RECHARGER® 360HD & 902HD

STORMWATER MANAGEMENT SOLUTIONS

INSTALLATION INSTRUCTIONS

RETENTION • DETENTION • INFILTRATION • WATER QUALITY

CULTEC

Published by

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7KH GUDZLQJV SKRWRJUDSKV DQG LOOXVWUDWLRQV VKRZQ LQ WKLV GRFXP
are not necessarily to scale.
Actual designs may vary.

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)RU JHQHUDO LQIRUPDWLRQ RQ RXU RWKHU SURGXFWV DQG VHUYLFHV SOH
6WDWHV DW H[W RU H PDLO XV DW FXVWVHUYLFH#

)RU WHFKQLFDO VXSSRUW SOHDVH FDOO H[W RU H PDLO WHF

9LVLW ZZZ FXOWHF FRP GRZQORDGV KWPO IRU 3URGXFW 'RZQORDGV DQG &$

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You are using version CLT009 03-20 of our CULTEC Installation Instructions for Recharger® 360HD and 902HD Stormwater Systems.

7KHVH LQVWUXFWLRQV DUH IRU VLQJOH OD\HU WUDÒF DSSOLFDWLRQV RQO\ )RU PXOWL OD\HU
$OO LOOXVWUDWLRQV DQG SKRWRV VKRZQ KHUHLQ DUH H[DPSOHV RI W\SLFDO VLWXDWLRQV %
$FWXDO GHVLJQV PD\ YDU\

Required Materials and Equipment

- Proper geotechnical soil evaluation by a qualified engineer or soil scientist to determine suitability of structural installation
- OSHA compliance
- CULTEC warning tape or equivalent
- Assurances from local utilities that no underground gas, electrical, or other dangerous pipelines or conduits are already buried at the site
- Acceptable – inch washed crushed stone as shown in Table page. Cleanliness of stone to be verified by engineer
- Acceptable fill material
- CULTEC No. ™ non-woven geotextile or equivalent
- CULTEC No. ™ woven geotextile or equivalent as required
- All CULTEC chambers and accessories as specified in the engineer's pla[...] CULTEC No. ™ non-woven geotextile[...] CULTEC StormFilter® and CULTEC No.™ woven geotextile where applica[...] CULTEC chambers for damage prior to installation. Do not use damaged CULTEC chambers. Contact your supplier immediately to report damage or packing list discrepancies.
- Reciprocating saw or router
- Stone bucket
- Stone conveyor and/or tracked excavator
- Transit or laser level measuring device
- Compaction equipment

Requirements for CULTEC Chamber System Installations

- CULTEC systems must be designed and installed in accordance with CULTEC's minimum requirements. Failure to do so will void the limited warranty. To request a copy and submit the CULTEC limited warranty, call CULTEC at or visit www.cultec.com
- Installing contractors are expected to comprehend and use the most current installation instructions prior to beginning a system installation. If there is any question as to whether these are the most current instructions, contact CULTEC at or visit www.cultec.com
- Contact CULTEC at least thirty days prior to system installation to arrange a pre-construction meeting.
- All CULTEC system designs must be certified by a registered professional engineer.
- Use these installation instructions as a guideline only. Actual design may vary. Refer to approved construction drawings for job-specific details. Be sure to follow the engineer's drawings as your primary guide.
- System cover backfill requireme[...] based on installation type.
- Any discrepancies with the system sub-grade soil's bearing capacity must be reported to the design engineer.
- Non-woven geotextile must be used as specified in the engineer's draw[...]
- Erosion and sediment-control measures must meet local codes and the design engineer's specifications throughout the [...] construction process.
- Responsibility for preventing vehicles that exceed CULTEC's requirements from traveling across or parking over the chamber system lies solely with the contractor throughout the entire site construction process. The placement of warning tape, temp[...] and/or appropriately located signs is highly recommended. Imprinted warning tape is available from CULTEC. For Accept[...] Load information, refer to Tabl[...]

&KDPEHU 6SHFL¿FDWLRQ ,QIRUPDWLRQ

	Recharger 360HD Chamber	Recharger 902HD Chamber
6L]H / [: [+	¶ [´ [´	[[
Installed Length	3.67’	
Length Adjustment per Row		
with two end caps installed	¶	
when not using end caps	¶	
Chamber Storage	I^3/ft	I^3/ft
	36.66 ft^3/unit	I^3/unit
Minimum Installed Storage	I^3/ft	27.06 ft^3/ft
	I^3/unit	99.28 ft^3/unit
Minimum Area Required	I^{2}W	I^{2}W
Minimum Center-to-Center Spacing	¶	
Minimum Spacing Between Chambers	´	´
Minimum Cover Requirements	´ 3DYHG	´ 3DYHG
	´ 8QSDYHG	´ 8QSDYHG
Maximum Allowable Cover	¶	
Maximum Allowable O.D. in Side Portal	´ +'3(´ 39&	´ +'3(´ 39&
Compatible Feed Connector	+9/9)&)HHG &RQQHFWRU	+9/9)&)HHG &RQQHFWRU

(QG &DS 6SHFL¿FDWLRQ ,QIRUPDWLRQ

	Recharger 360HD End Cap	Recharger 902HD End Cap
6L]H / [: [+	´ [´ [´	[[
Installed Length	´	
End Cap Storage	I^3/ft	I^3/ft
	I^{3}WXQLW LQWHUORFNHG	2.76 ft^3 XQLW LQWHUORFNHG
Minimum Installed Storage	I^3/ft	I^3/ft
	I^3/unit	I^3/unit
Maximum Inlet Opening in End Cap	´ +'3(´ 39&	+'3(´ 39&

$OO GLPHQVLRQV DUH QRPLQDO $FWXDO GLPHQVLRQV PD\ YDU\ RQ VLWH GXH WR VKLSSLQJ DQG WHPSHUDWXUH

	HVLV® FC-48 Feed Connector
Length	
Installed Length exposed	min
Width	
Height	
Chamber Storage Capacity	ft³
Pipe Comparison	Greater flow capacity than pipe

Site Preparation and Excavation

- Excavate and level the area per engineer's drawings. Refer to plan view and cross-section details and excavate bed to accommodate chambers and manifold system. Be sure to allow for a minimum inch sto around the perimeter of the system and unforeseen overages in your excavation calculations.

- Remove any standing water and maintain positive drainage of the site throughout the installation. Dewatering procedures must be used if necessary

- Prepare the sub-grade soil for the chamber bed as specified by the engineer's drawings

- Place CULTEC No ™ non woven geotextile or equivalent on the excavated and perimeter sidewalls as specified by the engineer's drawings CULTEC No ™ non woven geotextile is required on the sides and over the top of the system. It is also recommended on the system bottom. Overlap the geotextile by at least inches where the fabric edges meet.

- Disperse a level base of to in washed crushed stone over the of the bed bottom. Refer to the engineer's drawings for sub-grade soil preparation and required stone foundation thickness.

- Compact the stone base to achi unyielding surface. For vibratory roller refer to Table on page for re guidelines.

Chamber Information for Recharger® Models 360HD & 902HD

'LUHFWLRQDO DUURZV ORFDWHG RQ WKH WRS RI WKH FKDPEHU SRLQW WRZDUGV WKH 6PDOO 5

CULTEC Recharger® 360HD & 902HD Chambers

The Recharger models 360HD & 902HD chambers come in only one model type which is fully open on both ends. The chamber requires the coordinating End &DSVROG VHSDUDWHO\ WR FDS URZV RI chambers or to create single stand alone units. One rib is dimensionally smaller to be able to interlock with additional units. A directional arrow points towards the VPDOO ULE HQG 7\SLFDOO\ WKH EXLOG RI WKH row begins with the large rib end facing you.

6KRZQ 5HFKDUJHU +' 5HFKDUJHU +' &KDPEHU ZLWK RYHUODSSLQJ (QG &DSV

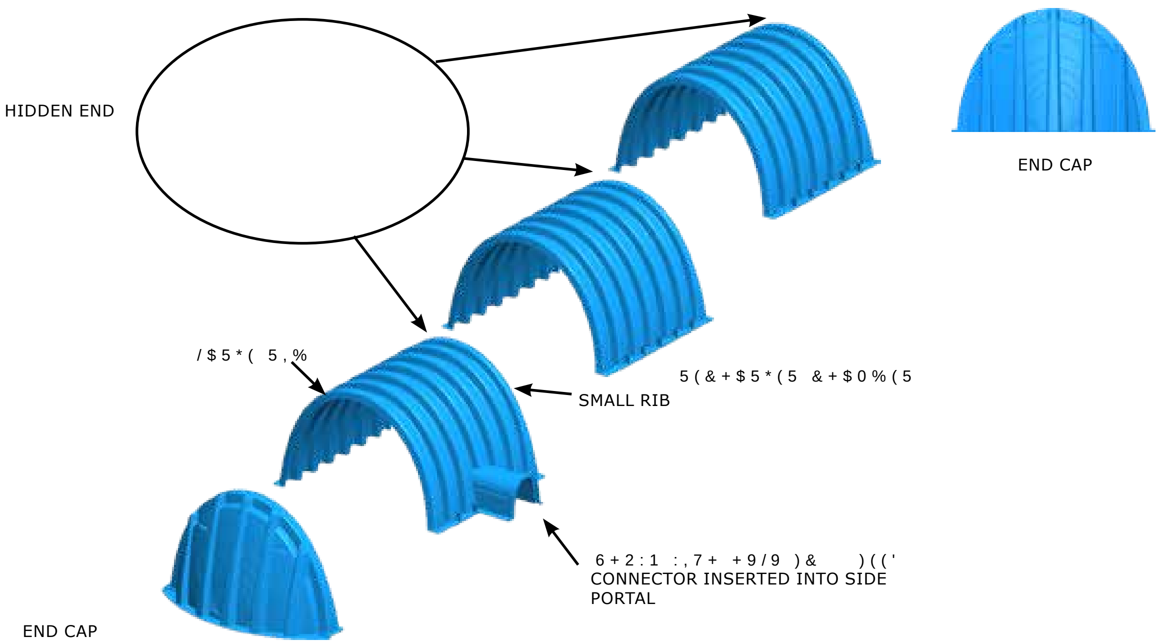
CULTEC Recharger® 360HD & 902HD End Caps

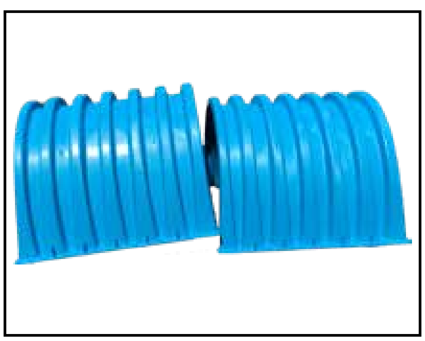
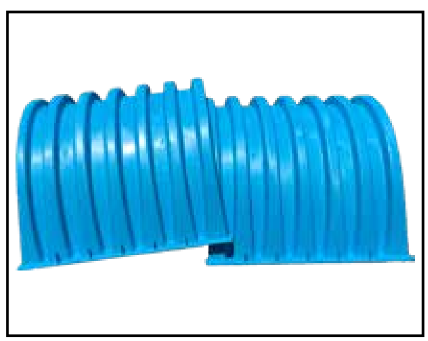
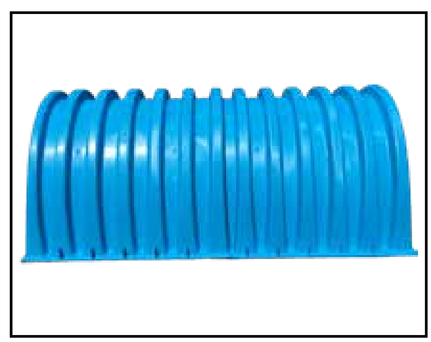
The End Cap is used in conjunction with the chamber to cap rows of chambers or to create single stand alone units.

6KRZQ 5HFKDUJHU +' (QG &DS 5HFKDUJHU +' (Q

Typical Installation Method

Interlock Recharger chambers using the overlapping rib connection.
Cap the ends of the lines using the Recharger End Cap.





Chamber Preparation and Installation

CULTEC Recharger® 360HD & 902HD chambers have the distinctive features of being fully open on both ends and utilize an overlapping rib connection. CULTEC chamber ribs are dimensionally sized with a large rib and a smaller rib to allow for an easy interlocking rib connection. The chambers require a separate HQG FDS WR FDS RÑ OLQHV

- Identify and group the chambers and end caps to ensure proper quantity and usage.
- 7ULP DOO VLGH SRUWDOV HQG FD ports prior to installation for easier handling during trimming.
- Place one Recharger chamber for each row of units to be installed. Directional arrows point towards the small rib end of the chamber.
- If using the side portal internal manifold IHDWXUH WULP WKH VLGH SRUWD to guidelines located on the sidewall of the FKDPEHU DV UHTXLUHG ,QVHUW +9/9)&)HHG &RQQHFWRU LQWR WKH WULPPHG portal to create the internal manifold. Refer to Installation of Manifold section on page 9.
- Place the next Recharger chamber so the directional arrow located in the center of the unit points downstream towards the end of the line. Overlap the large rib over the small rib of WKH SUHFHGLQJ FKDPEHU¶V HQG Z the chambers together. When placing chambers WDNH FDUH WR PDLQWDLQ VHSDU measuring from the base of the chamber.

- 7R HDVH EDFN¿OOLQJ UHTXLUHPH many chambers as the stone-laying bucket or conveyor can reach.
- Place stone taking care not to drop stone over the last rib to be overlapped.
- Continue chamber and stone placement to extend the length of the row.
- 8VH WKH 5HFKDUJHU (QG &DSV WR FKDPEHU URZV 7R LQVWDOO WKH end cap above the chamber and slide down the chamber rib.
- Prior to the placement of the next line of FKDPEHUV FKHFN DQG FRUUHFW DOLJQPHQW RI WKH FKDPEHU XQLW

Installation of Manifold

Utilize the side portals located on the chamber as an internal manifold in locations where indicated on WKH HQJLQHHU¶V GUDZLQJV +9/9)& &RQQHFWRUV DUH LQVHUWHG LQWR WKH SI DGGLWLRQDO H[WHUQDO PDQLIROG LV QRW UHTXLUHG XQOHVV VSHFL¿HG E

- &8/7(& 1R Œ ZRYHQ JHRWH[WLOH LV WR EH placed under all chambers utilizing the internal manifold feature and under all chambers accepting inlet/outlet pipe connections per HQJLQHHU¶V GUDZLQJV ,I LQVHUW GLDPHWHU RU ODUJHU LQWR WKH WKH XVH RI &8/7(& 1R ZRYHQ recommended to prevent washout of the bedding stone.

- Most installations are designed with the internal manifold located at the ends of the chamber EHG +RZHYHU WKH VLGH SRUWDO feature allows for the manifold to be located at any point within the chamber run. Refer to V\VWHP GHVLJQ IRU PDQLIROG ORFDWLRQ V

- 8VLQJ D UHFLSURFDWLQJ VDZ RU URXWHU WULP the sidewall portals of the units that are to UHFHLYH WKH +9/9)&)HHG &RQQHFWRUV)HHG connectors may be placed on any chamber UHTXLULQJ D PDQLIROG DV LQGLFDWHG E\ WKH engineer’s drawings.

- 3ODFH WKH +9/9)&)HHG &RQQHF the side portal of the chambers per engineer’s GUDZLQJV 0DLQWDLQ D ´ PLQ VH chamber rows.

- Check for correct center-to-center spacing of chamber runs according to engineer’s drawings before proceeding to next row.

- ,QVHUW LQÀRZ RXWÀRZ SLSH V LQWR HQG FDS RU side portal as detailed on engineer’s drawings. 0D[LPXP LQOHW VL]HV IRU WKH HQG FDSV DUH ´ +'3(´ 39& IRU WKH 5HFKDUJHU +' (QG &DS DQG ´ +'3(´ 39& IRU WKH 5HFKDUJHU 902HD End Cap. Maximum pipe sizes for the side SRUWDOV DUH ´ +'3(´ 39& 7KHUH LV to feed every row if utilizing the internal manifold feature.

,I WKH PDQLIROG LQVWDOODWLRQ GHWDLO SRUWDO LQWHUQDO PDQLIROG SURFHHG DF GUDZLQJV IRU SLSH PDQLIROG LQVWDOODWL

How to Trim CULTEC Chamber to Accommodate Pipe on End Cap

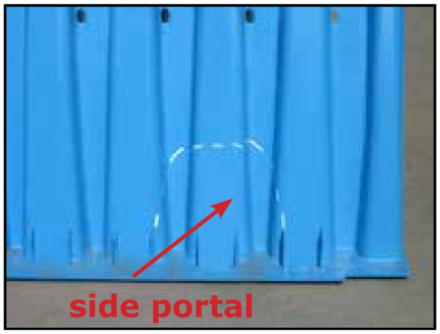
:KHQ XVLQJ D FRQYHQWLRQDO SLSH PDQLIROG RU LQOHW RXWOHW SLSHV CULTEC Recharger End Cap on-site. Here are some quick steps to ensure a successful outcome:

- Lay out chambers according to engineered plans.
- Directional arrows located at the top of the chamber point towards the small rib end.
- Install end caps on the chambers as detailed on the engineer’s drawing.
- Locate the proper diameter pipe outline on the end cap to accommodate the designed pipe size and invert elevation.
- Drill a hole on the chamber end wall large enough to accommodate a saw blade.
-)ROORZLQJ WKH HWFKHG RXWOLQH XVH D reciprocating saw to trim out the opening to accommodate the pipe. Trimming should be ZLWKLQ ´ WROHUDQFH RI SLSH stone intrusion.

- ,QVHUW WKH SLSH RU ¿WWLQJ D into the chamber. This is not required to be a watertight connection. Maximum inlet pipe VL]HV +' ´ +'3(´ 39& + ´ +'3(´ 39&
- %DFN¿OO DV QRWHG LQ WKH LQV and engineering details.
- Trimming may only be performed on end caps or within side portal areas. Pipe may not be inserted into the sidewall of the chamber unless it is within the side portal trim lines.

How to Trim Side Portal to Accommodate HVLV FC-48 Feed Connector for Internal Manifold

:KHQ XVLQJ WKH VLGH SRUWDO LQWHUQDO PDQLIROG IHDWXUH WKH FRQ
of the CULTEC Recharger chamber on site.



-)ROORZLQJ WKH JXLGHV RQ WKH VLGH SRUWDO XVH D UHFLSURFDWLQJ DFFRPPRGDWH WKH +9/9)&   )HHG &RQQHFWRU 7ULPPLQJ VKRXOG EH)&   )HHG &RQQHFWRU WR SUHYHQW VRLO LQWUXVLRQ

Trimming may only be performed on the side portal area. Side entry in any other location is unacceptable.

- ,QVHUW WKH +9/9)&   )HHG &RQQHF PLQLPXP RI ´ LQWR WKH FKDPEHU required to be a watertight connection.

- Maintain proper separation RI ´ PLQLPXP EHWZH chamber rows.

How to Trim Side Portal to Accommodate Pipe for Side Entry

:KHQ XVLQJ WKH VLGH SRUWDO IHDWXUH DV DQ LQOHW RU RXWOHW WKH WULP ORFDWLRQ
side portal of the CULTEC Chamber onsite.

- Line up the pipe on the chamber side portal to the designated pipe elevation as detailed on the engineer's drawing. The side portal may DFFRPPRGDWH ´ +'3(RU ´ 39&
- 8VLQJ D JUHDVH SHQ RXWOLQH W side portal of the CULTEC chamber. See Fig. IRU DFFHSWDEOH WULP DUHD 'R the side portal area guides.
- Drill a hole on the chamber side portal large enough to accommodate a saw blade.
-)ROORZLQJ WKH JUHDVH SHQ RXW reciprocating saw to trim out the opening to accommodate the pipe. Trimming should be ZLWKLQ ´ WROHUDQFH RI SLSH 2' WR SUHYHQW soil intrusion.

- ,QVHUW WKH SLSH RU ¿WWLQJ D into the chamber. This is not required to be a watertight connection.

Fig. 1 - Acceptable Trim Area

Trimming may only be performed on the side portal area. Side entry in any other location is unacceptable.

(PEHGPHQW 6WRQH %DFN¿OO

%DFN¿OO XVLQJ ZDVKHG FUXVKHG V
row separation distance and prevent chamber
GLVSODFHPHQW VORZO\ GLVWULEXW
the center of the chamber crown so that stone
trickles down and builds between chamber rows
DV UHTXLUHG 6WRQH FROXPQ GLÑH
H[FHHG ´ EHWZHHQ DGMDFHQW FKD
between chamber rows and perimeter.

Place the stone carefully over the centerline of the chamber crown. Embedment stone must only be placed by an excavator or telescoping conveyor boom. Placement of embedment stone with a bulldozer is not an acceptable method of installation and may cause damage to the chambers. Any chambers damaged using an XQDFFHSWDEOH PHWKRG RI EDFN¿OO DUH QRW FRYHUHG under the CULTEC limited warranty.

Excavator-Placed Stone

7\SLFDOO\ WKH PRVW FRPPRQ PHWKR
placed stone is limited by the reach of the arm.
7R DFFRPPRGDWH WKLV LVVXH ZLWK
common to prepare a bed by joining just a few
FKDPEHU XQLWV DW D WLPH WKHQ V
and fabric before installing the next few units.

The excavator is usually operated within the excavation area. The excavator may work at grade
OHYHO RYHU UHFHQWO\ SODFHG FKD
coverage between the chambers and the excavator tracks meets the minimum requirements.

Telescoping Conveyor Boom Placement

:LWK ERRPV DV PXFK DV   IHHW ORQJ
telescoping aggregate conveyors can greatly aid the process of stone placement.

:LWK ERWK VWRQH SODFHPHQW PHW
stone carefully over the chambers' centers will secure them in place. Evenly distributing the stones will help prevent chamber movement and maintain row separation.

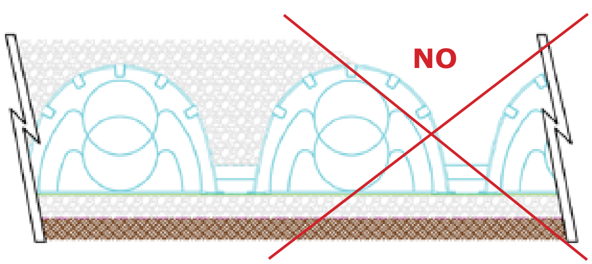
2QFH VHFXUHG VWRQH PD\ EH SODF
WKH FKDPEHUV DQG ¿OO WKH SHULP
sure to adhere to manufacturer recommendations
DQG HQJLQHHU¶V GUDZLQJV IRU V\V
requirements.

Do not allow equipment to drive over the chambers unless the minimum cover is in place. Use a ZDUQLQJ WDSH DYDLODEOH IURP &8 access.

Repeat steps until all of the last chamber units are in place. Be certain to use the Recharger End Caps WR HQG WKH OLQH RI FKDPEHUV DV drawings.

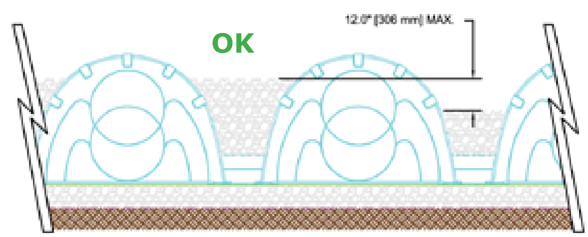
If a manifold system is designed on the back end RI WKH FKDPEHU EHG IROORZ PDQLI instructions as described previously.

6WRQH FROXPQ KHLJKW GLÑHUHQWLDO VKRXOG QHYHU H[FHHG LQFKHV ZLWK DGMDFHQW FKDPEHUV RU between chamber rows and perimeter. Minimum depth of cover of properly compacted material must be met before allowing vehicles to drive over the bed. Avoid using large rocks and/or organic PDWWHU DV EDFN¿OO PDWHULDO 5HIHU WR ³$FFHSWDEOH)LOO 0DWHULDOV´ RU FRQWDFW WKH GHVLJQ HQJLQHHU IRU DSSURYHG ¿OO W\SH



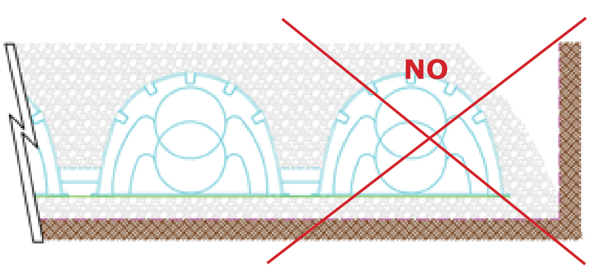
NOTE: CHAMBERS MUST BE BACKFILLED EVENLY.

81(9(1 %$&.),/ INCORRECT INSTALLATION



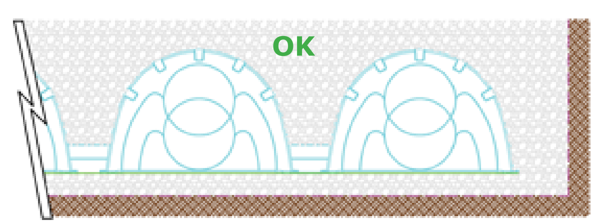
NOTE: STONE HEIGHT IN BETWEEN ROWS AND PERIMETER SHOULD NOT DIFFER BY MORE THAN 12" (300 mm).

(9(1 %$&.),/ CORRECT INSTALLATION



NOTE: WHEN FILLING IN PERIMETER, STONE MUST BE FILLED IN EVENLY WITH CHAMBER ROWS.

3(5,0(7(5 127)8//< %$&.),//('
INCORRECT INSTALLATION



NOTE: PERIMETER MUST BE FULLY BACKFILLED WITH STONE AND EXTEND TO THE EXCAVATION WALL.

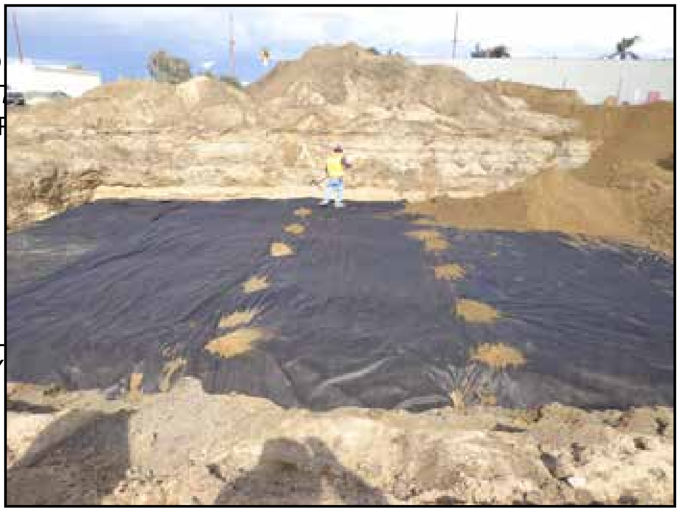
3(5,0(7(5)8//< %$&.),//('
CORRECT INSTALLATION

3ODFHPHQW RI 7RS)DEULF /D\HU 6\VWHP %DFN¿OO 3URFHVV

- Place the stone over the entire bed area as described in previous section.

- Cover the entire installation area with CULTEC 1R QRQ ZRYHQ JHRWH[WLOH V the perimeter and laying it on top of the VWRQH 7KH JHRWH[WLOH PXVW R inches at the edges.

-)LOO WKH ¿UVW LQFKHV ZLWK HQ LQ)LJ SDJH WR PHHW WKH DV VKRZQ LQ 7DEOH SDJH %DF WRS RI WKH JHRWH[WLOH 6HH LQ LQ OLIWV WKDW GR QRW H[FHHG WKH ¿OO ZLWK D YHKLFOH WKDW PHHWV WKH PD[LPXP wheel loads or ground pressure limits as VSHFL¿HG RQ VSHFL¿HG LQ 7DEOH RQ SDJH



- &RPSDFW HDFK OLIW RI EDFN¿OO WKH HQJLQHHU¶V GUDZLQJV &8/7 FRPSDFWLQJ WR D PLQLPXP RI standard proctor density using compaction HTXLSPHQW 5HIHU WR 7DEOH S acceptable equipment.

- %DFN¿OO RYHU WKH FKDPEHU EH SDJH LQ LQFK PD[LPXP OL WKH VSHFL¿HG JUDGH LV DFKLHY VXE EDVH RU VSHFLDO ¿OO UHTX engineer's drawings.

NOTE:
Excavation alongside already installed chamber URZV EDFN¿OOHG ZLWK VWRQH LV QRW DFFHSWDEOH No chambers may be added or subtracted from previously installed systems.

Table 1: Maximum Allowable Construction Loads

Material Location see Fig. 1, p. 18	Cumulative Cover Depth over Chambers (in)	Maximum Allowable Wheel Loads: Max Axle Load for Trucks (lbs)	Maximum Allowable Wheel Loads: Max Axle Load for Loaders (lbs)	Maximum Allowable Track Loads: Track Shoe Width (in)	Maximum Allowable Track Loads: Max Ground Pressure (psi)	Maximum Allowable Compaction Loads: Maximum Centrifugal Force (lbs)	Maximum Allowable Compaction Loads: Max Gross Vehicle Weight (lbs)
4 Final Fill Material	36 Compacted				23.8		
				30			
				36			
	30 Compacted						
				30			
				36	8.3		
3 Initial Fill Material	Compacted				9.9		
				30			
				36			
	Loose/Dumped	+' +'	+' +'		9.2		
				30	7.9		
				36	7.0		
	Compacted	+' +'	+' +'			+' 902HD: NOT ALLOWED	+' +'
				30			
				36	6.6		
	Loose/Dumped				9.3		
		+' 902HD: NOT ALLOWED	NOT ALLOWED		7.7	NOT ALLOWED	+' 902HD: NOT ALLOWED
				30	6.7		
				36	6.0		
2 Embedment Stone					8.3		
		NOT ALLOWED	NOT ALLOWED		7.0	NOT ALLOWED	NOT ALLOWED
				30	6.3		
				36			
	6	NOT ALLOWED	NOT ALLOWED	NOT ALLOWED FOR 5(&+$5*(5 +' ´),// '(37+ 75$&. LOAD DATA APPLIES TO 5(&+$5*(5 +' ONLY		NOT ALLOWED	NOT ALLOWED
					6.3		
				30			
				36			

The use of wheeled equipment without proper cover is strictly prohibited.
)RU 7UDFNHG 9HKLFOHV *URXQG SUHVVXUH LV YHKLFOH RSHUDWLQJ ZHLJKW GLYLGHG E\ WRWDO WUDFN FRQWDFW DUHD IRU
1R ZKHHOHG YHKLFOHV DUH DOORZHG SULRU WR FRPSDFWHG ¿OO SODFHPHQW

Table 2: Placement Methods and Descriptions

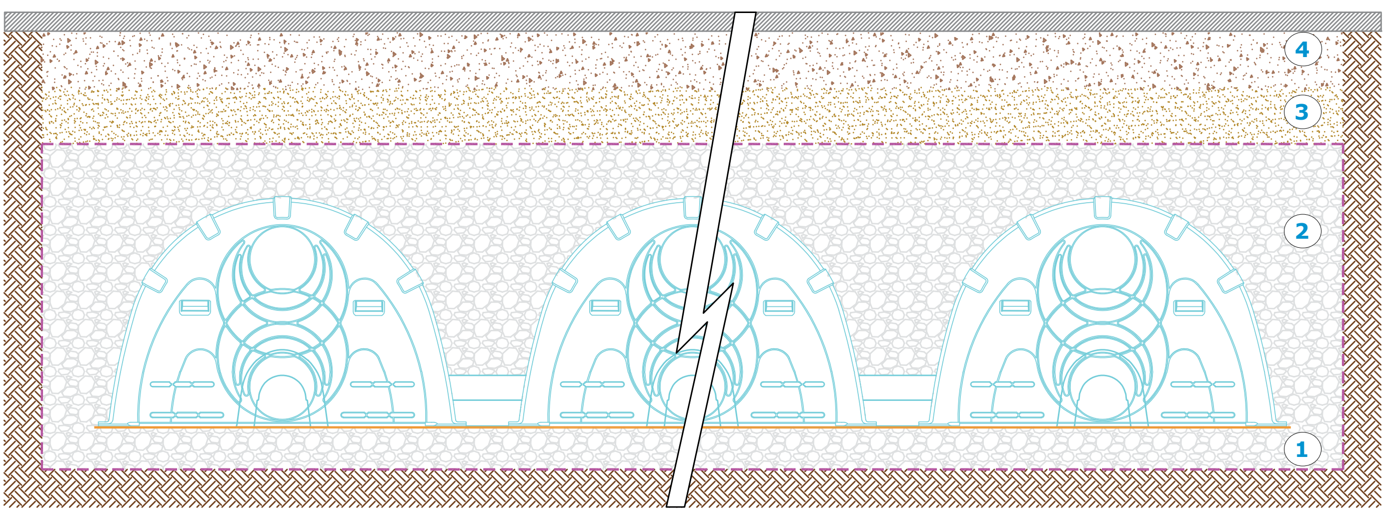
Material Location see Fig. 1, p.18	Placement Method/ Restrictions	Wheel Load Restrictions	Track Load Restrictions	Compaction Restrictions
	See Table 1, p. 16 for Maximum Construction Loads			
4 Final Fill Material	A variety of placement methods may be used. All construction loads shall not exceed the maximum YDOXHV OLVWHG LQ 7DEOH	+' ´ PLQLPXP cover for dump truck and wheel loader travel +' ´ PLQLPXP cover for dump truck and wheel loader travel	Dozers shall push parallel to rows only.	902HD: Roller travel shall be parallel to rows RQO\ XQWLO ´ RI FRYHU reached 360HD: Roller travel shall be parallel to rows RQO\ XQWLO ´ RI FRYHU reached
3 Initial Fill Material	([FDYDWRU SRVLWLR of bed or on foundation stone. 6PDOO /*3 WUDFN GR track skid steer loaders may be used. 0XVW PDLQWDLQ ´ PLQLPXP ¿OO EHORZ WUDFN at all times.	902HD: Asphalt can be dumped into paver machine when total FXPXODWLYH ¿OO GHSWK RYHU FKDPEHUV UHDFKHV 360HD: Asphalt can be dumped into paver machine when total FXPXODWLYH ¿OO GHSWK RYHU FKDPEHUV UHDFKHV ´	Equipment direction of travel shall be parallel to rows at all times. Equipment shall not be permitted to turn direction over chambers.	Roller travel shall be parallel to rows only. 902HD: Dynamic roller mode shall be used only when total cumulative ¿OO GHSWK RYHU FKDPEH UHDFKHV ´ 360HD: Dynamic roller mode shall be used only when total cumulative ¿OO GHSWK RYHU FKDPEH UHDFKHV ´
2 Embedment Stone	No equipment shall be permitted to contact the chambers. Stone conveyor positioned RÑ RI EHG RU RQ foundation stone. ([FDYDWRU SRVLWLRQHG RÑ of bed or on foundation stone. Stone column height GLÑHUHQWLDO EHWZHHQ chamber rows shall never H[FHHG ´ Stone to be placed at the crown of the chamber. No stone shall be pushed over chambers.	No wheel loads allowed. No wheel loaders permitted to dump stone directly onto chambers.	No tracked equipment is allowed on chambers until ´ RI HPEHGPHQW VWRQH LV in place.	No rollers allowed.
1 Foundation	$ YDULHW\ RI SODFHPHQW PHWKRGV PD\ EH XVHG LQFOXGLQJ EXW QRW OLPLWHG WR I placement or dozer placement. 3ODWH FRPSDFW RU UROO WR DFKLHYH D ÀDW XQ\LHOGLQJ VXUIDFH &RQWUDFWRU LV UHVSRQVLEOH IRU DQ\ FRQGLWLRQV RU UHTXLUHPHQWV UHODWLQJ W SURWHFWLRQ RI VXEJUDGH LQ¿OWUDWLYH FDSDFLW\			

Table 3: Acceptable Fill Materials

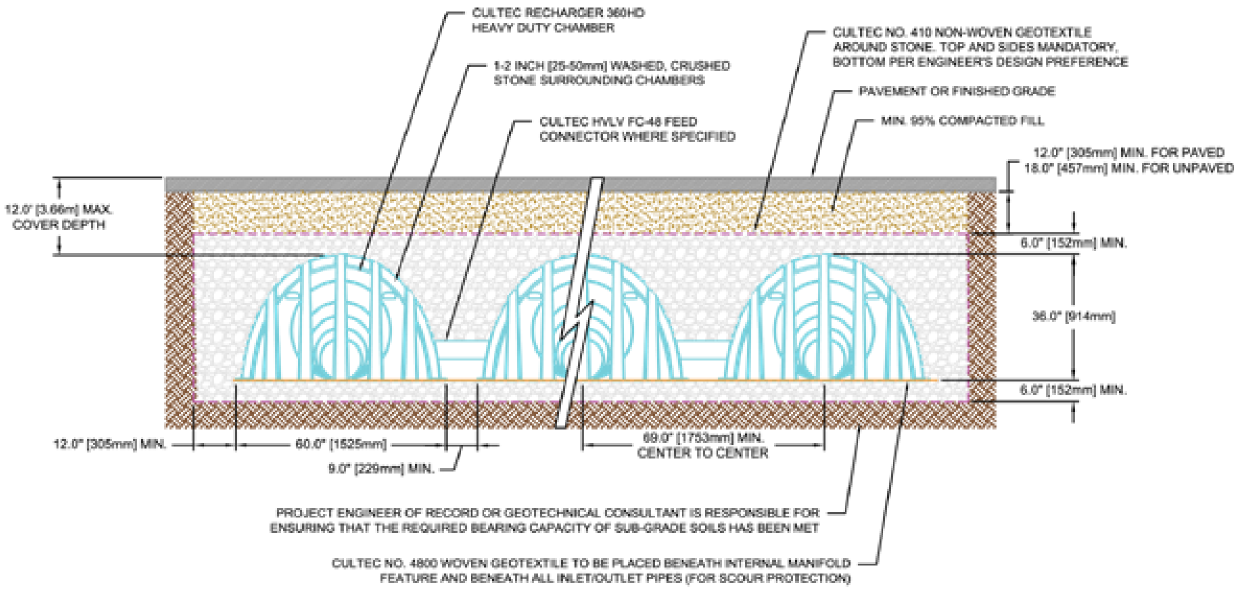
	Material Location	Description	AASHTO M43 &ODVVL¿FDWLRQ	Compaction/ Density Requirement
4	)LOO 0DWHULDO IRU /D\H the top of Layer 3 to the bottom RI SDYHPHQW RU XQSDY JUDGH DERYH 5HIHU WR SDJH IRU SURSHU PLQL requirements.	$Q\ VRLO URFN PDWHULDOV QDWLYH VRLOV or per engineer's plans. Check plans for pavement subgrade requirements.	Per engineer's drawings	Prepare per engineer's drawing. Paved installations may have strict material and preparation requirements.
3	Fill Material for Layer 3 starts from WRS RI HPEHGPHQW VWRQH /D\HU to minimum required depth above top of chamber. 5HIHU WR FURVV VHFWLRQ SDJH IRU SURSHU PLQLPXP ¿OO UHTXLUHPHQWV	*UDQXODU ZHOO JUDGHG VRLO DJJUHJDWH PL[WXUHV ¿QHV		&RPSDFW LQ ´ OLIWV WR D PLQLPXP 6WDQGDUG 3URFWRU GHQVLW\ 5HIHU WR 7DEOH IRU DFFHSWDEOH gross vehicle weights.
2	Embedment Stone surrounding chambers and to a minimum elevation above chamber crown. +' ´ PLQ UHTXLUHG +' ´ PLQ UHTXLUHG	:DVKHG FUXVKHG VWRQH ZLWK WKH majority of particles between ´ ´		No compaction required.
1	Foundation Stone below chambers per engineer's drawing +' ´ PLQ UHTXLUHG +' ´ PLQ UHTXLUHG	:DVKHG FUXVKHG VWRQH ZLWK WKH majority of particles between ´ ´		Plate compact or roll to achieve a ÀDW XQ\LHOGLQJ VXUIDFH

7KH OLVWHG $$6+72 FODVVL¿FDWLRQV DUH IRU JUDGDWLRQV 7KH VWRQH PXVW EH ZDVKHG FUXVKHG DQG DQJXODU 6HH 7DEO
)RU H[DPSOH WKH VWRQH PXVW EH VSHFL¿HG DV ZDVKHG FUXVKHG 1R VWRQH)LOO PDWHULDOV VKDOO EH IUHH RI GHEULV
&RPSDFW &8/7(& IRU JUDGDWLRQ UHTXLUHPHQWV IRU VSHFL¿F SURMHFWV WKDW GR QRW IDOO ZLWKLQ WKH DERYH VSHFL¿FDW

Fig. 1. Fill Material Locations - refer to Tables 1-3



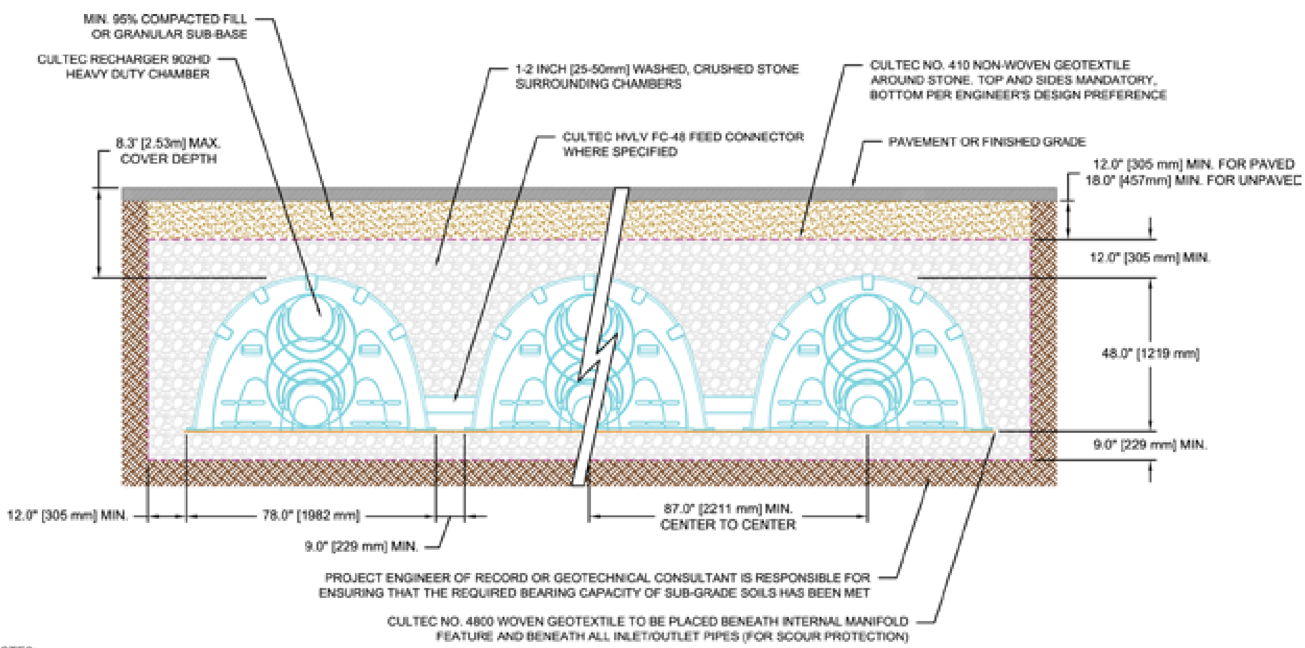
5HFKDUJHU +' 7\SLFDO &URVV 6HFWLRQ IRU 7UDÒF $SSOLFD



NOTES:

1. THE CHAMBERS SHALL BE DESIGNED AND TESTED IN ACCORDANCE WITH ASTM F2787 "STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS." THE LOAD CONFIGURATION SHALL INCLUDE:
   1.a. INSTANTANEOUS AASHTO DESIGN TRUCK LIVE LOAD AT MINIMUM COVER
   1.b. MAXIMUM PERMANENT (50-YEAR) COVER LOAD
   1.c. 1-WEEK PARKED AASHTO DESIGN TRUCK LOAD
2. THE CHAMBERS SHALL MEET THE REQUIREMENTS OF ASTM F3430-20 "STANDARD SPECIFICATION FOR CELLULAR POLYPROPYLENE (PP) CORRUGATED WALL STORMWATER COLLECTION CHAMBERS"
3. THE INSTALLED CHAMBER SYSTEM SHALL PROVIDE RESISTANCE TO THE LOADS AND LOAD FACTORS AS DEFINED IN THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS SECTION 12.12, WHEN INSTALLED ACCORDING TO CULTEC'S RECOMMENDED INSTALLATION INSTRUCTIONS. THE STRUCTURAL DESIGN OF THE CHAMBERS SHALL INCLUDE THE FOLLOWING:
   3.a. THE CREEP MODULUS SHALL BE 50-YEAR AS SPECIFIED IN ASTM F3430
   3.b. THE MINIMUM SAFETY FACTOR FOR LIVE LOADS SHALL BE 1.75
   3.c. THE MINIMUM SAFETY FACTOR FOR DEAD LOADS SHALL BE 1.95

5HFKDUJHU +' 7\SLFDO &URVV 6HFWLRQ IRU 7UDÒF $SSOLFD



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7DEOH &8/7(& 1R Œ 1RQ :RYHQ *HRWH[WLOH 6SHFL¿FDWLRQ

Properties	ASTM Test Method	Test Results
Appearance		Black
Weight - Typical	'	R] V\
Tensile Strength	'	OEV
(ORQJDWLRQ # %UHDN	'	
Mullen Burst*	D 3786*	SVL
Puncture Strength*	'	OEV
CBR Puncture	'	OEV
Trapezoid Tear	'	OEV
AOS	'	70 US Sieve
Permittivity	'	6HF
Water Flow Rate	'	JDO PLQ VI
89 5HVLVWDQFH # +RXUV	'	

+LVWRULFDO DYHUDJHV FXUUHQW YDOXHV QRW DYDLODEOH 0XOOHQ %XUVW 6WUHQJWK $670 ' LV QR ORQJHU UHFRJQL]H PHWKRG 3XQFWXUH 6WUHQJWK $670 ' LV QRW UHFRJQL]HG E\ $$6+72 0 DQG KDV EHHQ UHSODFHG ZLWK &%5 3XQFWXUH $6 6XEVWLWXWLRQV PXVW PHHW RU H[FHHG WKHVH PLQLPXPV 1RQ ZRYHQ JHRWH[WLOH VSDFHPHQW LV PDQGDWRU\ RYHU WRS D UHFRPPHQGHG +RZHYHU IROORZ HQJLQHHU¶V GHVLJQ SUHIHUHQFH

Table 4: &8/7(& 1R Œ :RYHQ *HRWH[WLOH 6SHFL¿FDWLRQ ,QIRU

Properties	ASTM Test Method	Test Results
Appearance		Black
Tensile Strength	'	[OEV
(ORQJDWLRQ # %UHDN	'	[
Wide Width Tensile	'	[OEV IW
:LGH :LGWK 7HQVLOH # 6WUDLQ	'	[OEV IW
:LGH :LGWK 7HQVLOH # 6WUDLQ	'	[OEV IW
:LGH :LGWK 7HQVLOH # 6WUDLQ	'	[OEV IW
CBR Puncture	'	OEV
Trapezoidal Tear	'	[OEV
Apparent Opening Size	'	86 6LHYH
Permittivity	'	6HF
Water Flow Rate	'	J PLQ VI
89 5HVLVWDQFH # +RXUV	'	

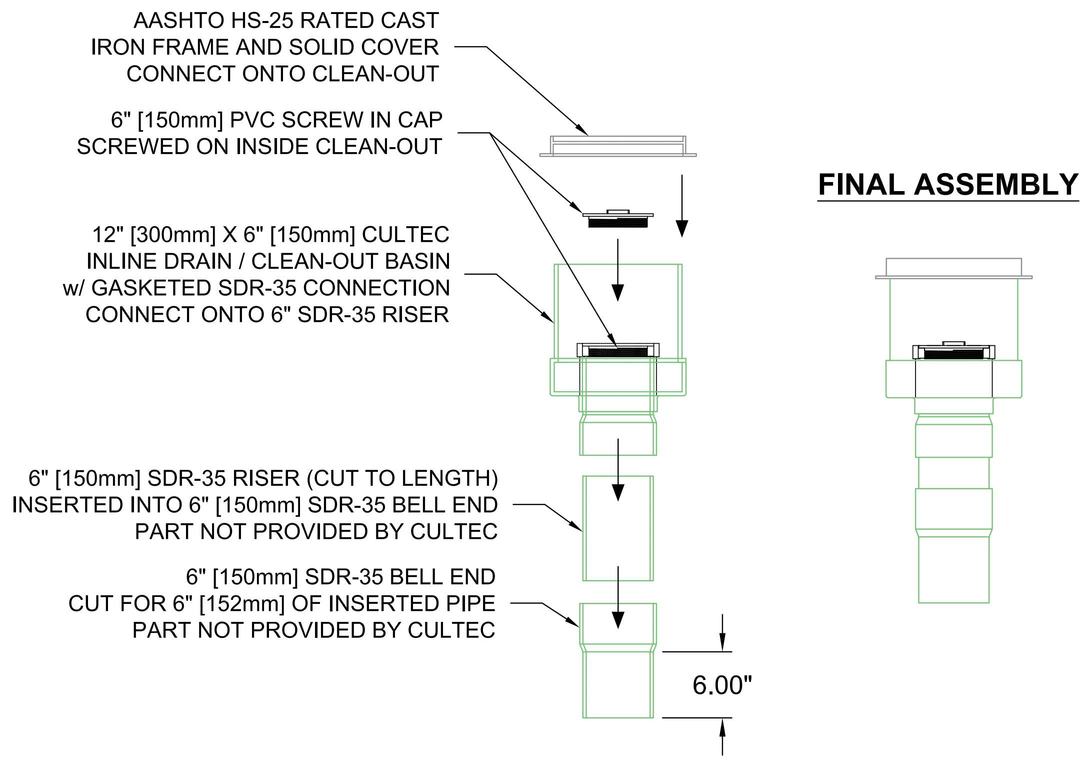
6XEVWLWXWLRQV PXVW PHHW RU H[FHHG WKHVH PLQLPXPV 7R EH XVHG DV VFRXU SURWHFWLRQ DQG LQ FRQMXQFWLRQ ZLWK

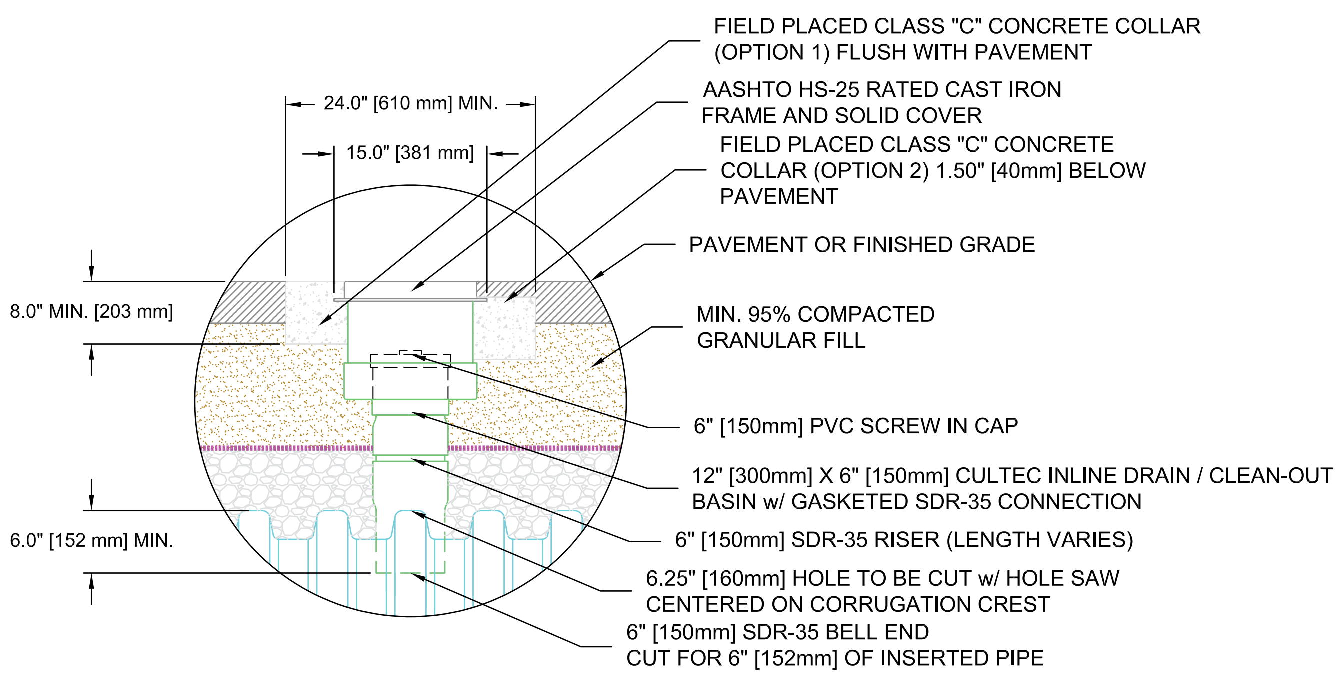
Table 5: Criteria for acceptable 1 - 2 inch washed, crushed, angular stone

Washed Crushed Stone	Description	Criteria
Acceptable	Angular	Stones have sharp edges and relatively plane sides with unpolished surfaces
	Subangular	Stones are similar to angular description but may have slightly rounded edges
Unacceptable	Subrounded	Stones have nearly plane sides but have well-rounded corners and edges
	Rounded	Stones have smoothly curved sides and no edges

6HH ,WHP DQG ,WHP RI 7DEOH RQ SDJH IRU DGGLWLRQDO VWRQH UHTXLUHPHQWV

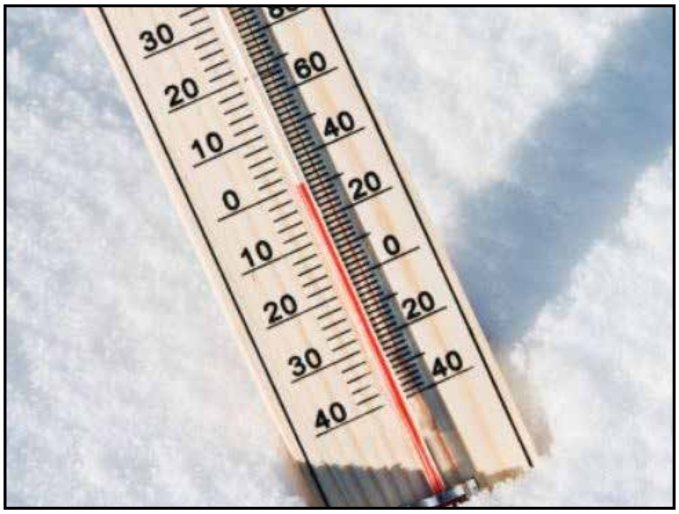
,QVSHFWLRQ 3RUW 'HWDLO IRU 3DYHG 7UDÒF $SSOLFDWLRQV





Trim inspection port knock-out with reciprocating saw or hole-saw.
Corrugated pipe is not suitable for inspection port.

Special Handling Instructions for Polypropylene, Chambers in Colder Temperatures



CULTEC chambers are manufactured of impact- PRGL¿HG SRO\SURS\OHQH ZKLFK LV LQKH resistant to corrosion and chemical breakdown DQG FROG ZHDWKHU LPSDFW $GGLWLRQ and antioxidants increase the chambers' UHVLVWDQFH WR VXQOLJKW GHJUDGDWLR &8/7(& UHFRPPHQGV WKDW ZKHQ LQVWDO WHPSHUDWXUHV EHORZ GHJUHHV) WK take special care when removing the chambers IURP WKH VWDFNV QRW DOORZLQJ WKH F from height. Avoid using machinery to handle the FKDPEHUV :KHQ SRVVLEOH &8/7(& UHFRP WKDW WKH VWRQH EDFN¿OO EH SODFHG I above 32 degrees F to minimize depressions or GHÀHFWLRQV