

February 15, 2012 10:16am By: sean.millist

**GENERAL NOTES**

- ALL CONSTRUCTION METHODS AND MATERIALS SHALL BE IN ACCORDANCE WITH THESE PLANS, WITH ALL CURRENT APPLICABLE CODES AND THE LATEST REVISIONS OF THE CITY OF ALEXANDRIA DEPARTMENT OF T&ES CONSTRUCTION STANDARDS AND SPECIFICATIONS.
- THE CONTRACTOR SHALL DIG TEST PITS AS REQUIRED FOLLOWING NOTIFICATION AND MARKING OF ALL EXISTING UTILITIES TO VERIFY THE LOCATION AND DEPTH OF EXISTING UTILITIES. TEST HOLES TO BE PERFORMED AT LEAST 30 DAYS PRIOR TO START OF CONSTRUCTION. ANY DISCREPANCIES ARE TO BE REPORTED IMMEDIATELY TO THE OWNER AND ENGINEER. REDESIGN AND APPROVAL BY REVIEWING AGENCIES SHALL BE OBTAINED IF REQUIRED.
- ANY CONTRACTOR/SUBCONTRACTOR PERFORMING WORK ON THIS PROJECT SHALL FAMILIARIZE HIMSELF WITH THE SITE AND SHALL BE SOLELY RESPONSIBLE FOR HIS OPERATIONS. ANY REMOVAL OR DAMAGE TO EXISTING IMPROVEMENTS SHALL BE REPLACED OR REPAIRED BY THE CONTRACTOR AT HIS EXPENSE AND SHALL BE APPROVED BY THE CITY OF ALEXANDRIA.
- ALL AREAS, ON OR OFF-SITE, WHICH ARE DISTURBED BY THIS CONSTRUCTION AND WHICH ARE NOT PAVED OR BUILT UPON, SHALL BE ADEQUATELY STABILIZED TO CONTROL EROSION AND SEDIMENTATION. THE MINIMUM ACCEPTABLE STABILIZATION SHALL CONSIST OF PERMANENT GRASS OR SEED MIXTURE AS RECOMMENDED BY THE CITY AGENT. ALL SLOPES 3:1 AND GREATER SHALL BE SODDED AND PEGGED OR OTHERWISE STABILIZED IN A MANNER APPROVED BY THE CITY OF ALEXANDRIA.
- THE CONTRACTOR SHALL TAKE ALL AVAILABLE PRECAUTIONS TO CONTROL DUST. CONTRACTOR SHALL CONTROL DUST BY SPRINKLING WATER OR BY OTHER MEANS APPROVED BY THE CITY OF ALEXANDRIA AND ENGINEER.
- ALL EXCAVATING IS UNCLASSIFIED AND SHALL INCLUDE ALL MATERIALS ENCOUNTERED. UNUSABLE EXCAVATED MATERIAL AND ALL WASTE RESULTING FROM SITE CLEARING AND GRUBBING SHALL BE DISPOSED OF OFF SITE BY THE CONTRACTOR AT HIS EXPENSE.
- THE CONTRACTOR SHALL PROVIDE ALL NECESSARY ENGINEERING AND SURVEYING FOR LINE AND GRADE CONTROL POINTS RELATED TO EARTHWORK.
- THE CONTRACTOR SHALL SALVAGE AND PROTECT ALL EXISTING UTILITY POLES, SIGNS, MANHOLES, TELEPHONE RISERS, GAS VALVES, TREES, ETC. DURING CONSTRUCTION.
- THE CITY OF ALEXANDRIA SHALL INSPECT ALL CONSTRUCTION. THE CONTRACTOR'S BID PRICE SHALL INCLUDE ALL INSPECTION AND PERMIT FEES.
- CONSTRUCTION STAKEOUT SHALL BE UNDER THE DIRECT SUPERVISION OF A LICENSED LAND SURVEYOR IN THE COMMONWEALTH OF VIRGINIA. THE CONTRACTOR SHALL PROVIDE CONSTRUCTION STAKEOUT.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR REPLACING WITH MATCHING MATERIALS ANY PAVEMENT, PAVEMENT MARKINGS, CURB AND GUTTER, SIDEWALK, ETC. THAT ARE DAMAGED DURING CONSTRUCTION.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL WORK ZONE SIGNING, DELINEATION, PAVEMENT MARKINGS AND ANY OTHER TRAFFIC CONTROL DEVICES NECESSARY TO PERFORM THE WORK. UPON COMPLETION OF THE WORK, THE CONTRACTOR SHALL IMMEDIATELY REMOVE ALL TEMPORARY DEVICES.
- UNLESS OTHERWISE INDICATED, ALL VEGETATIVE AND STRUCTURAL EROSION AND SEDIMENT CONTROL PRACTICES SHALL BE CONSTRUCTED AND MAINTAINED ACCORDING TO THE LATEST EDITION OF THE MINIMUM STANDARDS AND SPECIFICATIONS OF THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK AND VIRGINIA REGULATIONS SECTION 4VAC50-30 EROSION AND SEDIMENT CONTROL REGULATIONS.
- T&ES MUST BE NOTIFIED ONE WEEK PRIOR TO THE PRE-CONSTRUCTION CONFERENCE, ONE WEEK PRIOR TO THE COMMENCEMENTS OF LAND DISTURBING ACTIVITY, AND ONE WEEK PRIOR TO THE FINAL INSPECTION. CERTIFIED RESPONSIBLE LAND DISTURBER IS REQUIRED TO ATTEND PRE-CONSTRUCTION MEETINGS.
- ALL CONSTRUCTION ACTIVITIES MUST COMPLY WITH THE ALEXANDRIA NOISE CONTROL CODE TITLE 11, CHAPTER 5, WHICH PERMITS CONSTRUCTION ACTIVITIES TO OCCUR BETWEEN THE FOLLOWING HOURS:  
MONDAY THROUGH FRIDAY FROM 7AM TO 6PM AND  
SATURDAYS FROM 9AM TO 6PM  
NO CONSTRUCTION ACTIVITIES ARE PERMITTED ON SUNDAYS
- THE CONTRACTOR SHALL SUBMIT "AS-BUILT" DRAWINGS TO THE CITY OF ALEXANDRIA AND THE FAIRFAX COUNTY UPON JOB COMPLETION AND FINAL INSPECTION.
- ANY NOTES NOT MENTIONED IN THIS SECTION WILL REVERT TO THE CITY OF ALEXANDRIA STANDARDS.
- THE CITY OF ALEXANDRIA T&ES, DIVISION OF ENVIRONMENTAL QUALITY, ALONG WITH FAIRFAX COUNTY, MUST BE NOTIFIED IF UNUSUAL OR UNANTICIPATED CONTAMINATION OR UNDERGROUND STORAGE TANKS, DRUMS, AND CONTAINERS ARE ENCOUNTERED AT THE SITE. IF THERE IS ANY DOUBT ABOUT PUBLIC SAFETY OR A RELEASE TO THE ENVIRONMENT, THE ALEXANDRIA FIRE DEPARTMENT MUST BE CONTACTED IMMEDIATELY BY CALLING 911. THE TANK OR CONTAINER'S REMOVAL, ITS CONTENTS, ANY SOIL CONTAMINATION, AND RELEASE TO THE ENVIRONMENT WILL BE HANDLED IN ACCORDANCE WITH FEDERAL, STATE, AND CITY REGULATIONS.
- ACCORDING TO THE SURVEY PREPARED BY THE CITY OF ALEXANDRIA, DATED DECEMBER 22, 2011, THE HORIZONTAL DATUM IS BASED ON NAD 83 AND THE VERTICAL DATUM IS BASED ON NAVD 88.

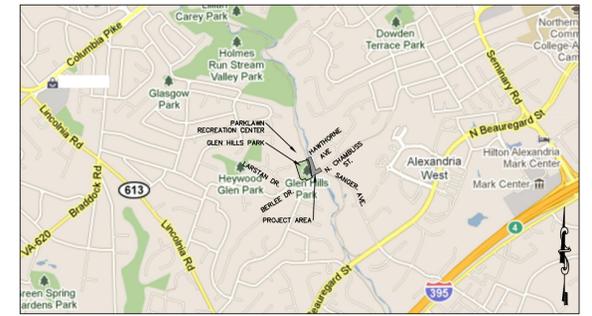
**CONTACTS**

**OWNER:**  
CITY OF ALEXANDRIA  
TRAFFIC AND ENVIRONMENTAL SERVICES  
CITY HALL  
301 KING STREET ROOM 4100  
ALEXANDRIA, VA 22314  
TEL: (703) 838-4966  
FAX: (703) 519-3356  
CONTACT: CARRIE SANDERS

**CIVIL ENGINEER/LANDSCAPE ARCHITECT:**  
KIMLEY-HORN AND ASSOCIATES, INC.  
11400 COMMERCE PARK DRIVE  
SUITE 400  
RESTON, VIRGINIA 20191  
TEL: (703) 674-1300  
FAX: (703) 674-1350  
CONTACT: KEVIN VAN HISE, RLA

# HOLMES RUN CHAMBLISS CROSSING

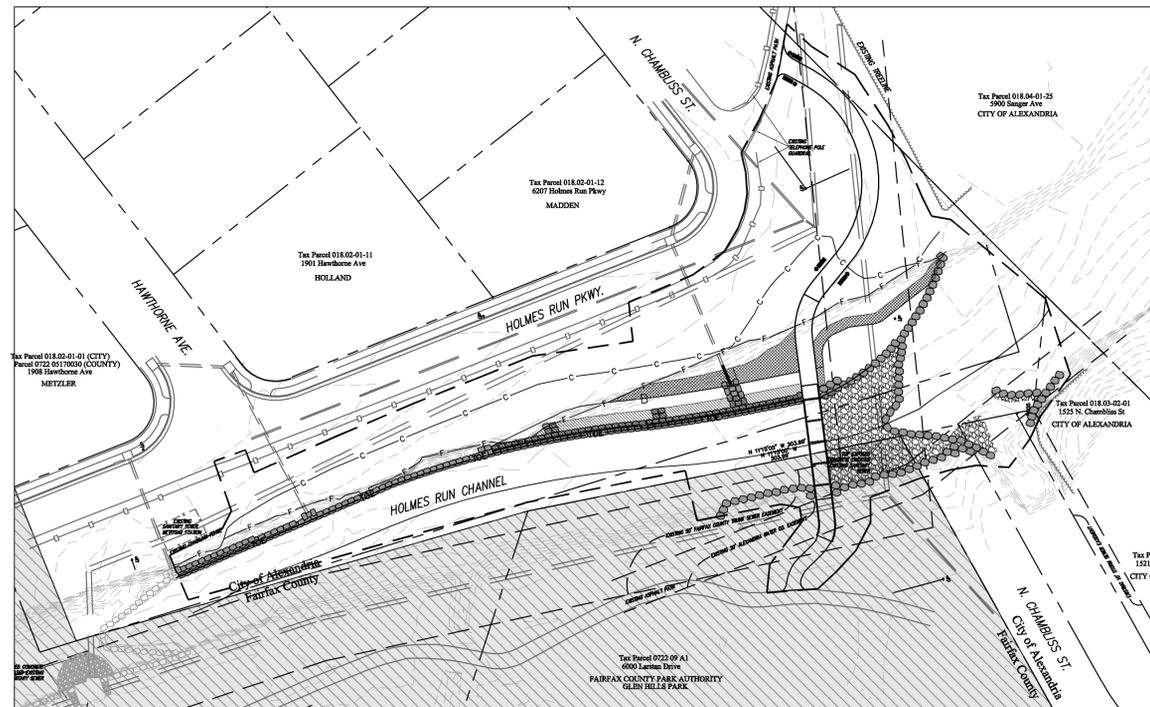
PREPARED FOR:



VICINITY MAP

SCALE: 1" = 2,000'

Sheet List Table	
Sheet Number	Sheet Title
1	COVER SHEET
2	EXISTING CONDITIONS PLAN
3	SITE AND GRADING PLAN
4	TYPICAL SECTIONS
5	SITE DETAILS
6	SITE DETAILS
7	SITE - EROSION DETAILS
8	PUMP-AROUND DETAILS
9	WALLS-SLAB PROFILE AND DETAILS
10	CULVERT DETAILS
11	LANDSCAPE PLAN
12	LANDSCAPE NOTES AND DETAILS
13	EROSION AND SEDIMENT CONTROL PLAN
14	PROJECT APPROVALS
15	APPROVED WQIA



CONTEXT MAP

SCALE: 1" = 50'

MISS UTILITY OF VIRGINIA



CALL BEFORE YOU DIG  
1.800.552.7001

RECOMMENDED FOR APPROVAL	DATE: _____
DIRECTOR OF ENVIRONMENTAL QUALITY DIVISION	
RECOMMENDED FOR APPROVAL	DATE: _____
CHIEF-ENGINEERING & DESIGN DIVISION	
RECOMMENDED FOR APPROVAL	DATE: _____
CHIEF-CONSTRUCTION & INSPECTION DIVISION	
RECOMMENDED FOR APPROVAL	DATE: _____
DEPUTY DIRECTOR OF TRANSPORTATION	
RECOMMENDED FOR APPROVAL	DATE: _____
DEPUTY DIRECTOR OF ENGINEERING	
RECOMMENDED FOR APPROVAL	DATE: _____
DEPUTY DIRECTOR OF OPERATIONS	
APPROVED	DATE: _____
DIRECTOR	

K:\VIA\_LAB\110104000\_Holmes Run\1-COVER.dwg

REV. No.	REVISION	DRAWN BY:	CHECKED BY:
6	REVISIONS PER CITY COMMENT (02/15/2012)	SMM	DMP
5	REVISIONS PER FLOOD DAMAGE (02/02/2012)	SMM	DMP
4	ADDED FAIRFAX COUNTY REVIEW LETTER (12/12/2011)	SMM	KVH
3	REVISIONS PER COUNTY COMMENTS (12/09/2011)	SMM	KVH
2	REVISIONS PER COUNTY AND CITY COMMENTS (11/02/2011)	SMM	KVH

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Suite 400  
Reston, Virginia 20191  
Phone: 703-674-1300  
Fax: 703-674-1350  
Engineering, Planning, and Environmental Consultants

CLIENT: **CITY OF ALEXANDRIA**

TITLE: **COVER SHEET**

DATE: FEB 2011  
HORIZONTAL SCALE: AS NOTED  
VERTICAL SCALE: AS NOTED  
DRAWN BY: SMM  
DESIGNED BY: JD  
CHECKED BY: KVH

**Professional Engineer Seal:**  
DAREN MATTHEW PAIT  
Lic. No. 047582  
02/15/12

PROJECT: **HOLMES RUN CHAMBLISS CROSSING**

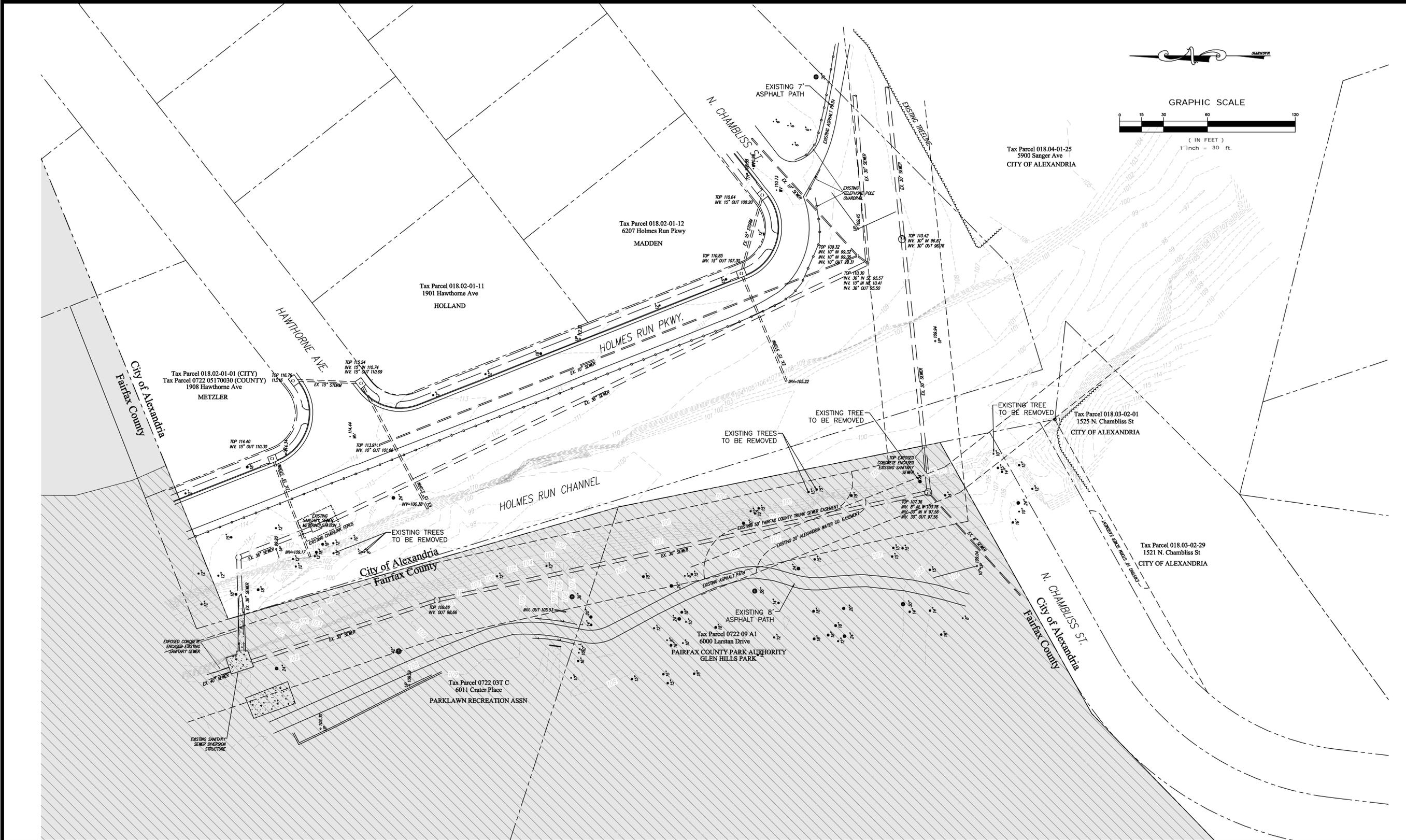
ATTACHED REFERENCE FILES: \_\_\_\_\_

JOB NUMBER: 110104000

SHEET NUMBER: **1** OF **15**

February 15, 2012 - 10:18am By: sean.millett

K:\NVA\_LAB\110104000\_Holmes Run\2-EXIST\_COND.dwg



6	REVISIONS PER CITY COMMENT (02/15/2012)	SMM	DMP
5	REVISIONS PER FLOOD DAMAGE (02/02/2012)	SMM	DMP
4	ADDED FAIRFAX COUNTY REVIEW LETTER (12/12/2011)	SMM	KVH
3	REVISIONS PER COUNTY COMMENTS (12/09/2011)	SMM	KVH
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CLIENT: **CITY OF ALEXANDRIA**

TITLE: **EXISTING CONDITIONS PLAN**

DATE: FEB 2011  
 HORIZONTAL SCALE: AS NOTED  
 VERTICAL SCALE: AS NOTED  
 DRAWN BY: SMM  
 DESIGNED BY: JD  
 CHECKED BY: KVH  
 SEAL: DAREN MATTHEW PAIT, Lic. No. 047582, 02/15/12, PROFESSIONAL ENGINEER

PROJECT: **HOLMES RUN CHAMBLISS CROSSING**

ATTACHED REFERENCE FILES:

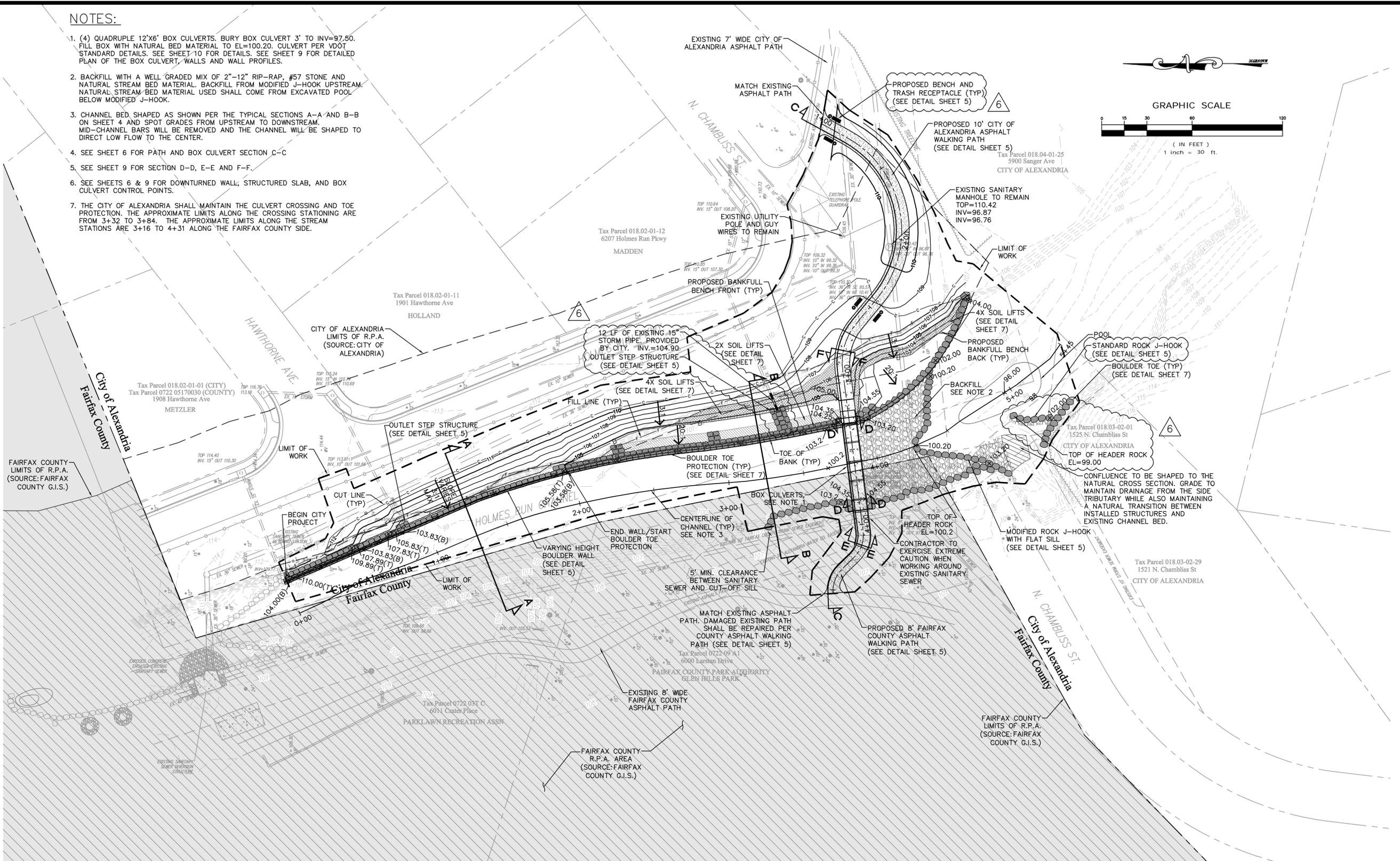
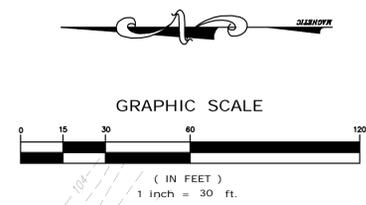
JOB NUMBER: 110104000

SHEET NUMBER: **2** OF 15

February 15, 2012 10:18am By: sean.millist  
K:\WA\_LAND\110104000\_Holmes Run\3 SITE AND GRADING PLAN.dwg

**NOTES:**

1. (4) QUADRUPEL 12'x6' BOX CULVERTS. BURY BOX CULVERT 3' TO INV=97.50. FILL BOX WITH NATURAL BED MATERIAL TO EL=100.20. CULVERT PER VDOT STANDARD DETAILS. SEE SHEET 10 FOR DETAILS. SEE SHEET 9 FOR DETAILED PLAN OF THE BOX CULVERT, WALLS AND WALL PROFILES.
2. BACKFILL WITH A WELL GRADED MIX OF 2"-12" RIP-RAP, #57 STONE AND NATURAL STREAM BED MATERIAL. BACKFILL FROM MODIFIED J-HOOK UPSTREAM. NATURAL STREAM BED MATERIAL USED SHALL COME FROM EXCAVATED POOL BELOW MODIFIED J-HOOK.
3. CHANNEL BED SHAPED AS SHOWN PER THE TYPICAL SECTIONS A-A AND B-B ON SHEET 4 AND SPOT GRADES FROM UPSTREAM TO DOWNSTREAM. MID-CHANNEL BARS WILL BE REMOVED AND THE CHANNEL WILL BE SHAPED TO DIRECT LOW FLOW TO THE CENTER.
4. SEE SHEET 6 FOR PATH AND BOX CULVERT SECTION C-C
5. SEE SHEET 9 FOR SECTION D-D, E-E AND F-F.
6. SEE SHEETS 6 & 9 FOR DOWNTURNED WALL; STRUCTURED SLAB, AND BOX CULVERT CONTROL POINTS.
7. THE CITY OF ALEXANDRIA SHALL MAINTAIN THE CULVERT CROSSING AND TOE PROTECTION. THE APPROXIMATE LIMITS ALONG THE CROSSING STATIONING ARE FROM 3+32 TO 3+84. THE APPROXIMATE LIMITS ALONG THE STREAM STATIONS ARE 3+16 TO 4+31 ALONG THE FAIRFAX COUNTY SIDE.



6	REVISIONS PER CITY COMMENT (02/15/2012)	SMM	DMP
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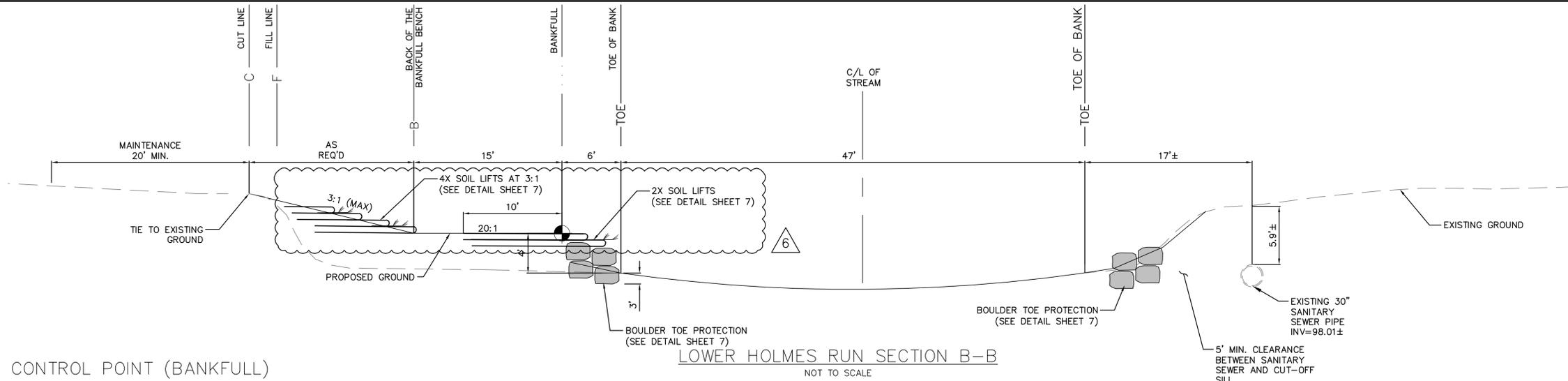
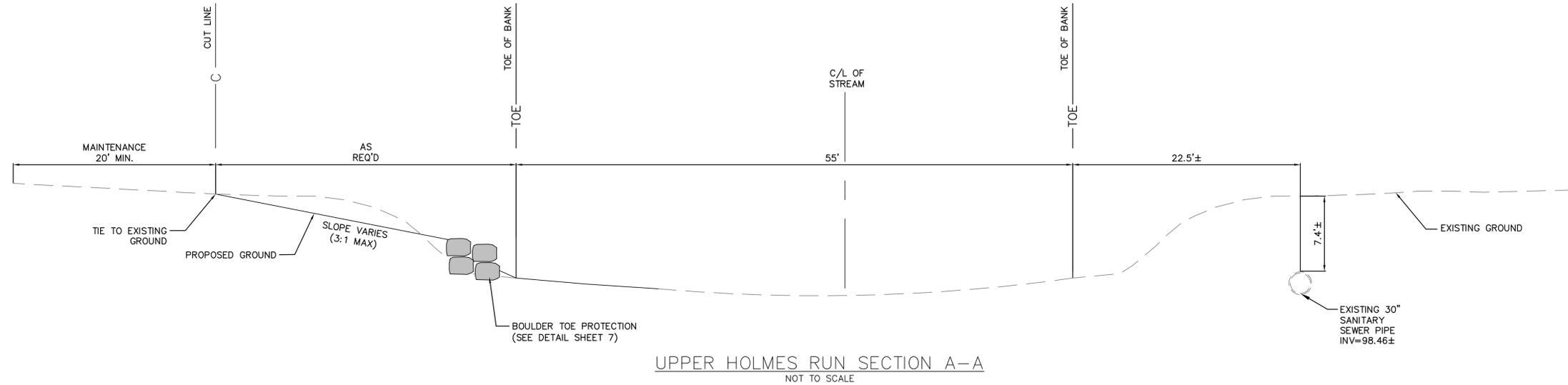
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CLIENT: **CITY OF ALEXANDRIA**  
 TITLE: **SITE AND GRADING PLAN**

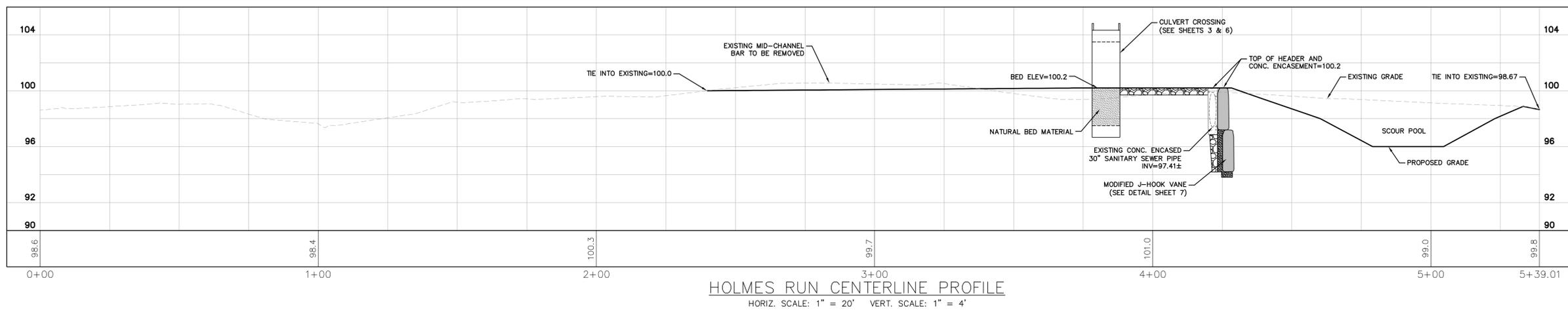
DATE: FEB 2011  
 HORIZONTAL SCALE: AS NOTED  
 VERTICAL SCALE: AS NOTED  
 DRAWN BY: SMM  
 DESIGNED BY: JD  
 CHECKED BY: KVH  
 SEAL: DAREN MATTHEW PAIT, PROFESSIONAL ENGINEER, Lic. No. 047582, 02/15/12

PROJECT: **HOLMES RUN CHAMBLISS CROSSING**  
 ATTACHED REFERENCE FILES:  
 JOB NUMBER: 110104000  
 SHEET NUMBER: **3** OF 15

February 15, 2012 10:19am By: sean.millist



ELEVATION CONTROL POINT (BANKFULL)



K:\WA\_LAB\110104000\_Holmes Run\4\_TYPICAL SECTIONS.dwg

6	REVISIONS PER CITY COMMENT (02/15/2012)	SMM	DMP
5	REVISIONS PER FLOOD DAMAGE (02/02/2012)	SMM	DMP
4	ADDED FAIRFAX COUNTY REVIEW LETTER (12/12/2011)	SMM	KVH
3	REVISIONS PER COUNTY COMMENTS (12/09/2011)	SMM	KVH
2	REVISIONS PER COUNTY AND CITY COMMENTS (11/02/2011)	SMM	KVH
REV. No.	REVISION:	DRAWN BY:	CHECKED BY:
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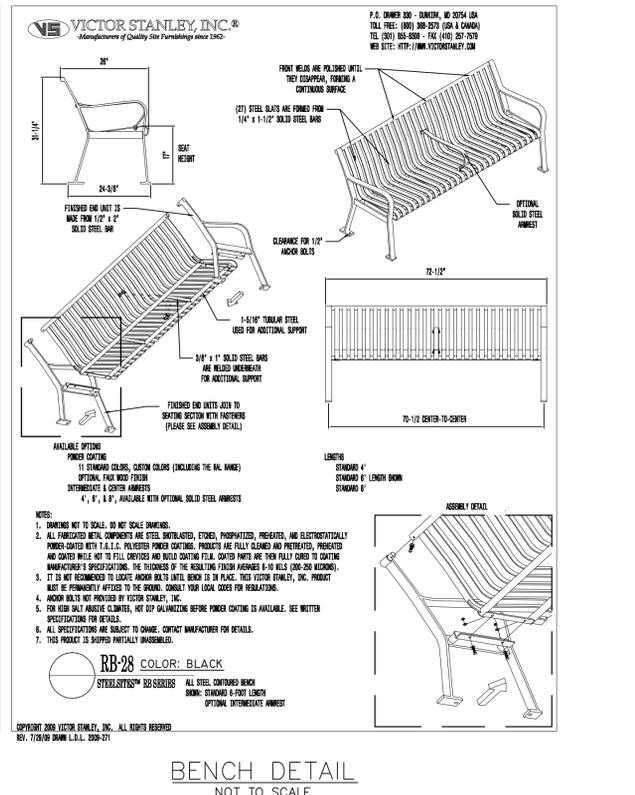
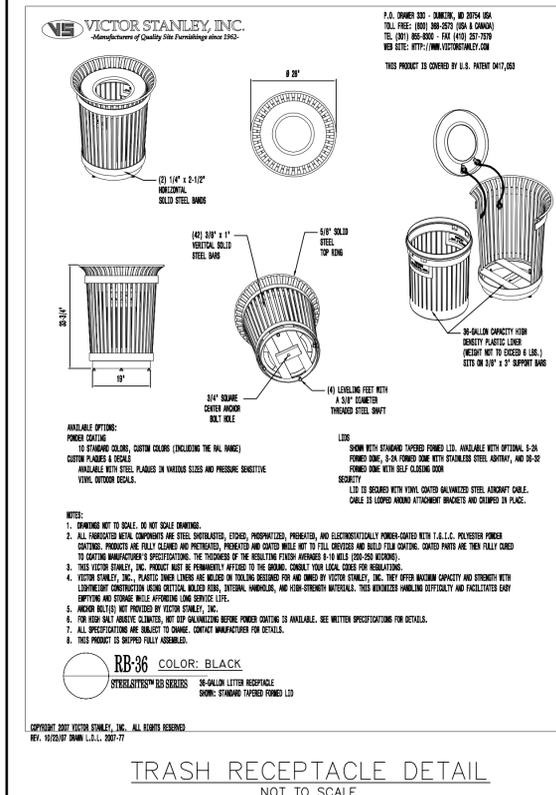
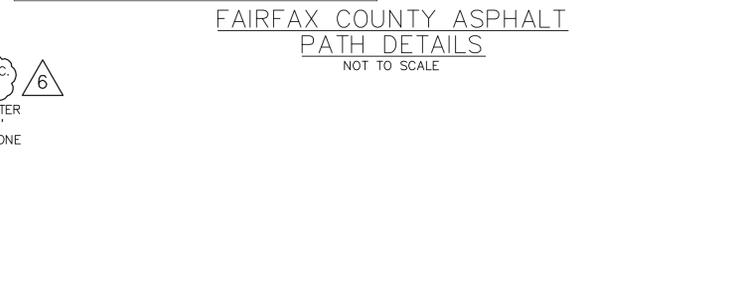
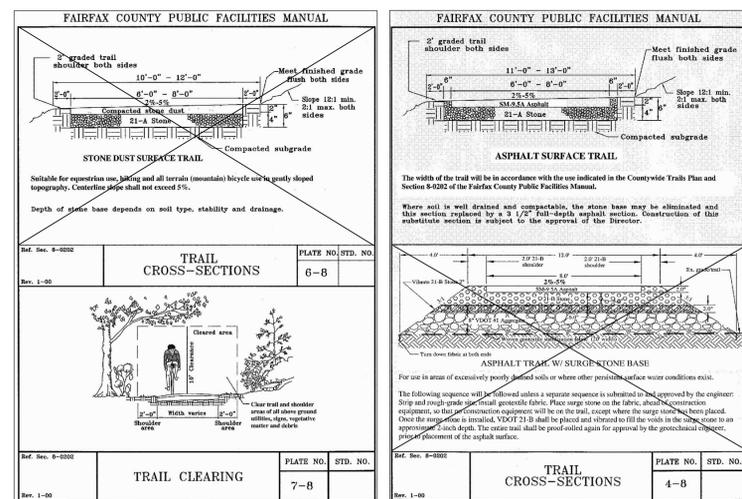
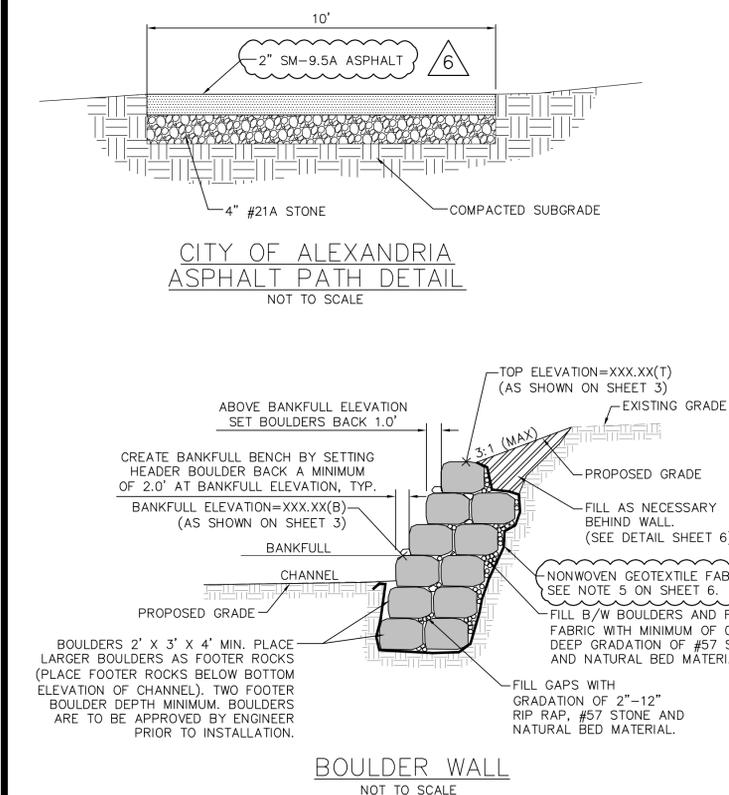
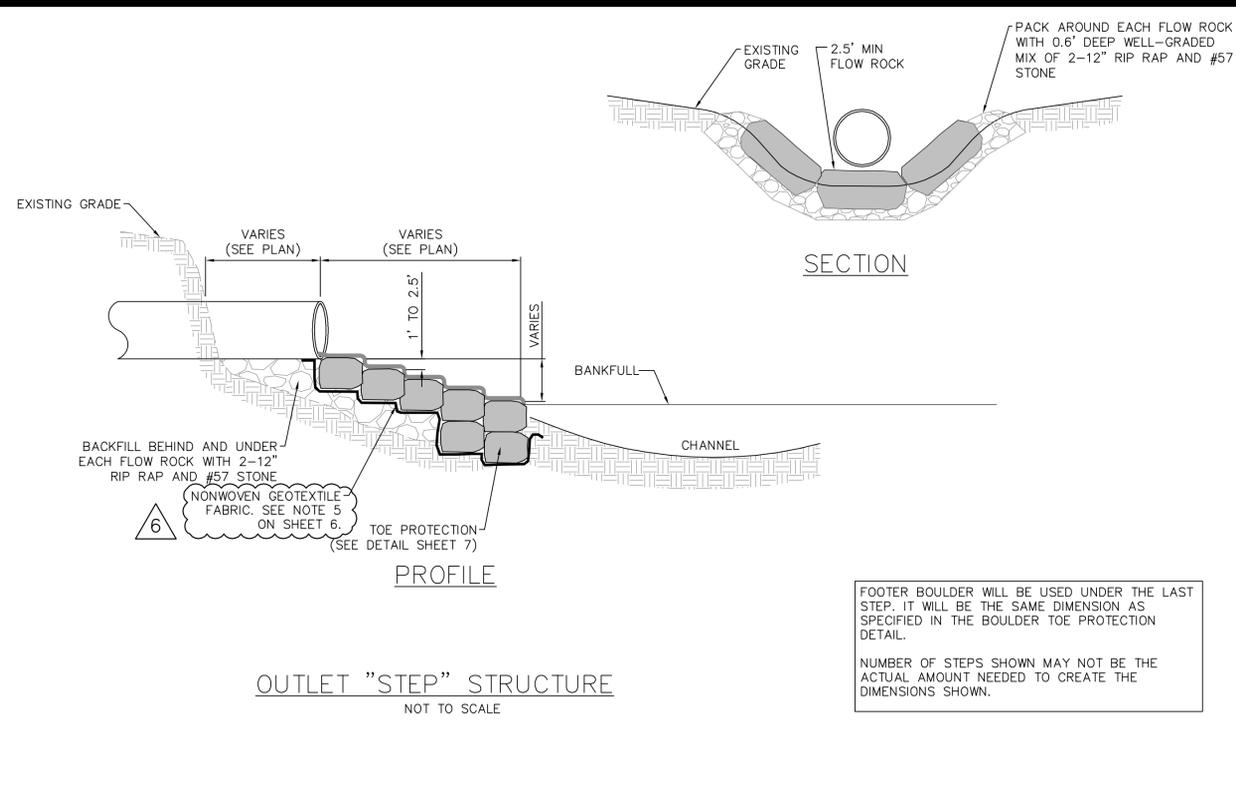
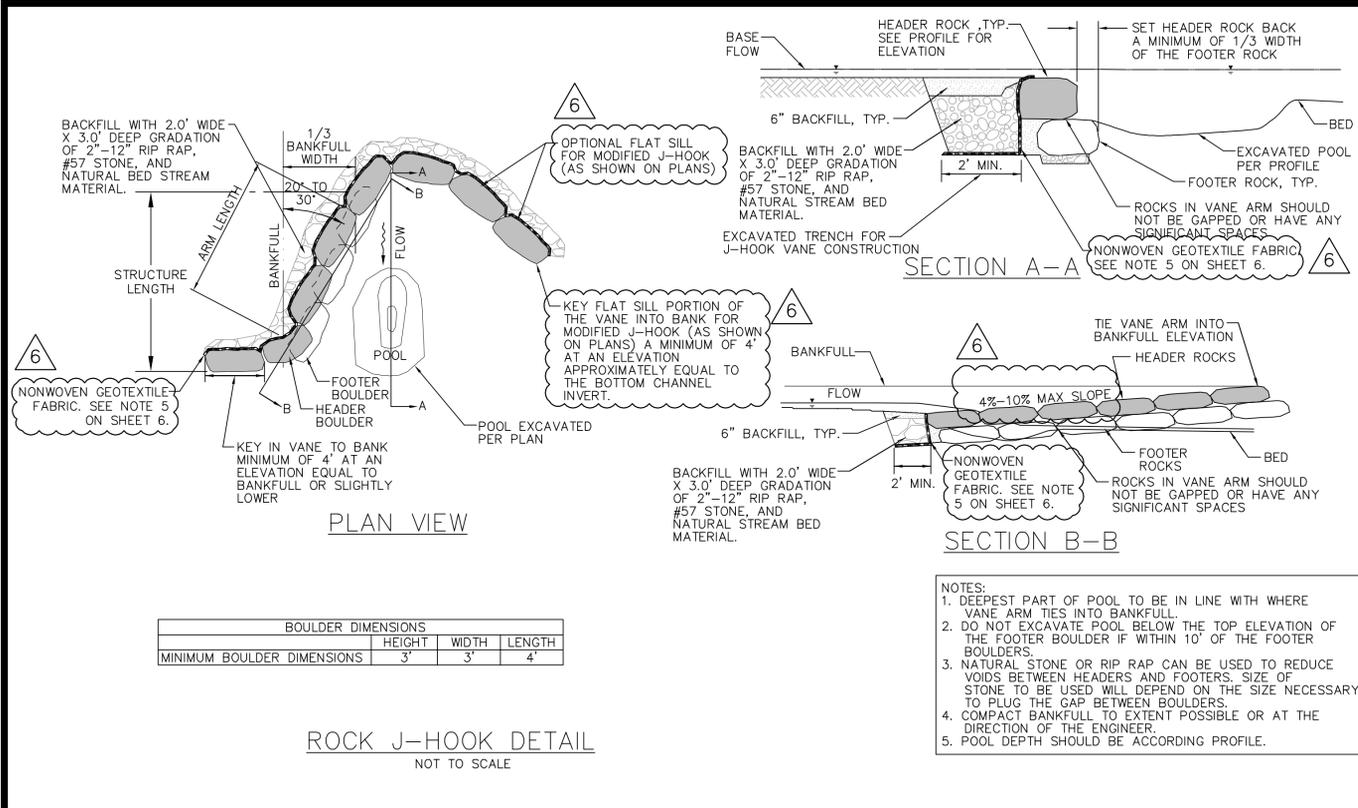
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 Engineering, Planning, and Environmental Consultants

CLIENT: **CITY OF ALEXANDRIA**  
 TITLE: **TYPICAL SECTIONS**

DATE: FEB 2011  
 HORIZONTAL SCALE: AS NOTED  
 VERTICAL SCALE: AS NOTED  
 DRAWN BY: SMM  
 DESIGNED BY: JD  
 CHECKED BY: KVH  
 SEAL: DAREN MATTHEW PAIT, Lic. No. 047582, PROFESSIONAL ENGINEER

PROJECT: **HOLMES RUN CHAMBLISS CROSSING**  
 ATTACHED REFERENCE FILES:  
 JOB NUMBER: 110104000  
 SHEET NUMBER: 4 OF 15

February 15, 2012 10:30am By: sean.millist



REV. NO.	REVISION	DRAWN BY	CHECKED BY
6	REVISIONS PER CITY COMMENT (02/15/2012)	SMM	DMP
5	REVISIONS PER FLOOD DAMAGE (02/02/2012)	SMM	DMP
4	ADDED FAIRFAX COUNTY REVIEW LETTER (12/12/2011)	SMM	KVH
3	REVISIONS PER COUNTY COMMENTS (12/09/2011)	SMM	KVH
2	REVISIONS PER COUNTY AND CITY COMMENTS (11/02/2011)	SMM	KVH

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Engineering, Planning, and Environmental Consultants

CLIENT: **CITY OF ALEXANDRIA**

TITLE: **SITE DETAILS**

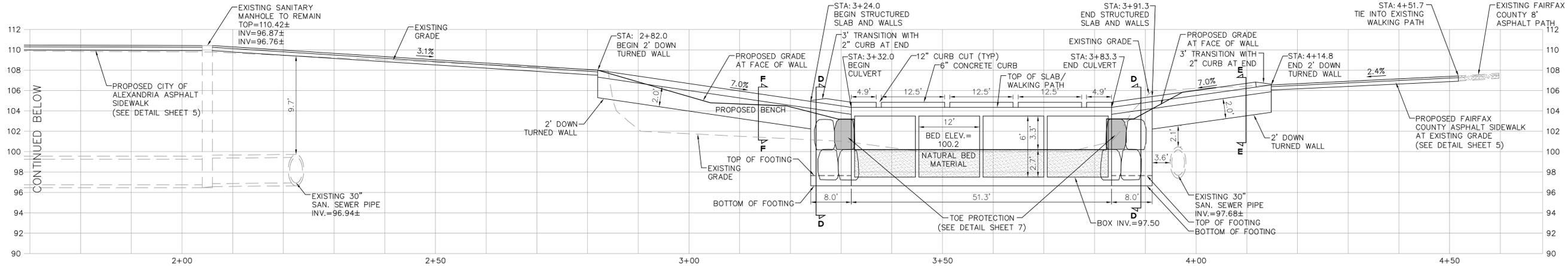
DATE: FEB 2011  
HORIZONTAL SCALE: AS NOTED  
VERTICAL SCALE: AS NOTED  
DRAWN BY: SMM  
DESIGNED BY: JD  
CHECKED BY: KVH

**DAREN MATTHEW PAIT**  
Lic. No. 047582  
02/15/12  
PROFESSIONAL ENGINEER

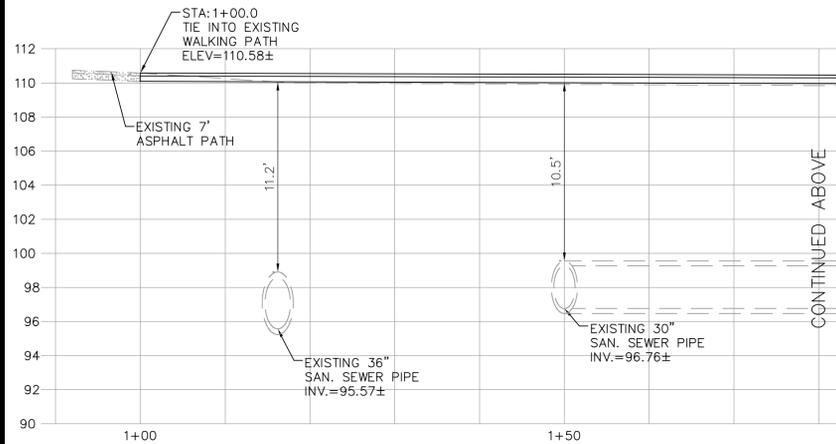
PROJECT: **HOLMES RUN CHAMBLISS CROSSING**

ATTACHED REFERENCE FILES:

JOB NUMBER: 110104000  
SHEET NUMBER: 5 of 15

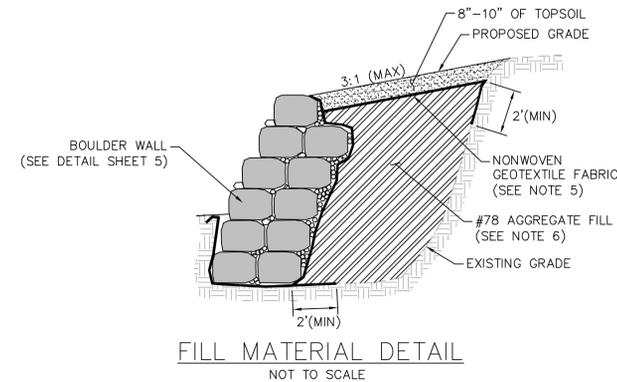


SECTION C-C  
HORIZ: 1"=10'  
VERT: 1"=5'



SECTION C-C  
HORIZ: 1"=10'  
VERT: 1"=5'

- NOTES**
- SEE SHEET 9 FOR SECTIONS D-D, E-E, AND F-F.
  - SEE SHEET 9 FOR BOX CULVERT CONTROL POINTS, WALL PROFILES, AND STRUCTURAL GENERAL NOTES.
  - DOWN-TURNED WALL AT BOX CULVERT NOT SHOWN ON SECTION C-C.
  - THE CULVERTS ARE HYDRAULICALLY DESIGNED TO PASS THE 1-YEAR/24-HOUR STORM EVENT, BUT THE 2-YEAR/24-HOUR STORM EVENT OVERTOPS THE CULVERTS.
  - FOR BOULDER WALL AND BOULDER TOE PROTECTION, GEOTEXTILE FABRIC SHALL BE NON-WOVEN, NEEDLE PUNCHED DRAINAGE FABRIC CONFORMING TO THE REQUIREMENTS OF VDOT SPECIFICATION 245.03(C). JOINTS IN THE FABRIC SHALL HAVE A 2 FOOT MINIMUM LAP.
  - NO. 78 AGGREGATE FILL SHALL CONFORM TO VDOT SPECIFICATION 203.02. TOPSOIL SHALL CONFORM TO CLASS B TOPSOIL IN ACCORDANCE WITH VDOT SPECIFICATION 244.02. FILL IS TO BE PLACED WITH A 6 INCH MAXIMUM LIFT IN ACCORDANCE WITH VDOT SPECIFICATION 303.



6	REVISIONS PER CITY COMMENT (02/15/2012)	SMM	DMP
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 Fax: 703-674-1350  
 Engineering, Planning, and Environmental Consultants

CLIENT: **CITY OF ALEXANDRIA**

TITLE: **SITE DETAILS**

DATE: FEB 2011  
 HORIZONTAL SCALE: AS NOTED  
 VERTICAL SCALE: AS NOTED  
 DRAWN BY: SMM  
 DESIGNED BY: JD  
 CHECKED BY: KVH

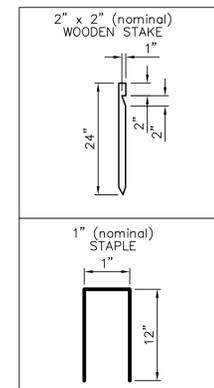
*Jerry D. Pertzsch*  
 JERRY D. PERTZSCH  
 Lic. No. 044322  
 02/15/2012  
 PROFESSIONAL ENGINEER

PROJECT: **HOLMES RUN CHAMBLISS CROSSING**

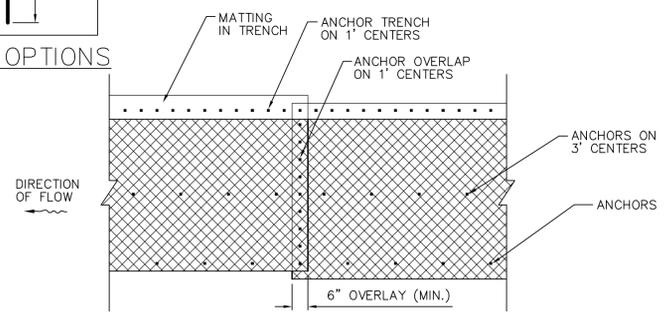
ATTACHED REFERENCE FILES:

JOB NUMBER: 110104000

SHEET NUMBER: **6** OF **15**

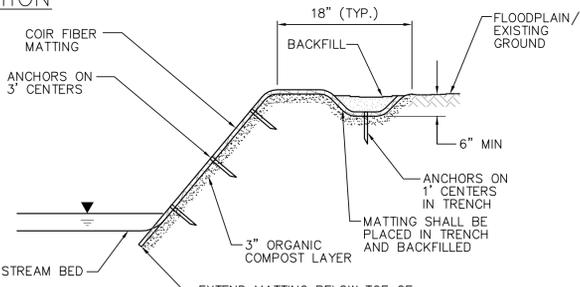


ANCHOR OPTIONS



PLAN VIEW

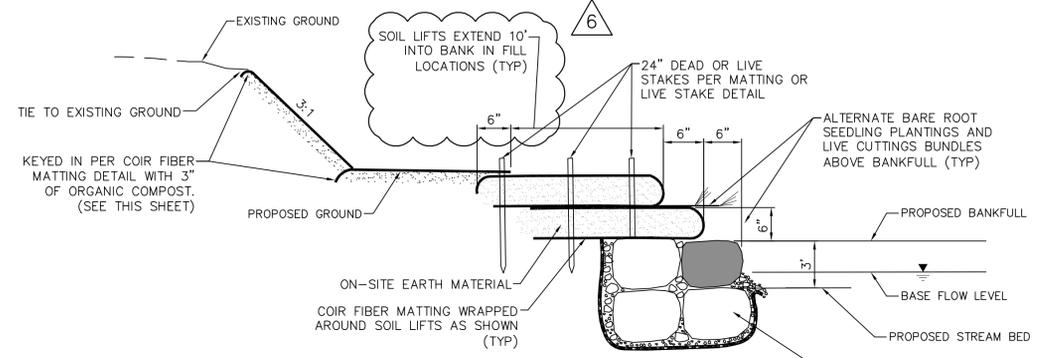
SECTION



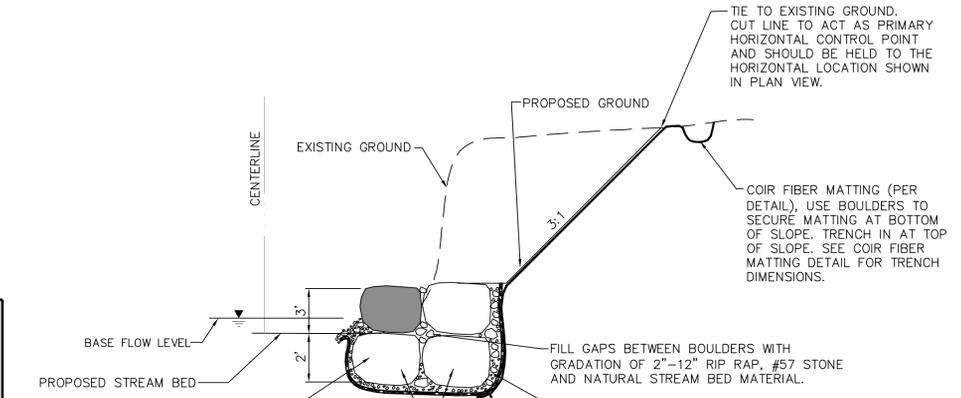
TYPICAL CROSS SECTION

COIR FIBER MATTING  
NOT TO SCALE

- NOTES:
1. IN AREAS TO BE MATTED, ALL SEEDING, SOIL AMENDMENTS, AND SOIL PREPARATION MUST BE COMPLETED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS PRIOR TO PLACEMENT OF COIR FIBER MATTING.
  2. STAPLES MAY BE USED IN PLACE OF WOODEN STAKES, AS APPROVED BY THE ENGINEER.
  3. USE COIR MAT 700 OR APPROVED EQUIVALENT.

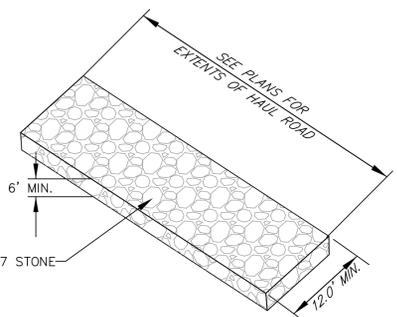


SOIL LIFT  
NOT TO SCALE



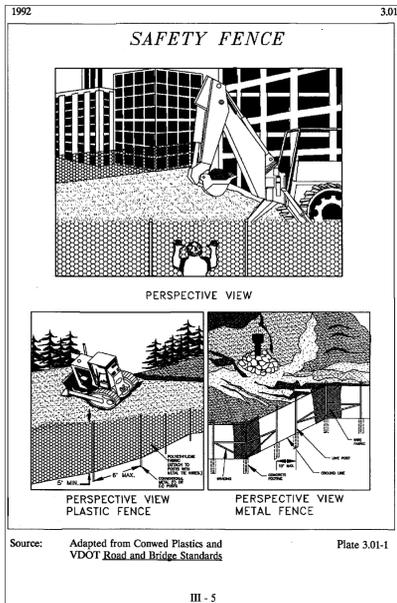
BOULDER TOE PROTECTION  
NOT TO SCALE

- 2"x3"x4" BOULDERS, PLACE LARGER BOULDERS AS FOOTERS (PLACE FOOTER BOULDERS BELOW BOTTOM ELEVATION OF CHANNEL). BOULDERS ARE TO BE APPROVED BY ENGINEER PRIOR TO INSTALLATION.
- 2"x3"x4" FOOTER BOULDERS (PLACE FOOTER BOULDERS BELOW INVERT OF CHANNEL)
- FILL GAPS BETWEEN BOULDERS WITH GRADATION OF 2"-12" RIP RAP, #57 STONE AND NATURAL STREAM BED MATERIAL.
- FILL BETWEEN BOULDERS AND FILTER FABRIC WITH COURSE AGGREGATE (2"-3" GAP BETWEEN BOULDER AND FABRIC TO BE FILLED)
- NONWOVEN GEOTEXTILE FABRIC. SEE NOTE 5 ON SHEET 6.

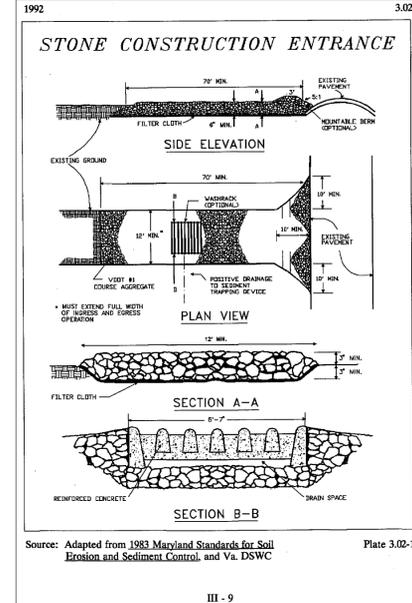


HAUL ROAD  
NOT TO SCALE

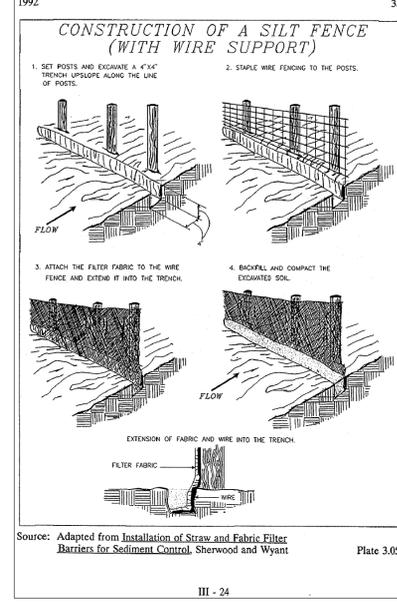
- NOTES:
1. TURNING RADIUS SUFFICIENT TO ACCOMMODATE LARGE TRUCKS SHALL BE PROVIDED.
  2. MUST BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR DIRECT FLOW OF MUD. PERIODIC TOP DRESSING WITH STONE WILL BE NECESSARY.
  3. FREQUENT CHECKS OF THE DEVICE AND TIMELY MAINTENANCE MUST BE PROVIDED.
  4. NUMBER AND LOCATION OF HAUL ROADS PER THE PLANS OR DETERMINED BY THE ENGINEER.



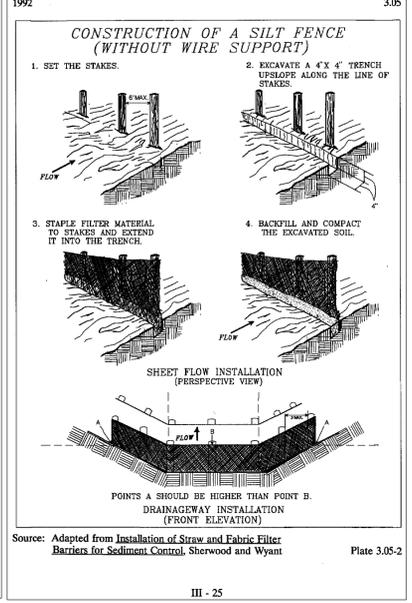
SAFETY FENCE  
NOT TO SCALE



STONE CONSTRUCTION  
ENTRANCE  
NOT TO SCALE



SILT FENCE  
NOT TO SCALE



SILT FENCE  
NOT TO SCALE

6	REVISIONS PER CITY COMMENT (02/15/2012)	SMM	DMP
5	REVISIONS PER FLOOD DAMAGE (02/02/2012)	SMM	DMP
4	ADDED FAIRFAX COUNTY REVIEW LETTER (12/12/2011)	SMM	KVH
3	REVISIONS PER COUNTY COMMENTS (12/09/2011)	SMM	KVH
2	REVISIONS PER COUNTY AND CITY COMMENTS (11/02/2011)	SMM	KVH
REV. No.:	REVISION:	DRAWN BY:	CHECKED BY:
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 Engineering, Planning, and Environmental Consultants

CLIENT: **CITY OF ALEXANDRIA**

TITLE: **SITE - EROSION DETAILS**

DATE: FEB 2011  
 HORIZONTAL SCALE: AS NOTED  
 VERTICAL SCALE: AS NOTED  
 DRAWN BY: SMM  
 DESIGNED BY: JD  
 CHECKED BY: KVH

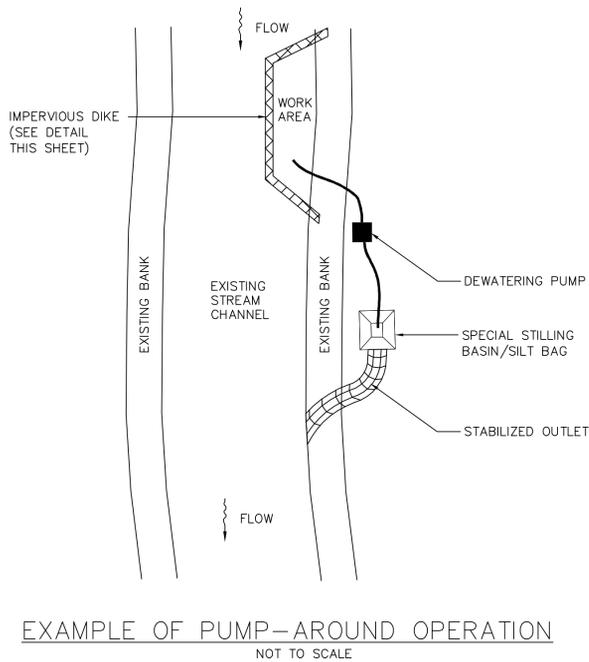
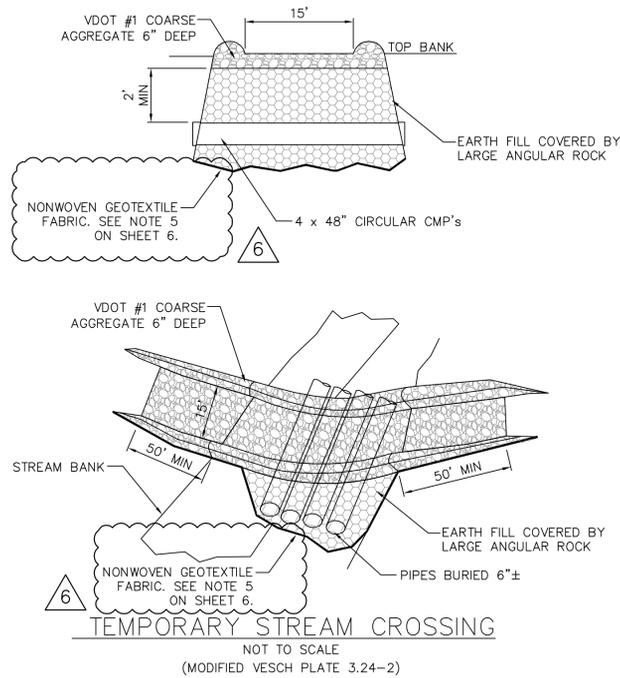
PROFESSIONAL ENGINEER  
 DAREN MATTHEW PAIT  
 Lic. No. 047582  
 02/15/12

PROJECT: **HOLMES RUN CHAMBLISS CROSSING**

ATTACHED REFERENCE FILES:

JOB NUMBER: 110104000

SHEET NUMBER: 7 of 15



**GENERAL CONSTRUCTION SEQUENCE REQUIREMENTS:**

- WORK TO BE COMPLETED IN ISOLATED SECTIONS OF CHANNEL.
- THE CHANNEL SHALL BE ISOLATED FROM THE WORK AREAS USING IMPERVIOUS DIKES (PER PROJECT SPECIFICATIONS).
- AT NO TIME SHALL AN IMPERVIOUS DIKE BE CONSTRUCTED THAT DOES NOT AT A MINIMUM MAINTAIN HALF THE WIDTH OF THE CHANNEL FOR PASSAGE OF BASE FLOW AND SMALL STORM FLOWS.
- BASE FLOW MUST NOT COME INTO CONTACT WITH THE WORK AREA.
- CONTRACTOR IS TO WORK IN SMALL ISOLATED SECTIONS OF CHANNEL AT A TIME.
  - THE PROJECT HAS BEEN DIVIDED INTO PHASES FOR STREAM WORK. THE CONTRACTOR SHALL ONLY CONDUCT BANK AND STREAM BED WORK, INCLUDING ALL IN-STREAM GRADING, BANK STABILIZATION, AND IN-STREAM STRUCTURE INSTALLATION ON A SECTION OF ISOLATED STREAM THAT CAN BE ENTIRELY STABILIZED BEFORE TURNING FLOW INTO THE NEWLY CONSTRUCTED CHANNEL SEGMENTS.
  - THE CONTRACTOR MAY SUB-DIVIDE THE PHASES INTO SMALLER PHASES.
  - THE CONTRACTOR CAN'T WORK IN TWO STREAM PHASE OR CULVERT PHASES AT SAME TIME UNLESS USING MULTIPLE CREWS. IF USING MULTIPLE CREWS THEN EACH CREW MUST BE CAPABLE OF FULLY COMPLETING THE WORK THEY START.
  - THE CULVERT PHASE CAN CONCUR CONCURRENTLY WITH THE STREAM PHASES.
- GROUND WATER OR RAINWATER THAT COMES INTO THE WORK ZONE (BEHIND THE IMPERVIOUS DIKE) CAN'T BE DISCHARGED DIRECTLY INTO THE STREAM. TURBID/DIRTY WATER FROM THE WORK AREA MUST BE PUMPED THROUGH A SILT BAG OR SPECIAL STILLING BASIN.
- THE CONTRACTOR IS TO CONTINUOUSLY MONITOR WEATHER. IF RAIN IS PREDICTED THAN THE SITE SHOULD BE TEMPORARILY STABILIZED PRIOR TO THE PREDICTED RAINFALL. TEMPORARY STABILIZATION WOULD INCLUDE MATTING ALL EXPOSED BANKS AND REMOVING ANY DEBRIS FROM THE CHANNEL THAT COULD BE WASHED DOWNSTREAM.

**SPECIAL STILLING BASIN**

THE SPECIAL STILLING BASIN(S) SHALL BE A WATER PERMEABLE FABRIC BAG THAT TRAPS SAND, SILT, AND FINES AS SEDIMENT LADEN WATER IS PUMPED INTO IT. THIS DEVICE SHALL BE CONSTRUCTED SUCH THAT IT IS PORTABLE AND CAN BE USED ADJACENT TO THE PUMP HOSE OUTLET.

THE FILTER FABRIC SHALL MEET THE REQUIREMENTS OF SECTION 245.03(C) OF THE VIRGINIA DEPARTMENT OF TRANSPORTATION (VDOT) STANDARD SPECIFICATIONS FOR DRAINAGE FABRIC. FILTER FABRIC SHALL ALSO BE TYPE II.

STONE SHALL BE FOR EROSION CONTROL CONTROL STONE (#57).

**CONSTRUCTION METHODS:**

THE SPECIAL STILLING BASIN(S) SHALL BE A BAG CONSTRUCTED TO A MINIMUM SIZE OF 10'X15' (3MX4.6M) MADE FROM A NONWOVEN FABRIC. IT SHALL HAVE A SEWN-IN 8-INCH (20.3CM) MAXIMUM SPOUT FOR RECEIVING PUMP DISCHARGE. THE BAG SEAMS SHALL BE SEWN WITH A DOUBLE NEEDLE MACHINE USING A HIGH STRENGTH THREAD. THE SEAMS SHALL HAVE A MINIMUM WIDE WIDTH STRENGTH AS FOLLOWS:

TEST METHOD	MINIMUM SPECIFICATIONS
ASTM D-4884	60 LB/IN (10.7 KG/CM)

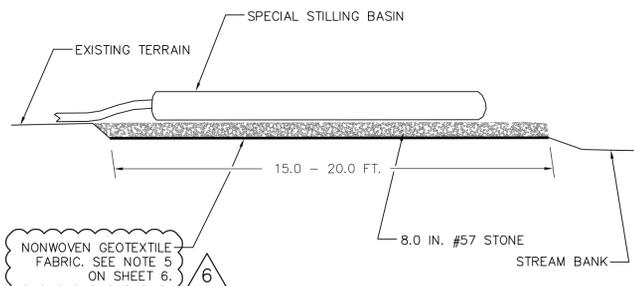
THE FABRIC USED TO CONSTRUCT THE BAG SHALL BE STABILIZED TO PROVIDE RESISTANCE TO ULTRA-VIOLET DEGRADATION AND MEET THE FOLLOWING SPECIFICATIONS FOR FLOW RATES, STRENGTH, AND PERMEABILITY:

THE SPECIAL STILLING BASIN(S) SHALL BE PLACED SO THE INCOMING WATER FLOWS INTO AND THROUGH THE BAG WITHOUT CAUSING EROSION. THE NECK OR SPOUT OF THE BAG SHALL BE TIED OFF TIGHTLY TO STOP THE WATER FROM FLOWING OUT OF THE BAG WITHOUT GOING THROUGH THE WALLS.

THE SPECIAL STILLING BASIN(S) SHALL BE REPLACED AND DISPOSED OF WHEN IT IS 3/4 FULL OF SEDIMENT, WHEN IT IS IMPRACTICAL FOR THE BAG TO FILTER THE SEDIMENT OUT AT A REASONABLE FLOW RATE, OR WHEN IT BECOMES PUNCTURED OR TORN.

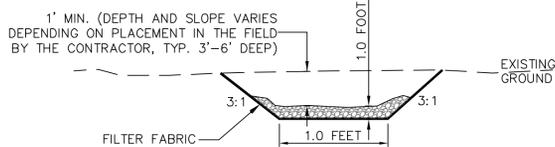
THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING A SUFFICIENT QUANTITY OF BAGS TO CONTAIN SILT FROM PUMPED EFFLUENT DURING CONSTRUCTION.

PROPERTY	TEST METHOD	UNITS		MINIMUM	
		ENGLISH	METRIC	ENGLISH	METRIC
WEIGHT	ASTM D-3776	Oz/YD	G/m	8.0	248.03
GRAB TENSILE	ASTM D-4632	LB	Kg	200.0	90.72
PUNCTURE FLOW	ASTM D-4833	LB	Kg	130.0	58.97
RATE	ASTM D-4491	GAL/MIN/SF	L/S/SM	80.0	0.47
PERMITTIVITY	ASTM D-4991	1/SEC		1.5	
UV RESISTANCE	ASTM D-4355	%		70.0	



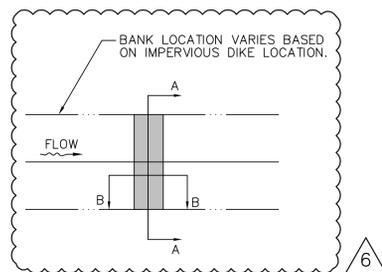
NOTE: IF SPECIAL STILLING BASIN IS PLACED IN EXISTING FLAT GROUND (SUCH AS A FIELD OR PASTURE) ADJACENT TO AN UNDISTURBED STREAM NO OUTLET IS REQUIRED (PREFERRED). IF SPECIAL STILLING BASIN IS PLACED ON DISTURBED SOIL THEN A STABILIZED OUTLET/CHANNEL NEEDS TO BE PROVIDED.

THE STABILIZED OUTLET WILL CONSIST OF A 1"-6" WELL GRADED MIX OF RIP RAP A MINIMUM OF 1" THICK PER THE DIMENSIONS BELOW. PLACE FILTER FABRIC BETWEEN THE RIP RAP AND SOIL FOUNDATION. THE STABILIZED OUTLET WILL EXTEND FROM THE SPECIAL STILLING BASIN TO THE BANK OF THE CHANNEL BELOW THE WORK AREA.

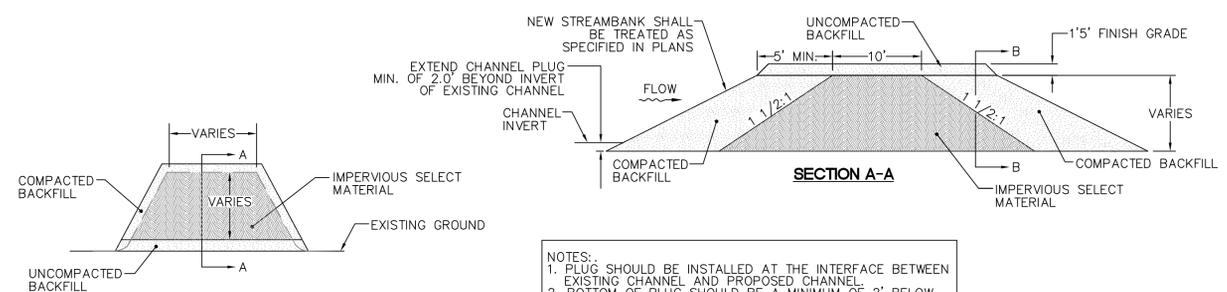


**STABILIZED OUTLET**

**SPECIAL STILLING BASIN WITH ROCK PAD**  
NOT TO SCALE



**PLAN VIEW**



**SECTION B-B IMPERVIOUS DIKE**  
NOT TO SCALE

- NOTES:
1. PLUG SHOULD BE INSTALLED AT THE INTERFACE BETWEEN EXISTING CHANNEL AND PROPOSED CHANNEL.
  2. BOTTOM OF PLUG SHOULD BE A MINIMUM OF 2' BELOW THE INVERT OF THE EXISTING CHANNEL.
  3. PLUG SHOULD EXTEND A MINIMUM OF 15' BEYOND THE LIMITS OF THE EXISTING STREAM CHANNEL.
  4. INSTALL EROSION CONTROL MATTING AND SEED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS IMMEDIATELY AFTER GRADING.
  5. COMPACT BACKFILL TO EXTENT POSSIBLE.

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CLIENT: **CITY OF ALEXANDRIA**  
 TITLE: **PUMP-AROUND DETAILS**

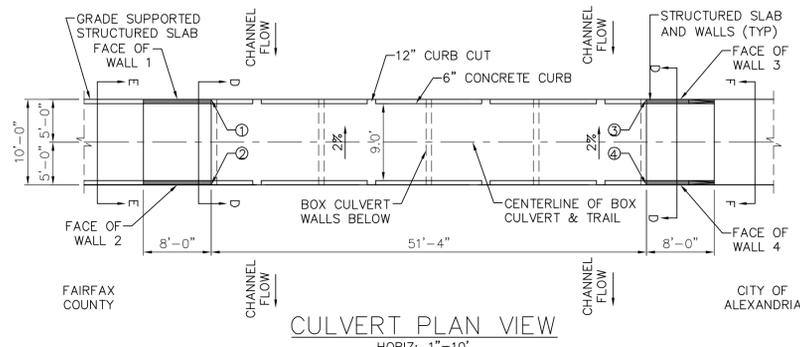
DATE: FEB 2011  
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 DRAWN BY: SMM  
 DESIGNED BY: JD  
 CHECKED BY: KVH  
 SEAL: DAREN MATTHEW PAIT, PROFESSIONAL ENGINEER, Lic. No. 047582, 02/15/12

PROJECT: **HOLMES RUN CHAMBLISS CROSSING**  
 ATTACHED REFERENCE FILES:  
 JOB NUMBER: 110104000  
 SHEET NUMBER: 8 OF 15

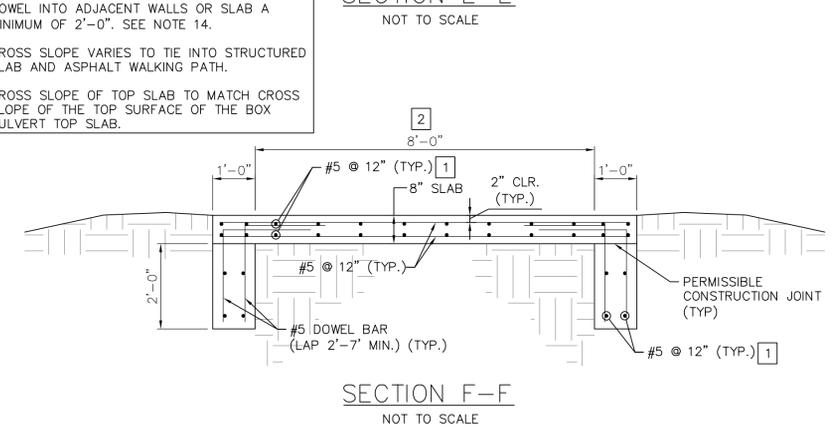
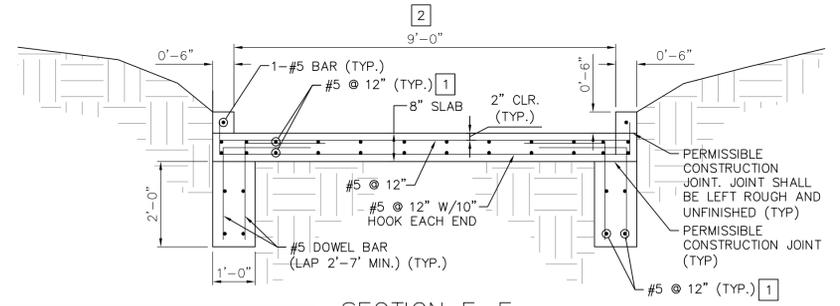
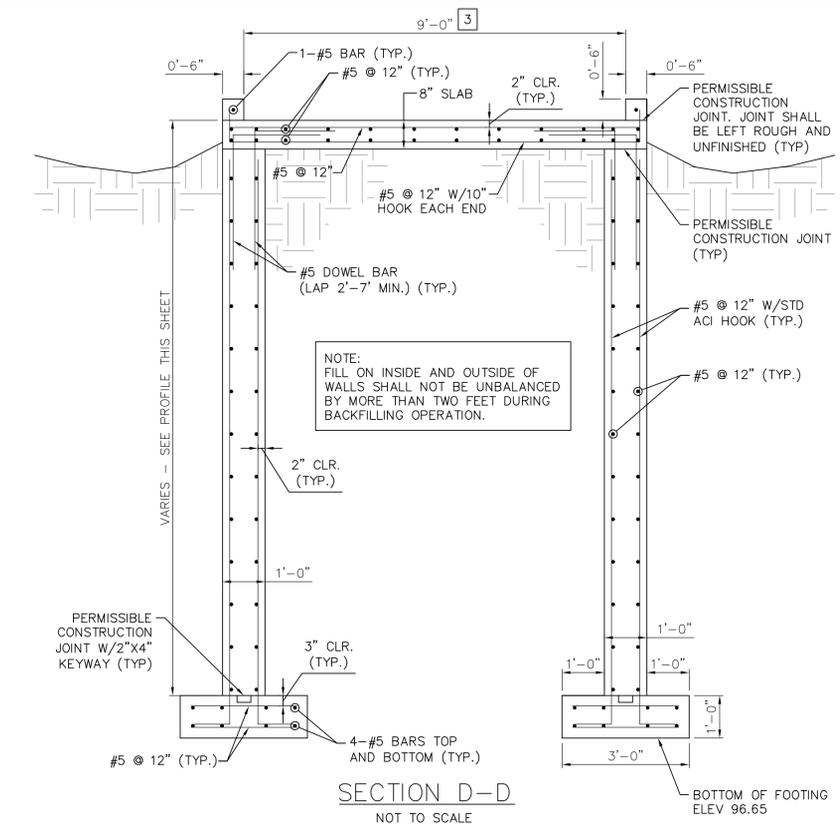
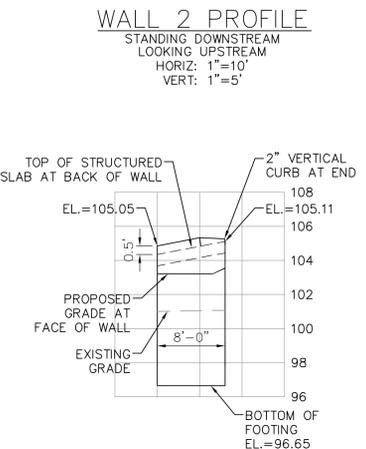
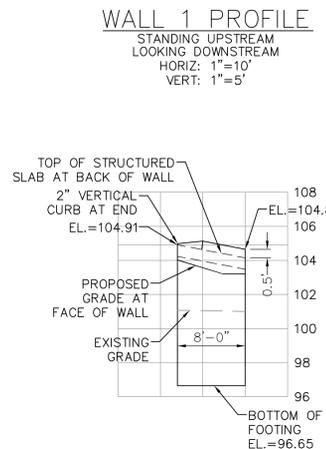
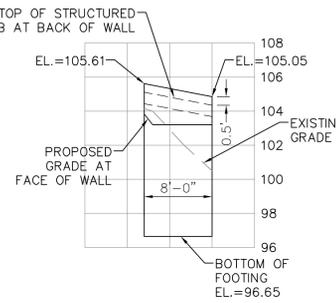
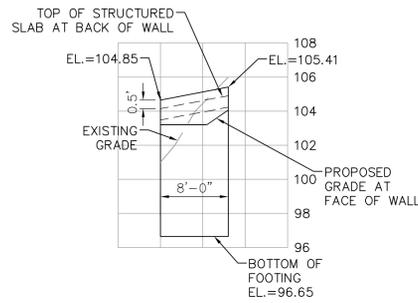
February 15, 2012 10:16am By: sean.millat

**STRUCTURAL GENERAL NOTES:**

- DESIGN CRITERIA:  
AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES, 17TH EDITION  
AASHTO GUIDE SPECIFICATIONS FOR THE DESIGN OF PEDESTRIAN BRIDGES, 2009 EDITION  
VIRGINIA DEPARTMENT OF TRANSPORTATION (VDOT), 2007 ROAD AND BRIDGE SPECIFICATIONS
- DESIGN LOADS:  
PEDESTRIAN LIVE LOAD: 90 PSF  
VEHICULAR LIVE LOAD: 5 TON VEHICLE (10 FOOT AXLE SPACING)
- PRELIMINARY DESIGN OF ALL STRUCTURES ARE BASED ON THE FOLLOWING SOIL PARAMETERS:  
MOIST UNIT WEIGHT: 120 PCF  
SUBMERGED UNIT WEIGHT: 100 PCF  
FRICTION ANGLE: 28.0 DEGREES  
AT REST PRESSURE COEFFICIENT: 0.53  
ALLOWABLE BEARING PRESSURE: 2,500 PSF  
  
CONTRACTOR SHALL VERIFY SOIL PARAMETERS PRIOR TO CONSTRUCTION, AND SHALL NOTIFY ENGINEER OF ANY DIFFERING CONDITIONS. CONSTRUCTION SHALL NOT PROCEED WITHOUT THE APPROVAL OF THE ENGINEER.
- CONCRETE AND REINFORCEMENT FOR THE BOX CULVERT SHALL BE IN ACCORDANCE WITH THE VDOT ROAD AND BRIDGE SPECIFICATIONS AND THE VDOT STANDARD DETAILS.
- CONCRETE FOR THE WALLS AND STRUCTURED SLABS SHALL CONFORM TO THE REQUIREMENTS OF VDOT ROAD AND BRIDGE SPECIFICATION SECTION 217 FOR CLASS A4.
- ALL REINFORCING STEEL SHALL BE DEFORMED AND SHALL CONFORM TO ONE OR MORE OF THE THREE TYPES LISTED BELOW. THE MINIMUM YIELD STRENGTH SHALL BE: 100 KSI FOR LOW CARBON/CHROMIUM STEEL AND 60 KSI FOR STAINLESS CLAD STEEL OR SOLID STAINLESS STEEL.  
A. LOW-CARBON, CHROMIUM, REINFORCING STEEL: STEEL SHALL CONFORM TO THE REQUIREMENTS OF ASTM A1035/A1035M II STANDARD SPECIFICATION FOR DEFORMED AND PLAIN, LOW-CARBON, CHROMIUM, STEEL BARS FOR CONCRETE REINFORCEMENT.  
B. SOLID STAINLESS REINFORCING STEEL: STEEL SHALL CONFORM TO THE REQUIREMENTS OF ASTM A955/A955M - STANDARD AND SPECIFICATION FOR DEFORMED AND PLAIN SOLID STAINLESS STEEL BARS FOR CONCRETE REINFORCEMENT. UNS\* DESIGNATIONS: S24000, S24100, S30400, S31603, S31653, S31803, S32101.  
C. STEEL CLAD REINFORCING STEEL: STEEL SHALL CONFORM TO THE REQUIREMENTS OF AASHTO DESIGNATION: MP 13M/MP 13-04, STANDARD SPECIFICATION FOR STAINLESS STEEL CLAD DEFORMED AND PLAIN ROUND STEEL BARS FOR CONCRETE REINFORCEMENT.
- CLEAR DIMENSIONS FROM FACE OF CONCRETE TO MAIN REINFORCEMENT STEEL SHALL BE AS SHOWN ON THE DRAWINGS. WHERE CLEAR DIMENSION IS NOT SHOWN, THE GUIDELINES IN THE AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES, 17TH EDITION SHALL BE USED.
- CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI PRIOR TO THE REMOVAL OF FORMWORK.
- CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING, PROTECTING, AND RELOCATING AS REQUIRED, WITH THE APPROVAL OF THE ENGINEER, ALL SERVICE AND UTILITIES IN THE VICINITY OF THE WORK SITE. ALL EXCAVATIONS SHALL BE CARRIED OUT WITH EXTREME CAUTION.
- CONSTRUCTION OF BOX CULVERTS AND WALLS SHALL BE IN ACCORDANCE WITH VDOT ROAD AND BRIDGE SPECIFICATIONS, SECTION 302, EXCEPT AS MODIFIED BY THESE PLANS AND NOTES.
- THE BOX CULVERT SHALL BE CONSTRUCTED PER THE VDOT STANDARD DETAILS INCLUDED IN THIS PLAN, EXCEPT, THE VDOT STANDARD WING WALLS SHALL NOT BE CONSTRUCTED. THE NOSING FOR THE INTERIOR WALLS OF THE CULVERTS FOR BOTH THE UPSTREAM AND DOWNSTREAM ENDS SHALL BE CONSTRUCTED PER THE VDOT DETAILS SHOWN FOR THE UPSTREAM END OF THE CULVERT WITH WING WALL REMOVED. THE CURB AND EDGE OF TOP SLAB SHALL BE PER THE VDOT DETAILS SHOWN FOR THE DOWNSTREAM END EXCEPT THE CURB SHALL BE 6"x6".
- ALL EXPOSED CONCRETE SHALL RECEIVE A CLASS 2 FINISH PER VDOT ROAD AND BRIDGE SPECIFICATION SECTION 404.07 (b) UNLESS NOTED OTHERWISE.
- THE TOP OF THE BOX CULVERT TOP SLAB AND THE TOP SURFACE OF THE STRUCTURED SLABS ARE THE WEARING SURFACE FOR THE TRAIL, AND SHALL BE CONSTRUCTED TO THE LINE AND GRADE SHOWN IN THESE PLANS. THE WEARING SURFACE OF CONCRETE STRUCTURES SHALL RECEIVE A CLASS 7 FINISH PER VDOT ROAD AND BRIDGE SPECIFICATION SECTION 404.07 (g).
- ALL EXPOSED EDGES OF STRUCTURED SLAB SHALL HAVE A 3/4" x 3/4" CHAMFER.
- THE WALLS AND STRUCTURED SLAB SHALL BE TIED INTO THE BOX CULVERT, AND THE STRUCTURED SLAB ON GRADE SHALL BE TIED INTO THE STRUCTURED SLAB AND WALLS WITH 4'-0" #5 BARS CENTERED ON THE COLD JOINT. THE #5 BARS SHALL BE SPACED AND LOCATED WITH THE BARS IN THE WALLS AND STRUCTURED SLABS.
- PROVIDE 1" WIDE BY 1/2" DEEP CAULK JOINT AT ALL CONSTRUCTION JOINTS IN TOP SLAB, CURB, AND FRONT FACE OF WALL IN STRUCTURED SLABS AND WALLS, GRADE SUPPORTED STRUCTURED SLABS, AND DOWNTURNED WALLS. PLACE BOND BREAKER TAPE AT BOTTOM OF JOINT. CAULK COLOR AND TYPE TO BE SUBMITTED TO OWNER FOR APPROVAL.
- CHANNEL EXCAVATION WITHIN THE ACTIVE, EXISTING CHANNEL SHALL ONLY BE PERFORMED IN DRY OR ISOLATED SECTIONS OF THE CHANNEL. DRY OR ISOLATED SECTIONS OF THE CHANNEL WILL PERTAIN TO THE DIVERSION OF FLOWING WATER AROUND THE WORK AREA. A VIABLE DIVERSION METHOD SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL WHEN WORK IS CONCURRENT WITH FLOWING WATER. IF THE DIVERSION METHOD REQUIRES AN ENGINEERED SYSTEM, THE SYSTEM SHALL BE ENGINEERED, SIGNED, AND SEALED BY AN ENGINEER REGISTERED IN THE STATE OF VIRGINIA.
- ALIGNMENT REFERENCE LINE IS AT FACE OF WALL.
- CONTROL JOINTS SHALL BE CONSTRUCTED AT 10'-0" ON CENTER, BEGINNING AT END OF WING WALL, IN GRADE SUPPORTED STRUCTURED SLAB AND SHALL CONFORM TO THE REQUIREMENTS OF VDOT ROAD AND BRIDGE SPECIFICATION SECTION 504.03 (a) 1.
- CONTROL JOINTS IN GRADE SUPPORTED STRUCTURED SLAB SHALL EXTEND UP THE FACE, ACROSS THE TOP, DOWN THE BACK OF THE CURB, AND DOWN THE FRONT FACE OF THE WALL.
- THE GRADING FOR THE GRADE SUPPORTED STRUCTURED SLAB AND THE BEDDING MATERIAL SHALL CONFORM TO THE REQUIREMENTS OF VDOT ROAD AND BRIDGE SPECIFICATION SECTION 504.



POINT	DESCRIPTION	NORTHING	EASTING	ELEVATION
1	TOP OF CURB	6,988,561.63	11,871,757.02	104.85
2	TOP OF CURB	6,988,551.71	11,871,758.28	105.05
3	TOP OF CURB	6,988,568.12	11,871,807.94	104.85
4	TOP OF CURB	6,988,558.20	11,871,809.20	105.05



- 1 DOWEL INTO ADJACENT WALLS OR SLAB A MINIMUM OF 2'-0". SEE NOTE 14.
- 2 CROSS SLOPE VARIES TO TIE INTO STRUCTURED SLAB AND ASPHALT WALKING PATH.
- 3 CROSS SLOPE OF TOP SLAB TO MATCH CROSS SLOPE OF THE TOP SURFACE OF THE BOX CULVERT TOP SLAB.

NO.	REVISION	DATE	BY	CHECKED BY
6	REVISIONS PER CITY COMMENT (02/15/2012)		SMM	DMP
5	REVISIONS PER FLOOD DAMAGE (02/02/2012)		SMM	DMP
4	ADDED FAIRFAX COUNTY REVIEW LETTER (12/12/2011)		SMM	KVH
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 Engineering, Planning, and Environmental Consultants

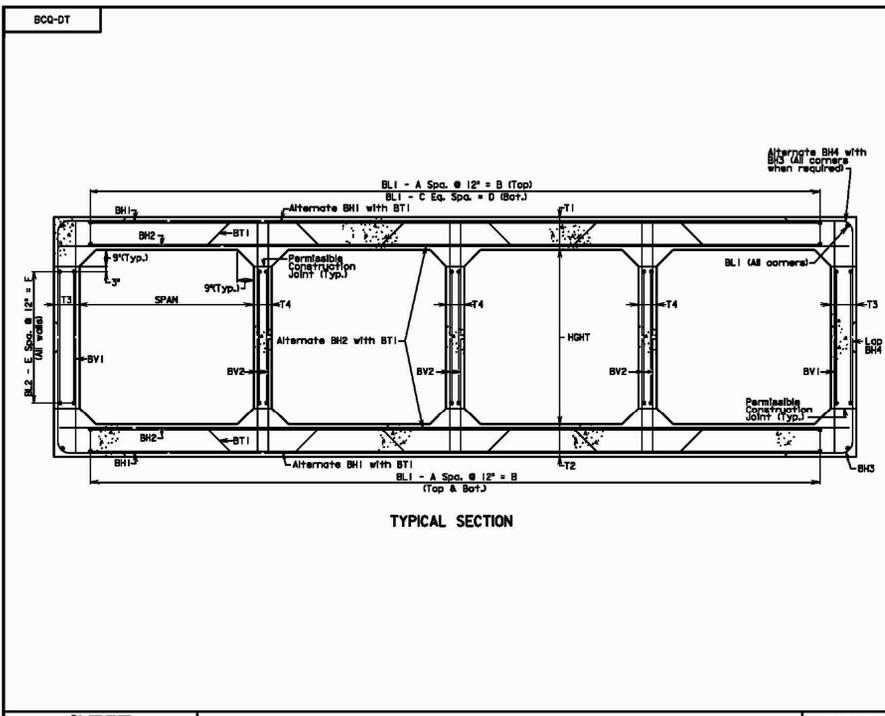
CLIENT: **CITY OF ALEXANDRIA**  
 TITLE: **WALLS-SLAB PROFILE AND DETAILS**

DATE: FEB 2011  
 HORIZONTAL SCALE: AS NOTED  
 VERTICAL SCALE: AS NOTED  
 DRAWN BY: SMM  
 DESIGNED BY: JD  
 CHECKED BY: KVH  
 SEAL: JERRY D. PERTZSCHE, PROFESSIONAL ENGINEER, No. 044322, 02/15/2012

PROJECT: **HOLMES RUN CHAMBLISS CROSSING**  
 ATTACHED REFERENCE FILES:  
 JOB NUMBER: 110104000  
 SHEET NUMBER: 9 of 15

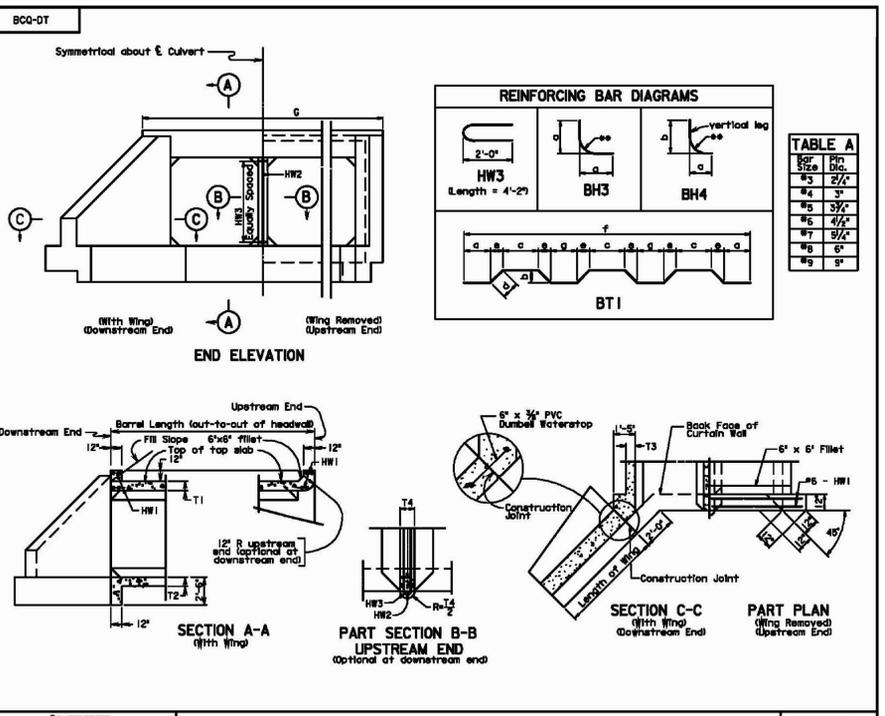
K:\WALLS-LAB\110104000 Holmes Run\DETAILED.dwg

February 15, 2012 10:16am By: sean.millist



**GENERAL NOTE**  
Capacity: HS20-44 Loading and Alternate Military Loading.  
Specifications:  
Construction - Va. Department of Transportation Road and Bridge Specifications, 2007.  
Design - AASHTO Standard Specifications for Highway Bridges, 1983 including Interim Specifications 1984, 1985 and VDOT Modifications, using Load Factor Design.

All concrete shall be Class A4.  
Deformed reinforcing bars shall conform to ASTM A615, Grade 60. Reinforcing bar dimensions on the detailed drawings are to centers of bars except where otherwise noted and are subject to fabrication and construction tolerances.  
Construction joints shall be constructed and bonded in accordance with the current Road and Bridge Specifications.  
Barrels more than 35' in length shall be poured in sections by providing vertical construction joints, not exceeding 25' between joints nor more than 30' from ends of barrels.  
All bends shall be made with a pin diameter as listed in TABLE A except for Bars BH3 & BH4 which shall have a pin diameter of 24 bar diameters.  
Dimensions on bar diagrams are out-to-out of bars. Bars are straight and #4 in size unless otherwise shown. BL2 shall be #3 in size.  
The number of BL1 & BL2 bars shown in the table is the number of longitudinal bars shown in the Typical Section and may not equal the total number of bars required. BL1 & BL2 shall have a lap of 30 bar diameters at splices. At construction joints, first placed bars shall project 30 bar diameters beyond the joint. Estimated QUAN./LF shown for reinforcing steel does not include quantity for laps of BL1 & BL2 bars. The additional weight per longitudinal lap is shown in the table.  
The centers of main reinforcing bars shall be 2" from the face of the concrete.  
When concrete protective coating is required, all steel shall be epoxy-coated. All reinforcing steel for culverts under 0 to 2 foot fills shall be epoxy-coated.  
At the Contractor's option, BV1 & BV2 bars may be spliced at the permissible construction joint in order to facilitate construction. No additional compensation shall be provided for the increase in reinforcing steel quantity due to the splices.  
Bar HW2 shall be 4" less than culvert height in length.  
Headwall quantities shown assume wingwalls are to be built at a 45° angle to the headwall.  
The designs are applicable to the fill height and other conditions indicated. Any change in the conditions invalidates these designs.  
Wingwalls referenced by letter apply when the acceptable foundation levels is the same for both box and wing. If foundation levels are different, the height of the wingwall shall be adjusted by selection of another lettered wingwall of appropriate height. For wingwall details, refer to standard series BCW for the appropriate fill slope.  
For details of extending existing boxes, refer to Standard BCE-01.  
For modification of details for skewed culverts, see the Skewed Box Details included in the road plans.  
This standard shall be used with the BCO standard series.



VDOT ROAD AND BRIDGE STANDARDS	
SHEET 1 OF 3	REVISION DATE
1005.01	

<b>QUADRUPLE BOX CULVERTS STANDARD DETAILS</b>	
SPECIFICATION REFERENCE	
ROAD AND BRIDGE STANDARDS	
REVISION DATE SHEET 2 OF 3	
10/09 1005.02	

<b>QUADRUPLE BOX CULVERTS STANDARD DETAILS</b>	
SPECIFICATION REFERENCE	
ROAD AND BRIDGE STANDARDS	
REVISION DATE SHEET 3 OF 3	
1005.03	

<b>QUADRUPLE BOX CULVERTS STANDARD DETAIL</b>	
SPECIFICATION REFERENCE	
ROAD AND BRIDGE STANDARDS	
REVISION DATE SHEET 2 OF 2	
1005.05	

- NOTES:
- THE CULVERTS ARE HYDRAULICALLY DESIGNED TO PASS THE 1-YEAR/24-HOUR STORM EVENT, BUT THE 2-YEAR/24-HOUR STORM EVENT OVERTOPS THE CULVERTS.
  - THICKNESS OF TOP SLAB VARIES. MINIMUM THICKNESS IS AS SHOWN IN TABLE. SEE ELEVATION CALLOUTS NOTED ON SHEET 3.

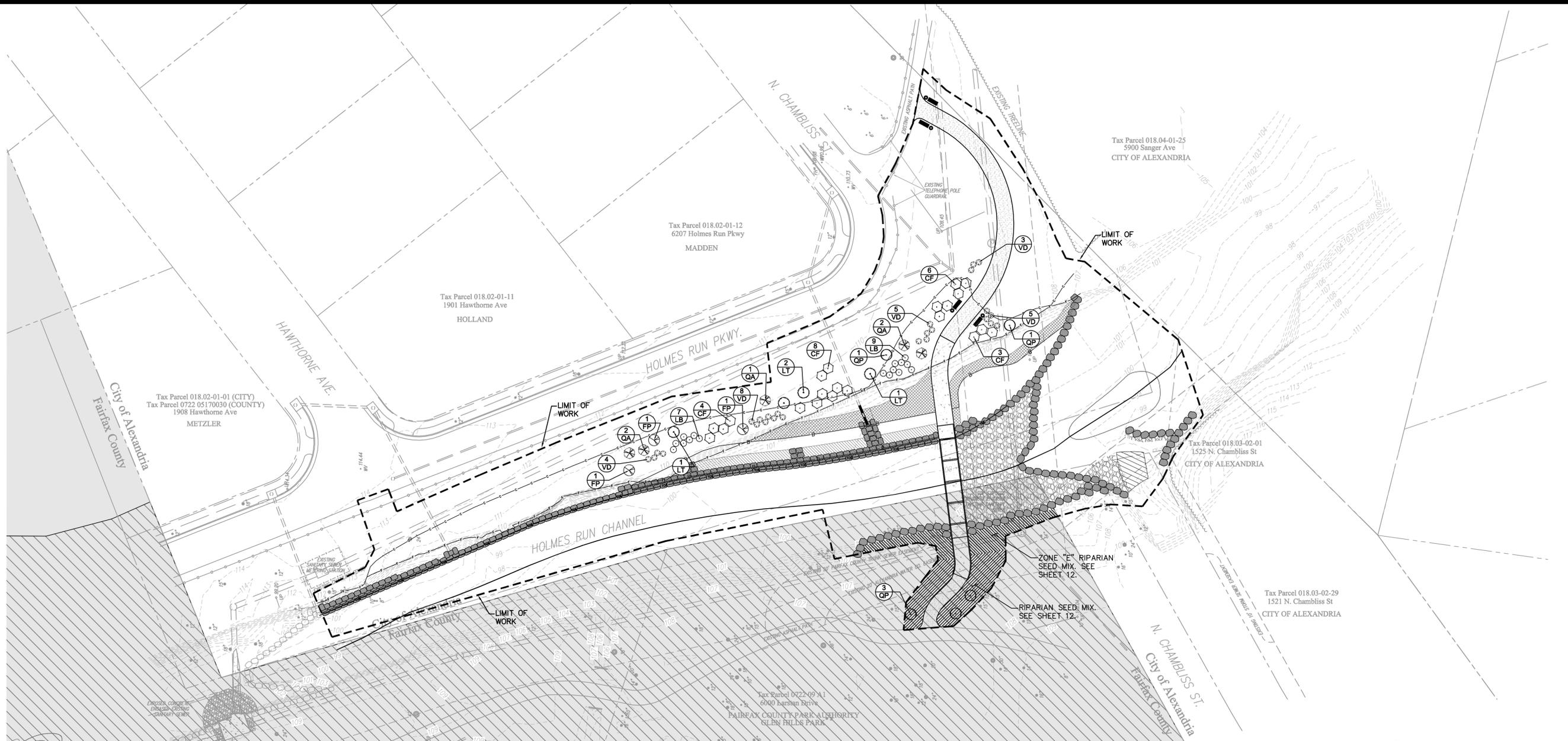
DIMENSIONS													
SPAN/HEIGHT		T1	T2	T3	T4	REINFORCING STEEL						HEADWALLS	
(FT.)	(FT.)	(FT.)	(FT.)	(FT.)	(FT.)	BH1	BH2	BH3	BH4	BV1	BV2	HW1	HW2
(FT.)	(FT.)	(FT.)	(FT.)	(FT.)	(FT.)	SIZE	SIZE	SIZE	SIZE	SIZE	SIZE	SIZE	SIZE
(FT.)	(FT.)	(FT.)	(FT.)	(FT.)	(FT.)	LENGTH	LENGTH	LENGTH	LENGTH	LENGTH	LENGTH	LENGTH	LENGTH
3	3	12	12	12	12	4	4	4	4	4	4	6	6
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REINFORCING STEEL													
SPAN/HEIGHT		T1	T2	T3	T4	REINFORCING STEEL						HEADWALLS	
(FT.)	(FT.)	(FT.)	(FT.)	(FT.)	(FT.)	BH1	BH2	BH3	BH4	BV1	BV2	HW1	HW2
(FT.)	(FT.)	(FT.)	(FT.)	(FT.)	(FT.)	SIZE	SIZE	SIZE	SIZE	SIZE	SIZE	SIZE	SIZE
(FT.)	(FT.)	(FT.)	(FT.)	(FT.)	(FT.)	LENGTH	LENGTH	LENGTH	LENGTH	LENGTH	LENGTH	LENGTH	LENGTH
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VDOT ROAD AND BRIDGE STANDARDS	
SHEET 1 OF 2	REVISION DATE
1005.04	

<b>QUADRUPLE BOX CULVERTS 0 TO 2 FT. FILLS</b>	
SPECIFICATION REFERENCE	
ROAD AND BRIDGE STANDARDS	
REVISION DATE SHEET 2 OF 2	
1005.05	

6	REVISIONS PER CITY COMMENT (02/15/2012)	SM	DMP
5	REVISIONS PER FLOOD DAMAGE (02/02/2012)	SM	DMP
4	ADDED FAIRFAX COUNTY REVIEW LETTER (12/12/2011)	SM	KVH
3	REVISIONS PER COUNTY COMMENTS (12/09/2011)	SM	KVH
2	REVISIONS PER COUNTY AND CITY COMMENTS (11/02/2011)	SM	KVH
REV. NO.	REVISION	DRAW	



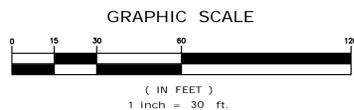
TREES AND SHRUBS - BARE ROOT / TUBELINGS  
(ZONE B AND C - SEE DETAIL)

SYMBOL	BOTANICAL NAME	COMMON NAME	TREE/SHRUB	SPACING	QTY.
⊙	QUERCUS PRINUS	CHESTNUT OAK	TREE	4'-5'	5
⊕	CORNUS FLORIDA	FLOWERING DOGWOOD	TREE	4'-5'	21
⊙	LINDERA BENZON	SPICEBUSH	SHRUB	4'-5'	16
⊙	LIRIODENDRON TULIPIFERA	YELLOW POPLAR	TREE	4'-5'	4
⊕	FRAXINUS PENNSYLVANICA	GREEN ASH	TREE	4'-5'	3
⊕	QUERCUS ALBA	WHITE OAK	TREE	4'-5'	5
⊕	VIBURNUM DENTATUM	SOUTHERN ARROWWOOD	SHRUB	4'-5'	25

FAIRFAX COUNTY RPA MITIGATION PLANTINGS:

- REQUIRED OVERSTORY TREES: 8 (OR 16 SEEDLINGS)
- REQUIRED UNDERSTORY TREES: 16 (OR 32 SEEDLINGS)
- REQUIRED SHRUBS: 88 (OR EQUIVALENT SEED MIXTURE)

NOTE: THE THREE TREES DEPICTED ON THE FAIRFAX COUNTY SIDE OF THE RUN SHALL BE INSTALLED BY THE CITY OF ALEXANDRIA. THE REMAINDER OF THE PLANTINGS SHALL BE PROCURED AND PLANTED BY OTHERS WITH THE PLANTING LOCATION AT THE FAIRFAX COUNTY PARK AUTHORITY'S DISCRETION.



6	REVISIONS PER CITY COMMENT (02/15/2012)	SMM	DMP
5	REVISIONS PER FLOOD DAMAGE (02/02/2012)	SMM	DMP
4	ADDED FAIRFAX COUNTY REVIEW LETTER (12/12/2011)	SMM	KVH
3	REVISIONS PER COUNTY COMMENTS (12/09/2011)	SMM	KVH
2	REVISIONS PER COUNTY AND CITY COMMENTS (11/02/2011)	SMM	KVH
REV. No:	REVISION:	DRAWN BY:	CHECKED BY:
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20191  
Phone: 703-674-1300  
Fax: 703-674-1350  
Engineering, Planning, and Environmental Consultants

CLIENT: **CITY OF ALEXANDRIA**

TITLE: **LANDSCAPE PLAN**

DATE: FEB 2011  
HORIZONTAL SCALE: AS NOTED  
VERTICAL SCALE: AS NOTED  
DRAWN BY: SMM  
DESIGNED BY: JD  
CHECKED BY: KVH

PROJECT: **HOLMES RUN CHAMBLISS CROSSING**

ATTACHED REFERENCE FILES:

JOB NUMBER: 110104000

SHEET NUMBER: **11** OF **15**

February 15, 2012 10:22am By: sean.millican

**PERMANENT SEEDING – OUTSIDE OF CUT SLOPE SEED MIX (ZONE A)**

COMMON NAME	BOTANICAL NAME	PERCENTAGE
KY-31 TALL FESCUE	FESTUCA ARUNDINACEA	50
HARD FESCUE	FESTUCA OVINA	50

APPLICATION RATE 200 LBS/ACRE

**TREES AND SHRUBS – BARE ROOT / TUBELINGS (ZONE B AND C – SEE DETAIL)**

COMMON NAME	BOTANICAL NAME	TREE/SHRUB	SPACING	ZONE	
				B	C
GREEN ASH	FRAXINUS PENNSYLVANICA	SHRUB	5'	■	■
ALTERNATE-LEAF DOGWOOD	CORNUS ALTERNIFOLIA	TREE	5'	■	■
RED MAPLE	ACER RUBRUM	TREE	5'	■	■
YELLOW POPLAR	LIRIODENDRON TULIPIFERA	TREE	5'	■	■
SOUTHERN ARROWWOOD	VIBURNUM DENTATUM	SHRUB	5'	■	■
VIRGINIA WILLOW	ITEA VIRGINICA	SHRUB	5'	■	■
HAZEL ALDER	ALNUS SERRULATA	TREE	5'	■	■

NO SPECIES TO COMPRISE MORE THAN 20%  
TUBELINGS = 18" TO 24" IN HEIGHT

**HERBACEOUS PLUGS (ZONES D AND E – SEE DETAIL)**

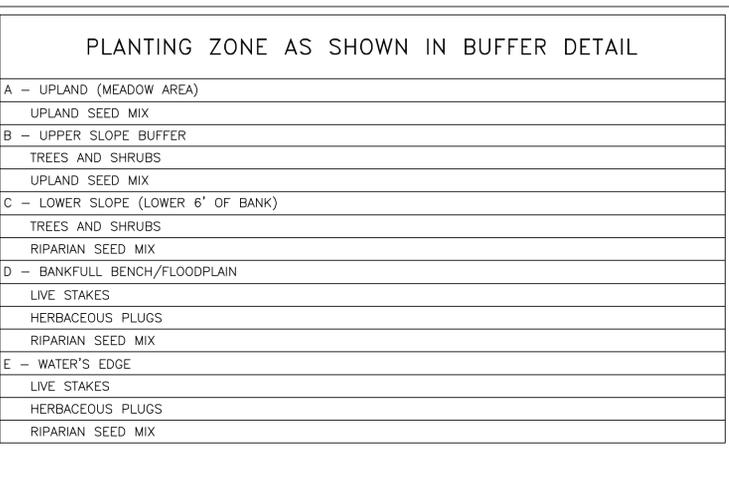
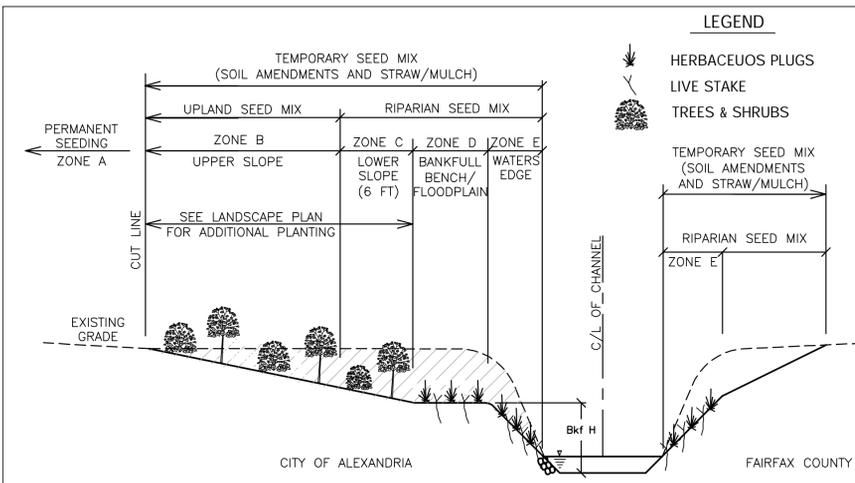
COMMON NAME	BOTANICAL NAME	SPACING
SOFT RUSH	JUNCUS EFFUSUS	18" O.C.
ROSE MALLOW	HIBISCUS MOSCHEUTOS	18" O.C.
SWEETFLAG	ACORUS CALAMUS	18" O.C.
SEDGE	CAREX STRICTA	18" O.C.
BLUE-FLAG IRIS	IRIS VIRGINICA	18" O.C.
SWAMP MILKWEED	ASCLEPIAS INCARNATA	18" O.C.
WOOL-GRASS/BULL RUSH	SCIRPUS CYPERINUS	18" O.C.
IRON WEED	VERNONIA NOVEBORACENSIS	18" O.C.

NO SPECIES TO COMPRISE MORE THAN 20%  
SHALL BE A MINIMUM OF 2-INCHES

**WOODY VEGETATION – LIVE STAKING (ZONES D AND E – SEE DETAIL)**

COMMON NAME	BOTANICAL NAME	PERCENTAGE	SPACING	ZONE	
				D	E
SILKY WILLOW	SALIX SERICEA	25	48"	■	■
SILKY DOGWOOD	CORNUS AMOMUM	25	48"	■	■
ELDERBERRY	SAMBUCUS CANADENSIS	25	48"	■	■
BUTTON BUSH	CEPHALANTHUS OCCIDENTALIS	25	48"	■	■

LIVE STAKES ARE 1/2" TO 3" IN DIAMETER AND 2'-3" IN LENGTH



**PERMANENT SEEDING – UPLAND SEED MIX (ZONE B – SEE DETAIL)**

COMMON NAME	BOTANICAL NAME	PERCENTAGE
TALL COREOPSIS	COREOPSIS TRIPTERIS	20
TEN-PETALED SUNFLOWER	HELIANTHUS DECAPETALES	20
CUT-LEAVED CONEFLOWER	RUDBECKIA LACINIATA	30
UPLAND BENTGRASS	AGROSTIS PERENNANS	30

APPLICATION RATE 15 LBS/ACRE

**PERMANENT SEEDING – RIPARIAN SEED MIX (ZONES C, D AND E – SEE DETAIL)**

COMMON NAME	BOTANICAL NAME	PERCENTAGE (%)
INDIAN GRASS	SORGHASTRUM NUTANS	10
VIRGINIA WILD RYE	ELYMUS VIRGINICUS	20
DEER TONGUE	DICHANTHELIUM CLANDESTINUM	10
SWEET WOODREED	CINNA ARUNDINACEA	5
FOX SEDGE	CAREX VULPINOIDEA	5
LURID SEDGE	CAREX LURIDA	5
FRANK'S SEDGE	CAREX FRANKII	5
COMMON RUSH	JUNCUS EFFUSUS	5
PATH RUSH	JUNCUS TENUIS	5
WOOL GRASS	SCIRPUS CYPERINUS	5
COMMON MILKWEED	ASCLEPIAS SYRIACA	3
SWAMP MILKWEED	ASCLEPIAS INCARNATA	3
JOE-PYE WEED	EUPATORIUM FISTULOSUM	3
NEW YORK IRONWEED	VERONIA NOVEBORACENSIS	2
PENNSYLVANIA SMARTWEED	POLYGONUM PENNSYLVANICUM	4
HEATH ASTER	SYMPHYOTRICHUM PILOSUM	4
GRASS-LEAVED GOLDENROD	EUTHAMIA GRAMINIFOLIA	3
BLUESTEMMED GOLDENROD	SOLIDAGO CAESIA	3

APPLICATION RATE 30 LBS/ACRE

**TEMPORARY SEEDING (ALL ZONES)**

COMMON NAME	BOTANICAL NAME	RATE (LB/ACRE)	SEEDING WINDOW	
			START	END
RYE GRAIN	SECALE CEREALE	15	AUG 15	MAY 1
BROWNTOP MILLET	PANICUM RAMOSUM	15	MAY 1	AUG 15

**SOIL AMENDMENTS**

APPLY SOIL AMENDMENTS ACCORDING TO THE FOLLOWING TABLE AT 700 LBS/ACRE:

LIME	0
N <sub>2</sub>	10
P <sub>2</sub> O <sub>5</sub>	10
K <sub>2</sub> O	10

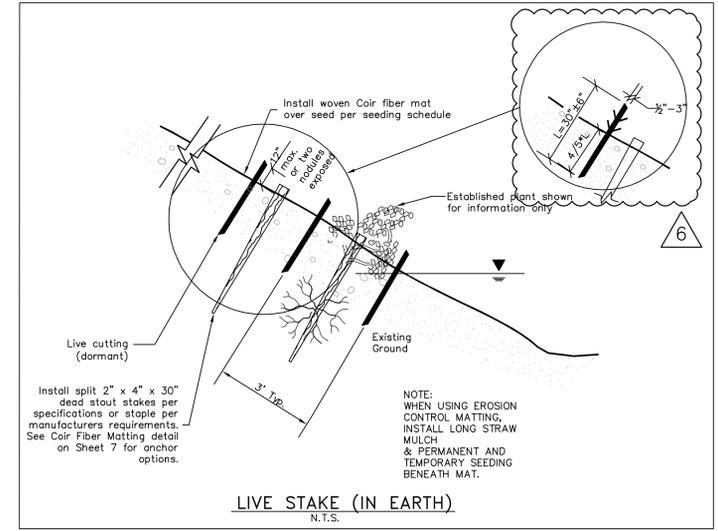
MULCH  
APPLY 4,000 LB/ACRE STRAW. ANCHOR STRAW BY TACKING, WITH BIODEGRADABLE NETTING, OR A MULCH ANCHORING TOOL. A DISK WITH BLADES SET NEARLY STRAIGHT CAN BE USED AS A MULCH ANCHORING TOOL.

MAINTENANCE  
REFERTILIZE IF GROWTH IS NOT FULLY ADEQUATE. RESEED, REFERTILIZE AND MULCH IMMEDIATELY FOLLOWING EROSION OR OTHER DAMAGE PER SECTION 6.10 OF NCDENR EROSION AND SEDIMENT CONTROL DESIGN MANUAL.

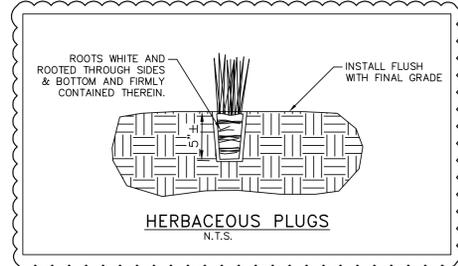
NOTE: GROUND COVER SHALL BE ESTABLISHED ON EXPOSED SLOPES WITHIN 21 WORKING DAYS FOLLOWING COMPLETION OF ANY PHASE OF GRADING.

**GENERAL NOTES**

- IN ALL DISTURBED AREAS ZONES B, C, D, AND E SHOULD BE RAKED/ROUGHENED (A MINIMUM OF 5"), A 3" BLANKET OF CERTIFIED ORGANIC COMPOST APPLIED, SEEDED (PERMANENT AND TEMPORARY), STRAWED, AND THEN COVERED WITH EROSION CONTROL MATTING PER THE MANUFACTURERS' RECOMMENDATIONS. ONCE THE MATTING IS DOWN INSTALL THE LIVE STAKES AND HERBACEOUS PLUGS THROUGH THE MATTING.
- IMMEDIATELY FOLLOWING THE PLACEMENT OF THE PERMANENT SEED, THE CONTRACTOR SHALL HYDROSEED ACCORDING TO ONE OF THE FOLLOWING METHODS:  
1. APPLY FIBERMULCH AND ANNUAL RYE (LOLIUM MULTIFLORUM) AT A RATE OF 60 LB/ACRE OVER THE DRILLED SEED AREA. WINTER WHEAT COULD BE SUBSTITUTED FOR ANNUAL RYE IF SEEDING AFTER OCTOBER 1ST. CLEAN WHEAT STRAW MAY BE USED IN PLACE OF FIBERMULCH.  
2. ORGANIC COMPOST MAY BE USED INSTEAD OF DRILLING. IF ORGANIC COMPOST IS USED, THEN HYDROSEED CAN BE SOWN DIRECTLY ONTO THE COMPOST AND NO ADDITIONAL MULCHING IS REQUIRED.
- COIR MATS MUST BE USED IN STREAM BANKS AND STEEP SLOPE AREAS.
- O.C. = ON-CENTER
- IF DROUGHT CONDITIONS EXIST THE CONTRACTOR WILL WATER THE INSTALLED VEGETATION WITH WATER FROM THE CREEK TO ENSURE 85% SURVIVAL AT THE END OF THE 1-YEAR WARRANTY PERIOD.



**LIVE STAKE (IN EARTH)**  
N.T.S.



**HERBACEOUS PLUGS**  
N.T.S.

K:\WVA\_LAND\110104000\_Holmes Run\VEG-NGTIES.dwg

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6	REVISIONS PER CITY COMMENT (02/15/2012)	SMM	DMP
5	REVISIONS PER FLOOD DAMAGE (02/02/2012)	SMM	DMP
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11400 Commerce Park Drive  
Suite 400  
Reston, Virginia 20191  
Phone: 703-674-1300  
Fax: 703-674-1350  
Engineering, Planning, and Environmental Consultants

CLIENT: **CITY OF ALEXANDRIA**  
TITLE: **LANDSCAPE NOTES AND DETAILS**

DATE: FEB 2011  
HORIZONTAL SCALE: AS NOTED  
VERTICAL SCALE: AS NOTED  
DRAWN BY: SMM  
DESIGNED BY: JD  
CHECKED BY: KVH

PROJECT: **HOLMES RUN CHAMBLISS CROSSING**  
ATTACHED REFERENCE FILES:  
JOB NUMBER: 110104000  
SHEET NUMBER: 12 OF 15

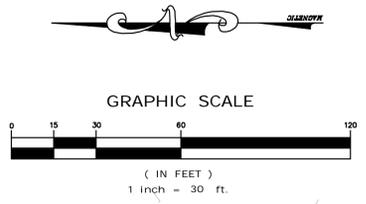
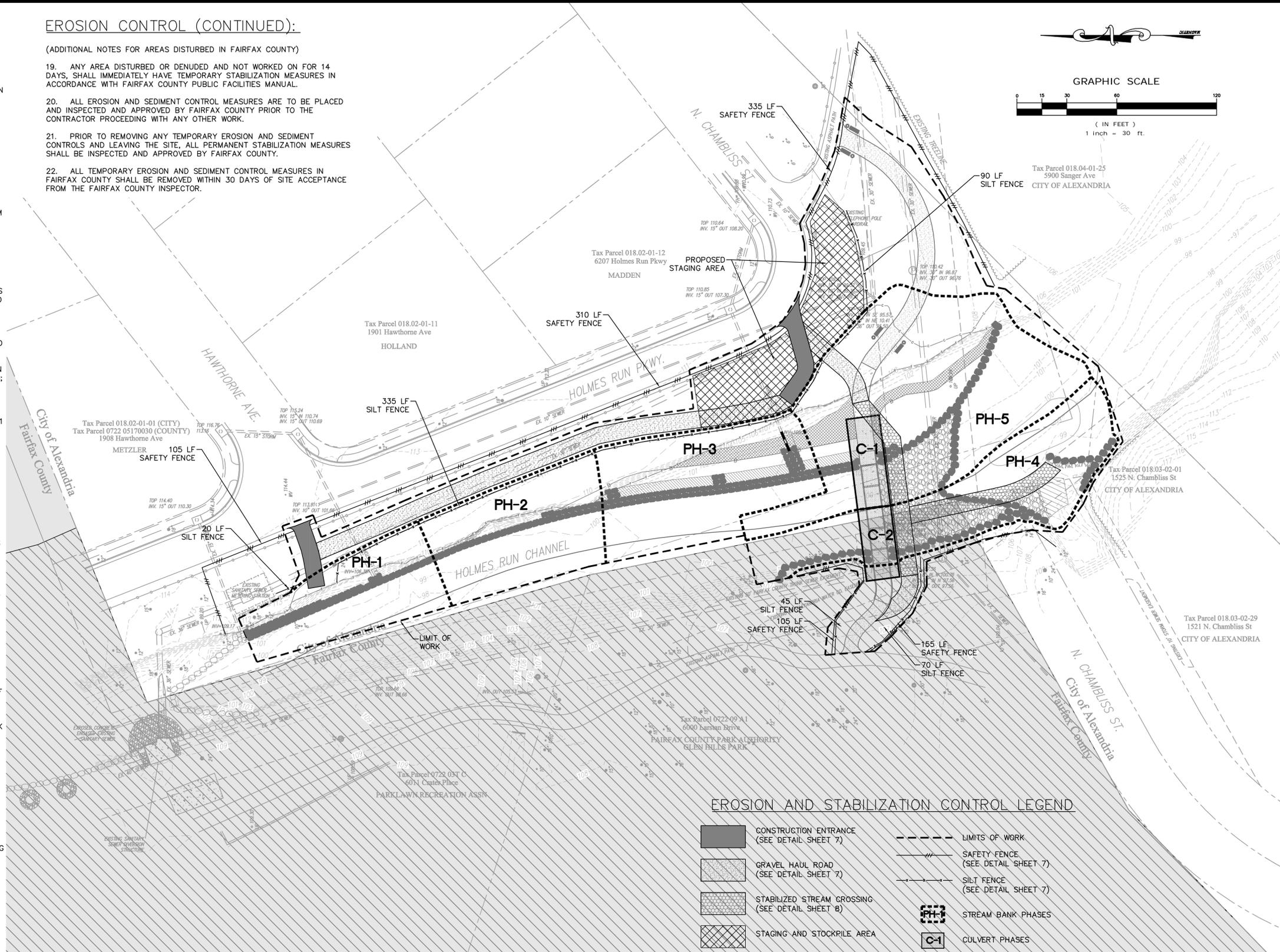
February 15, 2012 10:20am By: sean.millett

**EROSION CONTROL:**

- ERECTOR OF SEDIMENTATION AND EROSION CONTROL MEASURES SHALL BE IN ACCORDANCE WITH STATE AND LOCAL EROSION CONTROL REGULATIONS.
- THE CONTRACTOR SHALL INSTALL AND MAINTAIN THROUGHOUT THE PROJECT CONSTRUCTION ALL EROSION CONTROL MEASURES SHOWN WITH THESE PLANS IN ACCORDANCE WITH APPLICABLE STATE EROSION AND SEDIMENT CONTROL REGULATIONS. THE CONTRACTOR MAY ADJUST LOCATION OF HAUL ROADS AND SILT FENCE AS NECESSARY AFTER SUCH PROPOSED CHANGES HAVE BEEN APPROVED BY THE ENGINEER.
- ALL CONSTRUCTION WORK SHALL BE IN COMPLIANCE WITH REGULATIONS OF THE NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) STORM WATER GENERAL PERMIT.
- CONTRACTOR SHALL BE RESPONSIBLE FOR HAVING A RAIN GAUGE ON THE PROJECT SITE & FOR RECORDING DAILY RAINFALL AMOUNTS DURING CONSTRUCTION.
- SILT FENCE SHOULD BE LOCATED BETWEEN THE HAUL ROAD AND STREAM WHERE HAUL ROADS ARE LOCATED NEAR A SECTION OF STREAM THAT WILL NOT BE WORKED ON AS PART OF THIS PROJECT, OR WILL NOT BE WORKED ON WITHIN A WEEK OF CONSTRUCTING THE HAUL ROAD.
- EROSION AND SEDIMENT CONTROL MEASURES SHALL BE MAINTAINED CONTINUOUSLY, RELOCATED WHEN AND AS NECESSARY, AND SHALL BE CHECKED FOR MAINTENANCE ISSUES AFTER EVERY RAINFALL.
- STABILIZATION IS THE BEST FORM OF EROSION CONTROL. SEEDED AREAS SHALL BE CHECKED REGULARLY AND SHALL BE WATERED, RESEEDING AND MULCHED AS NECESSARY TO OBTAIN A DENSE STAND OF GRASS. ALL DISTURBED AREAS THAT ARE NOT OTHERWISE STABILIZED SHALL BE TOP SOILED AND SEEDED, TEMPORARILY OR PERMANENTLY IN ACCORDANCE WITH THE SEDIMENT CONTROL REGULATIONS. PERMANENT SEEDING AND GRASS ESTABLISHMENT IS REQUIRED PRIOR TO PROJECT COMPLETION AND ACCEPTANCE.
- CONTRACTOR SHALL PROVIDE GROUND COVER ON EXPOSED AREAS WITHIN 7 CALENDAR DAYS FOLLOWING COMPLETION OF ANY PHASE OF GRADING; PERMANENT GROUND COVER FOR ALL DISTURBED AREAS WITHIN 15 WORKING DAYS FOLLOWING COMPLETION OF CONSTRUCTION OR DEVELOPMENT. APPLY TEMPORARY STABILIZATION TO AREAS THAT WILL REMAIN DORMANT FOR MORE THAN 30 DAYS. APPLY PERMANENT STABILIZATION TO AREAS THAT WILL REMAIN DORMANT FOR MORE THAN 1 YEAR.
- CONTRACTOR SHALL KEEP ALL SURROUNDING PUBLIC ROADWAYS AND DRAINAGE SYSTEMS FREE FROM DIRT, MUD, AND CONSTRUCTION DEBRIS AT ALL TIMES. WHERE SEDIMENT IS TRANSPORTED ONTO A PAVED OR PUBLIC ROAD SURFACE, THE ROAD SURFACE SHALL BE CLEANED THOROUGHLY AT THE END OF EACH DAY. SEDIMENT SHALL BE REMOVED FROM THE ROADS BY SHOVELING OR SWEEPING AND TRANSPORTED TO A SEDIMENT CONTROL DISPOSAL AREA. STREET WASHING SHALL BE ALLOWED ONLY AFTER SEDIMENT IS REMOVED IN THIS MANNER.
- CONSTRUCTION ENTRANCES SHALL BE INSTALLED AT ALL ACCESS LOCATIONS PER THE PLANS AND SPECIFICATIONS. WHEN A CRUSHED STONE CONSTRUCTION ENTRANCE HAS BEEN COVERED WITH SOIL OR HAS BEEN PUSHED INTO THE SOIL BY CONSTRUCTION TRAFFIC, IT SHALL BE REPLACED WITH A DEPTH OF STONE EQUAL TO THAT OF THE ORIGINAL APPLICATION.
- ALL DRAINAGE INLETS SHALL BE PROTECTED FROM SILTATION. INEFFECTIVE PROTECTION DEVICES SHALL BE IMMEDIATELY REPLACED AND THE INLET CLEANED. FLUSHING IS NOT AN ACCEPTABLE METHOD OF CLEANING.
- DURING CONSTRUCTION OF THE PROJECT, SOIL STOCKPILES SHALL BE STABILIZED OR PROTECTED WITH SEDIMENT TRAPPING MEASURES. THE CONTRACTOR IS RESPONSIBLE FOR THE TEMPORARY PROTECTION AND PERMANENT STABILIZATION OF ALL SOIL STOCKPILES ON SITE AS WELL AS SOIL INTENTIONALLY TRANSPORTED FROM THE PROJECT SITE.
- ALL HAUL ROAD LOCATIONS ONSITE MAY BE ADJUSTED IN THE FIELD TO PROTECT EXISTING TREES LARGER THAN 6" DBH. THE FINAL STAKING OF THE HAUL ROADS SHALL BE APPROVED BY THE ENGINEER BEFORE CLEARING COMMENCES.
- SEDIMENT BASINS AND TRAPS, PERIMETER DIKES, TEMPORARY SILT CHECK DAMS, SEDIMENT BARRIERS AND OTHER MEASURES INTENDED TO TRAP SEDIMENT SHALL BE CONSTRUCTED AS A FIRST STEP IN ANY LAND-DISTURBING ACTIVITY AND SHALL BE MADE FUNCTIONAL BEFORE UPSLOPE LAND DISTURBANCE TAKES PLACE.
- STABILIZATION MEASURES SHALL BE APPLIED TO STRUCTURES SUCH AS DAMS, DIKES AND DIVERSIONS IMMEDIATELY AFTER INSTALLATION.
- DURING CONSTRUCTION THE CONTRACTOR SHALL BE RESPONSIBLE FOR INSTALLING ADDITIONAL EROSION CONTROL MEASURES NOT SHOWN ON THE PLANS BUT NECESSARY TO CONTROL EXCESS SEDIMENT, IF DETERMINED TO BE NECESSARY BY THE DESIGNER.
- THE CONTRACTOR SHALL CONSTRUCT TO A STABLE FORM BEFORE MOVING OUT OF THE WORK AREA PER THE SHOWN PHASING PLAN.
- ALL TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES SHALL BE REMOVED WITHIN 30 DAYS AFTER SITE ACCEPTANCE.

**EROSION CONTROL (CONTINUED):**

- (ADDITIONAL NOTES FOR AREAS DISTURBED IN FAIRFAX COUNTY)
- ANY AREA DISTURBED OR DENUED AND NOT WORKED ON FOR 14 DAYS, SHALL IMMEDIATELY HAVE TEMPORARY STABILIZATION MEASURES IN ACCORDANCE WITH FAIRFAX COUNTY PUBLIC FACILITIES MANUAL.
  - ALL EROSION AND SEDIMENT CONTROL MEASURES ARE TO BE PLACED AND INSPECTED AND APPROVED BY FAIRFAX COUNTY PRIOR TO THE CONTRACTOR PROCEEDING WITH ANY OTHER WORK.
  - PRIOR TO REMOVING ANY TEMPORARY EROSION AND SEDIMENT CONTROLS AND LEAVING THE SITE, ALL PERMANENT STABILIZATION MEASURES SHALL BE INSPECTED AND APPROVED BY FAIRFAX COUNTY.
  - ALL TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES IN FAIRFAX COUNTY SHALL BE REMOVED WITHIN 30 DAYS OF SITE ACCEPTANCE FROM THE FAIRFAX COUNTY INSPECTOR.



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 Reston, Virginia 20191  
 Phone: 703-674-1300  
 Fax: 703-674-1350  
 Engineering, Planning, and Environmental Consultants

CLIENT: **CITY OF ALEXANDRIA**  
 TITLE: **EROSION AND SEDIMENT CONTROL PLAN**

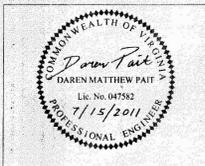
DATE: FEB 2011  
 HORIZONTAL SCALE: AS NOTED  
 VERTICAL SCALE: AS NOTED  
 DRAWN BY: SMM  
 DESIGNED BY: JD  
 CHECKED BY: KVH  
 SEAL: DAREN MATTHEW PAIT, Lic. No. 047582, 02/15/12, PROFESSIONAL ENGINEER

PROJECT: **HOLMES RUN CHAMBLISS CROSSING**  
 ATTACHED REFERENCE FILES:  
 JOB NUMBER: 110104000  
 SHEET NUMBER: 13 of 15

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"NO-RISE/NO-IMPACT" CERTIFICATION

This document is to certify that I am a duly qualified engineer licensed to practice in the State of Virginia. It is to further certify that the attached technical data supports the fact that the proposed Holmes Run Chambliss Crossing and Bank Stabilization project will not impact the base flood elevations (100-year flood) on Holmes Run at published cross sections in the City of Alexandria Flood Insurance Rate Map (FIRM) community-panel number 515519.0005 D dated May 15, 1991 and Fairfax County FIRM community-panel number 51225 0089 D dated March 5, 1990 and will not impact the base flood elevations (100-year flood) at the unpublished cross-sections in the area of the proposed project.



Daren Paiz, P.E., CFM
Name
Environmental Engineer
Title
4500 Main Street, Suite 500
Virginia Beach, VA 23462
Address

SEAL, SIGNATURE AND DATE

FOR COMMUNITY USE ONLY: Community Approval

Approved Disapproved

Signature and date: 11/2/11

Base Flood Elevation Comparison Table

Table with columns: River Station, USACE Model, Existing Conditions, Proposed Conditions, Datum Adjusted Results, Results Comparison. Includes a 'LIMITS' section at the bottom.

Model vertical datum is National Geodetic Vertical Datum 1929 (NGVD 29) in feet.
\*Model vertical datum is North American Vertical Datum of 1988 (NAVD 88) in feet.
\*\*Results adjusted +0.82 ft to convert to NGVD 29.
\*\*\*Cross sections subject to existing conditions.

Base Flood Elevation Comparison Table (Cont.)

Continuation of the Base Flood Elevation Comparison Table with columns: River Station, USACE Model, Existing Conditions, Proposed Conditions, Datum Adjusted Results, Results Comparison.

Model vertical datum is National Geodetic Vertical Datum 1929 (NGVD 29) in feet.
\*Model vertical datum is North American Vertical Datum of 1988 (NAVD 88) in feet.
\*\*Results adjusted +0.82 ft to convert to NGVD 29.
\*\*\*Cross sections subject to existing conditions.

NO-RISE/NO-IMPACT CERTIFICATION

FAIRFAX COUNTY PRIORITY RATING FORM FOR E&S CONTROL

PROJECT NAME: Holmes Run Stream Stabilization / Crossing PROJECT NUMBER: FX0100-CA009
TAX MAP: 72-2 EVALUATOR: Sean Millett DATE: November 22, 2011

Priority Rating Form sections A through F: A. Percentage of Denuded Area to Total Site Area, B. Watercourse Crossing, C. Distance of Denuded Area to Downstream Adjacent Property, D. Distance of Any Portion of the Denuded Area to a Natural Watercourse, E. Minimum Vegetative Buffer, F. Distance Between the Site Outfall and any Downstream, Wet Pool, Wetland, Parkland or other Land Deemed Environmentally Sensitive by the Director.

TOTAL OVERALL RATING: 19

OVERALL RATING: HIGH (22)
PRIORITY: High (X)
PROJECT PRIORITY LEVEL: HIGH (DUE TO PROXIMITY TO WATERCOURSE)

APPROVED BY: [Signature] DATE: [ ]

BASE FLOOD ELEVATION COMPARISON TABLE

CITY OF ALEXANDRIA FLOOD DETERMINATION APPROVAL LETTER

FLOOD IMPACT STUDY REPORT: PLEASE REFERENCE THE FLOOD IMPACT STUDY APPROVED IN JULY 2011 FOR "HOLMES RUN CHAMBLISS CROSSING" PREPARED BY KIMLEY-HORN AND ASSOCIATES, INC. FOR THE CITY OF ALEXANDRIA. INITIALLY SUBMITTED IN SEPTEMBER 2010 AND REVISED IN JUNE 2011.



October 29, 2010
Mr. Kevin Van Hise
Project Manager
Kimley-Horn and Associates, Inc.
P.O. Box 33068
Raleigh, NC 27636-3068

SUBJECT: Flood Impact Study, Holmes Run Chambliss Crossing

Dear Mr. Van Hise:

I am writing to follow up on the September 21, 2010 letter sent by your colleague (Mr. Steve Marks) and the submission of the Holmes Run Chambliss Crossing Flood Impact Study (Flood Study). The September 21 letter asked that the City review the Flood Study to determine if the proposed stream restoration and stream crossing project does not cause any increase in the water surface elevation associated with the 100-year flood (base flood) event. The no-rise criterion protects both residential and commercial properties located within and along the Special Flood Hazard Area from additional risk of flooding.

We have reviewed the Flood Impact Study and the hydraulic modeling developed to evaluate the impact of the stream restoration/bank stabilization and the low-profile pedestrian crossing. We agree with the findings of the Flood Impact Study, which indicate that the proposed project will not cause an increase in the water surface elevations associated with the 100-year flood event. It should be noted that the HEC-RAS hydraulic model used as the effective model was developed by the United States Army Corps of Engineers (USACE) and documented in the May 2007 report entitled Hydrologic and Hydraulic Analysis for the Cameron Run Watershed in Northern Virginia. Please note that the Flood Insurance Study (FIS) report and Flood Insurance Rate Maps (FIRMs) that incorporate the hydrologic and hydraulic model results for the Cameron Run watershed is currently considered preliminary by FEMA and is not anticipated to become final (effective) until June 2011, based upon the receipt of a Letter of Map Determination that is expected in December of this year.

I hope that this letter addresses your request. If you have additional questions, please contact me.

Signature: Elyse A. Baker, P.E., City Engineer

cc: Claudia Hamblin-Katnik, Ph.D., Watershed Program Administrator, T&ES

Table with columns: REV. No., REVISION, DRAWN BY, CHECKED BY. Includes revision history and a disclaimer: THIS DOCUMENT, TOGETHER WITH THE CONCEPTS AND DESIGNS PRESENTED HEREIN, AS AN INSTRUMENT OF SERVICE, IS INTENDED ONLY FOR THE SPECIFIC PURPOSE, AND CLIENT FOR WHICH IT WAS PREPARED...

Kimley-Horn and Associates, Inc. logo and address: 11400 Commerce Park Drive, Suite 400, Reston, Virginia 20191. Phone: 703-674-1300, Fax: 703-674-1350.

CITY OF ALEXANDRIA PROJECT APPROVALS. CLIENT: CITY OF ALEXANDRIA. TITLE: PROJECT APPROVALS.

Professional Engineer Seal for Daren Mattheus Paiz, Lic. No. 047582, dated 02/15/12.

PROJECT: HOLMES RUN CHAMBLISS CROSSING. DATE: FEB 2011. HORIZONTAL SCALE: AS NOTED. VERTICAL SCALE: AS NOTED. DRAWN BY: SMM. DESIGNED BY: JD. CHECKED BY: KVVH. ATTACHED REFERENCE FILES: [ ]. JOB NUMBER: 110104000. SHEET NUMBER: 14 OF 15.

  
 DEPARTMENT OF TRANSPORTATION AND ENVIRONMENTAL SERVICES  
 Office of Environmental Quality  
 P.O. Box 178 - City Hall  
 Alexandria, Virginia 22313  
<http://alexandriava.gov/oeq/>  
 Phone: 703-746-4065 FAX: 703-519-8354  
 December 8, 2011  
 Fairfax County DPWES  
 Land Development Services  
 Environmental and Site Review Division  
 12055 Government Center Parkway, Suite 530  
 Fairfax, Virginia 22035

RE: Holmes Run (Chambliss) Stream Stabilization and Stream Crossing Plan  
 Dear Ms. Ferial:

The above project and associated plan consists of streambank improvements and improvements associated with a low profile stream crossing within Holmes Run. The municipal border between Alexandria and Fairfax County lies generally down the center of Holmes Run and then runs perpendicular to and westward of the Run just below the crossing. The Fairfax County Sanitation Authority is performing work upstream of this project which is not covered by this WQIA, but the two projects coordinated their efforts to minimize disturbance within the RPA and maximize hydraulics through the area. The Fairfax County Sanitation Authority plan stabilizes their banks and adds a cross vane upstream of this plan to protect an exposed pipe under the stream. Just downstream of the sanitation pipe, Alexandria is restructuring the bank on the Alexandria side with subsequent stabilization and native riparian landscaping on those restructured banks. Downstream of this will be the bike/pedestrian low profile crossing and cross vane protection (of the crossing and another sewer pipe. A pool will be created to increase habitat and the banks surrounding the large outfall downstream of the crossing will be stabilized. There will be no rise in water surface elevation associated with any of the activities completed by the City of Alexandria. The asphalt path on Fairfax County land will be maintained by Fairfax County Park Authority while the crossing and toe protection will be maintained by the City of Alexandria. The impact to Fairfax County land involves a portion of the low profile crossing within the stream, the asphalt trail from the crossing to the existing Fairfax County trail and toe protection. This water quality impact assessment will focus on these aspects of the crossing and restoration effort. The crossing will provide a regional connection of the Fairfax County and City of Alexandria trail systems. This crossing has been in the City's plans since adoption of the Alexandria Bicycle Transportation and Multi-use Trail Master Plan in 1998.

These activities qualify as "water-dependent development," and are allowed uses or developments within the Resource Protection Area (RPA) per Section 118-2-1(a) of the Fairfax County Chesapeake Bay Preservation Ordinance (CBPO) provided that the performance criteria included in Article 3 of the CBPO are satisfied, including the submission and approval of a Water Quality Impact Assessment (WQIA).

The content of this letter is intended to satisfy the requirements for a WQIA per Section 118-4-3 of the CBPO:

(a) *Display the boundaries of the RPA:*  
 Based on the County's current Chesapeake Bay Preservation Area Map 72-2 (Revised to August 1, 2005), a RPA is mapped along Holmes Run and generally coincident with the major floodplain. However the RPA extends further landward near the lots serviced by Sanby Court and the lot nearest the stream serviced by Larstan Drive. Given that the proposed streambank stabilization, crossing with trail connection and riparian buffer plantings are located within the major floodplain, the entire Project area is located within the RPA, and therefore, a site-specific RPA boundary and floodplain delineation is not warranted.

(b) *Display and describe the location and nature of the proposed encroachment into and/or impacts to the RPA, including any clearing, grading, impervious surfaces, structures, utilities, and sewage disposal systems:*  
 As depicted on Sheet 3 of the Chambliss Stream Restoration/Crossing plan, the majority of the stabilization, path and crossing structure occur on the City of Alexandria side of the stream. The low profile crossing lands upon Fairfax County Park Authority land and an impervious trail will connect to the existing Fairfax County trail. The trail is relatively short (approximately 45 feet) so only a minor increase in run-off will result. The stream toe both upstream and downstream of the crossing will also be stabilized with imbricated boulders. The majority of the work on the Fairfax side will be accomplished via a stabilized stream crossing, which will be removed. There will be some disturbance to the toe by the placement of stabilizing boulders and the bed of the stream will be disturbed by the placement of the culverts, stabilized stream crossing and the construction of the cross-vane. Disturbed land on the Park Authority property will be stabilized by a riparian seed mix and live stakes as specified on Sheet 12 of the plan. The three replacement trees will be planted within the disturbed area as shown on Sheet 11. Due to the existing water and sewer easements, buffer area trees/seedlings will be planted by hand in the area west of the area of disturbance.

Total disturbed area within this project is 5,620 square feet; 2,130 square feet stream bed with 3,490 square feet of bank and upland area.

(c) *Provide justification for the proposed encroachment into and/or impacts to the RPA:*

The original purpose of the project was to provide a crossing in this location to provide a connection between Fairfax County and the City of Alexandria trail systems. Coincidentally the City was able to generate sufficient funds for stream restoration in this same reach as the banks on the City side are severely eroded (banks on the Fairfax County side are stable). The landing of the crossing and the subsequent connection to the existing trail on the Fairfax side necessitates working in the stream and on Fairfax County land. All work on the Fairfax County side has been minimized, and that which is shown has been deemed as necessary by various Fairfax County reviewers as well as our stream design consultants.

(d) *Describe the extent and nature of any proposed disturbance or disruption of wetlands:*  
 The proposed Project will not disturb nontidal wetlands.

(e) *Display and discuss the type and location of proposed best management practices to mitigate the proposed RPA encroachment and/or adverse impacts:*  
 As detailed in the Site Plan (Sheet 3), Erosion Details (sheet 7), Pump Around Details (sheet 8), Landscape Plan (Sheet 11), Landscape Details (Sheet 12), and Erosion and Sediment Control Plan (Sheet 13), appropriate erosion and sediment controls will be installed and maintained throughout the construction process. These controls include a temporary construction entrance, temporary stream crossing, pump around operation with impervious dikes, dirt-bag stilling basin, silt and safety fence. A more detailed sequence of construction is provided in the EAS Control Plan (Sheet 13) to minimize the potential for sediment loading. All disturbed areas will be stabilized as outlined in the Landscape notes and Details (Sheet 12) in the enclosed plans. This includes, on the Fairfax side, toe stabilization with imbricated boulders, re-vegetating the area with live stakes, herbaceous plugs and riparian seed mix. Re-vegetation along the trail will entail seeding with the riparian seed mix. Due to the extensive utility easements within the disturbed area, buffer area trees/seedlings will be planted within the RPA west of the disturbed area using hand tools and accessing the area by foot so as not to disturb the RPA.

(f) *Demonstrate the extent to which the proposed activity will comply with all applicable performance criteria of the Chapter:*  
 As noted above, the combined Project will contribute to overall water quality improvement in Holmes Run through the outfall improvement, stabilization of the streambanks, enhancement of the existing aquatic environment, and increased pollutant removal through the riparian buffer restoration. The Project on the Fairfax County property has been designed to minimize disturbance in the RPA through minimization of disturbance and preservation of existing vegetation to the greatest extent practicable. Three trees on the Fairfax County side will need to be removed due to culvert stabilization. Three trees will be replanted and

the ground stabilized with seed mix requested by Fairfax County Naturalist Charles Smith. The requirements of the Alexandria community are to keep the level area (meadow) maximized as much as possible and to leave it as a grassy area (not planted in trees). Thus, the extensive sloped areas have been vegetated with native riparian species and the seed mixes negotiated by Rod Simmons (Alexandria Naturalists) and Charles Smith.

(g) *Provide any other information deemed by the Director to be necessary to evaluate potential water quality impacts of the proposed activity.*  
 No additional information has been requested by the Director.

Compliance with Article 3, Performance Criteria:

The criteria outlined in Article 3 are not all directly applicable to this project. However, the proposed plan minimizes land disturbance, proposes to preserve indigenous vegetation, minimizes impervious cover, will restore the system to an equilibrium superior to what exists today, and, since the stream is the BMP, will improve water quality.

As detailed in the above WQIA, this stream crossing and restoration project satisfies performance criteria outlined in the CBPO and qualifies as an "allowed use or development" in the RPA per Section 118-2-1(a).

If you have any questions concerning the Project or require additional information, please feel free to contact me at 703-746-4068 or [Claudia.Hamblin-Katnik@alexandriava.gov](mailto:Claudia.Hamblin-Katnik@alexandriava.gov).

Sincerely,  
  
 Claudia Hamblin-Katnik, Ph.D.  
 Watershed Program Administrator

Cc: Kevin Van Hise

The Proposed Construction Limits shown near and/or within the limits of the Resource Protection Area (RPA) must be strictly observed and enforced. Any encroachment into, and/or disturbance of, the RPA not shown on this plan is considered a violation of Chesapeake Bay Preservation Ordinance (CBPO) and is subject to the penalties of CBPO Article 9 (Violations and Penalties).

Stormwater Planning Division Reviewer:   
 Approval Date: 12/18/11

**BUFFER AREA REESTABLISHMENT CALCULATIONS:**  
 Total RPA area mitigated on Fairfax County property = 3490 SF or .80 AC  
 Buffer Area will be reestablished as per Section 118-3-3(f) of the Chesapeake Bay Preservation Ordinance:  
 Required Overstory Trees: 8 overstory trees (or 16 seedlings)  
 Required Understory Trees: 16 understory trees (or 32 seedlings)  
 Required Shrubs: 88 shrubs (or equivalent seed mixture)

NOTE: A seed mixture will be provided to supplement the individual plants for shrubs and groundcover.

Three replacement trees, seed mix, and live stakes will be provided and installed by the City of Alexandria. The remaining buffer area plantings on Fairfax County property will be provided and installed by others.

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TITLE: **APPROVED WQIA**

DATE: FEB 2011  
 HORIZONTAL SCALE: AS NOTED  
 VERTICAL SCALE: AS NOTED  
 DRAWN BY: SMM  
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ATTACHED REFERENCE FILES:

JOB NUMBER: 110104000

SHEET NUMBER: 15 OF 15