



VANDERBURGH COUNTY ENGINEERING DEPARTMENT

201 NW Fourth Street Suite 308
Old Vanderburgh County Courthouse
Evansville, IN 47708-1358

Phone 812-435-5773
Fax 812-435-5676

September 21, 2011

Ms. Marilyn Stemaly
Stemaly Excavating, Inc.
2010 Fuquay Road
Evansville, IN 47715

Post-it® Fax Note	7671	Date	9/21/2011	# of pages	1
To	County Surveyor	From	County Engineering		
Co./Dept.		Co.			
Phone #		Phone #			
Fax #	5023	Fax #	5676		

RE: Camden Farms Subdivision

Dear Ms. Stemaly,

As was requested, an inspection has been completed in Camden Farms subdivision. Based on this inspection and previous items on the punch list dated June 27, 2008, the following remains to be addressed:

1. Replace the broken curbs at the following locations: along the south side of lot #3, along the northeast corner of lot #16, along the southeast corner of outlot A, and along the southeast corner of lot #47.
2. There is standing water and sediment in some curb inlets, especially the ones discharging into the eastern basin.

As soon as the entirety of the punch list items have been properly addressed, please contact me so another inspection can be completed. If you have any questions concerning this matter, feel free to contact me.

Sincerely,

Patrick R. Seib
Vanderburgh County Assistant Engineer

cc: Vanderburgh County Surveyor
File

file

8/23/2014
TW



VANDERBURGH COUNTY ENGINEERING DEPARTMENT

201 NW Fourth Street Suite 306
Old Vanderburgh County Courthouse
Evansville, IN 47708-1358

Phone 812-435-5773
Fax 812-435-5676

August 10, 2007

Mr. Dan Buck
Windemere Development LLC
P.O. Box 4530
Evansville, IN 47724-0530

RE: Camden Farms Subdivision

Dear Mr. Buck:

As was requested, an inspection was done in Camden Farms Subdivision. Based on this inspection, the following items must be addressed.

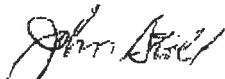
1. Install the concrete ribbon in the ditch along Kansas Road on the north side of lot #2 as required on the approved drainage plans.
2. A stable stand of grass is needed around end section #559.
3. The drainage between lots #14 and #15 does not go into the retention basin as shown on the approved plans for this subdivision.
4. Replace the broken curbs at the following locations: along the south side of lot #3, along the northeast corner of lot #16, along the southeast corner of outlot A, and along the southeast corner of lot #47.
5. There is standing water in all the curb inlets, especially the ones discharging into the eastern basin. All end sections in this basin were noticed to be mostly under water.
6. Since the subdivision entrance sign is located within the street right of way, an encroachment agreement will be required. While a copy of a draft encroachment agreement prepared in 2000 was found in our files, no final approved agreement was found. As a result, a new encroachment agreement must be signed by the homeowners association for this subdivision. A draft copy of the current version of the county's encroachment agreement is enclosed. Please re-type this agreement to include the appropriate information in the areas highlighted in yellow, such as the correct legal name of the association and its president's name, and then forward it back to me. I can then request approval of this at a county commissioners' meeting.
7. Submit a copy of the documents that show a homeowners association has been formed to maintain the storm drainage facilities located outside of dedicated street rights of way in this subdivision. Due to the number of fences that have already been installed in drainage easements, it appears that the association's future maintenance and/or repairs of some of these facilities will be difficult in some areas.
8. Provide an amended as-built plan for this subdivision that includes as-built elevations on the pipe that drains the retention basin, as-built elevations on the emergency spillway for the basin, and provides notes indicating that AD#568 has been replaced with an elbow.

Page 2
Mr. Dan Buck
August 10, 2007

Once all of these items have been addressed, please contact me so that another inspection can be completed. After these items have been satisfactorily completed, the streets can be accepted for maintenance by the county, and the letter of credit can be released.

If you have any questions concerning this, please contact me.

Sincerely,



John Stoll, P.E.
Vanderburgh County Engineer

cc: Keith Poff, Sitecon Inc.
Bill Jeffers, Vanderburgh County Surveyor



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February 18, 2004

Mr. Dan Buck
Dan Buck Development LLC
P.O. Box 4530
Evansville, IN 47724-0530

Post-It® Fax Note	7671	Date	2/18/04	# of pages	3
To	BILL JEFFERS	From	FAT SELB		
Co./Dept.	CO. SURVEYOR	Co.	CO. ENGR.		
Phone #		Phone #			
Fax #	5023	Fax #			

RE: Windemere Farms Sections 1-4, Camden Farms, Oaklynn Park, Ashton Park

Dear Mr. Buck:

In accordance with your request, inspections have been performed in Windemere Farms Sections 1, 2, 3, and 4; Camden Farms; Oaklynn Park; and Ashton Park. These inspections indicate that the following items must be addressed:

Windemere Farms Section 1

1. Complete construction of the sidewalks in this section.

Windemere Farms Section 2

1. Complete construction of the sidewalks in this section.

Windemere Farms Section 3

1. Construct the berm around structure #307 on lot #111 and the overflow channel "A" between lots #111 and #112.
2. Adjust the casting to grade on manhole #314A.
3. Construct the overflow channel between lots #65 and #66.
4. Complete the drainage swales on the south side of lots #66 through #68, along the north side of lots #112 and #113, and at the northeast corner of lot #65.
5. Due to the embankment slope on the north side of the subdivision, the drainage swale along the north side of lots #112 through #115 does not appear to lie entirely within the drainage easement.
6. Complete construction of the sidewalks in this section.
7. Submit a copy of the documents that show a homeowners association has been formed to maintain the storm drainage facilities in this subdivision.

Windemere Farms Section 4

1. Clean all silt and debris off of all streets and out of all inlets.
2. Repair the streets in order to eliminate the standing water located on Clays Drive at the boundary of Windemere Section 4 and Camden Farms.

Page 2
Mr. Dan Buck
February 18, 2004

3. Complete construction of the sidewalks in this section.
4. Submit a copy of the documents that show a homeowners association has been formed to maintain the storm drainage facilities in this subdivision.
5. Submit a complete set of as-built drawings for this section.

Camden Farms

1. The ditch along Kansas Road on the north side of lot #2 must be re-graded to eliminate the standing water in the ditch and in the pipe under Cayes Drive. At the time of this inspection there was no conspicuous evidence of a concrete ribbon having been installed in this ditch in accordance with the approved plans for this subdivision. The concrete ribbon must either be constructed or cleaned off if, in fact, it has already been constructed.
2. Several small areas around the retention basin still require a stable stand of grass, including the area around F.E.S. #559.
3. Remove the wood shims from underneath the casting of C.I. #558 and properly grout the substituted brick or block shims into place.
4. The drainage between lots #14 and #15 does not go into the retention basin as shown on the approved plans for this subdivision.
5. The pavement patch at the northwest corner of Windemere Drive and Cayes Drive needs to be repaired. It appears that the existing patch was done by the Evansville Water and Sewer Utility.
6. Replace the broken curbs in the following locations: along the east side of lot #1, along the south side of lot #3, along the northeast corner of lot #16, along the southeast corner of outlot A, and along the southeast corner of lot #47.
7. Provide handicapped ramps for the sidewalks at all intersections. It should be noted that a crew from Comb's Landscaping was seen doing work on the day of this inspection. While it has not escaped the notice of this office that progress is being made on this item, the work is not yet 100% complete.
8. Remove all silt and debris from all inlets and pipes.
9. Replace the broken inlet box at C.I. #576.
10. The subdivision entrance sign appears to be located in the street right of way. As a result, an encroachment agreement must be signed by the homeowners association in this subdivision.
11. Submit a copy of the documents that show a homeowners association has been formed to maintain the storm drainage facilities in this subdivision. Due to the number of fences that have already been installed in drainage easements, it appears that future maintenance and/or repairs of some of these drainage facilities will be difficult in some areas of the subdivision.
12. Provide a complete set of as-built drawings for this subdivision including, but not necessarily limited to, the following: the pipe that drains the retention basin, the emergency spillway for the basin, and indicating that A.D. #568 has been replaced with an elbow.

Oaklynn Park

1. Based upon the approved plans for this subdivision, no obstructions were supposed to be constructed within 40 feet of the centerline of the Sonntag-Stevens ditch along the north boundary of the subdivision. However, utilities were installed within this 40 foot area, so the relocation of these utilities has been requested on punch lists for this subdivision since 1995. These utilities still exist within this 40' strip of land. In discussing this matter with

Page 3
Mr. Dan Buck
February 18, 2004

Vanderburgh County Surveyor Bill Jeffers, he verified that the letter of credit for the relocation of the utilities is no longer needed. He stated that the encroachments within the 40' strip of land will be addressed through the Vanderburgh County Drainage Board and applicable state statues if necessary. As a result, no further letter of credit is required for this work.

2. During an inspection, it was verified that all sidewalks have been completed in this subdivision. As a result, the \$4,782 letter of credit for sidewalks can now be released.
3. There is one other drainage issued that appears to be unresolved. Based upon our files, it appears that the maintenance fees might not been paid for the pipes located adjacent to lot 9 and between lots 41 and 42. We have contacted the designers of Oaklynn Park to see if they have any records that might verify if the maintenance fees have been paid on these two sections of pipe.

Ashton Park

Our records indicate that there is no outstanding letter of credit for this subdivision. Therefore, this office is making no request to have any outstanding work performed.

If you have any questions concerning any of these subdivisions, please contact me.

Sincerely,



Patrick R. Seib
Vanderburgh County Assistant Engineer

cc: Bill Jeffers, Vanderburgh County Surveyor
Norma Duckworth, SWCD

JAGOE LAND CORPORATION
P.O. Box 23019
Owensboro, Kentucky 42304-3019
Phone (270) 684-0639, ext. 216
Fax (270) 683-8288
Email tom.hansen@jagoehomes.com



Fax

To: Bill Jeffers, County Surveyor	From: Tom Hansen
Fax: (812) 435-5023	Pages: 4
Phone: (812) 435-5210	Date: 8/13/2002
Re: Concrete Ditch Liner	CC:

Urgent For Review Please Comment Please Reply Please Recycle

Bill,

The original of the attachments were sent in the mail this evening. Please call if any questions. Thanks.

Tom

Attachments

CAMDEN
FARMS

file
com

JAGOE LAND CORPORATION
P.O. Box 23019
Owensboro, Kentucky 42304-3019
Phone (270) 684-0639, ext. 216
Fax (270) 683-8288
Email tom.hansen@jagoehomes.com



To: Bill Jeffers
Vanderburgh County Surveyor

From: Tom Hansen

Date: August 13, 2002

Re: Concrete Ditch Liner for Drainage Ditch along Lot 14, Camden Farms

Dear Mr. Jeffers,

Attached is a detail for the concrete ditch liner that I discussed with you this past Friday, August 9, 2002. Jagoe Homes, Inc. plans to install the concrete liner in the existing drainage ditch bottom from the east end of the existing 54" RCP installed by the developer of Camden Farms and extending easterly for a distance of approximately 15'. The liner will prevent silt and water from collecting at the end of the drainage pipe that has been a nuisance for the owner of Lot 14.

It is requested that the concrete ditch liner detail be approved for the 15' section of ditch in Camden Farms, described above and as shown on the attachments, at your earliest convenience.

If you have any questions, please let me know. Thank you.

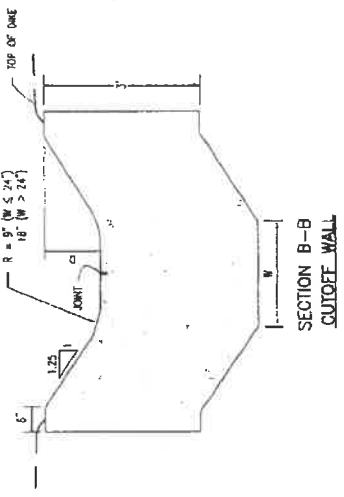
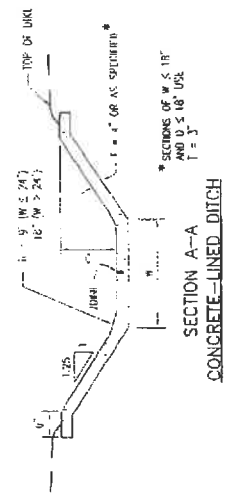
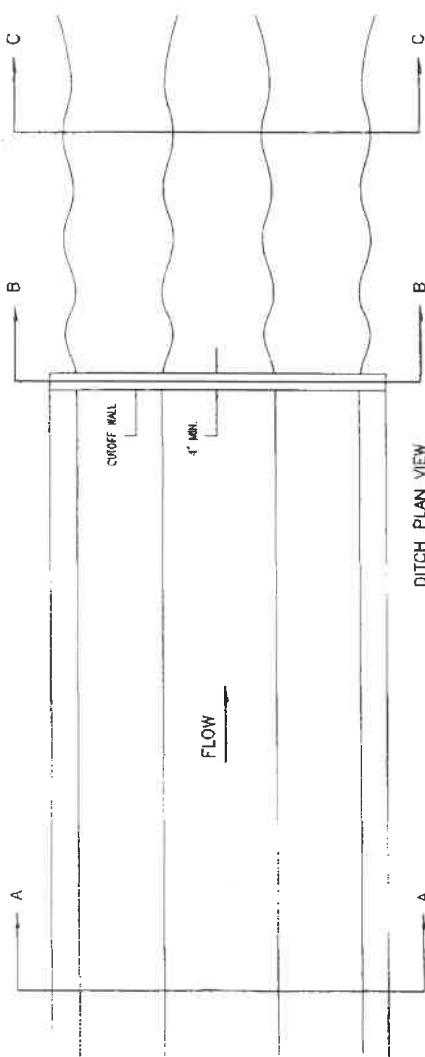
Sincerely,

A handwritten signature in cursive script that reads "Tom Hansen".

Tom Hansen

Attachments

- GENERAL NOTES**
1. ALL DITCHES ARE TO BE CONSTRUCTED TO LINES AND GRADES AS SHOWN ON PLANS. USING THE DITCH SECTION SHOWN ON PLANS OR AS ORDERED BY THE ENGINEER.
 2. CONCRETE LINING TO BE PAID FOR AS CONCRETE SLOPE. A PITCH PAVING.
 3. PROVIDE A CUTOFF WALL AT END OF CONCRETE DITCH WHENEVER CONCRETE LINED DITCH ENDS AND THE DITCH CONTINUES AS REPAV. OR GRASS LINED DITCH.



4215 Benttree Drive • P.O. Box 23019
 Owensboro, Kentucky 42304-3019
 Phone: (270) 684-0639 FAX: (270) 683-8288

STANDARD DETAILS

CONCRETE DITCH LINER DETAIL

Sheet No. 1 of 1

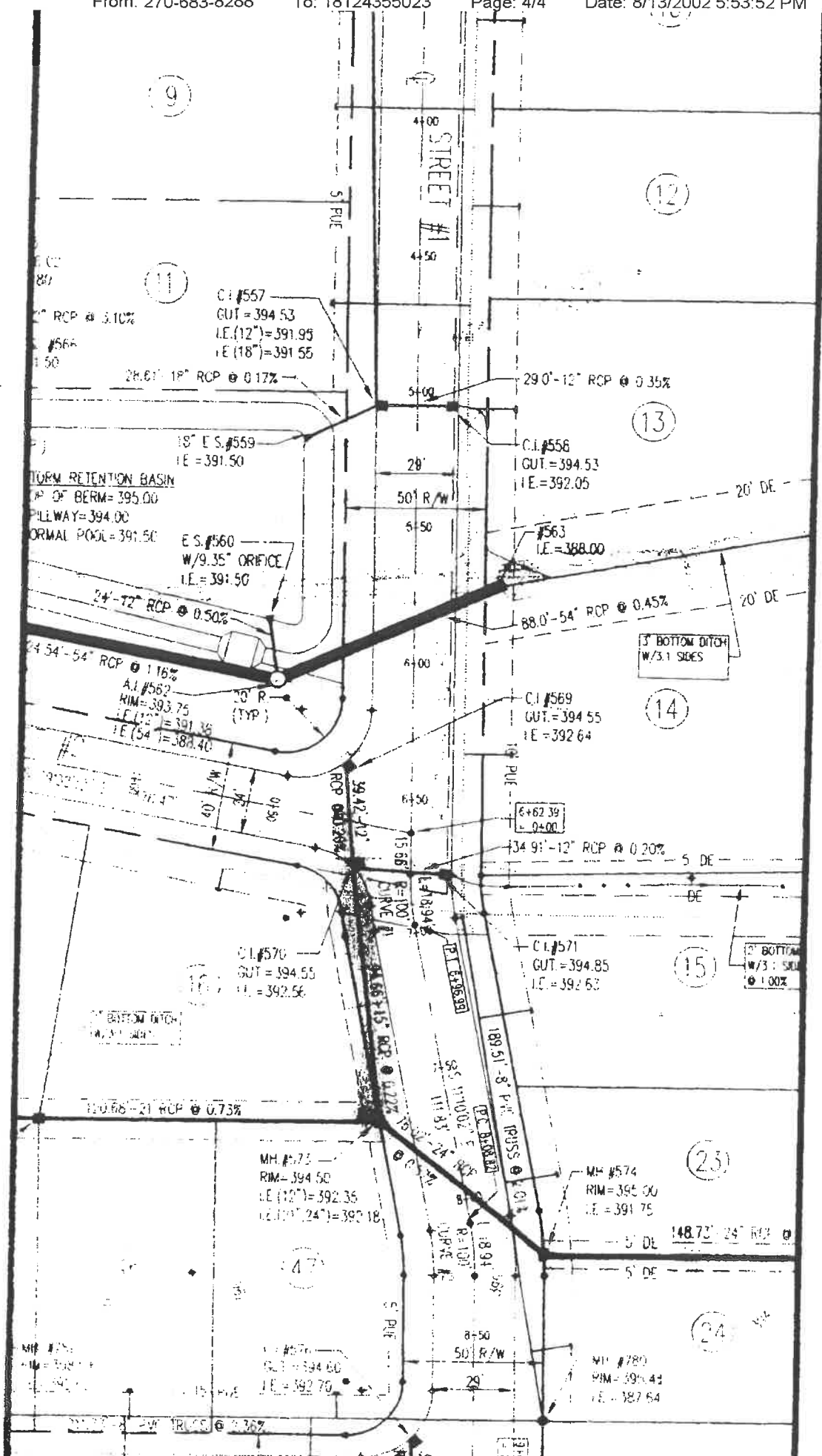
Date: 08/12/02

V.C. DATA
 PVI STA 3+00.00
 ELEV = 394.65
 LVC = 50.00
 CORR = 0.12

V.C. DATA
 PVI STA 5+75.00
 ELEV = 395.55
 LVC = 50.00
 CORR = -0.11

V.C. DATA
 PVI STA 6+75.00
 ELEV = 395.05
 LVC = 50.00
 CORR = 0.05

V.C. DATA
 PVI STA 8+00.00
 ELEV = 395.68
 LVC = 50.00
 CORR = -0.07



2415 BENTTREE DRIVE PO BOX 23019 OWENSBORO, KY 42302-23019



VANDERBURGH COUNTY ENGINEERING DEPARTMENT

201 Northwest Fourth Street • Suite 307
Old Vanderburgh County Courthouse
Evansville, Indiana 47708-1358
Tel. (812) 435-5773
FAX (812) 435-5676

January 23, 2002

Mr. Pat Gould, P.E.
Sitecon, Inc.
10335 Hedden Road
Evansville, IN 47725

Dear Mr. Gould:

As was requested, an inspection has been completed in Camden Farms subdivision. This inspection indicated that the following items need to be addressed:

1. The ditch along Kansas Road on the north side of lot 2 must be re-graded to eliminate the standing water in the ditch and in the pipe under Cayes Drive. The concrete liner must also be constructed in this ditch as shown on the approved plans for the subdivision.
2. The subdivision entrance sign appears to be located in the street right of way. As a result, the enclosed encroachment agreement must be signed by the homeowners association in this subdivision.
3. Submit a copy of the documents that show that a homeowners association has been formed to maintain the storm drainage facilities in this subdivision. Due to the number of fences that have already been installed in drainage easements, it appears that future maintenance and/or repairs of some of these drainage facilities will be difficult in some areas of the subdivision.
4. Although seed and straw has been placed on the berm around the retention basin, very little grass is growing as of yet. Therefore, additional seeding and grading may be required in the spring depending upon how much grass grows and whether erosion occurs prior to the grass growing. Some additional grading and seeding is already needed on the east side of the east bank of the basin.
5. Provide as-built elevations on the pipe that drains the retention basin.
6. Construct the emergency spillway on this basin and provide as-built elevations for the spillway.
7. Indicate on the as-built plans that area drain #568 has been replaced with an elbow.
8. Remove all wood shims from underneath all castings, and properly grout all brick and/or block shims into place. The locations where wood shims were found include curb inlets #590, #577, and #558.
9. Repair the erosion that is taking place under the sidewalk on the east side of area inlet #581, and provide a permanent solution to this problem so it will not continue to erode.
10. Repair the erosion that has occurred on the retention basin bank on lot 15.
11. The drainage between lots 14 and 15 does not go into the retention basin as shown on the approved plans for this subdivision.
12. Repair the sinkholes, and pipe if necessary, that are located near end section #575 between lots 23 and 24.
13. The pavement patch at the northwest corner of Windemere Drive and Cayes Drive needs to be repaired. It appears that the existing patch was done by the Evansville Water and Sewer Utility.

Page 2
Mr. Pat Gould
January 22, 2002

14. Replace the broken curbs in the following locations: along the east side of lot 1; on the south side of lot 3 just past the intersection corner radius; along the northeast corner of lot 16; along the southeast corner of outlot A; and along the southeast corner of lot 47.
15. Provide handicapped ramps for the sidewalks at all intersections.
16. Remove all silt and debris from all inlets and pipes.
17. Replace the broken inlet box at curb inlet #576.

Please contact me once these repairs have been completed so that another inspection can be done. If you have any questions concerning this, please contact me.

Sincerely,



John Stoll, P.E.
Vanderburgh County Engineer

cc: Bill Jeffers, Vanderburgh County Surveyor

CAMDEN FARMS



VANDERBURGH COUNTY ENGINEERING DEPARTMENT

201 Northwest Fourth Street • Suite 307
Old Vanderburgh County Courthouse
Evansville, Indiana 47708-1358
Tel. (812) 435-5773
FAX (812) 435-5676

January 28, 2000

Mr. Jim Williams
Dan Buck Development, LLC
P.O. Box 4530
Evansville, IN 47724-0530

Dear Jim:

As we discussed during our phone conversation today, an inspection of Camden Farms Subdivision indicated the following drainage repairs are needed:

1. There is a large sinkhole at the upstream end of the 54" pipe that must be repaired. It appears that this might be the result of a pipe separation.
2. Install area inlet #568 in the run of 54" pipe.
3. Repair the sinkhole near the outlet end of the 18" pipe that runs between lots 25 and 26.
4. Repair the sinkhole and pavement failure adjacent to curb inlet #578.
5. Install manhole #574 between lots 23 and 24.
6. The 24" pipe that drains into area inlet #582 sticks too far into the inlet to allow water to properly drain into the inlet. It appears that a portion of the top of this pipe needs to be removed.

Please have your contractor contact this office when these repairs are made so that an inspector can be present during the repairs. Upon completion of these items and submittal of the as-built plans, another inspection can be done to determine if all work within the subdivision has been satisfactorily completed in accordance with the approved plans.

Sincerely,

John Stoll, P.E.
Vanderburgh County Engineer

cc: Bill Jeffers

CAMDEN FARMS

DEVELOPED CALCULATIONS FLOW FOR A 25 YEAR STORM

Job Name/Basin #: Basin # a-1

356,475 Total SF 8.18 AC

Exist. Impervious surfaces (2-5%) C=0.94

Structures	3 Total	2,600 SF	7,800 Total SF	0.18 AC
Drives	0 Total	0 SF	0 Total SF	0.00 AC
Pavement	0 Width (ft)	0 L (ft)	0 Total SF	0.00 AC
			7,800 TOTAL	0.18 AC

Proposed Impervious surfaces (2-5%) C=0.94

Structures	0 Total	0 SF	0 Total SF	0.00 AC
Drives	0 Total	0 SF	0 Total SF	0.00 AC
Pavement	14.5 Width (ft)	0 L (ft)	0 Total SF	0.00 AC
Patios	0 Total	400 SF	0 Total SF	0.00 AC
Sidewalks	0 Width (ft)		0 Total SF	0.00 AC
			0 TOTAL	0.00 AC

Exist cultivated fields:

0-2% slope	C=0.20	0 SF	0 Total SF	0.00 AC
2-5% slope	C=0.35	0 SF	0 Total SF	0.00 AC
5-10% slope	C=0.50	0 SF	0 Total SF	0.00 AC
10+% slope	C=0.65	0 SF	0 Total SF	0.00 AC
			0 TOTAL	0.00 AC

For lawn areas:

0-2% slope	C=0.15	0 SF	0 Total SF	0.00 AC
2-5% slope	C=0.25	0 SF	0 Total SF	0.00 AC
5-10% slope	C=0.40	348,675 SF	348,675 Total SF	8.00 AC
10+% slope	C=0.55	0 SF	0 Total SF	0.00 AC
			348,675 TOTAL	8.00 AC

For woodland areas:

0-2% slope	C=0.12	0 SF	0 Total SF	0.00 AC
2-5% slope	C=0.24	0 SF	0 Total SF	0.00 AC
5-10% slope	C=0.36	0 SF	0 Total SF	0.00 AC
10+% slope	C=0.48	0 SF	0 Total SF	0.00 AC
			0 TOTAL	0.00 AC

Check 356,475 GT

Wt'd C = 0.41
 Wt'd N = 0.39
 High Pt El 497.00 ft
 Inlet El 424.00 ft
 Length 960.00 ft
 Slope 0.0760
 tc 24.07 min

0	1	Is 5<tc<10?	i 25=	0.00 in/hr
0	1	Is 10<tc<15?	i 25=	0.00 in/hr
1	1	Is 15<tc<30?	i 25=	4.19 in/hr
1	0	Is 30<tc<60?	i 25=	0.00 in/hr

Q25= 14.14 cfs

Date: 10-22-98

Q10 = 12.5

i₁₀ = 3.74

DEVELOPED CALCULATIONS FLOW FOR A 25 YEAR STORM

Job Name/Basin #: Basin # b-1

460,000 Total SF 10.56 AC

Exist. Impervious surfaces (2-5%) C=0.94

Structures	0 Total	0 SF	0 Total SF	0.00 AC
Drives	0 Total	0 SF	0 Total SF	0.00 AC
Pavement	0 Width (ft)	0 L (ft)	0 Total SF	0.00 AC
			0 TOTAL	0.00 AC

Proposed Impervious surfaces (2-5%) C=0.94

Structures	28 Total	2,500 SF	70,000 Total SF	1.61 AC
Drives	23 Total	700 SF	16,100 Total SF	0.37 AC
Pavement	29 Width (ft)	1,390 L (ft)	40,310 Total SF	0.93 AC
Patios	28 Total	400 SF	11,200 Total SF	0.26 AC
Sidewalks	4 Width (ft)		5,560 Total SF	0.13 AC
			143,170 TOTAL	3.29 AC

Exist cultivated fields:

0-2% slope	C=0.20	0 SF	0 Total SF	0.00 AC
2-5% slope	C=0.35	0 SF	0 Total SF	0.00 AC
5-10% slope	C=0.50	0 SF	0 Total SF	0.00 AC
10+% slope	C=0.65	0 SF	0 Total SF	0.00 AC
			0 TOTAL	0.00 AC

For lawn areas:

0-2% slope	C=0.15	0 SF	0 Total SF	0.00 AC
2-5% slope	C=0.25	316,830 SF	316,830 Total SF	7.27 AC
5-10% slope	C=0.40	0 SF	0 Total SF	0.00 AC
10+% slope	C=0.55	0 SF	0 Total SF	0.00 AC
			316,830 TOTAL	7.27 AC

For woodland areas:

0-2% slope	C=0.12	0 SF	0 Total SF	0.00 AC
2-5% slope	C=0.24	0 SF	0 Total SF	0.00 AC
5-10% slope	C=0.36	0 SF	0 Total SF	0.00 AC
10+% slope	C=0.48	0 SF	0 Total SF	0.00 AC
			0 TOTAL	0.00 AC

Check 460,000 GT

Wt'd C = 0.46
 Wt'd N = 0.28
 High Pt El 435.00 ft
 Inlet El 402.00 ft
 Length 1,740.00 ft
 Slope 0.0190
 tc 37.67 min

0	1	Is 5<tc<10?	i 25=	0.00 in/hr
0	1	Is 10<tc<15?	i 25=	0.00 in/hr
0	1	Is 15<tc<30?	i 25=	0.00 in/hr
1	1	Is 30<tc<60?	i 25=	3.24 in/hr

Q25= 15.93 cfs

Date: 10-22-98

Q₁₀ = 13.9

i₁₀ = 2.67

DEVELOPED CALCULATIONS FLOW FOR A 25 YEAR STORM

Job Name/Basin #: Basin # c-1

398,000 Total SF 9.14 AC

Exist. Impervious surfaces (2-5%) C=0.94

Structures	0 Total	0 SF	0 Total SF	0.00 AC
Drives	0 Total	0 SF	0 Total SF	0.00 AC
Pavement	0 Width (ft)	0 L (ft)	0 Total SF	0.00 AC
			0 TOTAL	0.00 AC

Proposed Impervious surfaces (2-5%) C=0.94

Structures	23 Total	2,500 SF	57,500 Total SF	1.32 AC
Drives	28 Total	700 SF	19,600 Total SF	0.45 AC
Pavement	29 Width (ft)	1,360 L (ft)	39,440 Total SF	0.91 AC
Patios	23 Total	400 SF	9,200 Total SF	0.21 AC
Sidewalks	4 Width (ft)		5,440 Total SF	0.12 AC
			131,180 TOTAL	3.01 AC

Exist cultivated fields:

0-2% slope	C=0.20	0 SF	0 Total SF	0.00 AC
2-5% slope	C=0.35	0 SF	0 Total SF	0.00 AC
5-10% slope	C=0.50	0 SF	0 Total SF	0.00 AC
10+% slope	C=0.65	0 SF	0 Total SF	0.00 AC
			0 TOTAL	0.00 AC

For lawn areas:

0-2% slope	C=0.15	0 SF	0 Total SF	0.00 AC
2-5% slope	C=0.25	266,820 SF	266,820 Total SF	6.13 AC
5-10% slope	C=0.40	0 SF	0 Total SF	0.00 AC
10+% slope	C=0.55	0 SF	0 Total SF	0.00 AC
			266,820 TOTAL	6.13 AC

For woodland areas:

0-2% slope	C=0.12	0 SF	0 Total SF	0.00 AC
2-5% slope	C=0.24	0 SF	0 Total SF	0.00 AC
5-10% slope	C=0.36	0 SF	0 Total SF	0.00 AC
10+% slope	C=0.48	0 SF	0 Total SF	0.00 AC
			0 TOTAL	0.00 AC

Check 398,000 GT

Wt'd C = 0.48
 Wt'd N = 0.27
 High Pt El 435.00 ft
 Inlet El 404.00 ft
 Length 1,420.00 ft
 Slope 0.0218
 tc 32.77 min

0 1	Is 5<tc<10?	i 25=	0.00 in/hr
0 1	Is 10<tc<15?	i 25=	0.00 in/hr
0 1	Is 15<tc<30?	i 25=	0.00 in/hr
1 1	Is 30<tc<60?	i 25=	3.50 in/hr

Q25= 15.27 cfs

Date: 10-22-98

Q₁₀ = 13.6

3.10

Letter to Mr. Poff
August 14, 1995
REC #82-950717-1
Page Two

The Floodplain Management Section does not provide engineering services to develop 100-year frequency flood elevations on sites along streams which have drainage areas of less than one square mile. We consider these sites, with small drainage areas, to be better addressed through local floodplain management and stormwater management ordinances. Unfortunately, it is up to the local community or applicant to hire an engineering consultant to establish 100-year frequency flood elevations and address any local drainage problems which may exist at these sites.

We recommend that any building which you propose in the floodway or floodway fringe, noting again that residences are prohibited in the floodway under the provisions of IC 14-28-1, be provided with a lowest floor set at least 2 feet above the 100-year frequency flood elevation. If a basement is included, the basement floor should be considered to be the lowest floor.

You should note that portions of the tract are located in a "Special Flood Hazard Area" as defined by the Federal Emergency Management Agency. If any existing or proposed building lies within this "Special Flood Hazard Area" current or future owners may be required to purchase flood insurance as a condition of obtaining a mortgage on the property. The final determination regarding the flood insurance requirement is the responsibility of the lending institution. Flood insurance might also be required for any direct federal assistance for this property, such as disaster aid.

Depending on the type of building and the lowest floor elevation, including basements, flood insurance premiums can be substantial under the regular phase of the National Flood Insurance Program. The owner should discuss this matter with an insurance agent before starting any plans for construction.

You may have to obtain a permit from the Corps of Engineers under Section 404 of the Federal Water Pollution Control Act or Section 10 of the Rivers and Harbors Act. Information relative to the Corps' of Engineers permits may be obtained from:

**U.S. Army Corps of Engineers
Louisville District Office
P.O. Box 59
Louisville, Kentucky 40201
Telephone (502) 582-5607**

You should not construe this letter to be a building permit, approval of the proposed project, or a waiver of the provisions of local building or zoning ordinances.

Thank you for this opportunity to be of assistance; your interest in providing safe floodplain development is appreciated. **If you have any questions regarding this letter, please contact Ms. Dena C. Barnhouse, Hydraulic Engineer, in our Recommendations Unit, Floodplain Management Section, at (317) 232-4164.**

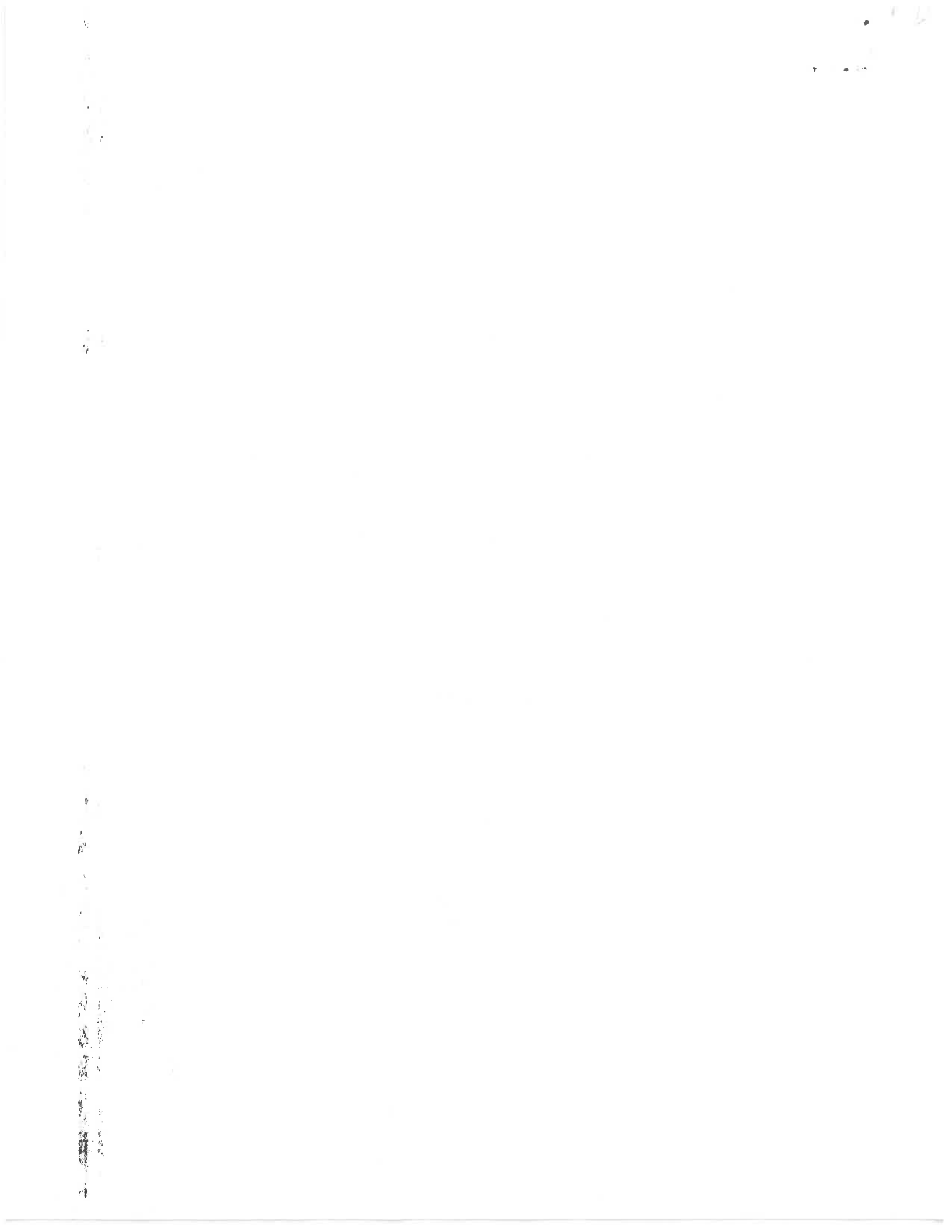
Sincerely,



James J. Hebenstreit, P.E.
Assistant Director
Division of Water

JJH/DCB

pc: Vanderburgh County Plan Commission
Louisville District, Corps of Engineers
Enclosures: floodway map
application and instructions



PRELIMINARY
DRAINAGE REPORT
AND
STORM WATER SYSTEM DESIGN
FOR

CAMDEN FARMS
Kansas Road
Vanderburgh County, Indiana

Report by:
SITECON, Inc.
600 SE 8th Street, Suite 2
Evansville, IN 47713-1774

August 19, 1998

8/23/2016
m

Camden Farms

Project Name and Location

Camden Farms
South of Kansas Road and 0.2 miles west of S.R. 57
Center Township
Section 27, T 5 S, R 10 W
Vanderburgh County, Indiana

Landowner Name and Address

Windemere Development, LLC.
Dan Buck, Member
P.O. Box 4530
Evansville, IN 47724-0530
Phone (812) 476-8840

Drainage Plan Preparer

SITECON, Inc.
600 SE 8th Street, Suite 2
Evansville, IN 47713-1774
(812) 423-2320

Site Location:

The proposed 47 lot residential subdivision is a 12.48 acre site located in northern Vanderburgh County, Indiana approximately 0.2 miles west of the intersection of State Road 57 and Kansas Road. The site was historically, cultivated. The current zoning of the site agricultural.

Existing Site Conditions:

A tributary to Firlick Creek passes through the site in a easterly direction. The northern third of the site has surface runoff into this ditch. The southern two thirds has sheet flow runoff into Firlick Creek and the roadside ditch of State Road 57.

The site is comprised of gently rolling cultivated terrain at both 0-2% and 2-5% grades. All cultivated areas, not improved, will be "converted" to grassy lawns. According to the Soil Survey of Vanderburgh County, Indiana, issued June, 1976, the site consists of Henshaw silt loam (He), Hosmer silt loam (HoB2), and Wilbur silt loam (Wm). See locations and details of soil types on Erosion Control Plan.

Significant Existing or Anticipated Drainage Problems:

No new significant drainage problems are anticipated by the development of the proposed residential subdivision once the new drainage system is operational. This is due in part to the conversion of cultivated land to grassy lawn areas. This should assist in offsetting runoff resulting from proposed improvements.

Analysis Procedure:

The Rational Method, valid for watershed areas up to 200 acres, was used for computations of storm water runoff. For the North Basin, the post development controlled peak release rate of storm water runoff during a twenty-five (25) year return period storm from the project was designed to not exceed the peak release rate during a ten (10) year return period storm from the same land area in its existing condition. A fifty (50) year retention basin was designed for the South Basin, due to the outlet into the right-of-way of State Road 57.

A 2200 SF footprint was used for the proposed structures, 200 SF for patios, 780 SF for drives, 29' width for pavement. On almost every lot, one half of the house is proposed to drain to the street.

Proposed Design:

The majority of stormwater runoff will be conveyed to the retention areas by sloping lawns and pavement, reinforced concrete pipe, or a series of swales and ditches.

The North Basin will be located on site "downstream" from the proposed improvements. The basin will provide the necessary storm water storage capacity, and predeveloped release rate, for the northern third of the developed site. The South Basin will be located east of the subdivision building sites. This basin will provide the necessary storm water storage capacity, and predeveloped release rate, for the southern two third of the developed site. The detention basin capacities are summarized in TABLE 1 of this report.

Stabilized earthen fill dams will be constructed with an outlet releasing at a rate not to exceed the required 10-year release rate. A ten foot (10') wide emergency spillway will allow release for extreme events over the design. The spillway elevations are typically 1.0 feet lower than the basin berm elevation

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Undeveloped Calculations and Detention Data

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Developed Calculations

North Basin

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South Basin

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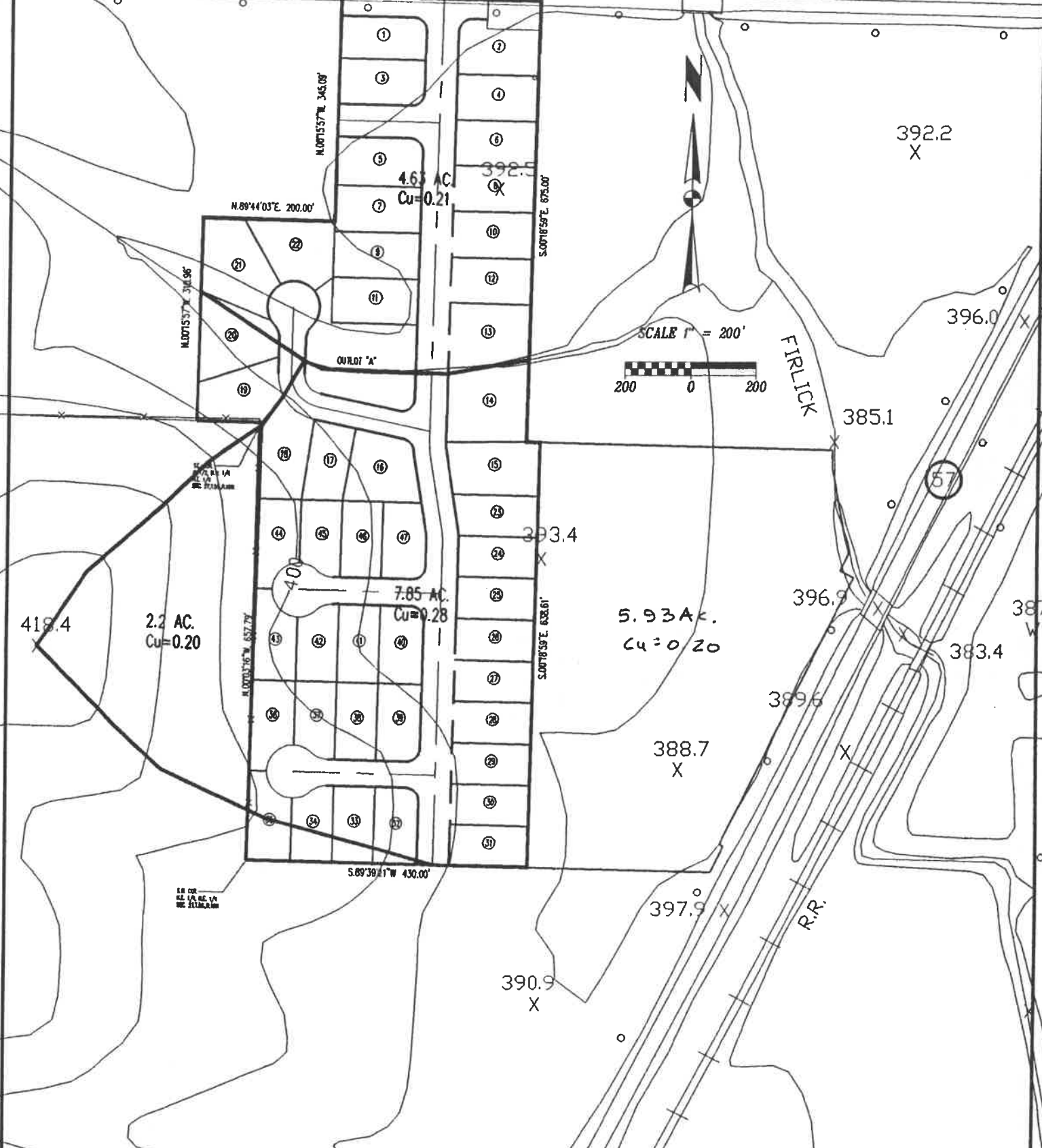
Appendix

Preliminary Drainage Plan

UNDEVELOPED DRAINAGE AREA

KANSAS RD.

P.O.B. MARSHVILLE, MISSOURI



SITECON, Inc.

600 S.E. EIGHTH ST. SUITE 2
EVANSVILLE, IN 47713 PH. 812-423-2320

PROJECT #:	DRWN BY:	R'VD. BY:	DATE:	SCALE:
1-98-40	RRB		8-21-98	1"=200'

FILENAME: UNDEVAREA.DWG

SUB-BASIN DRAINAGE CALCULATIONS - UNDEVELOPED FLOW FOR A 10 YEAR STORM

Job Name/Basin #:	North Basin		201,750 Total SF	4.63 AC
Structures	0 Total	0 SF	100 %	0 Total SF 0.00 AC
Drives	0 Total	SF		0 Total SF 0.00 AC
Pavement	9 Width (ft)	305 L (ft)		2,745 Total SF 0.06 AC
Patios	0 Total	0 SF		0 Total SF 0.00 AC
Sidewalks	0 Width (ft)			0 Total SF 0.00 AC
Impervious surfaces	C=0.92			
Terrain 1 (0-2%)	C=0.20	199,005 SF		199,005 Total SF 4.57 AC
Terrain 2 (2-4.99%)	C=0.35	0 SF		0 Total SF 0.00 AC
Terrain 3 (5-10%)	C=0.50	0 SF		0 Total SF 0.00 AC
Terrain 4 (10+ %)	C=0.65	0 SF		0 Total SF 0.00 AC
Terrain 5 (Lake)	C=1.00	0		0 Total SF 0.00 AC

Wt'd C = 0.21 Check 201,750
Wt'd N = 0.20
High Pt El 397.00 ft
Inlet El 389.00 ft
Length 850.00 ft
Slope 0.0094
tc 26.90 min

Is 5<tc<10? i 10= 0.00 in/hr
Is 10<tc<15? i 10= 0.00 in/hr
Is 15<tc<30? i 10= 3.51 in/hr
Is 30<tc<60? i 10= 0.00 in/hr

Q10= 3.41 cfs

DEVELOPED CALCULATIONS FLOW FOR A 25 YEAR STORM

Job Name/Basin #: Camden Farms-North Basin -for dev. coeff.

201,750 Total SF 4.63 AC

Exist. Impervious surfaces (2-5%) C=0.94

Structures	0 Total	0 SF	0 Total SF	0.00 AC
Drives	0 Total	0 SF	0 Total SF	0.00 AC
Pavement	9 Width (ft)	305 L (ft)	2,745 Total SF	0.06 AC
			2,745 TOTAL	0.06 AC

Proposed Impervious surfaces (2-5%) C=0.94

Structures	15 Total	2,200 SF	33,000 Total SF	0.76 AC
Drives	15 Total	780 SF	11,700 Total SF	0.27 AC
Pavement	29 Width (ft)	745 L (ft)	21,605 Total SF	0.50 AC
Patios	15 Total	400 SF	6,000 Total SF	0.14 AC
Sidewalks	8 Width (ft)		5,960 Total SF	0.14 AC
			78,265 TOTAL	1.80 AC

Exist cultivated fields:

0-2% slope	C=0.20	0 SF	0 Total SF	0.00 AC
2-5% slope	C=0.35	0 SF	0 Total SF	0.00 AC
5-10% slope	C=0.50	0 SF	0 Total SF	0.00 AC
10+% slope	C=0.65	0 SF	0 Total SF	0.00 AC
			0 TOTAL	0.00 AC

For lawn areas:

0-2% slope	C=0.15	120,740 SF	120,740 Total SF	2.77 AC
2-5% slope	C=0.25	0 SF	0 Total SF	0.00 AC
5-10% slope	C=0.40	0 SF	0 Total SF	0.00 AC
10+% slope	C=0.55	0 SF	0 Total SF	0.00 AC
			120,740 TOTAL	2.77 AC

For woodland areas:

0-2% slope	C=0.12	0 SF	0 Total SF	0.00 AC
2-5% slope	C=0.24	0 SF	0 Total SF	0.00 AC
5-10% slope	C=0.36	0 SF	0 Total SF	0.00 AC
10+% slope	C=0.48	0 SF	0 Total SF	0.00 AC
			0 TOTAL	0.00 AC

Wtd C = 0.47

Check 201,750 GT

**Vanderburgh County Drainage Board
Form 800**

Computation Sheet for Detention Storage Using the Rational Method

Project: Camden Farms-North Basin

Detention Facility Design Return Period 25 years

Release Rate Return Period 10 years

Watershed Area	4.63 acres
Undeveloped Time of Concentration	26.90 minutes
Undeveloped Rainfall Intensity (iu)	3.51 inches/hour
Weighted Undeveloped Runoff Coefficient (Cu)	0.21
Undeveloped Runoff Rate (O=Cu x iu x Au)	3.41 cfs
Developed Runoff Coefficient (Cd)	0.47

Storm Duration td	Rainfall Intensity id	Inflow Rate I(td) Cd x id x Ad	Outflow Rate O Cu x iu x Au	Storage Rate (I x td) - O	Required Storage [I(td)-O]x[td/12]
min	inches/hr	cfs	cfs	cfs	acre-ft
5	7.208	15.69	3.41	12.27	0.0852
10	5.925	12.89	3.41	9.48	0.1317
15	5.033	10.95	3.41	7.54	0.1571
20	4.571	9.95	3.41	6.53	0.1815
25	4.108	8.94	3.41	5.53	0.1919
30	3.646	7.93	3.41	4.52	0.1884
40	3.123	6.80	3.41	3.38	0.1880
50	2.601	5.66	3.41	2.25	0.1561
60	2.078	4.52	3.41	1.11	0.0924
90	1.578	3.43	3.41	0.02	0.0026

Required Storage = 0.1919 x 43,560 sf/ac = 8,359 cubic feet

**Vanderburgh County Drainage Board
Form 800**

Computation Sheet for Detention Storage Using the Rational Method

Project: Camden Farms-North Basin (50 year)

Detention Facility Design Return Period 50 years

Release Rate Return Period 10 years

Watershed Area 4.63 acres
 Undeveloped Time of Concentration 26.90 minutes
 Undeveloped Rainfall Intensity (iu) 3.51 inches/hour
 Weighted Undeveloped Runoff Coefficient (Cu) 0.21
 Undeveloped Runoff Rate (O=Cu x iu x Au) 3.41 cfs
 Developed Runoff Coefficient (Cd) 0.47

Storm Duration td	Rainfall Intensity id	Inflow Rate I(td) Cd x id x Ad	Outflow Rate O Cu x iu x Au	Storage Rate (I x td) - O	Required Storage [I(td)-O]x[td/12]
min	inches/hr	cfs	cfs	cfs	acre-ft
5	7.936	17.27	3.41	13.86	0.0962
10	6.616	14.40	3.41	10.98	0.1526
15	5.697	12.40	3.41	8.98	0.1872
20	5.196	11.31	3.41	7.89	0.2193
25	4.695	10.22	3.41	6.80	0.2363
30	4.194	9.13	3.41	5.71	0.2381
40	3.600	7.83	3.41	4.42	0.2456
50	3.006	6.54	3.41	3.13	0.2173
60	2.412	5.25	3.41	1.84	0.1530
90	2.016	4.39	3.41	0.97	0.1218

Required Storage = 0.2456 x 43,560 sf/ac = 10,698 cubic feet

**Vanderburgh County Drainage Board
Form 800**

Computation Sheet for Detention Storage Using the Rational Method

Project: Camden Farms-North Basin (100 year)

Detention Facility Design Return Period 100 years

Release Rate Return Period 10 years

Watershed Area 4.63 acres

Undeveloped Time of Concentration 26.90 minutes

Undeveloped Rainfall Intensity (iu) 3.51 inches/hour

Weighted Undeveloped Runoff Coefficient (Cu) 0.21

Undeveloped Runoff Rate (O=Cu x iu x Au) 3.41 cfs

Developed Runoff Coefficient (Cd) 0.47

Storm Duration td	Rainfall Intensity id	Inflow Rate I(td) Cd x id x Ad	Outflow Rate O Cu x iu x Au	Storage Rate (I x td) - O	Required Storage [I(td)-O]x[td/12]
min	inches/hr	cfs	cfs	cfs	acre-ft
5	8.469	18.43	3.41	15.02	0.1043
10	7.126	15.51	3.41	12.09	0.1680
15	6.194	13.48	3.41	10.07	0.2097
20	5.665	12.33	3.41	8.91	0.2476
25	5.137	11.18	3.41	7.77	0.2696
30	4.608	10.03	3.41	6.61	0.2756
40	3.960	8.62	3.41	5.20	0.2891
50	3.311	7.21	3.41	3.79	0.2634
60	2.663	5.79	3.41	2.38	0.1985
90	2.224	4.84	3.41	1.43	0.1784

Required Storage = 0.2891 x 43,560 sf/ac= 12,593 cubic feet

North Basin-Outlet

Culverts -- English Units

Civil Tools for Windows

(08-23-1998, 18:49:17)

Diameter = 9.35 in
Length = 16 ft
Friction Coeff = 0.011
Ent+Exit Coeff =
Inlet Control Coeff = 0.6
Inv Elev Out = 91.45 ft
Inv Elev In = 91.5 ft
Tailwater Elev = ft
Elev Increment = .2 ft

Headwater ft		Flowrate cfs
92.28	OC	1.21
92.48	IC	1.76
92.68	IC	2.04
92.88	IC	2.28
93.08	IC	2.50
93.28	IC	2.71
93.48	IC	2.89
93.68	IC	3.07
93.88	IC	3.24
94.08	IC	3.40
94.28	IC	3.55
94.48	IC	3.69
94.68	IC	3.83
94.88	IC	3.97
95.08	IC	4.10
93.79	IC	3.26

SUB-BASIN DRAINAGE CALCULATIONS - UNDEVELOPED FLOW FOR A 10 YEAR STORM

Job Name/Basin #: South Basin-all water

696,090 Total SF 15.98 AC

Structures	0 Total	0 SF	100 %	0 Total SF	0.00 AC
Drives	0 Total	SF		0 Total SF	0.00 AC
Pavement	0 Width (ft)	0 L (ft)		0 Total SF	0.00 AC
Patios	0 Total	0 SF		0 Total SF	0.00 AC
Sidewalks	0 Width (ft)			0 Total SF	0.00 AC
Impervious surfaces	C=0.92				
Terrain 1 (0-2%)	C=0.20	266,805 SF		266,805 Total SF	6.13 AC
Terrain 2 (2-4.99%)	C=0.35	429,285 SF		429,285 Total SF	9.86 AC
Terrain 3 (5-10%)	C=0.50	0 SF		0 Total SF	0.00 AC
Terrain 4 (10+ %)	C=0.65	0 SF		0 Total SF	0.00 AC
Terrain 5 (Lake)	C=1.00	0		0 Total SF	0.00 AC

Wt'd C = 0.29 Check 696,090
 Wt'd N = 0.20
 High Pt El 418.00 ft
 Inlet El 389.00 ft
 Length 1250.00 ft
 Slope 0.0232
 tc 26.24 min

Is 5<tc<10? i 10= 0.00 in/hr
 Is 10<tc<15? i 10= 0.00 in/hr
 Is 15<tc<30? i 10= 3.99 in/hr
 Is 30<tc<60? i 10= 0.00 in/hr

Q10= 18.65 cfs

DEVELOPED CALCULATIONS FLOW FOR A 25 YEAR STORM

Job Name/Basin #: Camden Farms-Southa Basin -for dev. coeff.

696,090 Total SF 15.98 AC

Exist. Impervious surfaces (2-5%) C=0.94

Structures	0 Total	0 SF	0 Total SF	0.00 AC
Drives	0 Total	0 SF	0 Total SF	0.00 AC
Pavement	0 Width (ft)	0 L (ft)	0 Total SF	0.00 AC
			0 TOTAL	0.00 AC

Proposed Impervious surfaces (2-5%) C=0.94

Structures	32 Total	2,200 SF	70,400 Total SF	1.62 AC
Drives	32 Total	780 SF	24,960 Total SF	0.57 AC
Pavement	29 Width (ft)	1,480 L (ft)	42,920 Total SF	0.99 AC
Patios	32 Total	400 SF	12,800 Total SF	0.29 AC
Sidewalks	8 Width (ft)		11,840 Total SF	0.27 AC
			162,920 TOTAL	3.74 AC

Exist cultivated fields:

0-2% slope	C=0.20	0 SF	0 Total SF	0.00 AC
2-5% slope	C=0.35	0 SF	0 Total SF	0.00 AC
5-10% slope	C=0.50	0 SF	0 Total SF	0.00 AC
10+% slope	C=0.65	0 SF	0 Total SF	0.00 AC
			0 TOTAL	0.00 AC

For lawn areas:

0-2% slope	C=0.15	147,666 SF	147,666 Total SF	3.39 AC
2-5% slope	C=0.25	147,666 SF	147,666 Total SF	3.39 AC
5-10% slope	C=0.40	0 SF	0 Total SF	0.00 AC
10+% slope	C=0.55	0 SF	0 Total SF	0.00 AC
			295,332 TOTAL	6.78 AC

For Commercial and lake areas:

Lake	C=1.0	108,900 SF	108,900 Total SF	2.50 AC
Commercial	C=0.75	128,938 SF	128,938 Total SF	2.96 AC
5-10% slope	C=0.36	0 SF	0 Total SF	0.00 AC
10+% slope	C=0.48	0 SF	0 Total SF	0.00 AC
			237,838 TOTAL	5.46 AC

Wt'd C = 0.60

Check 696,090 GT

**Vanderburgh County Drainage Board
Form 800**

Computation Sheet for Detention Storage Using the Rational Method

Project: Camden Farms-Southa Basin

Detention Facility Design Return Period 25 years

Release Rate Return Period 10 years

Watershed Area	15.98 acres
Undeveloped Time of Concentration	26.24 minutes
Undeveloped Rainfall Intensity (iu)	3.99 inches/hour
Weighted Undeveloped Runoff Coefficient (Cu)	0.29
Undeveloped Runoff Rate (O=Cu x iu x Au)	18.49 cfs
Developed Runoff Coefficient (Cd)	0.60

Storm Duration td	Rainfall Intensity id	Inflow Rate I(td) Cd x id x Ad	Outflow Rate O Cu x iu x Au	Storage Rate (I x td) - O	Required Storage [I(td)-O]x[td/12]
min	inches/hr	cfs	cfs	cfs	acre-ft
5	7.208	69.11	18.49	50.62	0.3515
10	5.925	56.81	18.49	38.32	0.5322
15	5.033	48.26	18.49	29.77	0.6201
20	4.571	43.83	18.49	25.34	0.7038
25	4.108	39.39	18.49	20.90	0.7256
30	3.646	34.96	18.49	16.47	0.6861
40	3.123	29.94	18.49	11.45	0.6363
50	2.601	24.94	18.49	6.45	0.4478
60	2.078	19.92	18.49	1.43	0.1195
90	1.578	15.13	18.49	-3.36	-0.4201

Required Storage = 0.7256 x 43,560 sf/ac = 31,607 cubic feet

**Vanderburgh County Drainage Board
Form 800**

Computation Sheet for Detention Storage Using the Rational Method

Project: Camden Farms-Southa Basin (50 year)

Detention Facility Design Return Period 50 years

Release Rate Return Period 10 years

Watershed Area	15.98 acres
Undeveloped Time of Concentration	26.24 minutes
Undeveloped Rainfall Intensity (iu)	3.99 inches/hour
Weighted Undeveloped Runoff Coefficient (Cu)	0.29
Undeveloped Runoff Rate (O=Cu x iu x Au)	18.49 cfs
Developed Runoff Coefficient (Cd)	0.60

Storm Duration td	Rainfall Intensity id	Inflow Rate I(td) Cd x id x Ad	Outflow Rate O Cu x iu x Au	Storage Rate (I x td) - O	Required Storage [I(td)-O]x[td/12]
min	inches/hr	cfs	cfs	cfs	acre-ft
5	7.936	76.09	18.49	57.60	0.4000
10	6.616	63.43	18.49	44.94	0.6242
15	5.697	54.62	18.49	36.13	0.7528
20	5.196	49.82	18.49	31.33	0.8702
25	4.695	45.02	18.49	26.53	0.9210
30	4.194	40.21	18.49	21.72	0.9051
40	3.600	34.52	18.49	16.03	0.8904
50	3.006	28.82	18.49	10.33	0.7174
60	2.412	23.13	18.49	4.64	0.3863
90	2.016	19.33	18.49	0.84	0.1049

Required Storage = 0.921 x 43,560 sf/ac= 40,119 cubic feet

**Vanderburgh County Drainage Board
Form 800**

Computation Sheet for Detention Storage Using the Rational Method

Project: Camden Farms-Southa Basin (100 year)

Detention Facility Design Return Period 100 years

Release Rate Return Period 10 years

Watershed Area	15.98 acres
Undeveloped Time of Concentration	26.24 minutes
Undeveloped Rainfall Intensity (iu)	3.99 inches/hour
Weighted Undeveloped Runoff Coefficient (Cu)	0.29
Undeveloped Runoff Rate (O=Cu x iu x Au)	18.49 cfs
Developed Runoff Coefficient (Cd)	0.60

Storm Duration td	Rainfall Intensity id	Inflow Rate I(td) Cd x id x Ad	Outflow Rate O Cu x iu x Au	Storage Rate (I x td) - O	Required Storage [I(td)-O]x[td/12]
min	inches/hr	cfs	cfs	cfs	acre-ft
5	8.469	81.20	18.49	62.71	0.4355
10	7.126	68.32	18.49	49.83	0.6921
15	6.194	59.39	18.49	40.90	0.8520
20	5.665	54.32	18.49	35.83	0.9952
25	5.137	49.25	18.49	30.76	1.0682
30	4.608	44.18	18.49	25.69	1.0705
40	3.960	37.97	18.49	19.48	1.0821
50	3.311	31.75	18.49	13.26	0.9205
60	2.663	25.53	18.49	7.04	0.5869
90	2.224	21.32	18.49	2.83	0.3542

Required Storage = 1.0821 x 43,560 sf/ac = 47,136 cubic feet

**INLET CONTROL
NOMOGRAPH FOR PROJECTING CONCRETE PIPE
(Socket End)**

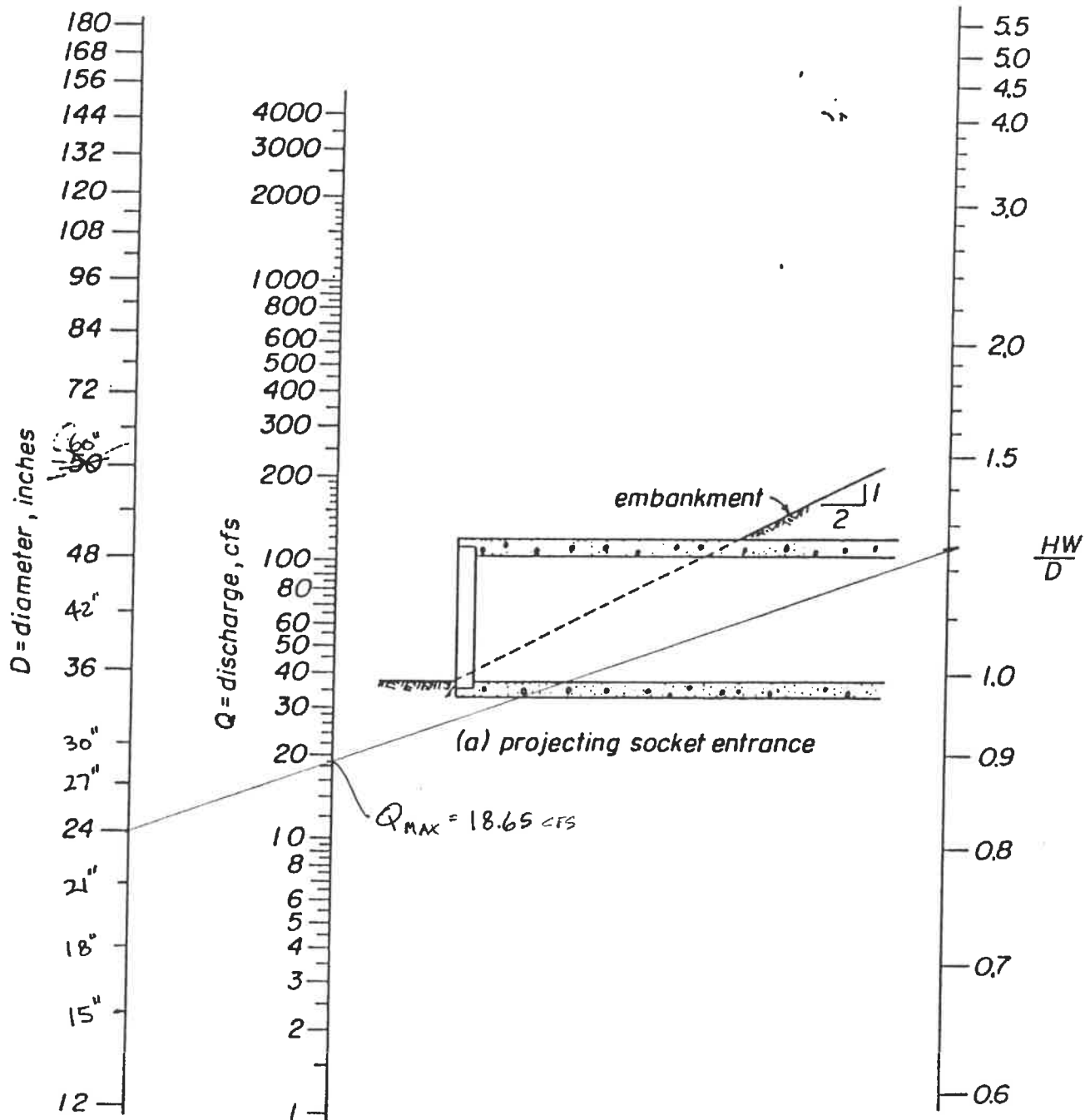


Fig. B-1

$$\frac{H_w}{D} = \frac{2.50}{2.00} = 1.25$$

TABLE 1
DETENTION VOLUME REQUIREMENTS

	10 year Undev. Release Rate	Required Storage			Available Storage
		25 year	50 year	100 year	
N. Basin	3.41 cfs	8,359	10,698	12,593 cf	12,948 cf

Retention Volume >>

	394.00	Storage Pool Elevation (spillway elev.)
	- 391.50	Normal Pool Elevation
	<u>2.50</u> feet	

	6,516	Storage Pool Area
	+ 3,842	Normal Pool Area
	<u>10,358</u> sq. ft.	

Volume= $(1/2) \times (10,358) \times 2.5 = 12,948$ cu. ft. available

	10 year Undev. Release Rate	Required Storage			Available Storage
		25 year	50 year	100 year	
S. Basin	18.65 cfs	31,607	40,119	47,136 cf	142,491 cf

Retention Volume >>

	393.40	Storage Pool Elevation (spillway elev.)
	- 390.90	Normal Pool Elevation
	<u>2.50</u> feet	

	63,237	Storage Pool Area
	+ 50,756	Normal Pool Area
	<u>113,993</u> sq. ft.	

Volume= $(1/2) \times (113,993) \times 2.5 = 142,491$ cu. ft. available

DEVELOPED CALCULATIONS FLOW FOR A 25 YEAR STORM

Job Name/Basin #: Basin #1-1

25,200 Total SF 0.58 AC

Exist. Impervious surfaces (2-5%) C=0.94

Structures	0 Total	0 SF	0 Total SF	0.00 AC
Drives	0 Total	0 SF	0 Total SF	0.00 AC
Pavement	0 Width (ft)	0 L (ft)	0 Total SF	0.00 AC
			0 TOTAL	0.00 AC

Proposed Impervious surfaces (2-5%) C=0.94

Structures	1.5 Total	2,200 SF	3,300 Total SF	0.08 AC
Drives	3 Total	780 SF	2,340 Total SF	0.05 AC
Pavement	14.5 Width (ft)	420 L (ft)	6,090 Total SF	0.14 AC
Patios	0 Total	400 SF	0 Total SF	0.00 AC
Sidewalks	4 Width (ft)		1,680 Total SF	0.04 AC
			13,410 TOTAL	0.31 AC

Exist cultivated fields:

0-2% slope	C=0.20	0 SF	0 Total SF	0.00 AC
2-5% slope	C=0.35	0 SF	0 Total SF	0.00 AC
5-10% slope	C=0.50	0 SF	0 Total SF	0.00 AC
10+% slope	C=0.65	0 SF	0 Total SF	0.00 AC
			0 TOTAL	0.00 AC

For lawn areas:

0-2% slope	C=0.15	11,790 SF	11,790 Total SF	0.27 AC
2-5% slope	C=0.25	0 SF	0 Total SF	0.00 AC
5-10% slope	C=0.40	0 SF	0 Total SF	0.00 AC
10+% slope	C=0.55	0 SF	0 Total SF	0.00 AC
			11,790 TOTAL	0.27 AC

For woodland areas:

0-2% slope	C=0.12	0 SF	0 Total SF	0.00 AC
2-5% slope	C=0.24	0 SF	0 Total SF	0.00 AC
5-10% slope	C=0.36	0 SF	0 Total SF	0.00 AC
10+% slope	C=0.48	0 SF	0 Total SF	0.00 AC
			0 TOTAL	0.00 AC

Check 25,200 GT

Wt'd C = 0.57
 Wt'd N = 0.20
 High Pt El 401.00 ft
 Inlet El 394.50 ft
 Length 390.00 ft
 Slope 0.0167
 tc 16.37 min

0 1	Is 5<tc<10?	i 25=	0.00 in/hr
0 1	Is 10<tc<15?	i 25=	0.00 in/hr
1 1	Is 15<tc<30?	i 25=	4.91 in/hr
1 0	Is 30<tc<60?	i 25=	0.00 in/hr

Q25= 1.62 cfs

Date: 8/21/98

DEVELOPED CALCULATIONS FLOW FOR A 25 YEAR STORM

Job Name/Basin #: Basin #1-2

17,500 Total SF 0.40 AC

Exist. Impervious surfaces (2-5%) C=0.94

Structures	0 Total	0 SF	0 Total SF	0.00 AC
Drives	0 Total	0 SF	0 Total SF	0.00 AC
Pavement	0 Width (ft)	0 L (ft)	0 Total SF	0.00 AC
			0 TOTAL	0.00 AC

Proposed Impervious surfaces (2-5%) C=0.94

Structures	2 Total	2,200 SF	4,400 Total SF	0.10 AC
Drives	4 Total	780 SF	3,120 Total SF	0.07 AC
Pavement	14.5 Width (ft)	250 L (ft)	3,625 Total SF	0.08 AC
Patios	0 Total	400 SF	0 Total SF	0.00 AC
Sidewalks	4 Width (ft)		1,000 Total SF	0.02 AC
			12,145 TOTAL	0.28 AC

Exist cultivated fields:

0-2% slope	C=0.20	0 SF	0 Total SF	0.00 AC
2-5% slope	C=0.35	0 SF	0 Total SF	0.00 AC
5-10% slope	C=0.50	0 SF	0 Total SF	0.00 AC
10+% slope	C=0.65	0 SF	0 Total SF	0.00 AC
			0 TOTAL	0.00 AC

For lawn areas:

0-2% slope	C=0.15	5,355 SF	5,355 Total SF	0.12 AC
2-5% slope	C=0.25	0 SF	0 Total SF	0.00 AC
5-10% slope	C=0.40	0 SF	0 Total SF	0.00 AC
10+% slope	C=0.55	0 SF	0 Total SF	0.00 AC
			5,355 TOTAL	0.12 AC

For woodland areas:

0-2% slope	C=0.12	0 SF	0 Total SF	0.00 AC
2-5% slope	C=0.24	0 SF	0 Total SF	0.00 AC
5-10% slope	C=0.36	0 SF	0 Total SF	0.00 AC
10+% slope	C=0.48	0 SF	0 Total SF	0.00 AC
			0 TOTAL	0.00 AC

Check 17,500 GT

Wt'd C = 0.70
 Wt'd N = 0.14
 High Pt El 396.50 ft
 Inlet El 394.50 ft
 Length 205.00 ft
 Slope 0.0098
 tc 11.54 min

0 1	Is 5<tc<10?	i 25=	0.00 in/hr
1 1	Is 10<tc<15?	i 25=	5.65 in/hr
1 0	Is 15<tc<30?	i 25=	0.00 in/hr
1 0	Is 30<tc<60?	i 25=	0.00 in/hr

Q25= 1.58 cfs

Date: 8/21/98

DEVELOPED CALCULATIONS FLOW FOR A 25 YEAR STORM

Job Name/Basin #: Basin #1-3

41,475 Total SF 0.95 AC

Exist. Impervious surfaces (2-5%) C=0.94

Structures	0 Total	0 SF	0 Total SF	0.00 AC
Drives	0 Total	0 SF	0 Total SF	0.00 AC
Pavement	0 Width (ft)	0 L (ft)	0 Total SF	0.00 AC
			0 TOTAL	0.00 AC

Proposed Impervious surfaces (2-5%) C=0.94

Structures	3 Total	2,200 SF	6,600 Total SF	0.15 AC
Drives	4 Total	780 SF	3,120 Total SF	0.07 AC
Pavement	14.5 Width (ft)	485 L (ft)	7,033 Total SF	0.16 AC
Patios	2 Total	400 SF	800 Total SF	0.02 AC
Sidewalks	4 Width (ft)		1,940 Total SF	0.04 AC
			19,493 TOTAL	0.45 AC

Exist cultivated fields:

0-2% slope	C=0.20	0 SF	0 Total SF	0.00 AC
2-5% slope	C=0.35	0 SF	0 Total SF	0.00 AC
5-10% slope	C=0.50	0 SF	0 Total SF	0.00 AC
10+% slope	C=0.65	0 SF	0 Total SF	0.00 AC
			0 TOTAL	0.00 AC

For lawn areas:

0-2% slope	C=0.15	21,982 SF	21,982 Total SF	0.50 AC
2-5% slope	C=0.25	0 SF	0 Total SF	0.00 AC
5-10% slope	C=0.40	0 SF	0 Total SF	0.00 AC
10+% slope	C=0.55	0 SF	0 Total SF	0.00 AC
			21,982 TOTAL	0.50 AC

For woodland areas:

0-2% slope	C=0.12	0 SF	0 Total SF	0.00 AC
2-5% slope	C=0.24	0 SF	0 Total SF	0.00 AC
5-10% slope	C=0.36	0 SF	0 Total SF	0.00 AC
10+% slope	C=0.48	0 SF	0 Total SF	0.00 AC
			0 TOTAL	0.00 AC

Check 41,475 GT

Wt'd C = 0.52
 Wt'd N = 0.22
 High Pt El 401.00 ft
 Inlet El 394.50 ft
 Length 390.00 ft
 Slope 0.0167
 tc 17.26 min

0 1	Is 5<tc<10?	i 25=	0.00 in/hr
0 1	Is 10<tc<15?	i 25=	0.00 in/hr
1 1	Is 15<tc<30?	i 25=	4.82 in/hr
1 0	Is 30<tc<60?	i 25=	0.00 in/hr

Q25= 2.39 cfs

Date: 8/21/98

DEVELOPED CALCULATIONS FLOW FOR A 25 YEAR STORM

Job Name/Basin #: Basin #1-4

14,700 Total SF 0.34 AC

Exist. Impervious surfaces (2-5%) C=0.94

Structures	0 Total	0 SF	0 Total SF	0.00 AC
Drives	0 Total	0 SF	0 Total SF	0.00 AC
Pavement	0 Width (ft)	0 L (ft)	0 Total SF	0.00 AC
			0 TOTAL	0.00 AC

Proposed Impervious surfaces (2-5%) C=0.94

Structures	1.5 Total	2,200 SF	3,300 Total SF	0.08 AC
Drives	3 Total	780 SF	2,340 Total SF	0.05 AC
Pavement	14.5 Width (ft)	210 L (ft)	3,045 Total SF	0.07 AC
Patios	0 Total	400 SF	0 Total SF	0.00 AC
Sidewalks	4 Width (ft)		840 Total SF	0.02 AC
			9,525 TOTAL	0.22 AC

Exist cultivated fields:

0-2% slope	C=0.20	0 SF	0 Total SF	0.00 AC
2-5% slope	C=0.35	0 SF	0 Total SF	0.00 AC
5-10% slope	C=0.50	0 SF	0 Total SF	0.00 AC
10+% slope	C=0.65	0 SF	0 Total SF	0.00 AC
			0 TOTAL	0.00 AC

For lawn areas:

0-2% slope	C=0.15	5,175 SF	5,175 Total SF	0.12 AC
2-5% slope	C=0.25	0 SF	0 Total SF	0.00 AC
5-10% slope	C=0.40	0 SF	0 Total SF	0.00 AC
10+% slope	C=0.55	0 SF	0 Total SF	0.00 AC
			5,175 TOTAL	0.12 AC

For woodland areas:

0-2% slope	C=0.12	0 SF	0 Total SF	0.00 AC
2-5% slope	C=0.24	0 SF	0 Total SF	0.00 AC
5-10% slope	C=0.36	0 SF	0 Total SF	0.00 AC
10+% slope	C=0.48	0 SF	0 Total SF	0.00 AC
			0 TOTAL	0.00 AC

Check 14,700 GT

Wt'd C = 0.66
 Wt'd N = 0.15
 High Pt El 396.50 ft
 Inlet El 394.50 ft
 Length 200.00 ft
 Slope 0.0100
 tc 12.01 min

0 1	Is 5<tc<10?	i 25=	0.00 in/hr
1 1	Is 10<tc<15?	i 25=	5.57 in/hr
1 0	Is 15<tc<30?	i 25=	0.00 in/hr
1 0	Is 30<tc<60?	i 25=	0.00 in/hr

Q25= 1.24 cfs

Date: 8/21/98

DEVELOPED CALCULATIONS FLOW FOR A 25 YEAR STORM

Job Name/Basin #: Basin #1-5

23,450 Total SF 0.54 AC

Exist. Impervious surfaces (2-5%) C=0.94

Structures	0 Total	0 SF	0 Total SF	0.00 AC
Drives	0 Total	0 SF	0 Total SF	0.00 AC
Pavement	0 Width (ft)	0 L (ft)	0 Total SF	0.00 AC
			0 TOTAL	0.00 AC

Proposed Impervious surfaces (2-5%) C=0.94

Structures	2 Total	2,200 SF	4,400 Total SF	0.10 AC
Drives	2 Total	780 SF	1,560 Total SF	0.04 AC
Pavement	14.5 Width (ft)	210 L (ft)	3,045 Total SF	0.07 AC
Patios	2 Total	400 SF	800 Total SF	0.02 AC
Sidewalks	4 Width (ft)		840 Total SF	0.02 AC
			10,645 TOTAL	0.24 AC

Exist cultivated fields:

0-2% slope	C=0.20	0 SF	0 Total SF	0.00 AC
2-5% slope	C=0.35	0 SF	0 Total SF	0.00 AC
5-10% slope	C=0.50	0 SF	0 Total SF	0.00 AC
10+% slope	C=0.65	0 SF	0 Total SF	0.00 AC
			0 TOTAL	0.00 AC

For lawn areas:

0-2% slope	C=0.15	12,805 SF	12,805 Total SF	0.29 AC
2-5% slope	C=0.25	0 SF	0 Total SF	0.00 AC
5-10% slope	C=0.40	0 SF	0 Total SF	0.00 AC
10+% slope	C=0.55	0 SF	0 Total SF	0.00 AC
			12,805 TOTAL	0.29 AC

For woodland areas:

0-2% slope	C=0.12	0 SF	0 Total SF	0.00 AC
2-5% slope	C=0.24	0 SF	0 Total SF	0.00 AC
5-10% slope	C=0.36	0 SF	0 Total SF	0.00 AC
10+% slope	C=0.48	0 SF	0 Total SF	0.00 AC
			0 TOTAL	0.00 AC

Check 23,450 GT

Wt'd C = 0.51
 Wt'd N = 0.23
 High Pt El 396.50 ft
 Inlet El 394.50 ft
 Length 280.00 ft
 Slope 0.0071
 tc 18.25 min

0 1	Is 5<tc<10?	i 25=	0.00 in/hr
0 1	Is 10<tc<15?	i 25=	0.00 in/hr
1 1	Is 15<tc<30?	i 25=	4.73 in/hr
1 0	Is 30<tc<60?	i 25=	0.00 in/hr

Q25= 1.30 cfs

Date: 8/21/98

DEVELOPED CALCULATIONS FLOW FOR A 25 YEAR STORM

Job Name/Basin #: Basin #2-1

51,900 Total SF 1.19 AC

Exist. Impervious surfaces (2-5%) C=0.94

Structures	0 Total	0 SF	0 Total SF	0.00 AC
Drives	0 Total	0 SF	0 Total SF	0.00 AC
Pavement	0 Width (ft)	0 L (ft)	0 Total SF	0.00 AC
			0 TOTAL	0.00 AC

Proposed Impervious surfaces (2-5%) C=0.94

Structures	4.5 Total	2,200 SF	9,900 Total SF	0.23 AC
Drives	4 Total	780 SF	3,120 Total SF	0.07 AC
Pavement	14.5 Width (ft)	170 L (ft)	2,465 Total SF	0.06 AC
Patios	6 Total	400 SF	2,400 Total SF	0.06 AC
Sidewalks	4 Width (ft)		680 Total SF	0.02 AC
			18,565 TOTAL	0.43 AC

Exist cultivated fields:

0-2% slope	C=0.20	0 SF	0 Total SF	0.00 AC
2-5% slope	C=0.35	0 SF	0 Total SF	0.00 AC
5-10% slope	C=0.50	0 SF	0 Total SF	0.00 AC
10+% slope	C=0.65	0 SF	0 Total SF	0.00 AC
			0 TOTAL	0.00 AC

For lawn areas:

0-2% slope	C=0.15	33,335 SF	33,335 Total SF	0.77 AC
2-5% slope	C=0.25	0 SF	0 Total SF	0.00 AC
5-10% slope	C=0.40	0 SF	0 Total SF	0.00 AC
10+% slope	C=0.55	0 SF	0 Total SF	0.00 AC
			33,335 TOTAL	0.77 AC

For woodland areas:

0-2% slope	C=0.12	0 SF	0 Total SF	0.00 AC
2-5% slope	C=0.24	0 SF	0 Total SF	0.00 AC
5-10% slope	C=0.36	0 SF	0 Total SF	0.00 AC
10+% slope	C=0.48	0 SF	0 Total SF	0.00 AC
			0 TOTAL	0.00 AC

Check 51,900 GT

Wt'd C = 0.43
 Wt'd N = 0.26
 High Pt El 401.00 ft
 Inlet El 395.00 ft
 Length 210.00 ft
 Slope 0.0286
 tc 12.37 min

0 1	Is 5<tc<10?	i 25=	0.00 in/hr
1 1	Is 10<tc<15?	i 25=	5.50 in/hr
1 0	Is 15<tc<30?	i 25=	0.00 in/hr
1 0	Is 30<tc<60?	i 25=	0.00 in/hr

Q25= 2.84 cfs

Date: 8/21/98

DEVELOPED CALCULATIONS FLOW FOR A 25 YEAR STORM

Job Name/Basin #: Basin #2-2

15,750 Total SF 0.36 AC

Exist. Impervious surfaces (2-5%) C=0.94

Structures	0 Total	0 SF	0 Total SF	0.00 AC
Drives	0 Total	0 SF	0 Total SF	0.00 AC
Pavement	0 Width (ft)	0 L (ft)	0 Total SF	0.00 AC
			0 TOTAL	0.00 AC

Proposed Impervious surfaces (2-5%) C=0.94

Structures	1 Total	2,200 SF	2,200 Total SF	0.05 AC
Drives	1 Total	780 SF	780 Total SF	0.02 AC
Pavement	14.5 Width (ft)	170 L (ft)	2,465 Total SF	0.06 AC
Patios	2 Total	400 SF	800 Total SF	0.02 AC
Sidewalks	4 Width (ft)		680 Total SF	0.02 AC
			6,925 TOTAL	0.16 AC

Exist cultivated fields:

0-2% slope	C=0.20	0 SF	0 Total SF	0.00 AC
2-5% slope	C=0.35	0 SF	0 Total SF	0.00 AC
5-10% slope	C=0.50	0 SF	0 Total SF	0.00 AC
10+% slope	C=0.65	0 SF	0 Total SF	0.00 AC
			0 TOTAL	0.00 AC

For lawn areas:

0-2% slope	C=0.15	8,825 SF	8,825 Total SF	0.20 AC
2-5% slope	C=0.25	0 SF	0 Total SF	0.00 AC
5-10% slope	C=0.40	0 SF	0 Total SF	0.00 AC
10+% slope	C=0.55	0 SF	0 Total SF	0.00 AC
			8,825 TOTAL	0.20 AC

For woodland areas:

0-2% slope	C=0.12	0 SF	0 Total SF	0.00 AC
2-5% slope	C=0.24	0 SF	0 Total SF	0.00 AC
5-10% slope	C=0.36	0 SF	0 Total SF	0.00 AC
10+% slope	C=0.48	0 SF	0 Total SF	0.00 AC
			0 TOTAL	0.00 AC

Check 15,750 GT

Wt'd C = 0.50
 Wt'd N = 0.23
 High Pt El 401.00 ft
 Inlet El 395.00 ft
 Length 225.00 ft
 Slope 0.0267
 tc 12.25 min

0 1	Is 5<tc<10?	i 25=	0.00 in/hr
1 1	Is 10<tc<15?	i 25=	5.52 in/hr
1 0	Is 15<tc<30?	i 25=	0.00 in/hr
1 0	Is 30<tc<60?	i 25=	0.00 in/hr

Q25= 0.99 cfs

Date: 8/21/98

DEVELOPED CALCULATIONS FLOW FOR A 25 YEAR STORM

Job Name/Basin #: Basin #3-1

87,150 Total SF 2.00 AC

Exist. Impervious surfaces (2-5%) C=0.94

Structures	0 Total	0 SF		0 Total SF	0.00 AC
Drives	0 Total	0 SF		0 Total SF	0.00 AC
Pavement	10 Width (ft)	510 L (ft)		5,100 Total SF	0.12 AC
				5,100 TOTAL	0.12 AC

Proposed Impervious surfaces (2-5%) C=0.94

Structures	2.5 Total	2,200 SF		5,500 Total SF	0.13 AC
Drives	0 Total	780 SF		0 Total SF	0.00 AC
Pavement	14.5 Width (ft)	0 L (ft)		0 Total SF	0.00 AC
Patios	5 Total	400 SF		2,000 Total SF	0.05 AC
Sidewalks	4 Width (ft)			0 Total SF	0.00 AC
				7,500 TOTAL	0.17 AC

Exist cultivated fields:

0-2% slope	C=0.20	0 SF		0 Total SF	0.00 AC
2-5% slope	C=0.35	0 SF		0 Total SF	0.00 AC
5-10% slope	C=0.50	0 SF		0 Total SF	0.00 AC
10+% slope	C=0.65	0 SF		0 Total SF	0.00 AC
				0 TOTAL	0.00 AC

For lawn areas:

0-2% slope	C=0.15	74,550 SF		74,550 Total SF	1.71 AC
2-5% slope	C=0.25	0 SF		0 Total SF	0.00 AC
5-10% slope	C=0.40	0 SF		0 Total SF	0.00 AC
10+% slope	C=0.55	0 SF		0 Total SF	0.00 AC
				74,550 TOTAL	1.71 AC

For woodland areas:

0-2% slope	C=0.12	0 SF		0 Total SF	0.00 AC
2-5% slope	C=0.24	0 SF		0 Total SF	0.00 AC
5-10% slope	C=0.36	0 SF		0 Total SF	0.00 AC
10+% slope	C=0.48	0 SF		0 Total SF	0.00 AC
				0 TOTAL	0.00 AC

Check 87,150 GT

Wt'd C = 0.26
 Wt'd N = 0.35
 High Pt El 401.00 ft
 Inlet El 392.50 ft
 Length 510.00 ft
 Slope 0.0167
 tc 24.06 min

0 1	Is 5<tc<10?	i 25=	0.00 in/hr
0 1	Is 10<tc<15?	i 25=	0.00 in/hr
1 1	Is 15<tc<30?	i 25=	4.19 in/hr
1 0	Is 30<tc<60?	i 25=	0.00 in/hr

Q25= 2.22 cfs

Date: 8/23/98

DEVELOPED CALCULATIONS FLOW FOR A 25 YEAR STORM

Job Name/Basin #: Basin #3-2

8,100 Total SF 0.19 AC

Exist. Impervious surfaces (2-5%) C=0.94

Structures	0 Total	0 SF	0 Total SF	0.00 AC
Drives	0 Total	0 SF	0 Total SF	0.00 AC
Pavement	10 Width (ft)	30 L (ft)	300 Total SF	0.01 AC
			300 TOTAL	0.01 AC

Proposed Impervious surfaces (2-5%) C=0.94

Structures	0.5 Total	2,200 SF	1,100 Total SF	0.03 AC
Drives	1 Total	780 SF	780 Total SF	0.02 AC
Pavement	14.5 Width (ft)	95 L (ft)	1,378 Total SF	0.03 AC
Patios	0 Total	400 SF	0 Total SF	0.00 AC
Sidewalks	4 Width (ft)		380 Total SF	0.01 AC
			3,638 TOTAL	0.08 AC

Exist cultivated fields:

0-2% slope	C=0.20	0 SF	0 Total SF	0.00 AC
2-5% slope	C=0.35	0 SF	0 Total SF	0.00 AC
5-10% slope	C=0.50	0 SF	0 Total SF	0.00 AC
10+% slope	C=0.65	0 SF	0 Total SF	0.00 AC
			0 TOTAL	0.00 AC

For lawn areas:

0-2% slope	C=0.15	4,162 SF	4,162 Total SF	0.10 AC
2-5% slope	C=0.25	0 SF	0 Total SF	0.00 AC
5-10% slope	C=0.40	0 SF	0 Total SF	0.00 AC
10+% slope	C=0.55	0 SF	0 Total SF	0.00 AC
			4,162 TOTAL	0.10 AC

For woodland areas:

0-2% slope	C=0.12	0 SF	0 Total SF	0.00 AC
2-5% slope	C=0.24	0 SF	0 Total SF	0.00 AC
5-10% slope	C=0.36	0 SF	0 Total SF	0.00 AC
10+% slope	C=0.48	0 SF	0 Total SF	0.00 AC
			0 TOTAL	0.00 AC

Check 8,100 GT

Wt'd C = 0.53
 Wt'd N = 0.22
 High Pt El 397.00 ft
 Inlet El 394.50 ft
 Length 170.00 ft
 Slope 0.0147
 tc 11.90 min

0 1	Is 5<tc<10?	i 25=	0.00 in/hr
1 1	Is 10<tc<15?	i 25=	5.59 in/hr
1 0	Is 15<tc<30?	i 25=	0.00 in/hr
1 0	Is 30<tc<60?	i 25=	0.00 in/hr

Q25= 0.55 cfs

Date: 8/23/98

DEVELOPED CALCULATIONS FLOW FOR A 25 YEAR STORM

Job Name/Basin #: Basin #3-3

8,100 Total SF 0.19 AC

Exist. Impervious surfaces (2-5%) C=0.94

Structures	0 Total	0 SF	0 Total SF	0.00 AC
Drives	0 Total	0 SF	0 Total SF	0.00 AC
Pavement	10 Width (ft)	30 L (ft)	300 Total SF	0.01 AC
			300 TOTAL	0.01 AC

Proposed Impervious surfaces (2-5%) C=0.94

Structures	0.5 Total	2,200 SF	1,100 Total SF	0.03 AC
Drives	1 Total	780 SF	780 Total SF	0.02 AC
Pavement	14.5 Width (ft)	95 L (ft)	1,378 Total SF	0.03 AC
Patios	0 Total	400 SF	0 Total SF	0.00 AC
Sidewalks	4 Width (ft)		380 Total SF	0.01 AC
			3,638 TOTAL	0.08 AC

Exist cultivated fields:

0-2% slope	C=0.20	0 SF	0 Total SF	0.00 AC
2-5% slope	C=0.35	0 SF	0 Total SF	0.00 AC
5-10% slope	C=0.50	0 SF	0 Total SF	0.00 AC
10+% slope	C=0.65	0 SF	0 Total SF	0.00 AC
			0 TOTAL	0.00 AC

For lawn areas:

0-2% slope	C=0.15	4,162 SF	4,162 Total SF	0.10 AC
2-5% slope	C=0.25	0 SF	0 Total SF	0.00 AC
5-10% slope	C=0.40	0 SF	0 Total SF	0.00 AC
10+% slope	C=0.55	0 SF	0 Total SF	0.00 AC
			4,162 TOTAL	0.10 AC

For woodland areas:

0-2% slope	C=0.12	0 SF	0 Total SF	0.00 AC
2-5% slope	C=0.24	0 SF	0 Total SF	0.00 AC
5-10% slope	C=0.36	0 SF	0 Total SF	0.00 AC
10+% slope	C=0.48	0 SF	0 Total SF	0.00 AC
			0 TOTAL	0.00 AC

Check 8,100 GT

Wt'd C = 0.53
 Wt'd N = 0.22
 High Pt El 397.00 ft
 Inlet El 394.50 ft
 Length 170.00 ft
 Slope 0.0147
 tc 11.90 min

0 1	Is 5<tc<10?	i 25=	0.00 in/hr
1 1	Is 10<tc<15?	i 25=	5.59 in/hr
1 0	Is 15<tc<30?	i 25=	0.00 in/hr
1 0	Is 30<tc<60?	i 25=	0.00 in/hr

Q25= 0.55 cfs

Date: 8/23/98

STORM SEWER DESIGN SHEET -- RATIONAL METHOD

PROJECT CAMDEN FARMS - NORTH BASIN DATE 8-19-93 SHEET OF

ENGINEER SITECON INC. DESIGN STORM 25 YR. MANNINGS n 0.011

Line Number	Upstream Manhole	Downstream Manhole	Length (ft)	C ₁	A ₁ (Acres)	C ₂ /A ₂	t ₁ (min)	t ₂ (min)	Q (CFS)	Q ₂ (CFS)	Pipe Slope (%)	Pipe Capacity (CFS)	Velocity (Ft/Sec)	Travel Time (min)	Rim Elevation Upstream	Rim Elevation Downstream	Invert Elevation Upstream	Invert Elevation Downstream	Upstream Pipe Cover	Downstream Pipe Cover		
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1-1			43	0.57	0.56	0.33	—	16.4	—	4.91	1.62	12	0.23				92.87	92.77				
1-2			37	0.70	0.40	0.26	—	11.5	—	5.45	1.52	12	0.27				92.87	92.77				
1-3			294	0.52	0.95	0.45	11.0	17.3	17.3	4.82	5.32	18	0.28	3.7			92.37	91.55				
1-4			29	0.66	0.34	0.22	—	12.0	—	5.57	1.23	12	0.35				92.05	91.95				
1-5			27	0.51	0.54	0.22	13.8	18.25	18.25	4.73	5.93	15	0.18	3.0			91.55	91.50				
2-1			60	0.43	1.19	0.51	—	12.4	—	5.50	2.01	12	1.00				92.42	92.20				
2-2			40	0.50	0.36	0.13	0.69	12.2	12.4	5.45	3.76	12	3.25				92.20	91.50				
3-1			0.36	0.00	0.52	1.2	20.1	24.1	24.1	4.19	5.4	15	0.50									
3-2			0.53	0.15	0.10	1.3	11.9	24.	24.	4.15	5.45	15	0.50									
3-3			0.53	0.15	0.10	1.4	11.9	20.	20.	4.15	5.67	15	0.50									

North Basin-Bypass Channel

110 cfs; s=1.85%; b=3'

Man Made Channels -- English Units

Civil Tools for Windows

(08-23-1998, 18:03:09)

Flow Depth = 1.836 ft
Flowrate = 110.000 cfs
Channel Bottom Width = 3.000 ft
Channel Side Slope = 3.000 ft/ft
Channel Slope = 0.01850 ft/ft
Channel Roughness = 0.030
Wetted Area = 15.62 sf
Wetted Perimeter = 14.61 ft
Velocity = 7.04 fps
Froude No. = 1.18
Flow = Super-Critical

DEVELOPED CALCULATIONS FLOW FOR A 25 YEAR STORM

Job Name/Basin #: Basin #4-1

5,720 Total SF 0.13 AC

Exist. Impervious surfaces (2-5%) C=0.94

Structures	0 Total	0 SF	0 Total SF	0.00 AC
Drives	0 Total	0 SF	0 Total SF	0.00 AC
Pavement	0 Width (ft)	0 L (ft)	0 Total SF	0.00 AC
			0 TOTAL	0.00 AC

Proposed Impervious surfaces (2-5%) C=0.94

Structures	0 Total	2,200 SF	0 Total SF	0.00 AC
Drives	0 Total	780 SF	0 Total SF	0.00 AC
Pavement	14.5 Width (ft)	260 L (ft)	3,770 Total SF	0.09 AC
Patios	0 Total	400 SF	0 Total SF	0.00 AC
Sidewalks	4 Width (ft)		1,040 Total SF	0.02 AC
			4,810 TOTAL	0.11 AC

Exist cultivated fields:

0-2% slope	C=0.20	0 SF	0 Total SF	0.00 AC
2-5% slope	C=0.35	0 SF	0 Total SF	0.00 AC
5-10% slope	C=0.50	0 SF	0 Total SF	0.00 AC
10+% slope	C=0.65	0 SF	0 Total SF	0.00 AC
			0 TOTAL	0.00 AC

For lawn areas:

0-2% slope	C=0.15	910 SF	910 Total SF	0.02 AC
2-5% slope	C=0.25	0 SF	0 Total SF	0.00 AC
5-10% slope	C=0.40	0 SF	0 Total SF	0.00 AC
10+% slope	C=0.55	0 SF	0 Total SF	0.00 AC
			910 TOTAL	0.02 AC

For woodland areas:

0-2% slope	C=0.12	0 SF	0 Total SF	0.00 AC
2-5% slope	C=0.24	0 SF	0 Total SF	0.00 AC
5-10% slope	C=0.36	0 SF	0 Total SF	0.00 AC
10+% slope	C=0.48	0 SF	0 Total SF	0.00 AC
			0 TOTAL	0.00 AC

Check 5,720 GT

Wt'd C = 0.81
 Wt'd N = 0.08
 High Pt El 397.00 ft
 Inlet El 394.50 ft
 Length 190.00 ft
 Slope 0.0132
 tc 8.12 min

1 1	Is 5<tc<10?	i 25=	6.41 in/hr
1 0	Is 10<tc<15?	i 25=	0.00 in/hr
1 0	Is 15<tc<30?	i 25=	0.00 in/hr
1 0	Is 30<tc<60?	i 25=	0.00 in/hr

Q25= 0.69 cfs

Date: 8/24/98

DEVELOPED CALCULATIONS FLOW FOR A 25 YEAR STORM

Job Name/Basin #: Basin #4-2

12,600 Total SF 0.29 AC

Exist. Impervious surfaces (2-5%) C=0.94

Structures	0 Total	0 SF	0 Total SF	0.00 AC
Drives	0 Total	0 SF	0 Total SF	0.00 AC
Pavement	0 Width (ft)	0 L (ft)	0 Total SF	0.00 AC
			0 TOTAL	0.00 AC

Proposed Impervious surfaces (2-5%) C=0.94

Structures	1 Total	2,200 SF	2,200 Total SF	0.05 AC
Drives	2 Total	780 SF	1,560 Total SF	0.04 AC
Pavement	14.5 Width (ft)	180 L (ft)	2,610 Total SF	0.06 AC
Patios	0 Total	400 SF	0 Total SF	0.00 AC
Sidewalks	4 Width (ft)		720 Total SF	0.02 AC
			7,090 TOTAL	0.16 AC

Exist cultivated fields:

0-2% slope	C=0.20	0 SF	0 Total SF	0.00 AC
2-5% slope	C=0.35	0 SF	0 Total SF	0.00 AC
5-10% slope	C=0.50	0 SF	0 Total SF	0.00 AC
10+% slope	C=0.65	0 SF	0 Total SF	0.00 AC
			0 TOTAL	0.00 AC

For lawn areas:

0-2% slope	C=0.15	5,510 SF	5,510 Total SF	0.13 AC
2-5% slope	C=0.25	0 SF	0 Total SF	0.00 AC
5-10% slope	C=0.40	0 SF	0 Total SF	0.00 AC
10+% slope	C=0.55	0 SF	0 Total SF	0.00 AC
			5,510 TOTAL	0.13 AC

For woodland areas:

0-2% slope	C=0.12	0 SF	0 Total SF	0.00 AC
2-5% slope	C=0.24	0 SF	0 Total SF	0.00 AC
5-10% slope	C=0.36	0 SF	0 Total SF	0.00 AC
10+% slope	C=0.48	0 SF	0 Total SF	0.00 AC
			0 TOTAL	0.00 AC

Check 12,600 GT

Wt'd C = 0.59
 Wt'd N = 0.19
 High Pt El 396.00 ft
 Inlet El 394.50 ft
 Length 150.00 ft
 Slope 0.0100
 tc 11.48 min

0 1	Is 5<tc<10?	i 25=	0.00 in/hr
1 1	Is 10<tc<15?	i 25=	5.66 in/hr
1 0	Is 15<tc<30?	i 25=	0.00 in/hr
1 0	Is 30<tc<60?	i 25=	0.00 in/hr

Q25= 0.97 cfs

Date: 8/24/98

DEVELOPED CALCULATIONS FLOW FOR A 25 YEAR STORM

Job Name/Basin #: Basin #4-3

31,200 Total SF 0.72 AC

Exist. Impervious surfaces (2-5%) C=0.94

Structures	0 Total	0 SF	0 Total SF	0.00 AC
Drives	0 Total	0 SF	0 Total SF	0.00 AC
Pavement	0 Width (ft)	0 L (ft)	0 Total SF	0.00 AC
			0 TOTAL	0.00 AC

Proposed Impervious surfaces (2-5%) C=0.94

Structures	3 Total	2,200 SF	6,600 Total SF	0.15 AC
Drives	3 Total	780 SF	2,340 Total SF	0.05 AC
Pavement	14.5 Width (ft)	310 L (ft)	4,495 Total SF	0.10 AC
Patios	3 Total	400 SF	1,200 Total SF	0.03 AC
Sidewalks	4 Width (ft)		1,240 Total SF	0.03 AC
			15,875 TOTAL	0.36 AC

Exist cultivated fields:

0-2% slope	C=0.20	0 SF	0 Total SF	0.00 AC
2-5% slope	C=0.35	0 SF	0 Total SF	0.00 AC
5-10% slope	C=0.50	0 SF	0 Total SF	0.00 AC
10+% slope	C=0.65	0 SF	0 Total SF	0.00 AC
			0 TOTAL	0.00 AC

For lawn areas:

0-2% slope	C=0.15	15,325 SF	15,325 Total SF	0.35 AC
2-5% slope	C=0.25	0 SF	0 Total SF	0.00 AC
5-10% slope	C=0.40	0 SF	0 Total SF	0.00 AC
10+% slope	C=0.55	0 SF	0 Total SF	0.00 AC
			15,325 TOTAL	0.35 AC

For woodland areas:

0-2% slope	C=0.12	0 SF	0 Total SF	0.00 AC
2-5% slope	C=0.24	0 SF	0 Total SF	0.00 AC
5-10% slope	C=0.36	0 SF	0 Total SF	0.00 AC
10+% slope	C=0.48	0 SF	0 Total SF	0.00 AC
			0 TOTAL	0.00 AC

Check 31,200 GT

Wt'd C = 0.55
 Wt'd N = 0.21
 High Pt El 402.00 ft
 Inlet El 394.50 ft
 Length 310.00 ft
 Slope 0.0242
 tc 13.76 min

0 1	Is 5<tc<10?	i 25=	0.00 in/hr
1 1	Is 10<tc<15?	i 25=	5.25 in/hr
1 0	Is 15<tc<30?	i 25=	0.00 in/hr
1 0	Is 30<tc<60?	i 25=	0.00 in/hr

Q25= 2.08 cfs

Date: 8/24/98

DEVELOPED CALCULATIONS FLOW FOR A 25 YEAR STORM

Job Name/Basin #: Basin #4-4

17,850 Total SF 0.41 AC

Exist. Impervious surfaces (2-5%) C=0.94

Structures	0 Total	0 SF	0 Total SF	0.00 AC
Drives	0 Total	0 SF	0 Total SF	0.00 AC
Pavement	0 Width (ft)	0 L (ft)	0 Total SF	0.00 AC
			<hr/>	
			0 TOTAL	0.00 AC

Proposed Impervious surfaces (2-5%) C=0.94

Structures	2 Total	2,200 SF	4,400 Total SF	0.10 AC
Drives	0 Total	780 SF	0 Total SF	0.00 AC
Pavement	14.5 Width (ft)	0 L (ft)	0 Total SF	0.00 AC
Patios	4 Total	400 SF	1,600 Total SF	0.04 AC
Sidewalks	4 Width (ft)		0 Total SF	0.00 AC
			<hr/>	
			6,000 TOTAL	0.14 AC

Exist cultivated fields:

0-2% slope	C=0.20	0 SF	0 Total SF	0.00 AC
2-5% slope	C=0.35	0 SF	0 Total SF	0.00 AC
5-10% slope	C=0.50	0 SF	0 Total SF	0.00 AC
10+% slope	C=0.65	0 SF	0 Total SF	0.00 AC
			<hr/>	
			0 TOTAL	0.00 AC

For lawn areas:

0-2% slope	C=0.15	11,850 SF	11,850 Total SF	0.27 AC
2-5% slope	C=0.25	0 SF	0 Total SF	0.00 AC
5-10% slope	C=0.40	0 SF	0 Total SF	0.00 AC
10+% slope	C=0.55	0 SF	0 Total SF	0.00 AC
			<hr/>	
			11,850 TOTAL	0.27 AC

For woodland areas:

0-2% slope	C=0.12	0 SF	0 Total SF	0.00 AC
2-5% slope	C=0.24	0 SF	0 Total SF	0.00 AC
5-10% slope	C=0.36	0 SF	0 Total SF	0.00 AC
10+% slope	C=0.48	0 SF	0 Total SF	0.00 AC
			<hr/>	
			0 TOTAL	0.00 AC

Check 17,850 GT

Wt'd C = 0.42
 Wt'd N = 0.27
 High Pt El 404.00 ft
 Inlet El 395.00 ft
 Length 310.00 ft
 Slope 0.0290
 tc 15.00 min

0 1	Is 5<tc<10?	i 25=	0.00 in/hr
1 1	Is 10<tc<15?	i 25=	5.03 in/hr
1 0	Is 15<tc<30?	i 25=	0.00 in/hr
1 0	Is 30<tc<60?	i 25=	0.00 in/hr

Q25= 0.86 cfs

Date: 8/24/98

DEVELOPED CALCULATIONS FLOW FOR A 25 YEAR STORM

Job Name/Basin #: Basin #4-5

17,850 Total SF 0.41 AC

Exist. Impervious surfaces (2-5%) C=0.94

Structures	0 Total	0 SF	0 Total SF	0.00 AC
Drives	0 Total	0 SF	0 Total SF	0.00 AC
Pavement	0 Width (ft)	0 L (ft)	0 Total SF	0.00 AC
			0 TOTAL	0.00 AC

Proposed Impervious surfaces (2-5%) C=0.94

Structures	2 Total	2,200 SF	4,400 Total SF	0.10 AC
Drives	4 Total	780 SF	3,120 Total SF	0.07 AC
Pavement	14.5 Width (ft)	365 L (ft)	5,293 Total SF	0.12 AC
Patios	0 Total	400 SF	0 Total SF	0.00 AC
Sidewalks	4 Width (ft)		1,460 Total SF	0.03 AC
			14,273 TOTAL	0.33 AC

Exist cultivated fields:

0-2% slope	C=0.20	0 SF	0 Total SF	0.00 AC
2-5% slope	C=0.35	0 SF	0 Total SF	0.00 AC
5-10% slope	C=0.50	0 SF	0 Total SF	0.00 AC
10+% slope	C=0.65	0 SF	0 Total SF	0.00 AC
			0 TOTAL	0.00 AC

For lawn areas:

0-2% slope	C=0.15	3,577 SF	3,577 Total SF	0.08 AC
2-5% slope	C=0.25	0 SF	0 Total SF	0.00 AC
5-10% slope	C=0.40	0 SF	0 Total SF	0.00 AC
10+% slope	C=0.55	0 SF	0 Total SF	0.00 AC
			3,577 TOTAL	0.08 AC

For woodland areas:

0-2% slope	C=0.12	0 SF	0 Total SF	0.00 AC
2-5% slope	C=0.24	0 SF	0 Total SF	0.00 AC
5-10% slope	C=0.36	0 SF	0 Total SF	0.00 AC
10+% slope	C=0.48	0 SF	0 Total SF	0.00 AC
			0 TOTAL	0.00 AC

Check 17,850 GT

Wt'd C = 0.78
 Wt'd N = 0.10
 High Pt El 404.00 ft
 Inlet El 395.00 ft
 Length 310.00 ft
 Slope 0.0290
 tc 9.22 min

1 1	Is 5<tc<10?	i 25=	6.12 in/hr
1 0	Is 10<tc<15?	i 25=	0.00 in/hr
1 0	Is 15<tc<30?	i 25=	0.00 in/hr
1 0	Is 30<tc<60?	i 25=	0.00 in/hr

Q25= 1.96 cfs

Date: 8/24/98

DEVELOPED CALCULATIONS FLOW FOR A 25 YEAR STORM

Job Name/Basin #: Basin #4-6

17,850 Total SF 0.41 AC

Exist. Impervious surfaces (2-5%) C=0.94

Structures	0 Total	0 SF	0 Total SF	0.00 AC
Drives	0 Total	0 SF	0 Total SF	0.00 AC
Pavement	0 Width (ft)	0 L (ft)	0 Total SF	0.00 AC
			0 TOTAL	0.00 AC

Proposed Impervious surfaces (2-5%) C=0.94

Structures	2 Total	2,200 SF	4,400 Total SF	0.10 AC
Drives	4 Total	780 SF	3,120 Total SF	0.07 AC
Pavement	14.5 Width (ft)	365 L (ft)	5,293 Total SF	0.12 AC
Patios	0 Total	400 SF	0 Total SF	0.00 AC
Sidewalks	4 Width (ft)		1,460 Total SF	0.03 AC
			14,273 TOTAL	0.33 AC

Exist cultivated fields:

0-2% slope	C=0.20	0 SF	0 Total SF	0.00 AC
2-5% slope	C=0.35	0 SF	0 Total SF	0.00 AC
5-10% slope	C=0.50	0 SF	0 Total SF	0.00 AC
10+% slope	C=0.65	0 SF	0 Total SF	0.00 AC
			0 TOTAL	0.00 AC

For lawn areas:

0-2% slope	C=0.15	3,577 SF	3,577 Total SF	0.08 AC
2-5% slope	C=0.25	0 SF	0 Total SF	0.00 AC
5-10% slope	C=0.40	0 SF	0 Total SF	0.00 AC
10+% slope	C=0.55	0 SF	0 Total SF	0.00 AC
			3,577 TOTAL	0.08 AC

For woodland areas:

0-2% slope	C=0.12	0 SF	0 Total SF	0.00 AC
2-5% slope	C=0.24	0 SF	0 Total SF	0.00 AC
5-10% slope	C=0.36	0 SF	0 Total SF	0.00 AC
10+% slope	C=0.48	0 SF	0 Total SF	0.00 AC
			0 TOTAL	0.00 AC

Check 17,850 GT

Wt'd C = 0.78
 Wt'd N = 0.10
 High Pt El 404.00 ft
 Inlet El 395.00 ft
 Length 310.00 ft
 Slope 0.0290
 tc 9.22 min

1	1	Is 5<tc<10?	i 25=	6.12 in/hr
1	0	Is 10<tc<15?	i 25=	0.00 in/hr
1	0	Is 15<tc<30?	i 25=	0.00 in/hr
1	0	Is 30<tc<60?	i 25=	0.00 in/hr

Q25= 1.96 cfs

Date: 8/24/98

DEVELOPED CALCULATIONS FLOW FOR A 25 YEAR STORM

Job Name/Basin #: Basin #4-7

17,850 Total SF 0.41 AC

Exist. Impervious surfaces (2-5%) C=0.94

Structures	0 Total	0 SF	0 Total SF	0.00 AC
Drives	0 Total	0 SF	0 Total SF	0.00 AC
Pavement	0 Width (ft)	0 L (ft)	0 Total SF	0.00 AC
			0 TOTAL	0.00 AC

Proposed Impervious surfaces (2-5%) C=0.94

Structures	2 Total	2,200 SF	4,400 Total SF	0.10 AC
Drives	4 Total	780 SF	3,120 Total SF	0.07 AC
Pavement	14.5 Width (ft)	365 L (ft)	5,293 Total SF	0.12 AC
Patios	0 Total	400 SF	0 Total SF	0.00 AC
Sidewalks	4 Width (ft)		1,460 Total SF	0.03 AC
			14,273 TOTAL	0.33 AC

Exist cultivated fields:

0-2% slope	C=0.20	0 SF	0 Total SF	0.00 AC
2-5% slope	C=0.35	0 SF	0 Total SF	0.00 AC
5-10% slope	C=0.50	0 SF	0 Total SF	0.00 AC
10+% slope	C=0.65	0 SF	0 Total SF	0.00 AC
			0 TOTAL	0.00 AC

For lawn areas:

0-2% slope	C=0.15	3,577 SF	3,577 Total SF	0.08 AC
2-5% slope	C=0.25	0 SF	0 Total SF	0.00 AC
5-10% slope	C=0.40	0 SF	0 Total SF	0.00 AC
10+% slope	C=0.55	0 SF	0 Total SF	0.00 AC
			3,577 TOTAL	0.08 AC

For woodland areas:

0-2% slope	C=0.12	0 SF	0 Total SF	0.00 AC
2-5% slope	C=0.24	0 SF	0 Total SF	0.00 AC
5-10% slope	C=0.36	0 SF	0 Total SF	0.00 AC
10+% slope	C=0.48	0 SF	0 Total SF	0.00 AC
			0 TOTAL	0.00 AC

Check 17,850 GT

Wt'd C = 0.78
 Wt'd N = 0.10
 High Pt El 408.00 ft
 Inlet El 396.00 ft
 Length 310.00 ft
 Slope 0.0387
 tc 8.62 min

1 1	Is 5<tc<10?	i 25=	6.28 in/hr
1 0	Is 10<tc<15?	i 25=	0.00 in/hr
1 0	Is 15<tc<30?	i 25=	0.00 in/hr
1 0	Is 30<tc<60?	i 25=	0.00 in/hr

Q25= 2.01 cfs

Date: 8/24/98

DEVELOPED CALCULATIONS FLOW FOR A 25 YEAR STORM

Job Name/Basin #: Basin #4-8

17,850 Total SF 0.41 AC

Exist. Impervious surfaces (2-5%) C=0.94

Structures	0 Total	0 SF	0 Total SF	0.00 AC
Drives	0 Total	0 SF	0 Total SF	0.00 AC
Pavement	0 Width (ft)	0 L (ft)	0 Total SF	0.00 AC
			0 TOTAL	0.00 AC

Proposed Impervious surfaces (2-5%) C=0.94

Structures	2 Total	2,200 SF	4,400 Total SF	0.10 AC
Drives	4 Total	780 SF	3,120 Total SF	0.07 AC
Pavement	14.5 Width (ft)	365 L (ft)	5,293 Total SF	0.12 AC
Patios	0 Total	400 SF	0 Total SF	0.00 AC
Sidewalks	4 Width (ft)		1,460 Total SF	0.03 AC
			14,273 TOTAL	0.33 AC

Exist cultivated fields:

0-2% slope	C=0.20	0 SF	0 Total SF	0.00 AC
2-5% slope	C=0.35	0 SF	0 Total SF	0.00 AC
5-10% slope	C=0.50	0 SF	0 Total SF	0.00 AC
10+% slope	C=0.65	0 SF	0 Total SF	0.00 AC
			0 TOTAL	0.00 AC

For lawn areas:

0-2% slope	C=0.15	3,577 SF	3,577 Total SF	0.08 AC
2-5% slope	C=0.25	0 SF	0 Total SF	0.00 AC
5-10% slope	C=0.40	0 SF	0 Total SF	0.00 AC
10+% slope	C=0.55	0 SF	0 Total SF	0.00 AC
			3,577 TOTAL	0.08 AC

For woodland areas:

0-2% slope	C=0.12	0 SF	0 Total SF	0.00 AC
2-5% slope	C=0.24	0 SF	0 Total SF	0.00 AC
5-10% slope	C=0.36	0 SF	0 Total SF	0.00 AC
10+% slope	C=0.48	0 SF	0 Total SF	0.00 AC
			0 TOTAL	0.00 AC

Check 17,850 GT

Wt'd C = 0.78
 Wt'd N = 0.10
 High Pt El 408.00 ft
 Inlet El 396.00 ft
 Length 310.00 ft
 Slope 0.0387
 tc 8.62 min

1 1	Is 5<tc<10?	i 25=	6.28 in/hr
1 0	Is 10<tc<15?	i 25=	0.00 in/hr
1 0	Is 15<tc<30?	i 25=	0.00 in/hr
1 0	Is 30<tc<60?	i 25=	0.00 in/hr

Q25= 2.01 cfs

Date: 8/24/98

DEVELOPED CALCULATIONS FLOW FOR A 25 YEAR STORM

Job Name/Basin #: Basin #4-9

35,700 Total SF 0.82 AC

Exist. Impervious surfaces (2-5%) C=0.94

Structures	0 Total	0 SF	0 Total SF	0.00 AC
Drives	0 Total	0 SF	0 Total SF	0.00 AC
Pavement	0 Width (ft)	0 L (ft)	0 Total SF	0.00 AC
			0 TOTAL	0.00 AC

Proposed Impervious surfaces (2-5%) C=0.94

Structures	4 Total	2,200 SF	8,800 Total SF	0.20 AC
Drives	0 Total	780 SF	0 Total SF	0.00 AC
Pavement	14.5 Width (ft)	0 L (ft)	0 Total SF	0.00 AC
Patios	8 Total	400 SF	3,200 Total SF	0.07 AC
Sidewalks	4 Width (ft)		0 Total SF	0.00 AC
			12,000 TOTAL	0.28 AC

Exist cultivated fields:

0-2% slope	C=0.20	0 SF	0 Total SF	0.00 AC
2-5% slope	C=0.35	0 SF	0 Total SF	0.00 AC
5-10% slope	C=0.50	0 SF	0 Total SF	0.00 AC
10+% slope	C=0.65	0 SF	0 Total SF	0.00 AC
			0 TOTAL	0.00 AC

For lawn areas:

0-2% slope	C=0.15	23,700 SF	23,700 Total SF	0.54 AC
2-5% slope	C=0.25	0 SF	0 Total SF	0.00 AC
5-10% slope	C=0.40	0 SF	0 Total SF	0.00 AC
10+% slope	C=0.55	0 SF	0 Total SF	0.00 AC
			23,700 TOTAL	0.54 AC

For woodland areas:

0-2% slope	C=0.12	0 SF	0 Total SF	0.00 AC
2-5% slope	C=0.24	0 SF	0 Total SF	0.00 AC
5-10% slope	C=0.36	0 SF	0 Total SF	0.00 AC
10+% slope	C=0.48	0 SF	0 Total SF	0.00 AC
			0 TOTAL	0.00 AC

Check 35,700 GT

Wt'd C = 0.42
 Wt'd N = 0.27
 High Pt El 405.00 ft
 Inlet El 395.00 ft
 Length 330.00 ft
 Slope 0.0303
 tc 15.29 min

0 1	Is 5<tc<10?	i 25=	0.00 in/hr
0 1	Is 10<tc<15?	i 25=	0.00 in/hr
1 1	Is 15<tc<30?	i 25=	5.01 in/hr
1 0	Is 30<tc<60?	i 25=	0.00 in/hr

Q25= 1.70 cfs

Date: 8/24/98

DEVELOPED CALCULATIONS FLOW FOR A 25 YEAR STORM

Job Name/Basin #: Basin #4-10

6,250 Total SF 0.14 AC

Exist. Impervious surfaces (2-5%) C=0.94

Structures	0 Total	0 SF	0 Total SF	0.00 AC
Drives	0 Total	0 SF	0 Total SF	0.00 AC
Pavement	0 Width (ft)	0 L (ft)	0 Total SF	0.00 AC
			0 TOTAL	0.00 AC

Proposed Impervious surfaces (2-5%) C=0.94

Structures	0 Total	2,200 SF	0 Total SF	0.00 AC
Drives	0 Total	780 SF	0 Total SF	0.00 AC
Pavement	14.5 Width (ft)	250 L (ft)	3,625 Total SF	0.08 AC
Patios	0 Total	400 SF	0 Total SF	0.00 AC
Sidewalks	4 Width (ft)		1,000 Total SF	0.02 AC
			4,625 TOTAL	0.11 AC

Exist cultivated fields:

0-2% slope	C=0.20	0 SF	0 Total SF	0.00 AC
2-5% slope	C=0.35	0 SF	0 Total SF	0.00 AC
5-10% slope	C=0.50	0 SF	0 Total SF	0.00 AC
10+% slope	C=0.65	0 SF	0 Total SF	0.00 AC
			0 TOTAL	0.00 AC

For lawn areas:

0-2% slope	C=0.15	1,625 SF	1,625 Total SF	0.04 AC
2-5% slope	C=0.25	0 SF	0 Total SF	0.00 AC
5-10% slope	C=0.40	0 SF	0 Total SF	0.00 AC
10+% slope	C=0.55	0 SF	0 Total SF	0.00 AC
			1,625 TOTAL	0.04 AC

For woodland areas:

0-2% slope	C=0.12	0 SF	0 Total SF	0.00 AC
2-5% slope	C=0.24	0 SF	0 Total SF	0.00 AC
5-10% slope	C=0.36	0 SF	0 Total SF	0.00 AC
10+% slope	C=0.48	0 SF	0 Total SF	0.00 AC
			0 TOTAL	0.00 AC

Check 6,250 GT

Wt'd C = 0.73
 Wt'd N = 0.12
 High Pt El 396.00 ft
 Inlet El 394.30 ft
 Length 140.00 ft
 Slope 0.0121
 tc 8.61 min

1 1	Is 5<tc<10?	i 25=	6.28 in/hr
1 0	Is 10<tc<15?	i 25=	0.00 in/hr
1 0	Is 15<tc<30?	i 25=	0.00 in/hr
1 0	Is 30<tc<60?	i 25=	0.00 in/hr

Q25= 0.66 cfs

Date: 8/24/98

DEVELOPED CALCULATIONS FLOW FOR A 25 YEAR STORM

Job Name/Basin #: Basin #4-11

39,200 Total SF 0.90 AC

Exist. Impervious surfaces (2-5%) C=0.94

Structures	0 Total	0 SF	0 Total SF	0.00 AC
Drives	0 Total	0 SF	0 Total SF	0.00 AC
Pavement	0 Width (ft)	0 L (ft)	0 Total SF	0.00 AC
			0 TOTAL	0.00 AC

Proposed Impervious surfaces (2-5%) C=0.94

Structures	4.5 Total	2,200 SF	9,900 Total SF	0.23 AC
Drives	9 Total	780 SF	7,020 Total SF	0.16 AC
Pavement	14.5 Width (ft)	560 L (ft)	8,120 Total SF	0.19 AC
Patios	0 Total	400 SF	0 Total SF	0.00 AC
Sidewalks	4 Width (ft)		2,240 Total SF	0.05 AC
			27,280 TOTAL	0.63 AC

Exist cultivated fields:

0-2% slope	C=0.20	0 SF	0 Total SF	0.00 AC
2-5% slope	C=0.35	0 SF	0 Total SF	0.00 AC
5-10% slope	C=0.50	0 SF	0 Total SF	0.00 AC
10+% slope	C=0.65	0 SF	0 Total SF	0.00 AC
			0 TOTAL	0.00 AC

For lawn areas:

0-2% slope	C=0.15	11,920 SF	11,920 Total SF	0.27 AC
2-5% slope	C=0.25	0 SF	0 Total SF	0.00 AC
5-10% slope	C=0.40	0 SF	0 Total SF	0.00 AC
10+% slope	C=0.55	0 SF	0 Total SF	0.00 AC
			11,920 TOTAL	0.27 AC

For woodland areas:

0-2% slope	C=0.12	0 SF	0 Total SF	0.00 AC
2-5% slope	C=0.24	0 SF	0 Total SF	0.00 AC
5-10% slope	C=0.36	0 SF	0 Total SF	0.00 AC
10+% slope	C=0.48	0 SF	0 Total SF	0.00 AC
			0 TOTAL	0.00 AC

Check 39,200 GT

Wt'd C = 0.70
 Wt'd N = 0.14
 High Pt El 397.00 ft
 Inlet El 394.30 ft
 Length 380.00 ft
 Slope 0.0071
 tc 16.54 min

0 1	Is 5<tc<10?	i 25=	0.00 in/hr
0 1	Is 10<tc<15?	i 25=	0.00 in/hr
1 1	Is 15<tc<30?	i 25=	4.89 in/hr
1 0	Is 30<tc<60?	i 25=	0.00 in/hr

Q25= 3.08 cfs

Date: 8/24/98

STORM SEWER DESIGN SHEET - RATIONAL METHOD

PROJECT CAMDEN FACMS - SOUTH BASIN DATE 8-19-98 SHEET OF

ENGINEER SITECON, INC. DESIGN STORM 25 YR. MANNINGS n 0.011

Line Number	Upstream Manhole	Downstream Manhole	Length (Ft)	C _f	A _f (Acres)	C _f A _f	Σ(C _f A _f)	T _h (min)	I [inches/hr]	Q (CFS)	D (inches)	Pipe Slope (%)	Pipe Capacity (CFS)	Velocity (Ft/Sec)	Travel Time (min)	Rim Elevation Upstream	Rim Elevation Downstream	Invert Elevation Upstream	Invert Elevation Downstream	Fig. Cover	Fig. Cover	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
4-1				0.51	0.13	0.11	0.11	—	6.41	0.6	12	0.10	0.10									
4-2				0.55	0.25	0.17	0.17	—	5.66	0.84	12	0.10	0.10									
4-3				0.55	0.75	0.40	0.65	13.5	5.25	5.57	15	0.22										
4-4				0.42	0.4	0.17	0.35	15.0	5.03	4.25	15	0.31										
4-5				0.75	0.41	0.32	0.17	9.2	5.0	5.85	16	0.22										
4-6				0.75	0.41	0.32	0.45	9.2	4.85	7.33	21	0.16										
4-7				0.75	0.4	0.32	—	5.6	4.25	5.01	12	0.35						91.22	91.17			
4-8				0.75	0.4	0.32	0.65	6.2	4.2	5.97	12	0.55						91.57	91.50			
4-9				0.42	0.55	0.30	0.55	15.3	5.01	4.91	15	0.41						91.20	91.13			
4-10				0.75	0.16	0.10	0.57	3.6	5.0	12.85	21	0.17						91.75	91.60			
4-11				0.70	0.90	0.63	5.20	16.5	4.35	5.15	24	0.34						91.50	90.90			

