

Record Drawing

NOTES:

- MBOE = MINIMUM BUILDING OPENING ELEVATION FOR HOUSES ADJACENT TO ENGINEERED OVERFLOW SWALES SHALL BE MINIMUM 2 FEET ABOVE THE 100-YEAR WATER SURFACE ELEVATION.
- EGL = ENERGY GRADE LINE (100-YEAR)
- WSE = WATER SURFACE ELEVATION (100-YEAR)
- ENGINEERED SWALES TO BE GRADED TO NORMAL DEPTH OF FLOW (WATER SURFACE ELEVATION) OR 1.0 FT. WHICHEVER IS GREATER. MINIMUM SLOPE OF ENGINEERED SWALES SHALL BE AS NOTED.
- MINIMUM BUILDING OPENING ELEVATIONS (MBOES) ADJACENT TO SUMPED INLETS SHALL BE A MINIMUM OF 1' ABOVE TOP OF ADJACENT BERM

BASIS OF BEARINGS:

MISSOURI STATE PLANE COORDINATE SYSTEM (NAD) 1983, MISSOURI, WEST ZONE

NOTES:

ALL CONSTRUCTION ON THIS PROJECT SHALL CONFORM TO THE CITY OF LEES SUMMIT TECHNICAL SPECIFICATIONS.

THE CONTRACTOR IS RESPONSIBLE FOR VERIFYING ALL EXISTING UTILITY LOCATIONS PRIOR TO EXCAVATION.

GRADING LEGEND:

- DENOTES OVERFLOW SWALE
- DENOTES FINISHED AS-BUILT GRADE ELEVATION
- DENOTES FINISHED GRADE ELEVATION
- DENOTES EXISTING GRADE ELEVATION
- DENOTES LOT HIGH POINT ELEVATION
- DENOTES PROPOSED MAJOR CONTOUR
- DENOTES PROPOSED MINOR CONTOUR
- DENOTES EXISTING MAJOR CONTOUR
- DENOTES EXISTING MINOR CONTOUR
- DENOTES AS-BUILT MAJOR CONTOUR
- DENOTES AS-BUILT MINOR CONTOUR
- DENOTES AS-BUILT MINOR CONTOUR

Lot Number	Basement Type	MBOE	Notes
196	WALKOUT		
197	WALKOUT		
198	DAYLIGHT	1013	MBOE is for South Side of Lot. Walkout possible on North side of the Lot.
199	DAYLIGHT	1014	
200	DAYLIGHT	1010	
201	DAYLIGHT	1010	
202	DAYLIGHT	1010	
203	DAYLIGHT	1010	
204	DAYLIGHT	1010	
205	DAYLIGHT	1010	
206	STANDARD		
207	STANDARD		
208	STANDARD	1012	
209	STANDARD	1012	
210	STANDARD	1010	
211	WALKOUT		Walkout location on east side of lot.
212	WALKOUT		
213	WALKOUT		
214	WALKOUT		
215	WALKOUT		
216	WALKOUT		Walkout location on west side of lot.
217	DAYLIGHT		
218	DAYLIGHT		
219	DAYLIGHT		
220	STANDARD		
221	STANDARD	1019	
222	STANDARD	1017	
223	STANDARD	1017	
224	STANDARD	1019	
225	STANDARD		
226	STANDARD		
227	STANDARD		
228	STANDARD		
229	STANDARD		
230	STANDARD		
231	STANDARD		
232	STANDARD		

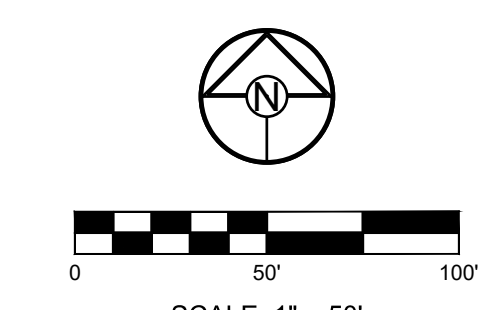
* LOTS WHICH REQUIRE AN "AS-GRADED PLOT PLAN" BEFORE OCCUPANCY.

RECORD DRAWING

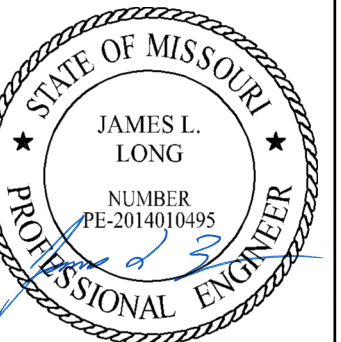
The information provided on this drawing conforms to construction records; it is not intended for construction, implementation or recording purposes; and it is solely based on information obtained by Schlagel and Associates.

"100-00 100.10", "1-00% 1.15% slope", or "8-inch HDPE PVC pipe" are all typical examples of revisions that indicate that design data has been replaced with "as-built" information. All other data is as designed and has not been field verified.

Date: 3/17/2025
 Certified by: JLL
 Title: Senior Project Engineer
 Firm: Schlagel and Associates, P.A.



PREPARED BY:



SCHLAGEL & ASSOCIATES, P.A.

CORNERSTONE AT BAILEY FARMS, FIRST PLAT
 STREET, STORMWATER, AND MASTER DRAINAGE
 PLAN
 SE BAILEY ROAD AND SE RANSON ROAD
 LEES SUMMIT, MISSOURI

REVISION DATE	DESCRIPTION
02/03/2022	PER CITY COMMENTS DATED 01/10/2022
04/20/2022	PER CITY COMMENTS DATED 02/28/2022
05/19/2022	PER CITY COMMENTS DATED 05/13/2022
10/27/2023	Updated City Details to 2023 Details
11/30/2023	Added "New City Requirements" Note
03/17/2025	AS-BUILTS

DRAWN BY: JRL
 CHECKED BY: JLL
 DATE PREPARED: 1/22/2021
 PROJ. NUMBER: 21-136

MASTER DRAINAGE PLAN-GRADING PLAN

SHEET

3

REVISION DATE	DESCRIPTION
02/03/2022	PER CITY COMMENTS DATED 01/10/2022
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10/27/2023	Updated City Details to 2023 Details
11/30/2023	Added "New City Requirements" Note
03/17/2025	AS-BUILTS

DRAWN BY:	DATE:	TITLE:
JRJ	3/17/2025	MASTER DRAINAGE PLAN - SWALE GRADING PLAN
JLL	3/17/2025	Checked by: JLL
JLL	3/17/2025	Certified by: JLL
JLL	3/17/2025	Senior Project Engineer
JLL	3/17/2025	Schlagel and Associates, P.A.

NOTES:

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- MINIMUM BUILDING OPENING ELEVATIONS (MBOEs) ADJACENT TO SUMPED INLETS SHALL BE A MINIMUM OF 1' ABOVE TOP OF ADJACENT BERM

BASIS OF BEARINGS:

MISSOURI STATE PLANE COORDINATE SYSTEM (NAD) 1983, MISSOURI, WEST ZONE

NOTES:

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- MWSE

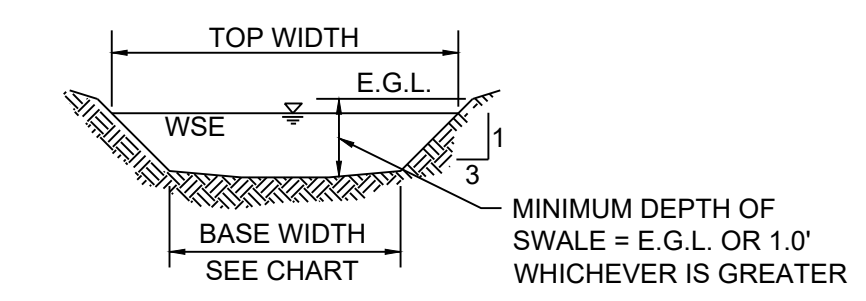
WEIR CALCULATIONS (Q = CLH^{3/2})

SECTION	DRAINAGE AREA (AC.)	Q100 (CFS)	Q10 (CFS)	DESIGN OVERFLOW (CFS)	WEIR ELEVATION	WEIR COEFFICIENT	LENGTH (FT.)	HEAD REQUIRED (FT.)	WSE
1-1	0.60	5.11	2.91	2.20	1016.30	3.33	10	0.16	1016.46

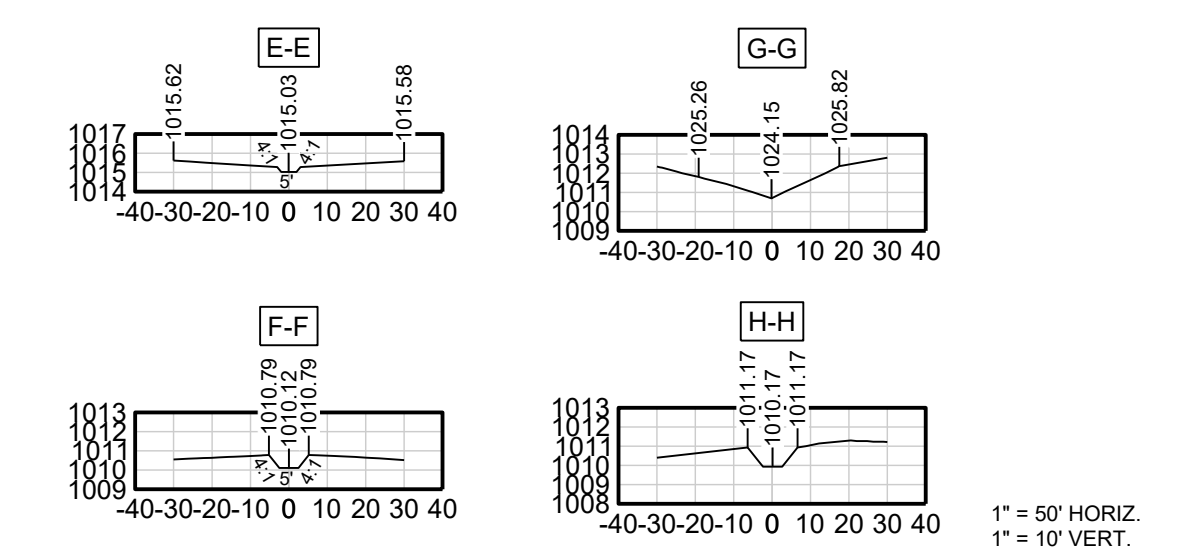
100 YEAR OVERFLOW SWALES

SECTION	DRAINAGE AREA (AC.)	Q100 (CFS)	Q10 (CFS)	DESIGN OVERFLOW (CFS)	BED SLOPE (%)	BASE WIDTH (FT.)	SIDE SLOPE	TOP WIDTH (FT.)	NORMAL DEPTH (FT.)	VELOCITY (FPS)	VELOCITY HEAD (FT.)	EGL (FT.)
E-E	0.76	6.47	3.69	2.78	2.2	5	4:1	4.00	0.50	2.78	0.12	0.62
F-F	3.21	27.33	15.57	11.76	2.0	5	4:1	8.84	0.48	3.54	0.19	0.67
G-G	3.56	30.31	17.27	13.04	2.4	0	4:1	6.96	0.87	4.31	0.29	1.16
H-H	8.77	74.67	42.54	32.12	5.3	5	4:1	10.04	0.63	6.78	0.71	1.34

RUNOFF CALCULATIONS:
 $Q = K \cdot C \cdot I \cdot A$
 $K_{10} = 1.0 \quad K_{100} = 1.25 \quad C = 0.66 \quad I = \text{INTENSITY}$
 DESIGN OVERFLOW = $Q_{\text{OVERFLOW}} = Q_{100} \cdot C_{10}$
 MANNINGS "n" = 0.030 FOR SWALES



100 YEAR OVERFLOW SWALE SECTIONS

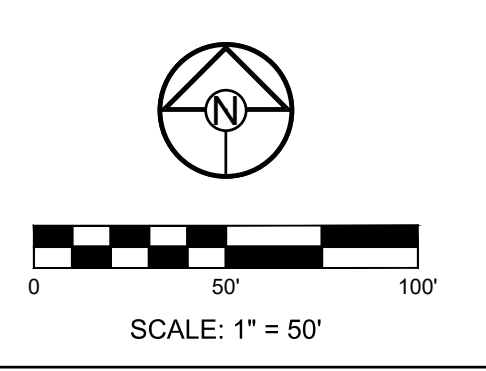


RECORD DRAWING

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"100-00 100.10", "3-00% 1.15% slope", or "8-inch HDPE PVC pipe" are all typical examples of revisions that indicate that design data has been replaced with "as-built" information. All other data is as designed and has not been field verified.

Date: 3/17/2025
 Certified by: JLL
 Title: Senior Project Engineer
 Firm: Schlagel and Associates, P.A.





MISSOURI GEOGRAPHIC REFERENCE SYSTEM BENCHMARK:
 BM JA-45, IS A KC METRO ALUMINUM GRS DISK SET IN CONCRETE AND ABOUT 3 INCHES BELOW THE PAVEMENT ON THE SHOULDER OF SE RANSON ROAD. IT IS STAMPED JA45, 1987.
 ELEV. = 1046.25

Record Drawing

SCHLAGEL
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 Missouri State Certificates of Authority
 #E2002003690-F #LAC201005237 #LS200200869-F

PREPARED BY:

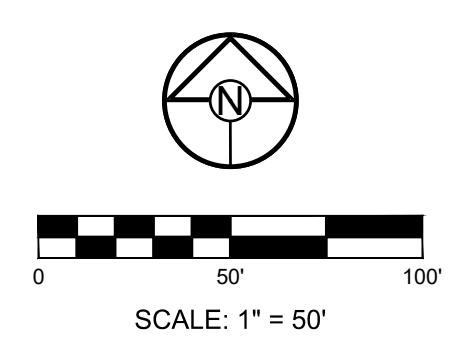
 JAMES L. LONG
 NUMBER PE-2014010495
 3/17/2025

SCHLAGEL & ASSOCIATES, P.A.

CORNERSTONE AT BAILEY FARMS, FIRST PLAT
 STREET, STORMWATER, AND MASTER DRAINAGE
 PLAN
 SE BAILEY ROAD AND SE RANSON ROAD
 LEE'S SUMMIT, MISSOURI

RECORD DRAWING
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 Date: 3/7/2025
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 Title: Senior Project Engineer
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MASTER DRAINAGE
 PLAN-DRAINAGE
 AREA MAP

SHEET
9

10-YEAR RUNOFF CALCULATIONS

Design Storm:		10																						
"K" Value:		1.00																						
"F" Factor:		1.00																						
Runoff Calculations										Pipe Properties														
Inlet #	Area (acres)	"C" Value	Cumul. Area (acres)	Cumul. CxA	To Intensity	To Inlet	Cumul. Runoff	Pipe Cap.	Pipe Vel.	Up Piped Inlet 1	Up Piped Inlet 2	Up Area (acres)	Up CxA	Up Inlet	Down Inlet	Pipe Type	"n" Value	Pipe Size	Slope %	Drop In Inlet	FL Up	FL Down	Inlet Top	
DS TAILWATER @ STR #200																								
201	0.00	0.66	8.09	5.34	7.7	6.60	0.00	35.27	34.42	7.01		0.00	0.00	201	200	HDPE	0.012	30	184.94	0.60	0.20	1002.61	1001.50	1008.75
202	0.69	0.66	8.09	5.34	7.4	6.68	3.04	35.64	39.74	8.10		0.00	0.00	202	201	HDPE	0.012	30	135.90	0.80	1.50	1003.90	1002.81	1013.49
203	0.39	0.66	7.40	4.88	7.3	6.70	1.72	32.71	21.92	6.98		0.00	0.00	203	202	HDPE	0.012	24	35.04	0.80	0.50	1005.68	1005.40	1013.50
204	0.51	0.66	7.01	4.63	7.2	6.74	2.27	31.20	21.92	6.98	301	1.85	1.22	204	203	HDPE	0.012	24	75.49	0.80	0.50	1006.78	1006.18	1015.11
205	0.55	0.66	4.65	3.07	7.1	6.76	2.46	20.76	21.92	6.98		0.00	0.00	205	204	HDPE	0.012	24	35.00	0.80	0.50	1007.56	1007.28	1015.11
206	0.14	0.66	4.10	2.71	7.0	6.79	0.63	18.38	21.92	6.98		0.00	0.00	206	205	HDPE	0.012	24	41.74	0.80	0.20	1008.40	1008.06	1015.83
DS TAILWATER @ STR #700																								
701	0.00	0.66	1.98	1.31	5.7	7.14	0.00	9.33	21.92	6.98		0.00	0.00	701	700	HDPE	0.012	24	61.51	0.80	0.50	1000.13	999.64	1009.24
702	0.24	0.66	1.98	1.31	5.5	7.20	1.14	9.40	34.66	11.03		0.00	0.00	702	701	HDPE	0.012	24	135.04	2.00	0.30	1003.33	1000.63	1014.47
703	0.32	0.66	1.74	1.15	5.5	7.21	1.52	8.28	34.66	11.03	901	0.74	0.49	703	702	HDPE	0.012	24	35.00	2.00	0.40	1004.33	1003.63	1014.47
704	0.30	0.66	0.68	0.45	5.4	7.23	1.43	3.24	34.66	11.03		0.00	0.00	704	703	HDPE	0.012	18	41.96	3.00	0.40	1005.99	1004.73	1015.29
705	0.38	0.66	0.38	0.25	5.0	7.35	1.84	1.84	9.90	8.06		0.00	0.00	705	704	HDPE	0.012	15	195.23	2.00	0.40	1010.30	1006.39	1017.49
706	0.88	0.66	0.88	0.58	5.0	7.35	4.27	4.27	9.90	8.06		0.00	0.00	706	705	HDPE	0.012	15	38.73	2.00	N/A	1011.47	1010.70	1017.78
Drop in Inlet 703																								
801	0.41	0.66	1.12	0.74	5.3	7.28	1.97	5.38	16.09	9.11		0.00	0.00	801	703	HDPE	0.012	18	97.97	2.00	0.50	1006.79	1004.83	1014.92
802	0.71	0.66	0.71	0.47	5.0	7.35	3.45	3.45	9.90	8.06		0.00	0.00	802	801	HDPE	0.012	15	122.16	2.00	N/A	1009.74	1007.29	1015.80
Drop in Inlet 704																								
901	0.74	0.66	0.74	0.49	5.0	7.35	3.59	3.59	9.90	8.06		0.00	0.00	901	704	HDPE	0.012	15	35.06	2.00	N/A	1007.19	1006.49	1015.06
DS TAILWATER @ STR #1000																								
1001	0.00	0.66	14.65	10.02	8.3	6.45	0.00	64.59	67.78	9.59		0.00	0.00	1001	1000	HDPE	0.012	36	35.00	0.88	0.30	999.49	999.18	1010.90
1002	1.18	0.66	14.65	10.02	8.1	6.50	0.00	65.12	72.26	10.22		0.00	0.00	1002	1001	HDPE	0.012	36	135.00	1.00	0.30	1001.14	999.79	1010.90
1003	0.11	0.66	14.65	10.02	7.7	6.60	5.14	66.16	64.63	9.14	1101	0.30	0.20	1003	1002	HDPE	0.012	36	232.81	0.80	0.40	1003.30	1001.44	1014.95
1004	0.15	0.66	13.17	9.04	7.5	6.65	0.48	60.10	64.63	9.14		0.00	0.00	1004	1003	HDPE	0.012	36	94.66	0.80	0.40	1004.46	1003.70	1016.07
1005	0.06	0.66	13.06	8.97	7.3	6.70	0.66	60.11	64.63	9.14		0.00	0.00	1005	1004	HDPE	0.012	36	118.84	0.80	0.40	1005.81	1004.86	1017.25
Drop in Inlet 1002																								
1101	0.30	0.66	0.30	0.20	5.0	7.35	1.46	1.46	12.12	9.88		0.00	0.00	1101	1002	HDPE	0.012	15	36.19	3.00	1.75	1003.97	1002.89	1014.88

100-YEAR RUNOFF CALCULATIONS

Design Storm:		100																						
"K" Value:		1.25																						
"F" Factor:		1.00																						
Runoff Calculations										Pipe Properties														
Inlet #	Area (acres)	"C" Value	Cumul. Area (acres)	Cumul. CxA	To Intensity	To Inlet	Cumul. Runoff	Pipe Cap.	Pipe Vel.	Up Piped Inlet 1	Up Piped Inlet 2	Up Area (acres)	Up CxA	Up Inlet	Down Inlet	Pipe Type	"n" Value	Pipe Size	Slope %	Drop In Inlet	FL Up	FL Down	Inlet Top	
DS TAILWATER @ STR #200																								
201	0.00	0.66	8.09	5.34	7.7	9.31	0.00	62.14	34.42	7.01		0.00	0.00	201	200	HDPE	0.012	30	184.94	0.60	0.20	1002.61	1001.50	1008.75
202	0.69	0.66	8.09	5.34	7.4	9.41	5.35	62.78	39.74	8.10		0.00	0.00	202	201	HDPE	0.012	30	135.90	0.80	1.50	1003.90	1002.81	1013.49
203	0.39	0.66	7.40	4.88	7.3	9.44	3.04	57.60	21.92	6.98		0.00	0.00	203	202	HDPE	0.012	24	35.04	0.80	0.50	1005.68	1005.40	1013.50
204	0.51	0.66	7.01	4.63	7.2	9.50	4.00	54.93	21.92	6.98	301	1.85	1.22	204	203	HDPE	0.012	24	75.49	0.80	0.50	1006.78	1006.18	1015.11
205	0.55	0.66	4.65	3.07	7.1	9.53	4.32	36.55	21.92	6.98		0.00	0.00	205	204	HDPE	0.012	24	35.00	0.80	0.50	1007.56	1007.28	1015.11
206	0.14	0.66	4.10	2.71	7.0	9.56	1.10	32.35	21.92	6.98		0.00	0.00	206	205	HDPE	0.012	24	41.74	0.80	0.20	1008.40	1008.06	1015.83
DS TAILWATER @ STR #700																								
701	0.00	0.66	1.98	1.31	5.7	10.03	0.00	16.38	21.92	6.98		0.00	0.00	701	700	HDPE	0.012	24	61.51	0.80	0.50	1000.13	999.64	1009.24
702	0.24	0.66	1.98	1.31	5.5	10.11	2.00	16.52	34.66	11.03		0.00	0.00	702	701	HDPE	0.012	24	135.04	2.00	0.30	1003.33	1000.63	1014.47
703	0.32	0.66	1.74	1.15	5.5	10.13	2.67	14.54	34.66	11.03	901	0.74	0.49	703	702	HDPE	0.012	24	35.00	2.00	0.40	1004.33	1003.63	1014.47
704	0.30	0.66	0.68	0.45	5.4	10.16	2.51	5.70	19.71	11.15		0.00	0.00	704	703	HDPE	0.012	18	41.96	3.00	0.40	1005.99	1004.73	1015.29
705	0.38	0.66	0.38	0.25	5.0	10.32	3.24	3.24	9.90	8.06		0.00	0.00	705	704	HDPE	0.012	15	195.23	2.00	0.40	1010.30	1006.39	1017.49
706	0.88	0.66	0.88	0.58	5.0	10.32	7.49	7.49	9.90	8.06		0.00	0.00	706	705	HDPE	0.012	15	38.73	2.00	N/A	1011.47	1010.70	1017.78
Drop in Inlet 703																								
801	0.41	0.66	1.12	0.74	5.3	10.22	3.46	9.44	16.09	9.11		0.00	0.00	801	703	HDPE	0.012	18	97.97	2.00	0.50	1006.79	1004.83	1014.92
802	0.71	0.66	0.71	0.47	5.0	10.32	6.05	6.05	9.90	8.06		0.00	0.00	802	801	HDPE	0.012	15	122.16	2.00	N/A	1009.74	1007.29	1015.80
Drop in Inlet 704																								
901	0.74	0.66	0.74	0.49	5.0	10.32	6.30	6.30	9.90	8.06		0.00	0.00	901	704	HDPE	0.012	15	35.06	2.00	N/A	1007.19	1006.49	1015.06
DS TAILWATER @ STR #1000																								
1001	0.00	0.66	14.65	10.02	8.3	9.09	0.00	113.91	67.78	9.59		0.00	0.00	1001	1000	HDPE	0.012	36	35.00	0.88	0.30	999.49	999.18	1010.90
1002	1.18	0.66	14.65	10.02	8.1	9.17	0.00	114.81	72.26	10.22		0.00	0.00	1002	1001	HDPE	0.012	36	135.00	1.00	0.30	1001.14	999.79	1010.90
1003	0.11	0.66	14.65	10.02	7.7	9.31	9.06	116.58	64.63	9.14	1101	0.30	0.20	1003	1002	HDPE	0.012	36	232.81	0.80	0.40	1003.30	1001.44	1014.95
1004	0.15	0.66	13.17	9.04	7.5	9.37	0.85	105.88	64.63	9.14		0.00	0.00	1004	1003	HDPE	0.012	36	94.66	0.80	0.40	1004.46	1003.70	1016.07
1005	0.06	0.66	13.06	8.97	7.3	9.44	1.17	105.87	64.63	9.14		0.00	0.00	1005	1004	HDPE	0.012	36	118.84	0.80	0.40	1005.81	1004.86	1017.25
Drop in Inlet 1002																								
1101	0.30	0.66	0.30	0.20	5.0	10.32	2.55	2.55	12.12	9.88		0.00	0.00	1101	1002	HDPE	0.012	15	36.19	3.00	1.75	1003.97	1002.89	1014.88

GUTTER SPREAD AND INLET CAPACITY CALCULATIONS

DESIGN STORM		10																					
"K" FACTOR		1.00																					
RUNOFF CALCULATIONS										INLET DESIGN										GUTTER DESIGN			
INLET #	COMPOSITE "C"	AREA	INLET Tc	INTENSITY																			