

# Stormwater Division

## MEMORANDUM

**DATE:** March 12, 2010  
**TO:** Michael J. Gillis, Virginia Correctional Enterprises Document Management Services  
**FROM:** Tina Cantwell, Stormwater  
**PO:** 270712  
**RE:** Files Approved for Scanning

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**General File ID or BMP ID:** WC047

**PIN:** 0640100001

**Subdivision, Tract, Business or Owner**

**Name (if known):**

GS Stonehouse Greenland Sub LLC

**Property Description:**

Stonehosue Commerce Park BMP #2 - Avid Medical

**Site Address:**

9770 Six Mt Zion Road

*(For internal use only)*

**Box** 13

**Drawer:** 8

**Agreements:** (in file as of scan date)

N

**Book or Doc#:**

**Page:**

Comments

Multiple facilities  
of property  
WCO47

013282

BOOK 0806 PAGE 0866

12/10/0038  
AND  
0640/000

DECLARATION OF COVENANTS

INSPECTION/MAINTENANCE OF RUNOFF CONTROL FACILITY

THIS DECLARATION, made this 23rd day of August, 1996,  
between Stonehouse Inc., and all successors in interest, hereinafter referred  
to as the "COVENANTOR(S)," owner(s) of the following property:  
BMP No. 2 at Commerce Park for Stonehouse Inc.  
DEED BOOK 393, PAGE 285 & DEED BOOK 589, PAGE 59  
and James City County, Virginia, hereinafter referred to as the "COUNTY."

WITNESSETH:

We, the COVENANTOR(S), with full authority to execute deeds, mortgages, other  
covenants, and all rights, titles and interests in the property described above, do hereby covenant  
with the COUNTY as follows:

1. The COVENANTOR(S) shall provide maintenance for the runoff control facility,  
hereinafter referred to as the "FACILITY," located on and serving the above-described property  
to ensure that the FACILITY is and remains in proper working condition in accordance with  
approved design standards, and with the law and applicable executive regulations.
2. If necessary, the COVENANTOR(S) shall levy regular or special assessments  
against all present or subsequent owners of property served by the FACILITY to ensure that the  
FACILITY is properly maintained.
3. The COVENANTOR(S) shall provide and maintain perpetual access from public  
right-of-ways to the FACILITY for the COUNTY, its agent and its contractor.
4. The COVENANTOR(S) shall grant the COUNTY, its agent and its contractor a  
right of entry to the FACILITY for the purpose of inspecting, operating, installing, constructing,  
reconstructing, maintaining or repairing the FACILITY.
5. If, after reasonable notice by the COUNTY, the COVENANTOR(S) shall fail to  
maintain the FACILITY in accordance with the approved design standards and with the law and  
applicable executive regulations, the COUNTY may perform all necessary repair or maintenance  
work, and the COUNTY may assess the COVENANTOR(S) and/or all property served by the  
FACILITY for the cost of the work and any applicable penalties.
6. The COVENANTOR(S) shall indemnify and save the COUNTY harmless from  
any and all claims for damages to persons or property arising from the installation, construction,  
maintenance, repair, operation or use of the FACILITY.
7. The COVENANTOR(s) shall promptly notify the COUNTY when the  
COVENANTOR(S) legally transfers any of the COVENANTOR(S)' responsibilities for the  
FACILITY. The COVENANTOR(S)' shall supply the COUNTY with a copy of any document  
of transfer, executed by both parties.
8. The covenants contained herein shall run with the land and shall bind the  
COVENANTOR(S) and the COVENANTOR(S)' heirs, executors, administrators, successors and  
assignees, and shall bind all present and subsequent owners of property served by the FACILITY.
9. This DECLARATION shall be recorded in the County Land Records.

IN WITNESS WHEREOF, the COVENANTOR(S) BOOK 0806 PAGE 0867 have executed this DECLARATION OF COVENANTS as of this 23rd day of August, 1996.

COVENANTOR(S)

[Signature]  
STEVEN M. CAMPITELL, V. PRESIDENT

ATTEST:

[Signature]

COVENANTOR(S)

\_\_\_\_\_

ATTEST:

\_\_\_\_\_

COMMONWEALTH OF VIRGINIA  
CITY/COUNTY OF King William

I, the undersigned Notary Public, in and for the jurisdiction aforesaid, do certify that Stephen M. Campitell, whose name is signed as such to the foregoing writing bearing date 23 day of August, 1996, this day sworn the same before me in my jurisdiction aforesaid.

GIVEN under my hand this 29 day of August, of 1996.

[Signature]  
Notary Public

My Commission expires: February 28, 1998

Approved as to form:  
[Signature]



0261U.Wpf  
Revised 9/92

VIRGINIA: City of Williamsburg and County of James City, to WIT:  
In the Clerk's Office of the Circuit Court of the City of Williamsburg and County of James City the 11 day of September 1996 This Dedication of Covenants was presented with certificate annexed and admitted to record at 10:03 o'clock  
Teste: Helena S. Ward, Clerk  
by [Signature]  
Deputy Clerk





and for the proper use only, benefit and behoove forever of Grantee, its successors and assigns, in fee simple forever.

This conveyance is made subject to the following (a) conditions, restrictions, encroachments, protrusions, covenants, proffers and easements of record or apparent on the ground affecting the property conveyed hereby; (b) rights of riparian landowners to the use and continued flow of the rivers, streams and creeks running over, upon, adjacent to and through the Property; and (c) the terms of applicable zoning ordinances and proffers.

Grantor, for itself and its successors and assigns, does hereby covenant with the said Grantee, and its successors and assigns, to warrant specially the property hereby granted and conveyed, and to execute such further assurances of the said property as may be requisite.

**REMAINDER OF PAGE INTENTIONALLY BLANK**

WITNESS the following signature and seal:

GS STONEHOUSE GREEN LAND LLC, a Delaware limited liability company

By: [Signature] (SEAL)  
Barry P. Marcus, Senior Vice President

STATE OF Connecticut  
CITY/COUNTY OF Norwalk / Fairfield

The foregoing instrument was acknowledged before me this 2 day of June, 2010, by Barry P. Marcus, Senior Vice President, of GS Stonehouse Green Land LLC on behalf of the company.

[Signature]  
NOTARY PUBLIC

My Commission Expires: \_\_\_\_\_  
Notary Registration No. : \_\_\_\_\_

Jennifer Montanaro  
Notary Public  
Fairfield Cty. CT  
My Commission Expires 5-31-13



Exhibit A  
Property Description

LAND BAY 1

Tax Parcel ID No.: 0440100028

13.1105 acres shown as Parcel E on a "Boundary Line Adjustment Plat of Property Owned by Stonehouse, Inc. and Golf Trust of America, L.P." made by Langley and McDonald, P.C., dated 5/5/97, recorded in Plat Book 66, Pages 89-93.

Being a portion of the property conveyed to GS Stonehouse Green Land Sub, LLC, by Special Warranty Deed dated October 31, 2006 from Stonehouse Capital, LLC, Commerce Park at Stonehouse, LLC, Six Hundred North, LLC, Fairmont Investment, LLC, Mount Laurel, LLC, Stonehouse Glen, LLC, Fieldstone Investment, LLC, Tymar Capital, LLC, Cimarron Capital, LLC and JTL Stonewill Joint Venture, LLC, which deed is recorded in the Clerk's Office of the Circuit Court for the City of Williamsburg and County of James City as Instrument No. 060027006.

LAND BAY 8

Parcel I:

Tax Parcel ID No. 0530100025

That certain property shown as "Parcel R-5" on that certain "SUBDIVISION PLAT SHOWING STONEHOUSE GLEN SECTION 1 & 2 AND RIGHT OF WAY OF FIELDSTONE PARKWAY BEING A SUBDIVISION OF THE PROPERTY OF FIELDSTONE INVESTMENT, LLC AND STONEHOUSE GLEN, LLC" dated May 31, 2006, prepared by LandMark Design Group, recorded in the Clerk's Office for the City of Williamsburg and the County of James City as Instrument No. 060016179.

Being a portion of the property conveyed to GS Stonehouse Green Land Sub, LLC, by Special Warranty Deed dated October 31, 2006 from Stonehouse Capital, LLC, Commerce Park at Stonehouse, LLC, Six Hundred North, LLC, Fairmont Investment, LLC, Mount Laurel, LLC, Stonehouse Glen, LLC, Fieldstone Investment, LLC, Tymar Capital, LLC, Cimarron Capital, LLC and JTL Stonewill Joint Venture, LLC, which deed is recorded in the Clerk's Office of the Circuit Court for the City of Williamsburg and County of James City as Instrument No. 060027006.

Parcel II:

Tax Parcel ID Nos. 0530100023 and 0530100024

All that property shown as "BMP #6" and "Parcel R-4" on that certain plat entitled "SUBDIVISION PLAT SHOWING STONEHOUSE GLEN SECTION 1 & 2 AND RIGHT OF WAY OF FIELDSTONE PARKWAY BEING A SUBDIVISION OF THE PROPERTY OF FIELDSTONE INVESTMENT, LLC AND STONEHOUSE GLEN, LLC" dated May 31, 2006, prepared by LandMark Design Group, recorded in the Clerk's Office for the City of Williamsburg and the County of James City as Instrument Number 060016179. Together with all the rights, title and interest in and to that certain easement conveyed to Fieldstone Investment, LLC under that certain Benefit Pathway and Utility Easement dated May 15, 2006, recorded in the aforementioned Clerk's Office as Document No. 060012689.

Being a portion of the property conveyed to GS Stonehouse Green Land Sub, LLC, by Special Warranty Deed dated October 31, 2006 from Stonehouse Capital, LLC, Commerce Park at Stonehouse, LLC, Six Hundred North, LLC, Fairmont Investment, LLC, Mount Laurel, LLC, Stonehouse Glen, LLC, Fieldstone Investment, LLC, Tymar Capital, LLC, Cimarron Capital, LLC and JTL Stonewill Joint Venture, LLC, which deed is recorded in the Clerk's Office of the Circuit Court for the City of Williamsburg and County of James City as Instrument No. 060027006.

LAND BAY 14

Parcel I:

Tax Parcel ID No. 0530100010

Section III-C containing 16.0620 acres, all as shown on "Subdivision Plat of Stonehouse Development Area One, Phase 1, Section I-B, Section II-A, Section III-C, Being a Subdivision of Properties Owned by Stonehouse Limited Liability Company and Stonehouse, Inc.", made by Langley and McDonald, Inc., dated November 19, 1999, last revised December 9, 1999, recorded in Plat Book 75, Pages 93-97.

Being a portion of the property conveyed to GS Stonehouse Green Land Sub, LLC, by Special Warranty Deed dated October 31, 2006 from Stonehouse Capital, LLC, Commerce Park at Stonehouse, LLC, Six Hundred North, LLC, Fairmont Investment, LLC, Mount Laurel, LLC, Stonehouse Glen, LLC, Fieldstone Investment, LLC, Tymar Capital, LLC, Cimarron Capital, LLC and JTL Stonewill Joint Venture, LLC, which deed is recorded in the Clerk's Office of the Circuit Court for the City of Williamsburg and County of James City as Instrument No. 060027006.

Parcel II:

Tax Parcel ID No. 0530100020

All that certain piece, parcel or tract of land, situate, lying and being in Stonehouse Magisterial District, James City County, Virginia, and being more particularly shown and described on that certain plat entitled "Composite Plat Showing a Portion of Parcel A, Stonehouse Development Company, L.L.C., prepared by G.T. Wilson, Jr., L.S., dated January 14, 2004 and revised March 18, 2004, a copy of which is recorded in the Clerk's Office of the Circuit Court of the City of Williamsburg and County of James City as Instrument No. 040008576, which plat was recorded with that certain Deed of Bargain and Sale from Stonehouse Development Company, LLC, a Virginia limited liability company, to 2J Investments, LLC, a Virginia limited liability company, dated March 16, 2004 and recorded March 25, 2004 in the aforesaid Clerk's Office as Instrument No. 040008576, and to which plat reference is hereby made for a more particular description of such property.

Being a portion of the property conveyed to GS Stonehouse Green Land Sub, LLC by Special Warranty Deed dated December 15, 2006 from 2J Investments, L.L.C., which deed is recorded in the Clerk's Office of the Circuit Court of the City of Williamsburg and County of James City as Instrument No. 060030587.

TRACT 9

Tax Parcel ID No.: 1310100019

ALL THAT certain tract of land lying in Stonehouse District, James City County, Virginia, containing 48.21 acres, more or less, and being in the residue of the "Tankard" Tract, known among the tax recorded for said county as Tax Map 13-1 (1-19). Reference is made to that plat of survey recorded in the Clerk's Office, Circuit Court, James City County, Virginia, in Plat Book 50, Page 14, and Deed recorded in Deed Book 420, Page 712, that plat recorded in Plat Book 88, Pages 43-44, and that Deed recorded as Instrument Number 020027159.

Tax Parcel ID No.: 1310100008A

Parcel I: ALL THAT certain tract or parcel of land situate, lying and being in Stonehouse District, James City County, Virginia, known and designated as "35.0 Acres, +/-" on a certain plat entitled "Survey of 35 Acres +/- for Conveyance to: Jackie L., Gary M. & Steve L. Massie from: Leon Carr Avery & Maxie G. Avery", made by AES, a professional corporation, dated March 11, 1982, which plat is recorded in the Clerk's Office, Circuit Court, James City County, Virginia, in Plat Book 37, Page 24.

Parcel II: ALL THAT certain tract or parcel of land, situate, lying and being in Stonehouse District, James City County, Virginia, known and designated as "7.31 acres", on plat entitled "Boundary Survey of 7.31 Acres Located on the North Line of Route 30", made by AES, a professional corporation, dated December 17, 1984, and described by metes and bounds in that certain deed recorded in the Clerk's Office aforesaid in Deed Book 262, Page 455.

Portions of the property being further described as follows:

Legal Description for Massie Tract 1:

All that certain piece or parcel of land situated in James City County, Virginia containing 48.00 acres more or less, designated as Tax Parcel #1310100019 by the James City County Assessors office and being shown as Tract I on a plat titled SURVEY OF PROPERTIES STANDING IN THE NAME OF FIELDSTONE INVESTMENT, LLC AS DESIGNATED BY PARCEL IDENTIFICATION NUMBERS: PIN: 1310100008A & PIN: 1310100019 dated 10-9-06 and prepared by LandTech Resources, Williamsburg, VA. and being more particularly described as follows:

Beginning at the most southerly corner of Lot 10, Section 2 of the Sand Hill Subdivision, said point being marked by an iron pipe; thence from said Point Of Beginning following the line common with the property herein described and Lot 10, Lot 9 and Lot 8, Section 2 of the Sand Hill Subdivision N19°49'17"E, 441.90 feet to an iron pipe; thence following the line common with the property herein described and the property now or formerly of Kinney and Johnson, trustees N24°38'06"E, 677.11 feet to an iron rod at the southerly right of way line of Sand Hill Road; thence following the southerly right of way line of Sand Hill Road the following courses: along a curve to the left having a radius of 159.00 feet an arc length of 58.63 feet, a chord distance of 58.30 feet, and a chord bearing of N89°29'12"E to an iron rod; thence N78°55'23"E, 104.77 feet to an iron rod at the intersection of southerly right of way line of Sand Hill Road and the south westerly right of way line of Interstate Route 64; thence following the south westerly right of way line of Interstate Route 64 the following courses: along a curve to the right having a radius of 28,497.89 feet, an arc length of 2,005.99 feet, a chord distance of 2,005.57 feet, and a chord bearing of S40°58'22"E to an iron rod; thence S13°04'03"W, 62.18 feet to an iron rod; thence S59°46'58"E, 136.50 feet to an iron rod; thence along a curve to the right having a radius of 28,497.89 feet an arc length of 573.33 feet, a chord distance of 573.32 feet and a chord bearing of S38°02'47"E to an iron rod; thence leaving the south westerly right of way line of Interstate Route 64 and following the line common with the property herein described and the property now or formerly of Altizer the following courses: S32°01'54"W, 178.80 feet to an iron rod; thence S57°20'49"W, 161.50 feet to an iron T-bar; thence following the line common with the property herein described and the property now or formerly of Milton & Lee, Reilly and Jackson N56°00'33"W, 785.03 feet to an iron pipe; thence following the line common with the property herein described and the property now or formerly of Fieldstone Investment, LLC, said line being marked by painted and marked trees the following courses: N56°07'41"W, 1,326.91 feet to an iron pipe; thence S68°15'24"W, 259.77 feet to an iron T-bar; thence N86°43'56"W, 194.00 feet to a tree; thence N68°06'56"W, 179.71 feet to an iron T-bar; thence N72°18'56"W, 179.00 feet to an iron T-bar, thence N73°43'29"W, 159.47 feet to a Walnut Tree; thence following the line common with the property herein described and the property now or formerly of Mereau N66°08'23"E, 134.24 feet to a Hickory Tree; thence following the line common with the property herein described and the property now or formerly of Burrell the following courses: N69°17'01"E, 91.38 feet to an iron rod; thence S77°00'33"E, 236.30 feet to an iron pipe; thence following the line common with the property herein described and Lot 10, Section 2 of the Sand Hill Subdivision

S84°02'51"E, 105.35 feet and returning to the point of beginning.

Legal Description for Massie Tract 2:

All that certain piece or parcel of land situated in James City County, Virginia containing 41.95 acres more or less, designated as Tax Parcel #1310100008A by the James City County Assessors office and being shown as Tract 2 on a plat titled SURVEY OF PROPERTIES STANDING IN THE NAME OF FIELDSTONE INVESTMENT, LLC AS DESIGNATED BY PARCEL IDENTIFICATION NUMBERS: PIN: 1310100008A & PIN; 1310100019 dated 10-9-06 and prepared by LandTech Resources, Williamsburg, VA. and being more particularly described as follows:

Commencing at a Point on the northerly right of way line of Rochambeau Drive at its intersection with the easterly right of way line of Sand Hill Road; thence following the northerly right of way line of Rochambeau Drive in a south easterly direction approximately 823' feet to an iron pipe at the common corner of the property herein described and the property now or formerly of Bradby, said point being The True Point Of Beginning; thence from said Point Of Beginning, leaving the northerly right of way line of Rochambeau Drive and following the line common with the property herein described and the property now or formerly of Bradby N24°34'56"E, 537.26 feet to an iron pipe; thence N22°32'19"W, 165.63 feet to an iron pipe; thence following the line common with the property herein described and the property now or formerly of Bradby, Lapham and Carroll N70°42'20"W, 394.06 feet to an iron rod; thence following the line common with the property herein described and the property now or formerly of Sligh N25°11'45"E, 184.04 feet to a Walnut tree; thence following the line common with the property herein described and the Property now or formerly of Fieldstone Investment, LLC, said line being marked by painted and marked trees the following courses: S73°43'29"E, 159.47 feet to an iron T-bar; thence S72°18'56"E, 179.00 feet to an iron T-bar; thence S68°06'56"E, 179.71 feet to tree; thence S86°43'56"E, 194.00 feet to an iron T-bar; thence N68°15'24"E, 259.77 feet to an iron pipe; thence S56°07'41"E, 1,326.91 feet to an iron pipe; thence following the line common with the property herein described and the property now or formerly of Jackson the following two courses: S18°47'32"W, 447.68 feet to an iron pipe; thence S22°59'39"W, 531.17 feet to an iron pipe; on the northerly right of way line of Rochambeau Drive thence following the northerly right of way line of Rochambeau Drive the following courses: N62°43'32"W, 141.29 feet; thence following the centerline of a stream along a tie line course of N09°03'49"W, 297.36 feet to the intersection of two streams; thence following a tie line course of S52°28'21"W, 264.72 feet to a point; thence N62°43'32"W, 1,304.46 feet and returning to the point of beginning.

TRACT 13

Tax Parcel ID Nos.: 1210100047, 1210100048, and 0640100001

"LAGRANGE" Tract, containing (i) 223.89 acres as depicted on that plat of survey dated August 26, 1988 made by Charles J. Kerns, Jr., L.S., recorded in Plat Book 50, Page 11, as conveyed to

Chesapeake Corporation by Sheldon Lumber Company, Incorporated, dated April 29, 1987, recorded in Deed Book 393, Page 285, and (ii) 4.75 acres, depicted as Parcel B on plat of survey dated 3/29/84 made by AES, recorded in Deed Book 246, page 313, as conveyed to Stonehouse Inc. by deed from Howard V. Clayton and Marion P. Clayton dated January 28, 1992, recorded Deed Book 549, Page 59. LESS AND EXCEPT the following described property:

1. 15.00 acres depicted on "Plat of Section A of Stonehouse Commerce Park at Stonehouse for Stonehouse, Inc." dated 10/10/95, made by Langley and McDonald, P.C., recorded in Plat Book 62, Pages 94-96, as conveyed to Amoco/Enron Solar by deed dated October 12, 1995, recorded in Deed Book 758, Page 721;
2. 11.1906 acres, depicted as Parcel A on "Plat of Section A of Stonehouse Commerce Park at Stonehouse for Stonehouse Inc." dated 10/10/95, made by Langley and McDonald, P.C. recorded in Plat Book 62, Pages 94-96, as conveyed to The Industrial Development Authority of James City County by deed dated September 30, 1996 recorded in Deed Book 809, Page 728;
3. 4.600 acres, depicted as Stonehouse Commerce Park, Section B, Parcel A on that plat entitled "Plat of Section B of Stonehouse Commerce Park at Stonehouse for Stonehouse Inc." made by Langley and McDonald, P.C., dated 1/23/98, recorded in Plat Book 68, Pages 60-61, as conveyed to The Barre Company, L.L.C., by deed dated March 3, 1998, recorded as Document No. 98-4099;
4. 6.245 acres, as depicted on "Plat of Boundary Line Adjustment Stonehouse Commerce Park Between Avid Realty, L.L.C. and Stonehouse Inc." dated May 2, 2002, made by AES Consulting Engineers, recorded in the Clerk's Office aforesaid in Plat Book 87, Page 89, of which 3.100 acres, depicted as Stonehouse Commerce Park, Section B, Parcel B on that plat entitled "Plat of Section B of Stonehouse Commerce Park at Stonehouse for Stonehouse Inc." made by Langley and McDonald, P.C., dated 1/23/98, recorded in Plat Book 68, Pages 60-61, was conveyed to Avid Realty, L.L.C., by deed from Stonehouse Inc., dated June 23, 1998, recorded as Document No. 98-11721;
5. 74.3712 acres, depicted as "Stonehouse Commerce Park, Section C, Parcel A" on the plat entitled "Plat of Section C of Stonehouse Commerce Park at Stonehouse Commerce Park at Stonehouse for Stonehouse Inc." made by Langley and McDonald, P.C., dated 3/22/99, recorded in Plat Book 73, Pages 38-39, as conveyed to Wachovia Capital Investments, Inc., by deed from Stonehouse Inc. dated May 17, 1999, recorded as Document No. 99-11248;
6. 4.1278 acres, depicted as "Stonehouse Commerce Park, New Parcel B-1, Section C" on the plat entitled "Resubdivision Plat of Section C, Parcel B of Stonehouse Commerce Park at Stonehouse Commerce Park at Stonehouse for Stonehouse Inc." made by Landmark Design Group, dated 4/5/00, recorded in Plat Book 77, Pages 28-29, as conveyed to Friendship Partnership, LLC. by deed from Stonehouse Inc. dated April 6, 2000, recorded as document No. 00-7666;
7. Parcel A-2B containing 4151 S.F., Parcel A-2A containing 2750 S.F. and Parcel A-1A containing 2050 S.F., all as depicted on "Resubdivision Plat of Section A, Parcel A of Stonehouse Commerce Park at Stonehouse for the Industrial Development Authority of the County of James City, Virginia"

*Plats*

*PB 50/11*

*62/94-96*

*68/60-61*

*78/4-5*

*#030039997*

*030010861*

*060009197*

made by Landmark Design Group, dated March 17, 2000, last revised June 23, 2000, recorded in Plat Book 78, Pages 4-5, and as conveyed to The Industrial Development Authority of James City County by three deeds from Stonehouse Inc. dated June 26, 2000, June 23, 2000 and June 23, 2000, recorded as Document Numbers 00-12706,00-12707 and 00-12708, respectively;

8. All that certain lot, piece or parcel of land with all improvements thereon and appurtenances thereunto belonging, situate, lying and being in the County of James City, Virginia, known and designated as "New Parcel," consisting of 10.3± acres, more or less, as shown on that certain plat entitled, "SUBDIVISION OF THE PROPERTY OF STONEHOUSE AT WILLIAMSBURG, LLC AT STONEHOUSE COMMERCE PARK STONEHOTJSE DISTRICT, JAMES CITY COUNTY, VIRGINIA, made by Landmark Design Group, dated October 24, 2003, and revised October 28, 2003, and recorded in the Clerk's Office of the Circuit Court for the County of James City, Virginia as Instrument No. 030039997, to which reference is here made;

9. All that certain lot, piece or parcel of land with all improvements thereon and appurtenances thereunto belonging, situate, lying and being in the County of James City, Virginia, known and designated as "Parcel A 24,157 S.F., .05689 AC." on that certain plat entitled, "SUBDIVISION PLAT OF PARCEL A & PARCEL B SECTION D, STONEHOUSE COMMERCE PARK BEING A PORTION OF THE PROPERTY OF COMMERCE PARK AT STONEHOUSE, LLC", made by Landmark Design Group, dated September 26, 2005, attached hereto as Exhibit A-I, and the easement rights to be conveyed therewith as noted on the aforementioned plat;

10. All that property shown as "NEW RIGHT OF WAY" on that certain plat entitled "PLAT SHOWING RIGHT OF WAY BEING THE EXTENSION OF LAGRANGE PARKWAY AND REALIGNMENT OF A PORTION OF STATE ROUTE 600", dated July 8, 2002, last revised January 16, 2003, prepared by LandMark Design Group, recorded in the Clerk's Office for the City of Williamsburg and the County of James City as Instrument Number 030010861.

11. That certain lot or parcel of land located in the Stonehouse District of James City County, Virginia shown and set out as "Parcel B, 100,898 S. F., 2.3163 AC." on the plat of subdivision entitled "Subdivision Plat of Parcel A & Parcel B, Section D, Stonehouse Commerce Park Being a Portion of the Property of Commerce Park at Stonehouse, LLC", prepared by Landmark Design Group and dated February 16, 2006, consisting of three sheets, which plat of subdivision is recorded in the Clerk's Office of the Circuit Court of the City of Williamsburg and County of James City as Instrument No. 060009197.

Together with the reservation of easements set forth in the following Deeds of Conveyance: Deed Book 758 Page 721, Deed Book 809 Page 728, Document No. 980004099, Document No. 980011721, Document No. 990011248; Document No. 00007666; and Document No. 020022341.

VIRGINIA: CITY OF WILLIAMSBURG & COUNTY OF JAMES CITY  
This document was admitted to record on 8 Oct 2010  
at 10:45 AM/PM. The taxes imposed by Virginia Code  
Section 58.1-801, 58.1-802 & 58.1-814 have been paid.  
STATE TAX LOCAL TAX ADDITIONAL TAX

TESTE: BETSY B. WOOLRIDGE, CLERK  
BY: Betsy B Woolridge Clerk

VIRGINIA: CITY OF WILLIAMSBURG & COUNTY OF JAMES CITY  
This document was admitted to record on 7 June 2010  
at 3:30 AM/PM. The taxes imposed by Virginia Code  
Section 58.1-801, 58.1-802 & 58.1-814 have been paid.  
STATE TAX LOCAL TAX ADDITIONAL TAX

TESTE: BETSY B. WOOLRIDGE, CLERK  
BY: Betsy B Woolridge Clerk



12.1010000 AND  
0640100001

004986

DECLARATION OF COVENANTS

INSPECTION/MAINTENANCE OF RUNOFF CONTROL FACILITY

WC035

WC068  
WC035  
WCOM

THIS DECLARATION, made this 10TH day of March, 19 95, between Stonehouse, Inc., and all successors in interest, hereinafter referred to as the COVENANTOR(S), owner(s) of the following property: Part of Tax Map (6-4) Parcel 38, D.B. 285 and Tax Map (12-1) Parcel 38, D.B. 589, Pg. 59 (Stonehouse Commerce Park) and James City County, Virginia, hereinafter referred to as the "COUNTY."

↑  
S/B 48

WITNESSETH:

We, the COVENANTOR(S), with full authority to execute deeds, mortgages, other covenants, and all rights, titles and interests in the property described above, do hereby covenant with the COUNTY as follows:

1. The COVENANTOR(S) shall provide maintenance for the runoff control facility, hereinafter referred to as the "FACILITY," located on and serving the above-described property to ensure that the FACILITY is and remains in proper working condition in accordance with approved design standards, and with the law and applicable executive regulations.
2. If necessary, the COVENANTOR(S) shall levy regular or special assessments against all present or subsequent owners of property served by the FACILITY to ensure that the FACILITY is properly maintained.
3. The COVENANTOR(S) shall provide and maintain perpetual access from public right-of-ways to the FACILITY for the COUNTY, its agent and its contractor.
4. The COVENANTOR(S) shall grant the COUNTY, its agent and its contractor a right of entry to the FACILITY for the purpose of inspecting, operating, installing, constructing, reconstructing, maintaining or repairing the FACILITY.
5. If, after reasonable notice by the COUNTY, the COVENANTOR(S) shall fail to maintain the FACILITY in accordance with the approved design standards and with the law and applicable executive regulations, the COUNTY may perform all necessary repair or maintenance work, and the COUNTY may assess the COVENANTOR(S) and/or all property served by the FACILITY for the cost of the work and any applicable penalties.
6. The COVENANTOR(S) shall indemnify and save the COUNTY harmless from any and all claims for damages to persons or property arising from the installation, construction, maintenance, repair, operation or use of the FACILITY.
7. The COVENANTOR(s) shall promptly notify the COUNTY when the COVENANTOR(S) legally transfers any of the COVENANTOR(S)' responsibilities for the FACILITY. The COVENANTOR(S)' shall supply the COUNTY with a copy of any document of transfer, executed by both parties.
8. The covenants contained herein shall run with the land and shall bind the COVENANTOR(S) and the COVENANTOR(S)' heirs, executors, administrators, successors and assignees, and shall bind all present and subsequent owners of property served by the FACILITY.
9. This DECLARATION shall be recorded in the County Land Records.

IN WITNESS WHEREOF, the COVENANTOR(S) have executed this DECLARATION OF COVENANTS as of this 10<sup>th</sup> day of March, 1995.

COVENANTOR(S)

James D. Franklin  
VICE PRESIDENT

ATTEST:

Stephen D. Jan

COVENANTOR(S)

\_\_\_\_\_

ATTEST:

\_\_\_\_\_

COMMONWEALTH OF VIRGINIA  
CITY/COUNTY OF Williamsburg

I, the undersigned Notary Public, in and for the jurisdiction aforesaid, do certify that James D. Franklin, whose name is signed as such to the foregoing writing bearing date 10<sup>th</sup> day of March, 1995 this day sworn the same before me in my jurisdiction aforesaid.

GIVEN under my hand this 10<sup>th</sup> day of March, of 1995.

Janice M. Thompson  
Notary Public

My Commission expires: February 28, 1999

Approved as to form:

Leo P. Rogers

0261U.Wpf  
Revised 9/92

VIRGINIA: City of Williamsburg and County of

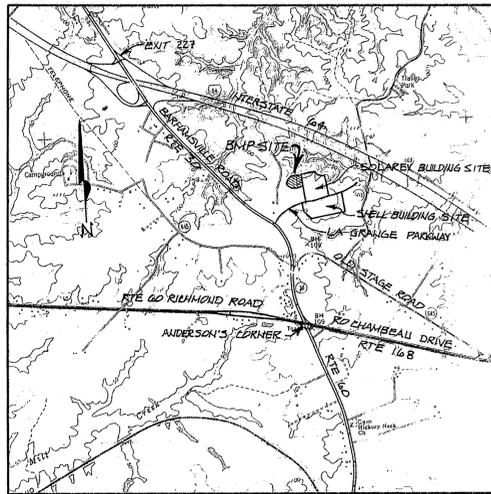
In the \_\_\_\_\_ the \_\_\_\_\_ Court of the

5 April 95 This Covenant

admitted \_\_\_\_\_ 3 annexed and

Tested: 12:47 o'clock

Deputy Clerk

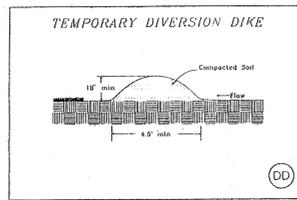


VICINITY MAP SCALE: 1" = 2000'

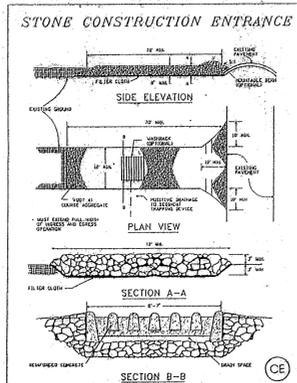
JAMES CITY COUNTY  
EROSION AND SEDIMENT CONTROL NOTES  
REVISED 2/3/96

THE PURPOSE OF THE EROSION CONTROL MEASURES SHOWN ON THESE PLANS SHALL BE TO PRECLUDE THE TRANSPORT OF ALL WATERBORNE SEDIMENTS RESULTING FROM CONSTRUCTION ACTIVITIES FROM ENTERING ONTO ADJACENT PROPERTIES OR STATE WATERS. IF FIELD INSPECTION REVEALS THE INADEQUACY OF THE PLAN TO CONFINE SEDIMENT TO THE PROJECT SITE, APPROPRIATE MODIFICATIONS WILL BE MADE TO CORRECT ANY PLAN DEFICIENCIES. IN ADDITION, THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE MAINTENANCE OF ALL EROSION AND SEDIMENT CONTROL MEASURES THROUGHOUT THE PROJECT.

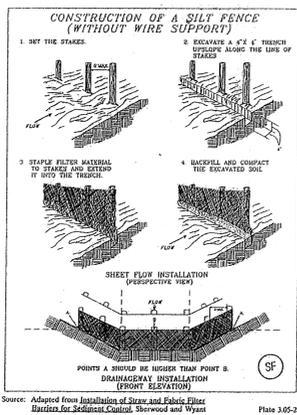
- ALL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INSTALLED AND MAINTAINED IN ACCORDANCE WITH THE "VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK". THE CONTRACTOR SHALL BE THOROUGHLY FAMILIAR WITH ALL APPLICABLE MEASURES CONTAINED THEREIN WHICH MAY BE PERTINENT TO THIS PROJECT.
- ALL POINTS OF CONSTRUCTION INGRESS AND EGRESS SHALL BE PROTECTED BY A TEMPORARY CONSTRUCTION ENTRANCE TO PREVENT TRACKING OF MUD ONTO PUBLIC RIGHT-OF-WAYS. AN ENTRANCE PERMIT FROM VDOT IS REQUIRED PRIOR TO ANY CONSTRUCTION ACTIVITIES WITHIN STATE RIGHT-OF-WAYS. WHERE SEDIMENT IS TRANSPORTED ONTO A PUBLIC ROAD SURFACE, THE ROAD SHALL BE THOROUGHLY CLEANED AT THE END OF EACH DAY.
- A PRECONSTRUCTION MEETING SHALL BE HELD ON-SITE BETWEEN THE COUNTY, THE DEVELOPER, THE PROJECT ENGINEER, AND THE CONTRACTOR PRIOR TO ISSUANCE OF THE LAND DISTURBING PERMIT. THE CONTRACTOR SHALL SUBMIT A SEQUENCE OF CONSTRUCTION TO THE COUNTY FOR APPROVAL PRIOR TO THE PRECONSTRUCTION MEETING. THE CONTRACTOR WILL SUPPLY CODE COMPLIANCE WITH THE NAME OF THE INDIVIDUAL WHO WILL BE RESPONSIBLE FOR ENSURING MAINTENANCE OF INSTALLED MEASURES ON A DAILY BASIS.
- SEDIMENT BASINS AND TRAPS, PERIMETER DIKES, SEDIMENT BARRIERS AND OTHER MEASURES INTENDED TO TRAP SEDIMENT ON-SITE MUST BE CONSTRUCTED AS A FIRST STEP IN GRADING AND BE MADE FUNCTIONAL BEFORE UPSCALE LAND DISTURBANCE TAKES PLACE. EARTHEN STRUCTURES SUCH AS DAMS, DIKES, AND DIVERSIONS MUST BE SEEDED AND MULCHED IMMEDIATELY AFTER INSTALLATION. PERIODIC INSPECTIONS OF THE EROSION CONTROL MEASURES SHALL BE MADE TO ASSESS THEIR CONDITION. ANY NECESSARY MAINTENANCE OF THE MEASURES SHALL BE ACCOMPLISHED IMMEDIATELY UPON NOTIFICATION BY THE COUNTY AND SHALL INCLUDE THE REPAIR OF MEASURES DAMAGED BY ANY SUBCONTRACTOR INCLUDING THOSE OF THE PUBLIC UTILITY COMPANIES.
- SURFACE FLOWS OVER CUT AND FILL SLOPES SHALL BE CONTROLLED BY EITHER REDIRECTING FLOWS FROM TRANSVERSING THE SLOPES OR BY MECHANICAL DEVICES TO SAFELY LEAD WATER DOWN SLOPE WITHOUT CAUSING EROSION. A TEMPORARY FILL DIVERSION (STD. & SPEC. 3.10) SHALL BE INSTALLED PRIOR TO THE END OF EACH WORKING DAY.
- SEDIMENT CONTROL MEASURES MAY REQUIRE MINOR FIELD ADJUSTMENTS AT TIME OF CONSTRUCTION TO INSURE THEIR INTENDED PURPOSE IS ACCOMPLISHED. DIVISION OF CODE COMPLIANCE APPROVAL WILL BE REQUIRED FOR OTHER DEVIATIONS FROM THE APPROVED PLANS.
- THE CONTRACTOR SHALL PLACE SOIL STOCKPILES AT THE LOCATIONS SHOWN ON THIS PLAN OR AS DIRECTED BY THE ENGINEER. SOIL STOCKPILES SHALL BE STABILIZED OR PROTECTED WITH SEDIMENT TRAPPING MEASURES. OFF-SITE WASTE OR BORROW AREAS SHALL BE APPROVED BY THE DIVISION OF CODE COMPLIANCE PRIOR TO THE IMPORT OF ANY BORROW OR EXPORT OF ANY WASTE TO OR FROM THE PROJECT SITE.
- THE CONTRACTOR SHALL COMPLETE DRAINAGE FACILITIES WITHIN 30 DAYS FOLLOWING COMPLETION OF ROUGH GRADING AT ANY POINT WITHIN THE PROJECT. THE INSTALLATION OF DRAINAGE FACILITIES SHALL TAKE PRECEDENCE OVER ALL UNDERGROUND UTILITIES. OUTFALL DITCHES FROM DRAINAGE STRUCTURES SHALL BE STABILIZED IMMEDIATELY AFTER CONSTRUCTION OF SAME. THIS INCLUDES INSTALLATION OF EROSION CONTROL STONE OR PAVED DITCHES WHERE REQUIRED. ANY DRAINAGE OUTFALLS REQUIRING CONSTRUCTION OF A STREET MUST BE COMPLETED BEFORE STREET GRADING OR UTILITY INSTALLATION BEGINS.
- PERMANENT OR TEMPORARY SOIL STABILIZATION MUST BE APPLIED TO ALL DENUDED AREAS WITHIN 7 DAYS AFTER FINAL GRADE IS REACHED ON ANY PORTION OF THE SITE. SOIL STABILIZATION MUST ALSO BE APPLIED TO DENUDED AREAS WHICH MAY NOT BE AT FINAL GRADE BUT WILL REMAIN DORMANT (UNDISTURBED) FOR LONGER THAN 30 DAYS. SOIL STABILIZATION MEASURES INCLUDE VEGETATIVE ESTABLISHMENT, MULCHING AND THE EARLY APPLICATION OF GRAVEL BASE MATERIAL ON AREAS TO BE PAVED.
- NO MORE THAN 300 FEET OF SANITARY SEWER, STORM SEWER, WATERLINES, OR UNDERGROUND UTILITY LINES ARE TO BE OPEN AT ONE TIME. FOLLOWING INSTALLATION OF ANY PORTION OF THESE ITEMS, ALL DISTURBED AREAS ARE TO BE IMMEDIATELY STABILIZED (I.E., THE SAME DAY).
- IF DISTURBED AREA STABILIZATION IS TO BE ACCOMPLISHED DURING THE MONTHS OF DECEMBER, JANUARY, OR FEBRUARY, STABILIZATION SHALL CONSIST OF MULCHING IN ACCORDANCE WITH SPECIFICATION 3.35. SEEDING WILL THEN TAKE PLACE AS SOON AS THE SEASON PERMITS.
- THE TERM SEEDING, FINAL VEGETATIVE COVER OR STABILIZATION, ON THIS PLAN SHALL MEAN THE SUCCESSFUL GERMINATION AND ESTABLISHMENT OF A STABLE GRASS COVER FROM A PROPERLY PREPARED SEEDBED CONTAINING THE SPECIFIED AMOUNTS OF SEED, LIME, AND FERTILIZER IN ACCORDANCE WITH SPECIFICATION 3.32, PERMANENT SEEDING. IRRIGATION SHALL BE REQUIRED AS NECESSARY TO ENSURE ESTABLISHMENT OF GRASS COVER.
- ALL SLOPES STEEPER THAN 3:1 SHALL REQUIRE THE USE OF EROSION CONTROL BLANKETS SUCH AS EXCELOR BLANKETS TO AID IN THE ESTABLISHMENT OF A VEGETATIVE COVER. INSTALLATION SHALL BE IN ACCORDANCE WITH SPECIFICATION 3.36, MULCHING AND MANUFACTURER'S INSTRUCTIONS. NO SLOPES SHALL BE CREATED STEEPER THAN 2:1.
- INLET PROTECTION IN ACCORDANCE WITH SPECIFICATION 3.07 SHALL BE PROVIDED FOR ALL STORM DRAIN INLETS AS SOON AS PRACTICAL FOLLOWING CONSTRUCTION OF SAME.
- TEMPORARY LINERS, SUCH AS POLYETHYLENE SHEETS, SHALL BE PROVIDED FOR ALL PAVED DITCHES UNTIL THE PERMANENT CONCRETE LINER IS INSTALLED.
- PAVED DITCHES SHALL BE REQUIRED WHEREVER EROSION IS EVIDENT. PARTICULAR ATTENTION SHALL BE PAID TO THOSE AREAS WHERE GRADES EXCEED 3 PERCENT.
- TEMPORARY EROSION CONTROL MEASURES ARE NOT TO BE REMOVED UNTIL ALL DISTURBED AREAS ARE STABILIZED. AFTER STABILIZATION IS COMPLETE, ALL MEASURES SHALL BE REMOVED WITHIN 30 DAYS. TRAPPED SEDIMENT SHALL BE SPREAD AND SEEDED.
- AS-BUILT DRAWINGS MUST BE PROVIDED FOR ALL DETENTION/BMP FACILITIES. ALSO UPON COMPLETION, THE CONSTRUCTION OF ALL DETENTION/BMP FACILITIES SHALL BE CERTIFIED BY A PROFESSIONAL ENGINEER WHO INSPECTED THE STRUCTURE DURING CONSTRUCTION. THE CERTIFICATION SHALL STATE THAT TO THE BEST OF HIS/HER JUDGEMENT, KNOWLEDGE, AND BELIEF, THE STRUCTURE WAS CONSTRUCTED IN ACCORDANCE WITH APPROVAL PLANS AND SPECIFICATIONS.



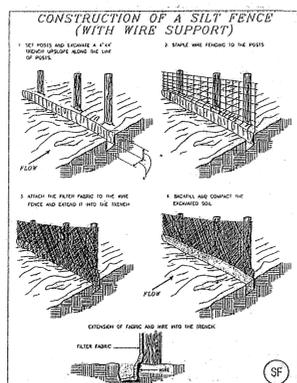
Source: Va. DSWC Plate 3.09-1



Source: Adapted from 1993 Maryland Standards for Soil Erosion and Sediment Control, and Va. DSWC Plate 3.02-1



Source: Adapted from Installation of Stone and Fabric Filter Barriers for Sediment Control, Stormwater and Wastewater Plate 3.05-2



Source: Adapted from Installation of Stone and Fabric Filter Barriers for Sediment Control, Stormwater and Wastewater Plate 3.05-1

# STONEHOUSE, INC.

## BMP NO. 2

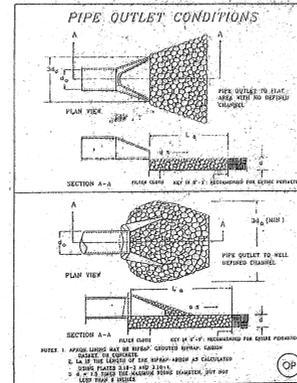
### AT COMMERCE PARK

JAMES CITY COUNTY, VIRGINIA

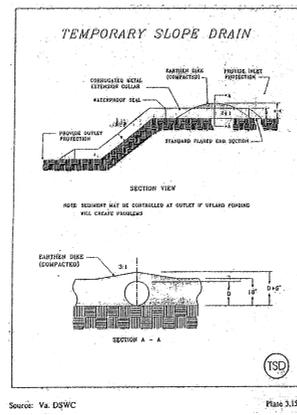
OCTOBER 12, 1995

REVISED 5/20/96

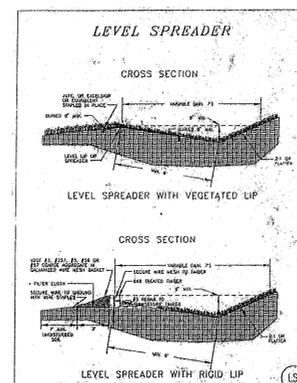
REVISED 7/11/96



Source: Va. DSWC Plate 3.11-1

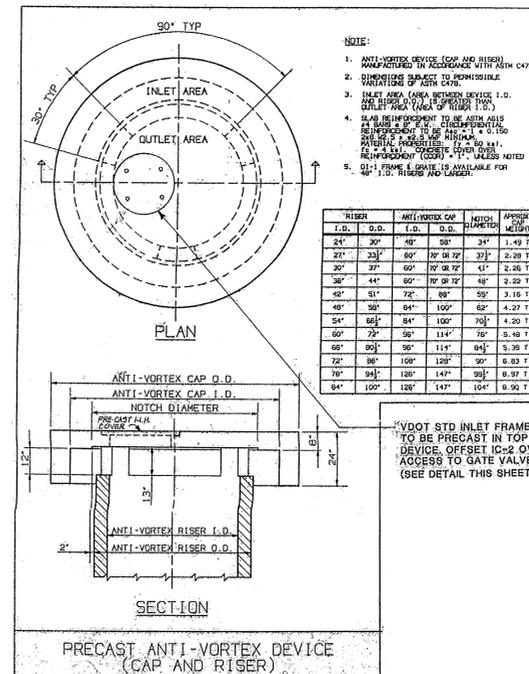


Source: Va. DSWC Plate 3.11-1



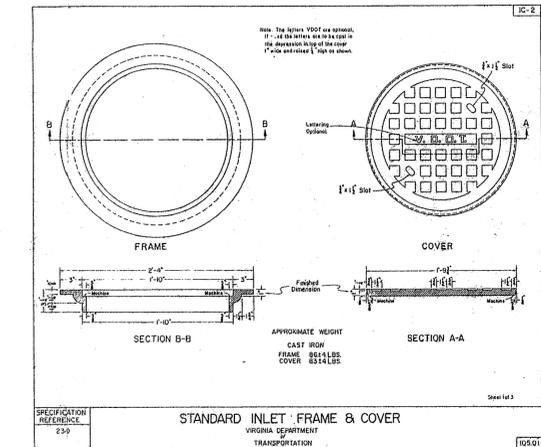
Source: Va. DSWC and M.C. Erosion and Sediment Control, Planning and Design Manual Plate 3.11-1

- GENERAL NOTES - EMBANKMENT CONSTRUCTION
- EMBANKMENT SUBGRADES TO BE STRIPPED OF ALL TOPSOIL, ORGANIC MATTER, AND SOFT AND LOOSE SOILS PRIOR TO PLACEMENT OF FILL MATERIALS.
  - SUBGRADE TO BE PROOF ROLLED WITH A LOADED TANDEM DUMP TRUCK OR SIMILAR EQUIPMENT UNDER THE OBSERVATION OF THE ENGINEER.
  - AREAS THAT EXHIBIT EXCESSIVE PUMPING OR WEAVING WILL REQUIRE UNDERCUTTING.
  - COMPACTED EMBANKMENT FILL TO BE FREE OF ORGANIC MATTER AND CLASSIFY SM, SC, ML, MH OR CL IN ACCORDANCE WITH UNIFIED SOIL CLASSIFICATION SYSTEM ASTM D-2487.
  - EMBANKMENT FILL TO BE PLACED IN LOOSE LIFTS NOT EXCEEDING 8 INCHES IN THICKNESS AND SHOULD BE COMPACTED TO AT LEAST 95% OF MAXIMUM DRY DENSITY ACCORDING TO ASTM D-698, STANDARD PROCTOR. FILL SHOULD BE COMPACTED AT MOISTURE CONTENTS WITHIN ± 20% OF THE OPTIMUM MOISTURE CONTENT FOR THE MATERIAL USED.
  - THE SURFACE OF EACH COMPLETED LIFT OF COMPACTED EMBANKMENT FILL SHOULD BE SCARIFIED TO A DEPTH OF 2 TO 3 INCHES PRIOR TO PLACING ADDITIONAL FILL TO LIMIT THE DEVELOPMENT OF HORIZONTAL SEEPAGE PLAINS WITHIN THE EMBANKMENT.
  - COMPACTED EMBANKMENT FILL TO BE PLACED IN HORIZONTAL LIFTS.
  - SURFACES STEEPER THAN 4:1 TO BE BENCHED TO RECEIVE FILL. BENCH HEIGHTS NOT TO EXCEED 2 FEET.
  - BACKFILL ALONG THE PRINCIPAL SPILLWAY CONDUIT SHOULD BE PLACED EQUALLY ON BOTH SIDES OF THE PIPE DURING FILLING.
  - THE PRINCIPAL SPILLWAY PIPE TO BE SUPPORTED ON NATURAL GROUND OR COMPACTED EMBANKMENT FILL OR AS SHOWN ON THE PLANS.
  - SUFFICIENT CLEARANCE SHOULD BE PROVIDED FOR STANDARD COMPACTION EQUIPMENT TO ACCESS DURING BACKFILLING ALONG THE PRINCIPAL SPILLWAY CONDUIT. THE BACKFILL SHOULD BE RAMMED UP AGAINST THE CONDUIT ON A MAXIMUM SLOPE OF 6:1. WHERE ACCESS IS LIMITED, THINNER LIFT THICKNESS, HAND COMPACTION AND TIGHT CONTROL ON MATERIAL QUALITY WILL BE NECESSARY.
  - WHERE TRENCH EXCAVATION FOR THE INSTALLATION OF THE PRINCIPAL SPILLWAY CONDUIT IS NECESSARY, SLOPE TO BE CUT NO STEEPER THAN 2:1.
  - SITE DRAINAGE TO BE PROVIDED TO MAINTAIN SUBGRADES FREE OF WATER AND TO AVOID SATURATION AND DISTURBANCE OF THE SUBGRADE SOILS PRIOR TO CONSTRUCTING FOUNDATIONS AND PLACING FILL. ANY SOILS THAT HAVE BEEN WEAKENED DUE TO SATURATION AND DISTURBANCE TO BE REMOVED AS RECOMMENDED BY THE ENGINEER.
  - DEWATERING OF THE DAM FOUNDATION AREAS (WELL POINTING OR PUMPING FROM SUMPS), AND THE DIVERSION OF SURFACE WATER AWAY FROM THE WORK AREA MAY BE NECESSARY TO ALLOW PROPER EXECUTION OF THE CONSTRUCTION WORK. DEWATERING SHOULD BEGIN PRIOR TO EARTHWORK SO THAT THE SPILLWAY CONDUIT CAN BE INSTALLED AND SURFACE WATER WOULD THEN BE DIVERTED THROUGH THE PRINCIPAL SPILLWAY.
  - THE EMBANKMENT FOUNDATION TO BE FREE OF PONDED WATER, EXCESSIVELY MUDDY CONDITIONS AND IN DRAINABLE CONDITION AS NEEDED FOR PROPER EXECUTION OF THE CONSTRUCTION WORK.

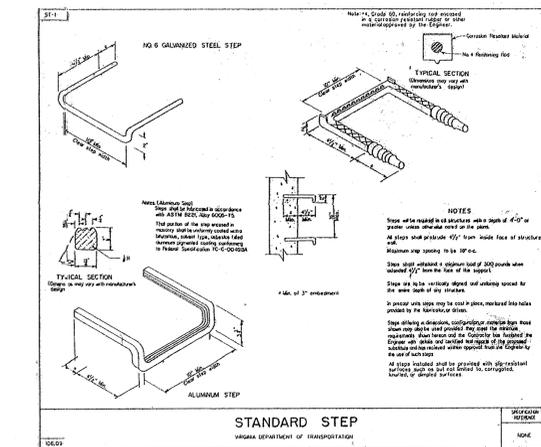


NOTE:

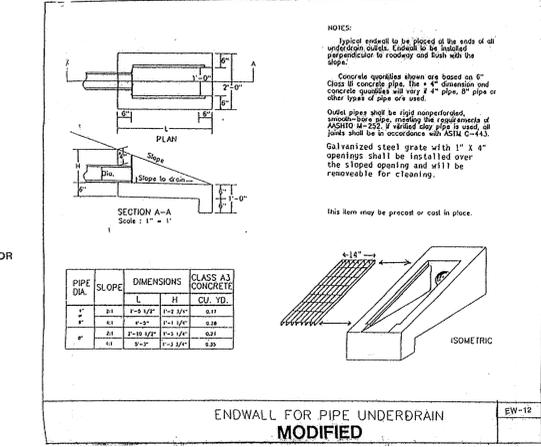
- ANTI-VORTEX DEVICE (CAP AND RISER) MANUFACTURED BY HANCOCK WITH AN O.D. OF 36".
- CONCRETE SHALL BE PERMISSIBLE.
- INLET AREA (AREA BETWEEN DEVICE I.D. AND PIPE R.I.S.E.R.) SHALL BE 1.50 TIMES THE AREA OF THE PIPE (I.D.).
- SLAB REINFORCEMENT TO BE AS PER 3.07. CONCRETE SHALL BE CLASS A3. CONCRETE COVER OVER DEVICES SHALL BE 2" MINIMUM. CONCRETE COVER OVER RISERS SHALL BE 4" MINIMUM. (SEE SPEC. 3.07 FOR REINFORCEMENT COVER) - ALL DIMENSIONS NOTED.
- 01-1 FORM & GRADE IS AVAILABLE FOR RENT, RISES AND LAGES.



Source: Virginia Department of Transportation Plate 3.02-1



Source: Virginia Department of Transportation Plate 3.02-1



Source: Virginia Department of Transportation Plate 3.02-1

OFFICE OF JAMES CITY COUNTY  
SITE PLAN  
DATE: 10/12/95  
NO. 7753  
RECEIVED  
JUL 1995

COMMONWEALTH OF VIRGINIA  
JOHN L. HITCHCOCK  
No. 7753  
Professional Engineer

Langleigh and McDonald, P.C.  
Engineers • Surveyors • Planners  
Landscape Architects • Environmental Consultants  
WILLIAMSBURG  
VIRGINIA BEACH

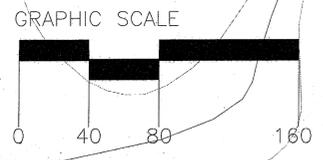
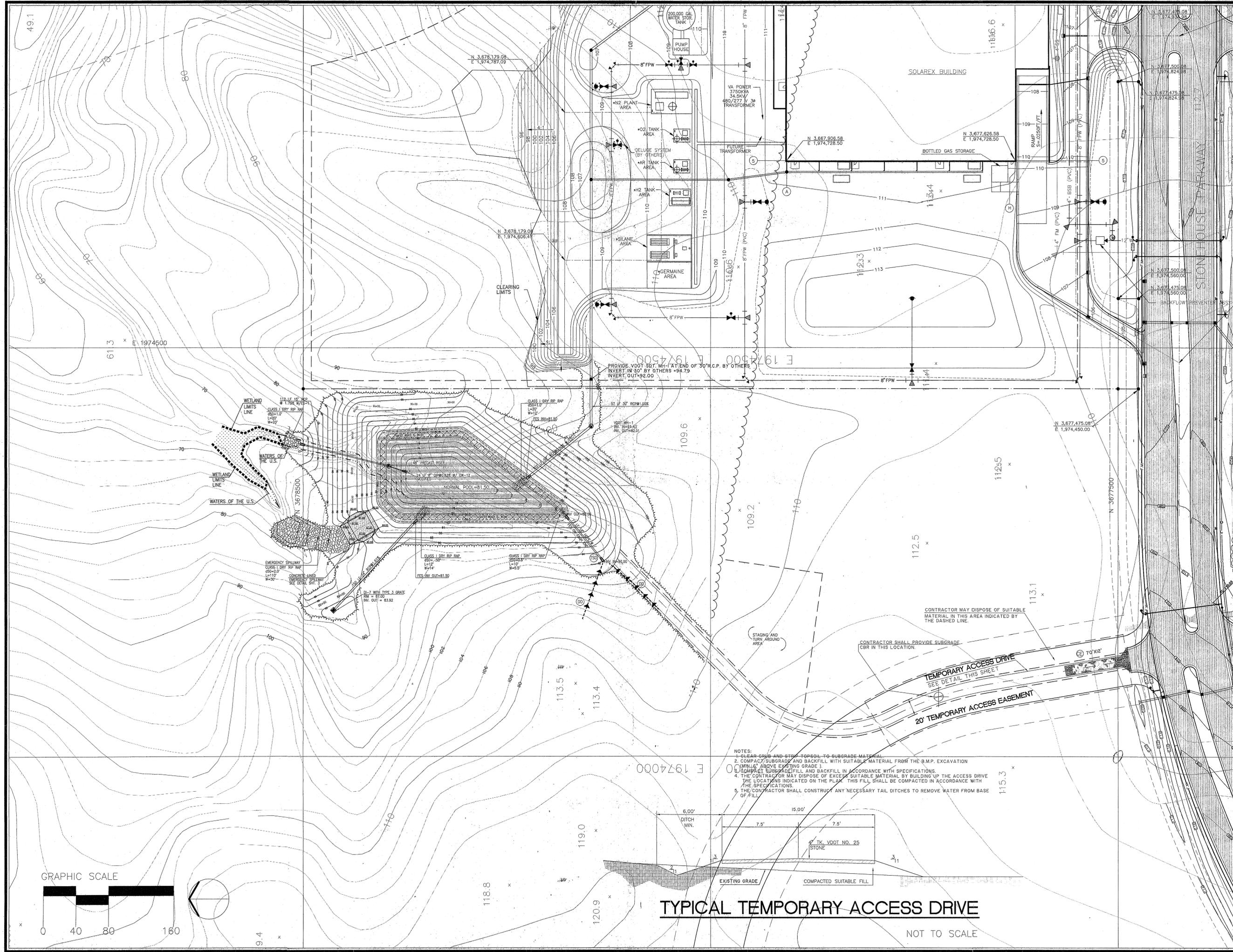
DES. J.L.H./D.S.L.  
DWN. S.A.G.  
CHK. J.L.H.  
DATE 10/12/95

BMP NO. 2  
AT COMMERCE PARK  
FOR STONEHOUSE, INC.  
TITLE SHEET/EROSION AND SEDIMENT CONTROL NOTES AND DETAILS

Thin Film Division  
826 Newtown-Yardley Road  
Newtown, PA 18940 USA  
(215) 860-0902  
FAX 215-860-2986

SOLAREX  
A Business Unit of  
Amcor/Encon Solar

PROJ. NO. 80046-331-02  
SCALE: NO SCALE  
SHEET 1 OF 3  
DWG. NO.



**TYPICAL TEMPORARY ACCESS DRIVE**

NOT TO SCALE

- NOTES:
1. CLEAR CRUB AND STRIP TOPSOIL TO SUBGRADE MATERIAL.
  2. COMPACT/SUBGRADE AND BACKFILL WITH SUITABLE MATERIAL FROM THE BMP. EXCAVATION (MINUS ABOVE EXISTING GRADE).
  3. COMPACT SUBGRADE/FILL AND BACKFILL IN ACCORDANCE WITH SPECIFICATIONS.
  4. THE CONTRACTOR MAY DISPOSE OF EXCESS SUITABLE MATERIAL BY BUILDING UP THE ACCESS DRIVE THE LOCATIONS INDICATED ON THE PLAN. THIS FILL SHALL BE COMPACTED IN ACCORDANCE WITH THE SPECIFICATIONS.
  5. THE CONTRACTOR SHALL CONSTRUCT ANY NECESSARY TAIL DITCHES TO REMOVE WATER FROM BASE OF FILL.



**Langley and McDonald, P.C.**  
 Engineers • Surveyors • Planners  
 Landscape Architects • Environmental Consultants  
 VIRGINIA BEACH



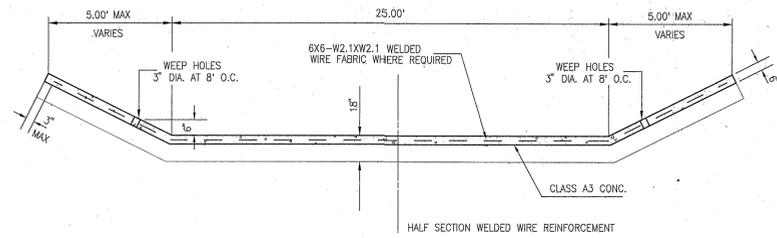
DES.	DSL
DWN.	JAM
CHK.	JLH
DATE	10/12/95

**BMP NO. 2**  
**AT COMMERCE PARK**  
**FOR STONEHOUSE, INC.**  
 BMP OVERALL LAYOUT

Thin Film Division  
 826 Newtown-Yardley Road  
 Newtown, PA 18940 USA  
 (215) 860-0902  
 FAX 215-860-2986

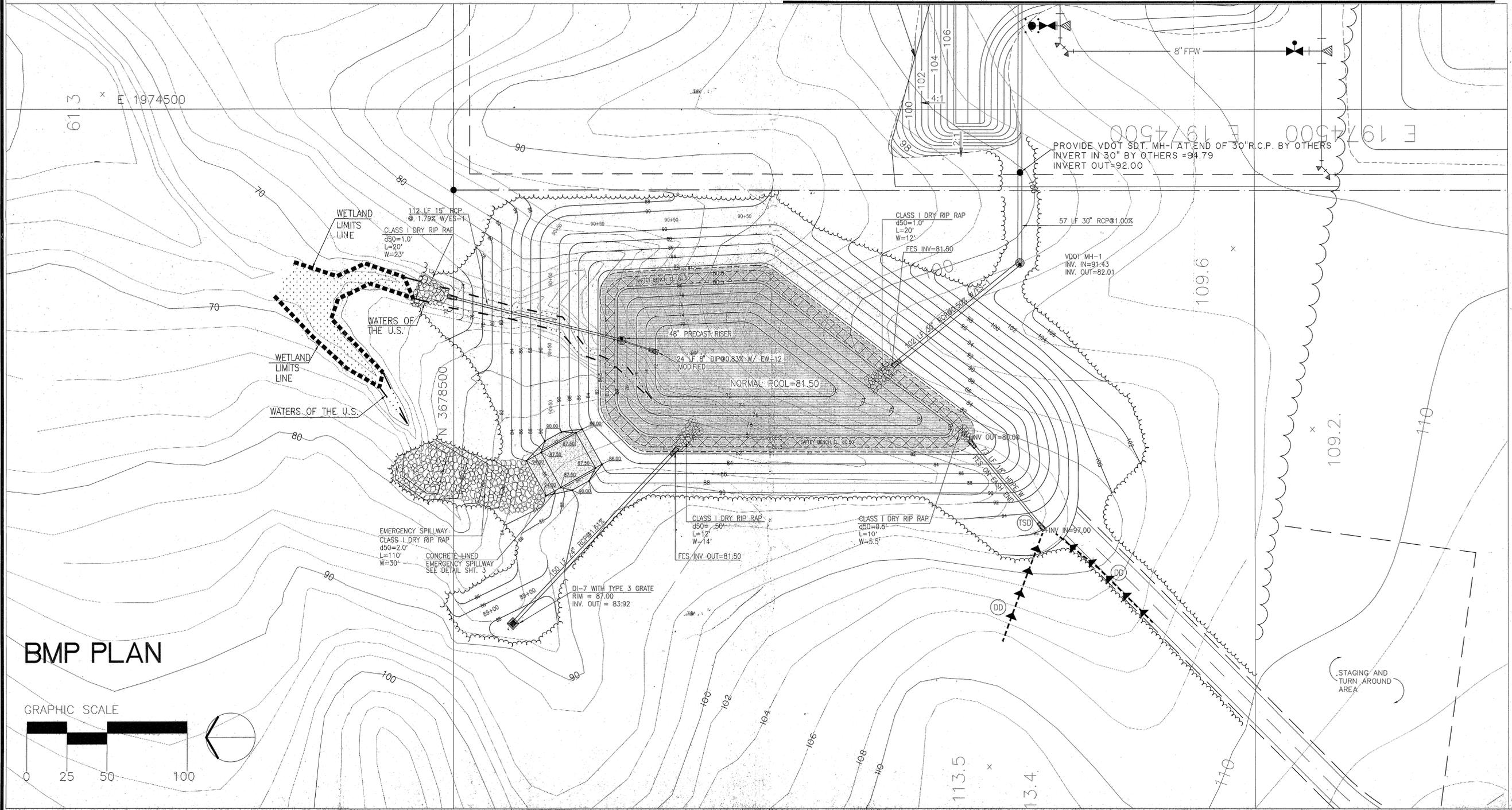


PROJ. NO.  
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 SCALE: 1"=40'  
 SHEET 2 OF 3  
 DWG. NO.



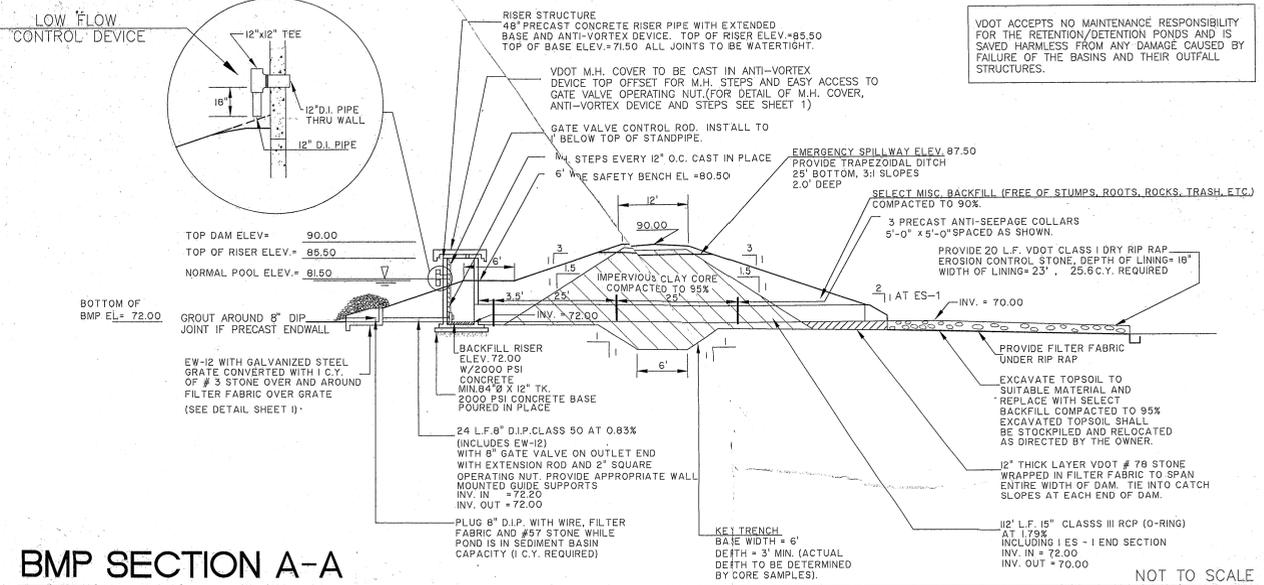
**TYPICAL CONC. SPILLWAY SECTION**  
NOT TO SCALE

**BMP SECTION A-A**  
NOT TO SCALE



**BMP PLAN**

GRAPHIC SCALE



VDOT ACCEPTS NO MAINTENANCE RESPONSIBILITY FOR THE RETENTION/DETENTION PONDS AND IS SAVED HARMLESS FROM ANY DAMAGE CAUSED BY FAILURE OF THE BASINS AND THEIR OUTFALL STRUCTURES.



**Langley and McDonald, P.C.**  
Engineers • Surveyors • Planners  
Landscape Architects • Environmental Consultants  
WILLIAMSBURG, VIRGINIA BEACH



DES.	DSL
DWN.	JAM
CHK.	JLH
DATE	10/12/95

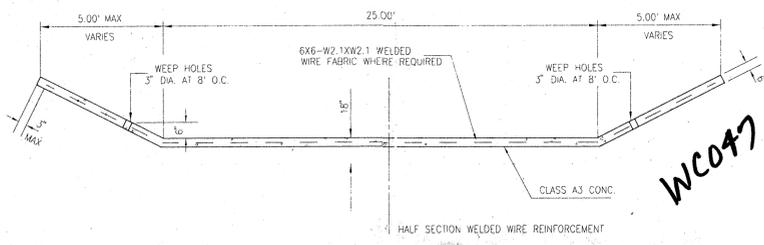
**BMP NO. 2**  
**AT COMMERCE PARK**  
**FOR STONEHOUSE, INC.**  
BMP PLAN AND SECTION

Thin Film Division  
826 Newtown-Yardley Road  
Newtown, PA 18940 USA  
(215) 860-0902  
FAX 215-860-2986

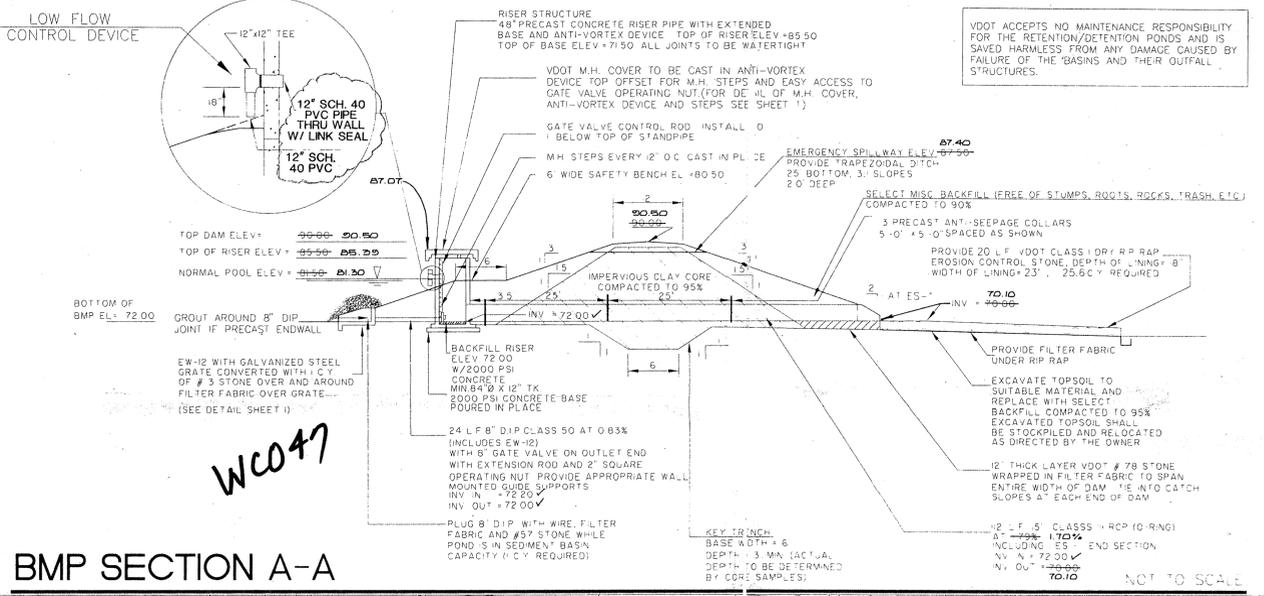


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SHEET	3 OF 3
DWG. NO.	



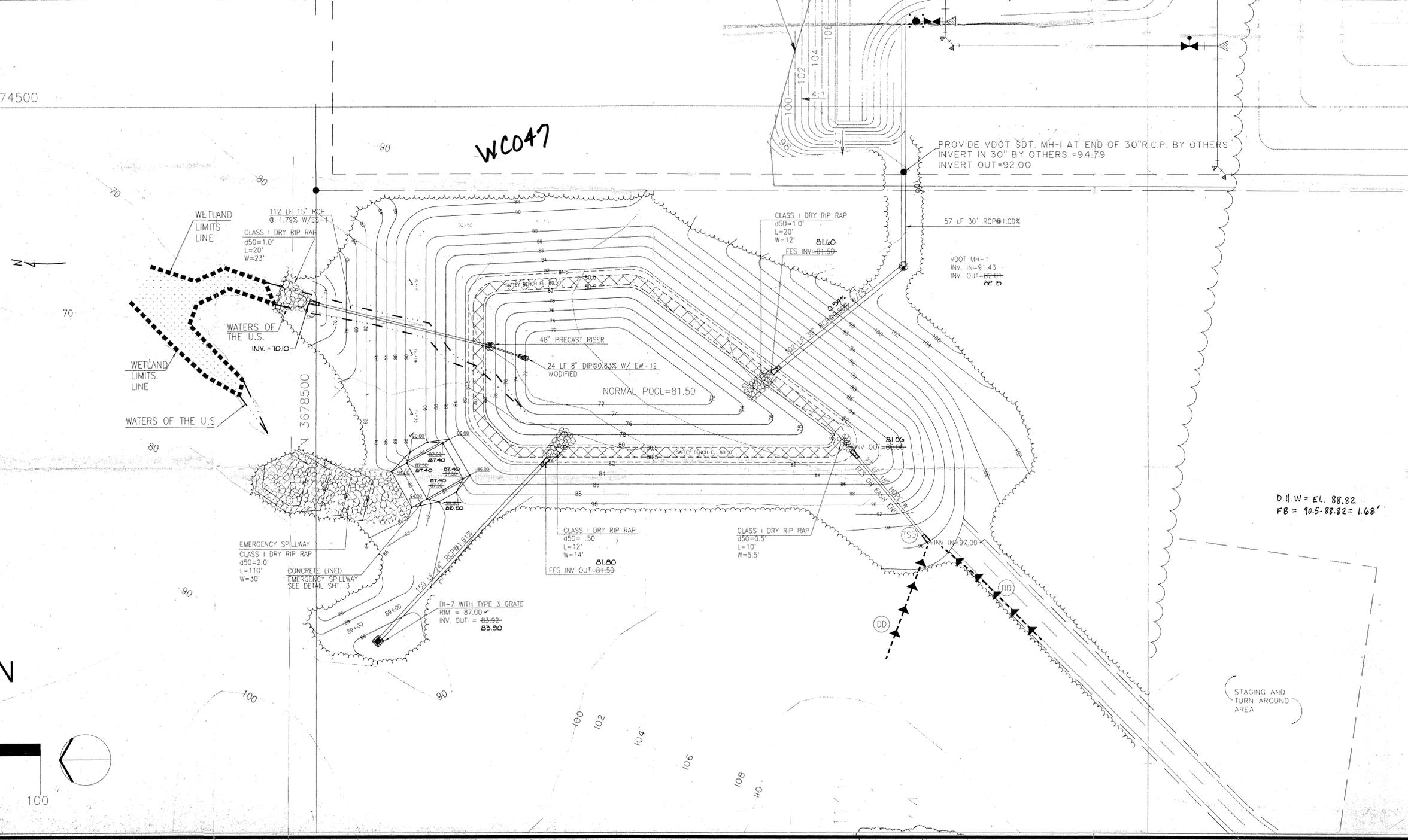


**TYPICAL CONC. SPILLWAY SECTION**  
NOT TO SCALE

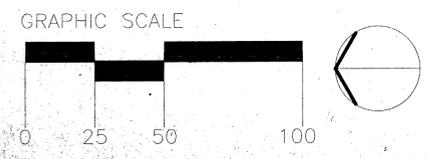


**BMP SECTION A-A**  
NOT TO SCALE

E 1974500



**BMP PLAN**



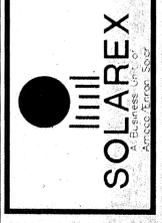
**Langley and McDonald, P.C.**  
Engineers • Surveyors • Planners  
Landscape Architects • Environmental Consultants



DES.	DSL
DWN.	JAM
CHK.	JLH
DATE	10/12/95

BMP NO. 2  
AT COMMERCE PARK  
FOR STONEHOUSE, INC.  
**RECORD DRAWING**  
BMP PLAN AND SECTION

Thin Film Division  
826 Newtown-Yardley Road  
Newtown, PA 18940 USA  
(215) 860-0902  
FAX 215-860-2986



PROJ. NO.	89046-331-02
SCALE:	1" = 25'
SHEET	3 OF 3
DWG. NO.	

**BMP NO. 2 CALCULATIONS**  
**FOR**  
**COMMERCE PARK**  
**AT**  
**STONEHOUSE**  
**(TO SERVE THE SOLAREX SITE)**  
**JAMES CITY COUNTY, VIRGINIA**

*WC 047*



**OCTOBER 12, 1995**  
**REVISED DEC. 4, 1995**  
**REVISED MAY 20, 1996**



Langley and McDonald, P.C.

Engineers  
Surveyors  
Planners  
Landscape Architects  
Environmental Consultants

5544 Greenwich Road, Virginia Beach, VA 23462  
(804) 473-2000 FAX: (804) 497-7933

201 Packets Court, Williamsburg, VA 23185  
(804) 253-2975 FAX: (804) 229-0049

**BMP NO. 2 CALCULATIONS**  
**FOR**  
**COMMERCE PARK**  
**AT**  
**STONEHOUSE**

**(TO SERVE THE SOLAREX SITE)**  
**JAMES CITY COUNTY, VIRGINIA**



**OCTOBER 12, 1995**  
**REVISED DEC. 4, 1995**  
**REVISED MAY 20, 1996**

BMP		AREA SERVED ACRES	BMP POINTS	FRACTION SERVED BY BMP		WEIGHTED BMP POINTS	Rv	Rm	V (Ac-Ft)	V (C.F.)	HxV (C.F.)
1	WET POND	32.6	9	0.201	=	1.808	0.50	0.45	0.611	26626	106504
2	WET POND	25.1	9	0.155	=	1.392	0.50	0.45	0.471	20500	82002
	R.M. POND	68.0	8	0.419	=	3.352	0.50	0.45	1.275	55539	138848
	TOTAL	125.7				6.551					
	NATURAL OPENSOURCE OUTSIDE OF R.M. POND(AC)	85	10	0.344	=	3.437	Rv=0.05+1.009I, ASSUME I=50% V=(Rm)(Rv)/12*AREA H=2.5 FOR 8 POINT WET POND H=4 FOR 9 POINT WET POND				
	TOTAL BMP POINTS				=	10.0					
	AREA SERVED BY RICHARDSONS MILL (ACRES)				=	68.0					
	DEVELOPABLE AREA (ACRES) (247.3-85.0)				=	162.3					
	AREA THROUGH BMPS				=	125.7					
	TOTAL AREA OF SITE (ACRES)				=	247.3					



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ENGINEERS • PLANNERS • SURVEYORS  
VIRGINIA BEACH • WILLIAMSBURG, VIRGINIA

Subject STONEHOUSE  
BMP2  
Computed By DBT Checked By \_\_\_\_\_

Project No. 89046-331-02  
Client \_\_\_\_\_  
Date 5/13/96 Sheet No. 1

$$\text{WET VOLUME REQ'D FOR BMP2} = 82,002 \text{ CF} \\ = 1.88 \text{ AC-FT}$$

$$D \ z = 81.5 \quad \text{VOL} = 1.92 \text{ AC-FT} \quad \text{OK} \quad (\text{NORMAL POOL})$$

EXISTING CONDITIONS:

$$\text{DRAINAGE AREA} = 11.0 \text{ AC}$$

$$\text{LAND USE} \rightarrow \begin{array}{ll} \text{FARM} & 4.9 \text{ AC} \\ \text{WOODS} & 6.1 \text{ AC} \end{array}$$

$$'C' \text{ SOILS} \rightarrow \begin{array}{ll} \text{FARM} & \text{CN} = 71 \\ \text{WOODS} & \text{CN} = 70 \end{array} \Rightarrow \text{CN}_{\text{AVG}} = 70$$

$T_c$ : 100' overland flow,  $s = 0.01$ ,  $n = 0.15$  (short grass),

$$t = \frac{.007(nL)^{0.8}}{P_2^{0.5} s^{0.4}} = \frac{.007(.15 \times 100)^{0.8}}{(3.36)^{0.5} (.01)^{0.4}}$$

$$= 0.21 \text{ hr} \approx 13 \text{ min}$$

800' shallow conc. flow,  $s = .05$

$$v = 20.3282 s^{1/2} = 4.5 \text{ fps}$$

$$t = \frac{800}{4.5(60)} \approx 3 \text{ min}$$

$$\text{total } t_c \approx 16 \text{ min} \approx 0.267 \text{ hr}$$



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Subject STONEHOUSE

BMP 2

Computed By DBT Checked By \_\_\_\_\_

Project No. 89046-331-02

Client \_\_\_\_\_

Date 5/12/96 Sheet No. 2

### FUTURE CONDITIONS :

DRAINAGE AREA = 25.1 AC  
90 IMP = 50, 'C' SOILS → CN = 86

$T_c$ : 5 min. to 1<sup>st</sup> inlet

800' pipe @ 3 fps →  $t = 4$  min

total  $t_c = 9$  min = 0.15 hr

### RAINFALL DATA - 24-hr storm depths:

2-4R      3.36"

10-4R      5.04"

25-4R      6.24"

100-4R      7.68"

TR55 → SEE COMPUTER PRINTOUTS FOR SCS HYDROGRAPHS.



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Subject STONEHOUSE

BMPZ

Computed By DBT Checked By \_\_\_\_\_

Project No. 89046-331-02

Client \_\_\_\_\_

Date 5/13/96 Sheet No. 3

PROPOSED BMP W/ BENCH @ ELEV 80,  
NORMAL POOL @ ELEV 81.5

<u>ELEV</u>	<u>AREA (AC)</u>
72	0.08
74	0.12
76	0.16
78	0.22
80	0.28
82	0.42
84	0.50
86	0.58
88	0.66
90	0.75

@  $Z = 81.5$  VOL = 1.92 ACFT

SEE PRINTOUTS.

OUTFALL STRUCTURE :

12" ORIFICE @ INV = 81.5  
 48" RISER @ CREST = 85.5  
 15" BARREL @ INV = 72.00  
 25' WEIR @ CREST = 87.5  
 TOP OF DAM = 90.0

ROUTING RESULTS (SEE PRINTOUT)

<u>STORM</u>	<u>Q<sub>in</sub></u>	<u>Q<sub>out</sub></u>	<u>Z<sub>max</sub></u>	<u>EXIST @</u>
2-yr	63 CFS	8 CFS	85.55	9 CFS
10-yr	110 CFS	23 CFS	87.43	23 CFS
25-yr	146 CFS	72 CFS	88.25	—
100-yr	189 CFS	138 CFS	88.82	—

TR-55 TABULAR HYDROGRAPH METHOD  
Type II. Distribution  
(24 hr. Duration Storm)

Executed: 05-13-1996 14:29:46  
Watershed file: --> A:\BMP2\EXIST .MOP  
Hydrograph file: --> A:\BMP2\EX-2.HYD

STONEHOUSE COMMERCE PARK  
BMP-2  
PRE-DEVELOPMENT CONDITIONS

)))) Input Parameters Used to Compute Hydrograph (((((

Subarea Description	AREA (acres)	CN	Tc (hrs)	* Tt (hrs)	Precip. I (in)	Runoff I (in)	Ia/p input/used
TO OUTFALL	11.00	70.0	0.30	0.00	3.36	1 0.92	1.26 .26

\* Travel time from subarea outfall to composite watershed outfall point.  
I -- Subarea where user specified interpolation between Ia/p tables.

Total area = 11.00 acres or 0.01719 sq.mi  
Peak discharge = 9 cfs

)))) Computer Modifications of Input Parameters ((((((

Subarea Description	Input Values		Rounded Values		Ia/p Interpolated (Yes/No)	Ia/p Messages
	Tc (hr)	* Tt (hr)	Tc (hr)	* Tt (hr)		
TO OUTFALL	0.27	0.00	0.30	0.00	Yes	--

\* Travel time from subarea outfall to composite watershed outfall point.

TR-55 TABULAR HYDROGRAPH METHOD  
Type II. Distribution  
(24 hr. Duration Storm)

Executed: 05-13-1996 14:29:46  
Watershed file: --> A:\BMP2\EXIST .MOP  
Hydrograph file: --> A:\BMP2\EX-2.HYD

STONEHOUSE COMMERCE PARK  
BMP-2  
PRE-DEVELOPMENT CONDITIONS

>>> Summary of Subarea Times to Peak <<<<

Subarea	Peak Discharge at Composite Outfall (cfs)	Time to Peak at Composite Outfall (hrs)
TO OUTFALL	9	12.2
Composite Watershed	9	12.2

TR-55 TABULAR HYDROGRAPH METHOD  
 Type II. Distribution  
 (24 hr. Duration Storm)

Executed: 05-13-1996 14:29:46  
 Watershed file: --> A:\BMP2\EXIST .MOP  
 Hydrograph file: --> A:\BMP2\EX-2.HYD

STONEHOUSE COMMERCE PARK  
 BMP-2  
 PRE-DEVELOPMENT CONDITIONS

Composite Hydrograph Summary (cfs)

Subarea Description	11.0 hr	11.3 hr	11.6 hr	11.9 hr	12.0 hr	12.1 hr	12.2 hr	12.3 hr	12.4 hr
TO OUTFALL	0	0	0	1	2	5	9	9	7
Total (cfs)	0	0	0	1	2	5	9	9	7

Subarea Description	12.5 hr	12.6 hr	12.7 hr	12.8 hr	13.0 hr	13.2 hr	13.4 hr	13.6 hr	13.8 hr
TO OUTFALL	5	3	3	2	2	1	1	1	1
Total (cfs)	5	3	3	2	2	1	1	1	1

Subarea Description	14.0 hr	14.3 hr	14.6 hr	15.0 hr	15.5 hr	16.0 hr	16.5 hr	17.0 hr	17.5 hr
TO OUTFALL	1	1	1	1	1	1	0	0	0
Total (cfs)	1	1	1	1	1	1	0	0	0

Subarea Description	18.0 hr	19.0 hr	20.0 hr	22.0 hr	26.0 hr
TO OUTFALL	0	0	0	0	0
Total (cfs)	0	0	0	0	0

TR-55 TABULAR HYDROGRAPH METHOD  
 Type II. Distribution  
 (24 hr. Duration Storm)

Executed: 05-13-1996 14:29:46  
 Watershed file: --> A:\BMP2\EXIST .MOP  
 Hydrograph file: --> A:\BMP2\EX-10.HYD

STONEHOUSE COMMERCE PARK  
 BMP-2  
 PRE-DEVELOPMENT CONDITIONS

)))) Input Parameters Used to Compute Hydrograph <<<<

Subarea Description	AREA (acres)	CN	Tc (hrs)	* Tt (hrs)	Precip. I (in)	I	Runoff (in)	Ia/p input/used
TO OUTFALL	11.00	70.0	0.30	0.00	5.04	1	2.07	1.17 .17

\* Travel time from subarea outfall to composite watershed outfall point.  
 I -- Subarea where user specified interpolation between Ia/p tables.

Total area = 11.00 acres or 0.01719 sq.mi  
 Peak discharge = 23 cfs

)))) Computer Modifications of Input Parameters <<<<

Subarea Description	Input Values		Rounded Values		Ia/p Interpolated (Yes/No)	Ia/p Messages
	Tc (hr)	* Tt (hr)	Tc (hr)	* Tt (hr)		
TO OUTFALL	0.27	0.00	0.30	0.00	Yes	--

\* Travel time from subarea outfall to composite watershed outfall point.

TR-55 TABULAR HYDROGRAPH METHOD  
 Type II. Distribution  
 (24 hr. Duration Storm)

Executed: 05-13-1996 14:29:46  
 Watershed file: --) A:\BMP2\EXIST .MOP  
 Hydrograph file: --) A:\BMP2\EX-10.HYD

STONEHOUSE COMMERCE PARK  
 BMP-2  
 PRE-DEVELOPMENT CONDITIONS

>>> Summary of Subarea Times to Peak <<<<

Subarea	Peak Discharge at Composite Outfall (cfs)	Time to Peak at Composite Outfall (hrs)
TO OUTFALL	23	12.3
Composite Watershed	23	12.3

TR-55 TABULAR HYDROGRAPH METHOD  
 Type II. Distribution  
 (24 hr. Duration Storm)

Executed: 05-13-1996 14:29:46  
 Watershed file: --) A:\BMP2\EXIST .MOP  
 Hydrograph file: --) A:\BMP2\EX-10.HYD

STONEHOUSE COMMERCE PARK  
 BMP-2  
 PRE-DEVELOPMENT CONDITIONS

Composite Hydrograph Summary (cfs)

Subarea Description	11.0 hr	11.3 hr	11.6 hr	11.9 hr	12.0 hr	12.1 hr	12.2 hr	12.3 hr	12.4 hr
TO OUTFALL	0	1	1	3	6	13	22	23	16
Total (cfs)	0	1	1	3	6	13	22	23	16

Subarea Description	12.5 hr	12.6 hr	12.7 hr	12.8 hr	13.0 hr	13.2 hr	13.4 hr	13.6 hr	13.8 hr
TO OUTFALL	10	7	6	4	3	3	2	2	2
Total (cfs)	10	7	6	4	3	3	2	2	2

Subarea Description	14.0 hr	14.3 hr	14.6 hr	15.0 hr	15.5 hr	16.0 hr	16.5 hr	17.0 hr	17.5 hr
TO OUTFALL	2	1	1	1	1	1	1	1	1
Total (cfs)	2	1	1	1	1	1	1	1	1

Subarea Description	18.0 hr	19.0 hr	20.0 hr	22.0 hr	26.0 hr
TO OUTFALL	1	1	1	1	0
Total (cfs)	1	1	1	1	0

TR-55 TABULAR HYDROGRAPH METHOD  
 Type II. Distribution  
 (24 hr. Duration Storm)

Executed: 05-13-1996 14:30:16  
 Watershed file: --> A:\BMP2\FUTURE .MOP  
 Hydrograph file: --> A:\BMP2\FUT-2.HYD

STONEHOUSE COMMERCE PARK  
 BMP-2  
 POST-DEVELOPMENT CONDITIONS

>>>> Input Parameters Used to Compute Hydrograph <<<<

Subarea Description	AREA (acres)	CN	Tc (hrs)	* Tt (hrs)	Precip. I (in)	Runoff I (in)	Ia/p input/used
TO OUTFALL	25.10	86.0	0.20	0.00	3.36	1.97	1.1 .10

\* Travel time from subarea outfall to composite watershed outfall point.  
 I -- Subarea where user specified interpolation between Ia/p tables.

Total area = 25.10 acres or 0.03922 sq.mi  
 Peak discharge = 62 cfs

>>>> Computer Modifications of Input Parameters <<<<

Subarea Description	Input Values		Rounded Values		Ia/p	Ia/p Messages
	Tc (hr)	* Tt (hr)	Tc (hr)	* Tt (hr)	Interpolated (Yes/No)	
TO OUTFALL	0.15	0.00	0.20	0.00	No	Computed Ia/p (.1

\* Travel time from subarea outfall to composite watershed outfall point.

Return Frequency: 2 years

TR-55 TABULAR HYDROGRAPH METHOD  
Type II. Distribution  
(24 hr. Duration Storm)

Executed: 05-13-1996 14:30:16  
Watershed file: --> A:\BMP2\FUTURE .MOP  
Hydrograph file: --> A:\BMP2\FUT-2.HYD

STONEHOUSE COMMERCE PARK  
BMP-2  
POST-DEVELOPMENT CONDITIONS

>>> Summary of Subarea Times to Peak <<<

Subarea	Peak Discharge at Composite Outfall (cfs)	Time to Peak at Composite Outfall (hrs)
----- TO OUTFALL -----	62	12.2
----- Composite Watershed	62	12.2

Return Frequency: 2 years

TR-55 TABULAR HYDROGRAPH METHOD  
 Type II. Distribution  
 (24 hr. Duration Storm)

Executed: 05-13-1996 14:30:16  
 Watershed file: --> A:\BMP2\FUTURE .MOP  
 Hydrograph file: --> A:\BMP2\FUT-2.HYD

STONEHOUSE COMMERCE PARK  
 BMP-2  
 POST-DEVELOPMENT CONDITIONS

## Composite Hydrograph Summary (cfs)

Subarea Description	11.0 hr	11.3 hr	11.6 hr	11.9 hr	12.0 hr	12.1 hr	12.2 hr	12.3 hr	12.4 hr
TO OUTFALL	2	2	4	16	31	57	62	37	19
Total (cfs)	2	2	4	16	31	57	62	37	19

Subarea Description	12.5 hr	12.6 hr	12.7 hr	12.8 hr	13.0 hr	13.2 hr	13.4 hr	13.6 hr	13.8 hr
TO OUTFALL	13	10	8	7	5	5	4	4	3
Total (cfs)	13	10	8	7	5	5	4	4	3

Subarea Description	14.0 hr	14.3 hr	14.6 hr	15.0 hr	15.5 hr	16.0 hr	16.5 hr	17.0 hr	17.5 hr
TO OUTFALL	3	3	3	2	2	2	2	2	1
Total (cfs)	3	3	3	2	2	2	2	2	1

Subarea Description	18.0 hr	19.0 hr	20.0 hr	22.0 hr	26.0 hr
TO OUTFALL	1	1	1	1	0
Total (cfs)	1	1	1	1	0

TR-55 TABULAR HYDROGRAPH METHOD  
Type II. Distribution  
(24 hr. Duration Storm)

Executed: 05-13-1996 14:30:16  
Watershed file: --> A:\BMP2\FUTURE .MOP  
Hydrograph file: --> A:\BMP2\FUT-10.HYD

STONEHOUSE COMMERCE PARK  
BMP-2  
POST-DEVELOPMENT CONDITIONS

)))) Input Parameters Used to Compute Hydrograph (((((

Subarea Description	AREA (acres)	CN	Tc (hrs)	* Tt (hrs)	Precip. I (in)	Runoff I (in)	Ia/p input/used
TO OUTFALL	25.10	86.0	0.20	0.00	5.04	3.50	1.06 .10

\* Travel time from subarea outfall to composite watershed outfall point.  
I -- Subarea where user specified interpolation between Ia/p tables.

Total area = 25.10 acres or 0.03922 sq.mi  
Peak discharge = 110 cfs

)))) Computer Modifications of Input Parameters ((((((

Subarea Description	Input Values		Rounded Values		Ia/p Interpolated (Yes/No)	Ia/p Messages
	Tc (hr)	* Tt (hr)	Tc (hr)	* Tt (hr)		
TO OUTFALL	0.15	0.00	0.20	0.00	No	Computed Ia/p (.1

\* Travel time from subarea outfall to composite watershed outfall point.

TR-55 TABULAR HYDROGRAPH METHOD  
Type II. Distribution  
(24 hr. Duration Storm)Executed: 05-13-1996 14:30:16  
Watershed file: --> A:\BMP2\FUTURE .MOP  
Hydrograph file: --> A:\BMP2\FUT-10.HYDSTONEHOUSE COMMERCE PARK  
BMP-2  
POST-DEVELOPMENT CONDITIONS

## &gt;&gt;&gt; Summary of Subarea Times to Peak &lt;&lt;&lt;&lt;

Subarea	Peak Discharge at Composite Outfall (cfs)	Time to Peak at Composite Outfall (hrs)
TO OUTFALL	110	12.2
Composite Watershed	110	12.2

TR-55 TABULAR HYDROGRAPH METHOD  
 Type II. Distribution  
 (24 hr. Duration Storm)

Executed: 05-13-1996 14:30:16  
 Watershed file: --> A:\BMP2\FUTURE .MOP  
 Hydrograph file: --> A:\BMP2\FUT-10.HYD

STONEHOUSE COMMERCE PARK  
 BMP-2  
 POST-DEVELOPMENT CONDITIONS

Composite Hydrograph Summary (cfs)

Subarea Description	11.0 hr	11.3 hr	11.6 hr	11.9 hr	12.0 hr	12.1 hr	12.2 hr	12.3 hr	12.4 hr
TO OUTFALL	3	4	6	29	55	101	110	66	34
Total (cfs)	3	4	6	29	55	101	110	66	34

Subarea Description	12.5 hr	12.6 hr	12.7 hr	12.8 hr	13.0 hr	13.2 hr	13.4 hr	13.6 hr	13.8 hr
TO OUTFALL	23	18	14	12	10	8	7	7	6
Total (cfs)	23	18	14	12	10	8	7	7	6

Subarea Description	14.0 hr	14.3 hr	14.5 hr	15.0 hr	15.5 hr	16.0 hr	16.5 hr	17.0 hr	17.5 hr
TO OUTFALL	5	5	5	4	4	3	3	3	3
Total (cfs)	5	5	5	4	4	3	3	3	3

Subarea Description	18.0 hr	19.0 hr	20.0 hr	22.0 hr	26.0 hr
TO OUTFALL	2	2	2	2	0
Total (cfs)	2	2	2	2	0

TR-55 TABULAR HYDROGRAPH METHOD  
 Type II. Distribution  
 (24 hr. Duration Storm)

Executed: 05-13-1996 14:30:16  
 Watershed file: --) A:\BMP2\FUTURE .MOP  
 Hydrograph file: --) A:\BMP2\FUT-25.HYD

STONEHOUSE COMMERCE PARK  
 BMP-2  
 POST-DEVELOPMENT CONDITIONS

>>>> Input Parameters Used to Compute Hydrograph <<<<

Subarea Description	AREA (acres)	CN	Tc (hrs)	* Tt (hrs)	Precip. I (in)	Runoff I (in)	Ia/p input/used
TO OUTFALL	25.10	86.0	0.20	0.00	6.24	4.64	1.05 .10

\* Travel time from subarea outfall to composite watershed outfall point.  
 I -- Subarea where user specified interpolation between Ia/p tables.

Total area = 25.10 acres or 0.03922 sq.mi  
 Peak discharge = 146 cfs

>>>> Computer Modifications of Input Parameters <<<<

Subarea Description	Input Values		Rounded Values		Ia/p Interpolated	Ia/p Messages
	Tc (hr)	* Tt (hr)	Tc (hr)	* Tt (hr)	(Yes/No)	
TO OUTFALL	0.15	0.00	0.20	0.00	No	Computed Ia/p < .1

\* Travel time from subarea outfall to composite watershed outfall point.

TR-55 TABULAR HYDROGRAPH METHOD  
Type II. Distribution  
(24 hr. Duration Storm)

Executed: 05-13-1996 14:30:16  
Watershed file: --> A:\BMP2\FUTURE .MOP  
Hydrograph file: --> A:\BMP2\FUT-25.HYD

STONEHOUSE COMMERCE PARK  
BMP-2  
POST-DEVELOPMENT CONDITIONS

>>>> Summary of Subarea Times to Peak <<<<

Subarea	Peak Discharge at Composite Outfall (cfs)	Time to Peak at Composite Outfall (hrs)
TO OUTFALL	146	12.2
Composite Watershed	146	12.2

TR-55 TABULAR HYDROGRAPH METHOD  
 Type II. Distribution  
 (24 hr. Duration Storm)

Executed: 05-13-1996 14:30:16  
 Watershed file: --> A:\BMP2\FUTURE .MOP  
 Hydrograph file: --> A:\BMP2\FUT-25.HYD

STONEHOUSE COMMERCE PARK  
 BMP-2  
 POST-DEVELOPMENT CONDITIONS

Composite Hydrograph Summary (cfs)

Subarea Description	11.0 hr	11.3 hr	11.6 hr	11.9 hr	12.0 hr	12.1 hr	12.2 hr	12.3 hr	12.4 hr
TO OUTFALL	4	6	9	38	73	134	146	88	45
Total (cfs)	4	6	9	38	73	134	146	88	45

Subarea Description	12.5 hr	12.6 hr	12.7 hr	12.8 hr	13.0 hr	13.2 hr	13.4 hr	13.6 hr	13.8 hr
TO OUTFALL	30	23	19	16	13	11	10	9	8
Total (cfs)	30	23	19	16	13	11	10	9	8

Subarea Description	14.0 hr	14.3 hr	14.6 hr	15.0 hr	15.5 hr	16.0 hr	16.5 hr	17.0 hr	17.5 hr
TO OUTFALL	7	6	6	5	5	4	4	4	3
Total (cfs)	7	6	6	5	5	4	4	4	3

Subarea Description	18.0 hr	19.0 hr	20.0 hr	22.0 hr	26.0 hr
TO OUTFALL	3	3	2	2	0
Total (cfs)	3	3	2	2	0

TR-55 TABULAR HYDROGRAPH METHOD  
Type II. Distribution  
(24 hr. Duration Storm)

Executed: 05-13-1996 14:30:16  
Watershed file: --) A:\BMP2\FUTURE .MOP  
Hydrograph file: --) A:\BMP2\FUT-100.HYD

STONEHOUSE COMMERCE PARK  
BMP-2  
POST-DEVELOPMENT CONDITIONS

)))) Input Parameters Used to Compute Hydrograph (((((

Subarea Description	AREA (acres)	CN	Tc (hrs)	* Tt (hrs)	Precip. I (in)	Runoff (in)	Ia/p input/used
TO OUTFALL	25.10	86.0	0.20	0.00	7.68	1 6.02	1.04 .10

\* Travel time from subarea outfall to composite watershed outfall point.  
I -- Subarea where user specified interpolation between Ia/p tables.

Total area = 25.10 acres or 0.03922 sq.mi  
Peak discharge = 189 cfs

)))) Computer Modifications of Input Parameters (((((

Subarea Description	Input Values		Rounded Values		Ia/p	Ia/p Messages
	Tc (hr)	* Tt (hr)	Tc (hr)	* Tt (hr)	Interpolated (Yes/No)	
TO OUTFALL	0.15	0.00	0.20	0.00	No	Computed Ia/p < .1

\* Travel time from subarea outfall to composite watershed outfall point.

TR-55 TABULAR HYDROGRAPH METHOD  
 Type II. Distribution  
 (24 hr. Duration Storm)

Executed: 05-13-1996 14:30:16  
 Watershed file: --) A:\BMP2\FUTURE .MOP  
 Hydrograph file: --) A:\BMP2\FUT-100.HYD

STONEHOUSE COMMERCE PARK  
 BMP-2  
 POST-DEVELOPMENT CONDITIONS

>>> Summary of Subarea Times to Peak <<<<

Subarea	Peak Discharge at Composite Outfall (cfs)	Time to Peak at Composite Outfall (hrs)
TO OUTFALL	189	12.2
Composite Watershed	189	12.2

TR-55 TABULAR HYDROGRAPH METHOD  
Type II. Distribution  
(24 hr. Duration Storm)Executed: 05-13-1996 14:30:16  
Watershed file: --> A:\BMP2\FUTURE .MOP  
Hydrograph file: --> A:\BMP2\FUT-100.HYDSTONEHOUSE COMMERCE PARK  
BMP-2  
POST-DEVELOPMENT CONDITIONS

## Composite Hydrograph Summary (cfs)

Subarea Description	11.0 hr	11.3 hr	11.6 hr	11.9 hr	12.0 hr	12.1 hr	12.2 hr	12.3 hr	12.4 hr
TO OUTFALL	5	7	11	49	95	174	189	114	59
Total (cfs)	5	7	11	49	95	174	189	114	59

Subarea Description	12.5 hr	12.6 hr	12.7 hr	12.8 hr	13.0 hr	13.2 hr	13.4 hr	13.6 hr	13.8 hr
TO OUTFALL	39	30	24	20	17	14	13	12	10
Total (cfs)	39	30	24	20	17	14	13	12	10

Subarea Description	14.0 hr	14.3 hr	14.6 hr	15.0 hr	15.5 hr	16.0 hr	16.5 hr	17.0 hr	17.5 hr
TO OUTFALL	9	8	8	7	6	6	5	5	4
Total (cfs)	9	8	8	7	6	6	5	5	4

Subarea Description	18.0 hr	19.0 hr	20.0 hr	22.0 hr	26.0 hr
TO OUTFALL	4	4	3	3	0
Total (cfs)	4	4	3	3	0

POND-2 Version: 5.20  
S/N:

STONEHOUSE BMP NO. 2  
PROPOSED CONTOURS W/BENCH, NORMAL POOL AT ELEV 81.5

CALCULATED 05-13-1996 14:34:22  
DISK FILE: a:\bmp2\BMP-2-R2.VOL

Planimeter scale: 1 inch = 208.71 ft.

Elevation (ft)	Planimeter (sq.in.)	Area (acres)	$A1+A2+\text{sq}r(A1 \times A2)$ (acres)	* Volume (acre-ft)	Volume Sum (acre-ft)
72.00	0.08	0.08	0.00	0.00	0.00
74.00	0.12	0.12	0.30	0.20	0.20
76.00	0.16	0.16	0.42	0.28	0.48
78.00	0.22	0.22	0.57	0.38	0.86
80.00	0.28	0.28	0.75	0.50	1.35
80.10	0.35	0.35	0.94	0.03	1.39
81.00	0.39	0.39	1.11	0.33	1.72
81.50	*I*	0.40	1.19	0.20	1.92 ✓
82.00	0.42	0.42	1.21	0.40	2.12
84.00	0.50	0.50	1.38	0.92	3.04
86.00	0.58	0.58	1.62	1.08	4.12
88.00	0.66	0.66	1.86	1.24	5.36
90.00	0.75	0.75	2.11	1.41	6.77

\*I\* ---) Interpolated area from closest two planimeter readings.

2

$$IA = (\text{sq. rt}(Area1) + ((Ei - E1) / (E2 - E1)) * (\text{sq. rt}(Area2) - \text{sq. rt}(Area1)))$$

where: E1, E2 = Closest two elevations with planimeter data  
Ei = Elevation at which to interpolate area  
Area1, Area2 = Areas computed for E1, E2, respectively  
IA = Interpolated area for Ei

\* Incremental volume computed by the Conic Method for Reservoir Volumes.

$$Volume = (1/3) * (EL2 - EL1) * (Area1 + Area2 + \text{sq. rt.}(Area1 * Area2))$$

where: EL1, EL2 = Lower and upper elevations of the increment  
Area1, Area2 = Areas computed for EL1, EL2, respectively  
Volume = Incremental volume between EL1 and EL2

Outlet Structure File: BMP .STR

POND-2 Version: 5.20

S/N:

Date Executed:

Time Executed:

\*\*\*\*\*  
STONEHOUSE COMMERCE PARK  
BMP-2

\*\*\*\*\*

Outlet Structure File: a:\bmp2\BMP .STR  
Planimeter Input File: a:\bmp2\BMP-2-R2.VOL  
Rating Table Output File: a:\bmp2\BMP .PND

Min. Elev.(ft) = 81.5 Max. Elev.(ft) = 90 Incr.(ft) = .25

Additional elevations (ft) to be included in table:

\*\*\*\*\*

\*\*\*\*\*  
SYSTEM CONNECTIVITY  
\*\*\*\*\*

Structure	No.	Q Table	Q Table
TABLE	7		-> 7
ORIFICE-VC	4		-> 4
STAND PIPE	1	+ 4	-> 5
ORIFICE-VC	2	? 5	-> 3
WEIR-VR	6		-> 6

Outflow rating table summary was stored in file:  
a:\bmp2\BMP .PND

Outlet Structure File: BMP .STR

POND-2 Version: 5.20

S/N:

Date Executed:

Time Executed:

\*\*\*\*\*  
STONEHOUSE COMMERCE PARK  
BMP-2

\*\*\*\*\*

\*\*\*\*\* COMPOSITE OUTFLOW SUMMARY \*\*\*\*\*

Elevation (ft)	Q (cfs)	Contributing Structures
81.50	0.0	7
81.75	0.3	7
82.00	0.6	7
82.25	1.0	7
82.50	2.7	4
82.75	3.3	4
83.00	3.8	4
83.25	4.2	4
83.50	4.6	4
83.75	5.0	4
84.00	5.3	4
84.25	5.7	4
84.50	6.0	4
84.75	6.3	4
85.00	6.6	4
85.25	6.8	4
85.50	7.1	4 +1
85.75	12.5	4 +1
86.00	21.6	2
86.25	21.8	2
86.50	22.0	2
86.75	22.2	2
87.00	22.4	2
87.25	22.6	2
87.50	22.8	2 +6
87.75	32.4	2 +6
88.00	49.7	2 +6
88.25	72.1	2 +6
88.50	98.5	2 +6
88.75	128.5	2 +6
89.00	161.7	2 +6
89.25	197.7	2 +6
89.50	236.4	2 +6
89.75	277.6	2 +6
90.00	321.1	2 +6

12" orid.

12" orid.

Outlet Structure File: BMP .STR

POND-2 Version: 5.20

S/N:

Date Executed:

Time Executed:

\*\*\*\*\*  
STONEHOUSE COMMERCE PARK  
BMP-2

\*\*\*\*\*

>>>>> Structure No. 7 <<<<<<  
(Input Data)

TABLE

Input your own rating table.

E1 (ft) =81.5      E2 (ft) =82.499

Constant (ft) added to each elevation was:

Elev. (ft)	Q (cfs)
81.5	0
82.5	1.3

Outlet Structure File: BMP .STR

POND-2 Version: 5.20

S/N:

Date Executed:

Time Executed:

\*\*\*\*\*  
STONEHOUSE COMMERCE PARK  
BMP-2

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)))))) Structure No. 4 <<<<<<  
(Input Data)

ORIFICE-VC  
Orifice - Vertical Circular

E1 elev.(ft)?	82.5
E2 elev.(ft)?	90.001
Orifice coeff.?	.6
Invert elev.(ft)?	81.5
Datum elev.(ft)?	82.0
Diameter (ft)?	1.0

Outlet Structure File: BMP .STR

POND-2 Version: 5.20

S/N:

Date Executed:

Time Executed:

\*\*\*\*\*  
STONEHOUSE COMMERCE PARK  
BMP-2

\*\*\*\*\*

)))))) Structure No. 1 ((((((  
(Input Data)

STAND PIPE  
Stand Pipe with weir or orifice flow

E1 elev.(ft)?	85.5
E2 elev.(ft)?	90.001
Crest elev.(ft)?	85.5
Diameter (ft)?	4.0
Weir coefficient?	3.3
Orifice coefficient?	.6
Start transition elev.(ft) @ ?	
Transition height (ft)?	

Outlet Structure File: BMP .STR

POND-2 Version: 5.20

S/N:

Date Executed:

Time Executed:

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STONEHOUSE COMMERCE PARK

BMP-2

\*\*\*\*\*

)))))) Structure No. 2 ((((((  
(Input Data)

ORIFICE-VC

Orifice - Vertical Circular

*15" based*

E1 elev.(ft)?	85.5
E2 elev.(ft)?	90.001
Orifice coeff.?	.6
Invert elev.(ft)?	72
Datum elev.(ft)?	72.625
Diameter (ft)?	1.25

Outlet Structure File: BMP .STR

POND-2 Version: 5.20

S/N:

Date Executed:

Time Executed:

XXXXXXXXXXXXXXXXXXXXXXXXXXXX

STONEHOUSE COMMERCE PARK  
BMP-2

XXXXXXXXXXXXXXXXXXXXXXXXXXXX

)))))) Structure No. 6 ((((((  
(Input Data)

WEIR-VR

Weir - Vertical Rectangular

E1 elev.(ft)?	87.5
E2 elev.(ft)?	90.001
Weir coefficient?	3.0
Weir elev.(ft)?	87.5
Length (ft)?	25 ✓
Contracted/Suppressed (C/S)?	S

Outlet Structure File: BMP .STR

POND-2 Version: 5.20

S/N:

Date Executed:

Time Executed:

\*\*\*\*\*  
STONEHOUSE COMMERCE PARK  
BMP-2

\*\*\*\*\*

Outflow Rating Table for Structure #7  
TABLE           Input your own rating table.

Elevation (ft)	Q (cfs)	Computation Messages
81.50	0.0	
81.75	0.3	Interpolated from input table
82.00	0.6	Interpolated from input table
82.25	1.0	Interpolated from input table
82.50	0.0	E = or ) E2=82.499
82.75	0.0	E = or ) E2=82.499
83.00	0.0	E = or ) E2=82.499
83.25	0.0	E = or ) E2=82.499
83.50	0.0	E = or ) E2=82.499
83.75	0.0	E = or ) E2=82.499
84.00	0.0	E = or ) E2=82.499
84.25	0.0	E = or ) E2=82.499
84.50	0.0	E = or ) E2=82.499
84.75	0.0	E = or ) E2=82.499
85.00	0.0	E = or ) E2=82.499
85.25	0.0	E = or ) E2=82.499
85.50	0.0	E = or ) E2=82.499
85.75	0.0	E = or ) E2=82.499
86.00	0.0	E = or ) E2=82.499
86.25	0.0	E = or ) E2=82.499
86.50	0.0	E = or ) E2=82.499
86.75	0.0	E = or ) E2=82.499
87.00	0.0	E = or ) E2=82.499
87.25	0.0	E = or ) E2=82.499
87.50	0.0	E = or ) E2=82.499
87.75	0.0	E = or ) E2=82.499
88.00	0.0	E = or ) E2=82.499
88.25	0.0	E = or ) E2=82.499
88.50	0.0	E = or ) E2=82.499
88.75	0.0	E = or ) E2=82.499
89.00	0.0	E = or ) E2=82.499
89.25	0.0	E = or ) E2=82.499
89.50	0.0	E = or ) E2=82.499
89.75	0.0	E = or ) E2=82.499
90.00	0.0	E = or ) E2=82.499

Outlet Structure File: BMP .STR

POND-2 Version: 5.20

S/N:

Date Executed:

Time Executed:

\*\*\*\*\*  
STONEHOUSE COMMERCE PARK  
BMP-2

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Outflow Rating Table for Structure #4  
ORIFICE-VC Orifice - Vertical Circular

Elevation (ft)	Q (cfs)	Computation Messages
81.50	0.0	E < E1=82.5
81.75	0.0	E < E1=82.5
82.00	0.0	E < E1=82.5
82.25	0.0	E < E1=82.5
82.50	2.7	H =.5
82.75	3.3	H =.750
83.00	3.8	H =1.0
83.25	4.2	H =1.25
83.50	4.6	H =1.5
83.75	5.0	H =1.75
84.00	5.3	H =2.0
84.25	5.7	H =2.25
84.50	6.0	H =2.5
84.75	6.3	H =2.75
85.00	6.6	H =3.0
85.25	6.8	H =3.25
85.50	7.1	H =3.5
85.75	7.3	H =3.75
86.00	7.6	H =4.0
86.25	7.8	H =4.25
86.50	8.0	H =4.5
86.75	8.2	H =4.75
87.00	8.5	H =5.0
87.25	8.7	H =5.25
87.50	8.9	H =5.5
87.75	9.1	H =5.75
88.00	9.3	H =6.0
88.25	9.5	H =6.25
88.50	9.6	H =6.5
88.75	9.8	H =6.75
89.00	10.0	H =7.0
89.25	10.2	H =7.25
89.50	10.4	H =7.5
89.75	10.5	H =7.75
90.00	10.7	H =8.0

C = .6    A = .7853982 sq.ft.

H (ft) = Table elev. - Datum elev. ( 82 ft )

Q (cfs) = C \* A \*  $\text{sqr}(2g * H)$

Outlet Structure File: BMP .STR

POND-2 Version: 5.20

S/N:

Date Executed:

Time Executed:

\*\*\*\*\*  
STONEHOUSE COMMERCE PARK  
BMP-2

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Outflow Rating Table for Structure #1  
STAND PIPE Stand Pipe with weir or orifice flow

\*\*\*\*\* INLET CONTROL ASSUMED \*\*\*\*\*

Elevation (ft)	Q (cfs)	Computation	Messages
81.50	0.0	E <	Inv.El.= 85.5
81.75	0.0	E <	E1=85.5
82.00	0.0	E <	E1=85.5
82.25	0.0	E <	E1=85.5
82.50	0.0	E <	E1=85.5
82.75	0.0	E <	E1=85.5
83.00	0.0	E <	E1=85.5
83.25	0.0	E <	E1=85.5
83.50	0.0	E <	E1=85.5
83.75	0.0	E <	E1=85.5
84.00	0.0	E <	E1=85.5
84.25	0.0	E <	E1=85.5
84.50	0.0	E <	E1=85.5
84.75	0.0	E <	E1=85.5
85.00	0.0	E <	E1=85.5
85.25	0.0	E <	E1=85.5
85.50	0.0	Weir:	H =0.0
85.75	5.2	Weir:	H =.25
86.00	14.7	Weir:	H =.5
86.25	26.9	Weir:	H =.750
86.50	41.5	Weir:	H =1.0
86.75	58.0	Weir:	H =1.25
87.00	74.1	Orifice:	H =1.5
87.25	80.0	Orifice:	H =1.75
87.50	85.6	Orifice:	H =2.0
87.75	90.8	Orifice:	H =2.25
88.00	95.7	Orifice:	H =2.5
88.25	100.3	Orifice:	H =2.75
88.50	104.8	Orifice:	H =3.0
88.75	109.1	Orifice:	H =3.25
89.00	113.2	Orifice:	H =3.5
89.25	117.2	Orifice:	H =3.75

Outlet Structure File: BMP .STR

POND-2 Version: 5.20

S/N:

Date Executed:

Time Executed:

>>>> CONTINUED from previous page <<<<<

Outflow Rating Table for Structure #1  
STAND PIPE Stand Pipe with weir or orifice flow

\*\*\*\*\* INLET CONTROL ASSUMED \*\*\*\*\*

Elevation (ft)	Q (cfs)	Computation	Messages
89.50	121.0	Orifice:	H =4.0
89.75	124.7	Orifice:	H =4.25
90.00	128.4	Orifice:	H =4.5

Weir Cw = 3.3 Weir length = 12.56637 ft  
Orifice Co = .6 Orifice area = 12.56637 sq.ft.  
 $Q \text{ (cfs)} = (Cw \times L \times H^{1.5}) \text{ or } (Co \times A \times \text{sqr}(2 \times g \times H))$   
No transition used, transition height = 0.0  
Weir equation = Orifice equation @ elev.= 86.95908 ft

Outlet Structure File: BMP .STR

POND-2 Version: 5.20

S/N:

Date Executed:

Time Executed:

\*\*\*\*\*  
STONEHOUSE COMMERCE PARK  
BMP-2

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Outflow Rating Table for Structure #2  
ORIFICE-VC Orifice - Vertical Circular

Elevation (ft)	Q (cfs)	Computation Messages
81.50	0.0	E < E1=85.5
81.75	0.0	E < E1=85.5
82.00	0.0	E < E1=85.5
82.25	0.0	E < E1=85.5
82.50	0.0	E < E1=85.5
82.75	0.0	E < E1=85.5
83.00	0.0	E < E1=85.5
83.25	0.0	E < E1=85.5
83.50	0.0	E < E1=85.5
83.75	0.0	E < E1=85.5
84.00	0.0	E < E1=85.5
84.25	0.0	E < E1=85.5
84.50	0.0	E < E1=85.5
84.75	0.0	E < E1=85.5
85.00	0.0	E < E1=85.5
85.25	0.0	E < E1=85.5
85.50	21.2	H =12.875
85.75	21.4	H =13.125
86.00	21.6	H =13.375
86.25	21.8	H =13.625
86.50	22.0	H =13.875
86.75	22.2	H =14.125
87.00	22.4	H =14.375
87.25	22.6	H =14.625
87.50	22.8	H =14.875
87.75	23.0	H =15.125
88.00	23.2	H =15.375
88.25	23.4	H =15.625
88.50	23.5	H =15.875
88.75	23.7	H =16.125
89.00	23.9	H =16.375
89.25	24.1	H =16.625
89.50	24.3	H =16.875
89.75	24.5	H =17.125
90.00	24.6	H =17.375

C = .6    A = 1.227185 sq.ft.

H (ft) = Table elev. - Datum elev. ( 72.625 ft )

Q (cfs) = C \* A \* sqrt(2g \* H)

Outlet Structure File: BMP .STR

POND-2 Version: 5.20

S/N:

Date Executed:

Time Executed:

\*\*\*\*\*  
STONEHOUSE COMMERCE PARK  
BMP-2

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Outflow Rating Table for Structure #6  
WEIR-VR Weir - Vertical Rectangular

\*\*\*\*\* INLET CONTROL ASSUMED \*\*\*\*\*

Elevation (ft)	Q (cfs)	Computation Messages
81.50	0.0	E < Inv.El.= 87.5
81.75	0.0	E < Inv.El.= 87.5
82.00	0.0	E < Inv.El.= 87.5
82.25	0.0	E < Inv.El.= 87.5
82.50	0.0	E < Inv.El.= 87.5
82.75	0.0	E < Inv.El.= 87.5
83.00	0.0	E < Inv.El.= 87.5
83.25	0.0	E < Inv.El.= 87.5
83.50	0.0	E < Inv.El.= 87.5
83.75	0.0	E < Inv.El.= 87.5
84.00	0.0	E < Inv.El.= 87.5
84.25	0.0	E < Inv.El.= 87.5
84.50	0.0	E < Inv.El.= 87.5
84.75	0.0	E < Inv.El.= 87.5
85.00	0.0	E < Inv.El.= 87.5
85.25	0.0	E < Inv.El.= 87.5
85.50	0.0	E < Inv.El.= 87.5
85.75	0.0	E < Inv.El.= 87.5
86.00	0.0	E < Inv.El.= 87.5
86.25	0.0	E < Inv.El.= 87.5
86.50	0.0	E < Inv.El.= 87.5
86.75	0.0	E < Inv.El.= 87.5
87.00	0.0	E < Inv.El.= 87.5
87.25	0.0	E < Inv.El.= 87.5
87.50	0.0	H =0.0
87.75	9.4	H =.25
88.00	26.5	H =.5
88.25	48.7	H =.750
88.50	75.0	H =1.0
88.75	104.8	H =1.25
89.00	137.8	H =1.5
89.25	173.6	H =1.75
89.50	212.1	H =2.0
89.75	253.1	H =2.25
90.00	296.5	H =2.5

C = 3 L (ft) = 25

H (ft) = Table elev. - Invert elev. ( 87.5 ft )

Q (cfs) = C \* L \* (H\*\*1.5) -- Suppressed Weir

Outlet Structure File: BMP .STR

POND-2 Version: 5.20

S/N:

Date Executed:

Time Executed:

\*\*\*\*\*  
STONEHOUSE COMMERCE PARK  
BMP-2

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Outflow Rating Table 5  
Table 5 = 4 + 1

Elevation (ft)	Q (cfs)	Contributing Structures
81.50	0.0	-
81.75	0.0	-
82.00	0.0	-
82.25	0.0	-
82.50	2.7	4
82.75	3.3	4
83.00	3.8	4
83.25	4.2	4
83.50	4.6	4
83.75	5.0	4
84.00	5.3	4
84.25	5.7	4
84.50	6.0	4
84.75	6.3	4
85.00	6.6	4
85.25	6.8	4
85.50	7.1	4 +1
85.75	12.5	4 +1
86.00	22.2	4 +1
86.25	34.7	4 +1
86.50	49.5	4 +1
86.75	66.2	4 +1
87.00	82.6	4 +1
87.25	88.7	4 +1
87.50	94.4	4 +1
87.75	99.8	4 +1
88.00	104.9	4 +1
88.25	109.8	4 +1
88.50	114.4	4 +1
88.75	118.9	4 +1
89.00	123.2	4 +1
89.25	127.4	4 +1
89.50	131.4	4 +1
89.75	135.3	4 +1
90.00	139.1	4 +1

Outlet Structure File: BMP .STR

POND-2 Version: 5.20

S/N:

Date Executed:

Time Executed:

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STONEHOUSE COMMERCE PARK  
BMP-2

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Outflow Rating Table 3  
Table 3 = 5 ? 2

Elevation (ft)	Q (cfs)	Contributing Structures
81.50	0.0	-
81.75	0.0	-
82.00	0.0	-
82.25	0.0	-
82.50	2.7	4
82.75	3.3	4
83.00	3.8	4
83.25	4.2	4
83.50	4.6	4
83.75	5.0	4
84.00	5.3	4
84.25	5.7	4
84.50	6.0	4
84.75	6.3	4
85.00	6.6	4
85.25	6.8	4
85.50	7.1	4 +1
85.75	12.5	4 +1
86.00	21.6	2
86.25	21.8	2
86.50	22.0	2
86.75	22.2	2
87.00	22.4	2
87.25	22.6	2
87.50	22.8	2
87.75	23.0	2
88.00	23.2	2
88.25	23.4	2
88.50	23.5	2
88.75	23.7	2
89.00	23.9	2
89.25	24.1	2
89.50	24.3	2
89.75	24.5	2
90.00	24.6	2

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*****
* STONEHOUSE COMMERCE PARK *
* PROPOSED BMP2 *
* *
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* *
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Inflow Hydrograph: a:\bmp2\FUT-2 .HYD  
 Rating Table file: a:\bmp2\BMP .PND

----INITIAL CONDITIONS----  
 Elevation = 81.50 ft  
 Outflow = 0.00 cfs  
 Storage = 1.92 ac-ft

GIVEN POND DATA			INTERMEDIATE ROUTING COMPUTATIONS		
ELEVATION	OUTFLOW	STORAGE	2S/t	2S/t	+ 0
(ft)	(cfs)	(ac-ft)	(cfs)	(cfs)	
81.50	0.0	1.9181	464.1	464.1	
81.75	0.3	2.0201	488.8	489.1	
82.00	0.6	2.1241	514.0	514.6	
82.25	1.0	2.2301	539.7	540.7	
82.50	2.7	2.3391	566.0	568.7	
82.75	3.3	2.4501	592.9	596.2	
83.00	3.8	2.5631	620.4	624.2	
83.25	4.2	2.6801	648.4	652.6	
83.50	4.6	2.7981	677.1	681.7	
83.75	5.0	2.9191	706.4	711.4	
84.00	5.3	3.0431	736.4	741.7	
84.25	5.7	3.1691	766.9	772.6	
84.50	6.0	3.2981	798.1	804.1	
84.75	6.3	3.4291	829.8	836.1	
85.00	6.6	3.5621	862.1	868.7	
85.25	6.8	3.6981	895.0	901.8	
85.50	7.1	3.8371	928.6	935.7	
85.75	12.5	3.9781	962.7	975.2	
86.00	21.6	4.1221	997.5	1019.1	
86.25	21.8	4.2681	1032.9	1054.7	
86.50	22.0	4.4171	1068.9	1090.9	
86.75	22.2	4.5681	1105.4	1127.6	
87.00	22.4	4.7211	1142.6	1165.0	
87.25	22.6	4.8781	1180.4	1203.0	
87.50	22.8	5.0361	1218.8	1241.6	
87.75	32.4	5.1971	1257.8	1290.2	
88.00	49.7	5.3611	1297.4	1347.1	
88.25	72.1	5.5271	1337.6	1409.7	
88.50	98.5	5.6971	1378.6	1477.1	
88.75	128.5	5.8681	1420.2	1548.7	
89.00	161.7	6.0431	1462.4	1624.1	

GIVEN POND DATA			INTERMEDIATE ROUTING COMPUTATIONS		
ELEVATION (ft)	OUTFLOW (cfs)	STORAGE (ac-ft)	2S/t (cfs)	2S/t + 0 (cfs)	
89.25	197.7	6.221	1505.4	1703.1	
89.50	236.4	6.401	1549.0	1785.4	
89.75	277.6	6.584	1593.3	1870.9	
90.00	321.1	6.770	1638.4	1959.5	

Time increment (t) = 0.100 hrs.

\*\*\*\*\* SUMMARY OF ROUTING COMPUTATIONS \*\*\*\*\*

Pond File: a:\bmp2\BMP .PND  
Inflow Hydrograph: a:\bmp2\FUT-2 .HYD  
Outflow Hydrograph: a:\bmp2\2-OUT .HYD

Starting Pond W.S. Elevation = 81.50 ft

\*\*\*\*\* Summary of Peak Outflow and Peak Elevation \*\*\*\*\*

Peak Inflow = 62.00 cfs  
Peak Outflow = 8.26 cfs  
Peak Elevation = 85.55 ft

\*\*\*\*\* Summary of Approximate Peak Storage \*\*\*\*\*

Initial Storage = 1.92 ac-ft  
Peak Storage From Storm = 1.95 ac-ft  
-----  
Total Storage in Pond = 3.87 ac-ft

Warning: Inflow hydrograph truncated on left side.

```

XXXXXXXXXXXXXXXXXXXXXXXXXXXX
X                               X
X  STONEHOUSE COMMERCE PARK  X
X      PROPOSED BMP2        X
X                               X
X                               X
X                               X
XXXXXXXXXXXXXXXXXXXXXXXXXXXX
    
```

Inflow Hydrograph: a:\bmp2\FUT-10 .HYD  
 Rating Table file: a:\bmp2\BMP .PND

----INITIAL CONDITIONS----

Elevation = 81.50 ft  
 Outflow = 0.00 cfs  
 Storage = 1.92 ac-ft

GIVEN POND DATA			INTERMEDIATE ROUTING COMPUTATIONS		
ELEVATION	OUTFLOW	STORAGE	2S/t	2S/t	+ 0
(ft)	(cfs)	(ac-ft)	(cfs)	(cfs)	
81.50	0.0	1.918	464.1	464.1	
81.75	0.3	2.020	488.8	489.1	
82.00	0.6	2.124	514.0	514.6	
82.25	1.0	2.230	539.7	540.7	
82.50	2.7	2.339	566.0	568.7	
82.75	3.3	2.450	592.9	596.2	
83.00	3.8	2.563	620.4	624.2	
83.25	4.2	2.680	648.4	652.6	
83.50	4.6	2.798	677.1	681.7	
83.75	5.0	2.919	706.4	711.4	
84.00	5.3	3.043	736.4	741.7	
84.25	5.7	3.169	766.9	772.6	
84.50	6.0	3.298	798.1	804.1	
84.75	6.3	3.429	829.8	836.1	
85.00	6.6	3.562	862.1	868.7	
85.25	6.8	3.698	895.0	901.8	
85.50	7.1	3.837	928.6	935.7	
85.75	12.5	3.978	962.7	975.2	
86.00	21.6	4.122	997.5	1019.1	
86.25	21.8	4.268	1032.9	1054.7	
86.50	22.0	4.417	1068.9	1090.9	
86.75	22.2	4.568	1105.4	1127.6	
87.00	22.4	4.721	1142.6	1165.0	
87.25	22.6	4.878	1180.4	1203.0	
87.50	22.8	5.036	1218.8	1241.6	
87.75	32.4	5.197	1257.8	1290.2	
88.00	49.7	5.361	1297.4	1347.1	
88.25	72.1	5.527	1337.6	1409.7	
88.50	98.5	5.697	1378.6	1477.1	
88.75	128.5	5.868	1420.2	1548.7	
89.00	161.7	6.043	1462.4	1624.1	

GIVEN POND DATA			INTERMEDIATE ROUTING COMPUTATIONS		
ELEVATION (ft)	OUTFLOW (cfs)	STORAGE (ac-ft)	2S/t (cfs)	2S/t + 0 (cfs)	
89.25	197.7	6.221	1505.4	1703.1	
89.50	236.4	6.401	1549.0	1785.4	
89.75	277.6	6.584	1593.3	1870.9	
90.00	321.1	6.770	1638.4	1959.5	

Time increment (t) = 0.100 hrs.

\*\*\*\*\* SUMMARY OF ROUTING COMPUTATIONS \*\*\*\*\*

Pond File: a:\bmp2\BMP .PND  
Inflow Hydrograph: a:\bmp2\FUT-10 .HYD  
Outflow Hydrograph: a:\bmp2\10-OUT .HYD

Starting Pond W.S. Elevation = 81.50 ft

\*\*\*\*\* Summary of Peak Outflow and Peak Elevation \*\*\*\*\*

Peak Inflow = 110.00 cfs  
Peak Outflow = 22.75 cfs  
Peak Elevation = 87.43 ft

\*\*\*\*\* Summary of Approximate Peak Storage \*\*\*\*\*

Initial Storage = 1.92 ac-ft  
Peak Storage From Storm = 3.08 ac-ft  
-----  
Total Storage in Pond = 4.99 ac-ft

Warning: Inflow hydrograph truncated on left side.

```

XXXXXXXXXXXXXXXXXXXXXXXXXXXX
*
* STONEHOUSE COMMERCE PARK *
* PROPOSED BMP2 *
*
*
*
XXXXXXXXXXXXXXXXXXXXXXXXXXXX
  
```

Inflow Hydrograph: a:\bmp2\FUT-25 .HYD  
 Rating Table file: a:\bmp2\BMP .PND

----INITIAL CONDITIONS----  
 Elevation = 81.50 ft  
 Outflow = 0.00 cfs  
 Storage = 1.92 ac-ft

GIVEN POND DATA			INTERMEDIATE ROUTING COMPUTATIONS		
ELEVATION	OUTFLOW	STORAGE	25/t	25/t + 0	
(ft)	(cfs)	(ac-ft)	(cfs)	(cfs)	
81.50	0.0	1.9181	464.1	464.1	
81.75	0.3	2.0201	488.8	489.1	
82.00	0.6	2.1241	514.0	514.6	
82.25	1.0	2.2301	539.7	540.7	
82.50	2.7	2.3391	566.0	568.7	
82.75	3.3	2.4501	592.9	596.2	
83.00	3.8	2.5631	620.4	624.2	
83.25	4.2	2.6801	648.4	652.6	
83.50	4.6	2.7981	677.1	681.7	
83.75	5.0	2.9191	706.4	711.4	
84.00	5.3	3.0431	736.4	741.7	
84.25	5.7	3.1691	766.9	772.6	
84.50	6.0	3.2981	798.1	804.1	
84.75	6.3	3.4291	829.8	836.1	
85.00	6.6	3.5621	862.1	868.7	
85.25	6.8	3.6981	895.0	901.8	
85.50	7.1	3.8371	928.6	935.7	
85.75	12.5	3.9781	962.7	975.2	
86.00	21.6	4.1221	997.5	1019.1	
86.25	21.8	4.2681	1032.9	1054.7	
86.50	22.0	4.4171	1068.9	1090.9	
86.75	22.2	4.5681	1105.4	1127.6	
87.00	22.4	4.7211	1142.6	1165.0	
87.25	22.6	4.8781	1180.4	1203.0	
87.50	22.8	5.0361	1218.8	1241.6	
87.75	32.4	5.1971	1257.8	1290.2	
88.00	49.7	5.3611	1297.4	1347.1	
88.25	72.1	5.5271	1337.6	1409.7	
88.50	98.5	5.6971	1378.6	1477.1	
88.75	128.5	5.8681	1420.2	1548.7	
89.00	161.7	6.0431	1462.4	1624.1	

GIVEN POND DATA			INTERMEDIATE ROUTING COMPUTATIONS		
ELEVATION	OUTFLOW	STORAGE	2S/t	2S/t + 0	
(ft)	(cfs)	(ac-ft)	(cfs)	(cfs)	
89.25	197.7	6.221	1505.4	1703.1	
89.50	236.4	6.401	1549.0	1785.4	
89.75	277.6	6.584	1593.3	1870.9	
90.00	321.1	6.770	1638.4	1959.5	

Time increment (t) = 0.100 hrs.

\*\*\*\*\* SUMMARY OF ROUTING COMPUTATIONS \*\*\*\*\*

Pond File: a:\bmp2\BMP .PND  
Inflow Hydrograph: a:\bmp2\FUT-25 .HYD  
Outflow Hydrograph: a:\bmp2\25-OUT .HYD

Starting Pond W.S. Elevation = 81.50 ft

\*\*\*\*\* Summary of Peak Outflow and Peak Elevation \*\*\*\*\*

Peak Inflow = 146.00 cfs  
Peak Outflow = 71.73 cfs  
Peak Elevation = 88.25 ft

\*\*\*\*\* Summary of Approximate Peak Storage \*\*\*\*\*

Initial Storage = 1.92 ac-ft  
Peak Storage From Storm = 3.61 ac-ft  
-----  
Total Storage in Pond = 5.52 ac-ft

Warning: Inflow hydrograph truncated on left side.

```

XXXXXXXXXXXXXXXXXXXXXXXXXXXX
X                               X
X  STONEHOUSE COMMERCE PARK    X
X      PROPOSED BMP2           X
X                               X
X                               X
X                               X
X                               X
XXXXXXXXXXXXXXXXXXXXXXXXXXXX
    
```

Inflow Hydrograph: a:\bmp2\FUT-100 .HYD  
 Rating Table file: a:\bmp2\BMP .PND

----INITIAL CONDITIONS----  
 Elevation = 81.50 ft  
 Outflow = 0.00 cfs  
 Storage = 1.92 ac-ft

GIVEN POND DATA			INTERMEDIATE ROUTING COMPUTATIONS		
ELEVATION (ft)	OUTFLOW (cfs)	STORAGE (ac-ft)	2S/t (cfs)	2S/t + O (cfs)	
81.50	0.0	1.9181	464.1	464.1	
81.75	0.3	2.0201	488.8	489.1	
82.00	0.6	2.1241	514.0	514.6	
82.25	1.0	2.2301	539.7	540.7	
82.50	2.7	2.3391	566.0	568.7	
82.75	3.3	2.4501	592.9	596.2	
83.00	3.8	2.5631	620.4	624.2	
83.25	4.2	2.6801	648.4	652.6	
83.50	4.6	2.7981	677.1	681.7	
83.75	5.0	2.9191	706.4	711.4	
84.00	5.3	3.0431	736.4	741.7	
84.25	5.7	3.1691	766.9	772.6	
84.50	6.0	3.2981	798.1	804.1	
84.75	6.3	3.4291	829.8	836.1	
85.00	6.6	3.5621	862.1	868.7	
85.25	6.8	3.6981	895.0	901.8	
85.50	7.1	3.8371	928.6	935.7	
85.75	12.5	3.9781	962.7	975.2	
86.00	21.6	4.1221	997.5	1019.1	
86.25	21.8	4.2681	1032.9	1054.7	
86.50	22.0	4.4171	1068.9	1090.9	
86.75	22.2	4.5681	1105.4	1127.6	
87.00	22.4	4.7211	1142.6	1165.0	
87.25	22.6	4.8781	1180.4	1203.0	
87.50	22.8	5.0361	1218.8	1241.6	
87.75	32.4	5.1971	1257.8	1290.2	
88.00	49.7	5.3611	1297.4	1347.1	
88.25	72.1	5.5271	1337.6	1409.7	
88.50	98.5	5.6971	1378.6	1477.1	
88.75	128.5	5.8681	1420.2	1548.7	
89.00	161.7	6.0431	1462.4	1624.1	

GIVEN POND DATA			INTERMEDIATE ROUTING COMPUTATIONS		
ELEVATION	OUTFLOW	STORAGE	2S/t	2S/t + 0	
(ft)	(cfs)	(ac-ft)	(cfs)	(cfs)	
89.25	197.7	6.221	1505.4	1703.1	
89.50	236.4	6.401	1549.0	1785.4	
89.75	277.6	6.584	1593.3	1870.9	
90.00	321.1	6.770	1638.4	1959.5	

Time increment (t) = 0.100 hrs.

\*\*\*\*\* SUMMARY OF ROUTING COMPUTATIONS \*\*\*\*\*

Pond File: a:\bmp2\BMP .PND  
Inflow Hydrograph: a:\bmp2\FUT-100 .HYD  
Outflow Hydrograph: a:\bmp2\100-OUT .HYD

Starting Pond W.S. Elevation = 81.50 ft

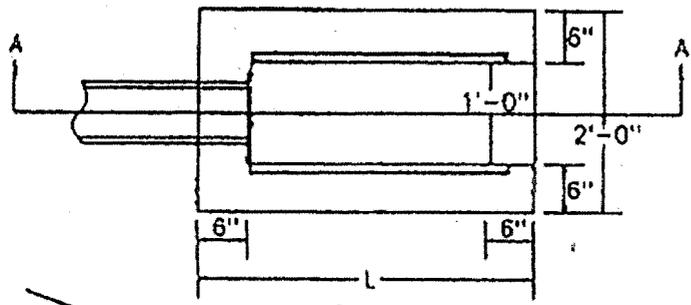
\*\*\*\*\* Summary of Peak Outflow and Peak Elevation \*\*\*\*\*

Peak Inflow = 189.00 cfs  
Peak Outflow = 138.38 cfs  
Peak Elevation = 88.82 ft *DHW*

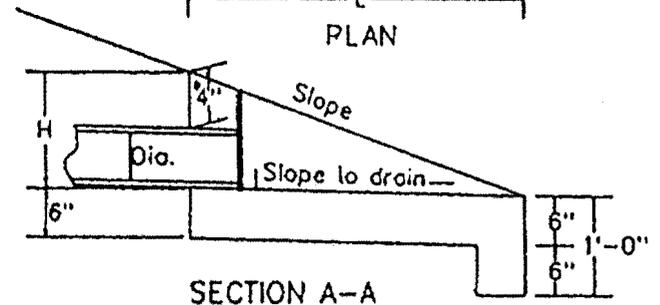
\*\*\*\*\* Summary of Approximate Peak Storage \*\*\*\*\*

Initial Storage = 1.92 ac-ft  
Peak Storage From Storm = 4.00 ac-ft  
-----  
Total Storage in Pond = 5.92 ac-ft

Warning: Inflow hydrograph truncated on left side.

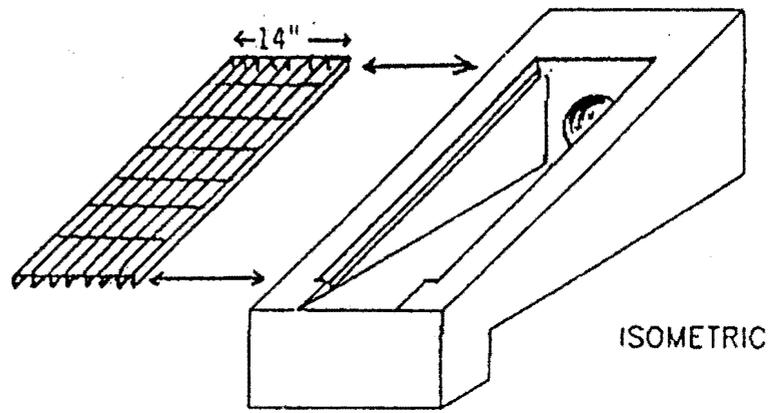


PLAN



SECTION A-A  
Scale: 1" = 1'

PIPE DIA.	SLOPE	DIMENSIONS		CLASS A3 CONCRETE CU. YD.
		L	H	
4"	2:1	2'-5 1/2"	1'-2 3/4"	0.17
6"	4:1	4'-3"	1'-1 1/4"	0.28
8"	2:1	2'-10 1/2"	1'-5 1/4"	0.21
	4:1	3'-3"	1'-3 3/4"	0.35



ISOMETRIC

NOTES:

Typical endwall to be placed at the ends of all underdrain outlets. Endwall to be installed perpendicular to roadway and flush with the slope.

Concrete quantities shown are based on 6" Class III concrete pipe. The 4" dimension and concrete quantities will vary if 4" pipe, 8" pipe or other types of pipe are used.

Outlet pipes shall be rigid nonperforated, smooth-bore pipe, meeting the requirements of AASHTO M-252. If vitrified clay pipe is used, all joints shall be in accordance with ASTM C-443.

Galvanized steel grate with 1" X 4" openings shall be installed over the sloped opening and will be removeable for cleaning.

This item may be precast or cast in place.

- WILL THIS WORK FOR FIVE CORNERS SEWER BASIN?  
 STAN - C. C. MCMILLIN II, INC

ENDWALL FOR PIPE UNDERDRAIN  
**MODIFIED**

EW-12



•WC047

•WC035

## Scott Thomas

---

**From:** Scott Thomas  
**Sent:** Thursday, August 15, 2002 10:52 AM  
**To:** Darryl Cook  
**Subject:** RE: Avid Medical

Project No. SP-127-01  
Project: Avid Medical  
BMP: WC 047; SP-96-95

***This email will serve as a memo to file stating staff findings concerning the condition of the BMP.***

As-built: Yes dated 4/17/97 by Langley & McDonald  
Const Cert: No.

For review of the Avid Medical expansion project, Environmental Division offered comments in January 2002, June 2002 and August 2002. For the purposes of this memo, there were comments about the project which pertained to the offsite downstream existing BMP having adequate capacity (ie. adequately sized) for the Avid expansion project and for the plan preparer to provide evidence through normal dam inspection/assessment methods that the BMP was in "good working order" and performing at the "design level of service".

The plan preparer provided adequate response to the sizing/capacity issue, as it appeared the original BMP as designed, was sized to handle activity on the Avid site. However, the plan preparer would not provide a letter stating that the BMP appeared to be functioning in an acceptable condition.

The basis of this comment was that the Environmental Division has in the past routinely requested information regarding the condition of existing or previously constructed BMPs which service sites under the plan of development review process. It is difficult to justify approval of a plan to tie drainage into an existing BMP if the condition of the BMP may be in a failure mode or not performing as designed. This would also appear to be a due process requirement of the site designer which is conveying drainage from a proposed development site to an existing, offsite BMP facility which is about 5 years of age.

For this specific review case, it would appear that the dam inspection requirement as outlined per Environmental Division comments # 26 dated 1/22/02; # 11 dated 6/13/02; and # 2 dated 8/12/02 will be waived without further justification by the applicant or plan preparer and it is mutually agreed that a joint cursory inspection as performed by Scott J. Thomas, PE of the James City County and Mark Richardson, P.E. of AES Consulting Engineers on July 18th 2002 will be satisfactory to resolve this issue.

### **BMP Condition: County BMP ID Code WC 047; SP-96-95**

Based on our joint inspection of 7/18/02, it is my professional opinion that the BMP facility was in satisfactory working order and performing at the intended design level of service. A standing normal pool was present and there appeared to be no noticeable seeps, bare soil or eroded areas on the dam embankment thus indicating the potential for imminent failure. However, the downstream dam face was not fully accessible for observation due to the amount of trees and woody vegetation present. The interior shoreline and side slopes of the BMP were well-vegetated with no signs of major slope or shoreline erosion problems. The primary and emergency spillways appeared to be functioning properly and there were no obvious signs of obstructions due to sediment, vegetation or trash and debris. As typical for most wet/dry embankment type ponds in the County, the need for routine maintenance was necessary as trees and woody vegetation were present on the downstream embankment.

Based on the inspection performed, the rating for the BMP in accordance with the rating system established under the County BMP Inventory/Inspection program is a 3, meaning acceptable structural and stormwater management control function with routine maintenance activities imminent.

Scott J. Thomas, P.E.  
James City County  
Environmental Division

-----Original Message-----

**From:** Darryl Cook  
**Sent:** Wednesday, August 14, 2002 1:36 PM  
**To:** Scott Thomas  
**Subject:** Avid Medical

Update regarding this project & your 2 outstanding comments.

1- The developer of Stonehouse Commerce Park is going to give permission for the offsite work. A letter should be here any day on this matter.

2- Regarding the condition of the offsite BMP, given that there is some disagreement and confusion about what the Ordinance and we require for this item and the fact that this is an expedited review project, the County is going to issue the statement about the condition of the BMP. It will take too long to determine the requirements for this Ordinance requirement than we have available for this project. Can you check to see if we have as-builts and certifications? Also, I remember that you said based on a visual inspection, the BMP seemed to be in good working order. If that is so, can you just prepare a memo to the file that states our findings concerning the condition of the BMP. I assume that the BMP is properly sized for this expansion. As a followup to this issue, lets talk about setting up a mini-team to discuss this issue and determine what we will accept for this case where a BMP needs to be in good working order and performing at the design level of service.

ENVIRONMENTAL DIVISION REVIEW COMMENTS  
AVID MEDICAL EXPANSION  
COUNTY PLAN NO. SP - 127 - 01  
June 13, 2002

GEL / SJT

General Comments:

1. Offsite Work. Previous comment # 2 was not addressed. A land-disturbing permit cannot be issued until proper evidence to disturb and occupy the offsite adjacent tract is received from the owner.

Chesapeake Bay Preservation:

2. Steep Slope Areas. Previous comment # 3 was not addressed. There waiver request letter could not be found in the revised plan application or supporting information documents.

Erosion & Sediment Control Plan:

3. Grading. Erosion and sediment control measures for the site were redesigned since the last review. The previous sediment trap was moved northeast and enlarged and new Sediment Trap # 2 was added to the plan along the north border of the site next to the proposed parking area. There is a conflict with proposed grading contour elevations 107 and 108 adjacent to the parking lot for Sediment Trap # 2. Also, the bottom of the trap ranges from 6' to 13' below existing ground. The last proposed contour shown is at El. 107 which is still approximately 5 feet below existing ground. Show additional grading along the west side of the trap to tie back to existing ground and correct the limit of work (clearing and grading) and disturbed area estimates appropriately to correspond with additional trap grading.
4. E&SC Plan. Previous comment # 10 was not fully addressed. Although Sediment Trap # 2 was added to the plan as a primary control measure, there are no perimeter temporary diversion dikes, fill diversion and slopes drains (along the top of fill) or temporary pipes leading from the onsite storm drainage system to convey drainage into Sediment Trap # 2. Without use of these types of diversion measures, it is difficult to see how 1.796 acres of drainage area (as shown on Sheet 10) is being conveyed to the trap, unless it only consists of undisturbed offsite area from the parcel to the north. Also, our initial comment still remains unaddressed. Once site work first begins (clearing, topsoil removal, grading, etc.) but before site fill operations begin on the north side of the project, existing topography indicates that most of the disturbed area for the site will be conveyed toward the channel at the north portion of the site where the existing channel leads to the BMP. Based on the E&SC plan on Sheet 5, even though the traps are shown, there is no sediment trapping device at this location for initial control until fill is placed and the storm drainage system is installed.
5. Sequence of Construction. In Step 2 of the construction sequence, installation of sediment traps and diversion dikes shall precede clearing of the site as it can be interpreted that the installation of the trap and associated diversion measures are not necessary until the entire site is cleared. Also, Step 7 of the sequence of construction conflicts with the response to previous comment # 27. It is indicated that Sediment Trap # 2 will remain in place after construction to serve as a quasi pretreatment device by filling wet storage volume area and keeping a rock filter in place. Clarify the Step 7 of the construction sequence as it would relates to Sediment Trap # 2.
6. Slope Labels. Provide slope indicator labels (3H:1V, 2H:1V, etc.) on grading plan Sheet 5 at the north fill slope and for interior graded slopes associated with Sediment Trap # 1 and # 2 to show intended grading. The trap details do not designate intended interior slope grading for the traps.

7. Outlet Protection. Previous comment # 16 was not addressed properly. This issue is not related to the BMP, rather it pertains to Virginia Erosion and Sediment Control Regulations 4VAC50-30. Per MS # 11, "before newly constructed stormwater conveyance channels or pipes are made operational, adequate outlet protection and any required temporary or permanent channel lining shall be installed in both the conveyance channel and the receiving channel. As the existing system is being extended, confirm if existing outlet protection at the outfall is adequate or provide outlet protection meeting the requirement of Minimum Standard 3.18 and 3.19 of the VESCH.
8. Outlet Protection. Similar to the above comment, the same is now true for the existing outfall into the BMP at storm structure SS # 1 (24-inch pipe). Proposed inlet SS # 3A and a 15-inch pipe are now proposed to be connected to the existing onsite "east" storm drain system. This was previously not proposed but is now subject to the requirements of MS # 11. Confirm if existing outlet protection at the outfall is adequate or provide outlet protection.
9. Downstream BMP Protection. Previous comment # 20 was not addressed. As the existing downstream BMP is not to be used as a sediment trapping measure for this project, regardless of the changes or configuration of the onsite erosion and sediment control plan, the previous comment is still valid. This requirement needs to be shown on the plan or the sequence of construction as it will be an equally important erosion and sediment control measure for land-disturbing activity at this site.

**Stormwater Management / Drainage:**

10. SWM/BMP. Previous comment # 23 was not fully addressed. Label design high water for the existing offsite downstream BMP on Sheets 4, 5 and 6.
11. Offsite BMP. Previous comment # 26 was not addressed. As the proposed onsite storm drainage system is being conveyed to an existing (approved) offsite downstream BMP, it must be demonstrated that the facility which is accepting drainage is in good working order and performing at the intended design level of service. A field inspection and certification letter by a registered professional engineer will satisfy this requirement. *(Note: There was no deviation from this requirement based on the results of our past meeting).*
12. Sediment Forebay. The intent of a sediment forebay is to pretreat drainage from development sites prior to its release into BMP treatment facilities. Per definitions in Minimum Standard 3.04 of the VSMH, "a sediment forebay is a settling basin or plunge pool constructed at the incoming discharge points of a stormwater BMP and the purpose is "to allow sediment to settle from the incoming stormwater runoff before it is delivered to the balance of the BMP. A sediment forebay helps to isolate the sediment deposition in an accessible area, which facilitates BMP maintenance efforts". As per our previous meeting, the plan preparer stated their intent to not provide a pretreatment sediment forebay along the onsite storm drainage system to address previous comment # 27. Justification was that since an existing offsite approved BMP facility was provided per master plan, this site would not be subject to current Environmental Division stormwater management requirements. However, the plan must compensate for the loss of the quasi pretreatment rock filter structure which existed on the site shown on Sheets 2 and 3. The existing channel and rock filter accepted drainage from area on both the proposed site and offsite areas prior to entry into the 18-inch culvert which leads to the BMP. Based on Sheets 5 and 6, it is the intent of the revised plan to leave Sediment Trap # 2 to replace the "lost" field constructed filtering measure. It is our determination that the modified Sediment Trap # 2 structure as proposed is not an equivalent measure, as it now accepts a very substantially reduced amount of onsite drainage and is offline to the proposed onsite storm drainage system thus it does not serve a similar function to the previous structure nor does it serve as any kind of a pretreatment device for onsite development, even in a quasi nature, prior to drainage being conveyed to the downstream BMP. Most of the onsite area which was conveyed through the previous rock filter structure is now bypassed directly into the proposed onsite storm drainage system without conveyance through the "replacement" measure.

13. Storm Computations. Revised storm drain computations were submitted due to changes in the onsite storm drainage systems. Explain why two different initial tailwater elevations were used for design/analyses for the two onsite systems (ie. El 81.71 and El. 88.82, respectively). Also, the storm sewer tabulation for the "east" system does not match the construction plan for rim, invert and slope for proposed pipe segment SS # 3A to existing structure SS # 2.

ENVIRONMENTAL DIVISION REVIEW COMMENTS  
AVID MEDICAL EXPANSION  
COUNTY PLAN NO. SP - 127 - 01  
January 22, 2002

General Comments:

1. ✓ A Land Disturbing Permit and Siltation Agreement, with surety, are required for this project.
2. Offsite Work. Clearing, grading and installation of storm drainage facilities are proposed on the offsite tract to the north (n/f Stonehouse, Inc.). Provide evidence of permission to disturb and occupy the offsite adjacent tract from the parcel owner. **NOT ADDRESSED.  
LETTER PENDING**

Chesapeake Bay Preservation:

3. Steep Slope Areas. Section 23-5 of the Chesapeake Bay Preservation Ordinance does not allow land disturbing activities to be performed on slopes of 25 percent or greater. It appears that steep slope areas will be impacted along the north side of existing berms situated along the existing Westmont Drive site access road and along the existing drainage channel leading to the BMP. Although these features are man-made, they will be cleared and topsoil removed prior to site grading; thus the potential for exposure and erosion exists. Therefore, a request for a waiver or exception is required, in writing. **NO REQUEST FORWARDED.**

Erosion & Sediment Control Plan:

4. ✓ Design Checklist. Please provide a standard James City County Erosion and Sediment Control and Stormwater Management Design Plan Checklist.
5. ~~✓~~ Offsite Land Disturbing Areas. Address or identify any offsite land disturbing activity associated with removal of waste material generated from demolition of the Westmont Drive site entrance, existing road asphalt and the gravel access road or indicate on the plans that none are anticipated for this project. **OK PUT NOTE ON PLAN ADDRESSING REMOVAL OF WASTE MATERIAL.  
IE. ONLY ON RESPONSE LETTER.**
6. ✓ Existing Information. Provide existing contour and site feature information (curbing, utilities, etc.) on the plan set for the southwest corner of the site within road right-of-way of LaGrange Parkway and Westmont Drive. Proposed contours on Sheet 5 of the plan do not tie to any existing feature or contour. Also, an existing fire hydrant is missing along Westmont Drive. ✓
7. ✓ E&SC Narrative. Provide a brief erosion and sediment control plan narrative in accordance with VESCH requirements. Explain what special provisions are being incorporated into the erosion and sediment control plan as a majority of site soils in the demolition and expansion area exhibit severe erosion hazard characteristics (ie. 11C and 15F soil map units).
8. ✓ Limits of Work. Correct the limits of work (disturbance, clearing and grading) on Sheet 5 to include all areas of work, including work in right-of-way for LaGrange Parkway and Westmont Drive, the 30 ft. landscape setback and the 25 ft. commerce park open area strips.
9. ✓ E&SC Plan. Adjust all erosion control measures to correspond to the limits of construction. Provide silt fence at the curb line extending from the entrance off of LaGrange Parkway to the curblin tangent from Westmont Drive. Move the silt fence to the common property line between Avid and Solarex.

NOT ADDRESSED PROPERLY.

10.

E&SC Plan. Identify what is the primary site perimeter E&S control, once the site is first cleared, but before graded. Based on existing topography, most of the disturbed area for the site will be conveyed toward the channel at the north portion of the site where the existing channel leads to the BMP. Based on the E&SC plan on Sheet 5, there is no device at this location for initial control and until fill is placed at this location, the diversion dike on the west side of the trap cannot physically convey flow to the sediment trap. Furthermore, according to the sequence of construction, once the storm drain system is installed, the majority of the site will bypass the sediment trap, making it worthless in terms of providing sediment control. Alternative methods for primary site control should be evaluated using the primary (perimeter) structural sediment-trapping facilities as provided.

11.

Slope Stabilization. The fill slope at the north corner of the site near the parking area and directly adjacent (south) to Inlet # SS-7 will require matting, since it is proposed at steeper than 3H:1V. Provide proper keys and symbols on Sheet 5.

12.

Diversion Dike. The diversion dike west of the proposed temporary sediment trap should be extended along the limit of work as far possible westward (toward Westmont Drive) to intercept and convey drainage from as much disturbed area as possible to the trap. Due to slope lengths and existing/proposed slopes, the silt fence along the north edge of the proposed north parking area would be overextended and require excessive maintenance. *NO DDO TO ST #2??*

13.

Silt Fence. The silt fence shown around the edge of the new parking area to the west and south of the existing building may not be necessary. Based on grading shown on plan Sheet 5, rock check dams may provide more effective control than silt fence, as placement of silt fence may interfere with work activities and grading, spot elevations and drainage patterns for the parking/channel areas are not conducive for effective use of silt fence as a control. Also, add silt fence at the base of the fill in the north portion of the site (parallel to contour El. 100 or 101). This silt fence would be control only for the slope area and not for concentrated drainage.

14.

Sequence of Construction. Modify Step 2 of the sequence of construction to clarify the entrance off of LaGrange Parkway is the one to remain open. Add when base stone stabilization is to occur for the Phase I and II of the parking areas. Also, if possible, try to put the sequence of construction on Sheet 5.

15.

Sediment Trap. Provide a drainage area map to show the ultimate drainage area used for design of the trap as it appears drainage area (before or after installation of the storm drain system) could be more than 2.74 acres as shown on Sheet 9. Provide sediment trap computations in accordance with Minimum Standard 3.13 of the VESCH. Drainage area in excess of 3 acres requires use of a sediment basin; or alternatively, a request for variance from Minimum Standard 3.13 of the VESCH submitted in writing to the Environmental Division. *PLAN REDESIGNED.*

16.

Outlet Protection. Show outlet protection in accordance with Minimum Standard 3.18 and 3.19 of the VESCH at storm drain outfalls # SS-1 and # SS-6. If outlet protection is currently present at these locations, resizing would be necessary due to the addition of impervious area to both systems. Provide computations and add details to the plan set as necessary. Add end sections at the same pipe (if not currently present) to bring the drainage system up to current standards. *MS #11*

17.

Inlet Protection. Correct the inlet protection key symbol for Inlet # SS-7 from HP to IP on Sheet 5.

18.

Site Grading. It appears that site cuts, shown west of the existing building along Westmont Drive would reduce cover over the existing water service line into the site.

19.

Pavement. Clarify the legend and pavement schedule on Sheet 4. Similar hatch and shading patterns were used for both Phase I parking and heavy duty asphalt pavement area. Clarify whether parking area in the northwest corner of the site is to receive heavy duty pavement.

E&S PLAN  
REVISION #1

20

Downstream BMP Protection. Include provisions on the E&SC plan to monitor the existing offsite BMP for signs of sedimentation, specifically during or as a result of construction on this site. As this facility is not to be used for sediment control, the contractor should be aware that additional onsite or offsite controls may be necessary to protect the BMP from degradation. This may include additional E&SC measures, sediment removal, cleaning and coordination with the owner, engineer or the County.

*NOT ADDRESSED.*

21. Loading Dock/Operations. A note on Sheet 3 of the plan indicates that existing loading docks shall remain in place until proposed docks are constructed and functional. Explain in further detail how it is possible for the access road to the existing loading to be removed (demolished) and the loading dock to remain functional, especially when the new docks will not be constructed yet. Evaluate the operational needs for the site and clearly address access and loading/unloading issues during construction. Incorporate items into the sequence of construction on Sheet 4, if these issues will affect the contractor and/or site work activities. Similarly, provide more information as to how semi-trailers will access the site and the loading docks once the entrance off of Westmont Drive is closed.

22. Site Parking. Provide information as to how employee parking will be handled once the existing drive is removed on the north part of the site. Currently employees park on both sides of the drive from the entrance all the way to the back corner (northeast). Again, incorporate items into the sequence of construction if parking issues will affect the contractor and/or site work activities.

Stormwater Management / Drainage:

23

SWM/BMP. On all applicable sheets and the design report, label the existing offsite stormwater management facility with the following identifiers: BMP # 2 Stonehouse Commerce Park; BMP ID Code: WC 047; and approved County Plan No. SP-96-95. On site and grading plan Sheets 4 and 5, label design high water for the BMP at El. 88.82. *NO*

24. Impervious Cover. Provide information to justify why the site, as a whole, requires over 100 more parking spaces than required. Section 23-9(a) of the Chesapeake Bay Preservation ordinance recommends keeping impervious cover to a minimum. Justify why this is the minimum amount necessary for uses at the site.

25. Impervious Cover. Based on our pre-application discussions and the narrative presented in the design report, it is understood that this site (commerce park tract), based on a previous master BMP plan arrangement, could slightly exceed the Chesapeake Bay ordinance requirement of no more than 60 percent impervious cover due to various open spaces provided and other compensatory measures provided for the site as a whole. Based on the site tabulation on the cover sheet, the total impervious cover for this site expansion will be around 65 percent. Based on our review of record information for BMP # 2 at Stonehouse Commerce Park (BMP ID Code: WC 047), the basis of design for the BMP was for a 9 point wet pond BMP, designed to handle a drainage area of 25.1 acres with a CN value of 86 for HSG C soils. The CN value selected for design was based on a 50 percent impervious cover estimate within the postdevelopment drainage basin to the BMP. Please confirm if this site, if constructed at 65 percent impervious, will be consistent with the 50 percent impervious cover estimate within the basin's final drainage area.

26.

BMP. The development plan as proposed for this site appears to fall under redevelopment criteria. In accordance with Section 23-9(b)(7)(b) of the Chesapeake Bay Preservation ordinance, provide evidence that the downstream BMP facility is in good working order and performing at the design level of service. A field inspection and certification letter by a registered professional engineer will satisfy this requirement.

*Demonstrate BMP is in good working order.*

27.

Sediment Forebay. To remain consistent with water quality initiatives and Chesapeake Bay Preservation purposes, investigate the possibility of shortening (or removing) the existing 18-inch corrugated polyethylene pipe storm drain downstream of Inlet # SS-7 and creating a pretreatment sediment forebay in the back (south) portion of existing BMP # 2, especially for onsite pipe system

*STILL 1996.*

SS-9 to SS-6. Drainage from the onsite storm drainage system would outfall into the forebay prior to entry into the BMP. (Note: The forebay could also be utilized as a primary perimeter sediment trap device during site work activities.)

28. ✓ BMP Access. Address relocation of the gravel access road to the BMP as Sheet 3 of the plan indicates removal of this feature. As the central north side of the site is proposed to be filled, if access is relocated to off of proposed parking area, road slopes may be rather steep. Relocated access must meet current BMP manual requirements. OK. ACCESS FROM PARKING LOT CG-90.
29. ✓ Stormwater Conveyance Channel. Provide computations and a typical detail for the stormwater conveyance channel proposed around the south part of the site. This channel will be graded to convey drainage from around the south and west sides of the existing building to existing inlet # SS-5. Ensure the channel has adequate depth for capacity, sufficient erosion resistance (lining) and transitions properly to the yard inlet at existing inlet # SS-5. Replaced w/ C&G
30. ✓ Existing Inlet SS-2. Based on proposed spot elevations shown on Sheet 5, the existing storm manhole at Inlet SS-2 would need to be converted to a curb-type inlet. Plan grading shows this location as a low spot for drainage, yet the plan does not call for a new inlet for drainage entry.
31. ✓ Inlet SS-8. Ensure Inlet # SS-8 has adequate capacity to handle drainage which will collect to the corner of the north parking area as no inlet computations were provided. Flow to this corner of the parking area should not pond excessively or overtop the CG-6 curb, creating a slope erosion problem on the fill slope adjacent to Inlet # SS-7. Also, label inlet lengths (sizes) as applicable on construction plans.
32. ✓ Existing Storm Drains. Label existing storm drain pipe types and sizes between existing Inlets # SS-5 and # SS-4 and # SS-4 to # SS-3 on Sheet 5.
33. ✓ HDPE pipe. Provide storm drain pipe specifications or reference the appropriate VDOT Road and Bridge Standards section for use of corrugated polyethylene pipe as intended for the site. If VDOT standards are not referenced, provide a typical bedding and installation detail and indicate minimum cover requirements during construction and the allowable maximum height of final and temporary cover for the type of pipe selected.

# Hydraflow Storm Sewer Tabulation

Station		Len (ft)	Drng Area		Rnoff coeff (C)	Area x C		Tc		Rain (l) (in/hr)	Total flow (cfs)	Cap full (cfs)	Vel (ft/s)	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line		Incr (ac)	Total (ac)		Incr	Total	Inlet (min)	Syst (min)					Size (in)	Slope (%)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	
1	End	68.0	0.85	2.44	0.30	0.26	1.39	20.0	20.0	4.5	6.30	50.20	5.29	18	22.85	96.29	80.75	97.25	81.71	99.00	80.75	SS-7 TO SS-8
2	1	31.0	0.87	1.59	0.76	0.66	1.14	5.0	8.8	6.2	7.07	20.78	6.05	15	10.35	99.50	96.29	100.57	97.55	107.20	99.00	SS-8 TO SS-9
3	2	142.0	0.33	0.72	0.81	0.27	0.48	5.0	7.9	6.4	3.06	11.50	3.41	15	3.17	104.00	99.50	104.70	101.25	110.90	107.20	SS-9 TO SS-10
4	3	213.0	0.39	0.39	0.54	0.21	0.21	5.0	5.0	7.1	1.50	8.85	2.47	15	1.88	108.00	104.00	108.49	104.90	0.00	110.90	SS-10 TO SS-11

OK FOR HOPE

WRONG BUT OK

Project File: 844101\_S02-REV1.stm

IDF File: JCCstormsewer.IDF

Total number of lines: 4

Run Date: 05-31-2002

NOTES: Intensity = 143.72 / (Inlet time + 19.20) ^ 0.94; Return period = 10 Yrs. ; Initial tailwater elevation = 81.71 (ft)

HW 80.75 0.80 = 81.95

OHW 88.82

FIRST SUBMITTAL

10' BUILDING SETBACK

15' STONEHOUSE PARKING SETBACK

15' LANDSCAPE SETBACK

N/F  
STONEHOUSE, INC.  
D.B. 420, PG. 712  
TAX PARCEL (06-4)(1-1)  
ZONED PUD-C

SS-2  
EX. STORM MH  
RIM=107.31  
INV=98.46

CHANGE CURB TO LET

ADD OFF-ROAD DRIVE

OFF-ROAD DRIVE

USE 2" HDPE  
W/UT SF  
DO NOT TRAP

LIMITS OF DISTURBANCE,  
CLEARING AND GRADING

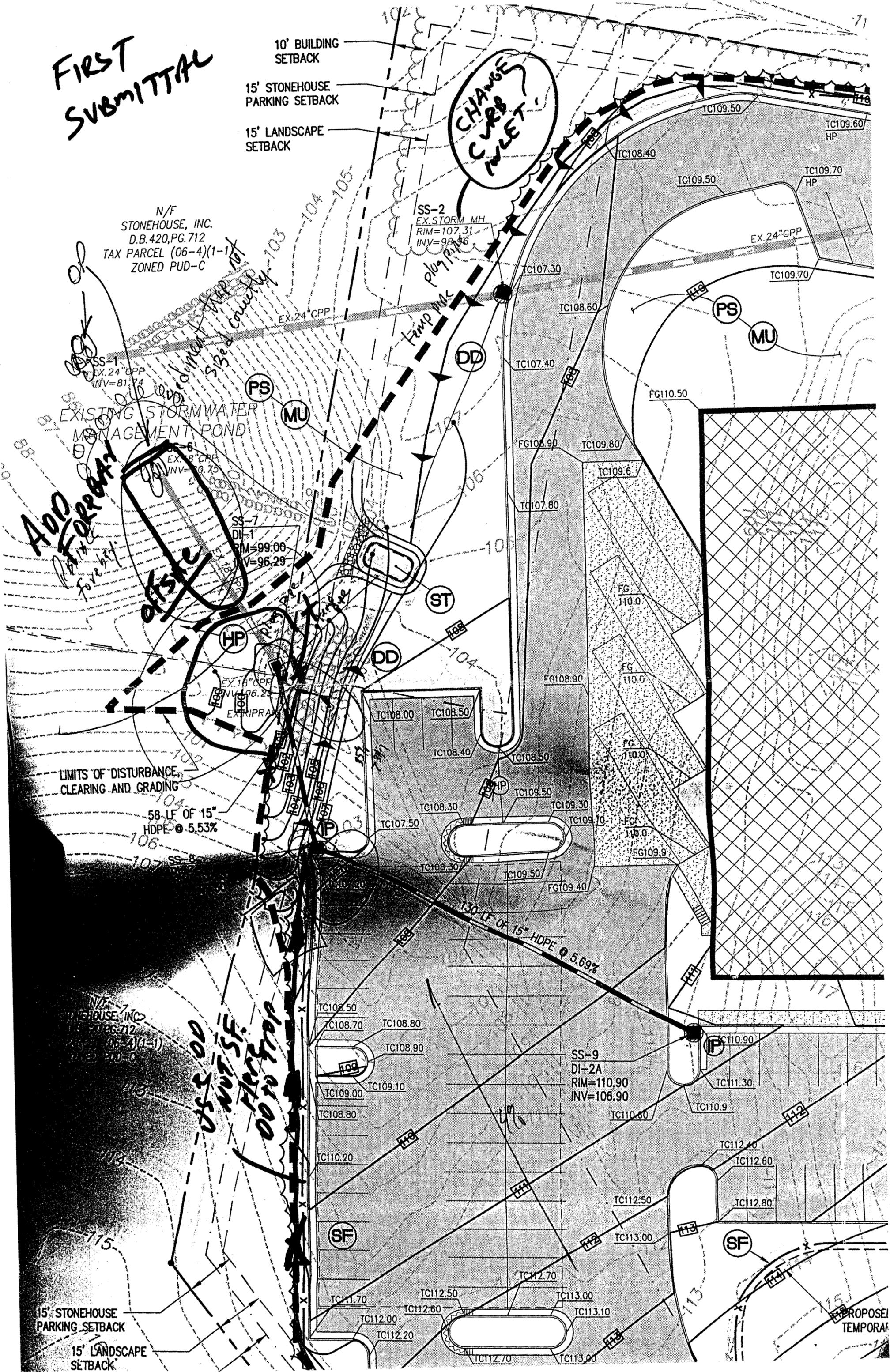
58 LF OF 15"  
HDPE @ 5.53%

130 LF OF 15"  
HDPE @ 5.69%

15' STONEHOUSE PARKING SETBACK

15' LANDSCAPE SETBACK

PROPOSED TEMPORARY





AV10

SP-127-01

#26 1/22/02

#11 6/13/02

#2 Aug 12 '02

From this point forward the file is not certified. The list below details the documents that have been added to the file, the person that added the documents and the date they were added.

Name	Content	Date
Jo Anna Ripley	WC047	1/14/2014

WATERSHED	WC	MAINTENANCE PLAN	No	CTRL STRUC DESC	RCP Riser
BMP ID NO	047	SITE AREA acre		CTRL STRUC SIZE inches	48
PLAN NO	SP-96-95	LAND USE		OTLT BARRL DESC	RCP Barrel
TAX PARCEL		old BMP TYP	Wet Pond	OTLT BARRL SIZE inch	15
PIN NO	0640100001	JCC BMP CODE			
CONSTRUCTION DATE		POINT VALUE		EMERG SPILLWAY	Yes
PROJECT NAME	Stonehouse Commerce Park BMP # 2			DESIGN HW ELEV	88.82
FACILITY LOCATION	Westmont Drive Near Solarex			PERM POOL ELEV	81.5
CITY-STATE		SVC DRAIN AREA acres		2-YR OUTFLOW cfs	8.26
CURRENT OWNER	Stonehouse Inc.			10-YR OUTFLOW cfs	22.75
OWNER ADDRESS	530 East Park Court			REC DRAWING	Yes
OWNER ADDRESS 2	Suite A				
CITY-STATE-ZIP CODE	Sandston, Va. 23150			CONSTR CERTI	No
OWNER PHONE		SERVICE AREA DESCRI			
MAINT AGREEMENT	Yes	IMPERV AREA acres	0.00	LAST INSP DATE	
EMERG ACTION PLAN	No	RECV STREAM		INTERNAL RATING	
		EXT DET-WQ-CTRL	No	MISC/COMMENTS	
		WTR QUAL VOL acre-ft		Also see WC035.	
		CHAN PROT CTRL	No		
		CHAN PROT VOL acre-ft			
		SW/FLOOD CONTROL	No		
		GEOTECH REPORT	No		

**Get Last BMP No**

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