



CASH WAGGNER
& ASSOCIATES, PC
 CONSULTING ENGINEERS • LAND SURVEYORS

DATE: 02.23.21

ATTENTION: Linda Freeman

PROJECT NO.: 20-4456

COMPANY: Vanderburgh County
 Surveyor

REFERENCE: Westridge Commons

ADDRESS: Civic Center Complex -
 Room 325

YOUR FILE NO.:

CITY, ST, ZIP: Evansville, IN 47708

PHONE:

THE FOLLOWING ITEMS:

COPIES:	ORIG./LAST REV. DATE:	DESCRIPTION:
1	02.23.21	Revised Drainage Plan & Details
1	02.23.21	Developed Sub-basin Exhibit
1	02.23.21	Drainage Report & Calculations
1	02.08.21	Form 801

LETTER OF TRANSMITTAL

ARE TRANSMITTED:

- PER YOUR REQUEST
- FOR YOUR FILES
- FOR REVIEW & COMMENT
- OTHER

FOR YOUR:

- APPROVAL
- USE
- INFORMATION
- OTHER

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COMMENTS:

Please review the attached drainage plan and report. If you have any questions or comments, please give me a call.

414 CITADEL CIRCLE
 SUITE B
 EVANSVILLE, IN 47715
 PH: 812.401.5561
 FAX: 812.401.5563
GMERITT@CASHWAGGNER.COM

FROM:

GLEN MERITT, JR., P.E.

cc: File

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 VANDERBURGH COUNTY
 SURVEYOR'S OFFICE

Submitted 2-24-2021
 8:55 AM
 AR

APPLICANT INFORMATION FORM 801

Project Name: Westridge Commons Subdivision

Approximate Location: Located on the south side of Strueh Hendricks Road approximately 3000' west of Broadway Avenue

Applicant Name: Jagoe Homes Inc.

Applicant is (check one)

Individual (s)
 Partnership or legal LLC
 Corporation

Applicant Address: 3624 Wathens Crossing
City: Owenboro
State: Kentucky
Zip Code: 42301

Email: manuel.ball@jagoehomes.com

For Individual (s)

I (we) do hereby certify that the Information contained on this application is to true and correct. I (we) further understand that upon completion of the project that an as built drawing or certification statement as required by the Vanderburgh County Code will be submitted as required and that failure to provide such certification could result in fines under Section 13.04.110 and/or make me (us) ineligible for future drainage plan approvals until such time as an as built drawing or certification is submitted.

Signature _____

Date Click here to enter a date.

Signature _____

Date Click here to enter a date.

For Partnership (s)

I (we) do hereby certify that the Information contained on this application is to true and correct. I (we) further understand that upon completion of the project that an as built drawing or certification statement as required by the Vanderburgh County Code will be submitted as required and that failure to provide such certification could result in fines under Section 13.04.110 and/or make me (us) ineligible for future drainage plan approvals until such time as an as built drawing or certification is submitted.

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Submitted
2-24-2021
8:55 AM
AR

Signature of Senior or Managing Partner WJ
Printed Name William R. Jape IV
Date 2-8-21

If partnership does not have a Senior or Managing Partner than signatures of all partners

Signature _____ Date _____
Printed Name _____

Signature _____ Date _____
Printed Name _____

Signature _____ Date _____
Printed Name _____

Signature _____ Date _____
Printed Name _____

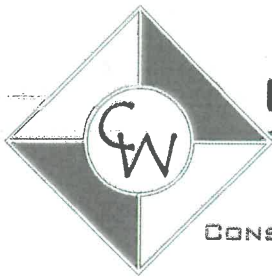
Signature _____ Date _____
Printed Name _____

For Corporation

I do hereby certify that the Information contained on this application is to true and correct. I further understand that upon completion of the project that an as built drawing or certification statement as required by the Vanderburgh County Code will be submitted as required and that failure to provide such certification could result in fines under Section 13.04.110 and/or make the corporation ineligible for future drainage plan approvals until such time as an as built drawing or certification is submitted.

Signature _____ Date _____
Printed Name _____

Title _____ (note if not a vice president or above of applicant company, than attached a Delegation of Authority)



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February 23, 2021

Linda Freeman
Vanderburgh County Surveyor
Room 325 Civic Center - 1 NW Martin Luther King Jr. Blvd.
Evansville, IN 47708

**RE: Preliminary Drainage Report
Westridge Commons Subdivision
Strueh Hendricks Road
Our Project #: 20-4456**

Ms. Freeman:

Below is a summary of the drainage calculations for the above-referenced project.

SITE DESCRIPTION

This development consists of a single-family residential subdivision with 74 lots and its associated improvements (i.e. roads, utilities). This subdivision is located on a 27.08-acre parcel that lies on the south side of Strueh Hendricks Road approximately 3,000 feet west of the Strueh Hendricks Road and Broadway Avenue intersection. The entire property with exception of the existing ditches along the east and south property lines will be disturbed during construction.

No regulated drains, inlets or outfalls exist on this site. An existing sanitary sewer is located on the north side of Strueh Hendricks Road. No existing combined sewers or outfalls are located on this site. No known wells, septic tanks systems or outfalls exist on this site. No seeps, springs, sinkholes, caves, shafts, faults or other such geological features are visible or of record on this site.

DRAINAGE PATTERNS

The existing site is rolling and was previously utilized as a cultivated field. UN-1 contains 1.77-acres and is located at the northwest corner of the site. Runoff from this sub-basin sheet flows to the northwest corner of the property and exits the property via an existing roadside ditch that flows west along the south side of Strueh Hendricks Road. UN-2 contains 22.13-acres and includes the majority of the site. Runoff from this sub-basin sheet flows to the southeast to the existing ditch located along the east and south property lines which flows off-site to the south. UN-3 contains 3.18-acres and is located along the west property line. Runoff from this sub-basin sheet flows to the existing ditch near the southwest corner of the site. See attached Undeveloped Sub-basin Exhibit for the locations of each sub-basin.

The 25-year and 100-year flows were calculated for the entire 27.08-acre development. The residential subdivision was divided into 24 developed sub-basins and one off-site sub-basin. Sub-basins #20 - #23 will be allowed to exit the site

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Submitted
2-24-2021
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undetained. See attached Developed Sub-basin Exhibit and Off-Site Sub-basin Exhibit for the locations of each sub-basin.

A drainage swale and storm sewer network will be installed within the development to capture the storm water runoff and convey it to one of the three detention basins. All storm sewers will be constructed with reinforced concrete pipe. Lots 27-32, 35-40, 47-52 and 63 will have to be graded from the rear of the lot to the front of the lot. Five (5) foot drainage easements have been added along each property line of these lots to allow side yard swales to be constructed when the homes are built to divert the upstream runoff around the homes. The primary outlets and emergency spillways of Detention Basin #1 and #2 will discharge to the existing ditch located along the east property line. The primary outlet and emergency spillway of Detention Basin #3 will discharge to the existing ditch located along the south property line. All runoff ultimately discharges to Bayou Creek.

The proposed sanitary sewer and water mains will be public and will be maintained by EW&SU.

The developer will be utilizing Repair Fund "B" for the maintenance and repair of all storm water drainage systems and facilities outside the county accepted road right-of-ways. Upon the completion of the earthwork activities and utility construction, Tenbarger - Green Alliance seed mixture will be used for permanent seeding all green space areas and the earthen side slopes of all three detention basins. No tree limbs, refuse from legally burnt vegetation, nor construction waste, demolition materials or other man-made material may be buried within detention basins #1, #2 or #3.

CALCULATIONS

The Rational Method and HERPICC Manual were utilized in performing the drainage calculations for this project. All storm sewers and swales were designed to carry the 25-year developed runoff. The outlet structure for the detention basin was sized for the 25-year design storm event while allowing a discharge rate less than the undeveloped 10-year storm event from the system. The emergency spillways for all three detention basins were designed to convey the 100-year storm flow.

Below is a summary of the detention basin design elements:

Detention Basin #1		NOTES
Developed Q(25)	29.23 - cfs	#1 - #9
Developed Q(100)	37.25 - cfs	#1 - #9
Undeveloped Q(10)	21.36 - cfs	50% of UN-2
Undetained Developed Q(25)	5.83 - cfs	#20 + #23
Off-Site Developed Q(25)	N/A	N/A
25-year Req'd Storage Volume	36,566 - cf	
25-year Provided Storage Volume	44,890 - cf	



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Allowable Detention Basin #1 Release Rate	15.53 - cfs	Undeveloped Q(10) - Undetained Developed Q(25) + Off-Site Developed Q(25)
<i>Proposed Detention Basin #1 Release Rate</i>	<i>2.24 - cfs</i>	<i>Detention Basin #1 Primary Spillway</i>
<i>Outlet Structure</i>	<i>36-LF of 10" H.D.P.E.</i>	<i>P-553</i>
Outlet I.E.	382.00	
25-year Storage Vol. Elev.	383.07	
100-year Storage Vol. Elev.	383.45	
HW (25-yr. elev. - I.E.)	1.07 - ft.	
Minimum Top/Bank	384.20	

Detention Basin #2		NOTES
Developed Q(25)	26.71 - cfs	#10 - #13 & #17 - #19
Developed Q(100)	34.02 - cfs	#10 - #13 & #17 - #19
Undeveloped Q(10)	21.36 - cfs	50% of UN-2
Undetained Developed Q(25)	N/A	N/A
Off-Site Developed Q(25)	N/A	N/A
25-year Req'd Storage Volume	25,399 - cf	
25-year Provided Storage Volume	31,537 - cf	
Allowable Detention Basin #2 Release Rate	21.36 - cfs	Undeveloped Q(10) - Undetained Developed Q(25) + Off-Site Developed Q(25)
<i>Proposed Detention Basin #2 Release Rate</i>	<i>3.04 - cfs</i>	<i>Detention Basin #2 Primary Spillway</i>
<i>Outlet Structure</i>	<i>41-LF of 12" R.C.P.</i>	<i>P-549</i>
Outlet I.E.	380.50	
25-year Storage Vol. Elev.	381.57	
100-year Storage Vol. Elev.	381.93	
HW (25-yr. elev. - I.E.)	1.07 - ft.	
Minimum Top/Bank	382.80	

Detention Basin #3		NOTES
Developed Q(25)	16.34 - cfs	#14 - #16
Developed Q(100)	20.82 - cfs	#14 - #16
Undeveloped Q(10)	10.81 - cfs	UN-3
Undetained Developed Q(25)	2.73 - cfs	#22
Off-Site Developed Q(25)	N/A	N/A
25-year Req'd Storage Volume	15,189 - cf	
25-year Provided Storage Volume	16,331 - cf	



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Allowable Detention Basin #3 Release Rate	8.08 - cfs	Undeveloped Q(10) - Undetained Developed Q(25) + Off-Site Developed Q(25)
<i>Proposed Detention Basin #3 Release Rate</i>	<i>2.18 - cfs</i>	<i>Detention Basin #3 Primary Spillway</i>
<i>Outlet Structure</i>	<i>31-LF of 10" H.D.P.E.</i>	<i>P-561</i>
Outlet I.E.	380.00	
25-year Storage Vol. Elev.	381.03	
100-year Storage Vol. Elev.	381.35	
HW (25-yr. elev. - I.E.)	1.03 - ft.	
Minimum Top/Bank	382.00	

Undetained Runoff at the Northwest Corner of Site		NOTES
Undeveloped (Cu x Au)	0.499 x 1.77 acres = 0.883	UN-1
Developed (Cd x Ad)	0.574 x 0.80 acres = 0.459	#21



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Westridge Commons

Detention Basin #1

PROVIDED DETENTION VOLUMES

(per ACAD)

	<u>Elevation</u>	<u>Area (s.f.)</u>	<u>Avg. Area (s.f.)</u>	<u>Inc. Vol. (c.f.)</u>	<u>Cumulative Vol. (c.f.)</u>
Pool	382.00	31,444			
	383.00	36,277	33,861	33,861	33,861
E.O.S.	383.20	37,256	36,767	7,353	41,214
T.B.	384.20	42,209	39,733	39,733	80,946

Detention volume provided at Elev. 383.2 = 41,214 c.f.

Total, required 25-YR detention volume = 36,566 c.f.

25-YR Req'd detention volume provided @ Elev. = 383.07 ft.

Req'd HW= 1.07 ft.

Detention volume provided at Elev. 384.20 = 80,946 c.f.

Total, required 100-YR detention volume = 50,250 c.f.

100-YR Req'd detention volume provided @ Elev. = 383.45 ft.

Req'd HW= 1.45 ft.

DETENTION FACILITY DESIGN VOLUME CALCULATIONS

PROJECT: **Westridge Commons**
Detention Basin #3

DETENTION FACILITY DESIGN RETURN PERIOD: 25 YRS

RELEASE RATE RETURN PERIOD: 10 YRS

WATERSHED AREA: 5.23 ACRES
 DEVELOPED RUNOFF COEFFICIENT (C_d): 0.567

STORM DURATION T_d (HRS)	RAINFALL INTENSITY I_d (INCH/HR)	INFLOW RATE $I(T_d)$ ($C_d * I_d * A$) (CFS)	OUTFLOW RATE O ($C_u * I_u * A$) (CFS)	STORAGE RATE ΔS $I(T_d) - O$ (CFS)	REQUIRED STORAGE S_d ($(I(T_d) - O) * T_d / 12$) (ACRE-FT)
0.08	7.810	23.16	2.22	20.94	0.145
0.17	6.320	18.74	2.22	16.52	0.229
0.25	5.240	15.54	2.22	13.32	0.277
0.33	4.597	13.63	2.22	11.41	0.317
0.42	3.953	11.72	2.22	9.50	0.330
0.50	3.310	9.82	2.22	7.60	0.316
0.58	3.083	9.14	2.22	6.92	0.337
0.67	2.857	8.47	2.22	6.25	0.347
0.75	2.630	7.80	2.22	5.58	0.349
0.83	2.403	7.13	2.22	4.91	0.341
0.92	2.177	6.45	2.22	4.23	0.323
1.00	1.950	5.78	2.22	3.56	0.297
1.25	1.805	5.35	2.22	3.13	0.326
1.50	1.660	4.92	2.22	2.70	0.338
1.75	1.515	4.49	2.22	2.27	0.331
2.00	1.370	4.06	2.22	1.84	0.307
3.00	1.020	3.02	2.22	0.80	0.201

PEAK STORAGE (ACRE/FT):	0.35
PEAK STORAGE (CUBIC FT):	15,189

Westridge Commons

Detention Basin #3

PROPOSED 25-YR DESIGN RELEASE RATE

CALCULATIONS FOR PIPE FLOWING FULL

(Pressure Conditions)

SOLVE FOR Q

\emptyset = 0.833 FT.
h'= 2.4 IN.
h= 0.6165 FT.
Ke= 0.5
Ko= 1
n= 0.011
L= 31 FT.
HW= 1.033 FT.

Q= 2.22 CFS

\emptyset = diameter of orifice (pipe)

Ke= entrance coefficient

Ko= outfall coefficient

n= manning's 'n'

L= length of orifice (pipe)

Q= allowable release rate

h= h' + \emptyset /2

h'= ht. of water
above orifice

HW= h' + \emptyset

DETENTION FACILITY DESIGN VOLUME CALCULATIONS

PROJECT: **Westridge Commons**
Detention Basin #3

DETENTION FACILITY DESIGN RETURN PERIOD: 100 YRS

RELEASE RATE RETURN PERIOD: 10 YRS

WATERSHED AREA:

5.23 ACRES

DEVELOPED RUNOFF COEFFICIENT (C_d):

0.567

STORM DURATION T_d (HRS)	RAINFALL INTENSITY I_d (INCH/HR)	INFLOW RATE $I(T_d)$ ($C_d * I_d * A$) (CFS)	OUTFLOW RATE O ($C_u * I_u * A$) (CFS)	STORAGE RATE ΔS $I(T_d) - O$ (CFS)	REQUIRED STORAGE S_d ($(I(T_d) - O) * T_d / 12$) (ACRE-FT)
0.08	9.950	29.51	2.74	26.77	0.186
0.17	8.050	23.87	2.74	21.13	0.293
0.25	6.680	19.81	2.74	17.07	0.356
0.33	5.857	17.37	2.74	14.63	0.406
0.42	5.033	14.93	2.74	12.19	0.423
0.50	4.210	12.48	2.74	9.74	0.406
0.58	3.935	11.67	2.74	8.93	0.434
0.67	3.660	10.85	2.74	8.11	0.451
0.75	3.385	10.04	2.74	7.30	0.456
0.83	3.110	9.22	2.74	6.48	0.450
0.92	2.835	8.41	2.74	5.67	0.433
1.00	2.560	7.59	2.74	4.85	0.404
1.25	2.380	7.06	2.74	4.32	0.450
1.50	2.200	6.52	2.74	3.78	0.473
1.75	2.020	5.99	2.74	3.25	0.474
2.00	1.840	5.46	2.74	2.72	0.453

PEAK STORAGE (ACRE/FT):	0.47
PEAK STORAGE (CUBIC FT):	20,646

Westridge Commons

Detention Basin #3

PROPOSED 100-YR DESIGN RELEASE RATE

CALCULATIONS FOR PIPE FLOWING FULL

(Pressure Conditions)

SOLVE FOR Q

\emptyset = 0.833 FT.
h'= 6.2 IN.
h= 0.9332 FT.
Ke= 0.5
Ko= 1
n= 0.011
L= 31 FT.
HW= 1.3497 FT.

Q= 2.74 CFS

\emptyset = diameter of orifice (pipe) h= h' + \emptyset /2
Ke= entrance coefficient h'= ht. of water
Ko= outfall coefficient above orifice
n= manning's 'n' HW= h' + \emptyset
L= length of orifice (pipe)
Q= allowable release rate

Westridge Commons

Detention Basin #3

PROVIDED DETENTION VOLUMES

(per ACAD)

	<u>Elevation</u>	<u>Area (s.f.)</u>	<u>Avg. Area (s.f.)</u>	<u>Inc. Vol. (c.f.)</u>	<u>Cumulative Vol. (c.f.)</u>
Pool	380.00	13,388			
	380.50	14,706	14,047	7,024	7,024
E.O.S.	381.10	16,320	15,513	9,308	16,331
T.B.	382.00	18,771	17,546	15,791	32,122

Detention volume provided at Elev. 381.10 = 16,331 c.f.

Total, required 25-YR detention volume = 15,189 c.f.

25-YR Req'd detention volume provided @ Elev. = 381.03 ft.

Req'd HW= 1.03 ft.

Detention volume provided at Elev. 382.00 = 32,122 c.f.

Total, required 100-YR detention volume = 20,646 c.f.

100-YR Req'd detention volume provided @ Elev. = 381.35 ft.

Req'd HW= 1.35 ft.

Weighted c calculations for sub-basins captured by Detention Basin #3

DEVELOPED WEIGHTED c CALCULATIONS			
			Total Area = 5.23 Acres
Sub-basin	Area (A)	c	c x A
#14	0.90 Ac.	0.667	0.115
#15	1.87 Ac.	0.561	0.201
#16	2.46 Ac.	0.536	0.252

Weighted c = 0.567

STORM SEWER CALCULATIONS

Design Return Period: 25 Year
 Manning's n: 0.011

Project Name: Westridge Commons
 Project #: 20-4456
 Date: 2/23/21

NO.	SUB-BASIN NO.	UPSTREAM STRUCTURE	PIPE #	DOWNSTREAM STRUCTURE	LENGTH (ft)	Ci	Aj (ac.)	C/Aj	SUM C/Aj	Tj (min)	Tcum (min)	I (in/hr)	PIPE Q (cfs)	PIPE DIA. (in)	PIPE SLOPE (ft/ft)	I.E. (Upstream)	I.E. (Downstream)	CAP. (cfs)	TRAVEL VELOCITY (ft/sec)	TIME (min)
1	1	CI 500	501	CI 502	25	0.365	2.27	0.83	0.83	22.72	22.72	4.246	3.52	12	0.0103	384.28	384.01	4.27	5.44	0.08
1	2	CI 502	503	FES 504	150	0.651	0.75	0.49	1.32	16.64	22.80	4.236	5.58	15	0.0134	384.01	382.00	8.83	7.20	0.35
2	4	CI 506	507	AD 512	100	0.577	1.79	1.03	1.03	33.88	33.88	5.482	5.66	12	0.0782	400.57	392.75	11.77	14.99	0.11
3	5	CI 508	509	CI 510	27	0.691	0.36	0.25	0.25	10.76	10.76	6.155	1.53	12	0.0050	410.24	410.11	2.98	3.79	0.12
3	6	CI 510	511	AD 512	146	0.573	0.20	0.11	0.36	10.48	10.88	6.130	2.23	12	0.0782	404.17	392.75	11.77	14.99	0.16
3	7	AD 512	513	AD 514	65	0.470	0.19	0.09	1.49	8.26	13.99	5.458	8.11	12	0.0782	392.75	387.67	11.77	14.99	0.07
3	7B	AD 514	515	CI 516	134	0.489	0.22	0.11	1.59	6.30	14.06	5.443	8.67	18	0.0090	387.63	386.02	11.77	6.67	0.34
3	8	CI 516	517	CI 518	27	0.582	1.37	0.80	2.39	20.46	20.46	4.537	10.85	18	0.0100	386.02	385.75	12.41	7.03	0.06
3	9	CI 518	519	MH 520	22	0.665	0.50	0.33	2.72	16.62	20.52	4.530	12.33	18	0.0110	385.75	385.51	13.02	7.37	0.05
4	10	MH 520	521	FES 522	127	0.665	0.50	0.33	2.72	20.57	20.57	4.523	12.32	18	0.0276	385.51	382.00	20.62	11.68	0.18
4	11	CI 526	527	CI 528	42	0.632	0.49	0.31	0.31	11.57	11.57	5.981	1.85	12	0.0040	388.97	388.80	2.66	3.39	0.21
4	12	CI 528	529	CI 530	40	0.640	0.98	0.63	0.94	11.51	11.78	5.936	5.56	15	0.0074	388.80	388.51	6.56	5.35	0.12
5	14	CI 534	535	CI 536	26	0.633	0.87	0.58	0.58	11.33	11.33	6.033	3.48	12	0.0085	397.67	397.45	3.88	4.94	0.09
5	15	CI 536	537	FES 538	154	0.583	3.87	1.05	1.63	15.35	15.35	5.195	8.45	12	0.0677	397.45	387.02	10.95	13.95	0.18
6	17	FES 540	541	CI 542	32	0.524	2.12	1.11	1.11	11.98	11.98	5.892	6.55	12	0.0580	391.60	389.74	10.14	12.91	0.04
6	18	CI 542	543	CI 544	28	0.583	1.11	0.65	1.76	20.54	20.54	4.527	7.96	12	0.0490	389.74	388.37	9.32	11.87	0.04
6	19	CI 544	545	FES 546	138	0.646	1.24	0.80	2.56	16.51	20.58	4.523	11.57	15	0.0285	384.43	380.50	12.88	10.50	0.22
7	20 + OS-1	FES 556	557	FES 558	86	0.585	12.29	7.19	7.19	17.07	17.07	4.974	35.75	30	0.0058	384.35	383.85	36.90	7.52	0.19

24" x 36" Elliptical RCP req'd

DEVELOPED DRAINAGE BASIN CALCULATIONS

Basin No.:	15			Total Area =	81,462 S.F.		
					1.87 Acres		
Surface							
Structures	8.5	@	2000	=	17,000 S.F.	=	0.39 Ac.
Pavement				=	8,108 S.F.	=	0.19 Ac.
Drives	10.5	@	700	=	7,350 S.F.	=	0.17 Ac.
Patios	6.5	@	100	=	650 S.F.	=	0.01 Ac.
Sidewalks				=	2,312 S.F.	=	0.05 Ac.
Lawn (0-2%)				=	0 S.F.	=	0.00 Ac.
Lawn (2-5%)				=	40,589 S.F.	=	0.93 Ac.
Lawn (5-10%)				=	0 S.F.	=	0.00 Ac.
Lawn (>10%)				=	5,453 S.F.	=	0.13 Ac.
Water				=	0 S.F.	=	0.00 Ac.
Misc.				=	0 S.F.	=	0.00 Ac.

Weighted c =	0.561
Weighted N =	0.235
Sheet Flow	
L =	300 Ft.
H =	8.1 Ft.
S =	0.0270 Ft./Ft.
t1 =	14.02 Minutes
(Min. 5 minutes)	
Shallow Concentrated Flow	
L =	300 Ft.
H =	14.1 Ft.
S =	0.0470 Ft./Ft.
v =	4.44 Ft./sec.
t2 =	1.13 Minutes
(From HETPICC Figure 3.4.5)	
Open Channel Flow	
L =	94 Ft.
H =	4.9 Ft.
S =	0.0521 Ft./Ft.
v =	7.53 Ft./sec.
t3 =	0.21 Minutes
tc =	15.35 Minutes
I(10) =	In./Hr.
I(25) =	5.195 In./Hr.
I(50) =	In./Hr.
I(100) =	6.622 In./Hr.
Q(10) =	0.00 CFS
Q(25) =	5.45 CFS
Q(50) =	0.00 CFS
Q(100) =	6.95 CFS

DEVELOPED DRAINAGE BASIN CALCULATIONS

Basin No.:	16			Total Area =	106,954 S.F.		
					2.46 Acres		
Surface							
Structures	5	@	2000	=	10,000 S.F.	=	0.23 Ac.
Pavement				=	0 S.F.	=	0.00 Ac.
Drives	0	@	700	=	0 S.F.	=	0.00 Ac.
Patios	10	@	100	=	1,000 S.F.	=	0.02 Ac.
Sidewalks				=	0 S.F.	=	0.00 Ac.
Lawn (0-2%)				=	0 S.F.	=	0.00 Ac.
Lawn (2-5%)				=	0 S.F.	=	0.00 Ac.
Lawn (5-10%)				=	77,183 S.F.	=	1.77 Ac.
Lawn (>10%)				=	5,383 S.F.	=	0.12 Ac.
Woods (>10%)				=	0 S.F.	=	0.00 Ac.
Water				=	13,388 S.F.	=	0.31 Ac.
Misc.				=	0 S.F.	=	0.00 Ac.

Weighted c =	0.536
Weighted N =	0.311
Sheet Flow	
L =	114 Ft.
H =	1.7 Ft.
S =	0.0145 Ft./Ft.
t1 =	11.77 Minutes
(Min. 5 minutes)	
Open Channel Flow	
L =	249 Ft.
H =	1.3 Ft.
S =	0.0050 Ft./Ft.
v =	2.80 Ft./sec.
t2 =	1.48 Minutes
tc =	13.25 Minutes
I(10) =	In./Hr.
I(25) =	5.619 In./Hr.
I(50) =	In./Hr.
I(100) =	7.160 In./Hr.
Q(10) =	0.00 CFS
Q(25) =	7.40 CFS
Q(50) =	0.00 CFS
Q(100) =	9.43 CFS

DEVELOPED DRAINAGE BASIN CALCULATIONS

Basin No.:	21		Total Area =	34,685 S.F.		0.80 Acres		
Surface						C	N	
Structures	0.75	@	2000	=	1,500 S.F. =	0.03 Ac.	0.92	0.02
Pavement				=	3,601 S.F. =	0.08 Ac.	0.92	0.02
Drives	0	@	700	=	0 S.F. =	0.00 Ac.	0.92	0.02
Patios	1.5	@	100	=	150 S.F. =	0.00 Ac.	0.92	0.02
Sidewalks				=	0 S.F. =	0.00 Ac.	0.92	0.02
Lawn (0-2%)			0 S.F.	=	0.00 Ac.	0.15	0.40	
Lawn (2-5%)			0 S.F.	=	0.00 Ac.	0.25	0.40	
Lawn (5-10%)			7,327 S.F.	=	0.17 Ac.	0.40	0.40	
Lawn (>10%)			22,107 S.F.	=	0.51 Ac.	0.55	0.40	
Water			0 S.F.	=	0.00 Ac.	1.00	0.00	
Misc.			0 S.F.	=	0.00 Ac.	0.92	0.02	

Weighted c =	0.574
Weighted N =	0.342
Sheet Flow	
L =	169 Ft.
H =	14.2 Ft.
S =	0.0839 Ft./Ft.
t1 =	9.82 Minutes
(Min. 5 minutes)	
Shallow Concentrated Flow	
L =	0 Ft.
H =	0.0 Ft.
S =	#DIV/0! Ft./Ft.
v =	2.90 Ft./sec.
t2 =	0.00 Minutes
tc =	9.82 Minutes
I(10) =	In./Hr.
I(25) =	6.372 In./Hr.
I(50) =	In./Hr.
I(100) =	8.117 In./Hr.
Q(10) =	0.00 CFS
Q(25) =	2.91 CFS
Q(50) =	0.00 CFS
Q(100) =	3.71 CFS

DEVELOPED DRAINAGE BASIN CALCULATIONS

Basin No.:	22		Total Area =	29,549 S.F.		0.68 Acres		
Surface						C	N	
Structures	1	@	2000	=	2,000 S.F. =	0.05 Ac.	0.92	0.02
Pavement				=	0 S.F. =	0.00 Ac.	0.92	0.02
Drives	0	@	700	=	0 S.F. =	0.00 Ac.	0.92	0.02
Patios	2	@	100	=	200 S.F. =	0.00 Ac.	0.92	0.02
Sidewalks				=	0 S.F. =	0.00 Ac.	0.92	0.02
Lawn (0-2%)			0 S.F.	=	0.00 Ac.	0.15	0.40	
Lawn (2-5%)			0 S.F.	=	0.00 Ac.	0.25	0.40	
Lawn (5-10%)			0 S.F.	=	0.00 Ac.	0.40	0.40	
Lawn (>10%)			27,349 S.F.	=	0.63 Ac.	0.55	0.40	
Woods (>10%)			0 S.F.	=	0.00 Ac.	0.48	0.60	
Water			0 S.F.	=	0.00 Ac.	1.00	0.00	
Misc.			0 S.F.	=	0.00 Ac.	0.92	0.02	

Weighted c =	0.578
Weighted N =	0.372
Sheet Flow	
L =	136 Ft.
H =	22.6 Ft.
S =	0.1663 Ft./Ft.
t1 =	7.85 Minutes
(Min. 5 minutes)	
Shallow Concentrated Flow	
L =	0 Ft.
H =	0.0 Ft.
S =	#DIV/0! Ft./Ft.
v =	0.00 Ft./sec.
t2 =	0.00 Minutes
tc =	7.85 Minutes
I(10) =	In./Hr.
I(25) =	6.960 In./Hr.
I(50) =	In./Hr.
I(100) =	8.867 In./Hr.
Q(10) =	0.00 CFS
Q(25) =	2.73 CFS
Q(50) =	0.00 CFS
Q(100) =	3.47 CFS

(From HERPICC Figure 3.4.5)