CERTIFICATE OF AUTHENTICITY

THIS IS TO CERTIFY THAT THE FOLLOWING ELECTRONIC RECORDS ARE TRUE AND ACCURATE REPRODUCTIONS OF THE ORIGINAL RECORDS OF JAMES CITY COUNTY GENERAL SERVICES DEPARTMENT- STORMWATER DIVISION; WERE SCANNED IN THE REGULAR COURSE OF BUSINESS PURSUANT TO GUIDELINES ESTABLISHED BY THE LIBRARY OF VIRGINIA AND ARCHIVES; AND HAVE BEEN VERIFIED IN THE CUSTODY OF THE INDIVIDUAL LISTED BELOW.

BMP NUMBER: **PC134**

DATE VERIFIED: **July 5, 2012**

QUALITY ASSURANCE TECHNICIAN: **Leah Hardenbergh**

Leah Hardenbergh

LOCATION: WILLIAMSBURG, VIRGINIA

Stormwater Division

MEMORANDUM

DATE: March 13, 2010

TO: Michael J. Gillis, Virginia Correctional Enterprises Document Management Services

FROM: Jo Anna Ripley, Stormwater

PO: 270712

RE: Files Approved for Scanning

General File ID or BMP ID: PC134

PIN: 4610100011

Subdivision, Tract, Business or Owner Name (if known): Jamestown Hundred Homeowners Association

Property Description: Parcel C, Chisman to JCC

Site Address: 3314 Reades Way

(For internal use only) **Box** 1 **Drawer:** 2

Agreements: (in file as of scan date) **Y** **Book or Doc#:** 000007138 **Page:**

000005190

990009568

970016205

627 251

Comments

Property owned by James City County, but BMP maintenance is the responsibility of the Jamestown Hundred HOA

99 0009568

COPY

STORM WATER MANAGEMENT FACILITY AGREEMENT

THIS AGREEMENT, is made this 19th day of March, 1999, between Saint Thomas Hundred Association and its successors in interest, hereinafter referred to as "Association" and James City County, Virginia, hereinafter referred to as "County":

WHEREAS, County is the owner of certain real property situate in James City County, Virginia, briefly described as follows ("BMP Parcel"):

> Parcel B containing 32.61 acres, more or less and Parcel C containing 2.0 acres, more or less, as shown on a plat recorded in James City County Plat Book 67, Pages 42 and 43.

WHEREAS, the BMP Parcel and certain facilities constructed therein provide storm water management for a parcel or parcels of land adjoining it which have been or are being developed as a residential subdivision ("Residential Parcel"), and;

WHEREAS, the Residential Parcel has been or is being developed pursuant to a special use permit which requires that all owners of lots within the Residential Parcel be members of a homeowners association with the power to assess its members for the cost of maintaining any best management practice facilities which serve the Residential Parcel, and;

WHEREAS, all owners of lots within the Residential Parcel must be members of the Association, which is empowered by the declarations of covenants, conditions and restrictions applicable to lots within the Residential Parcel to assess its members and obligated to contribute to the maintenance of best management practice facilities serving the Residential Parcel, and;

WHEREAS, the Association and County wish to enter into an agreement specifically describing the obligations of the Association with respect to maintenance of the BMP Parcel.

NOW THEREFORE, the Association does hereby covenant with the County as follows:

1. Association is responsible for one-third (1/3) of the maintenance costs associated with the Beaver Dam ("Beaver Dam") which is located on Parcel B containing 32.61 acres, more or less, and

MAY-39 0453

shown on a certain plat entitled "PLAT OF TWO PARCELS CONTAINING 34.61 ACRES ± OWNED BY J. R. CHISMAN TO BE CONVEYED TO JAMES CITY COUNTY, BERKELEY DISTRICT, JAMES CITY COUNTY, VIRGINIA" dated October 25, 1996 and made by AES Consulting Engineers and recorded in James City County Plat Book 67, Pages 42 and 43.

2. Association shall provide maintenance for the storm water management forebay ("Forebay") located on Parcel C containing 2.0 acres, more or less, as shown on a certain entitled "PLAT OF TWO PARCELS CONTAINING 34.61 ACRES ± OWNED BY J. R. CHISMAN TO BE CONVEYED TO JAMES CITY COUNTY, BERKELEY DISTRICT, JAMES CITY COUNTY, VIRGINIA" dated October 25, 1996 and made by AES Consulting Engineers and recorded in James City County Plat Book 67, Pages 42 and 43. Association shall ensure that the Forebay is and remains in proper working condition in accordance with approved design standards, and with the law and applicable executive regulations.

3. If necessary, the Association shall levy regular or special assessments against all of its present or subsequent members to ensure that the Forebay is properly maintained and that the contribution required by Paragraph 1 of this Agreement is paid.

4. If, after reasonable notice by the County, the Association fails to maintain the Forebay 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 recover from the Association the cost of the work and any applicable penalties.

5. Association 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 Forebay.

MAY-39 0454

6. Association shall obtain the consent of the County before it transfers any of its responsibilities for the maintenance of the Forebay. In such event, Association shall supply the County with a copy of any document of transfer, executed by both parties.

7. The obligations and privileges of this Agreement shall run with the land and bind the Association and its successors and assignees and shall bind all present and subsequent members of the Association.

8. This Agreement shall be recorded in the County land records.

In Witness Whereof, the Association has executed this Agreement as of this 6th day of April, 1999.

SAINT THOMAS HUNDRED ASSOCIATION

By _____
J. R. Chisman, President

APPROVED AS TO FORM

_____
COUNTY ATTORNEY

JAMES CITY COUNTY, VIRGINIA

By _____
Sanford B. Wanner
County Administrator

MAY -3 99 0455

COMMONWEALTH OF VIRGINIA

CITY/COUNTY OF YORK, to-wit:

I hereby certify that on this 6th day of ~~February~~ April, 1999, before the subscribed, a Notary Public of the Commonwealth of Virginia, and for the City/County aforesaid, personally appeared J. R. Chisman, President of Saint Thomas Hundred Association, and did acknowledge the foregoing instrument to be his act.

In Witness Whereof, I have hereunto set my hand and official seal this 6th day of ~~March~~ April, 1999.

Anne P. Gillespie
NOTARY PUBLIC

My commission expires: Jan. 31, 2000

COMMONWEALTH OF VIRGINIA

CITY/COUNTY OF James City, to-wit:

I hereby certify that on this 15th day of ~~February~~ april, 1999, before the subscribed, a Notary Public of the Commonwealth of Virginia, and for the City/County aforesaid, personally appeared Sanford B. Wanner of James City County, Virginia, and did acknowledge the foregoing instrument to be his act.

In Witness Whereof, I have hereunto set my hand and official seal this 15th day of ~~March~~ April, 1999.

Mary Frances Rieger
NOTARY PUBLIC

My commission expires: October 31, 2001

MAY -3 99 04 56

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 3 day of MAY, 1999. This Agreement was presented with certificate annexed and admitted to record at 2:44 o'clock
Teste: Helene S. Ward, Clerk
by Helene S. Ward

COPY

DECLARATION OF COVENANTS

INSPECTION/MAINTENANCE OF DRAINAGE SYSTEM

THIS DECLARATION, made this 8th day of September, 1997, between *, and all successors in interest, hereinafter referred to as the "COVENANTOR(S)," owner(s) of the following property: Parcel III, Parcel IV-B and Parcel VII (remaining unsold portion only) - James City County Plat Book 57, Page 78, Tax Map 46-1, **, Deed Book 627, Page No. 251 or Instrument No. _____, and James City County, Virginia, hereinafter referred to as the "COUNTY."

*J.R. Chisman Development Co., a Virginia Corporation

**Parcel 1-2C, 3851 John Tyler Highway, Williamsburg, VA

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 drainage system including any runoff control facilities, conveyance systems and associated easements, hereinafter referred to as the "SYSTEM," located on and serving the above-described property to ensure that the SYSTEM is and remains in proper working condition in accordance with approved design standards, and with the law and applicable executive regulations. The SYSTEM shall not include any elements located within any Virginia Department of Transportation rights-of-way.

2. If necessary, the COVENANTOR(S) shall levy regular or special assessments against all present or subsequent owners of property served by the SYSTEM to ensure that the SYSTEM is properly maintained.

3. The COVENANTOR(S) shall provide and maintain perpetual access from public right-of-ways to the SYSTEM 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 SYSTEM for the purpose of inspecting, operating, installing, constructing, reconstructing, maintaining or repairing the SYSTEM.

5. If, after reasonable notice by the COUNTY, the COVENANTOR(S) shall fail to maintain the SYSTEM 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 SYSTEM 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 SYSTEM.

7. The COVENANTOR(s) shall promptly notify the COUNTY when the COVENANTOR(S) legally transfers any of the COVENANTOR(S)' responsibilities for the SYSTEM. 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 SYSTEM.

9. This COVENANT shall be recorded in the County Land Records.

Instrument # 970016205
Recorded Oct. 8, 1997

PC134_JAMESTOWN_HUNDRED_FORM_THOMAS_FOREBAY_STORM - 007

IN WITNESS WHEREOF, the COVENANTOR(S) have executed this DECLARATION OF COVENANTS as of this 8th day of September, 19 97.

COVENANTOR(S)
J.R. CHISMAN DEVELOPMENT CO.

BY: _____
President
J. R. Chisman

ATTEST:

Annette S. Gilbert

COVENANTOR(S)

_____

ATTEST:

_____

COMMONWEALTH OF VIRGINIA
~~CITY~~/COUNTY OF JAMES CITY

I hereby certify that on this 8th day of September, 19 97, before the subscribed, a Notary Public of the State of Virginia, and for the County of James City, aforesaid personally appeared J.R. Chisman, President of * and did acknowledge the aforegoing instrument to be their Act.

*J.R. Chisman Development Co., a Virginia Corporation

IN WITNESS WHEREOF, I have hereunto set my hand and official seal this 8th day of September, 1997.

Debra J. Newberry
Notary Public

My Commission expires: Sept 30, 2000

Approved as to form:

L. P. Rogers

This Declaration of Covenants prepared by:

ANDERSON, FRANCK & DAVIS, P.C.
(Print Name)

ATTORNEYS AT LAW
(Title)

1200 OLD COLONY LANE
(Address)

WILLIAMSBURG, VA 23185
(City) (State) (Zip)

drainage.pre
Revised 2/97

PC134_JAMESTOWN_HUNDRED_FORM_THOMAS_FOREBAY_STORM - 008

DECLARATION OF COVENANTS

COPY

INSPECTION/MAINTENANCE OF DRAINAGE SYSTEM

THIS DECLARATION, made this 27th day of March, 2000, between Hampton Roads Development, LLC, and all successors in interest, hereinafter referred to as the "COVENANTOR(S)," owner(s) of the following property: 3851 John Tyler Highway Map #46-1 01-00002-C Parcel 2 David M. Murray Deed Book _____, Page No. _____ or Instrument No. 000005190, 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 drainage system including any runoff control facilities, conveyance systems and associated easements, hereinafter referred to as the "SYSTEM," located on and serving the above-described property to ensure that the SYSTEM is and remains in proper working condition in accordance with approved design standards, and with the law and applicable executive regulations. The SYSTEM shall not include any elements located within any Virginia Department of Transportation rights-of-way.

2. If necessary, the COVENANTOR(S) shall levy regular or special assessments against all present or subsequent owners of property served by the SYSTEM to ensure that the SYSTEM is properly maintained.

3. The COVENANTOR(S) shall provide and maintain perpetual access from public right-of-ways to the SYSTEM 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 SYSTEM for the purpose of inspecting, operating, installing, constructing, reconstructing, maintaining or repairing the SYSTEM.

5. If, after reasonable notice by the COUNTY, the COVENANTOR(S) shall fail to maintain the SYSTEM 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 SYSTEM 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 SYSTEM.

7. The COVENANTOR(s) shall promptly notify the COUNTY when the COVENANTOR(S) legally transfers any of the COVENANTOR(S)' responsibilities for the SYSTEM. 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 SYSTEM.

9. This COVENANT shall be recorded in the County Land Records.

INSTRUMENT:
000007138
RECORDED: APRIL 6, 2000

PC134_JAMESTOWN_HUNDRED_FORM_THOMAS_FOREBAY_STORM - 009

IN WITNESS WHEREOF, the COVENANTOR(S) have executed this DECLARATION OF COVENANTS as of this 27th day of March, 19 2000

COVENANTOR(S)
Hampton Roads Development, LLC

Print Name/Title EDWARD G. FISCELLA, MANAGER

ATTEST:

John B. Armstrong

COVENANTOR(S)

Print Name/Title

ATTEST:

COMMONWEALTH OF VIRGINIA,
CITY/~~COUNTY~~ OF Newport News

I hereby certify that on this 27th day of March, 19 2000, before the subscribed, a Notary Public of the State of Virginia, and for the City/~~County~~ of Newport News, aforesaid personally appeared Edward G. Fiscella and did acknowledge the aforegoing instrument to be their Act.

IN WITNESS WHEREOF, I have hereunto set my hand and official seal this 27th day of March, 19 2000.

John B. Armstrong
Notary Public

My Commission expires: March 31, 2002

Approved as to form:

L. P. Rogers
Deputy County Attorney

This Declaration of Covenants prepared by:

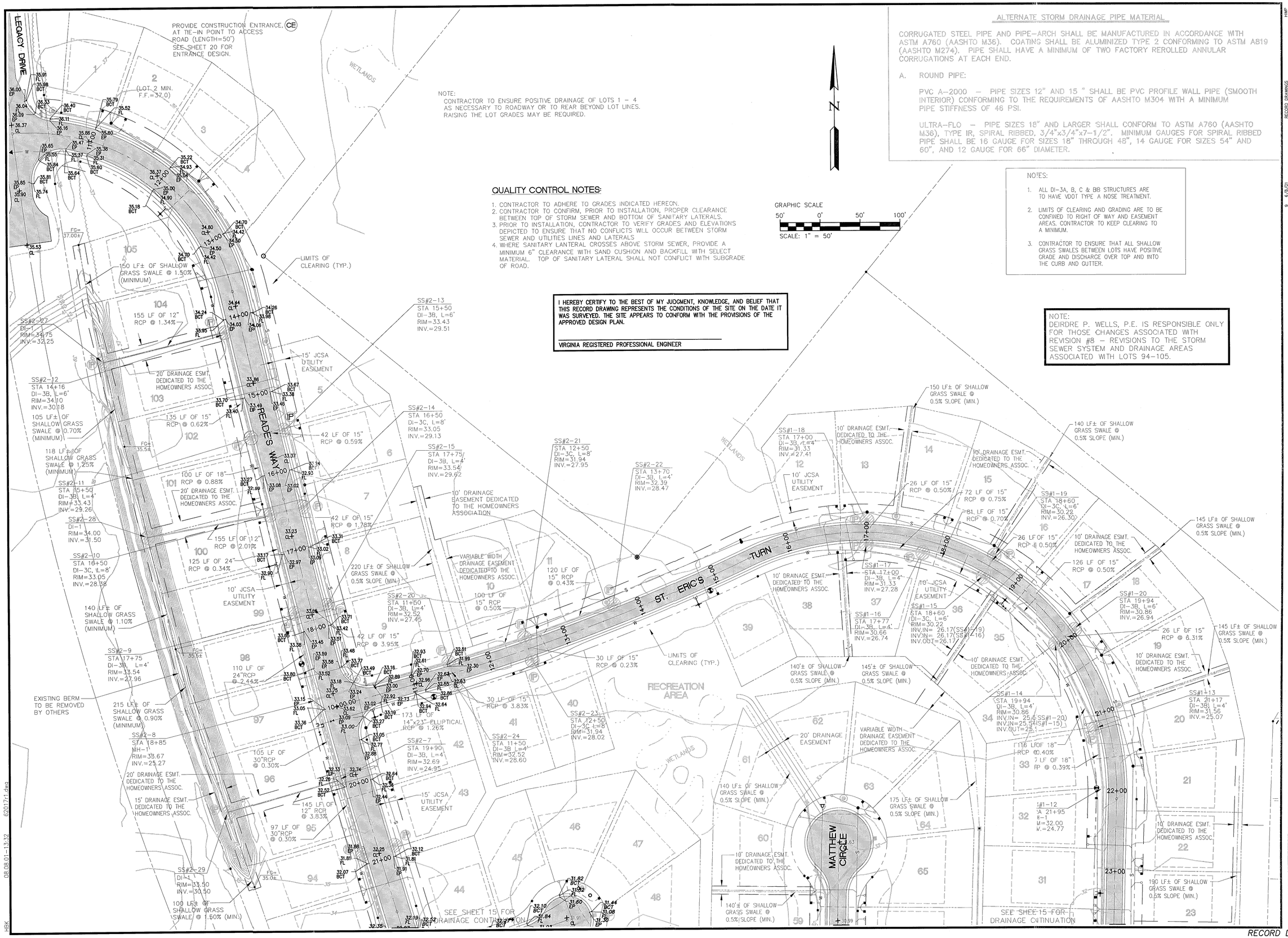
Edward G. Fiscella
(Print Name)

Manager
(Title)

703 Thimble Shoals Blvd C-1
(Address)

Newport News, VA 23606
(City) (State) (Zip)

drainage.pre
Revised 2/97



QUALITY CONTROL NOTES:

1. CONTRACTOR TO ADHERE TO GRADES INDICATED HEREON.
2. CONTRACTOR TO CONFIRM, PRIOR TO INSTALLATION, PROPER CLEARANCE BETWEEN TOP OF STORM SEWER AND BOTTOM OF SANITARY LATERALS.
3. PRIOR TO INSTALLATION, CONTRACTOR TO VERIFY GRADES AND ELEVATIONS DEPICTED TO ENSURE THAT NO CONFLICTS WILL OCCUR BETWEEN STORM SEWER AND UTILITIES LINES AND LATERALS.
4. WHERE SANITARY LANTERAL CROSSES ABOVE STORM SEWER, PROVIDE A MINIMUM 6" CLEARANCE WITH SAND CUSHION AND BACKFILL WITH SELECT MATERIAL. TOP OF SANITARY LATERAL SHALL NOT CONFLICT WITH SUBGRADE OF ROAD.

I HEREBY CERTIFY TO THE BEST OF MY JUDGMENT, KNOWLEDGE, AND BELIEF THAT THIS RECORD DRAWING REPRESENTS THE CONDITIONS OF THE SITE ON THE DATE IT WAS SURVEYED. THE SITE APPEARS TO CONFORM WITH THE PROVISIONS OF THE APPROVED DESIGN PLAN.

VIRGINIA REGISTERED PROFESSIONAL ENGINEER

ALTERNATE STORM DRAINAGE PIPE MATERIAL

CORRUGATED STEEL PIPE AND PIPE-ARCH SHALL BE MANUFACTURED IN ACCORDANCE WITH ASTM A760 (AASHTO M36). COATING SHALL BE ALUMINIZED TYPE 2 CONFORMING TO ASTM A819 (AASHTO M274). PIPE SHALL HAVE A MINIMUM OF TWO FACTORY REROLLED ANNULAR CORRUGATIONS AT EACH END.

A. ROUND PIPE:

PVC A-2000 – PIPE SIZES 12" AND 15 " SHALL BE PVC PROFILE WALL PIPE (SMOOTH INTERIOR) CONFORMING TO THE REQUIREMENTS OF AASHTO M304 WITH A MINIMUM PIPE STIFFNESS OF 46 PSI.

ULTRA-FLO – PIPE SIZES 18" AND LARGER SHALL CONFORM TO ASTM A760 (AASHTO M36), TYPE IR, SPIRAL RIBBED, 3/4"x3/4"x7-1/2". MINIMUM GAUGES FOR SPIRAL RIBBED PIPE SHALL BE 16 GAUGE FOR SIZES 18" THROUGH 48", 14 GAUGE FOR SIZES 54" AND 60", AND 12 GAUGE FOR 66" DIAMETER.

NOTES:

1. ALL DI-3A, B, C & BB STRUCTURES ARE TO HAVE VDOT TYPE A NOSE TREATMENT.
2. LIMITS OF CLEARING AND GRADING ARE TO BE CONFINED TO RIGHT OF WAY AND EASEMENT AREAS. CONTRACTOR TO KEEP CLEARING TO A MINIMUM.
3. CONTRACTOR TO ENSURE THAT ALL SHALLOW GRASS SWALES BETWEEN LOTS HAVE POSITIVE GRADE AND DISCHARGE OVER TOP AND INTO THE CURB AND GUTTER.

NOTE:
DEIRDRE P. WELLS, P.E. IS RESPONSIBLE ONLY FOR THOSE CHANGES ASSOCIATED WITH REVISION #8 – REVISIONS TO THE STORM SEWER SYSTEM AND DRAINAGE AREAS ASSOCIATED WITH LOTS 94-105.

No.	DATE	REVISION / COMMENT / NOTE	BY
9	6/8/01	RECORD DRAWINGS	HWP
8	6/12/00	REVISED DRAINAGE SYSTEM ALONG LOTS 94-105 PER OWNER REQUEST	DPW
7	11/15/99	REVISED HYDRANT SPACING (NONE THIS SHEET)	DPW
6	7/28/99	REVISED WETLAND AREAS	DPW
5	4/14/99	REVISED PER 4/99 ACC COMMENT LETTER	SOW
4	3/24/99	REVISED PER 3/99 ACC COMMENT LETTER	SOW
3	10/16/98	REVISED PER 1/15/98 ACC COMMENT LETTER	SOW
2	1/25/96	REVISED MASTER PLAN PER ACC	SOW
1			HWP

5248 Olde Towne Road, Suite 1
Williamsburg, Virginia 23188
(757) 253-0040
Fax (757) 220-8994
CONSULTING ENGINEERS

DRAINAGE AND EROSION CONTROL PLAN

JAMESTOWN HUNDRED

OWNER/DEVELOPER: HAMPTON ROADS DEVELOPMENT, L.L.C.

BERKLEY DISTRICT JAMES CITY COUNTY VIRGINIA

Designed	Drawn
SOW/RMO	SCL
Scale	Date
1"=50'	11/29/95

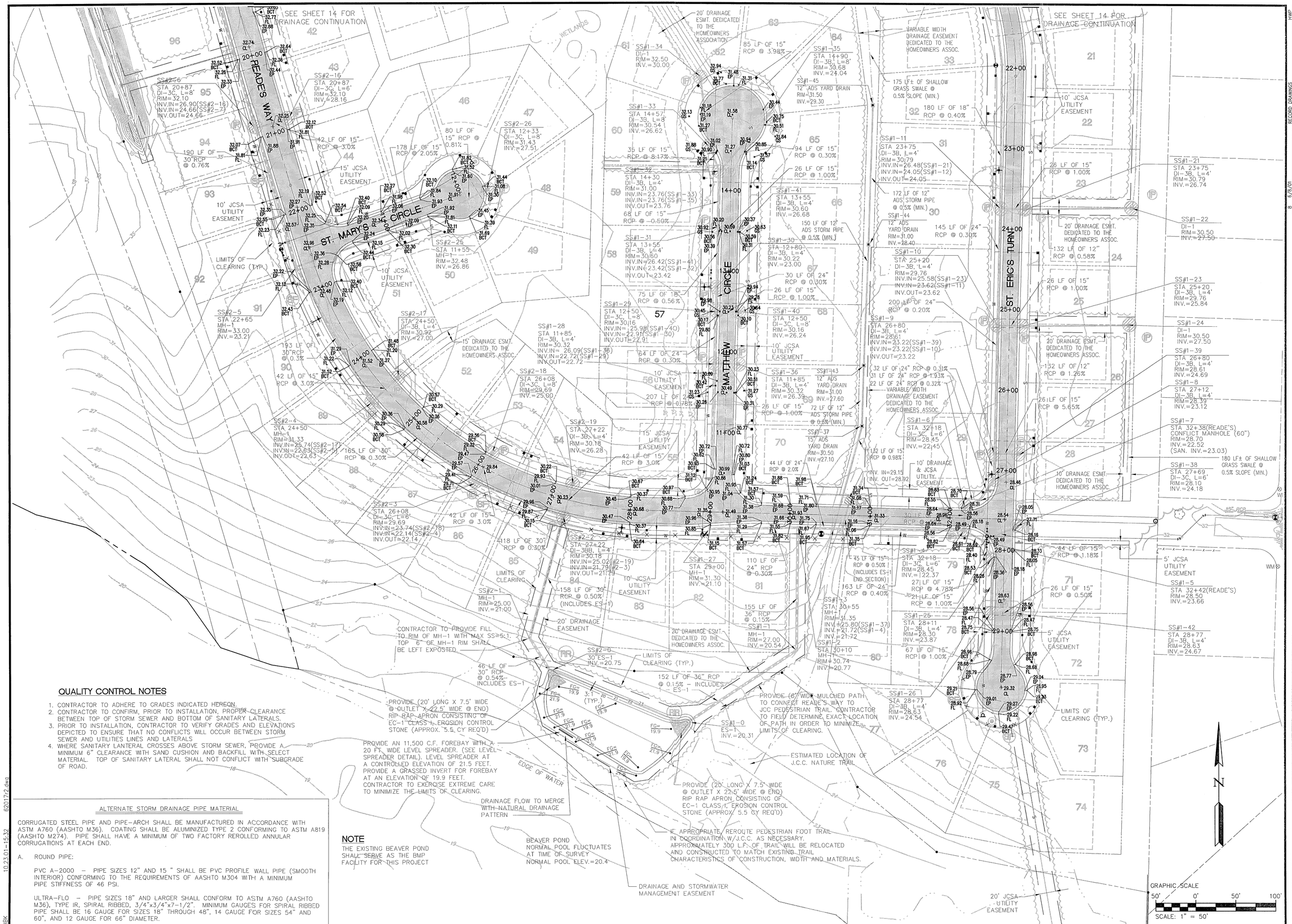
Project No. 6201-7

Drawing No. 1

RECORD DRAWING–6/8/01

HBK 6201711.dwg 08.08.01–13:32

PC134_JAMESTOWN_HUNDRED_FORM_THOMAS_FOREBAY_STORM - 011



QUALITY CONTROL NOTES

1. CONTRACTOR TO ADHERE TO GRADES INDICATED HEREON.
2. CONTRACTOR TO CONFIRM, PRIOR TO INSTALLATION, PROPER CLEARANCE BETWEEN TOP OF STORM SEWER AND BOTTOM OF SANITARY LATERALS.
3. PRIOR TO INSTALLATION, CONTRACTOR TO VERIFY GRADES AND ELEVATIONS DEPICTED TO ENSURE THAT NO CONFLICTS WILL OCCUR BETWEEN STORM SEWER AND UTILITIES LINES AND LATERALS
4. WHERE SANITARY LANTERAL CROSSES ABOVE STORM SEWER, PROVIDE A MINIMUM 6" CLEARANCE WITH SAND CUSHION AND BACKFILL WITH SELECT MATERIAL. TOP OF SANITARY LATERAL SHALL NOT CONFLICT WITH SUBGRADE OF ROAD.

ALTERNATE STORM DRAINAGE PIPE MATERIAL

CORRUGATED STEEL PIPE AND PIPE-ARCH SHALL BE MANUFACTURED IN ACCORDANCE WITH ASTM A760 (AASHTO M36). COATING SHALL BE ALUMINIZED TYPE 2 CONFORMING TO ASTM A819 (AASHTO M274). PIPE SHALL HAVE A MINIMUM OF TWO FACTORY REROLLED ANNULAR CORRUGATIONS AT EACH END.

A. ROUND PIPE:

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ULTRA-FLO – PIPE SIZES 18" AND LARGER SHALL CONFORM TO ASTM A760 (AASHTO M36), TYPE IR, SPIRAL RIBBED, 3/4"x3/4"x7-1/2". MINIMUM GAUGES FOR SPIRAL RIBBED PIPE SHALL BE 16 GAUGE FOR SIZES 18" THROUGH 48", 14 GAUGE FOR SIZES 54" AND 60", AND 12 GAUGE FOR 66" DIAMETER.

NOTE

THE EXISTING BEAVER POND SHALL SERVE AS THE BMP FACILITY FOR THIS PROJECT

RECORD DRAWINGS

No.	DATE	REVISION / COMMENT / NOTE	BY
8	6/8/01	REVISED HYDRANT SPACING (NONE THIS SHEET)	DPW
7	11/15/99	REVISED WETLAND AREAS	DPW
6	7/28/99	REVISED PER 4/99 JCC COMMENT LETTER	SOW
5	4/14/99	REVISED PER 1/99 JCC COMMENT LETTER	SOW
4	3/2/99	REVISED PER 11/5/98 JCC COMMENT LETTER	SOW
3	12/18/98	REVISED PER 3/14/96 JCC COMMENT LETTER	SOW
2	10/16/98	REVISED MASTER PLAN PER JCC	HWP
1	1/25/96		

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CONSULTING ENGINEERS

DRAINAGE AND EROSION CONTROL PLAN

JAMESTOWN HUNDRED

OWNER/DEVELOPER: HAMPTON ROADS DEVELOPMENT, L.L.C.

BERKLEY DISTRICT JAMES CITY COUNTY VIRGINIA

Designed	Drawn
SOW/RMO	SCL
Scale	Date
1"=50'	11/29/95

Project No. 6201-7

Drawing No. 2

RECORD DRAWING-6/8/01

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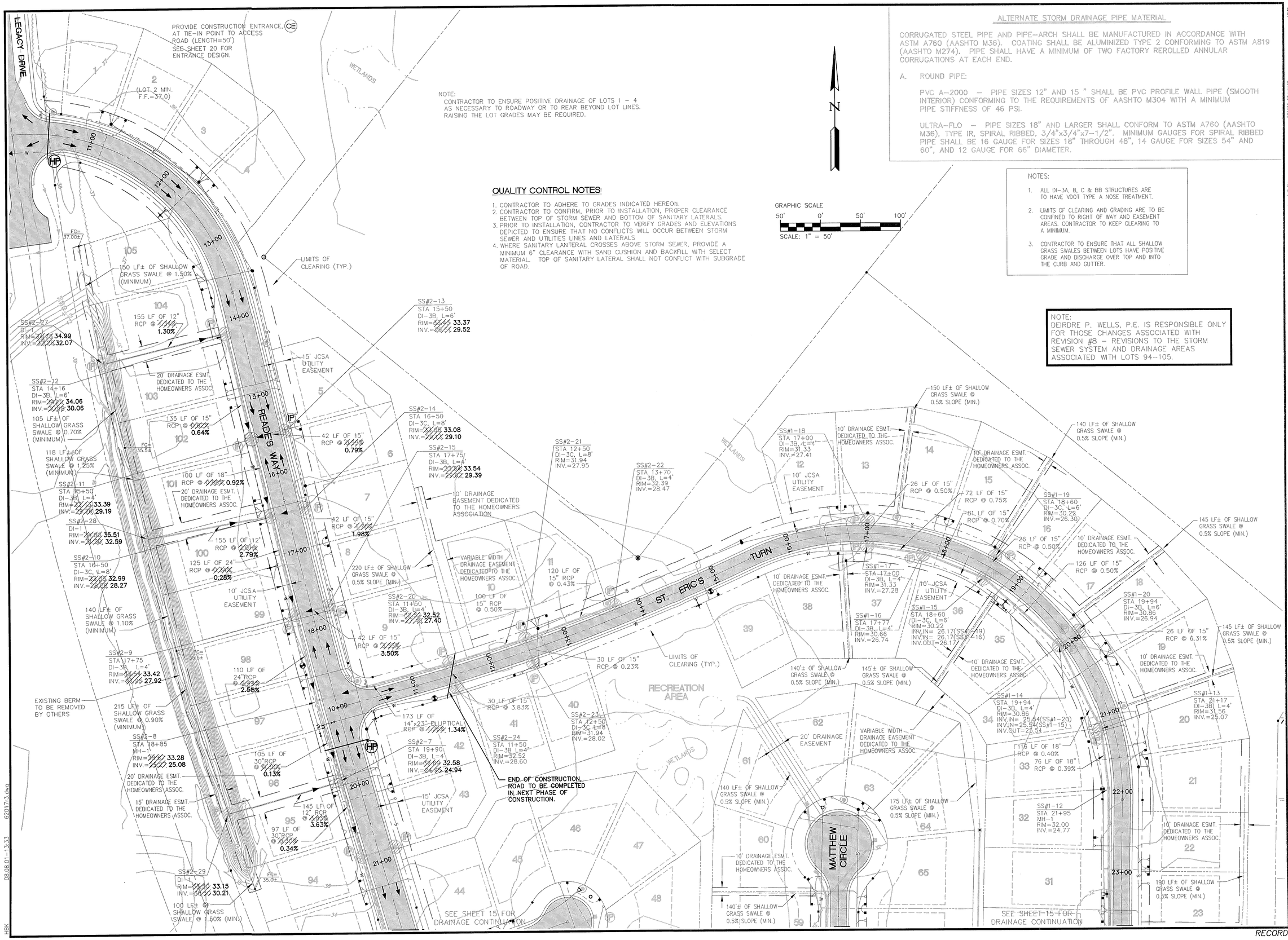
PC134_JAMESTOWN_HUNDRED_FORM_THOMAS_FOREBAY_STORM - 012



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2. CONTRACTOR TO CONFIRM, PRIOR TO INSTALLATION, PROPER CLEARANCE BETWEEN TOP OF STORM SEWER AND BOTTOM OF SANITARY LATERALS.
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3. CONTRACTOR TO ENSURE THAT ALL SHALLOW GRASS SWALES BETWEEN LOTS HAVE POSITIVE GRADE AND DISCHARGE OVER TOP AND INTO THE CURB AND GUTTER.

NOTE:
DEIRDRE P. WELLS, P.E. IS RESPONSIBLE ONLY FOR THOSE CHANGES ASSOCIATED WITH REVISION #8 – REVISIONS TO THE STORM SEWER SYSTEM AND DRAINAGE AREAS ASSOCIATED WITH LOTS 94-105.

RECORD DRAWINGS

No.	DATE	REVISION / COMMENT / NOTE	BY
9	6/8/01		HWP
8	5/12/01	REVISED DRAINAGE SYSTEM ALONG LOTS 94-105 PER OWNER REQUEST	DPW
7	11/15/99	REVISED HYDRANT SPACING (NONE THIS SHEET)	DPW
6	7/28/99	REVISED WETLAND AREAS	DPW
5	4/14/99	REVISED PER 4/99 JCC COMMENT LETTER	SOW
4	3/2/99	REVISED PER 1/99 JCC COMMENT LETTER	SOW
3	12/18/98	REVISED PER 11/5/98 JCC COMMENT LETTER	SOW
2	10/16/98	REVISED PER 3/14/98 JCC COMMENT LETTER	SOW
1	1/25/96	REVISED MASTER PLAN PER JCC	HWP

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DRAINAGE AND EROSION CONTROL PLAN

JAMESTOWN HUNDRED

OWNER/DEVELOPER: HAMPTON ROADS DEVELOPMENT, L.L.C.

BERKLEY DISTRICT JAMES CITY COUNTY VIRGINIA

Designed	Drawn
SOW/RMO	SCL
Scale	Date
1"=50'	11/29/95

Project No. 6201-7

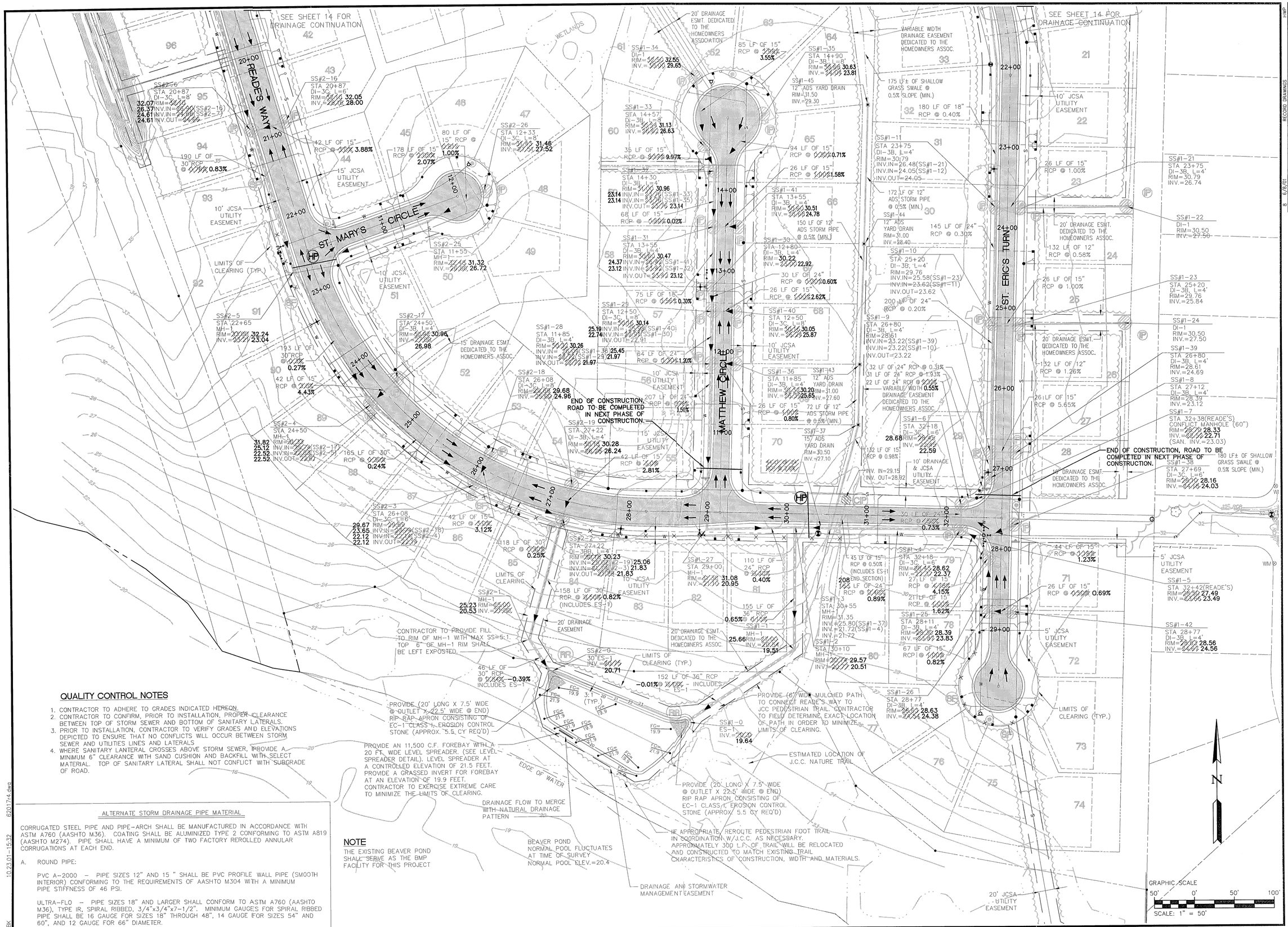
Drawing No. 3

RECORD DRAWING-6/8/01

08.08.01 - 13:33 6201-7-3.dwg

HBK

PC134_JAMESTOWN_HUNDRED_FORM_THOMAS_FOREBAY_STORM - 013



QUALITY CONTROL NOTES

1. CONTRACTOR TO ADHERE TO GRADES INDICATED HEREON.
2. CONTRACTOR TO CONFIRM, PRIOR TO INSTALLATION, PROPER CLEARANCE BETWEEN TOP OF STORM SEWER AND BOTTOM OF SANITARY LATERALS.
3. PRIOR TO INSTALLATION, CONTRACTOR TO VERIFY GRADES AND ELEVATIONS DEPICTED TO ENSURE THAT NO CONFLICTS WILL OCCUR BETWEEN STORM SEWER AND UTILITIES LINES AND LATERALS
4. WHERE SANITARY LANTERAL CROSSES ABOVE STORM SEWER, PROVIDE A MINIMUM 6" CLEARANCE WITH SAND CUSHION AND BACKFILL WITH SELECT MATERIAL. TOP OF SANITARY LATERAL SHALL NOT CONFLICT WITH SUBGRADE OF ROAD.

ALTERNATE STORM DRAINAGE PIPE MATERIAL

CORRUGATED STEEL PIPE AND PIPE-ARCH SHALL BE MANUFACTURED IN ACCORDANCE WITH ASTM A760 (AASHTO M36). COATING SHALL BE ALUMINIZED TYPE 2 CONFORMING TO ASTM A819 (AASHTO M274). PIPE SHALL HAVE A MINIMUM OF TWO FACTORY REROLLED ANNULAR CORRUGATIONS AT EACH END.

A. ROUND PIPE:

PVC A-2000 – PIPE SIZES 12" AND 15 " SHALL BE PVC PROFILE WALL PIPE (SMOOTH INTERIOR) CONFORMING TO THE REQUIREMENTS OF AASHTO M304 WITH A MINIMUM PIPE STIFFNESS OF 46 PSI.

ULTRA-FLO – PIPE SIZES 18" AND LARGER SHALL CONFORM TO ASTM A760 (AASHTO M36), TYPE IR, SPIRAL RIBBED, 3/4"x3/4"x7-1/2". MINIMUM GAUGES FOR SPIRAL RIBBED PIPE SHALL BE 16 GAUGE FOR SIZES 18" THROUGH 48", 14 GAUGE FOR SIZES 54" AND 60", AND 12 GAUGE FOR 66" DIAMETER.

NOTE

THE EXISTING BEAVER POND SHALL SERVE AS THE BMP FACILITY FOR THIS PROJECT

BEAVER POND NORMAL POOL FLUCTUATES AT TIME OF SURVEY NORMAL POOL ELEV.=20.4

No.	DATE	REVISION / COMMENT / NOTE	BY
8	6/8/01	RECORD DRAWINGS (NONE THIS SHEET)	HWP
7	11/15/99	REVISED HYDRANT SPACING	DPW
6	7/28/99	REVISED WETLAND AREAS	DPW
5	4/14/99	REVISED PER 4/99 JCC COMMENT LETTER	SOW
4	3/2/99	REVISED PER 1/99 JCC COMMENT LETTER	SOW
3	12/18/98	REVISED PER 11/5/98 JCC COMMENT LETTER	SOW
2	10/16/98	REVISED PER 3/14/96 JCC COMMENT LETTER	SOW
1	1/25/96	REVISED MASTER PLAN PER JCC	HWP

5248 Olde Towne Road, Suite 1
Williamsburg, Virginia 23188
(757) 253-0040
Fax (757) 220-8994
CONSULTING ENGINEERS

DRAINAGE AND EROSION CONTROL PLAN

JAMESTOWN HUNDRED

OWNER/DEVELOPER: HAMPTON ROADS DEVELOPMENT, L.L.C.

BERKLEY DISTRICT JAMES CITY COUNTY VIRGINIA

Designed	Drawn
SOW/RMO	SCL
Scale	Date
1"=50'	11/29/95

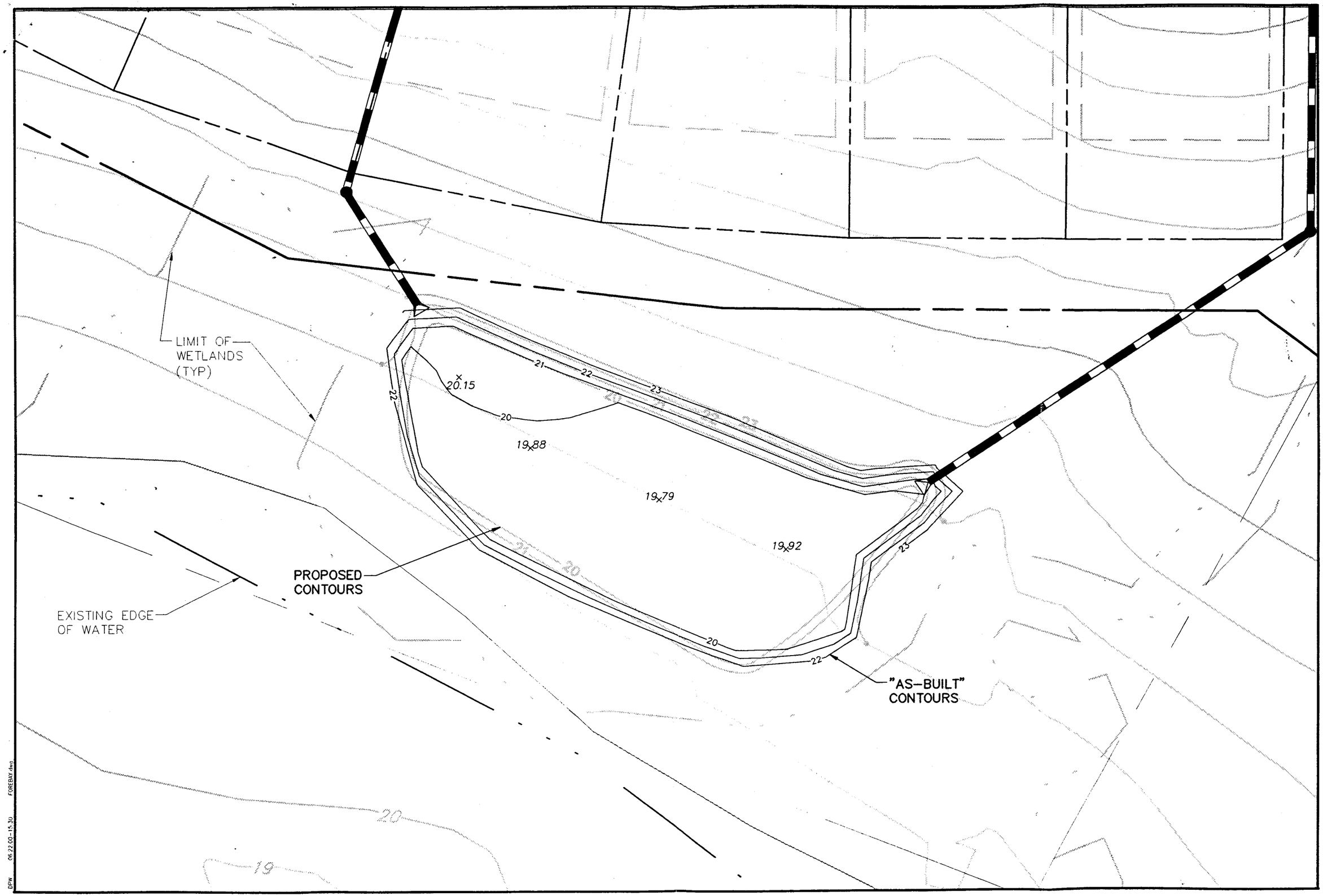
Project No. 6201-7

Drawing No. 4

RECORD DRAWING-6/8/01

HBK 10.23.01-15:32 6201714.dwg

PC134_JAMESTOWN_HUNDRED_FORM_THOMAS_FOREBAY_STORM - 014



No.	DATE	REVISION / COMMENT / NOTE	BY

5248 Olde Towne Road, Suite 1
Williamsburg, Virginia 23188
(757) 253-0040
Fax (757) 220-9994
CONSULTING ENGINEERS

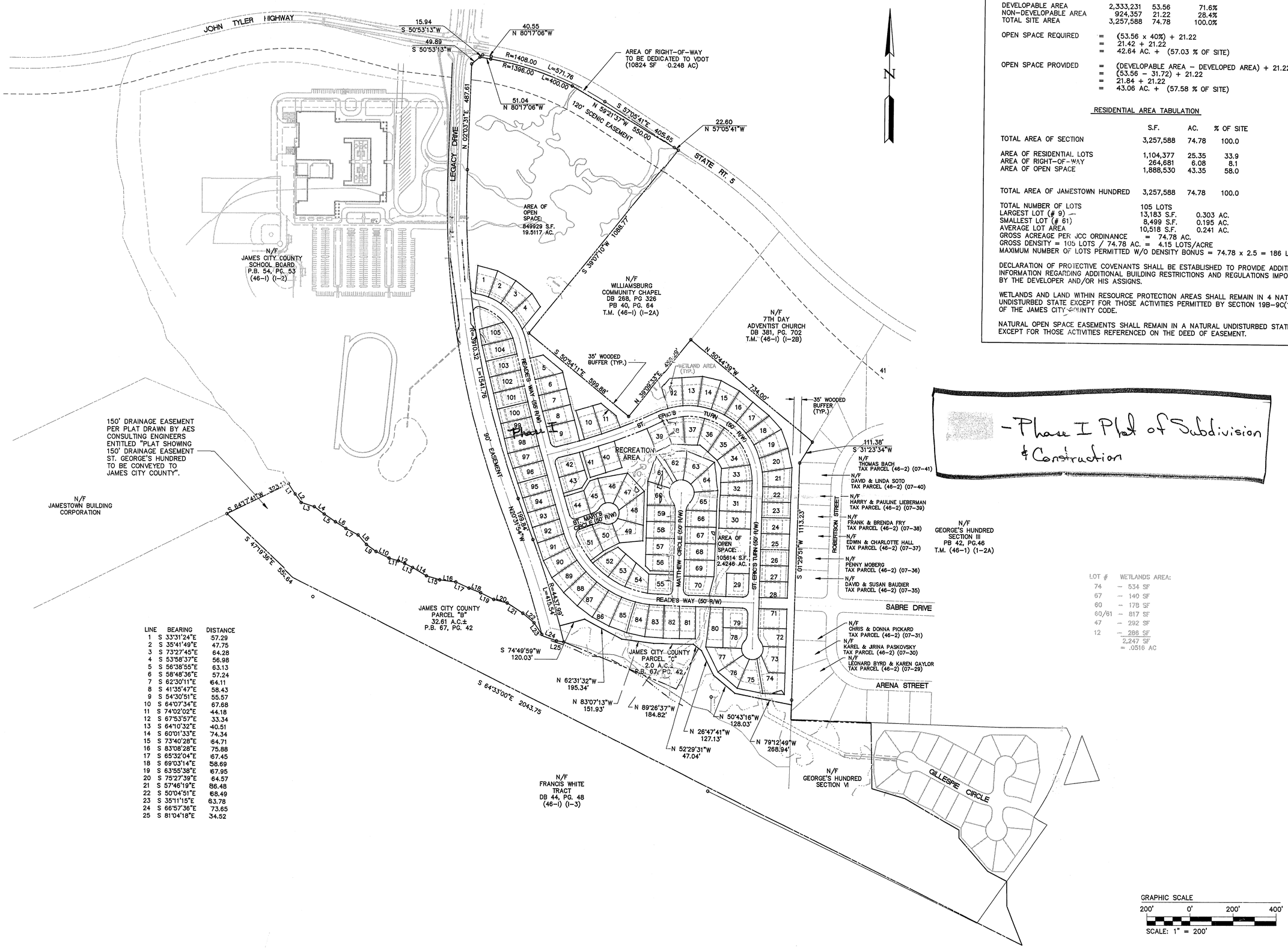
JAMESTOWN HUNDRED

FOREBAY LOCATION
(PRESENTLY UNDER CONSTRUCTION)

Designed	Drawn DPW
Scale 1"=30'	Date 6/22/00
Project No. 6201-07	
Drawing No. 1 OF 1	

DPW 06.22.00-15:30 FOREBAY.dwg

PC134_JAMESTOWN_HUNDRED_FORM_THOMAS_FOREBAY_STORM - 015



LINE	BEARING	DISTANCE
1	S 33°31'24"E	57.29
2	S 35°41'49"E	47.75
3	S 73°27'45"E	64.28
4	S 53°58'37"E	56.98
5	S 56°38'55"E	63.13
6	S 58°48'36"E	57.24
7	S 62°30'11"E	64.11
8	S 41°35'47"E	58.43
9	S 54°30'51"E	55.57
10	S 64°07'34"E	67.68
11	S 74°02'02"E	44.18
12	S 67°53'57"E	33.34
13	S 64°10'32"E	40.51
14	S 60°01'33"E	74.34
15	S 73°40'28"E	64.71
16	S 83°08'28"E	75.88
17	S 65°32'04"E	67.45
18	S 69°03'14"E	58.69
19	S 63°55'38"E	67.95
20	S 75°27'39"E	64.57
21	S 57°46'19"E	86.48
22	S 50°04'51"E	68.49
23	S 35°11'15"E	63.78
24	S 66°57'36"E	73.65
25	S 81°04'18"E	34.52

RESIDENTIAL CLUSTER STATISTICS

	S.F.	AC.	% OF SITE
DEVELOPABLE AREA	2,333,231	53.56	71.6%
NON-DEVELOPABLE AREA	924,357	21.22	28.4%
TOTAL SITE AREA	3,257,588	74.78	100.0%

OPEN SPACE REQUIRED = (53.56 x 40%) + 21.22
= 21.42 + 21.22
= 42.64 AC. + (57.03 % OF SITE)

OPEN SPACE PROVIDED = (DEVELOPABLE AREA – DEVELOPED AREA) + 21.22
= (53.56 – 31.72) + 21.22
= 21.84 + 21.22
= 43.06 AC. + (57.58 % OF SITE)

RESIDENTIAL AREA TABULATION

	S.F.	AC.	% OF SITE
TOTAL AREA OF SECTION	3,257,588	74.78	100.0
AREA OF RESIDENTIAL LOTS	1,104,377	25.35	33.9
AREA OF RIGHT-OF-WAY	264,681	6.08	8.1
AREA OF OPEN SPACE	1,888,530	43.35	58.0
TOTAL AREA OF JAMESTOWN HUNDRED	3,257,588	74.78	100.0

TOTAL NUMBER OF LOTS 105 LOTS
LARGEST LOT (# 9) 13,183 S.F. 0.303 AC.
SMALLEST LOT (# 61) 8,499 S.F. 0.195 AC.
AVERAGE LOT AREA 10,518 S.F. 0.241 AC.
GROSS ACREAGE PER JCC ORDINANCE = 74.78 AC.
GROSS DENSITY = 105 LOTS / 74.78 AC. = 4.15 LOTS/ACRE
MAXIMUM NUMBER OF LOTS PERMITTED W/O DENSITY BONUS = 74.78 x 2.5 = 186 LOTS

DECLARATION OF PROTECTIVE COVENANTS SHALL BE ESTABLISHED TO PROVIDE ADDITIONAL INFORMATION REGARDING ADDITIONAL BUILDING RESTRICTIONS AND REGULATIONS IMPOSED BY THE DEVELOPER AND/OR HIS ASSIGNS.

WETLANDS AND LAND WITHIN RESOURCE PROTECTION AREAS SHALL REMAIN IN 4 NATURAL UNDISTURBED STATE EXCEPT FOR THOSE ACTIVITIES PERMITTED BY SECTION 19B-9C(1) OF THE JAMES CITY COUNTY CODE.

NATURAL OPEN SPACE EASEMENTS SHALL REMAIN IN A NATURAL UNDISTURBED STATE EXCEPT FOR THOSE ACTIVITIES REFERENCED ON THE DEED OF EASEMENT.

LOT #	WETLANDS AREA:
74	– 534 SF
67	– 140 SF
60	– 178 SF
60/61	– 817 SF
47	– 292 SF
12	– 286 SF
	2,247 SF
	= .0516 AC

- Phase I Plat of Subdivision & Construction

No.	DATE	REVISION / COMMENT / NOTE	BY
5	4/14/99	REVISED PER 4/99 JCC COMMENT LETTER	SOW
4	3/2/99	REVISED PER 1/99 JCC COMMENT LETTER	SOW
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2	10/16/98	REVISED PER 3/14/96 JCC COMMENT LETTER	SOW
1	1/25/96	REVISED MASTER PLAN PER JCC	HWP

COMMONWEALTH OF VIRGINIA
STEVEN O. WIGLEY
No. 019307
12/21/99
PROFESSIONAL ENGINEER

5248 Olde Towne Road, Suite 1
Williamsburg, Virginia 23188
(757) 253-0040
Fax (757) 220-8994
CONSULTING ENGINEERS

PRELIMINARY BOUNDARY PLAT
JAMESTOWN HUNDRED

OWNER/DEVELOPER: JAMES R. CHISMAN DEVELOPMENT COMPANY
BERKLEY DISTRICT JAMES CITY COUNTY VIRGINIA

Designed	Drawn
SOW/RMO	SCL
Scale	Date
1"=200'	11/29/95

Project No. 6201-7
Drawing No. 2

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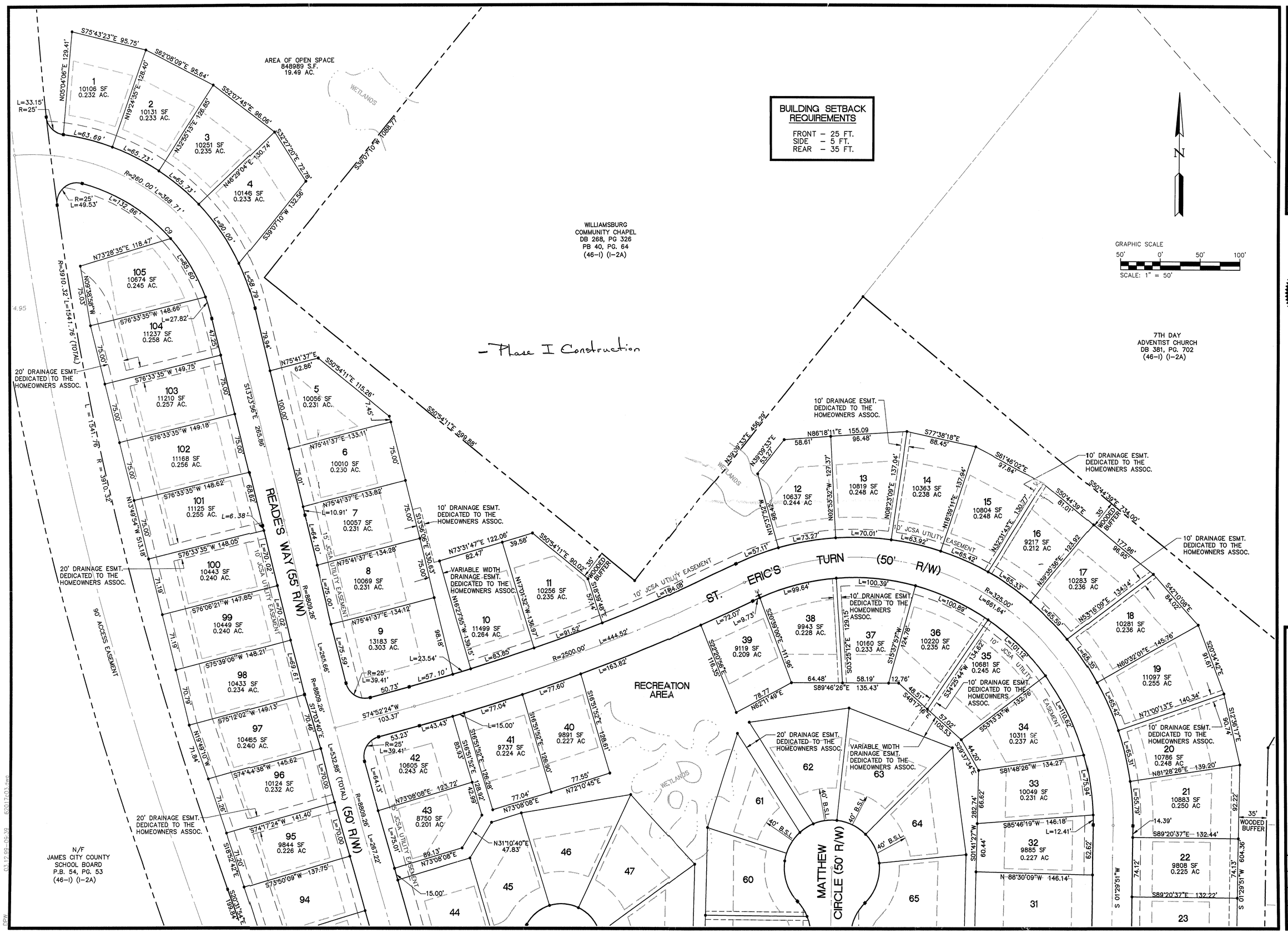
KEG
PC134_JAMESTOWN_HUNDRED_FORM_THOMAS_FOREBAY_STORM - 016



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2	10/16/98	REVISED PER 3/14/96 JCC COMMENT LETTER	SOW
1	1/25/96	REVISED MASTER PLAN PER JCC	HWP

COMMONWEALTH OF VIRGINIA
STEVEN O. WIGNER
No. 019307
12/21/98
PROFESSIONAL ENGINEER

5248 Olde Towne Road, Suite 1
Williamsburg, Virginia 23188
(757) 253-0040
Fax (757) 220-8994
CONSULTING ENGINEERS

PRELIMINARY PLAT

JAMESTOWN HUNDRED

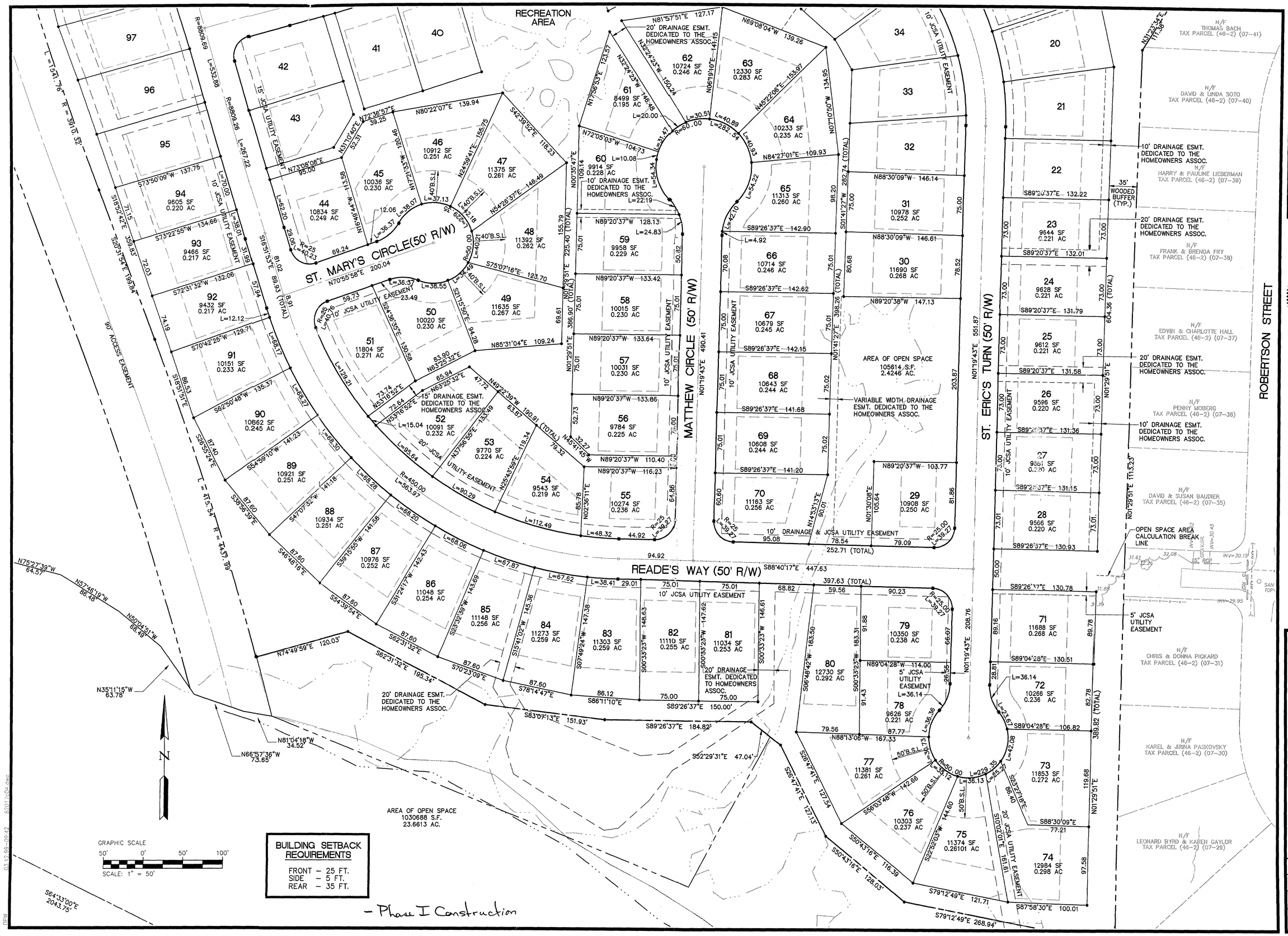
OWNER/DEVELOPER: JAMES R. CHISMAN DEVELOPMENT COMPANY

BERKLEY DISTRICT JAMES CITY COUNTY VIRGINIA

Designed	Drawn
SOW/RMO	SCL
Scale	Date
1"=50'	11/29/95

Project No. 6201-7

Drawing No. 3



BUILDING SETBACK REQUIREMENTS

FRONT – 25 FT.
SIDE – 5 FT.
REAR – 35 FT.

– Phase I Construction

No.	DATE	REVISION / COMMENT / NOTE	BY
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2	10/16/98	REVISED PER 3/14/98 JCC COMMENT LETTER	SOW
1	1/25/96	REVISED MASTER PLAN PER JCC	HWP

COMMONWEALTH OF VIRGINIA
STEVEN C. WICKER
No. 018307
12/21/98
PROFESSIONAL ENGINEER

5248 Olde Towne Road, Suite 1
Williamsburg, Virginia 23188
(757) 253-0040
Fax (757) 220-8994
CONSULTING ENGINEERS

PRELIMINARY PLAT FOR
JAMESTOWN HUNDRED
OWNER/DEVELOPER: JAMES R. CHISMAN DEVELOPMENT COMPANY
BERKLEY DISTRICT — JAMES CITY COUNTY — VIRGINIA

Designed	Drawn
SOW/RMO	SCL
Scale	Date
1"=50'	11/29/95

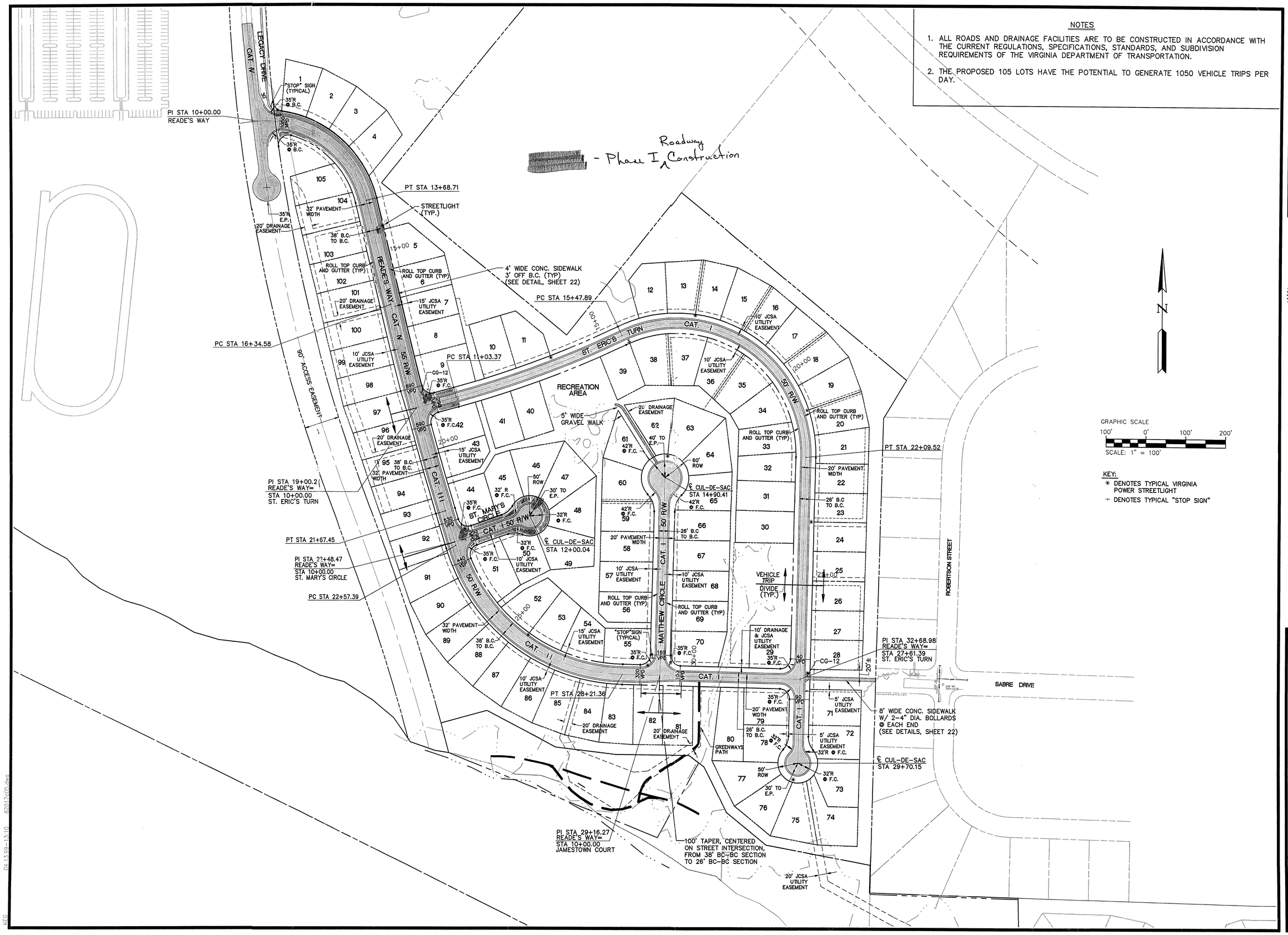
Project No. 6201-7
Drawing No. 4

03.12.99-09:42 67017c04.dwg

PC134_JAMESTOWN_HUNDRED_FORM_THOMAS_FOREBAY_STORM - 018

NOTES

1. ALL ROADS AND DRAINAGE FACILITIES ARE TO BE CONSTRUCTED IN ACCORDANCE WITH THE CURRENT REGULATIONS, SPECIFICATIONS, STANDARDS, AND SUBDIVISION REQUIREMENTS OF THE VIRGINIA DEPARTMENT OF TRANSPORTATION.
2. THE PROPOSED 105 LOTS HAVE THE POTENTIAL TO GENERATE 1050 VEHICLE TRIPS PER DAY.



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2	10/16/98	REVISED PER 3/14/98 JCC COMMENT LETTER	SOW
1	1/25/96	REVISED MASTER PLAN PER JCC	HWP

COMMONWEALTH OF VIRGINIA
STEVEN O. WICKS
No. 019307
12/21/98
PROFESSIONAL ENGINEER

5248 Olde Towne Road, Suite 1
Williamsburg, Virginia 23188
(757) 253-0040
Fax (757) 220-8994
CONSULTING ENGINEERS

ROADWAY PLAN AND VEHICLE TRIP GENERATION ANALYSIS FOR JAMESTOWN HUNDRED

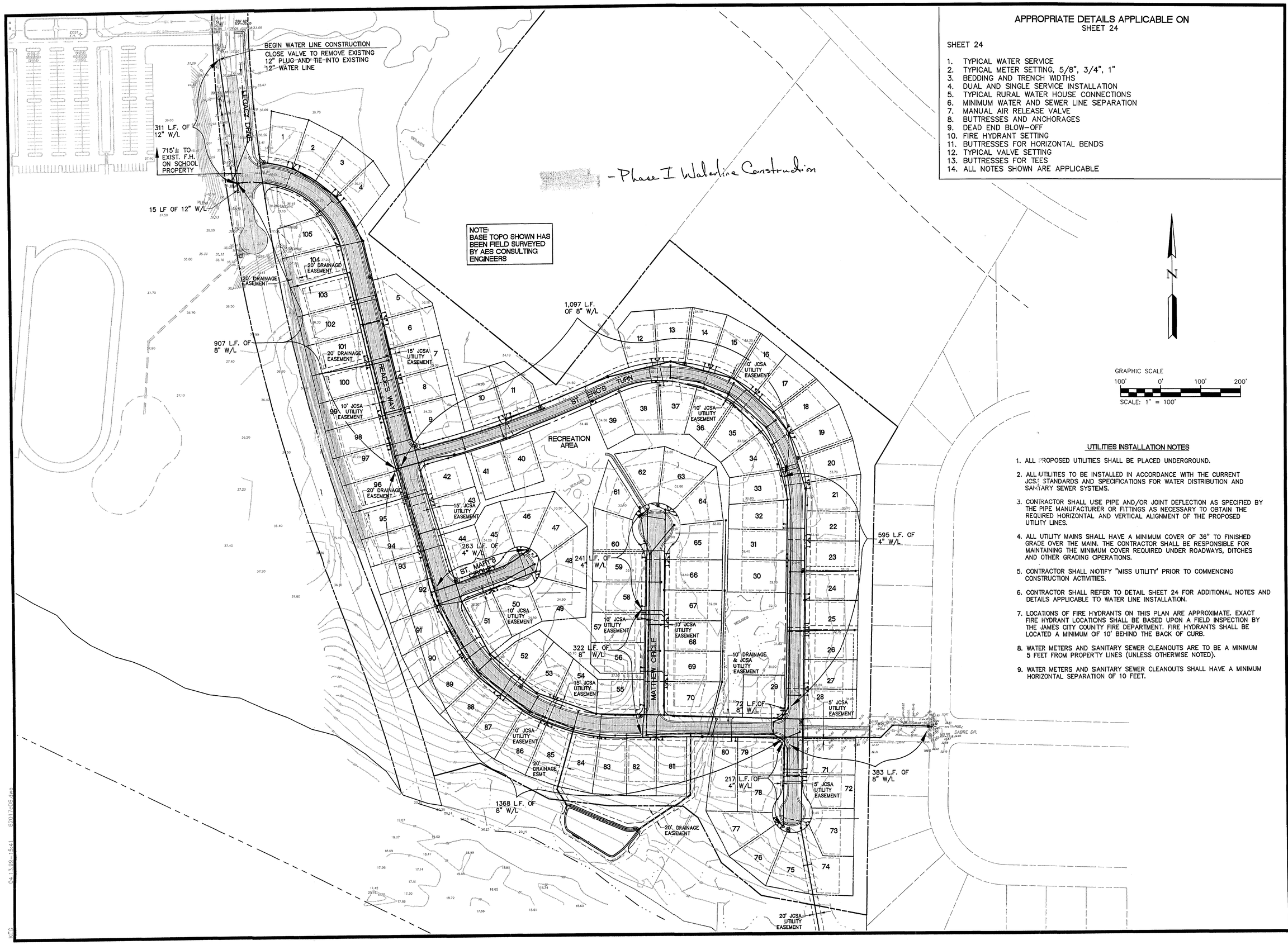
OWNER/DEVELOPER: JAMES R. CHISMAN DEVELOPMENT COMPANY

BERKLEY DISTRICT — JAMES CITY COUNTY — VIRGINIA

Designed	Drawn
SOW/RMO	GG
Scale	Date
1"=100'	11/29/95

Project No. 6201-7

Drawing No. 5



APPROPRIATE DETAILS APPLICABLE ON SHEET 24

SHEET 24

1. TYPICAL WATER SERVICE
2. TYPICAL METER SETTING, 5/8", 3/4", 1"
3. BEDDING AND TRENCH WIDTHS
4. DUAL AND SINGLE SERVICE INSTALLATION
5. TYPICAL RURAL WATER HOUSE CONNECTIONS
6. MINIMUM WATER AND SEWER LINE SEPARATION
7. MANUAL AIR RELEASE VALVE
8. BUTTRESSES AND ANCHORAGES
9. DEAD END BLOW-OFF
10. FIRE HYDRANT SETTING
11. BUTTRESSES FOR HORIZONTAL BENDS
12. TYPICAL VALVE SETTING
13. BUTTRESSES FOR TEES
14. ALL NOTES SHOWN ARE APPLICABLE

UTILITIES INSTALLATION NOTES

1. ALL PROPOSED UTILITIES SHALL BE PLACED UNDERGROUND.
2. ALL UTILITIES TO BE INSTALLED IN ACCORDANCE WITH THE CURRENT JCSA STANDARDS AND SPECIFICATIONS FOR WATER DISTRIBUTION AND SANITARY SEWER SYSTEMS.
3. CONTRACTOR SHALL USE PIPE AND/OR JOINT DEFLECTION AS SPECIFIED BY THE PIPE MANUFACTURER OR FITTINGS AS NECESSARY TO OBTAIN THE REQUIRED HORIZONTAL AND VERTICAL ALIGNMENT OF THE PROPOSED UTILITY LINES.
4. ALL UTILITY MAINS SHALL HAVE A MINIMUM COVER OF 36" TO FINISHED GRADE OVER THE MAIN. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING THE MINIMUM COVER REQUIRED UNDER ROADWAYS, DITCHES AND OTHER GRADING OPERATIONS.
5. CONTRACTOR SHALL NOTIFY "MISS UTILITY" PRIOR TO COMMENCING CONSTRUCTION ACTIVITIES.
6. CONTRACTOR SHALL REFER TO DETAIL SHEET 24 FOR ADDITIONAL NOTES AND DETAILS APPLICABLE TO WATER LINE INSTALLATION.
7. LOCATIONS OF FIRE HYDRANTS ON THIS PLAN ARE APPROXIMATE. EXACT FIRE HYDRANT LOCATIONS SHALL BE BASED UPON A FIELD INSPECTION BY THE JAMES CITY COUNTY FIRE DEPARTMENT. FIRE HYDRANTS SHALL BE LOCATED A MINIMUM OF 10' BEHIND THE BACK OF CURB.
8. WATER METERS AND SANITARY SEWER CLEANOUTS ARE TO BE A MINIMUM 5 FEET FROM PROPERTY LINES (UNLESS OTHERWISE NOTED).
9. WATER METERS AND SANITARY SEWER CLEANOUTS SHALL HAVE A MINIMUM HORIZONTAL SEPARATION OF 10 FEET.

No.	DATE	REVISION / COMMENT / NOTE	BY
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2	10/16/98	REVISED PER 3/14/96 JCC COMMENT LETTER	SOW
1	1/25/96	REVISED MASTER PLAN PER JCC	HWP

COMMONWEALTH OF VIRGINIA
STEVEN O. WGLER
No. 019307
12/21/98
PROFESSIONAL ENGINEER

5248 Olde Towne Road, Suite 1
Williamsburg, Virginia 23188
(757) 253-0040
Fax (757) 220-8994
CONSULTING ENGINEERS

OVERALL WATER PLAN

JAMESTOWN HUNDRED

OWNER/DEVELOPER: JAMES R. CHISMAN DEVELOPMENT COMPANY

BERKLEY DISTRICT JAMES CITY COUNTY VIRGINIA

Designed	Drawn
SOW/RMO	SCL
Scale	Date
1"=100'	11/29/95

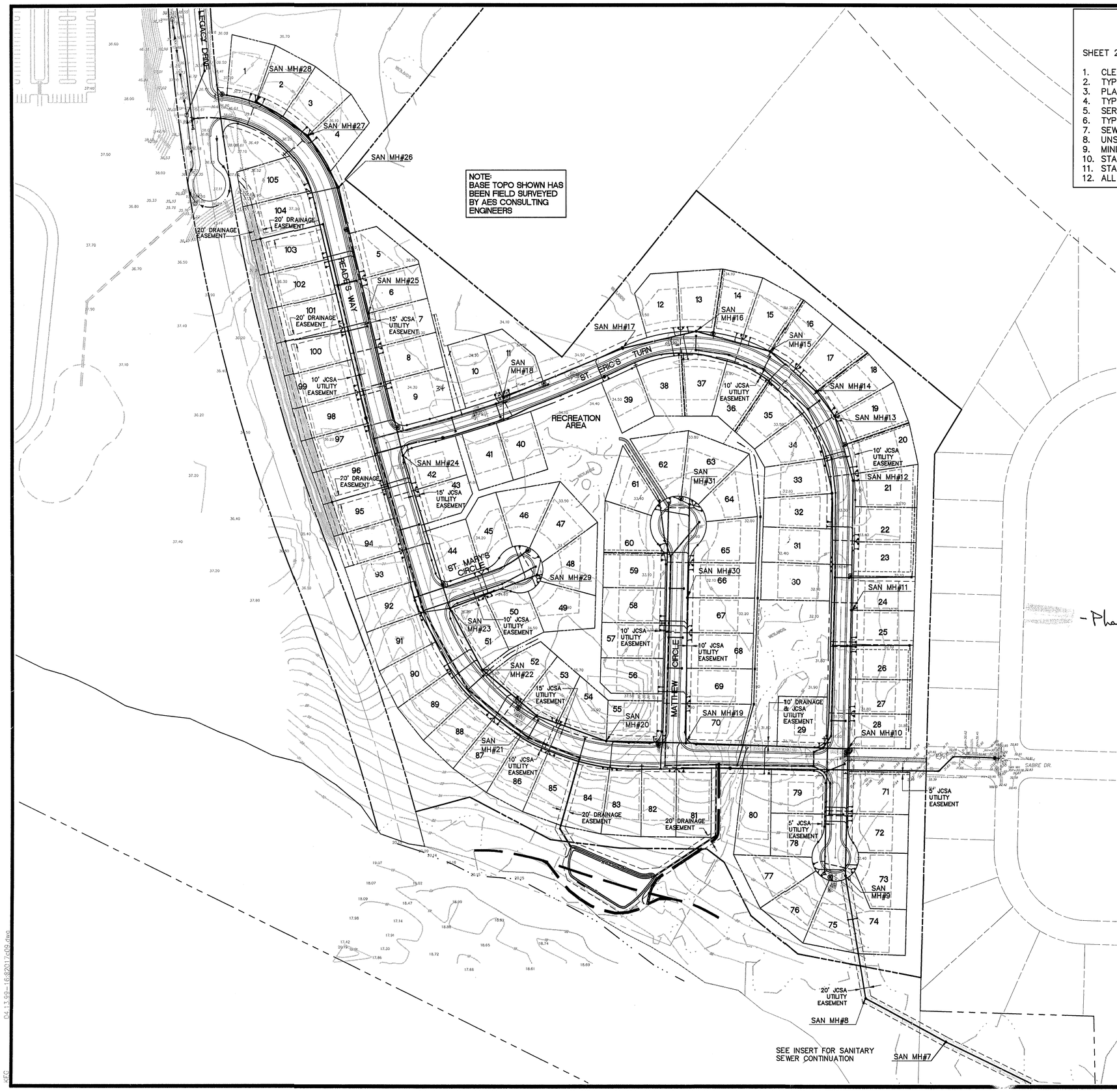
Project No. 6201-7

Drawing No. 6

04.13.99 15:41 6201-7-OS.dwg

KFC

PC134_JAMESTOWN_HUNDRED_FORM_THOMAS_FOREBAY_STORM - 020



NOTE:
BASE TOPO SHOWN HAS BEEN FIELD SURVEYED BY AES CONSULTING ENGINEERS

- Phase I Sanitary Sewer Construction

APPROPRIATE DETAILS APPLICABLE ON SHEET 23

SHEET 23

1. CLEANOUT COVER ASSEMBLY
2. TYPICAL 6" LATERAL SERVING TWO DWELLINGS
3. PLANS FOR MANHOLES
4. TYPICAL SEWER LATERAL CONNECTION
5. SERVICE CONNECTION FOR DEPTHS OVER 8 FEET
6. TYPICAL SEWER SERVICE
7. SEWER TRENCH INSTALLATION
8. UNSTABLE TRENCH SEWER PIPE FOUNDATION
9. MINIMUM WATER AND SEWER PIPE SEPARATION
10. STANDARD MANHOLE FRAME AND COVER
11. STANDARD MANHOLE
12. ALL NOTES SHOWN ARE APPLICABLE

UTILITIES INSTALLATION NOTES

1. ALL PROPOSED UTILITIES SHALL BE PLACED UNDERGROUND.
2. ALL UTILITIES TO BE INSTALLED IN ACCORDANCE WITH THE CURRENT JCSA STANDARDS AND SPECIFICATIONS FOR WATER DISTRIBUTION AND SANITARY SEWER SYSTEMS.
3. CONTRACTOR SHALL USE PIPE AND/OR JOINT DEFLECTION AS SPECIFIED BY THE PIPE MANUFACTURER OR FITTINGS AS NECESSARY TO OBTAIN THE REQUIRED HORIZONTAL AND VERTICAL ALIGNMENT OF THE PROPOSED UTILITY LINES.
4. ALL UTILITY MAINS SHALL HAVE A MINIMUM COVER OF 36" TO FINISHED GRADE OVER THE MAIN. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING THE MINIMUM COVER REQUIRED UNDER ROADWAYS, DITCHES AND OTHER GRADING OPERATIONS.
5. CONTRACTOR SHALL NOTIFY "MISS UTILITY" PRIOR TO COMMENCING CONSTRUCTION ACTIVITIES.
6. CONTRACTOR SHALL REFER TO DETAIL SHEET 23 FOR ADDITIONAL NOTES AND DETAILS APPLICABLE TO SANITARY SEWER SYSTEM INSTALLATION.
7. LOCATIONS OF FIRE HYDRANTS ON THIS PLAN ARE APPROXIMATE. EXACT FIRE HYDRANT LOCATIONS SHALL BE BASED UPON A FIELD INSPECTION BY THE JAMES CITY COUNTY FIRE DEPARTMENT. FIRE HYDRANTS SHALL BE LOCATED A MINIMUM OF 10' BEHIND THE BACK OF CURB.
8. WATER METERS AND SANITARY SEWER CLEANOUTS ARE TO BE A MINIMUM 5 FEET FROM PROPERTY LINES (UNLESS OTHERWISE NOTED).
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2	10/16/98	REVISED PER 3/14/98 JCC COMMENT LETTER	SOW
1	1/25/96	REVISED MASTER PLAN PER JCC	HWP

COMMONWEALTH OF VIRGINIA
STEVEN O. MOORE
No. 019307
12/21/98
PROFESSIONAL ENGINEER

5248 Olde Towne Road, Suite 1
Williamsburg, Virginia 23188
(757) 253-0040
Fax (757) 220-8994
CONSULTING ENGINEERS

OVERALL SANITARY SEWER PLAN
JAMESTOWN HUNDRED

OWNER/DEVELOPER: JAMES R. CHISMAN DEVELOPMENT COMPANY

BERKLEY DISTRICT JAMES CITY COUNTY VIRGINIA

Designed	Drawn
SOW/RMO	SCL
Scale	Date
1"=100'	11/29/95
Project No.	
6201-7	
Drawing No.	
9	

No.	DATE	REVISION / COMMENT / NOTE	BY
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1	1/25/96	REVISED MASTER PLAN PER JCC	HWP

COMMONWEALTH OF VIRGINIA
STEVEN O. WIGGS
No. 019307
PROFESSIONAL ENGINEER
12/21/98

5248 Olde Towne Road, Suite 1
Williamsburg, Virginia 23188
(757) 253-0040
Fax (757) 220-8994
CONSULTING ENGINEERS

OVERALL DRAINAGE PLAN
JAMESTOWN HUNDRED

OWNER/DEVELOPER: JAMES R. CHISMAN DEVELOPMENT COMPANY

BERKLEY DISTRICT JAMES CITY COUNTY VIRGINIA

Designed	Drawn
SOW/RMO	SCL
Scale	Date
1"=100'	11/29/95

Project No.
6201-7

Drawing No.
13

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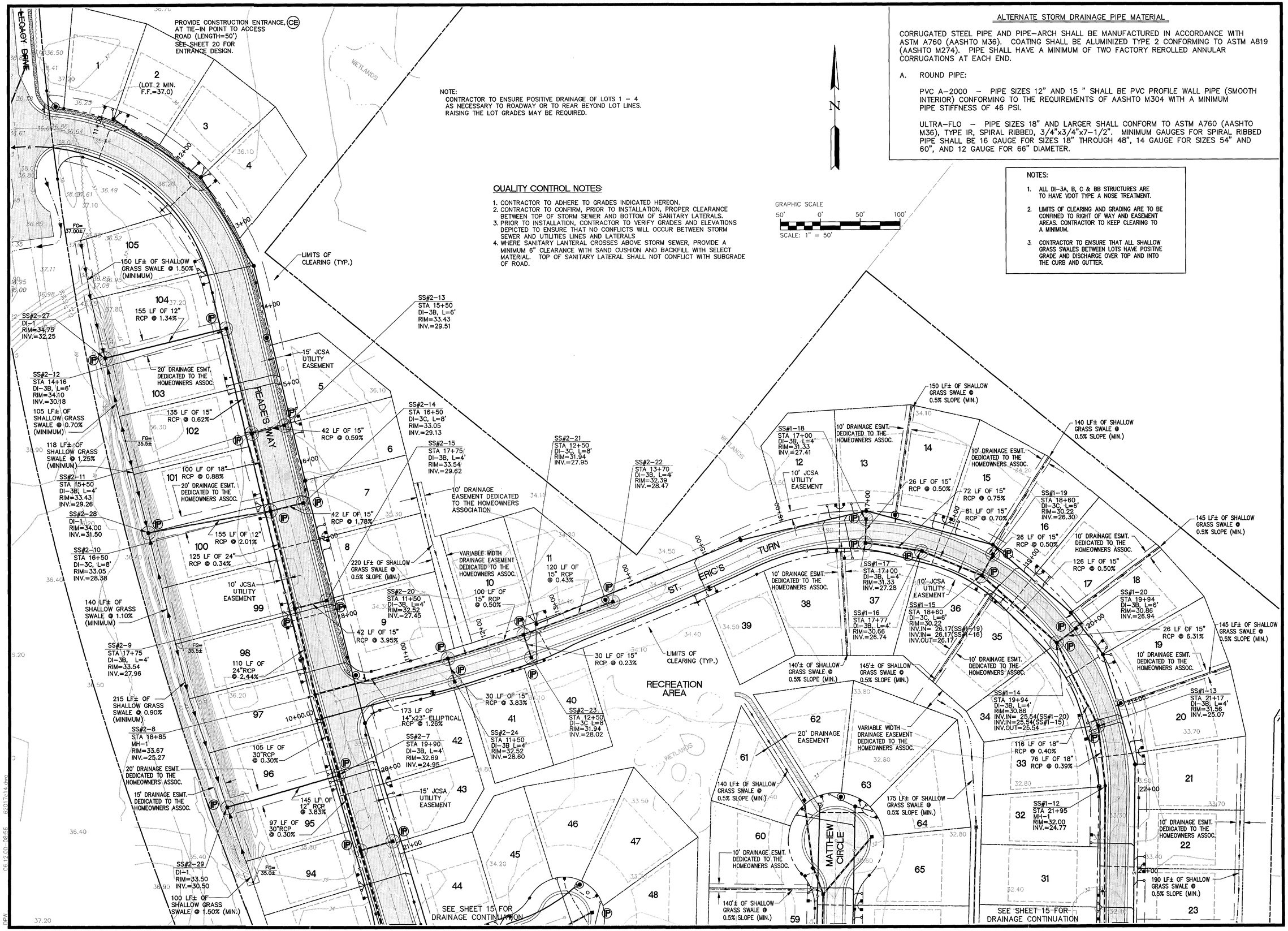
DRW

PC134_JAMESTOWN_HUNDRED_FORM_THOMAS_FOREBAY_STORM - 022



QUALITY CONTROL NOTES:

1. CONTRACTOR TO ADHERE TO GRADES INDICATED HEREON.
2. CONTRACTOR TO CONFIRM, PRIOR TO INSTALLATION, PROPER CLEARANCE BETWEEN TOP OF STORM SEWER AND BOTTOM OF SANITARY LATERALS.
3. PRIOR TO INSTALLATION, CONTRACTOR TO VERIFY GRADES AND ELEVATIONS DEPICTED TO ENSURE THAT NO CONFLICTS WILL OCCUR BETWEEN STORM SEWER AND UTILITIES LINES AND LATERALS
4. WHERE SANITARY LANTERAL CROSSES ABOVE STORM SEWER, PROVIDE A MINIMUM 6" CLEARANCE WITH SAND CUSHION AND BACKFILL WITH SELECT MATERIAL. TOP OF SANITARY LATERAL SHALL NOT CONFLICT WITH SUBGRADE OF ROAD.

ALTERNATE STORM DRAINAGE PIPE MATERIAL

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A. ROUND PIPE:

PVC A-2000 – PIPE SIZES 12" AND 15 " SHALL BE PVC PROFILE WALL PIPE (SMOOTH INTERIOR) CONFORMING TO THE REQUIREMENTS OF AASHTO M304 WITH A MINIMUM PIPE STIFFNESS OF 46 PSI.

ULTRA-FLO – PIPE SIZES 18" AND LARGER SHALL CONFORM TO ASTM A760 (AASHTO M36), TYPE IR, SPIRAL RIBBED, 3/4"x3/4"x7-1/2". MINIMUM GAUGES FOR SPIRAL RIBBED PIPE SHALL BE 16 GAUGE FOR SIZES 18" THROUGH 48", 14 GAUGE FOR SIZES 54" AND 60", AND 12 GAUGE FOR 66" DIAMETER.

NOTES:

1. ALL DI-3A, B, C & BB STRUCTURES ARE TO HAVE VDOT TYPE A NOSE TREATMENT.
2. LIMITS OF CLEARING AND GRADING ARE TO BE CONFINED TO RIGHT OF WAY AND EASEMENT AREAS. CONTRACTOR TO KEEP CLEARING TO A MINIMUM.
3. CONTRACTOR TO ENSURE THAT ALL SHALLOW GRASS SWALES BETWEEN LOTS HAVE POSITIVE GRADE AND DISCHARGE OVER TOP AND INTO THE CURB AND GUTTER.

No.	DATE	REVISION / COMMENT / NOTE	BY
8	6/12/00	REVISED DRAINAGE SYSTEM ALONG LOTS 94-105 PER OWNER REQUEST	DPW
7	11/15/98	REVISED HYDRANT SPACING (NONE THIS SHEET)	DPW
6	7/28/98	REVISED WETLAND AREAS	DPW
5	4/14/98	REVISED PER 4/98 JCC COMMENT LETTER	SOW
4	3/2/98	REVISED PER 1/98 JCC COMMENT LETTER	SOW
3	12/18/98	REVISED PER 11/5/98 JCC COMMENT LETTER	SOW
2	10/16/98	REVISED PER 3/14/98 JCC COMMENT LETTER	SOW
1	1/29/96	REVISED MASTER PLAN PER JCC	HMP

COMMONWEALTH OF VIRGINIA
STEVEN O. WILSON
No. 018307
12/21/98
PROFESSIONAL ENGINEER

5248 Olde Towne Road, Suite 1
Williamsburg, Virginia 23188
(757) 253-0040
Fax (757) 220-8994
CONSULTING ENGINEERS

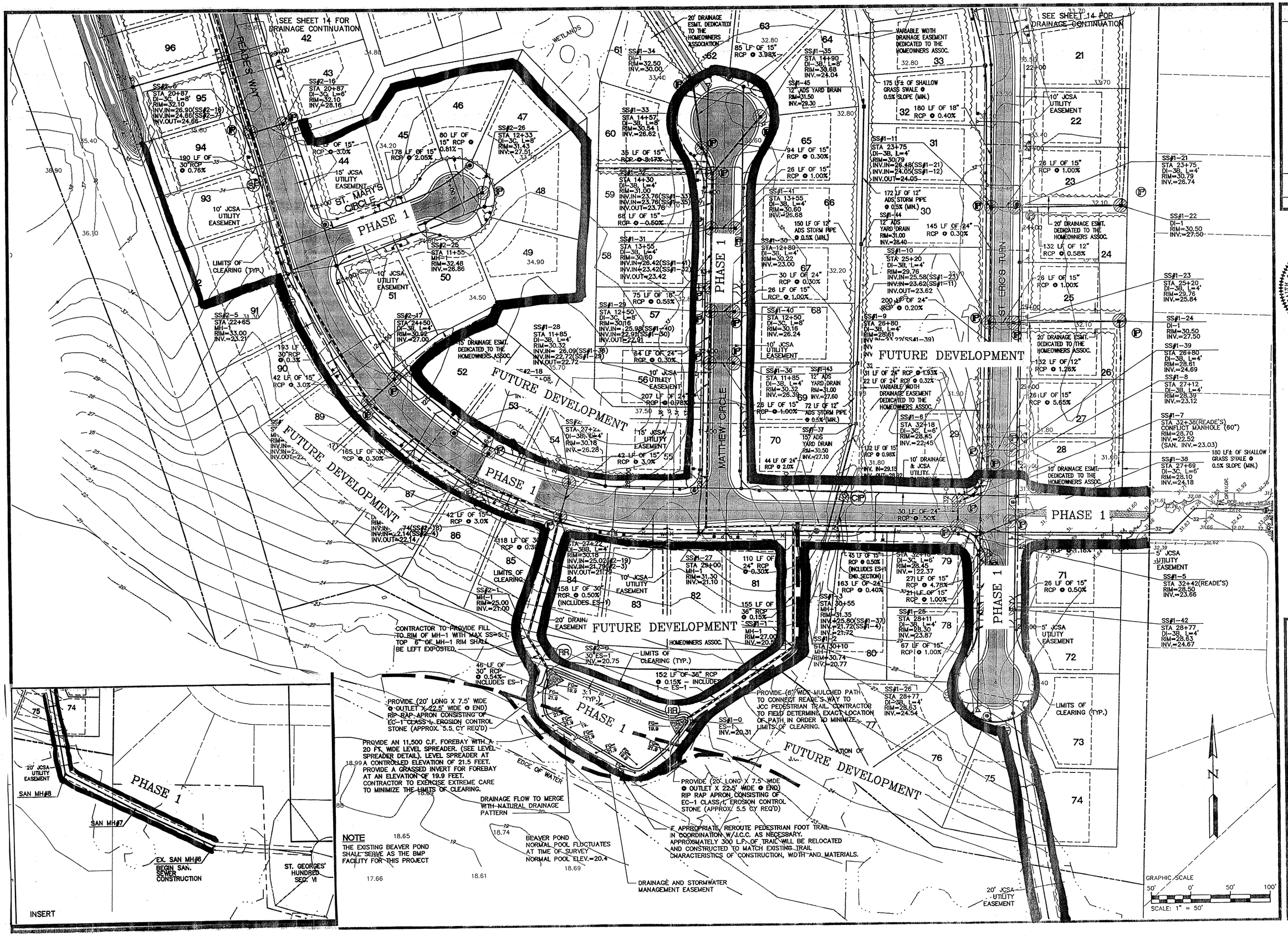
DRAINAGE AND EROSION CONTROL PLAN

JAMESTOWN HUNDRED

OWNER/DEVELOPER: LAND DEVELOPMENT CONSULTANTS, DEVELOPMENT, L.L.C.

BERKLEY DISTRICT — JAMES CITY COUNTY — VIRGINIA

Designed	Drawn
SOW/RMO	SCL
Scale	Date
1"=50'	11/29/95
Project No.	
6201-7	
Drawing No.	
14	



No.	DATE	REVISION / COMMENT / NOTE	BY
5	4/14/99	REVISED PER 4/99 JCC COMMENT LETTER	SOW
4	3/2/99	REVISED PER 1/99 JCC COMMENT LETTER	SOW
3	12/16/98	REVISED PER 11/5/98 JCC COMMENT LETTER	SOW
2	10/16/98	REVISED PER 3/14/96 JCC COMMENT LETTER	SOW
1	1/25/96	REVISED MASTER PLAN PER JCC	HWP

COMMONWEALTH OF VIRGINIA
STEVEN O. WOOD
No. 019307
12/21/98
REGISTERED PROFESSIONAL ENGINEER

5248 Olde Towne Road, Suite 1
Williamsburg, Virginia 23188
(757) 253-0040
Fax (757) 220-8994
CONSULTING ENGINEERS

DRAINAGE AND EROSION CONTROL PLAN

JAMESTOWN HUNDRED

OWNER/DEVELOPER: JAMES R. CHISMAN DEVELOPMENT COMPANY

BERKLEY DISTRICT JAMES CITY COUNTY VIRGINIA

Designed	Drawn
SOW/RMO	SCL
Scale	Date
1"=50'	11/29/95
Project No.	
6201-7	
Drawing No.	
15	

PC134_JAMESTOWN_HUNDRED_FORM_THOMAS_FOREBAY_STORM - 024

IRON ROD FOUND

IRF

IRF

5'5"

5'2"

LOT 66
19,950 S.F.

5'0"

EXISTING TREELINE

LOT 66

S 32°03'13" E 210.00'

N 32°03'13" W 210.00'

LOT 68

4'0½"

4'4½

AREA TO BE SODDED ±6,143 S.F.

4'0

3'11½"

3'11"

3'10½"

3'9"

DECK

57.35'

EXISTING RESIDENCE

2 STY FRAME RESIDENCE HOUSE #2549

48.3'

42.1'

CONC D/W

8.0'

12.0'

7.2'

13.1'

22.3'

14.0'

EXISTING CONCRETE DRIVEWAY

EXISTING RESIDENCE

53' TO ℄ INT OF ANDFALL DRIVE

IRF

N 58°29'06" E 95.00'

IRF

EDGE OF PAVEMENT

EXISTING CURB

ROBERT FENTON ROAD
(50' R/W)

S:
ROBERT FENTON ROAD
CITY COUNTY, VIRGINIA

ALTH OF VIRGINIA
HEW H. CONNOLLY
. No. 2053
D SURVEYOR

REFERENCES:
P.B. 87/42-47

DATE: 7/12/07
SCALE: 1"=30'
JOB# 07-198
CAD File
07-198.dwg

PROPOSED LANDSCAPE SKETCH OF
LOT 67
LANDFALL AT JAMESTOWN
James City County, Virginia

LandTech Resources, Inc.
Surveying • GPS • Engineering
5810-F Mooretown Road, Williamsburg, Virginia 23188
Telephone: 757-565-1677 Fax: 757-565-0782
Web: landtechresources.com

THIS PLAT WAS PRODUCED WITHOUT THE BENEFIT OF A TITLE REPORT AND REFLECTS ONLY THOSE ENCUMBRANCES, EASEMENTS AND SETBACKS AS SHOWN IN P.B. 87, PG. 43.

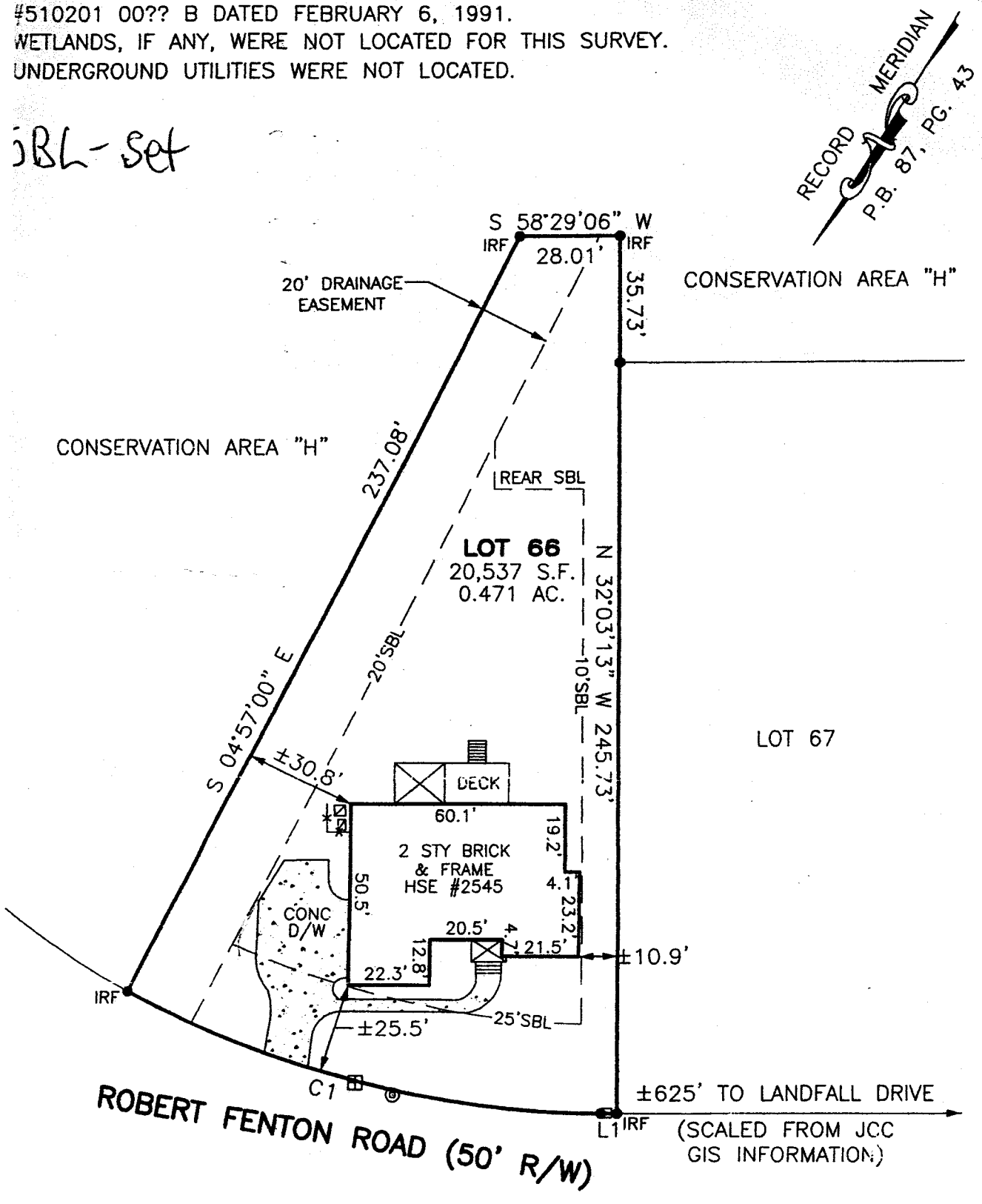
THIS FIRM IS NOT RESPONSIBLE FOR THE LOCATION OF ANY STRUCTURE, MANHOLE, VALVE, ETC., HIDDEN OR OBSTRUCTED AT THE TIME THE FIELD SURVEY WAS PERFORMED.

LOT LIES IN F.I.R.M. ZONE "X" ACCORDING TO COMMUNITY PANEL #510201 00?? B DATED FEBRUARY 6, 1991.

WETLANDS, IF ANY, WERE NOT LOCATED FOR THIS SURVEY.

UNDERGROUND UTILITIES WERE NOT LOCATED.

SBL-Set



END

Telephone Pedestal ADDRESS: ECKOFF

S-108-95

HUNDRED
VELOPMENT, L.L.C.
NSTRUCTION PLANS

JUL 2000
RECEIVED
PLANNING DEPARTMENT

COUNTY OF JAMES CITY
FINAL SUBDIVISION

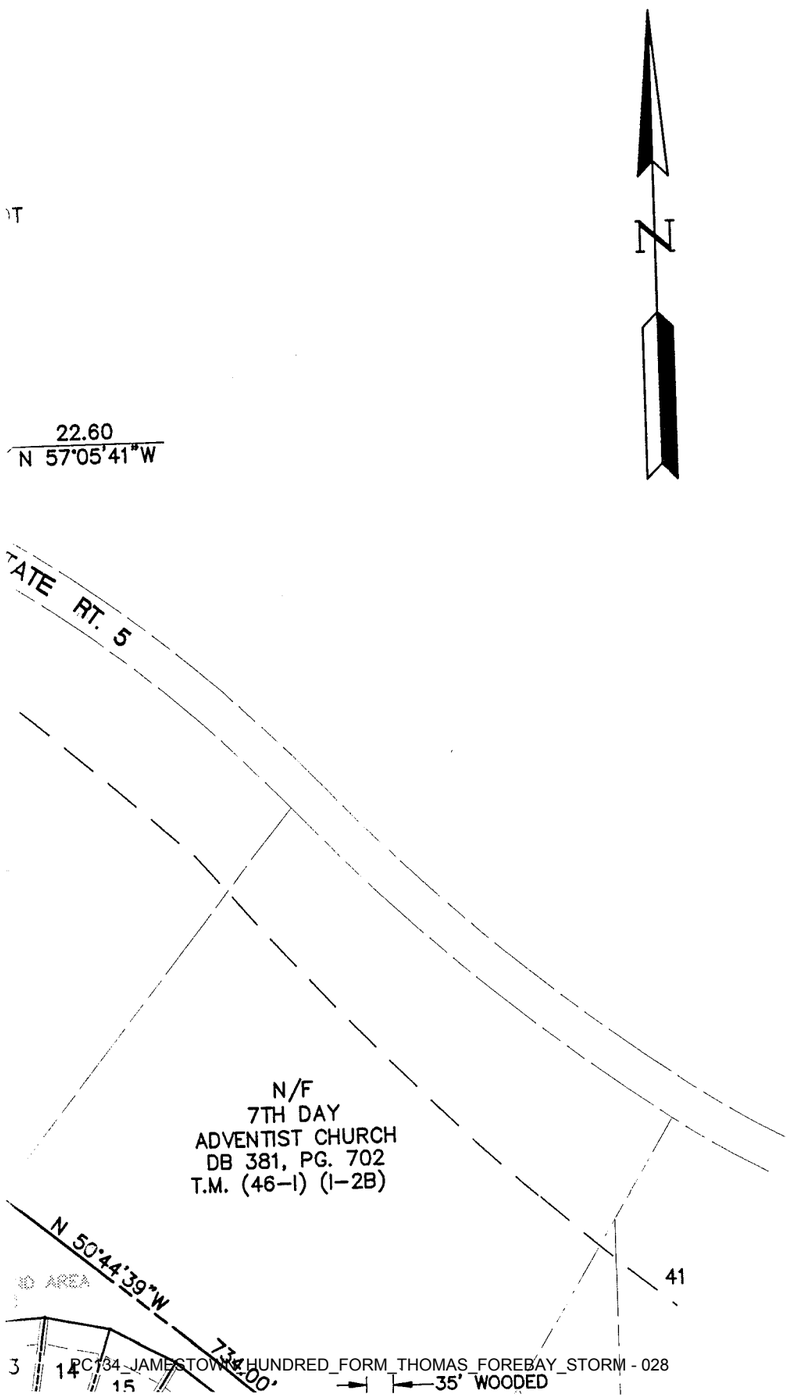
APPROVALS		DATE
Fire Dept	N/A	
Health Dept	N/A	
VDOT	JM / TR	2/13/00
Planning	TR	2/20/00
Environ	DEC / TR	2/20/00
JCSA	N/A	
County Eng.	N/A	
BEA	N/A	
Other	N/A	

REVISED PLANS

INDEX OF SHEETS

COVER SHEET

1. OVERALL DEVELOPMENT PLAN
2. PRELIMINARY BOUNDARY PLAT



RESIDENTIAL CLUSTER STATISTICS

	S.F.	AC.	% OF SITE
DEVELOPABLE AREA	2,333,231	53.56	71.6%
NON-DEVELOPABLE AREA	924,357	21.22	28.4%
TOTAL SITE AREA	3,257,588	74.78	100.0%

OPEN SPACE REQUIRED = (53.56 x 40%) + 21.22
= 21.42 + 21.22
= 42.64 AC. + (57.03 % OF SITE)

OPEN SPACE PROVIDED = (DEVELOPABLE AREA – DEVELOPED AREA) + 21.22
= (53.56 – 31.72) + 21.22
= 21.84 + 21.22
= 43.06 AC. + (57.58 % OF SITE)

RESIDENTIAL AREA TABULATION

	S.F.	AC.	% OF SITE
TOTAL AREA OF SECTION	3,257,588	74.78	100.0
AREA OF RESIDENTIAL LOTS	1,104,377	25.35	33.9
AREA OF RIGHT-OF-WAY	264,681	6.08	8.1
AREA OF OPEN SPACE	1,888,530	43.35	58.0
TOTAL AREA OF JAMESTOWN HUNDRED	3,257,588	74.78	100.0

TOTAL NUMBER OF LOTS	105 LOTS	
LARGEST LOT (# 9)	13,183 S.F.	0.303 AC.
SMALLEST LOT (# 61)	8,499 S.F.	0.195 AC.
AVERAGE LOT AREA	10,518 S.F.	0.241 AC.

GROSS ACREAGE PER JCC ORDINANCE = 74.78 AC.
GROSS DENSITY = 105 LOTS / 74.78 AC. = 4.15 LOTS/ACRE
MAXIMUM NUMBER OF LOTS PERMITTED W/O DENSITY BONUS = 74.78 x 2.5 = 186 LOTS

DECLARATION OF PROTECTIVE COVENANTS SHALL BE ESTABLISHED TO PROVIDE ADDITIONAL INFORMATION REGARDING ADDITIONAL BUILDING RESTRICTIONS AND REGULATIONS IMPOSED BY THE DEVELOPER AND/OR HIS ASSIGNS.

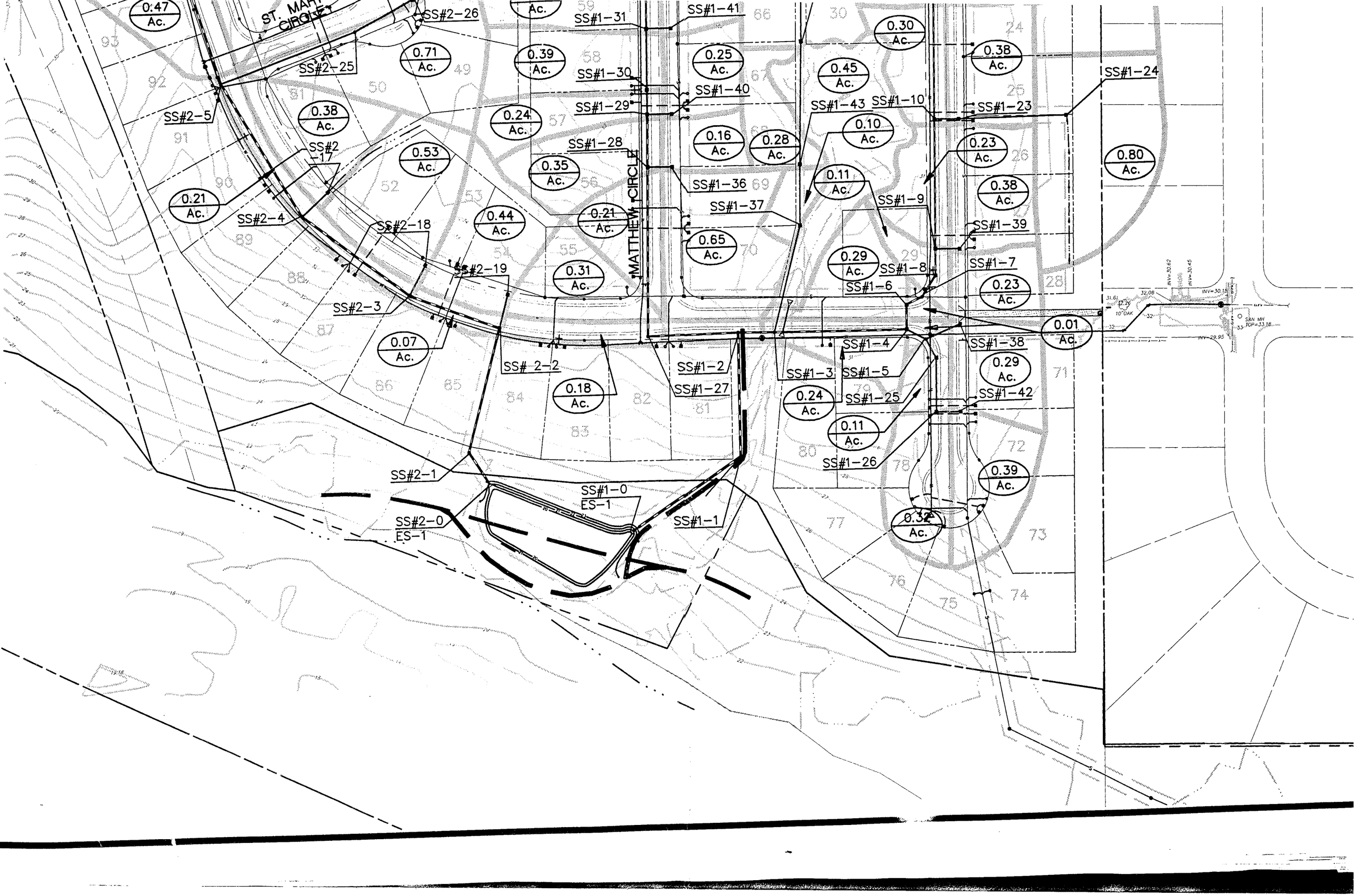
WETLANDS AND LAND WITHIN RESOURCE PROTECTION AREAS SHALL REMAIN IN 4 NATURAL UNDISTURBED STATE EXCEPT FOR THOSE ACTIVITIES PERMITTED BY SECTION 19B-9C(1) OF THE JAMES CITY COUNTY CODE.

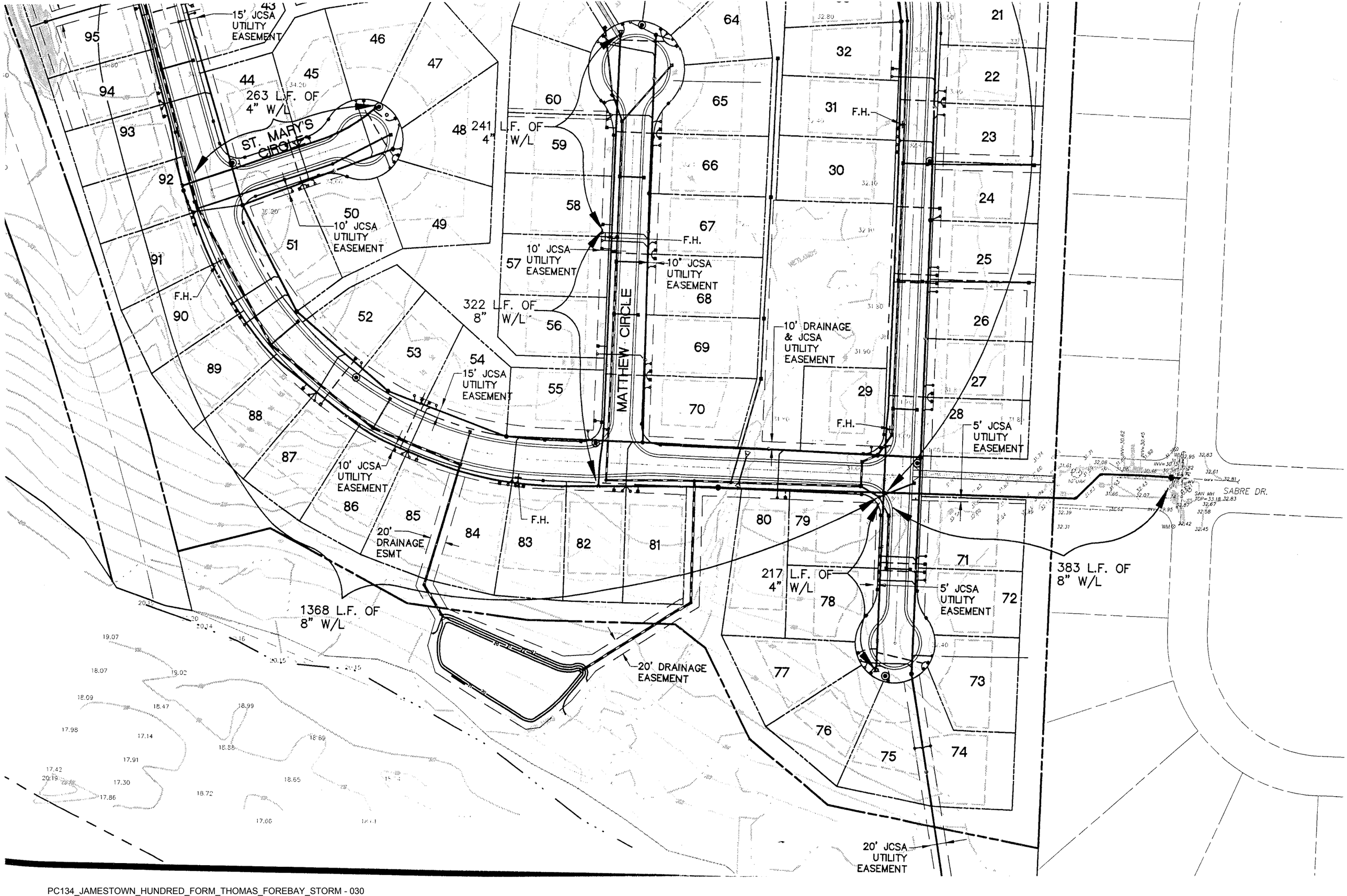
NATURAL OPEN SPACE EASEMENTS SHALL REMAIN IN A NATURAL UNDISTURBED STATE EXCEPT FOR THOSE ACTIVITIES REFERENCED ON THE DEED OF EASEMENT.

No.	DATE	REVISION / COMMENT / NOTE	BY
7	11/15/99	REVISED HYDRANT SPACING (NONE THIS SHEET)	DPW
6	7/28/99	REVISED WETLAND AREAS	DPW
5	4/14/99	REVISED PER 4/99 JCC COMMENT LETTER	SOW
4	3/2/99	REVISED PER 1/99 JCC COMMENT LETTER	SOW
3	12/18/98	REVISED PER 11/5/98 JCC COMMENT LETTER	SOW
2	10/16/98	REVISED PER 3/14/96 JCC COMMENT LETTER	SOW
1	1/25/96	REVISED MASTER PLAN PER JCC	HWP

COMMONWEALTH OF VIRGINIA
STEVEN O. WIGLEY
No. 019307
12/21/98
PROFESSIONAL ENGINEER

Road, Suite 1
rginia 23188
-0040
20-8994


ST. MATTHEW CIRCLE
MATTHEW CIRCLE
0.47 Ac.
0.71 Ac.
0.39 Ac.
0.30 Ac.
0.38 Ac.
0.25 Ac.
0.45 Ac.
0.38 Ac.
0.24 Ac.
0.16 Ac.
0.28 Ac.
0.10 Ac.
0.23 Ac.
0.80 Ac.
0.53 Ac.
0.35 Ac.
0.11 Ac.
0.38 Ac.
0.21 Ac.
0.44 Ac.
0.21 Ac.
0.65 Ac.
0.29 Ac.
0.23 Ac.
0.31 Ac.
0.01 Ac.
0.07 Ac.
0.29 Ac.
0.18 Ac.
0.24 Ac.
0.11 Ac.
0.39 Ac.
0.32 Ac.
SS#2-26
SS#2-25
SS#2-5
SS#2-17
SS#2-4
SS#2-18
SS#2-19
SS#2-3
SS# 2-2
SS#2-1
SS#2-0
ES-1
SS#1-0
ES-1
SS#1-1
SS#1-31
SS#1-41
SS#1-30
SS#1-40
SS#1-29
SS#1-28
SS#1-36
SS#1-37
SS#1-43
SS#1-10
SS#1-24
SS#1-23
SS#1-9
SS#1-39
SS#1-8
SS#1-7
SS#1-6
SS#1-38
SS#1-4
SS#1-2
SS#1-27
SS#1-3
SS#1-5
SS#1-25
SS#1-42
SS#1-26
INV=30.62
INV=30.45
INV=30.15
INV=29.95
SAN MH
TOP=33.18
10" OAK


15' JCSA UTILITY EASEMENT
263 L.F. OF 4" W/L
ST. MARY'S CIRCLE
241 L.F. OF 4" W/L
10' JCSA UTILITY EASEMENT
F.H.
322 L.F. OF 8" W/L
MATTHEW CIRCLE
10' DRAINAGE & JCSA UTILITY EASEMENT
15' JCSA UTILITY EASEMENT
5' JCSA UTILITY EASEMENT
20' DRAINAGE ESMT
1368 L.F. OF 8" W/L
20' DRAINAGE EASEMENT
217 L.F. OF 4" W/L
383 L.F. OF 8" W/L
SABRE DR.
20' JCSA UTILITY EASEMENT

SS#2-3
STA 26+08
DI-3C, L=6'
RIM=29.69
INV.IN=23.74(SS#2-18)
INV.IN=22.14(SS#2-4)
INV.OUT=22.14

42 LF OF 15" RCP @ 3.0%

86

118 LF OF 30" RCP @ 0.30%

85

LIMITS OF CLEARING

SS#2-1
MH-1
RIM=25.00
INV.=21.00

SS#2-2
STA 27+22
DI-3BB, L=4'
RIM=30.18
INV.IN=25.02(#2-19)
INV.IN=21.79(#2-3)
INV.OUT=21.79

84

158 LF OF 30" RCP @ 0.50% (INCLUDES ES-1)

10' JCSA UTILITY EASEMENT

83

20' DRAINAGE EASEMENT

SS#1-27
STA 29+00
MH-1
RIM=31.30
INV.=21.10

82

110 LF OF 24" RCP @ 0.30%

81

155 LF OF 36" RCP @ 0.15%

SS#1-1
MH-1
RIM=27.00
INV.=20.54

20' DRAINAGE ESMT. DEDICATED TO THE HOMEOWNERS ASSOC.

45 LF RCP @ (INCLUDE END SE

163 LF O RCP @

SS#1-3
STA 30+55
MH-1
RIM=31.35
INV.=25.80(SS
INV.=21.72(SS
INV.=21.72

SS#1-2
STA 30+10
MH-1
RIM=30.74
INV.=20.77

CONTRACTOR TO PROVIDE FILL TO RIM OF MH-1 WITH MAX SS=5:1. TOP 6" OF MH-1 RIM SHALL BE LEFT EXPOSTED.

SS#2-0
30"ES-1
INV.=20.75

46 LF OF 30" RCP @ 0.54%- INCLUDES ES-1

LIMITS OF CLEARING (TYP.)

152 LF OF 36" RCP @ 0.15% - INCLUDES 1 - ES-1

PROVIDE (20' LONG X 7.5' WIDE @ OUTLET X 22.5' WIDE @ END) RIP RAP APRON CONSISTING OF EC-1 CLASS I, EROSION CONTROL STONE (APPROX. 5.5 CY REQ'D)

3:1 (TYP.)

FG= 19.9

FG= 21.9

SS#1-0
ES-1
INV.=20.31

PROVIDE (6' WIDE MULCHED PATH TO CONNECT READE'S WAY TO JCC PEDESTRIAN TRAIL. CONTRACTO TO FIELD DETERMINE EXACT LOCATIO OF PATH IN ORDER TO MINIMIZE LIMITS OF CLEARING.

PROVIDE AN 11,500 C.F. FOREBAY WITH A 20 FT. WIDE LEVEL SPREADER. (SEE LEVEL SPREADER DETAIL). LEVEL SPREADER AT A CONTROLLED ELEVATION OF 21.5 FEET. PROVIDE A GRASSED INVERT FOR FOREBAY AT AN ELEVATION OF 19.9 FEET. CONTRACTOR TO EXERCISE EXTREME CARE TO MINIMIZE THE LIMITS OF CLEARING.

EDGE OF WATER

ESTIMATED LOCATION OF J.C.C. NATURE TRAIL

PROVIDE (20' LONG X 7.5' WIDE @ OUTLET X 22.5' WIDE @ END) RIP RAP APRON CONSISTING OF EC-1 CLASS I, EROSION CONTROL STONE (APPROX. 5.5 CY REQ'D)

DRAINAGE FLOW TO MERGE WITH NATURAL DRAINAGE PATTERN

BEAVER POND
NORMAL POOL FLUCTUATES AT TIME OF SURVEY
NORMAL POOL ELEV.=20.4

IF APPROPRIATE, REROUTE PEDESTRIAN FOOT TRAIL IN COORDINATION W/J.C.C. AS NECESSARY. APPROXIMATELY 300 L.F. OF TRAIL WILL BE RELOCATED AND CONSTRUCTED TO MATCH EXISTING TRAIL CHARACTERISTICS OF CONSTRUCTION, WIDTH AND MATERIALS.

DRAINAGE AND STORMWATER MANAGEMENT EASEMENT

19.07

TED HEREON.
ATION, PROPER CLEARANCE
M OF SANITARY LATERALS.
RIFY GRADES AND ELEVATIONS
IBLO OCCUR BETWEEN STORM 02

STORM SEWER, PROVIDE A
AND BACKFILL WITH SELECT
L NOT CONFLICT WITH SUBGRADE

18.47

PE MATERIAL

UFACTURED IN ACCORDANCE WITH
ED TYPE 2 CONFORMING TO ASTM A819
ACTORY REROLLED ANNULAR

BE PVC PROFILE WALL PIPE (SMOOTH
ASHTO M304 WITH A MINIMUM

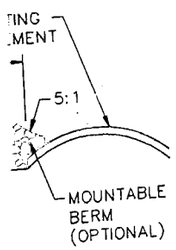
CONFORM TO ASTM A760 (AASHTO
MINIMUM GAUGES FOR SPIRAL RIBBED
48", 14 GAUGE FOR SIZES 54" AND

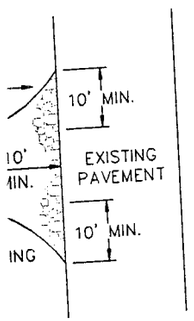
NOTE

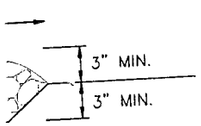
THE EXISTING BEAVER POND SHALL SERVE AS THE BMP FACILITY FOR THIS PROJECT

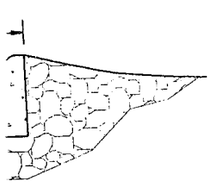
18.99 18.89 18.88 18.65 18.74 17.66 18.61

CE

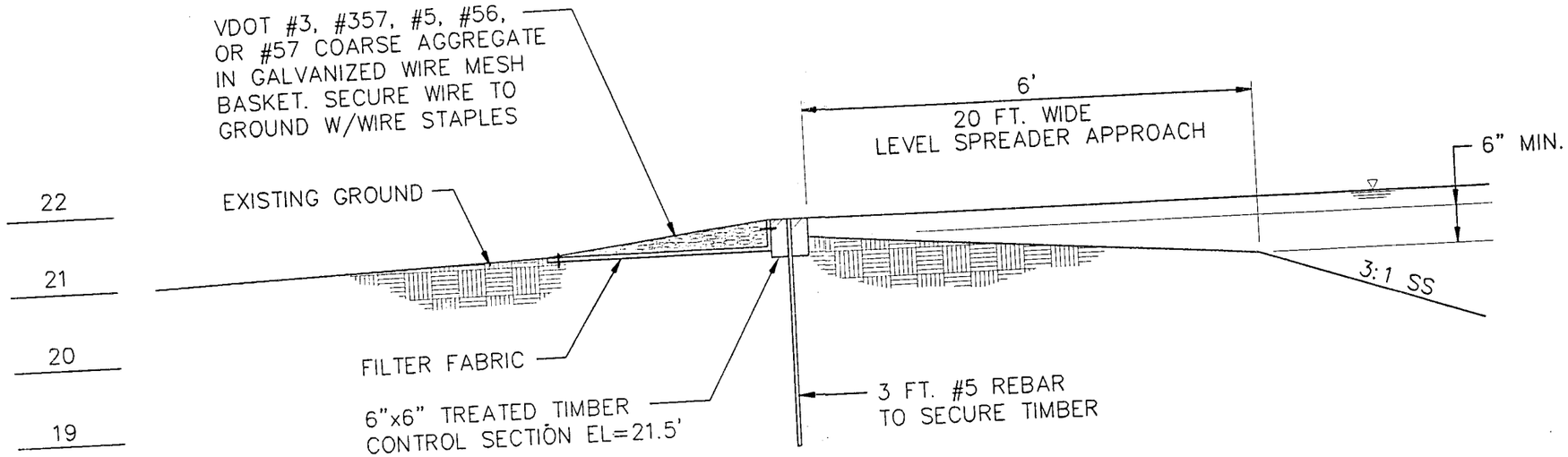








- DRAIN SPACE

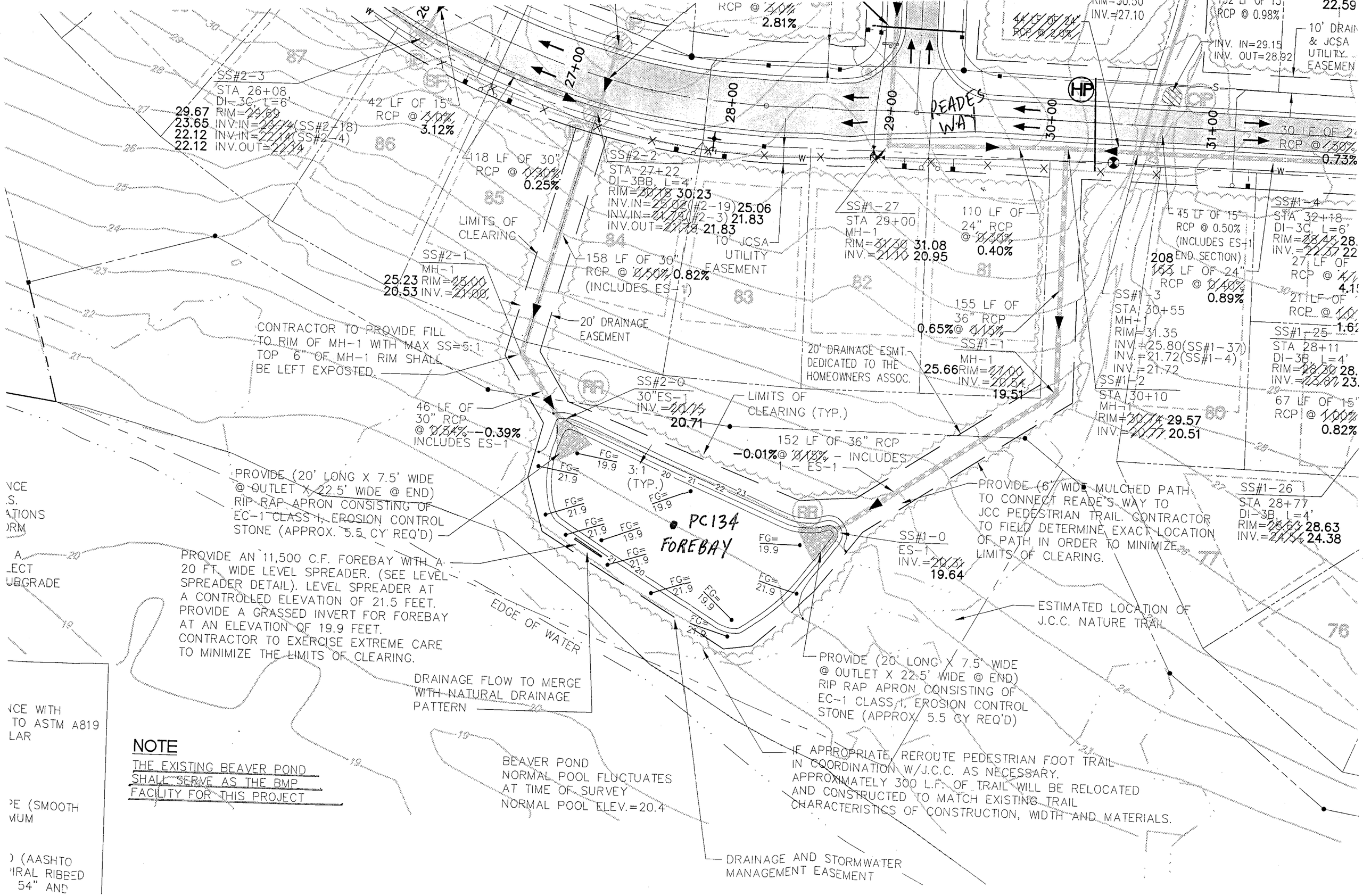


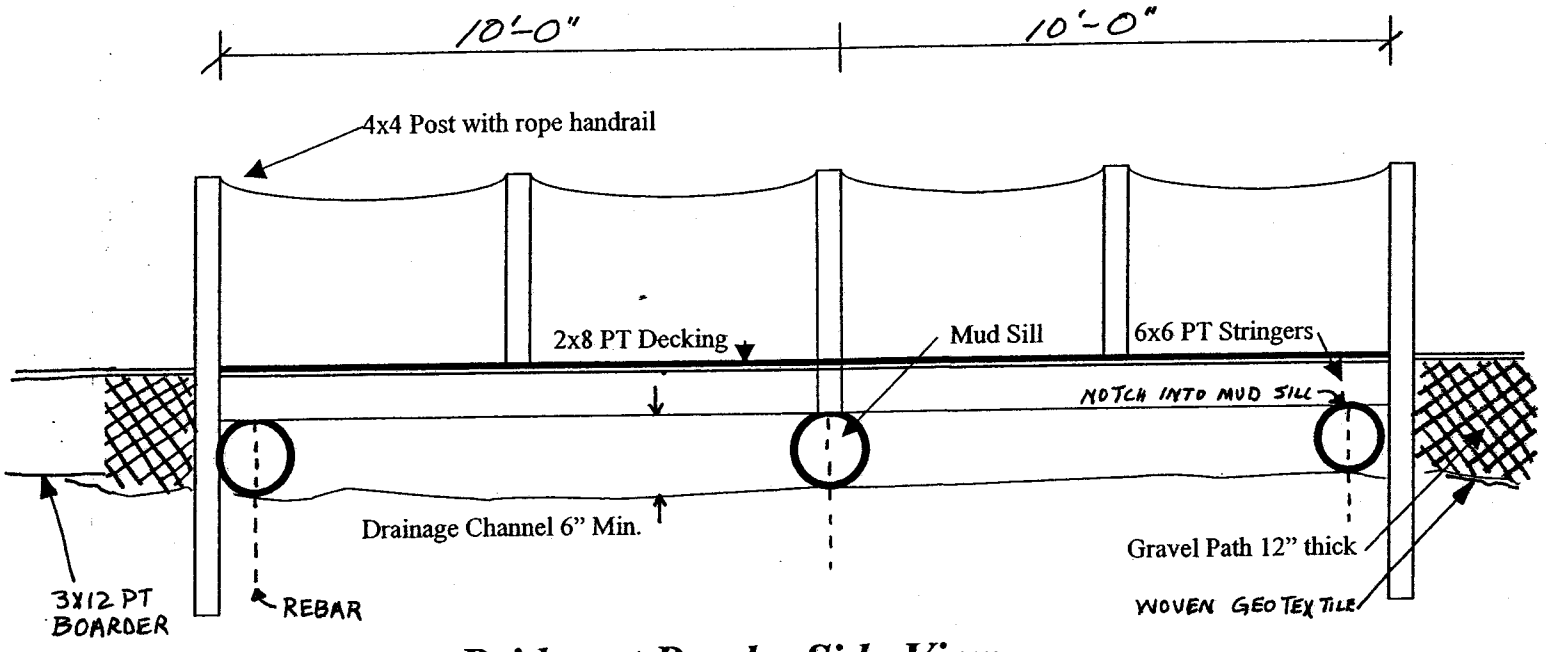
GENERAL NOTES:

1. CREST ELEVATION OF LEVEL SPREADER = 21.5 FT.
2. TOP WIDTH OF BERM = 6 FT.
3. CREST OF LEVEL SPREADER TO HAVE ZERO GRADE DIFFERENTIAL FROM END TO END, 0% GRADE.
4. LEVEL SPREADER TO BE CONSTRUCTED ON UNDISTURBED SOIL.
5. CONSTRUCT A 20' TRANSITION THRU THE DIKE/BERM TO BLEND SMOOTHLY TO THE WIDTH AND DEPTH OF THE SPREADER.
6. IMMEDIATELY AFTER ITS CONSTRUCTION, APPROPRIATELY SEED AND MULCH THE ENTIRE DISTURBED AREA OF THE SPREADER AND FOREBAY.

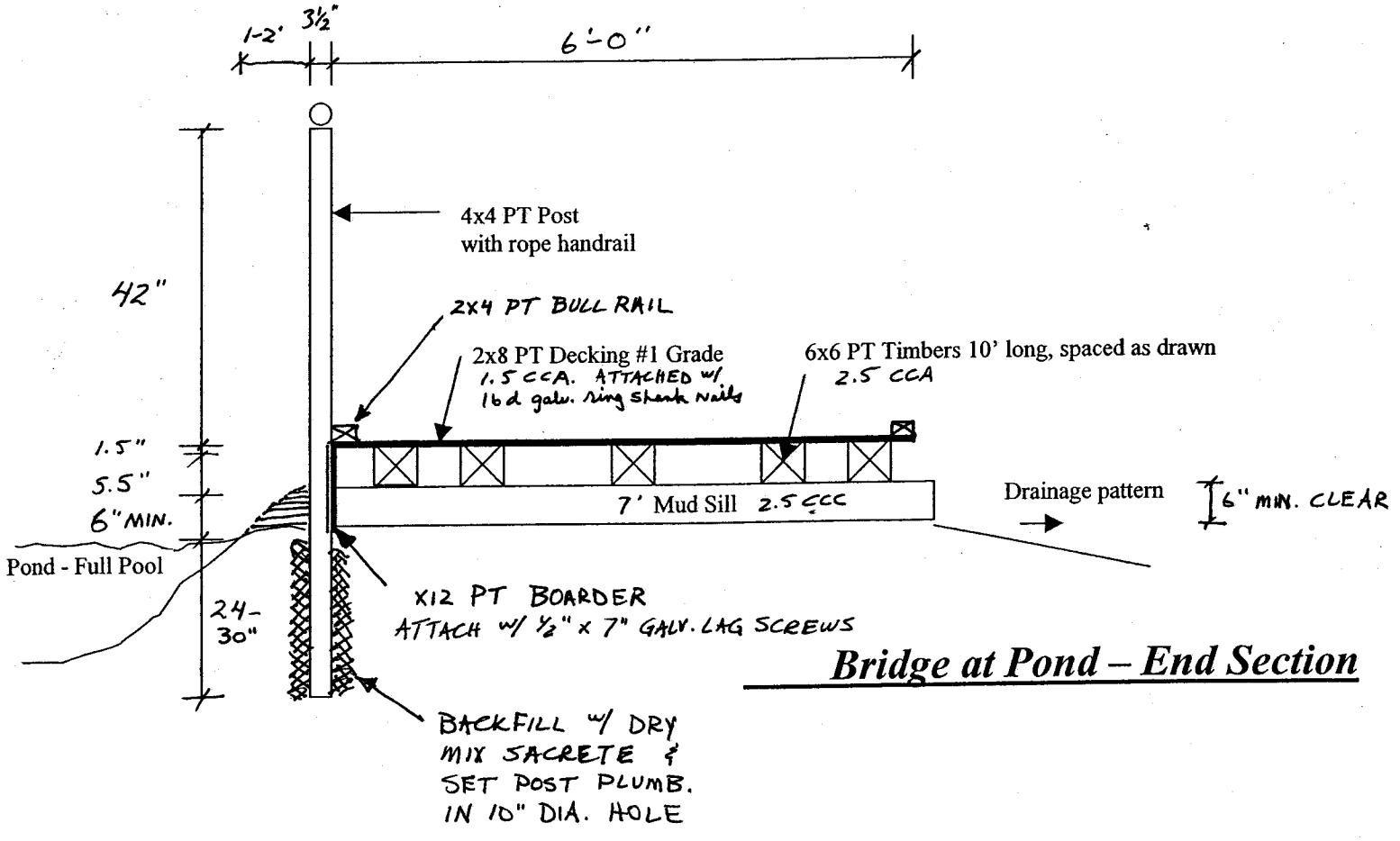
LEVEL SPREADER

SCALE: 1"=2'

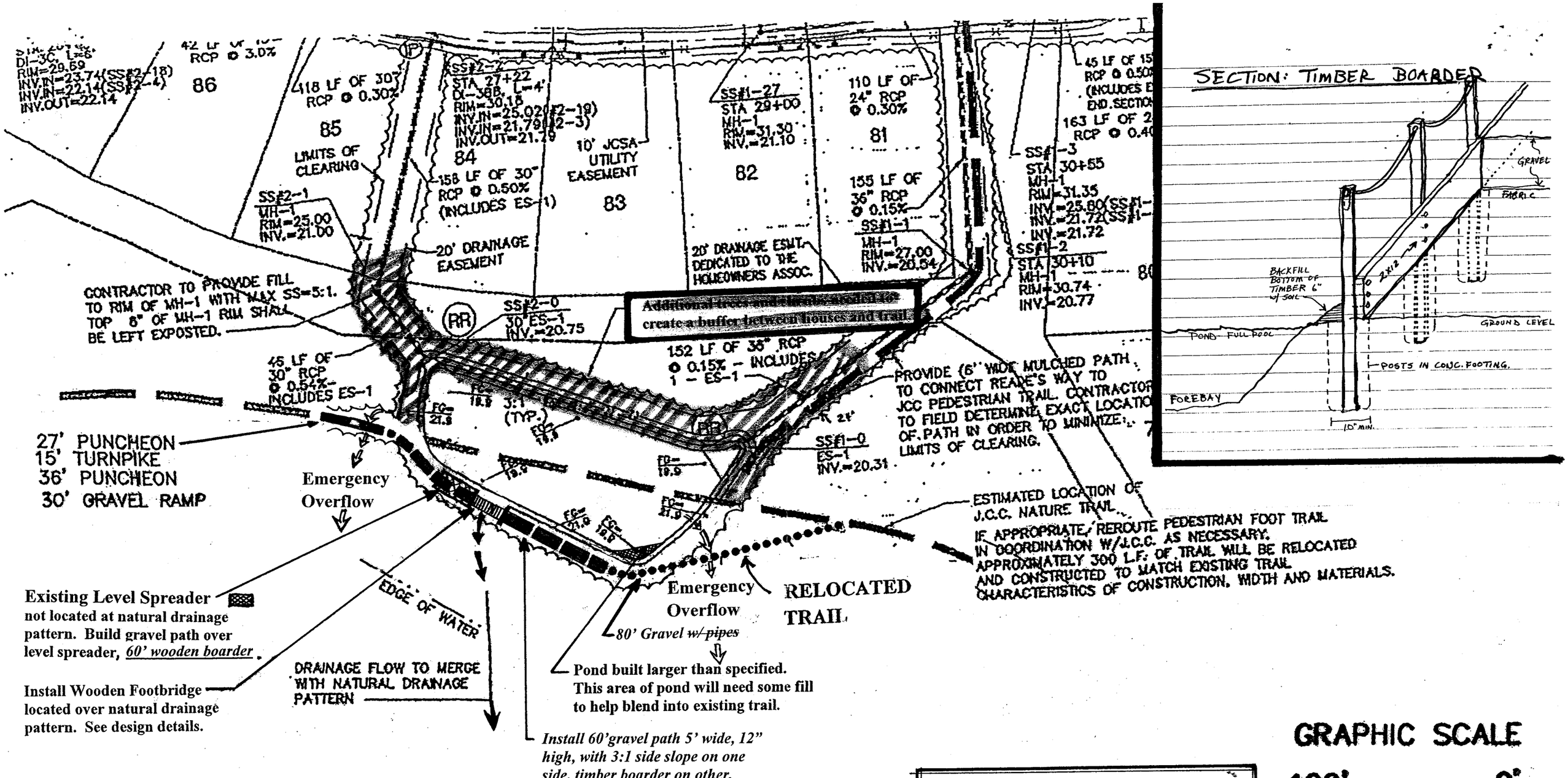

SS#2-3
STA 26+08
DI-3C, L=6'
29.67 RIM=29.00
23.65 INV.IN=23.74(SS#2-18)
22.12 INV.IN=22.14(SS#2-4)
22.12 INV.OUT=22.14
42 LF OF 15" RCP @ 1.00% 3.12%
118 LF OF 30" RCP @ 0.30% 0.25%
SS#2-2
STA 27+22
DI-3BB, L=4'
RIM=30.18 30.23
INV.IN=25.02(#2-19) 25.06
INV.IN=21.78(#2-3) 21.83
INV.OUT=21.78 21.83
10' JCSA UTILITY EASEMENT
LIMITS OF CLEARING
SS#2-1
MH-1
25.23 RIM=25.00
20.53 INV.=21.00
158 LF OF 30" RCP @ 0.50% 0.82%
(INCLUDES ES-1)
20' DRAINAGE EASEMENT
CONTRACTOR TO PROVIDE FILL TO RIM OF MH-1 WITH MAX SS=5:1. TOP 6" OF MH-1 RIM SHALL BE LEFT EXPOSTED.
46 LF OF 30" RCP @ 0.84% -0.39%
INCLUDES ES-1
SS#2-0
30"ES-1
INV.=20.17
20.71
LIMITS OF CLEARING (TYP.)
RCP @ 1.00% 2.81%
27+00
28+00
29+00
30+00
31+00
READES WAY
HP
44 LF OF 24" RCP @ 2.00%
RIM=30.50
INV.=27.10
52 LF OF 15" RCP @ 0.98%
INV. IN=29.15
INV. OUT=28.92
22.59
10' DRAIN & JCSA UTILITY EASEMEN
30 LF OF 2
RCP @ 1.00% 0.73%
SS#1-27
STA 29+00
MH-1
RIM=31.00 31.08
INV.=21.10 20.95
110 LF OF 24" RCP @ 0.40% 0.40%
155 LF OF 36" RCP 0.65%@ 0.15%
SS#1-1
MH-1
25.66 RIM=27.00
INV.=20.54
19.51
20' DRAINAGE ESMT. DEDICATED TO THE HOMEOWNERS ASSOC.
152 LF OF 36" RCP -0.01%@ 0.15% - INCLUDES 1 - ES-1
45 LF OF 15" RCP @ 0.50% (INCLUDES ES-1 END SECTION)
208 163 LF OF 24" RCP @ 0.40% 0.89%
SS#1-3
STA 30+55
MH-1
RIM=31.35
INV.=25.80(SS#1-37)
INV.=21.72(SS#1-4)
INV.=21.72
SS#1-2
STA 30+10
MH-1
RIM=30.74 29.57
INV.=20.77 20.51
SS#1-4
STA 32+18
DI-3C, L=6'
RIM=28.45 28.
INV.=22.37 22
27 LF OF
RCP @ 4.1
21 LF OF
RCP @ 1.62
SS#1-25
STA 28+11
DI-3B, L=4'
RIM=28.30 28.
INV.=23.87 23.
67 LF OF 15"
RCP @ 1.00% 0.82%
SS#1-26
STA 28+77
DI-3B, L=4'
RIM=28.63 28.63
INV.=24.54 24.38
SS#1-0
ES-1
INV.=20.33
19.64
PC134 FOREBAY
FG= 19.9
FG= 21.9
3:1 (TYP.)
EDGE OF WATER
PROVIDE (20' LONG X 7.5' WIDE @ OUTLET X 22.5' WIDE @ END) RIP RAP APRON CONSISTING OF EC-1 CLASS 1, EROSION CONTROL STONE (APPROX. 5.5 CY REQ'D)
PROVIDE AN 11,500 C.F. FOREBAY WITH A 20 FT. WIDE LEVEL SPREADER. (SEE LEVEL SPREADER DETAIL). LEVEL SPREADER AT A CONTROLLED ELEVATION OF 21.5 FEET. PROVIDE A GRASSED INVERT FOR FOREBAY AT AN ELEVATION OF 19.9 FEET. CONTRACTOR TO EXERCISE EXTREME CARE TO MINIMIZE THE LIMITS OF CLEARING.
DRAINAGE FLOW TO MERGE WITH NATURAL DRAINAGE PATTERN
PROVIDE (6' WIDE MULCHED PATH TO CONNECT READE'S WAY TO JCC PEDESTRIAN TRAIL. CONTRACTOR TO FIELD DETERMINE EXACT LOCATION OF PATH IN ORDER TO MINIMIZE LIMITS OF CLEARING.
ESTIMATED LOCATION OF J.C.C. NATURE TRAIL
PROVIDE (20' LONG X 7.5' WIDE @ OUTLET X 22.5' WIDE @ END) RIP RAP APRON CONSISTING OF EC-1 CLASS 1, EROSION CONTROL STONE (APPROX. 5.5 CY REQ'D)
IF APPROPRIATE, REROUTE PEDESTRIAN FOOT TRAIL IN COORDINATION W/J.C.C. AS NECESSARY. APPROXIMATELY 300 L.F. OF TRAIL WILL BE RELOCATED AND CONSTRUCTED TO MATCH EXISTING TRAIL CHARACTERISTICS OF CONSTRUCTION, WIDTH AND MATERIALS.
BEAVER POND NORMAL POOL FLUCTUATES AT TIME OF SURVEY NORMAL POOL ELEV.=20.4
DRAINAGE AND STORMWATER MANAGEMENT EASEMENT
NOTE
THE EXISTING BEAVER POND SHALL SERVE AS THE BMP FACILITY FOR THIS PROJECT

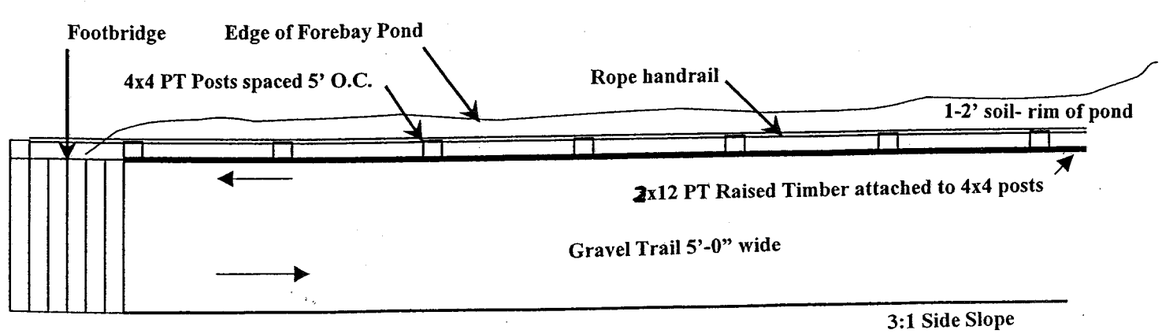


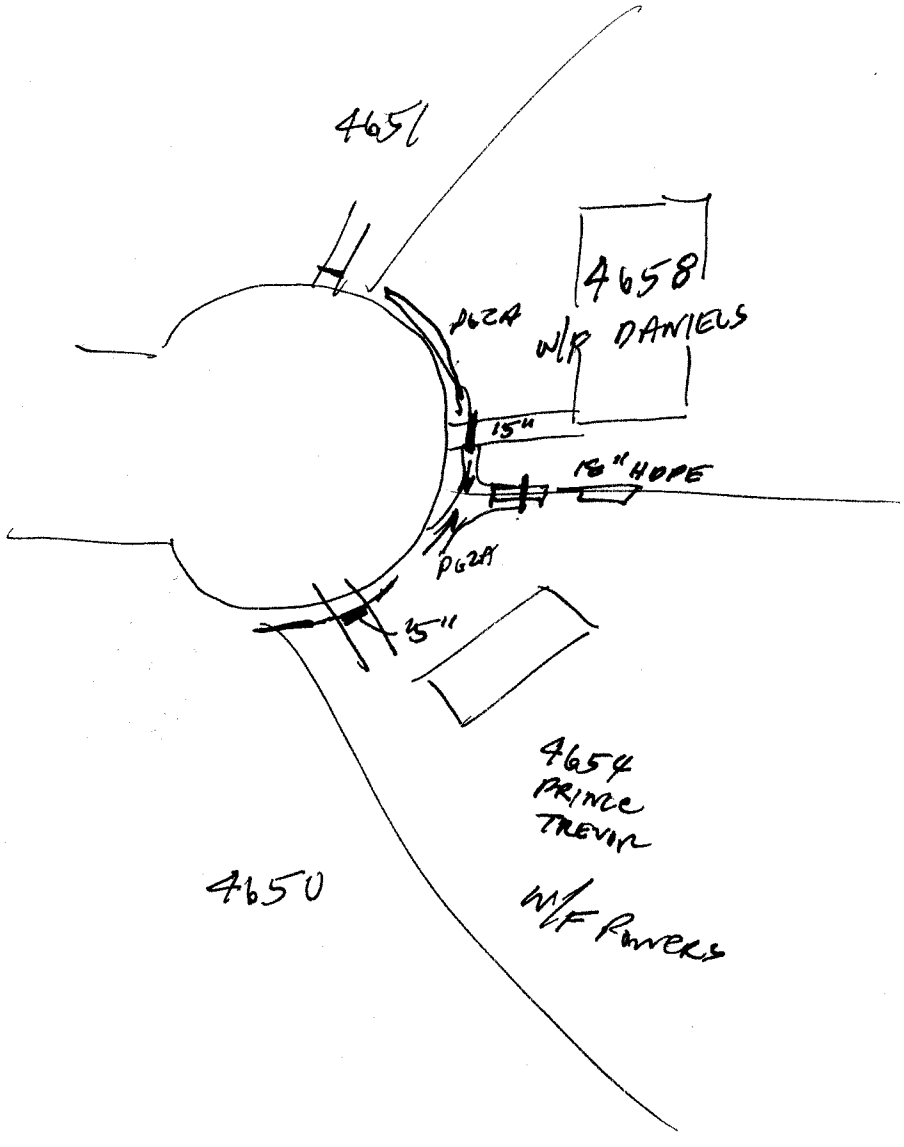
Bridge at Pond – Side View

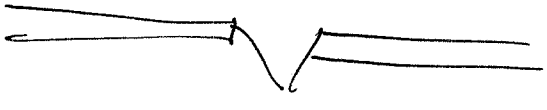


Bridge at Pond – End Section


DI-3C, L=6'
RIM=29.69
INV.IN=23.74(SS#2-18)
INV.IN=22.14(SS#2-4)
INV.OUT=22.14
42 LF OF 10" RCP @ 3.0%
86
118 LF OF 30" RCP @ 0.30%
85
LIMITS OF CLEARING
SS#2-1
MH-1
RIM=25.00
INV.=21.00
SS#2-2
STA 27+22
DI-3BB, L=4'
RIM=30.18
INV.IN=25.02(SS#2-19)
INV.IN=21.79(SS#2-3)
INV.OUT=21.79
84
158 LF OF 30" RCP @ 0.50% (INCLUDES ES-1)
10' JCSA UTILITY EASEMENT
83
SS#1-27
STA 29+00
MH-1
RIM=31.30
INV.=21.10
82
110 LF OF 24" RCP @ 0.30%
81
155 LF OF 36" RCP @ 0.15%
SS#1-1
MH-1
RIM=27.00
INV.=20.54
45 LF OF 15" RCP @ 0.50% (INCLUDES END SECTION)
163 LF OF 2" RCP @ 0.40
SS#1-3
STA 30+55
MH-1
RIM=31.35
INV.=25.80(SS#1-
INV.=21.72(SS#1-
INV.=21.72
SS#1-2
STA 30+10
MH-1
RIM=30.74
INV.=20.77
20' DRAINAGE EASEMENT
20' DRAINAGE ESMT. DEDICATED TO THE HOMEOWNERS ASSOC.
CONTRACTOR TO PROVIDE FILL TO RIM OF MH-1 WITH MAX SS=5:1. TOP 6" OF MH-1 RIM SHALL BE LEFT EXPOSTED.
SS#2-0
30" ES-1
INV.=20.75
Additional trees and shrubs are to be added to create a buffer between houses and trail.
152 LF OF 36" RCP @ 0.15% - INCLUDES 1 - ES-1
45 LF OF 30" RCP @ 0.54% - INCLUDES ES-1
3:1 (TYP.)
PROVIDE (6' WIDE MULCHED PATH TO CONNECT READE'S WAY TO JCC PEDESTRIAN TRAIL. CONTRACTOR TO FIELD DETERMINE EXACT LOCATION OF PATH IN ORDER TO MINIMIZE LIMITS OF CLEARING.
SS#1-0
ES-1
INV.=20.31
27' PUNCHEON
15' TURNPIKE
36' PUNCHEON
30' GRAVEL RAMP
Emergency Overflow
ESTIMATED LOCATION OF J.C.C. NATURE TRAIL
IF APPROPRIATE, REROUTE PEDESTRIAN FOOT TRAIL IN COORDINATION W/J.C.C. AS NECESSARY. APPROXIMATELY 300 L.F. OF TRAIL WILL BE RELOCATED AND CONSTRUCTED TO MATCH EXISTING TRAIL CHARACTERISTICS OF CONSTRUCTION, WIDTH AND MATERIALS.
Existing Level Spreader not located at natural drainage pattern. Build gravel path over level spreader, 60' wooden boarder.
EDGE OF WATER
Emergency Overflow
RELOCATED TRAIL
80' Gravel w/ pipes
Install Wooden Footbridge located over natural drainage pattern. See design details.
DRAINAGE FLOW TO MERGE WITH NATURAL DRAINAGE PATTERN
Pond built larger than specified. This area of pond will need some fill to help blend into existing trail.
Install 60'gravel path 5' wide, 12" high, with 3:1 side slope on one side, timber boarder on other.
SECTION: TIMBER BOARDER
GRAVEL
FABRIC
2x12
BACKFILL BOTTOM OF TIMBER 6" w/ SOIL
GROUND LEVEL
POND FULL POOL
POSTS IN CONC. FOOTING.
FOREBAY
10" MIN.
GRAPHIC SCALE
100'
0'
SCALE: 1" =
Trail Relocation Around Jamestown Hundred Pond
TRAIL w/ 2X12 BOARDER
TRAIL w/o BOARDER

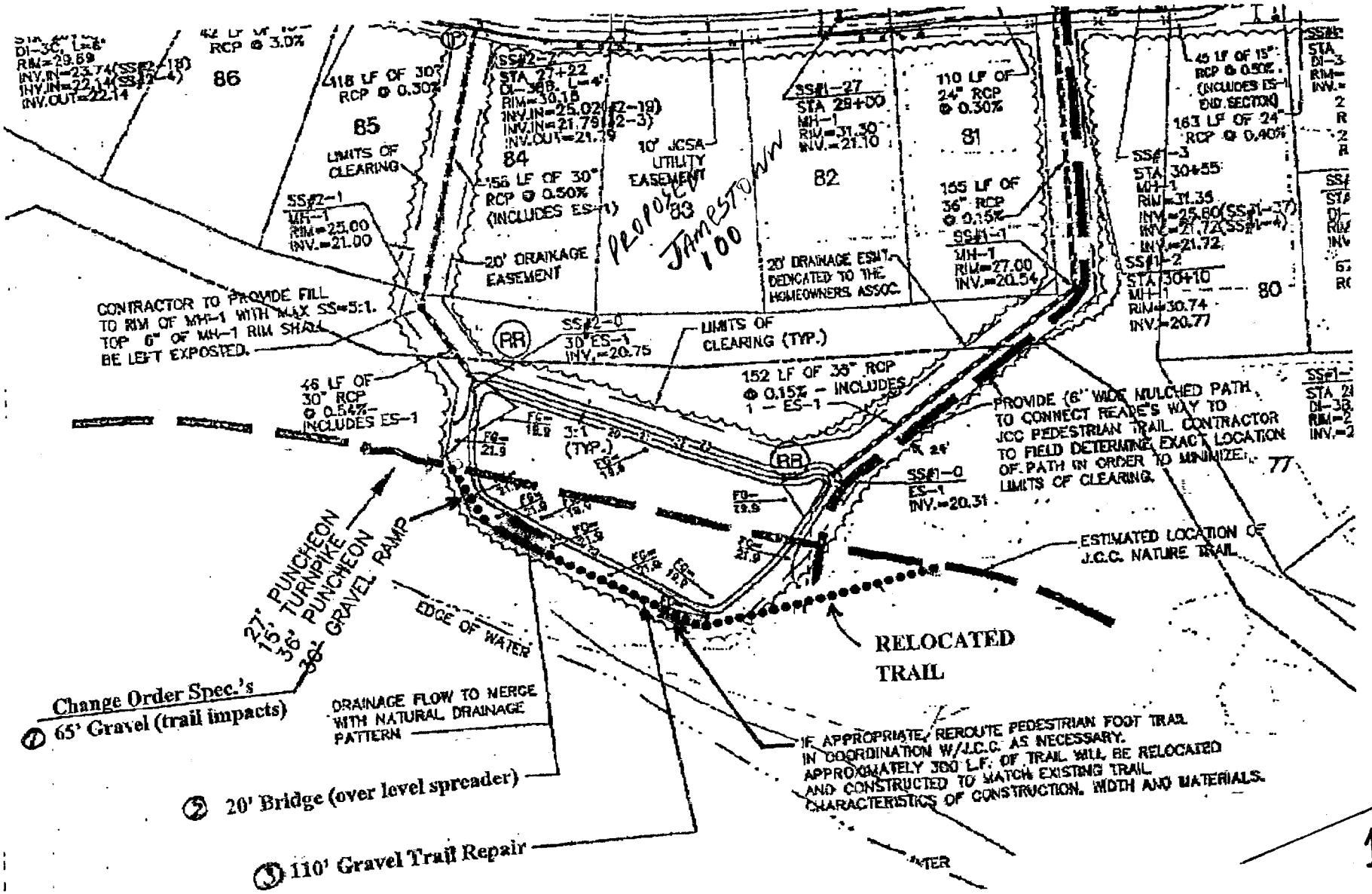

Footbridge
Edge of Forebay Pond
4x4 PT Posts spaced 5' O.C.
Rope handrail
1-2' soil- rim of pond
2x12 PT Raised Timber attached to 4x4 posts
Gravel Trail 5'-0" wide
3:1 Side Slope





- MOST DRIVEWAY IN LOWER PORTION OF PRINCE TREVOR DRIVE 15" RCP DRIVEWAY CULVERTS
- CULV. ACROSS SIR GILBERT LOOP IS 15" RCP.

∴ 18" @ END OF DRAINAGE SUBAREA IS NOT REASONABLE



Bonded?
~~Bond~~
As-Built Drawing
Pino-

1. Look at Design
2. As-Builts?
3. RAT?

RELOCATED TRAIL

The existing trail was relocated between the edge of clearing and the Forebay Pond. Other alternative routes were rejected because they would create additional tree clearing, land disturbance, as well as more costly trail development. The current function of the forebay has multiple discharge points in addition to the level spreader. This will need to be resolved before, or in tandem with, these projected trail improvements.

1. ALL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE 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.

2. 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.

3. 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.

4. 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 UPSLOPE 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.

5. SURFACE FLOWS OVER CUT AND FILL SLOPES SHALL BE CONTROLLED BY EITHER REDIRECTING FLOWS FROM TRANSVERSING THE SLOPES OR BY INSTALLING MECHANICAL DEVICES TO SAFELY LOWER WATER DOWNSLOPE WITHOUT CAUSING EROSION. A TEMPORARY FILL DIVERSION (STD. & SPEC. 3.10) SHALL BE INSTALLED PRIOR TO THE END OF EACH WORKING DAY.

6. 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.

7. 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.

8. 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 REQUIRED FOR A STREET MUST BE COMPLETED BEFORE STREET GRADING OR UTILITY INSTALLATION BEGINS.

9. 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.

10. NO MORE THAN 300' 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).

11. 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.

12. THE TERM SEEDING, FINAL VEGETATIVE COVER OR STABILIZATION, ON THIS SITE 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.

13. ALL SLOPES STEEPER THAN 3:1 SHALL REQUIRE THE USE OF EROSION CONTROL BLANKETS SUCH AS EXCELSIOR BLANKETS TO AID IN THE ESTABLISHMENT OF A VEGETATIVE COVER. INSTALLATION SHALL BE IN ACCORDANCE WITH SPECIFICATION 3.35, MULCHING AND MANUFACTURER'S INSTRUCTIONS. NO SLOPES SHALL BE CREATED STEEPER THAN 2:1.

14. INLET PROTECTION IN ACCORDANCE WITH SPECIFICATION 3.07 SHALL BE PROVIDED FOR ALL STORM DRAIN INLETS AS SOON AS PRACTICAL FOLLOWING CONSTRUCTION OF SAME.

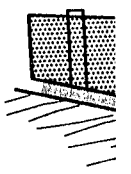
15. TEMPORARY LINERS, SUCH AS POLYETHYLENE SHEETS, SHALL BE PROVIDED FOR ALL PAVED DITCHES UNTIL THE PERMANENT CONCRETE LINER IS INSTALLED.

16. PAVED DITCHES SHALL BE REQUIRED WHEREVER EROSION IS EVIDENT. PARTICULAR ATTENTION SHALL BE PAID TO THOSE AREAS WHERE GRADES EXCEED 3%.

17. 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.

18. 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 THE APPROVAL PLANS AND SPECIFICATIONS.

3. Stap
stak
into



HYDRAULIC CALUCLATIONS
FOR
ENTRANCE STORM SYSTEM
OF THE
JAMESTOWN HUNDRED SUBDIVISION

Prepared By:
AES Consulting Engineers
5248 Olde Towne Road, Suite 1
Williamsburg, Virginia 23188

Date: 12/21/98

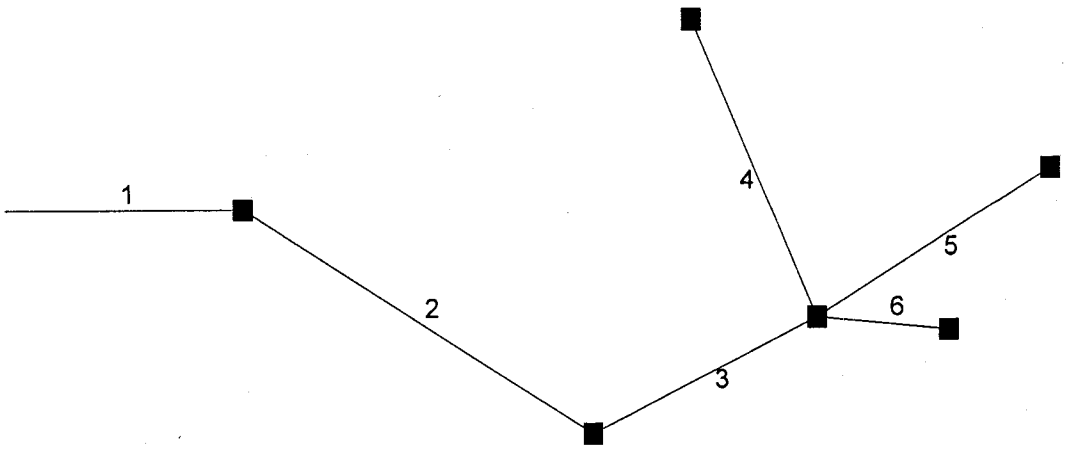
Overview of Entrance Storm System

The following calculations contain a modification to the existing system designed by Smith Demer Normann, LTD in conjunction with the high school project. In order to simplify the HGL calculation process, only the last six structures of the existing system are entered into this program. The flow of the remaining upstream structures (23 CFS) has been included as "Known Q" for line number 5.

A portion of the drainage area served by existing structure number 18 is now served by the New DI-1 structure. For this reason, additional attenuation calculations on the outfall pond are unnecessary. The drainage area of the new DI-1 is 0.28 acres and is indicated on Sheet 13.

The previous iteration of construction plans showed an area of 0.58 acres at the entrance. This plan revision includes the redesign of the Legacy Drive extension. Recent (12/17/98) survey of existing topography of the entrance area shows that the drainage areas have been decreased as depicted on the plans.

Hydraflow Plan View



Project file: 62017ex.stm	IDF file: Jcc.IDF	No. Lines: 6	12-22-1998

Hydraflow Hydraulic Grade Line Computations

Line	Size	Q	Downstream								Len	Upstream								Check		JL coeff	Minor loss
	(in)	(cfs)	Invert elev (ft)	HGL elev (ft)	Depth (ft)	Area (sqft)	Vel (ft/s)	Vel head (ft)	EGL elev (ft)	Sf (%)	(ft)	Invert elev (ft)	HGL elev (ft)	Depth (ft)	Area (sqft)	Vel (ft/s)	Vel head (ft)	EGL elev (ft)	Sf (%)	Ave Sf (%)	Enrgy loss (ft)	(K)	(ft)
1	42	29.28	25.32	27.55	2.23	6.48	4.52	0.32	27.87	0.156	182	25.61	27.84	2.23	6.46	4.53	0.32	28.16	0.157	0.157	0.285	0.70	0.22
2	42	28.41	25.61	28.06	2.45	7.20	3.95	0.24	28.30	0.114	312	26.24	28.41	2.17	6.27	4.53	0.32	28.73	0.160	0.137	0.427	1.25	0.40
3	42	27.23	26.24	28.81	2.57	7.57	3.60	0.20	29.01	0.093	190	26.77	28.94	2.17	6.27	4.34	0.29	29.23	0.147	0.120	0.227	1.50	0.44
4	18	3.30	26.77	29.38	1.50	1.77	1.87	0.05	29.44	0.099	227	27.15	29.61	1.50	1.77	1.87	0.05	29.66	0.099	0.099	0.224	1.00	0.05
5	42	23.00	26.77	29.38	2.61	7.70	2.99	0.14	29.52	0.064	207	27.03	29.51	2.48	7.28	3.16	0.16	29.66	0.072	0.068	0.141	1.00	0.16
6	15	0.78	31.15	31.51	0.36*	0.29	2.72	0.12	31.62	0.472	102	31.70	32.05	0.35**	0.29	2.74	0.12	32.17	0.479	0.476	N/A	1.00	0.12

Project File: 62017ex.stm | I-D-F File: Jcc.IDF | Total number of lines: 6 | Run Date: 12-22-1998

NOTES: Initial tailwater elevation = 27.55228 (ft) , * Normal depth assumed., ** Critical depth assumed.

Hydraflow Summary Report

Line No.	Line ID	Flow rate (cfs)	Line size (in)	Line length (ft)	Invert EL Dn (ft)	Invert EL Up (ft)	Line slope (%)	HGL down (ft)	HGL up (ft)	Minor loss (ft)	Dns line No.
1	20-21	29.28	42 c	182.0	25.32	25.61	0.159	27.55	27.84	0.22	End
2	19-20	28.41	42 c	312.0	25.61	26.24	0.202	28.06	28.41	0.40	1
3	18-19	27.23	42 c	190.0	26.24	26.77	0.279	28.81	28.94	0.44	2
4	17-18	3.30	18 c	227.0	26.77	27.15	0.167	29.38*	29.61*	0.05	3
5	16-18	23.00	42 c	207.0	26.77	27.03	0.126	29.38	29.51	0.16	3
6	NEW DI-1 - 18	0.78	15 c	102.0	31.15	31.70	0.539	31.51	32.05	0.12	3

Project File: 62017ex.stm	I-D-F File: Jcc.IDF	Total No. Lines: 6	Run Date: 12-22-1998

NOTES: c = circular; e = elliptical; b = box; Return period = 10 Yrs.; * Indicates surcharge condition.

REVISED 3/11/99

T_{ALL} = 10'
STA 10 → 29 + CUL-DE-SAC

T_{ALL} = 7'
29 → END

STORM WATER INLET COMPUTATIONS

FORM LD 204
REV 6-85

RTE READE'S WAY / ST. MARY'S CIRCLE PROJECT NAME JAMESTOWN 100

DATE 10/19/98
AES PROJ # 6201-7

INLET NUMBER	TYPE	LENGTH (FT)	STATION	DRAINAGE AREA (AC)	C	CA	I (IN/HR)	Q INCR (CFS)	Q CARRY OVER (CFS)	Qt GUTTER FLOW (CFS)	S GUTTER SLOPE (FT/FT)	Sx CROSS SLOPE (FT/FT)	T SPREAD	W (FT)	W/T	Sw (FT/FT)	Sw/Sx	Eo (#10)	a	Sw = a/12W	Se = Sx+SwEo (FT/FT)	Lt (FT)	P EFFECT (FT)	L/Lt	d (FT)	E (#16)	h (FT)	Q: INTRCPT (CFS)	d/h	Qb: CARRY OVER (CFS)	T SPREAD @ SAG (FT)	REMARKS
-3 3	C	6	26+08R	.21	.4	.08	3.5	.29	—	.29		.0208		2		.0833																
				.07		.03		.10	—	.10																						
			TOTAL							.39	.001											9.6		0.05	.27			.18		2.4 < 10		OK
						.07		.25		.25			2.32		.86			.98			.16	2.78		1.04	1.0			100%		Qb = 0		OK
2-2 3	B	4	27+10R	~~.18~~		~~.04~~		~~.15~~	—	~~.15~~	.005		~~1.0~~		~~.25~~		4	~~1.0~~	3.5	.1458	~~.14~~	~~1.91~~		~~2.09~~	~~1.0~~			~~100%~~		~~Qb=0~~		~~OK~~
2-17 3	B	4	24+50L	.38		.15		.53	—	.53	.0099		3.16		.55		4	.96	3.5	.1458	.16	4.13		.968	.998			.528		Qb = .002		∴ 0 OK
2-19 3	B	4	27+10L	.31		.12		.43	—	.43	.005		4.1		.49		4	.93	3.5	.1458	.16	3.08		1.30	1.0			100%		Qb = 0		OK
2-18 3	C	8	26+08L	.53		.21		.74	—	.74																						
				.44		.18		.62	—	.62																						
			TOTAL							1.36	.001											11.6		.14	.27			.52		6.73 < 10		OK
				✓																												
-4 3	C	6	32+32R	.31		.12		.43	—	.43																						
				.01		0		.01	—	.01																						
			TOTAL							.44	.001											9.6		0.05	.27			.18		2.4 < 7		OK
-6				✓																												
-5 3	C	6	32+32L	.29		.12		.41	—	.41																						
				.01		0		.01		.01																						
			TOTAL							.42	.001											9.6		0.05	.27			.18		2.4 < 7		OK
T. MARY'S																																
-26 3	C	8	12+33R	.65		.26		.91	—	.91																						
				.71		.28		.99	—	.99																						
			TOTAL		↓		↓			1.90	.001	↓		↓		↓						11.6		.17	.27			.63		8.17 < 10 CUL-DE-SAC		OK

REVISED 3/11/99

FORM LD 204
REV 6-85

JAMESTOWN CT

STORM WATER INLET COMPUTATIONS

RTE ~~ST. ANNE'S CIRCLE~~

PROJECT NAME JAMESTOWN 100

DATE 10/19/98
AES PROJ # 6201-7

T_{ALL} = 7.0'

INLET NUMBER	TYPE	LENGTH (FT)	STATION	DRAINAGE AREA (AC)	C	CA	I (IN/HR)	Q INCR (CFS)	Q CARRY OVER (CFS)	Qt GUTTER FLOW (CFS)	S GUTTER SLOPE (FT/FT)	Sx CROSS SLOPE (FT/FT)	T SPREAD	W (FT)	W/T	Sw (FT/FT)	Sw/Sx	Eo (#10)	a	Sw = a/12W	Se = Sx+SwEo (FT/FT)	Lt (FT)	P EFFECT (FT)	L/Lt	d (FT)	E (#16)	h (FT)	Q: INTRCPT (CFS)	d/h	Qb: CARRY OVER (CFS)	T SPREAD @ SAG (FT)	REMARKS
~~26~~ 28	3	B	4	11+85 L	0.21	.4	.08	3.5	.29	—	.29	.004	.0208	3.0	2	.67	.0833	4	.98	3.5	.1458	.16	2.44		1.64		1.0		100%	Qb=0		OK
~~28~~ 30	3	B	4	12+80 L	0.39		.16		.55	—	.55	.005		4.8	2	.42		4	.90	3.5	.1458	.15	3.52		1.14		1.0		100%	Qb=0		OK
~~29~~ 31	3	B	4	13+55 L	0.35		.14		.49	—	.49	.005		4.4	2	.45		4	.92	3.5	.1458	.15	3.32		1.20		1.0		100%	Qb=0		OK
~~30~~ 32	3	B	4	14+30 L	0.26		.10		.36	—	.36	.005		3.4	2	.59		4	.95	3.5	.1458	.16	2.86		1.40		1.0		100%	Qb=0		OK
~~31~~ 33	3	B	8	14+57 L	0.77		.31		1.08	—	1.08	.005		8.2	2	.24		4	.64	3.5	.1458	.11	5.68		1.41		1.0		100%	Qb=0		OK
													* 10' OK IN CUL-DE-SAC																			
~~27~~ 29	3	C	8	12+50 L	0.35		.14		.49	—	.49																					
					0.24		.10		.34	—	.34																					
			TOTAL								.83	.001											11.6		0.11		.27		.41		5.29<7.0	OK
					0.165		.26		.91		.91	.0043		5.4	✓	.37		✓	.87	✓	✓	✓	4.75		.84		.96		.87	Qb=.04		
~~34~~ 36	3	B	4	11+85 R	~~0.33~~		~~.13~~		~~.46~~	—	~~.46~~	~~.004~~		~~4.4~~	2	~~.45~~		4	~~.92~~	3.5	.1458	.15	~~3.08~~		~~1.30~~		~~1.0~~		~~100%~~	~~Qb=0~~		OK
~~34~~ 41	3	B	4	13+55 R	0.39		.16		.55	—	.55	.005		4.8	2	.42		4	.90	3.5	.1458	.15	3.52		1.14		1.0		100%	Qb=0		OK
~~33~~ 35	3	B	8	14+90 R	1.09		.44		1.53	—	1.53	.005		8.1	2	.25		4	.67	3.5	.1458	.12	6.24		1.28		1.0		100%	Qb=0		OK
					0.16		.06		.22	.04	.26	OK	* 10' OK																			
~~35~~ 40	3	C	8	12+50 R	~~0.26~~		~~.10~~		~~.36~~	—	~~.36~~	B/C < .36																				
					0.38		.15		.53	—	.53																					
			TOTAL								.89	.001											11.6		0.12		.27		.44		5.77<7.0	OK

$T_{ALL} = 10'$
STA 10+00 → 29+00

$T_{ALL} = 7.0'$
STA 29+00 → END

STORM WATER INLET COMPUTATIONS

FORM LD 204
REV 6-85

RTE READE'S WAY

PROJECT NAME JAMESTOWN 100

DATE 10-6-98
AES PROJ # 60201-7

INLET	NUMBER	TYPE	LENGTH (FT)	STATION	DRAINAGE AREA (AC)	C	CA	I (IN/HR)	Q INCR (CFS)	Q CARRY OVER (CFS)	Qt GUTTER FLOW (CFS)	S GUTTER SLOPE (FT/FT)	Sx CROSS SLOPE (FT/FT)	T SPREAD	W (FT)	W/T	Sw (FT/FT)	Sw/Sx	Eo (#10)	a	Sw = a/12W	Se = Sx+SwEo (FT/FT)	Lt (FT)	P EFFECT (FT)	L/Lt	d (FT)	E (#16)	h (FT)	Q: INTRCPT (CFS)	d/h	Qb: CARRY OVER (CFS)	T SPREAD @ SAG (FT)	REMARKS
2-12	3	B	6	14+30R	.75	.4	.30	3.5	1.05	—	1.05	.005	.0208	6.8	2	.29	.0833	4	.76	3.5	.1458	.13	5.08		1.18		1.0		100%		Qb=0		OK
2-11	3	B	4	15+50R	.36		.14		.50	—	.50	.005		4.4	2	.45	.0833	4	.92	3.5	.1458	.15	3.41		1.17		1.0		100%		Qb=0		OK
2-9	3	B	4	17+75R	.18		.07		.25	—	.25	.005		2.3	2	.87	.0833	4	1.0	3.5	.1458	.17	2.37		1.69		1.0		100%		Qb=0		OK
2-10	3	C	8	16+50R	.29		.12		.41	—	.41																						
					.34		.14		.48	—	.48																						
				TOTAL							.89	.001											11.6		.12		.27		.44		5.77<10		OK
2-13	3	B	6	15+50L	1.25		.50		1.75	—	1.75	.005		7.5	2	.27	.0833	4	.72	3.5	.1458	.13	6.42		.934		.993		1.74		Qb=.01		TO 2-14
2-15	3	B	4	17+75L	.26		.10		.36	—	.36	.005		3.4	2	.59	.0833	4	.98	3.5	.1458	.16	2.86		1.40		1.0		100%		Qb=0		OK
2-14	3	C	8	16+50L	.36		.14		.50	.01	.51																						
					.44		.18		.62	—	.62																						
				TOTAL							1.13	.001											11.6		.13		.27		.48		6.25<10		OK
2-7	3	B	4	19+80R	.38		.15		.53	—	.53	.0089		3.8	2	.53	.0833	4	.96	3.5	.1458	.16	4.00		1.0		1.0		100%		Qb=0		OK
2-6	3	C	8	20+87R	.27		.11		.38	—	.38																						
					.47		.19		.66	—	.66																						
				TOTAL							1.04	.001											11.6		.13		.27		.48		6.25<10		OK
2-16	3	C	6	20+87L	.47		.19		.66	—	.66																						
					.40		.16		.56	—	.56																						
				TOTAL							1.22	.001											9.6		.14		.27		.52		6.73<10		OK

$T_{ALL} = 10'$
STA 10 → 29 + CUL-DE-SAC
$T_{ALL} = 7'$
29 → END

STORM WATER INLET COMPUTATIONS

FORM LD 204
REV 6-85

RTE READE'S WAY / ST. MARY'S CIRCLE PROJECT NAME JAMESTOWN 100

DATE 10/19/98
AES PROJ # 6201-7

	INLET NUMBER	TYPE	LENGTH (FT)	STATION	DRAINAGE AREA (AC)	C	CA	I (IN/HR)	Q INCR (CFS)	Q CARRY OVER (CFS)	Qt GUTTER FLOW (CFS)	S GUTTER SLOPE (FT/FT)	Sx CROSS SLOPE (FT/FT)	T SPREAD	W (FT)	W/T	Sw (FT/FT)	Sw/Sx	Eo (#10)	a	Sw = a/12W	Se = Sx+SwEo (FT/FT)	Lt (FT)	P EFFECT (FT)	L/Lt	d (FT)	E (#16)	h (FT)	Q: INTRCPT (CFS)	d/h	Qb: CARRY OVER (CFS)	T SPREAD @ SAG (FT)	REMARKS
2-3	3	C	6	26+08R	.21	.4	.08	3.5	.29	—	.29		.0208		2		.0833																
					.07		.03		.10	—	.10																						
				TOTAL							.39	.001											9.6		0.05	.27		.18			2.4 < 10		OK
2-2	3	B	4	27+10R	.11		.04		.15	—	.15	.005		1.6		1.25		4	1.0	3.5	.1458	.17	1.91		2.09		1.0		100%		Qb=0		OK
2-17	3	B	4	24+50L	.38		.15		.53	—	.53	.0099		3.6		.55		4	.96	3.5	.1458	.16	4.13		.968		.998		.528		Qb=.002		∴0 OK
2-19	3	B	4	27+10L	.31		.12		.43	—	.43	.005		4.1		.49		4	.93	3.5	.1458	.16	3.08		1.30		1.0		100%		Qb=0		OK
2-18	3	C	8	26+08L	.53		.21		.74	—	.74																						
					.44		.18		.62	—	.62																						
				TOTAL							1.36	.001											11.6		.14		.27		.52		6.73 < 10		OK
1-4	3	C	6	32+32R	.31		.12		.43	—	.43																						
					.01		0		.01	—	.01																						
				TOTAL							.44	.001											9.6		0.05		.27		.18		2.4 < 7		OK
1-5	3	C	6	32+32L	.29		.12		.41	—	.41																						
					.01		0		.01		.01																						
				TOTAL							.42	.001											9.6		0.05		.27		.18		2.4 < 7		OK
ST. MARY'S																																	
2-26	3	C	8	12+33R	.65		.26		.91	—	.91																						
					.71		.28		.99	—	.99																						
				TOTAL		↓		↓			1.90	.001	↓		↓		↓						11.6		.17		.27		.63		8.17 < 10		OK
																															CUL-DE-SAC		

STORM WATER INLET COMPUTATIONS

FORM LD 204
REV 6-85

RTE St. Eric's Turn

PROJECT NAME Jamestown 100

DATE 10/6/98
AES PROJ # 6201-7

TALL = 7.0'

INLET NUMBER	TYPE	LENGTH (FT)	STATION	DRAINAGE AREA (AC)	C	CA	I (IN/HR)	Q INCR (CFS)	Q CARRY OVER (CFS)	Qt GUTTER FLOW (CFS)	S GUTTER SLOPE (FT/FT)	Sx CROSS SLOPE (FT/FT)	T SPREAD	W (FT)	W/T	Sw (FT/FT)	Sw/Sx	Eo (#10)	a	Sw = a/12W	Se = Sx+SwEo (FT/FT)	Lt (FT)	P EFFECT (FT)	L/Lt	d (FT)	E (#16)	h (FT)	Q: INTRCPT (CFS)	d/h	Qb: CARRY OVER (CFS)	T SPREAD @ SAG (FT)	REMARKS
2-20	3B	4	11+50L	.32	.40	.13	3.5	.45	–	.45	.0075	.0208	3.6	2	.55	.0833	4	.96	3.5	.1458	.16	3.55		1.13	1.0			100%		Qb=0		OK
2-24	3B	4	11+50R	.19	.40	.08	3.5	.27	–	.27	.0075	.0208	2.3	2	.87	.0833	4	.99	3.5	.1458	.16	2.86		1.40	1.0			100%		Qb=0		OK
2-22	3B	4	13+70L	.22	.40	.09	3.5	.31	–	.31	.005	.0208	3.7	2	.63	.0833	4	.98	3.5	.1458	.16	2.69		1.45	1.0			100%		Qb=0		OK
2-21	3C	8	12+50L	.26	.40	.10	3.5	.36	–	.36		.0208																				
	3C	8	12+50L	.33	.40	.13	3.5	.46	–	.46		.0208																				
			TOTAL							.82	.001	.0208				.0833						11.6		.12	.27			.44		5.76<6.0		OK
2-23	3C	8	12+50R	.24	.40	.10	3.5	.34	–	.34		.0208																				
	3C	8	12+50R	.38	.40	.15	3.5	.53	–	.53		.0208																				
			TOTAL							.87	.001	.0208				.0833						11.6		.115	.27			.43		5.53<6.0		OK
1-14	3B	4	17+00R	.35	.40	.14	3.5	.49	–	.49	.009	.0208	3.4	2	.59	.0833	4	.98	3.5	.1458	.16	3.88		1.03	1.0			100%		Qb=0		OK
1-15	3B	4	17+00L	.37	.40	.15	3.5	.52	–	.52	.009	.0208	3.8	2	.53	.0833	4	.97	3.5	.1458	.16	3.98		1.00	1.0			100%		Qb=0		OK
1-12	3B	4	20+36R	.34	.40	.14	3.5	.48	–	.48	.006	.0208	4.2	2	.48	.0833	4	.93	3.5	.1458	.16	3.41		1.17	1.0			100%		Qb=0		OK
1-17	3B	4	20+36L	.42	.40	.17	3.5	.59	–	.59	.006	.0208	5.0	2	.40	.0833	4	.85	3.5	.1458	.14	4.03		.99	.999			.589		Qb=.001	1.0	OK
1-13	3C	6	18+50R	.29	.40	.12	3.5	.41	–	.41		.0208																				
	3C	6	18+50R	.33	.40	.13	3.5	.46	–	.46		↓																				
			TOTAL							.87	.001	↓				.0833						11.6		.115	.27			.43		5.53<6.0		OK

STORM WATER INLET COMPUTATIONS

FORM LD 204
REV 6-85

RTE ST. ANNE'S CIRCLE

PROJECT NAME JAMESTOWN 100

DATE 10/19/98
AES PROJ # 6201-7

T_{ALL} = 7.0'

INLET NUMBER	TYPE	LENGTH (FT)	STATION	DRAINAGE AREA (AC)	C	CA	I (IN/HR)	Q INCR (CFS)	Q CARRY OVER (CFS)	Qt GUTTER FLOW (CFS)	S GUTTER SLOPE (FT/FT)	Sx CROSS SLOPE (FT/FT)	T SPREAD	W (FT)	W/T	Sw (FT/FT)	Sw/Sx	Eo (#10)	a	Sw = a/12W	Se = Sx+SwEo (FT/FT)	Lt (FT)	P EFFECT (FT)	L/Lt	d (FT)	E (#16)	h (FT)	Q: INTRCPT (CFS)	d/h	Qb: CARRY OVER (CFS)	T SPREAD @ SAG (FT)	REMARKS
-26	3	B	4	11+85 L	0.21	.4	.08	3.5	.29	—	.29	.004	.0208	3.0	2	.67	.0833	4	.98	3.5	.1458	.16	2.44		1.64	1.0		100%		Qb=0		OK
-28	3	B	4	12+80 L	0.39		.16		.55	—	.55	.005		4.8	2	.42		4	.90	3.5	.1458	.15	3.52		1.14	1.0		100%		Qb=0		OK
-29	3	B	4	13+55 L	0.35		.14		.49	—	.49	.005		4.4	2	.45		4	.92	3.5	.1458	.15	3.32		1.20	1.0		100%		Qb=0		OK
-30	3	B	4	14+30 L	0.26		.10		.36	—	.36	.005		3.4	2	.59		4	.95	3.5	.1458	.16	2.86		1.40	1.0		100%		Qb=0		OK
-31	3	B	8	14+57 L	0.77		.31		1.08	—	1.08	.005		8.2	2	.24		4	.64	3.5	.1458	.11	5.68		1.41	1.0		100%		Qb=0		OK
													* 10' OK IN CUL-DE-SAC																			
-27	3	C	8	12+50 L	0.35		.14		.49	—	.49																					
					0.24		.10		.34	—	.34																					
				TOTAL							.83	.001											11.6		0.11	.27		.41		5.29<7.0		OK
-36	3	B	4	11+85 R	0.33		.13		.46	—	.46	.004		4.4	2	.45		4	.92	3.5	.1458	.15	3.08		1.30	1.0		100%		Qb=0		OK
-34	3	B	4	13+55 R	0.39		.16		.55	—	.55	.005		4.8	2	.42		4	.90	3.5	.1458	.15	3.52		1.14	1.0		100%		Qb=0		OK
-33	3	B	8	14+90 R	1.09		.44		1.53	—	1.53	.005		8.1	2	.25		4	.67	3.5	.1458	.12	6.24		1.28	1.0		100%		Qb=0		OK
													* 10' OK																			
-35	3	C	8	12+50 R	0.26		.10		.36	—	.36																					
					0.38		.15		.53	—	.53																					
				TOTAL							.89	.001											11.6		0.12	.27		.44		5.77<7.0		OK

STORM WATER INLET COMPUTATIONS

FORM LD 204
REV 6-85

RTE ST. ERIC'S TURN

PROJECT NAME JAMESTOWN 100

DATE 10/6/98
AES PROJ # 1620-7

$T_{ALL} = 7.0'$

INLET NUMBER	TYPE	LENGTH (FT)	STATION	DRAINAGE AREA (AC)	C	CA	I (IN/HR)	Q INCR (CFS)	Q CARRY OVER (CFS)	Qt GUTTER FLOW (CFS)	S GUTTER SLOPE (FT/FT)	Sx CROSS SLOPE (FT/FT)	T SPREAD	W (FT)	W/T	Sw (FT/FT)	Sw/Sx	Eo (#10)	a	Sw = a/12W	Se = Sx+SwEo (FT/FT)	Lt (FT)	P EFFECT (FT)	L/Lt	d (FT)	E (#16)	h (FT)	Q: INTRCPT (CFS)	d/h	Qb: CARRY OVER (CFS)	T SPREAD @ SAG (FT)	REMARKS
1-16	3C	6	18+50 L	.36	.4	.14	3.5	.50	—	.50		.0208																				
	3C	6	18+50L	.44	.4	.18	3.5	.62	—	.62		.0208																				
			TOTAL							1.12	.001					.0833						9.6		.13	.27		.48		6.25 < 7.0	OK
1-10	3B	4	23+75R	.45		.18		.63	—	.63	.007		4.4	2	.45		4.0	.91	3.5	.1458	.15	4.16		.961	.997		.628		Qb = .002 ∴	0 OK	
1-9	3B	4	25+20R	.35		.14		.49	—	.49	.007		3.8	2	.53		4.0	.97	3.5	.1458	.16	3.60		1.11	1.0		100%		Qb = 0	OK	
1-7	3B	4	27+25R	.11		.04		.15	—	.15	.007		1.6	2	1.25		4.0	1.0	3.5	.1458	.17	2.11		1.89	1.0		100%		Qb = 0	OK	
1-18	3B	4	23+75L	.45		.18		.63	—	.63	.007		4.4	2	.45		4.0	.91	3.5	.1458	.15	4.16		.961	.997		.628		Qb = .002 ∴	0 OK	
1-19	3B	4	25+20L	.38		.15		.53	—	.53	.007		3.9	2	.51		4.0	.95	3.5	.1458	.16	3.72		1.07	1.0		100%		Qb = 0	OK	
1-23	3B	4	28+70L	.39		.16		.55	—	.55	.005		4.8	2	.42		4.0	.87	3.5	.1458	.15	3.55		1.12	1.0		100%		Qb = 0	OK	
1-24	3C	6	27+70L	.23		.09		.32	—	.32																						
	3C	6	27+70R	.29		.12		.41	—	.41																						
			TOTAL							.73	.001											9.6		.11	.27		.41		5.29 < 7.0	OK	
1-20	3B	4	26+78L	.38		.15		.53	—	.53	.007		3.9	2	.51		4.0	.95	3.5	.1458	.16	3.72		1.07	1.0		100%		Qb = 0	OK	
1-8	3B	4	26+78R	.34		.14		.48	—	.48	.007		3.6	2	.55		4.0	.96	3.5	.1458	.16	3.57		1.12	1.0		100%		Qb = 0	OK	
1-22	3B	4	28+70R	.32		.13		.45	—	.45	.005		4.1	2	.49		4.0	.93	3.5	.1458	.16	3.14		1.27	1.0		100%		Qb = 0	OK	
1-21	3B	4	28+00	.11		.04		.15	—	.15	.005		1.6	2	1.25		4.0	1.0	3.5	.1458	.17	2.11		1.89	1.0		100%		Qb = 0	OK	

LD-269
Rev 3-83

Project: JAMESTOWN HUNDRED

Plan Sheet No. ____ Designer ____ Sheet ____ of ____
Rev. Date ____ Date ____

HYDROLOGICAL DATA:
D.A. = 0.45 AC.

WETLANDS AREA
w/ S=.013
T_c = 15 MIN w/ FIG 1.5.1.1

i_{10} = 5.00 in/hr
C = 0.4 b/c left as natural area

FOR L<50'

$$H = \left(1 + K_e + \frac{29 n^2 L}{R^{1.33}}\right)\frac{V^2}{2g}$$

$$V = \frac{0.59}{n} d^{5/3} S^{1/2}$$

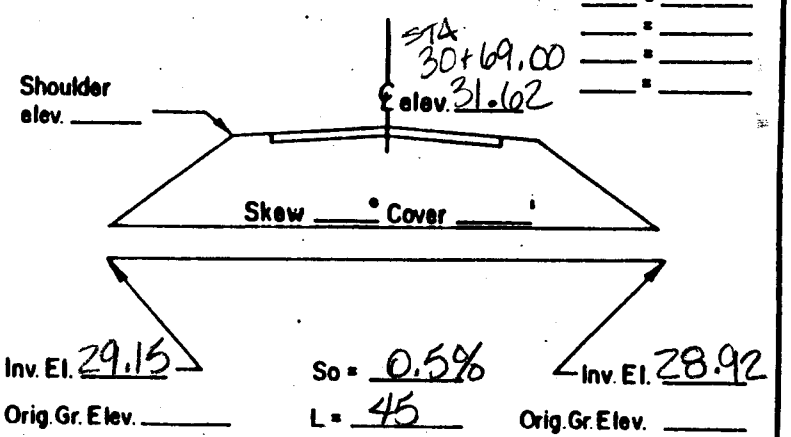
$$R = \frac{d}{4}$$

∴ V = 4.65 fps R = 0.31'

H = 0.86

AHW Controls STATION ____
100 yr. Flood plain ____ elev. ____
Design AHW depth ____ elev. ____
Structures ____ elev. ____

freq. TW elev.
____ = ____
____ = ____
____ = ____
____ = ____
____ = ____



DISCHARGES USED
Q 10 = 0.9 CFS
Q ____ = ____ CFS
Q ____ = ____ CFS
Q ____ = ____ CFS
Q ____ = ____ CFS

RISK ASSESSMENT ADT ____
Detours Available ____, Length ____
Overtopping Stage ____
Flood Plain Management ____
Criteria and Significant Impact ____

240 A

CULVERT TYPE & SIZE	Q	Q/B	HEADWATER COMPUTATIONS: INLET CONT. HW/D	INLET CONT. HW	OUTLET CONTROL Ke	dc	(dc+D)/2	ho	H	LSo	HW	CONT. HW. ELEV.	OUTLET VELOCITY C.M.	OUTLET VELOCITY Smooth	End Treat.	COMMENTS
15" RCP	0.9		MIN 0.5	0.63	0.5	.3	.78	.78	0.86	0.23	1.41	30.33			RR	DOES NOT OVERTOP CURB ✓

Design Flood Exceed Prob. ____ Elev ____
Overtop Flood Exceed Prob. ____ Elev ____
Base Flood 1% Exceed Prob. ____ Elev ____

Rev 3 83

22(5-18)

Project ST. THOMAS HUNDRED
SOUTH SIDE RT 5 @ ST GEORGE'S HUNDRED

Plan Sheet No. 20 Designer RMO
Rev. Date _____ Date 11/28/95

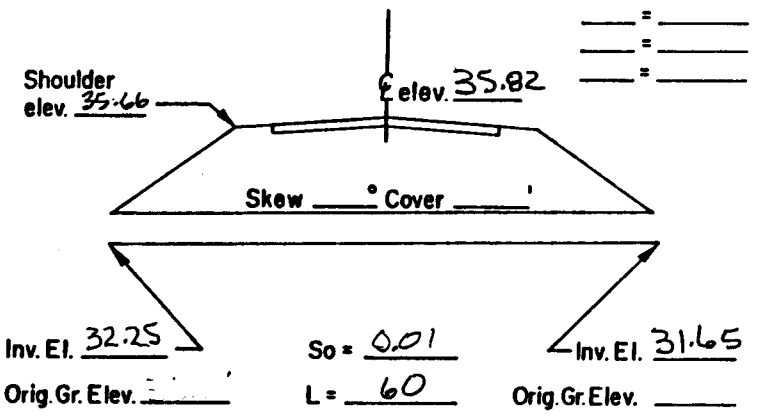
Sheet 1 of 1

HYDROLOGICAL DATA:
D.A. = 0.58 AC.

AHW Controls
100 yr. Flood plain _____ elev. _____
Design AHW depth _____ elev. _____
Structures _____ elev. _____

STATION: _____

freq. TW elev.
____ = ____
____ = ____
____ = ____
____ = ____
____ = ____



DISCHARGES USED
Q 1 = 1.11 CFS
Q ____ = ____ CFS
Q ____ = ____ CFS
Q ____ = ____ CFS
Q ____ = ____ CFS

RISK ASSESSMENT ADT _____
Detours Available _____, Length _____
Overtopping Stage _____
Flood Plain Management _____
Criteria and Significant Impact _____

CULVERT TYPE & SIZE	Q	Q/B	HEADWATER COMPUTATIONS									CONT. HW. ELEV.	OUTLET VELOCITY		End Treat.	COMMENTS
			INLET CONT.		OUTLET CONTROL											
			HW/D	HW	Ke	dc	$\frac{dc+D}{2}$	ho	H	LSo	HW		C.M.	Smooth		
15" RCP (RNA)	1.11		.40	0.50	.2	.6	.925	.925	.05	.60	.375	.50		3.5		INLET CONTROL GOVERNS
12" RCP	1.11		.63	0.63	.2	.4	.70	.70	.5	.6	.60			3.6		

Design Flood Exceed. Prob. _____ Elev. _____
Overtop Flood Exceed. Prob. _____ Elev. _____
Base Flood 1% Exceed. Prob. _____ Elev. _____

SUMMARY RECOMMENDATIONS: 60 LF OF 15" RCP @ 1%

SYSTEM 1 AS-BUILT DWGS

Rainfall file: JCCN (10 Yr) 1-1 to 1-0

LINE 1 / Q = 24.3 / HT = 36 / WID = 36 / N = .013 / L = 152 / JLC = 0

OUTFALL

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
							Rim = 25.66 -UPS	
DNSTRM	22.06	28.99	19.64 ✓	3.98	22.30	32.30	-3.2	6.10
UPSTRM	22.30	33.49	19.51 ✓	3.54	22.50	18.34	1.48	6.85

Drainage area (ac)	= 0.00	Slope of invert (%)	=-0.0855
Runoff coefficient	= 0.00	Slope energy grade line (%)	= 0.1277
Time of conc (min)	= 24.42	Critical depth (in)	= 18.83
Inlet time (min)	= 0.00	Natural ground elevation	= 24.00
Intensity (in/hr)	= 3.94	Upstream surcharge (ft)	= 0.00
Cumulative C*A	= 6.15	Additional Q (cfs)	= 0.00
Q = CA * I (cfs)	= 24.26	Line capacity (cfs)	= 0.00

Q catchment (cfs)	= 0.00	Inlet length (ft)	= 0.00
Q carryover (cfs)	= 35.03	Gutter slope (ft/ft)	= 0.0000
Q captured (cfs)	= 0.00	Cross slope (ft/ft)	= 0.0000
Q bypassed (cfs)	= 35.03	Ponding width (ft)	= N/A

Rainfall file: JCCN (10 Yr) 1-2 to 1-1

LINE 2 / Q = 24.5 / HT = 36 / WID = 36 / N = .013 / L = 155 / JLC = 0

DNLN = 1

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	22.30	33.49	19.51 ✓	3.58	22.50	34.72	1.48	6.85
Rim = 29.57 UPSTRM	22.37	22.32	20.51 ✓	5.33	22.81	34.95	7.22	4.60

Drainage area (ac)	= 0.00	Slope of invert (%)	= 0.6452
Runoff coefficient	= 0.00	Slope energy grade line (%)	= 0.2009
Time of conc (min)	= 23.84	Critical depth (in)	= 18.94
Inlet time (min)	= 0.00	Natural ground elevation	= 30.74
Intensity (in/hr)	= 3.99	Upstream surcharge (ft)	= 0.00
Cumulative C*A	= 6.15	Additional Q (cfs)	= 0.00
Q = CA * I (cfs)	= 24.54	Line capacity (cfs)	= 53.57

Q catchment (cfs)	= 0.00	Inlet length (ft)	= 0.00
Q carryover (cfs)	= 35.03	Gutter slope (ft/ft)	= 0.0000
Q captured (cfs)	= 0.00	Cross slope (ft/ft)	= 0.0000
Q bypassed (cfs)	= 35.03	Ponding width (ft)	= N/A

Rainfall file: JCCN (10 Yr) 1-3 to 1-2

LINE 3 / Q = 15.2 / HT = 24 / WID = 24 / N = .013 / L = 44 / JLC = 0

DNLN = 2

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA

RIM = ?

	HGL	DEPTH	INV	VEL	EGL	TWID	COVER	
DNSTRM	22.37	22.32	20.51	4.98	22.75	23.15	8.22	3.05
UPSTRM	23.10	16.54	21.72	6.56	23.77	22.22	7.63	2.31

Drainage area (ac) =	0.00	Slope of invert (%) =	2.7500
Runoff coefficient =	0.00	Slope energy grade line (%) =	2.3010
Time of conc (min) =	23.71	Critical depth (in) =	16.54
Inlet time (min) =	0.00	Natural ground elevation =	31.35
Intensity (in/hr) =	4.00	Upstream surcharge (ft) =	0.00
Cumulative C*A =	3.79	Additional Q (cfs) =	0.00
Q = CA * I (cfs) =	15.15	Line capacity (cfs) =	37.51

Q catchment (cfs) =	0.00	Inlet length (ft) =	0.00
Q carryover (cfs) =	21.87	Gutter slope (ft/ft) =	0.0000
Q captured (cfs) =	0.00	Cross slope (ft/ft) =	0.0000
Q bypassed (cfs) =	21.87	Ponding width (ft) =	N/A

Rainfall file: JCCN (10 Yr) 1-4 to 1-3

LINE 4 / Q = 13.3 / HT = 24 / WID = 24 / N = .013 / L = 163 / JLC = 0

DNLN = 3

RIM = 28.62

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	23.10	16.54	21.72	5.74	23.61	19.92	7.63	2.31
UPSTRM	23.94	18.81	22.37	5.02	24.33	19.76	4.07	2.64

Drainage area (ac) =	0.25	Slope of invert (%) =	0.3988
Runoff coefficient =	0.40	Slope energy grade line (%) =	0.4407
Time of conc (min) =	23.21	Critical depth (in) =	15.47
Inlet time (min) =	10.00	Natural ground elevation =	28.45
Intensity (in/hr) =	4.04	Upstream surcharge (ft) =	0.00
Cumulative C*A =	3.28	Additional Q (cfs) =	0.00
Q = CA * I (cfs) =	13.26	Line capacity (cfs) =	14.28

Q catchment (cfs) =	0.57	Inlet length (ft) =	0.00
Q carryover (cfs) =	18.34	Gutter slope (ft/ft) =	0.0000
Q captured (cfs) =	0.00	Cross slope (ft/ft) =	0.0000
Q bypassed (cfs) =	18.91	Ponding width (ft) =	N/A

Rainfall file: JCCN (10 Yr) 1-5 to 1-4

LINE 5 / Q = 3.0 / HT = 15 / WID = 15 / N = .013 / L = 27 / JLC = .5

DNLN = 4

RIM = 27.49

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	23.94	15.00	22.37	2.44	24.03	0.00	4.82	1.23
UPSTRM	24.18	8.31	23.49	4.29	24.47	14.91	3.76	0.70

Drainage area (ac) =	0.00	Slope of invert (%) =	4.1481
Runoff coefficient =	0.00	Slope energy grade line (%) =	1.6249
Time of conc (min) =	10.70	Critical depth (in) =	8.31

```
Inlet time (min)    =   0.00        Natural ground elevation     =  28.50
Intensity (in/hr)   =   5.59        Upstream surcharge (ft)      =   0.00
Cumulative C*A      =   0.54        Additional Q (cfs)           =   0.00
Q = CA * I (cfs)    =   3.00        Line capacity (cfs)          =  13.15
-----------------------------------------------------------------------
-
Q catchment (cfs)   =   0.00        Inlet length (ft)            =   0.00
Q carryover (cfs)   =   3.12        Gutter slope (ft/ft)         = 0.0000
Q captured (cfs)    =   0.00        Cross slope (ft/ft)          = 0.0000
Q bypassed (cfs)    =   3.12        Ponding width (ft)           =    N/A

-----------------------------------------------------------------------
-
Rainfall file: JCCN  ( 10 Yr)                                 1-6 to 1-4

LINE 6 / Q =  10.7 / HT = 24 / WID = 24 / N = .013 / L = 26 / JLC = 0
-----------------------------------------------------------------------
-
DNLN = 4
            HGL    DEPTH  INVERT    VEL    EGL     T WID   COVER    AREA

DNSTRM    23.94   18.81   22.37    4.05   24.19   21.25   4.07     2.64
UPSTRM    23.89   15.65   22.59    4.94   24.27   22.86   3.86     2.17

Drainage area (ac) =   0.30        Slope of invert (%)          = 0.8462
Runoff coefficient =   0.40        Slope energy grade line (%)  = 0.3074
Time of conc (min) =  23.11        Critical depth (in)          =  13.91
Inlet time (min)   =   5.00        Natural ground elevation     =  28.45
Intensity (in/hr)  =   4.05        Upstream surcharge (ft)      =   0.00
Cumulative C*A     =   2.65        Additional Q (cfs)           =   0.00
Q = CA * I (cfs)   =  10.71        Line capacity (cfs)          =  20.81
-----------------------------------------------------------------------
-
Q catchment (cfs)  =   0.84        Inlet length (ft)            =   0.00
Q carryover (cfs)  =  14.38        Gutter slope (ft/ft)         = 0.0000
Q captured (cfs)   =   0.00        Cross slope (ft/ft)          = 0.0000
Q bypassed (cfs)   =  15.21        Ponding width (ft)           =    N/A

-----------------------------------------------------------------------
-
Rainfall file: JCCN  ( 10 Yr)                                 1-7 to 1-6

LINE 7 / Q =  10.2 / HT = 24 / WID = 24 / N = .013 / L = 22 / JLC = 0
-----------------------------------------------------------------------
-
DNLN = 6
            HGL    DEPTH  INVERT    VEL    EGL     T WID   COVER    AREA

DNSTRM    23.89   15.65   22.59    4.72   24.24   19.38   3.86     2.17
UPSTRM    23.91   14.42   22.71    5.19   24.33   23.50   3.99     1.97

Drainage area (ac) =   0.00        Slope of invert (%)          = 0.5454
Runoff coefficient =   0.00        Slope energy grade line (%)  = 0.4113
Time of conc (min) =  23.03        Critical depth (in)          =  13.60
Inlet time (min)   =   0.00        Natural ground elevation     =  28.70
Intensity (in/hr)  =   4.05        Upstream surcharge (ft)      =   0.00
Cumulative C*A     =   2.53        Additional Q (cfs)           =   0.00
Q = CA * I (cfs)   =  10.24        Line capacity (cfs)          =  16.70
-----------------------------------------------------------------------
-
Q catchment (cfs)  =   0.00        Inlet length (ft)            =   0.00
```

Q carryover (cfs)	= 14.38	Gutter slope (ft/ft)	= 0.0000
Q captured (cfs)	= 0.00	Cross slope (ft/ft)	= 0.0000
Q bypassed (cfs)	= 14.38	Ponding width (ft)	= N/A

Rainfall file: JCCN (10 Yr) 1-8to1-7 Confl MH

LINE 8 / Q = 10.3 / HT = 24 / WID = 24 / N = .013 / L = 31 / JLC = 0

DNLN = 7

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	23.91	14.42	22.71	5.20	24.33	18.61	3.99	1.97
UPSTRM	24.25	13.61	23.12	5.58	24.74	23.78	3.26	1.84

Drainage area (ac)	= 0.11	Slope of invert (%)	= 1.3226
Runoff coefficient	= 0.40	Slope energy grade line (%)	= 1.3082
Time of conc (min)	= 22.94	Critical depth (in)	= 13.61
Inlet time (min)	= 5.00	Natural ground elevation	= 28.39
Intensity (in/hr)	= 4.06	Upstream surcharge (ft)	= 0.00
Cumulative C*A	= 2.53	Additional Q (cfs)	= 0.00
Q = CA * I (cfs)	= 10.26	Line capacity (cfs)	= 26.01

Q catchment (cfs)	= 0.31	Inlet length (ft)	= 0.00
Q carryover (cfs)	= 14.07	Gutter slope (ft/ft)	= 0.0000
Q captured (cfs)	= 0.00	Cross slope (ft/ft)	= 0.0000
Q bypassed (cfs)	= 14.38	Ponding width (ft)	= N/A

Rainfall file: JCCN (10 Yr) 1-9 to 1-8

LINE 9 / Q = 10.1 / HT = 24 / WID = 24 / N = .013 / L = 32 / JLC = .9

DNLN = 8

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	24.25	13.61	23.12	5.50	24.72	18.07	3.26	1.84
UPSTRM	24.53	15.73	23.22	4.63	24.86	22.81	3.39	2.18

Drainage area (ac)	= 0.23	Slope of invert (%)	= 0.3125
Runoff coefficient	= 0.40	Slope energy grade line (%)	= 0.4385
Time of conc (min)	= 22.83	Critical depth (in)	= 13.51
Inlet time (min)	= 10.00	Natural ground elevation	= 28.61
Intensity (in/hr)	= 4.07	Upstream surcharge (ft)	= 0.00
Cumulative C*A	= 2.48	Additional Q (cfs)	= 0.00
Q = CA * I (cfs)	= 10.10	Line capacity (cfs)	= 12.64

Q catchment (cfs)	= 0.53	Inlet length (ft)	= 0.00
Q carryover (cfs)	= 13.54	Gutter slope (ft/ft)	= 0.0000
Q captured (cfs)	= 0.00	Cross slope (ft/ft)	= 0.0000
Q bypassed (cfs)	= 14.07	Ponding width (ft)	= N/A

Rainfall file: JCCN (10 Yr) 1-10 to 1-9

LINE 10 / Q = 9.3 / HT = 24 / WID = 24 / N = .013 / L = 200 / JLC = 0

DNLN = 9

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	24.83	19.32	23.22	3.43	25.01	21.54	3.39	2.71
UPSTRM	25.18	18.67	23.62	3.55	25.37	19.95	4.13	2.62

Drainage area (ac) =	0.30	Slope of invert (%)	= 0.2000
Runoff coefficient =	0.40	Slope energy grade line (%)	= 0.1791
Time of conc (min) =	21.88	Critical depth (in)	= 12.96
Inlet time (min) =	5.00	Natural ground elevation	= 29.76
Intensity (in/hr) =	4.15	Upstream surcharge (ft)	= 0.00
Cumulative C*A =	2.24	Additional Q (cfs)	= 0.00
Q = CA * I (cfs) =	9.30	Line capacity (cfs)	= 10.11

Q catchment (cfs) =	0.84	Inlet length (ft)	= 0.00
Q carryover (cfs) =	11.84	Gutter slope (ft/ft)	= 0.0000
Q captured (cfs) =	0.00	Cross slope (ft/ft)	= 0.0000
Q bypassed (cfs) =	12.67	Ponding width (ft)	= N/A

Rainfall file: JCCN (10 Yr) 1-11 to 1-10

LINE 11 / Q = 7.5 / HT = 24 / WID = 24 / N = .013 / L = 145 / JLC = 0

DNLN = 10

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	25.18	18.67	23.62	2.84	25.30	21.17	4.13	2.62
UPSTRM	25.34	15.51	24.05	3.47	25.53	22.95	4.74	2.15

Drainage area (ac) =	0.45	Slcpe of invert (%)	= 0.2966
Runoff coefficient =	0.40	Slope energy grade line (%)	= 0.1575
Time of conc (min) =	21.11	Critical depth (in)	= 11.61
Inlet time (min) =	5.00	Natural ground elevation	= 30.79
Intensity (in/hr) =	4.22	Upstream surcharge (ft)	= 0.00
Cumulative C*A =	1.77	Additional Q (cfs)	= 0.00
Q = CA * I (cfs) =	7.46	Line capacity (cfs)	= 12.32

Q catchment (cfs) =	1.25	Inlet length (ft)	= 0.00
Q carryover (cfs) =	8.85	Gutter slope (ft/ft)	= 0.0000
Q captured (cfs) =	0.00	Cross slope (ft/ft)	= 0.0000
Q bypassed (cfs) =	10.10	Ponding width (ft)	= N/A

Rainfall file: JCCN (10 Yr) 1-12 to 1-11

LINE 12 / Q = 6.1 / HT = 18 / WID = 18 / N = .013 / L = 180 / JLC = 0

DNLN = 11

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA

DNSTRM	25.34	15.51	24.05	3.76	25.56	16.71	5.24	1.62
UPSTRM	25.91	13.69	24.77	4.22	26.19	15.37	5.72	1.44

Drainage area (ac) =	0.00	Slope of invert (%)	= 0.4000
Runoff coefficient =	0.40	Slope energy grade line (%)	= 0.3473
Time of conc (min) =	12.61	Critical depth (in)	= 11.29
Inlet time (min) =	5.00	Natural ground elevation	= 32.00
Intensity (in/hr) =	5.26	Upstream surcharge (ft)	= 0.00
Cumulative C*A =	1.16	Additional Q (cfs)	= 0.00
Q = CA * I (cfs) =	6.08	Line capacity (cfs)	= 6.64

Q catchment (cfs) =	0.00	Inlet length (ft)	= 0.00
Q carryover (cfs) =	6.73	Gutter slope (ft/ft)	= 0.0000
Q captured (cfs) =	0.00	Cross slope (ft/ft)	= 0.0000
Q bypassed (cfs) =	6.73	Ponding width (ft)	= N/A

Rainfall file: JCCN (10 Yr) 1-13 to 1-12

LINE 13 / Q = 6.1 / HT = 18 / WID = 18 / N = .013 / L = 76 / JLC = .9

DNLN = 12

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	25.91	13.69	24.77	4.26	26.19	15.70	5.72	1.44
UPSTRM	26.21	13.73	25.07	4.24	26.49	15.31	4.98	1.45

Drainage area (ac) =	0.17	Slope of invert (%)	= 0.3947
Runoff coefficient =	0.40	Slope energy grade line (%)	= 0.3972
Time of conc (min) =	12.31	Critical depth (in)	= 11.34
Inlet time (min) =	10.00	Natural ground elevation	= 31.56
Intensity (in/hr) =	5.31	Upstream surcharge (ft)	= 0.00
Cumulative C*A =	1.16	Additional Q (cfs)	= 0.00
Q = CA * I (cfs) =	6.14	Line capacity (cfs)	= 6.60

Q catchment (cfs) =	0.39	Inlet length (ft)	= 0.00
Q carryover (cfs) =	6.34	Gutter slope (ft/ft)	= 0.0000
Q captured (cfs) =	0.00	Cross slope (ft/ft)	= 0.0000
Q bypassed (cfs) =	6.73	Ponding width (ft)	= N/A

Rainfall file: JCCN (10 Yr) 1-14 to 1-13

LINE 14 / Q = 5.9 / HT = 18 / WID = 18 / N = .013 / L = 116 / JLC = 0

DNLN = 13

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	26.47	16.75	25.07	3.43	26.65	17.36	4.98	1.71
UPSTRM	26.76	14.70	25.54	3.80	26.99	13.94	3.81	1.54

Drainage area (ac) =	0.23	Slope of invert (%)	= 0.4052
Runoff coefficient =	0.40	Slope energy grade line (%)	= 0.2938
Time of conc (min) =	11.78	Critical depth (in)	= 11.10
Inlet time (min) =	5.00	Natural ground elevation	= 30.86

Intensity (in/hr)	=	5.40	Upstream surcharge (ft)	=	0.00
Cumulative C*A	=	1.09	Additional Q (cfs)	=	0.00
Q = CA * I (cfs)	=	5.87	Line capacity (cfs)	=	6.68

Q catchment (cfs)	=	0.64	Inlet length (ft)	=	0.00
Q carryover (cfs)	=	5.70	Gutter slope (ft/ft)	=	0.0000
Q captured (cfs)	=	0.00	Cross slope (ft/ft)	=	0.0000
Q bypassed (cfs)	=	6.34	Ponding width (ft)	=	N/A

Rainfall file: JCCN (10 Yr) 1-15 to 1-14

LINE 15 / Q = 4.3 / HT = 15 / WID = 15 / N = .013 / L = 126 / JLC = 0

DNLN = 14

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	26.76	14.70	25.54	3.55	26.96	14.85	4.06	1.22
UPSTRM	27.25	12.93	26.17	3.85	27.48	10.35	2.79	1.12

Drainage area (ac)	=	0.42	Slope of invert (%)	=	0.5000
Runoff coefficient	=	0.40	Slope energy grade line (%)	=	0.4107
Time of conc (min)	=	11.21	Critical depth (in)	=	9.99
Inlet time (min)	=	10.00	Natural ground elevation	=	30.22
Intensity (in/hr)	=	5.50	Upstream surcharge (ft)	=	0.00
Cumulative C*A	=	0.79	Additional Q (cfs)	=	0.00
Q = CA * I (cfs)	=	4.33	Line capacity (cfs)	=	4.57

Q catchment (cfs)	=	0.96	Inlet length (ft)	=	0.00
Q carryover (cfs)	=	3.55	Gutter slope (ft/ft)	=	0.0000
Q captured (cfs)	=	0.00	Cross slope (ft/ft)	=	0.0000
Q bypassed (cfs)	=	4.51	Ponding width (ft)	=	N/A

Rainfall file: JCCN (10 Yr) 1-16 to 1-15

LINE 16 / Q = 1.9 / HT = 15 / WID = 15 / N = .013 / L = 81 / JLC = 0

DNLN = 15

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	27.25	12.93	26.17	1.71	27.29	13.92	2.79	1.12
UPSTRM	27.33	7.03	26.74	3.41	27.51	14.97	2.67	0.57

Drainage area (ac)	=	0.14	Slope of invert (%)	=	0.7037
Runoff coefficient	=	0.40	Slope energy grade line (%)	=	0.2637
Time of conc (min)	=	10.68	Critical depth (in)	=	6.66
Inlet time (min)	=	10.00	Natural ground elevation	=	30.66
Intensity (in/hr)	=	5.59	Upstream surcharge (ft)	=	0.00
Cumulative C*A	=	0.34	Additional Q (cfs)	=	0.00
Q = CA * I (cfs)	=	1.92	Line capacity (cfs)	=	5.42

Q catchment (cfs)	=	0.32	Inlet length (ft)	=	0.00
Q carryover (cfs)	=	1.65	Gutter slope (ft/ft)	=	0.0000

Q captured (cfs)	=	0.00	Cross slope (ft/ft)	= 0.0000
Q bypassed (cfs)	=	1.97	Ponding width (ft)	= N/A

Rainfall file: JCCN (10 Yr) 1-17 to 1-16

LINE 17 / Q = 1.6 / HT = 15 / WID = 15 / N = .013 / L = 72 / JLC = .9

DNLN = 16

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	27.33	7.02	26.74	2.89	27.46	10.26	2.66	0.56
UPSTRM	27.79	6.13	27.28	3.46	27.98	14.75	2.79	0.47

Drainage area (ac)	=	0.35	Slope of invert (%)	= 0.7485
Runoff coefficient	=	0.40	Slope energy grade line (%)	= 0.7228
Time of conc (min)	=	10.30	Critical depth (in)	= 6.13
Inlet time (min)	=	10.00	Natural ground elevation	= 31.33
Intensity (in/hr)	=	5.67	Upstream surcharge (ft)	= 0.00
Cumulative C*A	=	0.29	Additional Q (cfs)	= 0.00
Q = CA * I (cfs)	=	1.63	Line capacity (cfs)	= 5.59

Q catchment (cfs)	=	0.80	Inlet length (ft)	= 0.00
Q carryover (cfs)	=	0.85	Gutter slope (ft/ft)	= 0.0000
Q captured (cfs)	=	0.00	Cross slope (ft/ft)	= 0.0000
Q bypassed (cfs)	=	1.65	Ponding width (ft)	= N/A

Rainfall file: JCCN (10 Yr) 1-18 to 1-17

LINE 18 / Q = 0.8 / HT = 15 / WID = 15 / N = .013 / L = 26 / JLC = .9

DNLN = 17

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	27.96	8.14	27.28	1.25	27.98	11.05	2.79	0.68
UPSTRM	28.00	6.65	27.41	1.61	28.04	14.90	2.67	0.53

Drainage area (ac)	=	0.37	Slope of invert (%)	= 0.5000
Runoff coefficient	=	0.40	Slope energy grade line (%)	= 0.2262
Time of conc (min)	=	10.00	Critical depth (in)	= 4.42
Inlet time (min)	=	10.00	Natural ground elevation	= 31.33
Intensity (in/hr)	=	5.72	Upstream surcharge (ft)	= 0.00
Cumulative C*A	=	0.15	Additional Q (cfs)	= 0.00
Q = CA * I (cfs)	=	0.85	Line capacity (cfs)	= 4.57

Q catchment (cfs)	=	0.85	Inlet length (ft)	= 0.00
Q carryover (cfs)	=	0.00	Gutter slope (ft/ft)	= 0.0000
Q captured (cfs)	=	0.00	Cross slope (ft/ft)	= 0.0000
Q bypassed (cfs)	=	0.85	Ponding width (ft)	= N/A

Rainfall file: JCCN (10 Yr) 1-19 to 1-15

LINE 19 / Q = 1.6 / HT = 15 / WID = 15 / N = .013 / L = 26 / JLC = .9

DNLN = 15

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	27.25	12.93	26.17	1.40	27.28	13.92	2.79	1.12
UPSTRM	27.29	11.44	26.30	1.57	27.33	12.76	2.67	1.00

Drainage area (ac) =	0.69	Slope of invert (%)	= 0.5000
Runoff coefficient =	0.40	Slope energy grade line (%)	= 0.1870
Time of conc (min) =	10.00	Critical depth (in)	= 6.03
Inlet time (min) =	10.00	Natural ground elevation	= 30.22
Intensity (in/hr) =	5.72	Upstream surcharge (ft)	= 0.00
Cumulative C*A =	0.28	Additional Q (cfs)	= 0.00
Q = CA * I (cfs) =	1.58	Line capacity (cfs)	= 4.57

Q catchment (cfs) =	1.58	Inlet length (ft)	= 0.00
Q carryover (cfs) =	0.00	Gutter slope (ft/ft)	= 0.0000
Q captured (cfs) =	0.00	Cross slope (ft/ft)	= 0.0000
Q bypassed (cfs) =	1.58	Ponding width (ft)	= N/A

Rainfall file: JCCN (10 Yr) 1-20 to 1-14

LINE 20 / Q = 1.2 / HT = 15 / WID = 15 / N = .013 / L = 26 / JLC = .9

DNLN = 14

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	26.76	14.70	25.54	0.98	26.78	14.85	4.06	1.22
UPSTRM	27.75	5.24	27.18	3.12	27.90	14.30	2.74	0.38

Drainage area (ac) =	0.52	Slope of invert (%)	= 6.3077
Runoff coefficient =	0.40	Slope energy grade line (%)	= 4.3241
Time of conc (min) =	10.00	Critical depth (in)	= 5.24
Inlet time (min) =	10.00	Natural ground elevation	= 31.18
Intensity (in/hr) =	5.72	Upstream surcharge (ft)	= 0.00
Cumulative C*A =	0.21	Additional Q (cfs)	= 0.00
Q = CA * I (cfs) =	1.19	Line capacity (cfs)	= 16.22

Q catchment (cfs) =	1.19	Inlet length (ft)	= 0.00
Q carryover (cfs) =	0.00	Gutter slope (ft/ft)	= 0.0000
Q captured (cfs) =	0.00	Cross slope (ft/ft)	= 0.0000
Q bypassed (cfs) =	1.19	Ponding width (ft)	= N/A

Rainfall file: JCCN (10 Yr) 1-21 to 1-11

LINE 21 / Q = 1.8 / HT = 15 / WID = 15 / N = .013 / L = 26 / JLC = .9

DNLN = 11

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	26.94	5.49	26.48	4.47	27.25	14.45	3.06	0.41

UPSTRM	27.20	5.49	26.74	4.47	27.51	14.45	2.8	0.41

Drainage area (ac) =	0.45	Slope of invert (%)	= 1.0000
Runoff coefficient =	0.40	Slope energy grade line (%)	= 1.0000
Time of conc (min) =	21.02	Critical depth (in)	= 6.48
Inlet time (min) =	10.00	Natural ground elevation	= 30.79
Intensity (in/hr) =	4.23	Upstream surcharge (ft)	= 0.00
Cumulative C*A =	0.43	Additional Q (cfs)	= 0.00
Q = CA * I (cfs) =	1.82	Line capacity (cfs)	= 6.46

Q catchment (cfs) =	1.03	Inlet length (ft)	= 0.00
Q carryover (cfs) =	1.08	Gutter slope (ft/ft)	= 0.0000
Q captured (cfs) =	0.00	Cross slope (ft/ft)	= 0.0000
Q bypassed (cfs) =	2.11	Ponding width (ft)	= N/A
		Note: Normal depth assumed	

Rainfall file: JCCN (10 Yr) 1-22 to 1-21

LINE 22 / Q = 1.1 / HT = 12 / WID = 12 / N = .013 / L = 152 / JLC = .9

DNLN = 21

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	27.48	8.85	26.74	1.74	27.52	10.30	3.05	0.62
UPSTRM	28.09	5.29	27.50	3.24	28.25	11.92	2	0.33

Drainage area (ac) =	1.00	Slope of invert (%)	= 0.5000
Runoff coefficient =	0.25	Slope energy grade line (%)	= 0.4781
Time of conc (min) =	20.00	Critical depth (in)	= 5.29
Inlet time (min) =	20.00	Natural ground elevation	= 30.50
Intensity (in/hr) =	4.33	Upstream surcharge (ft)	= 0.00
Cumulative C*A =	0.25	Additional Q (cfs)	= 0.00
Q = CA * I (cfs) =	1.08	Line capacity (cfs)	= 2.52

Q catchment (cfs) =	1.08	Inlet length (ft)	= 0.00
Q carryover (cfs) =	0.00	Gutter slope (ft/ft)	= 0.0000
Q captured (cfs) =	0.00	Cross slope (ft/ft)	= 0.0000
Q bypassed (cfs) =	1.08	Ponding width (ft)	= N/A

Rainfall file: JCCN (10 Yr) 1-23 to 1-10

LINE 23 / Q = 1.5 / HT = 15 / WID = 15 / N = .013 / L = 26 / JLC = .9

DNLN = 10

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	25.99	4.96	25.58	4.20	26.27	14.11	2.93	0.35
UPSTRM	26.25	4.96	25.84	4.20	26.53	14.11	2.67	0.35

Drainage area (ac) =	0.38	Slope of invert (%)	= 1.0000
Runoff coefficient =	0.40	Slope energy grade line (%)	= 1.0000
Time of conc (min) =	21.11	Critical depth (in)	= 5.86
Inlet time (min) =	10.00	Natural ground elevation	= 29.76

```
Intensity (in/hr)  =   4.23        Upstream surcharge (ft)     =   0.00
Cumulative C*A     =   0.35        Additional Q (cfs)          =   0.00
Q = CA * I (cfs)   =   1.49        Line capacity (cfs)         =   6.46
-----------------------------------------------------------------------
-
Q catchment (cfs)  =   0.87        Inlet length (ft)           =   0.00
Q carryover (cfs)  =   0.87        Gutter slope (ft/ft)        = 0.0000
Q captured (cfs)   =   0.00        Cross slope (ft/ft)         = 0.0000
Q bypassed (cfs)   =   1.74        Ponding width (ft)          =    N/A
                                   Note: Normal depth assumed
-----------------------------------------------------------------------
-
Rainfall file: JCCN  ( 10 Yr)                              1-24 to 1-23

LINE 24 / Q =   0.9 / HT = 12 / WID = 12 / N = .013 / L = 152 / JLC =
.9
-----------------------------------------------------------------------
-
DNLN = 23
          HGL    DEPTH  INVERT   VEL    EGL     T WID   COVER    AREA

DNSTRM   26.50    7.92   25.84   1.58   26.54    9.75   2.92     0.55
UPSTRM   28.02    4.74   27.50   3.01   28.16   11.73   2        0.29

Drainage area (ac) =   0.80        Slope of invert (%)         = 1.0921
Runoff coefficient =   0.25        Slope energy grade line (%) = 1.0677
Time of conc (min) =  20.00        Critical depth (in)         =   4.74
Inlet time (min)   =  20.00        Natural ground elevation    =  30.50
Intensity (in/hr)  =   4.33        Upstream surcharge (ft)     =   0.00
Cumulative C*A     =   0.20        Additional Q (cfs)          =   0.00
Q = CA * I (cfs)   =   0.87        Line capacity (cfs)         =   3.72
-----------------------------------------------------------------------
-
Q catchment (cfs)  =   0.87        Inlet length (ft)           =   0.00
Q carryover (cfs)  =   0.00        Gutter slope (ft/ft)        = 0.0000
Q captured (cfs)   =   0.00        Cross slope (ft/ft)         = 0.0000
Q bypassed (cfs)   =   0.87        Ponding width (ft)          =    N/A

-----------------------------------------------------------------------
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Rainfall file: JCCN  ( 10 Yr)                              1-25 to 1-5

LINE 25 / Q =   1.8 / HT = 15 / WID = 15 / N = .013 / L = 21 / JLC = .9
-----------------------------------------------------------------------
-
DNLN = 5
          HGL    DEPTH  INVERT   VEL    EGL     T WID   COVER    AREA

DNSTRM   24.33   10.03   23.49   2.11   24.39   12.26   3.76     0.87
UPSTRM   24.37    6.51   23.83   3.60   24.57   14.87   3.21     0.51

Drainage area (ac) =   0.11        Slope of invert (%)         = 1.6190
Runoff coefficient =   0.40        Slope energy grade line (%) = 0.8540
Time of conc (min) =  10.58        Critical depth (in)         =   6.51
Inlet time (min)   =   5.00        Natural ground elevation    =  28.30
Intensity (in/hr)  =   5.61        Upstream surcharge (ft)     =   0.00
Cumulative C*A     =   0.33        Additional Q (cfs)          =   0.00
Q = CA * I (cfs)   =   1.84        Line capacity (cfs)         =   8.22
-----------------------------------------------------------------------
-
Q catchment (cfs)  =   0.31        Inlet length (ft)           =   0.00
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Q carryover (cfs)  =   1.63        Gutter slope (ft/ft)        = 0.0000
Q captured (cfs)   =   0.00        Cross slope (ft/ft)         = 0.0000
Q bypassed (cfs)   =   1.93        Ponding width (ft)          =    N/A

-----------------------------------------------------------------------
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Rainfall file: JCCN  ( 10 Yr)                              1-26  to 1-25

LINE 26 / Q =   1.6 / HT = 15 / WID = 15 / N = .013 / L = 67 / JLC = 0
-----------------------------------------------------------------------
-
DNLN = 25
          HGL    DEPTH  INVERT    VEL    EGL     T WID   COVER    AREA

DNSTRM   24.55    8.69   23.83    2.19   24.63   11.42   3.21     0.74
UPSTRM   24.89    6.10   24.38    3.45   25.07   14.74   3        0.47

Drainage area (ac) =   0.32        Slope of invert (%)         = 0.8209
Runoff coefficient =   0.40        Slope energy grade line (%) = 0.6629
Time of conc (min) =  10.18        Critical depth (in)         =   6.10
Inlet time (min)   =  10.00        Natural ground elevation    =  28.63
Intensity (in/hr)  =   5.69        Upstream surcharge (ft)     =   0.00
Cumulative C*A     =   0.28        Additional Q (cfs)          =   0.00
Q = CA * I (cfs)   =   1.62        Line capacity (cfs)         =   5.85
-----------------------------------------------------------------------
-
Q catchment (cfs)  =   0.73        Inlet length (ft)           =   0.00
Q carryover (cfs)  =   0.89        Gutter slope (ft/ft)        = 0.0000
Q captured (cfs)   =   0.00        Cross slope (ft/ft)         = 0.0000
Q bypassed (cfs)   =   1.63        Ponding width (ft)          =    N/A

-----------------------------------------------------------------------
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Rainfall file: JCCN  ( 10 Yr)                              1-27 to 1-2

LINE 27 / Q =  10.9 / HT = 24 / WID = 24 / N = .013 / L = 110 / JLC = 0
-----------------------------------------------------------------------
-
DNLN = 2
          HGL    DEPTH  INVERT    VEL    EGL     T WID   COVER    AREA

DNSTRM   22.37   22.32   20.51    3.59   22.57   23.15   8.22     3.05
UPSTRM   22.56   19.37   20.95    4.02   22.81   18.95   8.34     2.72

Drainage area (ac) =   0.00        Slope of invert (%)         = 0.4000
Runoff coefficient =   0.00        Slope energy grade line (%) = 0.2227
Time of conc (min) =  17.35        Critical depth (in)         =  14.04
Inlet time (min)   =   0.00        Natural ground elevation    =  31.30
Intensity (in/hr)  =   4.62        Upstream surcharge (ft)     =   0.00
Cumulative C*A     =   2.37        Additional Q (cfs)          =   0.00
Q = CA * I (cfs)   =  10.92        Line capacity (cfs)         =  14.30
-----------------------------------------------------------------------
-
Q catchment (cfs)  =   0.00        Inlet length (ft)           =   0.00
Q carryover (cfs)  =  13.16        Gutter slope (ft/ft)        = 0.0000
Q captured (cfs)   =   0.00        Cross slope (ft/ft)         = 0.0000
Q bypassed (cfs)   =  13.16        Ponding width (ft)          =    N/A

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Rainfall file: JCCN  ( 10 Yr)                              1-28  to 1-27
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LINE 28 / Q = 11.1 / HT = 24 / WID = 24 / N = .013 / L = 207 / JLC = .9

DNLN = 27

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	22.56	19.37	20.95	4.09	22.82	21.56	8.34	2.72
UPSTRM	23.16	14.28	21.97	5.70	23.67	23.56	6.35	1.95

Drainage area (ac) =	0.21	Slope of invert (%)	= 0.4928
Runoff coefficient =	0.40	Slope energy grade line (%)	= 0.4066
Time of conc (min) =	16.64	Critical depth (in)	= 14.17
Inlet time (min) =	10.00	Natural ground elevation	= 30.32
Intensity (in/hr) =	4.70	Upstream surcharge (ft)	= 0.00
Cumulative C*A =	2.37	Additional Q (cfs)	= 0.00
Q = CA * I (cfs) =	11.12	Line capacity (cfs)	= 15.88

Q catchment (cfs) =	0.48	Inlet length (ft)	= 0.00
Q carryover (cfs) =	12.68	Gutter slope (ft/ft)	= 0.0000
Q captured (cfs) =	0.00	Cross slope (ft/ft)	= 0.0000
Q bypassed (cfs) =	13.16	Ponding width (ft)	= N/A

Rainfall file: JCCN (10 Yr) 1-29 to 1-28

LINE 29 / Q = 9.6 / HT = 24 / WID = 24 / N = .013 / L = 64 / JLC = 0

DNLN = 28

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	23.61	19.74	21.97	3.46	23.80	21.77	6.35	2.76
UPSTRM	24.00	13.14	22.91	5.43	24.46	23.89	5.25	1.76

Drainage area (ac) =	0.59	Slope of invert (%)	= 1.4688
Runoff coefficient =	0.40	Slope energy grade line (%)	= 1.0347
Time of conc (min) =	16.40	Critical depth (in)	= 13.14
Inlet time (min) =	10.00	Natural ground elevation	= 30.16
Intensity (in/hr) =	4.73	Upstream surcharge (ft)	= 0.00
Cumulative C*A =	2.02	Additional Q (cfs)	= 0.00
Q = CA * I (cfs) =	9.56	Line capacity (cfs)	= 27.41

Q catchment (cfs) =	1.35	Inlet length (ft)	= 0.00
Q carryover (cfs) =	9.84	Gutter slope (ft/ft)	= 0.0000
Q captured (cfs) =	0.00	Cross slope (ft/ft)	= 0.0000
Q bypassed (cfs) =	11.19	Ponding width (ft)	= N/A

Rainfall file: JCCN (10 Yr) 1-30 to 1-29

LINE 30 / Q = 7.7 / HT = 24 / WID = 24 / N = .013 / L = 30 / JLC = .9

DNLN = 29

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA

DNSTRM	24.00	15.18	22.74	3.67	24.21	19.09	5.42	2.09
UPSTRM	23.99	12.86	22.92	4.49	24.30	23.94	5.29	1.71

Drainage area (ac) =	0.39	Slope of invert (%)	= 0.6000
Runoff coefficient =	0.40	Slope energy grade line (%)	= 0.3007
Time of conc (min) =	16.28	Critical depth (in)	= 11.78
Inlet time (min) =	10.00	Natural ground elevation	= 30.22
Intensity (in/hr) =	4.75	Upstream surcharge (ft)	= 0.00
Cumulative C*A =	1.62	Additional Q (cfs)	= 0.00
Q = CA * I (cfs) =	7.69	Line capacity (cfs)	= 17.52

Q catchment (cfs) =	0.89	Inlet length (ft)	= 0.00
Q carryover (cfs) =	8.01	Gutter slope (ft/ft)	= 0.0000
Q captured (cfs) =	0.00	Cross slope (ft/ft)	= 0.0000
Q bypassed (cfs) =	8.90	Ponding width (ft)	= N/A

Rainfall file: JCCN (10 Yr) 1-31 to 1-30

LINE 31 / Q = 7.0 / HT = 18 / WID = 18 / N = .013 / L = 75 / JLC = .9

DNLN = 30

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	24.27	16.24	22.92	4.18	24.54	17.10	5.79	1.68
UPSTRM	24.60	17.73	23.12	3.98	24.84	4.39	5.97	1.76

Drainage area (ac) =	0.35	Slope of invert (%)	= 0.2667
Runoff coefficient =	0.40	Slope energy grade line (%)	= 0.3987
Time of conc (min) =	15.97	Critical depth (in)	= 12.12
Inlet time (min) =	10.00	Natural ground elevation	= 30.60
Intensity (in/hr) =	4.78	Upstream surcharge (ft)	= 0.00
Cumulative C*A =	1.46	Additional Q (cfs)	= 0.00
Q = CA * I (cfs) =	7.01	Line capacity (cfs)	= 5.42

Q catchment (cfs) =	0.80	Inlet length (ft)	= 0.00
Q carryover (cfs) =	7.21	Gutter slope (ft/ft)	= 0.0000
Q captured (cfs) =	0.00	Cross slope (ft/ft)	= 0.0000
Q bypassed (cfs) =	8.01	Ponding width (ft)	= N/A

Rainfall file: JCCN (10 Yr) 1-32 to 1-31

LINE 32 / Q = 5.8 / HT = 18 / WID = 18 / N = .013 / L = 68 / JLC = .9

DNLN = 31

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	24.82	18.00	23.12	3.29	24.99	0.00	5.97	1.77
UPSTRM	25.03	18.00	23.14	3.29	25.20	0.00	6.36	1.77

Drainage area (ac) =	0.26	Slope of invert (%)	= 0.0294
Runoff coefficient =	0.40	Slope energy grade line (%)	= 0.3070
Time of conc (min) =	15.63	Critical depth (in)	= 11.04

Inlet time (min)	=	10.00	Natural ground elevation	=	31.00
Intensity (in/hr)	=	4.83	Upstream surcharge (ft)	=	0.39
Cumulative C*A	=	1.20	Additional Q (cfs)	=	0.00
Q = CA * I (cfs)	=	5.82	Line capacity (cfs)	=	1.80

Q catchment (cfs)	=	0.60	Inlet length (ft)	=	0.00
Q carryover (cfs)	=	5.92	Gutter slope (ft/ft)	=	0.0000
Q captured (cfs)	=	0.00	Cross slope (ft/ft)	=	0.0000
Q bypassed (cfs)	=	6.52	Ponding width (ft)	=	N/A

Rainfall file: JCCN (10 Yr) 1-33 to 1-32

LINE 33 / Q = 3.7 / HT = 15 / WID = 15 / N = .013 / L = 35 / JLC = .9

DNLN = 32

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	25.18	15.00	23.14	3.05	25.32	0.00	6.61	1.23
UPSTRM	27.40	9.29	26.63	4.69	27.75	14.56	2.66	0.80

Drainage area (ac)	=	0.77	Slope of invert (%)	=	9.9714
Runoff coefficient	=	0.40	Slope energy grade line (%)	=	6.9221
Time of conc (min)	=	15.48	Critical depth (in)	=	9.29
Inlet time (min)	=	10.00	Natural ground elevation	=	30.54
Intensity (in/hr)	=	4.85	Upstream surcharge (ft)	=	0.00
Cumulative C*A	=	0.77	Additional Q (cfs)	=	0.00
Q = CA * I (cfs)	=	3.75	Line capacity (cfs)	=	20.39

Q catchment (cfs)	=	1.76	Inlet length (ft)	=	0.00
Q carryover (cfs)	=	2.28	Gutter slope (ft/ft)	=	0.0000
Q captured (cfs)	=	0.00	Cross slope (ft/ft)	=	0.0000
Q bypassed (cfs)	=	4.05	Ponding width (ft)	=	N/A

Rainfall file: JCCN (10 Yr) 1-34 to 1-33

LINE 34 / Q = 2.3 / HT = 15 / WID = 15 / N = .013 / L = 85 / JLC = .5

DNLN = 33

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	27.71	12.99	26.63	2.02	27.78	13.96	2.66	1.13
UPSTRM	30.37	7.26	29.65	3.88	30.61	14.99	1.6	0.59

Drainage area (ac)	=	1.55	Slope of invert (%)	=	3.5529
Runoff coefficient	=	0.30	Slope energy grade line (%)	=	3.3296
Time of conc (min)	=	15.00	Critical depth (in)	=	7.26
Inlet time (min)	=	15.00	Natural ground elevation	=	32.50
Intensity (in/hr)	=	4.91	Upstream surcharge (ft)	=	0.00
Cumulative C*A	=	0.47	Additional Q (cfs)	=	0.00
Q = CA * I (cfs)	=	2.28	Line capacity (cfs)	=	12.17

Q catchment (cfs)	=	2.28	Inlet length (ft)	=	0.00

Q carryover (cfs)	= 0.00	Gutter slope (ft/ft)	= 0.0000
Q captured (cfs)	= 0.00	Cross slope (ft/ft)	= 0.0000
Q bypassed (cfs)	= 2.28	Ponding width (ft)	= N/A

Rainfall file: JCCN (10 Yr) 1-35 to 1-32

LINE 35 / Q = 1.9 / HT = 15 / WID = 15 / N = .013 / L = 94 / JLC = .9

DNLN = 32

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	25.18	15.00	23.14	1.53	25.22	0.00	6.61	1.23
UPSTRM	25.29	15.00	23.81	1.53	25.33	0.00	5.62	1.23

Drainage area (ac)	= 0.82	Slope of invert (%)	= 0.7128
Runoff coefficient	= 0.40	Slope energy grade line (%)	= 0.1194
Time of conc (min)	= 10.00	Critical depth (in)	= 6.58
Inlet time (min)	= 10.00	Natural ground elevation	= 30.68
Intensity (in/hr)	= 5.72	Upstream surcharge (ft)	= 0.23
Cumulative C*A	= 0.33	Additional Q (cfs)	= 0.00
Q = CA * I (cfs)	= 1.88	Line capacity (cfs)	= 5.45

Q catchment (cfs)	= 1.88	Inlet length (ft)	= 0.00
Q carryover (cfs)	= 0.00	Gutter slope (ft/ft)	= 0.0000
Q captured (cfs)	= 0.00	Cross slope (ft/ft)	= 0.0000
Q bypassed (cfs)	= 1.88	Ponding width (ft)	= N/A

Rainfall file: JCCN (10 Yr) 1-36 to 1-28

LINE 36 / Q = 1.5 / HT = 15 / WID = 15 / N = .013 / L = 26 / JLC = .9

DNLN = 28

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	25.89	5.31	25.45	3.82	26.12	14.35	3.61	0.39
UPSTRM	26.30	5.31	25.65	3.82	26.52	14.35	3.42	0.39

Drainage area (ac)	= 0.65	Slope of invert (%)	= 0.7692
Runoff coefficient	= 0.40	Slope energy grade line (%)	= 1.5556
Time of conc (min)	= 10.00	Critical depth (in)	= 5.86
Inlet time (min)	= 10.00	Natural ground elevation	= 30.32
Intensity (in/hr)	= 5.72	Upstream surcharge (ft)	= 0.00
Cumulative C*A	= 0.26	Additional Q (cfs)	= 0.00
Q = CA * I (cfs)	= 1.49	Line capacity (cfs)	= 5.66

Q catchment (cfs)	= 1.49	Inlet length (ft)	= 0.00
Q carryover (cfs)	= 0.00	Gutter slope (ft/ft)	= 0.0000
Q captured (cfs)	= 0.00	Cross slope (ft/ft)	= 0.0000
Q bypassed (cfs)	= 1.49	Ponding width (ft)	= N/A
		Note: Normal depth assumed	

Rainfall file: JCCN (10 Yr) 1-37 to 1-3

LINE 37 / Q = 2.7 / HT = 15 / WID = 15 / N = .013 / L = 132 / JLC = 0

DNLN = 3

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	26.37	6.78	25.80	4.93	26.74	14.93	4.3	0.54
UPSTRM	27.67	6.78	27.10	4.93	28.04	14.93	2.94	0.54

Drainage area (ac) =	0.10	Slope of invert (%)	= 0.9848
Runoff coefficient =	0.40	Slope energy grade line (%)	= 0.9848
Time of conc (min) =	12.83	Critical depth (in)	= 7.82
Inlet time (min) =	5.00	Natural ground elevation	= 31.30
Intensity (in/hr) =	5.23	Upstream surcharge (ft)	= 0.00
Cumulative C*A =	0.51	Additional Q (cfs)	= 0.00
Q = CA * I (cfs) =	2.66	Line capacity (cfs)	= 6.41

Q catchment (cfs) =	0.28	Inlet length (ft)	= 0.00
Q carryover (cfs) =	2.68	Gutter slope (ft/ft)	= 0.0000
Q captured (cfs) =	0.00	Cross slope (ft/ft)	= 0.0000
Q bypassed (cfs) =	2.96	Ponding width (ft)	= N/A
		Note: Normal depth assumed	

Rainfall file: JCCN (10 Yr) 1-43 to 1-37

LINE 38 / Q = 2.5 / HT = 12 / WID = 12 / N = .013 / L = 83 / JLC = 1

DNLN = 37

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	27.77	8.00	27.10	4.44	28.07	9.80	3.19	0.56
UPSTRM	28.40	9.63	27.60	3.66	28.61	9.56	2.39	0.68

Drainage area (ac) =	0.28	Slope of invert (%)	= 0.6024
Runoff coefficient =	0.40	Slope energy grade line (%)	= 0.6470
Time of conc (min) =	12.49	Critical depth (in)	= 8.00
Inlet time (min) =	10.00	Natural ground elevation	= 31.00
Intensity (in/hr) =	5.28	Upstream surcharge (ft)	= 0.00
Cumulative C*A =	0.47	Additional Q (cfs)	= 0.00
Q = CA * I (cfs) =	2.47	Line capacity (cfs)	= 2.76

Q catchment (cfs) =	0.64	Inlet length (ft)	= 0.00
Q carryover (cfs) =	2.04	Gutter slope (ft/ft)	= 0.0000
Q captured (cfs) =	0.00	Cross slope (ft/ft)	= 0.0000
Q bypassed (cfs) =	2.68	Ponding width (ft)	= N/A

Rainfall file: JCCN (10 Yr) 1-44 to 1-43

LINE 39 / Q = 1.9 / HT = 12 / WID = 12 / N = .013 / L = 150 / JLC = 1

DNLN = 38

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA

DNSTRM	28.61	12.00	27.60	2.46	28.70	0.00	2.39	0.79
UPSTRM	29.08	8.17	28.40	3.39	29.26	11.19	2.6	0.57

Drainage area (ac) =	0.62	Slope of invert (%)	= 0.5333
Runoff coefficient =	0.40	Slope energy grade line (%)	= 0.3700
Time of conc (min) =	11.63	Critical depth (in)	= 7.07
Inlet time (min) =	10.00	Natural ground elevation	= 32.00
Intensity (in/hr) =	5.42	Upstream surcharge (ft)	= 0.00
Cumulative C*A =	0.36	Additional Q (cfs)	= 0.00
Q = CA * I (cfs) =	1.93	Line capacity (cfs)	= 2.60

Q catchment (cfs) =	1.42	Inlet length (ft)	= 0.00
Q carryover (cfs) =	0.62	Gutter slope (ft/ft)	= 0.0000
Q captured (cfs) =	0.00	Cross slope (ft/ft)	= 0.0000
Q bypassed (cfs) =	2.04	Ponding width (ft)	= N/A

Rainfall file: JCCN (10 Yr) 1-45 to 1-44

LINE 40 / Q = 0.6 / HT = 12 / WID = 12 / N = .013 / L = 172 / JLC = 1

DNLN = 39

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	29.26	10.31	28.40	0.86	29.27	11.12	2.6	0.72
UPSTRM	29.75	4.06	29.30	2.65	29.86	11.35	1.7	0.23

Drainage area (ac) =	0.27	Slope of invert (%)	= 0.5233
Runoff coefficient =	0.40	Slope energy grade line (%)	= 0.3400
Time of conc (min) =	10.00	Critical depth (in)	= 4.00
Inlet time (min) =	10.00	Natural ground elevation	= 32.00
Intensity (in/hr) =	5.72	Upstream surcharge (ft)	= 0.00
Cumulative C*A =	0.11	Additional Q (cfs)	= 0.00
Q = CA * I (cfs) =	0.62	Line capacity (cfs)	= 2.58

Q catchment (cfs) =	0.62	Inlet length (ft)	= 0.00
Q carryover (cfs) =	0.00	Gutter slope (ft/ft)	= 0.0000
Q captured (cfs) =	0.00	Cross slope (ft/ft)	= 0.0000
Q bypassed (cfs) =	0.62	Ponding width (ft)	= N/A

Rainfall file: JCCN (10 Yr) 1-38 to 1-5

LINE 41 / Q = 1.2 / HT = 15 / WID = 15 / N = .013 / L = 44 / JLC = .9

DNLN = 5

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	24.33	10.03	23.49	1.37	24.35	12.26	3.76	0.87
UPSTRM	24.60	5.24	24.03	3.12	24.75	14.30	2.81	0.38

Drainage area (ac) =	0.52	Slope of invert (%)	= 1.2273
Runoff coefficient =	0.40	Slope energy grade line (%)	= 0.9069
Time of conc (min) =	10.00	Critical depth (in)	= 5.24
Inlet time (min) =	10.00	Natural ground elevation	= 28.10

Intensity (in/hr)	=	5.72	Upstream surcharge (ft)	=	0.00
Cumulative C*A	=	0.21	Additional Q (cfs)	=	0.00
Q = CA * I (cfs)	=	1.19	Line capacity (cfs)	=	7.15

Q catchment (cfs)	=	1.19	Inlet length (ft)	=	0.00
Q carryover (cfs)	=	0.00	Gutter slope (ft/ft)	=	0.0000
Q captured (cfs)	=	0.00	Cross slope (ft/ft)	=	0.0000
Q bypassed (cfs)	=	1.19	Ponding width (ft)	=	N/A

Rainfall file: JCCN (10 Yr) 1-39 to 1-9

LINE 42 / Q = 0.9 / HT = 15 / WID = 15 / N = .013 / L = 26 / JLC = .9

DNLN = 9

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	24.83	15.00	23.22	0.71	24.84	0.00	4.14	1.23
UPSTRM	25.18	4.48	24.69	2.83	25.30	13.73	2.67	0.31

Drainage area (ac)	=	0.38	Slope of invert (%)	=	5.6539
Runoff coefficient	=	0.40	Slope energy grade line (%)	=	1.7736
Time of conc (min)	=	10.00	Critical depth (in)	=	4.48
Inlet time (min)	=	10.00	Natural ground elevation	=	28.61
Intensity (in/hr)	=	5.72	Upstream surcharge (ft)	=	0.00
Cumulative C*A	=	0.15	Additional Q (cfs)	=	0.00
Q = CA * I (cfs)	=	0.87	Line capacity (cfs)	=	15.35

Q catchment (cfs)	=	0.87	Inlet length (ft)	=	0.00
Q carryover (cfs)	=	0.00	Gutter slope (ft/ft)	=	0.0000
Q captured (cfs)	=	0.00	Cross slope (ft/ft)	=	0.0000
Q bypassed (cfs)	=	0.87	Ponding width (ft)	=	N/A

Rainfall file: JCCN (10 Yr) 1-40 to 1-29

LINE 43 / Q = 0.9 / HT = 15 / WID = 15 / N = .013 / L = 26 / JLC = .9

DNLN = 29

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	25.45	3.14	25.19	5.04	25.85	12.20	3.71	0.19
UPSTRM	26.49	3.14	25.87	5.04	26.88	12.20	3.03	0.19

Drainage area (ac)	=	0.41	Slope of invert (%)	=	2.6154
Runoff coefficient	=	0.40	Slope energy grade line (%)	=	3.9808
Time of conc (min)	=	10.00	Critical depth (in)	=	4.65
Inlet time (min)	=	10.00	Natural ground elevation	=	30.16
Intensity (in/hr)	=	5.72	Upstream surcharge (ft)	=	0.00
Cumulative C*A	=	0.16	Additional Q (cfs)	=	0.00
Q = CA * I (cfs)	=	0.94	Line capacity (cfs)	=	10.44

Q catchment (cfs)	=	0.94	Inlet length (ft)	=	0.00
Q carryover (cfs)	=	0.00	Gutter slope (ft/ft)	=	0.0000

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Q captured (cfs)   =   0.00        Cross slope (ft/ft)          = 0.0000
Q bypassed (cfs)   =   0.94        Ponding width (ft)           =    N/A
                                   Note: Normal depth assumed
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Rainfall file: JCCN  ( 10 Yr)                              1-41 to 1-31

LINE 44 / Q =   0.7 / HT = 15 / WID = 15 / N = .013 / L = 26 / JLC = .9
-----------------------------------------------------------------------
-
DNLN = 31
           HGL    DEPTH  INVERT    VEL    EGL     T WID   COVER    AREA

DNSTRM    24.82    5.38   24.37    1.74   24.87    8.98   4.97     0.40
UPSTRM    25.21    3.98   24.78    2.63   25.32   13.24   4.56     0.26

Drainage area (ac) =   0.30        Slope of invert (%)          = 1.5769
Runoff coefficient =   0.40        Slope energy grade line (%) = 1.7348
Time of conc (min) =  10.00        Critical depth (in)          =   3.98
Inlet time (min)   =  10.00        Natural ground elevation     =  30.60
Intensity (in/hr)  =   5.72        Upstream surcharge (ft)      =   0.00
Cumulative C*A     =   0.12        Additional Q (cfs)           =   0.00
Q = CA * I (cfs)   =   0.69        Line capacity (cfs)          =   8.11
-----------------------------------------------------------------------
-
Q catchment (cfs)  =   0.69        Inlet length (ft)            =   0.00
Q carryover (cfs)  =   0.00        Gutter slope (ft/ft)         = 0.0000
Q captured (cfs)   =   0.00        Cross slope (ft/ft)          = 0.0000
Q bypassed (cfs)   =   0.69        Ponding width (ft)           =    N/A

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-
Rainfall file: JCCN  ( 10 Yr)                              1-42 to 1-26

LINE 45 / Q =   0.9 / HT = 15 / WID = 15 / N = .013 / L = 26 / JLC = .9
-----------------------------------------------------------------------
-
DNLN = 26
           HGL    DEPTH  INVERT    VEL    EGL     T WID   COVER    AREA

DNSTRM    24.89    6.10   24.38    1.90   24.94    9.57   3        0.47
UPSTRM    25.05    4.61   24.56    2.79   25.17   13.84   2.81     0.32

Drainage area (ac) =   0.39        Slope of invert (%)          = 0.6923
Runoff coefficient =   0.40        Slope energy grade line (%) = 0.4618
Time of conc (min) =  10.00        Critical depth (in)          =   4.54
Inlet time (min)   =  10.00        Natural ground elevation     =  28.63
Intensity (in/hr)  =   5.72        Upstream surcharge (ft)      =   0.00
Cumulative C*A     =   0.16        Additional Q (cfs)           =   0.00
Q = CA * I (cfs)   =   0.89        Line capacity (cfs)          =   5.37
-----------------------------------------------------------------------
-
Q catchment (cfs)  =   0.89        Inlet length (ft)            =   0.00
Q carryover (cfs)  =   0.00        Gutter slope (ft/ft)         = 0.0000
Q captured (cfs)   =   0.00        Cross slope (ft/ft)          = 0.0000
Q bypassed (cfs)   =   0.89        Ponding width (ft)           =    N/A

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RIM = 28.56

SYSTEM 2

AS BUILT DWGS

Rainfall file: JCCN (10 Yr) 2-0 - 2-1

LINE 1 / Q = 19.3 / HT = 30 / WID = 30 / N = .013 / L = 46 / JLC = 1

OUTFALL

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	23.59	30.00	20.71	3.93	23.83	0.00	-2.2	4.91
UPSTRM	23.69	30.00	20.53	3.93	23.93	0.00	1.96	4.91

RIM = 25.23

Drainage area (ac) =	0.00	Slope of invert (%)	=-0.3913
Runoff coefficient =	0.00	Slope energy grade line (%)	= 0.2214
Time of conc (min) =	24.17	Critical depth (in)	= 17.61
Inlet time (min) =	0.00	Natural ground elevation	= 25.00
Intensity (in/hr) =	3.96	Upstream surcharge (ft)	= 0.66
Cumulative C*A =	4.87	Additional Q (cfs)	= 0.00
Q = CA * I (cfs) =	19.29	Line capacity (cfs)	= 0.00

Q catchment (cfs) =	0.00	Inlet length (ft)	= 0.00
Q carryover (cfs) =	17.87	Gutter slope (ft/ft)	= 0.0000
Q captured (cfs) =	0.00	Cross slope (ft/ft)	= 0.0000
Q bypassed (cfs) =	17.87	Ponding width (ft)	= N/A

Rainfall file: JCCN (10 Yr) 2-1 - 2-2

LINE 2 / Q = 19.6 / HT = 30 / WID = 30 / N = .013 / L = 158 / JLC = 1

DNLN = 1

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	23.93	30.00	20.53	3.98	24.18	0.00	1.96	4.91
UPSTRM	24.27	29.25	21.83	4.01	24.52	9.37	5.85	4.88

RIM = 30.23

Drainage area (ac) =	0.18	Slope of invert (%)	= 0.8228
Runoff coefficient =	0.40	Slope energy grade line (%)	= 0.2144
Time of conc (min) =	23.51	Critical depth (in)	= 17.73
Inlet time (min) =	5.00	Natural ground elevation	= 30.18
Intensity (in/hr) =	4.01	Upstream surcharge (ft)	= 0.00
Cumulative C*A =	4.87	Additional Q (cfs)	= 0.00
Q = CA * I (cfs) =	19.55	Line capacity (cfs)	= 37.20

Q catchment (cfs) =	0.50	Inlet length (ft)	= 4.00
Q carryover (cfs) =	18.50	Gutter slope (ft/ft)	= 0.0833
Q captured (cfs) =	1.13	Cross slope (ft/ft)	= 0.0208
Q bypassed (cfs) =	17.87	Ponding width (ft)	= N/A

Rainfall file: JCCN (10 Yr) 2-2 - 2-3

LINE 3 / Q = 19.0 / HT = 30 / WID = 30 / N = .013 / L = 118 / JLC = 1

DNLN = 2

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA

DNSTRM	24.52	30.00	21.83	3.86	24.75	0.00	5.85	4.91
UPSTRM	24.77	30.00	22.12	3.86	25.00	0.00	5.06	4.91

Drainage area (ac) =	0.28	Slope of invert (%) =	0.2458
Runoff coefficient =	0.40	Slope energy grade line (%) =	0.2139
Time of conc (min) =	23.00	Critical depth (in) =	17.46
Inlet time (min) =	5.00	Natural ground elevation =	29.69
Intensity (in/hr) =	4.06	Upstream surcharge (ft) =	0.15
Cumulative C*A =	4.68	Additional Q (cfs) =	0.00
Q = CA * I (cfs) =	18.97	Line capacity (cfs) =	20.33

Q catchment (cfs) =	0.78	Inlet length (ft) =	6.00
Q carryover (cfs) =	18.74	Gutter slope (ft/ft) =	0.0833
Q captured (cfs) =	1.71	Cross slope (ft/ft) =	0.0208
Q bypassed (cfs) =	17.81	Ponding width (ft) =	N/A

Rainfall file: JCCN (10 Yr) 2-3 - 2-4

LINE 4 / Q = 17.2 / HT = 30 / WID = 30 / N = .013 / L = 165 / JLC = 1

DNLN = 3

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	25.00	30.00	22.12	3.51	25.19	0.00	5.06	4.91
UPSTRM	25.29	30.00	22.52	3.51	25.48	0.00	6.3	4.91

Drainage area (ac) =	0.00	Slope of invert (%) =	0.2424
Runoff coefficient =	0.00	Slope energy grade line (%) =	0.1763
Time of conc (min) =	22.22	Critical depth (in) =	16.64
Inlet time (min) =	0.00	Natural ground elevation =	31.33
Intensity (in/hr) =	4.12	Upstream surcharge (ft) =	0.27
Cumulative C*A =	4.18	Additional Q (cfs) =	0.00
Q = CA * I (cfs) =	17.22	Line capacity (cfs) =	20.19

Q catchment (cfs) =	0.00	Inlet length (ft) =	0.00
Q carryover (cfs) =	16.73	Gutter slope (ft/ft) =	0.0000
Q captured (cfs) =	0.00	Cross slope (ft/ft) =	0.0000
Q bypassed (cfs) =	16.73	Ponding width (ft) =	N/A

Rainfall file: JCCN (10 Yr) 2-4 - 2-5

LINE 5 / Q = 16.9 / HT = 30 / WID = 30 / N = .013 / L = 193 / JLC = 1

DNLN = 4

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	25.48	30.00	22.52	3.45	25.67	0.00	6.3	4.91
UPSTRM	25.81	30.00	23.04	3.45	26.00	0.00	7.45	4.91

Drainage area (ac) =	0.00	Slope of invert (%) =	0.2694
Runoff coefficient =	0.00	Slope energy grade line (%) =	0.1705
Time of conc (min) =	21.29	Critical depth (in) =	16.50

Inlet time (min)	=	0.00	Natural ground elevation	=	33.00
Intensity (in/hr)	=	4.21	Upstream surcharge (ft)	=	0.27
Cumulative C*A	=	4.02	Additional Q (cfs)	=	0.00
Q = CA * I (cfs)	=	16.93	Line capacity (cfs)	=	21.29

Q catchment (cfs)	=	0.00	Inlet length (ft)	=	0.00
Q carryover (cfs)	=	15.87	Gutter slope (ft/ft)	=	0.0000
Q captured (cfs)	=	0.00	Cross slope (ft/ft)	=	0.0000
Q bypassed (cfs)	=	15.87	Ponding width (ft)	=	N/A

Rainfall file: JCCN (10 Yr) 2-5 - 2-6

LINE 6 / Q = 14.9 / HT = 30 / WID = 30 / N = .013 / L = 190 / JLC = 1

DNLN = 5

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	26.00	30.00	23.04	3.04	26.14	0.00	7.45	4.91
UPSTRM	26.18	18.89	24.61	4.58	26.51	28.97	4.98	3.26

Drainage area (ac)	=	0.74	Slope of invert (%)	=	0.8263
Runoff coefficient	=	0.40	Slope energy grade line (%)	=	0.1944
Time of conc (min)	=	20.46	Critical depth (in)	=	15.48
Inlet time (min)	=	5.00	Natural ground elevation	=	32.10
Intensity (in/hr)	=	4.29	Upstream surcharge (ft)	=	0.00
Cumulative C*A	=	3.48	Additional Q (cfs)	=	0.00
Q = CA * I (cfs)	=	14.92	Line capacity (cfs)	=	37.28

Q catchment (cfs)	=	2.06	Inlet length (ft)	=	8.00
Q carryover (cfs)	=	13.42	Gutter slope (ft/ft)	=	0.0833
Q captured (cfs)	=	1.97	Cross slope (ft/ft)	=	0.0208
Q bypassed (cfs)	=	13.51	Ponding width (ft)	=	N/A

Rainfall file: JCCN (10 Yr) 2-6 - 2-7

LINE 7 / Q = 12.3 / HT = 30 / WID = 30 / N = .013 / L = 97 / JLC = 1

DNLN = 6

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	26.51	22.80	24.61	3.07	26.66	26.15	4.98	4.00
UPSTRM	26.59	19.82	24.94	3.57	26.79	28.41	5.24	3.44

Drainage area (ac)	=	0.38	Slope of invert (%)	=	0.3402
Runoff coefficient	=	0.40	Slope energy grade line (%)	=	0.1373
Time of conc (min)	=	19.97	Critical depth (in)	=	14.06
Inlet time (min)	=	5.00	Natural ground elevation	=	32.69
Intensity (in/hr)	=	4.34	Upstream surcharge (ft)	=	0.00
Cumulative C*A	=	2.84	Additional Q (cfs)	=	0.00
Q = CA * I (cfs)	=	12.29	Line capacity (cfs)	=	23.92

Q catchment (cfs)	=	1.06	Inlet length (ft)	=	4.00

Q carryover (cfs)	= 11.30	Gutter slope (ft/ft)	= 0.0833
Q captured (cfs)	= 0.88	Cross slope (ft/ft)	= 0.0208
Q bypassed (cfs)	= 11.49	Ponding width (ft)	= N/A

Rainfall file: JCCN (10 Yr) 2-7 - 2-29

LINE 8 / Q = 0.5 / HT = 12 / WID = 12 / N = .013 / L = 145 / JLC = 1

DNLN = 7

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	26.79	12.00	24.94	0.59	26.80	0.00	6.74	0.79
UPSTRM	30.59	3.48	30.21	2.47	30.69	10.89	2.79	0.19

Drainage area (ac)	= 0.38	Slope of invert (%)	= 3.6345
Runoff coefficient	= 0.25	Slope energy grade line (%)	= 2.6857
Time of conc (min)	= 15.00	Critical depth (in)	= 3.48
Inlet time (min)	= 15.00	Natural ground elevation	= 34.00
Intensity (in/hr)	= 4.91	Upstream surcharge (ft)	= 0.00
Cumulative C*A	= 0.09	Additional Q (cfs)	= 0.00
Q = CA * I (cfs)	= 0.47	Line capacity (cfs)	= 6.79

Q catchment (cfs)	= 0.47	Inlet length (ft)	= 0.00
Q carryover (cfs)	= 0.00	Gutter slope (ft/ft)	= 0.0000
Q captured (cfs)	= 0.00	Cross slope (ft/ft)	= 0.0000
Q bypassed (cfs)	= 0.47	Ponding width (ft)	= N/A

Rainfall file: JCCN (10 Yr) 2-7 - 2-8

LINE 9 / Q = 11.4 / HT = 30 / WID = 30 / N = .013 / L = 105 / JLC = 1

DNLN = 7

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	26.79	22.20	24.94	2.92	26.92	25.80	5.24	3.89
UPSTRM	26.88	21.54	25.08	3.02	27.02	27.00	6.08	3.77

Drainage area (ac)	= 0.00	Slope of invert (%)	= 0.1333
Runoff coefficient	= 0.00	Slope energy grade line (%)	= 0.0897
Time of conc (min)	= 19.38	Critical depth (in)	= 13.52
Inlet time (min)	= 0.00	Natural ground elevation	= 33.67
Intensity (in/hr)	= 4.40	Upstream surcharge (ft)	= 0.00
Cumulative C*A	= 2.59	Additional Q (cfs)	= 0.00
Q = CA * I (cfs)	= 11.38	Line capacity (cfs)	= 14.98

Q catchment (cfs)	= 0.00	Inlet length (ft)	= 0.00
Q carryover (cfs)	= 10.84	Gutter slope (ft/ft)	= 0.0000
Q captured (cfs)	= 0.00	Cross slope (ft/ft)	= 0.0000
Q bypassed (cfs)	= 10.84	Ponding width (ft)	= N/A

Rainfall file: JCCN (10 Yr) 2-8 - 2-9

LINE 10 / Q = 8.1 / HT = 24 / WID = 24 / N = .013 / L = 110 / JLC = 1

DNLN = 9

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	27.02	23.24	25.08	2.59	27.12	23.62	6.58	3.11
UPSTRM	28.92	12.06	27.92	5.10	29.33	24.00	3.62	1.58

Drainage area (ac) =	0.18	Slope of invert (%)	= 2.5818
Runoff coefficient =	0.40	Slope energy grade line (%)	= 2.0070
Time of conc (min) =	18.90	Critical depth (in)	= 12.06
Inlet time (min) =	5.00	Natural ground elevation	= 33.54
Intensity (in/hr) =	4.45	Upstream surcharge (ft)	= 0.00
Cumulative C*A =	1.81	Additional Q (cfs)	= 0.00
Q = CA * I (cfs) =	8.05	Line capacity (cfs)	= 36.34

Q catchment (cfs) =	0.50	Inlet length (ft)	= 4.00
Q carryover (cfs) =	7.43	Gutter slope (ft/ft)	= 0.0833
Q captured (cfs) =	0.68	Cross slope (ft/ft)	= 0.0208
Q bypassed (cfs) =	7.26	Ponding width (ft)	= N/A

Rainfall file: JCCN (10 Yr) 2-9 - 2-10

LINE 11 / Q = 7.4 / HT = 24 / WID = 24 / N = .013 / L = 125 / JLC = 1

DNLN = 10

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	29.33	16.90	27.92	3.12	29.48	20.14	3.62	2.36
UPSTRM	29.50	14.76	28.27	3.64	29.71	23.36	2.77	2.03

Drainage area (ac) =	0.63	Slope of invert (%)	= 0.2800
Runoff coefficient =	0.40	Slope energy grade line (%)	= 0.1811
Time of conc (min) =	18.28	Critical depth (in)	= 11.54
Inlet time (min) =	5.00	Natural ground elevation	= 33.05
Intensity (in/hr) =	4.51	Upstream surcharge (ft)	= 0.00
Cumulative C*A =	1.64	Additional Q (cfs)	= 0.00
Q = CA * I (cfs) =	7.38	Line capacity (cfs)	= 11.97

Q catchment (cfs) =	1.76	Inlet length (ft)	= 8.00
Q carryover (cfs) =	6.46	Gutter slope (ft/ft)	= 0.0833
Q captured (cfs) =	1.35	Cross slope (ft/ft)	= 0.0208
Q bypassed (cfs) =	6.87	Ponding width (ft)	= N/A

Rainfall file: JCCN (10 Yr) 2-28 - 2-10

LINE 12 / Q = 0.3 / HT = 12 / WID = 12 / N = .013 / L = 155 / JLC = 1

DNLN = 11

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA

DNSTRM	29.71	12.00	28.27	0.41	29.71	0.00	3.77	0.79
UPSTRM	32.91	2.87	32.59	2.21	32.98	10.24	1.9	0.14

Drainage area (ac) =	0.26	Slope of invert (%)	= 2.7871
Runoff coefficient =	0.25	Slope energy grade line (%)	= 2.1113
Time of conc (min) =	15.00	Critical depth (in)	= 2.87
Inlet time (min) =	15.00	Natural ground elevation	= 35.50
Intensity (in/hr) =	4.91	Upstream surcharge (ft)	= 0.00
Cumulative C*A =	0.06	Additional Q (cfs)	= 0.00
Q = CA * I (cfs) =	0.32	Line capacity (cfs)	= 5.95

Q catchment (cfs) =	0.32	Inlet length (ft)	= 0.00
Q carryover (cfs) =	0.00	Gutter slope (ft/ft)	= 0.0000
Q captured (cfs) =	0.00	Cross slope (ft/ft)	= 0.0000
Q bypassed (cfs) =	0.32	Ponding width (ft)	= N/A

Rainfall file: JCCN (10 Yr) 2-10 - 2-11

LINE 13 / Q = 4.6 / HT = 18 / WID = 18 / N = .013 / L = 100 / JLC = 0

DNLN = 11

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	29.71	17.23	28.27	2.62	29.81	17.61	3.27	1.74
UPSTRM	30.00	9.78	29.19	4.65	30.34	17.93	2.73	0.98

Drainage area (ac) =	0.36	Slope of invert (%)	= 0.9200
Runoff coefficient =	0.40	Slope energy grade line (%)	= 0.5280
Time of conc (min) =	17.82	Critical depth (in)	= 9.78
Inlet time (min) =	5.00	Natural ground elevation	= 33.43
Intensity (in/hr) =	4.56	Upstream surcharge (ft)	= 0.00
Cumulative C*A =	1.00	Additional Q (cfs)	= 0.00
Q = CA * I (cfs) =	4.56	Line capacity (cfs)	= 10.07

Q catchment (cfs) =	1.00	Inlet length (ft)	= 4.00
Q carryover (cfs) =	4.04	Gutter slope (ft/ft)	= 0.0833
Q captured (cfs) =	0.52	Cross slope (ft/ft)	= 0.0208
Q bypassed (cfs) =	4.53	Ponding width (ft)	= N/A

Rainfall file: JCCN (10 Yr) 2-11 - 2-12

LINE 14 / Q = 1.7 / HT = 15 / WID = 15 / N = .013 / L = 135 / JLC = .8

DNLN = 13

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	30.00	9.78	29.19	1.95	30.06	12.11	2.98	0.85
UPSTRM	30.57	6.17	30.06	3.47	30.76	14.76	2.78	0.48

Drainage area (ac) =	0.75	Slope of invert (%)	= 0.6444
Runoff coefficient =	0.40	Slope energy grade line (%)	= 0.5170
Time of conc (min) =	16.99	Critical depth (in)	= 6.17

Inlet time (min)	=	7.00	Natural ground elevation	=	34.10
Intensity (in/hr)	=	4.66	Upstream surcharge (ft)	=	0.00
Cumulative C*A	=	0.36	Additional Q (cfs)	=	0.00
Q = CA * I (cfs)	=	1.65	Line capacity (cfs)	=	5.18

Q catchment (cfs)	=	1.92	Inlet length (ft)	=	6.00
Q carryover (cfs)	=	0.27	Gutter slope (ft/ft)	=	0.0833
Q captured (cfs)	=	0.47	Cross slope (ft/ft)	=	0.0208
Q bypassed (cfs)	=	1.72	Ponding width (ft)	=	N/A

Rainfall file: JCCN (10 Yr) 2-27 - 2-12

LINE 15 / Q = 0.3 / HT = 12 / WID = 12 / N = .013 / L = 155 / JLC = 1

DNLN = 14

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	30.72	7.97	30.06	0.49	30.73	9.78	3.03	0.55
UPSTRM	32.36	2.64	32.07	2.10	32.43	9.95	2.43	0.13

Drainage area (ac)	=	0.22	Slope of invert (%)	=	1.2968
Runoff coefficient	=	0.25	Slope energy grade line (%)	=	1.0966
Time of conc (min)	=	15.00	Critical depth (in)	=	2.64
Inlet time (min)	=	15.00	Natural ground elevation	=	35.50
Intensity (in/hr)	=	4.91	Upstream surcharge (ft)	=	0.00
Cumulative C*A	=	0.05	Additional Q (cfs)	=	0.00
Q = CA * I (cfs)	=	0.27	Line capacity (cfs)	=	4.06

Q catchment (cfs)	=	0.27	Inlet length (ft)	=	0.00
Q carryover (cfs)	=	0.00	Gutter slope (ft/ft)	=	0.0000
Q captured (cfs)	=	0.00	Cross slope (ft/ft)	=	0.0000
Q bypassed (cfs)	=	0.27	Ponding width (ft)	=	N/A

Rainfall file: JCCN (10 Yr) 2-11 - 2-13

LINE 16 / Q = 2.9 / HT = 15 / WID = 15 / N = .013 / L = 42 / JLC = 0

DNLN = 13

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	30.00	9.78	29.19	3.38	30.18	12.11	2.98	0.85
UPSTRM	30.20	8.12	29.52	4.22	30.47	14.95	2.65	0.68

Drainage area (ac)	=	1.25	Slope of invert (%)	=	0.7857
Runoff coefficient	=	0.40	Slope energy grade line (%)	=	0.6937
Time of conc (min)	=	10.00	Critical depth (in)	=	8.12
Inlet time (min)	=	10.00	Natural ground elevation	=	33.43
Intensity (in/hr)	=	5.72	Upstream surcharge (ft)	=	0.00
Cumulative C*A	=	0.50	Additional Q (cfs)	=	0.00
Q = CA * I (cfs)	=	2.86	Line capacity (cfs)	=	5.72

Q catchment (cfs)	=	2.86	Inlet length (ft)	=	6.00

Q carryover (cfs)	= 0.00	Gutter slope (ft/ft)	= 0.0833
Q captured (cfs)	= 0.55	Cross slope (ft/ft)	= 0.0208
Q bypassed (cfs)	= 2.32	Ponding width (ft)	= N/A

Rainfall file: JCCN (10 Yr) 2-10 - 2-14

LINE 17 / Q = 2.2 / HT = 15 / WID = 15 / N = .013 / L = 42 / JLC = 0

DNLN = 11

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	29.71	15.00	28.27	1.82	29.76	0.00	3.52	1.23
UPSTRM	29.70	7.25	29.10	3.80	29.93	14.99	2.69	0.59

Drainage area (ac)	= 0.80	Slope of invert (%)	= 1.9762
Runoff coefficient	= 0.40	Slope energy grade line (%)	= 0.4067
Time of conc (min)	= 5.00	Critical depth (in)	= 7.17
Inlet time (min)	= 5.00	Natural ground elevation	= 33.05
Intensity (in/hr)	= 6.97	Upstream surcharge (ft)	= 0.00
Cumulative C*A	= 0.32	Additional Q (cfs)	= 0.00
Q = CA * I (cfs)	= 2.23	Line capacity (cfs)	= 9.08

Q catchment (cfs)	= 2.23	Inlet length (ft)	= 8.00
Q carryover (cfs)	= 0.00	Gutter slope (ft/ft)	= 0.0833
Q captured (cfs)	= 0.62	Cross slope (ft/ft)	= 0.0208
Q bypassed (cfs)	= 1.61	Ponding width (ft)	= N/A

Rainfall file: JCCN (10 Yr) 2-9 - 2-15

LINE 18 / Q = 0.7 / HT = 15 / WID = 15 / N = .013 / L = 42 / JLC = 0

DNLN = 10

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	29.33	15.00	27.92	0.59	29.33	0.00	4.37	1.23
UPSTRM	29.73	4.09	29.39	2.68	29.84	13.36	2.9	0.27

Drainage area (ac)	= 0.26	Slope of invert (%)	= 3.5000
Runoff coefficient	= 0.40	Slope energy grade line (%)	= 1.2104
Time of conc (min)	= 5.00	Critical depth (in)	= 4.09
Inlet time (min)	= 5.00	Natural ground elevation	= 33.54
Intensity (in/hr)	= 6.97	Upstream surcharge (ft)	= 0.00
Cumulative C*A	= 0.10	Additional Q (cfs)	= 0.00
Q = CA * I (cfs)	= 0.73	Line capacity (cfs)	= 12.08

Q catchment (cfs)	= 0.73	Inlet length (ft)	= 4.00
Q carryover (cfs)	= 0.00	Gutter slope (ft/ft)	= 0.0833
Q captured (cfs)	= 0.16	Cross slope (ft/ft)	= 0.0208
Q bypassed (cfs)	= 0.56	Ponding width (ft)	= N/A

Rainfall file: JCCN (10 Yr) 2-8 - 2-20

LINE 19 / Q = 4.8 / HT = 14 / WID = 23 / N = .013 / L = 173 / JLC = 1

DNLN = 9

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	27.02	14.00	25.08	2.15	27.09	0.00	7.42	2.24
UPSTRM	27.98	6.97	27.40	4.32	28.27	23.00	3.95	1.11

Drainage area (ac) =	0.32	Slope of invert (%)	= 1.3410
Runoff coefficient =	0.40	Slope energy grade line (%)	= 0.6833
Time of conc (min) =	7.83	Critical depth (in)	= 6.97
Inlet time (min) =	5.00	Natural ground elevation	= 32.52
Intensity (in/hr) =	6.19	Upstream surcharge (ft)	= 0.00
Cumulative C*A =	0.78	Additional Q (cfs)	= 0.00
Q = CA * I (cfs) =	4.81	Line capacity (cfs)	= 15.05

Q catchment (cfs) =	0.89	Inlet length (ft)	= 4.00
Q carryover (cfs) =	3.14	Gutter slope (ft/ft)	= 0.0833
Q captured (cfs) =	0.45	Cross slope (ft/ft)	= 0.0208
Q bypassed (cfs) =	3.58	Ponding width (ft)	= N/A

Rainfall file: JCCN (10 Yr) 2-20 - 2-21

LINE 20 / Q = 3.6 / HT = 15 / WID = 15 / N = .013 / L = 100 / JLC = 1

DNLN = 19

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	28.27	10.44	27.40	3.94	28.51	12.52	3.87	0.91
UPSTRM	28.73	9.33	27.95	4.49	29.04	14.55	2.73	0.80

Drainage area (ac) =	0.59	Slope of invert (%)	= 0.5500
Runoff coefficient =	0.40	Slope energy grade line (%)	= 0.5279
Time of conc (min) =	7.43	Critical depth (in)	= 9.11
Inlet time (min) =	5.00	Natural ground elevation	= 31.94
Intensity (in/hr) =	6.29	Upstream surcharge (ft)	= 0.00
Cumulative C*A =	0.57	Additional Q (cfs)	= 0.00
Q = CA * I (cfs) =	3.60	Line capacity (cfs)	= 4.79

Q catchment (cfs) =	1.65	Inlet length (ft)	= 8.00
Q carryover (cfs) =	1.92	Gutter slope (ft/ft)	= 0.0833
Q captured (cfs) =	0.82	Cross slope (ft/ft)	= 0.0208
Q bypassed (cfs) =	2.75	Ponding width (ft)	= N/A

Rainfall file: JCCN (10 Yr) 2-21 - 2-22

LINE 21 / Q = 0.6 / HT = 15 / WID = 15 / N = .013 / L = 120 / JLC = 1

DNLN = 20

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA

DNSTRM	29.04	13.08	27.95	0.54	29.04	14.01	2.73	1.14
UPSTRM	29.08	7.11	28.47	1.07	29.10	14.98	2.67	0.57

Drainage area (ac) =	0.22	Slope of invert (%)	= 0.4333
Runoff coefficient =	0.40	Slope energy grade line (%)	= 0.0449
Time of conc (min) =	5.00	Critical depth (in)	= 3.76
Inlet time (min) =	5.00	Natural ground elevation	= 32.39
Intensity (in/hr) =	6.97	Upstream surcharge (ft)	= 0.00
Cumulative C*A =	0.09	Additional Q (cfs)	= 0.00
Q = CA * I (cfs) =	0.61	Line capacity (cfs)	= 4.25

Q catchment (cfs) =	0.61	Inlet length (ft)	= 4.00
Q carryover (cfs) =	0.00	Gutter slope (ft/ft)	= 0.0833
Q captured (cfs) =	0.15	Cross slope (ft/ft)	= 0.0208
Q bypassed (cfs) =	0.47	Ponding width (ft)	= N/A

Rainfall file: JCCN (10 Yr) 2-21 - 2-23

LINE 22 / Q = 1.7 / HT = 15 / WID = 15 / N = .013 / L = 30 / JLC = 1

DNLN = 20

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	29.04	13.08	27.95	1.52	29.08	14.01	2.73	1.14
UPSTRM	29.09	12.39	28.02	1.59	29.13	11.37	2.67	1.08

Drainage area (ac) =	0.62	Slope of invert (%)	= 0.2333
Runoff coefficient =	0.40	Slope energy grade line (%)	= 0.1871
Time of conc (min) =	5.00	Critical depth (in)	= 6.31
Inlet time (min) =	5.00	Natural ground elevation	= 31.94
Intensity (in/hr) =	6.97	Upstream surcharge (ft)	= 0.00
Cumulative C*A =	0.25	Additional Q (cfs)	= 0.00
Q = CA * I (cfs) =	1.73	Line capacity (cfs)	= 3.12

Q catchment (cfs) =	1.73	Inlet length (ft)	= 4.00
Q carryover (cfs) =	0.00	Gutter slope (ft/ft)	= 0.0833
Q captured (cfs) =	0.27	Cross slope (ft/ft)	= 0.0208
Q bypassed (cfs) =	1.45	Ponding width (ft)	= N/A

Rainfall file: JCCN (10 Yr) 2-20 - 2-24

LINE 23 / Q = 0.5 / HT = 15 / WID = 15 / N = .013 / L = 30 / JLC = 1

DNLN = 19

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	28.27	10.44	27.40	0.58	28.28	12.52	3.87	0.91
UPSTRM	28.98	3.49	28.60	2.44	29.08	12.68	2.67	0.22

Drainage area (ac) =	0.19	Slope of invert (%)	= 4.0000
Runoff coefficient =	0.40	Slope energy grade line (%)	= 2.6688
Time of conc (min) =	5.00	Critical depth (in)	= 3.49
Inlet time (min) =	5.00	Natural ground elevation	= 32.52

Intensity (in/hr)	=	6.97	Upstream surcharge (ft)	=	0.00
Cumulative C*A	=	0.08	Additional Q (cfs)	=	0.00
Q = CA * I (cfs)	=	0.53	Line capacity (cfs)	=	12.91

Q catchment (cfs)	=	0.53	Inlet length (ft)	=	4.00
Q carryover (cfs)	=	0.00	Gutter slope (ft/ft)	=	0.0833
Q captured (cfs)	=	0.13	Cross slope (ft/ft)	=	0.0208
Q bypassed (cfs)	=	0.40	Ponding width (ft)	=	N/A

Rainfall file: JCCN (10 Yr) 2-6 - 2-16

LINE 24 / Q = 2.4 / HT = 15 / WID = 15 / N = .013 / L = 42 / JLC = 1

DNLN = 6

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	26.75	4.61	26.37	7.58	27.65	13.84	4.47	0.32
UPSTRM	29.28	4.61	28.00	7.58	30.17	13.84	2.84	0.32

Drainage area (ac)	=	0.87	Slope of invert (%)	=	3.8810
Runoff coefficient	=	0.40	Slope energy grade line (%)	=	6.0056
Time of conc (min)	=	5.00	Critical depth (in)	=	7.48
Inlet time (min)	=	5.00	Natural ground elevation	=	32.10
Intensity (in/hr)	=	6.97	Upstream surcharge (ft)	=	0.03
Cumulative C*A	=	0.35	Additional Q (cfs)	=	0.00
Q = CA * I (cfs)	=	2.43	Line capacity (cfs)	=	12.72

Q catchment (cfs)	=	2.43	Inlet length (ft)	=	6.00
Q carryover (cfs)	=	0.00	Gutter slope (ft/ft)	=	0.0833
Q captured (cfs)	=	0.49	Cross slope (ft/ft)	=	0.0208
Q bypassed (cfs)	=	1.93	Ponding width (ft)	=	N/A
			Note: Normal depth assumed		

Rainfall file: JCCN (10 Yr) 2-5 - 2-25

LINE 25 / Q = 3.1 / HT = 15 / WID = 15 / N = .013 / L = 178 / JLC = 1

DNLN = 5

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	26.00	15.00	23.04	2.51	26.09	0.00	8.7	1.23
UPSTRM	27.42	8.42	26.72	4.34	27.71	14.89	4.51	0.71

Drainage area (ac)	=	0.00	Slope of invert (%)	=	2.0674
Runoff coefficient	=	0.00	Slope energy grade line (%)	=	0.9094
Time of conc (min)	=	10.36	Critical depth (in)	=	8.42
Inlet time (min)	=	0.00	Natural ground elevation	=	32.48
Intensity (in/hr)	=	5.65	Upstream surcharge (ft)	=	0.00
Cumulative C*A	=	0.54	Additional Q (cfs)	=	0.00
Q = CA * I (cfs)	=	3.08	Line capacity (cfs)	=	9.28

Q catchment (cfs)	=	0.00	Inlet length (ft)	=	0.00
Q carryover (cfs)	=	2.36	Gutter slope (ft/ft)	=	0.0000

Q captured (cfs)	=	0.00	Cross slope (ft/ft)	= 0.0000
Q bypassed (cfs)	=	2.36	Ponding width (ft)	= N/A

Rainfall file: JCCN (10 Yr) 2-25 - 2-26

LINE 26 / Q = 3.1 / HT = 15 / WID = 15 / N = .013 / L = 80 / JLC = 0

DNLN = 25

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	27.71	11.93	26.72	2.98	27.85	13.37	4.51	1.05
UPSTRM	28.23	8.47	27.52	4.36	28.52	14.87	2.65	0.71

Drainage area (ac)	=	1.36	Slope of invert (%)	= 1.0000
Runoff coefficient	=	0.40	Slope energy grade line (%)	= 0.8370
Time of conc (min)	=	10.00	Critical depth (in)	= 8.47
Inlet time (min)	=	10.00	Natural ground elevation	= 31.43
Intensity (in/hr)	=	5.72	Upstream surcharge (ft)	= 0.00
Cumulative C*A	=	0.54	Additional Q (cfs)	= 0.00
Q = CA * I (cfs)	=	3.11	Line capacity (cfs)	= 6.46

Q catchment (cfs)	=	3.11	Inlet length (ft)	= 8.00
Q carryover (cfs)	=	0.00	Gutter slope (ft/ft)	= 0.0833
Q captured (cfs)	=	0.75	Cross slope (ft/ft)	= 0.0208
Q bypassed (cfs)	=	2.36	Ponding width (ft)	= N/A

Rainfall file: JCCN (10 Yr) 2-4 - 2-17

LINE 27 / Q = 1.1 / HT = 15 / WID = 15 / N = .013 / L = 42 / JLC = 1

DNLN = 4

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	25.36	2.84	25.12	6.57	26.03	11.75	4.95	0.16
UPSTRM	27.89	2.84	26.98	6.57	28.56	11.75	2.69	0.16

Drainage area (ac)	=	0.38	Slope of invert (%)	= 4.4286
Runoff coefficient	=	0.40	Slope energy grade line (%)	= 6.0230
Time of conc (min)	=	5.00	Critical depth (in)	= 4.94
Inlet time (min)	=	5.00	Natural ground elevation	= 30.92
Intensity (in/hr)	=	6.97	Upstream surcharge (ft)	= 0.00
Cumulative C*A	=	0.15	Additional Q (cfs)	= 0.00
Q = CA * I (cfs)	=	1.06	Line capacity (cfs)	= 13.59

Q catchment (cfs)	=	1.06	Inlet length (ft)	= 4.00
Q carryover (cfs)	=	0.00	Gutter slope (ft/ft)	= 0.0833
Q captured (cfs)	=	0.20	Cross slope (ft/ft)	= 0.0208
Q bypassed (cfs)	=	0.86	Ponding width (ft)	= N/A

Note: Normal depth assumed

Rainfall file: JCCN (10 Yr) 2-3 - 2-18

LINE 28 / Q = 2.7 / HT = 15 / WID = 15 / N = .013 / L = 42 / JLC = 1

DNLN = 3

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	25.00	15.00	23.65	2.20	25.08	0.00	4.79	1.23
UPSTRM	25.88	7.90	24.96	4.13	26.15	14.98	3.48	0.65

Drainage area (ac) =	0.97	Slope of invert (%)	= 3.1190
Runoff coefficient =	0.40	Slope energy grade line (%)	= 2.5500
Time of conc (min) =	5.00	Critical depth (in)	= 7.90
Inlet time (min) =	5.00	Natural ground elevation	= 29.69
Intensity (in/hr) =	6.97	Upstream surcharge (ft)	= 0.00
Cumulative C*A =	0.39	Additional Q (cfs)	= 0.00
Q = CA * I (cfs) =	2.70	Line capacity (cfs)	= 11.40

Q catchment (cfs) =	2.70	Inlet length (ft)	= 8.00
Q carryover (cfs) =	0.00	Gutter slope (ft/ft)	= 0.0833
Q captured (cfs) =	0.69	Cross slope (ft/ft)	= 0.0208
Q bypassed (cfs) =	2.01	Ponding width (ft)	= N/A

Rainfall file: JCCN (10 Yr) 2-2 - 2-19

LINE 29 / Q = 0.9 / HT = 15 / WID = 15 / N = .013 / L = 42 / JLC = 1

DNLN = 2

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	25.31	2.99	25.06	4.98	25.69	11.98	3.87	0.17
UPSTRM	26.87	2.99	26.24	4.98	27.26	11.98	2.69	0.17

Drainage area (ac) =	0.31	Slope of invert (%)	= 2.8095
Runoff coefficient =	0.40	Slope energy grade line (%)	= 2.8095
Time of conc (min) =	5.00	Critical depth (in)	= 4.46
Inlet time (min) =	5.00	Natural ground elevation	= 30.18
Intensity (in/hr) =	6.97	Upstream surcharge (ft)	= 0.00
Cumulative C*A =	0.12	Additional Q (cfs)	= 0.00
Q = CA * I (cfs) =	0.86	Line capacity (cfs)	= 10.82

Q catchment (cfs) =	0.86	Inlet length (ft)	= 4.00
Q carryover (cfs) =	0.00	Gutter slope (ft/ft)	= 0.0833
Q captured (cfs) =	0.18	Cross slope (ft/ft)	= 0.0208
Q bypassed (cfs) =	0.68	Ponding width (ft)	= N/A
		Note: Normal depth assumed	

DESIGN CALCS

HYDRAULIC CALCULATIONS
FOR
STORM SYSTEM #1
OF THE
JAMESTOWN HUNDRED SUBDIVISION

Prepared By:
AES Consulting Engineers
5248 Olde Towne Road, Suite 1
Williamsburg, Virginia 23188

Revised date: 3/11/1999

STORM SEWER DESIGN / ANALYSIS

Return Period = 10 Yrs
Rainfall file: JCCN

Run Date: 03-11-1999
File: 62017B2.ST3

LINE 1 / Q = 23.73 / HT = 36 / WID = 36 / N = .013 / L = 152 / JLC = 0

1-1 to 1-0 / Outfall

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	22.06	20.95	20.31	5.56	22.54	27.46	-3.87	4.27
UPSTRM	22.58	24.42	20.54	4.65	22.91	33.63	.45	5.11

Drainage area (ac)	= 0.00	Slope of invert (%)	= 0.1513
Runoff coefficient	= 0.00	Slope energy grade line (%)	= 0.2467
Time of conc (min)	= 25.53	Critical depth (in)	= 18.63
Inlet time (min)	= 0.00	Natural ground elev. (ft)	= 24.00
Intensity (in/hr)	= 3.86	Upstream surcharge (ft)	= 0.00
Cumulative C*A	= 6.15	Additional Q (cfs)	= 0.00
Q = CA * I (cfs)	= 23.73	Line capacity (cfs)	= 25.94
Q catchment (cfs)	= 0.00	Inlet length (ft)	= 0.00
Q carryover (cfs)	= 35.03	Gutter slope (ft/ft)	= 0.0000
Q captured (cfs)	= 0.00	Cross slope (ft/ft)	= 0.0000
Q bypassed (cfs)	= 35.03	Ponding width (ft)	= N/A

LINE 2 / Q = 24.13 / HT = 36 / WID = 36 / N = .013 / L = 155 / JLC = 0

1-2 to 1-1 / DNLN = 1

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	22.58	24.42	20.54	4.73	22.92	29.65	.45	5.11
UPSTRM	22.90	25.56	20.77	4.50	23.21	32.67	6.96	5.37

Drainage area (ac)	= 0.00	Slope of invert (%)	= 0.1484
Runoff coefficient	= 0.00	Slope energy grade line (%)	= 0.1883
Time of conc (min)	= 24.67	Critical depth (in)	= 18.78
Inlet time (min)	= 0.00	Natural ground elev. (ft)	= 30.74
Intensity (in/hr)	= 3.92	Upstream surcharge (ft)	= 0.00
Cumulative C*A	= 6.15	Additional Q (cfs)	= 0.00
Q = CA * I (cfs)	= 24.13	Line capacity (cfs)	= 25.69
Q catchment (cfs)	= 0.00	Inlet length (ft)	= 0.00
Q carryover (cfs)	= 35.03	Gutter slope (ft/ft)	= 0.0000
Q captured (cfs)	= 0.00	Cross slope (ft/ft)	= 0.0000
Q bypassed (cfs)	= 35.03	Ponding width (ft)	= N/A

LINE 3 / Q = 14.93 / HT = 24 / WID = 24 / N = .013 / L = 44 / JLC = 0

1-3 to 1-2 / DNLN = 2

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	22.90	24.00	20.77	4.75	23.25	0.00	7.96	3.14
UPSTRM	23.09	16.42	21.72	6.52	23.75	22.31	7.63	2.29

Drainage area (ac)	= 0.00	Slope of invert (%)	= 2.1591
Runoff coefficient	= 0.00	Slope energy grade line (%)	= 1.1300
Time of conc (min)	= 24.43	Critical depth (in)	= 16.42
Inlet time (min)	= 0.00	Natural ground elev. (ft)	= 31.35
Intensity (in/hr)	= 3.94	Upstream surcharge (ft)	= 0.00
Cumulative C*A	= 3.79	Additional Q (cfs)	= 0.00
Q = CA * I (cfs)	= 14.93	Line capacity (cfs)	= 33.23
Q catchment (cfs)	= 0.00	Inlet length (ft)	= 0.00
Q carryover (cfs)	= 21.87	Gutter slope (ft/ft)	= 0.0000
Q captured (cfs)	= 0.00	Cross slope (ft/ft)	= 0.0000
Q bypassed (cfs)	= 21.87	Ponding width (ft)	= N/A

LINE 4 / Q = 13.17 / HT = 24 / WID = 24 / N = .013 / L = 163 / JLC = 0

1-4 to 1-3 / DNLN = 3

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	23.09	16.42	21.72	5.75	23.60	19.85	7.63	2.29
UPSTRM	23.93	18.77	22.37	5.00	24.32	19.82	4.07	2.64

Drainage area (ac)	= 0.25	Slope of invert (%)	= 0.3988
Runoff coefficient	= 0.40	Slope energy grade line (%)	= 0.4416
Time of conc (min)	= 23.52	Critical depth (in)	= 15.42
Inlet time (min)	= 10.00	Natural ground elev. (ft)	= 28.45
Intensity (in/hr)	= 4.01	Upstream surcharge (ft)	= 0.00
Cumulative C*A	= 3.28	Additional Q (cfs)	= 0.00
Q = CA * I (cfs)	= 13.17	Line capacity (cfs)	= 14.28
Q catchment (cfs)	= 0.57	Inlet length (ft)	= 0.00
Q carryover (cfs)	= 18.34	Gutter slope (ft/ft)	= 0.0000
Q captured (cfs)	= 0.00	Cross slope (ft/ft)	= 0.0000
Q bypassed (cfs)	= 18.91	Ponding width (ft)	= N/A

LINE 5 / Q = 3.00 / HT = 15 / WID = 15 / N = .013 / L = 27 / JLC = .5

1-5 to 1-4 / DNLN = 4

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	23.93	15.00	22.37	2.45	24.03	0.00	4.82	1.23
UPSTRM	24.35	8.32	23.66	4.30	24.64	14.91	3.59	0.70

Drainage area (ac) =	0.00 ✓	Slope of invert (%) =	4.7778
Runoff coefficient =	0.00	Slope energy grade line (%) =	2.2713
Time of conc (min) =	10.63	Critical depth (in) =	8.32
Inlet time (min) =	0.00	Natural ground elev. (ft) =	28.50
Intensity (in/hr) =	5.60	Upstream surcharge (ft) =	0.00
Cumulative C*A =	0.54	Additional Q (cfs) =	0.00
Q = CA * I (cfs) =	3.00	Line capacity (cfs) =	14.11
Q catchment (cfs) =	0.00	Inlet length (ft) =	0.00
Q carryover (cfs) =	3.12	Gutter slope (ft/ft) =	0.0000
Q captured (cfs) =	0.00	Cross slope (ft/ft) =	0.0000
Q bypassed (cfs) =	3.12	Ponding width (ft) =	N/A

LINE 6 / Q = 10.65 / HT = 24 / WID = 24 / N = .013 / L = 26 / JLC = 0

1-6 to 1-4 / DNLN = 4

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	23.93	18.77	22.37	4.04	24.19	21.22	4.07	2.64
UPSTRM	23.99	18.44	22.45	4.11	24.25	20.26	4	2.59

Drainage area (ac) =	0.30 ✓	Slope of invert (%) =	0.3077
Runoff coefficient =	0.40	Slope energy grade line (%) =	0.2370
Time of conc (min) =	23.38	Critical depth (in) =	13.87
Inlet time (min) =	5.00	Natural ground elev. (ft) =	28.45
Intensity (in/hr) =	4.03	Upstream surcharge (ft) =	0.00
Cumulative C*A =	2.65	Additional Q (cfs) =	0.00
Q = CA * I (cfs) =	10.65	Line capacity (cfs) =	12.55
Q catchment (cfs) =	0.84	Inlet length (ft) =	0.00
Q carryover (cfs) =	14.38	Gutter slope (ft/ft) =	0.0000
Q captured (cfs) =	0.00	Cross slope (ft/ft) =	0.0000
Q bypassed (cfs) =	15.21	Ponding width (ft) =	N/A

LINE 7 / Q = 10.19 / HT = 24 / WID = 24 / N = .013 / L = 22 / JLC = 0

1-7 to 1-6 / DNLN = 6

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	23.99	18.44	22.45	3.94	24.23	21.04	4	2.59
UPSTRM	24.03	18.18	22.52	3.99	24.28	20.57	4.18	2.55

Drainage area (ac)	= 0.00	Slope of invert (%)	= 0.3182
Runoff coefficient	= 0.00	Slope energy grade line (%)	= 0.2518
Time of conc (min)	= 23.26	Critical depth (in)	= 13.57
Inlet time (min)	= 0.00	Natural ground elev. (ft)	= 28.70
Intensity (in/hr)	= 4.04	Upstream surcharge (ft)	= 0.00
Cumulative C*A	= 2.53	Additional Q (cfs)	= 0.00
Q = CA * I (cfs)	= 10.19	Line capacity (cfs)	= 12.76
Q catchment (cfs)	= 0.00	Inlet length (ft)	= 0.00
Q carryover (cfs)	= 14.38	Gutter slope (ft/ft)	= 0.0000
Q captured (cfs)	= 0.00	Cross slope (ft/ft)	= 0.0000
Q bypassed (cfs)	= 14.38	Ponding width (ft)	= N/A

LINE 8 / Q = 10.23 / HT = 24 / WID = 24 / N = .013 / L = 31 / JLC = 0

1-8to1-7 Confl MH / DNLN = 7

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	24.03	18.18	22.52	4.01	24.28	20.89	4.18	2.55
UPSTRM	24.25	13.59	23.12	5.58	24.74	23.79	3.26	1.83

Drainage area (ac)	= 0.11	Slope of invert (%)	= 1.9355
Runoff coefficient	= 0.40	Slope energy grade line (%)	= 1.4546
Time of conc (min)	= 23.08	Critical depth (in)	= 13.59
Inlet time (min)	= 5.00	Natural ground elev. (ft)	= 28.39
Intensity (in/hr)	= 4.05	Upstream surcharge (ft)	= 0.00
Cumulative C*A	= 2.53	Additional Q (cfs)	= 0.00
Q = CA * I (cfs)	= 10.23	Line capacity (cfs)	= 31.47
Q catchment (cfs)	= 0.31	Inlet length (ft)	= 0.00
Q carryover (cfs)	= 14.07	Gutter slope (ft/ft)	= 0.0000
Q captured (cfs)	= 0.00	Cross slope (ft/ft)	= 0.0000
Q bypassed (cfs)	= 14.38	Ponding width (ft)	= N/A

LINE 9 / Q = 10.09 / HT = 24 / WID = 24 / N = .013 / L = 32 / JLC = .9

1-9 to 1-8 / DNLN = 8

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	24.25	13.59	23.12	5.50	24.72	18.06	3.26	1.83
UPSTRM	24.53	15.72	23.22	4.63	24.86	22.82	3.39	2.18

Drainage area (ac) =	0.23 ✓	Slope of invert (%) =	0.3125
Runoff coefficient =	0.40	Slope energy grade line (%) =	0.4387
Time of conc (min) =	22.91	Critical depth (in) =	13.50
Inlet time (min) =	10.00	Natural ground elev. (ft) =	28.61
Intensity (in/hr) =	4.07	Upstream surcharge (ft) =	0.00
Cumulative C*A =	2.48	Additional Q (cfs) =	0.00
Q = CA * I (cfs) =	10.09	Line capacity (cfs) =	12.64
Q catchment (cfs) =	0.53	Inlet length (ft) =	0.00
Q carryover (cfs) =	13.54	Gutter slope (ft/ft) =	0.0000
Q captured (cfs) =	0.00	Cross slope (ft/ft) =	0.0000
Q bypassed (cfs) =	14.07	Ponding width (ft) =	N/A

LINE 10 / Q = 9.32 / HT = 24 / WID = 24 / N = .013 / L = 200 / JLC = 0

1-10 to 1-9 / DNLN = 9

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	24.83	19.31	23.22	3.44	25.01	21.53	3.39	2.71
UPSTRM	25.18	18.68	23.62	3.55	25.37	19.93	4.13	2.62

Drainage area (ac) =	0.30 ✓	Slope of invert (%) =	0.2000
Runoff coefficient =	0.40	Slope energy grade line (%) =	0.1800
Time of conc (min) =	21.79	Critical depth (in) =	12.97
Inlet time (min) =	5.00	Natural ground elev. (ft) =	29.76
Intensity (in/hr) =	4.16	Upstream surcharge (ft) =	0.00
Cumulative C*A =	2.24	Additional Q (cfs) =	0.00
Q = CA * I (cfs) =	9.32	Line capacity (cfs) =	10.11
Q catchment (cfs) =	0.84	Inlet length (ft) =	0.00
Q carryover (cfs) =	11.84	Gutter slope (ft/ft) =	0.0000
Q captured (cfs) =	0.00	Cross slope (ft/ft) =	0.0000
Q bypassed (cfs) =	12.67	Ponding width (ft) =	N/A

LINE 11 / Q = 7.48 / HT = 24 / WID = 24 / N = .013 / L = 145 / JLC = 0

1-11 to 1-10 / DNLN = 10

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	25.18	18.68	23.62	2.85	25.30	21.18	4.13	2.62
UPSTRM	25.34	15.53	24.05	3.48	25.53	22.94	4.74	2.15

Drainage area (ac)	= 0.45	Slope of invert (%)	= 0.2966
Runoff coefficient	= 0.40	Slope energy grade line (%)	= 0.1578
Time of conc (min)	= 20.99	Critical depth (in)	= 11.62
Inlet time (min)	= 5.00	Natural ground elev. (ft)	= 30.79
Intensity (in/hr)	= 4.24	Upstream surcharge (ft)	= 0.00
Cumulative C*A	= 1.77	Additional Q (cfs)	= 0.00
Q = CA * I (cfs)	= 7.48	Line capacity (cfs)	= 12.32
Q catchment (cfs)	= 1.25	Inlet length (ft)	= 0.00
Q carryover (cfs)	= 8.85	Gutter slope (ft/ft)	= 0.0000
Q captured (cfs)	= 0.00	Cross slope (ft/ft)	= 0.0000
Q bypassed (cfs)	= 10.10	Ponding width (ft)	= N/A

LINE 12 / Q = 6.06 / HT = 18 / WID = 18 / N = .013 / L = 180 / JLC = 0

1-12 to 1-11 / DNLN = 11

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	25.34	15.53	24.05	3.74	25.56	16.72	5.24	1.62
UPSTRM	25.91	13.66	24.77	4.21	26.18	15.40	5.72	1.44

Drainage area (ac)	= 0.00	Slope of invert (%)	= 0.4000
Runoff coefficient	= 0.40	Slope energy grade line (%)	= 0.3460
Time of conc (min)	= 12.76	Critical depth (in)	= 11.27
Inlet time (min)	= 5.00	Natural ground elev. (ft)	= 32.00
Intensity (in/hr)	= 5.24	Upstream surcharge (ft)	= 0.00
Cumulative C*A	= 1.16	Additional Q (cfs)	= 0.00
Q = CA * I (cfs)	= 6.06	Line capacity (cfs)	= 6.64
Q catchment (cfs)	= 0.00	Inlet length (ft)	= 0.00
Q carryover (cfs)	= 6.73	Gutter slope (ft/ft)	= 0.0000
Q captured (cfs)	= 0.00	Cross slope (ft/ft)	= 0.0000
Q bypassed (cfs)	= 6.73	Ponding width (ft)	= N/A

LINE 13 / Q = 6.13 / HT = 18 / WID = 18 / N = .013 / L = 76 / JLC = .9

1-13 to 1-12 / DNLN = 12

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	25.91	13.66	24.77	4.26	26.19	15.68	5.72	1.44
UPSTRM	26.21	13.73	25.07	4.24	26.49	15.32	4.98	1.45

Drainage area (ac)	= 0.17✓	Slope of invert (%)	= 0.3947
Runoff coefficient	= 0.40	Slope energy grade line (%)	= 0.3983
Time of conc (min)	= 12.34	Critical depth (in)	= 11.34
Inlet time (min)	= 10.00	Natural ground elev. (ft)	= 31.56
Intensity (in/hr)	= 5.31	Upstream surcharge (ft)	= 0.00
Cumulative C*A	= 1.16	Additional Q (cfs)	= 0.00
Q = CA * I (cfs)	= 6.13	Line capacity (cfs)	= 6.60
Q catchment (cfs)	= 0.39	Inlet length (ft)	= 0.00
Q carryover (cfs)	= 6.34	Gutter slope (ft/ft)	= 0.0000
Q captured (cfs)	= 0.00	Cross slope (ft/ft)	= 0.0000
Q bypassed (cfs)	= 6.73	Ponding width (ft)	= N/A

LINE 14 / Q = 5.89 / HT = 18 / WID = 18 / N = .013 / L = 116 / JLC = 0

1-14 to 1-13 / DNLN = 13

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	26.47	16.74	25.07	3.44	26.65	17.36	4.98	1.71
UPSTRM	26.77	14.71	25.54	3.81	26.99	13.92	3.81	1.55

Drainage area (ac)	= 0.23✓	Slope of invert (%)	= 0.4052
Runoff coefficient	= 0.40	Slope energy grade line (%)	= 0.2949
Time of conc (min)	= 11.69	Critical depth (in)	= 11.11
Inlet time (min)	= 5.00	Natural ground elev. (ft)	= 30.86
Intensity (in/hr)	= 5.41	Upstream surcharge (ft)	= 0.00
Cumulative C*A	= 1.09	Additional Q (cfs)	= 0.00
Q = CA * I (cfs)	= 5.89	Line capacity (cfs)	= 6.68
Q catchment (cfs)	= 0.64	Inlet length (ft)	= 0.00
Q carryover (cfs)	= 5.70	Gutter slope (ft/ft)	= 0.0000
Q captured (cfs)	= 0.00	Cross slope (ft/ft)	= 0.0000
Q bypassed (cfs)	= 6.34	Ponding width (ft)	= N/A

LINE 15 / Q = 4.36 / HT = 15 / WID = 15 / N = .013 / L = 126 / JLC = 0

1-15 to 1-14 / DNLN = 14

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	26.77	14.71	25.54	3.57	26.96	14.85	4.06	1.22
UPSTRM	27.26	13.05	26.17	3.85	27.49	10.08	2.79	1.13

Drainage area (ac) =	0.42	Slope of invert (%) =	0.5000
Runoff coefficient =	0.40	Slope energy grade line (%) =	0.4159
Time of conc (min) =	10.99	Critical depth (in) =	10.03
Inlet time (min) =	10.00	Natural ground elev. (ft) =	30.22
Intensity (in/hr) =	5.54	Upstream surcharge (ft) =	0.00
Cumulative C*A =	0.79	Additional Q (cfs) =	0.00
Q = CA * I (cfs) =	4.36	Line capacity (cfs) =	4.57
Q catchment (cfs) =	0.96	Inlet length (ft) =	0.00
Q carryover (cfs) =	3.55	Gutter slope (ft/ft) =	0.0000
Q captured (cfs) =	0.00	Cross slope (ft/ft) =	0.0000
Q bypassed (cfs) =	4.51	Ponding width (ft) =	N/A

LINE 16 / Q = 1.93 / HT = 15 / WID = 15 / N = .013 / L = 81 / JLC = 0

1-16 to 1-15 / DNLN = 15

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	27.26	13.05	26.17	1.71	27.30	13.99	2.79	1.13
UPSTRM	27.33	7.05	26.74	3.41	27.51	14.97	2.67	0.57

Drainage area (ac) =	0.14	Slope of invert (%) =	0.7037
Runoff coefficient =	0.40	Slope energy grade line (%) =	0.2533
Time of conc (min) =	10.54	Critical depth (in) =	6.68
Inlet time (min) =	10.00	Natural ground elev. (ft) =	30.66
Intensity (in/hr) =	5.62	Upstream surcharge (ft) =	0.00
Cumulative C*A =	0.34	Additional Q (cfs) =	0.00
Q = CA * I (cfs) =	1.93	Line capacity (cfs) =	5.42
Q catchment (cfs) =	0.32	Inlet length (ft) =	0.00
Q carryover (cfs) =	1.65	Gutter slope (ft/ft) =	0.0000
Q captured (cfs) =	0.00	Cross slope (ft/ft) =	0.0000
Q bypassed (cfs) =	1.97	Ponding width (ft) =	N/A

LINE 17 / Q = 1.64 / HT = 15 / WID = 15 / N = .013 / L = 72 / JLC = .9

1-17 to 1-16 / DNLN = 16

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	27.33	7.04	26.74	2.90	27.46	10.27	2.66	0.57
UPSTRM	27.79	6.15	27.28	3.46	27.98	14.75	2.79	0.47

Drainage area (ac)	= 0.35	Slope of invert (%)	= 0.7485
Runoff coefficient	= 0.40	Slope energy grade line (%)	= 0.7229
Time of conc (min)	= 10.14	Critical depth (in)	= 6.15
Inlet time (min)	= 10.00	Natural ground elev. (ft)	= 31.33
Intensity (in/hr)	= 5.70	Upstream surcharge (ft)	= 0.00
Cumulative C*A	= 0.29	Additional Q (cfs)	= 0.00
Q = CA * I (cfs)	= 1.64	Line capacity (cfs)	= 5.59
Q catchment (cfs)	= 0.80	Inlet length (ft)	= 0.00
Q carryover (cfs)	= 0.85	Gutter slope (ft/ft)	= 0.0000
Q captured (cfs)	= 0.00	Cross slope (ft/ft)	= 0.0000
Q bypassed (cfs)	= 1.65	Ponding width (ft)	= N/A

LINE 18 / Q = 0.85 / HT = 15 / WID = 15 / N = .013 / L = 26 / JLC = .9

1-18 to 1-17 / DNLN = 17

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	27.96	8.16	27.28	1.24	27.98	11.06	2.79	0.68
UPSTRM	28.00	6.65	27.41	1.61	28.04	14.90	2.67	0.53

Drainage area (ac)	= 0.37	Slope of invert (%)	= 0.5000
Runoff coefficient	= 0.40	Slope energy grade line (%)	= 0.2193
Time of conc (min)	= 10.00	Critical depth (in)	= 4.42
Inlet time (min)	= 10.00	Natural ground elev. (ft)	= 31.33
Intensity (in/hr)	= 5.72	Upstream surcharge (ft)	= 0.00
Cumulative C*A	= 0.15	Additional Q (cfs)	= 0.00
Q = CA * I (cfs)	= 0.85	Line capacity (cfs)	= 4.57
Q catchment (cfs)	= 0.85	Inlet length (ft)	= 0.00
Q carryover (cfs)	= 0.00	Gutter slope (ft/ft)	= 0.0000
Q captured (cfs)	= 0.00	Cross slope (ft/ft)	= 0.0000
Q bypassed (cfs)	= 0.85	Ponding width (ft)	= N/A

LINE 19 / Q = 1.58 / HT = 15 / WID = 15 / N = .013 / L = 26 / JLC = .9

1-19 to 1-15 / DNLN = 15

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	27.26	13.05	26.17	1.39	27.29	13.99	2.79	1.13
UPSTRM	27.30	11.57	26.30	1.56	27.34	12.60	2.67	1.02

Drainage area (ac)	= 0.69	Slope of invert (%)	= 0.5000
Runoff coefficient	= 0.40	Slope energy grade line (%)	= 0.1825
Time of conc (min)	= 10.00	Critical depth (in)	= 6.03
Inlet time (min)	= 10.00	Natural ground elev. (ft)	= 30.22
Intensity (in/hr)	= 5.72	Upstream surcharge (ft)	= 0.00
Cumulative C*A	= 0.28	Additional Q (cfs)	= 0.00
Q = CA * I (cfs)	= 1.58	Line capacity (cfs)	= 4.57
Q catchment (cfs)	= 1.58	Inlet length (ft)	= 0.00
Q carryover (cfs)	= 0.00	Gutter slope (ft/ft)	= 0.0000
Q captured (cfs)	= 0.00	Cross slope (ft/ft)	= 0.0000
Q bypassed (cfs)	= 1.58	Ponding width (ft)	= N/A

LINE 20 / Q = 1.19 / HT = 15 / WID = 15 / N = .013 / L = 26 / JLC = .9

1-20 to 1-14 / DNLN = 14

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	26.77	14.71	25.54	0.97	26.78	14.85	4.06	1.22
UPSTRM	27.75	5.24	27.18	3.12	27.90	14.30	2.74	0.38

Drainage area (ac)	= 0.52	Slope of invert (%)	= 6.3077
Runoff coefficient	= 0.40	Slope energy grade line (%)	= 4.3205
Time of conc (min)	= 10.00	Critical depth (in)	= 5.24
Inlet time (min)	= 10.00	Natural ground elev. (ft)	= 31.18
Intensity (in/hr)	= 5.72	Upstream surcharge (ft)	= 0.00
Cumulative C*A	= 0.21	Additional Q (cfs)	= 0.00
Q = CA * I (cfs)	= 1.19	Line capacity (cfs)	= 16.22
Q catchment (cfs)	= 1.19	Inlet length (ft)	= 0.00
Q carryover (cfs)	= 0.00	Gutter slope (ft/ft)	= 0.0000
Q captured (cfs)	= 0.00	Cross slope (ft/ft)	= 0.0000
Q bypassed (cfs)	= 1.19	Ponding width (ft)	= N/A

LINE 21 / Q = 1.83 / HT = 15 / WID = 15 / N = .013 / L = 26 / JLC = .9

1-21 to 1-11 / DNLN = 11

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	26.94	5.49	26.48	4.49	27.25	14.45	3.06	0.41
UPSTRM	27.20	5.49	26.74	4.49	27.51	14.45	2.8	0.41

Drainage area (ac)	= 0.45 ✓	Slope of invert (%)	= 1.0000
Runoff coefficient	= 0.40	Slope energy grade line (%)	= 1.0000
Time of conc (min)	= 20.84	Critical depth (in)	= 6.49
Inlet time (min)	= 10.00	Natural ground elev. (ft)	= 30.79
Intensity (in/hr)	= 4.25	Upstream surcharge (ft)	= 0.00
Cumulative C*A	= 0.43	Additional Q (cfs)	= 0.00
Q = CA * I (cfs)	= 1.83	Line capacity (cfs)	= 6.46
Q catchment (cfs)	= 1.03	Inlet length (ft)	= 0.00
Q carryover (cfs)	= 1.08	Gutter slope (ft/ft)	= 0.0000
Q captured (cfs)	= 0.00	Cross slope (ft/ft)	= 0.0000
Q bypassed (cfs)	= 2.11	Ponding width (ft)	= N/A

Note: Normal depth assumed

LINE 22 / Q = 1.08 / HT = 12 / WID = 12 / N = .013 / L = 152 / JLC = .9

1-22 to 1-21 / DNLN = 21

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	27.48	8.87	26.74	1.74	27.53	10.32	3.05	0.62
UPSTRM	28.09	5.29	27.50	3.24	28.25	11.92	2	0.33

Drainage area (ac)	= 1.00 ✓	Slope of invert (%)	= 0.5000
Runoff coefficient	= 0.25	Slope energy grade line (%)	= 0.4769
Time of conc (min)	= 20.00	Critical depth (in)	= 5.29
Inlet time (min)	= 20.00	Natural ground elev. (ft)	= 30.50
Intensity (in/hr)	= 4.33	Upstream surcharge (ft)	= 0.00
Cumulative C*A	= 0.25	Additional Q (cfs)	= 0.00
Q = CA * I (cfs)	= 1.08	Line capacity (cfs)	= 2.52
Q catchment (cfs)	= 1.08	Inlet length (ft)	= 0.00
Q carryover (cfs)	= 0.00	Gutter slope (ft/ft)	= 0.0000
Q captured (cfs)	= 0.00	Cross slope (ft/ft)	= 0.0000
Q bypassed (cfs)	= 1.08	Ponding width (ft)	= N/A

LINE 23 / Q = 1.50 / HT = 15 / WID = 15 / N = .013 / L = 26 / JLC = .9

1-23 to 1-10 / DNLN = 10

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	25.99	4.96	25.58	4.23	26.27	14.11	2.93	0.35
UPSTRM	26.25	4.96	25.84	4.23	26.53	14.11	2.67	0.35

Drainage area (ac)	= 0.38	Slope of invert (%)	= 1.0000
Runoff coefficient	= 0.40	Slope energy grade line (%)	= 1.0000
Time of conc (min)	= 20.84	Critical depth (in)	= 5.87
Inlet time (min)	= 10.00	Natural ground elev. (ft)	= 29.76
Intensity (in/hr)	= 4.25	Upstream surcharge (ft)	= 0.00
Cumulative C*A	= 0.35	Additional Q (cfs)	= 0.00
Q = CA * I (cfs)	= 1.50	Line capacity (cfs)	= 6.46
Q catchment (cfs)	= 0.87	Inlet length (ft)	= 0.00
Q carryover (cfs)	= 0.87	Gutter slope (ft/ft)	= 0.0000
Q captured (cfs)	= 0.00	Cross slope (ft/ft)	= 0.0000
Q bypassed (cfs)	= 1.74	Ponding width (ft)	= N/A

Note: Normal depth assumed

LINE 24 / Q = 0.87 / HT = 12 / WID = 12 / N = .013 / L = 152 / JLC = .9

1-24 to 1-23 / DNLN = 23

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	26.50	7.95	25.84	1.57	26.54	9.77	2.92	0.55
UPSTRM	28.02	4.74	27.50	3.01	28.16	11.73	2	0.29

Drainage area (ac)	= 0.80	Slope of invert (%)	= 1.0921
Runoff coefficient	= 0.25	Slope energy grade line (%)	= 1.0661
Time of conc (min)	= 20.00	Critical depth (in)	= 4.74
Inlet time (min)	= 20.00	Natural ground elev. (ft)	= 30.50
Intensity (in/hr)	= 4.33	Upstream surcharge (ft)	= 0.00
Cumulative C*A	= 0.20	Additional Q (cfs)	= 0.00
Q = CA * I (cfs)	= 0.87	Line capacity (cfs)	= 3.72
Q catchment (cfs)	= 0.87	Inlet length (ft)	= 0.00
Q carryover (cfs)	= 0.00	Gutter slope (ft/ft)	= 0.0000
Q captured (cfs)	= 0.00	Cross slope (ft/ft)	= 0.0000
Q bypassed (cfs)	= 0.87	Ponding width (ft)	= N/A

LINE 25 / Q = 1.85 / HT = 15 / WID = 15 / N = .013 / L = 21 / JLC = .9

1-25 to 1-5 / DNLN = 5

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	24.50	10.04	23.66	2.11	24.57	12.27	3.59	0.87
UPSTRM	24.46	7.04	23.87	3.26	24.62	14.97	3.17	0.57

Drainage area (ac)	= 0.11	Slope of invert (%)	= 1.0000
Runoff coefficient	= 0.40	Slope energy grade line (%)	= 0.2659
Time of conc (min)	= 10.52	Critical depth (in)	= 6.52
Inlet time (min)	= 5.00	Natural ground elev. (ft)	= 28.30
Intensity (in/hr)	= 5.63	Upstream surcharge (ft)	= 0.00
Cumulative C*A	= 0.33	Additional Q (cfs)	= 0.00
Q = CA * I (cfs)	= 1.85	Line capacity (cfs)	= 6.46
Q catchment (cfs)	= 0.31	Inlet length (ft)	= 0.00
Q carryover (cfs)	= 1.63	Gutter slope (ft/ft)	= 0.0000
Q captured (cfs)	= 0.00	Cross slope (ft/ft)	= 0.0000
Q bypassed (cfs)	= 1.93	Ponding width (ft)	= N/A

LINE 26 / Q = 1.62 / HT = 15 / WID = 15 / N = .013 / L = 67 / JLC = 0

1-26 to 1-25 / DNLN = 25

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	24.61	8.83	23.87	2.15	24.68	11.51	3.17	0.75
UPSTRM	25.05	6.11	24.54	3.45	25.23	14.74	2.83	0.47

Drainage area (ac)	= 0.32	Slope of invert (%)	= 1.0000
Runoff coefficient	= 0.40	Slope energy grade line (%)	= 0.8297
Time of conc (min)	= 10.14	Critical depth (in)	= 6.11
Inlet time (min)	= 10.00	Natural ground elev. (ft)	= 28.63
Intensity (in/hr)	= 5.70	Upstream surcharge (ft)	= 0.00
Cumulative C*A	= 0.28	Additional Q (cfs)	= 0.00
Q = CA * I (cfs)	= 1.62	Line capacity (cfs)	= 6.46
Q catchment (cfs)	= 0.73	Inlet length (ft)	= 0.00
Q carryover (cfs)	= 0.89	Gutter slope (ft/ft)	= 0.0000
Q captured (cfs)	= 0.00	Cross slope (ft/ft)	= 0.0000
Q bypassed (cfs)	= 1.63	Ponding width (ft)	= N/A

LINE 27 / Q = 10.71 / HT = 24 / WID = 24 / N = .013 / L = 110 / JLC = 0

1-27 to 1-2 / DNLN = 2

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	22.90	24.00	20.77	3.41	23.08	0.00	7.96	3.14
UPSTRM	23.10	23.98	21.10	3.41	23.28	1.47	8.19	3.14

Drainage area (ac)	= 0.00	Slope of invert (%)	= 0.3000
Runoff coefficient	= 0.00	Slope energy grade line (%)	= 0.1798
Time of conc (min)	= 18.13	Critical depth (in)	= 13.90
Inlet time (min)	= 0.00	Natural ground elev. (ft)	= 31.30
Intensity (in/hr)	= 4.53	Upstream surcharge (ft)	= 0.00
Cumulative C*A	= 2.37	Additional Q (cfs)	= 0.00
Q = CA * I (cfs)	= 10.71	Line capacity (cfs)	= 12.39
Q catchment (cfs)	= 0.00	Inlet length (ft)	= 0.00
Q carryover (cfs)	= 13.16	Gutter slope (ft/ft)	= 0.0000
Q captured (cfs)	= 0.00	Cross slope (ft/ft)	= 0.0000
Q bypassed (cfs)	= 13.16	Ponding width (ft)	= N/A

LINE 28 / Q = 11.02 / HT = 24 / WID = 24 / N = .013 / L = 207 / JLC = .9

1-28 to 1-27 / DNLN = 27

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	23.10	23.98	21.10	3.51	23.29	23.99	8.19	3.14
UPSTRM	23.90	14.11	22.72	5.74	24.41	23.63	5.6	1.92

Drainage area (ac)	= 0.21	Slope of invert (%)	= 0.7826
Runoff coefficient	= 0.40	Slope energy grade line (%)	= 0.5400
Time of conc (min)	= 16.98	Critical depth (in)	= 14.11
Inlet time (min)	= 10.00	Natural ground elev. (ft)	= 30.32
Intensity (in/hr)	= 4.66	Upstream surcharge (ft)	= 0.00
Cumulative C*A	= 2.37	Additional Q (cfs)	= 0.00
Q = CA * I (cfs)	= 11.02	Line capacity (cfs)	= 20.01
Q catchment (cfs)	= 0.48	Inlet length (ft)	= 0.00
Q carryover (cfs)	= 12.68	Gutter slope (ft/ft)	= 0.0000
Q captured (cfs)	= 0.00	Cross slope (ft/ft)	= 0.0000
Q bypassed (cfs)	= 13.16	Ponding width (ft)	= N/A

LINE 29 / Q = 9.50 / HT = 24 / WID = 24 / N = .013 / L = 64 / JLC = 0

1-29 to 1-28 / DNLN = 28

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	24.36	19.63	22.72	3.45	24.54	21.71	5.6	2.75
UPSTRM	24.46	18.59	22.91	3.64	24.67	20.05	5.25	2.61

Drainage area (ac)	= 0.59 ✓	Slope of invert (%)	= 0.2969
Runoff coefficient	= 0.40	Slope energy grade line (%)	= 0.1934
Time of conc (min)	= 16.63	Critical depth (in)	= 13.10
Inlet time (min)	= 10.00	Natural ground elev. (ft)	= 30.16
Intensity (in/hr)	= 4.70	Upstream surcharge (ft)	= 0.00
Cumulative C*A	= 2.02	Additional Q (cfs)	= 0.00
Q = CA * I (cfs)	= 9.50	Line capacity (cfs)	= 12.32
Q catchment (cfs)	= 1.35	Inlet length (ft)	= 0.00
Q carryover (cfs)	= 9.84	Gutter slope (ft/ft)	= 0.0000
Q captured (cfs)	= 0.00	Cross slope (ft/ft)	= 0.0000
Q bypassed (cfs)	= 11.19	Ponding width (ft)	= N/A

LINE 30 / Q = 7.66 / HT = 24 / WID = 24 / N = .013 / L = 30 / JLC = .9

1-30 to 1-29 / DNLN = 29

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	24.46	18.59	22.91	2.93	24.59	21.12	5.25	2.61
UPSTRM	24.49	17.85	23.00	3.05	24.63	20.95	5.21	2.51

Drainage area (ac)	= 0.39 ✓	Slope of invert (%)	= 0.3000
Runoff coefficient	= 0.40	Slope energy grade line (%)	= 0.1331
Time of conc (min)	= 16.46	Critical depth (in)	= 11.76
Inlet time (min)	= 10.00	Natural ground elev. (ft)	= 30.22
Intensity (in/hr)	= 4.72	Upstream surcharge (ft)	= 0.00
Cumulative C*A	= 1.62	Additional Q (cfs)	= 0.00
Q = CA * I (cfs)	= 7.66	Line capacity (cfs)	= 12.39
Q catchment (cfs)	= 0.89	Inlet length (ft)	= 0.00
Q carryover (cfs)	= 8.01	Gutter slope (ft/ft)	= 0.0000
Q captured (cfs)	= 0.00	Cross slope (ft/ft)	= 0.0000
Q bypassed (cfs)	= 8.90	Ponding width (ft)	= N/A

LINE 31 / Q = 7.00 / HT = 18 / WID = 18 / N = .013 / L = 75 / JLC = .9

1-31 to 1-30 / DNLN = 30

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	24.62	18.00	23.00	3.96	24.86	0.00	5.71	1.77
UPSTRM	24.92	17.97	23.42	3.96	25.16	1.58	5.68	1.77

Drainage area (ac)	= 0.35	Slope of invert (%)	= 0.5600
Runoff coefficient	= 0.40	Slope energy grade line (%)	= 0.3984
Time of conc (min)	= 16.04	Critical depth (in)	= 12.11
Inlet time (min)	= 10.00	Natural ground elev. (ft)	= 30.60
Intensity (in/hr)	= 4.77	Upstream surcharge (ft)	= 0.00
Cumulative C*A	= 1.46	Additional Q (cfs)	= 0.00
Q = CA * I (cfs)	= 7.00	Line capacity (cfs)	= 7.86
Q catchment (cfs)	= 0.80	Inlet length (ft)	= 0.00
Q carryover (cfs)	= 7.21	Gutter slope (ft/ft)	= 0.0000
Q captured (cfs)	= 0.00	Cross slope (ft/ft)	= 0.0000
Q bypassed (cfs)	= 8.01	Ponding width (ft)	= N/A

LINE 32 / Q = 5.81 / HT = 18 / WID = 18 / N = .013 / L = 68 / JLC = .9

1-32 to 1-31 / DNLN = 31

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	25.14	18.00	23.42	3.29	25.30	0.00	5.68	1.77
UPSTRM	25.34	18.00	23.76	3.29	25.51	0.00	5.73	1.77

Drainage area (ac)	= 0.26	Slope of invert (%)	= 0.5000
Runoff coefficient	= 0.40	Slope energy grade line (%)	= 0.3064
Time of conc (min)	= 15.67	Critical depth (in)	= 11.04
Inlet time (min)	= 10.00	Natural ground elev. (ft)	= 31.00
Intensity (in/hr)	= 4.82	Upstream surcharge (ft)	= 0.08
Cumulative C*A	= 1.20	Additional Q (cfs)	= 0.00
Q = CA * I (cfs)	= 5.81	Line capacity (cfs)	= 7.43
Q catchment (cfs)	= 0.60	Inlet length (ft)	= 0.00
Q carryover (cfs)	= 5.92	Gutter slope (ft/ft)	= 0.0000
Q captured (cfs)	= 0.00	Cross slope (ft/ft)	= 0.0000
Q bypassed (cfs)	= 6.52	Ponding width (ft)	= N/A

LINE 33 / Q = 3.75 / HT = 15 / WID = 15 / N = .013 / L = 35 / JLC = .9

1-33 to 1-32 / DNLN = 32

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	25.50	15.00	23.76	3.05	25.64	0.00	5.98	1.23
UPSTRM	27.39	9.29	26.62	4.69	27.74	14.56	2.67	0.80

Drainage area (ac)	= 0.77	Slope of invert (%)	= 8.1714
Runoff coefficient	= 0.40	Slope energy grade line (%)	= 5.9881
Time of conc (min)	= 15.47	Critical depth (in)	= 9.29
Inlet time (min)	= 10.00	Natural ground elev. (ft)	= 30.54
Intensity (in/hr)	= 4.85	Upstream surcharge (ft)	= 0.00
Cumulative C*A	= 0.77	Additional Q (cfs)	= 0.00
Q = CA * I (cfs)	= 3.75	Line capacity (cfs)	= 18.46
Q catchment (cfs)	= 1.76	Inlet length (ft)	= 0.00
Q carryover (cfs)	= 2.28	Gutter slope (ft/ft)	= 0.0000
Q captured (cfs)	= 0.00	Cross slope (ft/ft)	= 0.0000
Q bypassed (cfs)	= 4.05	Ponding width (ft)	= N/A

LINE 34 / Q = 2.28 / HT = 15 / WID = 15 / N = .013 / L = 85 / JLC = .5

1-34 to 1-33 / DNLN = 33

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	27.70	12.99	26.62	2.02	27.77	13.96	2.67	1.13
UPSTRM	30.72	7.26	30.00	3.88	30.96	14.99	1.25	0.59

Drainage area (ac)	= 1.55	Slope of invert (%)	= 3.9765
Runoff coefficient	= 0.30	Slope energy grade line (%)	= 3.7530
Time of conc (min)	= 15.00	Critical depth (in)	= 7.26
Inlet time (min)	= 15.00	Natural ground elev. (ft)	= 32.50
Intensity (in/hr)	= 4.91	Upstream surcharge (ft)	= 0.00
Cumulative C*A	= 0.47	Additional Q (cfs)	= 0.00
Q = CA * I (cfs)	= 2.28	Line capacity (cfs)	= 12.88
Q catchment (cfs)	= 2.28	Inlet length (ft)	= 0.00
Q carryover (cfs)	= 0.00	Gutter slope (ft/ft)	= 0.0000
Q captured (cfs)	= 0.00	Cross slope (ft/ft)	= 0.0000
Q bypassed (cfs)	= 2.28	Ponding width (ft)	= N/A

LINE 35 / Q = 1.88 / HT = 15 / WID = 15 / N = .013 / L = 94 / JLC = .9

1-35 to 1-32 / DNLN = 32

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	25.50	15.00	23.76	1.53	25.53	0.00	5.98	1.23
UPSTRM	25.61	15.00	24.04	1.53	25.64	0.00	5.38	1.23

Drainage area (ac) =	0.82	Slope of invert (%) =	0.2979
Runoff coefficient =	0.40	Slope energy grade line (%) =	0.1194
Time of conc (min) =	10.00	Critical depth (in) =	6.58
Inlet time (min) =	10.00	Natural ground elev. (ft) =	30.68
Intensity (in/hr) =	5.72	Upstream surcharge (ft) =	0.32
Cumulative C*A =	0.33	Additional Q (cfs) =	0.00
Q = CA * I (cfs) =	1.88	Line capacity (cfs) =	3.52
Q catchment (cfs) =	1.88	Inlet length (ft) =	0.00
Q carryover (cfs) =	0.00	Gutter slope (ft/ft) =	0.0000
Q captured (cfs) =	0.00	Cross slope (ft/ft) =	0.0000
Q bypassed (cfs) =	1.88	Ponding width (ft) =	N/A

LINE 36 / Q = 1.49 / HT = 15 / WID = 15 / N = .013 / L = 26 / JLC = .9

1-36 to 1-28 / DNLN = 28

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	26.50	4.96	26.09	4.20	26.78	14.11	2.97	0.35
UPSTRM	27.01	4.96	26.35	4.20	27.28	14.11	2.71	0.35

Drainage area (ac) =	0.65	Slope of invert (%) =	1.0000
Runoff coefficient =	0.40	Slope energy grade line (%) =	1.9504
Time of conc (min) =	10.00	Critical depth (in) =	5.86
Inlet time (min) =	10.00	Natural ground elev. (ft) =	30.32
Intensity (in/hr) =	5.72	Upstream surcharge (ft) =	0.00
Cumulative C*A =	0.26	Additional Q (cfs) =	0.00
Q = CA * I (cfs) =	1.49	Line capacity (cfs) =	6.46
Q catchment (cfs) =	1.49	Inlet length (ft) =	0.00
Q carryover (cfs) =	0.00	Gutter slope (ft/ft) =	0.0000
Q captured (cfs) =	0.00	Cross slope (ft/ft) =	0.0000
Q bypassed (cfs) =	1.49	Ponding width (ft) =	N/A

Note: Normal depth assumed

LINE 37 / Q = 2.70 / HT = 15 / WID = 15 / N = .013 / L = 132 / JLC = 0

1-37 to 1-3 / DNLN = 3

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	26.38	6.97	25.80	4.84	26.74	14.96	4.3	0.56
UPSTRM	27.68	6.97	27.10	4.84	28.04	14.96	2.94	0.56

Drainage area (ac)	= 0.10	Slope of invert (%)	= 0.9848
Runoff coefficient	= 0.40	Slope energy grade line (%)	= 0.9848
Time of conc (min)	= 12.25	Critical depth (in)	= 7.89
Inlet time (min)	= 5.00	Natural ground elev. (ft)	= 31.30
Intensity (in/hr)	= 5.32	Upstream surcharge (ft)	= 0.00
Cumulative C*A	= 0.51	Additional Q (cfs)	= 0.00
Q = CA * I (cfs)	= 2.70	Line capacity (cfs)	= 6.41
Q catchment (cfs)	= 0.28	Inlet length (ft)	= 0.00
Q carryover (cfs)	= 2.68	Gutter slope (ft/ft)	= 0.0000
Q captured (cfs)	= 0.00	Cross slope (ft/ft)	= 0.0000
Q bypassed (cfs)	= 2.96	Ponding width (ft)	= N/A

Note: Normal depth assumed

LINE 38 / Q = 2.53 / HT = 12 / WID = 12 / N = .013 / L = 83 / JLC = 1

1-43 to 1-37 / DNLN = 37

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	27.69	7.07	27.10	5.25	28.12	11.81	3.19	0.48
UPSTRM	28.69	7.07	28.10	5.25	29.12	11.81	1.89	0.48

Drainage area (ac)	= 0.28	Slope of invert (%)	= 1.2048
Runoff coefficient	= 0.40	Slope energy grade line (%)	= 1.2048
Time of conc (min)	= 11.79	Critical depth (in)	= 8.09
Inlet time (min)	= 10.00	Natural ground elev. (ft)	= 31.00
Intensity (in/hr)	= 5.40	Upstream surcharge (ft)	= 0.00
Cumulative C*A	= 0.47	Additional Q (cfs)	= 0.00
Q = CA * I (cfs)	= 2.53	Line capacity (cfs)	= 3.91
Q catchment (cfs)	= 0.64	Inlet length (ft)	= 0.00
Q carryover (cfs)	= 2.04	Gutter slope (ft/ft)	= 0.0000
Q captured (cfs)	= 0.00	Cross slope (ft/ft)	= 0.0000
Q bypassed (cfs)	= 2.68	Ponding width (ft)	= N/A

Note: Normal depth assumed

LINE 39 / Q = 1.97 / HT = 12 / WID = 12 / N = .013 / L = 150 / JLC = 1

1-44 to 1-43 / DNLN = 38

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	29.12	12.00	28.10	2.51	29.21	0.00	1.89	0.79
UPSTRM	29.60	8.35	28.90	3.38	29.77	11.04	2.1	0.58

Drainage area (ac)	= 0.62 ✓	Slope of invert (%)	= 0.5333
Runoff coefficient	= 0.40	Slope energy grade line (%)	= 0.3725
Time of conc (min)	= 10.96	Critical depth (in)	= 7.15
Inlet time (min)	= 10.00	Natural ground elev. (ft)	= 32.00
Intensity (in/hr)	= 5.54	Upstream surcharge (ft)	= 0.00
Cumulative C*A	= 0.36	Additional Q (cfs)	= 0.00
Q = CA * I (cfs)	= 1.97	Line capacity (cfs)	= 2.60
Q catchment (cfs)	= 1.42	Inlet length (ft)	= 0.00
Q carryover (cfs)	= 0.62	Gutter slope (ft/ft)	= 0.0000
Q captured (cfs)	= 0.00	Cross slope (ft/ft)	= 0.0000
Q bypassed (cfs)	= 2.04	Ponding width (ft)	= N/A

LINE 40 / Q = 0.62 / HT = 12 / WID = 12 / N = .013 / L = 172 / JLC = 1

1-45 to 1-44 / DNLN = 39

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	29.77	10.48	28.90	0.85	29.78	11.22	2.1	0.73
UPSTRM	30.25	4.06	29.80	2.65	30.36	11.35	1.2	0.23

Drainage area (ac)	= 0.27 ✓	Slope of invert (%)	= 0.5233
Runoff coefficient	= 0.40	Slope energy grade line (%)	= 0.3318
Time of conc (min)	= 10.00	Critical depth (in)	= 4.00
Inlet time (min)	= 10.00	Natural ground elev. (ft)	= 32.00
Intensity (in/hr)	= 5.72	Upstream surcharge (ft)	= 0.00
Cumulative C*A	= 0.11	Additional Q (cfs)	= 0.00
Q = CA * I (cfs)	= 0.62	Line capacity (cfs)	= 2.58
Q catchment (cfs)	= 0.62	Inlet length (ft)	= 0.00
Q carryover (cfs)	= 0.00	Gutter slope (ft/ft)	= 0.0000
Q captured (cfs)	= 0.00	Cross slope (ft/ft)	= 0.0000
Q bypassed (cfs)	= 0.62	Ponding width (ft)	= N/A

LINE 41 / Q = 1.19 / HT = 15 / WID = 15 / N = .013 / L = 44 / JLC = .9

1-38 to 1-5 / DNLN = 5

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	24.50	10.04	23.66	1.36	24.53	12.27	3.59	0.87
UPSTRM	24.75	5.24	24.18	3.12	24.90	14.30	2.67	0.38

Drainage area (ac)	= 0.52 ✓	Slope of invert (%)	= 1.1818
Runoff coefficient	= 0.40	Slope energy grade line (%)	= 0.8592
Time of conc (min)	= 10.00	Critical depth (in)	= 5.24
Inlet time (min)	= 10.00	Natural ground elev. (ft)	= 28.10
Intensity (in/hr)	= 5.72	Upstream surcharge (ft)	= 0.00
Cumulative C*A	= 0.21	Additional Q (cfs)	= 0.00
Q = CA * I (cfs)	= 1.19	Line capacity (cfs)	= 7.02
Q catchment (cfs)	= 1.19	Inlet length (ft)	= 0.00
Q carryover (cfs)	= 0.00	Gutter slope (ft/ft)	= 0.0000
Q captured (cfs)	= 0.00	Cross slope (ft/ft)	= 0.0000
Q bypassed (cfs)	= 1.19	Ponding width (ft)	= N/A

LINE 42 / Q = 0.87 / HT = 15 / WID = 15 / N = .013 / L = 26 / JLC = .9

1-39 to 1-9 / DNLN = 9

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	24.83	15.00	23.22	0.71	24.84	0.00	4.14	1.23
UPSTRM	25.18	4.48	24.69	2.83	25.30	13.73	2.67	0.31

Drainage area (ac)	= 0.38 ✓	Slope of invert (%)	= 5.6539
Runoff coefficient	= 0.40	Slope energy grade line (%)	= 1.7786
Time of conc (min)	= 10.00	Critical depth (in)	= 4.48
Inlet time (min)	= 10.00	Natural ground elev. (ft)	= 28.61
Intensity (in/hr)	= 5.72	Upstream surcharge (ft)	= 0.00
Cumulative C*A	= 0.15	Additional Q (cfs)	= 0.00
Q = CA * I (cfs)	= 0.87	Line capacity (cfs)	= 15.35
Q catchment (cfs)	= 0.87	Inlet length (ft)	= 0.00
Q carryover (cfs)	= 0.00	Gutter slope (ft/ft)	= 0.0000
Q captured (cfs)	= 0.00	Cross slope (ft/ft)	= 0.0000
Q bypassed (cfs)	= 0.87	Ponding width (ft)	= N/A

LINE 43 / Q = 0.94 / HT = 15 / WID = 15 / N = .013 / L = 26 / JLC = .9

1-40 to 1-29 / DNLN = 29

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	26.31	3.93	25.98	3.66	26.52	13.19	2.93	0.26
UPSTRM	26.75	3.93	26.24	3.66	26.96	13.19	2.67	0.26

Drainage area (ac)	= 0.41	Slope of invert (%)	= 1.0000
Runoff coefficient	= 0.40	Slope energy grade line (%)	= 1.7203
Time of conc (min)	= 10.00	Critical depth (in)	= 4.65
Inlet time (min)	= 10.00	Natural ground elev. (ft)	= 30.16
Intensity (in/hr)	= 5.72	Upstream surcharge (ft)	= 0.00
Cumulative C*A	= 0.16	Additional Q (cfs)	= 0.00
Q = CA * I (cfs)	= 0.94	Line capacity (cfs)	= 6.46
Q catchment (cfs)	= 0.94	Inlet length (ft)	= 0.00
Q carryover (cfs)	= 0.00	Gutter slope (ft/ft)	= 0.0000
Q captured (cfs)	= 0.00	Cross slope (ft/ft)	= 0.0000
Q bypassed (cfs)	= 0.94	Ponding width (ft)	= N/A

Note: Normal depth assumed

LINE 44 / Q = 0.69 / HT = 15 / WID = 15 / N = .013 / L = 26 / JLC = .9

1-41 to 1-31 / DNLN = 31

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	26.71	3.45	26.42	3.22	26.87	12.62	2.93	0.21
UPSTRM	27.11	3.45	26.68	3.22	27.27	12.62	2.67	0.21

Drainage area (ac)	= 0.30	Slope of invert (%)	= 1.0000
Runoff coefficient	= 0.40	Slope energy grade line (%)	= 1.5589
Time of conc (min)	= 10.00	Critical depth (in)	= 3.98
Inlet time (min)	= 10.00	Natural ground elev. (ft)	= 30.60
Intensity (in/hr)	= 5.72	Upstream surcharge (ft)	= 0.00
Cumulative C*A	= 0.12	Additional Q (cfs)	= 0.00
Q = CA * I (cfs)	= 0.69	Line capacity (cfs)	= 6.46
Q catchment (cfs)	= 0.69	Inlet length (ft)	= 0.00
Q carryover (cfs)	= 0.00	Gutter slope (ft/ft)	= 0.0000
Q captured (cfs)	= 0.00	Cross slope (ft/ft)	= 0.0000
Q bypassed (cfs)	= 0.69	Ponding width (ft)	= N/A

Note: Normal depth assumed

LINE 45 / Q = 0.89 / HT = 15 / WID = 15 / N = .013 / L = 26 / JLC = .9

1-42 to 1-26 / DNLN = 26

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	25.05	6.11	24.54	1.90	25.11	9.57	2.83	0.47
UPSTRM	25.17	4.75	24.67	2.68	25.28	13.95	2.7	0.33

Drainage area (ac)	= 0.39	Slope of invert (%)	= 0.5000
Runoff coefficient	= 0.40	Slope energy grade line (%)	= 0.2763
Time of conc (min)	= 10.00	Critical depth (in)	= 4.54
Inlet time (min)	= 10.00	Natural ground elev. (ft)	= 28.63
Intensity (in/hr)	= 5.72	Upstream surcharge (ft)	= 0.00
Cumulative C*A	= 0.16	Additional Q (cfs)	= 0.00
Q = CA * I (cfs)	= 0.89	Line capacity (cfs)	= 4.57
Q catchment (cfs)	= 0.89	Inlet length (ft)	= 0.00
Q carryover (cfs)	= 0.00	Gutter slope (ft/ft)	= 0.0000
Q captured (cfs)	= 0.00	Cross slope (ft/ft)	= 0.0000
Q bypassed (cfs)	= 0.89	Ponding width (ft)	= N/A

AES CONSULTING ENGINEERS
Engineering, Surveying and Planning
5248 Olde Towne Road, Suite 1
WILLIAMSBURG, VIRGINIA 23188

(757) 253-0040
FAX (757) 220-8994

LETTER OF TRANSMITTAL

DATE	JOB NO.
6/26/00	6201-07

ATTENTION: Larry Cook

RE: Jamestown Hundred

TO James City County Environmental Division

WE ARE SENDING YOU ☑ Attached ☐ Under separate cover via _____ the following items:

> ☐ Shop drawings ☑ Prints ☐ Plans ☐ Samples ☐ Specifications

☐ Copy of letter ☐ Change order ☐ _____

COPIES	DATE	NO.	DESCRIPTION
1			drainage area plan

JUN 2000 RECEIVED ENVIRONMENTAL DIVISION

THESE ARE TRANSMITTED as checked below:

☐ For approval ☐ Approved as submitted ☐ Resubmit _____ copies for approval

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REMARKS

COPY TO _____ SIGNED: Andrew F. Wells

If enclosures are not as noted, kindly notify us at once.

DRAINAGE CALCULATIONS
FOR
JAMESTOWN HUNDRED
STORM SYSTEM #2

AES PROJECT #6201-07

CONSULTING ENGINEERS

5248 Olde Towne Road, Suite 1
Williamsburg, Virginia 23188
June 13, 2000

INDICATES REVISED LINE

STORM SEWER DESIGN / ANALYSIS

Return Period = 10 Yrs
Rainfall file: JCCN

Run Date: 06-13-2000
File: 620172.ST3

LINE 1 / Q = 19.63 / HT = 30 / WID = 30 / N = .013 / L = 46 / JLC = 1

2-0 - 2-1 / Outfall

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	23.59	30.00	20.75	4.00	23.84	0.00	-2.25	4.91
UPSTRM	23.70	30.00	21.00	4.00	23.94	0.00	1.5	4.91

Drainage area (ac)	= 0.00	Slope of invert (%)	= 0.5435
Runoff coefficient	= 0.00	Slope energy grade line (%)	= 0.2291
Time of conc (min)	= 24.17	Critical depth (in)	= 17.76
Inlet time (min)	= 0.00	Natural ground elev. (ft)	= 25.00
Intensity (in/hr)	= 3.96	Upstream surcharge (ft)	= 0.20
Cumulative C*A	= 4.96	Additional Q (cfs)	= 0.00
Q = CA * I (cfs)	= 19.63	Line capacity (cfs)	= 30.23
Q catchment (cfs)	= 0.00	Inlet length (ft)	= 0.00
Q carryover (cfs)	= 18.16	Gutter slope (ft/ft)	= 0.0000
Q captured (cfs)	= 0.00	Cross slope (ft/ft)	= 0.0000
Q bypassed (cfs)	= 18.16	Ponding width (ft)	= N/A

LINE 2 / Q = 19.98 / HT = 30 / WID = 30 / N = .013 / L = 158 / JLC = 1

2-1 - 2-2 / DNLN = 1

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	23.94	30.00	21.00	4.07	24.20	0.00	1.5	4.91
UPSTRM	24.29	29.97	21.79	4.07	24.54	1.94	5.88	4.91

Drainage area (ac)	= 0.18	Slope of invert (%)	= 0.5000
Runoff coefficient	= 0.40	Slope energy grade line (%)	= 0.2174
Time of conc (min)	= 23.29	Critical depth (in)	= 17.92
Inlet time (min)	= 5.00	Natural ground elev. (ft)	= 30.18
Intensity (in/hr)	= 4.03	Upstream surcharge (ft)	= 0.00
Cumulative C*A	= 4.96	Additional Q (cfs)	= 0.00
Q = CA * I (cfs)	= 19.98	Line capacity (cfs)	= 29.00
Q catchment (cfs)	= 0.50	Inlet length (ft)	= 4.00
Q carryover (cfs)	= 18.80	Gutter slope (ft/ft)	= 0.0833
Q captured (cfs)	= 1.14	Cross slope (ft/ft)	= 0.0208
Q bypassed (cfs)	= 18.16	Ponding width (ft)	= N/A

LINE 3 / Q = 19.46 / HT = 30 / WID = 30 / N = .013 / L = 118 / JLC = 1

2-2 - 2-3 / DNLN = 2

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	24.54	30.00	21.79	3.96	24.79	0.00	5.88	4.91
UPSTRM	24.81	30.00	22.14	3.96	25.05	0.00	5.05	4.91

Drainage area (ac)	= 0.28	Slope of invert (%)	= 0.2966
Runoff coefficient	= 0.40	Slope energy grade line (%)	= 0.2252
Time of conc (min)	= 22.64	Critical depth (in)	= 17.69
Inlet time (min)	= 5.00	Natural ground elev. (ft)	= 29.69
Intensity (in/hr)	= 4.09	Upstream surcharge (ft)	= 0.17
Cumulative C*A	= 4.76	Additional Q (cfs)	= 0.00
Q = CA * I (cfs)	= 19.46	Line capacity (cfs)	= 22.34
Q catchment (cfs)	= 0.78	Inlet length (ft)	= 6.00
Q carryover (cfs)	= 19.05	Gutter slope (ft/ft)	= 0.0833
Q captured (cfs)	= 1.72	Cross slope (ft/ft)	= 0.0208
Q bypassed (cfs)	= 18.11	Ponding width (ft)	= N/A

LINE 4 / Q = 17.76 / HT = 30 / WID = 30 / N = .013 / L = 165 / JLC = 1

2-3 - 2-4 / DNLN = 3

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	25.05	30.00	22.14	3.62	25.26	0.00	5.05	4.91
UPSTRM	25.36	30.00	22.63	3.62	25.57	0.00	6.2	4.91

Drainage area (ac)	= 0.00	Slope of invert (%)	= 0.2970
Runoff coefficient	= 0.00	Slope energy grade line (%)	= 0.1876
Time of conc (min)	= 21.72	Critical depth (in)	= 16.90
Inlet time (min)	= 0.00	Natural ground elev. (ft)	= 31.33
Intensity (in/hr)	= 4.17	Upstream surcharge (ft)	= 0.23
Cumulative C*A	= 4.26	Additional Q (cfs)	= 0.00
Q = CA * I (cfs)	= 17.76	Line capacity (cfs)	= 22.35
Q catchment (cfs)	= 0.00	Inlet length (ft)	= 0.00
Q carryover (cfs)	= 17.04	Gutter slope (ft/ft)	= 0.0000
Q captured (cfs)	= 0.00	Cross slope (ft/ft)	= 0.0000
Q bypassed (cfs)	= 17.04	Ponding width (ft)	= N/A

LINE 5 / Q = 17.54 / HT = 30 / WID = 30 / N = .013 / L = 193 / JLC = 1

2-4 - 2-5 / DNLN = 4

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	25.57	30.00	22.63	3.57	25.77	0.00	6.2	4.91
UPSTRM	25.92	30.00	23.21	3.57	26.12	0.00	7.29	4.91

Drainage area (ac)	= 0.00	Slope of invert (%)	= 0.3005
Runoff coefficient	= 0.00	Slope energy grade line (%)	= 0.1829
Time of conc (min)	= 20.65	Critical depth (in)	= 16.79
Inlet time (min)	= 0.00	Natural ground elev. (ft)	= 33.00
Intensity (in/hr)	= 4.27	Upstream surcharge (ft)	= 0.21
Cumulative C*A	= 4.11	Additional Q (cfs)	= 0.00
Q = CA * I (cfs)	= 17.54	Line capacity (cfs)	= 22.48
Q catchment (cfs)	= 0.00	Inlet length (ft)	= 0.00
Q carryover (cfs)	= 16.19	Gutter slope (ft/ft)	= 0.0000
Q captured (cfs)	= 0.00	Cross slope (ft/ft)	= 0.0000
Q bypassed (cfs)	= 16.19	Ponding width (ft)	= N/A

LINE 6 / Q = 15.59 / HT = 30 / WID = 30 / N = .013 / L = 190 / JLC = 1

2-5 - 2-6 / DNLN = 5

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	26.12	30.00	23.21	3.18	26.28	0.00	7.29	4.91
UPSTRM	26.33	20.08	24.66	4.46	26.64	28.23	4.93	3.49

Drainage area (ac)	= 0.74	Slope of invert (%)	= 0.7632
Runoff coefficient	= 0.40	Slope energy grade line (%)	= 0.1933
Time of conc (min)	= 19.59	Critical depth (in)	= 15.83
Inlet time (min)	= 5.00	Natural ground elev. (ft)	= 32.10
Intensity (in/hr)	= 4.37	Upstream surcharge (ft)	= 0.00
Cumulative C*A	= 3.56	Additional Q (cfs)	= 0.00
Q = CA * I (cfs)	= 15.59	Line capacity (cfs)	= 35.83
Q catchment (cfs)	= 2.06	Inlet length (ft)	= 8.00
Q carryover (cfs)	= 13.76	Gutter slope (ft/ft)	= 0.0833
Q captured (cfs)	= 2.00	Cross slope (ft/ft)	= 0.0208
Q bypassed (cfs)	= 13.83	Ponding width (ft)	= N/A

LINE 7 / Q = 12.93 / HT = 30 / WID = 30 / N = .013 / L = 97 / JLC = 1

2-6 - 2-7 / DNLN = 6

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	26.64	23.79	24.66	3.10	26.79	26.71	4.93	4.17
UPSTRM	26.72	21.27	24.95	3.47	26.91	27.25	5.23	3.72

Drainage area (ac)	= 0.38	Slope of invert (%)	= 0.2990
Runoff coefficient	= 0.40	Slope energy grade line (%)	= 0.1221
Time of conc (min)	= 19.06	Critical depth (in)	= 14.42
Inlet time (min)	= 5.00	Natural ground elev. (ft)	= 32.69
Intensity (in/hr)	= 4.43	Upstream surcharge (ft)	= 0.00
Cumulative C*A	= 2.92	Additional Q (cfs)	= 0.00
Q = CA * I (cfs)	= 12.93	Line capacity (cfs)	= 22.42
Q catchment (cfs)	= 1.06	Inlet length (ft)	= 4.00
Q carryover (cfs)	= 11.66	Gutter slope (ft/ft)	= 0.0833
Q captured (cfs)	= 0.89	Cross slope (ft/ft)	= 0.0208
Q bypassed (cfs)	= 11.83	Ponding width (ft)	= N/A

LINE 8 / Q = 0.63 / HT = 12 / WID = 12 / N = .013 / L = 145 / JLC = 1

2-7 - 2-29 / DNLN = 7

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	26.91	12.00	24.95	0.80	26.92	0.00	6.73	0.79
UPSTRM	30.95	4.03	30.50	2.71	31.06	11.33	1.99	0.23

Drainage area (ac)	= 0.51	Slope of invert (%)	= 3.8276
Runoff coefficient	= 0.25	Slope energy grade line (%)	= 2.8576
Time of conc (min)	= 15.00	Critical depth (in)	= 4.03
Inlet time (min)	= 15.00	Natural ground elev. (ft)	= 33.50
Intensity (in/hr)	= 4.91	Upstream surcharge (ft)	= 0.00
Cumulative C*A	= 0.13	Additional Q (cfs)	= 0.00
Q = CA * I (cfs)	= 0.63	Line capacity (cfs)	= 6.97
Q catchment (cfs)	= 0.63	Inlet length (ft)	= 0.00
Q carryover (cfs)	= 0.00	Gutter slope (ft/ft)	= 0.0000
Q captured (cfs)	= 0.00	Cross slope (ft/ft)	= 0.0000
Q bypassed (cfs)	= 0.63	Ponding width (ft)	= N/A

LINE 9 / Q = 11.86 / HT = 30 / WID = 30 / N = .013 / L = 105 / JLC = 1

2-7 - 2-8 / DNLN = 7

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	26.91	23.52	24.95	2.87	27.04	26.56	5.23	4.13
UPSTRM	26.97	20.43	25.27	3.33	27.14	27.97	5.89	3.56

Drainage area (ac) =	0.00	Slope of invert (%) =	0.3048
Runoff coefficient =	0.00	Slope energy grade line (%) =	0.1016
Time of conc (min) =	18.47	Critical depth (in) =	13.81
Inlet time (min) =	0.00	Natural ground elev. (ft) =	33.67
Intensity (in/hr) =	4.49	Upstream surcharge (ft) =	0.00
Cumulative C*A =	2.64	Additional Q (cfs) =	0.00
Q = CA * I (cfs) =	11.86	Line capacity (cfs) =	22.64
Q catchment (cfs) =	0.00	Inlet length (ft) =	0.00
Q carryover (cfs) =	11.03	Gutter slope (ft/ft) =	0.0000
Q captured (cfs) =	0.00	Cross slope (ft/ft) =	0.0000
Q bypassed (cfs) =	11.03	Ponding width (ft) =	N/A

LINE 10 / Q = 8.50 / HT = 24 / WID = 24 / N = .013 / L = 110 / JLC = 1

2-8 - 2-9 / DNLN = 9

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	27.14	22.50	25.27	2.78	27.26	23.24	6.39	3.06
UPSTRM	28.99	12.39	27.96	5.20	29.41	23.99	3.58	1.64

Drainage area (ac) =	0.18	Slope of invert (%) =	2.4455
Runoff coefficient =	0.40	Slope energy grade line (%) =	1.9520
Time of conc (min) =	17.86	Critical depth (in) =	12.39
Inlet time (min) =	5.00	Natural ground elev. (ft) =	33.54
Intensity (in/hr) =	4.56	Upstream surcharge (ft) =	0.00
Cumulative C*A =	1.86	Additional Q (cfs) =	0.00
Q = CA * I (cfs) =	8.50	Line capacity (cfs) =	35.37
Q catchment (cfs) =	0.50	Inlet length (ft) =	4.00
Q carryover (cfs) =	7.64	Gutter slope (ft/ft) =	0.0833
Q captured (cfs) =	0.69	Cross slope (ft/ft) =	0.0208
Q bypassed (cfs) =	7.45	Ponding width (ft) =	N/A

LINE 11 / Q = 7.83 / HT = 24 / WID = 24 / N = .013 / L = 125 / JLC = 1

2-9 - 2-10 / DNLN = 10

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	29.41	17.42	27.96	3.21	29.57	20.45	3.58	2.44
UPSTRM	29.60	14.63	28.38	3.91	29.84	23.42	2.67	2.01

Drainage area (ac) =	0.63	Slope of invert (%) =	0.3360
Runoff coefficient =	0.40	Slope energy grade line (%) =	0.2116
Time of conc (min) =	17.17	Critical depth (in) =	11.89
Inlet time (min) =	5.00	Natural ground elev. (ft) =	33.05
Intensity (in/hr) =	4.64	Upstream surcharge (ft) =	0.00
Cumulative C*A =	1.69	Additional Q (cfs) =	0.00
Q = CA * I (cfs) =	7.83	Line capacity (cfs) =	13.11
Q catchment (cfs) =	1.76	Inlet length (ft) =	8.00
Q carryover (cfs) =	6.69	Gutter slope (ft/ft) =	0.0833
Q captured (cfs) =	1.37	Cross slope (ft/ft) =	0.0208
Q bypassed (cfs) =	7.07	Ponding width (ft) =	N/A

LINE 12 / Q = 0.42 / HT = 12 / WID = 12 / N = .013 / L = 155 / JLC = 1

2-28 - 2-10 / DNLN = 11

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	29.84	12.00	28.38	0.53	29.84	0.00	3.67	0.79
UPSTRM	31.86	3.29	31.50	2.39	31.95	10.70	1.5	0.17

Drainage area (ac) =	0.34	Slope of invert (%) =	2.0129
Runoff coefficient =	0.25	Slope energy grade line (%) =	1.3621
Time of conc (min) =	15.00	Critical depth (in) =	3.29
Inlet time (min) =	15.00	Natural ground elev. (ft) =	34.00
Intensity (in/hr) =	4.91	Upstream surcharge (ft) =	0.00
Cumulative C*A =	0.09	Additional Q (cfs) =	0.00
Q = CA * I (cfs) =	0.42	Line capacity (cfs) =	5.05
Q catchment (cfs) =	0.42	Inlet length (ft) =	0.00
Q carryover (cfs) =	0.00	Gutter slope (ft/ft) =	0.0000
Q captured (cfs) =	0.00	Cross slope (ft/ft) =	0.0000
Q bypassed (cfs) =	0.42	Ponding width (ft) =	N/A

LINE 13 / Q = 4.85 / HT = 18 / WID = 18 / N = .013 / L = 100 / JLC = 0

2-10 - 2-11 / DNLN = 11

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	29.84	17.47	28.38	2.77	29.96	17.73	3.17	1.75
UPSTRM	30.10	10.09	29.26	4.76	30.45	17.87	2.67	1.02

Drainage area (ac) =	0.36	Slope of invert (%) =	0.8800
Runoff coefficient =	0.40	Slope energy grade line (%) =	0.4977
Time of conc (min) =	16.61	Critical depth (in) =	10.09
Inlet time (min) =	5.00	Natural ground elev. (ft) =	33.43
Intensity (in/hr) =	4.70	Upstream surcharge (ft) =	0.00
Cumulative C*A =	1.03	Additional Q (cfs) =	0.00
Q = CA * I (cfs) =	4.85	Line capacity (cfs) =	9.85
Q catchment (cfs) =	1.00	Inlet length (ft) =	4.00
Q carryover (cfs) =	4.18	Gutter slope (ft/ft) =	0.0833
Q captured (cfs) =	0.53	Cross slope (ft/ft) =	0.0208
Q bypassed (cfs) =	4.66	Ponding width (ft) =	N/A

LINE 14 / Q = 1.86 / HT = 15 / WID = 15 / N = .013 / L = 135 / JLC = .8

2-11 - 2-12 / DNLN = 13

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	30.10	10.09	29.26	2.12	30.17	12.30	2.92	0.88
UPSTRM	30.73	6.55	30.18	3.61	30.93	14.88	2.66	0.51

Drainage area (ac) =	0.75	Slope of invert (%) =	0.6815
Runoff coefficient =	0.40	Slope energy grade line (%) =	0.5615
Time of conc (min) =	15.86	Critical depth (in) =	6.55
Inlet time (min) =	7.00	Natural ground elev. (ft) =	34.10
Intensity (in/hr) =	4.80	Upstream surcharge (ft) =	0.00
Cumulative C*A =	0.39	Additional Q (cfs) =	0.00
Q = CA * I (cfs) =	1.86	Line capacity (cfs) =	5.33
Q catchment (cfs) =	1.92	Inlet length (ft) =	6.00
Q carryover (cfs) =	0.43	Gutter slope (ft/ft) =	0.0833
Q captured (cfs) =	0.49	Cross slope (ft/ft) =	0.0208
Q bypassed (cfs) =	1.86	Ponding width (ft) =	N/A

LINE 15 / Q = 0.43 / HT = 12 / WID = 12 / N = .013 / L = 155 / JLC = 1

2-27 - 2-12 / DNLN = 14

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	30.89	8.49	30.18	0.72	30.90	10.10	2.91	0.59
UPSTRM	32.62	3.34	32.25	2.41	32.71	10.75	1.5	0.18

Drainage area (ac)	= 0.35	Slope of invert (%)	= 1.3355
Runoff coefficient	= 0.25	Slope energy grade line (%)	= 1.1695
Time of conc (min)	= 15.00	Critical depth (in)	= 3.34
Inlet time (min)	= 15.00	Natural ground elev. (ft)	= 34.75
Intensity (in/hr)	= 4.91	Upstream surcharge (ft)	= 0.00
Cumulative C*A	= 0.09	Additional Q (cfs)	= 0.00
Q = CA * I (cfs)	= 0.43	Line capacity (cfs)	= 4.12
Q catchment (cfs)	= 0.43	Inlet length (ft)	= 0.00
Q carryover (cfs)	= 0.00	Gutter slope (ft/ft)	= 0.0000
Q captured (cfs)	= 0.00	Cross slope (ft/ft)	= 0.0000
Q bypassed (cfs)	= 0.43	Ponding width (ft)	= N/A

LINE 16 / Q = 2.86 / HT = 15 / WID = 15 / N = .013 / L = 42 / JLC = 0

2-11 - 2-13 / DNLN = 13

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	30.10	10.09	29.26	3.26	30.27	12.30	2.92	0.88
UPSTRM	30.19	8.20	29.51	4.17	30.46	14.94	2.67	0.69

Drainage area (ac)	= 1.25	Slope of invert (%)	= 0.5952
Runoff coefficient	= 0.40	Slope energy grade line (%)	= 0.4705
Time of conc (min)	= 10.00	Critical depth (in)	= 8.12
Inlet time (min)	= 10.00	Natural ground elev. (ft)	= 33.43
Intensity (in/hr)	= 5.72	Upstream surcharge (ft)	= 0.00
Cumulative C*A	= 0.50	Additional Q (cfs)	= 0.00
Q = CA * I (cfs)	= 2.86	Line capacity (cfs)	= 4.98
Q catchment (cfs)	= 2.86	Inlet length (ft)	= 6.00
Q carryover (cfs)	= 0.00	Gutter slope (ft/ft)	= 0.0833
Q captured (cfs)	= 0.55	Cross slope (ft/ft)	= 0.0208
Q bypassed (cfs)	= 2.32	Ponding width (ft)	= N/A

LINE 17 / Q = 2.23 / HT = 15 / WID = 15 / N = .013 / L = 42 / JLC = 0

2-10 - 2-14 / DNLN = 11

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	29.84	15.00	28.38	1.82	29.89	0.00	3.42	1.23
UPSTRM	29.82	8.29	29.13	3.20	29.98	14.92	2.67	0.70

Drainage area (ac) =	0.80	Slope of invert (%) =	1.7857
Runoff coefficient =	0.40	Slope energy grade line (%) =	0.2224
Time of conc (min) =	5.00	Critical depth (in) =	7.17
Inlet time (min) =	5.00	Natural ground elev. (ft) =	33.05
Intensity (in/hr) =	6.97	Upstream surcharge (ft) =	0.00
Cumulative C*A =	0.32	Additional Q (cfs) =	0.00
Q = CA * I (cfs) =	2.23	Line capacity (cfs) =	8.63
Q catchment (cfs) =	2.23	Inlet length (ft) =	8.00
Q carryover (cfs) =	0.00	Gutter slope (ft/ft) =	0.0833
Q captured (cfs) =	0.62	Cross slope (ft/ft) =	0.0208
Q bypassed (cfs) =	1.61	Ponding width (ft) =	N/A

LINE 18 / Q = 0.73 / HT = 15 / WID = 15 / N = .013 / L = 42 / JLC = 0

2-9 - 2-15 / DNLN = 10

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	29.41	15.00	27.96	0.59	29.42	0.00	4.33	1.23
UPSTRM	29.96	4.09	29.62	2.68	30.07	13.36	2.66	0.27

Drainage area (ac) =	0.26	Slope of invert (%) =	3.9524
Runoff coefficient =	0.40	Slope energy grade line (%) =	1.5591
Time of conc (min) =	5.00	Critical depth (in) =	4.09
Inlet time (min) =	5.00	Natural ground elev. (ft) =	33.54
Intensity (in/hr) =	6.97	Upstream surcharge (ft) =	0.00
Cumulative C*A =	0.10	Additional Q (cfs) =	0.00
Q = CA * I (cfs) =	0.73	Line capacity (cfs) =	12.84
Q catchment (cfs) =	0.73	Inlet length (ft) =	4.00
Q carryover (cfs) =	0.00	Gutter slope (ft/ft) =	0.0833
Q captured (cfs) =	0.16	Cross slope (ft/ft) =	0.0208
Q bypassed (cfs) =	0.56	Ponding width (ft) =	N/A

LINE 19 / Q = 5.13 / HT = 14 / WID = 23 / N = .013 / L = 173 / JLC = 1

2-8 - 2-20 / DNLN = 9

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	27.14	14.00	25.27	2.29	27.23	0.00	7.23	2.24
UPSTRM	28.06	7.27	27.45	4.41	28.36	23.00	3.9	1.16

Drainage area (ac)	= 0.32	Slope of invert (%)	= 1.2601
Runoff coefficient	= 0.40	Slope energy grade line (%)	= 0.6545
Time of conc (min)	= 6.22	Critical depth (in)	= 7.27
Inlet time (min)	= 5.00	Natural ground elev. (ft)	= 32.52
Intensity (in/hr)	= 6.61	Upstream surcharge (ft)	= 0.00
Cumulative C*A	= 0.78	Additional Q (cfs)	= 0.00
Q = CA * I (cfs)	= 5.13	Line capacity (cfs)	= 14.59
Q catchment (cfs)	= 0.89	Inlet length (ft)	= 4.00
Q carryover (cfs)	= 3.14	Gutter slope (ft/ft)	= 0.0833
Q captured (cfs)	= 0.45	Cross slope (ft/ft)	= 0.0208
Q bypassed (cfs)	= 3.58	Ponding width (ft)	= N/A

LINE 20 / Q = 3.87 / HT = 15 / WID = 15 / N = .013 / L = 100 / JLC = 1

2-20 - 2-21 / DNLN = 19

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	28.36	10.90	27.45	4.05	28.61	12.79	3.81	0.96
UPSTRM	28.83	10.51	27.95	4.22	29.10	13.74	2.73	0.92

Drainage area (ac)	= 0.59	Slope of invert (%)	= 0.5000
Runoff coefficient	= 0.40	Slope energy grade line (%)	= 0.4881
Time of conc (min)	= 5.67	Critical depth (in)	= 9.45
Inlet time (min)	= 5.00	Natural ground elev. (ft)	= 31.94
Intensity (in/hr)	= 6.77	Upstream surcharge (ft)	= 0.00
Cumulative C*A	= 0.57	Additional Q (cfs)	= 0.00
Q = CA * I (cfs)	= 3.87	Line capacity (cfs)	= 4.57
Q catchment (cfs)	= 1.65	Inlet length (ft)	= 8.00
Q carryover (cfs)	= 1.92	Gutter slope (ft/ft)	= 0.0833
Q captured (cfs)	= 0.82	Cross slope (ft/ft)	= 0.0208
Q bypassed (cfs)	= 2.75	Ponding width (ft)	= N/A

LINE 21 / Q = 0.61 / HT = 15 / WID = 15 / N = .013 / L = 120 / JLC = 1

2-21 - 2-22 / DNLN = 20

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	29.10	13.82	27.95	0.52	29.11	14.40	2.73	1.18
UPSTRM	29.13	7.71	28.47	0.97	29.14	14.99	2.67	0.64

Drainage area (ac) =	0.22	Slope of invert (%) =	0.4333
Runoff coefficient =	0.40	Slope energy grade line (%) =	0.0298
Time of conc (min) =	5.00	Critical depth (in) =	3.76
Inlet time (min) =	5.00	Natural ground elev. (ft) =	32.39
Intensity (in/hr) =	6.97	Upstream surcharge (ft) =	0.00
Cumulative C*A =	0.09	Additional Q (cfs) =	0.00
Q = CA * I (cfs) =	0.61	Line capacity (cfs) =	4.25
Q catchment (cfs) =	0.61	Inlet length (ft) =	4.00
Q carryover (cfs) =	0.00	Gutter slope (ft/ft) =	0.0833
Q captured (cfs) =	0.15	Cross slope (ft/ft) =	0.0208
Q bypassed (cfs) =	0.47	Ponding width (ft) =	N/A

LINE 22 / Q = 1.73 / HT = 15 / WID = 15 / N = .013 / L = 30 / JLC = 1

2-21 - 2-23 / DNLN = 20

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	29.10	13.82	27.95	1.46	29.13	14.40	2.73	1.18
UPSTRM	29.15	13.14	28.02	1.52	29.19	9.89	2.67	1.14

Drainage area (ac) =	0.62	Slope of invert (%) =	0.2333
Runoff coefficient =	0.40	Slope energy grade line (%) =	0.1724
Time of conc (min) =	5.00	Critical depth (in) =	6.31
Inlet time (min) =	5.00	Natural ground elev. (ft) =	31.94
Intensity (in/hr) =	6.97	Upstream surcharge (ft) =	0.00
Cumulative C*A =	0.25	Additional Q (cfs) =	0.00
Q = CA * I (cfs) =	1.73	Line capacity (cfs) =	3.12
Q catchment (cfs) =	1.73	Inlet length (ft) =	4.00
Q carryover (cfs) =	0.00	Gutter slope (ft/ft) =	0.0833
Q captured (cfs) =	0.27	Cross slope (ft/ft) =	0.0208
Q bypassed (cfs) =	1.45	Ponding width (ft) =	N/A

LINE 23 / Q = 0.53 / HT = 15 / WID = 15 / N = .013 / L = 30 / JLC = 1

2-20 - 2-24 / DNLN = 19

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	28.36	10.90	27.45	0.55	28.36	12.79	3.81	0.96
UPSTRM	28.98	3.49	28.60	2.44	29.08	12.68	2.67	0.22

Drainage area (ac) =	0.19	Slope of invert (%) =	3.8333
Runoff coefficient =	0.40	Slope energy grade line (%) =	2.3757
Time of conc (min) =	5.00	Critical depth (in) =	3.49
Inlet time (min) =	5.00	Natural ground elev. (ft) =	32.52
Intensity (in/hr) =	6.97	Upstream surcharge (ft) =	0.00
Cumulative C*A =	0.08	Additional Q (cfs) =	0.00
Q = CA * I (cfs) =	0.53	Line capacity (cfs) =	12.64
Q catchment (cfs) =	0.53	Inlet length (ft) =	4.00
Q carryover (cfs) =	0.00	Gutter slope (ft/ft) =	0.0833
Q captured (cfs) =	0.13	Cross slope (ft/ft) =	0.0208
Q bypassed (cfs) =	0.40	Ponding width (ft) =	N/A

LINE 24 / Q = 2.43 / HT = 15 / WID = 15 / N = .013 / L = 42 / JLC = 1

2-6 - 2-16 / DNLN = 6

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	27.30	4.78	26.90	7.20	28.10	13.98	3.94	0.34
UPSTRM	29.36	4.78	28.16	7.20	30.17	13.98	2.68	0.34

Drainage area (ac) =	0.87	Slope of invert (%) =	3.0000
Runoff coefficient =	0.40	Slope energy grade line (%) =	4.9180
Time of conc (min) =	5.00	Critical depth (in) =	7.48
Inlet time (min) =	5.00	Natural ground elev. (ft) =	32.10
Intensity (in/hr) =	6.97	Upstream surcharge (ft) =	0.00
Cumulative C*A =	0.35	Additional Q (cfs) =	0.00
Q = CA * I (cfs) =	2.43	Line capacity (cfs) =	11.18
Q catchment (cfs) =	2.43	Inlet length (ft) =	6.00
Q carryover (cfs) =	0.00	Gutter slope (ft/ft) =	0.0833
Q captured (cfs) =	0.49	Cross slope (ft/ft) =	0.0208
Q bypassed (cfs) =	1.93	Ponding width (ft) =	N/A

Note: Normal depth assumed

LINE 25 / Q = 3.07 / HT = 15 / WID = 15 / N = .013 / L = 178 / JLC = 1

2-5 - 2-25 / DNLN = 5

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	26.12	15.00	23.21	2.50	26.22	0.00	8.54	1.23
UPSTRM	27.56	8.41	26.86	4.33	27.85	14.89	4.36	0.71

Drainage area (ac)	= 0.00	Slope of invert (%)	= 2.0506
Runoff coefficient	= 0.00	Slope energy grade line (%)	= 0.9195
Time of conc (min)	= 10.44	Critical depth (in)	= 8.41
Inlet time (min)	= 0.00	Natural ground elev. (ft)	= 32.48
Intensity (in/hr)	= 5.64	Upstream surcharge (ft)	= 0.00
Cumulative C*A	= 0.54	Additional Q (cfs)	= 0.00
Q = CA * I (cfs)	= 3.07	Line capacity (cfs)	= 9.25
Q catchment (cfs)	= 0.00	Inlet length (ft)	= 0.00
Q carryover (cfs)	= 2.36	Gutter slope (ft/ft)	= 0.0000
Q captured (cfs)	= 0.00	Cross slope (ft/ft)	= 0.0000
Q bypassed (cfs)	= 2.36	Ponding width (ft)	= N/A

LINE 26 / Q = 3.11 / HT = 15 / WID = 15 / N = .013 / L = 80 / JLC = 0

2-25 - 2-26 / DNLN = 25

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	27.85	11.91	26.86	2.98	27.99	13.36	4.36	1.04
UPSTRM	28.22	8.47	27.51	4.36	28.51	14.87	2.67	0.71

Drainage area (ac)	= 1.36	Slope of invert (%)	= 0.8125
Runoff coefficient	= 0.40	Slope energy grade line (%)	= 0.6509
Time of conc (min)	= 10.00	Critical depth (in)	= 8.47
Inlet time (min)	= 10.00	Natural ground elev. (ft)	= 31.43
Intensity (in/hr)	= 5.72	Upstream surcharge (ft)	= 0.00
Cumulative C*A	= 0.54	Additional Q (cfs)	= 0.00
Q = CA * I (cfs)	= 3.11	Line capacity (cfs)	= 5.82
Q catchment (cfs)	= 3.11	Inlet length (ft)	= 8.00
Q carryover (cfs)	= 0.00	Gutter slope (ft/ft)	= 0.0833
Q captured (cfs)	= 0.75	Cross slope (ft/ft)	= 0.0208
Q bypassed (cfs)	= 2.36	Ponding width (ft)	= N/A

LINE 27 / Q = 1.06 / HT = 15 / WID = 15 / N = .013 / L = 42 / JLC = 1

2-4 - 2-17 / DNLN = 4

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	26.00	3.14	25.74	5.69	26.50	12.20	4.34	0.19
UPSTRM	27.76	3.14	27.00	5.69	28.27	12.20	2.67	0.19

Drainage area (ac)	= 0.38	Slope of invert (%)	= 3.0000
Runoff coefficient	= 0.40	Slope energy grade line (%)	= 4.1965
Time of conc (min)	= 5.00	Critical depth (in)	= 4.94
Inlet time (min)	= 5.00	Natural ground elev. (ft)	= 30.92
Intensity (in/hr)	= 6.97	Upstream surcharge (ft)	= 0.00
Cumulative C*A	= 0.15	Additional Q (cfs)	= 0.00
Q = CA * I (cfs)	= 1.06	Line capacity (cfs)	= 11.18
Q catchment (cfs)	= 1.06	Inlet length (ft)	= 4.00
Q carryover (cfs)	= 0.00	Gutter slope (ft/ft)	= 0.0833
Q captured (cfs)	= 0.20	Cross slope (ft/ft)	= 0.0208
Q bypassed (cfs)	= 0.86	Ponding width (ft)	= N/A

Note: Normal depth assumed

LINE 28 / Q = 2.70 / HT = 15 / WID = 15 / N = .013 / L = 42 / JLC = 1

2-3 - 2-18 / DNLN = 3

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	25.05	15.00	23.74	2.20	25.13	0.00	4.7	1.23
UPSTRM	25.92	7.90	25.00	4.13	26.19	14.98	3.44	0.65

Drainage area (ac)	= 0.97	Slope of invert (%)	= 3.0000
Runoff coefficient	= 0.40	Slope energy grade line (%)	= 2.5187
Time of conc (min)	= 5.00	Critical depth (in)	= 7.90
Inlet time (min)	= 5.00	Natural ground elev. (ft)	= 29.69
Intensity (in/hr)	= 6.97	Upstream surcharge (ft)	= 0.00
Cumulative C*A	= 0.39	Additional Q (cfs)	= 0.00
Q = CA * I (cfs)	= 2.70	Line capacity (cfs)	= 11.18
Q catchment (cfs)	= 2.70	Inlet length (ft)	= 8.00
Q carryover (cfs)	= 0.00	Gutter slope (ft/ft)	= 0.0833
Q captured (cfs)	= 0.69	Cross slope (ft/ft)	= 0.0208
Q bypassed (cfs)	= 2.01	Ponding width (ft)	= N/A

LINE 29 / Q = 0.86 / HT = 15 / WID = 15 / N = .013 / L = 42 / JLC = 1

2-2 - 2-19 / DNLN = 2

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	25.26	2.84	25.02	5.36	25.70	11.75	3.9	0.16
UPSTRM	26.96	2.84	26.28	5.36	27.41	11.75	2.64	0.16

Drainage area (ac)	= 0.31	Slope of invert (%)	= 3.0000
Runoff coefficient	= 0.40	Slope energy grade line (%)	= 3.0000
Time of conc (min)	= 5.00	Critical depth (in)	= 4.46
Inlet time (min)	= 5.00	Natural ground elev. (ft)	= 30.18
Intensity (in/hr)	= 6.97	Upstream surcharge (ft)	= 0.00
Cumulative C*A	= 0.12	Additional Q (cfs)	= 0.00
Q = CA * I (cfs)	= 0.86	Line capacity (cfs)	= 11.18
Q catchment (cfs)	= 0.86	Inlet length (ft)	= 4.00
Q carryover (cfs)	= 0.00	Gutter slope (ft/ft)	= 0.0833
Q captured (cfs)	= 0.18	Cross slope (ft/ft)	= 0.0208
Q bypassed (cfs)	= 0.68	Ponding width (ft)	= N/A

Note: Normal depth assumed

AES CONSULTING ENGINEERS
5248 Olde Towne Road, Suite 1
Williamsburg, Virginia 23188
(757) 253-0040
Fax: (757) 220-8994

PROJECT JAMESTOWN HUNDRED
PROJECT NO. 6201-7
SUBJECT OUTFALL FOREBAY CALCS
SHEET NO. 1 OF 1
CALCULATED BY DPW DATE 11/27/98

FOREBAY CALCS

SS #1 → TOTAL DA = 16.87 AC
SS #2 → TOTAL DA = 12.43 AC

∴ TOTAL DA TO FOREBAY = 29.3 → SAY 29

→ SIZE FOREBAY

RQD VOL = (0.1"/AC)(29 AC)(1"/12")(43560 SF/AC)
= 10,527 CF

→ USE AN 11,500 CF FOREBAY → OK

SEE PLAN SHEETS 15 AND 21 FOR DETAILS

Results of Jamestown 100 - As Built Drng Plan

Pipes

	Design	Built	Design Q	Built Cap
30" 2-0 → 2-1	0.54	0.39	19.63	25.63
30" 2-1 → 2-2	0.30	0.25	19.98	20.52
30" 2-3 → 2-4	0.30	0.24	17.76	20.10

DIs

	Design	Rim	Diff
2-27	34.75	34.99	+.24
2-28	34.00	35.51	+1.51
~~2-4~~ 1-4	28.45	28.62	+.17
1-6	28.45	28.68	+.23

Results of Jamestown 100 - As Built Drng Plan

Pipes

	Design	Built	Design Q	Built Cap
30" 2-0 → 2-1	0.54	0.39	19.63	25.63
30" 2-1 → 2-2	0.30	0.25	19.98	20.52
30" 2-3 → 2-4	0.30	0.24	17.76	20.10

DIs

	Design	Rim	Diff
2-27	34.75	34.99	+.24
2-28	34.00	35.51	+1.51
~~2-4~~ 1-4	28.45	28.62	+.17
1-6	28.45	28.68	+.23

DEVELOPMENT MANAGEMENT

101-E MOUNTS BAY ROAD, P.O. BOX 8784, WILLIAMSBURG, VIRGINIA 23187-8784
(757) 253-6671 Fax: (757) 253-6850 E-MAIL: devtman@james-city.va.us

CODE COMPLIANCE
(757) 253-6626
codecomp@james-city.va.us

ENVIRONMENTAL DIVISION
(757) 253-6670
environ@james-city.va.us

PLANNING
(757) 253-6685
planning@james-city.va.us

COUNTY ENGINEER
(757) 253-6678

INTEGRATED PEST MANAGEMENT
(757) 253-2620

July 25, 2000

Ms. Audrey Cotner
U.S. Army Corps of Engineers
Norfolk District, Eastern Regulatory Section
803 Front Street
Norfolk, VA 23510

RE: Jamestown Hundred

Dear Ms. Cotner:

Attached is the as-built drawing for the forebay for the above project that you requested. The facility is located in the design location and does not impact wetlands as shown on the plan.

I have not had an opportunity to talk to Mr. Chisman yet about what his plans are for the drainage channel in Section 6 of St. George's Hundred that you reviewed in the field. When I know what his plan is, I will contact you to discuss it.

Sincerely,

Darryl E Cook

Darryl E. Cook, P.E.
Director of Environmental Division

DEVELOPMENT MANAGEMENT

101-E MOUNTS BAY ROAD, P.O. BOX 8784, WILLIAMSBURG, VIRGINIA 23187-8784
(757) 253-6671 Fax: (757) 259-4032 E-MAIL: devtman@james-city.va.us

ENVIRONMENTAL DIVISION (757) 253-6670 environ@james-city.va.us
PLANNING (757) 253-6685 planning@james-city.va.us
COUNTY ENGINEER (757) 253-6678
MOSQUITO CONTROL (757) 259-4116

April 24, 2006

Ms. Debra Gillilan, P.E.
Jamestown Hundred HOA
3236 Reade's Way
Williamsburg, VA 23185

Re: Jamestown Hundred
County Plan No. S-108-95
Pretreatment Sediment Forebay
County BMP ID Code: PC 134

Dear Ms. Gillilan:

Thank you for letter dated March 7, 2006. It appears you have several questions relative to the sediment forebay PC 134. The following is a response to your four (4) questions.

1. What is the method of access to the pond to clean it out? We believe that there is an easement between lots 80 and 81 through which a bulldozer would have to follow to reach the pond for cleanout; can you confirm this?

Based on information available in our records, there appears to be two methods of access to the PC 134 forebay. The primary would be the open space common area (GPIN 4610700001A) and 20 ft. drainage easement situated between Lots 80 and 81 along Reade's Way. This open space is about 60 ft. wide and contains a 36-inch reinforced concrete storm drain pipe which goes into the east side of the forebay. The secondary is a 20 ft. drainage easement situated between Lots 84 and 85 along Reade's Way. In general the HOA should ensure that no buildings or permanent structures are constructed in the storm drainage easements. No trees, shrubs or woody vegetation or permanently anchored structures, fences or obstacles shall be placed within a drainage easement which would render the easement inaccessible by vehicles, equipment or personnel.

What is the requirement by the County for an HOA to post signs of "Danger" near a pond (ie. drowning)? We are concerned for liability in the event of accident. Please advise.

Currently, there appears to be no formal local policy or guideline relative to this issue. There are references in local and state regulations which touch on the subject; however, it is more or less an owner's decision to post signs or provide fencing relative to the level of liability in which they feel they face. I have attached a guidance document which can help the HOA with this decision.

How often, in usual circumstances, does a pond of the size present noted as "PC 134 Forebay" require cleanout, in your experience?

Minimum Standard & Spec. 3.14 of the Virginia Stormwater Management Handbook (attached) stipulates that sediment should be removed from sediment forebays every 3 to 5 years or when 6 to 12 inches have accumulated whichever comes first. However, this is a case of a pretreatment sediment forebay is provided in conjunction with a wet or dry pond stormwater management facility. In the case of PC 134, the forebay is the primary structure. Focus should be on performing routine maintenance to remove accumulated sediments from the outfall ends of the 30- and 36-inch storm drain pipes on a frequent basis (ie. every 1 or 2 years) so that a large removal activity can be avoided.

Does the County have maintenance standards on areas of drainage and easements to be cleaned, such as how low the grass in an easement must be mowed, etc.

No, we have no standards on this issue at this time. However, in lieu of not providing any guidance, it is suggested that maintenance should be similar to that associated with dam embankments for stormwater management facilities. Establish and maintain a dense cover of grass at a height of 4 to 8 inches. Regular mowing should be performed to discourage growth of woody vegetation and to facilitate visual inspection.

Hopefully this answers your questions. Should you have any additional questions, you can contact me at 757-253-6639 or by email at scottt@james-city.va.us .

Sincerely,

Scott J. Thomas, P.E.
Senior Engineer
Environmental Division

Attachments

SJT/sjt

SWMProg\Education\HOA\JamestownHundred.let1

Debra Gillilan
3236 Reade's Way
Williamsburg, VA 23185
March 07, 2006

RECEIVED
MAR 9 2006
ENVIRONMENTAL DIVISION

Mr. Scott Thomas, P.E.
Senior Engineer
Environmental Division
James City County
101-E Mounts Bay Road
P.O. Box 8784
Williamsburg, VA 23187-8784

Dear Mr. Thomas,
I am a committee member of the "Drainage Committee" for the subdivision of Jamestown Hundred. The homeowners will be assuming responsibility of the HOA in several months. I have several questions concerning drainage and our pond, on behalf of the drainage committee, as per below:

1. What is the method of access to the pond to clean it out? We believe that there is an easement between lots 80 and 81 through which a bulldozer would have to follow to reach the pond for cleanout; can you confirm this?
2. What is the requirement by the County for an HOA to post signs of "Danger" near a pond (i.e., drowning) ? We are concerned for liability in the event of an accident. Please advise.
3. How often, in usual circumstances, does a pond of the size present noted as "PC 134 Forebay" require cleanout, in your experience ?
4. Does the County have maintenance standards on areas of drainage and easements to be cleaned, such as how low the grass in an easement must be mowed, etc. ?

Thank you for any answers you can provide.

Sincerely,
Debra Gillilan

Debra Gillilan, P.E.

CONSULTING ENGINEERS

5248 Olde Towne Road • Suite 1 • Williamsburg, Virginia 23188
(757) 253-0040 • Fax (757) 220-8994 • E-mail aes@aesva.com

June 22, 2000

Mr. Darryl E. Cook, Environmental Director
James City County
Development Management
101-E Mounts Bay Road
Williamsburg, Virginia 23187

Re: Jamestown Hundred
JCC Case No. S-108-95
AES Project No. 6201-07

Dear Mr. Cook:

Pursuant to your request, I have reviewed the present location of the forebay facility for the above referenced project to ensure the existing limit of wetlands has not been compromised. Our preliminary field check shows that the "as-built" contours are in keeping with the design and that the wetlands have not been jeopardized. The attached exhibit shows the field contours in relation to the proposed contours.

Please call me with any questions you may have.

Sincerely,

AES Consulting Engineers

Deirdre P. Wells

Deirdre P. Wells, P.E.
Project Engineer

Attachment

Cc: JoAnn Armstrong, Virginia Enterprises

\6201\07\WORDPROC\Document\620107L18.dpw.doc

DEVELOPMENT MANAGEMENT

101-E MOUNTS BAY ROAD, P.O. BOX 8784, WILLIAMSBURG, VIRGINIA 23187-8784
(757) 253-6671 Fax: (757) 253-6850 E-MAIL: devtman@james-city.va.us

CODE COMPLIANCE
(757) 253-6626
codecomp@james-city.va.us

ENVIRONMENTAL DIVISION
(757) 253-6670
environ@james-city.va.us

PLANNING
(757) 253-6685
planning@james-city.va.us

COUNTY ENGINEER
(757) 253-6678

INTEGRATED PEST MANAGEMENT
(757) 253-2620

November 8, 2001

Ms. JoAnn Armstrong
Hampton Roads Development, LLC
703 Thimble Shoals Blvd, C-1
Newport News, VA 23606

RE: Jamestown Hundred As-Built Drawings

Dear Ms. Armstrong:

It was a requirement of the approved construction plan for Jamestown Hundred that as-built drawings be provided to the Environmental Division prior to the issuance of any building permits for the project. Those drawings have been submitted to and reviewed by the Environmental Division.

The review revealed that the majority of inlets were built within an acceptable tolerance of the design. However, two drainage inlets, 2-27 and 2-28, were built at elevations higher than design and will provide not proper drainage as intended. Structure 2-27 is 0.24 feet and 2-28 is 1.51 feet higher than design. These inlets will have to be adjusted to the design elevations or a revised grading plan submitted that demonstrates that these inlets will properly drain the adjacent property.

The as-built information also revealed that the last section of pipe for systems 1 and 2 were installed at a slight reverse grade. Supplemental information submitted by AES Engineers demonstrated that the drainage systems will still adequately drain the subdivision, so that is no longer an issue.

As the as-built information demonstrates that the drainage system will function as designed with the exception of those two inlets, the Environmental Division has no issues that would interfere with the issuance of building permits for the portion of the subdivision for which the as-built drawings were submitted. Therefore, building permits can be processed for lots 1-9, 42-55, and 70-105. However, until the drainage inlets have been properly installed, certificate of occupancy permits will not be issued for lots 100-105.

If you have any questions, please contact me at 253-6673.

Sincerely,

Darryl E. Cook

Darryl E. Cook
Environmental Director

Scott-
Lets discuss this.
Darryl

HAMPTON ROADS DEVELOPMENT, LLC

703 Thimble Shoals Blvd., C-1 • Newport News, Virginia 23606
(757) 873-3646 • Fax (757) 873-8819 or 5931

October 15, 2001

James City County - Environmental Division
101 E Mounts Bay Road
P. O. Box 8748
Williamsburg, VA 23187-8784

VIA FAX: 259-4032

Attention: Darryl Cook

Re: Jamestown Hundred

Dear Darryl:

I understand that JCC - Environmental (Scott Thomas) gave the Parks and Recreation authorization to relocate the level spreader that was installed for the above referenced project when they were installing the trail and building the bridge.

Please confirm in writing that JCC - Environmental authorized this work, accepts full responsibility and releases Hampton Roads Development, LLC and Vico Construction Company from any problems/corrections that may arise from this change.

Also, I need you to contact the Parks and Recreation Department and request them to clean up the pile of wood that was left over from their work as part of the bridge construction.

Sincerely,

JoAnn B. Armstrong

JoAnn B. Armstrong
Project Manager

MEMORANDUM

DATE: March 29, 2001

TO: Scott Thomas, Pat Menichino

FROM: Paul Tubach, Jr.

SUBJECT: Greensprings Trail

Attached is a map with details to re-route the Greensprings Trail around the pond/forebay built at Jamestown Hundred. The only item of departure from the existing plan and modifications we discussed last year concerns the disuse of the existing level spreader.

The level spreader was not built at the existing drainage pattern. Current drainage from the pond discharges at three points, with little discharge actually flowing over the level spreader. The proposed changes locate a puncheon footbridge over the main discharge point that serves as the natural drainage pattern with all water flowing under the puncheon. Two emergency overflow areas will prevent water from staking up on the trail or washing out the puncheon.

If you have any questions, please contact me. Thanks for your help.

SIDEWALK: Met JAN 5TH 2001

NEED FILE MEMO.

DEVELOPMENT MANAGEMENT

101-E MOUNTS BAY ROAD, P.O. BOX 8784, WILLIAMSBURG, VIRGINIA 23187-8784
(757) 253-6671 Fax: (757) 259-4032 E-MAIL: devtman@james-city.va.us

ENVIRONMENTAL DIVISION (757) 253-6670 environ@james-city.va.us
PLANNING (757) 253-6685 planning@james-city.va.us
COUNTY ENGINEER (757) 253-6678
MOSQUITO CONTROL (757) 259-4116

February 3, 2006

Ms. Christine Meeske
3231 Reades Way
Williamsburg, Va. 23188

PROTECTED WITH PRIDE IN JAMES CITY COUNTY

Re: Jamestown Hundred
County Plan No. S-108-95
Pretreatment Sediment Forebay
County BMP ID Code: PC 134

Dear Ms. Meeske:

As discussed, I am forwarding you some "***first contact***" information for your community association to use relative to maintenance of the above stormwater management facility. The subject stormwater management facility (PC 134) is a small pretreatment sediment forebay situated behind Lots 82 through 85 on Reades Way on Parcel C. The stormwater management plan for the subdivision is unusual in the fact that the actual primary stormwater treatment facility for the subdivision is the beaver pond/wetland complex situated to the south of the subdivision. However as a requirement for that type of approval, a pretreatment sediment forebay was implemented within the storm drainage piping system of the subdivision. The forebay serves about 23 acres and is situated at the end of the piping system (ie. at the 30 and 36 inch pipe outfalls).

Also, as a note, the subdivision is situated within Subwatershed 201 of the Powhatan Creek watershed. The Board of Supervisors adopted the Powhatan Creek Watershed Management Plan on February 26, 2002.

In addition, I have attached several pieces of useful information along with this cover letter. Information includes:

- An overall map from our County GIS;
- An 11 x 17 inch size exhibit map of the drainage system/forebay;
- A watershed education brochure from our PRIDE program;
- Landscaping tips for stormwater management BMP's;
- Watershed awareness tips;
- A sample maintenance plan for a wet/dry pond stormwater management facility;
- A brochures related to BMP maintenance.

The maintenance brochure is a good informational handout entitled *A Guide for Maintaining and Operating BMP's*. This publication is distributed through our office in response to a cooperative effort from the Hampton Roads Regional Stormwater Management Committee and HR STORM, a regional stormwater education program offered by the Hampton Roads Planning District Commission.

Although a sample maintenance plan was provided; the handout is for a larger wet or dry pond stormwater management facility. Maintenance for a pretreatment forebay is relatively simple. The main items to worry about are routinely removing trash, sediment and debris from the storm pipes coming into the forebay and from the level spreader which carries flow out of the forebay (along the trail).

Our Division is always readily available to assist owners and HOA representatives with guidance related to stormwater management facilities and drainage and we sincerely look forward working with you in the future. If you have any additional questions or comments in the meantime, call me at 757-253-6639 or by email at scottt@james-city.va.us.

Sincerely,

Scott J. Thomas, P.E.
Senior Engineer
Environmental Division

Attachments
SJT/sjt

SWMProg\Education\Subdivisions\JamestownHundred.fc

General Landscaping Guidance for All Stormwater Management /BMP Facilities

- ❒ *Trees, shrubs and/or any type of woody vegetation are not allowed on earthen fill embankments.*
- ❒ *Keep trees and shrubs at least 15 feet away from the toe of constructed earthen fill embankment slopes.*
- ❒ *Keep trees or shrubs having long taproot systems away from constructed fill embankments or subsurface drains.*
- ❒ *Keep trees and shrubs at least 25 feet away from perforated pipes, drains or stone/soil filters.*
- ❒ *Keep trees and shrubs at least 25 feet away from principal flow control structures (risers, grates, etc.).*
- ❒ *Keep vegetation and sediment at least 15 feet away from low flow orifice openings.*
- ❒ *Clean trash and debris frequently from within the facility and at principal flow control structures. Only trained or authorized personnel should enter confined spaces or structural components of the facility.*
- ❒ *Keep herbaceous (not woody) embankment plantings limited in height and girth.*
- ❒ *Maintain erosion control mats, blankets and fabrics in channels or on slopes to reduce erosion potential.*
- ❒ *Keep emergency spillways stabilized with plant material that can withstand strong flows. Root material should be fibrous and substantial, but lacking a taproot.*
- ❒ *Seed and mulch bare, exposed or formed soil erosion gullies around the facility. Divert surface runoff from seeded and mulched areas until vegetation establishes.*
- ❒ *Check water tolerances of existing native plant materials prior to inundation of pond areas.*
- ❒ *Stabilize aquatic and safety benches with emergent wetland plant species and specialized wet-seed mix.*
- ❒ *Keep access to embankments or flow control structures free of trees or shrubs. Ensure areas that are planted adjacent to access routes can withstand compaction, damage or vibration that may occur due to passing vehicles or heavy equipment.*
- ❒ *To reduce thermal warming effects, shade inflow and outflow channels as well as southern exposures.*
- ❒ *Avoid plantings that require routine or intensive chemical applications such as turf, lawn grass, etc.*
- ❒ *Use salt-tolerant plants if excessive amounts of deicing salt are anticipated in inflow runoff.*
- ❒ *Soil test perimeter areas periodically to determine if soil amendments are necessary. Contact the local office of the Virginia Cooperative Extension for assistance.*
- ❒ *Select native plant species which adapt to local soil and climate conditions over exotic or foreign species.*
- ❒ *Decrease or minimize areas where yard turf is used. Use low maintenance ground cover to help absorb and filter runoff and prevent erosion where possible.*
- ❒ *Maintain pond buffers (25 ft. minimum from design high water elevation) as meadow or forest areas. Preserve existing trees and ground cover within buffer areas to the greatest extent possible.*
- ❒ *Discourage resident geese populations by planting trees, shrubs and native ground covers in non-forested pond buffer areas.*
- ❒ *Plant stream and normal pool buffers (except fill embankments) with native trees, shrubs, grasses and herbaceous material where possible to stabilize banks, provide shade and provide for water quality enhancement.*
- ❒ *Stabilize eroded pond shorelines with native wetland plants or coconut (coir) fiber logs.*
- ❒ *Use selective or strategic plantings to minimize access to deeper pools, steep slopes or structures.*
- ❒ *If warranted, provide educational signs around the perimeter of the facility to indicate that it is a Stormwater Management Area or to designate planting, maintenance or mowing (or non-mowing) zones.*
- ❒ *Avoid the overuse of any one type of plant material and seed mixtures with weeds or invasive species.*
- ❒ *Preserve existing, native vegetation to the greatest extent possible unless it deters from the stormwater function or structural integrity of the facility. Strive to keep all tributary drainage areas in a stabilized condition..*
- ❒ *Aesthetics and cosmetic characteristics are important considerations. Strive to maintain the BMP with a natural, scenic character that blends well with the community theme, physical location and all surrounding land uses. Screening is promoted, but care should be exercised to avoid conflicts with required maintenance activities or practices that would threaten the stormwater function or structural integrity of the facility. Critical areas are embankments, riser structures, outlet barrels, spillways, trash racks, forebays, inlets, inflow channels, etc.*
- ❒ *Original design or enhanced landscaping should not encroach upon public or private roadways, sidewalks, trails or emergency vehicle access routes.*
- ❒ *Refer to the approved plan for the BMP. Some plans provide specific guidance relative to operation, inspection and maintenance. Although this is a current requirement of the Environmental Division, this information may not necessarily be found on all plans, especially for older facilities. Contact the Environmental Division at **757-253-6670** for additional information.*

PROTECTED WITH PRIDE IN JAMES CITY COUNTY

Revised 07/10/03

AES CONSULTING ENGINEERS
Engineering, Surveying and Planning
5248 Olde Towne Road, Suite 1
WILLIAMSBURG, VIRGINIA 23188

(757) 253-0040
FAX (757) 220-8994

LETTER OF TRANSMITTAL

DATE	JOB NO.
6/4/02	6201-7

ATTENTION: SCOTT THOMAS

RE: JAMESTOWN HUNDRED AS-BUILT (storm drain system)

TO: JCC ENVIRONMENTAL DIV.

WE ARE SENDING YOU ☒ Attached ☐ Under separate cover via _____ the following items:

☐ Shop drawings ☒ Prints ☐ Plans ☐ Samples ☐ Specifications

☐ Copy of letter ☐ Change order ☐ _____

COPIES	DATE	NO.	DESCRIPTION
1		ASBUILT	AS BUILT DRAWINGS

RECEIVED JUN 2002 ENVIRONMENTAL DIVISION

These as-builts are acceptable - inlets are in at an acceptable elevation based on field visit. DEC 7/29/02

THESE ARE TRANSMITTED as checked below:

☒ For approval ☐ Approved as submitted ☐ Resubmit _____ copies for approval

☐ For your use ☐ Approved as noted ☐ Submit _____ copies for distribution

☐ As requested ☐ Returned for corrections ☐ Return _____ corrected prints

☐ For review and comment ☐ _____

☐ FOR BIDS DUE _____ ☐ PRINTS RETURNED AFTER LOAN TO US

REMARKS

SCOTT:

PER OUR CONVERSATION TODAY, HERE IS THE LATEST AS-BUILT YOU REQUESTED. THIS SHOULD PROVIDE US APPROVAL. CALL IF YOU HAVE QUESTIONS.

THANKS

HOWARD

COPY TO _____ SIGNED: _____

If enclosures are not as noted, kindly notify us at once.

AES CONSULTING ENGINEERS
Engineering, Surveying and Planning
5248 Olde Towne Road, Suite 1
WILLIAMSBURG, VIRGINIA 23188

(757) 253-0040
FAX (757) 220-8994

LETTER OF TRANSMITTAL

DATE	JOB NO.
11/02/01	6201-7

ATTENTION: SCOTT THOMAS / DARYL COOK

RE: JAMESTOWN HUNDRED

TO JCC ENVIRONMENTAL DIVISION

WE ARE SENDING YOU ☒ Attached ☐ Under separate cover via _____ the following items:

☐ Shop drawings ☐ Prints ☐ Plans ☐ Samples ☐ Specifications

☐ Copy of letter ☐ Change order ☒ HGL CALCULATIONS

COPIES	DATE	NO.	DESCRIPTION
1		—	SYSTEM 1 AND 2

NOV 2001 RECEIVED ENVIRONMENTAL DIVISION

THESE ARE TRANSMITTED as checked below:

☒ For approval ☐ Approved as submitted ☐ Resubmit _____ copies for approval

☐ For your use ☐ Approved as noted ☐ Submit _____ copies for distribution

☒ As requested ☐ Returned for corrections ☐ Return _____ corrected prints

☐ For review and comment ☐ _____

☐ FOR BIDS DUE _____ ☐ PRINTS RETURNED AFTER LOAN TO US

REMARKS

SCOTT / DARYL:

PURSUANT TO OUR CONVERSATIONS, THE FOLLOWING CALCULATIONS CLEARLY INDICATE THE AS-BUILT STORM SEWER FOR THE SUBJECT PROJECT IS INADEQUATE. PLEASE CALL IF YOU HAVE ANY FURTHER QUESTIONS.

THANKS
HOWARD PRICE

COPY TO _____ SIGNED: _____

If enclosures are not as noted, kindly notify us at once.

AES CONSULTING ENGINEERS
Engineering, Surveying and Planning
5248 Olde Towne Road, Suite 1
WILLIAMSBURG, VIRGINIA 23188

(757) 253-0040
FAX (757) 220-8994

LETTER OF TRANSMITTAL

DATE	JOB NO.
7/17/01	6201-7/8910

ATTENTION: PAT M.

RE: JAMESTOWN HUNDRED DRAINAGE AS-BUILTS

TO: JAMES CITY COUNTY
ENVIRONMENTAL DIVISION

WE ARE SENDING YOU ☒ Attached ☐ Under separate cover via _____ the following items:

> ☐ Shop drawings ☒ Prints ☐ Plans ☐ Samples ☐ Specifications

☐ Copy of letter ☐ Change order ☐ _____

COPIES	DATE	NO.	DESCRIPTION
1		2SH.	SMS 3/4

JUL 2001 RECEIVED ENVIRONMENTAL DIVISION

THESE ARE TRANSMITTED as checked below:

☒ For approval ☐ Approved as submitted ☐ Resubmit _____ copies for approval

☒ For your use ☐ Approved as noted ☐ Submit _____ copies for distribution

> ☐ As requested ☐ Returned for corrections ☐ Return _____ corrected prints

☐ For review and comment ☐ _____

☐ FOR BIDS DUE _____ ☐ PRINTS RETURNED AFTER LOAN TO US

REMARKS

COPY TO _____ SIGNED: _____

If enclosures are not as noted, kindly notify us at once.

FAX

Date 12/21/00

Number of pages including cover sheet

TO: Scott Thomas + Pat M.

Phone
Fax Phone

CC:

FROM: Paul Tubach
James City County
5249-C Olde Towne Road
Williamsburg, Virginia
23188

E-mail ptubach2@james-city.va.us
Phone 757.259-3209
Fax Phone 757.259-3203

REMARKS: ☐ Urgent ☑ For your review ☐ Reply ASAP ☐ Please Comment

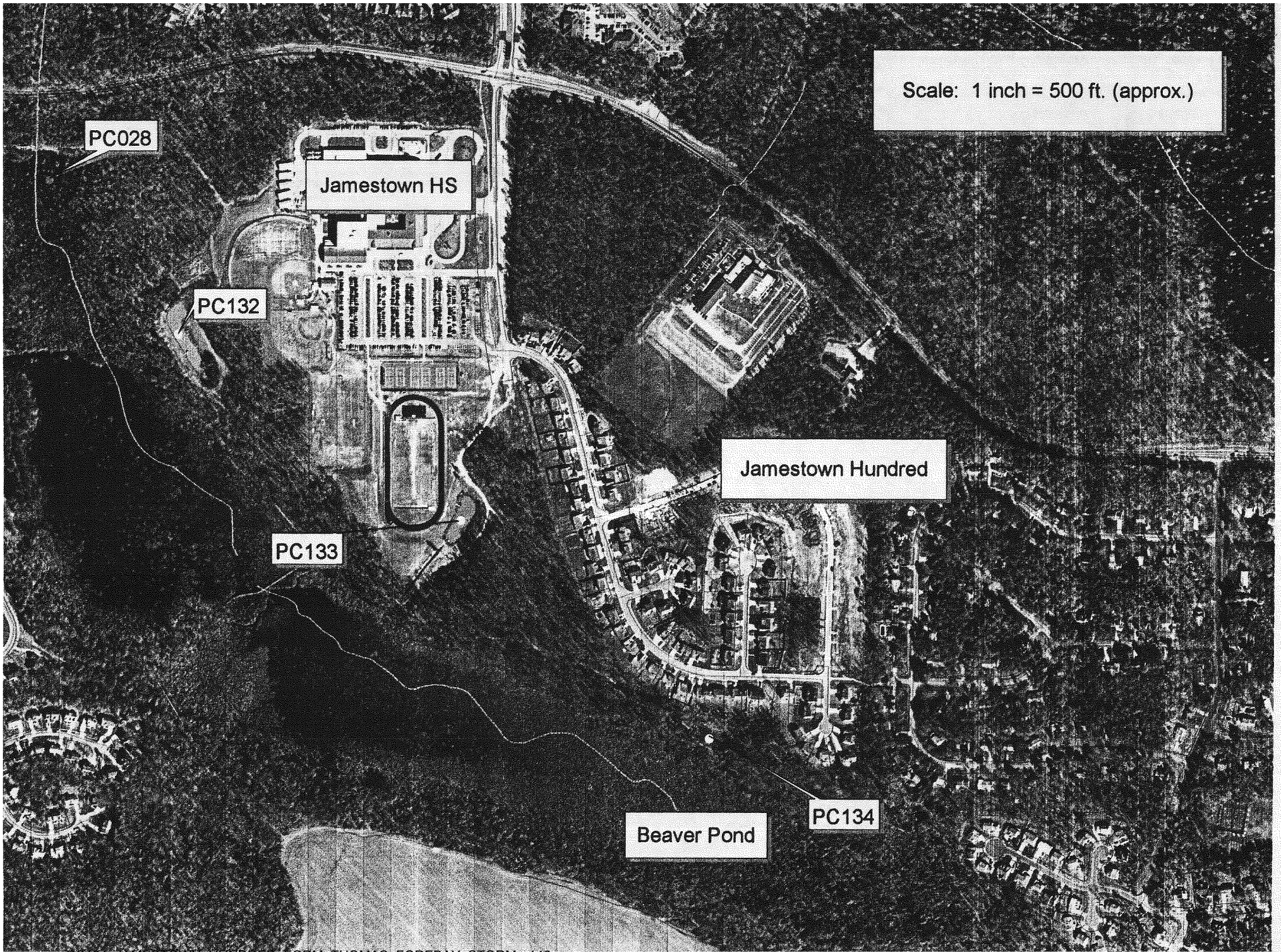
Lets discuss the developers position.
Call me.

(33-3)(01-10)
GPIN # 3330100010

WATERSHED	PC	MAINTENANCE PLAN	No	CTRL STRUC DESC	Level Spread
BMP ID NO	134	SITE AREA acre	74.78	CTRL STRUC SIZE inches	240
PLAN NO	S-108-95	LAND USE	SF Residential	OTLT BARRL DESC	None
TAX PARCEL	(46-01)(01-11)	old BMP TYP	Sediment Forebay	OTLT BARRL SIZE inch	
PIN NO	4610100011	JCC BMP CODE			
CONSTRUCTION DATE	6/12/2000	POINT VALUE		EMERG SPILLWAY	No
PROJECT NAME	Jamestown Hundred			DESIGN HW ELEV	21.5
FACILITY LOCATION	Reades Way (South of Lot 83)			PERM POOL ELEV	21.5
CITY-STATE	Williamsburg, Va. 23188	SVC DRAIN AREA acres	29.3	2-YR OUTFLOW cfs	0.00
CURRENT OWNER	Hampton Roads Development LLC			10-YR OUTFLOW cfs	0.00
OWNER ADDRESS	703 Shimble Shoals Blvd.			REC DRAWING	Yes
OWNER ADDRESS 2		SERVICE AREA DESCRI	SF Lots & Roads		
CITY-STATE-ZIP CODE	Newport News, Va. 23606	IMPERV AREA acres	11.00	CONSTR CERTI	No
OWNER PHONE		RECV STREAM	UT of Powhatan Creek		
MAINT AGREEMENT	Yes	EXT DET-WQ-CTRL	Yes	LAST INSP DATE	
EMERG ACTION PLAN	No	WTR QUAL VOL acre-ft	0.264	INTERNAL RATING	
		CHAN PROT CTRL	No	MISC/COMMENTS	
		CHAN PROT VOL acre-ft	0	I/M # 000007138 4/6/00. JCC owns Parcel C. 0.1" per ac. Bond not released.	
		SW/FLOOD CONTROL	No		
		GEOTECH REPORT	Yes		

Get Last BMP No

Return to Menu


Scale: 1 inch = 500 ft. (approx.)
PC028
Jamestown HS
PC132
Jamestown Hundred
PC133
PC134
Beaver Pond

PC134

PC134

Stormwater Division

MEMORANDUM

DATE: July 22, 2014
TO: Michael J. Gillis, Virginia Correctional Enterprises Document Management Services
FROM: Jacob Smith, Stormwater Intern
PO: 110426
RE: Files Approved for Scanning

NAME PDF/SCANNED FILE:	JAMESTOWN HUNDRED		
BMP ID OR GEN FILE NUMBER:	PC134	**OWNER NAME:**	HAMPTON ROADS DEVELOPMENT LLC
PIN:	4610100011	**SITE ADDRESS:**	~~DB/TILE~~ CONTRADICTORY
		LEGAL DESCRIPTION:	PARCEL C CHISMAN TO JCC

MAINTENANCE AGREEMENT IN FILE:	YES	**BOOK/PAGE OR DOCUMENT NO.:**	627 251 N/A	**OTHER DESCRIPTION:**	N/A

BOX NO.:	1	**COMMENTS:**	DECLARATION INSPECTION/MAINTENANCE

Jamestown Hundred PC134

Land owned by JCC but BMP owned by Hampton Roads Dev.

COPY

DECLARATION OF COVENANTS

INSPECTION/MAINTENANCE OF DRAINAGE SYSTEM

THIS DECLARATION, made this 27th day of March, 2000, between Hampton Roads Development, LLC, and all successors in interest, hereinafter referred to as the "COVENANTOR(S)," owner(s) of the following property: 3851 John Tyler Highway Map #46-1 01-0000-C Parcel 2 David M. Murray Deed Book _____, Page No. _____ or Instrument No. 000005190, 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 drainage system including any runoff control facilities, conveyance systems and associated easements, hereinafter referred to as the "SYSTEM," located on and serving the above-described property to ensure that the SYSTEM is and remains in proper working condition in accordance with approved design standards, and with the law and applicable executive regulations. The SYSTEM shall not include any elements located within any Virginia Department of Transportation rights-of-way.

2. If necessary, the COVENANTOR(S) shall levy regular or special assessments against all present or subsequent owners of property served by the SYSTEM to ensure that the SYSTEM is properly maintained.

3. The COVENANTOR(S) shall provide and maintain perpetual access from public right-of-ways to the SYSTEM 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 SYSTEM for the purpose of inspecting, operating, installing, constructing, reconstructing, maintaining or repairing the SYSTEM.

5. If, after reasonable notice by the COUNTY, the COVENANTOR(S) shall fail to maintain the SYSTEM 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 SYSTEM 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 SYSTEM.

7. The COVENANTOR(s) shall promptly notify the COUNTY when the COVENANTOR(S) legally transfers any of the COVENANTOR(S)' responsibilities for the SYSTEM. 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 SYSTEM.

9. This COVENANT shall be recorded in the County Land Records.

INSTRUMENT: # 000007138
RECORDED: APRIL 6, 2000

IN WITNESS WHEREOF, the COVENANTOR(S) have executed this DECLARATION OF COVENANTS as of this 27th day of March, 19 2000

COVENANTOR(S)
Hampton Roads Development, LLC

Print Name/Title EDWARD G. FISCELLA, MANAGER

ATTEST:

John B. Armstrong

COVENANTOR(S)

Print Name/Title

ATTEST:

COMMONWEALTH OF VIRGINIA,
CITY/~~COUNTY~~ OF Newport News

I hereby certify that on this 27th day of March, 19 2000, before the subscribed, a Notary Public of the State of Virginia, and for the City/~~County~~ of Newport News, aforesaid personally appeared Edward G. Fiscella and did acknowledge the aforegoing instrument to be their Act.

IN WITNESS WHEREOF, I have hereunto set my hand and official seal this 27th day of March, 19 2000.

John B. Armstrong
Notary Public

My Commission expires: March 31, 2002

Approved as to form:

Deputy County Attorney

This Declaration of Covenants prepared by:

Edward G. Fiscella
(Print Name)

Manager
(Title)

703 Thimble Shoals Blvd C-1
(Address)

Newport News, VA 23606
(City) (State) (Zip)

drainage.pre
Revised 2/97

Property owned by JCC BMP owned by Jamestown Hundred

PC134

99 0009568

Jmstown 100

COPY

This is the HOA For Jamestown Hundred subdivision per Darryl Cook County Engineer 4-18-14

STORM WATER MANAGEMENT FACILITY AGREEMENT

THIS AGREEMENT, is made this 19th day of March, 1999, between **Saint Thomas Hundred** Association and its successors in interest, hereinafter referred to as "Association" and James City County, Virginia, hereinafter referred to as "County":

WHEREAS, County is the owner of certain real property situate in James City County, Virginia, briefly described as follows ("BMP Parcel"):

> Parcel B containing 32.61 acres, more or less and Parcel C containing 2.0 acres, more or less, as shown on a plat recorded in James City County Plat Book 67, Pages 42 and 43.

WHEREAS, the BMP Parcel and certain facilities constructed therein provide storm water management for a parcel or parcels of land adjoining it which have been or are being developed as a residential subdivision ("Residential Parcel"), and;

WHEREAS, the Residential Parcel has been or is being developed pursuant to a special use permit which requires that all owners of lots within the Residential Parcel be members of a homeowners association with the power to assess its members for the cost of maintaining any best management practice facilities which serve the Residential Parcel, and;

WHEREAS, all owners of lots within the Residential Parcel must be members of the Association, which is empowered by the declarations of covenants, conditions and restrictions applicable to lots within the Residential Parcel to assess its members and obligated to contribute to the maintenance of best management practice facilities serving the Residential Parcel, and;

WHEREAS, the Association and County wish to enter into an agreement specifically describing the obligations of the Association with respect to maintenance of the BMP Parcel.

NOW THEREFORE, the Association does hereby covenant with the County as follows:

1. Association is responsible for one-third (1/3) of the maintenance costs associated with the Beaver Dam ("Beaver Dam") which is located on Parcel B containing 32.61 acres, more or less, and

MAY-39 0453

shown on a certain plat entitled "PLAT OF TWO PARCELS CONTAINING 34.61 ACRES ± OWNED BY J. R. CHISMAN TO BE CONVEYED TO JAMES CITY COUNTY, BERKELEY DISTRICT, JAMES CITY COUNTY, VIRGINIA" dated October 25, 1996 and made by AES Consulting Engineers and recorded in James City County Plat Book 67, Pages 42 and 43.

2. Association shall provide maintenance for the storm water management forebay ("Forebay") located on Parcel C containing 2.0 acres, more or less, as shown on a certain entitled "PLAT OF TWO PARCELS CONTAINING 34.61 ACRES ± OWNED BY J. R. CHISMAN TO BE CONVEYED TO JAMES CITY COUNTY, BERKELEY DISTRICT, JAMES CITY COUNTY, VIRGINIA" dated October 25, 1996 and made by AES Consulting Engineers and recorded in James City County Plat Book 67, Pages 42 and 43. Association shall ensure that the Forebay is and remains in proper working condition in accordance with approved design standards, and with the law and applicable executive regulations.

3. If necessary, the Association shall levy regular or special assessments against all of its present or subsequent members to ensure that the Forebay is properly maintained and that the contribution required by Paragraph 1 of this Agreement is paid.

4. If, after reasonable notice by the County, the Association fails to maintain the Forebay 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 recover from the Association the cost of the work and any applicable penalties.

5. Association 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 Forebay.

MAY -3 99 0454

6. Association shall obtain the consent of the County before it transfers any of its responsibilities for the maintenance of the Forebay. In such event, Association shall supply the County with a copy of any document of transfer, executed by both parties.

7. The obligations and privileges of this Agreement shall run with the land and bind the Association and its successors and assignees and shall bind all present and subsequent members of the Association.

8. This Agreement shall be recorded in the County land records.

In Witness Whereof, the Association has executed this Agreement as of this 6th day of April, 1999.

SAINT THOMAS HUNDRED ASSOCIATION

By _____
J. R. Chisman, President

APPROVED AS TO FORM

_____
COUNTY ATTORNEY

JAMES CITY COUNTY, VIRGINIA

By _____
Sanford B. Wanner
County Administrator

MAY 3 99 0455

COMMONWEALTH OF VIRGINIA

CITY/COUNTY OF York, to-wit:

I hereby certify that on this 6th day of ~~February~~ April, 1999, before the subscribed, a Notary Public of the Commonwealth of Virginia, and for the City/County aforesaid, personally appeared J. R. Chisman, President of Saint Thomas Hundred Association, and did acknowledge the foregoing instrument to be his act.

In Witness Whereof, I have hereunto set my hand and official seal this 6th day of ~~March~~ April, 1999.

Anne P. Gillespie
NOTARY PUBLIC

My commission expires: Jan. 31, 2000

COMMONWEALTH OF VIRGINIA

CITY/COUNTY OF James City, to-wit:

I hereby certify that on this 15th day of ~~February~~ april, 1999, before the subscribed, a Notary Public of the Commonwealth of Virginia, and for the City/County aforesaid, personally appeared Sanford B. Wanner of James City County, Virginia, and did acknowledge the foregoing instrument to be his act.

In Witness Whereof, I have hereunto set my hand and official seal this 15th day of ~~March~~ April, 1999.

Mary Frances Rieger
NOTARY PUBLIC

My commission expires: October 31, 2001

MAY -3 99 04:56

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 3 day of MAY, 1999. This Agreement was presented with certificate annexed and admitted to record at 2:44 o'clock
Teste: Helene S. Ward, Clerk
by Helene S. Ward

PC134

COPY

DECLARATION OF COVENANTS

INSPECTION/MAINTENANCE OF DRAINAGE SYSTEM

THIS DECLARATION, made this 8th day of September, 1997, between *, and all successors in interest, hereinafter referred to as the "COVENANTOR(S)," owner(s) of the following property: Parcel III, Parcel IV-B and Parcel VII (remaining unsold portion only) - James City County Plat Book 57, Page 78, Tax Map 46-1, **, Deed Book 627, Page No. 251 or Instrument No. _____, and James City County, Virginia, hereinafter referred to as the "COUNTY."

*J.R. Chisman Development Co., a Virginia Corporation

**Parcel 1-2C, 3851 John Tyler Highway, Williamsburg, VA

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 drainage system including any runoff control facilities, conveyance systems and associated easements, hereinafter referred to as the "SYSTEM," located on and serving the above-described property to ensure that the SYSTEM is and remains in proper working condition in accordance with approved design standards, and with the law and applicable executive regulations. The SYSTEM shall not include any elements located within any Virginia Department of Transportation rights-of-way.

2. If necessary, the COVENANTOR(S) shall levy regular or special assessments against all present or subsequent owners of property served by the SYSTEM to ensure that the SYSTEM is properly maintained.

3. The COVENANTOR(S) shall provide and maintain perpetual access from public right-of-ways to the SYSTEM 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 SYSTEM for the purpose of inspecting, operating, installing, constructing, reconstructing, maintaining or repairing the SYSTEM.

5. If, after reasonable notice by the COUNTY, the COVENANTOR(S) shall fail to maintain the SYSTEM 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 SYSTEM 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 SYSTEM.

7. The COVENANTOR(s) shall promptly notify the COUNTY when the COVENANTOR(S) legally transfers any of the COVENANTOR(S)' responsibilities for the SYSTEM. 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 SYSTEM.

9. This COVENANT shall be recorded in the County Land Records.

Instrument # 970016205
Recorded Oct. 8, 1997

IN WITNESS WHEREOF, the COVENANTOR(S) have executed this DECLARATION OF COVENANTS as of this 8th day of September, 19 97.

COVENANTOR(S)
J.R. CHISMAN DEVELOPMENT CO.

BY: _____
President
J. R. Chisman

ATTEST:

Annette S. Gilbert

COVENANTOR(S)

_____

ATTEST:

_____

COMMONWEALTH OF VIRGINIA
~~CITY~~/COUNTY OF JAMES CITY

I hereby certify that on this 8th day of September, 19 97, before the subscribed, a Notary Public of the State of Virginia, and for the County of James City, aforesaid personally appeared J.R. Chisman, President of * and did acknowledge the aforegoing instrument to be their Act.

*J.R. Chisman Development Co., a Virginia Corporation

IN WITNESS WHEREOF, I have hereunto set my hand and official seal this 8th day of September, 1997.

Notary Public

My Commission expires: Sept 30, 2000

Approved as to form:

This Declaration of Covenants prepared by:

ANDERSON, FRANCK & DAVIS, P.C.
(Print Name)

ATTORNEYS AT LAW
(Title)

1200 OLD COLONY LANE
(Address)

WILLIAMSBURG, VA 23185
(City) (State) (Zip)

drainage.pre
Revised 2/97