

FINAL
DRAINAGE REPORT

FOR

Stonegate Estates

Browning Road
Vanderburgh County, Indiana

for

Elpers Bros. Construction

Report by:
SITECON, Inc.
10335 Hedden Road, Suite 2
Evansville, IN 47725
(812) 868-0877
November 17, 2006



Keith J. Poff

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11/21/06 3:30 pm pjp

STONEGATE ESTATES
SUBDIVISION

Final Drainage Plan

Project Name and Location

Stonegate Estates
Browning Road
Scott Township, Section 9, T 5 S, R 10 W
Vanderburgh County, Indiana

Developer Name and Address

Elpers Bros. Construction Inc.
11911 Winery Road
Wadesville, IN 47638

Drainage Plan Preparer

SITECON, Inc.
10335 Hedden Road, Suite 2
Evansville, IN 47725
(812) 868-0877

Site Location:

The subject property is a 48.69-acre site located on Browning Road. The property is part of the N ½ of Section 9 of Scott Township in Vanderburgh County. The project plans to provide access on its east side where there is approximately 698 ft of frontage along Browning Rd. The subject site is currently wooded.

Existing Site Conditions:

The subject site is steep wooded terrain. The property drains to the east. Two large valleys intersect at the east most corner of the property and then flow together underneath Browning Rd. The project area lies at the northern end of a 129-acre watershed. This watershed is a sub-basin of the overall 420-acre watershed that contributes flow to the crossing underneath Browning Rd. This 129-acre watershed is comprised of two major sub-basins. The western sub-basin (39-acres) lays predominately on the subject property and flows almost due east along a central valley. The second sub-basin (90-acres) lies mostly to the south and flows from its high point near the intersection of Browning Rd. & Boonville New Harmony Rd. to the north where it intersects the flows of the previously mentioned watersheds.

A portion of the property is shown to be within the 100-year flood zone (Zone A) as said property plots by scale on the Flood Insurance Rate Map (FIRM) Community Panel Number 180256 0015 C, dated August 5, 1991.

According to the Soil Survey of Vanderburgh County, Indiana, issued June 1976, the site consists of Hosmer silt loam, Zanesville silt loam, Wellston silt loams, Stendal silt loam, & Gullied Land (HoB2, ZaC3, WeE2, WeD2, St, & Gu).

Analysis Procedure:

The Rational Method, valid for watershed areas up to 200 acres, was used for computations of storm water runoff. The post development controlled peak release rate of storm water runoff during a twenty-five (25) year return period storm from the developed project was designed to not exceed the peak release rate during a ten (10) year return period storm in its pre-developed condition. The SCS Graphical method was used to compute the 50 & 100 year peak discharge, contributing to the culvert under the access road.

Proposed Design:

The site's stormwater will be detained in an inline retention basin before being released into the existing flow path of the valley.

The majority of the site drains into an existing flow path, in the aforementioned 39-acre sub-basin, where it will eventually reach the storm retention basin and be detained. The interior access road winds along this existing flow path, and will act as a means for

conveyance for storm water via curb and gutter. This storm water will be captured in a series of curb inlets and be released into the existing flow path, and or the basin. The flow released into the natural flow path intersects the flow from the southern 89-acre sub-basin. This stormwater will be allowed to flow in its natural condition until it flows under the access road in a reinforced concrete culvert designed to convey a 100 yr flow. This culvert empties directly into the storm retention basin. The storm retention basin will empty out of twin 24" RCP pipes and be splashed onto 100 sf of boulders to dissipate energy upon entering the natural flow path before crossing underneath Browning Rd.

The stormwater runoff from the proposed development will be conveyed to the retention basin and then released into the existing ditch by a combination of surface slopes, sloping pavement, swales and storm drains. The site drainage system will be Reinforced Concrete Pipe (RCP).

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Existing Watershed Basins Exhibit
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Final Drainage Plan

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

Siteon, Inc. Project: 465-06-12

| | | | | | |
|----------------------|---------------|------------------|------------|------------------------|-----------------|
| Job Name/Basin #: | ENTIRE BASIN | | | 5,601,732 Total SF | 128.60 AC |
| Structures | 27 Total | 2,250 SF | 100 % | 60,750 Total SF | 1.39 AC |
| Drives | 12 Total | 1,000 SF | | 12,000 Total SF | 0.28 AC |
| Pavement | 10 Width (ft) | 4,516 L (ft) | | 45,160 Total SF | 1.04 AC |
| Patios | 0 Total | 120 SF | | 0 Total SF | 0.00 AC |
| Sidewalks | 0 Width (ft) | | | 0 Total SF | 0.00 AC |
| Impervious surfaces | C=0.92 | | | | |
| Terr 1 (0-2%) lawn | C=0.12 | 45,981 SF | | 45,981 Total SF | 1.06 AC |
| Terr 2 (2-5%) lawn | C=0.24 | 275,312 SF | | 275,312 Total SF | 6.32 AC |
| Terr 3 (5-10%) lawn | C=0.36 | 462,515 SF | | 462,515 Total SF | 10.62 AC |
| Terr 4 (0-2%) woods | C=0.12 | 289,886 SF | | 289,886 Total SF | 6.65 AC |
| Terr 5 (2-5%) woods | C=0.24 | 0 SF | | 0 Total SF | 0.00 AC |
| Terr 6 (5-10%) woods | C=0.36 | 4,410,128 SF | | 4,410,128 Total SF | 101.24 AC |
| Terr 7 (0-2%) cult | C=0.20 | 0 SF | | 0 Total SF | 0.00 AC |
| Terr 8 (2-5%) cult | C=0.35 | 0 SF | | 0 Total SF | 0.00 AC |
| Terr 9 (5-10%) cult | C=0.50 | 0 SF | | 0 Total SF | 0.00 AC |
| Terr 10-Lakes | C=1.00 | 0 SF | | 0 Total SF | 0.00 AC |
| | Wt'd C = | 0.39 | | 5,601,732 Check | |
| | Wt'd N = | 0.56 | | | |
| | High Pt El= | 526.00 ft | | | |
| | Inlet El= | 422.50 ft | | | |
| | Length= | 3609.00 ft | | | |
| | Slope= | 0.0287 | | | |
| | tc= | 66.27 min | | | |
| 0 1 | Is 5<tc<10? | i10= | 0.00 in/hr | | |
| 0 1 | Is 10<tc<15? | i10= | 0.00 in/hr | | |
| 0 1 | Is 15<tc<30? | i10= | 0.00 in/hr | | |
| 0 1 | Is 30<tc<60? | i10= | 0.00 in/hr | | |
| 1 0 | Is 60<tc<120? | i10= | 1.82 in/hr | | |
| | Q10= | 91.88 cfs | | Date: | 11/15/06 |

SUB-BASIN DRAINAGE CALCULATIONS - DEVELOPED BASIN COEFFICIENT

Siteon, Inc. Project: 465-06-12

| | | | | |
|---|-------------------|--------------|------------------------|-----------------|
| Job Name/Basin #: | Stonegate Estates | | 5,601,732 Total SF | 128.60 AC |
| Exist. Impervious surfaces (2-5%) C=0.94 | | | | |
| Structures | 27 Total | 2,250 SF | 60,750 Total SF | 1.39 AC |
| Pavement | 10 Width (ft.) | 4,516 Lft | 45,160 Total SF | 1.04 AC |
| Stone | 12 Total | 1,000 SF | 12,000 Total SF | 0.28 AC |
| | | | 117,910 TOTAL | 2.71 AC |
| Proposed Impervious surfaces (2-5%) C=0.94 | | | | |
| Structures | 16 Total | 5,500 SF | 88,000 Total SF | 2.02 AC |
| Drives | 16 Total | 2,000 SF | 32,000 Total SF | 0.73 AC |
| Pavement | 29 Width (ft) | 2,853 L (ft) | 82,726 Total SF | 1.90 AC |
| Patios | 16 Total | 1,000 SF | 16,000 Total SF | 0.37 AC |
| Sidewalks | 0 Width (ft) | | 0 Total SF | 0.00 AC |
| | | | 218,726 TOTAL | 5.02 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 | 45,981 SF | 45,981 Total SF | 1.06 AC |
| 2-5% slope | C=0.25 | 275,312 SF | 275,312 Total SF | 6.32 AC |
| 5-10% slope | C=0.40 | 832,775 SF | 832,775 Total SF | 19.12 AC |
| 10+% slope | C=0.55 | 0 SF | 0 Total SF | 0.00 AC |
| | | | 1,154,068 TOTAL | 26.49 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 | 4,111,029 SF | 4,111,029 Total SF | 94.38 AC |
| 10+% slope | C=0.48 | 0 SF | 0 Total SF | 0.00 AC |
| | | | 4,111,029 TOTAL | 94.38 AC |

Check 5,601,733 GT

W'd C = 0.39

Date: 11/15/06

**Vanderburgh County Drainage Board
Form 800**

Computation Sheet for Detention Storage Using the Rational Method

Project: Stonegate Estates Basin **Date:** 11/15/06

Detention Facility Design Return Period 25 years

Release Rate Return Period 10 years

Watershed Area 128.60 acres
 Undeveloped Time of Concentration 66.27 minutes
 Undeveloped Rainfall Intensity (iu) 1.82 inches/hour
 Weighted Undeveloped Runoff Coefficient (Cu) 0.39
 Undeveloped Runoff Rate (O=Cu x iu x Au) 91.28 cfs
 Developed Runoff Coefficient (Cd) 0.39

| Storm Duration td min | Rainfall Intensity id inches/hr | Inflow Rate I(td) Cd x id x Ad cfs | Outflow Rate O Cu x iu x Au cfs | Storage Rate (I x td) - O cfs | Required Storage [(I(td)-O)x[td/12]] acre-ft |
|-----------------------------|---------------------------------------|---|--|-------------------------------------|--|
| 5 | 7.208 | 361.51 | 91.28 | 270.23 | 1.8766 |
| 10 | 5.925 | 297.16 | 91.28 | 205.88 | 2.8595 |
| 15 | 5.033 | 252.43 | 91.28 | 161.14 | 3.3572 |
| 20 | 4.571 | 229.25 | 91.28 | 137.97 | 3.8326 |
| 25 | 4.108 | 206.03 | 91.28 | 114.75 | 3.9845 |
| 30 | 3.646 | 182.86 | 91.28 | 91.58 | 3.8159 |
| 40 | 3.123 | 156.63 | 91.28 | 65.35 | 3.6306 |
| 50 | 2.601 | 130.45 | 91.28 | 39.17 | 2.7202 |
| 60 | 2.078 | 104.22 | 91.28 | 12.94 | 1.0783 |
| 90 | 1.578 | 79.14 | 91.28 | -12.14 | -1.5172 |

Required Storage = 3.9845 x 43,560 sf/ac = 173,565 cubic feet

**Vanderburgh County Drainage Board
Form 800**

Computation Sheet for Restricted Detention Storage Using the Rational Method

Project: Stonegate Estates Basin **Date:** 11/16/06

Detention Facility Design Return Period 25 years

Release Rate Return Period 10 years

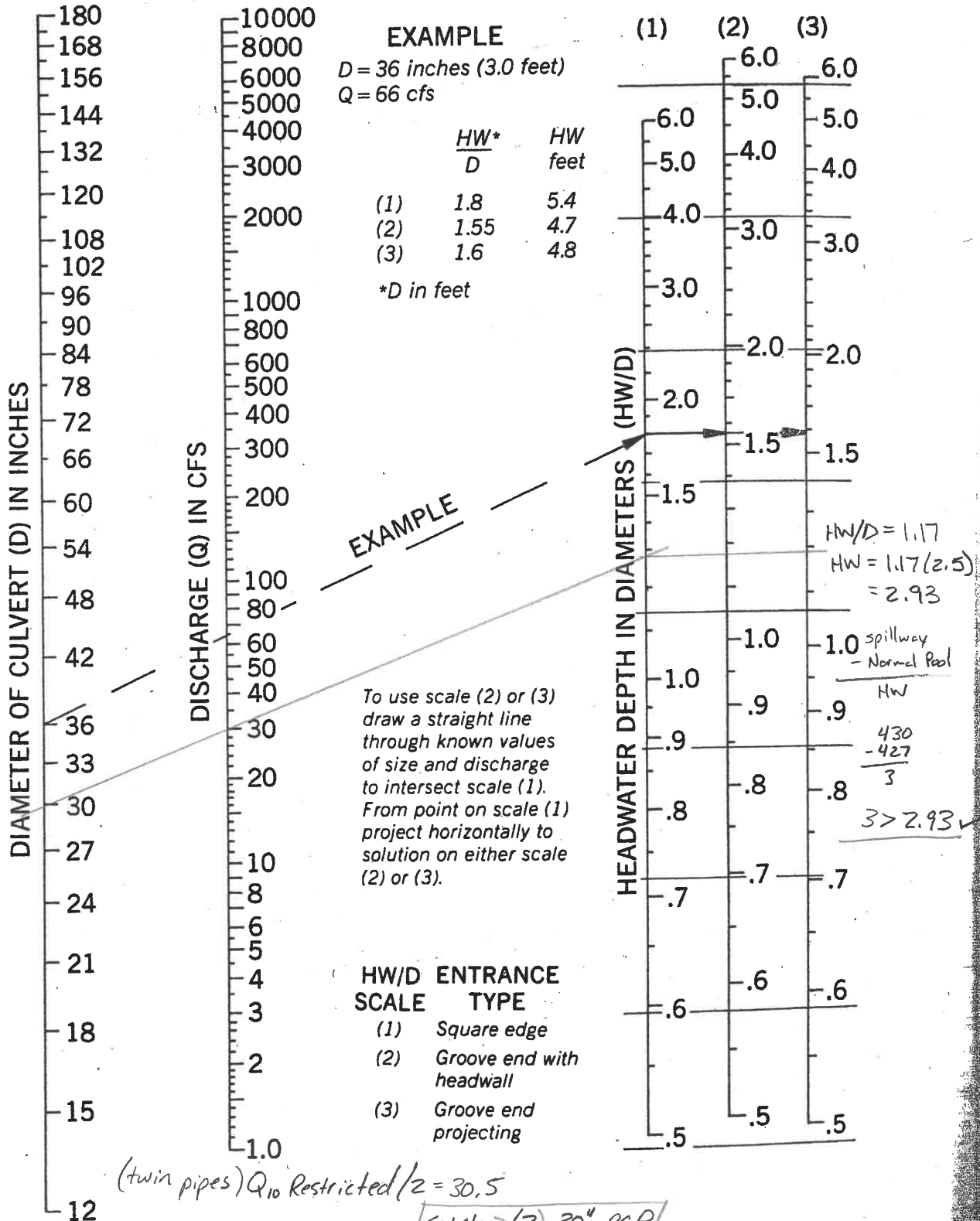
Watershed Area 128.60 acres
 Undeveloped Time of Concentration 66.27 minutes
 Undeveloped Rainfall Intensity (iu) 1.82 inches/hour
 Weighted Undeveloped Runoff Coefficient (Cu) 0.39
 Undeveloped Runoff Rate (O=Cu x iu x Au) 91.28 cfs
 Developed Runoff Coefficient (Cd) 0.39

| Storm Duration td min | Rainfall Intensity id inches/hr | Inflow Rate I(td) cfs | Outflow Rate O cfs | Storage Rate (I x td) - O cfs | Required Storage [I(td)-O]x[td/12] acre-ft |
|-----------------------------|---------------------------------------|-----------------------------|--------------------------|-------------------------------------|--|
| | | Cd x id x Ad | Cu x iu x Au | | |
| 5 | 7.208 | 361.51 | 61.00 | 300.51 | 2.0869 |
| 10 | 5.925 | 297.16 | 61.00 | 236.16 | 3.2800 |
| 15 | 5.033 | 252.43 | 61.00 | 191.43 | 3.9880 |
| 20 | 4.571 | 229.25 | 61.00 | 168.25 | 4.6737 |
| 25 | 4.108 | 206.03 | 61.00 | 145.03 | 5.0359 |
| 30 | 3.646 | 182.86 | 61.00 | 121.86 | 5.0776 |
| 40 | 3.123 | 156.63 | 61.00 | 95.63 | 5.3128 |
| 50 | 2.601 | 130.45 | 61.00 | 69.45 | 4.8230 |
| 60 | 2.078 | 104.22 | 61.00 | 43.22 | 3.6017 |
| 90 | 1.578 | 79.14 | 61.00 | 18.14 | 2.2679 |

Required Storage = 5.31 x 43,560 sf/ac = 231,304 cubic feet

Figure 33

HEADWATER DEPTH FOR CIRCULAR CONCRETE PIPE CULVERTS WITH INLET CONTROL



**TABLE 1
DETENTION VOLUME REQUIREMENTS**

Sitecon, Inc Project: 465-06-12

Date: 10-16-06

| Basin | 10 year Undev. Release Rate | Required Storage 25 year | Restricted | Available Storage |
|-------|--------------------------------|-----------------------------|------------|-------------------|
| | | 91.88 cfs | 173,565 cf | 59,583 cf |

Retention Volume >>

430
 - 427.00

 3.00 feet (D)

Storage Pool Elevation (spillway elev.)
Normal Pool Elevation

86,145
 + 69,287

 155,432 sq. ft.

Storage Pool Area (SP)
Normal Pool Area (NP)

Volume=(1/2x(SP+NP))xD= 233,148 cu. ft. available

DEVELOPED CALCULATIONS FLOW FOR A 25 YEAR STORM

Sitecon, Inc. Project: 465-06-12

| | | | | |
|---|---------------|------------------|-------------------------|----------------|
| Job Name/Basin #: | BASIN | Basin A-0 | 199,947 Total SF | 4.59 AC |
| Exist. Impervious surfaces (2-5%) C=0.94 | | | | |
| Structures | 0 Total | 3,000 SF | 0 Total SF | 0.00 AC |
| Drives | 0 Total | 720 SF | 0 Total SF | 0.00 AC |
| Pavement | 24 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 | 5,000 SF | 5,000 Total SF | 0.11 AC |
| Drives | 0 Total | 1,500 SF | 0 Total SF | 0.00 AC |
| Pavement | 250 L (ft) | 12 Width (ft) | 3,000 Total SF | 0.07 AC |
| Patios | 1 Total | 500 SF | 500 Total SF | 0.01 AC |
| Sidewalks | 0 Width (ft) | | 0 Total SF | 0.00 AC |
| | | | 8,500 TOTAL | 0.20 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 | 0 SF | 0 Total SF | 0.00 AC |
| 10+% slope | C=0.55 | 0 SF | 0 Total SF | 0.00 AC |
| | | | 0 TOTAL | 0.00 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 | 91,500 SF | 91,500 Total SF | 2.10 AC |
| 10+% slope | C=0.48 | 99,947 SF | 99,947 Total SF | 2.29 AC |
| | | | 191,447 TOTAL | 4.40 AC |

Check 199,947 GT

Wt'd C = 0.44
 Wt'd N = 0.58
 High Pt El 518.00 ft
 Inlet El 460.00 ft
 Length 661.00 ft
 Slope 0.0877
 tc 23.40 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= | 4.26 in/hr |
| 1 0 | Is 30<tc<60? | i 25= | 0.00 in/hr |

Q25= 8.69 cfs

Date: 11/16/2006

DEVELOPED CALCULATIONS FLOW FOR A 25 YEAR STORM

Sitecon, Inc. Project: 465-06-12

| | | | | |
|---|---------------|------------------|-------------------------|----------------|
| Job Name/Basin #: | BASIN | Basin A-1 | 195,021 Total SF | 4.48 AC |
| Exist. Impervious surfaces (2-5%) C=0.94 | | | | |
| Structures | 0 Total | 3,000 SF | 0 Total SF | 0.00 AC |
| Drives | 0 Total | 720 SF | 0 Total SF | 0.00 AC |
| Pavement | 24 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 | 2.5 Total | 5,000 SF | 12,500 Total SF | 0.29 AC |
| Drives | 2.5 Total | 1,500 SF | 3,750 Total SF | 0.09 AC |
| Pavement | 833 L (ft) | 12 Width (ft) | 9,996 Total SF | 0.23 AC |
| Patios | 2 Total | 450 SF | 900 Total SF | 0.02 AC |
| Sidewalks | 0 Width (ft) | | 0 Total SF | 0.00 AC |
| | | | 27,146 TOTAL | 0.62 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 | 48,621 SF | 48,621 Total SF | 1.12 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 |
| | | | 48,621 TOTAL | 1.12 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 | 14,604 SF | 14,604 Total SF | 0.34 AC |
| 10+% slope | C=0.48 | 104,650 SF | 104,650 Total SF | 2.40 AC |
| | | | 119,254 TOTAL | 2.74 AC |

Check 195,021 GT

Wtd C = 0.48
 Wtd N = 0.47
 High Pt El 511.00 ft
 Inlet El 468.28 ft
 Length 567.00 ft
 Slope 0.0753
 tc 23.25 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= | 4.27 in/hr |
| 1 0 | Is 30<tc<60? | i 25= | 0.00 in/hr |

Q25= 9.13 cfs

Date: 11/16/2006

DEVELOPED CALCULATIONS FLOW FOR A 25 YEAR STORM

Sitecon, Inc. Project: 465-06-12

| | | | | |
|---|---------------|------------------|------------------------|----------------|
| Job Name/Basin #: | BASIN | Basin A-2 | 33,090 Total SF | 0.76 AC |
| Exist. Impervious surfaces (2-5%) C=0.94 | | | | |
| Structures | 0 Total | 3,000 SF | 0 Total SF | 0.00 AC |
| Drives | 0 Total | 720 SF | 0 Total SF | 0.00 AC |
| Pavement | 24 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 | 0.5 Total | 5,000 SF | 2,500 Total SF | 0.06 AC |
| Drives | 1 Total | 1,500 SF | 1,500 Total SF | 0.03 AC |
| Pavement | 381 L (ft) | 14.5 Width (ft) | 5,525 Total SF | 0.13 AC |
| Patios | 0 Total | 450 SF | 0 Total SF | 0.00 AC |
| Sidewalks | 0 Width (ft) | | 0 Total SF | 0.00 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 | 0 SF | 0 Total SF | 0.00 AC |
| 2-5% slope | C=0.25 | 4,427 SF | 4,427 Total SF | 0.10 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 |
| | | | 4,427 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 | 19,139 SF | 19,139 Total SF | 0.44 AC |
| 10+% slope | C=0.48 | 0 SF | 0 Total SF | 0.00 AC |
| | | | 19,139 TOTAL | 0.44 AC |

Check 33,090 GT

Wt'd C = 0.51
 Wt'd N = 0.41
 High Pt El 506.00 ft
 Inlet El 468.42 ft
 Length 537.00 ft
 Slope 0.0700
 tc 19.03 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= | 4.66 in/hr |
| 1 0 | Is 30<tc<60? | i 25= | 0.00 in/hr |

Q25= 1.81 cfs

Date: 11/16/2006

DEVELOPED CALCULATIONS FLOW FOR A 25 YEAR STORM

Sitecon, Inc. Project: 465-06-12

| | | | | |
|---|---------------|------------------|------------------------|----------------|
| Job Name/Basin #: | BASIN | Basin A-3 | 94,356 Total SF | 2.17 AC |
| Exist. Impervious surfaces (2-5%) C=0.94 | | | | |
| Structures | 0 Total | 3,000 SF | 0 Total SF | 0.00 AC |
| Drives | 0 Total | 720 SF | 0 Total SF | 0.00 AC |
| Pavement | 24 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 | 5,000 SF | 5,000 Total SF | 0.11 AC |
| Drives | 2 Total | 1,500 SF | 3,000 Total SF | 0.07 AC |
| Pavement | 442 L (ft) | 14.5 Width (ft) | 6,409 Total SF | 0.15 AC |
| Patios | 0.5 Total | 450 SF | 225 Total SF | 0.01 AC |
| Sidewalks | 0 Width (ft) | | 0 Total SF | 0.00 AC |
| | | | 14,634 TOTAL | 0.34 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 | 12,155 SF | 12,155 Total SF | 0.28 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 |
| | | | 12,155 TOTAL | 0.28 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 | 67,648 SF | 67,648 Total SF | 1.55 AC |
| 10+% slope | C=0.48 | 0 SF | 0 Total SF | 0.00 AC |
| | | | 67,648 TOTAL | 1.55 AC |

Check 94,437 GT

W'd C = 0.44
 W'd N = 0.48
 High Pt El 511.00 ft
 Inlet El 467.80 ft
 Length 592.00 ft
 Slope 0.0730
 tc 23.35 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= | 4.26 in/hr |
| 1 0 | Is 30<tc<60? | i 25= | 0.00 in/hr |

Q25= 4.02 cfs

Date: 11/16/2006

DEVELOPED CALCULATIONS FLOW FOR A 25 YEAR STORM

Sitecon, Inc. Project: 465-06-12

| | | | | |
|---|---------------|------------------|------------------------|----------------|
| Job Name/Basin #: | BASIN | Basin A-4 | 45,184 Total SF | 1.04 AC |
| Exist. Impervious surfaces (2-5%) C=0.94 | | | | |
| Structures | 0 Total | 3,000 SF | 0 Total SF | 0.00 AC |
| Drives | 0 Total | 720 SF | 0 Total SF | 0.00 AC |
| Pavement | 24 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 | 0.5 Total | 5,000 SF | 2,500 Total SF | 0.06 AC |
| Drives | 0.5 Total | 1,500 SF | 750 Total SF | 0.02 AC |
| Pavement | 0 L (ft) | 14.5 Width (ft) | 0 Total SF | 0.00 AC |
| Patios | 0.25 Total | 450 SF | 113 Total SF | 0.00 AC |
| Sidewalks | 0 Width (ft) | | 0 Total SF | 0.00 AC |
| | | | 3,363 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 | 0 SF | 0 Total SF | 0.00 AC |
| 2-5% slope | C=0.25 | 17,271 SF | 17,271 Total SF | 0.40 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 |
| | | | 17,271 TOTAL | 0.40 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 | 24,551 SF | 24,551 Total SF | 0.56 AC |
| 10+% slope | C=0.48 | 0 SF | 0 Total SF | 0.00 AC |
| | | | 24,551 TOTAL | 0.56 AC |

Check 45,184 GT

Wt'd C = 0.36
 Wt'd N = 0.48
 High Pt El. 506.00 ft
 Inlet El 452.40 ft
 Length 646.00 ft
 Slope 0.0830
 tc 24.09 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= 1.57 cfs

Date: 11/16/2006

15

DEVELOPED CALCULATIONS FLOW FOR A 25 YEAR STORM

Sitecon, Inc. Project: 465-06-12

| | | | | |
|---|---------------|------------------|-------------------------|----------------|
| Job Name/Basin #: | BASIN: | Basin A-5 | 162,377 Total SF | 3.73 AC |
| Exist. Impervious surfaces (2-5%) C=0.94 | | | | |
| Structures | 0 Total | 3,000 SF | 0 Total SF | 0.00 AC |
| Drives | 0 Total | 720 SF | 0 Total SF | 0.00 AC |
| Pavement | 24 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 | 5,000 SF | 5,000 Total SF | 0.11 AC |
| Drives | 1.5 Total | 1,500 SF | 2,250 Total SF | 0.05 AC |
| Pavement | 401 L (ft) | 14.5 Width (ft) | 5,815 Total SF | 0.13 AC |
| Patios | 1 Total | 450 SF | 450 Total SF | 0.01 AC |
| Sidewalks | 0 Width (ft) | | 0 Total SF | 0.00 AC |
| | | | 13,515 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 | 0 SF | 0 Total SF | 0.00 AC |
| 2-5% slope | C=0.25 | 21,967 SF | 21,967 Total SF | 0.50 AC |
| 5-10% slope | C=0.40 | 20,000 SF | 20,000 Total SF | 0.46 AC |
| 10+% slope | C=0.55 | 0 SF | 0 Total SF | 0.00 AC |
| | | | 41,967 TOTAL | 0.96 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 | 106,896 SF | 106,896 Total SF | 2.45 AC |
| 10+% slope | C=0.48 | 0 SF | 0 Total SF | 0.00 AC |
| | | | 106,896 TOTAL | 2.45 AC |

Check 162,377 GT

W'd C = 0.40
 W'd N = 0.50
 High Pt El 503.50 ft
 Inlet El 448.60 ft
 Length 593.00 ft
 Slope 0.0926
 tc 20.57 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= | 4.52 in/hr |
| 1 0 | Is 30<tc<60? | i 25= | 0.00 in/hr |

Q25= 6.71 cfs

Date: 11/21/2006

DEVELOPED CALCULATIONS FLOW FOR A 25 YEAR STORM

Sitecon, Inc. Project: 465-06-12

| | | | | |
|---|---------------|------------------|------------------------|----------------|
| Job Name/Basin #: | BASIN | Basin A-6 | 42,655 Total SF | 0.98 AC |
| Exist. Impervious surfaces (2-5%) C=0.94 | | | | |
| Structures | 0 Total | 3,000 SF | 0 Total SF | 0.00 AC |
| Drives | 0 Total | 720 SF | 0 Total SF | 0.00 AC |
| Pavement | 24 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 | 0.33 Total | 5,000 SF | 1,650 Total SF | 0.04 AC |
| Drives | 0.33 Total | 1,500 SF | 495 Total SF | 0.01 AC |
| Pavement | 403 L (ft) | 14.5 Width (ft) | 5,844 Total SF | 0.13 AC |
| Patios | 0.75 Total | 450 SF | 338 Total SF | 0.01 AC |
| Sidewalks | 0 Width (ft) | | 0 Total SF | 0.00 AC |
| | | | 8,326 TOTAL | 0.19 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 | 6,152 SF | 6,152 Total SF | 0.14 AC |
| 5-10% slope | C=0.40 | 13,546 SF | 13,546 Total SF | 0.31 AC |
| 10+% slope | C=0.55 | 0 SF | 0 Total SF | 0.00 AC |
| | | | 19,698 TOTAL | 0.45 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 | 14,631 SF | 14,631 Total SF | 0.34 AC |
| 10+% slope | C=0.48 | 0 SF | 0 Total SF | 0.00 AC |
| | | | 14,631 TOTAL | 0.34 AC |

Check 42,655 GT

Wt'd C = 0.47
 Wt'd N = 0.39
 High Pt El. 506.00 ft
 Inlet El 448.60 ft
 Length 537.00 ft
 Slope 0.1069
 tc 17.00 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= | 4.85 in/hr |
| 1 0 | Is 30<tc<60? | i 25= | 0.00 in/hr |

Q25= 2.23 cfs

Date: 11/21/2006

DEVELOPED CALCULATIONS FLOW FOR A 25 YEAR STORM

Sitecon, Inc. Project: 465-06-12

| | | | | |
|---|---------------|-----------------|----------------------|----------------|
| Job Name/Basin #: | BASIN | Basin A-7 | 335,964 Total SF | 7.71 AC |
| Exist. Impervious surfaces (2-5%) C=0.94 | | | | |
| Structures | 0 Total | 3,000 SF | 0 Total SF | 0.00 AC |
| Drives | 0 Total | 720 SF | 0 Total SF | 0.00 AC |
| Pavement | 24 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 | 1.25 Total | 5,000 SF | 6,250 Total SF | 0.14 AC |
| Drives | 0 Total | 1,500 SF | 0 Total SF | 0.00 AC |
| Pavement | 0 L (ft) | 14.5 Width (ft) | 0 Total SF | 0.00 AC |
| Patios | 2 Total | 450 SF | 900 Total SF | 0.02 AC |
| Sidewalks | 0 Width (ft) | | 0 Total SF | 0.00 AC |
| | | | 7,150 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 | 29,190 SF | 29,190 Total SF | 0.67 AC |
| 2-5% slope | C=0.25 | 30,189 SF | 30,189 Total SF | 0.69 AC |
| 5-10% slope | C=0.40 | 34,800 SF | 34,800 Total SF | 0.80 AC |
| 10+% slope | C=0.55 | 25,200 SF | 25,200 Total SF | 0.58 AC |
| | | | 119,379 TOTAL | 2.74 AC |
| For woodland areas: | | | | |
| 0-2% slope | C=0.12 | 8,504 SF | 8,504 Total SF | 0.20 AC |
| 2-5% slope | C=0.24 | 25,513 SF | 25,513 Total SF | 0.59 AC |
| 5-10% slope | C=0.36 | 31,575 SF | 31,575 Total SF | 0.72 AC |
| 10+% slope | C=0.48 | 143,842 SF | 143,842 Total SF | 3.30 AC |
| | | | 209,434 TOTAL | 4.81 AC |

Check 335,964 GT

W'd C = 0.40
 W'd N = 0.52
 High Pt El 508.00 ft
 Inlet El 445.75 ft
 Length 977.00 ft
 Slope 0.0637
 tc 28.78 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= | 3.76 in/hr |
| 1 0 | Is 30<tc<60? | i 25= | 0.00 in/hr |

Q25= 11.56 cfs

Date: 11/21/2006

DEVELOPED CALCULATIONS FLOW FOR A 25 YEAR STORM

Sitecon, Inc. Project: 465-06-12

| | | | | |
|---|---------------|------------------|-------------------------|----------------|
| Job Name/Basin #: | BASIN | Basin B-1 | 191,667 Total SF | 4.40 AC |
| Exist. Impervious surfaces (2-5%) C=0.94 | | | | |
| Structures | 0 Total | 3,000 SF | 0 Total SF | 0.00 AC |
| Drives | 0 Total | 720 SF | 0 Total SF | 0.00 AC |
| Pavement | 24 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 | 5,000 SF | 5,000 Total SF | 0.11 AC |
| Drives | 1 Total | 1,500 SF | 1,500 Total SF | 0.03 AC |
| Pavement | 410 L (ft) | 14.5 Width (ft) | 5,945 Total SF | 0.14 AC |
| Patios | 1 Total | 450 SF | 450 Total SF | 0.01 AC |
| Sidewalks | 0 Width (ft) | | 0 Total SF | 0.00 AC |
| | | | 12,895 TOTAL | 0.30 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 | 12,375 SF | 12,375 Total SF | 0.28 AC |
| 5-10% slope | C=0.40 | 13,935 SF | 13,935 Total SF | 0.32 AC |
| 10+% slope | C=0.55 | 0 SF | 0 Total SF | 0.00 AC |
| | | | 26,310 TOTAL | 0.60 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 | 152,462 SF | 152,462 Total SF | 3.50 AC |
| | | | 152,462 TOTAL | 3.50 AC |

Check 191,667 GT

Wt'd C = 0.49
 Wt'd N = 0.53
 High Pt El 496.00 ft
 Inlet El 441.23 ft
 Length 793.00 ft
 Slope 0.0691
 tc 26.01 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= | 4.01 in/hr |
| 1 0 | Is 30<tc<60? | i 25= | 0.00 in/hr |

Q25= 8.66 cfs

Date: 11/21/2006

DEVELOPED CALCULATIONS FLOW FOR A 25 YEAR STORM

Sitecon, Inc. Project: 465-06-12

| | | | | |
|---|---------------|------------------|------------------------|----------------|
| Job Name/Basin #: | BASIN | Basin B-2 | 39,387 Total SF | 0.90 AC |
| Exist. Impervious surfaces (2-5%) C=0.94 | | | | |
| Structures | 0 Total | 3,000 SF | 0 Total SF | 0.00 AC |
| Drives | 0 Total | 720 SF | 0 Total SF | 0.00 AC |
| Pavement | 24 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 | 0.2 Total | 5,000 SF | 1,000 Total SF | 0.02 AC |
| Drives | 1 Total | 1,500 SF | 1,500 Total SF | 0.03 AC |
| Pavement | 410 L (ft) | 14.5 Width (ft) | 5,945 Total SF | 0.14 AC |
| Patios | 0 Total | 450 SF | 0 Total SF | 0.00 AC |
| Sidewalks | 0 Width (ft) | | 0 Total SF | 0.00 AC |
| | | | 8,445 TOTAL | 0.19 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 | 5,000 SF | 5,000 Total SF | 0.11 AC |
| 10+% slope | C=0.55 | 0 SF | 0 Total SF | 0.00 AC |
| | | | 5,000 TOTAL | 0.11 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 | 25,942 SF | 25,942 Total SF | 0.60 AC |
| 10+% slope | C=0.48 | 0 SF | 0 Total SF | 0.00 AC |
| | | | 25,942 TOTAL | 0.60 AC |

Check 39,387 GT

Wt'd C = 0.49
 Wt'd N = 0.45
 High Pt El 492.50 ft
 Inlet El 441.23 ft
 Length 593.00 ft
 Slope 0.0865
 tc 19.90 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= | 4.58 in/hr |
| 1 0 | Is 30<tc<60? | i 25= | 0.00 in/hr |

Q25= 2.03 cfs

Date: 11/16/2006

DEVELOPED CALCULATIONS FLOW FOR A 25 YEAR STORM

Sitecon, Inc. Project: 465-06-12

| | | | | |
|---|---------------|------------------|------------------------|----------------|
| Job Name/Basin #: | BASIN | Basin C-1 | 85,113 Total SF | 1.95 AC |
| Exist. Impervious surfaces (2-5%) C=0.94 | | | | |
| Structures | 0 Total | 3,000 SF | 0 Total SF | 0.00 AC |
| Drives | 0 Total | 720 SF | 0 Total SF | 0.00 AC |
| Pavement | 24 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 | 5,000 SF | 5,000 Total SF | 0.11 AC |
| Drives | 1 Total | 1,500 SF | 1,500 Total SF | 0.03 AC |
| Pavement | 417 L (ft) | 14.5 Width (ft) | 6,047 Total SF | 0.14 AC |
| Patios | 0.5 Total | 500 SF | 250 Total SF | 0.01 AC |
| Sidewalks | 0 Width (ft) | | 0 Total SF | 0.00 AC |
| | | | 12,797 TOTAL | 0.29 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 | 15,771 SF | 15,771 Total SF | 0.36 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 |
| | | | 15,771 TOTAL | 0.36 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 | 56,546 SF | 56,546 Total SF | 1.30 AC |
| 10+% slope | C=0.48 | 0 SF | 0 Total SF | 0.00 AC |
| | | | 56,546 TOTAL | 1.30 AC |

Check **85,113 GT**

Wt'd C = 0.43
 Wt'd N = 0.48
 High Pt El 477.50 ft
 Inlet El 435.26 ft
 Length 527.00 ft
 Slope 0.0802
 tc 19.67 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 |
| 1 1 | Is 15<tc<30? | i 25= | 4.60 in/hr |
| 1 0 | Is 30<tc<60? | i 25= | 0.00 in/hr |

Q25= 3.84 cfs

Date: 11/16/2006

DEVELOPED CALCULATIONS FLOW FOR A 25 YEAR STORM

Sitecon, Inc. Project: 465-06-12

| | | | | |
|---|---------------|-----------------|--------------------|----------------|
| Job Name/Basin #: | BASIN | Basin C-2 | 10,550 Total SF | 0.24 AC |
| Exist. Impervious surfaces (2-5%) C=0.94 | | | | |
| Structures | 0 Total | 3,000 SF | 0 Total SF | 0.00 AC |
| Drives | 0 Total | 720 SF | 0 Total SF | 0.00 AC |
| Pavement | 24 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 | 5,000 SF | 0 Total SF | 0.00 AC |
| Drives | 0 Total | 1,500 SF | 0 Total SF | 0.00 AC |
| Pavement | 417 L (ft) | 14.5 Width (ft) | 6,047 Total SF | 0.14 AC |
| Patios | 0 Total | 450 SF | 0 Total SF | 0.00 AC |
| Sidewalks | 0 Width (ft) | | 0 Total SF | 0.00 AC |
| | | | 6,047 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 |
| | | | 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 | 4,504 SF | 4,504 Total SF | 0.10 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 |
| | | | 4,504 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 10,550 GT

Wt'd C = 0.65
 Wt'd N = 0.18
 High Pt El. 441.50 ft
 Inlet El 435.26 ft
 Length 430.00 ft
 Slope 0.0145
 tc 17.03 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= | 4.85 in/hr |
| 1 0 | Is 30<tc<60? | i 25= | 0.00 in/hr |

Q25= 0.76 cfs

Date: 11/16/2006

DEVELOPED CALCULATIONS FLOW FOR A 25 YEAR STORM

Sitecon, Inc. Project: 465-06-12

| | | | | |
|---|----------------|------------------|-------------------------|----------------|
| Job Name/Basin #: | BASIN | Basin D-I | 134,690 Total SF | 3.09 AC |
| Exist. Impervious surfaces (2-5%) C=0.94 | | | | |
| Structures | 2.5 Total | 3,000 SF | 7,500 Total SF | 0.17 AC |
| Drives | 2 Total | 720 SF | 1,440 Total SF | 0.03 AC |
| Pavement | 12' Width (ft) | 1,004 L (ft) | 12,048 Total SF | 0.28 AC |
| | | | 20,988 TOTAL | 0.48 AC |
| Proposed Impervious surfaces (2-5%) C=0.94 | | | | |
| Structures | 1 Total | 5,000 SF | 5,000 Total SF | 0.11 AC |
| Drives | 1 Total | 1,500 SF | 1,500 Total SF | 0.03 AC |
| Pavement | 1,234 L (ft) | 14.5 Width (ft) | 17,893 Total SF | 0.41 AC |
| Patios | 1 Total | 450 SF | 450 Total SF | 0.01 AC |
| Sidewalks | 0 Width (ft) | | 0 Total SF | 0.00 AC |
| | | | 24,843 TOTAL | 0.57 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 | 13,198 SF | 13,198 Total SF | 0.30 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 |
| | | | 13,198 TOTAL | 0.30 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 | 75,662 SF | 75,662 Total SF | 1.74 AC |
| 10+% slope | C=0.48 | 0 SF | 0 Total SF | 0.00 AC |
| | | | 75,662 TOTAL | 1.74 AC |

Check 134,690 GT

W'r'd C = 0.55
 W'r'd N = 0.38
 High Pt El 488.00 ft
 Inlet El 431.42 ft
 Length 668.00 ft
 Slope 0.0847
 tc 19.61 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= | 4.61 in/hr |
| 1 0 | Is 30<tc<60? | i 25= | 0.00 in/hr |

Q25= 7.79 cfs

Date: 11/16/2006

DEVELOPED CALCULATIONS FLOW FOR A 25 YEAR STORM

Sitecon, Inc. Project: 465-06-12

Job Name/Basin #: **BASIN** Basin D-2 49,251 Total SF 1.13 AC

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

| | | | | |
|------------|--------------|--------------|----------------|----------------|
| Structures | 0 Total | 3,000 SF | 0 Total SF | 0.00 AC |
| Drives | 0 Total | 720 SF | 0 Total SF | 0.00 AC |
| Pavement | 0 Width (ft) | 1,004 L (ft) | 0 Total SF | 0.00 AC |
| | | | 0 TOTAL | 0.00 AC |

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

| | | | | |
|------------|--------------|-----------------|--------------------|----------------|
| Structures | 0:1 Total | 5,000 SF | 500 Total SF | 0.01 AC |
| Drives | 1 Total | 1,500 SF | 1,500 Total SF | 0.03 AC |
| Pavement | 495 L (ft) | 14.5 Width (ft) | 7,178 Total SF | 0.16 AC |
| Patios | 0 Total | 450 SF | 0 Total SF | 0.00 AC |
| Sidewalks | 0 Width (ft) | | 0 Total SF | 0.00 AC |
| | | | 9,178 TOTAL | 0.21 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 | 15,000 SF | 15,000 Total SF | 0.34 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 |
| | | | 15,000 TOTAL | 0.34 AC |

For woodland areas:

| | | | | |
|-------------|--------|-----------|---------------------|----------------|
| 0-2% slope | C=0.12 | 25,074 SF | 25,074 Total SF | 0.58 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 |
| | | | 25,074 TOTAL | 0.58 AC |

Check 49,251 GT

Wt'd C = 0.28
 Wt'd N = 0.43
 High Pt El 477.50 ft
 Inlet El 431.42 ft
 Length 891.00 ft
 Slope 0.0517
 tc 26.59 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= | 3.96 in/hr |
| 1 0 | Is 30<tc<60? | i 25= | 0.00 in/hr |

Q25= 1.26 cfs

Date: 11/16/2006

| Basin Number | Upstream Manhole | Downstream Manhole | Pipe Length (ft) | A (Acres) | C | A°C | Sum A°C | Inlet Time to (min) | L cum (min) | i (in/hr) | Q (cfs) | Pipe Diameter (in) | Pipe Slope (%) | Pipe Capacity (cfs) | Pipe Capacity Check | Velocity (ft/s) | Travel Time (min) | Rim Elevation (Upstream) | Rim Elevation (Downstream) | Invert Elevation (Upstream) | Invert Elevation (Downstream) | Pipe Cover (Upstream) | Pipe Cover (Downstream) | Pipe Type |
|--------------|------------------|--------------------|------------------|-----------|------|------|---------|---------------------|-------------|-----------|---------|--------------------|----------------|---------------------|---------------------|-----------------|-------------------|--------------------------|----------------------------|-----------------------------|-------------------------------|-----------------------|-------------------------|-----------|
| 1 | 2 | 3 | 4 | 6 | 5 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 23 | 24 |
| A-0 | 500 | 501 | 36.0 | 4.59 | 0.44 | 2.02 | 2.02 | 23.17 | 23.17 | 4.26 | 8.60 | 15 | 1.30 | 8.69 | O.K. | 7.08 | 0.08 | 469.00 | 469.00 | 459.53 | 459.53 | ES | 6.22 | RCP |
| | 501 | 502 | 44.3 | | | | | | | | 8.60 | 15 | 1.29 | 8.66 | O.K. | 7.06 | 0.10 | 469.00 | 468.28 | 459.53 | 458.96 | 8.22 | 8.07 | RCP |
| A-1 | 502 | 504 | 30.4 | 4.48 | 0.48 | 2.15 | 4.17 | 20.52 | 23.25 | 4.27 | 17.81 | 18 | 2.77 | 20.65 | O.K. | 11.69 | 0.04 | 469.00 | 467.80 | 459.53 | 457.92 | 8.02 | 8.38 | RCP |
| A-2 | 503 | 504 | 43.3 | 0.76 | 0.51 | 0.39 | 0.39 | 19.03 | 19.03 | 4.64 | 1.80 | 12 | 1.73 | 5.63 | O.K. | 7.04 | 0.10 | 468.42 | 467.80 | 454.50 | 453.75 | 2.92 | ES | RCP |
| A-3 | 504 | 525 | 276.8 | 2.17 | 0.44 | 0.95 | 5.51 | 21.42 | 23.35 | 4.26 | 23.48 | 21 | 3.04 | 32.65 | O.K. | 13.57 | 0.34 | 467.80 | 452.40 | 457.72 | 449.30 | 8.33 | 1.35 | RCP |
| A-4 | 525 | 505 | 122.8 | 1.04 | 0.36 | 0.37 | 5.89 | 21.56 | 24.09 | 4.19 | 24.67 | 21 | 3.12 | 33.07 | O.K. | 13.75 | 0.15 | 452.40 | 448.60 | 449.30 | 445.47 | 1.35 | 1.38 | RCP |
| A-5 | 505 | 506 | 29.0 | 3.73 | 0.40 | 1.49 | 1.49 | 20.57 | 20.57 | 4.52 | 6.74 | 15 | 0.90 | 6.82 | O.K. | 5.56 | 0.09 | 448.60 | 448.60 | 446.10 | 445.87 | 1.25 | ES | RCP |
| A-6 | 506 | 507 | 107.1 | 0.98 | 0.47 | 0.46 | 7.84 | 17.00 | 24.29 | 4.17 | 32.69 | 21 | 3.57 | 35.38 | O.K. | 14.71 | 0.12 | 448.60 | 445.25 | 445.47 | 441.65 | 1.38 | ES | RCP |
| A-7 | 507 | 508 | 174.0 | 7.71 | 0.40 | 3.08 | 10.92 | 28.78 | 28.78 | 3.76 | 41.07 | 30 | 0.72 | 41.18 | O.K. | 8.39 | 0.35 | 445.25 | HW | 441.05 | 439.80 | 1.70 | ES | RCP |
| B-1 | 509 | 510 | 29.0 | 4.40 | 0.49 | 2.16 | 2.16 | 26.01 | 26.01 | 4.01 | 8.65 | 18 | 0.60 | 8.77 | O.K. | 4.96 | 0.10 | 441.23 | 441.23 | 438.45 | 438.31 | 1.28 | 1.43 | RCP |
| B-2 | 510 | 511 | 14.0 | 0.90 | 0.49 | 0.44 | 2.60 | 19.90 | 19.90 | 4.58 | 11.89 | 18 | 0.92 | 11.90 | O.K. | 6.73 | 0.03 | 441.23 | ES | 438.31 | 438.18 | 1.42 | ES | RCP |
| C-1 | 512 | 513 | 29.0 | 1.95 | 0.43 | 0.84 | 0.84 | 19.67 | 19.67 | 4.60 | 3.86 | 12 | 0.85 | 3.87 | O.K. | 4.93 | 0.10 | 435.26 | 435.26 | 433.00 | 432.75 | 1.26 | 1.51 | RCP |
| C-2 | 513 | 514 | 130.8 | 0.24 | 0.65 | 0.16 | 0.99 | 17.04 | 17.04 | 4.85 | 4.82 | 15 | 0.57 | 5.76 | O.K. | 4.69 | 0.46 | 435.26 | ES | 432.75 | 432.00 | 1.26 | ES | RCP |
| D-1 | 517 | 517 | 29.0 | 3.09 | 0.55 | 1.70 | 1.70 | 19.61 | 19.61 | 4.61 | 7.83 | 15 | 1.10 | 8.00 | O.K. | 6.52 | 0.07 | 431.42 | 431.42 | 428.72 | 428.40 | 1.45 | 1.77 | RCP |
| D-2 | 518 | 518 | 73.5 | 1.13 | 0.28 | 0.32 | 2.02 | 26.59 | 26.59 | 3.95 | 7.98 | 15 | 1.90 | 10.51 | O.K. | 8.56 | 0.14 | 431.42 | ES | 428.40 | 427.00 | 1.77 | ES | RCP |

25

FLOW CALCULATIONS FOR A SCS TYPE II 50 & 100 YEAR STORM

Sitecon, Inc. Project: 465-06-12

Job Name/Basin # Stonegate Estates South Tributary

| Surface Cover | Treatment | Hydrologic Condition | Hydrologic Soil Group | Curve No. | Acres | CN*A |
|---------------|-------------|----------------------|-----------------------|-----------|-------------------|----------------|
| Residential | Imper. Only | Good | C | 98 | 2.62 | 256.76 |
| Lawn | | Good | C | 74 | 20.29 | 1501.46 |
| Woods | | Good | C | 70 | 93.76 | 6563.2 |
| Paved Roads | | Good | C | 98 | 1.29 | 126.42 |
| Paved Roads | | Good | C | 92 | 1.77 | 162.84 |
| Water | | | | 100 | 0.52 | 52 |
| | | | | | Total Area | Wt'd CN |
| | | | | | 120.25 | 72 |

Channel Flow Time

Wt'd CN = 72.00
 High Pt El 477.50 ft
 Inlet El 429.25 ft
 Length 2,349.00 ft
 Slope 0.0205
 tc 13.72 min

Overland Flow Time

n 0.03
 High Pt El 526.00 ft
 Inlet El 477.50 ft
 Length 665.00 ft
 Slope 0.0729
 to 6.17 min

| | |
|--------|------|
| S | 3.88 |
| P(50) | 1.73 |
| P(100) | 1.88 |

Tt 19.89
 qu(50) 300
 qu(100) 310

| | |
|--------------|------------------|
| Q50= | 97.4 cfs |
| Q100= | 109.7 cfs |

Date: 12/12/2003

DEVELOPED CALCULATIONS FLOW FOR A 25 YEAR STORM

Sitecon, Inc. Project: 465-06-12

| | | | | |
|--|--------------|-------------------------------|------------------------|----------------|
| Job Name/Basin #: | BASIN | Basin ENTRANCE CULVERT | 84,955 Total SF | 1.95 AC |
| Exist. Impervious surfaces (2-5%) C=0.94 | | | | |
| Structures | 0 Total | 3,000 SF | 0 Total SF | 0.00 AC |
| Drives | 4 Total | 600 SF | 2,400 Total SF | 0.06 AC |
| Pavement | 9 Width (ft) | 1,007 L (ft) | 9,063 Total SF | 0.21 AC |
| | | | 11,463 TOTAL | 0.26 AC |
| Proposed Impervious surfaces (2-5%) C=0.94 | | | | |
| Structures | 0 Total | 5,000 SF | 0 Total SF | 0.00 AC |
| Drives | 4 Total | 1,500 SF | 6,000 Total SF | 0.14 AC |
| Pavement | 120 L (ft) | 14.5 Width (ft) | 1,740 Total SF | 0.04 AC |
| Patios | 0 Total | 450 SF | 0 Total SF | 0.00 AC |
| Sidewalks | 0 Width (ft) | | 0 Total SF | 0.00 AC |
| | | | 7,740 TOTAL | 0.18 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 | 29,588 SF | 29,588 Total SF | 0.68 AC |
| 10+% slope | C=0.55 | 0 SF | 0 Total SF | 0.00 AC |
| | | | 29,588 TOTAL | 0.68 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 | 36,164 SF | 36,164 Total SF | 0.83 AC |
| 10+% slope | C=0.48 | 0 SF | 0 Total SF | 0.00 AC |
| | | | 36,164 TOTAL | 0.83 AC |

Check 84,955 GT

Wt'd C = 0.51
Wt'd N = 0.40
High Pt El 490.00 ft
Inlet El 433.50 ft
Length 1,012.00 ft
Slope 0.0558
tc 26.75 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= | 3.95 in/hr |
| 1 0 | Is 30<tc<60? | i 25= | 0.00 in/hr |

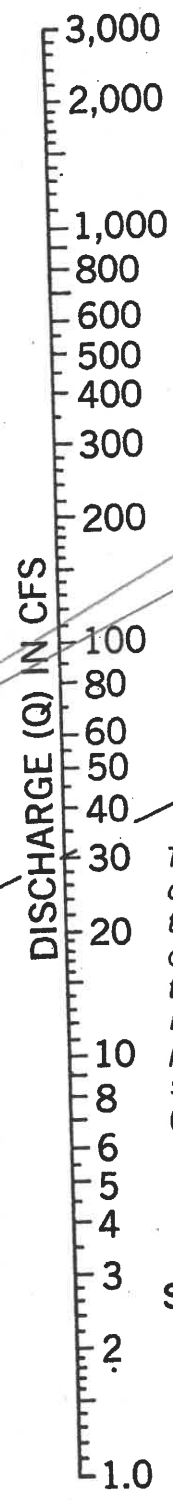
Q25= 3.89 cfs

Date: 11/16/2006

Figure 34

SOUTH TRIBUTARY CULVERT
HEADWATER DEPTH FOR HORIZONTAL ELLIPTICAL
CONCRETE PIPE CULVERTS WITH INLET CONTROL

- 180 X 116
- 166 X 106
- 151 X 97
- 136 X 87
- 128 X 92
- 121 X 77
- 113 X 72
- 106 X 68
- 98 X 63
- 91 X 58
- 83 X 53
- 76 X 48
- 68 X 43
- 60 X 38
- 53 X 34
- 49 X 32
- 45 X 29
- 42 X 27
- 38 X 24
- 34 X 22
- 30 X 19
- 23 X 14

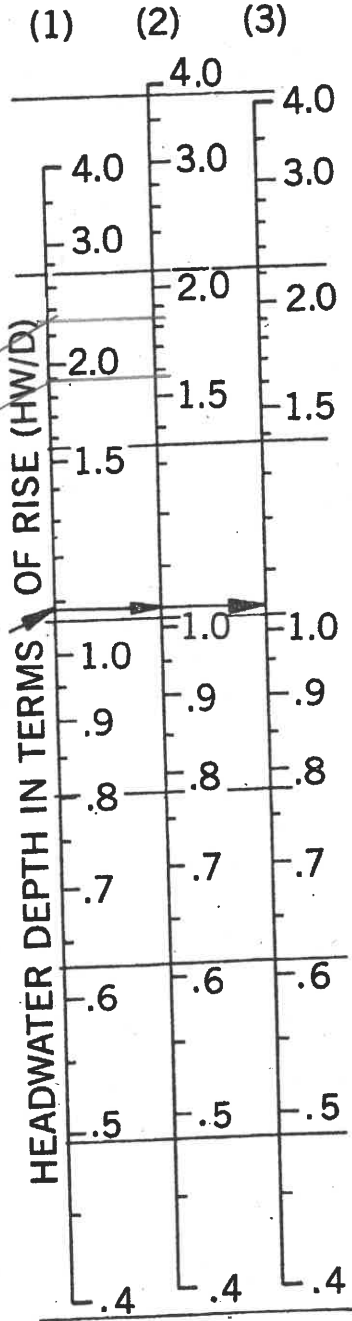


EXAMPLE

Size: 42" x 27"
Q = 30 cfs

| | HW* D | HW (feet) |
|-----|----------|--------------|
| (1) | 1.08 | 2.43 |
| (2) | 1.03 | 2.32 |
| (3) | 1.04 | 2.34 |

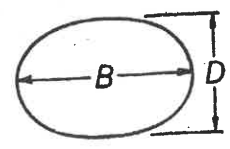
*D in feet



$HW/D_{100} = 1.84$
 $HW/D_{50} = 1.58$
 $HW_{100} = 5.21$
 $HW_{50} = 4.48$

To use scale (2) or (3) draw a straight line through known values of size and discharge to intersect scale (1). From point on scale (1) project horizontally to solution on either scale (2) or (3).

- HW/D ENTRANCE TYPE
- (1) Square edge
 - (2) Groove end with headwall
 - (3) Groove end projecting



$Q_{100} = 110 \text{ cfs}$
 $Q_{50} = 98 \text{ cfs}$

$L.E. = 429.25$

$T.O.B_{100} = 434.36$ ✓ $T.O.B_e R = 434.5$
 $T.O.B_{50} = 433.73$ ✓

25yr Entrance Culvert

INLET CONTROL
NOMOGRAPH FOR PROJECTING CONCRETE PIPE
(Socket End)

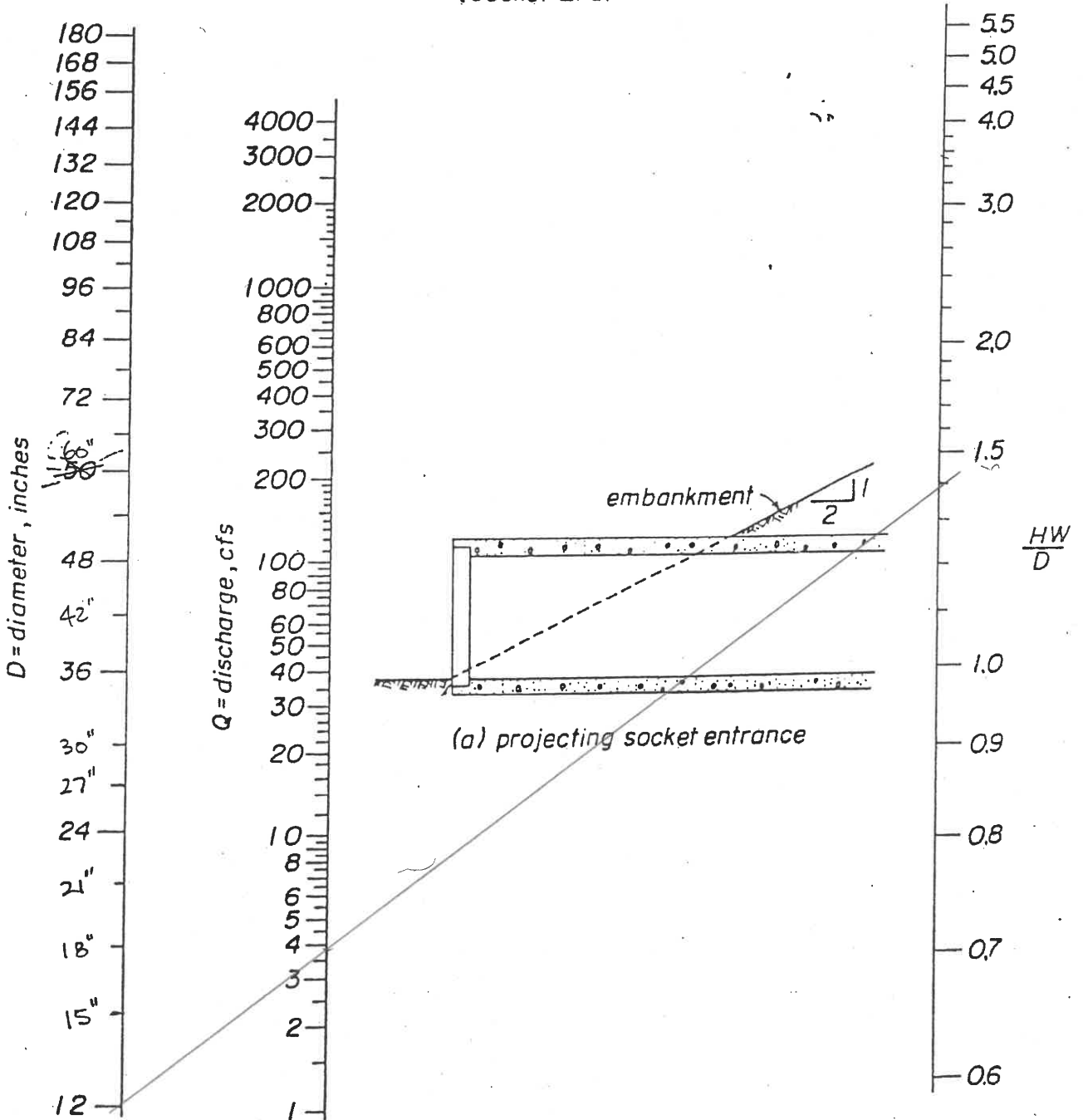


Fig. B-1

$Q_{25} = 3.89 \text{ cfs}$

$\frac{HW}{D} = 1.4$

$HW = 1.4$

$1.1.E. = 433.5 + 1.4 \Rightarrow \underline{434.9} \checkmark$