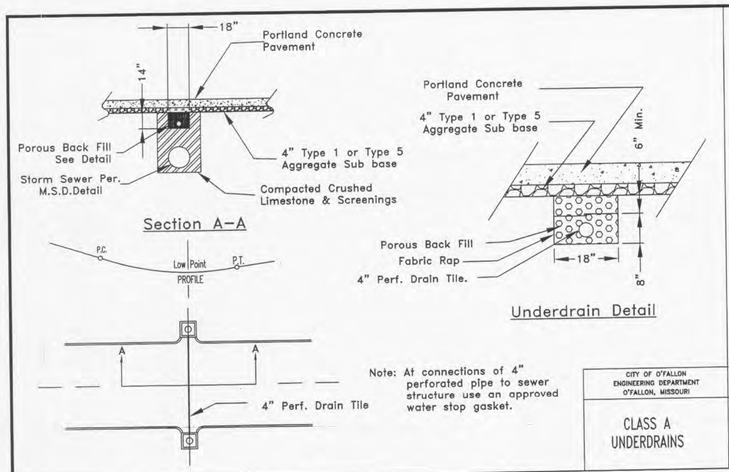
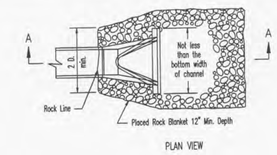


Note: At connections of 4" perforated pipe to sewer structure use an approved water stop gasket.

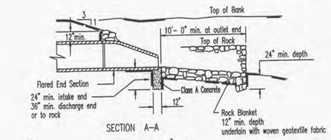
CITY OF O'FALLON ENGINEERING DEPARTMENT O'FALLON, MISSOURI

CLASS A UNDERDRAINS



* The discharge point of all flared end sections hall be protected by rip rap or other approved means.

** Rip rap shown at flared end sections will be evaluated in the field by the Engineer, Contractor, and City Inspectors after installation for effectiveness and field modified, if necessary to reduce erosion on and off site.



NOTE:
1. To be used at intake and discharge end of pipe. Grade of Rock Blanket to be adjusted accordingly.
2. Woven Geotextile Fabric required under Rock Blanket.

MSD Type 5 Rock Blanket (% By Weight Passing)		
Sieve	Maximum	Minimum
12 inch	90	70
6 inch	30	10
1/2 inch	5	0

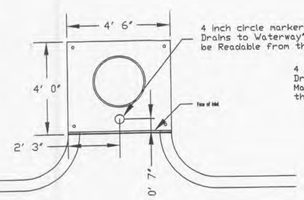
CITY OF O'FALLON ENGINEERING DEPARTMENT O'FALLON, MISSOURI

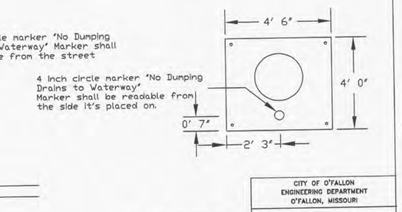
SEWER CONSTRUCTION DETAILS

FLARED END SECTION (INLET/OUTLET PROTECTION)

* The City of O'Fallon must be provided with a symbol/medallion for review and approval prior to installation. Contact the City if any information is needed.

Size	Style	Adhesive	Message (Part #)
3 7/8" TO 4"	Crystal Cap or Standard Style	Epoxy	No Dumping Drains to Waterway





CITY OF O'FALLON ENGINEERING DEPARTMENT O'FALLON, MISSOURI

STORM DRAIN MARKER LOCATION

ISSUE	REMARKS/DATE
1	10-16-2012, INITIAL SUBMITTAL
2	11-29-2012, CITY COMMENTS
3	1-14-2013, CITY & DCSD COMMENTS
4	2-13-2013, CITY COMMENTS
5	3-13-2013, REVISED STORM & SANITARY
6	3-22-2013, REVISED UNDERDRAIN
7	8-1-2013, REVISED STORM SEWERS

PROJECT TITLE

BOARDWALK GARDENS

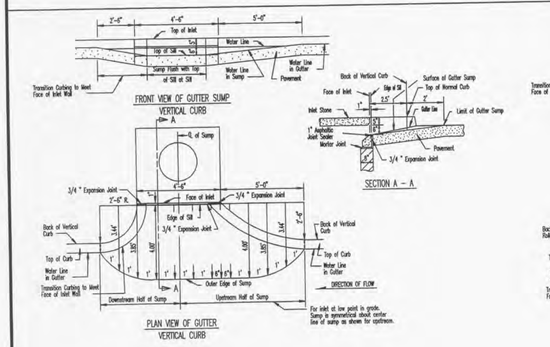
O'FALLON, MISSOURI

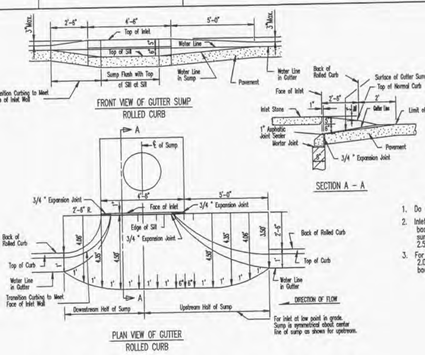
THE STERLING CO.
ENGINEERS & SURVEYORS
5055 New Baumgartner Road
St. Louis, Missouri 63129
Ph 314-487-0440 Fax 314-487-8944
www.sterling-eng-sur.com
Corporate Certificate of Authority #001348

The Professional Engineer's seal and signature affixed to this sheet applies only to the material and items shown on this sheet. All drawing, instruments or other documents not exhibiting this seal and signature are not to be considered prepared by this engineer and the engineer expressly disclaims any responsibility for such plans, drawings or documents not exhibiting this seal and signature.

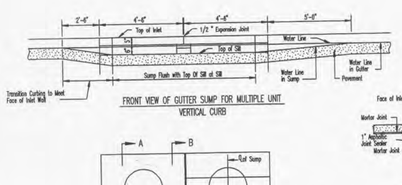
STATE OF MISSOURI
MICHAEL G. BOERDING
NUMBER E-28643
REGISTERED PROFESSIONAL ENGINEER

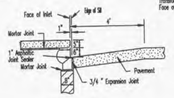
Date: 8/1/2013
MICHAEL G. BOERDING
License No. E-28643
Civil Engineer

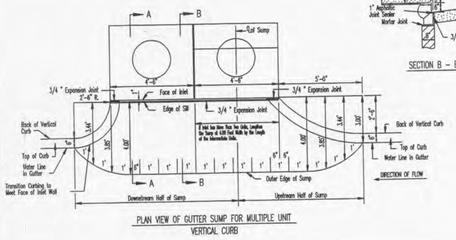


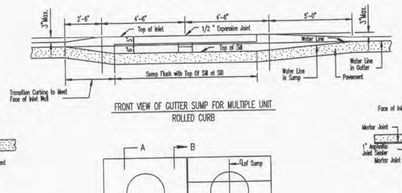


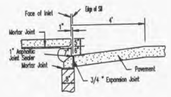
1. Do not scale drawing. Follow dimensions.
2. Inlets may be located 2.5 feet from the back of rolled curb. Add 0.5 feet to all sump dimensions for all inlets that are 2.5 feet offset.
3. For canted inlets, the sump shall extend 2.0 feet from the projection of the back of the curb.

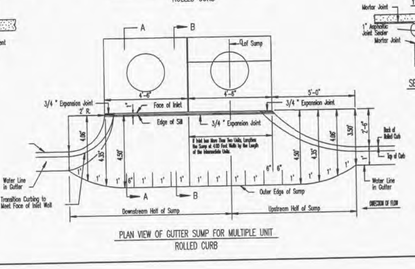












CITY OF O'FALLON ENGINEERING DEPARTMENT O'FALLON, MISSOURI

SEWER CONSTRUCTION DETAILS

STREET INLET SUMPS

HANCOR BLUE SEAL® WT IB PIPE (per AASHTO) SPECIFICATIONS

Scope
This specification describes 4- through 60-inch (100 to 1500 mm) Hancor BLUE SEAL WT IB pipe (per AASHTO) for use in gravity flow applications.

Pipe Requirements
BLUE SEAL WT IB pipe (per AASHTO) shall have a smooth interior and annular exterior corrugations.
- 4- through 10-inch (100 to 250 mm) shall meet AASHTO M252, Type S.
- 12- through 60-inch (300 to 1500 mm) shall meet AASHTO M294, Type S or ASTM F2306.
- Manning's "n" value for use in design shall be 0.012.

Joint Performance
Pipe shall be joined with the BLUE SEAL WT IB joint meeting the requirements of AASHTO M252, AASHTO M294, or ASTM F2306.

4- through 60-inch (100 to 1500 mm) shall be watertight according to the requirements of ASTM D3212. Gaskets shall meet the requirements of ASTM F477. Gaskets shall be installed by the pipe manufacturer and covered with a removable, protective wrap to ensure the gasket is free from debris. A joint lubricant available from the manufacturer shall be used on the gasket and bell during assembly.

12- through 60-inch (300 to 1500 mm) diameters shall have a reinforced bell with a polymer composite band. The bell tolerance device shall be installed by the manufacturer.

Fittings
Fittings shall conform to AASHTO M252, AASHTO M294, or ASTM F2306. Bell and spigot connections shall utilize a spun-on or welded bell and valley or saddle gasket meeting the watertight joint performance requirements of AASHTO M252, AASHTO M294 or ASTM F2306.

Field Pipe and Joint Performance
To assure watertightness, field performance verification may be accomplished by testing in accordance with ASTM F2487. Appropriate safety precautions must be used when field-testing any pipe material. Contact the manufacturer for recommended leakage rates.

Material Properties
Virgin material for pipe and fitting production shall be high-density polyethylene conforming with the minimum requirements of cell classification 424420C for 4- through 10-inch (100 to 250 mm) diameters, and 435420C for 12- through 60-inch (300 to 1500 mm) diameters, as defined and described in the latest version of ASTM D3350, except that carbon black content should not exceed 4%. The 12- through 60-inch (300 to 1500 mm) virgin pipe material shall comply with the notched constant ligament-stress (NCLS) test as specified in Sections 9.5 and 5.1 of AASHTO M294 and ASTM F2306 respectively.

Installation
Installation shall be in accordance with ASTM D2321 and Hancor recommended installation guidelines with the exception that minimum cover in trafficked areas for 4- through 48-inch (100 to 1200 mm) diameters shall be one foot (0.3 m) and for 54- and 60-inch (1350 and 1500 mm) diameters shall be 2 ft (0.6 m) in single run applications. Backfill for minimum cover situations shall consist of Class 1, Class 2 (minimum 90% SPD) or Class 3 (minimum 90%) material. Maximum fill heights depend on embedment material and compaction level; please refer to Technical Note 2.01. Contact your local Hancor representative or visit our website at www.hancor.com for a copy of the latest installation guidelines.

Pipe Dimensions

	Nominal Diameter, in (mm)												
Pipe I.D.	4 (100)	6 (150)	8 (200)	10 (250)	12 (300)	15 (375)	18 (450)	24 (600)	30 (750)	36 (900)	42 (1050)	48 (1200)	54* 60* (1350) (1500)
Approx. Weight lb (mm)	4.8 (110)	7.5 (170)	11.1 (277)	17.4 (395)	14.9 (380)	18 (457)	22 (564)	28 (711)	35 (914)	50 (1270)	62 (1578)	91 (1727)	91 (1727) (1727) (1949) (1727)

*Check with sales representative for availability by region.
**Pipe O.D. values are provided for reference purposes only, values stated for 12- through 60-inch are ± 1 inch. Contact a sales representative for exact values.

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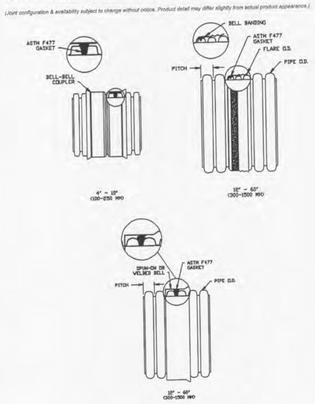
BLUE SEAL® WT IB (per AASHTO) JOINT SYSTEM

(Joint configuration & availability subject to change without notice. Product detail may differ slightly from actual product appearance.)



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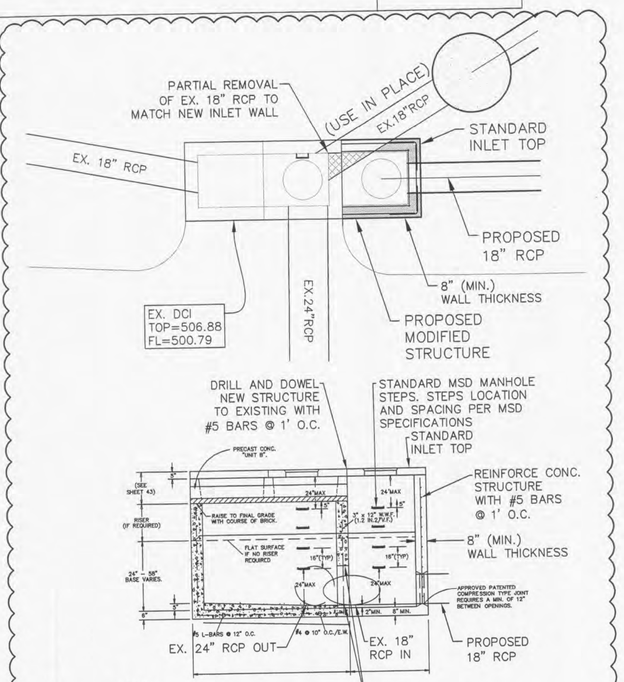
H.D.P.E. PIPE SPECIFICATION

Carefully placed compacted selected earth bedding will be used except if under pavement, or through rock cut areas. If under pavement, or through rock cut areas compacted crushed limestone and screenings is required to the base of pavement or to within 12" of finished surface. Water jetting is allowed under non paved areas.

CITY OF O'FALLON ENGINEERING DEPARTMENT O'FALLON, MISSOURI

TRANCH DETAIL



TRIPLE CURB INLET 100A

N.T.S.

* *All other Storm Sewer Details will be by M.S.D. 2009 Standards and Specifications.*

REVISION #7, 8-1-2013

MCBRIDE RED HAWK, LLC
16091 SWINGLEY RIDGE ROAD, SUITE 300
CHESTERFIELD, MISSOURI 63017
PH. 636-537-2000
Contact: Jeremy Roth

STORM SEWER DETAILS

P+Z No. 9831.34.09.01
City No.
Date: OCT.16, 2012
Job No. 12-05-128

Page No.

DTL-9 IMP

"Final Plan" Approval Date: November 1, 2012