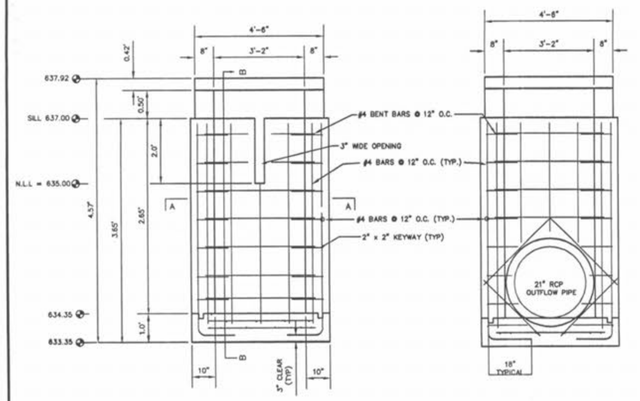
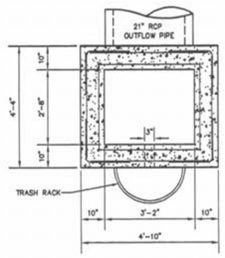
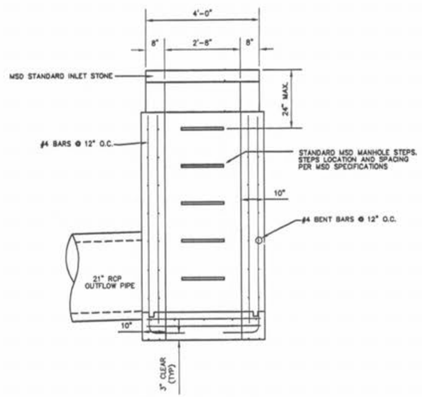


RETENTION LAKE #1
OUTFALL STRUCTURE 61
FRONT ELEVATION
N.T.S.

RETENTION LAKE #1
OUTFALL STRUCTURE 61
REAR ELEVATION
N.T.S.



RETENTION LAKE #1
OUTFALL STRUCTURE 61
SECTION A-A
N.T.S.

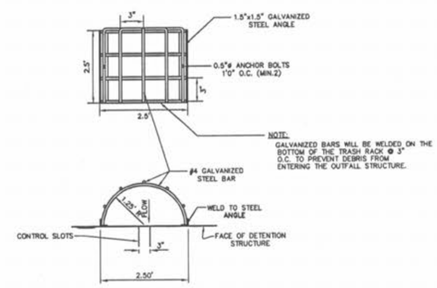


RETENTION LAKE #1
OUTFALL STRUCTURE 61
SECTION B-B
N.T.S.

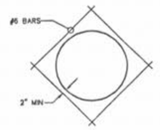
RETENTION LAKE #1, OS 61

2 YEAR, 20 MIN. STORM HIGH WATER = 635.65
15 YEAR, 20 MIN. STORM HIGH WATER = 636.02
25 YEAR, 20 MIN. STORM HIGH WATER = 636.24
100 YEAR, 20 MIN. STORM HIGH WATER = 636.55

2 YEAR, 20 MIN. STORM HIGH WATER BLOCKED LOW FLOW = 637.27
15 YEAR, 20 MIN. STORM HIGH WATER BLOCKED LOW FLOW = 637.42
25 YEAR, 20 MIN. STORM HIGH WATER BLOCKED LOW FLOW = 637.50
100 YEAR, 20 MIN. STORM HIGH WATER BLOCKED LOW FLOW = 637.62



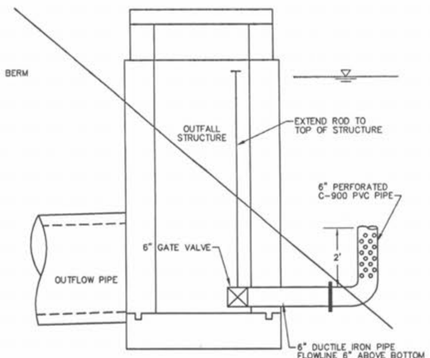
TRASH RACK DESIGN
NTS



DETAIL SHOWING REINFORCING
AROUND OPENINGS
NTS

CONSTRUCTION NOTES:

1. Concrete for the structure shall be "air entrained" and contain at least 6 sack Class "A" Portland Cement per cubic yard. The concrete shall be placed at a slump of 4 inches ±1/2 inch. The concrete shall be proportioned and transported in accordance with ASTM C-94.
2. Reinforcing steel shall conform to ASTM C-615-60 with deformations conforming to ASTM A-305 and shall have a minimum cover of 2 inches except for 3 inches where concrete is poured against earth.
3. Laps and/or splices in reinforcing steel shall be a minimum of 30 bar diameters.
4. Keyed joints shown are to be 2-inch by 2-inch keyed construction joints.
5. Fy = 60,000 psi.
6. Fc = 3,500 psi.
7. All exposed edges are to have a 3/4-inch Chamfer.
8. Contractor to provide for bypass of stormwater during construction of structure.
9. Soil density tests shall be obtained by the soils engineer at selected intervals to insure compliance with soils specifications.
10. All soil specifications shall be directed by soils engineer.
11. 2" clear (typ) to closest rebar to concrete surface.



OUTFALL STRUCTURE
DRAIN DETAIL
N.T.S.

THE UNDERGROUND UTILITIES SHOWN HEREON WERE PLOTTED FROM AVAILABLE INFORMATION AND DO NOT NECESSARILY REFLECT THE ACTUAL EXISTENCE, NONEXISTENCE, SIZE, TYPE, NUMBER OR LOCATION OF THESE OR OTHER UTILITIES. THE GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING THE ACTUAL LOCATION OF ALL UNDERGROUND UTILITIES, SHOWN OR NOT SHOWN, AND SAID UTILITIES SHALL BE LOCATED IN THE FIELD PRIOR TO ANY GRADING, EXCAVATION OR CONSTRUCTION OF IMPROVEMENTS. THESE PROVISIONS SHALL IN NO WAY ABSOLVE ANY PARTY FROM COMPLYING WITH THE UNDERGROUND FACILITY SAFETY AND DAMAGE PREVENTION ACT, CHAPTER 319, RSMo

STORM SEWER HYDRAULICS — THE STERLING COMPANY — Ver 1.33

Job Name: Briarchase — Date: 11/14/02
Prepared by: R. A. — Checked by: D. M.
Job No: 3043 — Sheet No: 1 — Revised: xxxxxxxxx

Upper Str. Type	Structr. Number Upr	Lowr	Len. in Ft.	Area in acre	P. I.	Q in c.f.s.	Total Q c.f.s.	Pipe Size in.	Const. Grade	V in f.p.s.	Vh in Ft.	Q x Vh	Hyd. Grade	Flow Line Elevation Upper	Lowr	Top of Structure Elevation Upper	Lowr	Free Board	Hydraulic Grade Line Upper	Lowr	Frict. Loss Ft.	Curve Loss Ft.	Junc. Loss Ft.	Entr. Loss Ft.	Angle (S a)	Turn Loss Ft.	Capacity c.f.s.	Q/Cap.	Normal Depth Ft.
T	69	68	87.32			1.08	1.08	12	1.50%	1.38	0.03	0.03	0.09%	638.49	637.18	643.50	641.58	4.68	638.82	638.18	0.08		0.06	0.03	5	0.00	4.36	0.25	0.33
CI	68	67	34.5			1.29	2.37	15	1.51%	1.93	0.06	0.14	0.13%	636.98	636.46	641.58	641.58	3.40	637.76	637.71	0.05		0.03		30	0.02	7.93	0.30	0.46
CI	67	66	84.1			0.33	2.70	15	1.50%	2.20	0.08	0.20	0.17%	636.26	635.00	641.58		3.87	637.60	637.45	0.15						7.91	0.34	0.50
T	65	64	122.75			2.52	2.52	12	1.00%	3.21	0.16	0.40	0.50%	640.22	638.99	644.50	646.26	3.66	640.84	639.99	0.61		0.19	0.16	10	0.02	3.57	0.71	0.62
DCI	64	63	35.2			2.19	4.71	15	1.00%	3.84	0.23	1.08	0.53%	638.79	638.44	646.26	646.24	6.27	639.88	639.69	0.19		0.30		10	0.03	6.46	0.73	0.79
CI	63	62	147.17			1.53	6.24	15	2.20%	5.08	0.40	2.51	0.93%	638.24	635.00	646.24		6.55	638.97	637.45	1.37						9.58	0.65	0.73
T	61	60	35			14.32	14.32	21	1.00%	5.95	0.55	7.88	0.82%	634.35	634.00	637.92		1.88	636.04	635.75	0.29			0.55			15.85	0.90	1.30
T	50	49	105.65			1.74	1.74	12	2.50%	2.22	0.08	0.13	0.24%	639.96	637.32	644.50	641.50	4.16	640.34	638.32	0.25		0.44	0.08	65	0.04	5.63	0.31	0.38
AI	49	48	125.92			2.07	3.81	12	1.30%	4.85	0.37	1.39	1.14%	637.12	635.48	641.50	642.68	3.18	637.92	636.48	1.44		0.01		25	0.11	4.07	0.94	0.76
CI	48	47	38.24			1.39	5.20	15	0.99%	4.24	0.28	1.45	0.65%	635.28	634.90	642.68	642.05	6.20	636.44	636.20	0.25		0.36		25	0.08	6.44	0.81	0.85
DCI	47	46	134.77			1.65	6.85	15	6.50%	5.58	0.48	3.31	1.12%	634.70	625.94	642.05	632.00	5.85	635.25	629.40	1.52		0.67		40	0.31	16.47	0.42	0.55
AI	46	45	141.83			3.09	12.76	18	2.00%	7.22	0.81	10.33	1.48%	625.74	622.90	632.00	628.50	2.60	628.42	626.33	2.09		0.23		35	0.32	14.86	0.86	1.07
AI	45	44	72.04			0.90	13.66	18	2.00%	7.73	0.93	12.67	1.69%	622.70	621.26	628.50	626.77	2.17	625.78	624.56	1.22		0.19		75	0.74	14.85	0.92	1.13
CI	44	43	34.5			2.19	27.93	27	1.01%	7.02	0.77	21.40	0.81%	621.06	620.71	626.77	626.77	2.21	623.63	623.35	0.28						31.19	0.90	1.64
CI	43	35	94.75			3.22	31.15	30	1.00%	6.35	0.63	19.48	0.58%	620.51	619.56	626.77	626.50	3.42	623.35	622.80	0.55				90	0.44	41.07	0.76	1.63
T	15	14	34.5			0.78	0.78	15	1.00%	0.64	0.01	0.00	0.01%	641.36	641.01	646.10	646.10	3.83	642.27	642.26	0.01		0.04	0.01			6.47	0.12	0.29
CI	14	13	126.86			1.08	1.86	15	4.00%	1.52	0.04	0.07	0.08%	640.81	635.74	646.10	640.00	3.84	641.12	636.99	0.11		0.17		95	0.02	12.91	0.14	0.31
AI	13	12	115.9			1.92	3.78	15	1.00%	3.08	0.15	0.56	0.34%	635.54	634.38	640.00	640.40	3.01	636.22	635.63	0.40				90	0.10	6.46	0.58	0.68
MH	12	11	72.36				3.78	15	1.00%	3.08	0.15	0.56	0.34%	634.18	633.46	640.40	638.23	4.77	634.96	634.71	0.25		0.32		65	0.08	6.44	0.59	0.69
CI	11	10	34.5			1.92	5.70	15	1.00%	4.64	0.33	1.91	0.78%	633.26	632.91	638.23	638.23	3.52	634.45	634.18	0.27		0.37				6.47	0.88	0.90
CI	10	9	181.39			1.56	7.26	15	3.70%	5.92	0.54	3.95	1.26%	632.71	626.00	638.23	631.00	4.05	633.39	627.67	2.29		0.66		70	0.33	12.42	0.58	0.68
AI	9	8	95.33			2.16	9.42	15	11.33%	7.68	0.91	8.62	2.13%	625.80	615.00	631.00		3.33	626.38	617.63	2.03						21.74	0.43	0.58

NOTE: AI=Area Inlet, M=Manhole, T=Terminal Structure, CI=Curb Inlet, DCI= Double Curb Inlet, SCI=Skewed Curb Inlet, TP=Tangent Point, EP= End of Pipe, OS=Outfall Structure
n=0.013 For RCP, 0.024 For CMP. For Drainage Areas, P. I. & Bypass, See Drainage Area Map.

BASE MAP

ISSUE	REMARKS/DATE
1	05-14-03 1st Submittal
2	06-24-03 City of OFallon Comments
3	11-19-04 Client Comments

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PROJECT: BRIARCHASE PHASE TWO

DRAWN: | DESIGNED: | CHECKED:

SHEET TITLE: HYDRAULICS & OUTFALL DETAILS

NO. 02 03 043
M.S.D. P#
DIGITAL FILE LOCATION: SERVER>STERLING-2 (G:) 3043outdrai.dwg
SHEET 12 OF 14

Drawing name: K:\D\0203043 HWY N (McBride)\IMPROVEMENTS 02-26-03\3043DETSTRUC.dwg Plotted on: Nov 19, 2004 - 11:29am Plotted by: jluetkenhaus