



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.

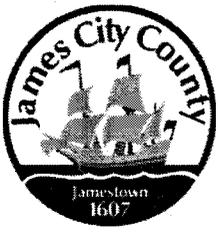
BMP NUMBER: CC023

DATE VERIFIED: May 17, 2012

QUALITY ASSURANCE TECHNICIAN: Leah Hardenbergh

Leah Hardenbergh

LOCATION: WILLIAMSBURG, VIRGINIA



Stormwater Division

MEMORANDUM

DATE: March 10, 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: CC023

PIN: 4820100005A

Subdivision, Tract, Business or Owner

Name (if known):

Williamsburg Jamestown Airport

Property Description:

Airport

Site Address:

100 Marclay Road

(For internal use only)

Box 10

Drawer: 6

Agreements: (in file as of scan date)

Y

Book or Doc#:

070002412

Page:

165

262

640

457-458

Comments

CC-023

Contents for Stormwater Management Facilities As-built Files

Each file is to contain:

- ① As-built plan
- ② Completed construction certification
3. Construction Plan
4. Design Calculations
5. Watershed Map
- ⑥ Maintenance Agreement
7. Correspondence with owners
8. Inspection Records
9. Enforcement Actions



COUNTY OF JAMES CITY, VIRGINIA

DECLARATION OF COVENANTS

INSPECTION/MAINTENANCE OF DRAINAGE SYSTEM

THIS DECLARATION, made this 12 day of JANUARY, 2007,
between LARRY & JEAN WALTRIP, and
all successors in interest, ("COVENANTOR(S),") owner(s) of the following property:

Parcel Identification Number: 4820100005A
Legal Description: Pt Shortneck (100 Marclay Road)
Project or Subdivision Name: WILLIAMSBURG-JAMESTOWN AIRPORT-T HANGAR & PARKING LOT
Document No. EXPANSION
OR Deed Book 165, Page No. 262,
and the County of James City, Virginia ("COUNTY.")

WITNESSETH:

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

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

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

3. The COVENANTOR(S) shall provide and maintain perpetual access from public right-of-ways to the SYSTEM for the COUNTY, its agent and its contractor.

4. The COVENANTOR(S) shall grant the COUNTY, its agent and its contractor a right of entry to the SYSTEM for the purpose of inspecting, monitoring, operating, installing, constructing, reconstructing, maintaining or repairing the SYSTEM.

5. If, after reasonable notice by the COUNTY, the COVENANTOR(S) shall fail to maintain the SYSTEM in accordance with the approved design standards and with the law and applicable executive regulations, the COUNTY may perform all necessary repair or maintenance

Instrument # 070002412

Recorded on Jan. 25, 2007 Page 1

Revised 05/06

work, and the COUNTY may assess the COVENANTOR(S) and/or all property served by the SYSTEM for the cost of the work and any applicable penalties.

6. The COVENANTOR(S) shall indemnify and save the COUNTY harmless from any and all claims for damages to persons or property arising from the installation, construction, maintenance, repair, operation or use of the SYSTEM.

7. The COVENANTOR(s) shall promptly notify the COUNTY when the COVENANTOR(S) legally transfers any of the COVENANTOR(S)' responsibilities for the SYSTEM. The COVENANTOR(S)' shall supply the COUNTY with a copy of any document of transfer, executed by both parties.

8. The covenants contained herein shall run with the land and shall bind the COVENANTOR(S) and the COVENANTOR(S)' heirs, executors, administrators, successors and assignees, and shall bind all present and subsequent owners of property served by the SYSTEM.

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

IN WITNESS WHEREOF, the COVENANTOR(S) have executed this DECLARATION OF COVENANTS as of the date first above written.

COVENANTOR(S)

Ray T. Waltrip

Print Name/Title President

ATTEST:

COVENANTOR(S)

Jean J. Waltrip

Print Name/Title Secretary

ATTEST:

William H. Gray

COMMONWEALTH OF VIRGINIA

CITY/COUNTY OF James City County

I hereby certify that on this 12th day of January, 2007, before the subscribed, a Notary Public for the Commonwealth of Virginia, personally appeared Larry T. Walker and Jean T. Walker and did acknowledge the foregoing instrument to be their Act.

IN WITNESS WHEREOF, I have hereunto set my hand and official seal this 12th day of January, 2007.

[Signature]
Notary Public

My Commission expires: 10/31/08

Approved as to form:

[Signature]
AST. County Attorney

SP-050-03

This Declaration of Covenants prepared by:

LARRY T. WALKER
(Print Name)

President
(Title)

100 Mardray Rd.
(Address)

Williamsburg VA - 23185
(City) (State) (Zip)

257-229-0434
(Phone Number)

drainage1.pre

DECLARATION OF COVENANTS

INSPECTION/MAINTENANCE OF RUNOFF CONTROL FACILITY

THIS DECLARATION, made this 29th day of JULY, 1993, between Larry T. Waltrip and Jean *, and all successors in interest, hereinafter referred to as the "COVENANTOR(S)," owner(s) of the following property: 19.015 acres ±, as shown on a plat dated February 16, 1988 entitled "PLAT OF BOUNDARY ADJUSTMENT BETWEEN THE PROPERTIES OF: LINWOOD WALTRIP, ET ALS: AND WILLIAMSBURG-JAMESTOWN" and James City County, Virginia, hereinafter referred to as the "COUNTY."
 *T. Waltrip, husband and wife
 **AIRPORT, INC., JAMES CITY COUNTY, VIRGINIA" and recorded in Plat Book 49, Page 24.

WITNESSETH:

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

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

IN WITNESS WHEREOF, the COVENANTOR(S) have executed this DECLARATION OF COVENANTS as of this 29th day of July, 1993.

COVENANTOR(S)

Larry T. Waltrip
Larry T. Waltrip

~~ATTEST:~~

Jean T. Waltrip
Jean T. Waltrip
~~Jean T. Waltrip~~

COVENANTOR(S)

ATTEST:

COMMONWEALTH OF VIRGINIA
CITY/COUNTY OF James City

I, the undersigned Notary Public, in and for the jurisdiction aforesaid, do certify that Larry T. Waltrip, ~~husband~~* whose name is signed as such to the foregoing writing bearing date 29th day of July, 1993, this day sworn the same before me in my jurisdiction aforesaid.
* and Jean T. Waltrip, husband - wife
GIVEN under my hand this 29th day of July, of 1993.

Helen L. Williams
Notary Public

My Commission expires: My Commission Expires March 31, 1997

Approved as to form:
Lee P. Ryan

0261U.Wpf
Revised 9/92

VIRGINIA: City of Williamsburg and County of James City, to Wit:
In the Clerk's Office of the Circuit Court of the City of Williamsburg, County of James City the 14 Sept, 1993 This Declaration was presented with certificate annexed and admitted to record at 3:52 o'clock
Teste: Helen L. Williams, Clerk
by Debra M. Ward
Deputy Clerk



James City County, Virginia
Environmental Division

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: T-HANGAR SITE PREPARATION & PARKING LOT EXPANSION
Structure/BMP Name: SAND FILTER
Project Location: WILLIAMSBURG-JAMESTOWN AIRPORT
BMP Location: 37° 14' 30.35" N 76° 43' 15.77" W
County Plan No.: SP - 050 - 03

Project Type: Residential Business Commercial Office Institutional Industrial Public Roadway Other AIRPORT TAXILANE
Tax Map/Parcel No.: 48-4-01-5A
BMP ID Code (if known): CC 023
Zoning District: R-B
Land Use: AIRPORT
Site Area (sf or acres): 130,600 AC

Brief Description of Stormwater Management/BMP Facility: SAND FILTER TIED-IN TO DRAINAGE STRUCTURE A. SAND FILTER TIED-IN TO DRAINAGE STRUCTURE B.

Nearest Visible Landmark to SWM/BMP Facility: END OF RUNWAY 13

Nearest Vertical Ground Control (if known): JCC Geodetic Ground Control USGS Temporary Arbitrary Other
Station Number or Name: 332
Datum or Reference Elevation: 71.71
Control Description: 3 1/4" DISK IN CONCRETE
Control Location from Subject Facility: 820' NORTH OF DRAINAGE STRUCTURE

Section 2 - Stormwater Management / BMP Facility Construction Information:

PreConstruction Meeting Held for Construction of SWM/BMP Facility: Yes No Unknown
Approx. Construction Start Date for SWM/BMP Facility: 10-9-06
Facility Monitored by County Representative during Construction: Yes No Unknown
Name of Site Work Contractor Who Constructed Facility: BASIC CONSTRUCTION CO.
Name of Professional Firm Who Routinely Monitored Construction: TALBERT & BRIGHT, INC.
Date of Completion for SWM/BMP Facility: 4-25-08 (PUNCHLIST)
Date of Record Drawing/Construction Certification Submittal: 5-7-08

(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 Environmental 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: WILLIAMSBURG-JAMESTOWN AIRPORT, INC.
Mailing Address: 11 MARCLAY ROAD
WILLIAMSBURG, VA 23185
Business Phone: 757-229-0434 Fax: 757-258-9086
Contact Person: LARRY WALTRIP Title: PRESIDENT

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: TALBERT & BRIGHT, INC.
Mailing Address: 10105 KRAUSE ROAD, SUITE 100
CHESTERFIELD, VA 23832
Business Phone: 804-768-6878
Fax: 804-768-6871
Responsible Plan Preparer: JOHN ROBINSON
Title: PROJECT ENGINEER
Plan Name: T-HANGER SITE PREPARATION & PARKING LOT EXPANSION
Firm's Project No. 4205-0101
Plan Date: JANUARY 2003
Sheet No.'s Applicable to SWM/BMP Facility: / / / /

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

Name: BASIC CONSTRUCTION CO.
Mailing Address: 538 OYSTER POINT ROAD
NEWPORT NEWS, VA 23602
Business Phone: 757-249-3789
Fax: 757-249-2229
Contact Person: C. DEREK PATTERSON, PRESIDENT
Site Foreman/Supervisor: JOE LINK
Specialty Subcontractors & Purpose (for BMP Construction Only):

N/A

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

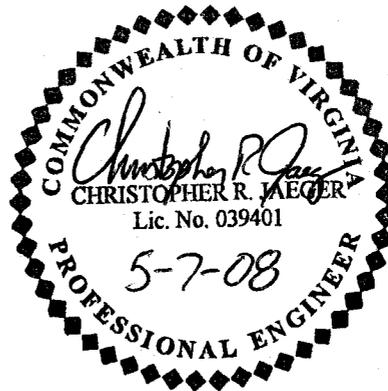
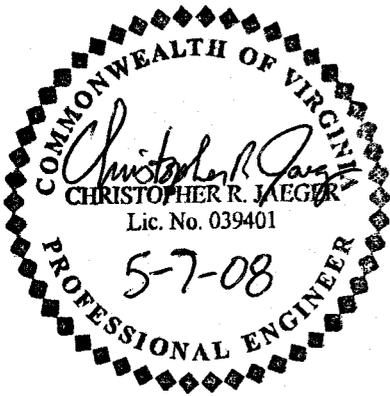
Firm Name: TALBERT & BRIGHT, INC.
Mailing Address: 10105 KRAUSE ROAD, SUITE 100
CHESTERFIELD, VA 23832
Business Phone: 804-768-6878
Fax: 804-768-6871
Name: CHRIS JAEGER
Title: PROJECT ENGINEER
Signature: Chris Jaeger
Date: 5-7-08

Construction Certification

Firm Name: TALBERT & BRIGHT, INC.
Mailing Address: 10105 KRAUSE ROAD, SUITE 100
CHESTERFIELD, VA 23832
Business Phone: 804-768-6878
Fax: 804-768-6871
Name: CHRIS JAEGER
Title: PROJECT ENGINEER
Signature: Chris Jaeger
Date: 5-7-08

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 with the provisions of the approved design plan, specifications and stormwater management plan, except as specifically noted.

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 design plan, specifications and stormwater management plan, except as specifically noted.



(Seal)

(Seal)

Virginia Registered Professional Engineer
or Certified Land Surveyor

Virginia Registered
Professional Engineer

T-HANGAR SITE PREPARATION (PHASE I) & PARKING LOT EXPANSION

WILLIAMSBURG-JAMESTOWN AIRPORT

DOAV PROJECT NO. CS9010-21

TBI PROJECT NO. 4205-0101

JCC CASE NO. SP-050-03

prepared for

WILLIAMSBURG-JAMESTOWN AIRPORT, INC.
WILLIAMSBURG, VIRGINIA



TALBERT & BRIGHT
ENGINEERING & PLANNING CONSULTANTS
10105 KRAUSE ROAD, SUITE 100
CHESTERFIELD, VIRGINIA 23832
PHONE: 804-768-6878 FAX: 804-768-6871



THE PROPOSED SITE IMPROVEMENTS ARE IN ACCORDANCE WITH THE CONDITIONS OF THE SPECIAL USE PERMIT (SUP-16-04) ADOPTED BY THE JAMES CITY COUNTY BOARD OF SUPERVISORS ON JUNE 8, 2004.

RECORD DRAWINGS
MAY 7, 2008

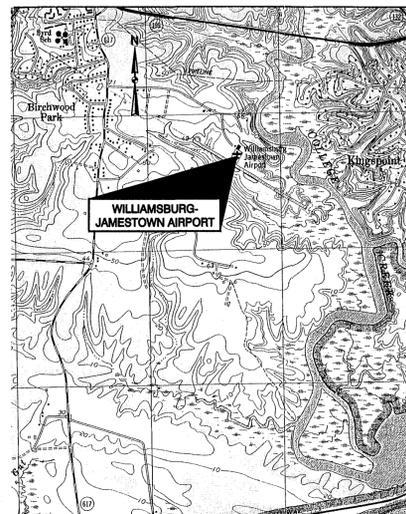
These record drawings have been prepared, in part, on the basis of information compiled and furnished by others. The Engineer will not be responsible for any errors or omissions which may have been incorporated into this document as a result. All items listed as "to be", "install", "remove", "provide", etc. under this project were accomplished unless noted otherwise.

TALBERT & BRIGHT, INC.

QUANTITY SCHEDULE

NO.	SPEC. NO.	DESCRIPTION	UNIT	AS - BID	AS - BUILT
1	P-152	UNCLASSIFIED EXCAVATION	CY	10,000	10,000
2	P-152	UNSUITABLE EXCAVATION	CY	1,000	1,000
3	P-156	CONSTRUCTION ENTRANCE	EA	3	3
4	P-156	SILT FENCE	LF	1,055	1,055
5	P-156	CULVERT INLET PROTECTION	EA	3	3
6	P-156	INLET PROTECTION	EA	4	4
7	P-156	ROCK CHECK DAM	EA	7	7
8	P-156	TEMPORARY SEDIMENT TRAP	CY	855	0
9	P-156	TEMPORARY DIVERSION DIKE	LF	1,100	0
10	T-901	SEEDING	AC	6	5.45
11	T-905	TOPSOILING (OBTAINED ON SITE OR REMOVED FROM STOCKPILE)	CY	1,800	1,844
12	T-908	MULCHING	AC	6	5
13	L-108	CABLE TRENCHING	LF	195	0
14	L-110	4" PVC SCHEDULE 40 CONDUIT	LF	610	620
15	VA-309	AGGREGATE BASE MATERIAL TYPE 21A	TN	5,500	4,311
16	VA-315	ASPHALT CONCRETE TYPE SM-12.5A	TN	1,700	1,396.61
17	VA-414	EROSION CONTROL RIP RAP, CLASS A1	TN	115	23.86
18	VA-501	SAND FILTER	LF	250	250
19	VA-502	CURB, VDOT STD. CG-2	LF	190	180
20	VA-502	BUMPER BLOCK	EA	30	37
21	VA-513	MOBILIZATION	LS	1	1
22	VA-520	SANITARY SEWER LINE 6"	LF	20	20
23	VA-520	SANITARY SEWER LINE 8"	LF	550	550
24	VA-520	SANITARY SEWER CLEAN OUT	EA	2	2
25	VA-520	WATER SERVICE LINE 2" PVC	LF	30	30
26	VA-520	WATER SERVICE LINE 4" PVC	LF	245	245
27	VA-520	WATERTIGHT MANHOLE FRAME AND COVER	EA	1	1
28	VA-520	PLUG OR CAP, 2"	EA	1	1
29	VA-520	PLUG OR CAP, 6"	EA	3	3
30	VA-520	PLUG OR CAP, 8"	EA	1	1
31	VA-704	PAVEMENT LINE MARKING, TYPE A	SF	2,540	2,540
32	M-104	TRAFFIC DRUMS	EA	22	0
33	M-107	LOW PROFILE AVIATION BARRICADES	LF	96	96
34	D-701	15" RCP, CLASS III	LF	130	130
35	D-701	24" RCP, CLASS III	LF	205	205
36	D-701	30" RCP, CLASS III	LF	280	280
37	D-751	15" FLARED END SECTION	EA	2	2
38	D-751	30" FLARED END SECTION	EA	1	1
39	D-751	DI-1 DROP INLET	EA	1	1
40	D-751	MH-1 MANHOLE	EA	3	3
41	PSP-9	EXCELSIOR BLANKET	SY	6,750	6,800
42	PSP-10	CONSTRUCTION FENCING	LF	760	760
43	CO-1	6" CRUSHED CONCRETE	TN	5,500	4,311
44	CO-1	FINE GRADE & PREPARE CRUSHED CONCRETE	SY	16,867	11,950
45	CO-2	ADDITIONAL UNCLASSIFIED EXCAVATION	CY	16,130	16,130
46	CO-3	EXPOSED AGGREGATE CONCRETE CURB	LF	160	160

JANUARY 2003



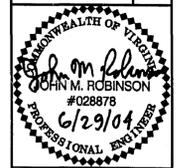
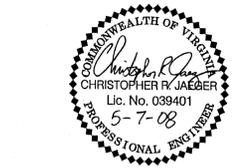
VICINITY MAP

SCALE: 1"=2000'

*Sheets
1, 2, 4, 5, 6, 7, 9, 12 & 15
Only Needed for
As-Built Record*

SHEET INDEX

NO.	TITLE
1	COVER SHEET
2	GENERAL LAYOUT AND PHASING
3	T-HANGAR SITE PLAN AND MARKING
4	PARKING LOT SITE PLAN AND MARKING
5	GRADING AND DRAINAGE
6	GRADING AND DRAINAGE
7	GRADING AND DRAINAGE
8	EROSION AND SEDIMENT CONTROL DETAILS
9	EROSION AND SEDIMENT CONTROL NOTES
10	PAVEMENT DETAILS AND TYPICAL SECTIONS
11	DRAINAGE DETAILS
12	DRAINAGE DETAILS
13	MARKING DETAILS
14	MISCELLANEOUS DETAILS
15	STORM SEWER PROFILE
16	CROSS SECTIONS
17	CROSS SECTIONS
	LANDSCAPE PLAN - PHASE I - T-HANGAR
	LANDSCAPE PLAN - PHASE I - PARKING EXPANSION



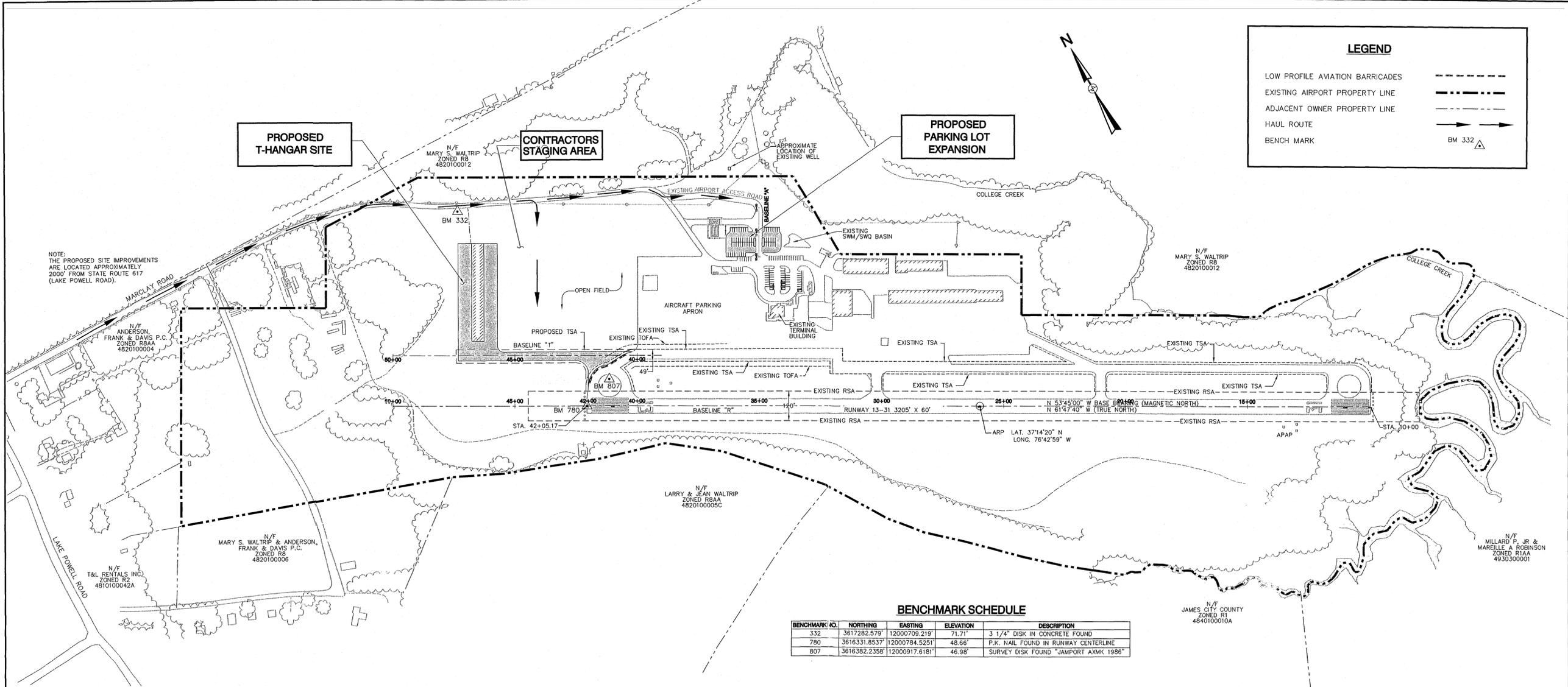
Date: JANUARY 2003
Scale: NONE
Drawn: MSP
Checked: STP
Project No.: 4205-0101
Sheet No.: 1

SET NO. _____
DATE _____

SP-50-03 CC023/CC024

COVER SHEET
T-Hangar Site Preparation (Phase I) & Parking Lot Expansion
Williamsburg-Jamestown Airport - Williamsburg, Virginia

REV. NO.	DESCRIPTION	DATE
1	JAMES CITY COUNTY/DOAV COMMENTS	6/19/03
2	JAMES CITY COUNTY COMMENTS	8/6/03
3	ADD LANDSCAPE PLAN	2/19/04
4	REVISED PROPERTY LINE	6/29/04
5	APPENDUM NO. ONE (1)	6/22/05
6	RECORD DRAWINGS	5/07/08



LEGEND

- LOW PROFILE AVIATION BARRICADES
- EXISTING AIRPORT PROPERTY LINE
- ADJACENT OWNER PROPERTY LINE
- HAUL ROUTE
- BENCH MARK BM 332

NOTE:
THE PROPOSED SITE IMPROVEMENTS
ARE LOCATED APPROXIMATELY
2000' FROM STATE ROUTE 617
(LAKE POWELL ROAD).

BENCHMARK SCHEDULE

BENCHMARK NO.	NORTHING	EASTING	ELEVATION	DESCRIPTION
332	3617282.579	12000709.219	71.71'	3 1/4" DISK IN CONCRETE FOUND
780	3616331.8537	12000784.5251	48.66'	P.K. NAIL FOUND IN RUNWAY CENTERLINE
807	3616382.2358	12000917.6181	46.98'	SURVEY DISK FOUND "JAMPORTR AXMK 1986"

GENERAL NOTES

- G1) THE CONTRACTOR SHALL MARK AND LIGHT AREAS UNDER CONSTRUCTION IN ACCORDANCE WITH THE PLANS AND SPECIFICATIONS. AIRCRAFT AND PUBLIC SAFETY SHALL NOT BE COMPROMISED AND PROPER SEPARATION SHALL BE MAINTAINED AT ALL TIMES. EQUIPMENT AND VEHICLES SHALL BE MARKED WITH 3' X 3' ORANGE AND WHITE CHECKERED FLAGS (DAY ONLY) OR YELLOW FLASHING DOME TYPE LIGHT (DAY OR NIGHT).
- G2) THE CONTRACTOR SHALL LOCATE AND PROTECT EXISTING UTILITIES AND FACILITIES (I.E., AIRPORT LIGHTING, NAVIGATIONAL AIDS, ETC.) FROM DAMAGE BY EQUIPMENT OR PERSONNEL. THE CONTRACTOR SHALL CONTACT ALL UTILITY AND FACILITY AGENCIES FOR FIELD MARKING BEFORE BEGINNING CONSTRUCTION. THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES SHOWN (AND VERIFIED BY SURFACE OBSERVATION) ARE APPROXIMATE. THE CONTRACTOR SHALL PROVIDE UTILITY LOCATION FOR AIRPORT OWNED UTILITIES.
- G3) THE CONTRACTOR SHALL ADVISE THE ENGINEER IN WRITING OF ANY EXISTING UTILITIES OR FIXTURES THAT ARE DAMAGED BEFORE BEGINNING CONSTRUCTION.
- G4) ANY UTILITIES OR FACILITIES DAMAGED DURING THE PROJECT BY THE CONTRACTOR'S MEN OR EQUIPMENT SHALL BE IMMEDIATELY REPAIRED AT THE CONTRACTOR'S EXPENSE. HAND DIGGING TO PROTECT UTILITIES FROM DAMAGE SHOULD BE ANTICIPATED.
- G5) ALL DISTURBED AREAS, INCLUDING THE CONTRACTOR'S STAGING AREA, INFIELD OR PAVEMENT SHOULDERS, HAUL ROUTES, ETC., SHALL BE RESTORED TO A SMOOTH LINE AND GRADE WITH POSITIVE DRAINAGE. ANY REPAIR WORK TO THE INFIELDS OR PAVEMENT SHOULDERS SHALL BE COMPLETED IMMEDIATELY. THE CONTRACTOR SHALL MAINTAIN THE HAUL ROUTE FOR THE DURATION OF THE CONSTRUCTION PROJECT.
- G6) THE CONTRACTOR SHALL SEED AND MULCH ALL DISTURBED AREAS. THERE WILL BE NO MEASUREMENT FOR PAYMENT OF SEEDING AND MULCHING BEYOND THE CONSTRUCTION LIMITS.
- G7) THE CONTRACTOR SHALL BE RESPONSIBLE FOR RESEARCHING AND OBTAINING ALL PERMITS, LICENSES, BONDS, ETC., REQUIRED BY LOCAL, STATE AND FEDERAL AGENCIES.
- G8) NO EQUIPMENT OR PERSONNEL SHALL ENTER AN OPEN RUNWAY OR TAXIWAY SAFETY AREA UNLESS PROPERLY COORDINATED WITH THE AIRPORT MANAGEMENT.

- G9) UPON NOTIFICATION FROM THE AIRPORT MANAGEMENT OR IN THE EVENT OF A DECLARED AIRCRAFT EMERGENCY, THE CONTRACTOR SHALL IMMEDIATELY CLEAR THE RUNWAY AND/OR TAXIWAY OF EQUIPMENT AND PERSONNEL.
- G10) THE CONTRACTOR SHALL BE REQUIRED TO RELOCATE THE AVIATION BARRICADES DURING THE PROJECT. MULTIPLE RELOCATION OF THE AVIATION BARRICADES SHALL BE CONSIDERED INCIDENTAL TO THE PROJECT. THE LOCATION OF THE AVIATION BARRICADES, AS SHOWN ON THE PLANS, REPRESENTS THE MOST TYPICAL LOCATION. THE LOW PROFILE AVIATION BARRICADES PROVIDED FOR THIS PROJECT WILL REMAIN THE PROPERTY OF THE WILLIAMSBURG-JAMESTOWN AIRPORT. BARRICADES SHALL REMAIN IN PLACE UNLESS OTHERWISE DIRECTED BY THE ENGINEER OWNER.
- G11) ALL WASTE MATERIAL (BROKEN CONCRETE, ASPHALT, CRATING/PACKING MATERIALS, ETC.) EXCLUDING TOPSOIL, SHALL BE DISPOSED OFFSITE BY THE CONTRACTOR.
- G12) THE OWNER RESERVES THE RIGHT TO CONTRACT AND PERFORM OTHER OR ADDITIONAL WORK ADJACENT TO AND WITHIN THE WORK AREA COVERED BY THIS CONTRACT. IT IS ANTICIPATED THAT OTHER WORK MAY BE COMPLETED BY AN INDEPENDENT CONTRACTOR(S) DURING THIS PROJECT. WHEN SEPARATE CONTRACTS ARE LET WITHIN THE LIMITS OF ANY ONE PROJECT, EACH CONTRACTOR SHALL CONDUCT HIS WORK SO AS NOT TO INTERFERE WITH OR HINDER THE PROGRESS OF THE WORK BEING COMPLETED BY OTHER CONTRACTORS. ANY ADDITIONAL EFFORT OR WORK REQUIRED FOR SUCH COORDINATION WITH OTHER CONTRACTORS SHALL BE CONSIDERED INCIDENTAL TO THE PROJECT AND NO SEPARATE MEASUREMENT OR PAYMENT WILL BE MADE.
- G13) THE CONTRACTOR IS ADVISED THAT AIRCRAFT OPERATIONS ARE CONDUCTED NEAR THE PROJECT SITE. SPECIAL ATTENTION TO DUST CONTROL WILL BE REQUIRED DURING THE PROJECT. THE ENGINEER RESERVES THE RIGHT TO HALT WORK OR HAULING IN NON-CONFORMING AREAS IF CORRECTIVE ACTIONS ARE NOT PROMPTLY TAKEN BY THE CONTRACTOR TO CONTROL DUST.
- G14) NO DEBRIS OF ANY NATURE SHALL BE ALLOWED IN ACTIVE AIRCRAFT OPERATIONS AREAS. ALL LOOSE MATERIALS (DIRT, STONE, PAVEMENT FORMING, ETC.) MUST BE KEPT WITHIN THE LIMITS OF THE CONSTRUCTION. WHEN THE CONSTRUCTION BARRIERS ARE RELOCATED, CLEANUP OF AREAS OUTSIDE THE BARRIERS SHALL OCCUR IMMEDIATELY. IN ADDITION, NO LOOSE MATERIALS THAT COULD BLOW INTO AIRCRAFT OPERATIONS AREAS SHALL BE ALLOWED IN THE CONSTRUCTION AREA.

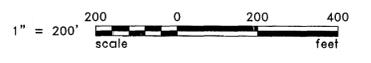
- G15) THE CONTRACTOR'S EMPLOYEES SHALL PARK ONLY IN THE AREA NOTED. ONLY AUTHORIZED VEHICLES WILL BE ALLOWED INSIDE THE AIRCRAFT OPERATIONS AREA. AT THE END OF EACH WORK DAY, THE CONTRACTOR SHALL POSITION ALL EQUIPMENT, TOOLS, MATERIAL, ETC. IN THE APPROVED CONTRACTOR'S STAGING AREA UNLESS OTHERWISE REQUESTED BY THE CONTRACTOR AND APPROVED BY THE ENGINEER.
- G16) OPEN TRENCHES, EXCAVATIONS, AND STOCKPILED MATERIAL AT THE CONSTRUCTION SITE(S) SHOULD BE PROMINENTLY MARKED WITH ORANGE FLAGS AND LIGHTED WITH FLASHING YELLOW UNITS DURING HOURS OF RESTRICTED VISIBILITY AND/OR DARKNESS.
- G17) ALL MATERIALS AND CONSTRUCTION TO BE IN ACCORDANCE WITH THE FEDERAL AVIATION ADMINISTRATION SPECIFICATIONS, FOOT ROAD AND BRIDGE SPECIFICATIONS (CURRENT EDITION) AND ANY APPLICABLE STANDARDS AND SPECIFICATIONS OF JAMES CITY COUNTY AND SUBJECT TO ITS INSPECTION AND CONTROL.
- G18) HORIZONTAL STATIONING BASED ON BASELINE "R" (CENTERLINE OF RUNWAY). P.K. NAILS FOUND AT EACH END OF RUNWAY CENTERLINE AT STATIONS 10+00 AND 42+05.17.
- G19) HORIZONTAL CONTROL DATA BASED UPON JAMES CITY COUNTY GEODETIC GROUND NETWORK SURVEY MARK "332" AND AZIMUTH MARK "332 RM3 AZ". MERIDIAN BASED UPON VIRGINIA STATE PLANE COORDINATES - SOUTH ZONE (NAD83)(1986) - U.S. SURVEY FOOT.
SURVEY MARK "332"
NORTHING: 3617282.579'
EASTING: 12000709.219'
ELEVATION: 71.71'
S52°35'42"E 2377.67' TO
AZIMUTH MARK "332 RM3 AZ".
- G20) VERTICAL CONTROL BASED UPON JAMES CITY COUNTY GEODETIC CONTROL NETWORK SURVEY MARK "332", ELEVATION=71.71' BASED ON THE NATIONAL GEODETIC VERTICAL DATUM (1929). ALL ELEVATIONS SHOWN ARE IN FEET. AZIMUTH MARK "332 RM3 AZ" HAS PUBLISHED ELEVATION OF 41.81'. THIS MARK WAS FIELD LOCATED AT AN ELEVATION OF 41.24'.

- G21) BASELINE "T" IS THE CONTROLLING BASELINE FOR THE LAYOUT AND CONSTRUCTION OF THE T-HANGAR SITE WORK. BASELINE "A" IS THE CONTROLLING BASELINE FOR THE LAYOUT AND CONSTRUCTION OF THE PARKING LOT EXPANSION. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO HAVE THESE BASELINES LAID OUT IN THE FIELD BASED ON THE STATIONING AND OFFSET DEPICTED ON THE PLANS.
- G22) CONTRACTOR SHALL EXERCISE EXTREME CAUTION WHEN TAXIING AIRCRAFT ARE CROSSING ACTIVE TAXIWAY. CONTRACTOR SHALL BE RESPONSIBLE FOR DIRECTING TAXIING AIRCRAFT TRAFFIC. WHILE CROSSING AN ACTIVE TAXIWAY, TAXIING AIRCRAFT SHALL HAVE THE RIGHT OF WAY. MEN AND CONSTRUCTION EQUIPMENT SHALL MOVE CLEAR OF THE TAXIWAY SAFETY AREA TO ALLOW AIRCRAFT PASSAGE. THE CONTRACTOR SHALL HAVE AN AVIATION BAND RADIO AND MONITOR THE AIRPORT UNICOM FREQUENCY 122.8MHz AT ALL TIMES.
- G23) IT IS UNDERSTOOD THAT PREPARATION OF RECORD DRAWINGS AND CONSTRUCTION CERTIFICATIONS AS REQUIRED FOR PROJECT FACILITIES MAY NOT NECESSARILY BE PERFORMED BY THE PLAN PREPARER. THESE COMPONENTS MAY BE PERFORMED BY OTHERS.

PHASING NOTES

- P1) CONTRACT TIME: 130 CALENDAR DAYS.
- P2) LIQUIDATED DAMAGES: LIQUIDATED DAMAGES IN THE AMOUNT OF \$150.00 PER CALENDAR DAY WILL BE ASSESSED AGAINST THE CONTRACTOR FOR EVERY CALENDAR DAY THAT THE CONTRACT TIME PLUS APPROVED EXTENSIONS IS EXCEEDED.
- P3) THE AIRPORT SHALL REMAIN OPEN TO AIR TRAFFIC DURING CONSTRUCTION OPERATIONS OUTSIDE OF THE RUNWAY SAFETY AREA (RSA).
- P4) THE CONTRACTOR SHALL GIVE THE OWNER 5 DAYS NOTICE PRIOR TO WORKING INSIDE OF THE EXISTING RUNWAY SAFETY AREA (RSA) IN ORDER TO PROVIDE RUNWAY CLOSURE AND FOR THE ISSUANCE OF THE PROPER NOTMAS.
- P5) WORK ASSOCIATED WITH THE PIPE INSTALLATION INSIDE OF THE RUNWAY SAFETY AREA (RSA) SHALL BE COMPLETED WITHIN A TWO DAY PERIOD. ALL TRENCHES INSIDE OF THE RUNWAY SAFETY AREA (RSA) SHALL BE COVERED AT THE END OF EACH DAY.
- P6) THE CONTRACTOR SHALL BE REQUIRED TO HAVE AT LEAST ONE PERSON ONSITE AT ALL TIMES MONITORING 122.8MHz ON A RADIO CAPABLE OF TRANSMITTING AND RECEIVING.

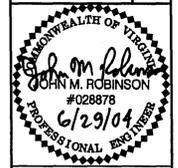
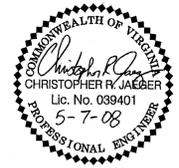
RECORD DRAWINGS
MAY 7, 2008



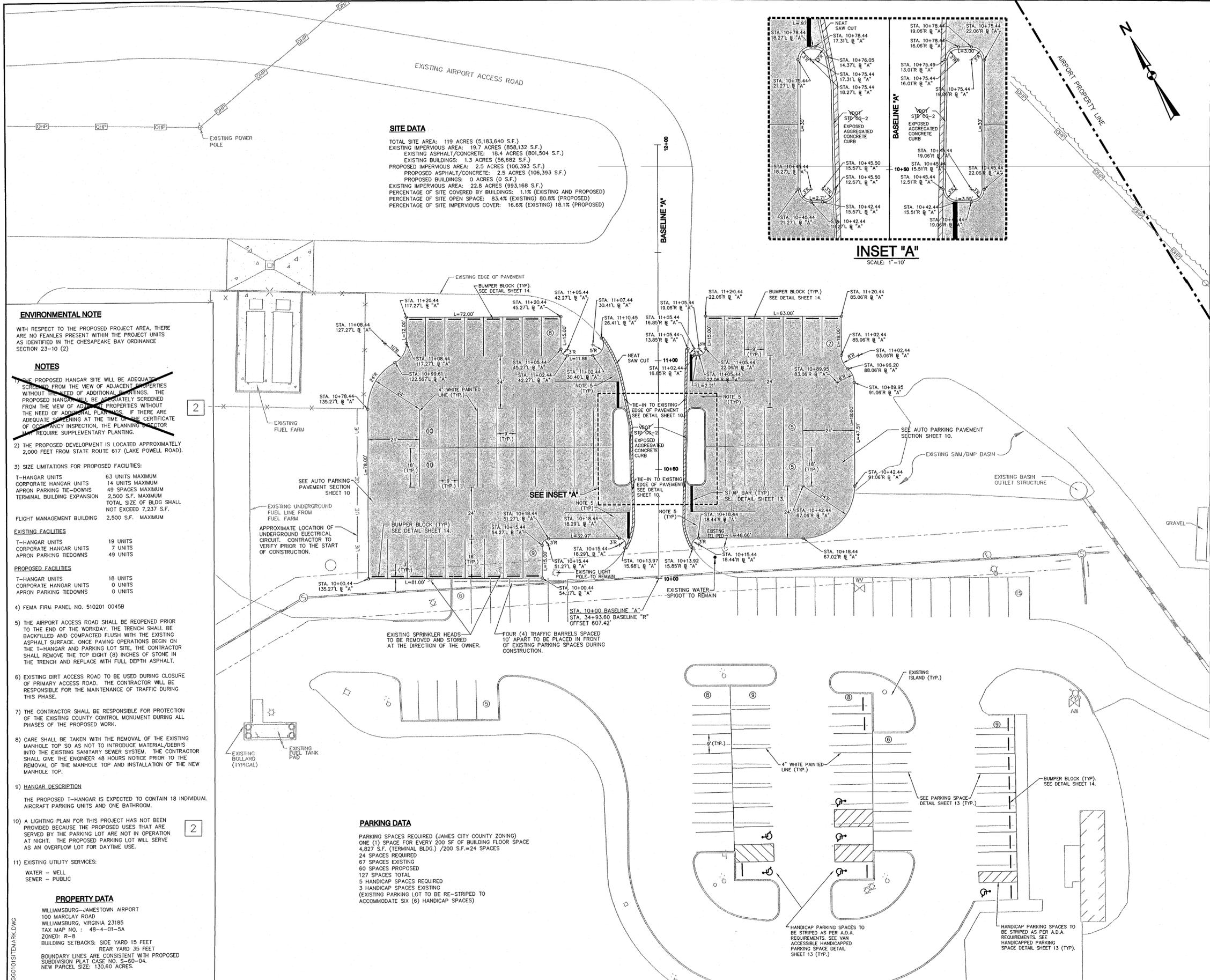
TALBERT & BRIGHT
ENGINEERING & PLANNING CONSULTANTS
10105 KRAUSE ROAD, SUITE 100
CHESTERTOWN, VIRGINIA 23042
PHONE: 804-768-6678 FAX: 804-768-6671

REV. NO.	DESCRIPTION	DATE
1	JAMES CITY COUNTY DAILY COMMENTS	6/19/03
2	REVISED PROPERTY LINE	6/29/04
3	RECORD DRAWINGS	5/07/08

GENERAL LAYOUT AND PHASING
T-Hangar Site Preparation (Phase I) & Parking Lot Expansion
Williamsburg-Jamestown Airport - Williamsburg, Virginia

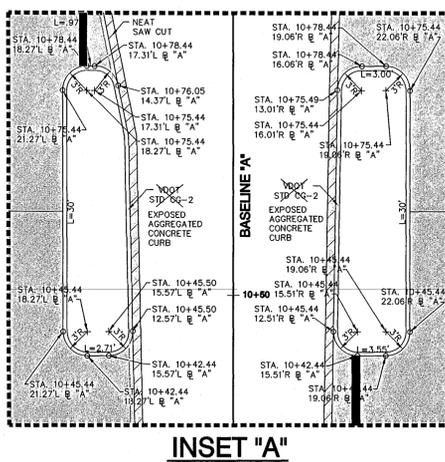


Date	JANUARY 2003
Scale	1"=200'
Drawn	MSP
Checked	STP
Project No.	4205-0101
Sheet No.	2
Of	17



SITE DATA

TOTAL SITE AREA: 119 ACRES (5,183,640 S.F.)
 EXISTING IMPERVIOUS AREA: 19.7 ACRES (858,132 S.F.)
 EXISTING ASPHALT/CONCRETE: 18.4 ACRES (801,504 S.F.)
 EXISTING BUILDINGS: 1.3 ACRES (56,682 S.F.)
 PROPOSED IMPERVIOUS AREA: 2.5 ACRES (106,393 S.F.)
 PROPOSED BUILDINGS: 0 ACRES (0 S.F.)
 PROPOSED ASPHALT/CONCRETE: 2.5 ACRES (106,393 S.F.)
 EXISTING IMPERVIOUS AREA: 22.8 ACRES (993,168 S.F.)
 PERCENTAGE OF SITE COVERED BY BUILDINGS: 1.1% (EXISTING AND PROPOSED)
 PERCENTAGE OF SITE OPEN SPACE: 83.4% (EXISTING) 80.8% (PROPOSED)
 PERCENTAGE OF SITE IMPERVIOUS COVER: 16.6% (EXISTING) 18.1% (PROPOSED)



ENVIRONMENTAL NOTE

WITH RESPECT TO THE PROPOSED PROJECT AREA, THERE ARE NO FEANLES PRESENT WITHIN THE PROJECT UNITS AS IDENTIFIED IN THE CHESAPEAKE BAY ORDINANCE SECTION 23-10 (2)

NOTES

1) THE PROPOSED HANGAR SITE WILL BE ADEQUATELY SCREENED FROM THE VIEW OF ADJACENT PROPERTIES WITHOUT THE NEED OF ADDITIONAL SCREENINGS. THE PROPOSED HANGAR WILL BE ADEQUATELY SCREENED FROM THE VIEW OF ADJACENT PROPERTIES WITHOUT THE NEED OF ADDITIONAL SCREENINGS. IF THERE ARE ADEQUATE SCREENING AT THE TIME OF THE CERTIFICATE OF OCCUPANCY INSPECTION, THE PLANNING DIRECTOR MAY REQUIRE SUPPLEMENTARY PLANNING.

2) THE PROPOSED DEVELOPMENT IS LOCATED APPROXIMATELY 2,000 FEET FROM STATE ROUTE 617 (LAKE POWELL ROAD).

3) SIZE LIMITATIONS FOR PROPOSED FACILITIES:
 T-HANGAR UNITS 63 UNITS MAXIMUM
 CORPORATE HANGAR UNITS 14 UNITS MAXIMUM
 APRON PARKING TIE-DOWNS 49 SPACES MAXIMUM
 TERMINAL BUILDING EXPANSION 2,500 S.F. MAXIMUM
 TOTAL SIZE OF BLDG SHALL NOT EXCEED 7,237 S.F.

FLIGHT MANAGEMENT BUILDING 2,500 S.F. MAXIMUM

EXISTING FACILITIES
 T-HANGAR UNITS 19 UNITS
 CORPORATE HANGAR UNITS 7 UNITS
 APRON PARKING TIE-DOWNS 49 UNITS

PROPOSED FACILITIES
 T-HANGAR UNITS 18 UNITS
 CORPORATE HANGAR UNITS 0 UNITS
 APRON PARKING TIE-DOWNS 0 UNITS

4) FEMA FIRM PANEL NO. 510201 00458

5) THE AIRPORT ACCESS ROAD SHALL BE REOPENED PRIOR TO THE END OF THE WORKDAY. THE TRENCH SHALL BE BACKFILLED AND COMPACTED FLUSH WITH THE EXISTING ASPHALT SURFACE. ONCE PAVING OPERATIONS BEGIN ON THE T-HANGAR AND PARKING LOT SITE, THE CONTRACTOR SHALL REMOVE THE TOP EIGHT (8) INCHES OF STONE IN THE TRENCH AND REPLACE WITH FULL DEPTH ASPHALT.

6) EXISTING DIRT ACCESS ROAD TO BE USED DURING CLOSURE OF PRIMARY ACCESS ROAD. THE CONTRACTOR WILL BE RESPONSIBLE FOR THE MAINTENANCE OF TRAFFIC DURING THIS PHASE.

7) THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTION OF THE EXISTING COUNTY CONTROL MONUMENT DURING ALL PHASES OF THE PROPOSED WORK.

8) CARE SHALL BE TAKEN WITH THE REMOVAL OF THE EXISTING MANHOLE TOP SO AS NOT TO INTRODUCE MATERIAL/DEBRIS INTO THE EXISTING SANITARY SEWER SYSTEM. THE CONTRACTOR SHALL GIVE THE ENGINEER 48 HOURS NOTICE PRIOR TO THE REMOVAL OF THE MANHOLE TOP AND INSTALLATION OF THE NEW MANHOLE TOP.

9) HANGAR DESCRIPTION
 THE PROPOSED T-HANGAR IS EXPECTED TO CONTAIN 18 INDIVIDUAL AIRCRAFT PARKING UNITS AND ONE BATHROOM.

10) A LIGHTING PLAN FOR THIS PROJECT HAS NOT BEEN PROVIDED BECAUSE THE PROPOSED USES THAT ARE SERVED BY THE PARKING LOT ARE NOT IN OPERATION AT NIGHT. THE PROPOSED PARKING LOT WILL SERVE AS AN OVERFLOW LOT FOR DAYTIME USE.

11) EXISTING UTILITY SERVICES:
 WATER - WELL
 SEWER - PUBLIC

PARKING DATA

PARKING SPACES REQUIRED (JAMES CITY COUNTY ZONING)
 ONE (1) SPACE FOR EVERY 200 SF OF BUILDING FLOOR SPACE
 4,827 S.F. (TERMINAL BLDG.) / 200 S.F. = 24 SPACES
 24 SPACES REQUIRED
 87 SPACES EXISTING
 60 SPACES PROPOSED
 127 SPACES TOTAL
 5 HANDICAP SPACES REQUIRED
 3 HANDICAP SPACES EXISTING
 (EXISTING PARKING LOT TO BE RE-STRIPED TO ACCOMMODATE SIX (6) HANDICAP SPACES)

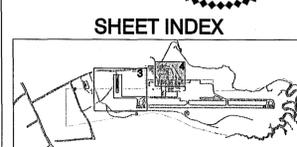
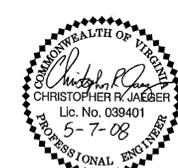
PROPERTY DATA

WILLIAMSBURG-JAMESTOWN AIRPORT
 100 MARCLAY ROAD
 WILLIAMSBURG, VIRGINIA 23185
 TAX MAP NO. 1-48-4-01-5A
 ZONED: R-8
 BUILDING SETBACKS: SIDE YARD 15 FEET
 REAR YARD 35 FEET
 BOUNDARY LINES ARE CONSISTENT WITH PROPOSED SUBDIVISION PLAT CASE NO. S-60-04.
 NEW PARCEL SIZE: 130.60 ACRES.

LEGEND

	EXISTING	PROPOSED
PROPERTY LINE	---	---
TREES	~	~
UTILITY POLE	○	○
BORINGS	⊕	⊕
DIRT ROAD	---	---
TAXIWAY SAFETY AREA	---TSA---	---TSA---
RUNWAY SAFETY AREA	---RSA---	---RSA---
TAXIWAY OBJECT FREE AREA	---TOFA---	---TOFA---
SANITARY MANHOLE	⊕	⊕
GAS VALVE	⊕	⊕
WATER VALVE	⊕	⊕
LIGHT POLE	○	○
SIGN	⊕	⊕
HELIPAD LIGHT	⊕	⊕
RUNWAY LIGHT	•	•
UNDERGROUND PHONE BOX	⊕	⊕
FENCE	---	---
STORM SEWER (RCP) SIZE & CLASS	---	---
SANITARY SEWER	---	---
FLARED END SECTION	---	---
LIMITS OF DISTURBANCE	---	---
SILT FENCE (SF 3.05)	---	---
FUTURE CONSTRUCTION	---	---
CULVERT INLET PROTECTION (CIP 3.08)	---	---
INLET PROTECTION (IP 3.07)	---	---
OUTLET PROTECTION (OP 3.18)	---	---
ASPHALT PAVEMENT	---	---
ASPHALT PAVEMENT MILLING	---	---
UNDERGROUND FIBER OPTIC	---	---
OVERHEAD POWER	---	---
UNDERGROUND ELECTRICAL	---	---

RECORD DRAWINGS
MAY 7, 2008

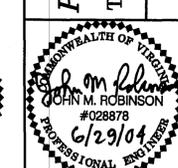


1"=20'
0 20 40
feet

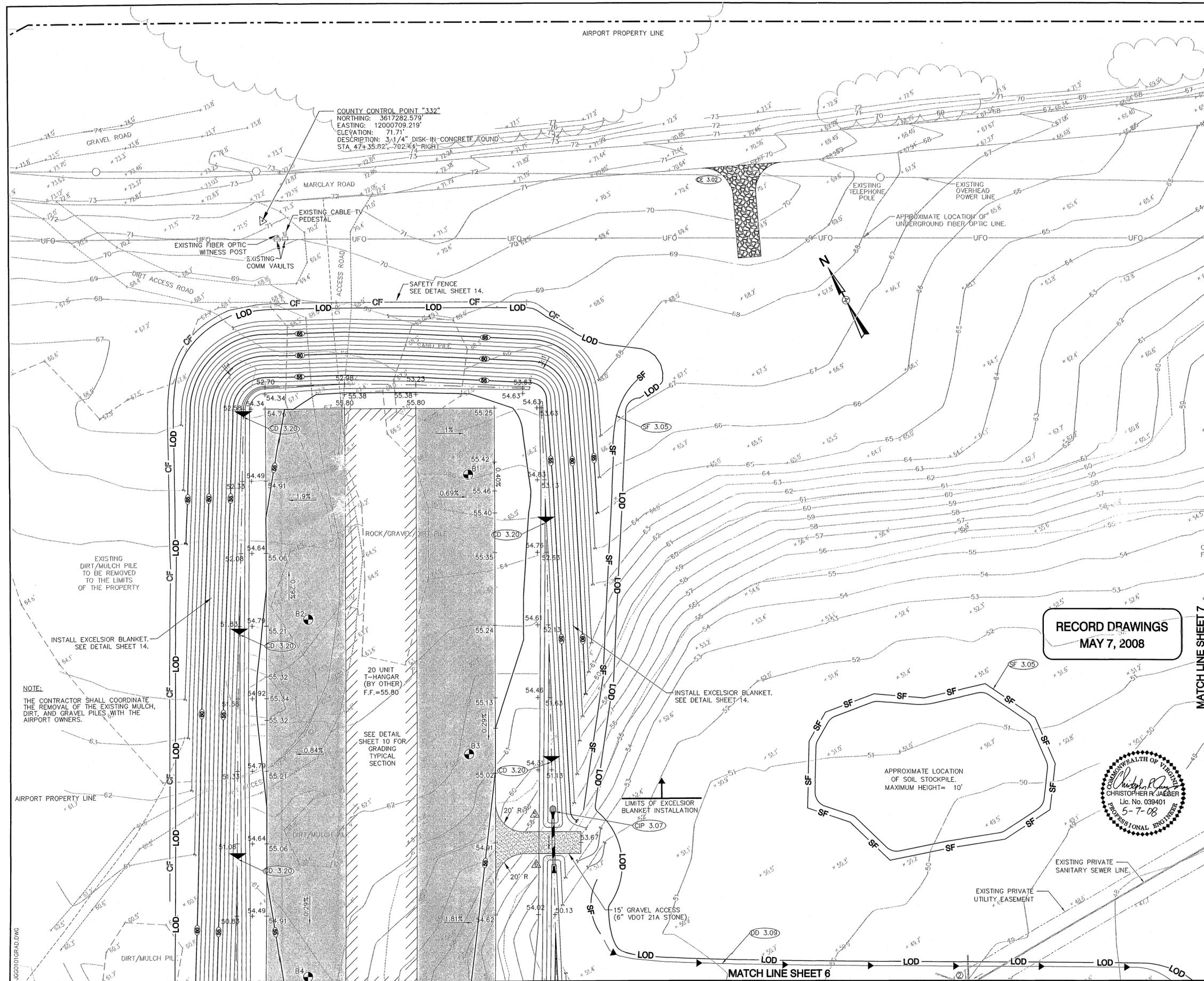
TALBERT & BRIGHT
 ENGINEERING & PLANNING CONSULTANTS
 1005 KRAUSE ROAD, SUITE 100
 CHESTERFIELD, VIRGINIA 23832
 PHONE: 804-768-6878 FAX: 804-768-6871

DATE	DESCRIPTION	REVISION
6/19/03	JAMES CITY COUNTY / DOAV COMMENTS	
8/6/03	JAMES CITY COUNTY COMMENTS - DELETED NOTE 1.	
5/07/08	RECORD DRAWINGS	

PARKING LOT SITE PLAN AND MARKING
 T-Hangar Site Preparation (Phase I) & Parking Lot Expansion
 Williamsburg-Jamestown Airport - Williamsburg, Virginia



Date	JANUARY 2003
Scale	1"=20'
Drawn	MSP
Checked	STP
Project No.	4205-0101
Sheet No.	4
Of	17



LEGEND

	EXISTING	PROPOSED
SPOT ELEVATION	---	---
PROPERTY LINE	---	---
1' CONTOURS	---	---
5' CONTOURS	---	---
TREES	---	---
UTILITY POLE	---	---
BORINGS	---	---
DIRT ROAD	---	---
TAXIWAY SAFETY AREA	---	---
RUNWAY SAFETY AREA	---	---
TAXIWAY OBJECT FREE AREA	---	---
SANITARY MANHOLE	---	---
GAS VALVE	---	---
WATER VALVE	---	---
LIGHT POLE	---	---
SIGN	---	---
HELIPAD LIGHT	---	---
RUNWAY LIGHT	---	---
UNDERGROUND PHONE BOX	---	---
FENCE	---	---
STORM SEWER (RCP) SIZE & CLASS	---	---
FLARED END SECTION	---	---
ROCK CHECK DAM (CD 3.20)	---	---
DIVERSION DIKE	---	---
UNDERGROUND FIBER OPTIC LINE	---	---
LIMITS OF DISTURBANCE	---	---
SILT FENCE (SF 3.05)	---	---
ORANGE CONSTRUCTION FENCING	---	---
CULVERT INLET PROTECTION (CIP 3.08)	---	---
INLET PROTECTION (IP 3.07)	---	---
OUTLET PROTECTION (OP 3.18)	---	---
SAND FILTER	---	---
ASPHALT PAVEMENT	---	---
TEMPORARY CONSTRUCTION ENTRANCE (CE 3.02)	---	---

EXISTING STORM SEWER SCHEDULE

- YARD INLET (NO TOP OR GRATE)
TOP SLAB=43.54'
INV IN 15" RCP= 40.57'
INV OUT 15" RCP= 40.55'
- YARD INLET
TOP GRATE= 45.94'
INVERT OUT 15" RCP= 43.57'

PROPOSED STORM SEWER SCHEDULE

- VOOT STD. 15" ES-1 END SECTION
INV= 50.79
- VOOT STD. 15" ES-1 END SECTION
INV= 50.46
- 33 LF OF 15" CLASS III RCP
SLOPE = 1.0%

SANITARY SEWER SCHEDULE

- SANITARY SEWER MANHOLE
RIM= 49.48'
INV IN 8" PVC(E)= 30.15'
INV IN 8" PVC(N)= 30.15'
INV IN 8" PVC(W)= 20.07'
INV OUT 8" PVC(S)= 30.08'
- SANITARY SEWER MANHOLE
RIM= 48.06'
INV IN 8" PVC(N)= 31.60'
INV IN 8" PVC(W)= 31.67'
INV OUT 8" PVC(SW)= 31.51'
- SANITARY SEWER MANHOLE
RIM= 47.40'
INV IN 8" PVC(N)= 28.66'
INV OUT 8" PVC(SW)= 28.57'

NOTE:

- ANY EXISTING UNUSED WELLS SHALL BE ABANDONED IN ACCORDANCE WITH THE STATE HEALTH DEPARTMENT REGULATIONS AND JAMES CITY COUNTY CODE.
- SEE GENERAL LAYOUT FOR LOCATION OF EXISTING WELL.

SHEET INDEX

1"=30'
scale feet

**RECORD DRAWINGS
MAY 7, 2008**

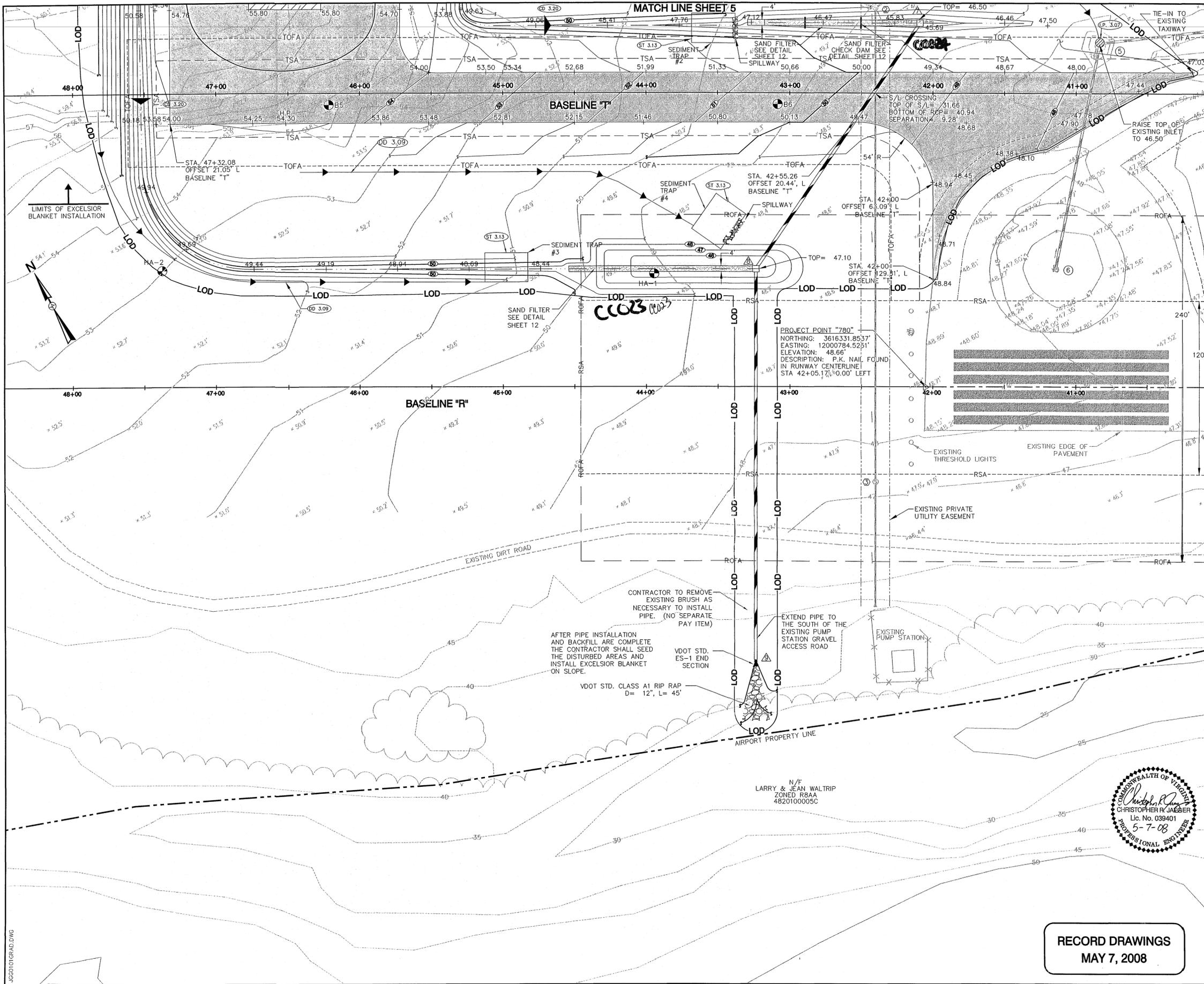


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6/19/03	JAMES CITY COUNTY/DOAV COMMENTS	DATE
6/29/04	REVISED PROPERTY LINE	DATE
5/07/08	RECORD DRAWINGS	DATE

GRADING AND DRAINAGE
T-Hangar Site Preparation (Phase I) & Parking Lot Expansion
Williamsburg-Jamestown Airport - Williamsburg, Virginia

Date: JANUARY 2003
Scale: 1"=30'
Drawn: MSP
Checked: STP
Project No.: 4205-0101
Sheet No.: **5** of 17



LEGEND

	EXISTING	PROPOSED
SPOT ELEVATION		44.35
PROPERTY LINE		
1' CONTOURS		38
5' CONTOURS		48
TREES		
UTILITY POLE		
BORINGS	B1	
DIRT ROAD		
TAXIWAY SAFETY AREA	TSA	
RUNWAY SAFETY AREA	RSA	
TAXIWAY OBJECT FREE AREA	TOFA	
SANITARY MANHOLE		
GAS VALVE		
WATER VALVE		
LIGHT POLE		
SIGN		
HELIPAD LIGHT		
RUNWAY LIGHT		
UNDERGROUND PHONE BOX		
FENCE		
STORM SEWER (RCP) SIZE & CLASS		
FLARED END SECTION		
ROCK CHECK DAM (CD 3.20)		
DIVERSION DIKE		
UNDERGROUND FIBER OPTIC LINE		UFO
LIMITS OF DISTURBANCE		L.O.D.
SILT FENCE (SF 3.05)		SF
ORANGE CONSTRUCTION FENCING		CF
CULVERT INLET PROTECTION (CP 3.08)		
INLET PROTECTION (IP 3.07)		
OUTLET PROTECTION (OP 3.18)		
SAND FILTER		
ASPHALT PAVEMENT		
TEMPORARY CONSTRUCTION ENTRANCE (CE 3.02)		

EXISTING STORM SEWER SCHEDULE

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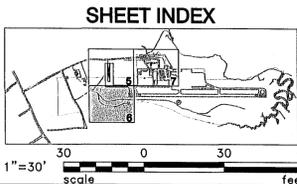
PROPOSED STORM SEWER SCHEDULE

- VDOT STD. MH-1 MANHOLE W/STEPS TOP= 45.60
H= 4.51
- VDOT STD. MH-1 MANHOLE W/STEPS TOP= 47.10
H= 8.49
- VDOT STD. 30" ES-1 END SECTION
INV= 35.91
- 205 LF OF 24" CLASS III RCP
SLOPE = 1.6%
INV IN = 41.99
INV OUT = 38.71
- 279 LF OF 30" CLASS III RCP
SLOPE = 1.0%
INV IN = 38.61
INV OUT = 35.94+ 81

SANITARY SEWER SCHEDULE

- SANITARY SEWER MANHOLE
RIM= 49.48'
INV IN 8" PVC(E)= 30.15'
INV IN 8" PVC(N)= 30.15'
INV IN 8" PVC(W)= 29.37'
INV OUT 8" PVC(S)= 30.08'
- SANITARY SEWER MANHOLE
RIM= 48.06'
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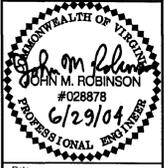
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2. SEE GENERAL LAYOUT FOR LOCATION OF EXISTING WELL.



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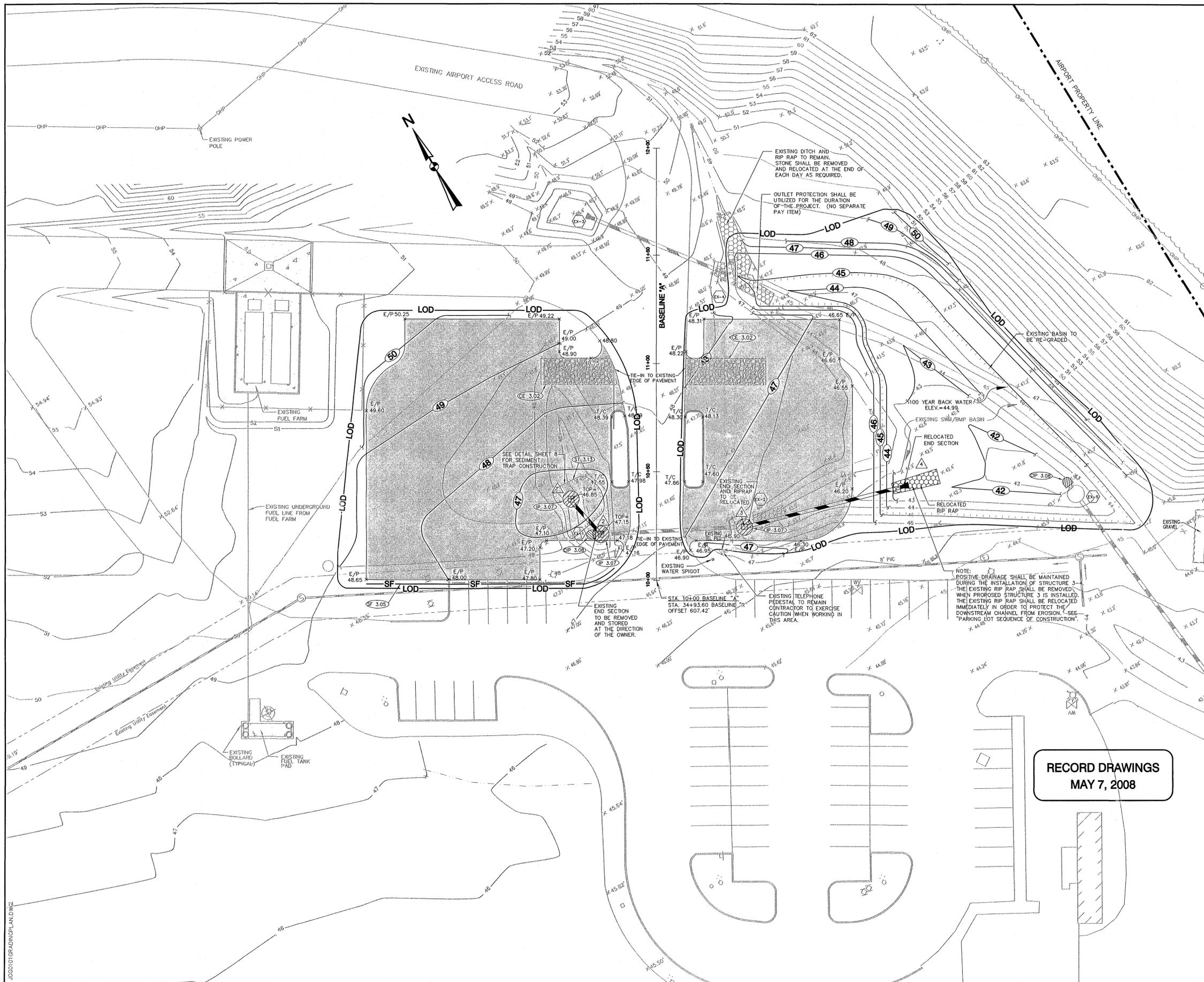
RECORD DRAWINGS	DATE	REVISIONS
1	5/19/03	
2	5/07/08	

GRADING AND DRAINAGE
T-Hanger Site Preparation (Phase I) & Parking Lot Expansion
Williamsburg-Jamestown Airport - Williamsburg, Virginia



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Sheet No.	6
Of	17

RECORD DRAWINGS
MAY 7, 2008



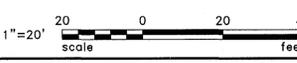
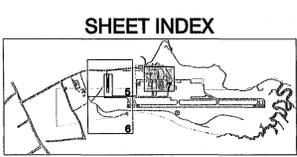
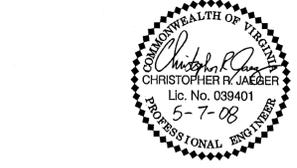
LEGEND

	EXISTING	PROPOSED
SPOT ELEVATION	---	44.35
PROPERTY LINE	---	---
1' CONTOURS	---	---
5' CONTOURS	---	---
TREES	---	---
UTILITY POLE	---	---
BORINGS	---	---
DIRT ROAD	---	---
TAXIWAY SAFETY AREA	---	---
RUNWAY SAFETY AREA	---	---
TAXIWAY OBJECT FREE AREA	---	---
SANITARY MANHOLE	---	---
GAS VALVE	---	---
WATER VALVE	---	---
LIGHT POLE	---	---
SIGN	---	---
HELIPAD LIGHT	---	---
RUNWAY LIGHT	---	---
UNDERGROUND PHONE BOX	---	---
FENCE	---	---
STORM SEWER (RCP) SIZE & CLASS AS	---	---
LIMITS OF DISTURBANCE	---	---
SILT FENCE (SF 3.05)	---	---
CULVERT INLET PROTECTION (CIP 3.08)	---	---
INLET PROTECTION (CP 3.07)	---	---
OUTLET PROTECTION (CP 3.18)	---	---
ASPHALT PAVEMENT	---	---
TEMPORARY CONSTRUCTION ENTRANCE (CE 3.02)	---	---

STORM SEWER SCHEDULE

- EX-1 FLARED END SECTION INVERT 15" RCP=44.21'
- EX-2 FLARED END SECTION INVERT 15" RCP=43.87'
- EX-3 FLARED END SECTION INVERT 15" RCP=46.33'
- EX-4 FLARED END SECTION INVERT 15" RCP=44.31'
- EX-5 STORM RISER TOP OF RISER=44.53' INVERT IN 15" RCP=41.10' (FROM POND) INVERT OUT=UNOBTAINABLE
- 1 D1-1 DROP INLET, TOP=46.85 H=2.17', IS-1 INLET SHAPING
- 2 VDOT STD. MH-1 MANHOLE W/IS-1 INLET SHAPING TOP= 47.15 INV IN= 44.21 INV OUT= 43.87
- 3 D1-1 DROP INLET, TOP=46.80 H=3.03', IS-1 INLET SHAPING
- 4 RELOCATED 15" ES-1 END SECTION
- 1-2 22 LF OF 15" CLASS III RCP @ 0.56% INV. IN= 44.43 INV. OUT=44.31
- 3-4 75 LF OF 15" CLASS III RCP @ 1.16% INV. IN= 43.77 INV. OUT=42.90

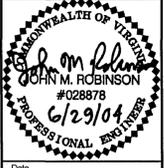
SWM / SWQ BASIN
 10 YEAR BACKWATER ELEV.=44.56
 100 YEAR BACKWATER ELEV.=44.99



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 ENGINEERING & PLANNING CONSULTANTS
 10105 KRAUSE ROAD, SUITE 100
 CHESTERFIELD, VIRGINIA 23832
 PHONE 804-768-6878 FAX 804-768-6871

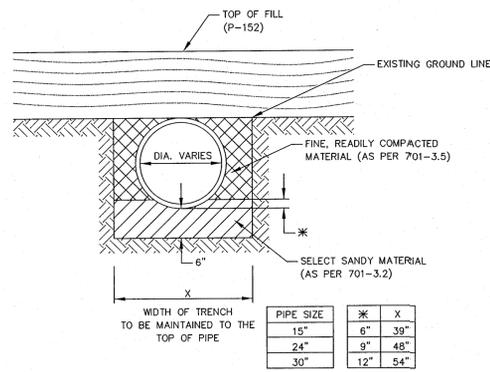
REV. NO.	DESCRIPTION	DATE
1	JAMES CITY COUNTY / DOA COMMENTS	8/19/03
2	RECORD DRAWINGS	5/07/08

GRADING AND DRAINAGE
 T-Hanger Site Preparation (Phase I) & Parking Lot Expansion
 Williamsburg-Jamestown Airport - Williamsburg, Virginia

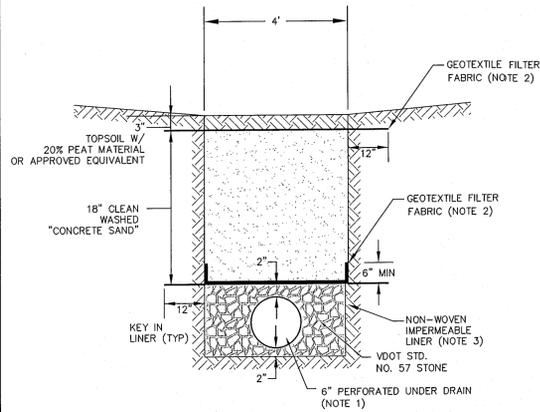


Date	JANUARY 2003
Scale	1"=20'
Drawn	MSP
Checked	STP
Project No.	4205-0101
Sheet No.	7

of 17

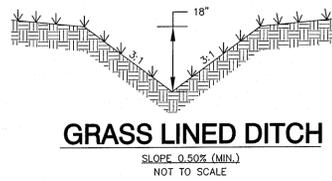


PIPE BEDDING DETAIL
NOT TO SCALE

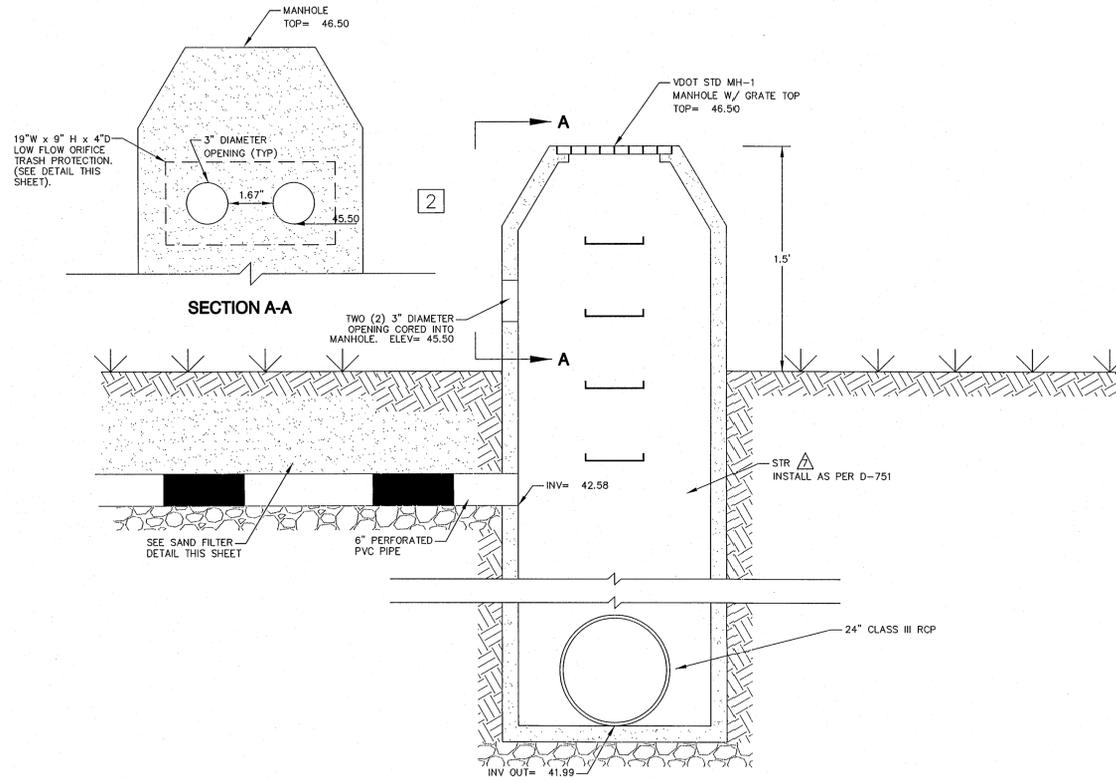


SAND FILTER DETAIL
NOT TO SCALE

- NOTE: 1. 6" PERFORATED UNDERDRAIN SHALL BE ADS N-12 PIPE, OR APPROVED EQUIVALENT.
 2. GEOTEXTILE FILTER FABRIC SHALL BE SYNTHETIC INDUSTRIES TYPE 200ST WOVEN POLYPROPYLENE OR APPROVED EQUIVALENT.
 3. IMPERMEABLE LINER SHALL HAVE THE FOLLOWING CHARACTERISTICS:
 GRAB TENSILE STRENGTH - 300 LB'S (MIN)
 ELONGATION - 50% (MIN)
 PUNCTURE STRENGTH - 175 LB'S (MIN)

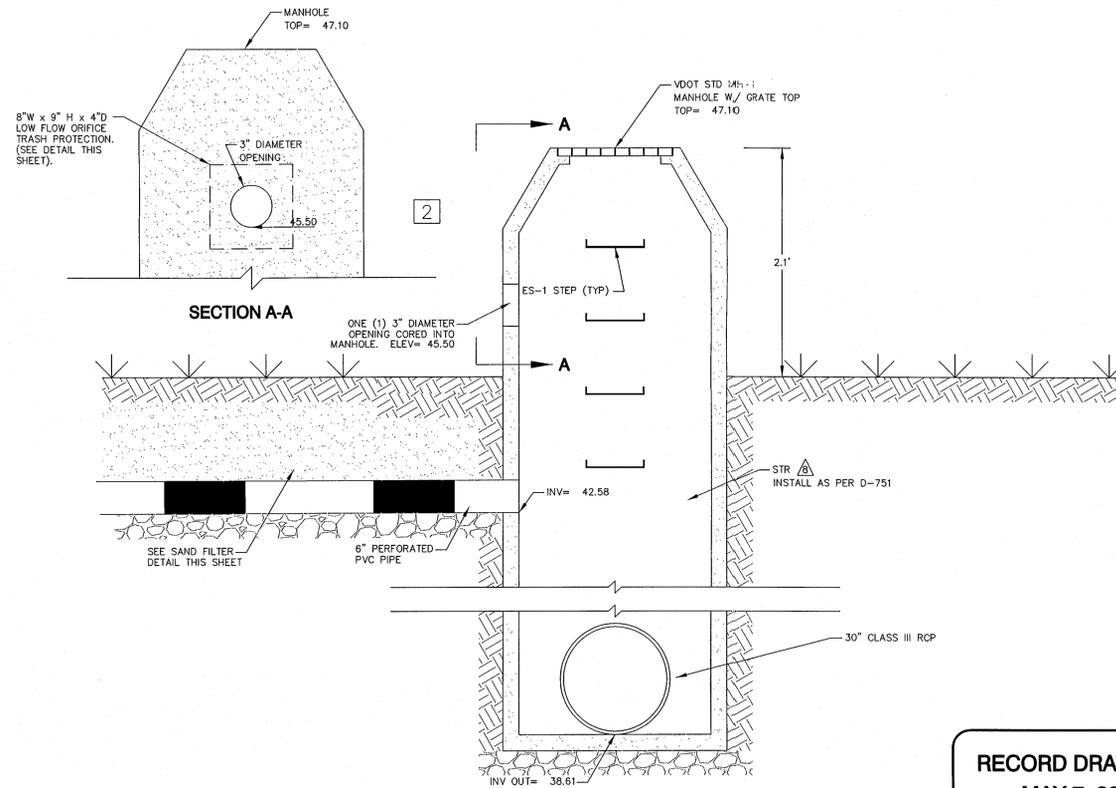


GRASS LINED DITCH
SLOPE 0.50% (MIN.)
NOT TO SCALE



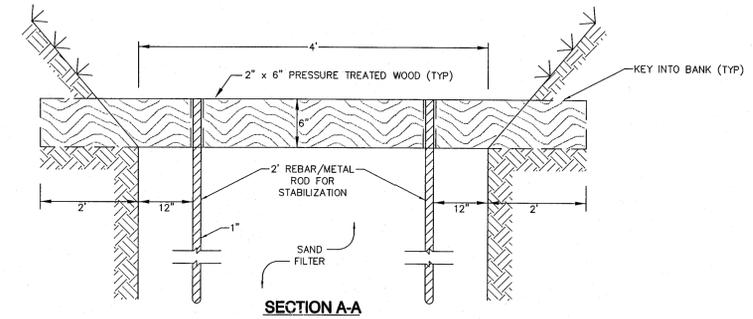
MANHOLE DETAIL - STR. A
NOT TO SCALE

- NOTE:
 1. PRICE OF 15" CLASS III RCP SHALL BE INCLUDED IN MANHOLE PAY ITEM.

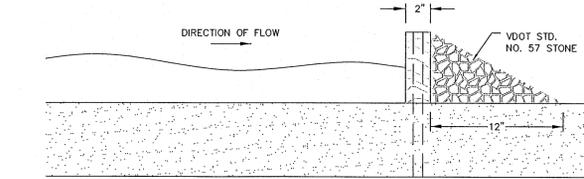


MANHOLE DETAIL - STR. B
NOT TO SCALE

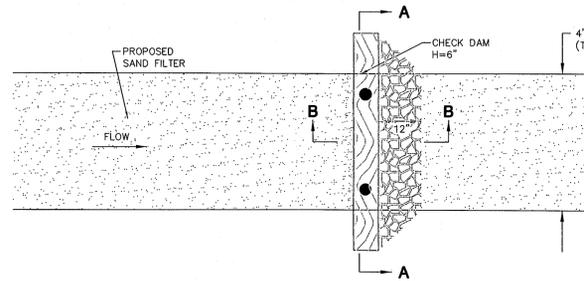
- NOTE:
 1. PRICE OF 15" CLASS III RCP SHALL BE INCLUDED IN MANHOLE PAY ITEM.



SECTION A-A



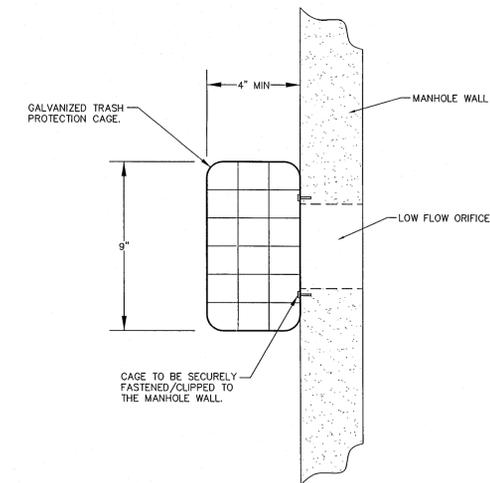
SECTION B-B



PLAN VIEW

SAND FILTER CHECK DAM

NOT TO SCALE



LOW FLOW ORIFICE TRASH PROTECTION

NOT TO SCALE

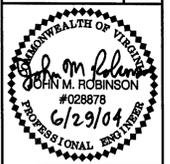
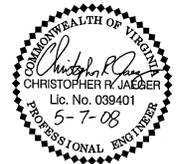
- NOTE: TRASH PROTECTION CAGE SHALL BE INSPECTED AND APPROVED BY THE ENGINEER.

RECORD DRAWINGS
MAY 7, 2008

TALBERT & BRIGHT
ENGINEERING & PLANNING CONSULTANTS
1005 KRAUSE ROAD, SUITE 100
CHESTERFIELD, VIRGINIA 23832
PHONE 804-768-6878 FAX 804-768-6871

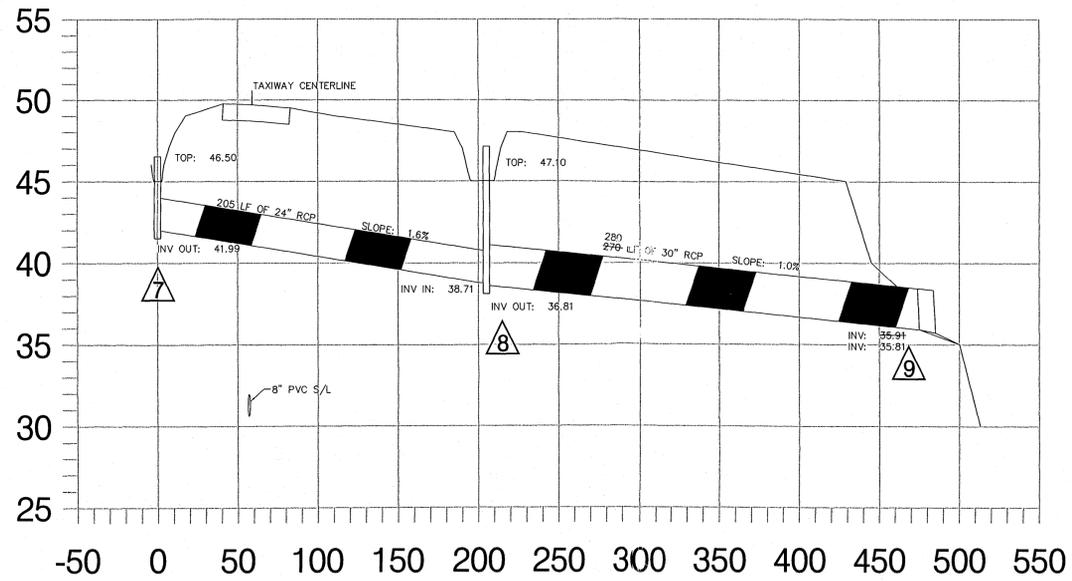
REV. NO.	DESCRIPTION	DATE
1	JAMES CITY COUNTY / DRAIN COMMENTS	8/19/03
2	JAMES CITY COUNTY COMMENTS - ORIFICE DIAMETER CHANGED TO THREE INCHES	8/19/03
3	RECORD DRAWINGS	5/07/08

DRAINAGE DETAILS
T-Hanger Site Preparation (Phase D) & Parking Lot Expansion
Williamsburg-Jamestown Airport - Williamsburg, Virginia



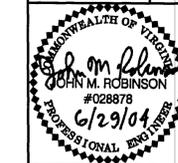
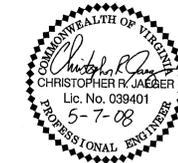
Date	JANUARY 2003
Scale	NONE
Drawn	MSP
Checked	STP
Project No.	4205-0101
Sheet No.	12

Of 17



STORM SEWER PROFILE STR. 7 - STR. 9

SCALE: 1"=50' HORZ.
1"=5' VERT.



**RECORD DRAWINGS
MAY 7, 2008**

REV. NO.	DESCRIPTION	DATE
1	RECORD DRAWINGS	5/07/08

STORM SEWER PROFILE
T-Hangar Site Preparation (Phase I) & Parking Lot Expansion
Williamsburg-Jamestown Airport - Williamsburg, Virginia

Date	JANUARY 2003
Scale	HORZ. 1"=50' VERT. 1"=5'
Drawn	MSP
Checked	STP
Project No.	4205-0101
Sheet No.	15
Of	17

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10105 KRAUSE ROAD, SUITE 100
CHESTERFIELD, VIRGINIA 23812
PHONE 804-768-6878 FAX 804-768-6871

S:\projects\Williamsburg-Jamestown\050101 - T-Hangar Site & Parking Lot Expansion\050101 - T-Hangar Site & Parking Lot Expansion\050101 - T-Hangar Site & Parking Lot Expansion.dwg, 5/3/2008 11:46:53 AM, 1/18/08/07/08/08.dwg

(E)

Worksheet 2: Runoff curve number and runoff

Project _____ By _____ Date _____

Location _____ Checked _____ Date _____

Circle one: Present Developed

1. Runoff curve number (CN)

Soil name and hydrologic group (appendix A)	Cover description (cover type, treatment, and hydrologic condition; percent impervious; unconnected/connected impervious area ratio)	CN ^{1/}			Area <input checked="" type="checkbox"/> acres <input type="checkbox"/> mi ² <input type="checkbox"/> %	Product of CN x area
		Table 2-2	FIG. 2-3	FIG. 2-4		
C	OPEN SPACE	99			49.7	3926.3
C	ASPHALT (R/W, T/W, APRON)	98			5.6	548.8
Totals =					55.3	4475.1

^{1/} Use only one CN source per line.

$$\text{CN (weighted)} = \frac{\text{total product}}{\text{total area}} = \frac{4475.1}{55.3} = 80.9$$

Use CN = 81

2. Runoff

Frequency yr

Rainfall, P (24-hour) in

Runoff, Q in
(Use P and CN with table 2-1, fig. 2-1, or eqs. 2-3 and 2-4.)

Storm #1	Storm #2	Storm #3
1	10	100
2.8	5.8	8.0
1.10	3.6	5.8

SAME

Worksheet 3: Time of concentration (T_c) or travel time (T_t)

Project _____ By _____ Date _____

Location _____ Checked _____ Date _____

Circle one: Present Developed _____
 Circle one: T_c T_t through subarea _____

NOTES: Space for as many as two segments per flow type can be used for each worksheet.

Include a map, schematic, or description of flow segments.

Sheet flow (Applicable to T _c only)	Segment ID		
1. Surface description (table 3-1)			
2. Manning's roughness coeff., n (table 3-1) ..			
3. Flow length, L (total L < 300 ft)	ft		
4. Two-yr 24-hr rainfall, P ₂	in		
5. Land slope, s	ft/ft		
6. $T_t = \frac{0.007 (nL)^{0.8}}{P_2^{0.5} s^{0.4}}$ Compute T _t	hr		
		+	=

Shallow concentrated flow	Segment ID		
7. Surface description (paved or unpaved)			
8. Flow length, L	ft		
9. Watercourse slope, s	ft/ft		
10. Average velocity, V (figure 3-1)	ft/s		
11. $T_t = \frac{L}{3600 V}$ Compute T _t	hr		
		+	=

Channel flow	Segment ID		
12. Cross sectional flow area, a	ft ²		
13. Wetted perimeter, p _w	ft		
14. Hydraulic radius, $r = \frac{a}{p_w}$ Compute r	ft		
15. Channel slope, s	ft/ft		
16. Manning's roughness coeff., n			
17. $v = \frac{1.49 r^{2/3} s^{1/2}}{n}$ Compute V	ft/s		
18. Flow length, L	ft		
19. $T_t = \frac{L}{3600 v}$ Compute T _t	hr		
20. Watershed or subarea T _c or T _t (add T _t in steps 6, 11, and 19)	hr		
		+	=

.89

Worksheet 4: Graphical Peak Discharge method

Project T-HANGER SITE PREP By SNP Date 12-27-02

Location WILLIAMSBURG - JAMESTOWN AIRPORT Checked _____ Date _____

Circle one: Present Developed _____

1. Data:

Drainage area $A_m = \underline{.10}$ mi^2 (acres/640)
 Runoff curve number $CN = \underline{81}$ (From worksheet 2)
 Time of concentration .. $T_c = \underline{.89}$ hr (From worksheet 3)
 Rainfall distribution type = II (I, IA, II, III)
 Pond and swamp areas spread throughout watershed = 1.0 percent of A_m (— acres or mi^2 covered)

		Storm #1	Storm #2	Storm #3
2. Frequency	yr	1	10	100
3. Rainfall, P (24-hour)	in	2.8	5.8	8.0
4. Initial abstraction, I_a	in	.469	.469	.469
(Use CN with table 4-1.)				
5. Compute I_a/P168	.081	.059
6. Unit peak discharge, q_u	csf/in	375	425	475
(Use T_c and I_a/P with exhibit 4-11)				
7. Runoff, Q	in	1.10	3.6	5.8
(From worksheet 2).				
8. Pond and swamp adjustment factor, F_p		1.0	1.0	1.0
(Use percent pond and swamp area with table 4-2. Factor is 1.0 for zero percent pond and swamp area.)				
9. Peak discharge, q_p	cfs	41.3	153.0	275.5
(Where $q_p = q_u A_m Q F_p$)				

Worksheet 2: Runoff curve number and runoff

27.9

Project _____ By _____ Date _____

Location _____ Checked _____ Date _____

Circle one: Present Developed

1. Runoff curve number (CN)

Soil name and hydrologic group (appendix A)	Cover description (cover type, treatment, and hydrologic condition; percent impervious; unconnected/connected impervious area ratio)	CN ^{1/}			Area <input checked="" type="checkbox"/> acres <input type="checkbox"/> mi ² <input type="checkbox"/> %	Product of CN x area
		Table 2-2	Fig. 2-3	Fig. 2-4		
C	GRAVEL PARKING, ROOFS	98			2.8	274.4
C	OPEN SPACE	79			33.4	2638.6
C	PAVEMENT (T/W, R/W)	98			3.0	294
C	OPEN SPACE	79			24.9	1967.1
Totals =					64.1	5174.1

^{1/} Use only one CN source per line.

$$\text{CN (weighted)} = \frac{\text{total product}}{\text{total area}} = \frac{5174.1}{64.1} = 80.7$$

Use CN = 81

2. Runoff

Frequency yr
 Rainfall, P (24-hour) in
 Runoff, Q in
 (Use P and CN with table 2-1, fig. 2-1, or eqs. 2-3 and 2-4.)

Storm #1	Storm #2	Storm #3
1	10	100
2.8	5.8	8.0
1.10	3.6	5.8

Worksheet 3: Time of concentration (T_c) or travel time (T_t)

Project _____ By _____ Date _____

Location _____ Checked _____ Date _____

Circle one: Present Developed

Circle one: T_c T_t through subarea

NOTES: Space for as many as two segments per flow type can be used for each worksheet.

Include a map, schematic, or description of flow segments.

<u>Sheet flow</u> (Applicable to T_c only)	Segment ID		
1. Surface description (table 3-1)	1	WOODS	
2. Manning's roughness coeff., n (table 3-1) ..		.80	
3. Flow length, L (total L \leq 300 ft)		300	ft
4. Two-yr 24-hr rainfall, P_2		3.5	in
5. Land slope, s10	ft/ft
6. $T_t = \frac{0.007 (nL)^{0.8}}{P_2^{0.5} s^{0.4}}$ Compute T_t75 + — = .75	hr

<u>Shallow concentrated flow</u>	Segment ID		
7. Surface description (paved or unpaved)	2	UNPAVED	
8. Flow length, L		350	ft
9. Watercourse slope, s125	ft/ft
10. Average velocity, V (figure 3-1)		6.5	ft/s
11. $T_t = \frac{L}{3600 V}$ Compute T_t015 + — = .02	hr

<u>Channel flow</u>	Segment ID		
12. Cross sectional flow area, a	3	1187.5	ft ²
13. Wetted perimeter, p_w		4750	ft
14. Hydraulic radius, $r = \frac{a}{p_w}$ Compute r25	ft
15. Channel slope, s03	ft/ft
16. Manning's roughness coeff., n06	
17. $V = \frac{1.49 r^{2/3} s^{1/2}}{n}$ Compute V		1.7	ft/s
18. Flow length, L		750	ft
19. $T_t = \frac{L}{3600 V}$ Compute T_t12 + — = .12	hr
20. Watershed or subarea T_c or T_t (add T_t in steps 6, 11, and 19)89	hr

Worksheet 4: Graphical Peak Discharge method

Project T-HANGER SIDE PREP By STP Date 12-27-02

Location WILLIAMSBURG - JAMESTOWN AIRPORT Checked _____ Date _____

Circle one: Present Developed

1. Data:

Drainage area $A_m = \underline{.086}$ mi^2 (acres/640)
 Runoff curve number CN = 81 (From worksheet 2)
 Time of concentration .. $T_c = \underline{.89}$ hr (From worksheet 3)
 Rainfall distribution type = II (I, IA, II, III)
 Pond and swamp areas spread throughout watershed = 1.0 percent of A_m (____ acres or mi^2 covered)

		Storm #1	Storm #2	Storm #3
2. Frequency	yr	1	10	100
3. Rainfall, P (24-hour)	in	2.8	5.8	8.0
4. Initial abstraction, I_a	in	.469	.469	.469
(Use CN with table 4-1.)				
5. Compute I_a/P168	.081	.059
6. Unit peak discharge, q_u	csu/in	375	425	475
(Use T_c and I_a/P with exhibit 4-___)				
7. Runoff, Q	in	1.10	3.6	5.8
(From worksheet 2).				
8. Pond and swamp adjustment factor, F_p		1.0	1.0	1.0
(Use percent pond and swamp area with table 4-2. Factor is 1.0 for zero percent pond and swamp area.)				
9. Peak discharge, q_p	cfs	35.48	131.58	236.9
(Where $q_p = q_u A_m Q F_p$)				

Table 2

Worksheet for BMP Point System

A. STRUCTURAL BMP POINT ALLOCATION

<u>BMP</u>	<u>BMP Points</u>		<u>Fraction of Site Served by BMP</u>	=	<u>Weighted BMP Points</u>
<u>SAND FILTER</u>	<u>8</u>	x	<u>100%</u>	=	<u>8</u>
<u>SAND FILTER</u>	<u>8</u>	x	<u>50% ex. imp. cover</u>	=	<u>4</u>
<u> </u>	<u> </u>	x	<u> </u>	=	<u> </u>
<u> </u>	<u> </u>	x	<u> </u>	=	<u> </u>

TOTAL WEIGHTED STRUCTURAL BMP POINTS: 12

B. NATURAL OPEN SPACE CREDIT

<u>Fraction of Site</u>		<u>Natural Open Space Credit</u>	=	<u>Points for Natural Open Space</u>
<u> </u>	x	<u>(0.1 per 1%)</u>	=	<u> </u>
<u> </u>	x	<u>(0.15 per 1%)</u>	=	<u> </u>

TOTAL NATURAL OPEN SPACE CREDIT:

C. TOTAL WEIGHTED POINTS

<u>12</u>	+	<u>0</u>	=	<u>12</u>
<u>Structural BMP Points</u>		<u>Natural Open Space Points</u>		<u>Total</u>

Williamsburg-Jamestown Airport - Existing Channel Worksheet for Irregular Channel

Project Description	
Worksheet	Existing Channel
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	0.030000 ft/ft
Water Surface Elevation	12.00 ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Method	Horton's Method

Results	
Mannings Coefficient	0.060
Elevation Range	11.50 to 60.00
Discharge	2,021.46 cfs
Flow Area	1,187.5 ft ²
Wetted Perimeter	4,750.00 ft
Top Width	4,750.00 ft
Actual Depth	0.50 ft
Critical Elevation	11.91 ft
Critical Slope	0.089138 ft/ft
Velocity	1.70 ft/s
Velocity Head	0.05 ft
Specific Energy	12.05 ft
Froude Number	0.60
Flow Type	Subcritical

Roughness Segments		
Start Station	End Station	Mannings Coefficient
0+00	680+00	0.060

Natural Channel Points	
Station (ft)	Elevation (ft)
0+00	43.50
100+00	40.00
140+00	32.50
152+00	30.00
175+00	12.50
210+00	11.50
270+00	12.50
290+00	22.50
400+00	30.00
445+00	32.50
475+00	32.50
510+00	31.00
580+00	42.50
680+00	60.00

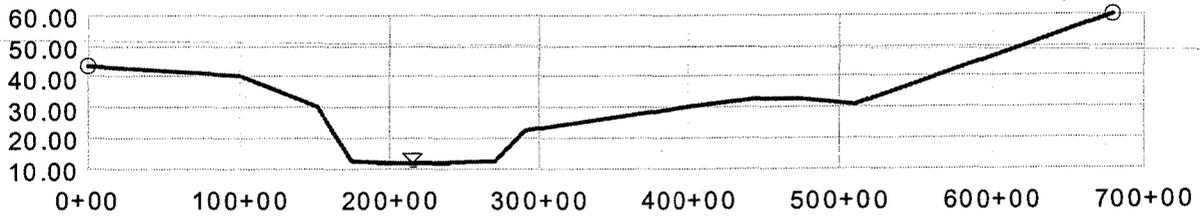
Project Engineer: Marty Wynn
FlowMaster v6.0 [614e]
Page 1 of 1

Cross Section

Cross Section for Irregular Channel

Project Description	
Worksheet	Existing Channel
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Section Data	
Mannings Coefficient	0.060
Slope	0.030000 ft/ft
Water Surface Elevation	12.00 ft
Elevation Range	11.50 to 60.00
Discharge	2,021.46 cfs



V:200.0
 H:1
 NTS

**STORMWATER MANAGEMENT / BMP FACILITIES
RECORD DRAWING CHECKLIST**

(Key for Checklist is as follows: XX Acceptable N/A Not Applicable Inc Incomplete)

I. Methods and Presentation: (Required for all Stormwater Management / BMP facilities.)

- XX 1. All constructed facilities meet approved design plans, unless otherwise shown. Record information or deviations from approved design plan shown in clearly annotated format and/or boxed beside design values.
- XX 2. Elevations to the nearest 0.1' unless higher accuracy is needed to show positive drainage.
- XX 3. All plan sheets labeled with "RECORD DRAWING" in large text in lower right hand corner (Approved County Plan Number and BMP ID Code can be included if known).
- XX 4. All plan sheet revision blocks modified to indicate date and record drawing status.
- XX 5. All plan sheets have certification statements and certifying professional's signature and seal.

II. Minimum Standards: (Required for all Stormwater Management / BMP facilities, as applicable.)

- XX 1. All requirements of Section I (Methods and Presentation) apply to this section.
- XX 2. Plan Views: Show general location, arrangement and dimensions. Location and alignment shall generally match approved design plans.
- N/A 3. Profile or elevations along top or berm of the facility. At a minimum, elevations are required at each end, at intervals not to exceed 50 feet and where low spots may be present. Top of embankment or berm elevations must be no less than design elevation plus any settlement allowances.
- N/A 4. Top widths, berm widths and embankment side slopes.
- N/A 5. Show length, width and depth of facility or grading, contours or spot elevations as required to verify permanent pool and design storage volumes were met or were reasonably close to the approved design. Evaluation of as-built grading, contours, spot elevations, or cross-sections, may be necessary by the professional to ensure approved design configurations, depths and volumes were closely maintained. If grading or elevations are significantly different from the approved plan, the Environmental Division shall be contacted immediately to determine whether the variation is acceptable or whether further evidence will be required. Facilities which do not closely resemble approved plan grades, elevations or configurations may require regrading by the Contractor; check volumetric computations; and/or a check hydraulic routing to ensure approved design water surface elevations, discharges or freeboard were closely maintained.
- N/A 6. Cross-section of the embankment through the principal spillway or outlet barrel. Must extend at least 100 ft. downstream of the pipe outlet or to recorded site property line, whichever is closer. Proper correlation is required between principal spillway (control structure) crest, emergency spillway crest, orifice and weirs and the top of the dam or facility. All elevations and dimensions must reasonably match the design plan or be sequentially relative to each other and the facility must reflect the required design storage volume(s) and/or design depth.
- N/A 7. Profile or elevations along the entire centerline of the emergency spillway. Emergency spillway may be steeper, but no flatter or narrower than design.
- N/A 8. Elevation of the principal spillway crest or outlet crest of the structure.

- N/A 9. Primary control structure (riser) diameter or dimensions, height, type of material and base size. Indicate provisions for access that are present such as steps, ladders, etc.
- XX 10. Dimensions, locations and elevations of outlet orifices, weirs, slots and drains.
- N/A 11. Type and size of anti-vortex and trash rack device. Height, diameter, dimensions, bar spacings (if applicable) and elevations relative to the principal spillway crest. Indicate if lockable hatch is present or not.
- N/A 12. Type, location, size and number of anti-seep collars or documentation of other methods utilized for seepage control. **May need to obtain this information during construction.**
- N/A 13. Top of impervious core embankment, core trench limits and elevation of cut-off trench bottom. **May need to obtain this information during construction.**
- N/A 14. Elevation of the principal spillway barrel (outlet pipe) inlet and outlet invert.
- N/A 15. Outlet barrel diameter, length, slope, type and thickness class of material and type of flared end sections, headwall or endwall.
- N/A 16. Outfall protection dimension, type and depth of rock and if underlain filter fabric is present.
- N/A 17. BMP interior and periphery landscaping zones conform with arrangements and requirements of the approved design plan.
- XX 18. Maintenance plan taken from approved design plan transposed onto record drawing set.
- N/A 19. Fencing location and type, if applicable to facility.
- XX 20. BMP vicinity properly cleaned of stockpiles and construction debris.
- XX 21. No visual signs of erosion or channel degradation immediately downstream of facility.
- XX 22. Any other information formally requested by the Environmental Division specific to the constructed SWM/BMP facility.

**STORMWATER MANAGEMENT / BMP FACILITIES
RECORD DRAWING CHECKLIST**

(Key for Checklist is as follows: XX Acceptable N/A Not Applicable Inc Incomplete)

VI. Group D - Filtering Systems (Includes D-1 Bioretention Cells; D-2 Surface Sand Filters; D-3 Underground Sand Filters; D-4 Perimeter Sand Filters; D-5 Organic Filters; and D-6 Pocket Sand Filters)

- XX D1. All requirements of Section II, Minimum Standards, apply to Group D facilities.
- XX D2. Sediment pretreatment devices provided.
- N/A D3. For D-1 BMPs (Bioretention Cells), pretreatment consisting of a grass filter strip below level spreader (deflector); a gravel diaphragm; and mulch and planting soil layers were provided.
- N/A D4. For D-1 BMPs (Bioretention Cells), plantings consist of native plant species; vegetation provided was based on zones of hydric tolerances; trees and understory of shrubs and herbaceous materials were provided; woody vegetation is absent from inflow locations; and trees are located around facility perimeter.
- XX D5. Facility was not used for erosion and sediment control purposes and sediment was prevented from entering the facility to the greatest extent possible during construction.
- XX D6. No visible signs of accumulated silt/sediment were present in the facility following construction or alternately, accumulated silt/sediment was properly removed .
- XX D7. Filtering system is off-line from storm drainage conveyance system.
- XX D8. Overflow outlet has adequate erosion protection.
- XX D9. Deflector, diversion, flow splitter or regulator structure provided to divert the water quality volume to the filtering structure.
- XX D10. Minimum four (4) inch perforated underdrain provided in a clean aggregate envelope layer beneath the facility.
- XX D11. Minimum fifty (50) foot separation from any slope fifteen (15) percent or greater. Minimum one hundred (100) foot separation horizontally from any known water supply well. Minimum one hundred (100) foot separation upslope and twenty-five (25) foot separation downslope from any building.
- XX D12. Stabilization and acceptable vegetative cover established over contributing drainage area prior to conveyance of stormwater to the facility.
- XX D13. No visual signs of erosion or channel degradation immediately downstream of facility.
- XX D14. Adequate, direct access provided to the pretreatment area and/or filter bed for future maintenance.

**STORMWATER MANAGEMENT / BMP FACILITIES
RECORD DRAWING CHECKLIST**

(Key for Checklist is as follows: XX Acceptable N/A Not Applicable Inc Incomplete)

X. Storm Drainage Systems (Associated with BMP's Only)

(Includes all incidental stormwater drainage conveyance systems associated with SWM/BMP facilities such as onsite or offsite storm drains, open channels, inlets, manholes, junctions, outlet protections, deflectors, etc. These facilities are external to the treatment function of, but are directly associated with drainage to and/or from a constructed SWM/BMP facility. The intent of this portion of the certification is to accurately identify the type and quantity of inflow or outflow points associated with the facility for future reference. The Professional may use his/her own discretion to determine inclusive facilities to meet the intent of this section. As a general rule, storm drainage systems would include incidental facilities to the nearest access structure upslope or downslope from the normal physical limits of the facility or 800 feet of storm drainage conveyance system length, whichever is less.)

- XX SD1. All requirements of Section II, Minimum Standards, apply to Storm Drainage Systems.
- XX SD2. Horizontal location of all pipe and structures relative to the SWM/BMP facility.
- XX SD3. Type, top elevation and invert elevation of all access type structures (inlets, manholes, etc.).
- XX SD4. Material type, size or diameter, class, invert elevations, lengths and slopes for all pipe segments.
- XX SD5. Class, length, width and depth of riprap and outlet protections or dimensions of special energy dissipation structures.

XII. Other Systems

(Includes any non-typical, specialty, manufactured or innovative stormwater management/BMP practices or systems generally accepted for use as or in conjunction with other acceptable stormwater management / BMP practices. Requires evidence of prior satisfactory industry use and prior Environmental Division approval, waiver or exception .)

- N/A O1. All requirements of Section II, Minimum Standards, apply to this section.
- N/A O2. Certification criteria to be determined on a case-by-case basis by the Environmental Division specific to the proposed SWM/BMP facility.



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BY:.....

James City County, Virginia
Environmental Division

Erosion and Sediment Control and Stormwater Management Design Plan Checklists

Table of Contents

<u>Contents</u>	<u>Page</u>
Erosion and Sediment Control Plan	
I. General	1
II. Site Plan	1
III. Narrative	3
IV. Calculations	4
Stormwater Management Design Plan	
I. General	5
II. Stormwater Conveyance Systems	7
III. Stormwater Management / BMP Facilities	8
IV. Outlet Protections	14
V. Additional Comments and Information	14

GENERAL INFORMATION

Project Name: T-HANGAR SITE PREPARATION (PHASE I) & PARKING LOT EXPANSION
 Owner / Applicant: WILLIAMSBURG - JAMESTOWN AIRPORT, INC.
 Plan Preparer: STEVEN T. PETERSON - TALBERT & BROWN Email: speterson@tbiric.com
 Project Location: WILLIAMSBURG - JAMESTOWN AIRPORT
 Tax Map / Parcel: 48-4-01-5A
 County Plan No. (if known): SP-63-01
 County BMP Type: _____ (-)

Other information submitted in addition to this checklist (Check all that apply):

- Design or Construction Drawings (Plans, Profiles, Details, etc.).
- Erosion & Sediment Control Plan (Plans, Details, etc.).
- Erosion & Sediment Control Plan Design Report.
- Stormwater Management Design Plan (Plans, Profiles, Details, etc.).
- Stormwater Management Design Report.
- Other, List: _____

Issue Date
March 1, 2001

**JAMES CITY COUNTY, VIRGINIA
ENVIRONMENTAL DIVISION**

EROSION AND SEDIMENT CONTROL PLAN CHECKLIST

I. GENERAL:

Yes No N/A

- FAMILIARITY* with current versions of Chapter 8, Erosion and Sedimentation Control and Chapter 23, Chesapeake Bay Preservation ordinances of the Code of James City County, Virginia and the Virginia Erosion and Sediment Control Handbook (VESCH).
- LAND DISTURBING PERMIT AND SILTATION AGREEMENT* with surety are required for the project.
- VARIANCE* if necessary, requested in writing, for the plan approving authority to waive or modify any of the minimum standards and specifications of the VESCH deemed inappropriate based on site conditions specific to this review case only. Variances which are approved shall be properly documented in the plan and become part of the approved erosion and sediment control plan for the site.

II. SITE PLAN:

Yes No N/A

- VICINITY MAP* locating the site in relation to the surrounding area. Include any major landmarks which might assist in physically locating the site.
- INDICATE NORTH* direction in relation to the site.
- LIMITS OF CLEARING AND GRADING* for the site including that required for implementation of erosion and sediment controls, stockpile areas and utilities.
- DISTURBED AREA ESTIMATES* in acres or square feet for the project.
- EXISTING TOPOGRAPHY* or contours for the site at no more than 5 foot contour interval.
- FINAL TOPOGRAPHY*, contours or proposed site grading in accordance with the design plan which indicates changes to existing topography and drainage patterns at no more than 2 foot contour interval (or 1 foot contours where required).
- EXISTING AND PROPOSED SPOT ELEVATIONS* to supplement existing and proposed contours, topography or site grading information. Spot elevations may replace final contours in some instances, especially if terrain is in a low lying area or relatively flat.
- EXISTING VEGETATION* including existing tree lines, grassed or unique vegetation areas.

Yes No N/A

EXISTING SITE FEATURES including roads, buildings, homes, utilities, streams, fences, structures and other important surface features of the site.

SOILS MAP with soil symbols, boundaries and legend in accordance with the current Soil Survey of James City and York Counties and the City of Williamsburg, Virginia.

ENVIRONMENTAL INVENTORY in accordance with Section 23-10(2) of the Chesapeake Bay Preservation Ordinance of James City County. Inventory generally includes: tidal shores and wetlands, non-tidal wetlands, resource protection area, hydric soils and slopes steeper than 25 percent. For wetlands, provide a copy of issued permits or satisfactory evidence that appropriate permits are being pursued for the entire project.

100-YEAR FLOODPLAIN LIMITS or any special flood hazard areas or flood zones based on appropriate Federal Management Agency Flood Insurance Rate Maps (FIRMs) or Flood Hazard Boundary Maps (FHBM) of James City County, Virginia.

DRAINAGE AREAS for offsite and onsite areas, existing or proposed as applicable. Include drainage divides and directional labels for all subareas at points of interest and size (in acres), weighted runoff coefficient or curve number and times of concentration for each subarea.

CRITICAL EROSION AREAS which require special consideration or unique erosion and sediment control measures. Refer to the VESCH, Chapter 6 for criteria.

DEVELOPMENT PLAN for the site showing all improvements such as buildings, structures, parking areas, access roadways, above and below ground utilities, stormwater management and drainage facilities, trails or sidewalks, proposed vegetation and landscaping, amenities, etc.

LOCATION OF PRACTICES proposed for erosion and sediment control, tree protection and temporary stormwater management due to land disturbance activities at the site. Use standard abbreviations, labels and symbols consistent for plan views based on minimum standards and specifications in Chapter 3 of the VESCH.

TEMPORARY STOCKPILE AREAS or staging and equipment storage areas as required for onsite or offsite construction activities or indicate that none are anticipated for this project.

OFFSITE LAND DISTURBING AREAS including borrow sites, waste areas, utility extensions, etc. and required erosion and sediment controls. If none are anticipated for the project, then indicate on the plans by general or erosion and sediment control notes.

DETAILS or alternately, appropriate reference to current minimum standards and specifications of the VESCH for each measure proposed for the project. Non-modified, standard duplicated details (silt fence, diversion dikes, etc.) may be referenced to the current version of the VESCH. Specific dimensional or modified standards (basins, traps, outlet protections, check dams, etc.) require presentation on detail sheets. Schedules or tables may be used for multiple site measures such as sediment traps, basins, channels, slope drains, etc. Any modification to standard details should be clearly defined, explained and illustrated.

Yes No N/A

MAINTENANCE PLAN or alternately, appropriate reference to current minimum standards and specifications of the VESCH, outlining the inspection frequency and maintenance requirements for all erosion and sediment control measures proposed for the project.

TRENCH DEWATERING methods and erosion and sediment controls, if anticipated for the project.

CONSTRUCTION SEQUENCE outlining the anticipated sequence for installation of erosion and sediment controls and site, grading and utility work to be performed for the project by the site contractor.

PHASING PLAN if required for larger project sites that are to be developed in stages or phases.

STANDARD COUNTY NOTES are required to be placed on the erosion and sediment control plan. Refer to the standard James City County Erosion and Sediment Control Notes, latest version.

PROFESSIONAL SEAL AND SIGNATURE required on final and complete approved plans, drawings, technical reports and specifications.

III. NARRATIVE:

Yes No N/A

PROJECT DESCRIPTION briefly describing the nature and purpose of the land disturbing activity and the acreage to be disturbed.

EXISTING SITE CONDITIONS description of existing topography, land use, cover and drainage patterns at the site.

ADJACENT AREA descriptions of neighboring onsite or offsite areas such as streams, lakes, property, roads, etc. and potential impacts due to concentrated flow or runoff from the land disturbing activity.

OFFSITE DISTURBED AREA descriptions of proposed borrow sites, waste or surplus areas, utility extensions and erosion and sediment controls to be implemented.

SOILS DESCRIPTION briefly summarizing site, disturbed area and drainage basin soils including name, unit, hydrologic soil group (HSG) classification, surface runoff potential, erodibility, permeability, depth, texture, structure, erosion hazards, shrink-swell potential, limitations for use and anticipated depths to bedrock and the seasonal water table, as applicable.

CRITICAL AREAS on the site which many have potentially serious erosion and sediment control problems and special considerations required (ie. steep slopes, hydric soils, channels, springs, sinkholes, water supply reservoirs, groundwater recharge areas, etc.)

Yes No N/A

Yes No N/A

PROPOSED EROSION & SEDIMENT CONTROL MEASURES inclusive to the specific erosion and sediment control plan as proposed for the land disturbing activity. Measures should be consistent with those proposed on the site drawings. Address general use, installation, limitations, sequencing and maintenance requirements for each control measure.

STABILIZATION MEASURES required for the site, either temporary or permanent, and during and following construction including temporary and permanent seeding and mulching, paving, stone, soil stabilization blankets and matting, sodding, landscaping or special stabilization techniques to be utilized at the site.

STORMWATER MANAGEMENT CONSIDERATIONS for the site, either of temporary or permanent nature, and strategies, sequences and measures required for control. May reference the stormwater management plan for the site, if prepared, for permanent stormwater management facilities and control of drainage once the site is stabilized.

IV. CALCULATIONS:

Yes No N/A

CALCULATIONS AND COMPUTATIONS associated with hydrology, hydraulics and design of proposed temporary and permanent erosion and sediment control measures including: sediment traps and basins, diversions, stormwater conveyance channels, culverts, slope drains, outlet protections, etc. Computations are not required on the construction plan and may be attached in a supplemental erosion and sediment control plan design report, if presented in a clear and organized format.

TEMPORARY SEDIMENT BASIN DESIGN DATA SHEET submitted for each basin along with schematic or sketch cross-section showing applicable design and construction data, storage volumes (wet-dry), dimensions and elevations. Peak design runoff to be based on the 2- or 25-year design storm event based on maximum disturbed site conditions (existing, interim or proposed conditions) in accordance with Minimum Standard 3.14 of the VESCH.

**JAMES CITY COUNTY, VIRGINIA
ENVIRONMENTAL DIVISION**

STORMWATER MANAGEMENT DESIGN PLAN CHECKLIST

I. GENERAL:

Yes No N/A

- FAMILIARITY* with current versions of the James City County Guidelines for Design and Construction of Stormwater Management BMPs manual; Chapter 8, Erosion and Sediment Control and Chapter 23, Chesapeake Bay Preservation ordinances of the Code of James City County, Virginia; the Virginia Erosion and Sediment Control Handbook (VESCH); and the Virginia Stormwater Management Handbook (VSMH).

- WAIVER OR EXCEPTION* if necessary, requested in writing, for the plan approving authority to waive or except the requirements of Chapter 23, Chesapeake Bay Preservation ordinance in accordance with procedure established in Sections 23-14 through 23-17 of the ordinance. Applies to this review case only.

- VARIANCE REQUEST* if necessary, requested in writing for the plan approving authority to waive or modify any of the minimum standards and specifications of the VESCH deemed inappropriate based on site conditions specific to this review case only. Variances which are approved shall be properly documented in the plan and become part of the approved erosion and sediment control plan for the site.

- PROFESSIONAL SEAL AND SIGNATURE* required on final and complete approved stormwater management plans, drawings, technical reports and specifications.

- WORKSHEET FOR BMP POINT SYSTEM* to ensure the stormwater management plan for the project attains at least 10 BMP points (New Development) or traditional pollutant load reduction computations per the Chesapeake Bay Local Assistance Manual (Redevelopment Only).

- PROPOSED CONSERVATION EASEMENT AREAS* for any natural open space points claimed in the BMP worksheet.

- INSPECTION/MAINTENANCE AGREEMENT* is required to be prepared and executed with the County for the project.

- FEMA FIRM PANEL* reference with designated special flood hazard areas or zone designations associated with the site, as applicable.

- DRAINAGE AREA MAP* at a maximum scale of 1"=200' scale showing drainage area boundaries for pre- and postdevelopment conditions and associated time of concentration flow paths. Labels to include drainage area size, runoff coefficient or curve number and time of concentration for each subarea shown on the map.

Yes No N/A

SOILS MAP with soil symbols, boundaries and legend in accordance with the current Soil Survey of James City and York Counties and the City of Williamsburg, Virginia with approximate locations of the project site, BMPs and applicable drainage basins.

STORMWATER MANAGEMENT NARRATIVE in a brief and simple format which describes the project; location; site and drainage basin soil characteristics; receiving water or drainage facility; existing site and drainage basin conditions (topography, land use, cover, slopes, etc.); proposed site development; proposed stormwater management and drainage plan including County BMP type selected; summary of hydrology and hydraulics; maintenance program; and any special assumptions utilized for development of the stormwater management and drainage design plan or computations.

TEMPORARY STORMWATER MANAGEMENT (if applicable) for control of stormwater runoff encountered during construction activities in addition to measures provided in the erosion and sediment control plan or stormwater management/drainage plan for the site. Adequate protection measures or sequencing provided.

MODIFICATION PLAN clearly defined for temporary sediment control structures which will be converted to permanent SWM/BMP structures. Includes appropriate hydrologic and hydraulic computations, conversions, sequencing and cleanout information or details. Normally related to primary control structures associated with dry detention or wet retention ponds. Normally not permitted for Group C or D categories such as bioretention, infiltration and filtering system facilities.

STORMWATER MANAGEMENT and DRAINAGE DESIGN REPORT in a bound 8-1/2 x 11 inch size format. Report shall generally include a title sheet, date, project identification, owner and preparer information, table of contents, narrative, summaries and computations as required. Computations may include: backwater, closed conduit, headwater, hydraulic, hydraulic grade line, hydrology, inlet, open channel, storm sewer, water quality, extended detention or stream channel protection and multi-stage storm routing calculations, as applicable, for the project. Computation data may include hand or computer generated computations, maps or schematics. All information should be presented in a clear, easy to follow format and should closely match construction plan information.

PLAN VIEW at 1 inch = 50 ft. scale or less (1" = 40', 1" = 30', etc.)

North arrow and plan legend.

Property lines.

Adjacent property information.

Existing site features and existing impervious cover areas.

Impervious cover tabulations.

Existing drainage facilities (natural or manmade).

Existing environmentally sensitive areas (RPA, wetlands, floodplain, steep slopes, critical soils, buffers, etc.).

Existing and proposed contours (1' or 2' contour interval) and spot elevations as necessary to define high and low topography.

Existing and proposed easement locations.

Yes No N/A

Proposed site improvements and proposed impervious cover areas.

Proposed stormwater conveyance, drainage and management facilities with appropriate labeled construction data and information.

Proposed landscaping and seeding plans (disturbed areas, pond interior, etc.).

Proposed slope stabilization areas (riprap, blankets, matings, walls, etc.).

Delineation of permanent pools and the 1-, 2-, 10- and 100-year Design Water Surface Elevations.

Delineation of ponding, headwater, surcharge or backwater areas which may affect adjacent existing or proposed buildings, structures or upstream adjacent properties.

Test boring locations with reference surface elevations (if known).

Risers, barrels, underdrains, overflows and outlet protections.

Emergency spillway level section and outlet channel.

Existing and proposed site utilities and protection measures.

Erosion and sediment control measures (for site or BMP).

Maintenance or access corridors to permanent stormwater management, BMP or drainage facilities.

II. STORMWATER CONVEYANCE SYSTEMS:

Yes No N/A

PLAN VIEWS

Storm drain lengths, sizes, types, classes and slopes for all segments. Label directly on plan or use structure/pipe schedule.

Access structure (inlets, manholes, junctions, etc.) rim elevations, inverts, type and required grate or top unit and lengths labeled.

All structure numbers labeled.

Adequate horizontal clearance from other site utilities or structures.

PROFILES generally are not required but are encouraged to expedite review. If not provided, ensure all pipe segments have adequate minimum cover, do not exceed maximum depths of cover for the type/class of pipe specified and do not conflict with other site utilities or excavation areas.

DETAILS

Typical storm drain bedding details or reference note.

Standard details or reference note for all proposed access structure types (inlets, manholes, junctions, etc.).

Inlet shaping detail or applicable reference note.

Step detail or applicable reference note (if depth 4 ft. or more).

Typical open channel details with designation, location, shape, type, bottom width, top width, lining, slope, length, side slope, and installation depth required for construction. Channel design data as necessary may also be included.

Outlet protections at all pipe outfalls.

Yes No N/A

STORMWATER CONVEYANCE SYSTEM COMPUTATIONS

- Storm Sewer Design computations based on 10-year design event.
- Hydraulic Grade Line computations based on 10-year design event.
- Inlet computations based on current VDOT procedure for spread, ponding depth and grate size required.
- Culvert Headwater computations. Design based on 10-year design storm event and check only for 100-year storm event.
- Open Channel computations based on 2-year design event for velocity and 10-year design event for capacity.
- Standard outlet protection or special energy dissipators.
- Pipe thickness design computations, as required, for selected pipe type (live load, minimum cover, maximum height of cover, etc.).
- Adequate channel computations for receiving channels (based on field measured channel section data).

III. STORMWATER MANAGEMENT / BMP FACILITIES:

Yes No N/A

HYDROLOGY - An SCS based methodology is required for the design of stormwater management/BMP facilities with watersheds exceeding 20 acres. Under 20 acres, other generally accepted methodologies such as the modified rational, critical storm are allowable. Refer to Chapter 5 of the VESCH or Chapter 5 of the VSMH.

- Runoff Curve Number or Coefficient determinations: predeveloped and ultimate development land use scenarios.
- Time of concentration: predeveloped and ultimate development indicating overland, shallow concentrated, and channel flow components (200 ft. maximum length for overland flow).
- Hydrograph generation (tabular or graphical): pre- and postdevelopment conditions for the 1-, 2-, 10-, and 100-year design storm events.

FACILITY CONFIGURATION and MINIMUM SEPARATIONS

- Screening and layout consistent with Section 24-98(d) of the Chapter 24 Zoning ordinance (landscaping, screening, visibility, etc.).
- Basic considerations for safety and unauthorized entry.
- Proper length to width ratio (Typically 2H:1V).
- Facilities with deep pools (4 feet or more in depth) provided with two benches. Fifteen (15) ft. safety bench outward from normal pool at maximum 6 percent slope and aquatic bench inward from normal shoreline below normal pool. Narrower widths may be considered on a case-by-case basis.
- Pond buffer minimum 25 feet outward from maximum design WSEL. Additional setbacks may be required to permanent structures.
- No trees, shrubs or woody plants within 15 feet of embankment toe or 25 feet from principal spillway structure.

Yes No N/A

- Infiltration and filtering system facilities generally located at least 100 feet horizontally from any water supply well; 100 feet from any downslope building; and 25 feet from any upslope buildings, unless site specific investigation allows for reduced separation.

Yes No N/A

-

HYDRAULIC COMPUTATIONS

- Elevation- or Stage- Storage curve and/or tabular data.
- Weir / Orifice Control - Extended Detention.
- Weir / Orifice Control - riser 1-year control for channel protection.
- Weir / Orifice Control - riser 2-year control for quantity (if required).
- Weir / Orifice Control - riser 10-year control for quantity (if required).
- Inlet / Outlet (barrel) control - (All Storms).
- Check for barrel control prior to riser orifice flow to prevent slug flow-water hammer conditions.
- Emergency spillway capacity and depth of flow.
- Elevation - Discharge (Outlet Rating) curve and/or table. Provide all supporting calculations and/or design assumptions.
- Adequate channel computations for receiving channel. May be waived if facility is designed based on current Stream Channel Protection criteria.

-

POND or RESERVOIR ROUTING

- Storage-Indication Routing of postdeveloped inflow hydrographs for the 1-, 2-, 10-, and 100-year design storms. Preference is for structure to discharge up to the 10-year storm through the principal spillway and pass the 100-year storm with a minimum 1 foot of freeboard through a combination principal and emergency spillways. If no emergency spillway is provided, riser must be large enough to pass the design high water flow and trash without overtopping the facility, have 3 square feet or more of cross-sectional area, contain a hood type inlet and have a minimum freeboard of 2 feet. Token spillways with minimum 8 ft. width are also recommended at or above the design 100-year storm elevation.
- Downstream hydrographs at established study points, if conditions warrant (ie. facility discharge combined with uncontrolled bypass).

-

MISCELLANEOUS COMPUTATIONS

- Water quality volume for permanent pool based on selected BMP treatment volume (WQv).
- Water quality volume for extended detention based on selected BMP treatment volume (WQv) with drawdown computations.
- Drawdown computations for the 1-year, 24 hour detention for stream channel protection criteria.
- Pond drain computations (within 24 hours).
- Anti-seep collar design (concrete preferred) or match material type.
- Filter diaphragm design (or alternative method of controlling seepage).

Yes No N/A

- Riser / base structure flotation analyses. FS = 1.25 minimum.
- Downstream danger reach study and/or emergency action plan (if conditions warrant).
- Upstream backwater analyses onto offsite adjacent property (if conditions warrant).
- 100 year floodplain impacts (if conditions warrant).

Yes No N/A

GEOTECHNICAL REQUIREMENTS

- Geotechnical Report with recommendations specific to BMP facility type selected. Report prepared by a registered professional engineer. Requires submission, review and approval prior to issuance of Land Disturbance Permit.
- Initial Feasibility Testing requirements satisfied as per Appendix E of the James City County Guidelines for Design and Construction of Stormwater Management BMPs manual. (Infiltration, Bioretention and Filtering System BMP types only).
- Concept Design Testing requirements satisfied as per Appendix E of the James City County Guidelines for Design and Construction of Stormwater Management BMPs manual. (Infiltration, Bioretention and Filtering System BMP types only).
- Minimum Boring locations: borrow area, pool area, principal control structure, top of facility near one abutment and emergency spillway if provided.
- Boring logs with Unified Soil Classification (ASTM D2487), soils descriptions and depths to bedrock and the seasonal water table indicated.
- Standard County Record Drawing/Construction Certification note provided on plan. *Note: It is understood that preparation of record drawings and construction certifications as required for project facilities may not necessarily be performed by the plan preparer. These components may be performed by others.*

PRINCIPAL SPILLWAY PROFILE AND ASSOCIATED DETAILS

- EXISTING GROUND AND PROPOSED GRADE**
 - Embankment or excavation side slopes labeled (3H:1V maximum).
 - Minimum top width labeled (per VESCH or VSMH requirements).
 - Removal of unsuitable material under proposed facility (per Geotechnical Report requirements).

Yes No N/A

CORE TRENCH

- Material (per plan or Geotechnical Report).
- Bottom width (4' minimum or greater as dictated by Geotechnical Report recommendations).
- Side slopes (1:1 maximum steepness)
- Depth (4' minimum or greater as dictated by Geotechnical Report).

PRINCIPAL CONTROL STRUCTURE. RISER OR SIMILAR STRUCTURE (DETAILS REQUIRED FOR ALL ITEMS)

- Durable, watertight, resistant material (concrete preferred).
- Riser diameter is at least 1.25 times larger than barrel diameter.
- All pertinent dimensions and elevations shown.
- Control orifice or weir dimensions and elevations shown.
- Trash rack - removable - for each release.
- Anti-vortex device, baffle or plate.
- Riser base structure with dimensions and embedment specifications (concrete preferred).
- Interior access (steps, ladders, etc.) for maintenance for structures over 4 feet in height. Excessively high risers may need some form of exterior access on top portion.
- Low flow orifice with trash rack device.

PRINCIPAL CONTROL STRUCTURE OUTLET BARREL

- Material (ASTM C-361 reinforced concrete pipe) with watertight joints. Prior approval required for all other pipe material (other RCP types, CMP, CPP, PVC, etc.).
- Support and bedding requirements for barrel - concrete cradles, etc. or as recommended by the Geotechnical Report.
- Pipe inverts, length, size, class and slope shown.
- Flared end section or endwall provided on barrel outlet.

SEEPAGE CONTROL

- Phreatic line shown (4:1 slope measured from the intersection of the embankment and the principal spillway design high water).

ANTI-SEEP COLLARS

- Anti-seep collar, concrete preferred.
- Size - 15 percent increase in length of saturation using outside pipe diameter.
- Spacing and location on barrel (located at least 2 feet from a pipe joint).

- FILTER DIAPHRAGMS*
- Design based on latest NRCS design methods and certified by a professional engineer.

Yes No N/A

- ELEVATION AND DIMENSIONAL DESIGN DATA*
- Top of facility - construction height and settled height (10 percent settlement).
- Crest of principal control structure spillway at least one (1) foot below crest of emergency spillway, if provided.
- Minimum freeboard of one (1) foot above the 100-year design high water elevation for facilities with an emergency spillway.
- Minimum freeboard of two (2) feet above the 100-year design high water elevation for facilities without an emergency spillway or in accordance with the SCS National Engineering Handbook (prior approval required).
- Basin Sediment Clean-Out elevation (permanent mode). Typically 10 to 25 percent of water quality volume.

- CROSS SECTION THROUGH FACILITY*
- Existing Ground.
- Proposed grade.
- Top of facility - constructed and settled.
- Location of emergency spillway with side slopes labeled (emergency spillway in cut).
- Bottom of core trench (4' minimum).
- Location of each soil boring.
- Barrel location.
- Existing and proposed utility location/protection.

- EMERGENCY SPILLWAY PROFILE*
- Existing ground.
- Inlet, level (control) and outlet sections per SCS.
- Spillway and crest elevations.

- PRETREATMENT DEVICES* of adequate depth and properly designed using required pretreatment volumes for the selected County BMP facility type. Including, but not limited to: sediment forebays, sediment basins, sumps, grass channels, gravel diaphragms, plunge pools, chamber separators, manufactured systems or other acceptable methods.

Yes No N/A

CONSTRUCTION SPECIFICATIONS and NOTES

- Anticipated sequence of construction for BMP (consistent with erosion and sediment control plan).
- Provisions to control base stream or storm flow conditions encountered during construction.
- Site and subgrade preparation requirements.
- Embankment, fill and backfill material soil and placement (lift) thickness requirements.
- Compaction and soil moisture content requirements.
- Geosynthetics for drainage, filtration, moisture barrier, separation, and reinforcement purposes.
- Clay or synthetic (PVC or HDPE) pond liners.
- Storm drain, underdrain and pipe conduit requirements.
- Minimum depth of pipe cover for temporary (construction) and final cover conditions.
- Permanent shutoff valve and pond drain.
- Concrete requirements for structural components.
- Riprap and slope protection.
- Access or maintenance road surface, base, subbase.
- Temporary and permanent stabilization measures.
- Temporary or permanent safety fencing.
- BMP Landscaping (deep, shallow, fringe, perimeter, etc.)
- Dust and traffic control (if warranted).
- Construction monitoring and certification by professional.
- Other: _____
- Other: _____

MAINTENANCE PROVISIONS

- Entity responsible for maintenance identified.
- Maintenance Plan which outlines the long-term schedule for inspection/maintenance of the facility and forebays
- Maintenance access from public right-of-way or publicly traveled road.
- Maintenance easement provided encompassing high water pool and buffer, principal and emergency spillways, outlet structures, forebays, embankment area and possible sediment-removal stockpile areas.
- Minimum 6 foot wide public safety shelf (landing) or alternative fencing.

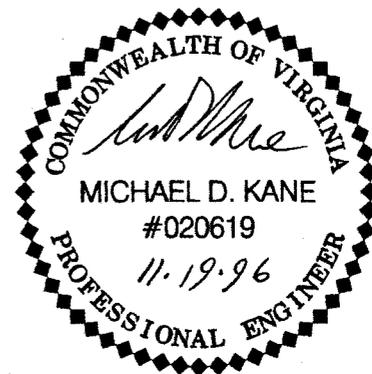
DESIGN ENGINEER'S REPORT

HANGAR SITE PREPARATION AND APRON

WILLIAMSBURG-JAMESTOWN AIRPORT
Williamsburg, Virginia

NOVEMBER 1996

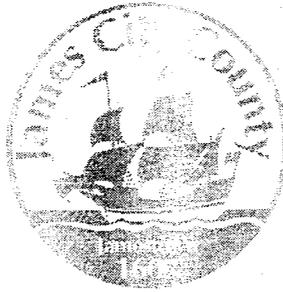
Prepared by:
Talbert & Bright, Inc.
13509 East Boundary Rd.
Suite E
Midlothian, Virginia 23112
TBI Project No. 4205-9601



Label	Length	Size	Discharge	Hydraulic Grade	
				Upstream	Downstream
P-1	56.00	18 inch	4.43	39.01	37.92
P-2	123.00	24 inch	5.67	37.92	37.91
P-3	12.00	24 inch	5.51	37.91	37.90
P-5	44.00	36.25 x 22	8.16	38.42	38.19
P-6	227.00	36.25 x 22	8.97	38.19	37.90
P-7	20.00	15 inch	1.50	37.99	37.92
P-9	196.00	24 inch	17.99	37.90	36.66
P-11	9.00	15 inch	4.51	36.70	36.66
P-12	164.00	24 inch	21.98	35.09	33.54
P-13	172.00	24 inch	23.87	33.54	31.60
P-14	11.00	24 inch	30.92	31.60	30.77
P-15	177.00	24 inch	21.28	36.66	35.09
P-17	10.00	15 inch	3.69	37.78	35.37

Label	Discharge	Elevations		
		Ground	Upstream HGL	Downstream HGL
I-1	4.43	39.70	39.01	39.01
J-1	5.67	41.00	37.92	37.92
J-2	5.51	40.00	37.91	37.91
I-2	17.99	39.87	37.90	37.90
I-3	21.98	39.62	35.09	35.09
I-4	8.16	40.50	38.42	38.42
I-5	8.97	39.63	38.19	38.19
I-6	1.50	39.00	37.99	37.99
I-8	4.51	39.74	36.70	36.70
J-3	21.28	39.75	36.66	36.66
I-9	23.87	39.40	33.54	33.54
I-10	30.92	37.69	31.60	31.60
Outlet	30.90	31.23	30.40	30.40
I-12	3.69	38.25	37.78	37.78

Elapsed: 0 minute(s) 8 second(s)



James City County, Virginia
Environmental Division



Erosion and Sediment Control and Stormwater Management Design Plan Checklists

Table of Contents

<u>Contents</u>	<u>Page</u>
Erosion and Sediment Control Plan	
I. General	1
II. Site Plan	1
III. Narrative	3
IV. Calculations	4
 Stormwater Management Design Plan	
I. General	5
II. Stormwater Conveyance Systems	7
III. Stormwater Management / BMP Facilities	8
IV. Outlet Protections	14
V. Additional Comments and Information	14

GENERAL INFORMATION

Project Name: APRON EXPANSION - PHASE I
 Owner / Applicant: WILLIAMSBURG - JAMESTOWN AIRPORT, INC
 Plan Preparer: STEVEN T. PETERSON - TALBERT & BLUNT Email: spetersw@t&binc.com
 Project Location: WILLIAMSBURG - JAMESTOWN AIRPORT
 Tax Map / Parcel: 48-4-01-5A
 County Plan No. (if known): SP-63-01
 County BMP Type: _____ (-)

Other information submitted in addition to this checklist (Check all that apply):

- Design or Construction Drawings (Plans, Profiles, Details, etc.).
- Erosion & Sediment Control Plan (Plans, Details, etc.).
- Erosion & Sediment Control Plan Design Report.
- Stormwater Management Design Plan (Plans, Profiles, Details, etc.).
- Stormwater Management Design Report.
- Other, List: _____

Issue Date
March 1, 2001

**JAMES CITY COUNTY, VIRGINIA
ENVIRONMENTAL DIVISION**

EROSION AND SEDIMENT CONTROL PLAN CHECKLIST

I. GENERAL:

Yes No N/A

- FAMILIARITY* with current versions of Chapter 8, Erosion and Sedimentation Control and Chapter 23, Chesapeake Bay Preservation ordinances of the Code of James City County, Virginia and the Virginia Erosion and Sediment Control Handbook (VESCH).
- LAND DISTURBING PERMIT AND SILTATION AGREEMENT* with surety are required for the project.
- VARIANCE* if necessary, requested in writing, for the plan approving authority to waive or modify any of the minimum standards and specifications of the VESCH deemed inappropriate based on site conditions specific to this review case only. Variances which are approved shall be properly documented in the plan and become part of the approved erosion and sediment control plan for the site.

II. SITE PLAN:

Yes No N/A

- VICINITY MAP* locating the site in relation to the surrounding area. Include any major landmarks which might assist in physically locating the site.
- INDICATE NORTH* direction in relation to the site.
- LIMITS OF CLEARING AND GRADING* for the site including that required for implementation of erosion and sediment controls, stockpile areas and utilities.
- DISTURBED AREA ESTIMATES* in acres or square feet for the project.
- EXISTING TOPOGRAPHY* or contours for the site at no more than 5 foot contour interval.
- FINAL TOPOGRAPHY*, contours or proposed site grading in accordance with the design plan which indicates changes to existing topography and drainage patterns at no more than 2 foot contour interval (or 1 foot contours where required).
- EXISTING AND PROPOSED SPOT ELEVATIONS* to supplement existing and proposed contours, topography or site grading information. Spot elevations may replace final contours in some instances, especially if terrain is in a low lying area or relatively flat.
- EXISTING VEGETATION* including existing tree lines, grassed or unique vegetation areas.

Yes No N/A

EXISTING SITE FEATURES including roads, buildings, homes, utilities, streams, fences, structures and other important surface features of the site.

SOILS MAP with soil symbols, boundaries and legend in accordance with the current Soil Survey of James City and York Counties and the City of Williamsburg, Virginia.

ENVIRONMENTAL INVENTORY in accordance with Section 23-10(2) of the Chesapeake Bay Preservation Ordinance of James City County. Inventory generally includes: tidal shores and wetlands, non-tidal wetlands, resource protection area, hydric soils and slopes steeper than 25 percent. For wetlands, provide a copy of issued permits or satisfactory evidence that appropriate permits are being pursued for the entire project.

100-YEAR FLOODPLAIN LIMITS or any special flood hazard areas or flood zones based on appropriate Federal Management Agency Flood Insurance Rate Maps (FIRMs) or Flood Hazard Boundary Maps (FHBMs) of James City County, Virginia.

DRAINAGE AREAS for offsite and onsite areas, existing or proposed as applicable. Include drainage divides and directional labels for all subareas at points of interest and size (in acres), weighted runoff coefficient or curve number and times of concentration for each subarea.

CRITICAL EROSION AREAS which require special consideration or unique erosion and sediment control measures. Refer to the VESCH, Chapter 6 for criteria.

DEVELOPMENT PLAN for the site showing all improvements such as buildings, structures, parking areas, access roadways, above and below ground utilities, stormwater management and drainage facilities, trails or sidewalks, proposed vegetation and landscaping, amenities, etc.

LOCATION OF PRACTICES proposed for erosion and sediment control, tree protection and temporary stormwater management due to land disturbance activities at the site. Use standard abbreviations, labels and symbols consistent for plan views based on minimum standards and specifications in Chapter 3 of the VESCH.

TEMPORARY STOCKPILE AREAS or staging and equipment storage areas as required for onsite or offsite construction activities or indicate that none are anticipated for this project.

OFFSITE LAND DISTURBING AREAS including borrow sites, waste areas, utility extensions, etc. and required erosion and sediment controls. If none are anticipated for the project, then indicate on the plans by general or erosion and sediment control notes.

DETAILS or alternately, appropriate reference to current minimum standards and specifications of the VESCH for each measure proposed for the project. Non-modified, standard duplicated details (silt fence, diversion dikes, etc.) may be referenced to the current version of the VESCH. Specific dimensional or modified standards (basins, traps, outlet protections, check dams, etc.) require presentation on detail sheets. Schedules or tables may be used for multiple site measures such as sediment traps, basins, channels, slope drains, etc. Any modification to standard details should be clearly defined, explained and illustrated.

Yes No N/A

MAINTENANCE PLAN or alternately, appropriate reference to current minimum standards and specifications of the VESCH, outlining the inspection frequency and maintenance requirements for all erosion and sediment control measures proposed for the project.

TRENCH DEWATERING methods and erosion and sediment controls, if anticipated for the project.

CONSTRUCTION SEQUENCE outlining the anticipated sequence for installation of erosion and sediment controls and site, grading and utility work to be performed for the project by the site contractor.

PHASING PLAN if required for larger project sites that are to be developed in stages or phases.

STANDARD COUNTY NOTES are required to be placed on the erosion and sediment control plan. Refer to the standard James City County Erosion and Sediment Control Notes dated May 5, 1999.

PROFESSIONAL SEAL AND SIGNATURE required on final and complete approved plans, drawings, technical reports and specifications.

III. NARRATIVE:

Yes No N/A

PROJECT DESCRIPTION briefly describing the nature and purpose of the land disturbing activity and the acreage to be disturbed.

EXISTING SITE CONDITIONS description of existing topography, land use, cover and drainage patterns at the site.

ADJACENT AREA descriptions of neighboring onsite or offsite areas such as streams, lakes, property, roads, etc. and potential impacts due to concentrated flow or runoff from the land disturbing activity.

OFFSITE DISTURBED AREA descriptions of proposed borrow sites, waste or surplus areas, utility extensions and erosion and sediment controls to be implemented.

SOILS DESCRIPTION briefly summarizing site, disturbed area and drainage basin soils including name, unit, hydrologic soil group (HSG) classification, surface runoff potential, erodibility, permeability, depth, texture, structure, erosion hazards, shrink-swell potential, limitations for use and anticipated depths to bedrock and the seasonal water table, as applicable.

CRITICAL AREAS on the site which many have potentially serious erosion and sediment control problems and special considerations required (ie. steep slopes, hydric soils, channels, springs, sinkholes, water supply reservoirs, groundwater recharge areas, etc.)

Yes No N/A

PROPOSED EROSION & SEDIMENT CONTROL MEASURES inclusive to the specific erosion and sediment control plan as proposed for the land disturbing activity. Measures should be consistent with those proposed on the site drawings. Address general use, installation, limitations, sequencing and maintenance requirements for each control measure.

STABILIZATION MEASURES required for the site, either temporary or permanent, and during and following construction including temporary and permanent seeding and mulching, paving, stone, soil stabilization blankets and matting, sodding, landscaping or special stabilization techniques to be utilized at the site.

STORMWATER MANAGEMENT CONSIDERATIONS for the site, either of temporary or permanent nature, and strategies, sequences and measures required for control. May reference the stormwater management plan for the site, if prepared, for permanent stormwater management facilities and control of drainage once the site is stabilized.

IV. CALCULATIONS:

Yes No N/A

CALCULATIONS AND COMPUTATIONS associated with hydrology, hydraulics and design of proposed temporary and permanent erosion and sediment control measures including: sediment traps and basins, diversions, stormwater conveyance channels, culverts, slope drains, outlet protections, etc. Computations are not required on the construction plan and may be attached in a supplemental erosion and sediment control plan design report, if presented in a clear and organized format.

TEMPORARY SEDIMENT BASIN DESIGN DATA SHEET submitted for each basin along with schematic or sketch cross-section showing applicable design and construction data, storage volumes (wet-dry), dimensions and elevations. Peak design runoff to be based on the 2- or 25-year design storm event based on maximum disturbed site conditions (existing, interim or proposed conditions) in accordance with Minimum Standard 3.14 of the VESCH.

**JAMES CITY COUNTY, VIRGINIA
ENVIRONMENTAL DIVISION**

STORMWATER MANAGEMENT DESIGN PLAN CHECKLIST

I. GENERAL:

Yes No N/A

- FAMILIARITY* with current versions of the James City County Guidelines for Design and Construction of Stormwater Management BMPs manual; Chapter 8, Erosion and Sediment Control and Chapter 23, Chesapeake Bay Preservation ordinances of the Code of James City County, Virginia; the Virginia Erosion and Sediment Control Handbook (VESCH); and the Virginia Stormwater Management Handbook (VSMH).

- WAIVER OR EXCEPTION* if necessary, requested in writing, for the plan approving authority to waive or except the requirements of Chapter 23, Chesapeake Bay Preservation ordinance in accordance with procedure established in Sections 23-14 through 23-17 of the ordinance. Applies to this review case only.

- VARIANCE REQUEST* if necessary, requested in writing for the plan approving authority to waive or modify any of the minimum standards and specifications of the VESCH deemed inappropriate based on site conditions specific to this review case only. Variances which are approved shall be properly documented in the plan and become part of the approved erosion and sediment control plan for the site.

- PROFESSIONAL SEAL AND SIGNATURE* required on final and complete approved stormwater management plans, drawings, technical reports and specifications.

- WORKSHEET FOR BMP POINT SYSTEM* to ensure the stormwater management plan for the project attains at least 10 BMP points (New Development) or traditional pollutant load reduction computations per the Chesapeake Bay Local Assistance Manual (Redevelopment Only).

- PROPOSED CONSERVATION EASEMENT AREAS* for any natural open space points claimed in the BMP worksheet.

- INSPECTION/MAINTENANCE AGREEMENT* is required to be prepared and executed with the County for the project.

- FEMA FIRM PANEL* reference with designated special flood hazard areas or zone designations associated with the site, as applicable.

- DRAINAGE AREA MAP* at a maximum scale of 1"=200' scale showing drainage area boundaries for pre- and postdevelopment conditions and associated time of concentration flow paths. Labels to include drainage area size, runoff coefficient or curve number and time of concentration for each subarea shown on the map.

Yes No N/A

SOILS MAP with soil symbols, boundaries and legend in accordance with the current Soil Survey of James City and York Counties and the City of Williamsburg, Virginia with approximate locations of the project site, BMPs and applicable drainage basins.

STORMWATER MANAGEMENT NARRATIVE in a brief and simple format which describes the project; location; site and drainage basin soil characteristics; receiving water or drainage facility; existing site and drainage basin conditions (topography, land use, cover, slopes, etc.); proposed site development; proposed stormwater management and drainage plan including County BMP type selected; summary of hydrology and hydraulics; maintenance program; and any special assumptions utilized for development of the stormwater management and drainage design plan or computations.

TEMPORARY STORMWATER MANAGEMENT (if applicable) for control of stormwater runoff encountered during construction activities in addition to measures provided in the erosion and sediment control plan or stormwater management/drainage plan for the site. Adequate protection measures or sequencing provided.

MODIFICATION PLAN clearly defined for temporary sediment control structures which will be converted to permanent SWM/BMP structures. Includes appropriate hydrologic and hydraulic computations, conversions, sequencing and cleanout information or details. Normally related to primary control structures associated with dry detention or wet retention ponds. Normally not permitted for Group C or D categories such as bioretention, infiltration and filtering system facilities.

STORMWATER MANAGEMENT and DRAINAGE DESIGN REPORT in a bound 8-1/2 x 11 inch size format. Report shall generally include a title sheet, date, project identification, owner and preparer information, table of contents, narrative, summaries and computations as required. Computations may include: backwater, closed conduit, headwater, hydraulic, hydraulic grade line, hydrology, inlet, open channel, storm sewer, water quality, extended detention or stream channel protection and multi-stage storm routing calculations, as applicable, for the project. Computation data may include hand or computer generated computations, maps or schematics. All information should be presented in a clear, easy to follow format and should closely match construction plan information.

PLAN VIEW at 1 inch = 50 ft. scale or less (1" = 40', 1" = 30', etc.)

North arrow and plan legend.

Property lines.

Adjacent property information.

Existing site features and existing impervious cover areas.

Impervious cover tabulations.

Existing drainage facilities (natural or manmade).

Existing environmentally sensitive areas (RPA, wetlands, floodplain, steep slopes, critical soils, buffers, etc.).

Existing and proposed contours (1' or 2' contour interval) and spot elevations as necessary to define high and low topography.

Existing and proposed easement locations.

Yes No N/A

- Proposed site improvements and proposed impervious cover areas.
- Proposed stormwater conveyance, drainage and management facilities with appropriate labeled construction data and information.
- Proposed landscaping and seeding plans (disturbed areas, pond interior, etc.).
- Proposed slope stabilization areas (riprap, blankets, mattings, walls, etc.).
- Delineation of permanent pools and the 1-, 2-, 10- and 100-year Design Water Surface Elevations.
- Delineation of ponding, headwater, surcharge or backwater areas which may affect adjacent existing or proposed buildings, structures or upstream adjacent properties.
- Test boring locations with reference surface elevations (if known).
- Risers, barrels, underdrains, overflows and outlet protections.
- Emergency spillway level section and outlet channel.
- Existing and proposed site utilities and protection measures.
- Erosion and sediment control measures (for site or BMP).
- Maintenance or access corridors to permanent stormwater management, BMP or drainage facilities.

II. **STORMWATER CONVEYANCE SYSTEMS:**

Yes No N/A

- PLAN VIEWS**
 - Storm drain lengths, sizes, types, classes and slopes for all segments. Label directly on plan or use structure/pipe schedule.
 - Access structure (inlets, manholes, junctions, etc.) rim elevations, inverts, type and required grate or top unit and lengths labeled.
 - All structure numbers labeled.
 - Adequate horizontal clearance from other site utilities or structures.
- PROFILES** generally are not required but are encouraged to expedite review. If not provided, ensure all pipe segments have adequate minimum cover, do not exceed maximum depths of cover for the type/class of pipe specified and do not conflict with other site utilities or excavation areas.
- DETAILS**
 - Typical storm drain bedding details or reference note.
 - Standard details or reference note for all proposed access structure types (inlets, manholes, junctions, etc.).
 - Inlet shaping detail or applicable reference note.
 - Step detail or applicable reference note (if depth 4 ft. or more).
 - Typical open channel details with designation, location, shape, type, bottom width, top width, lining, slope, length, side slope, and installation depth required for construction. Channel design data as necessary may also be included.
 - Outlet protections at all pipe outfalls.

Yes No N/A

STORMWATER CONVEYANCE SYSTEM COMPUTATIONS

- Storm Sewer Design computations based on 10-year design event.
- Hydraulic Grade Line computations based on 10-year design event.
- Inlet computations based on current VDOT procedure for spread, ponding depth and grate size required.
- Culvert Headwater computations. Design based on 10-year design storm event and check only for 100-year storm event.
- Open Channel computations based on 2-year design event for velocity and 10-year design event for capacity.
- Standard outlet protection or special energy dissipators.
- Pipe thickness design computations, as required, for selected pipe type (live load, minimum cover, maximum height of cover, etc.).
- Adequate channel computations for receiving channels (based on field measured channel section data).

III. STORMWATER MANAGEMENT / BMP FACILITIES:

Yes No N/A

HYDROLOGY - An SCS based methodology is required for the design of stormwater management/BMP facilities with watersheds exceeding 20 acres. Under 20 acres, other generally accepted methodologies such as the modified rational, critical storm are allowable. Refer to Chapter 5 of the VESCH or Chapter 5 of the VSMH.

- Runoff Curve Number or Coefficient determinations: predeveloped and ultimate development land use scenarios.
- Time of concentration: predeveloped and ultimate development indicating overland, shallow concentrated, and channel flow components (200 ft. maximum length for overland flow).
- Hydrograph generation (tabular or graphical): pre- and postdevelopment conditions for the 1-, 2-, 10-, and 100-year design storm events.

FACILITY CONFIGURATION and MINIMUM SEPARATIONS

- Screening and layout consistent with Section 24-98(d) of the Chapter 24 Zoning ordinance (landscaping, screening, visibility, etc.).
- Basic considerations for safety and unauthorized entry.
- Proper length to width ratio (Typically 2H:1V).
- Facilities with deep pools (4 feet or more in depth) provided with two benches. Fifteen (15) ft. safety bench outward from normal pool at maximum 6 percent slope and aquatic bench inward from normal shoreline below normal pool. Narrower widths may be considered on a case-by-case basis.
- Pond buffer minimum 25 feet outward from maximum design WSEL. Additional setbacks may be required to permanent structures.
- No trees, shrubs or woody plants within 15 feet of embankment toe or 25 feet from principal spillway structure.

Yes No N/A

- Infiltration and filtering system facilities generally located at least 100 feet horizontally from any water supply well; 100 feet from any downslope building; and 25 feet from any upslope buildings, unless site specific investigation allows for reduced separation.

Yes No N/A

HYDRAULIC COMPUTATIONS

- Elevation- or Stage- Storage curve and/or tabular data.
- Weir / Orifice Control - Extended Detention.
- Weir / Orifice Control - riser 1-year control for channel protection.
- Weir / Orifice Control - riser 2-year control for quantity (if required).
- Weir / Orifice Control - riser 10-year control for quantity (if required).
- Inlet / Outlet (barrel) control - (All Storms).
- Check for barrel control prior to riser orifice flow to prevent slug flow-water hammer conditions.
- Emergency spillway capacity and depth of flow.
- Elevation - Discharge (Outlet Rating) curve and/or table. Provide all supporting calculations and/or design assumptions.
- Adequate channel computations for receiving channel. May be waived if facility is designed based on current Stream Channel Protection criteria.

POND or RESERVOIR ROUTING

- Storage-Indication Routing of postdeveloped inflow hydrographs for the 1-, 2-, 10-, and 100-year design storms. Preference is for structure to discharge up to the 10-year storm through the principal spillway and pass the 100-year storm with a minimum 1 foot of freeboard through a combination principal and emergency spillways. If no emergency spillway is provided, riser must be large enough to pass the design high water flow and trash without overtopping the facility, have 3 square feet or more of cross-sectional area, contain a hood type inlet and have a minimum freeboard of 2 feet. Token spillways with minimum 8 ft. width are also recommended at or above the design 100-year storm elevation.
- Downstream hydrographs at established study points, if conditions warrant (ie. facility discharge combined with uncontrolled bypass).

MISCELLANEOUS COMPUTATIONS

- Water quality volume for permanent pool based on selected BMP treatment volume (WQv).
- Water quality volume for extended detention based on selected BMP treatment volume (WQv) with drawdown computations.
- Drawdown computations for the 1-year, 24 hour detention for stream channel protection criteria.
- Pond drain computations (within 24 hours).
- Anti-seep collar design (concrete preferred) or match material type.
- Filter diaphragm design (or alternative method of controlling seepage).

Yes No N/A

- Riser / base structure flotation analyses. FS = 1.25 minimum.
- Downstream danger reach study and/or emergency action plan (if conditions warrant).
- Upstream backwater analyses onto offsite adjacent property (if conditions warrant).
- 100 year floodplain impacts (if conditions warrant).

Yes No N/A

-

GEOTECHNICAL REQUIREMENTS

- Geotechnical Report with recommendations specific to BMP facility type selected. Report prepared by a registered professional engineer. Requires submission, review and approval prior to issuance of Land Disturbance Permit.
- Initial Feasibility Testing requirements satisfied as per Appendix E of the James City County Guidelines for Design and Construction of Stormwater Management BMPs manual. (Infiltration, Bioretention and Filtering System BMP types only).
- Concept Design Testing requirements satisfied as per Appendix E of the James City County Guidelines for Design and Construction of Stormwater Management BMPs manual. (Infiltration, Bioretention and Filtering System BMP types only).
- Minimum Boring locations: borrow area, pool area, principal control structure, top of facility near one abutment and emergency spillway if provided.
- Boring logs with Unified Soil Classification (ASTM D2487), soils descriptions and depths to bedrock and the seasonal water table indicated.
- Standard County Record Drawing/Construction Certification note provided on plan. *Note: It is understood that preparation of record drawings and construction certifications as required for project facilities may not necessarily be performed by the plan preparer. These components may be performed by others.*

-

PRINCIPAL SPILLWAY PROFILE AND ASSOCIATED DETAILS

- EXISTING GROUND AND PROPOSED GRADE**
 - Embankment or excavation side slopes labeled (3H:1V maximum).
 - Minimum top width labeled (per VESCH or VSMH requirements).
 - Removal of unsuitable material under proposed facility (per Geotechnical Report requirements).

Yes No N/A

CORE TRENCH

- Material (per plan or Geotechnical Report).
- Bottom width (4' minimum or greater as dictated by Geotechnical Report recommendations).
- Side slopes (1:1 maximum steepness)
- Depth (4' minimum or greater as dictated by Geotechnical Report).

PRINCIPAL CONTROL STRUCTURE. RISER OR SIMILAR STRUCTURE (DETAILS REQUIRED FOR ALL ITEMS)

- Durable, watertight, resistant material (concrete preferred).
- Riser diameter is at least 1.25 times larger than barrel diameter.
- All pertinent dimensions and elevations shown.
- Control orifice or weir dimensions and elevations shown.
- Trash rack - removable - for each release.
- Anti-vortex device, baffle or plate.
- Riser base structure with dimensions and embedment specifications (concrete preferred).
- Interior access (steps, ladders, etc.) for maintenance for structures over 4 feet in height. Excessively high risers may need some form of exterior access on top portion.
- Low flow orifice with trash rack device.

PRINCIPAL CONTROL STRUCTURE OUTLET BARREL

- Material (ASTM C-361 reinforced concrete pipe) with watertight joints. Prior approval required for all other pipe material (other RCP types, CMP, CPP, PVC, etc.).
- Support and bedding requirements for barrel - concrete cradles, etc. or as recommended by the Geotechnical Report.
- Pipe inverts, length, size, class and slope shown.
- Flared end section or endwall provided on barrel outlet.

SEEPAGE CONTROL

- Phreatic line shown (4:1 slope measured from the intersection of the embankment and the principal spillway design high water).

ANTI-SEEP COLLARS

- Anti-seep collar, concrete preferred.
- Size - 15 percent increase in length of saturation using outside pipe diameter.
- Spacing and location on barrel (located at least 2 feet from a pipe joint).

- FILTER DIAPHRAGMS**
- Design based on latest NRCS design methods and certified by a professional engineer.

Yes No N/A

- ELEVATION AND DIMENSIONAL DESIGN DATA**
- Top of facility - construction height and settled height (10 percent settlement).
- Crest of principal control structure spillway at least one (1) foot below crest of emergency spillway, if provided.
- Minimum freeboard of one (1) foot above the 100-year design high water elevation for facilities with an emergency spillway.
- Minimum freeboard of two (2) feet above the 100-year design high water elevation for facilities without an emergency spillway or in accordance with the SCS National Engineering Handbook (prior approval required).
- Basin Sediment Clean-Out elevation (permanent mode). Typically 10 to 25 percent of water quality volume.

- CROSS SECTION THROUGH FACILITY**
- Existing Ground.
- Proposed grade.
- Top of facility - constructed and settled.
- Location of emergency spillway with side slopes labeled (emergency spillway in cut).
- Bottom of core trench (4' minimum).
- Location of each soil boring.
- Barrel location.
- Existing and proposed utility location/protection.

- EMERGENCY SPILLWAY PROFILE**
- Existing ground.
- Inlet, level (control) and outlet sections per SCS.
- Spillway and crest elevations.

- PRETREATMENT DEVICES** of adequate depth and properly designed using required pretreatment volumes for the selected County BMP facility type. Including, but not limited to: sediment forebays, sediment basins, sumps, grass channels, gravel diaphragms, plunge pools, chamber separators, manufactured systems or other acceptable methods.

Yes No N/A

CONSTRUCTION SPECIFICATIONS and NOTES

- Anticipated sequence of construction for BMP (consistent with erosion and sediment control plan).
- Provisions to control base stream or storm flow conditions encountered during construction.
- Site and subgrade preparation requirements.
- Embankment, fill and backfill material soil and placement (lift) thickness requirements.
- Compaction and soil moisture content requirements.
- Geosynthetics for drainage, filtration, moisture barrier, separation, and reinforcement purposes.
- Clay or synthetic (PVC or HDPE) pond liners.
- Storm drain, underdrain and pipe conduit requirements.
- Minimum depth of pipe cover for temporary (construction) and final cover conditions.
- Permanent shutoff valve and pond drain.
- Concrete requirements for structural components.
- Riprap and slope protection.
- Access or maintenance road surface, base, subbase.
- Temporary and permanent stabilization measures.
- Temporary or permanent safety fencing.
- BMP Landscaping (deep, shallow, fringe, perimeter, etc.)
- Dust and traffic control (if warranted).
- Construction monitoring and certification by professional.
- Other: _____
- Other: _____

MAINTENANCE PROVISIONS

- Entity responsible for maintenance identified..
- Maintenance Plan which outlines the long-term schedule for inspection/maintenance of the facility and forebays
- Maintenance access from public right-of-way or publicly traveled road.
- Maintenance easement provided encompassing high water pool and buffer, principal and emergency spillways, outlet structures, forebays, embankment area and possible sediment-removal stockpile areas.
- Minimum 6 foot wide public safety shelf (landing) or alternative fencing.

Williamsburg-Jamestown Airport - Infield Ditch Worksheet for Trapezoidal Channel

Project Description	
Worksheet	Proposed Infield Ditch
Flow Element	Trapezoidal Channel
Method	Manning's Formula
Solve For	Channel Depth



Input Data	
Mannings Coefficient	0.030
Slope	0.005000 ft/ft
Left Side Slope	5.00 H : V
Right Side Slope	5.00 H : V
Bottom Width	3.00 ft
Discharge	38.58 cfs

Results	
Depth	1.34 ft
Flow Area	13.0 ft ²
Wetted Perimeter	16.67 ft
Top Width	16.40 ft
Critical Depth	1.04 ft
Critical Slope	0.015561 ft/ft
Velocity	2.97 ft/s
Velocity Head	0.14 ft
Specific Energy	1.48 ft
Froude Number	0.59
Flow Type	Subcritical

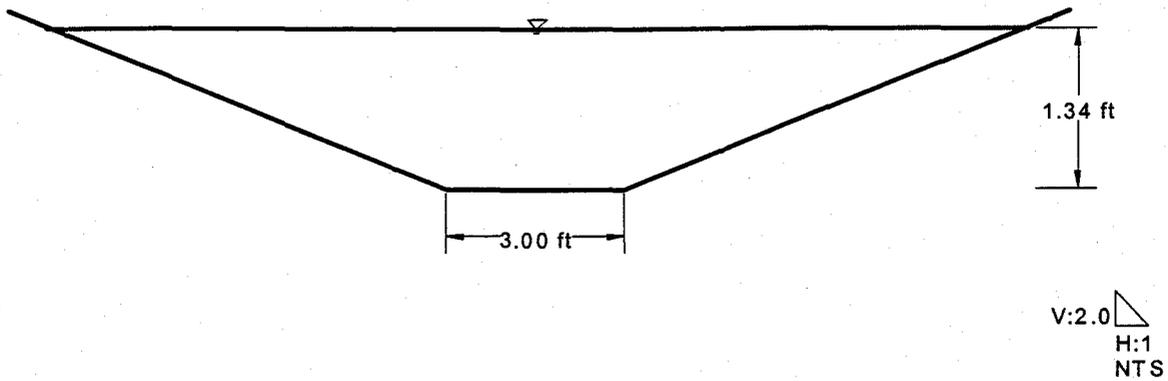
Williamsburg - Jamestown Airport - Infield Ditch Cross Section for Trapezoidal Channel

Project Description

Worksheet	Proposed Infield Ditch
Flow Element	Trapezoidal Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data

Mannings Coefficient	0.030
Slope	0.005000 ft/ft
Depth	1.34 ft
Left Side Slope	5.00 H : V
Right Side Slope	5.00 H : V
Bottom Width	3.00 ft
Discharge	38.58 cfs



**Existing Outfall Ditch @ STR 6
Worksheet for Triangular Channel**



Project Description	
Worksheet	Outfall Ditch at STR 5-6
Flow Element	Triangular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Mannings Coefficient	0.040
Slope	0.055000 ft/ft
Depth	1.50 ft
Left Side Slope	3.00 H : V
Right Side Slope	3.00 H : V

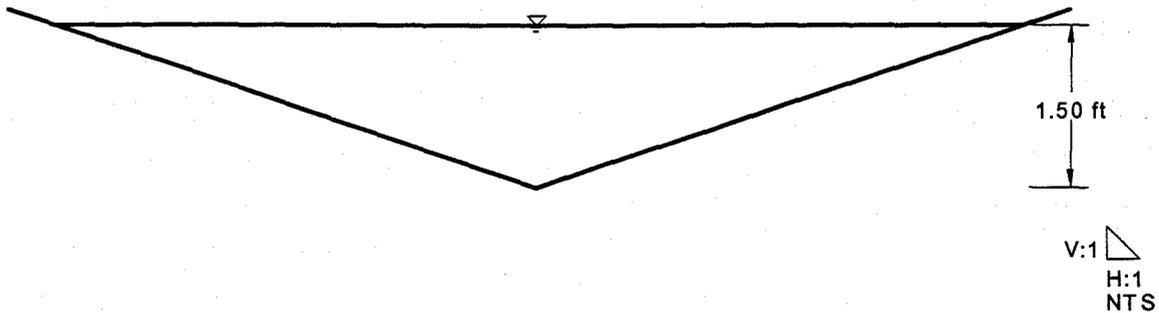
Results	
Discharge	46.87 cfs
Flow Area	6.8 ft ²
Wetted Perimeter	9.49 ft
Top Width	9.00 ft
Critical Depth	1.72 ft
Critical Slope	0.026287 ft/ft
Velocity	6.94 ft/s
Velocity Head	0.75 ft
Specific Energy	2.25 ft
Froude Number	1.41
Flow Type	Supercritical

Outfall Ditch @ STR 6

Cross Section for Triangular Channel

Project Description	
Worksheet	Outfall Ditch at STR 5-6
Flow Element	Triangular Channel
Method	Manning's Formula
Solve For	Discharge

Section Data	
Mannings Coefficient	0.040
Slope	0.055000 ft/ft
Depth	1.50 ft
Left Side Slope	3.00 H : V
Right Side Slope	3.00 H : V
Discharge	46.87 cfs



Williamsburg-Jamestown Airport - Proposed Ditch @ Apron
Worksheet for Triangular Channel

Project Description

Worksheet	Proposed Ditch
Flow Element	Triangular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data

Mannings Coefficient	0.030
Slope	0.005200 ft/ft
Left Side Slope	3.00 H : V
Right Side Slope	3.00 H : V
Discharge	3.89 cfs

Results

Depth	0.82 ft
Flow Area	2.0 ft ²
Wetted Perimeter	5.21 ft
Top Width	4.94 ft
Critical Depth	0.64 ft
Critical Slope	0.020606 ft/ft
Velocity	1.91 ft/s
Velocity Head	0.06 ft
Specific Energy	0.88 ft
Froude Number	0.52
Flow Type	Subcritical

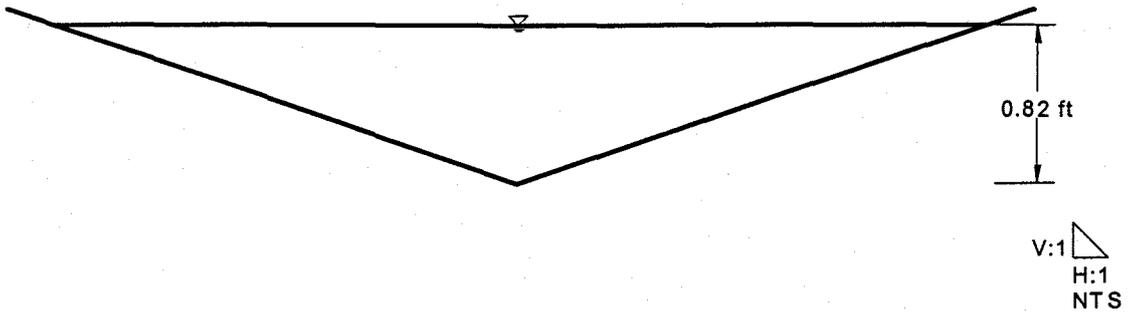
Williamsburg-Jamestown Airport - Proposed Ditch @ Apron Cross Section for Triangular Channel

Project Description

Worksheet	Proposed Ditch
Flow Element	Triangular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data

Mannings Coefficient	0.030
Slope	0.005200 ft/ft
Depth	0.82 ft
Left Side Slope	3.00 H : V
Right Side Slope	3.00 H : V
Discharge	3.89 cfs



Project 4205-0002 Apron Expansion @ JGG
STRUCTURE 1-2

Plan Sheet No. _____ Designer _____
Rev. Date _____ Date _____

Sheet 1 of 1

HYDROLOGICAL DATA:

D.A. = 3.5 AC.

$Q = 3.89$ cfs

AHW Controls

STATIC

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

freq. T Welev.

Shoulder elev. _____

elev. 48.73

Skew _____ ° Cover _____'

Inv. El. 47.01

So = 0.90%

Inv. El. 46.79

Orig. Gr. Elev. _____

L = 25'

Orig. Gr. Elev. _____

DISCHARGES USED

Q 10 = 3.89 CFS
Q _____ = _____ CFS

RISK ASSESSMENT

ADT _____

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

240A

CULVERT TYPE & SIZE	Q	Q/B	HEADWATER COMPUTATIONS										CONT. HW. ELEV.	OUTLET VELOCITY		End Treat.	COMMENTS
			INLET CONT.		OUTLET CONTROL									C.M.	Smooth		
			HW/D	HW	K _e	dc	$\frac{dc+D}{2}$	h _o	H	LSo	HW						
12" RCP	3.89	3.89	1.12	1.12	.5	.8	$\frac{.8+1}{2} = 0.9$.58	.23	1.23	1.25					H _w = 48.26 OK	
18" RCP	3.89	2.59	0.6	0.9	.5	.7	$\frac{.7+1.5}{2}$	1.1	.03	.23	0.9	0.9					H _w = 47.91

↑
Chart 1

↑
Chart 4

↑
Chart 5

h_o + H - LSo

Design Flood Exceed Prob. _____ Elev. _____
Over top Flood Exceed Prob. _____ Elev. _____
Base Flood 1% Exceed Prob. _____ Elev. _____

JGG DRAINAGE

2/14/02
CRS

$$Q = CiA \quad C_f = 1.0 \text{ (10-year storm)}$$
$$A = 3.5 \text{ ACRE}$$

$$C = ? \quad C_1 = .40 \text{ lawn} \quad A_1 = (3.5 \text{ ACRE} - \frac{10' \times 550'}{43560}) = 3.37 \text{ AC}$$
$$C_2 = .50 \text{ ditch} \quad A_2 = (10' \times 550') / 43560 = .13 \text{ AC}$$

$$C = \frac{3.37(.40) + .13(.50)}{3.37 + .13} = \underline{\underline{.404}}$$

Rainfall intensity

Overland Flow Chart

200'	sheet flow - grass	slope = 3.3%	$T_L = 15.5 \text{ min}$
230'	channelized flow - grass	slope = 5%	$T_L = 14.7 \text{ min}$
20'	channelized flow - grass before ditch	slope = 25%	$T_L = 3.0 \text{ min}$
210'	channelized flow - ditch	slope = .80%	$T_L = 20.7 \text{ min}$
			<u>53.9 min</u>

NORFOLK, VA \rightarrow $i = 2.75 \text{ "/hr}$ (10-year storm)

$$Q = (.404)(2.75)(3.5) = 3.89 \text{ cfs}$$

$$Q = 3.89 \text{ cfs}$$

Table 2

Worksheet for BMP Point System



A. STRUCTURAL BMP POINT ALLOCATION

<u>BMP</u>	<u>BMP Points</u>		<u>Fraction of Site Served by BMP</u>	=	<u>Weighted BMP Points</u>
<u>SAND FILTER</u>	<u>8</u>	x	<u>100%</u>	=	<u>8</u>
<u>SAND FILTER</u>	<u>8</u>	x	<u>50% EX. IMP. COVER</u>	=	<u>4</u>
<u> </u>	<u> </u>	x	<u> </u>	=	<u> </u>
<u> </u>	<u> </u>	x	<u> </u>	=	<u> </u>

TOTAL WEIGHTED STRUCTURAL BMP POINTS: 12

B. NATURAL OPEN SPACE CREDIT

<u>Fraction of Site</u>		<u>Natural Open Space Credit</u>	=	<u>Points for Natural Open Space</u>
<u> </u>	x	<u>(0.1 per 1%)</u>	=	<u> </u>
<u> </u>	x	<u>(0.15 per 1%)</u>	=	<u> </u>

TOTAL NATURAL OPEN SPACE CREDIT:

C. TOTAL WEIGHTED POINTS

<u>12</u>	+	<u>0</u>	=	<u>12</u>
<u>Structural BMP Points</u>		<u>Natural Open Space Points</u>		<u>Total</u>

WILLIAMSBURG - JAMESTOWN 4205-0101

SAND FILTER VOLUME COMPS - AIRRAIL PT ①

REF: VIRGINIA STORM WATER MANAGEMENT HANDBOOK
 CHAPTER 3, SUB SECTION 3.12c
 AUSTIN SURFACE SAND FILTER SYSTEM

IMPERVIOUS AREA (I_a)PROPOSED DEVELOPMENT = 0.95AC (T-HANGER $\frac{1}{2}$ AREA)MINIMUM AREA OF SAND FILTER (A_{fm})

SAND DEPTH = 1.5'

AVG DEPTH OF WATER ABOVE SURFACE (h) = 6"

$$A_{fm} = \frac{545 (I_a) (df)}{(h + df)} = \frac{545 (0.95AC) (1.5')}{(0.5' + 1.5')} = 367.9 SF$$

$$FILTER LENGTH = 368 SF / 5' = 73.6' \quad USE 80'$$

WILLIAMSBURG - JAMESTOWN 4205-0101
 SAND FILTER VOLUME COMPS - DROP PT (2)

REF: VIRGINIA STORM WATER MANAGEMENT HANDBOOK
 CHAPTER 3, SUBSECTION 3.12 C
 AUSTIN SURFACE SAND FILTER SYSTEM

IMPERVIOUS AREA (I_a)

$$I_a = 1.23A_c \quad (T\text{-NUMBER} \dagger \text{ TAXIWAY} / \text{TAXIWAY})$$

MINIMUM AREA OF SAND FILTER (A_{FM})

SAND DEPTH (d_f) = 1.5'

Avg DEPTH OF WATER ABOVE SURFACE (h) = 6"

$$A_{FM} = \frac{545 (I_a) (d_f)}{(h + d_f)} = \frac{545 (1.23) (1.5')}{(0.5' + 1.5')} = 503 \text{ SF}$$

$$\text{FILTER LENGTH} = 503' / 4' = 126' \quad \text{USE } \underline{\underline{130'}}$$

Date Record Created:

WS BMPNO:

Print Record

Created By:

CC023

PRINTED ON
Wednesday, March 10, 201
2:27:43 PM

WATERSHED CC
 BMP ID NO 023
 PLAN NO SP-50-03
 TAX PARCEL (48-2)(1-5A)
 PIN NO 4820100005A
 CONSTRUCTION DATE
 PROJECT NAME Wmbg-Jamestown Airport T-Hangers
 FACILITY LOCATION 100 Marclay Road
 CITY-STATE Williamsburg, VA 23185
 CURRENT OWNER Williamsburg-Jamestown Airport Inc.
 OWNER ADDRESS 100 Marclay Road
 OWNER ADDRESS 2
 CITY-STATE-ZIP CODE Williamsburg, VA 23185
 OWNER PHONE
 MAINT AGREEMENT No
 EMERG ACTION PLAN No

MAINTENANCE PLAN

No
 SITE AREA acre 119
 LAND USE Private Airport
 old BMP TYP Dry Swale
 JCC BMP CODE E2 Dry Swale
 POINT VALUE

SVC DRAIN AREA acres 55.3

SERVICE AREA DESCR

IMPERV AREA acres 5.70
 RECV STREAM
 EXT DET-WQ-CTRL No
 WTR QUAL VOL acre-ft
 CHAN PROT CTRL No
 CHAN PROT VOL acre-ft
 SW/FLOOD CONTROL No
 GEOTECH REPORT No

CTRL STRUC DESC

CTRL STRUC SIZE inches
 OTLT BARRL DESC
 OTLT BARRL SIZE inch

EMERG SPILLWAY No

DESIGN HW ELEV

PERM POOL ELEV

2-YR OUTFLOW cfs 0.00

10-YR OUTFLOW cfs 0.00

REC DRAWING No

CONSTR CERTIF Yes

LAST INSP DATE

Inspected by:

INTERNAL RATING

MISC/COMMENTS

T-hanger & parking lot exp. Plans for both
CC023 & CC024 are in CC024

Get Last BMP No

Return to Menu

Additional Comments:

Called Sand Filter on plan. Also provides for future impervious area of 0.7 acres.