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: **CC021**

DATE VERIFIED: **June 5, 2019**

QUALITY ASSURANCE TECHNICIAN: **Leah Hardenbergh**

Leah Hardenbergh

LOCATION: WILLIAMSBURG, VIRGINIA

CERTIFICATE OF AUTHENTICITY

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BMP NUMBER: **CC-021**

DATE VERIFIED: **March 21, 2012**

QUALITY ASSURANCE TECHNICIAN: **Leah Hardenbergh**

Leah Hardenbergh

LOCATION: WILLIAMSBURG, VIRGINIA

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- STORMW ATER 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: **CC021**

DATE VERIFIED: **September, 6 2018**

QUALITY ASSURANCE TECHNICIAN: **Charles E. Lovett II**

Charles E. Lovett II

LOCATION: WILLIAMSBURG, VIRGINIA

Stormwater Division

MEMORANDUM

DATE: March 11, 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: CC021

PIN: 4130100012A

Subdivision, Tract, Business or Owner Name (if known): Grindstaff Virginia Properties

Property Description: Parcel B1 Grindstaff Virginia Properties

Site Address: 7195 Merricmac Trail

(For internal use only) **Box** 12 **Drawer:** 7

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

Comments

County Record Checklist

*Directions: Please check the type of file for scanning and check the documents enclosed in the file. Remove any budget documents, contractor financial statements or any documents with account numbers.

☐ Stormwater Projects, General Site/Subdivision (from ERP) and Stream Restoration Files

Order of Contents: File Name: _____

	a.	Certification of Authenticity (placed in the file at the time of certification)
	b.	Memorandum of files approved for scanning
	c.	This checklist
☐	1.	Maintenance Agreement
☐	2.	Deeds/Easements/Agreements/Property Records
☐	3.	Record Drawings (As Builts)
☐	4.	Construction Drawings
☐	5.	Warranties
☐	6.	Project development documentation
☐	7.	Reports
☐	8.	Specifications and engineering calculations
☐	9.	Permitting (ex. wetlands permit, SWPPP)
☐	10.	Inspections
☐	11.	Correspondence
☐	12.	Misc. (ex. photos)

☒ Stormwater Stormwater Mangement Facilities (BMP) Files

Order of Contents: File Name: CC021

	a.	Certification of Authenticity (placed in the file at the time of certification)
	b.	Memorandum of files approved for scanning
	c.	This checklist
☐	1.	Maintenance Agreement
☐	2.	Deeds/Easements/Agreements/Property Records
☒	3.	Construction Certificate
☐	4.	Record Drawing (as-built plan)
☐	5.	Construction Drawings
☐	6.	Design Calculations
☐	7.	Reports
☐	8.	Correspondence
☐	9.	Inspection Records
☒	10.	Misc. (ex. photos)

Construction Certificate

psi Environmental Geotechnical Construction
Consulting • Engineering • Testing

Formerly Geo Design Consultants, Inc.

CC021
SP-122-96

November 20, 1997

Mastercorp Inc.
3003 North Main Street
Crossville, Tennessee 38555

Attn: Mr. Larry Echols

Re: BMP Pond Acceptance
Laundromat Facility
James City County, Virginia
PSI Project No: 239-75027-2

Dear Mr. Echols:

The purpose of this letter is to indicate that *Professional Service Industries, Inc. (PSI)* was at the above referenced project site to observe the construction of the BMP pond area. The construction was performed under the supervision of *PSI* and was observed and tested to be in general accordance with the project plans and specifications. Accordingly, to the best of our judgement, knowledge and belief, the impounding structure and its appurtenances were constructed in conformance with the approved plans and specifications.

We appreciate the opportunity to be of service to you on this project. Should you have any questions regarding this matter or require additional information, please do not hesitate to contact this office at (757) 873-4611.

COMMONWEALTH OF VIRGINIA
11/20/97
CAMILLE A. KATTAN
No. 018045
PROFESSIONAL ENGINEER

Respectfully Submitted,

Professional Service Industries, Inc.

Camille A. Kattan

Camille A. Kattan, P.E.
District Manager
VA Reg. No. 18045

cc: (1) Newport Construction Incorporated
(1) James City County Department of Development Management

Scott Thomas

Modified: Thu 1/10/2002 2:52 PM

CC 021
SP-122-96
Mastercorp Building Addition
Small Dry Pond

Although Sheet 4 of 4 for the project had standard JCC Env Div E&SC note # 18 and general note # 5 on the same sheet required an as-built drawing to be submitted, it was my determination based on the age of the project and due to the simple nature of the basin, that as-built drawings would not be required for the facility. Based on final inspection 1/10/02, it was my determination that construction was in conformance with the design plan, the facility appeared properly maintained, it has been adequately functional since construction for stormwater function and structural integrity (even through Hurr Floyd) and since I was requiring a few construction-related (punchlist) items to be performed, requiring AB's to be prepared by the owner at this time in the project status would be redundant.

A letter was forwarded to the Owner on 1/10/02, requesting construction-related items to be performed and for them to notify us for reinspection upon completion. We will then consider release of bond once the CR items are complete.

Scott J. Thomas
Civil Engineer
Environmental Division

James City County Engineering and Resource Protection Division
Stormwater Management/BMP Record Drawing and Construction Certification Review Tracking Form

Project Name: Merrimac Trail Drainage Improvements
County Plan No. (List any amendments): SP-0030-2011
Stormwater Management Facility Type: _____
BMP Phase #: ☐ I ☐ II ☐ III

- [x] Information Package Submittal Date: UNKNOWN
- [x] Completeness Check:
  - [x] Record Drawing Date/By: AES / 6/10/11
  - [x] Construction Certification Date/By: MARC BENNETT 5/14/12
  - [ ] RD/CC Standard Forms (Ensure that all forms for the BMP type are included)
  - [ ] Insp/Maint Agreement # / Date: _____
  - [ ] BMP Maintenance Plan Location: _____
  - [x] Special Considerations: STORM PIPE / DRAINAGE IMPROVEMENT

← STORMWATER HAS DIGITAL COPY IN EMAIL DATED 8/16/12 FROM MARC BENNETT.

- [x] Standard E&SC Notes on Approved Plan Requiring RD/CC or County comment in plan review
  Location (sheet #): C-05 #21
- [x] **County BMP ID Code #:** NA (DRAINS BY OUTFALL OF CC021)
- [x] Log into Division's "As-Built Tracking Log"
- [x] Obtain basic site information (GPIN, Owner, Address, etc.)
- [x] Log into Access Database (BMP ID #, Plan No., GPIN, Project Name, etc.)
- [x] Copy from Active Project File (correspondence, H&H, design computations, etc.).
- [x] Create As-Built File using Project File information (File label, folder, copy plan/details/design information, etc.).
- [x] Inspector Review of RD/CC (consult with Chief Engineer prior to completion of comments).
- [x] Record Drawing Review against Approved Plan prior to Field Inspection.
- [x] Final Site Inspection (FI) Performed Date: 1/10/13
- [x] Record Drawing (RD) Review Date: 1/15/13
- [x] Construction Certification (CC) Review Date: _____
- [x] Actions:
  - [x] No comments.
  - [ ] Comments. Letter Forwarded. Date:
  - [ ] Record Drawing (RD)
  - [ ] Construction Certification (CC)
  - [ ] Construction-Related (CR)
  - [ ] Site Issues (SI)
  - [ ] Other : _____
- [ ] Resubmittal (# and date): _____
- [ ] Re-inspection (if necessary): _____
- [x] Drainage System Information Acceptable (RD/CC/System Info). Ok for bond release.
- [ ] Complete "Surety Request Form".
- [ ] Final Inspection of active file copying any relevant information to "As-Built" file.
- [x] On County BMP Inventory (Phase I, II or III).
- [ ] Copy Final Inspection Report into County BMP Inspection Program file.
- [ ] Provide Digital Photographs of BMP and save into County BMP Inventory.
- [x] Request mylar/reproducible from As-Built plan preparer.
- [x] Complete "As-built Tracking Log".
- [ ] Last check of BMP Access Database (County BMP Inventory).
- [ ] Add BMP to JCC Hydrology & Hydraulic database (optional).
- [ ] Add BMP to Municipal BMP list (if a County-owned facility)
- [ ] Add BMP to PRIDE BMP ratings database.

Final Sign-Off

Inspector: _____ Date: 1/10/13

Chief Engineer: _____ Date: 1/15/13

*** See separate checklist, if needed.

Stormwater Management/BMP Facilities
Record Drawing and Construction Certification Forms

(Note: In accordance with the requirements of the Chesapeake Bay Preservation Ordinance, Chapter 23, Section 23-10(4), BMP's shall be designed and constructed in accordance with the manual entitled James City County Guidelines for Design and Construction of Stormwater Management BMP's. Erosion and sediment control policy and approved plans generally require that at the completion of the project and prior to release of surety, an "as-built" plan prepared by a registered Professional Engineer or Certified Land Surveyor must be provided for the drainage system for the project, including any Best Management Practice (BMP) facilities. In addition, for BMP facilities involving the construction of an impounding structure or dam embankment, certification is required by a Professional Engineer who has inspected the structure during its construction. Currently there are over 20 water quality type BMP's accepted by the County.)

Section 1 - Site Information:

Project Name: Merrimac Trail Drainage Improvements
Structure/BMP Name: –
Project Location: 7195 / 7213 Merrimac Trail
BMP Location: PROJECT IN PKG LOT OF BUSINESS IN PROXIMITY TO BMP # CC021
County Plan No.: SP-0030-2011

Project Type:
- ☐ Residential
- ☐ Commercial
- ☐ Institutional
- ☐ Public
- ☐ Other _____
- ☐ Business
- ☐ Office
- ☐ Industrial
- ☑ Roadway

Tax Map/Parcel No.: (41-3) (1-7B); (41-3) (1-12A)
BMP ID Code (if known): _____
Zoning District: B-1, General Business
Land Use: Commercial, Automobile repair shop
Site Area (sf or acres): 1.25 acres

Brief Description of Stormwater Management/BMP Facility:
Storm Sewer realignment and replacement to help a failing exiting storm sewer / culvert under Merrimac Trail

Nearest Visible Landmark to SWM/BMP Facility: Intersection of Admas Road with Merrimac Trail (120' to east of site)

Nearest Vertical Ground Control (if known):

☐ JCC Geodetic Ground Control ☐ USGS ☐ Temporary ☐ Arbitrary ☐ Other

Station Number or Name: _____
Datum or Reference Elevation: _____
Control Description: _____
Control Location from Subject Facility: _____

Section 2 - Stormwater Management/BMP Facility Construction Information:

Pre-Construction Meeting Held for Construction of SWM/BMP Facility: ☑ Yes ☐ No ☐ Unknown
Approx. Construction Start Date for SWM/BMP Facility: Ocotber 10, 2011
Facility Monitored by County Representative during Construction: ☑ Yes ☐ No ☐ Unknown
Name of Site Work Contractor Who Constructed Facility: Howard Brothers Contractors
Name of Professional Firm Who Routinely Monitored Construction: AES Consulting Engineers
Date of Completion for SWM/BMP Facility: End of November 2011
Date of Record Drawing/Construction Certification Submittal: / August 14, 2012

(Note: Record Drawing and Construction Certifications are required within thirty (30) days of the completion of Stormwater Management and/or BMP facility construction. Record Drawings and Construction Certifications must be reviewed and approved by the James City County Engineering and Resource Protection Division prior to final inspection, acceptance and bond or surety release.)

Section 3 - Owner/Designer/Contractor Information:

Owner/Developer: *(Note: Site Owner or Applicant responsible for development of the project.)*

Name: James City County Stromwater Division
Mailing Address: 5320 Palmer Lane, Suite 2A
Williamsburg, Virginia 23188
Business Phone: 757-259-1460 Fax: 757-259-5833
Contact Person: Barry Moses Title:

Design Professional: *(Note: Professional Engineer or Certified Land Surveyor responsible for the design and preparation of plans and specifications for the Stormwater Management / BMP facility.)*

Firm Name: AES Consulting Engineers
Mailing Address: 5248 Olde Towne Road, Suite 1
Williamsburg, Virginia 23188
Business Phone: 757-253-0040
Fax: 757-220-8994
Responsible Plan Preparer: V. Marc Bennett, P.E.
Title: Senior Project Manager
Plan Name: Merrimac Trail Drainages Improvement Project
Firm's Project No. 9801-E-27
Plan Date: March 25, 2011
Sheet No.'s Applicable to SWM/BMP Facility: 1 / 2 / 3 / 4 / 5

BMP Contractor: *(Note: Site Work Contractor directly responsible for construction of the Stormwater Management/BMP facility.)*

Firm Name: Howard Brothers Contractors
Mailing Address: 14400 Doctors Creek Road
Lanexa, Virginia 23089
Business Phone: 804-966-2762

Fax: _____
Contact Person: Sam Howard, President
Site Foreman/Supervisor: Mike Coy
Specialty Subcontractors and Purpose (for BMP Construction Only): _____

Section 4 - Professional Certifications:

Certifying Professionals: *(Note: A Registered Professional Engineer or Certified Land Surveyor is responsible for preparation of a Record Drawing, sometimes referred to as an As-Built plan, for the drainage system for the project including any Stormwater Management/BMP Facilities. A Registered Professional Engineer is responsible for the inspection, monitoring and certification of Stormwater Management / BMP facilities during its construction.)*

Record Drawing and Construction Certifications for Stormwater Management/BMP Facilities

Record Drawing Certification

Firm Name: _____
Mailing Address: _____
Business Phone: _____
Fax: _____
Name: _____
Title: _____
Signature: _____
Date: _____

I hereby certify to the best of my knowledge and belief that this record drawing represents the actual condition of the Stormwater Management/BMP facility. The facility appears to conform to the provisions of the approved design plan, specifications design, and stormwater management plan, except as specifically noted.

_____(Seal)

Virginia Registered Professional Engineer or Certified Land Surveyor

Construction Certification

Firm Name: AES Consulting Engineers
Mailing Address: 5248 Olde Towne Road, Suite 1
Williamsburg, Virginia 23188
Business Phone: 757-253-0040
Fax: 757-220-8994
Name: Van Marc Bennett
Title: Senior Project Manager
Signature: _____
Date: August 14, 2012

I hereby certify to the best of my knowledge and belief that this Stormwater Management/BMP facility was monitored and constructed in accordance with the provisions of the approved plan, specifications, and stormwater management plan, except as specifically noted.

COMMONWEALTH OF VIRGINIA
VAN MARC BENNETT
Lic. No. 026628
8/14/2012
PROFESSIONAL ENGINEER

_____(Seal)

Virginia Registered Professional Engineer

Construction Drawings

BUILDING ADDITION
FOR
MASTERCORP, INC.
JAMES CITY COUNTY, VIRGINIA

COUNTY OF JAMES CITY
FINAL SITE PLAN
Received .....

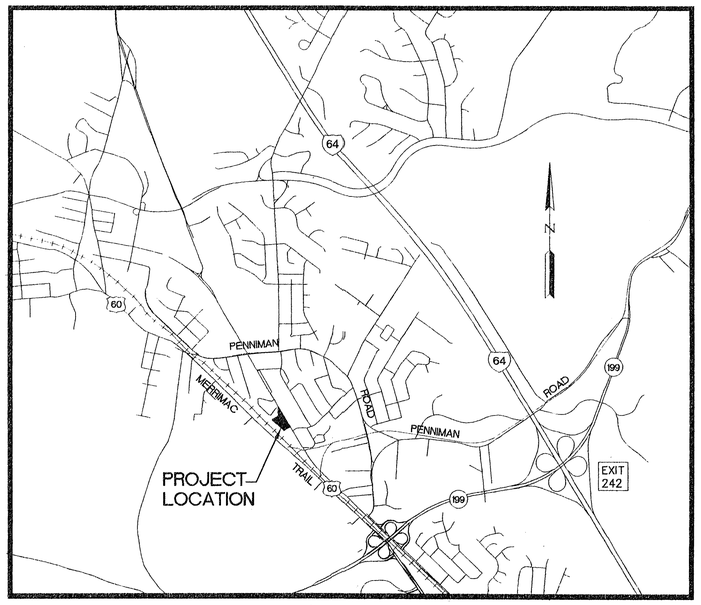
APPROVALS	DATE
Fire Dept.	
Health Dept.	
Hgwy. Dept.	
Plan. Comm.	
Pub Wks. Dept. DKC	4/29/97
Zoning Adm.	
JCSA	
Other	
Other	

APR 1997 RECEIVED PLANNING DEPARTMENT

SP-122-96

LEGEND

EXISTING		PROPOSED
	WATER	W
	SANITARY SEWER	S
	STORM SEWER	
	FORCE MAIN	F.M.
	MANHOLE	
	CURB DROP INLET	
	YARD DROP INLET	
	FLARED END SECTION	
	VALVE	
	FIRE HYDRANT ASSEMBLY	
	BLOW-OFF VALVE	
	AIR RELEASE ASSEMBLY	
	CLEAN OUT	
	WATER METER	
	STREETLIGHT	
	CENTERLINE/BASELINE	
	RIGHT OF WAY	
	PROPERTY LINE	
	℄ DITCH/SWALE	
	CONCRETE LINED DITCH	
	EC-3 LINED DITCH	
	EXISTING TREELINE	
	LIMITS OF CLEARING	
	SILT FENCE	
	INLET PROTECTION	
	CHECK DAM	
	STRAW BALE BARRIER	
	RIP RAP	
	REVERSE ROLL TOP GUTTER	
	GROUND ELEVATION	251
	PROPOSED TOP OF CURB ELEV.	TC ELEV
	GRADING LINE TIE-IN	
	EXISTING CONTOUR ELEV.	
	PROPOSED CONTOUR ELEV.	80
	GRADING BY OTHERS	80



VICINITY MAP (APROX. SCALE 1"=2000')

NOVEMBER, 1996

INDEX OF SHEETS

SHEET NUMBER	DESCRIPTION
COVER	COVER SHEET
1	SITE AND UTILITY PLAN
2	GRADING, DRAINAGE, AND EROSION AND SEDIMENT CONTROL PLAN
3	LANDSCAPE PLAN
4	NOTES AND DETAILS

LAND USE SUMMARY TABLE:

EXISTING	S.F.	AC.	% TOTAL
TOTAL SITE AREA	122,292	2.81	100.00
IMPERVIOUS AREA			
BUILDING COVERAGE	18,500	0.42	15.13
PAVED AREA (CONC/ASPHT)	37,565	0.86	30.72
GRAVEL AREA	21,992	0.50	17.98
TOTAL IMPERVIOUS AREA	78,057	1.79	63.83
OPEN SPACE	44,235	1.02	36.17
TOTAL SITE AREA	122,292	2.81	100.00

PROPOSED	S.F.	AC.	% TOTAL
TOTAL SITE AREA	122,292	2.81	100.00
IMPERVIOUS AREA			
BUILDING COVERAGE	26,500	0.61	21.67
PAVED AREA (CONC/ASPHT)	47,612	1.09	38.89
GRAVEL AREA	0	0.00	0.00
TOTAL IMPERVIOUS AREA	74,112	1.70	60.55
OPEN SPACE	48,180	1.11	39.36
TOTAL SITE AREA	122,292	2.81	100.00
TOTAL REDUCTION IN IMPERVIOUS AREA	3,945	0.091	3.22

PARKING CALCULATIONS:

EXISTING			
MODERATE DEMAND GENERATORS	1 SP/250 S.F.	@ 6,500 S.F.	26
INDUSTRIAL-LAUNDRY/WAREHOUSE	1 SP/2 EMPL	@ 12 EMPL	6
TOTAL SPACES REQUIRED			32
TOTAL SPACES PROVIDED			40

PROPOSED			
MODERATE DEMAND GENERATORS	1 SP/250 S.F.	@ 6,500 S.F.	26
INDUSTRIAL-LAUNDRY/WAREHOUSE	1 SP/2 EMPL	@ 5 EMPL	2.5
TOTAL SPACES REQUIRED			29
TOTAL SPACES PROVIDED			31

CONSULTING ENGINEERS
5248 Olde Towne Road, Suite 1
Williamsburg, Virginia 23188
(804) 253-0040
Fax (804) 220-8994

04-23-97-09:41 61040\COV

COVER SHEET

GRAPHIC SCALE
20' 0' 20' 40'
SCALE: 1" = 20'

N/F CSX RAILROAD

RAILROAD R/W

JAMES CITY COUNTY GEODETIC CONTROL MERIDIAN

172' TO C/L TRACK

EXIST. JCSA SAN. MH
TOP=47.16
INV.IN (6" STEEL)=42.66
INV.IN (10" CLAY)=38.06
INV.OUT (10" CLAY)=37.96

EXISTING METAL AND FRAME BUILDING

DUMPSTER PAD (SEE DETAIL)

N46°29'12"W 438.76'

TEMPORARY EQUIPMENT STORAGE AREA

EXISTING 20' SANITARY SEWER EASEMENT PER DB 82, PG 36

TIE-IN. EXISTING 10" GRAVITY SEWER

EXISTING LAUNDRY TO BE USED AS WAREHOUSE SPACE

EXISTING 1 STORY BRICK AND METAL BUILDING

EXISTING WATER SUPPLY TO SERVE SINGLE RESTROOM

HANDICAP SIGN

EXISTING PLANTING BEDS AND CONCRETE TO BE REMOVED AND REPLANTED/REGRADED AS PLANTING AREAS (SEE LANDSCAPE PLAN)

132 L.F. OF 6" G.S. @ MIN. 1.00%

EXISTING FENCE TO BE REMOVED

PROPOSED ASPHALT

LOADING SPACE

CONCRETE AND ASPHALT TO BE REMOVED AND REGRADED

EDGE OF PAVEMENT

12 SPACES @ 9' = 108' (INCLUDING 1 HC)

EXISTING TIMBERS TO REMAIN

HANDICAP SIGN

3 SPACES @ 9' = 27'

6" C.O. INV.=50.0

EMPLOYEE ACCESS DOOR

DOWNSPOUT LINES TO CARRY BUILDING RUN-OFF TO DRAIN LINE

EXISTING TIMBERS TO BE REMOVED

N29°47'32"W 5.65'

PROPOSED BUILDING
8,000 S.F.
BUILDING HEIGHT 30' MAXIMUM
F.F. = 55.0
CONSTRUCTION TYPE 2C
USE GROUP F1

10' OVERHEAD DOOR (TYPICAL)

EMERGENCY ACCESS DOORS

TEMPORARY STOCKPILE STORAGE AREA

EXISTING ASPHALT

EX. CONCRETE AND CURBING TO BE REMOVED

13 SPACES @ 9' = 117'

30' AT THIS POINT

EXIST. GRAVEL TO BE REMOVED AND AREA TO BE GRADED TOPSOILED & SEEDED

N/F JAMES CITY COUNTY T.M. (41-4)(1-7B) PB 41, PG 70

N/F CHARLES E. MORREL T.M. (41-4)(1-7B) PB 41, PG 70

PROPOSED 20' DRAINAGE EASEMENT TO BE DEDICATED TO VIRGINIA DEPARTMENT OF TRANSPORTATION

CG-2 OR REUSE TIMBER CURBING

EXISTING TIMBER CURBING TO BE REMOVED & REUSED IF POSSIBLE

S30°26'29"E 427.32'

EXISTING 1" WATER METER AND VALVE BOX

IPF

N59°33'31"E 220.70'

LOT 19 T.M. (41-3)(5-19)

LOT 20 T.M. (41-3)(5-20)

EXISTING FRAME BUILDING

N20°39'29"W 66.62'

N59°33'31"E 100.25'

EXISTING FRAME BUILDING & GREENHOUSE

WOOD RETAINING WALL

PARCEL A

N04°03'31"E

195.04'

DIRECTIONAL ARROWS

150' TAPER

ERADICATE 100' OF EXISTING WHITE LINE REPLACE WITH 100 L.F. - 4" WHITE MINI-SKIPS 3' LENGTHS, 6' SPACING

MERRIMAC TRAIL

140' R/W

STATE ROUTE 143

No.	DATE	REVISION / COMMENT / NOTE	BY
3	4/97	REVISED PER JCC COMMENTS 4/24/97	RMO
2	3/97	REVISED PER JCC COMMENTS 3/24/97	RMO
1	2/97	REVISED PER JCC COMMENTS 3/14/97	RMO

LEGEND

DENOTES DEMOLITION AND REMOVAL

COMMONWEALTH OF VIRGINIA
G. ARCHER MARSTON, III
No. 016826
PROFESSIONAL ENGINEER

5248 Olde Towne Road, Suite 1
Williamsburg, Virginia 23188
(804) 253-0040
Fax (804) 220-8994
CONSULTING ENGINEERS

SITE AND UTILITY PLAN
FOR
BUILDING ADDITION
OWNER / DEVELOPER - MASTERCORP, INC.
ROBERTS DISTRICT JAMES CITY COUNTY VIRGINIA

Designed	Drawn
RMO/GAM	BJU
Scale	Date
1"=20'	12/06/96
Project No.	
8104	
Drawing No.	
1 OF 4	

04.24.97-14:05 R1:240C01

RMO

GRAPHIC SCALE
20' 0' 20' 40'
SCALE: 1" = 20'

PROVIDE EC-3 DITCH LINER ON EMERGENCY SPILLWAY FROM TOP EL= 52.0 TO EL = 42.0

CONTRACTOR SHALL USE EXTREME CAUTION WHEN WORKING IN VICINITY OF SEWER. NO HEAVY EQUIPMENT SHALL BE OPERATED DIRECTLY OVER SEWER LINE. CONTRACTOR SHALL VERIFY DEPTH AND LOCATION OF LINE, AND MAINTAIN LOCATION FLAGGING DURING ALL CONSTRUCTION.

JAMES CITY COUNTY GEODETIC CONTROL MERIDIAN

OUTFALL CULVERT
30 L.F. OF 15" AAC.
HELICAL CMP @ 10.0%
INV. IN = 45.0
INV. OUT = 42.0

RIP RAP LINER
10'W @ OUTLET X
20'L X 20'W @ END
X 1.5' DEEP CLASS
1 VDOT STONE
(MIN. 8 CY REQ'D)

EC-3
GRASS LINED V-DITCH
EMERGENCY SPILLWAY
CREST EL.=52.0
MIN. LENGTH 12'

36" AAC. CMP RISER
W/EXTENDED BASE
TOP OF BASE
ELEV. = 45.0

BMP/SWM EXTENDED
DETENTION DRY POND
INV.=49.0

LIMITS OF CLEARING

INV.=42.0

40 LF 36" RCP @ 2.4 %

STORM MH
TOP=53.5
INV.=42.96

45 L.F. OF GRASS SWALE
@ 2.22%, MIN. 6" DEEP
WITH EC-3 LINER

EC-3 LINER
INV.= 50.0

39 LF OF 12"
HDPE @ 1.72%

LOADING SPACE

INV.=51.1

PROPOSED ASPHALT

28 LF OF 12"
PVC @ 0.40%

INV.= 50.67

107 L.F. OF 12" HDPE
DRAIN PIPE @ 0.40%
(TO CATCH GUTTER
DOWNSPOUT)

YD
TOP=52.5
INV.=51.2

PROPOSED BUILDING
8,000 S.F.
BUILDING HEIGHT 30' MAXIMUM
F.F. = 55.0
CONSTRUCTION TYPE 2C
USE GROUP F1

TOP = 51.2
INV. = 44.51

215 LF
GRASS SWALE
MIN. 6" DEEP
@ 0.93%

115 LF GRASS
SWALE @ 0.87%
MIN. 6" DEEP

ROOF DRAIN SPLASH
BLOCK & ENERGY
DISSIPATOR (TYP.)

EXISTING
METAL AND FRAME
BUILDING

EXISTING
1 STORY
BRICK AND METAL
BUILDING

TC/FG=
55.0

EXISTING
FRAME BUILDING

EXISTING FRAME
BUILDING & GREENHOUSE

EXISTING ASPHALT

EXISTING GRAVEL PARKING

0.42 Ac.
0.24 Ac.
0.22 Ac.
0.04 Ac.
0.77 Ac.
0.60 Ac.
0.57 Ac.
0.32 Ac.

MERRIMAC TRAIL
140' R/W

STATE ROUTE 143

No.	DATE	REVISION / COMMENT / NOTE	
3	4/97	REVISED PER JCC COMMENTS 4/21/97	RMO
2	3/97	REVISED PER JCC COMMENTS 3/24/97	RMO
1	12/97	REVISED PER JCC COMMENTS 1/13/97	RMO

COMMONWEALTH OF VIRGINIA
G. ARCHER MARSTON
No. 10803
PROFESSIONAL ENGINEER
4/24/97

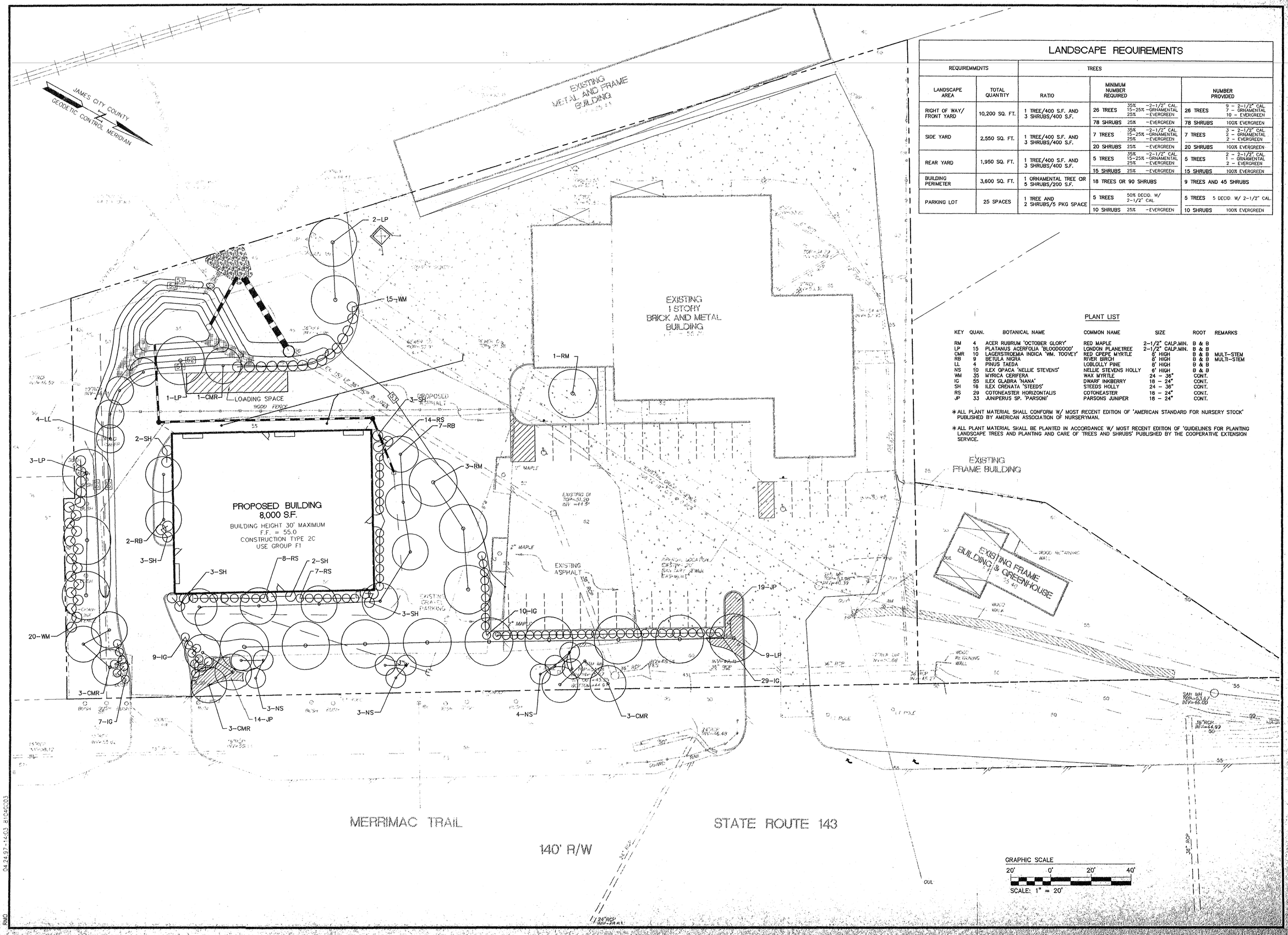
5248 Olde Towne Road, Suite 1
Williamsburg, Virginia 23188
(804) 253-0040
Fax (804) 220-8994
CONSULTING ENGINEERS

GRADING, DRAINAGE AND EROSION AND SEDIMENT CONTROL PLAN FOR BUILDING ADDITION

OWNER / DEVELOPER: MASTERCORP, INC.
ROBERTS DISTRICT JAMES CITY COUNTY VIRGINIA

Designed RMO/GAM	Drawn BJU
Scale 1"=20'	Date 12/06/96
Project No. 8104	
Drawing No. 2 OF 4	

04.24.97-14:06 8104C002
RMO



LANDSCAPE REQUIREMENTS

REQUIREMMENTS		TREES				
LANDSCAPE AREA	TOTAL QUANTITY	RATIO	MINIMUM NUMBER REQUIRED		NUMBER PROVIDED	
RIGHT OF WAY/ FRONT YARD	10,200 SQ. FT.	1 TREE/400 S.F. AND 3 SHRUBS/400 S.F.	26 TREES	35% -2-1/2" CAL. 15-25% -ORNAMENTAL 25% -EVERGREEN	26 TREES	9 - 2-1/2" CAL. 7 - ORNAMENTAL 10 - EVERGREEN
			78 SHRUBS	25% -EVERGREEN	78 SHRUBS	100% EVERGREEN
SIDE YARD	2,550 SQ. FT.	1 TREE/400 S.F. AND 3 SHRUBS/400 S.F.	7 TREES	35% -2-1/2" CAL. 15-25% -ORNAMENTAL 25% -EVERGREEN	7 TREES	3 - 2-1/2" CAL. 2 - ORNAMENTAL 2 - EVERGREEN
			20 SHRUBS	25% -EVERGREEN	20 SHRUBS	100% EVERGREEN
REAR YARD	1,950 SQ. FT.	1 TREE/400 S.F. AND 3 SHRUBS/400 S.F.	5 TREES	35% -2-1/2" CAL. 15-25% -ORNAMENTAL 25% -EVERGREEN	5 TREES	2 - 2-1/2" CAL. 1 - ORNAMENTAL 2 - EVERGREEN
			15 SHRUBS	25% -EVERGREEN	15 SHRUBS	100% EVERGREEN
BUILDING PERIMETER	3,600 SQ. FT.	1 ORNAMENTAL TREE OR 5 SHRUBS/200 S.F.	18 TREES OR 90 SHRUBS		9 TREES AND 45 SHRUBS	
PARKING LOT	25 SPACES	1 TREE AND 2 SHRUBS/5 PKG SPACE	5 TREES	50% DECID. W/ 2-1/2" CAL.	5 TREES	5 DECID. W/ 2-1/2" CAL.
			10 SHRUBS	25% -EVERGREEN	10 SHRUBS	100% EVERGREEN

PLANT LIST

KEY	QUAN.	BOTANICAL NAME	COMMON NAME	SIZE	ROOT	REMARKS
RM	4	ACER RUBRUM 'OCTOBER GLORY'	RED MAPLE	2-1/2" CALP.MIN.	B & B	
LP	15	PLATANUS ACERFOLIA 'BLOODGOOD'	LONDON PLANETREE	2-1/2" CALP.MIN.	B & B	
CMR	10	LAGERSTROEMIA INDICA 'WM. TOOVEY'	RED CREPE MYRTLE	8' HIGH	B & B	MULTI-STEM
RB	9	BETULA NIGRA	RIVER BIRCH	8' HIGH	B & B	MULTI-STEM
LL	4	PINUS TAEDA	LOBLOLLY PINE	8' HIGH	B & B	
NS	10	ILEX OPACA 'NELLIE STEVENS'	NELLIE STEVENS HOLLY	6' HIGH	B & B	
WM	35	MYRICA CERIFERA	WAX MYRTLE	24 - 36"	CONT.	
IG	55	ILEX GLABRA 'NANA'	DWARF INKBERRY	18 - 24"	CONT.	
SH	16	ILEX CRENATA 'STEEDS'	STEEDS HOLLY	24 - 36"	CONT.	
RS	29	COTONEASTER HORIZONTALIS	COTONEASTER	18 - 24"	CONT.	
JP	33	JUNIPERUS SP. 'PARSONI'	PARSONS JUNIPER	18 - 24"	CONT.	

* ALL PLANT MATERIAL SHALL CONFORM W/ MOST RECENT EDITION OF 'AMERICAN STANDARD FOR NURSERY STOCK' PUBLISHED BY AMERICAN ASSOCIATION OF NURSERYMAN.

* ALL PLANT MATERIAL SHALL BE PLANTED IN ACCORDANCE W/ MOST RECENT EDITION OF 'GUIDELINES FOR PLANTING LANDSCAPE TREES AND PLANTING AND CARE OF TREES AND SHRUBS' PUBLISHED BY THE COOPERATIVE EXTENSION SERVICE.

No.	DATE	REVISION / COMMENT / NOTE	BY
3	4/97	REVISED PER ARC COMMENTS 4/24/97	RMO
2	3/97	REVISED PER ARC COMMENTS 3/24/97	RMO
1	2/97	REVISED PER ARC COMMENTS 1/14/97	RMO

COMMONWEALTH OF VIRGINIA
JAMES S. PETERS
No. 000393
4/29/97
REGISTERED LANDSCAPE ARCHITECT

5248 Olde Towne Road, Suite 1
Williamsburg, Virginia 23188
(804) 253-0040
Fax (804) 220-8994
CONSULTING ENGINEERS

LANDSCAPE PLAN
FOR
BUILDING ADDITION
OWNER / DEVELOPER: MASTERCORP, INC.
ROBERTS DISTRICT JAMES CITY COUNTY VIRGINIA

Designed JSP	Drawn GO/MMR
Scale 1"=20'	Date 12/06/96
Project No. 8104	
Drawing No. 3 OF 4	

04.24.97 - 14:03 8104C03

RMO

STANDARD
EROSION AND SEDIMENT CONTROL NOTES
FOR JAMES CITY COUNTY, VIRGINIA
REVISED 2/3/95

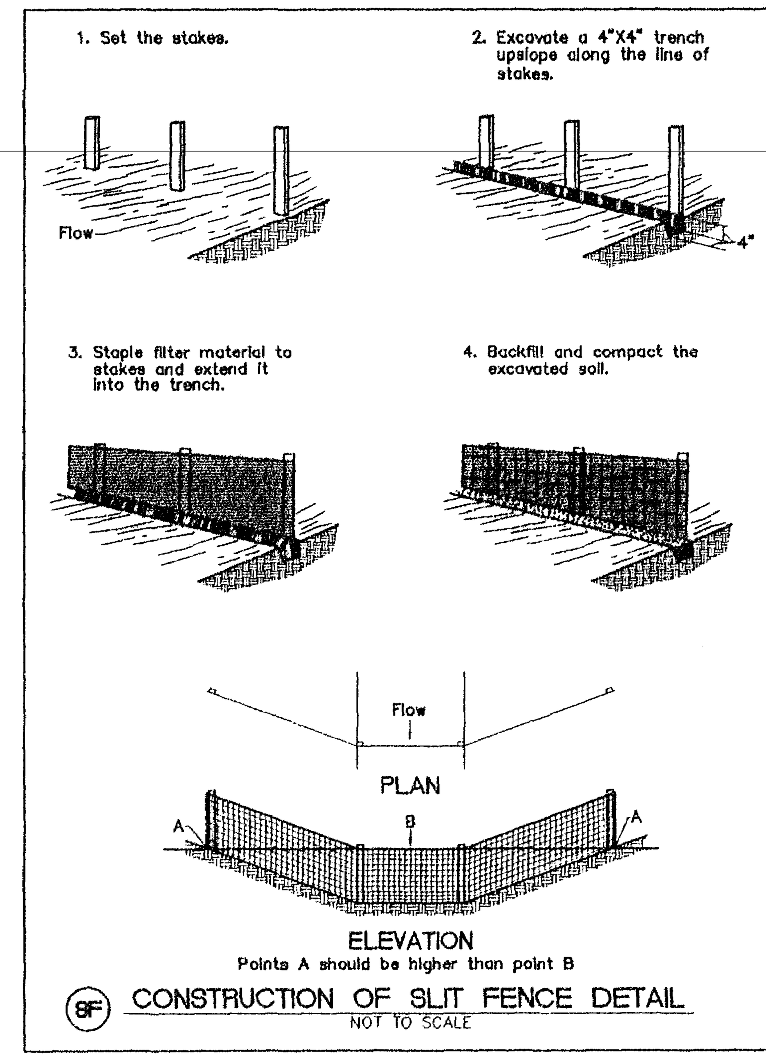
THE PURPOSE OF THE EROSION CONTROL MEASURES SHOWN ON THESE PLANS SHALL BE TO PRECLUDE THE TRANSPORT OF ALL WATERBORNE SEDIMENTS RESULTING FROM CONSTRUCTION ACTIVITIES FROM ENTERING ONTO ADJACENT PROPERTIES OR STATE WATERS. IF FIELD INSPECTION REVEALS THE INADEQUACY OF THE PLAN TO CONFINE SEDIMENT TO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

1. ALL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INSTALLED AND MAINTAINED IN ACCORDANCE WITH THE "VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK". THE CONTRACTOR SHALL BE THOROUGHLY FAMILIAR WITH ALL APPLICABLE MEASURES CONTAINED THEREIN WHICH MAY BE PERTINENT TO THIS PROJECT.
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.

GENERAL NOTES:

1. SITE IS ZONED B-1, GENERAL BUSINESS.
2. PROPERTY IS JCC TAX MAP PARCEL NO. (41-3) (1-12).
3. PROPOSED BUILDING ADDITION AREA – 8,000 S.F.
   TOTAL PROPOSED IMPERVIOUS AREA – 73,699 S.F. (1.69 AC.)
   TOTAL DISTURBED AREA – 50,530 S.F. (1.16 AC.)
4. BUILDING HEIGHT – 30 FEET MAX.
5. BUILDING USE GROUP – SI
6. CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND SHALL NOTIFY MISS UTILITY (1-800-552-7001) PRIOR TO ANY EXCAVATION OR DEMOLITION.
7. CONTRACTOR SHALL BE RESPONSIBLE FOR THE COORDINATION OF CONSTRUCTION EFFORTS WITH VIRGINIA NATURAL GAS, VIRGINIA POWER, BELL ATLANTIC TELEPHONE, APPROPRIATE CABLE COMPANY, COUNTY OF JAMES CITY, AND OTHERS AS REQUIRED.
8. THE LOCATION OF UNDERGROUND UTILITIES ON THIS PLAN ARE APPROXIMATE ONLY. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THEIR PRECISE FIELD LOCATION.
9. WATER AND SEWER SERVICE SHALL BE PROVIDED BY INTERNAL PLUMBING CONNECTION TO THE EXISTING SERVICES.
10. ALL SANITARY SEWER AND WATER SYSTEM CONNECTIONS SHALL BE INSTALLED IN ACCORDANCE WITH THE LATEST VERSION OF THE JAMES CITY COUNTY SANITARY SEWER AND WATER DISTRIBUTION SYSTEM CONSTRUCTION STANDARDS AND SPECIFICATIONS.
    ALL ON-SITE WATER AND SEWER FACILITIES SHALL BE PRIVATE.
11. ALL NEW SIGNS SHALL BE IN ACCORDANCE WITH ARTICLE II, DIVISION 3 OF THE JAMES CITY COUNTY ZONING ORDINANCE.
12. ALL NEW UTILITIES SHALL BE PLACED UNDERGROUND.
13. OWNER/DEVELOPER: MASTERCORP, INC
    3003 N. MAIN STREET
    CROSSVILLE, TN. 38557
    (804)229-6026

04.24.97-14:07 8104D004



(SF) CONSTRUCTION OF SILT FENCE DETAIL
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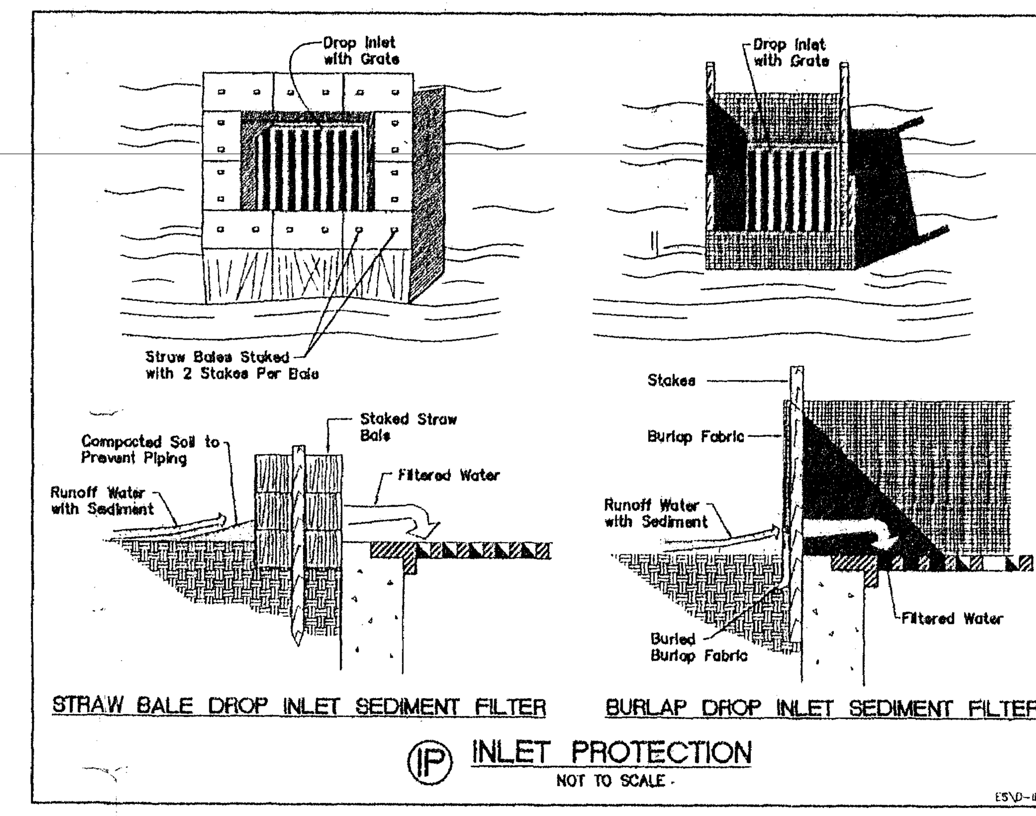

(IP) INLET PROTECTION
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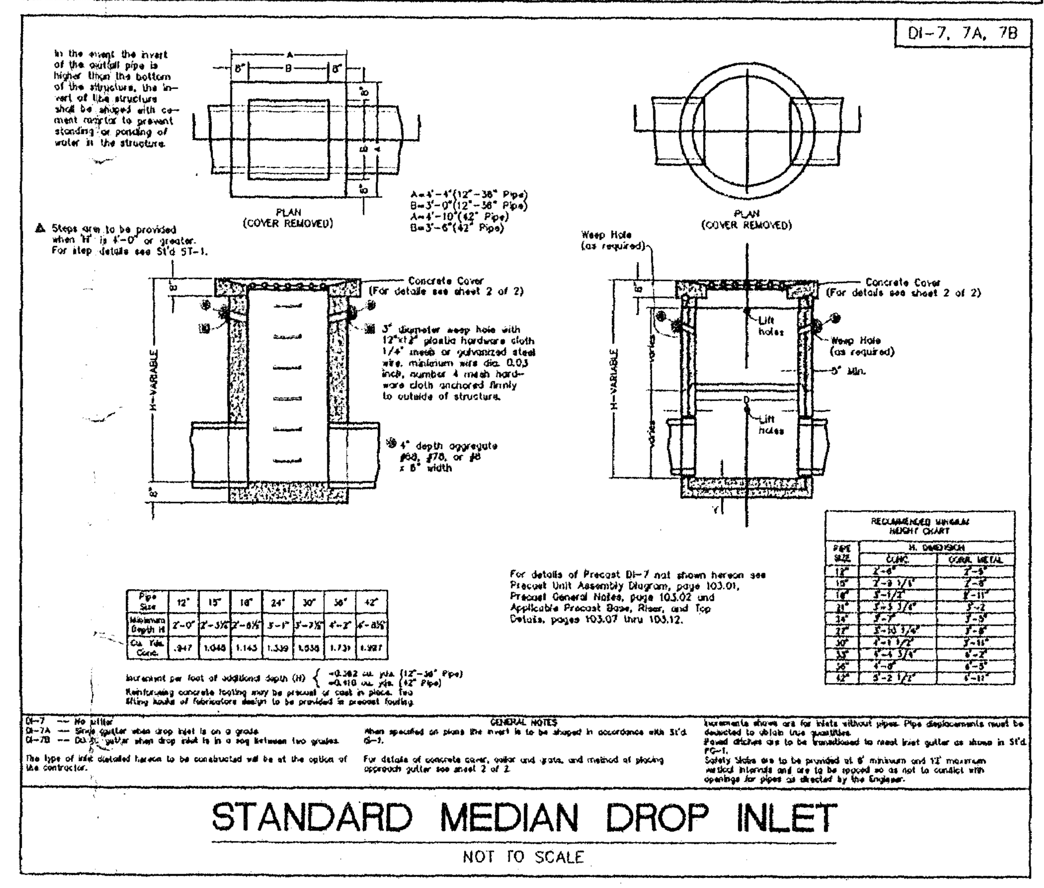

STANDARD MEDIAN DROP INLET
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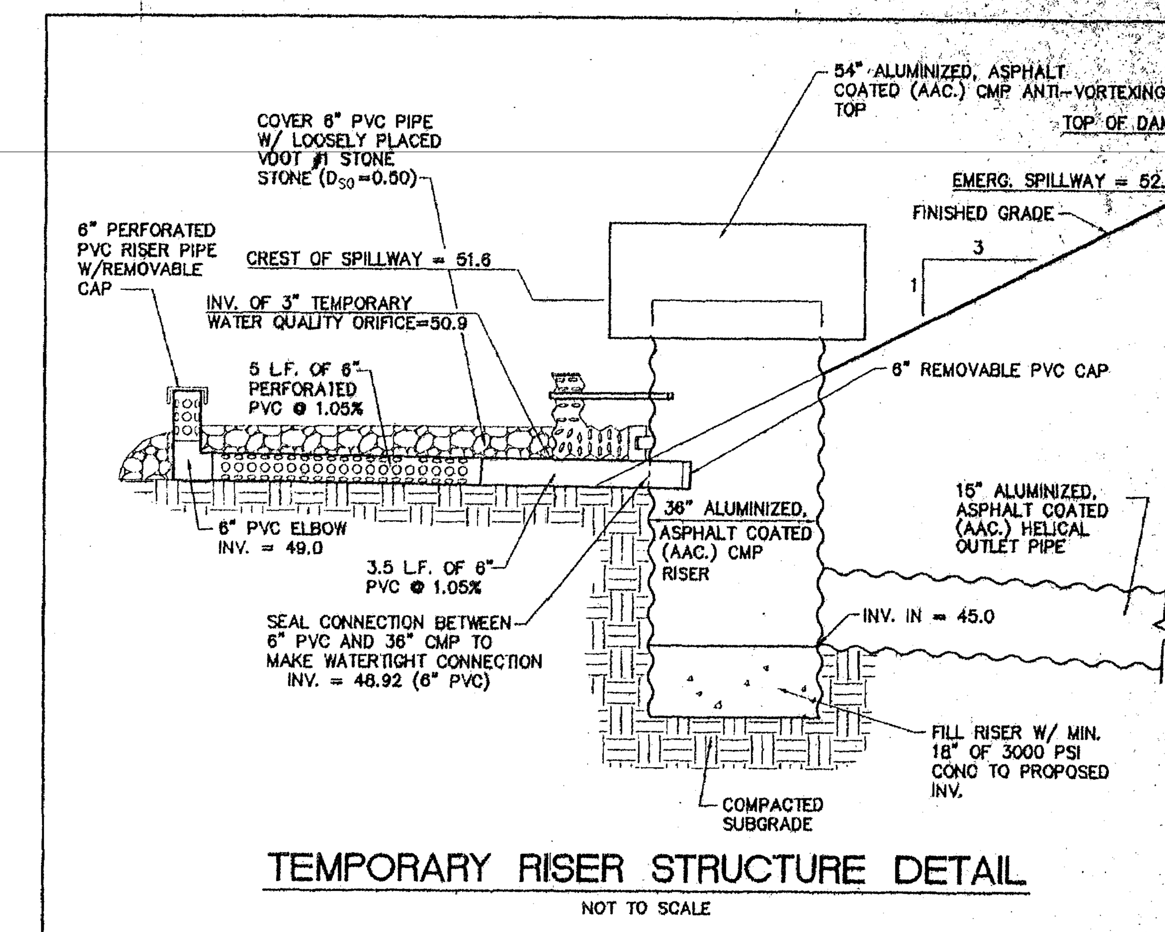

TEMPORARY RISER STRUCTURE DETAIL
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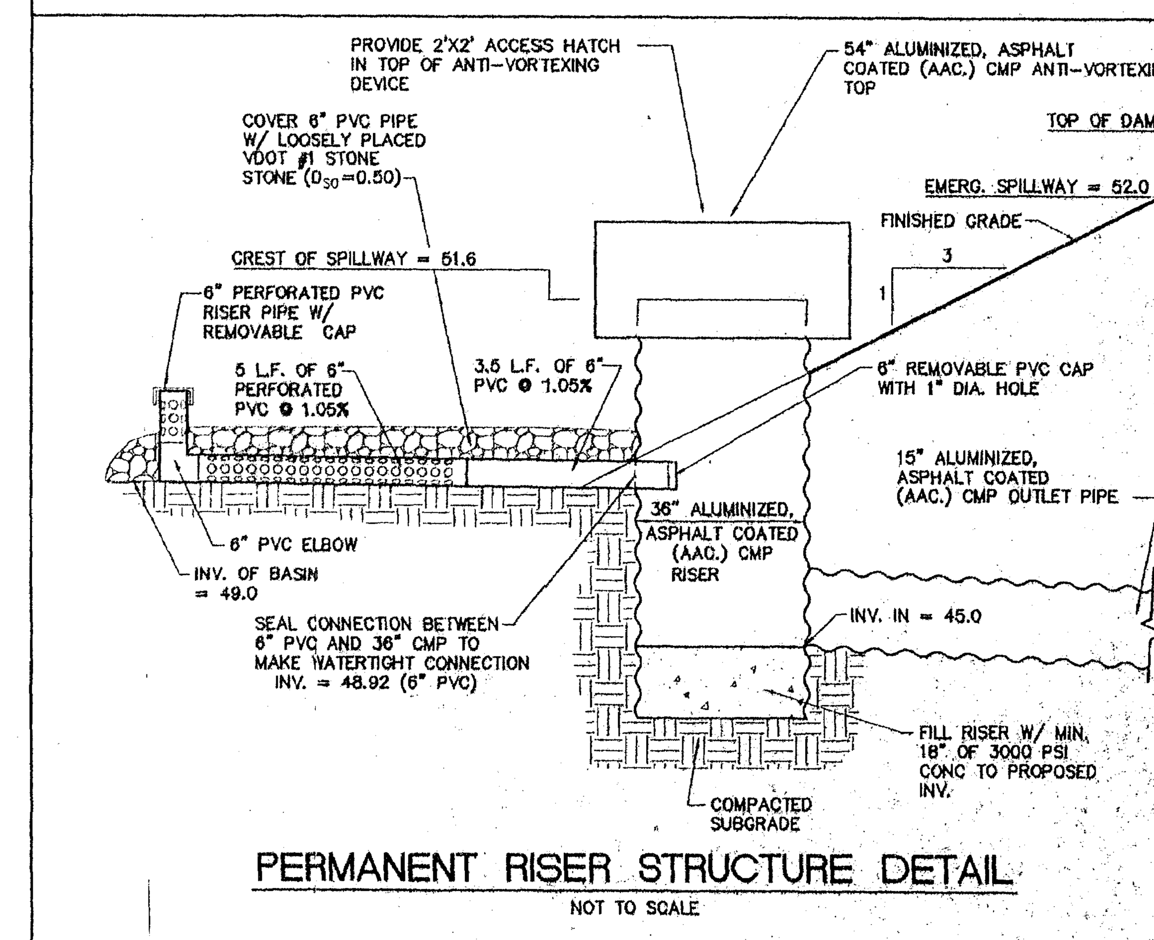
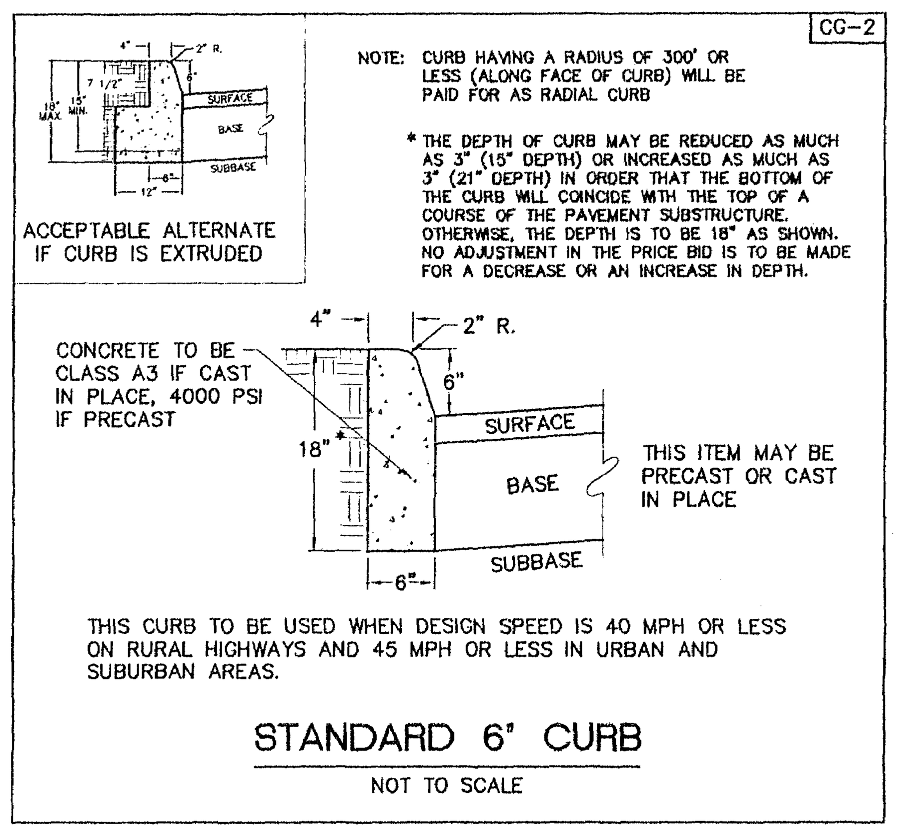


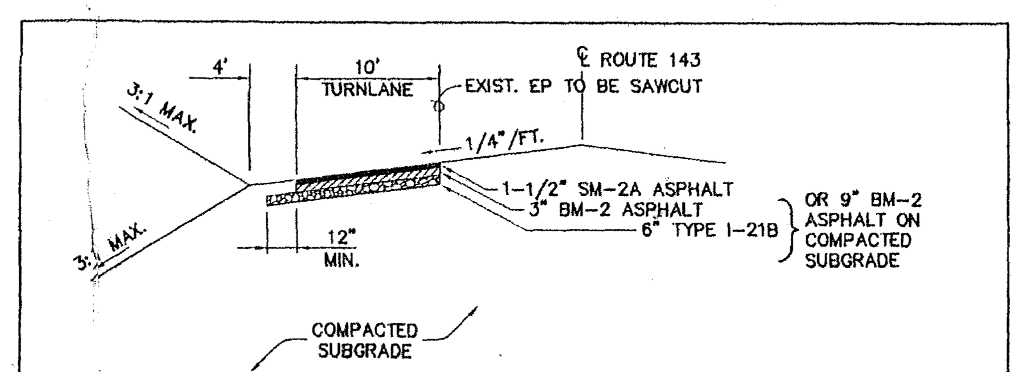
PERMANENT RISER STRUCTURE DETAIL
NOT TO SCALE

NOTES:
1. PROPOSED SWM/BMP "DRY" POND SHALL ACT AS A TEMPORARY SEDIMENT BASIN DURING CONSTRUCTION. SEE TEMPORARY RISER STRUCTURE THIS SHEET.
2. SEDIMENT CLEAN OUT POINT DURING OPERATION AS TEMPORARY SEDIMENT BASIN IS @ EL.=50.12'
3. AFTER ALL DISTURBED AREAS ARE STABILIZED AND OPERATION AS TEMPORARY SEDIMENT BASIN CEASES, THE BASIN SHALL BE DEWATERED, THE 6" PVC CAP AT THE RISER BASE SHALL BE DRILLED WITH A 1" DIA. HOLE. THE 6" PERFORATED POLYETHYLENE DEWATERING DEVICE SHALL THEN BE REMOVED AND THE RISER PIPE PLUGGED AND SEALED. CREST OF PRIMARY SPILLWAY RISER STRUCTURE SHALL THEN BE LOWERED FROM EL=52.0 TO EL=51.6.
4. UPON COMPLETION, THE CONSTRUCTION OF THE DAM SHALL BE CERTIFIED BY A PROFESSIONAL ENGINEER WHO HAS INSPECTED THE STRUCTURE DURING CONSTRUCTION.
5. CONTRACTOR SHALL PROVIDE AS-BUILT DRAWINGS TO ENGINEER UPON COMPLETION OF BMP FACILITY.



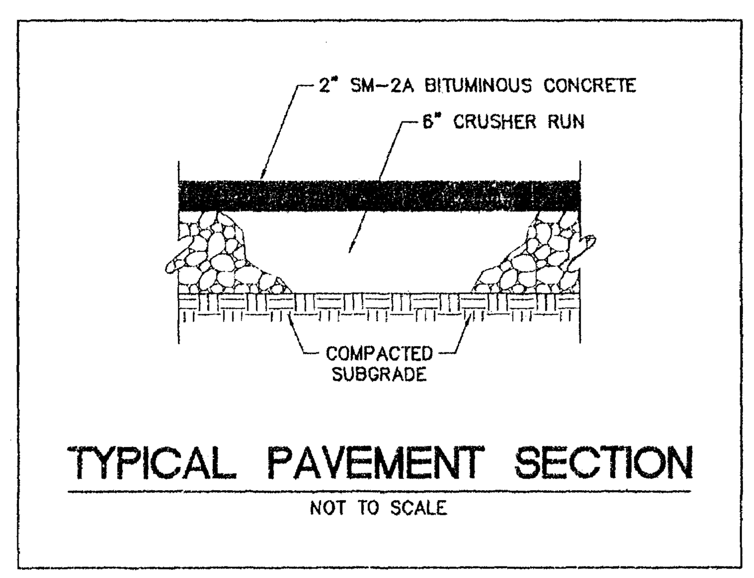
STANDARD 6" CURB
NOT TO SCALE

D-CG2



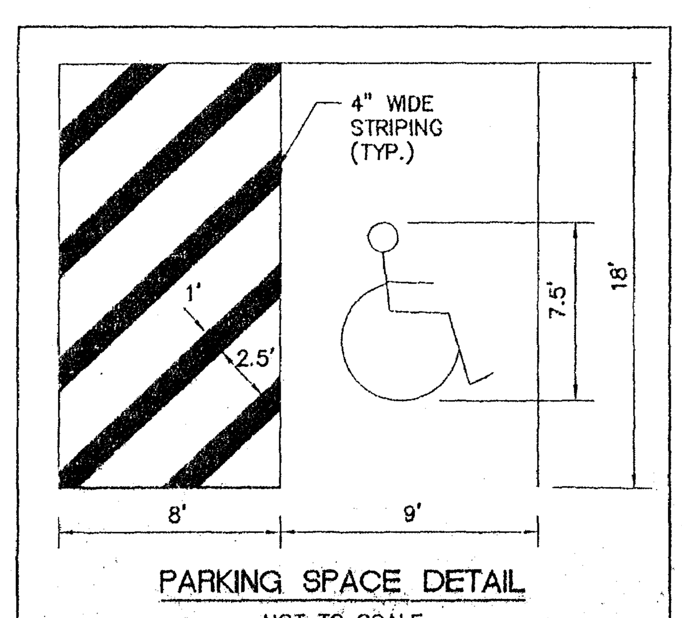
OFFSITE PAVEMENT SECTION DETAIL A-A
NOT TO SCALE

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. A VDOT CE-7 PERMIT IS REQUIRED PROIR TO COMMENCING ANY WORK ON THE VDOT RIGHT-OF-WAY.
3. CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND SHALL NOTIFY MISS UTILITY (1-800-552-7001) PRIOR TO ANY EXCAVATION.
4. THE STONE UNDER THE CURB AND GUTTER SHALL BE CHECKED BY VDOT PRIOR TO PAVING OR BACKFILLING.



TYPICAL PAVEMENT SECTION
NOT TO SCALE

D-2X6



PARKING SPACE DETAIL
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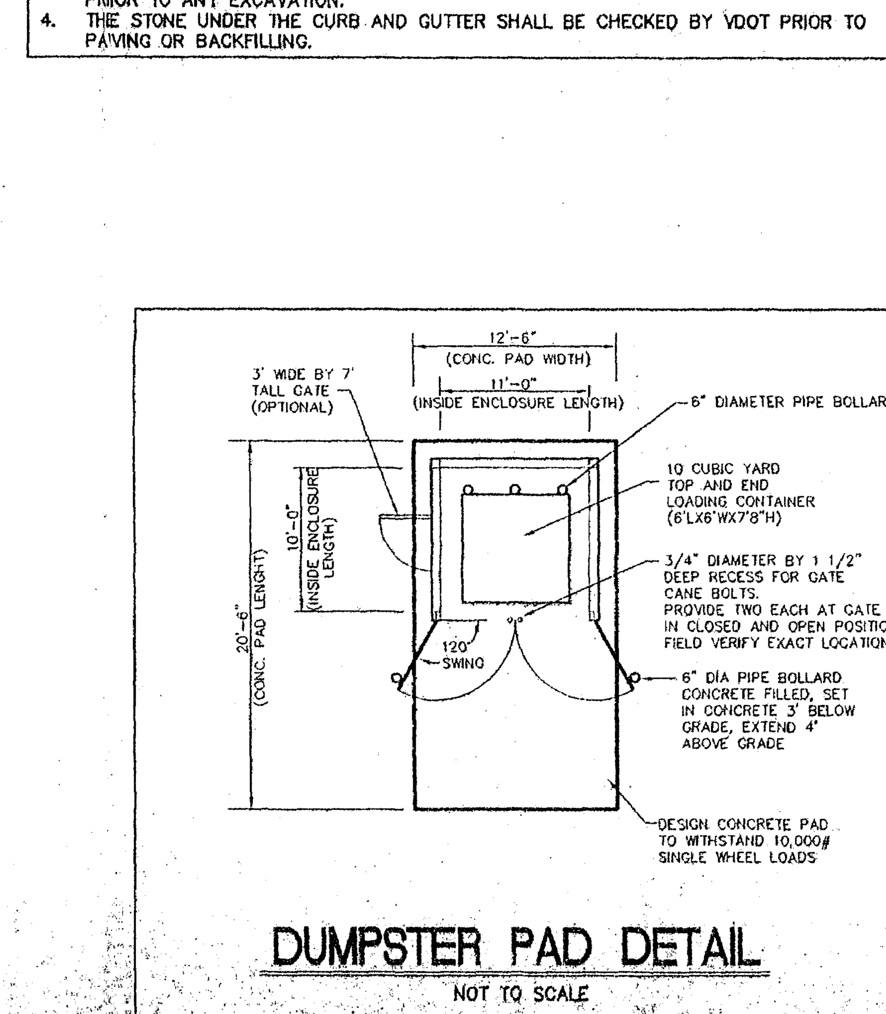

DUMPSTER PAD DETAIL
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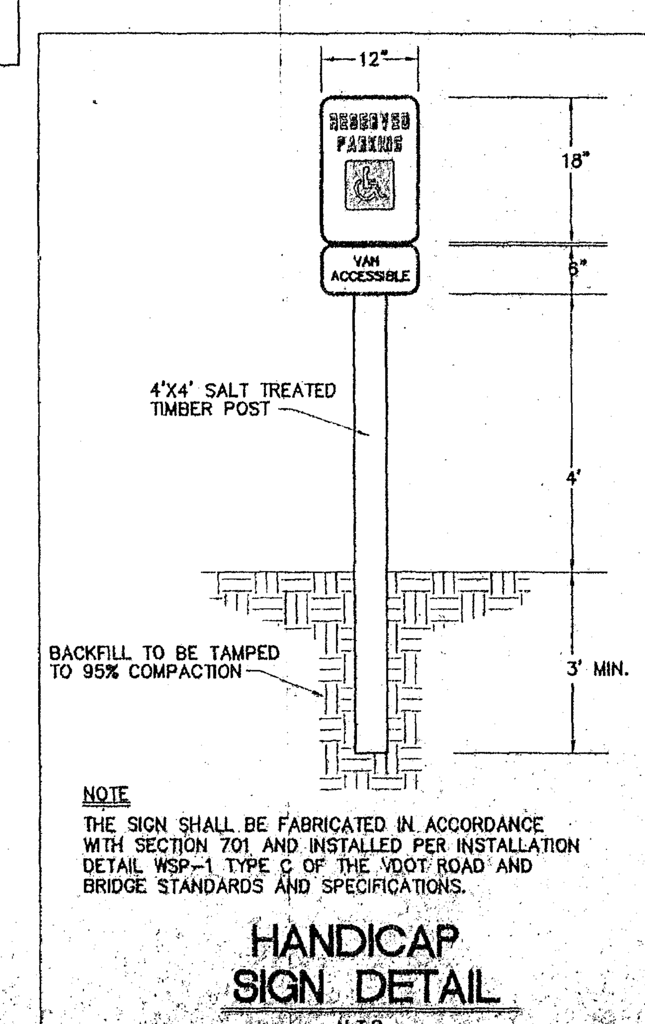
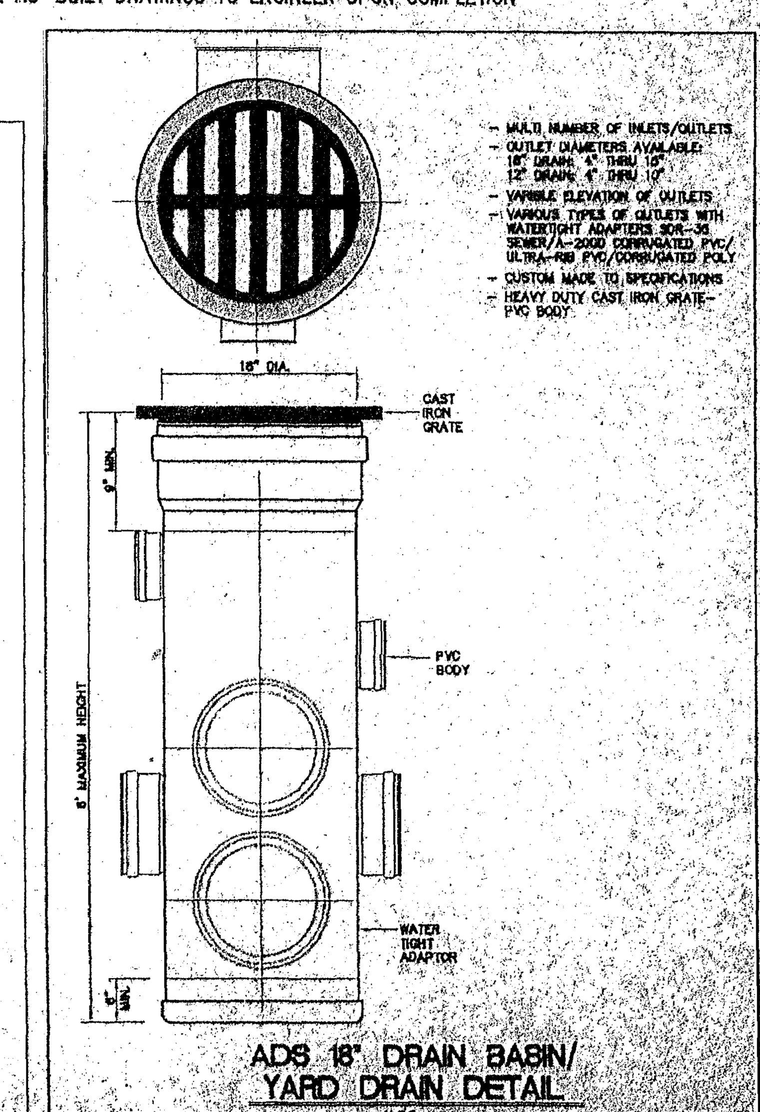


NOTE
THE SIGN SHALL BE FABRICATED IN ACCORDANCE WITH SECTION 701 AND INSTALLED PER INSTALLATION DETAIL WSP-1 TYPE C OF THE VDOT ROAD AND BRIDGE STANDARDS AND SPECIFICATIONS.

HANDICAP SIGN DETAIL
N.T.S.



ADS 18" DRAIN BASIN/ YARD DRAIN DETAIL
N.T.S.

No.	DATE	REVISION
3	4/97	REVISED PER JCC COMMENTS 4/21/97
2	3/97	REVISED PER JCC COMMENTS 3/21/97
1	2/97	REVISED PER JCC COMMENTS 2/14/97

COMMONWEALTH OF VIRGINIA
G. ARCHER MARSTON III
No. 018232
PROFESSIONAL ENGINEER

ES CONSULTING ENGINEERS
5248 Olde Towne Road, Suite 1
Williamsburg, Virginia 23188
(804) 253-0040
Fax (804) 220-8994

NOTES AND DETAILS
FOR
BUILDING ADDITION
OWNER / DEVELOPER: MASTERCORP, INC
ROBERTS DISTRICT JAMES CITY COUNTY VIRGINIA

Designed	Drawn
AES	BJU
Scale	Date
AS SHOWN	12/09/96
Project No.	
8104	
Drawing No.	
4 OF 4	

SITE PLAN

FOR

MERRIMAC TRAIL DRAINAGE IMPROVEMENTS

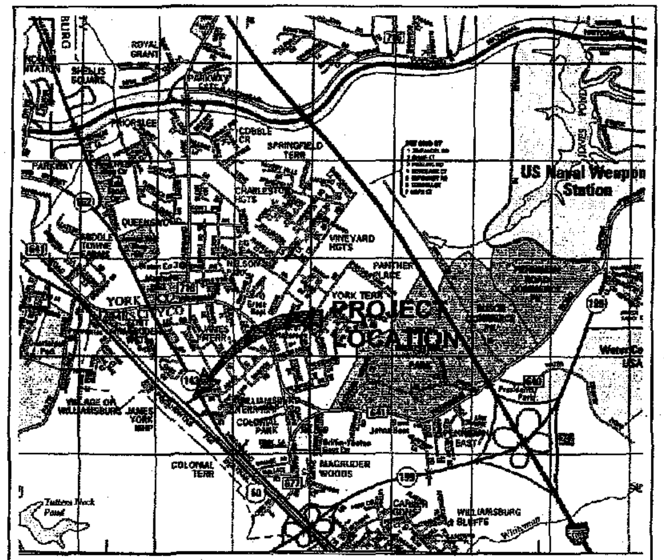
INVITATION FOR BID NUMBER 11-4390

ROBERTS DISTRICT — JAMES CITY COUNTY — VIRGINIA

GENERAL NOTES:

SITE IS CURRENTLY ZONED GENERAL BUSINESS, B1.

1. SITE ADDRESS: 7195 MERRIMAC TRAIL
   WILLIAMSBURG, VA 23185
2. TAX MAP PARCEL ID 4130100012A
3. APPLICANT: JAMES CITY COUNTY STORMWATER DIVISION
   5320 PALMER LANE, #2A
   WILLIAMSBURG VA. 23188
   CONTACT: BARRY MOSES, P.E.
   PHONE: (757) 259-1441
   FAX: (757) 259-5833
   EMAIL: BMOSES@JAMES-CITY.VA.US
4. PROPERTY SHOWN HEREON LIES IN ZONE "X", (AREA DETERMINED TO BE OUTSIDE THE 500 YEAR FLOOD PLAIN) PER F.I.R.M. #51095C0145C, DATED 9/28/07.
5. PROJECT LIES WITHIN COLLEGE CREEK WATERSHED.
6. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONTACTING MISS UTILITY (1-800-552-7001) FOR EXISTING UNDERGROUND UTILITY LOCATIONS PRIOR TO COMMENCING CONSTRUCTION.
7. EXISTING UTILITY LOCATIONS SHOWN ARE BASED UPON UTILITY MARKINGS AT THE TIME OF TOPOGRAPHIC SURVEY. THE ENGINEER ASSUMES NO LIABILITY AS TEH THE ACCURACY OF THIS INFORMATION. THE GENERAL CONTRACTOR SHALL HAVE UTILITIES MARKED AND/OR VERIFIED (POT-HOLED) PRIOR TO CONSTRUCTION ACTIVITIES.
8. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS FOR THIS PROJECT.
9. THE PROFESSIONAL WHOSE SEAL IS AFFIXED HEREON SHALL ACT AS THE "RESPONSIBLE LAND DISTURBER" FOR PURPOSES OF PLAN APPROVAL ONLY. PRIOR TO ISSUANCE OF THE LAND DISTURBING PERMIT, A RESPONSIBLE LAND DISTURBER FORT THE CONSTRUCTION ACTIVITIES SHALL BE PROVIDED.
10. ALL OBJECTIONABLE AND DELETERIOUS MATERIALS IS TO BE REMOVED FROM THE SITE AND DISPOSED OF IN A STATE APPROVED FACILITY MEETING THE REQUIREMENTS OF ALL APPLICABLE LOCAL, STATE, AND FEDERAL REGULATIONS.
11. THIS SITE LIES WITHIN A PRIMARY SERVICE AREA.
12. CONTOUR INTERVAL IS 1 FOOT.
13. PLAN SURVEY AND TOPOGRAPHIC DATA WAS BASED UPON NGVD 1929 AND NAD 1983.



VICINITY MAP
(APPROXIMATE SCALE: 1"=2000')
COPYRIGHT ADC THE MAP PEOPLE PERMITTED USE NUMBER 20804129

COUNTY PROJECT NO.:
ORIGINAL SUBMITTAL DATE:
APPROVAL DATE:

INDEX OF SHEETS:

SHEET NO.	SHEET DESCRIPTION
1	COVER SHEET
2	ENVIRONMENTAL INVENTORY
3	GRADING, DRAINAGE, AND SITE PLAN
4	STORM SYSTEM PROFILES
5	NOTES & DETAILS

VAN MARC BENNETT
Lic. No. 25628
3/14/11

CERTIFIED RESPONSIBLE LAND DISTURBER*:

VAN MARC BENNETT, P.E.
AES CONSULTING ENGINEERS
5248 OLDE TOWNE ROAD, SUITE 1
WILLIAMSBURG, VIRGINIA 23188
TELEPHONE: 757-253-0040

* FOR SITE PLAN REVIEW PROCESS ONLY.

SITE DATA:

SITE ADDRESS:	7195 MERRIMAC TRAIL WILLIAMSBURG, VA 23185
ZONING:	B1 - GENERAL BUSINESS
CONSTRUCTION AREA:	11,215 S.F.±, 0.26 AC.±
FLOOD HAZARD MAP:	THIS PROPERTY IS IN ZONE X AS SHOWN ON MAP NUMBER 51095C0145C, PANEL 0145, FOR COMMUNITY NUMBER 510201, DATED 9/28/2007 OF THE FLOOD INSURANCE RATE MAPS FOR JAMES CITY COUNTY, VA. ZONE X IS DEFINED AS OUTSIDE THE 500-YEAR FLOOD PLAIN.

LEGEND

EXISTING / PROPOSED

WATER
SANITARY SEWER
STORM SEWER
FORCE MAIN
SANITARY MANHOLE
STORM MANHOLE
CURB DROP INLET
YARD DROP INLET
FLARED END SECTION
VALVE
FIRE HYDRANT ASSEMBLY
BLOW-OFF VALVE
AIR RELEASE ASSEMBLY
CLEAN OUT
WATER METER
STREETLIGHT

EXISTING / PROPOSED

CENTERLINE/BASELINE
RIGHT OF WAY
PROPERTY LINE
℄ DITCH/SWALE
CONCRETE LINED DITCH
EXISTING TREELINE
LIMITS OF CLEARING
RIP RAP
CURB
CURB AND GUTTER
REVERSE GUTTER PAN
EDGE OF PAVEMENT
EXISTING GROUND ELEVATION
PROPOSED SPOT GRADE
CONTOUR

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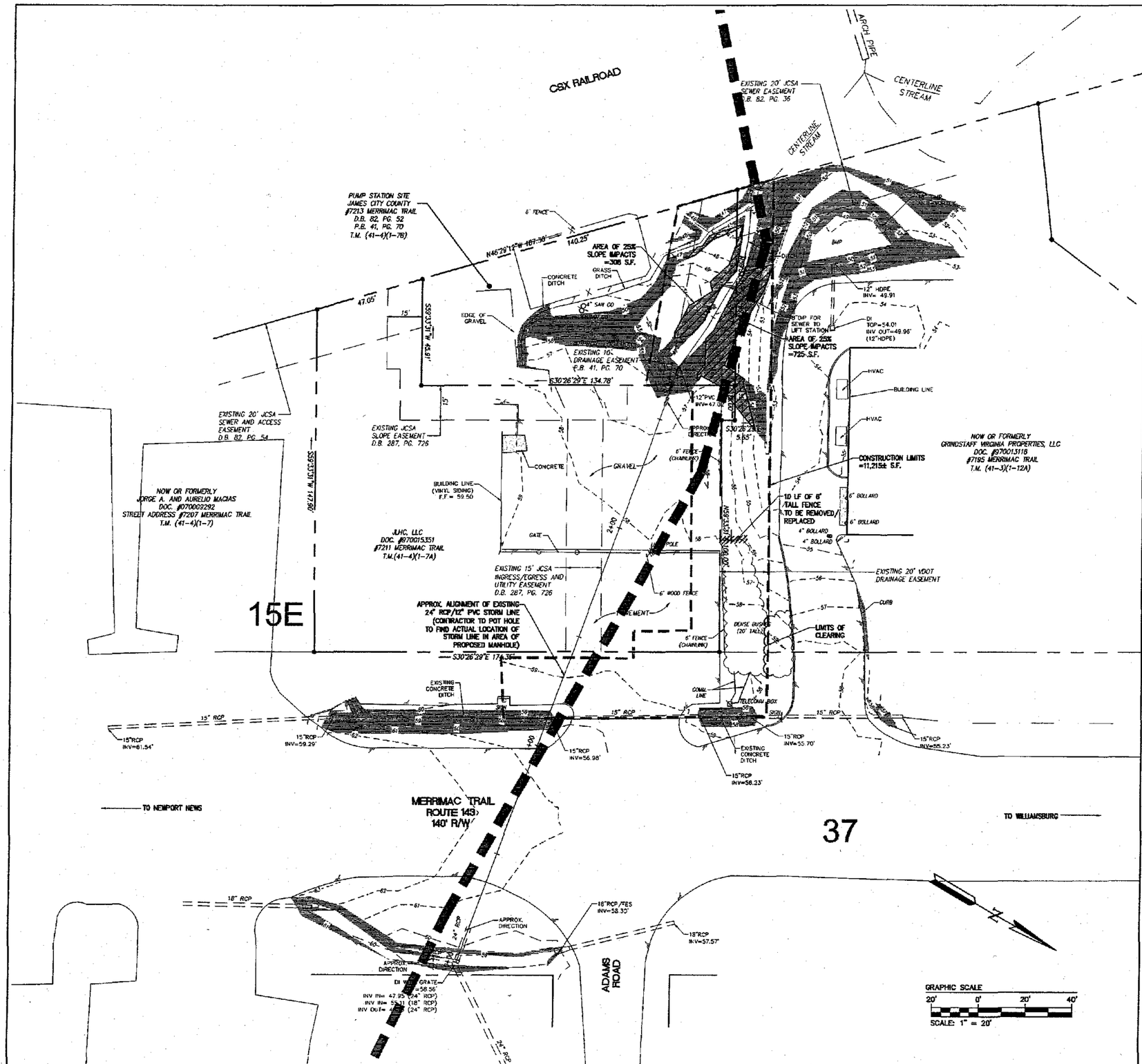
MERRIMAC TRAIL
DRAINAGE IMPROVEMENTS
DISTRICT — JAMES CITY COUNTY — VIRGINIA

Project Contacts:	VMB
Project Number:	9501-E-27
Scale: AS NOTED	Date: 3/14/11
Sheet Title: COVER SHEET	
Sheet Number	1

CC021 Mastercorp



ENVIRONMENTAL INVENTORY IMPACTS

TOTAL DISTURBANCE:	IMPACT
TIDAL WETLANDS:	NONE ON SITE
TIDAL SHORES:	NONE ON SITE
NON-TIDAL WETLANDS IN RWA:	NOT IMPACTED
100 FT RPA BUFFER:	NOT IMPACTED
NON-TIDAL WETLANDS IN RPA:	NOT IMPACTED
25% SLOPES OR GREATER:	0.024± AC. (1,033 S.F.)
100 YEAR FLOOD PLAIN:	NONE ON SITE

ENVIRONMENTAL IMPACTS HATCH LEGEND

25% SLOPES IMPACTS

25% SLOPES (AS KNOWN IN TOPOGRAPHICALLY SURVEYED AREAS)

SOILS TABLE

SOILS NO.	SOIL NAME	HYDROLOGIC SOIL GROUP	TYPICAL SLOPES	EROSION FACTOR (K)	EROSION FACTOR (T)
15E	EMPORIA COMPLEX	C	15-25	0.20-0.28	4
37	URBAN LAND	N/A	0-15%	N/A	N/A

INFORMATION TAKEN FROM "SOIL SURVEY OF JAMES CITY AND YORK COUNTIES AND THE CITY OF WILLIAMSBURG, VIRGINIA" ISSUED IN APRIL, 1985, BY THE UNITED STATES DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE IN COOPERATION WITH VIRGINIA POLYTECHNIC INSTITUTE AND STATE UNIVERSITY.

SOIL SUSCEPTIBILITY TO EROSION CLASSIFICATION (K)
0.23 AND LOWER – LOW ERODIBILITY
0.23 TO 0.36 – MODERATE ERODIBILITY
0.36 AND UP – HIGH ERODIBILITY

THE MAP SHOWN IS A "BEST FIT MODEL" OF THE SCS MAPS WITH EXISTING BASE INFORMATION.

EROSION & SEDIMENT CONTROL NARRATIVE

DESCRIPTION
THIS PROJECT CONSISTS OF IMPROVEMENTS TO AN EXISTING STORM SYSTEM THAT COLLECTS RUNOFF FROM THE NORTHEAST SIDE OF MERRIMAC TRAIL AND CONVEYS IT BEHIND EAGLE EYE AUTOMOTIVE. ADDITIONAL OUTFALL PROTECTION IS PROVIDED AT THE OUTFALL OF THE PROPOSED STORM SYSTEM.

EXISTING SITE CONDITIONS
A 24" CONCRETE PIPE EXITS THE GRATE INLET ON THE EAST SIDE OF MERRIMAC TRAIL, CROSSES THE ROAD, RUNS UNDERNEATH THE EAGLE EYE PARKING LOT, AND EVENTUALLY OUTFALLS INTO A RAVINE BEHIND EAGLE EYE AUTOMOTIVE. AT SOME UNDETERMINED POINT IN THE LINE, THE PIPE SIZE IS REDUCED TO 12".

ADJACENT AREAS
THE SITE IS BORDERED TO THE EAST BY MERRIMAC TRAIL, TO THE WEST BY THE CSX RAILROAD, TO THE NORTH BY THE GRINDSTAFF VIRGINIA PROPERTY, AND TO THE SOUTH BY EAGLE EYE AUTOMOTIVE.

OFF-SITE AREAS
THERE ARE NO AREAS OF OFF-SITE DISTURBANCE ASSOCIATED WITH THIS PROJECT.

CRITICAL AREAS
IMPACT TO SLOPES GREATER THAN 25% WILL BE LIMITED AS MUCH AS POSSIBLE. ALL LAND-DISTURBING ACTIVITIES WILL BE CONTAINED WITHIN THE EROSION AND SEDIMENT MEASURES SHOWN ON THE CONSTRUCTION PLANS. ALL PROPOSED PERMANENTLY GRADED SLOPES SHALL BE 2:1 OR FLATTER TO THE EXTENT POSSIBLE THROUGHOUT THE SITE.

SOILS
THE PROJECT AREA IS COMPRISED OF VARIOUS SOIL TYPES. THIS SHEET CONTAINS A SOIL TYPE DELINEATION MAP AND TABLE OF ASSOCIATED SOIL CHARACTERISTICS FOR THE SOILS TYPICALLY ENCOUNTERED ON THE SITE.

EROSION AND SEDIMENT CONTROL MEASURES
FOR MAXIMUM EROSION AND SEDIMENT CONTROL PROTECTION, THE FOLLOWING MEASURES HAVE BEEN UTILIZED ON THIS SITE IN ACCORDANCE WITH THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK TO MINIMIZE THE TRANSPORTATION OF SEDIMENT:

- SILT FENCE (SPEC. 3.05)
- CULVERT INLET PROTECTION (SPEC. 3.08-1)
- RIP-RAP (SPEC. 3.19)
- PERMANENT SEEDING (SPEC. 3.32)
- TREATMENT 2 SOIL STABILIZATION MATTING (SPEC. 3.36)
- DUST CONTROL (SPEC. 3.39)

PERMANENT STABILIZATION
PERMANENT SEEDING WILL BE USED TO STABILIZE THE SITE AFTER CONSTRUCTION IS COMPLETE. A SCHEDULE HAS BEEN PROVIDED.

MAINTENANCE
ALL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE CHECKED ROUTINELY AND AFTER EACH SIGNIFICANT RAINFALL EVENT TO INSURE THAT THEY ARE OPERATING EFFECTIVELY. ALL MEASURES SHALL BE MAINTAINED IN ACCORDANCE WITH THE VESCH.

Rev.	Date	Description	Revised By

COMMONWEALTH OF VIRGINIA
VAN MAC GERNETT
Lic. No. 26628
3/14/11
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MERRIMAC TRAIL
DRAINAGE IMPROVEMENTS
JAMES CITY COUNTY VIRGINIA
DISTRICT

Project Contact:	VMB
Project Number:	9801-E-27
Scale: 1"=20'	Date: 3/14/11

Sheet Title:
ENVIRONMENTAL INVENTORY

Sheet Number
C-02

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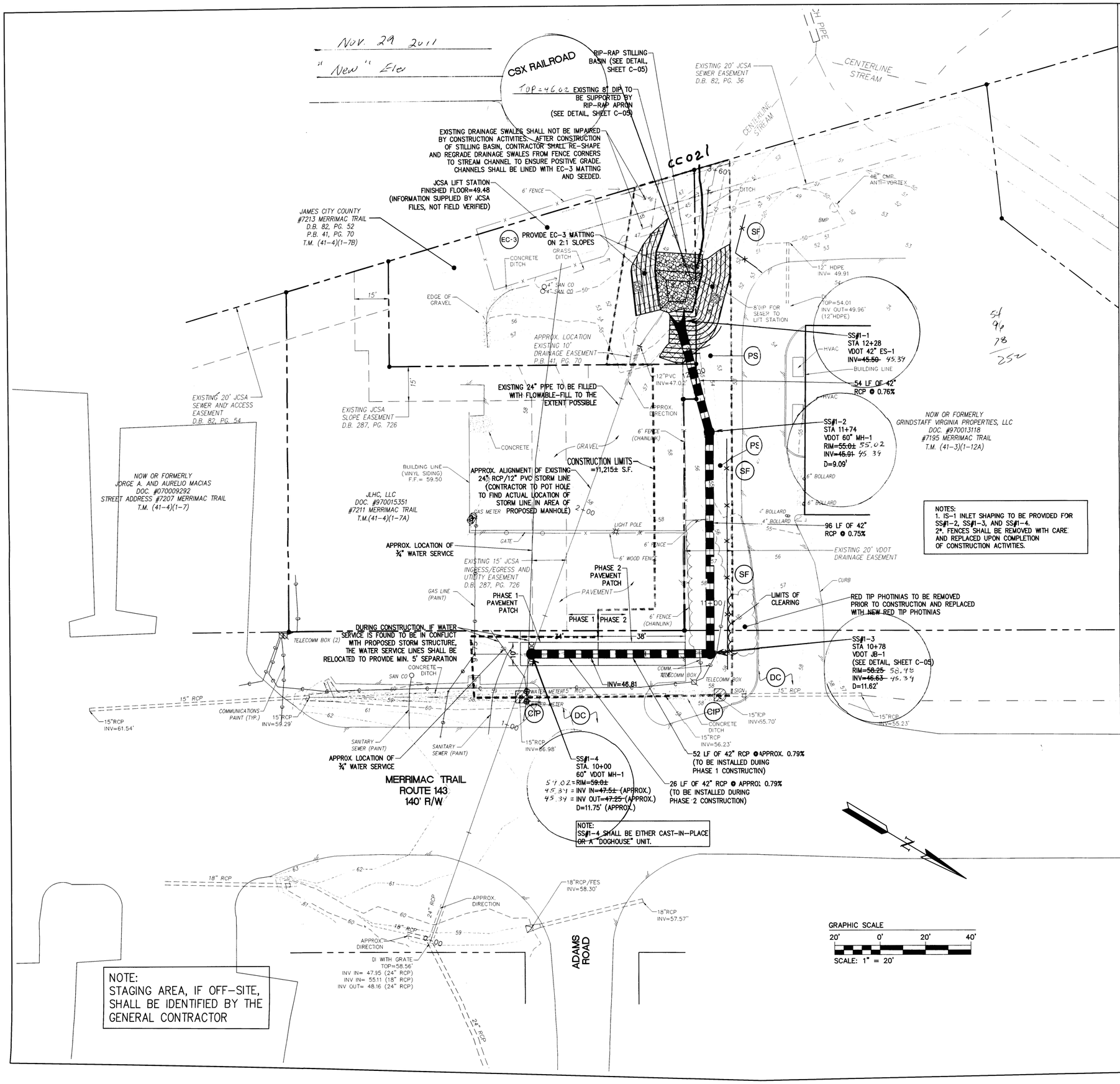
CC021 Mastercorp

Nov. 29 2011
"New" Elev



NOTES:
1. IS-1 INLET SHAPING TO BE PROVIDED FOR SS#1-2, SS#1-3, AND SS#1-4.
2*. FENCES SHALL BE REMOVED WITH CARE AND REPLACED UPON COMPLETION OF CONSTRUCTION ACTIVITIES.

NOTE:
STAGING AREA, IF OFF-SITE, SHALL BE IDENTIFIED BY THE GENERAL CONTRACTOR

NOTE:
SS#1-4 SHALL BE EITHER CAST-IN-PLACE OR A "DOGHOUSE" UNIT.

SEQUENCE OF CONSTRUCTION

1. THE GENERAL CONTRACTOR SHALL TAKE NOTE OF ALL ABOVE GROUND UTILITIES AT THE SITE.
2. THE GENERAL CONTRACTOR SHALL SECURE ALL BONDS OR LETTERS OF CREDIT REQUIRED FOR THE PENDING CONSTRUCTION ACTIVITIES AT THIS SITE.
3. GENERAL CONTRACTOR SHALL RETAIN A GEOTECHNICAL ENGINEER FOR SUBGRADE TESTING, SOIL EVALUATIONS, COMPACTION AND BACKFILL TESTING, AND GUIDANCE / CONSULTING DURING THE PLACEMENT OF FILL.
4. THE GENERAL CONTRACTOR IS RESPONSIBLE FOR POSSESSING THE MOST RECENT EDITION OF THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK (VESCH) ON THE CONSTRUCTION SITE DURING ALL CONSTRUCTION ACTIVITIES.
5. THE GENERAL CONTRACTOR IS RESPONSIBLE FOR DAILY AND PERIODIC INSPECTIONS OF EROSION CONTROL MEASURES. DAMAGED MEASURES SHALL BE REPAIRED IMMEDIATELY. EROSION AND SEDIMENT CONTROL MEASURES WITH EVIDENCE OF FAILURE SHALL BE REPLACED, REPAIRED OR REINFORCED WITH SUPPLEMENTAL MEASURES.
6. THE GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR THE REGISTRATION OF THESE CONSTRUCTION ACTIVITIES UNDER THE VIRGINIA STROMWATER MANAGEMENT PERMIT (VSMP) PROGRAM AND BE ACTIVE IN MAINTAINING ANY LOGS OF CONSTRUCTION, INSPECTION, AND EARTHMOVING ACTIVITY IN ACCORDANCE WITH THE CONDITIONS OF THE VSMP AND THE STORMWATER PREVENTION POLLUTION PLAN (SWPPP).
7. AFTER EVERY RAINFALL EVENT OF 0.1 INCH OR MORE, THE GENERAL CONTRACTOR SHALL INSPECT THE SITE IMMEDIATELY (OR THE NEXT WORK DAY IF RAINFALL OCCURS AT NIGHT OR DURING A NON-WORKING DAY) FOR FAILURES IN THE EROSION CONTROL MEASURES, OR TO MAINTAIN INSTALLED EROSION CONTROL MEASURES.
8. PRIOR TO ANY CONSTRUCTION ACTIVITY, THE GENERAL CONTRACTOR SHALL HAVE ALL AREAS OF TREE REMOVAL WELL MARKED. INDIVIDUAL TREES OR PERIMETER TREELINES TO REMAIN SHALL BE INDICATED WITH TREE PROTECTION MEASURES IN ACCORDANCE WITH VESCH.
9. THE GENERAL CONTRACTOR SHALL CONTRACT "MISS UTILITY" AND THE PROPERTY OWNER TO MARK FOR ANY UNDERGROUND INFRASTRUCTURE PRIOR TO GROUND DISTURBING ACTIVITIES.
10. A LAND-DISTURBING PERMIT AND SILTATION AGREEMENT, WITH SURETY, ARE REQUIRED FOR THIS PROJECT. THE GENERAL CONTRACTOR SHALL ARRANGE FOR A PRECONSTRUCTION MEETING WITH THE ASSIGNED JAMES CITY COUNTY EROSION AND SEDIMENT CONTROL INSPECTOR PRIOR TO DISTURBANCE OF ANY GROUND SURFACES.
11. PRIOR TO THE PRE-CONSTRUCTION MEETING, THE GENERAL CONTRACTOR SHALL HAVE PERIMETER EROSION AND SEDIMENT CONTROL MEASURES INSTALLED AND FUNCTIONAL. THESE MEASURES INCLUDE: SILT FENCING, CONSTRUCTION ENTRANCE, CHECK DAMS, CULVERT INLET PROTECTIONS, AND ADDITIONAL TREE PROTECTION MEASURES.
12. THE CONTRACTOR SHALL PROVIDE MEASURES TO:
    1. PROTECT TRENCH SIDE SLOPES DURING THE CONSTRUCTION PERIOD.
    2. MINIMIZE THE TIME THE PARKING LOT USE IS IMPAIRED. THE CONTRACTOR SHALL MINIMIZE THE AREA OF IMPACT TO THE PARKING LOT THROUGH SHORING OF THE TRENCH OR OTHER APPROPRIATE MEANS.
13. THE CONTRACTOR SHALL PROVIDE A MEANS TO BYPASS THE BASE FLOW FROM THE EXISTING 12-INCH STORM SEWER PIPE DURING THE CONSTRUCTION OF THE RIP-RAP STILLING BASIN ("BASE FLOW BYPASS MEANS"). THESE MEANS SHALL BE IN THE FORM OF A TEMPORARY 24" HDPE BYPASS PIPE CONNECTED TO THE EXISTING PIPE, ROUTING THE BASE FLOW PASSED THE WORK AREA. THE PIPE SHALL BE REMOVED FOLLOWING THE COMPLETION OF CONSTRUCTION.
14. THE CONTRACTOR SHALL CHECK DAILY FOR ANY ACCUMULATION OF SEDIMENT IN THE EXISTING, ADJACENT BMP (ASSOCIATED WITH THE GRINDSTAFF VIRGINIA PROPERTIES). SEDIMENT ACCUMULATION IN THIS FACILITY WILL NOT BE ALLOWED. ANY ACCUMULATION OF SEDIMENT WILL BE REMOVED IMMEDIATELY UPON OBSERVATION, AND ADDITIONAL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE IMPLEMENTED TO PREVENT THE RE-OCCURANCE OF SEDIMENT DEPOSITION.

PHASE 1:

15. PRIOR TO ANY PIPE, MANHOLE, OR JUNCTION BOX INSTALLATION OR CONSTRUCTION, THE CONTRACTOR SHALL VERIFY EXISTING ROUTE 143 CROSS CULVERT (EXISTING 24" RCP) HORIZONTAL LOCATION AND ELEVATION AT THE APPROXIMATE LOCATION OF FOR THE INSTALLATION OF SS#1-4. THE LOCATION AND ELEVATION INFORMATION SHALL BE REPORTED TO DESIGN ENGINEER FOR POSSIBLE USE TO ALTER DESIGN SLIGHTLY. BASED ON THE ACQUIRED INFORMATION, PIPE GRADE, PIPE LENGTH, AND EXACT MANHOLE/JUNCTION BOX LOCATIONS MAY ALTER SLIGHTLY. CONTRACTOR SHALL BE PREPARED TO ACCOMPLISH SLIGHT FIELD ADJUSTMENTS AND CHANGES WITHOUT DELAY FOR ORDERING ITEMS SUCH AS PIPE OR MANHOLE ADJUSTING RINGS.
16. CONTRACTOR SHALL ATTEMPT TO CLEAN THE EXISTING 24" PIPE UNDER MERRIMAC TRAIL, FROM THE EXISTING DI TO SS#1-4.
17. NOTE: DURING PHASE 1 CONSTRUCTION, THE NORTHERN HALF OF THE ENTRANCE TO EAGLE EYE AUTOMOTIVE DIRECTLY ACROSS FROM ADAMS ROAD SHALL REMAIN OPEN TO CUSTOMER TRAFFIC. CONTRACTOR SHALL ENSURE THAT THIS PORTION OF ENTRANCE REMAINS OPEN DURING ALL CONSTRUCTION ACTIVITIES.
18. WITH VERIFICATION OF THE LOCATION OF THE EXISTING 24-INCH CULVERT, THE CONTRACTOR SHALL INSTALL APPROXIMATELY 24 LINEAR FEET OF 42" RCP FROM STORM SYSTEM STRUCTURE #1-4 TOWARDS STORM SEWER STRUCTURE #1-3. STORM SYSTEM STRUCTURE #1-4 (60" MANHOLE) SHALL ALSO BE INSTALLED. FLOW THROUGH THE EXISTING 24" RCP SHALL NOT BE REDIRECTED AT THIS POINT.
19. THE CONTRACTOR SHALL FILL TRENCH AND PROVIDE PAVEMENT PATCH OVER THE INITIAL PIPE PLACEMENT SUITABLE FOR THE USE FOR VEHICLES USING THE COMMERCIAL ENTRANCE.

PHASE 2:

20. NOTE: DURING PHASE 2 CONSTRUCTION, THE SOUTHERN HALF OF THE ENTRANCE TO EAGLE EYE AUTOMOTIVE DIRECTLY ACROSS FROM ADAMS ROAD SHALL REMAIN OPEN TO CUSTOMER TRAFFIC AT ALL TIMES DURING CONSTRUCTION. NOTE: WHEN CONSTRUCTION IS NOT DIRECTLY LOCATED IN THE ENTRANCE TO EAGLE EYE AUTOMOTIVE ENTRANCE (THAT IS DURING THE CONSTRUCTION / INSTALLATION OF THE RIP-RAP STILLING BASIN, SS#1-1, SS#1-2, SS#1-3, AND THE 42-INCH PIPE BETWEEN THESE STRUCTURES), THE ENTIRE ENTRANCE SHALL REMAIN OPEN TO CUSTOMER TRAFFIC.
21. THE GENERAL CONTRACTOR SHALL CLEAR THE SITE AS SHOWN IN THE PLANS. PLANT MATERIAL TO BE SALVAGED SHALL BE REMOVED WITH CARE, AND STORED APPROPRIATELY.
22. THE CONTRACTOR SHALL INSTALL THE "BASE FLOW BYPASS MEANS" PRIOR TO THE CONSTRUCTION OF THE RIP-RAP STILLING BASIN. THE CONTRACTOR SHALL INSTALL THE RIGID BOUNDARY BASIN OUTLET PROTECTION (RIP-RAP STILLING BASIN) AND THE PROPOSED STORM SYSTEM STRUCTURES AND PIPES FROM STRUCTURE #1-1 TO STRUCTURE #1-3.
23. THE CONTRACTOR SHALL FINE GRADE ALL DENUDED AREAS, AND SHALL DISTRIBUTE TOPSOIL ACROSS ALL REMAINING DENUDED AREAS TO A DEPTH OF 4-INCHES MINIMUM. THE GENERAL CONTRACTOR SHALL SEED THE SITE WITH APPROPRIATE PERMANENT SEED. THE GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR WATERING AND MAINTAINING SEEDED AREAS UNTIL THE SEEDING PROVIDE A 90% PERMANENT GROUND COVER. THE CONTRACTOR SHALL RE-INSTALL STORE PLANT MATERIAL PREVIOUSLY SALVAGED.
24. THE CONTRACTOR SHALL SAWCUT EXISTING PAVEMENT AND INSTALL 52 LINEAR FEET OF THE 42" RCP FROM STORM SYSTEM STRUCTURE #1-3 TOWARDS #1-4 AND THE PREVIOUSLY INSTALLED PIPE FROM PHASE 1.
25. THE CONTRACTOR SHALL FILL TRENCH AND PROVIDE PAVEMENT PATCH.
26. UPON COMPLETION OF NEW STORM SEWER, THE EXISTING 24" RCP WITHIN SS#1-4 SHALL BE REMOVED AND FLOW SHALL BE DIRECTED INTO NEW 42" RCP. FLOWABLE FILL SHALL BE USED TO FILL THE CAVITY OF THE 24" RCP DOWNSTREAM OF SS#1-4. OPENING FOR 24" RCP EXITING SS#1-4 SHALL BE BRICKED, MORTARED AND SEALED. EXISTING 24" PIPE SHALL BE FILLED WITH FLOWABLE FILL TO THE EXTENT POSSIBLE.
27. CONTRACTOR TO CLEAN (PRESSURE-WASH) EXISTING 24" RCP LOCATED UNDER MERRIMAC TRAIL (FROM EXISTING DI TO SS #1-4) IN ACCORDANCE WITH SPECIFICATIONS.
28. UPON COMPLETION OF THE WORK AND WITHIN 30 DAYS OF FINAL SITE STABILIZATION, THE GENERAL CONTRACTOR SHALL REMOVAL ALL EROSION AND SEDIMENT MEASURES FROM THE SITE UPON APPROVAL OF THE REPRESENTATIVE OF JAMES COINTY.
29. THIS IS A GENERALIZED SEQUENCE OF CONSTRUCTION, AND MAY BE AMENDED WITH NOTICE TO THE OWNER AND JAMES CITY COUNTY REPRESENTATIVE SO LONG AS THE INTENT OF THE WORK REMAINS UNCHANGED.

EROSION AND SEDIMENTATION CONTROL LEGEND

SF	SILT FENCE (SPEC. 3.05)
CIP	CULVERT INLET PROTECTION (SPEC. 3.08-1 WITH STONE COMBINATION INSTEAD OF SILT FENCE)
RR	RIP RAP (SPEC. 3.19)
PS	PERMANENT SEEDING (SPEC. 3.32)
EC-3	TREATMENT 2 SOIL STABILIZATION MATTING (SPEC. 3.36)
DC	DUST CONTROL (SPEC. 3.39)

NOTE:
SEE VIRGINIA EROSION & SEDIMENT CONTROL HANDBOOK FOR EROSION CONTROL SPECIFICATIONS (SPEC.) AND DETAILS.

Rev	Date	Description	Reviewed by
1	6/11	RESPONDING TO COUNTY COMMENTS	AES

COMMONWEALTH OF VIRGINIA PROFESSIONAL ENGINEER VAN MARK BENNETT Lic. No. 26628 6/10/11

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MERRIMAC TRAIL
DRAINAGE IMPROVEMENTS
JAMES CITY COUNTY VIRGINIA
DISTRICT

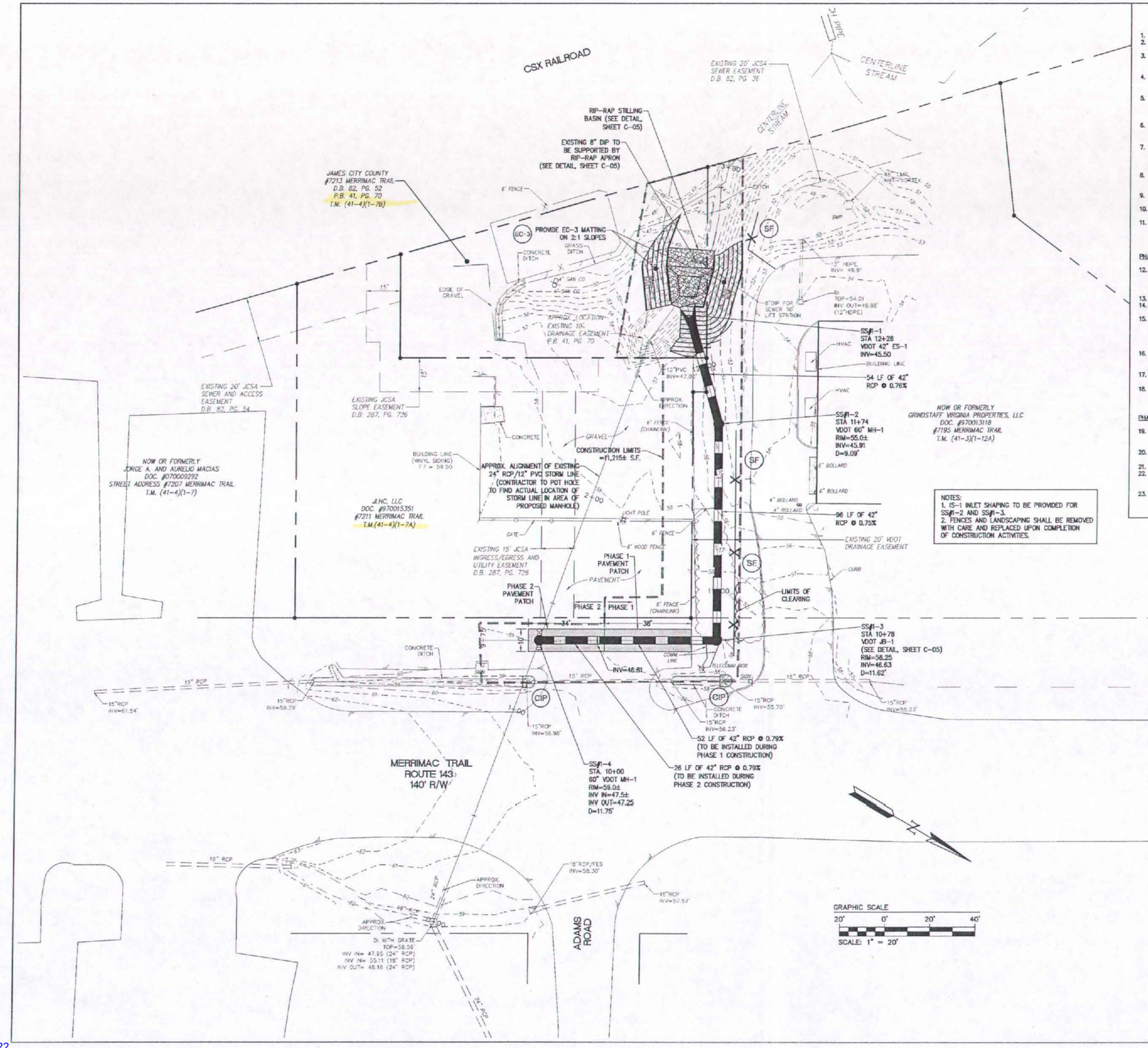
Project Contacts:	VMB
Project Number:	9801-E-27
Scale: 1"=20'	Date: 3/25/11

Sheet Title:
GRADING, DRAINAGE, AND SITE PLAN

Sheet Number
C-03

CC021

CC021 Mastercorp



NOTES:
1. IS-1 INLET SHAPING TO BE PROVIDED FOR SS#1-2 AND SS#1-3.
2. FENCES AND LANDSCAPING SHALL BE REMOVED WITH CARE AND REPLACED UPON COMPLETION OF CONSTRUCTION ACTIVITIES.

SEQUENCE OF CONSTRUCTION

1. THE GENERAL CONTRACTOR SHALL TAKE NOTE OF ALL OVERGROUND UTILITIES AT THE SITE.
2. THE GENERAL CONTRACTOR SHALL SECURE ALL BONDS OR LETTERS OF CREDIT REQUIRED FOR THE PENDING CONSTRUCTION ACTIVITIES AT THIS SITE.
3. GENERAL CONTRACTOR SHALL RETAIN A GEOTECHNICAL ENGINEER FOR SUBGRADE TESTING, SOIL EVALUATIONS, COMPACTION AND BACKFILL TESTING, AND GUIDANCE / CONSULTING DURING THE PLACEMENT OF FILL.
4. THE GENERAL CONTRACTOR IS RESPONSIBLE FOR POSSESSING THE MOST RECENT EDITION OF THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK (VESCH) ON THE CONSTRUCTION SITE DURING CONSTRUCTION ACTIVITIES.
5. THE GENERAL CONTRACTOR IS RESPONSIBLE FOR DAILY AND PERIODIC INSPECTIONS OF EROSION CONTROL MEASURES. DAMAGED MEASURES SHALL BE REPAIRED IMMEDIATELY. EROSION AND SEDIMENT CONTROL MEASURES WITH EVIDENCE OF FAILURE SHALL BE REPLACED, REPAIRED OR REINFORCED WITH SUPPLEMENTAL MEASURES.
6. THE GENERAL CONTRACTOR SHALL MAINTAIN AND BE ACTIVE IN MAINTAINING ANY LOGS OF EARTHMOVING ACTIVITY IN ACCORDANCE WITH THE CONDITIONS OF THE VIRGINIA STORMWATER MANAGEMENT PERMIT (VSMP) AND THE STORMWATER PREVENTION POLLUTION PLAN (SWPPP).
7. AFTER EVERY RAINFALL EVENT OF 0.1 INCH OR MORE, THE GENERAL CONTRACTOR SHALL INSPECT THE SITE IMMEDIATELY (OR THE NEXT WORK DAY IF RAINFALL OCCURS AT NIGHT OR DURING A NON-WORKING DAY) FOR FAILURES IN THE EROSION CONTROL MEASURES, OR TO MAINTAIN INSTALLED EROSION CONTROL MEASURES.
8. PRIOR TO ANY CONSTRUCTION ACTIVITY, THE GENERAL CONTRACTOR SHALL HAVE ALL AREAS OF TREE REMOVAL WELL MARKED. INDIVIDUAL TREES OR PERIMETER TREELINES TO REMAIN SHALL BE INDICATED WITH TREE PROTECTION MEASURES IN ACCORDANCE WITH VESCH.
9. THE GENERAL CONTRACTOR SHALL CONTRACT "MISS UTILITY" AND THE PROPERTY OWNER TO MARK FOR ANY UNDERGROUND INFRASTRUCTURE PRIOR TO GROUND DISTURBING ACTIVITIES.
10. THE GENERAL CONTRACTOR SHALL ARRANGE FOR A PRECONSTRUCTION MEETING WITH THE APPROPRIATE JAMES CITY COUNTY REPRESENTATIVES PRIOR TO DISTURBANCE OF ANY GROUND SURFACES.
11. UPON THE PRE-CONSTRUCTION MEETING, THE GENERAL CONTRACTOR SHALL HAVE PERIMETER EROSION AND SEDIMENT CONTROL MEASURES INSTALLED AND FUNCTIONAL. THESE MEASURES INCLUDE: SILT FENCING, CONSTRUCTION ENTRANCE, CHECK DAMS, CULVERT INLET PROTECTIONS, AND ADDITIONAL TREE PROTECTION MEASURES.

PHASE 1:

12. NOTE: DURING PHASE 1 CONSTRUCTION, THE SOUTHERN HALF OF THE ENTRANCE TO EAGLE EYE AUTOMOTIVE DIRECTLY ACROSS FROM ADAMS ROAD SHALL REMAIN OPEN TO CUSTOMER TRAFFIC AT ALL TIMES. DURING CONSTRUCTION ELEMENTS NOT DIRECTLY LOCATED IN THE ENTRANCE TO EAGLE EYE AUTOMOTIVE (OUTLET PROTECTION, SS#1-1, #1-2, #1-3), THE ENTIRE ENTRANCE SHALL REMAIN OPEN TO CUSTOMER TRAFFIC.
13. THE GENERAL CONTRACTOR SHALL CLEAR THE SITE AS SHOWN IN THE PLANS.
14. THE CONTRACTOR SHALL INSTALL THE RIGID BOUNDARY BASIN OUTLET PROTECTION AND THE PROPOSED STORM SYSTEM STRUCTURES AND PIPES FROM STRUCTURE #1-1 TO STRUCTURE #1-3.
15. THE CONTRACTOR SHALL FINE GRADE ALL DENUDED AREAS, AND SHALL DISTRIBUTE TOPSOIL ACROSS ALL REMAINING DENUDED AREAS TO A DEPTH OF 4-INCHES MINIMUM. THE GENERAL CONTRACTOR SHALL SEED THE SITE WITH APPROPRIATE PERMANENT SEED. THE GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR WATERING AND MAINTAINING SEEDED AREAS UNTIL THE SEEDING PROVIDE A 90% PERMANENT GROUND COVER.
16. THE CONTRACTOR SHALL SAWCUT EXISTING PAVEMENT AND INSTALL 52 LF OF THE 42" RCP FROM STORM SYSTEM STRUCTURE #1-3 TO #1-4. TRENCHING TO BE TERMINATED BEFORE INTERFERING WITH ENTRANCE TO EAGLE EYE AUTOMOTIVE, APPROXIMATELY 46 LF FROM EXISTING EDGE OF PAVEMENT (SEE PLANS).
17. THE TRENCH SHALL BE STABILIZED AND SHORED TO ALLOW FOR CONSTRUCTION OF THE REMAINING 24 LF OF 42" RCP DURING PHASE 2.
18. THE CONTRACTOR SHALL FILL TRENCH AND PROVIDE PAVEMENT PATCH THAT WILL SERVE AS THE ENTRANCE TO EAGLE EYE AUTOMOTIVE DURING PHASE 2 OF CONSTRUCTION. CONTRACTOR SHALL ENSURE THAT 42" RCP IS LEFT EXPOSED TO ALLOW CONNECTION DURING INSTALLATION OF REMAING 42" PIPE DURING PHASE 2.

PHASE 2:

19. NOTE: DURING PHASE 2 CONSTRUCTION, THE NORTHERN HALF OF THE ENTRANCE TO EAGLE EYE AUTOMOTIVE DIRECTLY ACROSS FROM ADAMS ROAD SHALL REMAIN OPEN TO CUSTOMER TRAFFIC. CONTRACTOR SHALL ENSURE THAT THIS PORTION OF ENTRANCE REMAIN OPEN DURING ALL CONSTRUCTION ACTIVITIES.
20. THE CONTRACTOR SHALL INSTALL REMAINING 24 LF OF 42" RCP FROM STORM SYSTEM STRUCTURE #1-3 TO #1-4 AND STORM SYSTEM STRUCTURE #1-4 (60" MANHOLE).
21. THE CONTRACTOR SHALL FILL TRENCH AND PROVIDE PAVEMENT PATCH OVER REMAINING STORM PIPE.
22. UPON COMPLETION OF THE WORK AND WITHIN 30 DAYS OF FINAL SITE STABILIZATION, THE GENERAL CONTRACTOR SHALL REMOVAL ALL EROSION AND SEDIMENT MEASURES FROM THE SITE UPON APPROVAL OF THE REPRESENTATIVE OF JAMES COUNTY.
23. THIS IS A GENERALIZED SEQUENCE OF CONSTRUCTION, AND MAY BE AMENDED WITH NOTICE TO THE OWNER AND JAMES CITY COUNTY REPRESENTATIVE SO LONG AS THE INTENT OF THE WORK REMAINS UNCHANGED.

EROSION AND SEDIMENTATION CONTROL LEGEND

SF	SILT FENCE (SPEC. 3.05)
CIP	CULVERT INLET PROTECTION (SPEC. 3.08-1 WITH STONE COMBINATION INSTEAD OF SILT FENCE)
RR	RIP RAP (SPEC. 3.19)
CD	ROCK CHECK DAM (SPEC. 3.20)
PS	PERMANENT SEEDING (SPEC. 3.32)
EC-3	TREATMENT 2 SOIL STABILIZATION MATTING (SPEC. 3.36)
DC	DUST CONTROL (SPEC. 3.39)

NOTE:
SEE VIRGINIA EROSION & SEDIMENT CONTROL HANDBOOK FOR EROSION CONTROL SPECIFICATIONS (SPEC.) AND DETAILS.

Rev.	Date	Description	Revised By

COMMONWEALTH OF VIRGINIA
VAN MAC BENNETT
Lic. No. 26628
3/14/11
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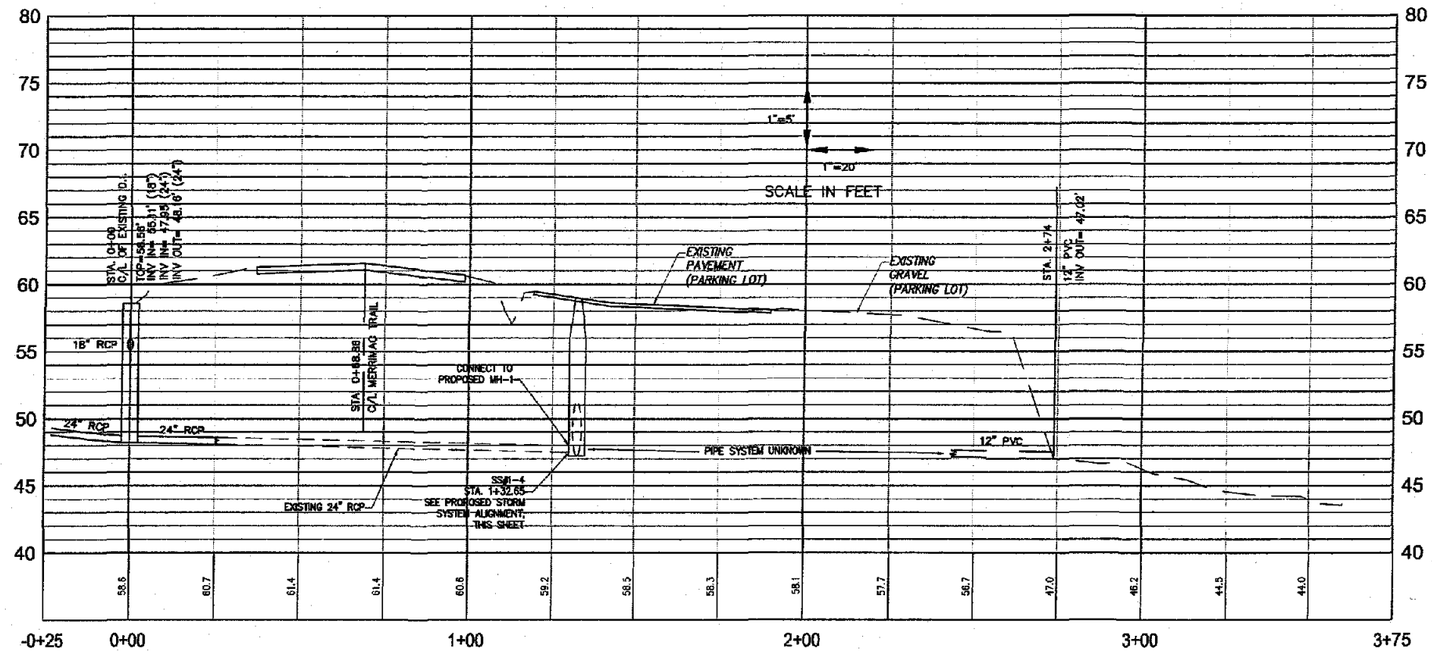
MERRIMAC TRAIL
DRAINAGE IMPROVEMENTS
JAMES CITY COUNTY VIRGINIA
DISTRICT

Project Contacts:	VMB
Project Number:	9601-E-27
Scale: 1"=20'	Date: 3/14/11

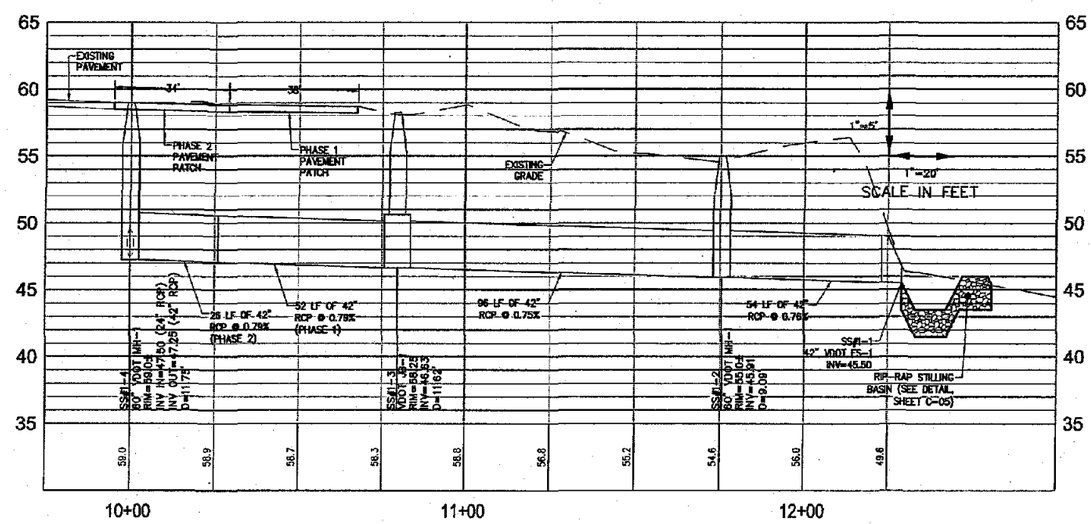
Sheet Title: GRADING, DRAINAGE, AND SITE PLAN

Sheet Number: C-03

S:\Jobs\9601\E-Engineering\27-JCC Merrimac Trl Storm Sewer\Engineering\Plans\9601-E-27_C-03_Grading, Drainage, and Site Plan.dwg, 3/14/2011 2:06:14 PM, graham.corson



EXISTING STORM SYSTEM ALIGNMENT



PROPOSED STORM SYSTEM ALIGNMENT

Rev.	Date	Description	Approved By

VIM MAC GINNITY
Lic. No. 26628
3/14/11
COMMONWEALTH OF VIRGINIA
PROFESSIONAL ENGINEER

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Hampton Roads | Central Virginia | Middle Peninsula

MERRIMAC TRAIL
DRAINAGE IMPROVEMENTS

DISTRICT JAMES CITY COUNTY VIRGINIA

Project Contacts:	VMB
Project Number:	9801-E-27
Scale: 1"=20'	Date: 3/14/11

Sheet Title:
NOTES & DETAILS

Sheet Number
C-04

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JAMES CITY COUNTY ENVIRONMENTAL DIVISION STANDARD EROSION AND SEDIMENT CONTROL NOTES REVISED OCTOBER 1, 2009

THE FOLLOWING STANDARD EROSION AND SEDIMENT CONTROL (E&SC) NOTES SHALL BECOME PART OF APPROVED EROSION AND SEDIMENT CONTROL PLANS FOR ALL PLAN OF DEVELOPMENT PROJECTS IN JAMES CITY COUNTY, VIRGINIA.

1. ALL THE PROVISIONS OF VIRGINIA EROSION AND SEDIMENT CONTROL LAW AND REGULATIONS, MINIMUM STANDARDS, HANDBOOKS, AND TECHNICAL BULLETINS AS PUBLISHED BY THE VIRGINIA SOIL & WATER CONSERVATION BOARD AND/OR THE VIRGINIA DEPARTMENT OF CONSERVATION AND RECREATION, DIVISION OF SOIL & WATER CONSERVATION SHALL APPLY TO THE PROJECT.
2. MINIMUM STANDARDS # 1 THROUGH # 19 OF THE VIRGINIA EROSION AND SEDIMENT CONTROL REGULATIONS (4VAC50-30-40) SHALL APPLY TO THE PROJECT.
3. THE OWNER OR APPLICANT SHALL BE RESPONSIBLE TO REGISTER FOR COVERAGE UNDER THE GENERAL PERMIT FOR DISCHARGE OF STORMWATER FROM CONSTRUCTION ACTIVITIES, IN ACCORDANCE WITH CURRENT REQUIREMENTS OF THE VIRGINIA STORMWATER MANAGEMENT PROGRAM (VSMP) AND THE VIRGINIA DEPARTMENT OF CONSERVATION AND RECREATION.
4. THE OWNER OR APPLICANT SHALL PROVIDE THE NAME OF AN INDIVIDUAL HOLDING A VALID RESPONSIBLE LAND DISTURBER (RLD) CERTIFICATE OF COMPETENCE WHO WILL BE RESPONSIBLE FOR THE LAND-DISTURBING ACTIVITY PRIOR TO ENGAGING IN THE LAND-DISTURBING ACTIVITY. THIS WILL BE NECESSARY PRIOR TO ISSUANCE OF A LAND-DISTURBING PERMIT FOR THE PROJECT. THE RLD IS REQUIRED TO ATTEND THE PRECONSTRUCTION CONFERENCE FOR THE PROJECT.
5. THE CONTRACTOR IS RESPONSIBLE TO CONTACT MISS UTILITY (DIAL 811 IN VA OR 1-800-552-7001) PRIOR TO ANY UTILITY OR SITE WORK EXCAVATIONS.
6. ALL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE PLANNED, DESIGNED, IMPLEMENTED, INSTALLED AND MAINTAINED IN ACCORDANCE WITH THE PROVISIONS OF THE LATEST EDITION OF THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK (VESCH). THE CONTRACTOR SHALL MAINTAIN, INSPECT AND REPAIR ALL EROSION AND SEDIMENT CONTROL MEASURES AS NEEDED THROUGHOUT THE LIFE OF THE PROJECT TO ENSURE CONTINUED ACCEPTABLE PERFORMANCE.
7. A PRECONSTRUCTION CONFERENCE (MEETING) SHALL BE HELD ON SITE BETWEEN THE COUNTY ENVIRONMENTAL DIVISION, THE OWNER-APPLICANT, THE RESPONSIBLE LAND-DISTURBER (RLD), THE CONTRACTOR AND OTHER RESPONSIBLE AGENCIES, AS APPLICABLE, PRIOR TO ISSUANCE OF A LAND-DISTURBING PERMIT. THE OWNER OR APPLICANT IS REQUIRED TO COORDINATE SCHEDULING OF THE PRECONSTRUCTION CONFERENCE BETWEEN ALL APPLICABLE PARTIES. THE CONTRACTOR SHALL SUBMIT A SEQUENCE OF CONSTRUCTION TO THE COUNTY ENVIRONMENTAL DIVISION FOR REVIEW AND APPROVAL PRIOR TO THE PRECONSTRUCTION MEETING.
8. ALL PERIMETER EROSION AND SEDIMENT CONTROL MEASURES SHALL BE CONSTRUCTED AS A FIRST STEP IN ANY LAND-DISTURBING ACTIVITY AND SHALL BE MADE FUNCTIONAL BEFORE UPSLOPE LAND DISTURBANCE TAKES PLACE.
9. ADDITIONAL SAFETY FENCE OR DUST CONTROL MEASURES, IN ACCORDANCE WITH THE PROVISIONS OF MINIMUM STANDARDS & SPECS. 3.01 AND 3.39 OF THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK (VESCH), MAY BE REQUIRED TO BE IMPLEMENTED IN ADDITION TO THAT SHOWN ON THE APPROVED PLAN IN ORDER TO ENSURE ADEQUATE PROTECTION OF THE HEALTH, SAFETY AND WELFARE OF THE PUBLIC OR IF SITE CONDITIONS CHANGE, BECOME APPARENT OR ALTER SIGNIFICANTLY FOLLOWING THE DATE OF PLAN APPROVAL.
10. EROSION AND SEDIMENT CONTROL MEASURES MAY REQUIRE MINOR FIELD ADJUSTMENTS AT OR FOLLOWING TIME OF CONSTRUCTION TO ENSURE THEIR INTENDED PURPOSE IS ACCOMPLISHED, TO ENSURE ADEQUATE PROTECTION OF THE HEALTH, SAFETY AND WELFARE OF THE PUBLIC, OR IF SITE CONDITIONS CHANGE, BECOME APPARENT OR ALTER SIGNIFICANTLY FOLLOWING THE DATE OF PLAN APPROVAL. COUNTY ENVIRONMENTAL DIVISION APPROVAL SHALL BE REQUIRED FOR ANY DEVIATION OF EROSION AND SEDIMENT CONTROL MEASURES FROM THE APPROVED PLAN.
11. OFF-SITE WASTE OR BORROW AREAS SHALL BE APPROVED BY THE COUNTY ENVIRONMENTAL DIVISION PRIOR TO THE IMPORT OF ANY BORROW OR EXPORT OF ANY WASTE TO OR FROM THE PROJECT SITE.
12. CULVERT AND STORM DRAIN INLET PROTECTIONS, IN ACCORDANCE WITH THE PROVISIONS OF MINIMUM STANDARDS & SPECS. 3.07 & 3.08 OF THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK (VESCH), MAY BE REMOVED AT THE DISCRETION OF THE ASSIGNED COUNTY ENVIRONMENTAL DIVISION INSPECTOR SHOULD PLACEMENT OF THE MEASURE RESULT IN EXCESSIVE ROAD FLOODING OR TRAFFIC HAZARD OR RESULT IN THE REDIRECTION OF DRAINAGE ONTO OR TOWARD EXISTING LOTS, DRIVEWAYS OR STRUCTURES. DECISIONS SHALL BE MADE ON A CASE-BY-CASE BASIS BASED ON FIELD SITUATIONS ENCOUNTERED.
13. DRAINAGE FACILITIES SHALL BE INSTALLED AND FUNCTIONAL WITHIN 30 DAYS FOLLOWING COMPLETION OF ROUGH GRADING AT ANY POINT WITHIN THE PROJECT.
14. NO MORE THAN 300 FEET OF TRENCH MAY BE OPEN AT ONE TIME FOR UNDERGROUND UTILITY LINES, INCLUDING STORM WATER CONVEYANCES. ALL OTHER PROVISIONS OF MINIMUM STANDARD # 16 OF THE VIRGINIA EROSION AND SEDIMENT CONTROL REGULATIONS APPLY.
15. IF DISTURBED AREA STABILIZATION IS TO BE ACCOMPLISHED DURING THE MONTHS OF DECEMBER, JANUARY OR FEBRUARY, STABILIZATION SHALL CONSIST OF MULCHING IN ACCORDANCE WITH MINIMUM STANDARD & SPEC. 3.35 OF THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK (VESCH). SEEDING WILL THEN TAKE PLACE AS SOON AS THE SEASON PERMITS.
16. THE TERM SEEDING, FINAL VEGETATIVE COVER OR STABILIZATION ON THE APPROVED PLAN SHALL MEAN THE SUCCESSFUL GERMINATION AND ESTABLISHMENT OF A STABLE GRASS COVER FROM A PROPERLY PREPARED SEEDBED, IN ACCORDANCE WITH MINIMUM STANDARDS & SPECS. 3.29 THROUGH 3.37 OF THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK (VESCH), AS APPLICABLE. IRRIGATION, IF NECESSARY, SHALL COMPLY WITH ALL APPLICABLE OUTDOOR WATER USE RESTRICTIONS OF THE JAMES CITY SERVICE AUTHORITY.
17. TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES SHALL NOT BE REMOVED UNTIL ALL DISTURBED AREAS ARE STABILIZED. REMOVAL SHALL NOT OCCUR WITHOUT AUTHORIZATION BY THE COUNTY ENVIRONMENTAL DIVISION. DISTURBANCES ASSOCIATED WITH THE REMOVAL OF TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES SHALL BE PROPERLY STABILIZED.
18. NO SEDIMENT TRAP OR SEDIMENT BASIN SHALL BE REMOVED UNTIL A) AT LEAST 75 PERCENT OF THE SINGLE-FAMILY LOTS WITHIN THE DRAINAGE AREA TO THE TRAP OR BASIN HAVE BEEN SOLD TO A THIRD PARTY FOR THE CONSTRUCTION OF HOMES (UNRELATED TO THE DEVELOPER); AND/OR, B) 60 PERCENT OF THE SINGLE-FAMILY LOTS WITHIN THE DRAINAGE AREA TO THE TRAP OR BASIN ARE COMPLETED AND STABILIZED. A BULK SALE OF THE LOTS TO ANOTHER BUILDER DOES NOT SATISFY THIS PROVISION. SEDIMENT TRAPS AND SEDIMENT BASINS SHALL NOT BE REMOVED WITHOUT AUTHORIZATION OF THE COUNTY ENVIRONMENTAL DIVISION.
19. APPLICABLE PROVISIONS OF THE COUNTY BMP MANUAL (JAMES CITY COUNTY GUIDELINES FOR DESIGN AND CONSTRUCTION OF STORMWATER MANAGEMENT BMPS) AND THE VIRGINIA STORMWATER MANAGEMENT HANDBOOK (VSMH) APPLY TO THE PROJECT.
20. DESIGN AND CONSTRUCTION OF PRIVATE-TYPE STORM DRAINAGE SYSTEMS, OUTSIDE VDOT RIGHT-OF-WAY, SHALL BE PERFORMED IN ACCORDANCE WITH THE CURRENT VERSION OF THE JAMES CITY COUNTY ENVIRONMENTAL DIVISION, STORMWATER DRAINAGE CONVEYANCE SYSTEMS (NON-BMP RELATED), GENERAL DESIGN AND CONSTRUCTION GUIDELINES.
21. RECORD DRAWINGS (ASBUILTS) AND CONSTRUCTION CERTIFICATIONS ARE REQUIRED FOR ALL STORMWATER FACILITIES INCLUDING STORMWATER MANAGEMENT/BMP FACILITIES AND STORM DRAINAGE CONVEYANCE SYSTEMS. RECORD DRAWINGS AND CONSTRUCTION CERTIFICATIONS MUST MEET ESTABLISHED PROGRAM REQUIREMENTS OF BOTH THE COUNTY ENVIRONMENTAL AND STORMWATER DIVISIONS.
22. ALL STORMWATER FACILITIES INCLUDING BMPS, STORM DRAINAGE PIPES, STORMWATER CONVEYANCES, INLETS, MANHOLES, OUTFALLS AND ROADSIDE AND OTHER OPEN CHANNELS SHALL BE INSPECTED BY THE COUNTY STORMWATER DIVISION AND GEOTECHNICAL ENGINEER IN ACCORDANCE WITH ESTABLISHED COUNTY STORMWATER DIVISION PROGRAM REQUIREMENTS.

	TOTAL LBS. PER ACRE
MINIMUM CARE LAWN	
COMMERCIAL OR RESIDENTIAL	
-KENTUCKY 31 OR TURF-TYPE TALL FESCUE	175-200 LBS.
OR	
-COMMON BERMUDA GRASS **	75 LBS.
GENERAL SLOPE (3:1 OR LESS)	
-KENTUCKY 31 FESCUE	128 LBS.
-RED TOP GRASS	2 LBS.
-SEASONAL NURSE CROP *	20 LBS.
	150 LBS.
LOW MAINTENANCE SLOPE (STEEPER THAN 3:1)	
-KENTUCKY 31 TALL FESCUE	93-108 LBS.
-COMMON BERMUDAGRASS **	0-15 LBS.
-RED TOP GRASS	2 LBS.
-SEASONAL NURSE CROP *	20 LBS.
-SERICEA LESPEDEZA **	20 LBS.
	150 LBS.

* USE SEASONAL CROP IN ACCORDANCE WITH SEEDING DATES AS STATED BELOW:
FEBRUARY, MARCH THROUGH APRIL ..... ANNUAL RYE
MAY 1ST THROUGH AUGUST ..... FOXTAIL MILLET
SEPTEMBER, OCTOBER THROUGH NOVEMBER 15TH ..... ANNUAL RYE
NOVEMBER 16TH THROUGH JANUARY ..... WINTER RYE

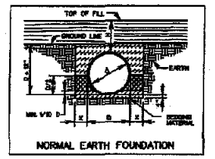
(PS) VA DSWC PG. III - 304

** MAY THROUGH OCTOBER, USE HULLED SEED. ALL OTHER SEEDING PERIODS, USE UNHULLED SEED. WEEPING LOVEGRASS MAY BE ADDED TO ANY SLOPE OR LOW-MAINTENANCE MIX DURING WARMER SEEDING PERIODS; ADD 10-20 LBS./ACRE IN MIXES.

SITE SPECIFIC SEEDING MIXTURES FOR COASTAL PLAIN AREA

PB-1

NO PROJECTION OF PIPE ABOVE GROUND LINE



NORMAL EARTH FOUNDATION

NOTE: FOR REINFORCED CONCRETE PIPE

BEDDING MATERIAL IN ACCORDANCE WITH SECTION 302 OF THE ROAD AND BRIDGE SPECIFICATIONS.
CLASS 2 BACKFILL MATERIAL IN ACCORDANCE WITH SECTION 302 OF THE ROAD AND BRIDGE SPECIFICATIONS.
REGULAR BACKFILL MATERIAL IN ACCORDANCE WITH SECTION 302 OF THE ROAD AND BRIDGE SPECIFICATIONS.
EMBANKMENT

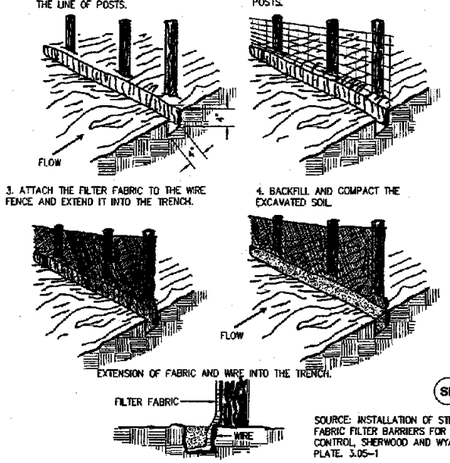
NOTES:
FOR RIGIDIFIED PIPE, THE LIMITS OF THE CLASS 2 BACKFILL MATERIAL SHALL BE EXTENDED TO 24" ABOVE THE TOP OF THE PIPE.
FOR GENERAL NOTES ON PIPE BEDDING, SEE INSTALLATION OF PIPE CULVERTS AND STORM SEWERS GENERAL NOTES ON SHEET 302.401.
CRUSHED GLASS CONFORMING TO THE SPEC REQUIREMENTS FOR GRADING NO. 21 AND 26 MAY BE USED IN PLACE OF CLASS 2 BACKFILL.

VDOT ROAD AND BRIDGE STANDARDS | SHEET 1 OF 4 | 02/01/01 | REVISION DATE

INSTALL. OF PIPE CULVERTS AND STORM SEWERS
CIRC. PIPE BEDDING AND BACKFILL - METHOD "A"
VIRGINIA DEPARTMENT OF TRANSPORTATION

SPECIFICATION REFERENCE: 302, 303

1. SET POSTS AND EXCAVATE A 4"X4" TRENCH UPSLOPE ALONG THE LINE OF POSTS.
2. STAPLE WIRE FENCING TO THE POSTS.
3. ATTACH THE FILTER FABRIC TO THE WIRE FENCE AND EXTEND IT INTO THE TRENCH.
4. BACKFILL AND COMPACT THE EXCAVATED SOIL.

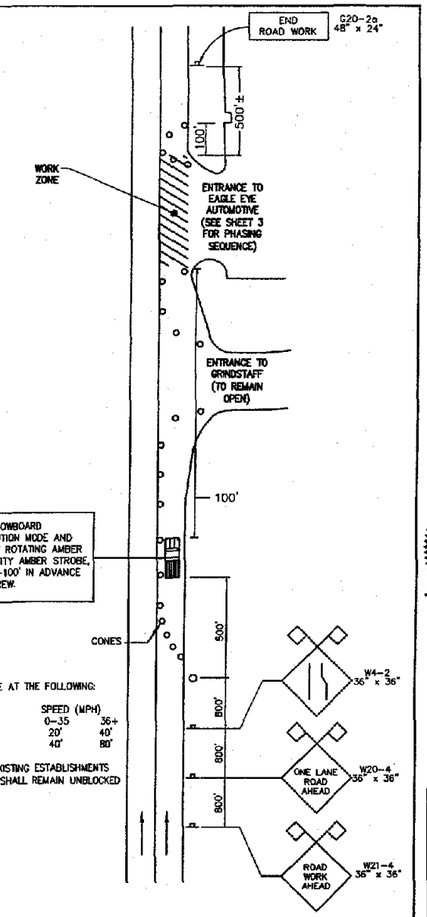


(SF)

SOURCE: INSTALLATION OF STRAW AND FABRIC FILTER BARRIERS FOR SEDIMENT CONTROL, SHERWOOD AND WYANT PLATE. 3.05-1

CONSTRUCTION OF A SILT FENCE (WITH WIRE SUPPORT)

N.T.S.



A TRUCK WITH AN ARROWBOARD OPERATING IN THE CAUTION MODE AND WITH AT LEAST ONE ROTATING AMBER LIGHT OR HIGH INTENSITY AMBER STROBE, SHALL BE PARKED 50'-100' IN ADVANCE OF THE FIRST WORK CREW.

CONES

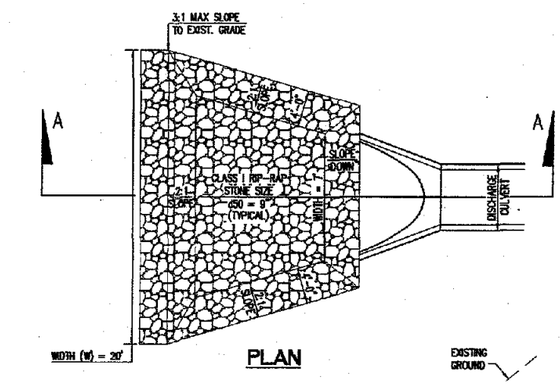
CONE SPACING SHALL BE AT THE FOLLOWING:

	SPEED (MPH) 0-35	36+
LOCATION		
TRANSITION SPACING	20'	40'
TRAVELWAY SPACING	40'	80'

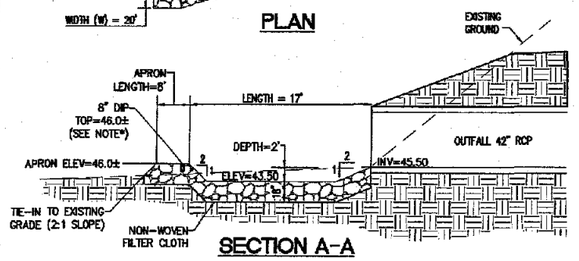
NOTE: ENTRANCES TO EXISTING ESTABLISHMENTS ALONG MERRIMAC TRAIL SHALL REMAIN UNBLOCKED BY CONES.

NOTE:
REFER TO PAGE 6-110 OF THE VIRGINIA WORK AREA PROTECTION MANUAL FOR NOTES REGARDING TRAFFIC CONTROL.

TRAFFIC CONTROL SIGNAGE DETAIL



PLAN

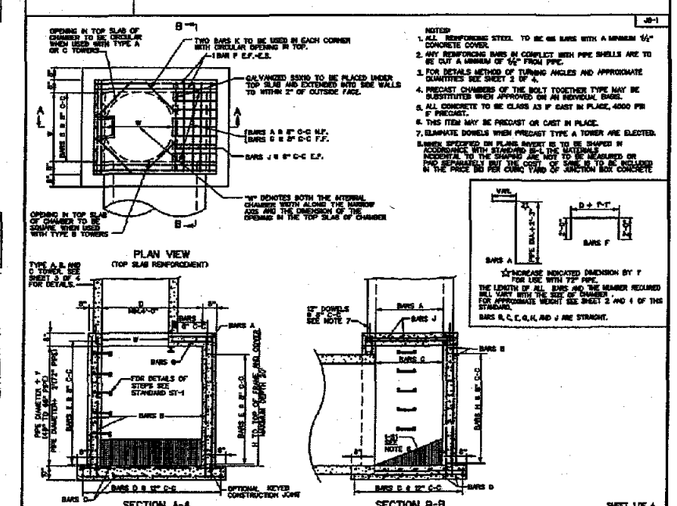


SECTION A-A

*NOTE:
CONTRACTOR TO ENSURE THAT EXISTING 8" SANITARY DIP IS SUPPORTED BY THE RIP-RAP IN THE APRON ACROSS ENTIRE 20' WIDTH OF THE STILLING BASIN. THE APRON ELEVATION SHALL MATCH THE TOP OF THE EXISTING SANITARY PIPE (ELEV=46.0±). DURING CONSTRUCTION OF STILLING BASIN, CONTRACTOR TO ENSURE THAT THE EXISTING 8" DIP IS NOT DAMAGED.

STILLING BASIN DETAIL

NOT TO SCALE



SPECIFICATION REFERENCE: 302, 303, 303

JUNCTION BOX CHAMBER DETAILS FOR 48" - 72" PIPE CULVERTS MAXIMUM DEPTH (H) = 20'

VIRGINIA DEPARTMENT OF TRANSPORTATION

Rev.	Date	Description	Revised By

VIRGINIA KENNETH VAN MAANEN NETT Lic. No. 26038 3/14/11 PROFESSIONAL ENGINEER

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Hampton Roads | Central Virginia | Middle Peninsula

MERRIMAC TRAIL
DRAINAGE IMPROVEMENTS
JAMES CITY COUNTY
DISTRICT VIRGINIA

Project Contacts:	VMB
Project Number:	9801-E-27
Scale:	1"=20'
Date:	3/14/11
Sheet Title:	NOTES & DETAILS
Sheet Number	C-05

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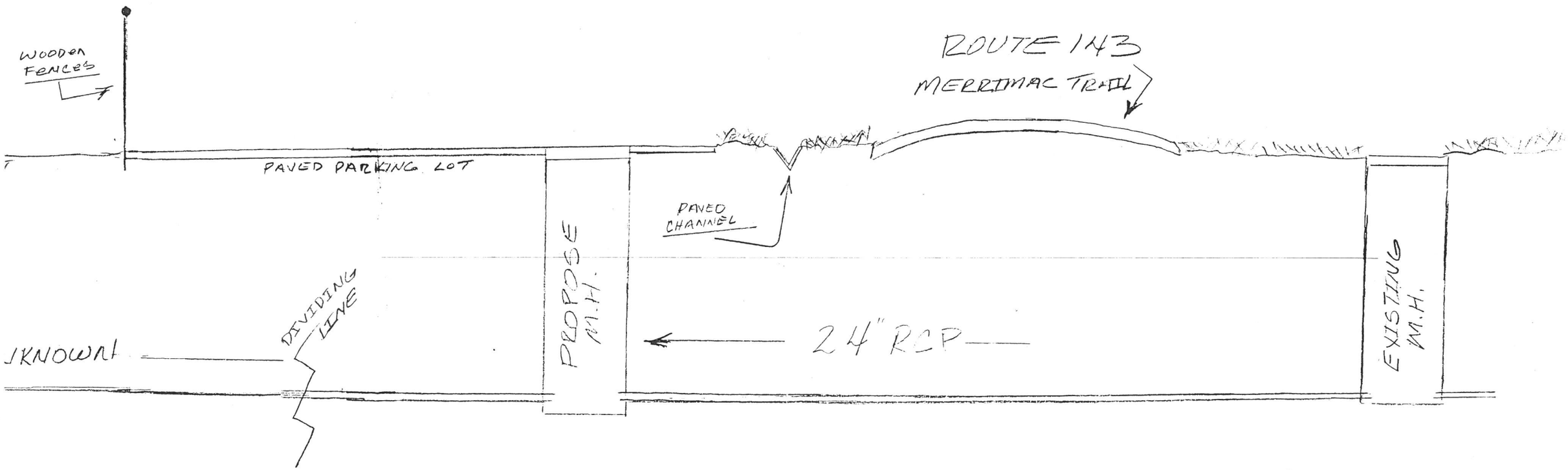
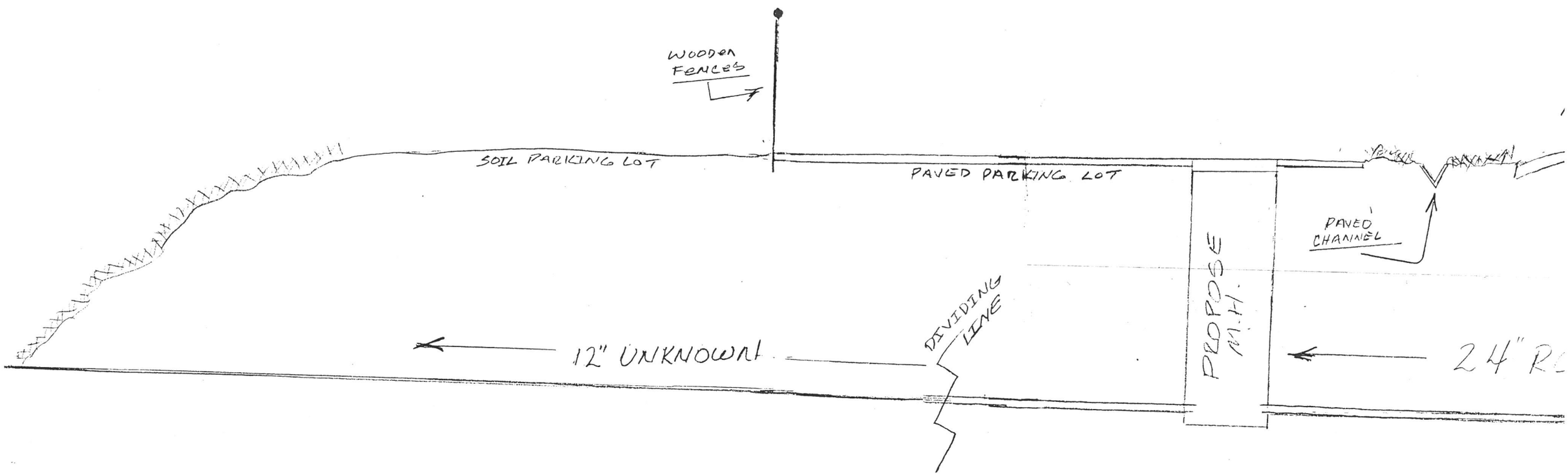
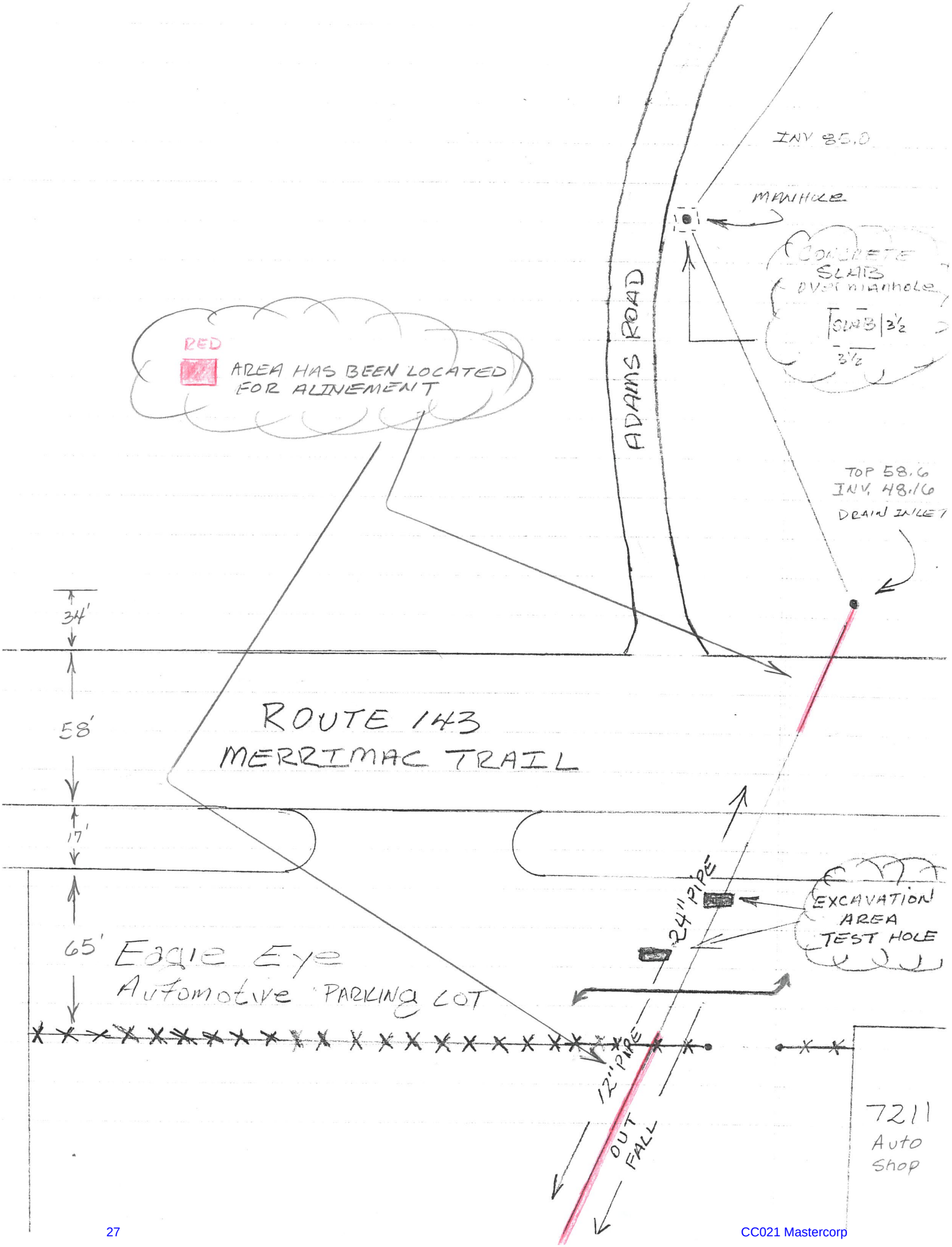
CC021 Mastercorp

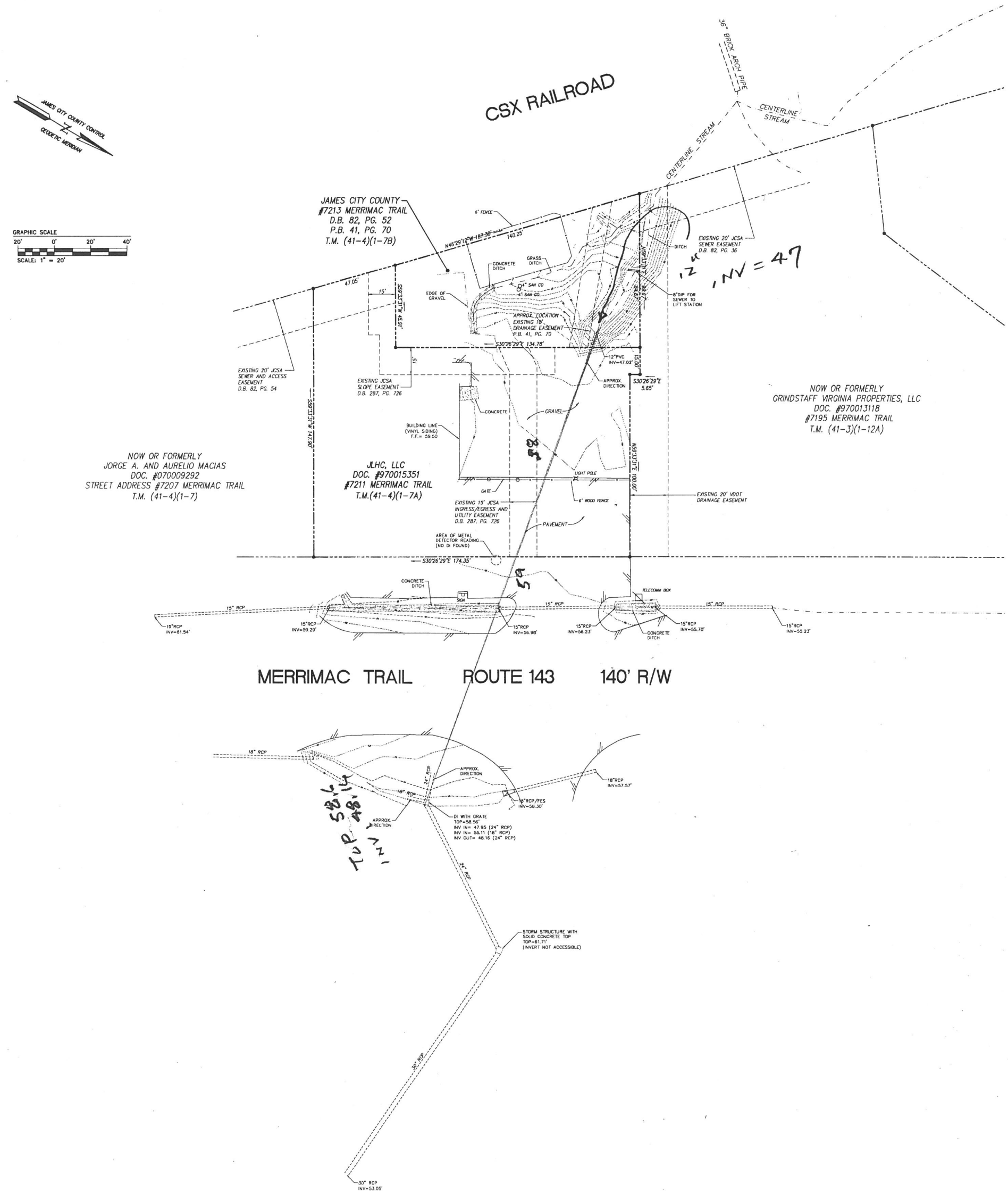
PROFILE
EAGLE EYE AUTOMOTIVE



PROFILE
EAGLE EYE AUTOMOTIVE




INV 85.0
MANHOLE
CONCRETE SLAB over manhole
SLAB
3½
3½
ADAMS ROAD
RED
AREA HAS BEEN LOCATED FOR ALINEMENT
TOP 58.6
INV. 48.16
DRAIN INLET
34'
58'
17'
65'
ROUTE 143
MERRIMAC TRAIL
24" PIPE
EXCAVATION AREA TEST HOLE
Eagle Eye
Automotive PARKING LOT
12" PIPE
OUT FALL
7211
Auto
Shop


JAMES CITY COUNTY CONTROL
GEODETIC MERIDIAN
GRAPHIC SCALE
20' 0' 20' 40'
SCALE: 1" = 20'
CSX RAILROAD
36" BRICK ARCH PIPE
CENTERLINE STREAM
CENTERLINE STREAM
JAMES CITY COUNTY
#7213 MERRIMAC TRAIL
D.B. 82, PG. 52
P.B. 41, PG. 70
T.M. (41-4)(1-7B)
6' FENCE
N46°29'12"W 187.38'
140.25'
EXISTING 20' JCSA SEWER EASEMENT D.B. 82, PG. 36
DITCH
CONCRETE DITCH
GRASS DITCH
EDGE OF GRAVEL
4" SAN CO
8"DIP FOR SEWER TO LIFT STATION
APPROX. LOCATION EXISTING 10' DRAINAGE EASEMENT P.B. 41, PG. 70
S30°26'29"E 134.78'
12"PVC INV=47.02'
APPROX. DIRECTION
S30°26'29"E 5.65'
EXISTING 20' JCSA SEWER AND ACCESS EASEMENT D.B. 82, PG. 54
EXISTING JCSA SLOPE EASEMENT D.B. 287, PG. 726
S59°33'31"W 142.90'
NOW OR FORMERLY
GRINDSTAFF VIRGINIA PROPERTIES, LLC
DOC. #970013118
#7195 MERRIMAC TRAIL
T.M. (41-3)(1-12A)
CONCRETE
GRAVEL
BUILDING LINE (VINYL SIDING) F.F.= 59.50
NOW OR FORMERLY
JORGE A. AND AURELIO MACIAS
DOC. #070009292
STREET ADDRESS #7207 MERRIMAC TRAIL
T.M. (41-4)(1-7)
JLHC, LLC
DOC. #970015351
#7211 MERRIMAC TRAIL
T.M.(41-4)(1-7A)
LIGHT POLE
GATE
6' WOOD FENCE
EXISTING 20' VDOT DRAINAGE EASEMENT
EXISTING 15' JCSA INGRESS/EGRESS AND UTILITY EASEMENT D.B. 287, PG. 726
PAVEMENT
AREA OF METAL DETECTOR READING (NO DI FOUND)
S30°26'29"E 174.35'
CONCRETE DITCH
SIGN
TELECOMM BOX
15" RCP
15"RCP INV=61.54'
15"RCP INV=59.29'
15"RCP INV=56.98'
15"RCP INV=56.23'
15"RCP INV=55.70'
15"RCP INV=55.23'
MERRIMAC TRAIL ROUTE 143 140' R/W
18" RCP
24" RCP
APPROX. DIRECTION
18"RCP INV=57.57'
18"RCP/FES INV=58.30'
DI WITH GRATE TOP=58.56' INV IN= 47.95 (24" RCP) INV IN= 55.11 (18" RCP) INV OUT= 48.16 (24" RCP)
STORM STRUCTURE WITH SOLID CONCRETE TOP TOP=61.71' (INVERT NOT ACCESSIBLE)
30" RCP
30" RCP INV=53.05'

Specifications and Engineering Calculations

BMP/SWM EXTENDED DETENTION DRY POND DESIGN

FOR

MASTERCORP, INC.

MERRIMAC TRAIL

WILLIAMSBURG, VIRGINIA 23185

(AES PROJECT NO. 8104)

CC 021
SP-122-96

Prepared by

AES CONSULTING ENGINEERS
5248 OLDE TOWNE ROAD, SUITE 1
WILLIAMSBURG, VIRGINIA 23188
(757) 253-0040
email: aes@widomaker.com

revised: March 24, 1997

WORKSHEET B : REDEVELOPMENT

REVISION 1-17-97

1 Compile site-specific data.

		PRE-DEVELOPMENT	POST-DEVELOPMENT
A*		= 2.81 acres	= 2.81 acres
I_a:	structures	= .42 acres	= 0.161 acres
	parking lot	= .86 acres	= 1.09 acres
	roadway	= _____ acres	= _____ acres
	other GRAVEL	= .50 acres	= _____ acres
		= _____ acres	= _____ acres
		= _____ acres	= _____ acres
	total I_a	= 1.78 acres	= 1.7 acres
$I = (\text{total } I_a / A) \times 100$		= 63.3 percent expressed in whole numbers	= 60.4 percent expressed in whole numbers
$R_v = 0.05 + (0.009 \times I)$		= 0.62 unitless	= 0.59 unitless
C:	$I \geq 20 = 1.08$ mg/l $I < 20 = 0.26$ mg/l	= 0.26 mg/l	= 0.26 mg/l

* Although the area subject to regulations may be only the area actually in a CBPA, some localities may require all of the site to comply with criteria.

2 Set constants.

P_j = unitless rainfall correction factor
= 0.9 for all of Tidewater Virginia

P = annual rainfall depth in inches
= 40 inches for Northern Virginia area
= 43 inches for Richmond Metropolitan area
= 45 inches for Hampton Roads area

12 and 2.72 are used in the equation as unit conversion factors.

3 Calculate the pre-development load (L_{pre}).

$L_{pre} = P \times P_j \times R_{v(pre)} \times C_{pre} \times A \times 2.72 / 12$

$= 45 \times 0.9 \times 0.62 \times 0.26 \times 2.81 \times 2.72 / 12$

$= 4.16$ pounds per year

4 Calculate the post-development load (L_{post}).

$L_{post} = P \times P_j \times R_{v(post)} \times C_{post} \times A \times 2.72 / 12$

$= 45 \times 0.9 \times 0.59 \times 0.26 \times 2.81 \times 2.72 / 12$

$= 3.96$ pounds per year

5 Calculate the pollutant removal requirement (RR).

$RR = L_{post} - (0.9 \times L_{pre})$

$= 3.96 - (0.9 \times 4.16)$

$= 0.22$ pounds per year

$\%RR = (RR / L_{post}) \times 100$

$= (0.22 / 3.96) \times 100$

$= 5.6$ %

WORKSHEET C: COMPLIANCE

Select BMP options using screening tools and list them below. Then calculate the load removed for each option. DO NOT LIST BMPs IN SERIES HERE.

1

Selected Option	Removal Efficiency (%/100)	×	Fraction of CBPA Drainage Area Served (expressed in decimal form)	×	L_{post} (lbs/yr)	=	Load Removed (lbs/yr)
EXTENDED POND DETENTION DESIGN 2	.50		0.11		3.96		0.22 = 13,465

2a **Estimate parameters for non-CBPA drainage areas on the project site (if the locality does not require complete compliance for the whole site). If the locality requires compliance for the whole site, omit this step.**

A (on site, non-CBPA) = _____ acres

I_a: structures = _____ acres
parking lot = _____ acres
roadway = _____ acres
other = _____ acres
= _____ acres
= _____ acres

total I_a = _____ acres

$I = (\text{total } I_a / A) \times 100$ = _____ %

$R_v = 0.05 + (0.009 \times I)$ = _____

C: $I \geq 20 = 1.08$ mg/l = _____ mg/l
$I < 20 = 0.26$ mg/l

When using VIRGINIA CHESAPEAKE BAY DEFAULT (F_{V_a} = 0.45 lbs/ac/yr), C=0.26 mg/l for all I_{site}.

2b **Calculate post-development load for on-site non-CBPAs.**

$L_{post(outside)} = P \times P_j \times R_v \times C \times A \times 2.72 / 12$

= ____ × 0.9 × ____ × ____ × ____ × 2.72 / 12

= _____ pounds per year

Revised 7/90

CALCULATE USING RUNOFF PRODUCED BY 1 INCH RAINFALL DETAINED FOR 24 HOURS.

REQUIRED VOLUME:

TOTAL DRAINAGE AREA (DA) TO POND = 0.77 ACRES (33,541 S.F)
C FACTOR = 0.82
IMPERVIOUS DRAINAGE AREA = TOTAL DA * C = 0.77 * 0.82 = 0.631 AC.

(1")(DA)(1'/12")(43,560 SF/AC) = 2,292 C.F.

VOLUME TO BE DETAINED = 2,292 C.F.

FROM STAGE STORAGE CURVE, THE REQUIRED WATER QUALITY VOLUME IS ACHIEVED AT ELEV = 51.59.

SIZE WATER QUALTIY ORIFICE TO DETAIN RUNOFF VOLUME FOR 24 HOURS.

VOLUME (Q) FOR 24 HOURS = VOLUME / 86,400 SEC. = 2292 / 86400 = 0.027 CFS

ORIFICE TO BE AT ELEV = 49.0.
ORIFICE FLOW EQUATION:

$$Q = K \times A_0 \times \sqrt{(2 \times g \times \Delta h)}$$

$h_2 - h_1$ = 51.59 - 49.0 = 2.59
Q = 0.027 CFS
K = 0.73 (DISCHARGE COEFF.)

A_0 = 0.00286 S.F. = 0.412 S.I. DIAM = 0.72 INCH

FOR THIS APPLICATION USE 1" DIAMETER ORIFICE.

TEMPORARY SEDIMENT BASIN DESIGN
PROPOSED DRY POND TO BE USED AS A TEMPORARY SEDIMENT BASIN DURING CONSTRUCTION.

DA = 33,541S.F. = 0.77 AC.

TOTAL STORAGE VOLUME REQUIRED = (134CY / AC) * (0.77 AC.)
= 103 CY = 2,786 C.F.

RISER CREST ELEVATION AT 52.0 ATTAINS A VOLUME OF APPROXIMATELY 2,800 C.F.
MIN WET STORAGE VOLUME = 1,393 C.F.
MIN DRY STORAGE VOLUME = 1,393 C.F.

SEDIMENT CLEANOUT REQ'D WHEN WET STORAGE IS REDUCED TO 696.5 C.F. AT ELEV = 50.12
WET STORAGE VOLUME OF 1,393 C.F. IS ACHIEVED AT ELEV = 50.88

SIZE DEWATERING ORIFICE:

Q = S / 21,600 SEC. = 1,400 / 21600 = 0.065 CFS. h = 0.63
A = Q / $(64.32 * h/2)^{.5}$ * (0.6) = 0.065 / 5.67 = 0.011 FT. = 0.165 S.I. D = 2 * $(A / 3.14)^{.5}$ = 1.44 INCH

MINIMUM DIAMETER = 3 INCHES

USE 3 INCH ORIFICE WITH MINIMUM 6 INCH PERFERATED TUBING

EXTENDED DETENTION DRY POND
DESIGN TYPE #2
SIZING CALCULATION
MASTERCORP SITE PLAN
DESIGN 7 - POND
AES PROJ # 8104

revised 4/4/97

Proposed: Design 2 Extended Detention Dry Pond
Volume Requirements: 1" runoff volume, detained 24 hours:

Total drainage area to pond:	33,541	S.F.
Total impervious area:	14,996	S.F.
Runoff coefficient:	0.82	

BMP Volume required: (1") (0.82) (1'/12") (33,541) = 2,292 C.F.
Volume provided @ El. = 51.60: 2,300 C.F.

Sediment Volume Required:

Total drainage area to pond (DA):	33,541 s.f.	0.77	AC.
Total Storage Volume Required (CY) = (134 CY / AC) * DA =		103	C.Y.
	=	2,786	C.F.
Minimum wet storage required =	51.59 C.Y.	1,393	C.F.
Minimum dry storage required =	51.59 C.Y.	1,393	C.F.

Sediment cleanout required when wet storage is reduced to 696 C.F. EL.= 50.12
Wet storage volume of 1,393 C.F. is achieved at EL.= 50.88

100 Year storm reaches a maximum elevation of 52.03 with primary spillway crest elevation of 51.60 and emergency spillway elevation of 52.0.

Proposed estimated pond volume by elevation

Elevation	Depth	Area (sq. ft.)	Volume (cu. ft.)	Volume (cu. yd.)	Cum Volume (cu. ft.)	Cum Volume (cu. yd.)
49.0	0.0	436				
49.5	0.5	568	251	9	251	9
50.0	0.5	738	327	12	578	21
50.5	0.5	909	412	15	989	37
51.0	0.5	1114	506	19	1,495	55
51.5	0.5	1322	609	23	2,104	78
52.0	0.5	1585	727	27	2,831	105
52.5	0.5	2304	972	36	3,803	141
53.0	0.5	3029	1333	49	5,136	190
53.5	0.0	0	0	0	5,136	190
54.0	0.0	0	0	0	5,136	190

1393 CF wet storage

HYDROLOGIC REPORT FOR

MASTERCORP, INC

EXT DETENTION DRY BASIN

AES PROJECT #8104

FILE NAME: 810405.GP1

prepared by:

AES CONSULTING ENGINEERS

5248 OLDE TOWNE RD., STE 1

WILLIAMSBURG, VA 23188

DATE: 3/21/97

Option 1 STAGE / STORAGE TABLE R to reset

1. RESERVOIR No = 1. 2. RESERVOIR NAME = DET. BASIN..
3. S = Ks * Z^b
Ks = 0..... b = 0.....
START ELEV = 0..... INCREMENT = 0...

	STAGE ft	ELEVATION ft	CO AREA sq ft	INC STORAGE cu ft	TOT STORAGE cu ft
4	0.00	45.00.	.00001..	0	0
5	3.99	48.99.	.00001..	0	0
6	4.00	49.00.	436.....	2	2
7	4.50	49.50.	568.....	251	253
8	5.00	50.00.	738.....	326	579
9	5.50	50.50.	909.....	411	990
10	6.00	51.00.	1114....	505	1495
11	6.50	51.50.	1322....	609	2104
12	7.00	52.00.	1585....	726	2830
13	7.50	52.50.	2304....	1152	3982
14	8.00	53.00.	3029....	1333	5315

Change item number: 0 ↵ to cont

Reservoir No. 1 OUTLET STRUCTURES

CULVERT STRUC A. Q=CoA[2gh/k]^.5

1. WIDTH (in) = 15.
2. HEIGHT (in) = 15.
3. No. BARRELS = 1..
4. INVERT ELEV. = 45.....
5. Co = 0.60
6. CULVERT LENGTH (ft) = 30..
7. CULVERT SLOPE (%) = 10..
8. MANNING'S N-VALUE = .013

CULVERT STRUC B. Q=CoA[2gh/k]^.5

9. WIDTH (in) = 1..
10. HEIGHT (in) = 1..
11. No. BARRELS = 1..
12. INVERT ELEV. = 49.....
13. Co = 0.60
14. CULVERT LENGTH (ft) = 5...
15. CULVERT SLOPE (%) = 1.05
16. MANNING'S N-VALUE = .013
17. MULTI-STAGE OPTION ? (Y/N) Y

WEIR STRUCTURE A. Q=CwLH^EXP

18. CREST LENGTH (ft) = 9.42...
19. CREST ELEVATION = 51.6...
20. Cw = 3.00
21. EXP = 1.50
22. MULTI-STAGE OPTION ? (Y/N) Y

WEIR STRUCTURE B. Q=CwLH^EXP

23. CREST LENGTH (ft) = 5.....
24. CREST ELEVATION = 52.....
25. Cw = 3.00
26. EXP = 1.50
27. MULTI-STAGE OPTION ? (Y/N) N

Change item number: 0 ↵ to

HYDROLOGIC REPORT

STAGE / STORAGE / DISCHARGE

RESERVOIR NUMBER = 1

RESERVOIR NAME = DET. BASIN.. (* Controlled by Culv Structure A)
STORAGE VALUES WERE INPUT MANUALLY

DISCHARGE VALUES: CULVERT STRUCT A. Q = .6 *A*[2gh/k]^.5 * 1
CULVERT STRUCT B. Q = .6 *A*[2gh/k]^.5 * 0
* WEIR STRUCT A. Q = 3 * 9.42 * H ^ 1.5
WEIR STRUCT B. Q = 3 * 5 * H ^ 1.5

ELEVATION	DISCHARGE (cfs) CULVERT A	CULVERT B	WEIR A	WEIR B
49.00	10.85	0.00	0.00	0.00
49.50	11.63	0.00	0.00	0.00
50.00	12.36	0.00	0.00	0.00
50.50	13.04	0.00	0.00	0.00
51.00	13.70	0.00	0.00	0.00
51.50	14.32	0.00	0.00	0.00
52.00	14.92	0.00	7.15	0.00
52.50	15.49	0.00	24.13	5.30
53.00	16.04	0.00	46.81	15.00
0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00

STAGE	ELEVATION	INC STOR cu ft	TOT STOR cu ft	OUTFLOW cfs
0.00	49.00	0	0	0.00
0.50	49.50	251	251	0.00
1.00	50.00	326	577	0.00
1.50	50.50	411	988	0.00
2.00	51.00	505	1493	0.00
2.50	51.50	609	2102	0.00
3.00	52.00	726	2828	7.15
3.50	52.50	972	3800	20.79
4.00	53.00	1333	5133	31.04
0.00	0.00	0	0	0.00
0.00	0.00	0	0	0.00

HYDROLOGIC REPORT

2 YR STORM EVENT.....
.....
.....

Hyd. No. 1

Hydrograph type	= S.C.S. RUNOFF	Peak discharge	= 3.33 cfs
Storm frequency	= 2 yr	Time interval	= 2 min
Basin area	= .77 ac	Basin curve No.	= 93
Ave basin slope	= 2.5 %	Hydraulic len	= 200 ft
Basin lag	= 2.1 min	Time of concen	= 3.42 min
Total precip.	= 3.50 in	Distribution	= S.C.S. II

HYDROGRAPH DISCHARGE TABLE

TIME--OUTFLOW (hrs cfs)		TIME--OUTFLOW (hrs cfs)		TIME--OUTFLOW (hrs cfs)		TIME--OUTFLOW (hrs cfS)	
11.63	0.60	11.67	0.76	11.70	0.93	11.73	1.11
11.77	1.30	11.80	1.56	11.83	1.94	11.87	2.42
11.90	2.95	11.93	3.33	11.97	3.21	12.00	2.51
12.03	1.58	12.07	0.87	12.10	0.54	12.13	0.44

HYDROLOGIC REPORT

2 YR ROUTED THRU POND.
.....
.....

Hyd. No. 2

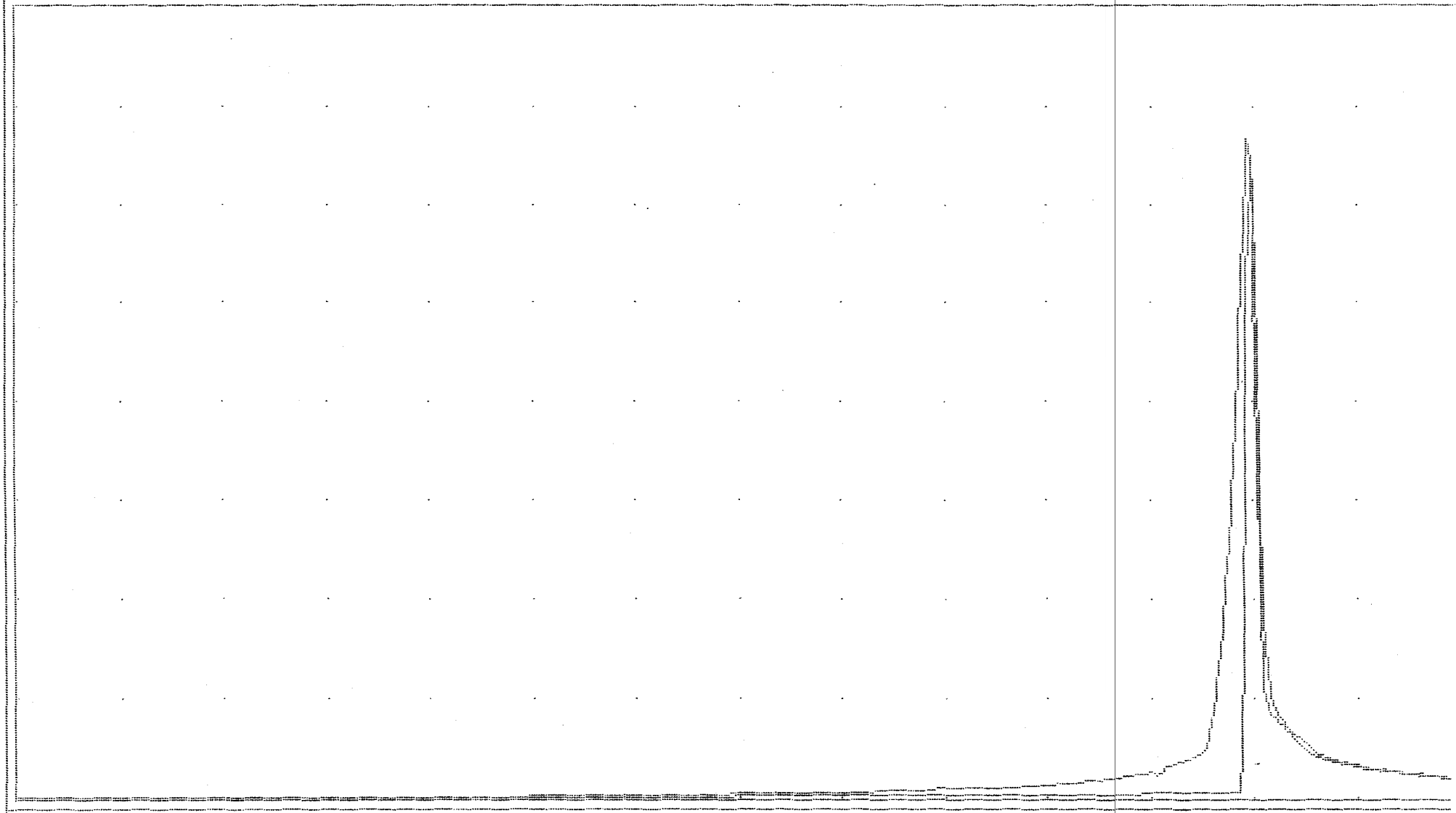
Hydrograph type = RESERVOIR ROUTE Peak discharge = 3.22 cfs
Storm frequency = 2 yr Time interval = 2 min
Inflow hyd. no. = 1 Reservoir no. = 1

HYDROGRAPH DISCHARGE TABLE

TIME hrs	INFLOW (i) cfs	INFLOW (j) cfs	2S/dt-O (i) cfs	2S/dt+O (j) cfs	OUTFLOW cfs
11.73	1.11	1.30	22.22	22.27	0.02
11.77	1.30	1.56	24.58	24.63	0.03
11.80	1.56	1.94	27.38	27.44	0.03
11.83	1.94	2.42	30.83	30.88	0.03
11.87	2.42	2.95	35.13	35.18	0.03
11.90	2.95	3.33	38.86	40.49	0.81
11.93	3.33	3.21	39.79	45.14	2.68
11.97	3.21	2.51	39.90	46.33	3.22
12.00	2.51	1.58	39.84	45.62	2.89
12.03	1.58	0.87	39.62	43.93	2.15
12.07	0.87	0.54	39.27	42.06	1.40

Maximum outflow (cfs) = 3.22
Maximum storage (cu ft) = 2587
Maximum elevation (ft) = 51.83

Qp = 3.2 RESERVOIR ROUTE 2 Yr



HGU = 60 min 2 VGU = 0.5 cfs

MAX STORAGE = 2587

MAX ELEVATION = 91.83

HYDROLOGIC REPORT

10 YR STORM EVENT.....
.....
.....

Hyd. No. 3

Hydrograph type	= S.C.S. RUNOFF	Peak discharge	= 5.62 cfs
Storm frequency	= 10 yr	Time interval	= 2 min
Basin area	= .77 ac	Basin curve No.	= 93
Ave basin slope	= 2.5 %	Hydraulic len	= 200 ft
Basin lag	= 2.1 min	Time of concen	= 3.42 min
Total precip.	= 5.60 in	Distribution	= S.C.S. II

HYDROGRAPH DISCHARGE TABLE

TIME--OUTFLOW (hrs cfs)		TIME--OUTFLOW (hrs cfs)		TIME--OUTFLOW (hrs cfs)		TIME--OUTFLOW (hrs cfS)	
11.63	1.07	11.67	1.35	11.70	1.65	11.73	1.96
11.77	2.28	11.80	2.71	11.83	3.35	11.87	4.14
11.90	5.01	11.93	5.62	11.97	5.39	12.00	4.20
12.03	2.63	12.07	1.44	12.10	0.89	12.13	0.73

HYDROLOGIC REPORT

10 YR ROUTED THRU POND
.....
.....

Hyd. No. 4

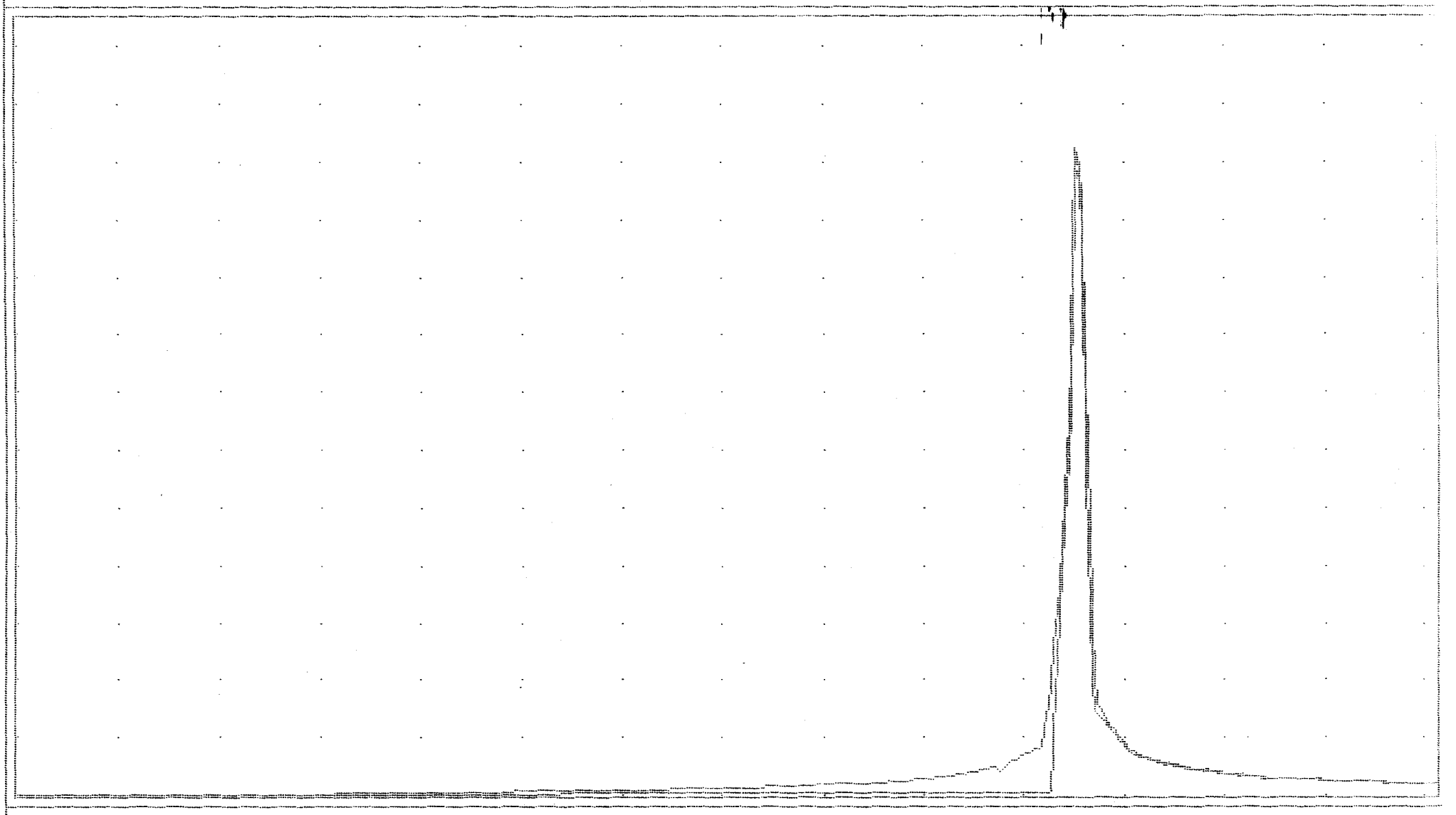
Hydrograph type = RESERVOIR ROUTE Peak discharge = 5.51 cfs
Storm frequency = 10 yr Time interval = 2 min
Inflow hyd. no. = 3 Reservoir no. = 1

HYDROGRAPH DISCHARGE TABLE

TIME hrs	INFLOW (i) cfs	INFLOW (j) cfs	2S/dt-O (i) cfs	2S/dt+O (j) cfs	OUTFLOW cfs
11.63	1.07	1.35	37.52	37.62	0.05
11.67	1.35	1.65	38.67	39.95	0.64
11.70	1.65	1.96	39.18	41.68	1.25
11.73	1.96	2.28	39.45	42.80	1.67
11.77	2.28	2.71	39.58	43.68	2.05
11.80	2.71	3.35	39.72	44.58	2.43
11.83	3.35	4.14	39.85	45.78	2.97
11.87	4.14	5.01	39.98	47.34	3.68
11.90	5.01	5.62	40.06	49.14	4.54
11.93	5.62	5.39	40.07	50.70	5.31
11.97	5.39	4.20	40.07	51.09	5.51
12.00	4.20	2.63	40.07	49.66	4.80
12.03	2.63	1.44	39.96	46.90	3.47
12.07	1.44	0.89	39.64	44.03	2.20
12.10	0.89	0.73	39.25	41.97	1.36

Maximum outflow (cfs) = 5.51
Maximum storage (cu ft) = 2735
Maximum elevation (ft) = 51.93

Qp = 5.5 RESERVOIR ROUTE 10 Yr



HGU = 68 min 4 VGU = 0.5 cfs

MAX STORAGE = 2735

MAX ELEVATION = 61.93

HYDROLOGIC REPORT

100 YR STORM EVENT....
.....
.....

Hyd. No. 5

Hydrograph type	= S.C.S. RUNOFF	Peak discharge	= 8.32 cfs
Storm frequency	= 100 yr	Time interval	= 2 min
Basin area	= .77 ac	Basin curve No.	= 93
Ave basin slope	= 2.5 %	Hydraulic len	= 200 ft
Basin lag	= 2.1 min	Time of concen	= 3.42 min
Total precip.	= 8.10 in	Distribution	= S.C.S. II

HYDROGRAPH DISCHARGE TABLE

TIME--OUTFLOW (hrs cfs)		TIME--OUTFLOW (hrs cfs)		TIME--OUTFLOW (hrs cfs)		TIME--OUTFLOW (hrs cfS)	
11.50	0.63	11.53	0.72	11.57	0.94	11.60	1.24
11.63	1.63	11.67	2.06	11.70	2.50	11.73	2.96
11.77	3.43	11.80	4.07	11.83	5.00	11.87	6.16
11.90	7.44	11.93	8.32	11.97	7.95	12.00	6.18
12.03	3.87	12.07	2.12	12.10	1.31	12.13	1.07
12.17	1.03	12.20	0.98	12.23	0.94	12.27	0.90

HYDROLOGIC REPORT

100YR ROUTED THRU POND
.....
.....

Hyd. No. 6

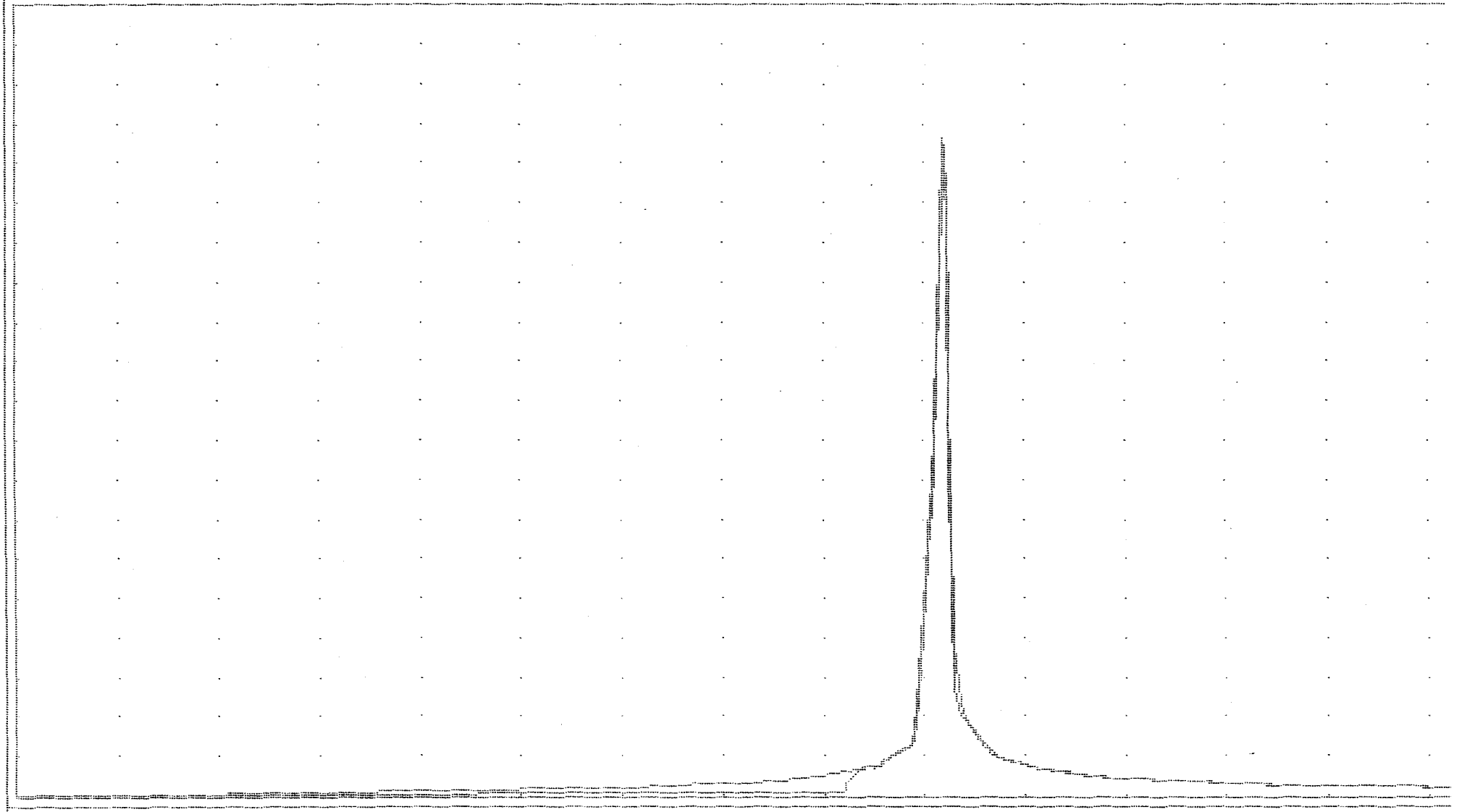
Hydrograph type = RESERVOIR ROUTE Peak discharge = 8.10 cfs
Storm frequency = 100 yr Time interval = 2 min
Inflow hyd. no. = 5 Reservoir no. = 1

HYDROGRAPH DISCHARGE TABLE

TIME hrs	INFLOW (i) cfs	INFLOW (j) cfs	2S/dt-O (i) cfs	2S/dt+O (j) cfs	OUTFLOW cfs
11.60	1.24	1.63	39.02	40.99	0.98
11.63	1.63	2.06	39.23	41.90	1.33
11.67	2.06	2.50	39.47	42.92	1.73
11.70	2.50	2.96	39.64	44.02	2.19
11.73	2.96	3.43	39.79	45.10	2.65
11.77	3.43	4.07	39.89	46.18	3.14
11.80	4.07	5.00	39.99	47.39	3.70
11.83	5.00	6.16	40.06	49.06	4.50
11.87	6.16	7.44	40.07	51.22	5.57
11.90	7.44	8.32	40.01	53.67	6.83
11.93	8.32	7.95	40.14	55.76	7.81
11.97	7.95	6.18	40.21	56.40	8.10
12.00	6.18	3.87	39.99	54.34	7.18
12.03	3.87	2.12	40.07	50.04	4.98
12.07	2.12	1.31	39.88	46.06	3.09
12.10	1.31	1.07	39.52	43.30	1.89
12.13	1.07	1.03	39.24	41.91	1.34
12.17	1.03	0.98	39.10	41.34	1.12
12.20	0.98	0.94	39.05	41.11	1.03

Maximum outflow (cfs) = 8.10
Maximum storage (cu ft) = 2898
Maximum elevation (ft) = 52.03 DHW

Qp = 8.1 RESERVOIR ROUTE 100 Yr

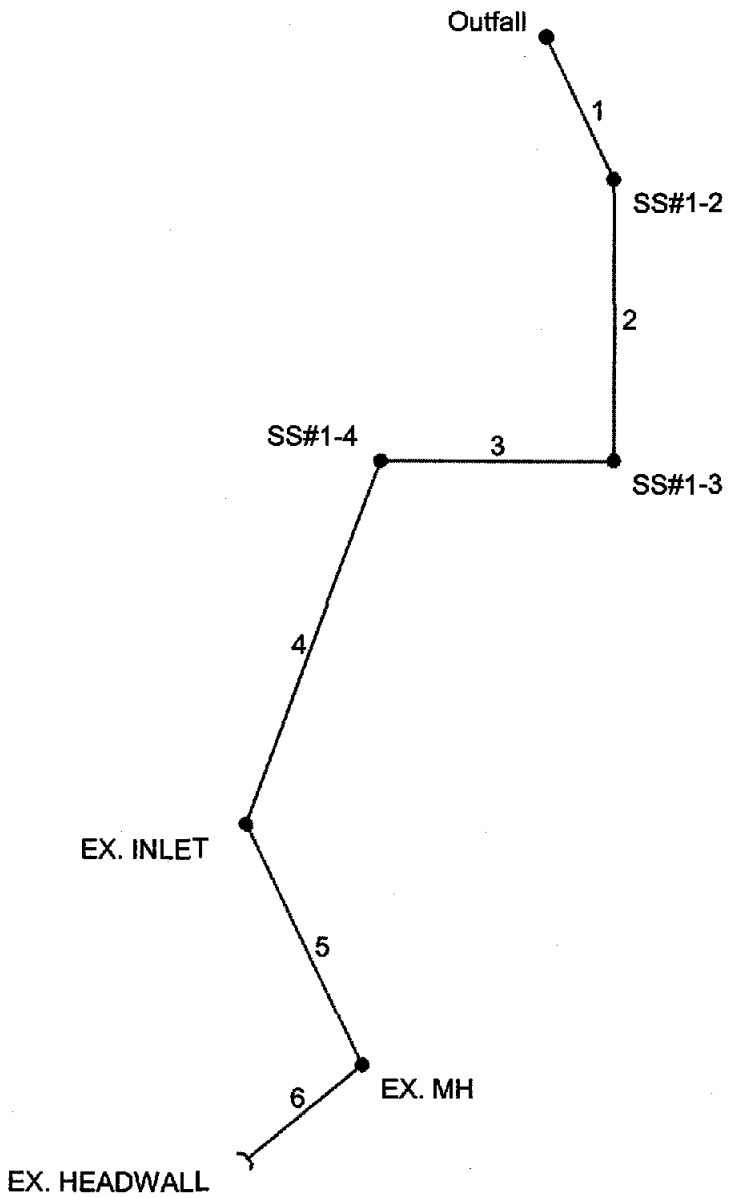


HGU = 70 min 6 VGU = 0.5 cfs

MAX STORAGE = 2898

MAX ELEVATION = 52.03

Hydraflow Storm Sewers Extension for AutoCAD® Civil 3D® 2009 Plan



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Project File: 9801-E-27_Storm System Design.stm	Number of lines: 6	Date: 06-10-2011

Hydraflow Storm Sewers Extension v6.066

Storm Sewer Summary Report

Line No.	Line ID	Flow rate (cfs)	Line size (in)	Line shape	Line length (ft)	Invert EL Dn (ft)	Invert EL Up (ft)	Line slope (%)	HGL down (ft)	HGL up (ft)	Minor loss (ft)	HGL Junct (ft)	Dns line No.	Junction Type
1	1-2 TO 1-1	82.81	42	Cir	54.000	45.50	45.91	0.759	48.79	49.01	0.00	49.01	End	Manhole
2	1-3 TO 1-2	82.81	42	Cir	96.000	45.91	46.63	0.750	49.01	49.42	0.00	49.42	1	Manhole
3	1-4 TO 1-3	82.81	42	Cir	78.000	46.63	47.25	0.795	49.42	50.04	0.00	50.04	2	Manhole
4	EX. INLET TO 1-4	82.81	24	Cir	132.000	47.50	47.95	0.341	50.04*	67.74*	0.00	67.74	3	Grate
5	EX MH TO EX. INLET	44.40	24	Cir	91.000	47.95	49.89	2.132	67.74*	71.25*	0.00	71.25	4	Manhole
6	EX. HEADWALL TO EX. MH	44.40	30	Cir	50.000	49.89	53.05	6.320	71.25*	71.83*	0.00	71.83	5	OpenHeadwall

Project File: 9801-E-27_Storm System Design.stm | Number of lines: 6 | Run Date: 06-10-2011

NOTES: Return period = 10 Yrs. ; *Surcharged (HGL above crown).

Hydraflow Storm Sewers Extension v6.066

DRAINAGE CALCULATIONS

FOR

MERRIMAC TRAIL DRAINAGE IMPROVEMENTS

SITE:

James City County

SUBMITTED TO:

Environmental Division
James City County

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Environmental Division
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Prepared By:

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

March 25, 2011

AES Project No. 9801-E-27

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Stormwater Division

AES
CONSULTING ENGINEERS

TABLE OF CONTENTS

-Stormwater Narrative.....1

-Drainage Network Map (Kerr).....2

-Drainage Area SCS Calculations.....3

-Drainage Area Hydrograph Report.....6

-Storm System Calculations.....16

-Stilling Basin Design.....18

STORM WATER NARRATIVE

PROJECT DESCRIPTION
This project consists of improvement to an existing storm system that collects runoff from the northeast side of Merrimac Trail and conveys it behind Eagle Eye Automotive. Additional outfall protection is provided at the outfall of the proposed storm system.

EXISTING SITE CONDITIONS
A 24" concrete pipe exits the grate inlet on the east side of Merrimac Trail, crosses the road, runs underneath the eagle eye parking lot, and eventually outfalls into a ravine behind Eagle Eye Automotive. At some undetermined point in the line, the pipe size is reduced to 12"

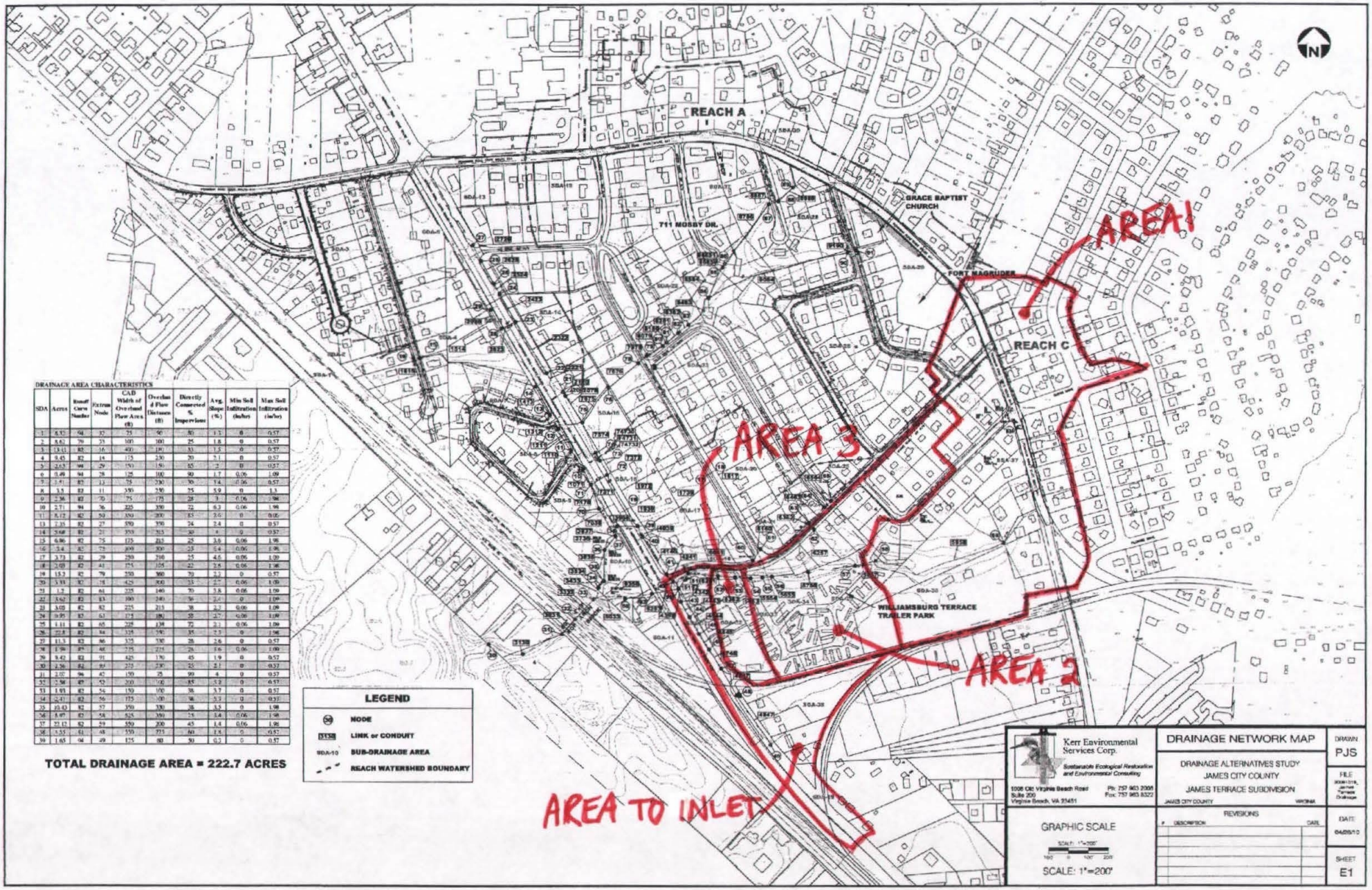
ADJACENT PROPERTIES
The project is bordered to the east by Merrimac Trail, to the west by the CSX railroad, to the North by the Grindstaff Virginia property, and to the south by Eagle Eye Automotive.

SOILS
The project area consists of 15E-Emporia Complex and 37-Urban Land with slopes ranging from 0 to 25 percent.

CRITICAL EROSION AREAS
There are areas of 25% slope impact at the proposed outfall of the storm system. This amount to 0.024 acres or 9.2% of the total disturbed area.

STORMWATER MANAGEMENT & WATER QUALITY
The proposed storm system was designed to pass the 25-year storm volume for its contributing drainage area. The total drainage area is shown on the Drainage Network Map provided by Kerr Environmental and included in this calculation package. A hydraflow routing was performed taking into account storage provided upstream of the storm system, and the 25-year flow for the proposed storm system was found to be 82.81 cubic feet per second. The storm system and the stilling basin outlet protection have been sized based on this value.

RESULTS & CONCLUSIONS
The resizing and rerouting of the storm system should alleviate upstream flooding problems as well as providing opportunity for future improvements. If VDOT ever decides to replace the existing 24" concrete pipe crossing Merrimac Trail with a larger pipe, opportunity is available for them to connect into the proposed storm system.



DRAINAGE AREA CHARACTERISTICS

SDA	Acres	Runoff Curve Number	Extreme Node	CAD Width of Overland Flow Area (ft)	Overland Flow Distance (ft)	Directly Connected % Impervious	Avg. Slope (%)	Min Soil Infiltration (in/hr)	Max Soil Infiltration (in/hr)
1	8.93	94	32	75	90	50	1.1	0	0.57
2	8.62	79	23	100	100	25	1.8	0	0.57
3	13.41	85	16	400	190	33	1.5	0	0.57
4	9.45	82	14	175	230	20	2.1	0	0.57
5	2.65	94	29	150	150	85	2.7	0	0.57
6	0.49	94	28	125	100	90	1.7	0.06	1.09
7	2.51	87	12	75	230	30	1.4	0.06	0.57
8	3.5	82	11	350	250	75	5.9	0	1.3
9	2.36	82	70	75	175	28	3.1	0.06	1.98
10	2.71	94	36	225	350	72	6.2	0.06	1.98
11	8.12	82	50	350	200	85	2.6	0	0.02
12	2.35	82	27	350	350	24	2.4	0	0.57
14	3.68	82	27	350	325	30	4	0	0.57
15	6.86	82	75	125	215	25	3.6	0.06	1.98
16	3.4	82	72	300	300	25	5.4	0.06	1.98
17	3.73	82	29	250	210	25	4.6	0.06	1.09
18	2.09	82	41	175	105	22	2.8	0.06	1.98
19	15.7	82	79	250	350	70	2.2	0	0.57
20	3.93	82	18	425	300	25	2.7	0.06	1.09
21	1.2	82	61	225	140	70	3.8	0.06	1.09
22	3.67	82	83	100	240	36	2.4	0	1.09
23	3.05	82	82	225	215	38	2.2	0.06	1.09
24	0.95	82	63	175	180	28	2.7	0.06	1.09
25	1.11	82	65	225	130	72	2.1	0.06	1.09
26	22.8	82	84	325	550	35	2.3	0	1.98
27	11.3	82	86	325	330	28	2.6	0	0.57
28	1.96	87	40	275	275	26	1.6	0.06	1.09
29	9.42	82	91	425	170	45	1.9	0	0.57
30	2.26	82	89	275	230	25	2.1	0	0.57
31	2.07	96	42	150	25	99	4	0	0.57
32	2.98	87	52	200	100	85	3.2	0	0.57
33	1.93	82	54	150	100	38	3.7	0	0.57
34	2.41	82	56	175	100	38	3.3	0	0.57
35	10.43	82	57	350	330	28	3.3	0	1.98
36	5.47	82	58	525	350	75	3.4	0.06	1.98
37	22.12	82	59	550	200	45	1.4	0.06	1.98
38	3.55	61	48	550	225	60	1.5	0	0.57
39	1.65	94	49	125	80	50	0.2	0	0.57

TOTAL DRAINAGE AREA = 222.7 ACRES

Merrimac Trail Storm Improvements

CALCULATION FOR SCS HYDROGRAPH GENERATION AND CHANNEL PROTECTION

FOR AREA 1

Project No. 9801-E-27

5-Oct-10

Revision Date

II. POST-DEVELOPMENT CONDITIONS TO POINT OF CONCERN (for total site)

A. Post-Development Drainage Area to Point of Concern = 31.09 Acres

B. Post-development Land Use, Soil Classification and Calculation of Composite Curve Number

	Soil Type	Soil Hydrologic Group	Post-Development Land Use	Area of Land Use (in Acres)	Curve Number for Land Use (CN)	Adjusted (CN)
1)						0
2)						0
3)						0
4)						0
5)						0
6)						0
7)						0
8)						0
9)						0
10)						0
11)						0

Total Adjusted CN =

Composite CN = 82

C. Post-Development Time of Concentration Calculations

1) Overland Flow (maximum 300 feet)

Surface description (table 5-7)	Dense grasses	
Manning's roughness coefficient., n (table 5-7)	0.24	
Length of overland flow, L	300	Feet
25-year 24-hour rainfall, P25	6.4	inches
Average slope of overland flow , s	0.02	feet per foot
Travel time, Tt = (0.007*(n*L)^0.8)/(P2^0.5*s^0.4)	0.41	hours

2) Shallow concentrated flow (maximum 300 feet)

Surface description, paved or unpaved		
Length of shallow concentrated flow, L	0	Feet
Average slope of shallow concentrated flow, s	0	feet per foot
Average velocity, v	0.0	feet per second
Travel time, Tt = L/(3600*v)	0.00	hours

3) Channel or Pipe Flow

Length of channel flow, L	1985	Feet
Average velocity of channel flow, v	2.8	feet per second
Travel time, Tt = L/(3600*v)	0.22	hours

Total Time of Concentration = 0.63 hours

or 38 minutes

Merrimac Trail Storm Improvements

CALCULATION FOR SCS HYDROGRAPH GENERATION AND CHANNEL PROTECTION

FOR AREA 2

Project No. 9801-E-27

5-Oct-10

Revision Date

II. POST-DEVELOPMENT CONDITIONS TO POINT OF CONCERN (for total site)

A. Post-Development Drainage Area to Point of Concern = 14.77 Acres

B. Post-development Land Use, Soil Classification and Calculation of Composite Curve Number

	Soil Type	Soil Hydrologic Group	Post-Development Land Use	Area of Land Use (in Acres)	Curve Number for Land Use (CN)	Adjusted (CN)
1)						0
2)						0
3)						0
4)						0
5)						0
6)						0
7)						0
8)						0
9)						0
10)						0
11)						0

Total Adjusted CN =

Composite CN = 82

C. Post-Development Time of Concentration Calculations

1) Overland Flow (maximum 300 feet)

Surface description (table 5-7)	Dense grasses	
Manning's roughness coefficient., n (table 5-7)	0.24	
Length of overland flow, L	300	Feet
25-year 24-hour rainfall, P25	6.4	inches
Average slope of overland flow , s	0.037	feet per foot
Travel time, Tt = (0.007*(n*L)^0.8)/(P2^0.5*s^0.4)	0.32	hours

2) Shallow concentrated flow (maximum 300 feet)

Surface description, paved or unpaved	unpaved	
Length of shallow concentrated flow, L	250	Feet
Average slope of shallow concentrated flow, s	0.01	feet per foot
Average velocity, v	4.2	feet per second
Travel time, Tt = L/(3600*v)	0.02	hours

3) Channel or Pipe Flow

Length of channel flow, L	400	Feet
Average velocity of channel flow, v	2.5	feet per second
Travel time, Tt = L/(3600*v)	0.04	hours

Total Time of Concentration = 0.38 hours

or 23 minutes

Merrimac Trail Storm Improvements

CALCULATION FOR SCS HYDROGRAPH GENERATION AND CHANNEL PROTECTION FOR AREA 3

Project No. 9801-E-27

5-Oct-10

Revision Date

II. POST-DEVELOPMENT CONDITIONS TO POINT OF CONCERN (for total site)

A. Post-Development Drainage Area to Point of Concern = 2.58 Acres

B. Post-development Land Use, Soil Classification and Calculation of Composite Curve Number

	Soil Type	Soil Hydrologic Group	Post-Development Land Use	Area of Land Use (in Acres)	Curve Number for Land Use (CN)	Adjusted (CN)
1)						0
2)						0
3)						0
4)						0
5)						0
6)						0
7)						0
8)						0
9)						0
10)						0
11)						0

Total Adjusted CN =

Composite CN = 82

C. Post-Development Time of Concentration Calculations

1) Overland Flow (maximum 300 feet)

Surface description (table 5-7)	Dense grasses	
Manning's roughness coefficient., n (table 5-7)	0.24	
Length of overland flow, L	300	Feet
25-year 24-hour rainfall, P25	6.4	inches
Average slope of overland flow , s	0.045	feet per foot
Travel time, Tt = (0.007*(n*L)^0.8)/(P2^0.5*s^0.4)	0.29	hours

2) Shallow concentrated flow (maximum 300 feet)

Surface description, paved or unpaved	unpaved	
Length of shallow concentrated flow, L	300	Feet
Average slope of shallow concentrated flow, s	0.06	feet per foot
Average velocity, v	4.0	feet per second
Travel time, Tt = L/(3600*v)	0.02	hours

3) Channel or Pipe Flow

Length of channel flow, L	60	Feet
Average velocity of channel flow, v	2.5	feet per second
Travel time, Tt = L/(3600*v)	0.01	hours

Total Time of Concentration = 0.32 hours

or 19 minutes

Hydraflow Table of Contents

Reach C Hydraflow Model.gpw

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2009 by Autodesk, Inc. v6.066

Friday, Mar 25, 2011

25 - Year

Summary Report 1
Hydrograph Reports 2
Hydrograph No. 1, SCS Runoff, Area 1 Drainage 2
Hydrograph No. 2, Reservoir, Pond 1 Routed 3
Hydrograph No. 4, SCS Runoff, Area 2 4
Hydrograph No. 5, Combine, Pond 1 Routed & Area 2 5
Hydrograph No. 6, Reservoir, Pond 2 Routed 6
Hydrograph No. 8, SCS Runoff, Area 3 7
Hydrograph No. 9, Combine, Pond 2 Routed & Area 3 8
Hydrograph No. 11, SCS Runoff, SCS Area to Grate Inlet 9

Hydrograph Summary Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2009 by Autodesk, Inc. v6.066

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph description
1	SCS Runoff	108.53	2	736	528,433	-----	-----	-----	Area 1 Drainage
2	Reservoir	45.08	2	764	528,428	1	72.29	216,634	Pond 1 Routed
4	SCS Runoff	73.34	2	726	255,527	-----	-----	-----	Area 2
5	Combine	83.92	2	726	783,955	2, 4	-----	-----	Pond 1 Routed & Area 2
6	Reservoir	43.27	2	782	783,943	5	60.66	146,049	Pond 2 Routed
8	SCS Runoff	13.86	2	724	43,852	-----	-----	-----	Area 3
9	Combine	44.40	2	780	827,794	6, 8	-----	-----	Pond 2 Routed & Area 3
11	SCS Runoff	38.41	2	730	157,243	-----	-----	-----	SCS Area to Grate Inlet

Reach C Hydraflow Model.gpw	Return Period: 25 Year	Friday, Mar 25, 2011

7

$$Q = \frac{(i - 0.2S)^2}{i - 0.8S}$$

$$S = \frac{1000}{CN} - 10$$

Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2009 by Autodesk, Inc. v6.066 — Friday, Mar 25, 2011

Hyd. No. 1

Q = CiA

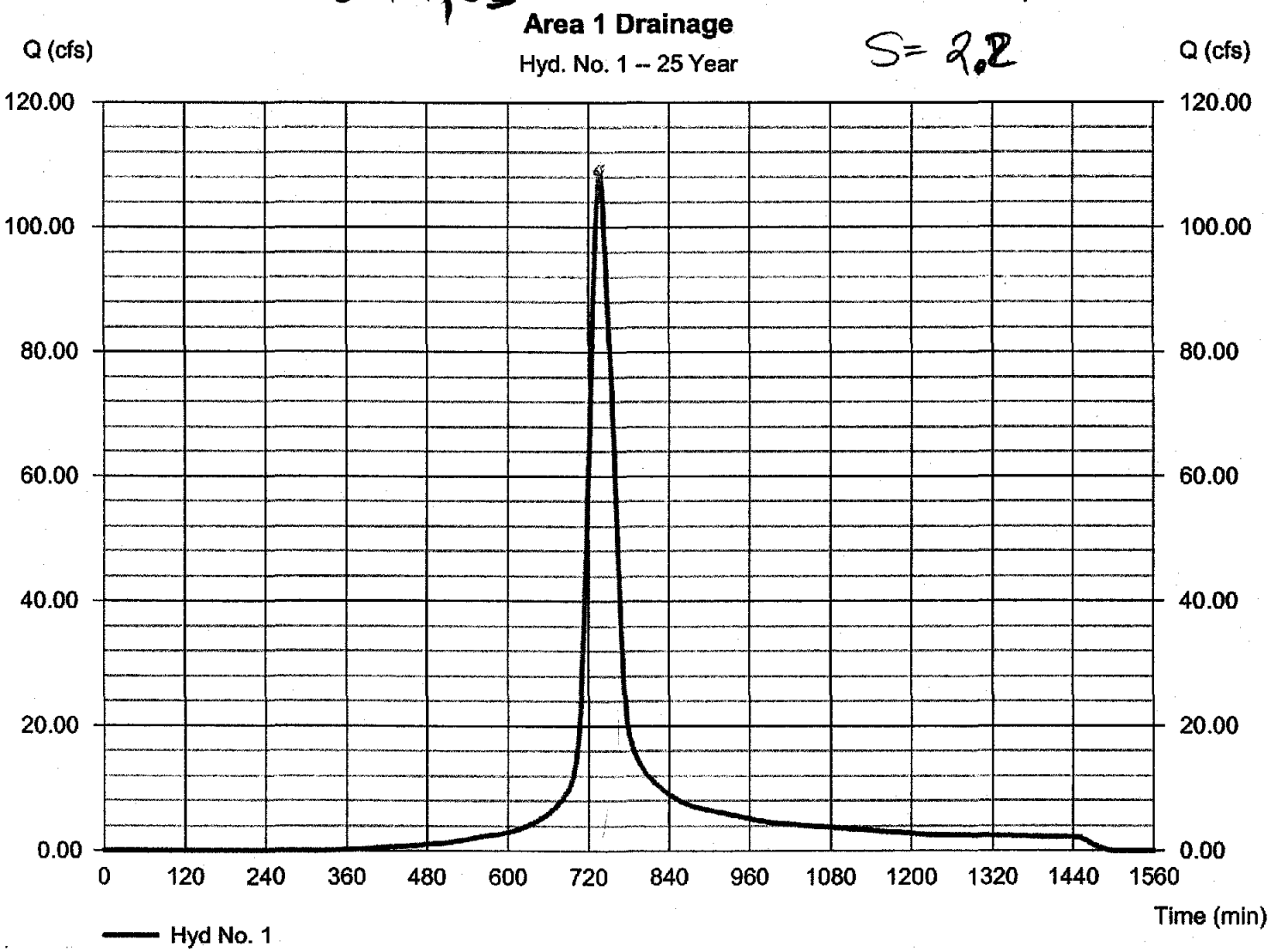
172

Area 1 Drainage

Hydrograph type	= SCS Runoff	Peak discharge	= 108.53 cfs
Storm frequency	= 25 yrs	Time to peak	= 736 min
Time interval	= 2 min	Hyd. volume	= 528,433 cuft
Drainage area	= 31.090 ac	Curve number	= 82 %
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 38.00 min
Total precip.	= 6.75 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

$Q = \frac{(i - 0.25)^2}{i + 0.85}$ $q = 4.68$ in $S = \frac{CN}{1000} - 10$

S = 2.2



8

Hydrograph Report

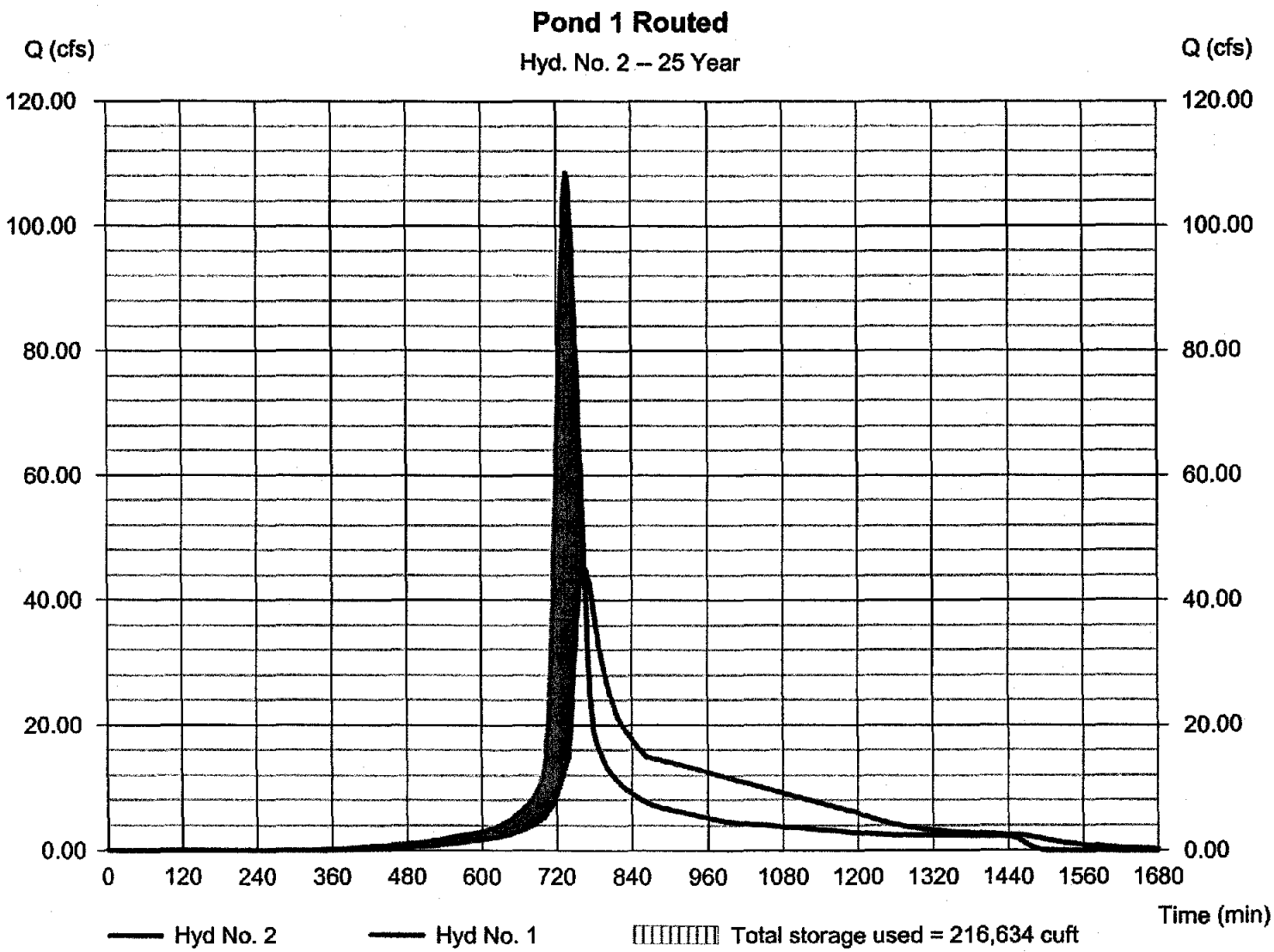
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2009 by Autodesk, Inc. v6.066 Friday, Mar 25, 2011

Hyd. No. 2

Pond 1 Routed

Hydrograph type	= Reservoir	Peak discharge	= 45.08 cfs
Storm frequency	= 25 yrs	Time to peak	= 764 min
Time interval	= 2 min	Hyd. volume	= 528,428 cuft
Inflow hyd. No.	= 1 - Area 1 Drainage	Max. Elevation	= 72.29 ft
Reservoir name	= Pond 1	Max. Storage	= 216,634 cuft

Storage Indication method used.



9

Hydrograph Report

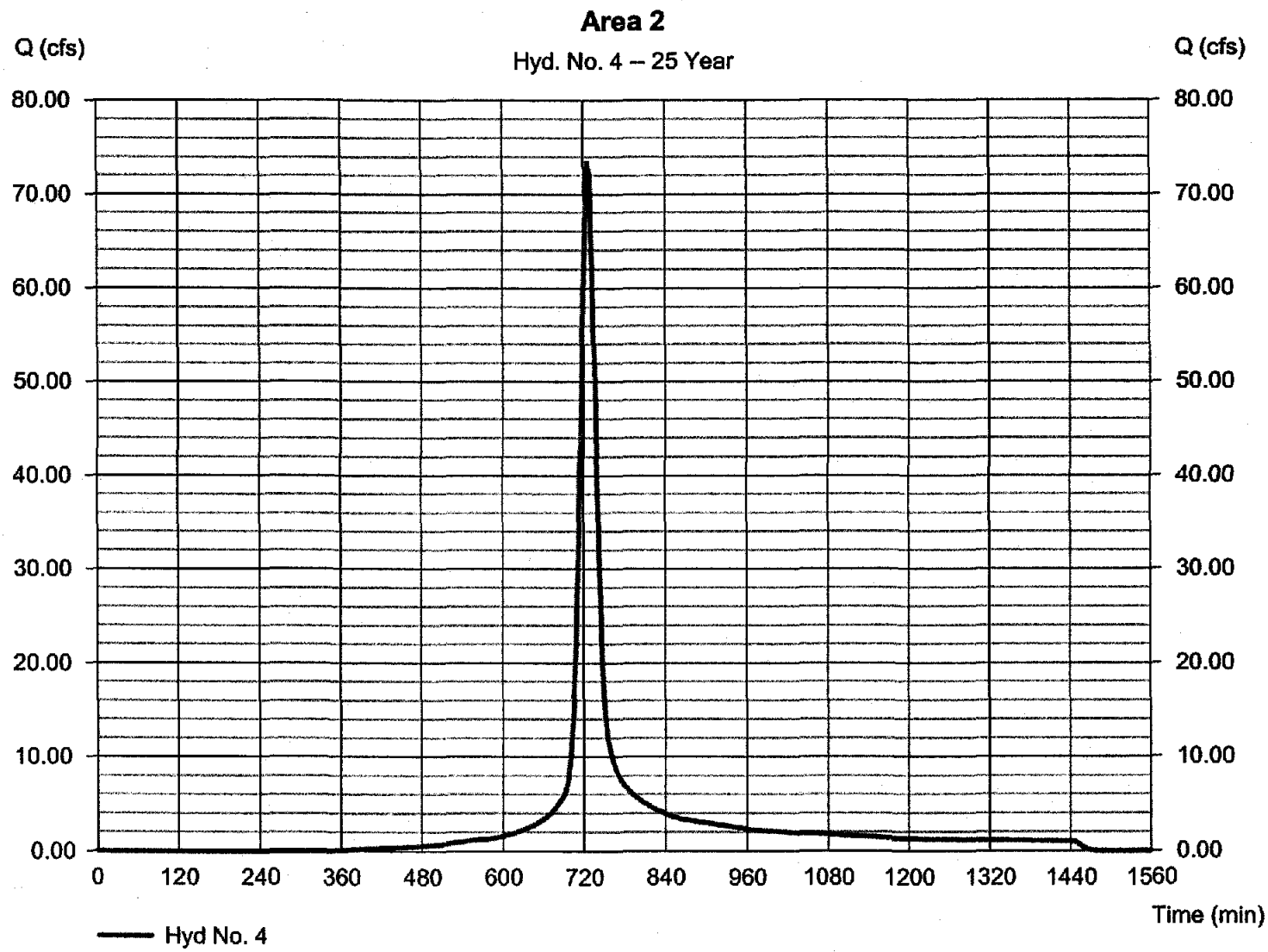
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2009 by Autodesk, Inc. v6.066 Friday, Mar 25, 2011

Hyd. No. 4

Area 2

$Q = C \cdot A = 0.82 \cdot 6.75 \cdot 14.77 = 84.75$

Hydrograph type	= SCS Runoff	Peak discharge	= 73.34 cfs
Storm frequency	= 25 yrs	Time to peak	= 726 min
Time interval	= 2 min	Hyd. volume	= 255,527 cuft
Drainage area	= 14.770 ac	Curve number	= 82
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 23.00 min
Total precip.	= 6.75 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



10

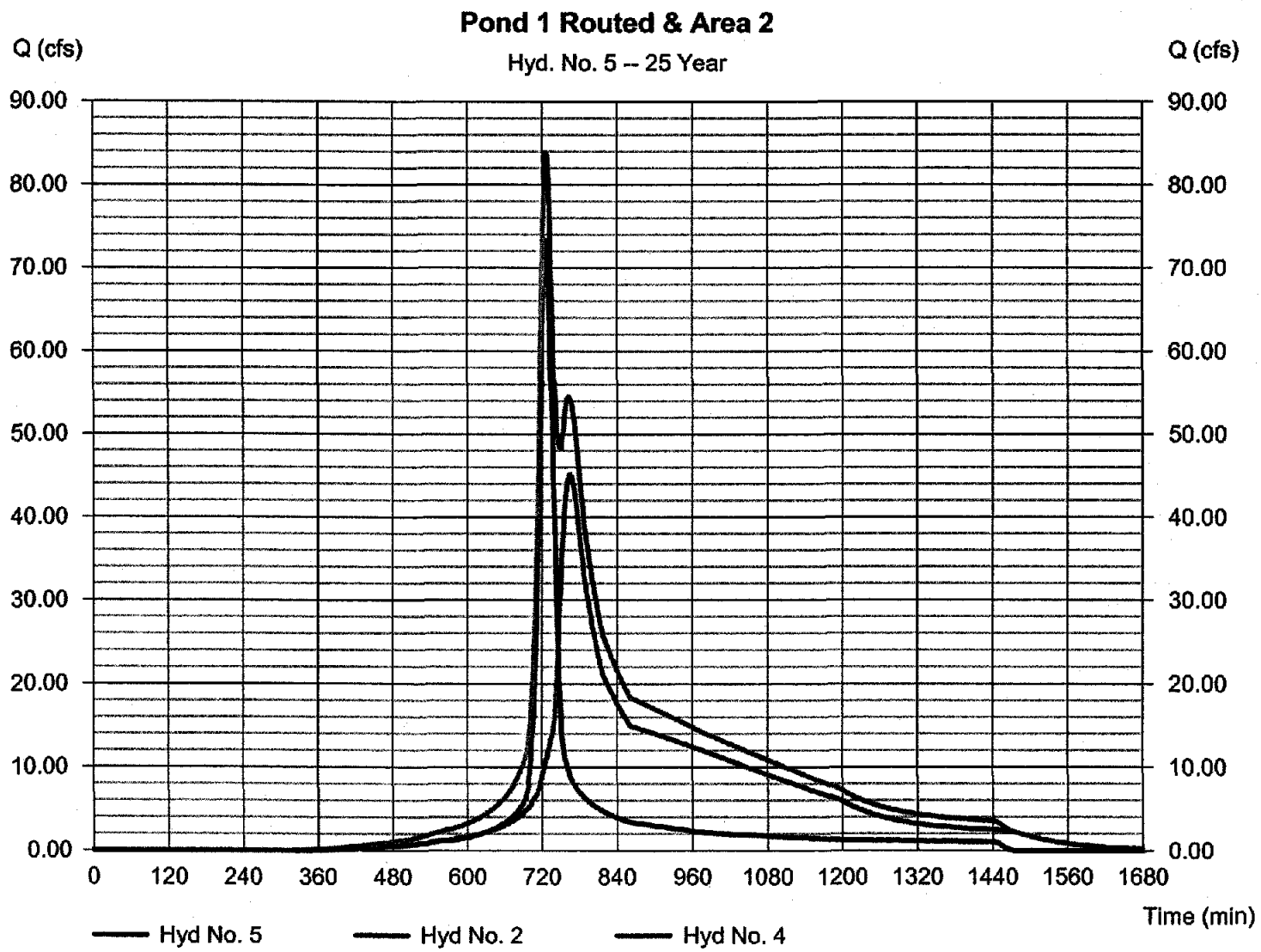
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2009 by Autodesk, Inc. v6.066 Friday, Mar 25, 2011

Hyd. No. 5

Pond 1 Routed & Area 2

Hydrograph type	= Combine	Peak discharge	= 83.92 cfs
Storm frequency	= 25 yrs	Time to peak	= 726 min
Time interval	= 2 min	Hyd. volume	= 783,955 cuft
Inflow hyds.	= 2, 4	Contrib. drain. area	= 14.770 ac



Hydrograph Report

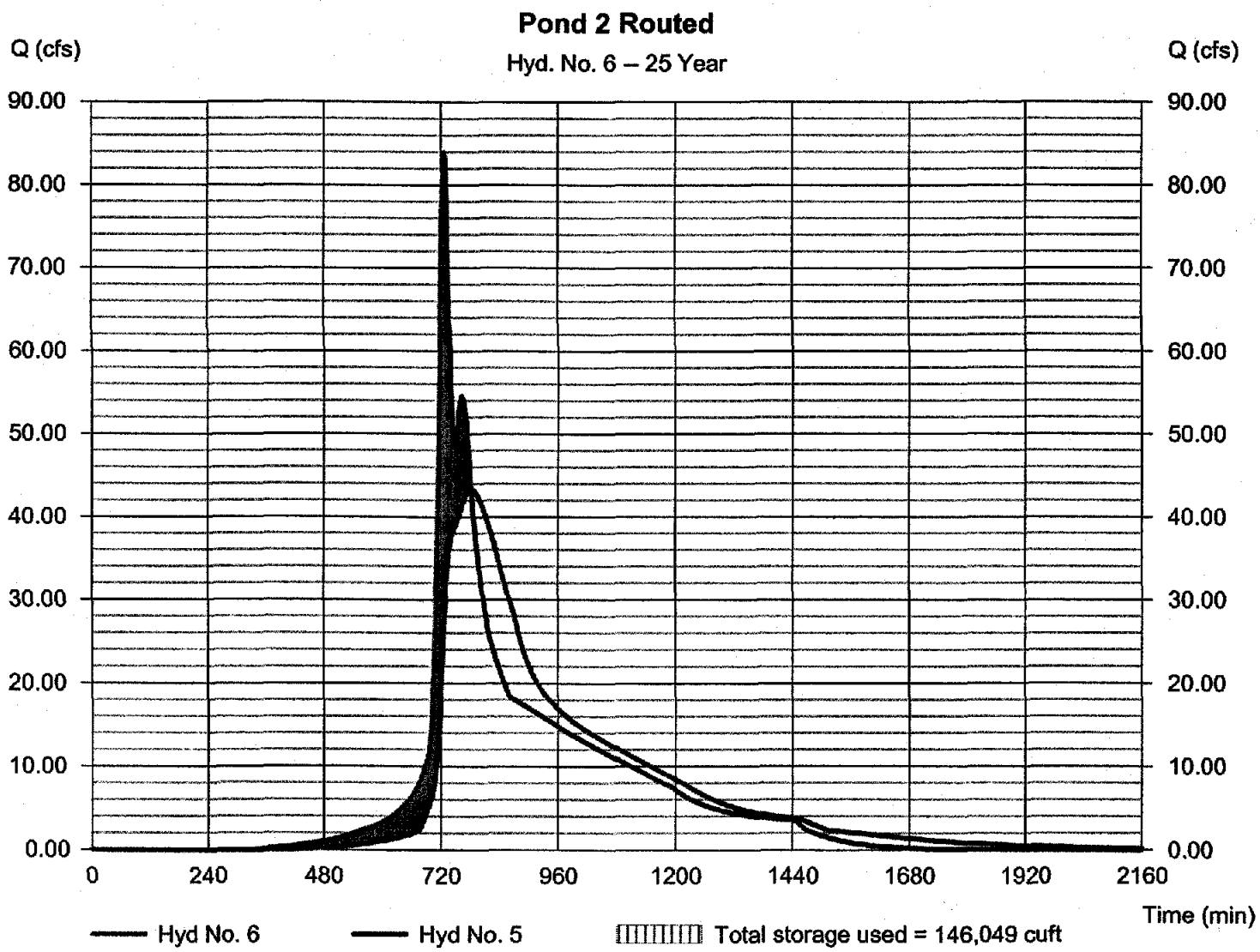
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2009 by Autodesk, Inc. v6.066 Friday, Mar 25, 2011

Hyd. No. 6

Pond 2 Routed

Hydrograph type	= Reservoir	Peak discharge	= 43.27 cfs
Storm frequency	= 25 yrs	Time to peak	= 782 min
Time interval	= 2 min	Hyd. volume	= 783,943 cuft
Inflow hyd. No.	= 5 - Pond 1 Routed & Area 2	Max. Elevation	= 60.66 ft
Reservoir name	= Pond 2	Max. Storage	= 146,049 cuft

Storage Indication method used.



12

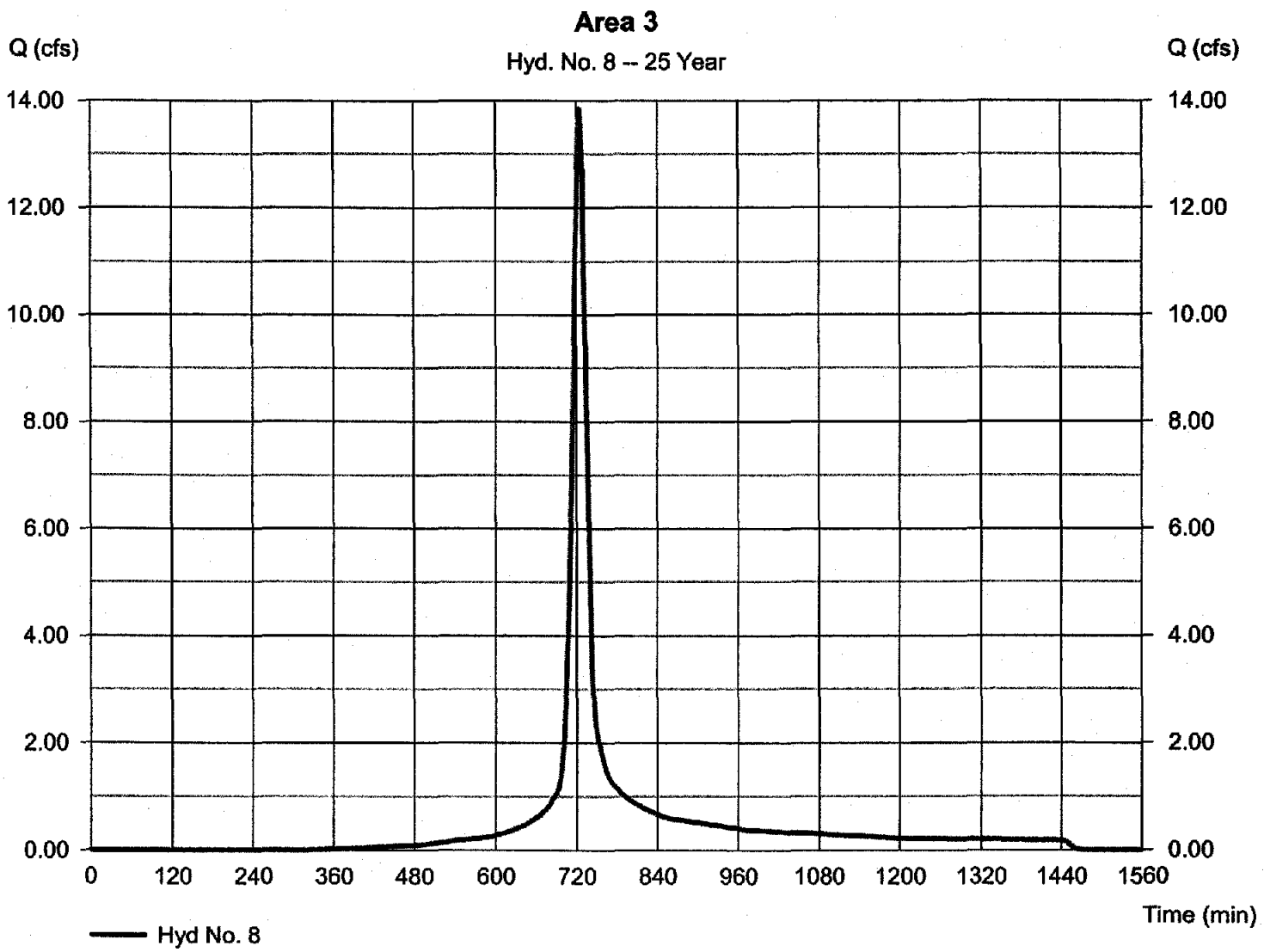
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2009 by Autodesk, Inc. v6.066 Friday, Mar 25, 2011

Hyd. No. 8

Area 3

Hydrograph type	= SCS Runoff	Peak discharge	= 13.86 cfs
Storm frequency	= 25 yrs	Time to peak	= 724 min
Time interval	= 2 min	Hyd. volume	= 43,852 cuft
Drainage area	= 2.580 ac	Curve number	= 82
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 19.00 min
Total precip.	= 6.75 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



13

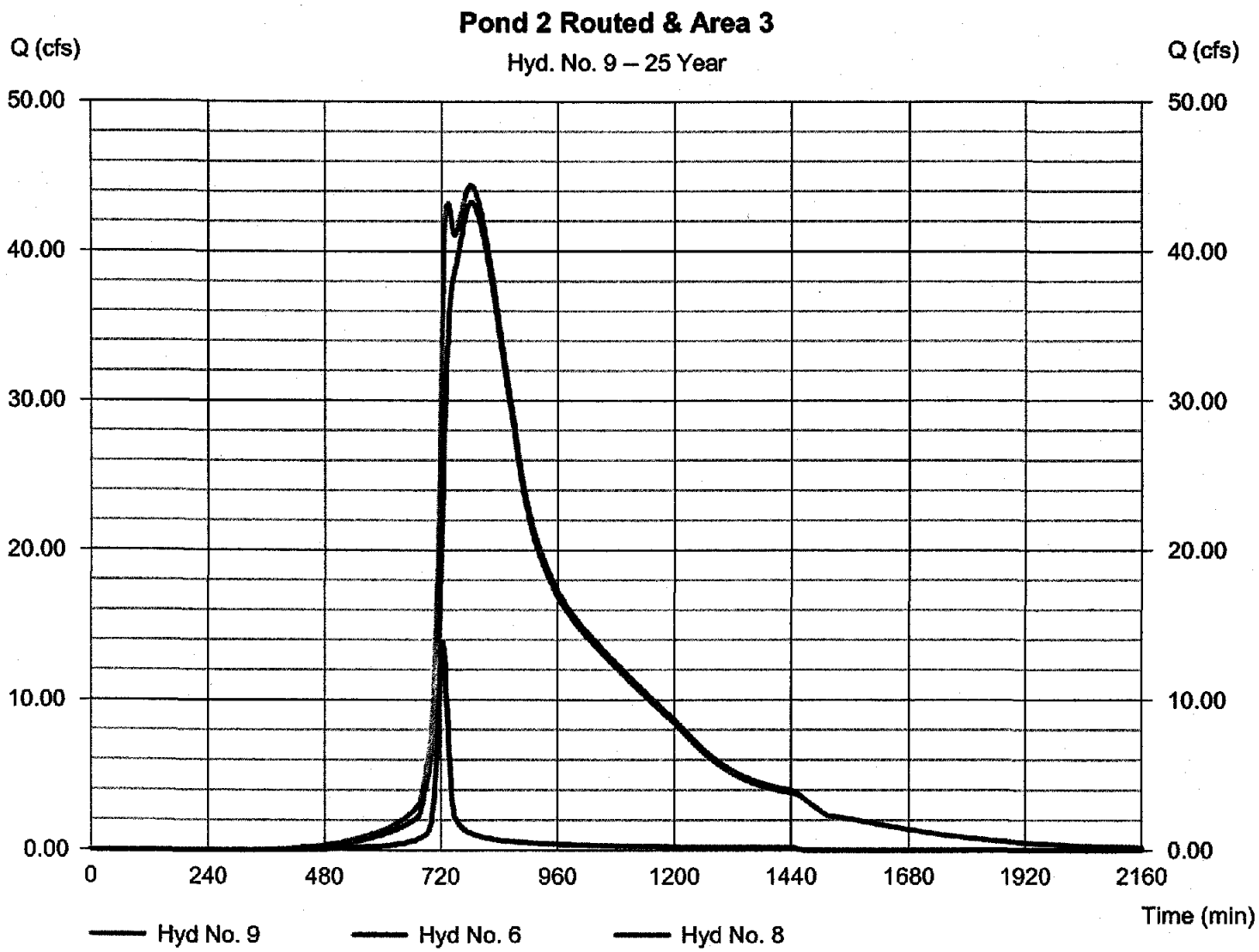
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2009 by Autodesk, Inc. v6.066 Friday, Mar 25, 2011

Hyd. No. 9

Pond 2 Routed & Area 3

Hydrograph type	= Combine	Peak discharge	= 44.40 cfs
Storm frequency	= 25 yrs	Time to peak	= 780 min
Time interval	= 2 min	Hyd. volume	= 827,794 cuft
Inflow hyds.	= 6, 8	Contrib. drain. area	= 2.580 ac



14

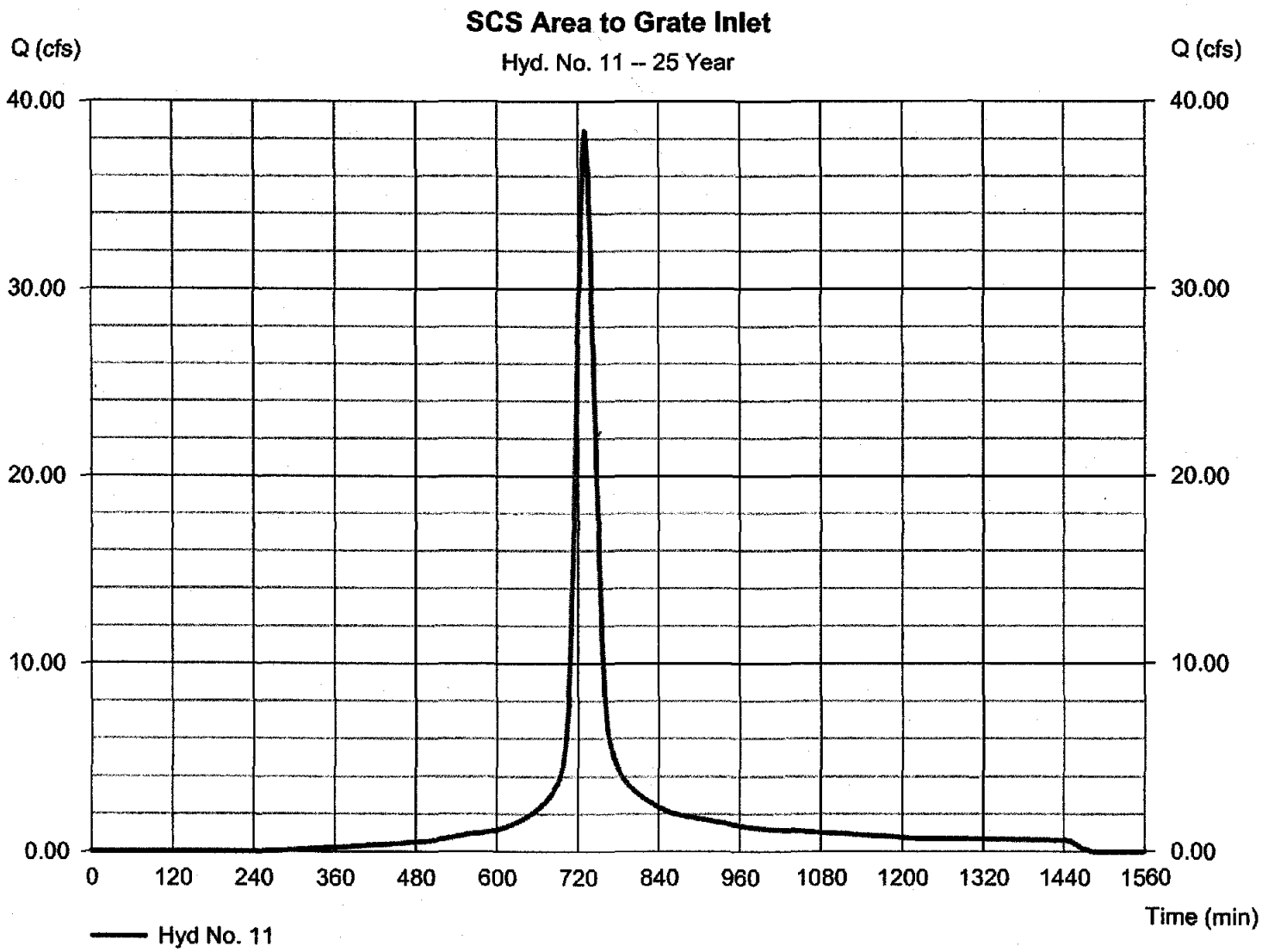
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2009 by Autodesk, Inc. v6.066 Friday, Mar 25, 2011

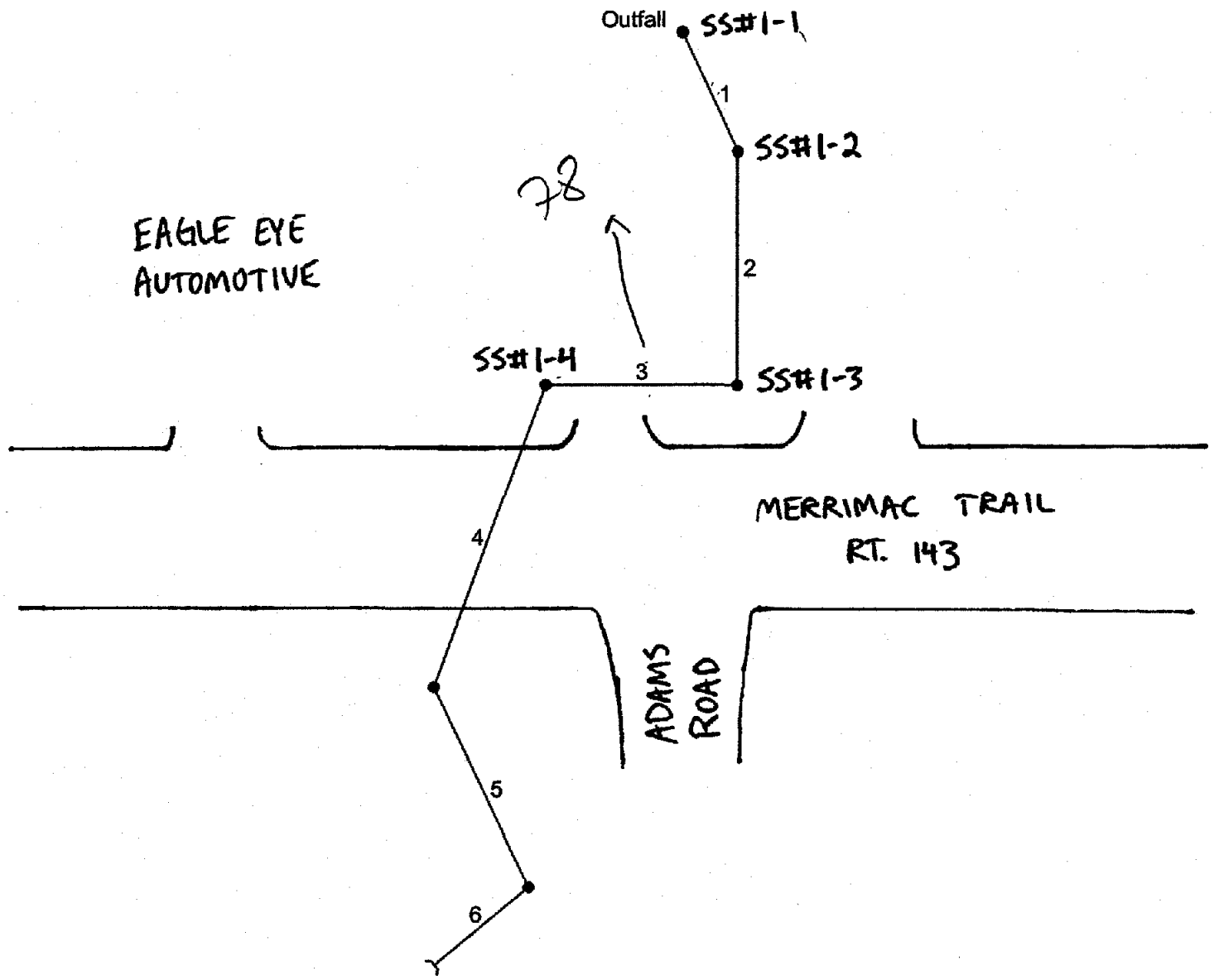
Hyd. No. 11

SCS Area to Grate Inlet

Hydrograph type	= SCS Runoff	Peak discharge	= 38.41 cfs
Storm frequency	= 25 yrs	Time to peak	= 730 min
Time interval	= 2 min	Hyd. volume	= 157,243 cuft
Drainage area	= 8.270 ac	Curve number	= 87
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 30.00 min
Total precip.	= 6.75 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydraflow Storm Sewers Extension for AutoCAD® Civil 3D® 2009 Plan



Project File: 9801-E-27_Storm System Design.stm	Number of lines: 6	Date: 03-25-2011

Hydraflow Storm Sewers Extension v6.066

16

Storm Sewer Tabulation

Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (I)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line	(ft)	Incr (ac)	Total (ac)	(C)	Incr	Total	Inlet (min)	Syst (min)	(in/hr)	(cfs)	(cfs)	(ft/s)	Size (in)	Slope (%)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	
1-2 1	1-1 End	54.000	0.00	0.00	0.00	0.00	0.00	0.0	45.7	0.0	82.81	87.67	9.69	42	0.76	45.75	46.16	48.79	48.95	44.50	58.10	→ 55.0
1-3 2	1-2 1	96.000	0.00	0.00	0.00	0.00	0.00	0.0	44.9	0.0	82.81	87.13	10.06	42	0.75	46.16	46.88	48.95	49.67	58.10	0.00	→ 55.00
1-4 3	1-3 2	78.000	0.00	0.00	0.00	0.00	0.00	0.0	44.3	0.0	82.81	89.70	10.07	42	0.79	46.88	47.50	49.67	50.29	0.00	58.95	→ 59.00
4	3	132.000	0.00	0.00	0.00	0.00	0.00	30.0	43.2	0.0	82.81	13.21	26.36	24	0.34	47.50	47.95	50.29	67.99	58.95	58.56	
5	4	91.000	0.00	0.00	0.00	0.00	0.00	0.0	42.4	0.0	44.40	33.02	14.13	24	2.13	47.95	49.89	67.99	71.50	58.56	61.71	
6	5	50.000	0.00	0.00	0.00	0.00	0.00	42.0	42.0	0.0	44.40	103.1	9.05	30	6.32	49.89	53.05	71.50	72.08	61.71	53.05	→ 58.25

58.25

Project File: 9801-E-27_Storm System Design.stm | Number of lines: 6 | Run Date: 03-25-2011

NOTES: Intensity = 143.72 / (Inlet time + 19.20) ^ 0.94; Return period = 10 Yrs. ; c = cir e = ellip b = box

Hydraflow Storm Sewers Extension v6.066

17

AES CONSULTING ENGINEERS

Project:	Merrimac Trail Drainage Improvements
Project No.:	9801-E-27
Subject:	Riprap Basin
	For Circular Culvert
Date:	3/25/2011
Calculated By:	GVC

Hydraulic Design of Energy Dissipators for Culverts and Channels
Hydraulic Engineering Circular No. 14, Third Edition
U.S. Department of Transportation Federal Highway Administration - July 2006

Outfall Description: **Storm System Outfall**

Pipe Diameter (D) or (W_o) = **3.50** FT.

Flow (Q) = **82.81** CFS

Tailwater Depth (TW) = **1.20** FT.

Determine brink depth (y_o):

$$(K_u)\frac{Q}{D^{2.5}} = (1)\frac{82.81}{22.92} = 3.61$$

$$\frac{TW}{D} = \frac{1.20}{3.50} = 0.34$$

y_o / D = **0.65** From Figure 3.4

		y_o / D		D			
y_o	=	0.65	x	3.50	=	2.28	FT.

Determine culvert outlet velocity (V_o):

$$\frac{TW}{y_o} = \frac{1.20}{2.28} = 0.527$$

A / D^2 = **0.5405** From Table B.2 where y_o / D = d / D

A	=	A / D^2	x	D^2	=	0.5405	x	12.25	=	6.62	SF
V_o	=	Q	÷	A	=	82.8	÷	6.62	=	12.5	FT/S

Determine Froude number (Fr):

$y_e = (A / 2)^{1/2} = 1.82$ FT.

$Fr = V_o / [(32.2)(y_e)]^{1/2} = 1.63$

Try d_{50} / y_e = **0.40** d_{50} = **0.40** x **1.82** = **0.73** FT. or **8.7** IN.

Tailwater Parameter, C_o	Equation 10.2		
TW / y_e = **1.20** ÷ **1.82** = **0.66**			
$TW / y_e < 0.75$	C_o	=	1.4
$0.75 < TW / y_e < 1.0$	C_o	=	$4.0 (TW/y_e) - 1.6$
		=	4.0 (**0.66**) - 1.6 = **1.04**
$1.0 < TW / y_e$	C_o	=	2.4

h_s / y_e = 0.86 $(d_{50} / y_e)^{-0.55}$ (Fr) - C_o Equation 10.1

h_s / y_e = 0.86 (**0.40**)$^{-0.55}$ (**1.63**) - **1.40**

h_s / y_e = **0.926**

h_s = **0.926** x **1.82** = **1.68** FT.

Check

hs / d_{50} = **2.32** ≥ 2 OK

d_{50} / y_e = **0.40** ≥ 0.1 OK

Riprap Basin Size

Length of Dissipator Pool

L_s = 10 x h_s = **16.8** FT.

or L_s = 3 x W_o = **10.5** FT. Use Larger Value L_s = **16.8** FT.

Total Length

L_B = 15 x h_s = **25.3** FT.

or L_B = 4 x W_o = **14.0** FT. Use Larger Value L_B = **25.3** FT.

Width of Apron

W_B = W_o + 2 (L_B/3) = **20.3** FT.

Length of Apron

L_A = L_B - L_S

= **25.3** - **16.8** = **8.4** FT.

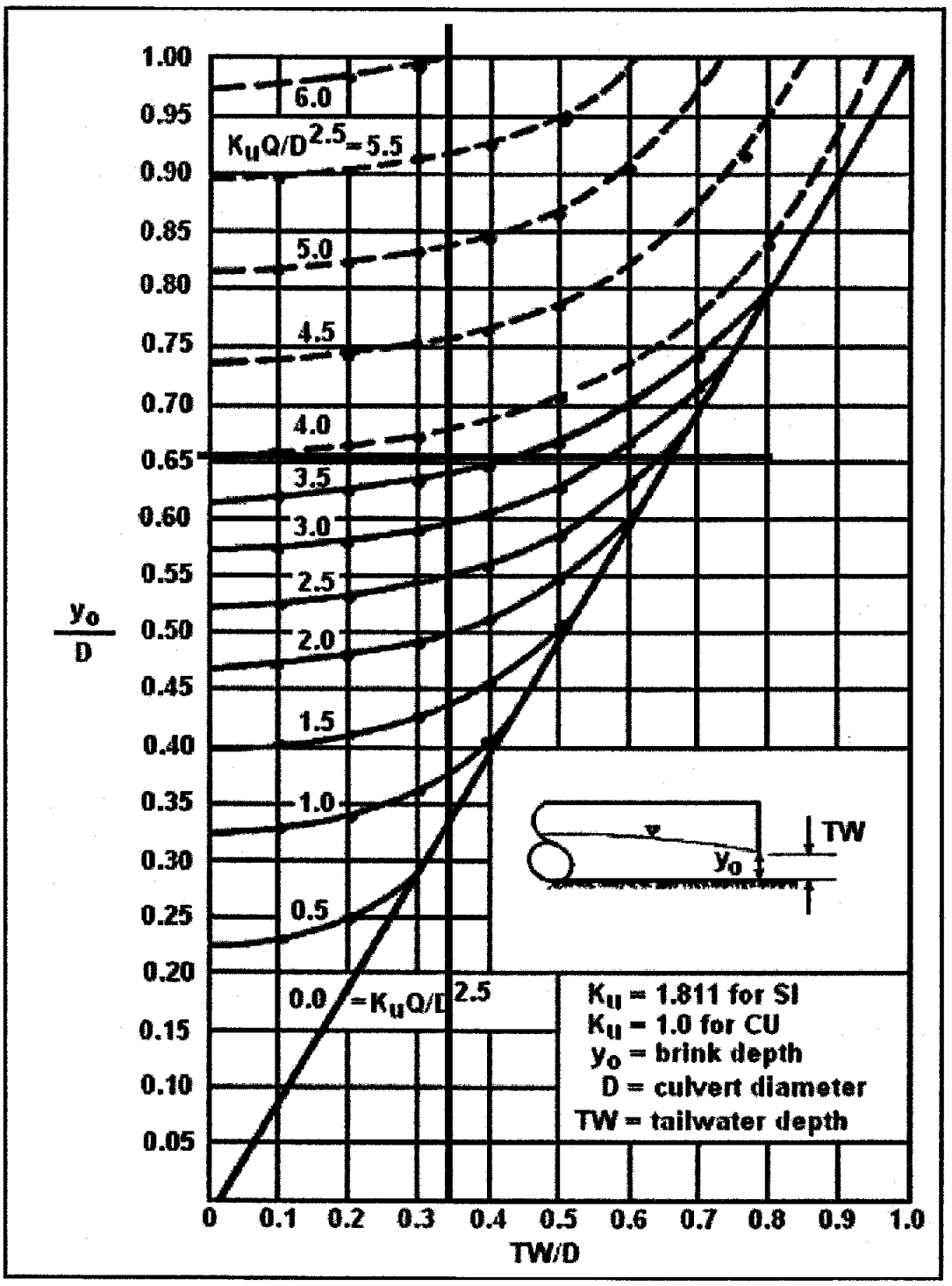


Figure 3.4. Dimensionless Rating Curves for the Outlets of Circular Culverts on Horizontal and Mild Slopes (Simons, 1970)

Table B.2. Uniform Flow in Circular Sections Flowing Partly Full

y/D	A/D^2	R/D	$\frac{(\alpha Qn)}{(D^{8/3} S^{1/2})}$	$\frac{(\alpha Qn)}{(y^{8/3} S^{1/2})}$	y/D	A/D^2	R/D	$\frac{(\alpha Qn)}{(D^{8/3} S^{1/2})}$	$\frac{(\alpha Qn)}{(y^{8/3} S^{1/2})}$
0.01	0.0013	0.0066	0.00007	15.04	0.51	0.4027	0.2531	0.239	1.442
0.02	0.0037	0.0132	0.00031	10.57	0.52	0.4127	0.2562	0.247	0.415
0.03	0.0069	0.0197	0.00074	8.56	0.53	0.4227	0.2592	0.255	1.388
0.04	0.0105	0.0262	0.00138	7.38	0.54	0.4327	0.2621	0.263	1.362
0.05	0.0147	0.0325	0.00222	6.55	0.55	0.4426	0.2649	0.271	1.336
0.06	0.0192	0.0389	0.00328	5.95	0.56	0.4526	0.2676	0.279	1.311
0.07	0.0294	0.0451	0.00455	5.47	0.57	0.1626	0.2703	0.287	1.286
0.08	0.0350	0.0513	0.00604	5.09	0.58	0.4724	0.2728	0.295	1.262
0.09	0.0378	0.0575	0.00775	4.76	0.59	0.4822	0.2753	0.303	1.238
0.10	0.0409	0.0635	0.0097	4.49	0.60	0.4920	0.2776	0.311	1.215
0.11	0.0470	0.0695	0.0118	4.25	0.61	0.5018	0.2799	0.319	1.192
0.12	0.0534	0.0755	0.0142	4.04	0.62	0.5115	0.2821	0.327	1.170
0.13	0.0600	0.0813	0.0167	3.86	0.63	0.5212	0.2842	0.335	1.148
0.14	0.0668	0.0871	0.0195	3.69	0.64	0.5308	0.2862	0.343	1.126
0.15	0.0739	0.0929	0.0225	3.54	0.65	0.5405	0.2988	0.350	1.105
0.16	0.0811	0.0985	0.0257	3.41	0.66	0.5499	0.2900	0.358	1.084
0.17	0.0885	0.1042	0.0291	3.28	0.67	0.5594	0.2917	0.366	1.064
0.18	0.0961	0.1097	0.0327	3.17	0.68	0.5687	0.2933	0.373	1.044
0.19	0.0139	0.1152	0.0365	3.06	0.69	0.5780	0.2948	0.380	1.024
0.20	0.1118	0.1206	0.0406	2.96	0.70	0.5872	0.2962	0.388	1.004
0.21	0.1199	0.1259	0.0448	2.87	0.71	0.5964	0.2975	0.395	0.985
0.22	0.1281	0.1312	0.0492	2.79	0.72	0.6054	0.2987	0.402	0.965
0.23	0.1365	0.1364	0.0537	2.71	0.73	0.6143	0.2998	0.409	0.947
0.24	0.1449	0.1416	0.0585	2.63	0.74	0.6231	0.3008	0.416	0.928
0.25	0.1535	0.1466	0.0634	2.56	0.75	0.6319	0.3042	0.422	0.910
0.26	0.1623	0.1516	0.0686	2.49	0.76	0.6405	0.3043	0.429	0.891
0.27	0.1711	0.1566	0.0739	2.42	0.77	0.6489	0.3043	0.435	0.873
0.28	0.1800	0.1614	0.0793	2.36	0.78	0.6573	0.3041	0.441	0.856
0.29	0.1890	0.1662	0.0849	2.30	0.79	0.6655	0.3039	0.447	0.838
0.30	0.1982	0.1709	0.0907	2.25	0.80	0.6736	0.3042	0.453	0.821
0.31	0.2074	0.1756	0.0966	2.20	0.81	0.6815	0.3043	0.458	0.804
0.32	0.2167	0.1802	0.1027	2.14	0.82	0.6893	0.3043	0.463	0.787
0.33	0.2260	0.1847	0.1089	2.09	0.83	0.6969	0.3041	0.468	0.770
0.34	0.2355	0.1891	0.1153	2.05	0.84	0.7043	0.3038	0.473	0.753
0.35	0.2450	0.1935	0.1218	2.00	0.85	0.7115	0.3033	0.453	0.736
0.36	0.2546	0.1978	0.1284	1.958	0.86	0.7186	0.3026	0.458	0.720
0.37	0.2642	0.2020	0.1351	1.915	0.87	0.7254	0.3018	0.485	0.703
0.38	0.2739	0.2062	0.1420	1.875	0.88	0.7320	0.3007	0.488	0.687
0.39	0.2836	0.2102	0.1490	1.835	0.89	0.7384	0.2995	0.491	0.670
0.40	0.2934	0.2142	0.1561	1.797	0.90	0.7445	0.2980	0.494	0.654
0.41	0.3032	0.2182	0.1633	1.760	0.91	0.7504	0.2963	0.496	0.637
0.42	0.3130	0.2220	0.1705	1.724	0.92	0.7560	0.2944	0.497	0.621
0.43	0.3229	0.2258	0.1779	1.689	0.93	0.7612	0.2921	0.498	0.604
0.44	0.3328	0.2295	0.1854	1.655	0.94	0.7662	0.2895	0.498	0.588
0.45	0.3428	0.2331	0.1929	1.622	0.95	0.7707	0.2865	0.498	0.571
0.46	0.3527	0.2366	0.201	1.590	0.96	0.7749	0.2829	0.496	0.553
0.47	0.3627	0.2401	0.208	1.559	0.97	0.7785	0.2787	0.494	0.535
0.48	0.3727	0.2435	0.216	1.530	0.98	0.7817	0.2735	0.489	0.517
0.49	0.3827	0.2468	0.224	1.500	0.99	0.7841	0.2666	0.483	0.496
0.50	0.3927	0.2500	0.232	1.471	1.00	0.7854	0.2500	0.463	0.463

y = depth of flow, m (ft)
D = diameter of pipe, m (ft)
A = area of flow, m^2 (ft^2)
R= hydraulic radius, m (ft)
Source: USBR (1974)

Q = discharge by Manning's Equation, m^3/s (ft^3/s)
n = Manning's coefficient
S = channel bottom and water surface slope
α = units conversion = 1.49 for SI, 1 for CU

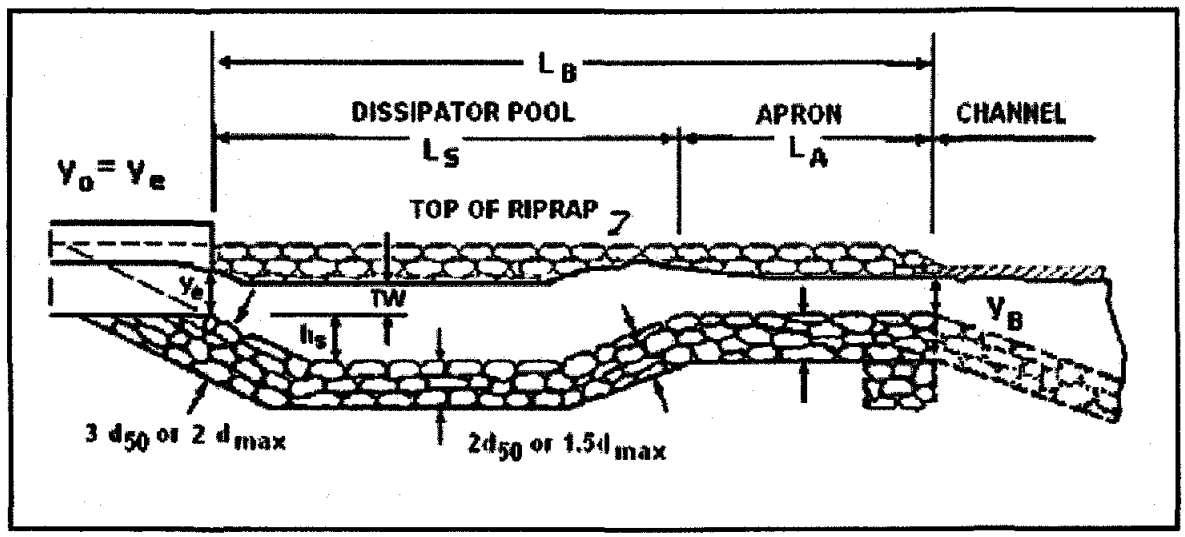


Figure 10.1. Profile of Riprap Basin

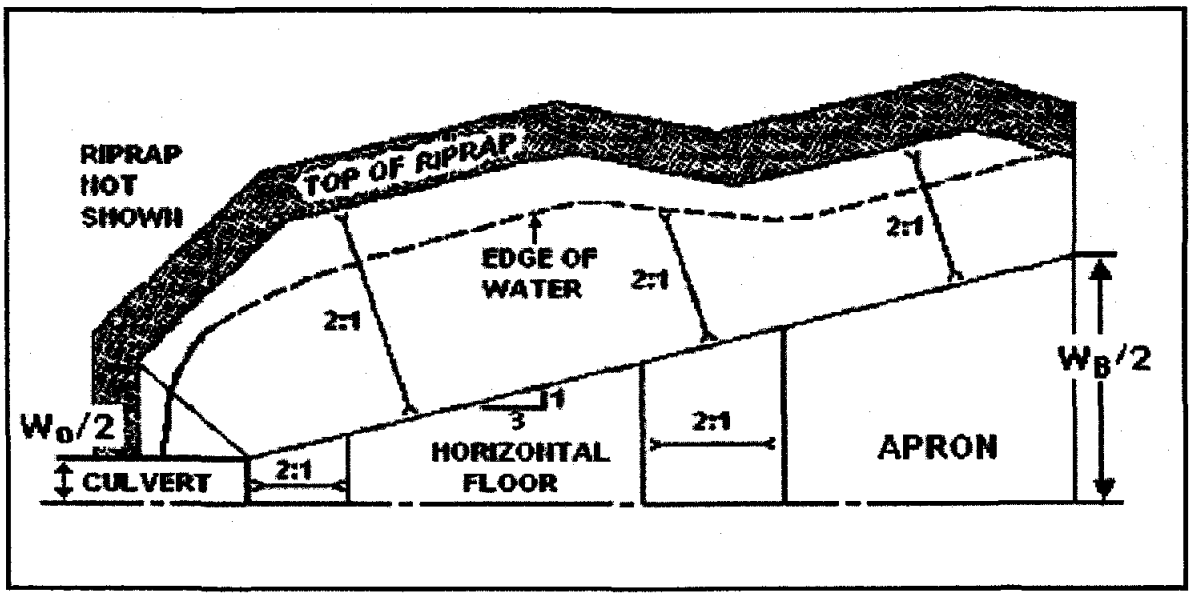


Figure 10.2. Half Plan of Riprap Basin

Correspondence

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) 259-4116

January 10, 2002

Met w/ Dave Smith onsite went over CR checklist items 2-21-02 mb. (931) 248-0267 To complete & call.

CALLED 03-01-02

COMPLETE. WE NEED TO CHECK AT. 03-5-02

Grindstaff Virginia Properties, LLC
P.O. Box 4027
Crossville, TN 38557

Attn: Mr. Alan Grindstaff

Re: MasterCorp Inc. Building Addition (Merrimac Trail, James City County, Va.)
County Plan No. SP-122-96
Stormwater Management Facility
County BMP ID Code: CC 021

Dear Mr. Grindstaff:

The Environmental Division has reviewed a construction certification previously submitted for and performed a final inspection of the stormwater management BMP facility for the above referenced project on January 10th 2002. The stormwater management BMP is located just southwest of the 8,000 square foot laundry facility. Based on our review and inspection, the following items must be addressed prior to release of the developer's surety instrument for the stormwater management/BMP facility:

Construction Certification

1. Construction certification as dated November 20th 1997 is **satisfactory**.

Construction-Related Items:

2. Since the pond's earthen embankment is now completely and adequately stabilized, remove silt fence present along the entire downstream toe.

3. Clean and remove dead wood debris piled up on the center part of the downstream embankment. Clean and remove all trash and debris from the floor of the basin including plastic, trash and dead wood pieces. Remove leaves and weed growth from along the rock filter. The rock filter is the VDOT No. 1 stone device surrounding the 6-inch perforated PVC pipe in the middle of the basin.

4. Clean and remove weeds and debris from the outfall end of the 15-inch pipe barrel through the dam. This pipe outfalls into the natural channel next to the existing 36-inch reinforced concrete storm drain pipe (outfall). Flow out of the basin shall not be obstructed by debris.

5. Add rock riprap stabilization at the outfall end of the 15-inch pipe barrel through the dam. Rock is needed to prevent undercutting of the pipe at it's end. *(Note: Rock protection is only necessary at the immediate outfall end of the 15-inch pipe from the basin.)*

Once this work is satisfactorily completed, contact our office appropriately. We can then proceed with final release of the surety on the project. Please contact me at 757-253-6639 or the assigned Environmental Division inspector, Mike Woolson, at 757-253-6823 if you have any further comments or questions.

Sincerely,

Scott J. Thomas, P.E.
Civil Engineer
Environmental Division

cc: Mastercorp, Inc. (7193 Merrimac Trail)

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Inspections

James City County Environmental Division
Stormwater Management / BMP Inspection Report
Detention and Retention Pond Facilities

SP-122-96

County BMP ID Code (if known): CC 021

Name of Facility: Mastercorp Inc. Building Addition BMP No.: 1 of 1 Date: 1-10-02

Location: 7191 Merrimac Trail (BACK OF LAUNDRY FACILITY)

Name of Owner: Mastercorp Inc.

Name of Inspector: S/Thomas, MD Woolson

Type of Facility: Dry Pond (Small)

Weather Conditions: Sunny Mild 60's Type: ☒ Final Inspection ☐ County BMP Inspection Program ☐ Owner Inspection

If an inspection item is not applicable, mark NA, otherwise mark the appropriate column.

O.K. - The item checked is in adequate condition and the maintenance program is currently satisfactory. No action required.
Routine - The item checked requires attention, but does not present an immediate threat to the function/integrity of the BMP.
Urgent - The item checked requires immediate attention to keep the BMP operational and to prevent damage to the facility.

Provide an explanation and details in the comment column, if routine or urgent are marked.

Facility Item	O.K.	Routine	Urgent	Comments
Embankments and Side Slopes: 2H:1V US/DS EMB SIDESLOPES; 5' TW, 8' HIGH				
Grass Height	✓			Good
Vegetation Condition	✓			well veg
Tree Growth	✓			None, Some along Nat Stream West
Erosion	✓			
Trash & Debris	✓	✓ SF		Some trees + debris o/s slope
Seepage	✓			None Observed
Fencing or Benches				
Interior Landscaping/Planted Areas: ☐ None ☐ Constructed Wetland/Shallow Marsh ☒ Naturally Established Vegetation				
Vegetated Conditions	✓			Weeds + Grasses
Trash & Debris	✓			Some wetland veg forming
Floating Material	✓			
Erosion	✓			
Sediment	✓			
Dead Plant	✓			
Aesthetics	✓			
Other				

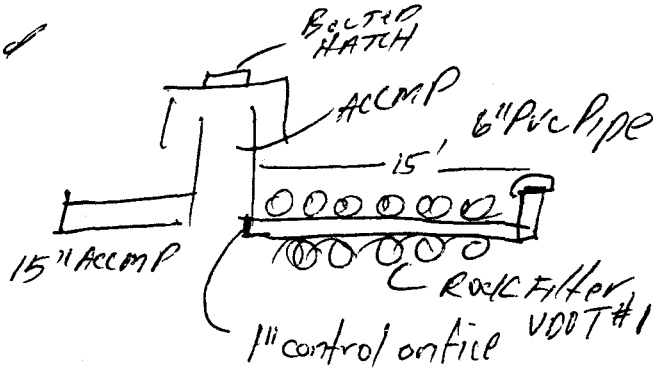
Notes: Serves New Building + Parking

Facility Item	O.K.	Routine	Urgent	
Water Pools:	☐ Permanent Pool (Retention Basin)	☐ Shallow Marsh (Detention Basin)	☑ None. Dry (Detention Basin)	
Shoreline Erosion	✗			None, Grassed
Algae	✗			
Trash & Debris	✗			
Sediment	✗			
Aesthetics	✓			Maintained well
Other				Wet Spots in bottom basin.
Inflows (Describe Types/Locations):	Channels (2) along east side of basin to BMP.			
Condition of Structure	✓			Grass
Erosion	✓			
Trash and Debris	✓			Leaves
Sediment	✓			
Outlet Protection	✓			None.
Other				Channels around parking area.
Principal Flow Control Structure - Riser, Intake, etc. (Describe Type):	ACCMP w/ CMP CAP (36" DIA)			
Condition of Structure	✓			Some minor flaking asphalt
Corrosion	✓			Good Condition
Trash and Debris	✓			
Sediment	✓			
Vegetation	✓			
Other	✓			8" perf pipe Riser, 15' long 1" control out-in riser.
Principal Outlet Structure - Barrel, Conduit, etc. :	15" CMP (next to exist 36" RCP Pipe)			
Condition of Structure	✓			Some minor corrosion.
Settlement	✓			
Trash & Debris		✓		Clean outfall.
Erosion/Sediment				
Outlet Protection		✓		Need more rock OP per spec
Other				
Emergency Spillway (Overflow):	Grassed; 2' wide; 6" deep			
Vegetation	✓			
Lining	✓			
Erosion	✓			None.
Trash & Debris				
Other				
Notes:				

Facility Item	O.K.	Routine	Urgent	Comments
Nuisance Type Conditions:				
Mosquito Breeding	✓			
Animal Burrows	✓			
Graffiti	✓			
Other	✓			
Surrounding Perimeter Conditions:	East Building + Parking; South Natural Channel			
Land Uses	✓			West CSX + Brick arch
Vegetation	✓			
Trash & Debris	✓			
Aesthetics	✓			Well Maintained
Access /Maintenance Roads or Paths	✓			Thru Site. Good Access
Other	✓			Riser hatch is bolted

Remarks:

- clear 15" CMP barrel outfall of weeds, debris add of rock. ~~of per plan~~ Riprap at outfall (immediate area only).
- Remove 5F o/s toe
- clean debris from basin bottom (plastic wrap, trash and leaves and weeds on rock filter.



Overall Environmental Division Internal Rating: 3

Signature: [signature] **Date:** 1-10-02

Title: Civil Engineer ENV Div

SWMProg\BMP\CoInspProg\DetRet.wpd

Miscellaneous

WATERSHED	CC
BMP ID NO	021
PLAN NO	SP-122-96
TAX PARCEL	(41-01)(01-12)
PIN NO	4130100012
CONSTRUCTION DATE	1/1/1998
PROJECT NAME	MasterCorp Inc. Building Addition
FACILITY LOCATION	7191 Merrimac Trail (South Corner)
CITY-STATE	Williamsburg, Va. 23185
CURRENT OWNER	Grindstaff Virginia Properties LLC
OWNER ADDRESS	P.O. Box 4027
OWNER ADDRESS 2	
CITY-STATE-ZIP CODE	Crossville, TN 38557
OWNER PHONE	615-484-1752
MAINT AGREEMENT	Yes
EMERG ACTION PLAN	No

Get Last BMP No

Return to Menu

MAINTENANCE PLAN	No
SITE AREA acre	2.81
LAND USE	Gen Business
old BMP TYP	Dry Pond
JCC BMP CODE	
POINT VALUE	4
SVC DRAIN AREA acres	0.77
SERVICE AREA DESCRI	Building and Parking area
IMPERV AREA acres	0.63
RECV STREAM	UT of Tutters Neck Creek
EXT DET-WQ-CTRL	Yes
WTR QUAL VOL acre-ft	0.0526
CHAN PROT CTRL	No
CHAN PROT VOL acre-ft	0
SW/FLOOD CONTROL	Yes
GEOTECH REPORT	No

CTRL STRUC DESC	ACAlum Ris
CTRL STRUC SIZE inches	36
OTLT BARRL DESC	ACAlum Barr
OTLT BARRL SIZE inch	15
EMERG SPILLWAY	Yes
DESIGN HW ELEV	52.03
PERM POOL ELE	na
2-YR OUTFLOW cfs	3.22
10-YR OUTFLOW cfs	5.51
REC DRAWING	No
CONSTR CERTI	Yes
LAST INSP DATE	1/10/2002
INTERNAL RATING	3

MISC/COMMENTS

I/M # 970007755. Laundry Facility. Type 2 design Treats 1" per DA, 24 hr. det.

CC021

CC 021

SP-122-96

(43-01)(01-12

4130100012

7191 Merrimac Trail

1.48AC

B1

(Phase 2)

LOR IN

Grindstaff Virginia Properties LLC
3505 N Main St
Crossville TN 38555

70007755