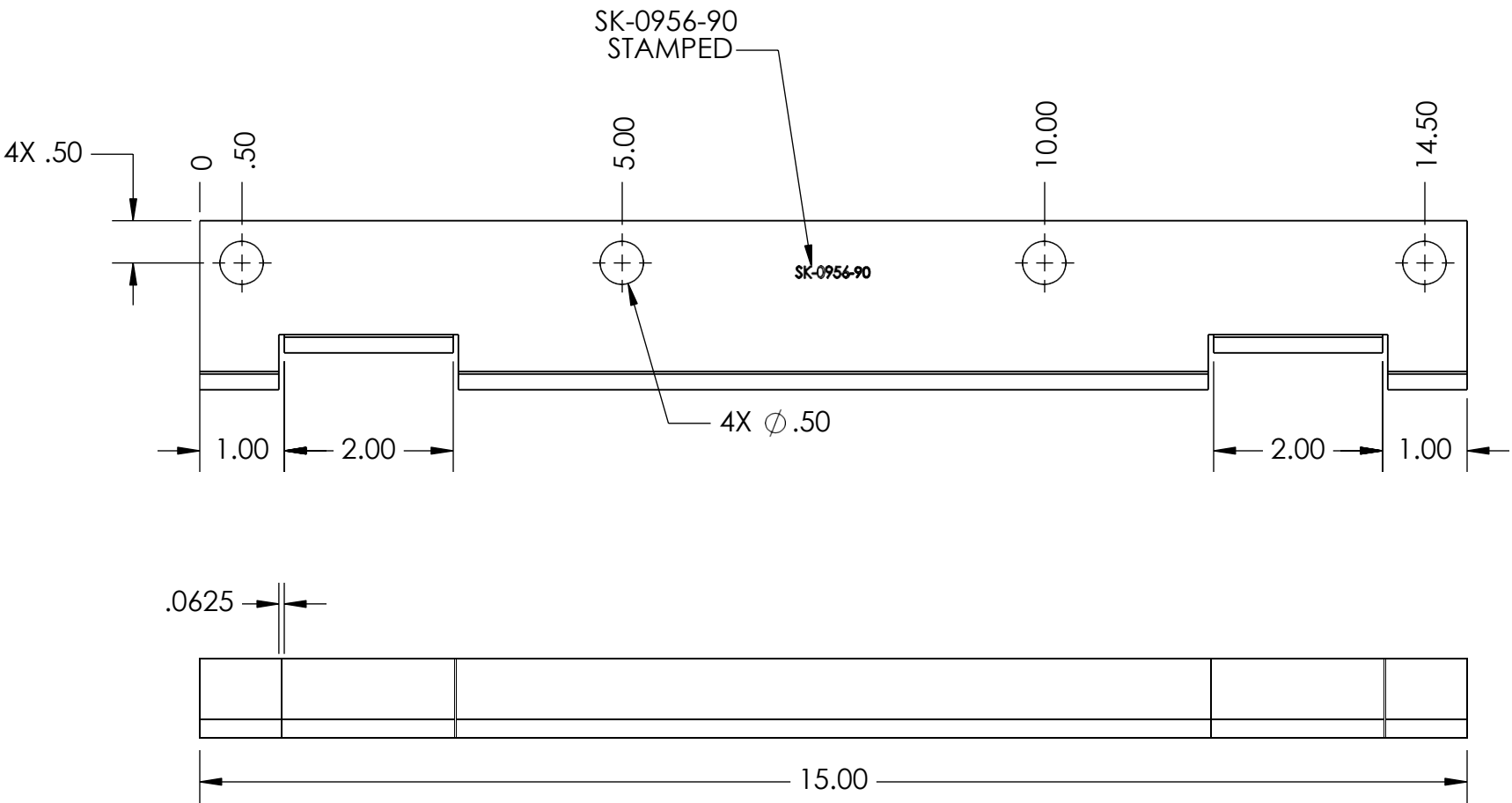
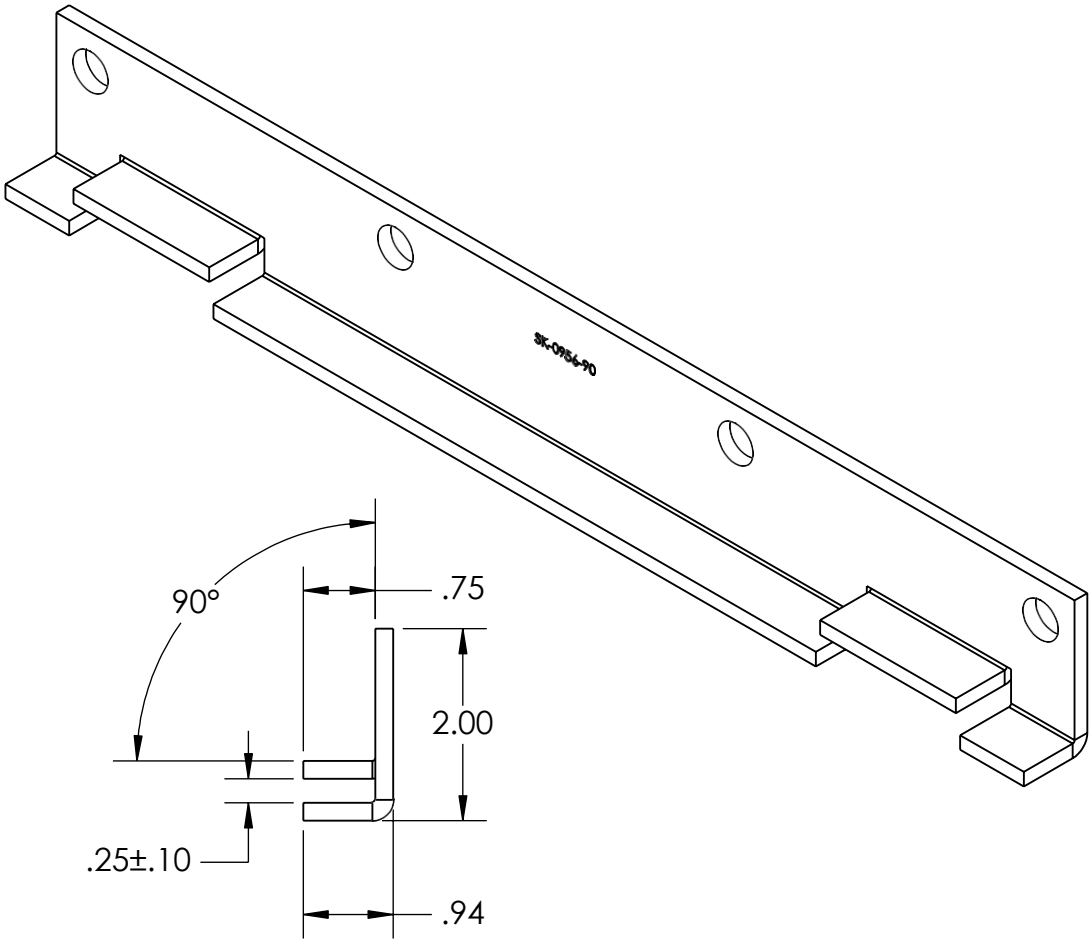


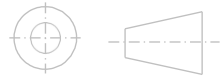

NOTES U.O.N.

1. USE MINIMUM BEND RADIUS.
2. USE MINIMUM BEND RELIEF.
3. DIMENSIONS O.D. APEX INTERSECTION U.O.N.
4. REMOVE BURRS AND SHARP EDGES.

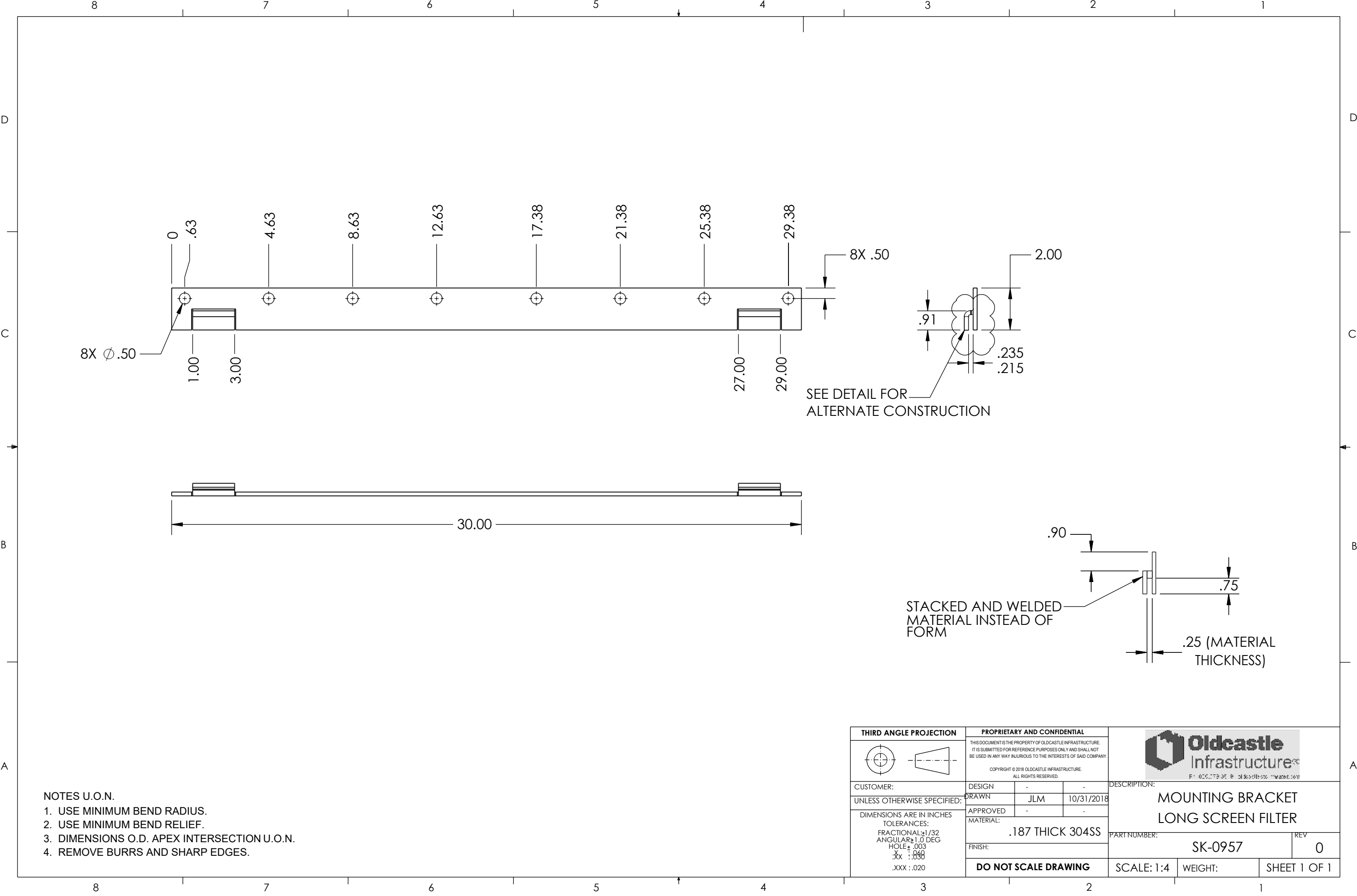
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		THIS DOCUMENT IS THE PROPERTY OF OLDCASTLE INFRASTRUCTURE. IT IS SUBMITTED FOR REFERENCE PURPOSES ONLY AND SHALL NOT BE USED IN ANY WAY INJURIOUS TO THE INTERESTS OF SAID COMPANY.			
CUSTOMER:		DESIGN - -			
UNLESS OTHERWISE SPECIFIED:		DRAWN JLM 10/22/2018			
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL: ±1/32 ANGULAR: ±1.0 DEG HOLE: .003 XX: .000 XXX: .020		APPROVED - -		PART NUMBER: SK-0956	
		MATERIAL: .187 THICK 304SS			
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				WEIGHT:	
				SHEET 1 OF 1	

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
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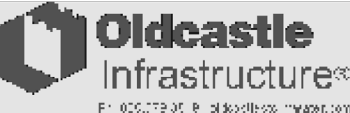
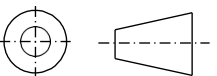
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REV	DESCRIPTION		DATE	BY
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		 Ph: 800.579.8819 oldcastlestormwater.com		
CUSTOMER:		DESIGN	EVAN	11/16/2018
UNLESS OTHERWISE SPECIFIED:		DRAWN	EVAN	11/16/2018
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ANGULAR: 1.0 DEG		FINISH:		
HOLE: .003		DO NOT SCALE DRAWING		
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XXX: .020		WEIGHT: 2.03		
		SHEET 1 OF 1		

NOTES:
1. MINIMUM BEND RELIEF & RADIUS TYPICAL
2. REMOVE ALL BURS AND SHARP EDGES



NOTES U.O.N.

1. USE MINIMUM BEND RADIUS.
2. USE MINIMUM BEND RELIEF.
3. DIMENSIONS O.D. APEX INTERSECTION U.O.N.
4. REMOVE BURRS AND SHARP EDGES.

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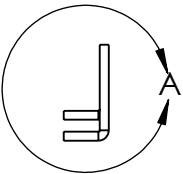
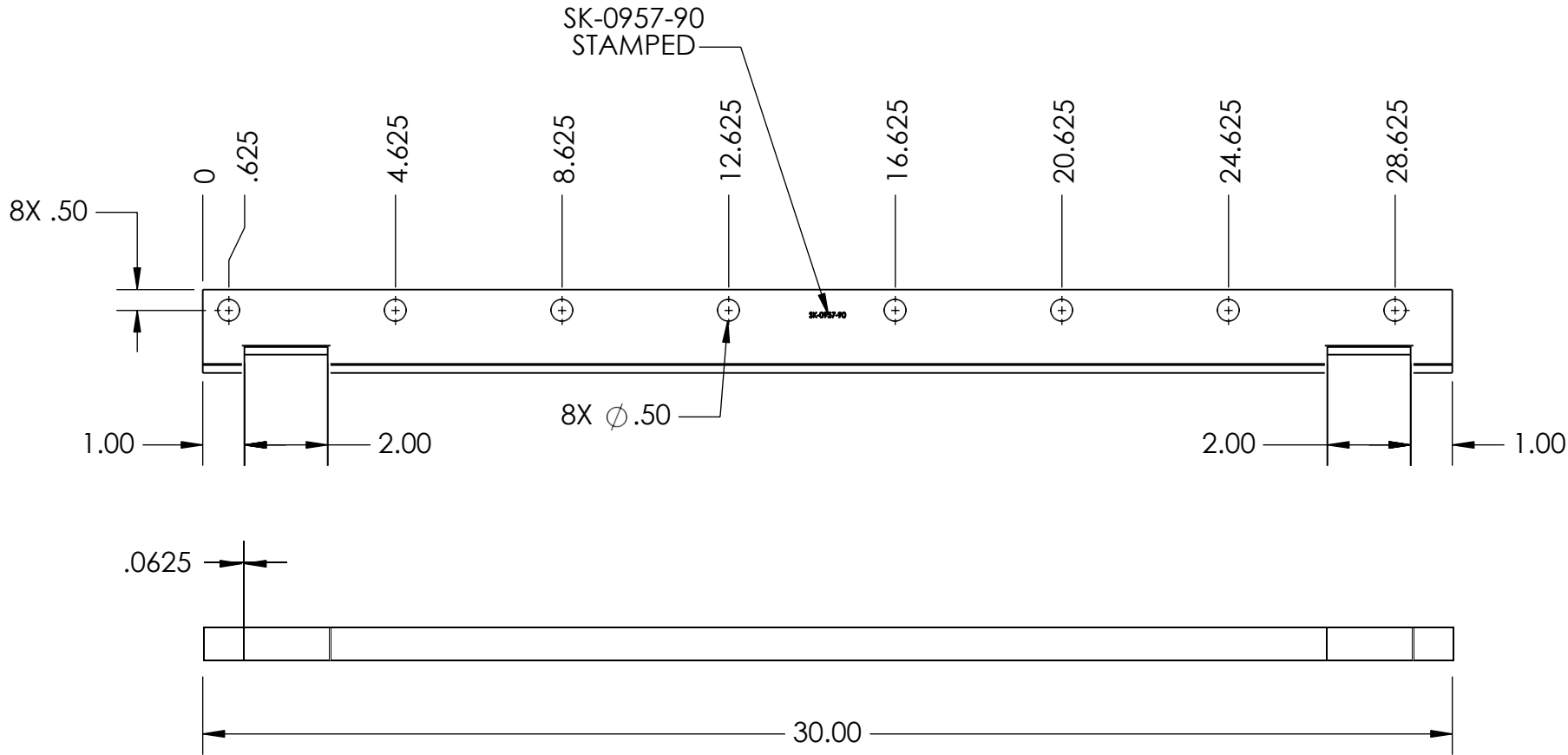
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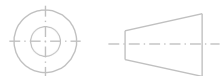

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B

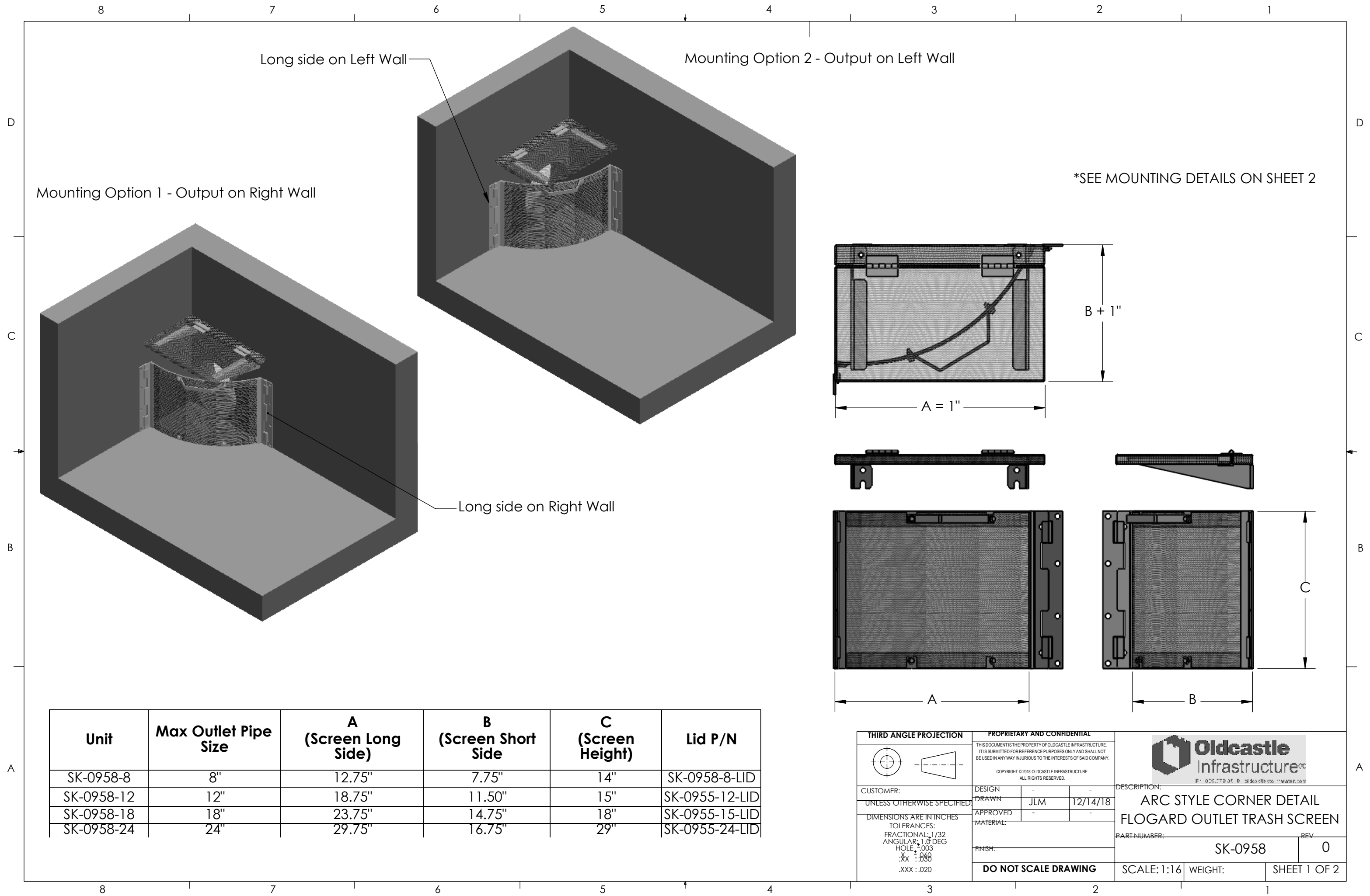
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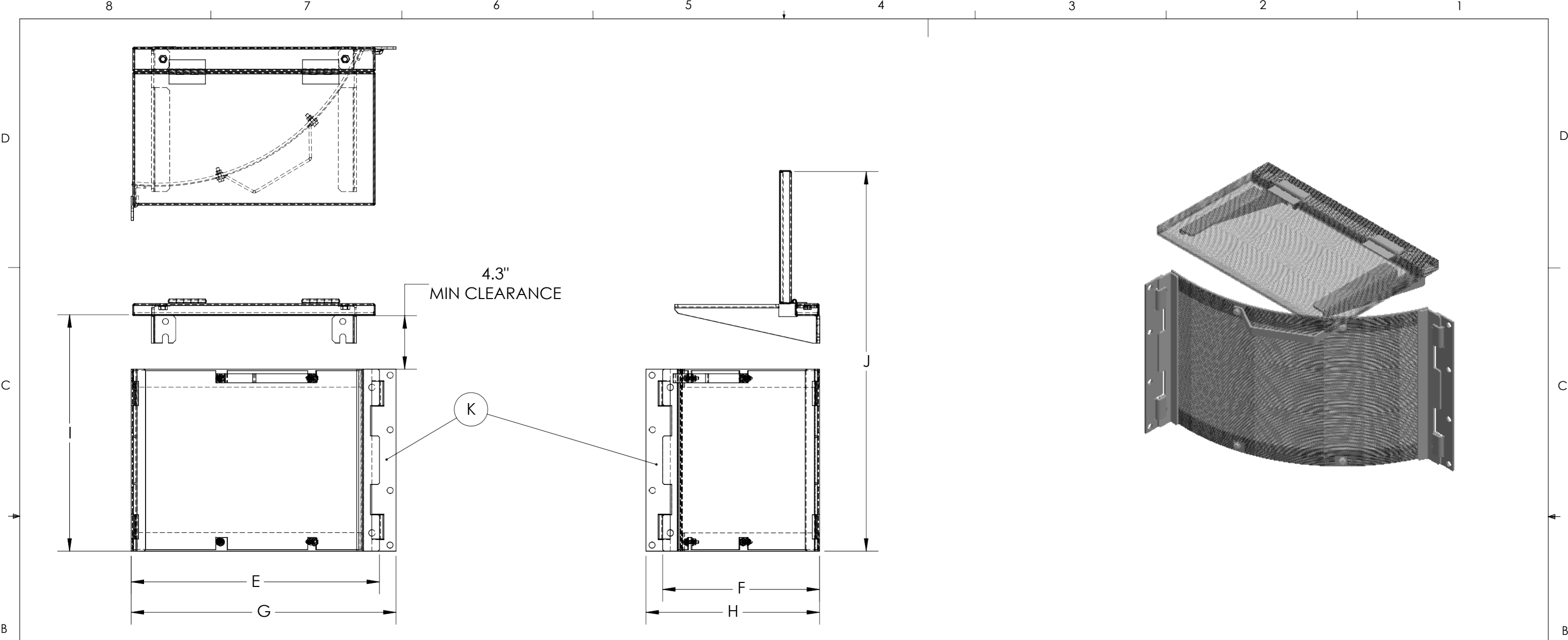


DETAIL A
SCALE 1 : 1

REVISIONS				
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		 <small>Ph: 800.579.8819 oldcastlestormwater.com</small>		
CUSTOMER: UNLESS OTHERWISE SPECIFIED:		DESIGN DRAWN	EVAN EVAN	11/16/2018 11/16/2018
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL: $\pm 1/32$ ANGULAR: ± 1.0 DEG HOLE: $\pm .003$ XX: $\pm .000$ XXX: $\pm .020$		APPROVED MATERIAL:	- AISI 304 STAINLESS STEEL 7 GAUGE (.187)	
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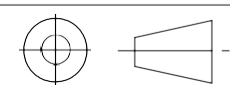
NOTES:
1. MINIMUM BEND RELIEF & RADIUS TYPICAL
2. REMOVE ALL BURS AND SHARP EDGES





UNIT	E (SCREEN LONG SIDE-DIRECT MOUNT)	F (SCREEN SHORT SIDE-DIRECT MOUNT)	G (SCREEN w/ BRACKET LONG SIDE)	H (SCREEN w/ BRACKET SHORT SIDE)	I (LID CLOSED OVERALL HEIGHT)	J (LID OPEN OVERALL HEIGHT)	K (MOUNTING BRACKET PART #)
SK-0958-8	14.25"	9.5"	15.5"	11"	19.5"	27"	SK-0956
SK-0958-12	20.5"	13"	22"	14.5"	20.5"	31.5"	SK-0956
SK-0958-18	25.25"	16.25"	26.5"	17.75"	26.5"	40.5"	SK-0956
SK-0958-24	31"	18.5"	32.5"	20"	34.5"	51.25"	SK-0957

THIRD ANGLE PROJECTION



CUSTOMER:
UNLESS OTHERWISE SPECIFIED:


DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONAL: 1/32
ANGULAR: 1.0 DEG
HOLE: .003
.X : .060
.XX : .030
.XXX : .020

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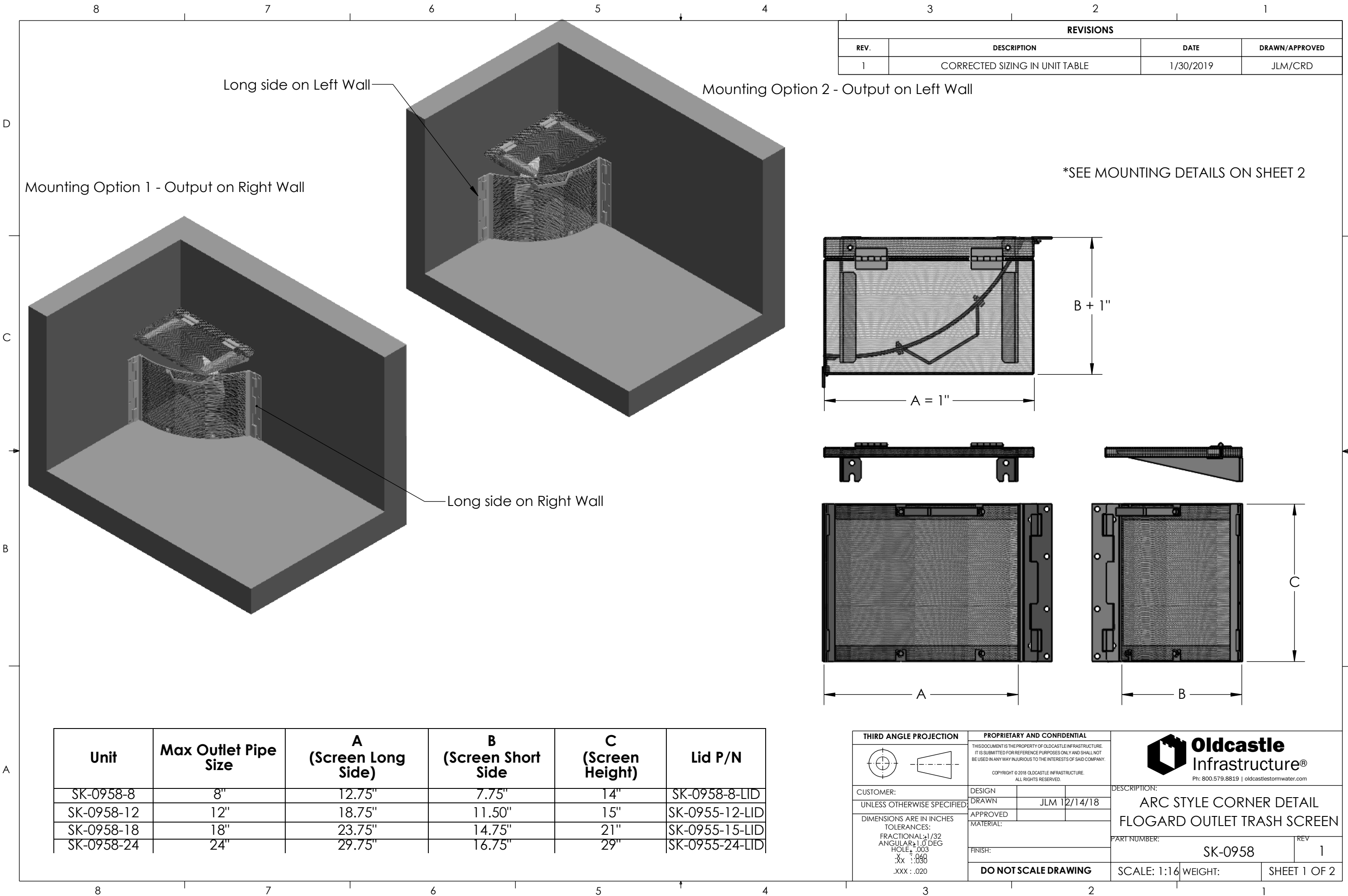
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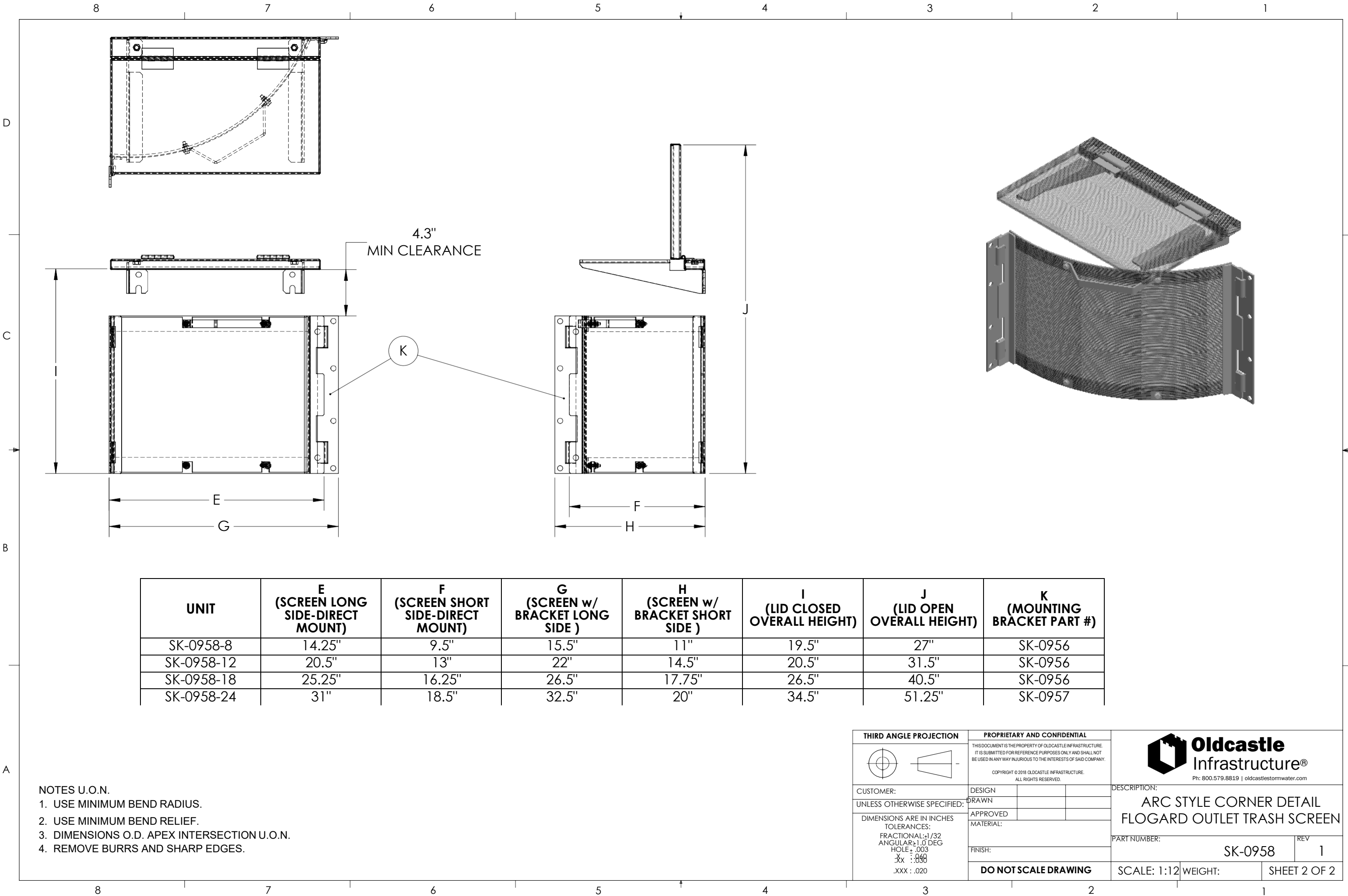
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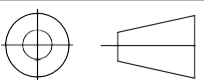
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**ARC STYLE GENERIC DETAIL
FLOGARD OUTLET TRASH SCREEN**

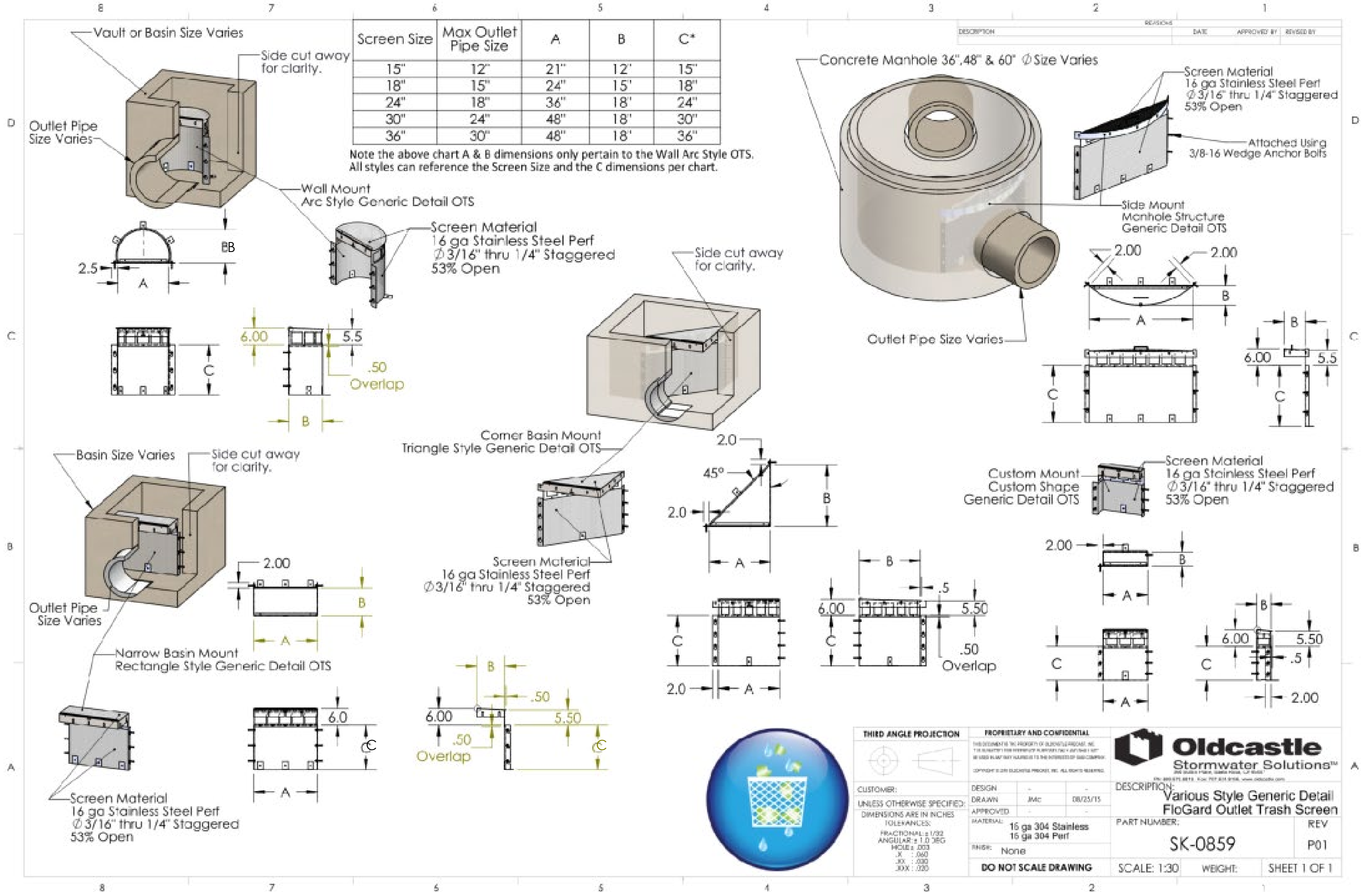
PART NUMBER:	SK-0955	REV 0
SCALE: 1:12	WEIGHT:	SHEET 2 OF 2





- NOTES U.O.N.
1. USE MINIMUM BEND RADIUS.
 2. USE MINIMUM BEND RELIEF.
 3. DIMENSIONS O.D. APEX INTERSECTION U.O.N.
 4. REMOVE BURRS AND SHARP EDGES.

THIRD ANGLE PROJECTION		PROPRIETARY AND CONFIDENTIAL		<div><div>Oldcastle Infrastructure®</div><div>Ph: 800.579.8819 oldcastlestormwater.com</div></div>	
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CUSTOMER:		DESIGN		DESCRIPTION: ARC STYLE CORNER DETAIL FLOGARD OUTLET TRASH SCREEN	
UNLESS OTHERWISE SPECIFIED:		DRAWN			
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL: ±1/32 ANGULAR: ±1.0 DEG HOLE: ±.003 X: ±.060 XX: ±.080 .XXX: ±.020		APPROVED			
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				WEIGHT:	SHEET 2 OF 2



THIRD ANGLE PROJECTION

CUSTOMER:

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DIMENSIONS ARE IN INCHES
TOLERANCES:
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ANGULAR: ± 1.0 DEG
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XX: .030
XXX: .020

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DESIGN: -
DRAWN: JMC
APPROVED: -
MATERIAL: 16 ga 304 Stainless
16 ga 304 Perf
FINISH: None

DO NOT SCALE DRAWING

Oldcastle
Stormwater Solutions™

DESCRIPTION: Various Style Generic Detail FloGard Outlet Trash Screen

PART NUMBER: SK-0859

SCALE: 1:30

WEIGHT: -

SHEET 1 OF 1

APPENDIX B

Mosquito and Vector Control Association of California Response



MVCAC
Mosquito and Vector Control Association of California

One Capitol Mall, Suite 320 • Sacramento, CA 95814 • p: (916) 440-0826 • f: (916) 444-7462 • e: mvcac@mvcac.org

Patrick Dean
Oldcastle Infrastructure
7100 Longe Ave., Suite 100
Stockton, CA 95206

March 18, 2025

Dear Mr. Dean,

Thank you for the submission of the Oldcastle FloGard Connector Pipe Screen/Outlet Trash Screen full trash capture device for review by the Mosquito and Vector Control Association of California pursuant to the SWRCB Trash Treatment Control Device Application Requirements. The Association has reviewed the conceptual drawings for the revised Oldcastle FloGard Connector Pipe Screen/Outlet Trash Screen and verifies that provisions have been included in the designs that allow for full visual access to all areas for presence of standing water, and when necessary, allows for treatments of mosquitoes.

While this verification letter confirms that inspection and treatment for the purpose of minimizing mosquito production should be possible with the revised Oldcastle FloGard Connector Pipe Screen/Outlet Trash Screen as presented, it does not affect the local mosquito control agency's rights and remedies under the State Mosquito Abatement and Vector Control District Law. For example, if the installed device or the associated stormwater system infrastructure becomes a mosquito breeding source, it may be determined by a local mosquito control agency to be a public nuisance in accordance with California Health and Safety Code sections 2060-2067.

"Public nuisance" means any of the following:

1. Any property, excluding water, that has been artificially altered from its natural condition so that it now supports the development, attraction, or harborage of vectors. The presence of vectors in their developmental stages on a property is prima facie evidence that the property is a public nuisance.
2. Any water that is a breeding place for vectors. The presence of vectors in their developmental stages in the water is prima facie evidence that the water is a public nuisance.
3. Any activity that supports the development, attraction, or harborage of vectors, or that facilitates the introduction or spread of vectors. (Heal. & Saf. Code § 2002 (j).)

Declaration of a facility or property as a public nuisance may result in penalties as provided under the Health and Safety Code. Municipalities and the vendors they work with are encouraged to discuss the design, installation, and maintenance of stormwater trash capture devices with their local mosquito control agency to reduce the potential for disease transmission and public nuisance associated with mosquito production.

Sincerely,

Megan MacNee
MVCAC Executive Director

APPENDIX C

FloGard® Connector Pipe Screen Fact Sheet

FloGard Outlet Trash Screen - Hydraulic Capacities

Model Number	Drawing Number	Outlet Pipe Size (in)	Screen Dimensions			Hydraulic Capacities				
			Height (in)	Length (in)	Surface Area (sf)	Max Filtered Flow ^(a) (cfs)	25% Blind Filtered Flow ^(b) (cfs)	50% Blind Filtered Flow ^(b) (cfs)	Bypass Flow H=4" ^(c) (cfs)	Bypass Flow H=12" ^(c) (cfs)
FG-OTS12	SK-0955-12	12	15.00	35.11	2.92	5.68	4.26	2.84	1.84	9.74
FG-OTS15	SK-0955-15	15	18.00	42.24	4.39	9.35	7.02	4.68	2.22	11.72
FG-OTS18	SK-0955-18	18	24.00	46.29	6.75	16.57	12.43	8.29	2.43	12.84
FG-OTS24	SK-0955-24	24	30.00	53.23	9.98	27.60	20.55	13.80	2.80	14.77
FG-OTS30	SK-0955-30	30	36.00	56.55	12.96	38.97	29.23	19.49	2.97	15.69

Assumptions:

Filtered Flow Calculations:

Use orifice equation to calculate filtered flow: $Q = CA(2gh)^{0.5} / SF$
 Safety Factor (no obstruction), SF: 1.00
 Orifice Discharge Coefficient, C: 0.60
 Area of openings, A: Screen surface area x 51% open
 Gravitational constant, g: 32.20 ft/s²
 Head, h: Height of screen in feet / 2 (i.e. half the screen height)

Calculations assume free discharge at outlet pipe.

Bypass Flow Calculations:

Use weir equation (without end contractions) to calculate bypass flow: $Q = 3.33LH^{\frac{3}{2}}$
 Safety Factor (no obstruction), SF: 1.00
 Coefficient for Sharp Crest Weir, C: 3.3
 Length, L (Screen length):
 Head, H (for lid placement at 4" above crest of screen): 4.00 in
 Head, H (for lid placement at 12" above crest of screen): 12.00 in

Notes:

- (d) A safety factor should be applied by the engineer of record based on anticipated trash loading and maintenance frequency.
- (e) 50% available open screen blinded: A/2
- (f) Site specific Lid placement height determined based on outlet bypass flow capacity required.

Sample Equation:

Hydraulic Capacity Equation for FG-OTS18

$$Q = \frac{CA\sqrt{(2gh)}}{SF}$$

$$C = 0.6$$

$$g = 32.20 \frac{ft}{s^2}$$

$$h = \frac{2 ft}{2} = 1 ft$$

$$SF = \text{Safety Factor} = 1$$

No Obstruction

$$A = 6.75 ft^2 * 51\% \text{ Open} = 3.44 ft^2$$

$$Q = \frac{(3.44 ft^2) \sqrt{2 \left(32.20 \frac{ft}{s^2} \right) (1 ft)}}{1}$$

$$Q = (3.44 ft^2) \sqrt{64.4 \frac{ft^2}{s^2}}$$

$$Q = 3.44 ft^2 * 8.02 \frac{ft}{s}$$

$$Q = 27.60 \frac{ft^3}{s}$$

50% Blind Obstruction

$$A = 6.75 ft^2 * 51\% \text{ Open} * 50\% \text{ Blind} = 1.72 ft^2$$

$$Q = \frac{(1.72 ft^2) \sqrt{2 \left(32.20 \frac{ft}{s^2} \right) (1 ft)}}{1}$$

$$Q = (1.72 ft^2) \sqrt{64.4 \frac{ft^2}{s^2}}$$

$$Q = 1.72 ft^2 * 8.02 \frac{ft}{s}$$

$$Q = 13.80 \frac{ft^3}{s}$$