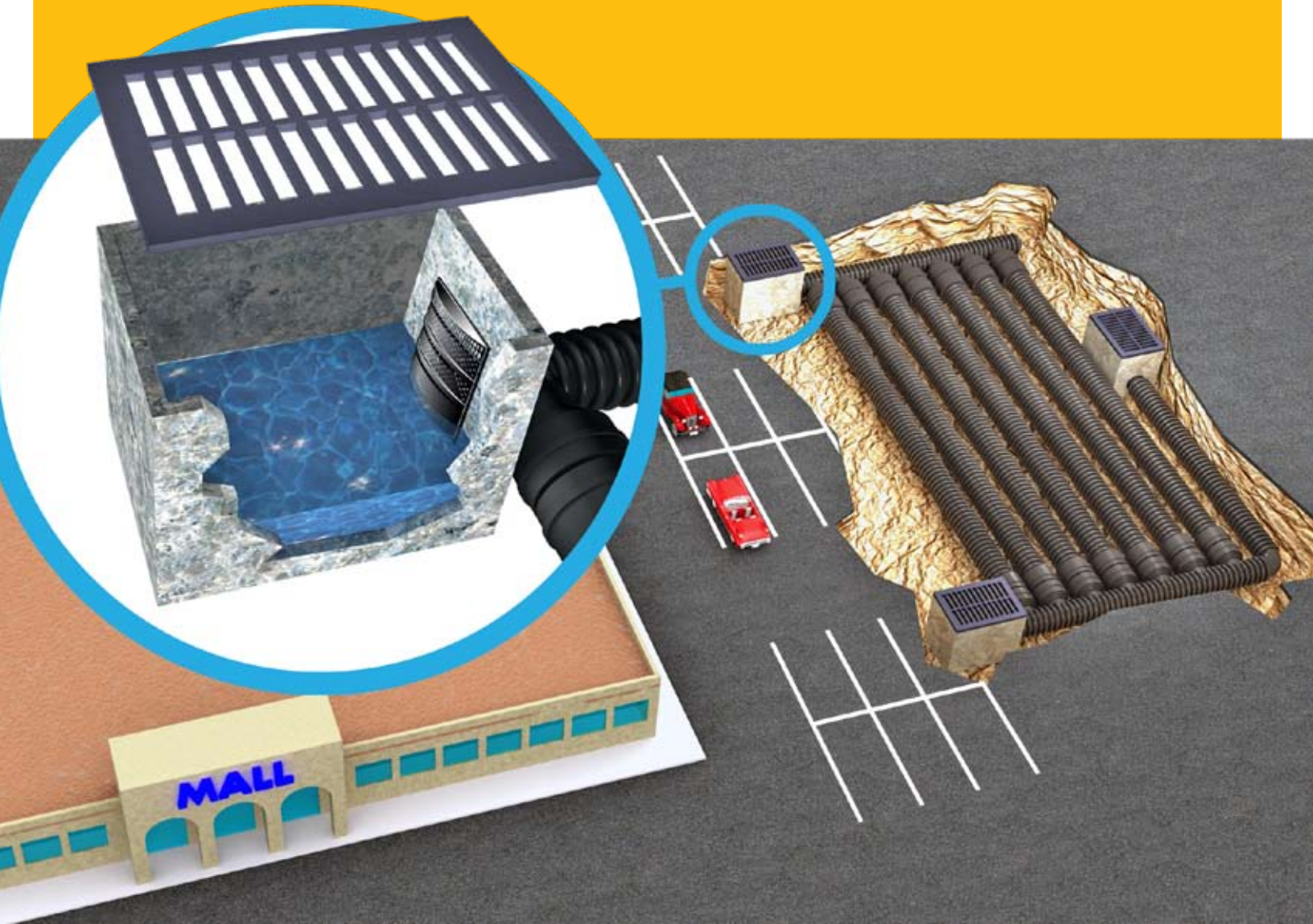


Stormwater Detention/Retention Systems



Crumpler Plastic Pipe, Inc.

Manufacturers of Corrugated Plastic Drainage Pipe

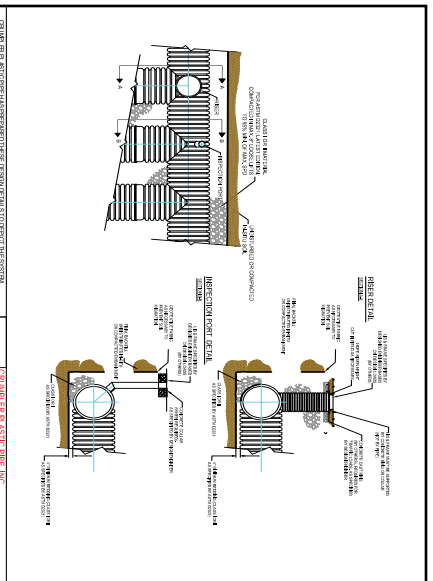
PHONE 910-525-4046 / (800) 334-5071

POST OFFICE BOX 2068

ROSEBORO, NORTH CAROLINA 28382

WEB SITE: www.cpp-pipe.com

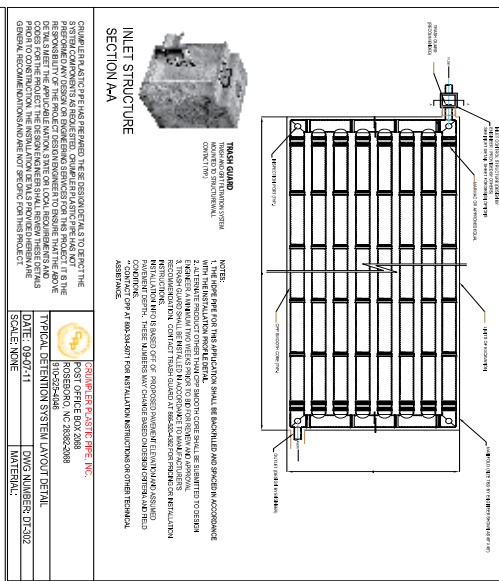




CRUMPLER PLASTIC PIPE, INC.
 POST OFFICE BOX 288
 ROSEBORO, NC 28382-0288
 PHONE: 919-286-2888
 FAX: 919-286-2888
 E-MAIL: SALES@CPPPIPE.COM
 WWW.CPPPIPE.COM

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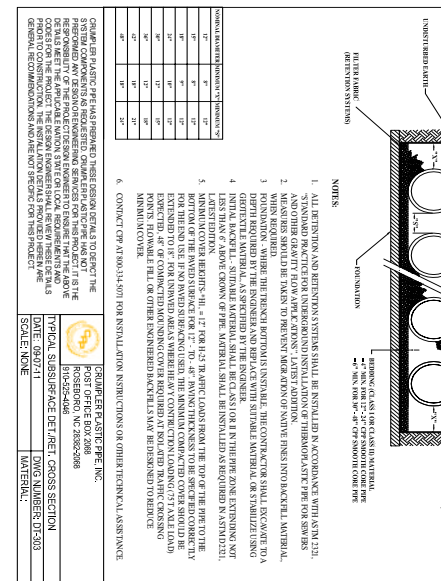
DATE: 09-07-11
 DWG NUMBER: D1-301
 SCALE: NONE



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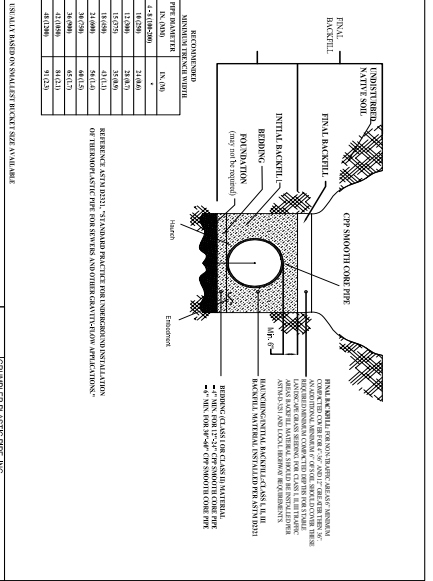
DATE: 09-07-11
 DWG NUMBER: D1-302
 SCALE: NONE



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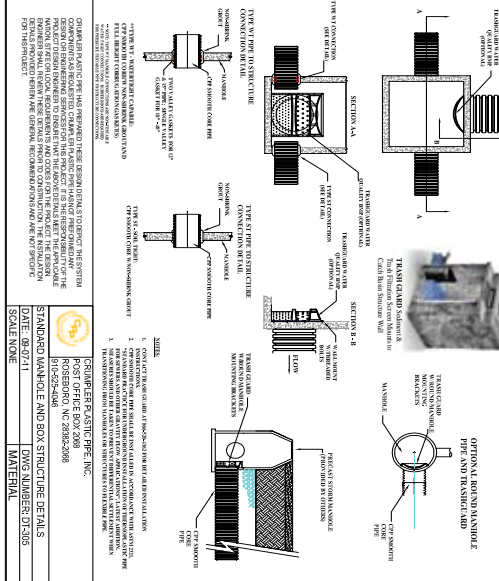
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 SCALE: NONE



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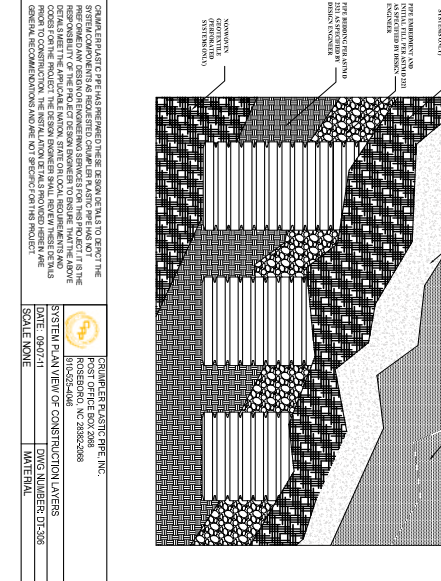
DATE: 09-07-11
 DWG NUMBER: D1-304
 SCALE: NONE



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DATE: 09-07-11
 DWG NUMBER: D1-305
 SCALE: NONE



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DATE: 09-07-11
 DWG NUMBER: D1-306
 SCALE: NONE

Introduction:
 Underground Stormwater Storage Products have become a popular BMP as Developers and Commercial Property Owners strive to save land space that can ultimately be used as an available building area to generate more income for a project. The placement of these Stormwater BMPs underneath parking lots, Roadways, Athletic Fields and set back open space areas permit volumes of Stormwater runoff to be stored underground, where it can be reused, discharged to public storm sewers or infiltrated into the soil to recharge local aquifers.

To protect underground C/P Pipe Stormwater Detention/Retention systems from trash and sediment accumulation as well as floatable items, such as plastic bags, from entering an underground pipe Storage System, CPP, Inc. recommends the use of the Catch Basin Insert screen called TRASH GUARD®. These durable plastic screens have been demonstrated to remove not only unsightly trash, but also parking lot sediments laden with regulated metals, Nitrogen and Phosphorus. By removing the unwanted trash and toxic sediments from the Stormwater flow at the TRASH GUARD® protected Catch Basin, CPP underground detention systems last longer because they are not becoming clogged. At numerous locations from mountains to the Carolina and California coasts, the cleaning cycle required of TRASH GUARD® protected Catch Basins has been either Quarterly or Semi-Annual under a variety of rainfall and topography conditions. Removal of trash and sediments from a Catch Basin is much less expensive than from an underground BMP storage system once the Post Construction life of a project begins.

Specification for Smooth Interior and Annular Exterior Corrugated High Density Polyethylene (HDPE) Pipe

Description
 This specification describes 12-inch through 48-inch (300 to 1200 mm) HDPE pipe for soft-light applications. All construction will be to prescribed lines and grades in accordance with the plans and specifications, or as directed by the engineer.

Manufacturer
 Pipe and fittings shall be Crumpler Plastic Pipe Smooth Core Pipe

Pipe Requirements
 Pipe shall have a smooth interior and annular exterior corrugations.

- 12-inch through 48-inch (300 to 1200 mm) shall meet most current edition of AASHTO M294.

Joint Performance
 Pipe joints shall meet the requirements of most current edition of AASHTO M294.

Fittings
 Fittings shall conform to most current edition of AASHTO M294.

Material Properties
 Pipe and fitting material shall be high-density polyethylene meeting ASTM D3350 cell classification. Cell classification shall be 345434C or greater. The 12-inch through 48-inch (300 to 1200mm) pipe shall be a slow crack resistant material evaluated using the single point notched constant tensile load (SP-NCTL) test per AASHTO M294.

Inlet / Outlet pipe joints shall be sealed with an exterior coupler. The joints coupler shall be Marmac Polyseal Pipe Coupler as supplied by Crumpler Plastic Pipe and shall be installed according to manufacturer's recommendations. The couplers shall have an outer layer of cross-laminated polyethylene with an under layer of rubberized mastic that is reinforced with a woven polypropylene fabric. The coupler's width shall be per manufacturer's recommendations and designed so that when it is applied around the joint the ends shall overlap at least 8-inches.

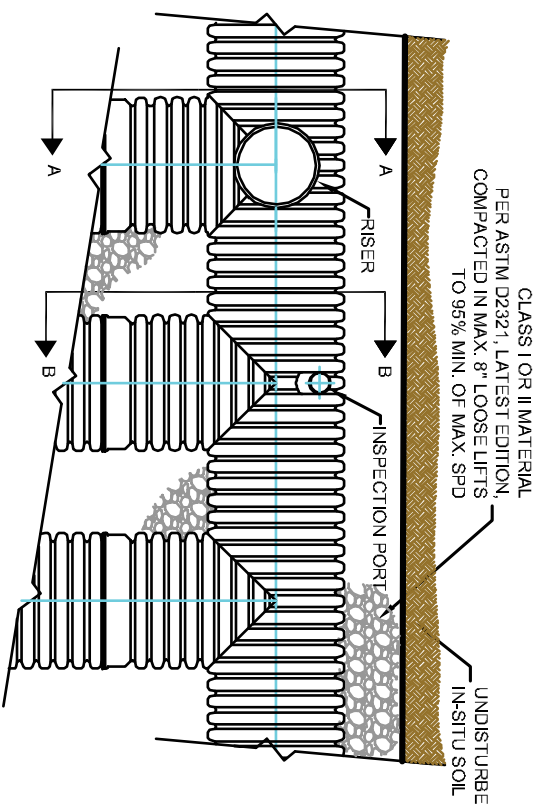
Installation
 Installation shall be in accordance with ASTM D2321, with the exception that minimum cover in trafficked areas for 12-inch through 36-inch (300 to 900 mm) diameters shall be 1 ft. (0.3 m) and for 42-inch (1050 mm) and 48-inch (1200 mm) diameter, the minimum cover shall be 2.0 ft. (0.6 m).



CRUMPLER PLASTIC PIPE
ROSEBORO, NC

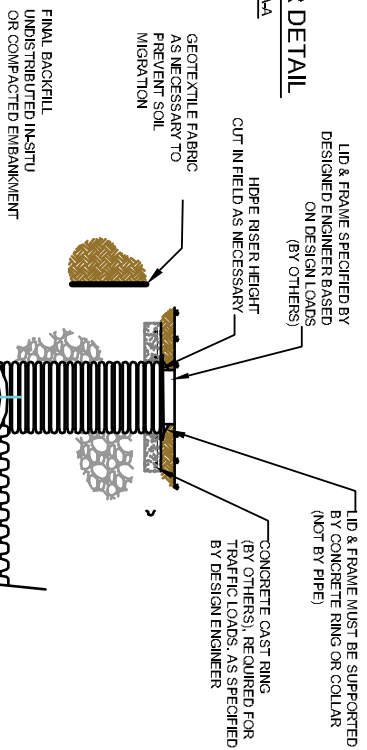
CRUMPLER PLASTIC PIPE
STORMWATER LAYOUT
ROSEBORO, NC

DATE:
DESIGNED BY: TRT
MATERIAL:



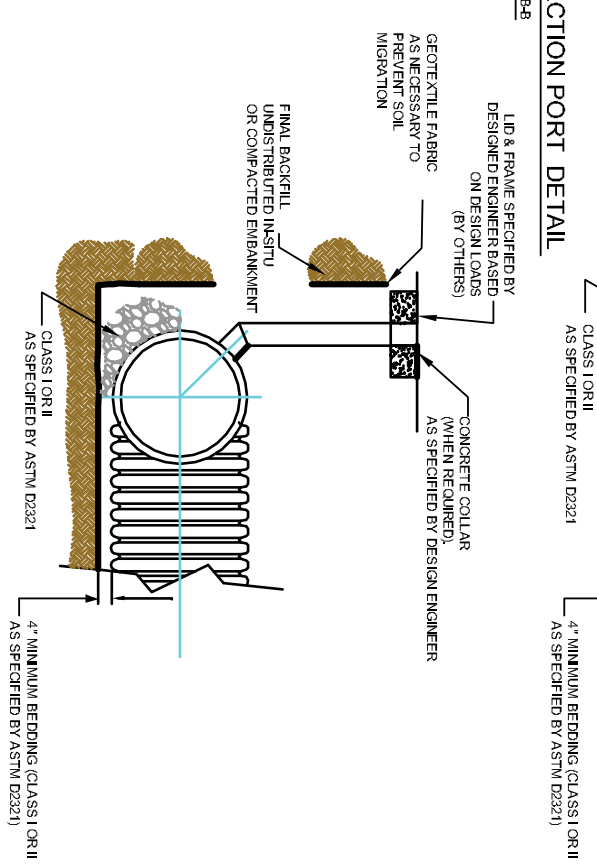
RISER DETAIL

SECTION AA



INSPECTION PORT DETAIL

SECTION BB



CRUMPLER PLASTIC PIPE HAS PREPARED THESE DESIGN DETAILS TO DEPICT THE SYSTEM COMPONENTS AS REQUESTED. CRUMPLER PLASTIC PIPE HAS NOT PERFORMED ANY DESIGN OR ENGINEERING SERVICES FOR THIS PROJECT. IT IS THE RESPONSIBILITY OF THE PROJECT DESIGN ENGINEER TO ENSURE THAT THE ABOVE DETAILS MEET THE APPLICABLE NATION, STATE OR LOCAL REQUIREMENTS AND CODES FOR THE PROJECT. THE DESIGN ENGINEER SHALL REVIEW THESE DETAILS PRIOR TO CONSTRUCTION. THE INSTALLATION DETAILS PROVIDED HEREIN ARE GENERAL RECOMMENDATIONS AND ARE NOT SPECIFIC FOR THIS PROJECT.



CRUMPLER PLASTIC PIPE, INC.
 POST OFFICE BOX 2068
 ROSEBORO, NC 28382-2068
 910-525-4046

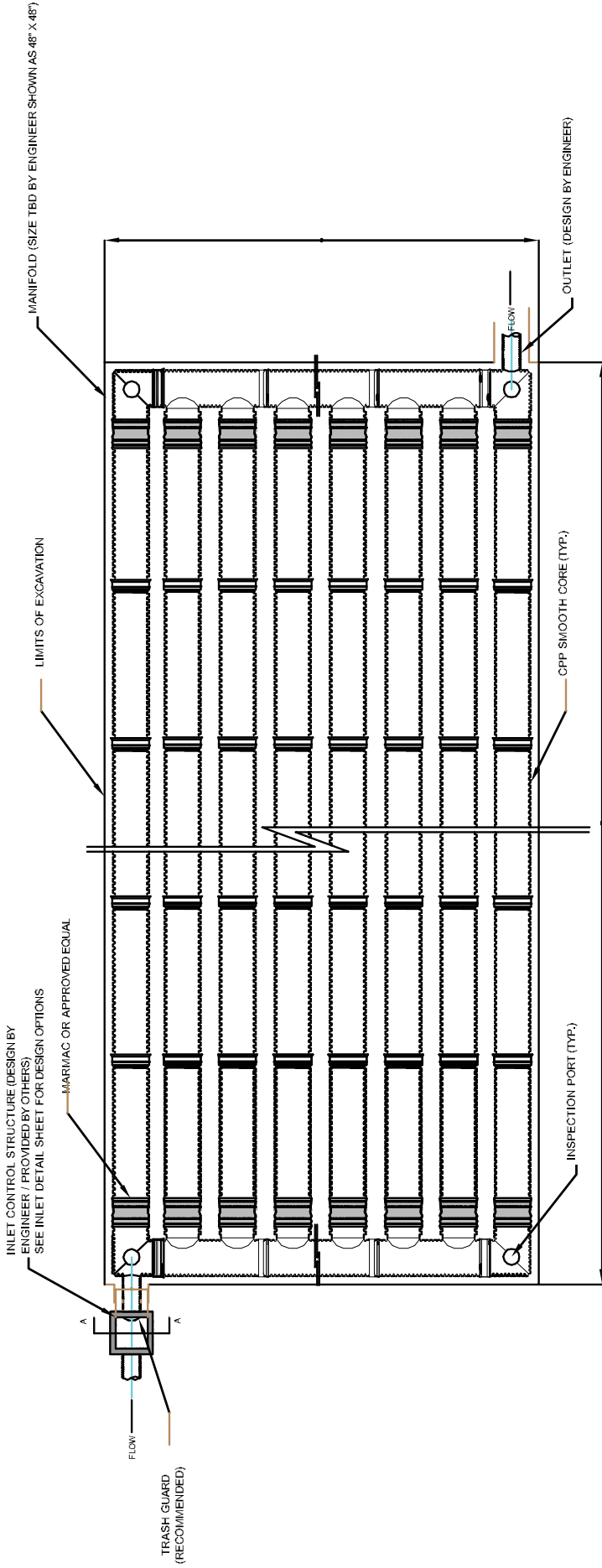
CLEANOUT AND RISER DETAIL

DATE: 09-07-11

DWG NUMBER: DT-301

SCALE: NONE

MATERIAL:



TRASH GUARD

TRASH AND GRIT FILTRATION SYSTEM
MOUNTED TO STRUCTURE WALL
CONTACT (TYP)



**INLET STRUCTURE
SECTION A-A**

NOTES:

1. THE HDPE PIPE FOR THIS APPLICATION SHALL BE BACKFILLED AND SPACED IN ACCORDANCE WITH THE INSTALLATION PROFILE DETAIL.
 2. ALTERNATE PRODUCT OTHER THAN CPP SMOOTH CORE SHALL BE SUBMITTED TO DESIGN ENGINEER A MINIMUM TWO WEEKS PRIOR TO BID FOR REVIEW AND APPROVAL
 3. TRASH GUARD SHALL BE INSTALLED IN ACCORDANCE TO MANUFACTURER'S RECOMMENDATION. CONTACT TRASH GUARD AT 866-520-4362 FOR PRICING OR INSTALLATION INSTRUCTIONS.
- INSTALLATION INFO IS BASED OFF OF PROPOSED PAVEMENT ELEVATION AND ASSUMED PAVEMENT DEPTH. THESE NUMBERS MAY CHANGE BASED ON DESIGN CRITERIA AND FIELD CONDITIONS.
- ** CONTACT CPP AT 800-334-5071 FOR INSTALLATION INSTRUCTIONS OR OTHER TECHNICAL ASSISTANCE.



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910-525-4046

TYPICAL DETENTION SYSTEM LAYOUT DETAIL

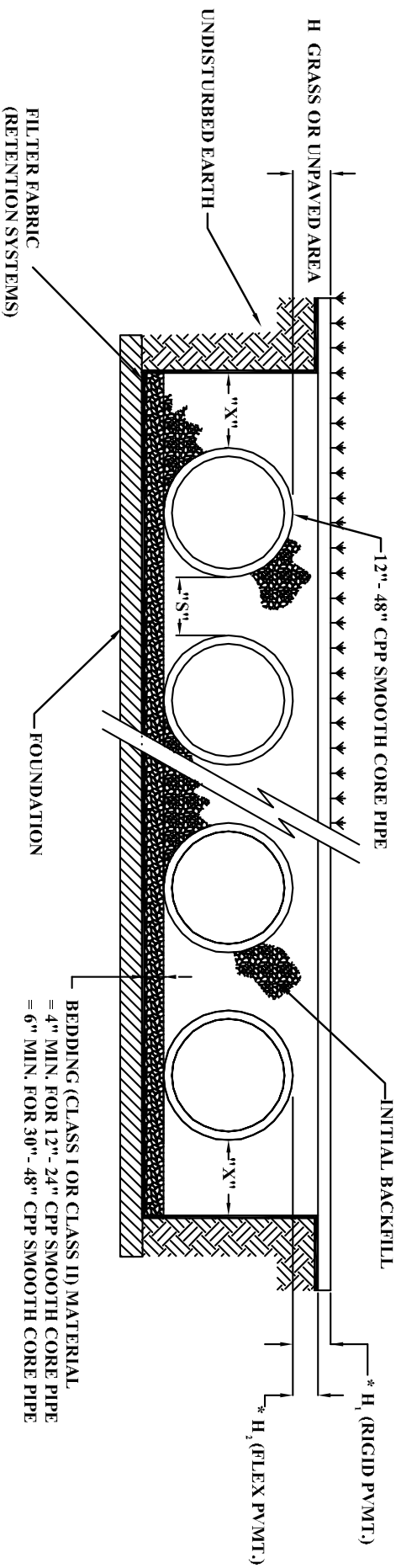
DATE: 09-07-11

SCALE: NONE

DWG NUMBER: DT-302

MATERIAL:

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NOTES:

1. ALL DETENTION AND RETENTION SYSTEMS SHALL BE INSTALLED IN ACCORDANCE WITH ASTM 2321, "STANDARD PRACTICE FOR UNDERGROUND INSTALLATION OF THERMOPLASTIC PIPE FOR SEWERS AND OTHER GRAVITY FLOW APPLICATIONS", LATEST ADDITION.
2. MEASURES SHOULD BE TAKEN TO PREVENT MIGRATION OF NATIVE FINES INTO BACKFILL MATERIAL, WHEN REQUIRED.
3. FOUNDATION - WHERE THE TRENCH BOTTOM IS UNSTABLE, THE CONTRACTOR SHALL EXCAVATE TO A DEPTH REQUIRED BY THE ENGINEER AND REPLACE WITH SUITABLE MATERIAL OR STABILIZE USING GEOTEXTILE MATERIAL, AS SPECIFIED BY THE ENGINEER.
4. INITIAL BACKFILL - SUITABLE MATERIAL SHALL BE CLASS I OR II IN THE PIPE ZONE EXTENDING NOT LESS THAN 6' ABOVE CROWN OF PIPE. MATERIAL SHALL BE INSTALLED AS REQUIRED IN ASTM D2321, LATEST EDITION.
5. MINIMUM COVER HEIGHTS: *H₁ = 12" FOR H-25 TRAFFIC LOADS FROM THE TOP OF THE PIPE TO THE BOTTOM OF THE PAVED SURFACE FOR 12" - TO - 48" PAVING THICKNESS TO BE SPECIFIED CORRECTLY FOR THE END USE. IF NO PAVED SURFACING USED, THE MINIMUM COMPACTED COVER SHOULD BE EXTENDED TO 18". FOR UNPAVED AREAS WHERE HEAVY CONSTRUCTION LOADING (7.5 T AXLE LOAD) EXPECTED, 48" OF COMPACTED MOUNDING COVER REQUIRED AT ISOLATED TRAFFIC CROSSING POINTS. FLOWABLE FILL OR OTHER ENGINEERED BACKFILLS MAY BE DESIGNED TO REDUCE MINIMUM COVER.
6. CONTACT CPP AT 800-334-5071 FOR INSTALLATION INSTRUCTIONS OR OTHER TECHNICAL ASSISTANCE.

NOMINAL DIAMETER	MINIMUM "X"	MINIMUM "S"
12"	8"	12"
15"	8"	12"
18"	9"	12"
24"	10"	12"
30"	12"	15"
36"	12"	18"
42"	18"	21"
48"	18"	24"

CRUMPLER PLASTIC PIPE HAS PREPARED THESE DESIGN DETAILS TO DEPICT THE SYSTEM COMPONENTS AS REQUESTED. CRUMPLER PLASTIC PIPE HAS NOT PERFORMED ANY DESIGN OR ENGINEERING SERVICES FOR THIS PROJECT. IT IS THE RESPONSIBILITY OF THE PROJECT DESIGN ENGINEER TO ENSURE THAT THE ABOVE DETAILS MEET THE APPLICABLE NATION, STATE OR LOCAL REQUIREMENTS AND CODES FOR THE PROJECT. THE DESIGN ENGINEER SHALL REVIEW THESE DETAILS PRIOR TO CONSTRUCTION. THE INSTALLATION DETAILS PROVIDED HEREIN ARE GENERAL RECOMMENDATIONS AND ARE NOT SPECIFIC FOR THIS PROJECT.



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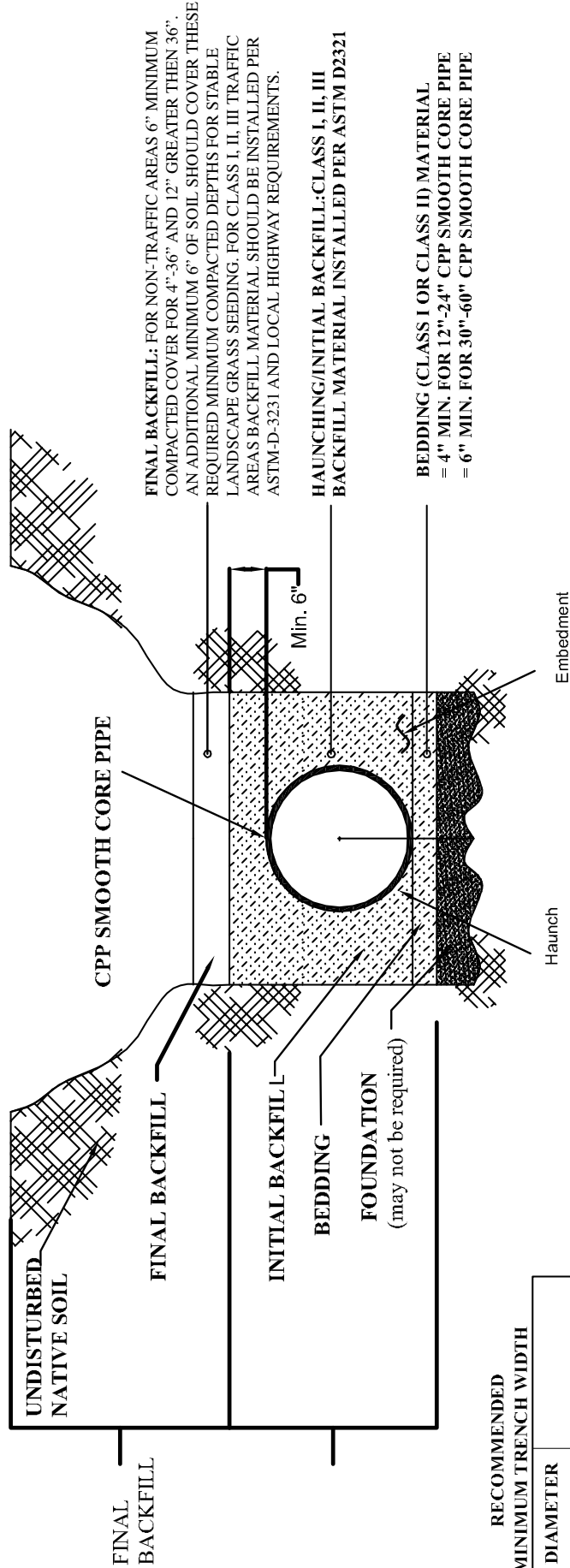
TYPICAL SUBSURFACE DET./RET. CROSS SECTION

DATE: 09-07-11

DWG NUMBER: DT-303

SCALE: NONE

MATERIAL:



REFERENCE ASTM D2321, "STANDARD PRACTICE FOR UNDERGROUND INSTALLATION OF THERMOPLASTIC PIPE FOR SEWERS AND OTHER GRAVITY-FLOW APPLICATIONS."

RECOMMENDED MINIMUM TRENCH WIDTH

PIPE DIAMETER IN. (MM)	IN. (M)
4 - 8 (100-200)	*
10 (250)	24 (0.6)
12 (300)	28 (0.7)
15 (375)	35 (0.9)
18 (450)	43 (1.1)
24 (600)	56 (1.4)
30 (750)	60 (1.5)
36 (900)	65 (1.7)
42 (1050)	84 (2.1)
48 (1200)	91 (2.3)

USUALLY BASED ON SMALLEST BUCKET SIZE AVAILABLE

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TYPICAL TRENCH DETAIL CROSS SECTION

DATE: 09-07-11

DWG NUMBER: DT-304

SCALE NONE

MATERIAL

FINISHED GRADE OR
SURFACE AS SPECIFIED BY
DESIGN ENGINEER

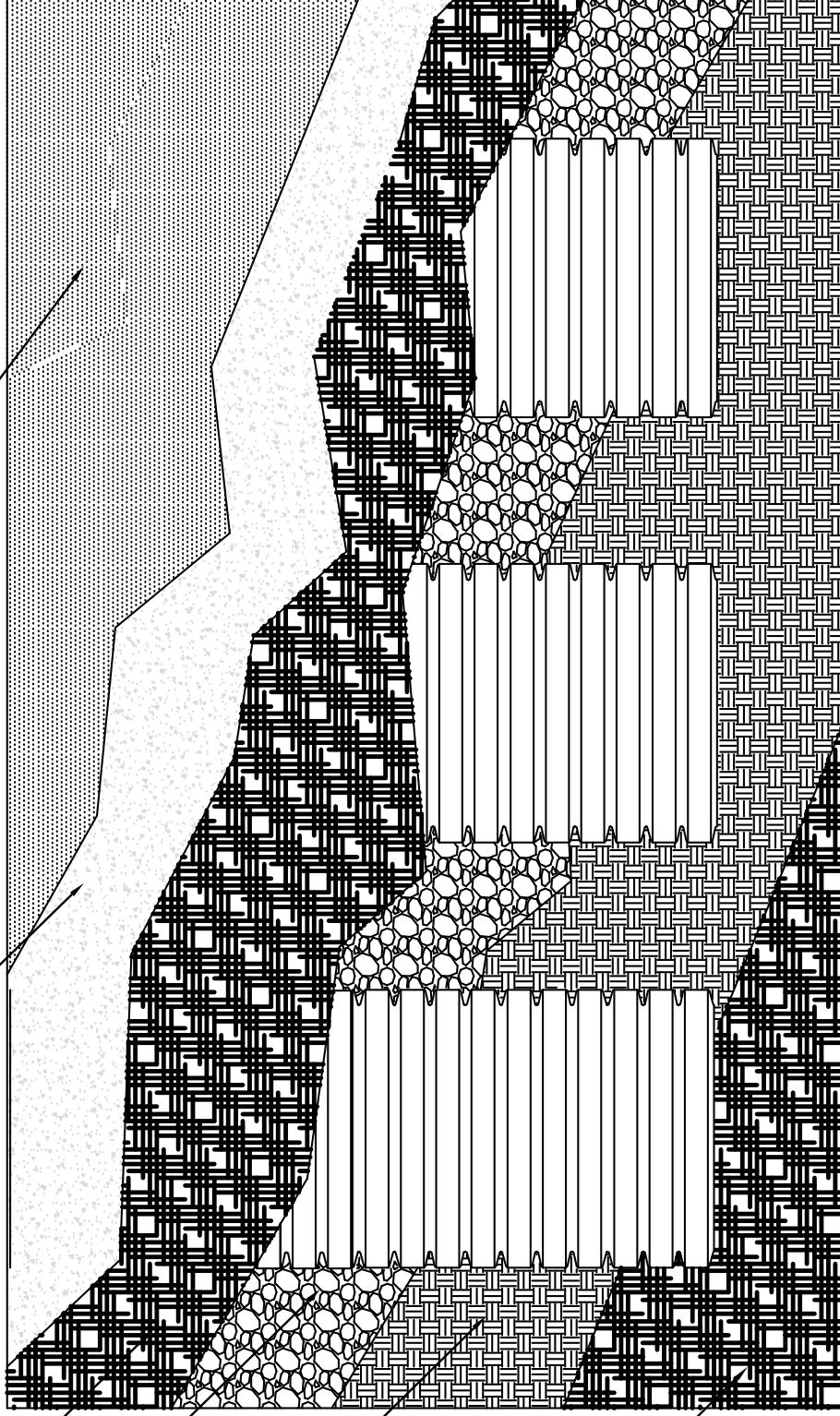
FINAL FILL MATERIAL AND COMPACTION
AS SPECIFIED BY DESIGN ENGINEER FOR
SURFACE LOADING CONDITIONS

NONWOVEN
GEOTEXTILE
(PERFORATED
SYSTEMS ONLY)

PIPE EMBEDMENT AND
INITIAL FILL PER ASTM D 2321
AS SPECIFIED BY DESIGN
ENGINEER

PIPE BEDDING PER ASTM D
2321 AS SPECIFIED BY
DESIGN ENGINEER

NONWOVEN
GEOTEXTILE
(PERFORATED
SYSTEMS ONLY)



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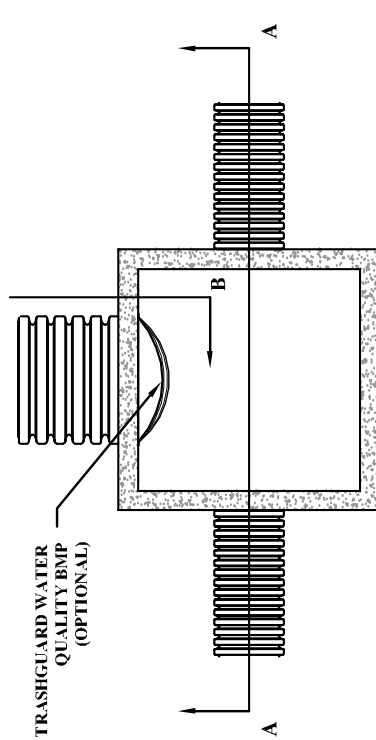
SYSTEM PLAN VIEW OF CONSTRUCTION LAYERS

DATE: 09-07-11

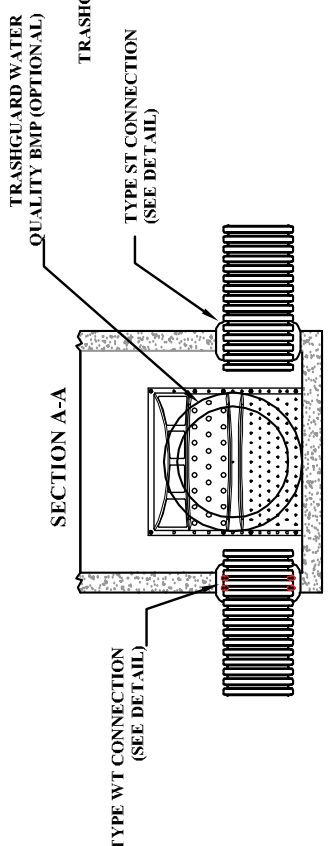
DWG NUMBER: DT-306

SCALE NONE

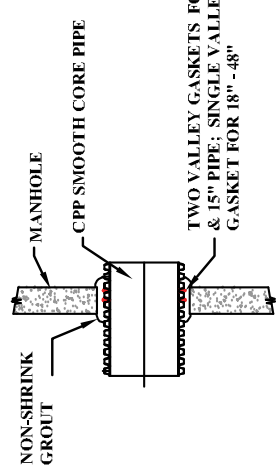
MATERIAL



TRASH GUARD Sediment & Trash Filtration Screen Mounts to Catch Basin Structure Wall



TYPE WT PIPE TO STRUCTURE CONNECTION DETAIL

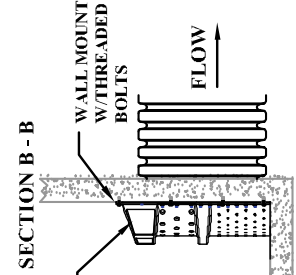
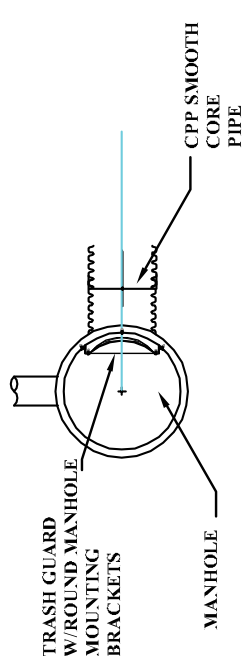


****TYPE WT - WATERTIGHT CAPABLE: CPP SMOOTH CORE/W NON-SHRINK GROUT AND FULL HEIGHT CORRUGATION GASKET(S)**

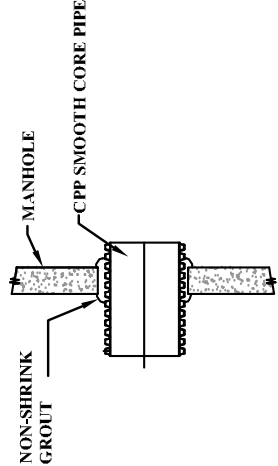
****NOTE: TYPE WT MANHOLE CONNECTIONS ARE NON-TESTABLE WATER TIGHT CONNECTIONS. RUBBER ROOTS ARE REQUIRED FOR PRESSURE TESTABLE PIPE TO STRUCTURE CONNECTIONS.**



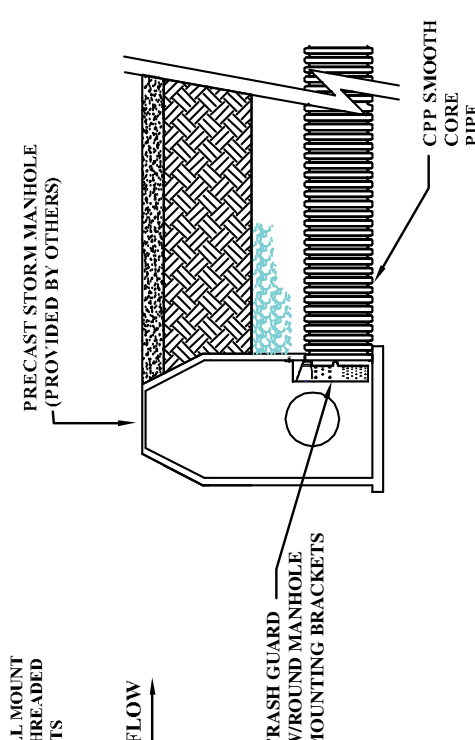
OPTIONAL ROUND MANHOLE PIPE AND TRASHGUARD



TYPE ST PIPE TO STRUCTURE CONNECTION DETAIL



TYPE ST - SOIL TIGHT: CPP SMOOTH CORE W/NON-SHRINK GROUT



NOTES:

1. CONTACT TRASH GUARD AT 866-520-4362 FOR DETAILED INSTALLATION INSTRUCTIONS.
2. CPP SMOOTH CORE PIPE SHALL BE INSTALLED IN ACCORDANCE WITH ASTM 2321, "STANDARD PRACTICE FOR UNDERGROUND INSTALLATION OF THERMOPLASTIC PIPE FOR SEWERS AND OTHER GRAVITY FLOW APPLICATIONS"; LATEST ADDITION. MEASURES SHOULD BE TAKEN TO PREVENT DIFFERENTIAL SETTLEMENT WHEN TRANSITIONING FROM MANHOLES OR STRUCTURES TO FLEXIBLE PIPE.



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 910-525-4046

STANDARD MANHOLE AND BOX STRUCTURE DETAILS

DATE: 09-07-11

SCALE NONE

DWG NUMBER: DT-305

MATERIAL

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CPP factory fabricated fittings and manifolds allows for easy site assembly of CPP Stormwater Detention/Retention Systems





Compacted cover and ready for paving photos show Manhole Covers for inspection access and easy post construction maintenance





Now ready for paving and final landscape touch up work, this Trash Guard® Protected CPP Stormwater Detention / Retention System is set to last the mortgage life of this shopping complex thanks to inexpensive maintenance for sediment control



Crumpler Plastic Pipe Stormwater Layout

Post Office Box 2068
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www.cpp-pipe.com



Crumpler Plastic Pipe, Inc.

Manufacturers of Corrugated Plastic Drainage Pipe



WEB SITE: www.cpp-pipe.com