Technical Information Report for:

Heritage Section 5
Franklin, Indiana 46131
April 16, 2014

Prepared for:

Heritage Brookhaven Dev LLC
c/o Mann Properties
6925 E. 96th Street
Indianapolis, Indiana 46250

4569.105

MICHAEL THOMPSON II
REGISTERED
No.
11011309
STATE OF
INDIANA
PROFESSIONAL ENGINEER

Michael Thompson

Schneider

Historic Fort Harrison 8901 Otis Avenue Indianapolis, Indiana 46216
Phone - 317.826.7100 Fax - 317.826.7200
www.schneidercorp.com contact@schneidercorp.com

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DRAINAGE NARRATIVE

INTRODUCTION:

Heritage is a proposed 204-acre, 749-lot residential development located northwest of the intersection of Arvin Drive and Hurricane Road, within Needham Township, Johnson County, Indiana. This report covers the Section 5 storm sewer. Please refer to Heritage Section 1 for the overall drainage design.

EXISTING CONDITIONS:

The majority of the existing site is an agricultural field, with one building structure near Hurricane Road, near the southeast corner of the site. The overall site has approximately 26 feet of relief, with elevations ranging from 766 M.S.L. at the northwest corner to 740 M.S.L. at the 36-inch culvert crossing under Hurricane Road in the southeastern portion of the site. Overall, the majority of the site sheet drains from the northwest corner to the southeast to the above mentioned culvert. This culvert discharges east into the Legends of Indiana Golf Course and then ultimately east into the Hurricane Creek.

<u>Adjoining land conditions:</u>

North:	Agricultural field
South:	Agricultural field
East:	Legends West Subdivision and Legends of Indiana Golf Course
West:	Agricultural field and Industrial

<u>Soil types:</u>

Soils maps from the United States Department of Agriculture, Soil Conservation Service identify Brookston, Crosby and Miami soils on the subject site. Brookston and Miami are in Soil Group B while Crosby is in Soil Group C. Overall, the site is 60% Soil Group B and 40% Soil Group C.

OVERALL DRAINAGE DESIGN:

In the pre-developed state, there are three separate discharge points. The first is the previously mentioned 36-inch corrugated metal culvert under Hurricane Road, which discharges into the Legends of Indiana Golf Course. About 80 percent (164± acres) of the site drains to this point. The southwest corner of the site (20± acres) sheet flows to the south through existing agricultural fields and then into an existing ditch along Arvin Drive. The third outlet point is located in the northeast corner (6± acres) and also sheet flows northeast through agricultural fields. No visible outlet or culvert was located for this area.

In addition to the 164± acres onsite draining to the aforementioned 36-inch culvert, approximately 45 acres of offsite drainage to the northwest and 9 acres of offsite drainage to the east contribute to this watershed, thus totaling 218 acres to this pre-developed outlet. These

offsite basins will be picked up with onsite storm sewer and routed through the proposed detention facility.

The required detention for the developed state of Heritage will provide five interconnected detention ponds. The ponds range in size from 0.8 acres to 3.5 acres. Of the three pre-developed discharge points, only the 36-inch culvert under Hurricane Road will be utilized for this development. The other two outfall points are not sufficient or effective discharge junctures for this project. All the drainage from the developed site will be routed through the five proposed ponds and then discharged into the previously mentioned culvert. Please note that currently the east end of the existing 36-inch culvert outlets into a small depression area on the east side of Hurricane Road. It has been determined that this small area incurs ponding, then flows overland through a grassy area within the golf course and then into a pond located in the golf course. It is evident that this grassy area within the golf course impedes the proper discharge of the pre-developed 218 acres draining through the 36-inch culvert.

Per the City of Franklin Drainage Requirements, the post-developed release rate from a 100-year storm must not exceed that of a 10-year pre-developed storm. In addition, the post-developed release rate from a 10-year storm must not exceed that of a 2-year storm event. The release rates must be checked to ensure that this criterion is met. By analyzing the proposed watersheds during all storm durations (1, 2, 3, 6, 12 and 24 hours), the Critical Peak Runoff Rate comparison of the pre-developed and post-developed discharge rates is as follows:

Storm Event	Discharge Rate
PRE-2 YEAR	40.31 cfs
DEV-10 YEAR	3.42 cfs
PRE-10 YEAR	111.29 cfs
DEV-100 YEAR	16.34 cfs

The discharge rate criteria are met for both the 10-year developed vs. 2 year pre-developed and the 100-year developed vs. 10-year pre-developed comparisons.

SITE MAPS

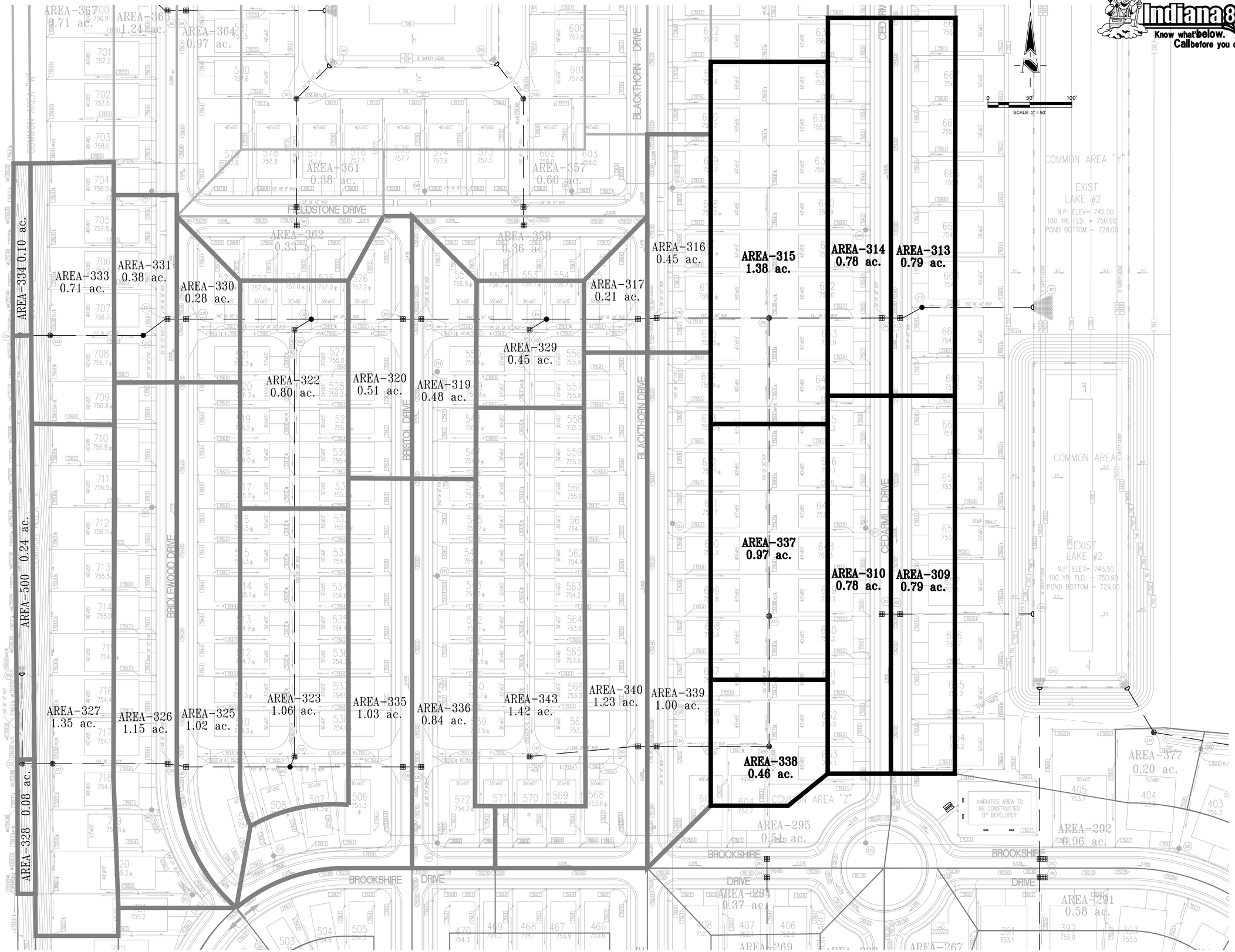
EXISTING CONDITIONS

SEE HERITAGE SECTION ONE DRAINAGE CALCULATIONS

PROPOSED CONDITIONS

SEE HERITAGE SECTION ONE DRAINAGE CALCULATIONS

STORM SEWER DESIGN



REVISIONS:

MICHAEL THOMPSON III
REGISTERED No. 11011309 STATE OF INDIANA
PROFESSIONAL ENGINEER

Michael Thompson

DATE: 04/17/2014

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Schneider

THE SCHNEIDER CORPORATION
Historic Fort Harrison
8901 Otis Avenue
Indianapolis, IN 46216-1037
Telephone: 317.826.7100
Fax: 317.826.7300
www.schneidercorp.com

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HERITAGE, SECTION 5

CITY OF FRANKLIN, JOHNSON COUNTY

MANN PROPERTIES
6925 E 96TH STREET, SUITE 200, INDIANAPOLIS, IN 46250

DATE: 4/17/2014	PROJECT NO.: 4569.105
DRAWN BY: MAP	CHECKED BY: MAT

SHEET TITLE: STREET DETAILS

DRAWING FILES: T:\4k\4569\105\drainage\Storm Sewer Basins Map (Complete

SHEET NO.: STRM

Plot Date: Apr 16, 2014 Plot Time: 8:37pm File Name: T:\4k\4569\105\drainage\Storm Sewer Basins Map (Complete).dwg, Layout: STRM By: Thompsonma

Time of Concentration Worksheet

Based on TR-55

PROJECT: Heritage Section 5

JOB #: 4569.105 *Date: 04/01/2014*

Typical values for Manning's n			
Overland Flow		Channel Flow	
short grass	0.15	grass	0.03
farm, > 20% cover	0.17	concrete	0.015
dense grass	0.24	rip-rap	0.035
pavement	0.011		

2 year, 24 hour rainfall = 2.64 inches

minimum T_c = 5.00 minutes

Basin name	Overland flow seg. 1 Length (ft)	S %	n	T_t (min)	Overland flow seg. 2 Length (ft)	S %	n	T_t (min)	Shallow Concentrated Flow Length (ft)	S %	Paved/Un (P or U)	Vel. (ft/s)	T_t (min)	Channel Flow Length (ft)	a (s.f.)	Pw (ft)	r (ft)	S %	n	Vel. (ft/s)	T_t (min)	T_c (min)
343	60	1.00	0.24	14					415	0.60	P	1.57	4								0	**18**
340	60	1.00	0.24	14					470	0.86	P	1.89	4								0	**18**
339	60	1.00	0.24	14					470	0.86	P	1.89	4								0	**18**
338	60	1.00	0.24	14					80	1.00	U	1.61	1								0	**15**
337 (off)	100	1.00	0.24	21					2390	0.91	U	1.54	26	560						3.00	3	**50**
337	70	1.00	0.24	16					230	1.00	U	1.61	2								0	**18**
336	60	1.00	0.24	14					340	0.50	P	1.44	4								0	**18**
335	60	1.00	0.24	14					340	0.50	P	1.44	4								0	**18**
334	20	33.3	0.24	1					200	1.00	U	1.61	2								0	**5**
333	75	1.00	0.24	16					200	1.00	U	1.61	2								0	**19**
332	0	-	0.24	0					0	-	P	0.00	0								0	**5**
331	60	1.00	0.24	14					145	1.38	P	2.39	1								0	**15**
330	60	1.00	0.24	14					75	0.50	P	1.44	1								0	**15**
329	60	1.00	0.24	14					90	0.60	P	1.57	1								0	**15**
500	20	33.3	0.24	1					355	1.00	U	1.61	4								0	**5**
328	20	33.3	0.24	1					355	1.00	U	1.61	4								0	**5**
327	70	1.00	0.24	16					355	1.00	U	1.61	4								0	**19**
326	60	1.00	0.24	14					460	0.57	P	1.53	5								0	**19**
325	60	1.00	0.24	14					460	0.57	P	1.53	5								0	**19**
324	0	-	0.24	0					0	-	P	0.00	0								0	**5**

Time of Concentration Worksheet

Based on TR-55

PROJECT: Heritage Section 5

JOB #: 4569.105 *Date: 04/01/2014*

Typical values for Manning's n			
Overland Flow		Channel Flow	
short grass	0.15	grass	0.03
farm, > 20% cover	0.17	concrete	0.015
dense grass	0.24	rip-rap	0.035
pavement	0.011		

2 year, 24 hour rainfall = 2.64 inches

minimum T_c = 5.00 minutes

Basin name	Overland flow seg. 1 Length (ft)	S %	n	T_t (min)	Overland flow seg. 2 Length (ft)	S %	n	T_t (min)	Shallow Concentrated Flow Length (ft)	S %	Paved/Un (P or U)	Vel. (ft/s)	T_t (min)	Channel Flow Length (ft)	a (s.f.)	Pw (ft)	r (ft)	S %	n	Vel. (ft/s)	T_t (min)	T_c (min)
323	60	1.00	0.24	14					295	0.60	P	1.57	3								0	**17**
322	60	1.00	0.24	14					210	0.60	P	1.57	2								0	**16**
321	0	-	0.24	0					0	-	P	0.00	0								0	**5**
320	60	1.00	0.24	14					190	0.50	P	1.44	2								0	**16**
319	60	1.00	0.24	14					190	0.50	P	1.44	2								0	**16**
318	0	-	0.24	0					0	-	P	0.00	0								0	**5**
317	60	1.00	0.24	14					45	1.43	P	2.43	0								0	**14**
316	60	1.00	0.24	14					215	0.96	P	1.99	2								0	**16**
315	60	1.00	0.24	14					355	0.82	U	1.46	4								0	**18**
315 (off)	100	0.75	0.24	23					1915	0.75	U	1.40	23	400						3.00	2	**48**
314	70	1.00	0.24	16					300	1.00	P	2.03	2								0	**18**
313	60	1.00	0.24	14					355	0.82	P	1.84	3								0	**17**
312	0			0					0		P	0.00	0								0	**5**
310	60	1.00	0.24	14					260	0.50	P	1.44	3								0	**17**
309	60	1.00	0.24	14					260	0.50	P	1.44	3								0	**17**
	Offsite time of concentration values prior to future development																					

Composite C Calculations
- Proposed Basins -

PROJECT:	*Heritage Section 5*	*DATE:*	*04/01/2014*
JOB #:	*4569.105*	*COMPUTED BY:*	*MAT*

Rational Method Runoff Coefficients	
All watertight roof surfaces	0.85
Pavement	0.85
Gravel	0.85
Slightly pervious soil (with turf)	0.20

40' PAD							
House Pad		Driveways		Street		Sidewalks	
Depth	65	Length	21	Length	50	Length	50
Width	40	Width	16	1/2 Width	14	Width	4
Lot Dimensions		Percent Impervious		Percent Pervious		**"c" Value**	**Assigned**
Length	120	Total	6,000	Total	6,000	**0.62**	**0.65**
Width	50	Impervious	3,836	Impervious	2,164		
	6,000		63.9%		36.1%		
45' PAD							
House Pad		Driveways		Street		Sidewalks	
Depth	65	Length	21	Length	60	Length	60
Width	45	Width	24	1/2 Width	14	Width	4
Lot Dimensions		Percent Impervious		Percent Pervious		**"c" Value**	**Assigned**
Length	110	Total	6,600	Total	6,600	**0.64**	**0.65**
Width	60	Impervious	4,509	Impervious	2,091		
	6,600		68.3%		31.7%		
50' PAD							
House Pad		Driveways		Street		Sidewalks	
Depth	65	Length	21	Length	60	Length	60
Width	50	Width	24	1/2 Width	14	Width	4
Lot Dimensions		Percent Impervious		Percent Pervious		**"c" Value**	**Assigned**
Length	110	Total	6,600	Total	6,600	**0.68**	**0.70**
Width	60	Impervious	4,834	Impervious	1,766		
	6,600		73.2%		26.8%		

Rational Runoff Calculations
- Proposed Basins -

PROJECT:	*Heritage Section 5*	*DATE:*	*04/01/2014*
JOB #:	*4569.105*	*COMPUTED BY:*	*MAT*
		DESIGN EVENT:	*10-Year*

STRUCTURE		BASINS							COMPOSITE BASINS				TRAVEL
FROM	TO	BASIN #	c	A (acres)	c*A	Tc (min)	I (in/hr)	Q (cfs)	SUM (c*A)	Tc (min)	I (in/hr)	Q (cfs)	TIME (min)
343	340	343	0.65	1.42	0.92	18	4.12	3.81	0.92	18	4.12	3.81	0.56
340	339	340	0.57	1.23	0.70	18	4.15	2.91	1.62	19	4.06	6.59	0.11
339	338	339	0.65	1.00	0.65	18	4.15	2.70	2.27	19	4.04	9.20	0.51
338	337	338	0.45	0.46	0.21	15	4.61	0.95	2.48	19	3.99	9.89	0.90
337	315	337	0.45	0.97	0.44	18	4.15	1.81	2.92	20	3.89	11.34	1.96
336	335	336	0.65	0.84	0.55	18	4.18	2.28	0.55	18	4.18	2.28	0.13
335	324	335	0.65	1.03	0.67	18	4.18	2.80	1.22	18	4.16	5.06	0.67
334	333	334	0.20	0.01	0.00	5	6.98	0.01	0.00	5	6.98	0.01	0.16
333	332	333	0.45	0.71	0.32	19	4.08	1.30	0.32	19	4.08	1.31	0.56
332	331	332	1.00	0.00	0.00	5	6.98	0.00	0.32	19	4.01	1.29	0.14
331	330	331	0.60	0.38	0.23	15	4.58	1.04	0.55	19	4.00	2.20	0.14
330	321	330	0.60	0.28	0.17	15	4.60	0.77	0.72	19	3.98	2.86	0.66
329	318	329	0.65	0.45	0.29	15	4.59	1.34	0.29	15	4.59	1.34	0.11
500	328	500	0.20	0.24	0.05	5	6.96	0.33	0.05	5	6.96	0.33	0.43
328	327	328	0.20	0.08	0.02	5	6.96	0.11	0.06	6	6.79	0.43	0.21
327	326	327	0.45	1.35	0.61	19	4.00	2.43	0.67	19	4.00	2.68	0.75
326	325	326	0.65	1.15	0.75	19	4.05	3.03	1.42	20	3.91	5.55	0.13
325	324	325	0.65	1.02	0.66	19	4.05	2.69	2.08	20	3.90	8.12	0.72
324	323	324	1.00	0.00	0.00	5	6.98	0.00	3.30	21	3.83	12.62	0.06
323	322	323	0.65	1.06	0.69	17	4.28	2.95	3.99	21	3.82	15.23	2.40
322	321	322	0.65	0.80	0.52	16	4.40	2.29	4.51	23	3.59	16.19	0.11
321	320	321	1.00	0.00	0.00	5	6.98	0.00	5.22	23	3.58	18.72	0.40

Rational Runoff Calculations
- Proposed Basins -

PROJECT:	*Heritage Section 5*	*DATE:*	*04/01/2014*
JOB #:	*4569.105*	*COMPUTED BY:*	*MAT*
		DESIGN EVENT:	*10-Year*

STRUCTURE		BASINS							COMPOSITE BASINS				TRAVEL
FROM	TO	BASIN #	c	A (acres)	c*A	Tc (min)	I (in/hr)	Q (cfs)	SUM (c*A)	Tc (min)	I (in/hr)	Q (cfs)	TIME (min)
320	319	320	0.60	0.51	0.31	16	4.41	1.35	5.53	24	3.55	19.62	0.10
319	318	319	0.60	0.48	0.29	16	4.41	1.27	5.82	24	3.54	20.59	0.51
318	317	318	1.00	0.00	0.00	5	6.98	0.00	6.11	24	3.50	21.36	0.36
317	316	317	0.65	0.21	0.14	14	4.69	0.64	6.25	25	3.47	21.65	0.10
316	315	316	0.65	0.45	0.29	16	4.46	1.31	6.54	25	3.46	22.61	0.41
315	314	315	0.45	1.38	0.62	18	4.16	2.59	10.08	25	3.43	34.52	0.39
314	313	314	0.65	0.78	0.51	18	4.14	2.10	10.59	26	3.39	35.93	0.08
313	312	313	0.65	0.79	0.51	17	4.27	2.19	11.10	26	3.39	37.61	0.10
312	311	312	1.00	0.00	0.00	5	6.98	0.00	11.10	26	3.38	37.53	0.49
310	309	310	0.65	0.78	0.51	17	4.30	2.18	0.51	17	4.30	2.18	0.13
309	308	309	0.70	0.79	0.55	17	4.30	2.38	1.06	17	4.28	4.54	0.37

Storm Sewer Design Calculations
- Pipe Design -

PROJECT: *Specialty Bakeries* *DATE:* *12/13/13*
JOB #: *6087.200* *COMPUTED BY:* *MAT*
DESIGN EVENT: *10-Year*

STRUCTURE FROM	STRUCTURE TO	DESIGN Q (cfs)	L (ft)	DIA. (in)	SLOPE %	CAP. Q (cfs)	VEL. (ft/s)	RIM ELEV. UP	RIM ELEV. DOWN	INVERT ELEV. UP	INVERT ELEV. DOWN	COVER (ft) UP	COVER (ft) DOWN
343	340	3.81	126	15	0.43	4.62	3.76	752.40	751.55	748.89	748.35	2.09	1.78
340	339	6.59	28	18	0.43	7.51	4.25	751.55	751.55	748.15	748.03	1.71	1.83
339	338	9.20	131	21	0.35	10.22	4.25	751.55	751.60	747.83	747.37	1.76	2.27
338	337	9.89	155	30	0.10	14.14	2.88	751.60	751.30	746.77	746.61	2.05	1.90
337	315	11.34	355	30	0.11	14.83	3.02	751.30	752.30	746.61	746.22	1.90	3.29
336	335	2.28	28	12	0.50	2.75	3.50	752.41	752.41	749.47	749.33	1.77	1.91
335	324	5.06	131	18	0.25	5.73	3.24	752.41	753.45	748.93	748.60	1.79	3.16
334	333	0.01	36	12	0.56	2.91	3.70	756.00	755.30	752.45	752.25	2.38	1.88
333	332	1.31	111	12	0.45	2.60	3.32	755.30	756.30	752.25	751.75	1.88	3.38
332	331	1.29	32	12	0.63	3.08	3.92	756.30	755.45	751.75	751.55	3.38	2.73
331	330	2.20	28	15	0.36	4.22	3.44	755.45	755.45	751.35	751.25	2.68	2.78
330	321	2.86	146	18	0.32	6.48	3.67	755.45	754.65	751.05	750.58	2.71	2.38
329	318	1.34	24	12	0.50	2.75	3.50	754.00	754.65	749.95	749.83	2.88	3.65
500	328	0.33	105	12	0.68	3.20	4.08	750.00	753.10	750.01	749.30	-	2.63
328	327	0.43	36	12	0.33	2.23	2.84	753.10	751.50	749.30	749.18	2.63	1.15
327	326	2.68	134	15	0.27	3.66	2.98	751.50	753.20	749.18	748.82	0.90	2.96
326	325	5.55	28	18	0.33	6.58	3.72	753.20	753.20	748.82	748.73	2.69	2.78
325	324	8.12	121	27	0.11	11.20	2.82	753.20	753.45	748.73	748.60	1.97	2.35
324	323	12.62	14	27	0.18	14.32	3.60	753.45	753.00	748.60	748.57	2.35	1.93
323	322	15.23	508	30	0.15	17.32	3.53	753.00	754.20	748.57	747.81	1.64	3.60
322	321	16.19	24	30	0.17	18.44	3.76	754.20	754.95	747.81	747.77	3.60	4.39
321	320	18.72	106	30	0.23	21.45	4.37	754.95	753.19	747.77	747.53	4.39	2.87

Storm Sewer Design Calculations
- Pipe Design -

PROJECT: *Specialty Bakeries* *DATE:* *12/13/13*
JOB #: *6087.200* *COMPUTED BY:* *MAT*
DESIGN EVENT: *10-Year*

STRUCTURE		DESIGN				CAP.							
FROM	TO	Q (cfs)	L (ft)	DIA. (in)	SLOPE %	Q (cfs)	VEL. (ft/s)	RIM ELEV. UP	RIM ELEV. DOWN	INVERT ELEV. UP	INVERT ELEV. DOWN	COVER (ft) UP	COVER (ft) DOWN
320	319	19.62	28	30	0.24	21.91	4.46	753.19	753.19	747.53	747.46	2.87	2.94
319	318	20.59	146	30	0.27	23.24	4.73	753.19	754.65	747.46	747.07	2.94	4.79
318	317	21.36	106	30	0.29	24.08	4.91	754.65	755.28	747.07	746.76	4.79	5.73
317	316	21.65	28	30	0.29	24.08	4.91	755.28	755.28	746.76	746.68	5.73	5.81
316	315	22.61	131	30	0.35	26.46	5.39	755.28	752.30	746.68	746.22	5.81	3.29
315	314	34.52	131	36	0.30	39.83	5.64	752.30	753.08	746.22	745.83	2.75	3.92
314	313	35.93	28	36	0.33	41.78	5.91	753.08	753.08	745.83	745.74	3.92	4.01
313	312	37.61	26	42	0.15	42.49	4.42	753.08	753.83	745.74	745.70	3.46	4.25
312	311	37.53	130	42	0.15	42.49	4.42	753.83		745.70	745.50	4.25	-
310	309	2.18	28	12	0.50	2.75	3.50	752.20	752.20	748.07	747.93	2.96	3.10
309	308	4.54	153	15	1.46	8.51	6.93	752.20	-	747.73	745.50	3.05	-

Inlet Capacity
- Proposed Basins -

PROJECT:	Heritage Section 5	DATE:	04/02/2014
JOB #:	4569.105	COMPUTED BY:	MAT

Casting Data			Area	Perimeter	Comments
			(ft^2)	(lf)	
Roll Curb	Neenah	R3501-TX	1.4	4.6	Roll Curb Inlet or Manhole
Valley	Neenah	R3405-A	1.3	8.0	Valley Curb Inlet or Manhole
Beehive	Neenah	R-4215-C	3.3	11.3	Ditch Casting, dome

Cw	3.3	C_w = Coefficient of weir flow	$Q_{wier} = C_w L H^{1.5}$
Cd	0.6	Cd = Coefficient of orifice flow	$Q_{orifice} = C_d A (2gh)^{0.5}$
		L = Weir length (ft)	
		A = Open area (ft^2)	C_w so Neenah Foundary Co.
		H = Head (ft)	

Basin Number	Casting Type	Q (ft^3/sec)	Area (ft^2)	Perimeter (lf)		H_{weir} (ft)	$H_{orifice}$ (ft)
338	Beehive	0.95	3.30	11.30		0.09	0.00
337	Beehive	1.81	3.30	11.30		0.13	0.01
315	Roll Curb	2.59	1.40	4.60		0.31	0.15
314	Roll Curb	2.10	1.40	4.60		0.27	0.10
313	Roll Curb	2.19	1.40	4.60		0.28	0.11
312	Roll Curb	0.00	1.40	4.60		0.00	0.00
310	Roll Curb	2.18	1.40	4.60		0.27	0.10
309	Roll Curb	2.38	1.40	4.60		0.29	0.12

Gutter Spread & Ponding Depth Calculations

$$Q = \frac{0.56}{N} * Z * D^{8/3} * S^{1/2}, \quad \textit{Modified Manning's Equation}$$

Q =	Flow, cfs	=	--	cfs
N =	Roughness	=	0.0160	(asphalt)
Z =	1/Transverse Slope	=	48.00	ft/ft
T =	Transverse Slope	=	0.0208	ft/ft
S =	Longtudinal Slope	=	--	ft/ft
D =	Depth, feet	=	--	ft/ft

INLET # 309 Flow to Inlet = 2.38 cfs

	Flow to Left = 60%	=	1.43	cfs		Flow to Right = 40%	=	0.95	cfs
S =	Longitudinal Slope	=	0.0050	ft/ft	S =	Longitudinal Slope	=	0.0050	ft/ft
D =	Depth, feet	=	0.19	feet	D =	Depth, feet	=	0.16	feet
G =	Spread, feet	=	9.15	feet	G =	Spread, feet	=	7.85	feet

INLET # 310 Flow to Inlet = 2.18 cfs

	Flow to Left = 40%	=	0.87	cfs		Flow to Right = 60%	=	1.31	cfs
S =	Longitudinal Slope	=	0.0050	ft/ft	S =	Longitudinal Slope	=	0.0050	ft/ft
D =	Depth, feet	=	0.16	feet	D =	Depth, feet	=	0.18	feet
G =	Spread, feet	=	7.59	feet	G =	Spread, feet	=	8.85	feet

Street Width = 29 feet
Combined Gutter Spread = 18.01 feet
Minimum Driving Lane Width = 10.99 feet < 11 feet, No good

--- Ponding Depth ---

INLET #309:	depth above inlet	= 0.30	feet	**> 0.30 feet, No good**
INLET #310:	depth above inlet	= 0.29	feet	**< 0.30 feet, OK**

INLET # 313 Flow to Inlet = 2.19 cfs

	Flow to Left = 80%	=	1.75	cfs		Flow to Right = 20%	=	0.44	cfs
S =	Longitudinal Slope	=	0.0064	ft/ft	S =	Longitudinal Slope	=	0.0050	ft/ft
D =	Depth, feet	=	0.20	feet	D =	Depth, feet	=	0.12	feet
G =	Spread, feet	=	9.43	feet	G =	Spread, feet	=	5.88	feet

INLET # 314 Flow to Inlet = 2.10 cfs

	Flow to Left = 20%	=	0.42	cfs		Flow to Right = 80%	=	1.68	cfs
S =	Longitudinal Slope	=	0.0050	ft/ft	S =	Longitudinal Slope	=	0.0064	ft/ft
D =	Depth, feet	=	0.12	feet	D =	Depth, feet	=	0.19	feet
G =	Spread, feet	=	5.78	feet	G =	Spread, feet	=	9.28	feet

Street Width = 29 feet
Combined Gutter Spread = 18.71 feet
Minimum Driving Lane Width = 10.29 feet < 11 feet, No good

--- Ponding Depth ---

INLET #313:	depth above inlet	= 0.29	feet	**< 0.30 feet, OK**
INLET #314:	depth above inlet	= 0.28	feet	**< 0.30 feet, OK**

WATER QUALITY DESIGN

SEE HERITAGE SECTION ONE DRAINAGE CALCULATIONS