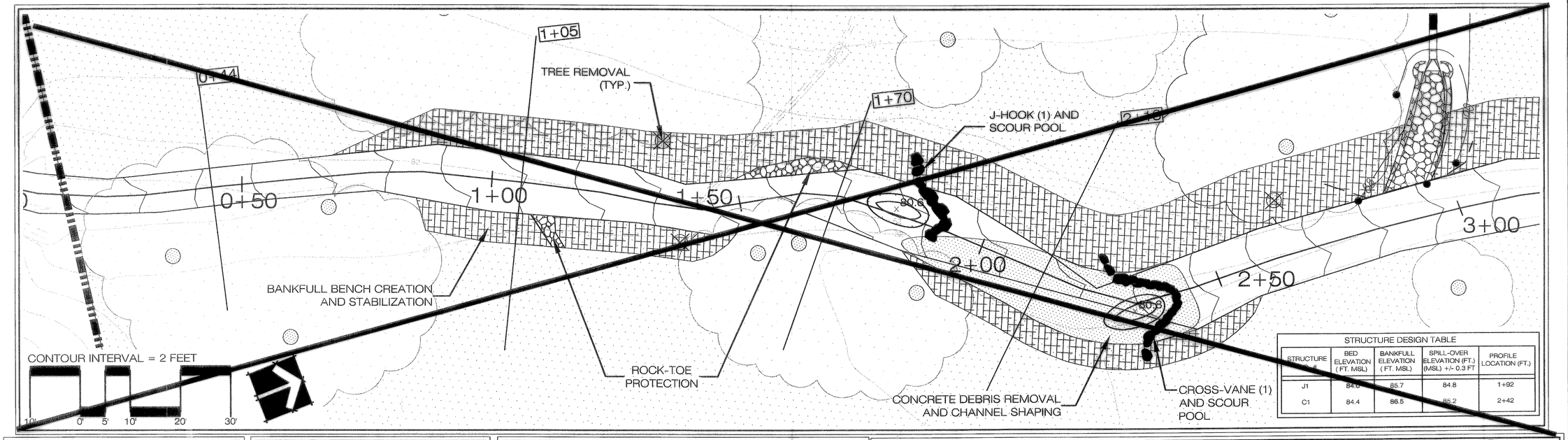


STRUCTURE DESIGN TABLE

STRUCTURE #	BED ELEVATION (FT. MSL)	BANKFULL ELEVATION (FT. MSL)	SPILL-OVER ELEVATION (FT.) (MSL) +/- 0.3 FT	PROFILE LOCATION (FT.)
J1	84.0	85.7	84.8	1+92
C1	84.4	86.5	85.2	2+42

RESTORATION AREA 1: CONSTRUCTION DETAILS

STATION 0+70 - 3+16: SHEET 8
- RIGHT BANKFULL BENCH CREATION AND STABILIZATION

STATION 0+70 - 1+50, 1+92 - 2+56 : SHEET 8
- LEFT BANKFULL BENCH CREATION AND STABILIZATION

STATION 1+07 - 1+12: SHEET 8
- ROCK-TOE PROTECTION AT OUTFALL OF DRAINAGE SWALE

STATION 1+50- 1+73: SHEET 8
- RIGHT BANK ROCK-TOE PROTECTION

STATION 1+92: SHEET 8
- J-HOOK (1)

STATION 2+42: SHEET 8
- CROSS-VANE (1)

STATION 2+90: SHEET 8
- OUTLET PROTECTION (DESIGNED BY LAND DESIGN CONSULTANTS, DSP# 2004-0038)

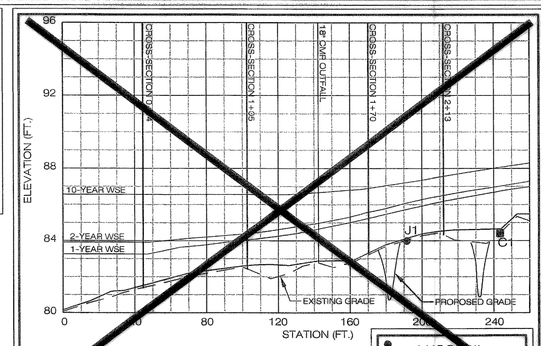
RESTORATION AREA 1: CONSTRUCTION ACTIVITIES

- REMOVE EXISTING CONCRETE DEBRIS
- STABILIZE DRAINAGE SWALE OUTFALL WITH ROCK-TOE PROTECTION
- IMPLEMENT ROCK-TOE PROTECTION
- INSTALL CROSS-VANE AND J-HOOK
- CHANNEL SHAPING AND STABILIZATION
- CREATE AND STABILIZE BANKFULL BENCH
- ADD SEEDING AND MATTING
- INSTALL BANK AND BUFFER PLANTINGS

WSE — WATER SURFACE ELEVATION

▽ — WATER SURFACE ELEVATION (9/14/05)

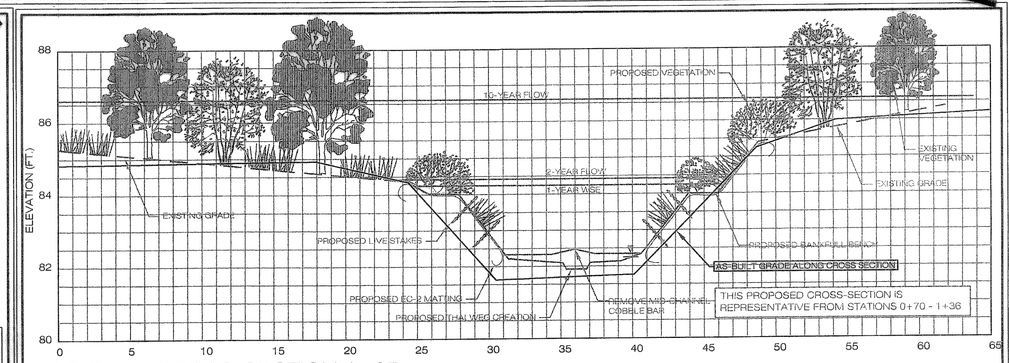
NOTE: NO STREAM RESTORATION ACTIVITIES ARE PLANNED FOR CROSS-SECTION 0+44.



RESTORATION AREA 1 PROFILE

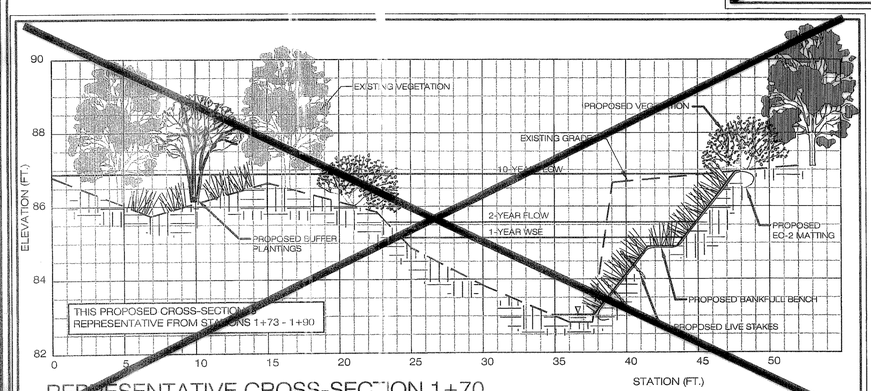
SCALE: HORIZONTAL 1 INCH = 40 FEET, VERTICAL 1 INCH = 4 FEET

J1 J-HOOK (1)
C1 CROSS-VANE (1)



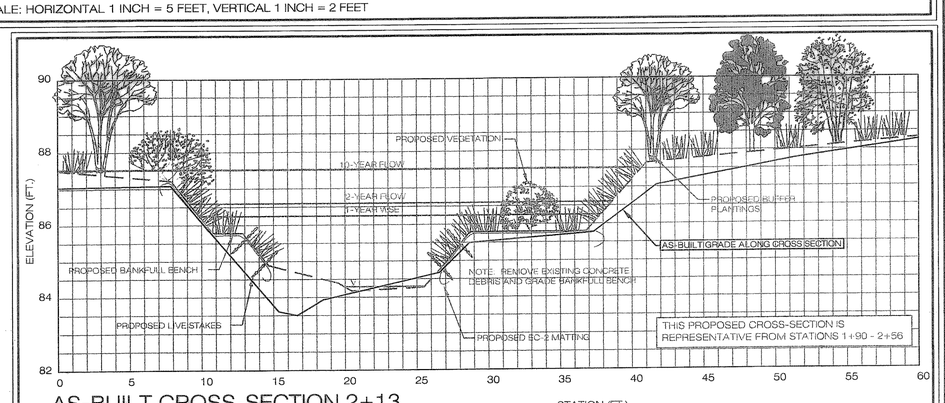
AS-BUILT CROSS-SECTION 1+05

SCALE: HORIZONTAL 1 INCH = 5 FEET, VERTICAL 1 INCH = 2 FEET



REPRESENTATIVE CROSS-SECTION 1+70

SCALE: HORIZONTAL 1 INCH = 5 FEET, VERTICAL 1 INCH = 2 FEET



AS-BUILT CROSS-SECTION 2+13

SCALE: HORIZONTAL 1 INCH = 5 FEET, VERTICAL 1 INCH = 2 FEET

DSP2007-00018

APPROVED ASBUILT

DEVELOPMENT SITE PLAN NO. _____

DEPARTMENT OF TRANSPORTATION & ENVIRONMENTAL SERVICES

DIRECTOR _____ DATE 10/11/11

SPECIAL USE PERMIT _____

LDC
UNLOCKING YOUR LAND'S POTENTIAL
9401 CENTREVILLE ROAD, SUITE 300
MANASSAS, VIRGINIA 20110
PH: 703-257-5600 FX: 703-257-5656

COMMONWEALTH OF VIRGINIA
8-24-10
KEVIN D. VAUGHN
Lic. No. 1508
PROFESSIONAL ENGINEER

WILLIAMSBURG ENVIRONMENTAL GROUP, INC.
6225 Center Street, Williamsburg, Virginia 23188, (757) 565-1677
13233 Rockville Pike, Suite 200, Beltsville, Maryland 20705, (301) 937-8888
7501 Boulder Avenue, Suite 201, Springfield, Virginia 22150, (703) 451-3000
5705 Salem Run Blvd, Suite 105, Fredericksburg, Virginia 22407, (540) 373-8884
Environmental Consultants

AS-BUILT CROSS SECTIONS
RESTORATION AREA 1
TAFT AVENUE
CITY OF ALEXANDRIA, VIRGINIA

COMMONWEALTH OF VIRGINIA
JEFFREY L. HANCOCK
Lic. No. 27017
PROFESSIONAL ENGINEER

REVISIONS:

DATE:	
10/18/06	UPDATED LONGITUDINAL PROFILE
04/12/07	BRIDGE RETAINED
08/14/07	PER 6/27/07 CITY REVIEW LETTER
01/15/08	PER CITY COMMENT

DRAWN BY: EBG/MAM
DESIGNED BY: TWC/EBG/NJL
DATE: 12/27/05
CHECKED BY: TWC/JTH

SHEET: 3
JOB#: 2256

APPROVED
SPECIAL USE PERMIT NO. _____
DEPARTMENT OF PLANNING & ZONING

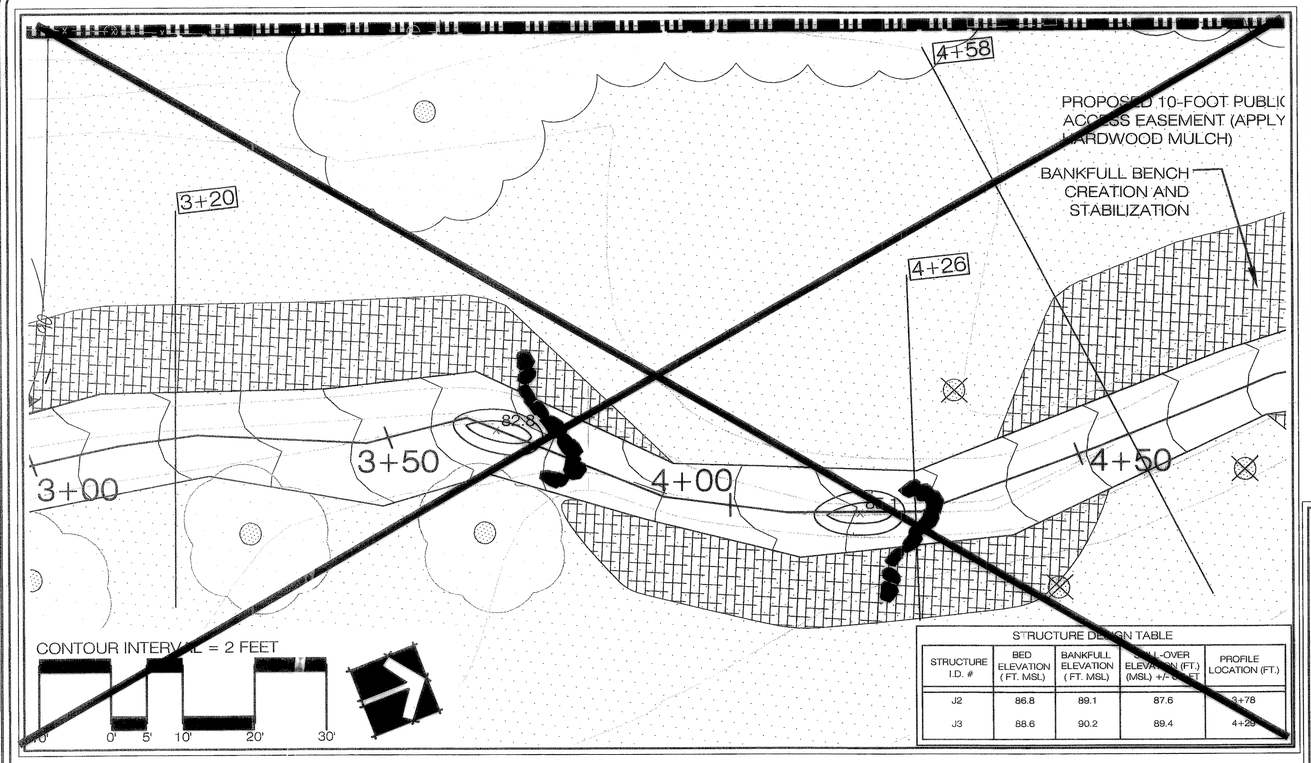
DIRECTOR _____ DATE
DEPARTMENT OF TRANSPORTATION & ENVIRONMENTAL SERVICES
SITE PLAN NO. 2007-0018

DIRECTOR _____ DATE

CHAIRMAN, PLANNING COMMISSION _____ DATE

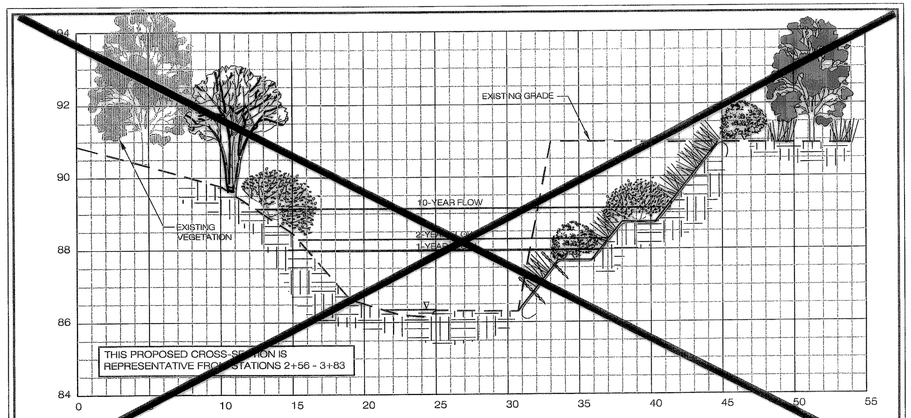
DATE RECORDED _____

INSTRUMENT NO. _____ DEED BOOK NO. _____ PAGE NO. _____



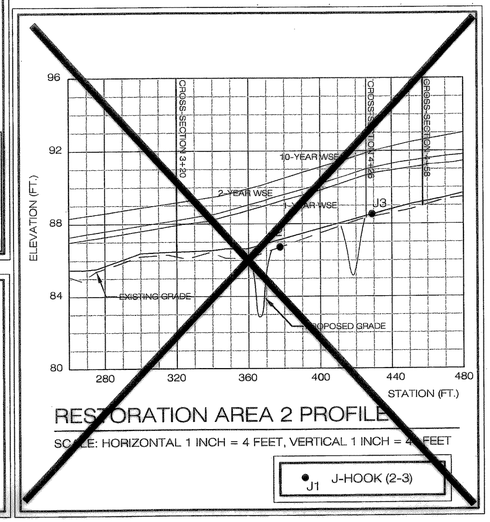
STRUCTURE DESIGN TABLE

STRUCTURE I.D. #	BED ELEVATION (FT. MSL)	BANKFULL ELEVATION (FT. MSL)	FALL-OVER ELEVATION (FT.) (MSL) +/- 0.1 FT.	PROFILE LOCATION (FT.)
J2	86.8	89.1	87.6	3+78
J3	88.6	90.2	89.4	4+29



REPRESENTATIVE CROSS-SECTION 3+20

SCALE: HORIZONTAL 1 INCH = 5 FEET, VERTICAL 1 INCH = 2 FEET



RESTORATION AREA 2 PROFILE

SCALE: HORIZONTAL 1 INCH = 4 FEET, VERTICAL 1 INCH = 4 FEET

J1 J-HOOK (2-3)

LDC

UNLOCKING YOUR LAND'S POTENTIAL

9401 CENTREVILLE ROAD, SUITE 300
MANASSAS, VIRGINIA 20110
PH: 703-257-5600 FX: 703-257-5656

COMMONWEALTH OF VIRGINIA
8-24-10
KEVIN D. VAUGHN
Lic. No. 1508
LAND SURVEYOR

DSP2007-00018

APPROVED ASBUILT

DEVELOPMENT SITE PLAN NO. _____

DEPARTMENT OF TRANSPORTATION & ENVIRONMENTAL SERVICES

DIRECTOR _____ DATE 10/11/11

SPECIAL USE PERMIT _____

RESTORATION AREA 2:
CONSTRUCTION ACTIVITIES

- REMOVE EXISTING CONCRETE DEBRIS
- MANAGE NON-NATIVE VEGETATION
- INSTALL J-HOOKS
- CREATE AND STABILIZE BANKFULL BENCH
- ADD SEEDING AND MATTING
- INSTALL BANK AND BUFFER PLANTINGS

RESTORATION AREA 2:
CONSTRUCTION DETAILS

STATION 3+16 - 3+83: SHEET 8
- RIGHT BANKFULL BENCH CREATION AND STABILIZATION

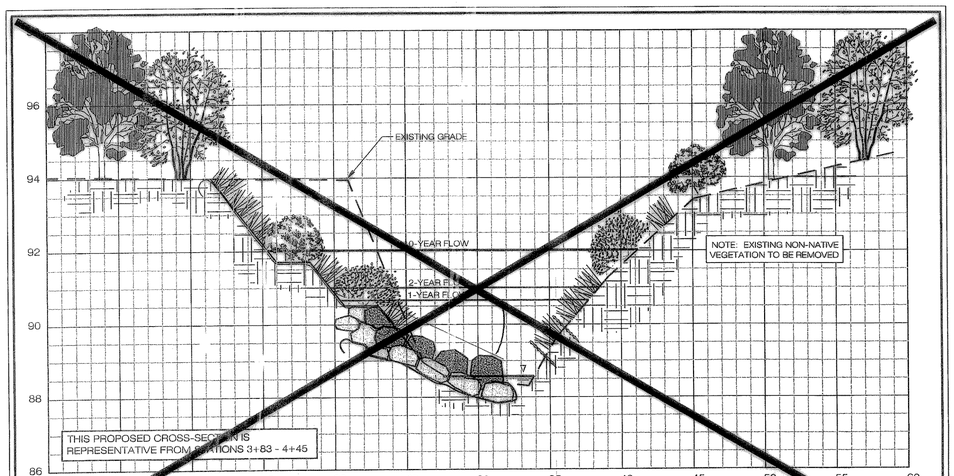
STATION 3+83 - 4+45: SHEET 8
- LEFT BANKFULL BENCH CREATION AND STABILIZATION

STATION 3+78 & 4+29: SHEET 8
- J-HOOKS (2-3)

STATION 4+45 - 4+80: SHEET 8
- RIGHT BANKFULL BENCH CREATION AND STABILIZATION

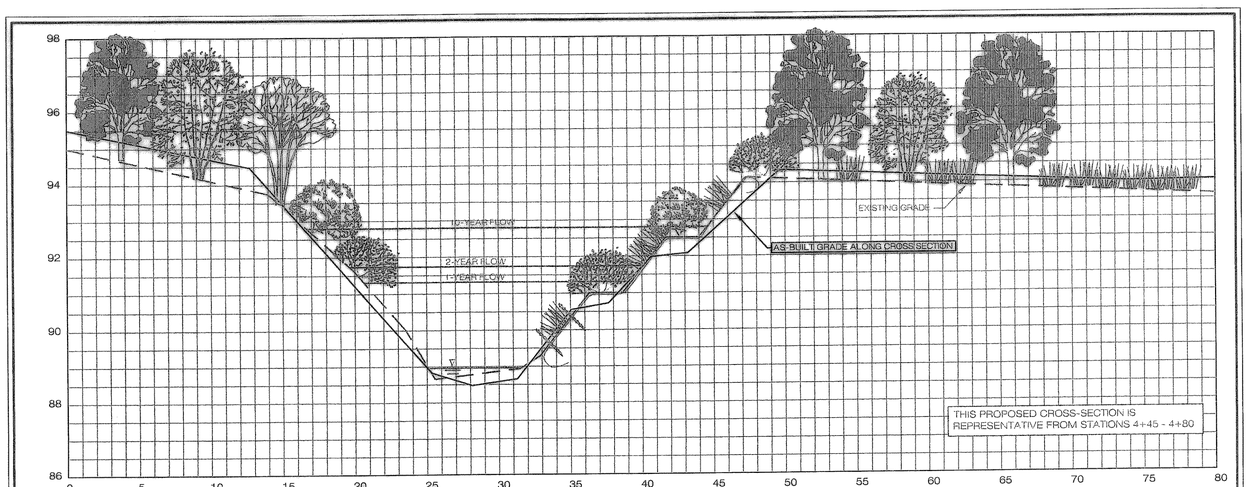
WSE WATER SURFACE ELEVATION

WATER SURFACE ELEVATION (9/14/05)



REPRESENTATIVE CROSS-SECTION 4+26

SCALE: HORIZONTAL 1 INCH = 5 FEET, VERTICAL 1 INCH = 2 FEET



AS-BUILT CROSS-SECTION 4+58

SCALE: HORIZONTAL 1 INCH = 5 FEET, VERTICAL 1 INCH = 2 FEET

6200 Center Street
Williamsburg, Virginia 23188
(757) 565-2553

13601 Jefferson Davis Road
Chester, Virginia 23111
(804) 421-3080

5708 Salem Run Blvd.
Suite 105
Fredericksburg, Virginia 22407
(540) 907-2474

7501 Boulevard
Suite 200
Richmond, Virginia 23235
(804) 320-2644

WILLIAMSBURG ENVIRONMENTAL GROUP, INC.
Environmental Consultants

AS-BUILT CROSS SECTIONS
RESTORATION AREA 2
TAFT AVENUE
CITY OF ALEXANDRIA, VIRGINIA

COMMONWEALTH OF VIRGINIA
JEFFREY W. HANCOCK
Lic. No. 7017
PROFESSIONAL ENGINEER

REVISIONS:

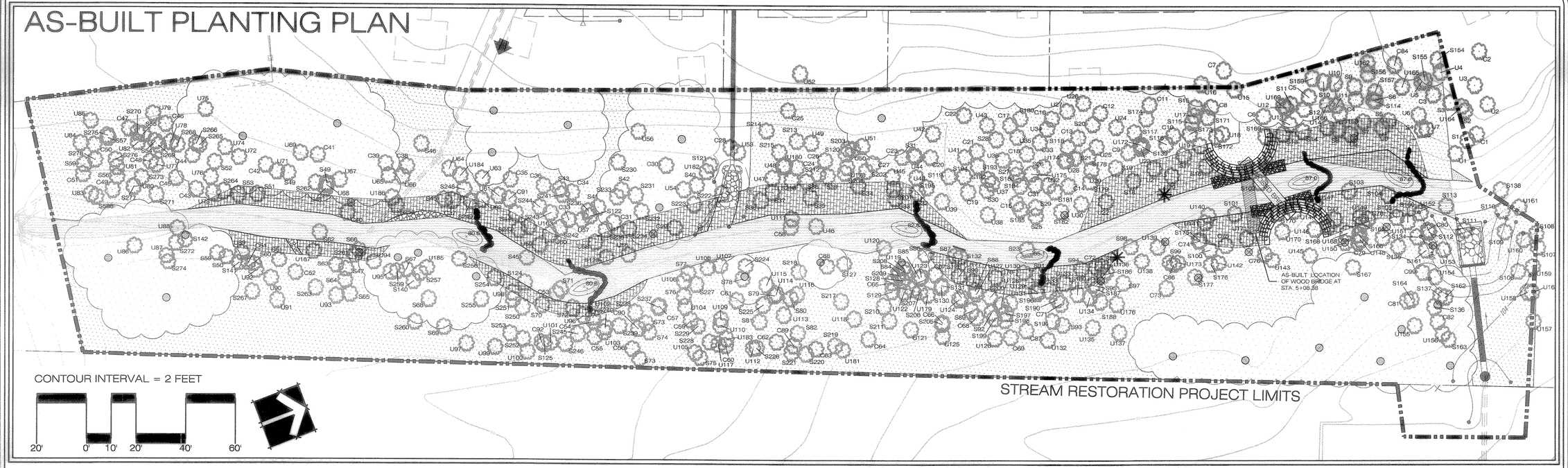
DATE:	
12/18/06	UPDATED LOCS (ORIGINAL PROFILE)
04/15/07	BRIDGE RETAINED
08/14/07	PER 02/07/07 CITY REVIEW LETTER

DRAWN BY: EBG/MAM
DESIGNED BY: TWC/EBG/NJL
DATE: 12/27/05
CHECKED BY: TWC/JTH

SHEET: 4
JOB#: 2256

APPROVED
SPECIAL USE PERMIT NO. _____
DEPARTMENT OF PLANNING & ZONING
DIRECTOR _____ DATE
DEPARTMENT OF TRANSPORTATION & ENVIRONMENTAL SERVICES
SITE PLAN NO. 2007-0018
DIRECTOR _____ DATE
CHAIRMAN, PLANNING COMMISION _____ DATE
DATE RECORDED _____
INSTRUMENT NO. _____ DEED BOOK NO. _____ PAGE NO. _____

AS-BUILT PLANTING PLAN



AS-BUILT STREAM RESTORATION PLANTING PLAN

LEGEND	DESIGN QUANTITY	BOTANICAL NAME	COMMON NAME	SPECIFICATION	INDICATOR	REMARKS	AS-BUILT QUANTITY
		UPLAND STABILIZATION SEED MIX					(LIVING STEMS)
	0.2 ACRES +/-						
	20%	Lespedeza virginica	SLENDER LESPEDEZA	SEED	UPL	SEED MIX SHALL BE SOWN ON ALL UPLAND DISTURBED AREAS AT A RATE OF 50LBS/AC.	
	20%	Lolium multiflorum	ANNUAL RYE	SEED	NI		
	20%	Elymus virginicus	VIRGINIA WILDRYE	SEED	FACW-		
	10%	Andropogon scoparius	CAMPER LITTLE BLUESTEM	SEED	FACU		
	10%	Sorghiastrum nutans	TOMAHAWK INDIANGRASS	SEED	UPL		
	10%	Rudbeckia hirta	BLACK-EYED SUSAN	SEED	FACU-		
	10%	Tridens flavus	PURPLETOP	SEED	FACU		
		STREAM BANK STABILIZATION SEED MIX					
	0.2 ACRES +/-						
	30%	Lolium multiflorum	ANNUAL RYE	SEED	NI	SEED MIX SHALL BE SOWN BELOW GRADED BANKFULL BENCHES, EXCEPT CHANNEL BOTTOM, AT A RATE OF 50LBS/AC.	
	10%	Carex vulpinoidea	FOX SEDGE	SEED	OBL		
	25%	Elymus virginicus	VIRGINIA WILDRYE	SEED	FACW-		
	20%	Panicum virgatum	SWITCHGRASS	SEED	FAC		
	10%	Leersia oryzoides	RICE CUTGRASS	SEED	FAC		
	5%	Lobelia cardinalis	CARDINAL FLOWER	SEED	FACW		
	0.8 ACRES +/-	CANOPY LAYER					
	13	Acer rubrum	RED MAPLE	1 1/2-INCH CALIPER	FACW	CANOPY TREES TO BE PLANTED AT ONE (1) PER 400 SQUARE FEET IN BUFFER RESTORATION AREA. CANOPY TREES TO BE LOCATED OPPOSITE EXISTING TREES IN PLANTING AREA. USE 1 1/2-INCH CALIPER TREES AT MINIMUM.	13
	12	~~Betula nigra~~ Celtis occidentalis	~~RIVER BIRCH~~ COMMON HACKBERRY	1 1/2-INCH CALIPER	~~FACW+~~ FACU		12
	13	~~Platanus pennsylvanica~~ Nyssa sylvatica	~~SycamoRE~~ BLACKGUM	1 1/2-INCH CALIPER	~~FACW-~~ FAC		13
	12	Liriodendron tulipifera	TULIPTREE	1 1/2-INCH CALIPER	FACU		12
	12	Plantanus occidentalis	AMERICAN SYCAMORE	1 1/2-INCH CALIPER	FACW-		12
	12	Quercus phellos	WILLOW OAK	1 1/2-INCH CALIPER	FAC+		12
	12	Quercus palustris	PIN OAK	1 1/2-INCH CALIPER	FACW		12
	0.8 ACRES +/-	UNDERSTORY LAYER					
	34	Amelanchier canadensis	SERVICEBERRY	1-INCH CALIPER	FAC	UNDERSTORY TREES AND LARGE SHRUBS TO BE PLANTED AT TWO (2) PER 400 SQUARE FEET IN BUFFER RESTORATION AREA. UNDERSTORY TREES AND LARGE SHRUBS TO BE SPACED AT 8' OC MINIMUM. USE 1-INCH CALIPER TREES AT MINIMUM.	38
	35	Cercis canadensis	REDBUD	1-INCH CALIPER	FACW		35
	35	Hamamellis virginiaiana	WITCH-HAZEL	1-INCH CALIPER	FAC-		35
	35	Ilex opaca	AMERCIAN HOLLY	1-INCH CALIPER	FACU-		35
	35	Viburnum prunifolium	BLACKHAW	1-INCH CALIPER	FACU		31
	0.8 ACRES +/-	SHRUB LAYER					
	53	Cornus amomum	SILKY DOGWOOD	15"-18" TUBELING	FACW+	SMALL SHRUBS TO BE PLANTED AT THREE (3) PER 400 SQUARE FEET IN STREAM RESTORATION AREA. SMALL SHRUBS TO BE SPACED AT 8' OC MINIMUM. USE 15 TO 18-INCH TUBELING SHRUBS AT MINIMUM.	53
	52	Lindera benzoin	SPICEBUSH	15"-18" TUBELING	FACW-		72
	52	Kalmia latifola	MOUNTAIN LAUREL	15"-18" TUBELING	FACU		32
	52	Morella cerifera	SOUTHERN WAXMYRTLE	15"-18" TUBELING	FAC		52
	52	Viburnum dentatum	SOUTHERN ARROWWOOD	15"-18" TUBELING	FAC		52
	628 L.F. +/-	LIVE STAKES					
	210	Cornus amomum	SILKY DOGWOOD	3' MIN LENGTH	FACW+	PLANT QUANTITIES BASED ON A DOUBLE ROW OF LIVE STAKES, 3-FEET OFF CENTER .	253
	210	Salix nigra	BLACK WILLOW	3' MIN LENGTH	FACW		242

NOTE:
PLANTING QUANTITIES AND SIZING BASED ON VIRGINIA DEPARTMENT OF CONSERVATION AND RECREATION'S RIPARIAN BUFFER GUIDANCE MANUAL (2003).

PLANTING KEY
C = CANOPY
U = UNDERSTORY
S = SMALL SHRUB

NOTE:
SEE SPREADSHEET ATTACHMENTS FOR DETAILS REGARDING SPECIES OF INDIVIDUAL TREE CODES.

LEGEND

- PROJECT LIMITS
- APPROXIMATE STREAM CHANNEL LIMITS
- EXISTING TREES (TO BE PROTECTED)
- EXISTING TREES (TO BE REMOVED)
- EXISTING CONTOURS
- PROPOSED BANK GRADING
- PROPOSED GRADING FOR STORMWATER OUTFALL (BY OTHERS)
- PROPOSED CROSS-VANE STRUCTURE
- PROPOSED J-HOOK STRUCTURE
- PROPOSED SCOUR POOL
- PROPOSED ROCK STABILIZATION
- PROPOSED OUTLET PROTECTION
- PROPOSED BRIDGE STABILIZATION
- PROPOSED BUFFER RESTORATION AREA
- AS-BUILT TREE PLANTING

5500 Center Street
Williamsburg, Virginia 23188
(757) 220-6569
1011 Boulder Springs Drive, Suite 225
Richmond, Virginia 23225
(804) 267-3474
150 Riverside Parkway, Suite 301
Fredericksburg, Virginia 22406
(540) 785-5504
Environmental Consultants
WILLIAMSBURG ENVIRONMENTAL GROUP, INC.

AS-BUILT PLANTING SURVEY
TAFT AVENUE
CITY OF ALEXANDRIA, VIRGINIA

COMMONWEALTH OF VIRGINIA
GEORGE C. RHODES III
No. 000894
9/15/11
LANDSCAPE ARCHITECT

REVISIONS:
DATE:

3/26/2013	GRS-1 LOCATED TREE SYMBOLS TO INDICATE ADDITIONAL PLANTINGS

DRAWN BY: MED
DESIGNED BY: TWC/EBG/NJL
DATE: 12/1/10
CHECKED BY: GCR

SHEET: 11A
JOB#: 2256

APPROVED AS-BUILT

DEVELOPMENT SITE PLAN NO.: DSP2007-00018

DEPARTMENT OF TRANSPORTATION & ENVIRONMENTAL SERVICES

DIRECTOR

10/11/11
DATE

SPECIAL USE PERMIT:

\\FREDFS1\FREDcad\2200s\2256 - Taft Avenue\Stream Restoration\As-Built Planting Survey\As-Built Planting Survey (rev. 2011).dwg

APPENDIX C – TAFT AVENUE PROPERTY AS-BUILT SITE PLAN DSP2004-0018

PROJECT NAME

TAFT AVENUE PROPERTY

AREA TABULATIONS

TOTAL SITE AREA = 117,799 SF (2.70 AC)
TOTAL AREA OF TAX PARCEL = 117,799 SF (2.70 AC)
TOTAL EXISTING IMPERVIOUS AREA = 32,670 SF (0.75 AC)
TOTAL PROPOSED IMPERVIOUS AREA = 39,200 SF (0.90 AC)
TOTAL DISTURBED AREA = 151,589 SF (3.48 AC)

GENERAL NOTES

CONSTRUCTION MATERIALS OR EQUIPMENT SHALL NOT BE STORED OR STAGED OUTSIDE THE LIMITS OF DISTURBANCE.

ENVIRONMENTAL SITE ASSESSMENT

WETLANDS ARE BEING DISTURBED AND WETLAND PERMITS ARE REQUIRED FOR THIS DEVELOPMENT. THERE ARE NO KNOWN EX. UNDERGROUND STORAGE TANKS OR AREAS OF SOIL OR GROUNDWATER CONTAMINATION ON THE SITE.

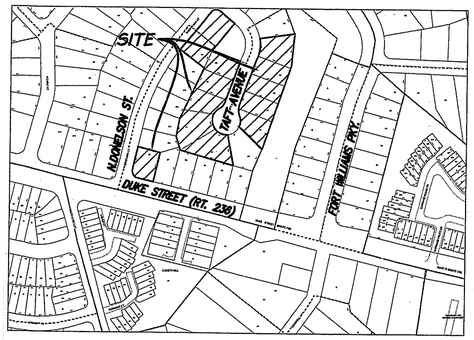
PLAN SHEET KEY

EXISTING INTERMEDIATE CONTOUR — 32
EXISTING INDEX CONTOUR — 30
PROPOSED CONTOUR — 20
EXISTING EDGE OF PAVEMENT — EX. E/P
PROPOSED EDGE OF PAVEMENT — PROP. E/P
EXISTING CURB AND GUTTER — EX. C & G
PROPOSED CURB AND GUTTER — CG-6
TRANSITION FROM CG-6 TO CG-6R — CG-6 CG-6R
EXISTING TELEPHONE LINE
PROPOSED TELEPHONE LINE
EXISTING STORM SEWER — EX. (15") RCP
PROPOSED STORM SEWER — PROP. (15") RCP
EXISTING SANITARY SEWER
PROPOSED SANITARY SEWER
EXISTING ELECTRIC SERVICE
PROPOSED ELECTRIC SERVICE
EXISTING GAS LINE
PROPOSED GAS LINE
PROPERTY LINE
EASEMENT LINE
CENTERLINE
LIMITS OF CLEARING AND GRADING
EXISTING SPOT ELEVATION — 12.0
PPOPOSED SPOT ELEVATION — 12.5
EXISTING TREE DRIP LINE
EXISTING TREE — 375 mm (15") OAK
PROPOSED TREE — OAK

FLOW LINE
FENCELINE
EXISTING UTILITY POLE
PROPOSED UTILITY POLE
EXISTING WATERLINE W/ TEE
PROPOSED WATERLINE W/ TEE
EXISTING FIRE HYDRANT
PROPOSED FIRE HYDRANT
EXISTING WATER VALVE
PROPOSED WATER VALVE
PROPOSED WATER METER
EXISTING REDUCER
PROPOSED REDUCER
STOP SIGN
HANDICAP RAMP (CG-12)
DENOTES LOCATION OF STD VDOT CG-12 AND/OR JURISDICTIONAL STANDARD RAMP CONSTRUCTION
PARKING INDICATOR — 12
INDICATES THE NUMBER OF TYPICAL PARKING SPACES
TEST PIT LOCATION
CRITICAL SLOPE
SLOPES TO BE STABILIZED PURSUANT TO VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK
VEHICLES PER DAY COUNT — 100
PROPOSED BUILDING ENTRANCE
EXISTING STREET LIGHT
PROPOSED STREET LIGHT
PROPOSED STREET NAME SIGN
PROPOSED SANITARY LATERAL CLEANOUT
SANITARY MANHOLE INDENTIFIER — 12
STORM DRAIN STRUCTURE IDENTIFIER — 18

VICINITY MAP

SCALE: 1" = 250'



PROJECT DESCRIPTION NARRATIVE

THE APPLICANT PROPOSES TO CONSTRUCT 13 SINGLE FAMILY DETACHED DWELLINGS BY INFILL LOT GRADING AND RESUBDIVISION ON 13 EXISTING LOTS. SUBJECT PROPERTY IS LOCATED WITHIN THE STRAWBERRY RUN WATERSHED. NO NET INCREASE IN THE NUMBER OF LOTS IS PROPOSED.

SPECIAL USE PERMITS/ZONING MODIFICATIONS/WAIVERS

NONE

MODIFICATIONS APPROVED WITH PRELIMINARY PLAT:

MINIMUM YARD SETBACKS (SEE TABLE SHEET 2A)
PERMITTED PAVING IN A SIDE YARD (SEE TABLE SHEET 2A)

PERMIT REQUIRED:

CONSTRUCTION & ENVIRONMENTAL PERMITS (ARMY COE, DEQ, & LOCAL)

ZONING TABULATIONS:

SEE SHEET 2A FOR CALCULATIONS.

RECORD OWNERS

LOT 12 : TAFT AVENUE LLC
ID # 040040658
LOT 13 : TAFT AVENUE LLC
ID # 040032714
LOT 14 : TAFT AVENUE LLC
ID # 040033061
LOT 15 : TAFT AVENUE LLC
ID # 040030983
LOT 16 : TAFT AVENUE LLC
ID # 040007802
LOT 18 : TAFT AVENUE LLC
ID # 050003452
LOT 19 : TAFT AVENUE LLC
ID # 050003453
LOT 20 : TAFT AVENUE, LLC
ID # 050003454
LOT 21 : TAFT AVENUE, LLC
ID # 050003455
LOT 22 : TAFT AVENUE, LLC
ID # 050003456
LOT 29 : CALVERT HOMES, INC.
ID # 050030974
LOT 30 : TAFT AVENUE, LLC
ID # 050003457
LOT 36 : TAFT AVENUE, LLC
ID # 050011395

CERTIFIED LAND DISTURBER

I, JOHN K. RINGLE WILL HEREBY SERVE AS THE CERTIFIED LAND DISTURBER FOR THE ENCLOSED PROJECT.

TOTAL DISTURBED AREA = 3.48 AC

SIGNATURE DATE LICENSE NUMBER 10466

ZONING TABULATIONS

1. ZONE OF SITE: R-8 (BY-RIGHT)
2. USE: EXISTING: RESIDENTIAL (S.F.D)
   PROPOSED: RESIDENTIAL (S.F.D)
3. LOT AREA: SEE SHEET 2A
   MINIMUM LOT AREA: 8,000 SF
4. NUMBER OF DWELLING UNITS: 13
5. UNITS PER ACRE (DENSITY): 13 UNITS/2.70 = 4.81 D.U./AC
6. GROSS SQUARE FOOTAGE: SEE SHEET 2A.
7. NET SQUARE FOOTAGE: SEE SHEET 2A.
8. FLOOR AREA RATIO: SEE SHEET 2A (Z.O. SECTION 3-306(B))
9. OPEN SPACE: SEE SHEET 7
10. AVERAGE FINISHED GRADE: SEE SHEET 2A.
11. HEIGHT: SEE SHEET 2A.
    MAX. ALLOWABLE HEIGHT = 35'
12. YARDS: SEE SHEET 2A.
13. FRONTAGE:
    REQUIRED: 40' MIN. AT FRONT LINE
    PROVIDED: 40' MIN. AT FRONT LINE
14. PARKING SPACES: 2 SPACES PER DWELLING UNIT
    EXISTING: 26 (2 SP/UNIT, IN GARAGE)
    PROPOSED: 26 (2 SP/UNIT, IN GARAGE)
15. LOADING SPACES: N/A
16. TRIP GENERATION (VPD):
    EXISTING: 130
    PROPOSED: 130
17. WATERSHED: STRAWBERRY RUN

SHEET INDEX

1. COVER SHEET
2. GENERAL NOTES
3.-4. GRADING PLAN
5. AS-BUILT PLAN
6.-7. STORM WATER MANAGEMENT COMPUTATIONS
8. OVERALL STORM AND ROOF DRAIN PLAN
9.-10. UTILITY COMPUTATIONS & PROFILES
11. TREE REMOVAL & PRESERVATION PLAN
12.-13. LANDSCAPE PLAN
14. TREE PRESERVATION NOTES & DETAILS

AS-BUILT NOTES

1. ▭ DENOTES "AS-BUILT" INFORMATION.

2. I, KEVIN D. VAUGHN, HEREBY CERTIFY TO THE BEST OF MY KNOWLEDGE AND BELIEF, THAT THIS AS-BUILT PLAN HAS BEEN PREPARED IN ACCORDANCE WITH SECTION 101-2-5, PARAGRAPH (d), SUBPARAGRAPH (5) OF THE SUBDIVISION ORDINANCE OF FAIRFAX COUNTY, VIRGINIA. THIS AS-BUILT PLAN CONTAINS ALL INFORMATION REQUIRED BY AND CONFORMS WITH SECTION 101-2-5(d)(5) AND REPRESENTS ACTUAL CONDITIONS ON THE SITE AS OF 11-17-2010 FOR ONLY THOSE ITEMS REQUIRED BY SUBPARAGRAPH (5) AS WELL AS ANY STANDARDS AND PROCEDURES REQUIRED BY THE RULES AND REGULATIONS ADOPTED BY THE COMMONWEALTH OF VIRGINIA BOARD OF ARCHITECTS, PROFESSIONAL ENGINEERS, LAND SURVEYORS AND LANDSCAPE ARCHITECTS.

3. ALL STORM SEWER FALL WITHIN THEIR RESPECTIVE EASEMENTS EXCEPT AS SHOWN (STRUCTURE #5A) AND ALL DEDICATIONS ARE RECORDED IN INSTRUMENT # 080004563 AND INSTRUMENT # 100016682 AND INSTRUMENT # 100009659 AND DEED BOOK 661 PAGE 372.

4. NO UTILITY LOCATIONS (ELECTRIC, TELEPHONE, CABLE TV AND GAS) HAVE BEEN PROVIDED BY THE UTILITY COMPANIES.

APPROVED ASBUILT
DEVELOPMENT SITE PLAN NO. 2004-0038
DEPARTMENT OF TRANSPORTATION & ENVIRONMENTAL SERVICES
DIRECTOR — DATE 2-22-16
SPECIAL USE PERMIT

AS-BUILT PREPARED BY:
LDC
UNLOCKING YOUR LAND'S POTENTIAL
9401 CENTREVILLE ROAD, SUITE 300
MANASSAS, VIRGINIA 20110
PH: 703-257-5600 FX: 703-257-5656

COMMONWEALTH OF VIRGINIA
11-22-10
KEVIN D. VAUGHN
Lic. No. 1568
LAND SURVEYOR
AS-BUILT CERTIFIED CORRECT

ESI Peer Review

DEVELOPER/OWNER

CALVERT HOMES, INC.
12656-C LAKE RIDGE DRIVE
LAKE RIDGE, VA 22192
PH NO.: (703) 643-5001

OWNER

TAFT STREET, LLC.
12656-C LAKE RIDGE DRIVE
LAKE RIDGE, VA 22192
PH NO.: (703) 643-5001

OWNER

TAFT AVENUE, LLC.
12656-C LAKE RIDGE DRIVE
LAKE RIDGE, VA 22192
PH NO.: (703) 643-5001

ENGINEER

LAND DESIGN CONSULTANTS
9401 CENTREVILLE ROAD,
SUITE 300
MANASSAS, VA 20110
PH NO.: (703) 257-5600
CONTACT: KELLY ATKINSON/
JOSH MARSHALL, P.E.

ARCHITECT:

RDG GROUP
12792 HARBOR DRIVE,
LAKE RIDGE, VA 22192
PH NO.: (703) 490-0408

ARCHITECT:

GARY M. ZICKAFOOSE
5830 BETHEL ROAD
ALEXANDRIA, VA 22310
PH NO.: (703) 960-5245

DESIGN ENGINEER / SURVEYOR
FIRM NAME: LAND DESIGN CONSULTANTS
ADDRESS: 9401 CENTREVILLE ROAD, SUITE 300
MANASSAS, VIRGINIA 20110
PHONE NO.: 703-257-5600 FAX NO.: 703-257-5656
PROJ. MANAGER: JOSH MARSHALL EMAIL: josh@ldc-va.com

SCALE: N/A DATE: MARCH 2007 DRAWN: RP

SEAL: I HEREBY CERTIFY THAT OTHER THAN THE REVISIONS SHOWN HEREON, NO OTHER CHANGES HAVE BEEN MADE.
COMMONWEALTH OF VIRGINIA — JOSHUA M. MARSHALL — PROFESSIONAL ENGINEER

REVISION APPROVED BY

NO.	DESCRIPTION	DATE	REV. BY	APPROVED	DATE
1	REV. STREAM ACCESS. PH. 1	1/2010			
	E&S, PERVIOUS CONC.				
2	ADD PRIVATE UNDERDRAINS	6/2010			

TAFT AVENUE PROPERTY
AS-BUILT SITE PLAN
CITY OF ALEXANDRIA, VIRGINIA

SHEET NAME: COVER SHEET

APPROVED
SPECIAL USE PERMIT NO.
DEPARTMENT OF PLANNING & ZONING
DIRECTOR DATE
DEPARTMENT OF TRANSPORTATION & ENVIRONMENTAL SERVICES
SITE PLAN No. 2004-0038
DIRECTOR DATE 2-22-16
CHAIRMAN, PLANNING COMMISSION DATE
DATE RECORDED
INSTRUMENT NO. DEED BOOK NO. PAGE NO.

File No. PRELIM Tax Map No. 60.02 Job No. 04126-1-0-35B Cadd Dwg. File: P:\PY 2004\04126-1-0 CITY OF ALEXANDRIA\ENG\SUBPLAN\04126CV.DWG

OFFICE OF THE CITY MANAGER
301 King Street, Suite 3500
Alexandria, Virginia 22314-3211

JAMES K. HARTMANN
City Manager

(703) 838-4300
Fax: (703) 838-6343

RECEIVED
MAR 16 2007
BY:

March 13, 2007

Kelly Atkinson
Land Design Consultants, Inc.
9401 Centreville Road, Suite 300
Manassas, Virginia 20110

Re: Letter of Permission for Stream Restoration in Fort Williams Park
Taft Avenue Project (DSP 2004-0038)

Dear Ms. Atkinson,

Thank you for your letter dated February 16, 2007 regarding the Taft Avenue project and your request for a letter of permission to perform stream restoration activities for Strawberry Run in Fort Williams Park. As indicated in your letter, your client, Calvert Homes, has proposed a stream restoration plan as part of the site plan for the Taft Avenue development that was approved at the Planning Commission on February 6, 2007. Considering the deteriorated state of this stream, the City agrees that the restoration will be of great benefit to the community. Therefore, the City grants you permission to perform work within the City-owned Fort Williams Park subject to the following conditions:

1. All work shall be performed in compliance with approved Site Plan (DSP 2004-0038) conditions:
2. The stream restoration plan shall be reviewed by the City as part of the Taft Avenue final site plan and work shall not begin in the stream and stream area until this plan has been approved and released.
3. A document illustrating access to and across public lands and other ground disturbance shall be approved by RP&CA, T&ES/DEQ, and P&Z prior to commencement of work.
4. RP&CA staff (City Arborist and Landscape Architect) shall field verify access routes, and other limits of ground disturbance in coordination with T&ES/DEQ and P&Z prior to commencement of work. Ten (10) calendar days notice is required to coordinate a field meeting.
5. All areas affected by work shall be restored to conditions as depicted in the restoration and landscape plans to the satisfaction of the RP&CA, T&ES/DEQ, and P&Z.
6. Per Condition of Approval #12, prior to any construction occurring in the stream and stream area, a community meeting shall be held with the applicable civic associations to discuss details of the plan and the implementation.

If you have any questions regarding this letter, please contact Katye Parker in the Planning and Zoning Department at (703) 838-4666 or katye.parker@alexandriava.gov.

Thank you for your cooperation on this project.

Sincerely,

James K. Hartmann
City Manager

cc: Ignacio Pessoa, City Attorney
Kirk Kincannon, Director, Recreation, Parks, and Cultural Activities
Roger Blakeley, Deputy Director, Park Operations and Capital Development, Recreation, Parks, and Cultural Activities
Rich Baier, Director, Transportation and Environmental Services
Bill Skrabak, Division Chief, Environmental Quality, Transportation and Environmental Services
Rich Josephson, Acting Director, Planning and Zoning
Katye Parker, Planner, Planning and Zoning

DEPARTMENT OF TRANSPORTATION
AND ENVIRONMENTAL SERVICES
P. O. Box 178 – City Hall
Alexandria, Virginia 22313

alexandriava.gov

January 31, 2007

Jeffrey T. Hancock
Williamsburg Environmental Group, Inc.
5209 Center Street
Williamsburg, VA 23188

Dear Mr. Hancock:

The applicant, Taft Avenue Properties, DSP 2004-0038, has requested an administrative approval for encroachment into the RPA under Section 13-107(E)(1), Article XIII, environmental Management, which regulates development within the Resource Protection Area (RPA). This section of the Zoning Ordinance specifies:

> *"The following encroachments, if permitted in the underlying zone, are allowed to the RPA buffer area if approved by the Director of T&ES and provided that a water quality impact assessment is performed and accepted by the Director of T&ES as complete in accordance with Sec. 13-114.*
>
> *(1) When the application of the buffer area would result in the loss of a buildable area on a lot or parcel recorded prior to October 1, 1989, encroachments into the buffer area may be approved by the Director of T&ES in accordance with the following criteria:*
>
> *(a) Encroachments into the buffer area shall be the minimum necessary to achieve a reasonable buildable area for a principal structure and necessary utilities;*
> *(b) Where practicable, a vegetated area that will maximize water quality protection, mitigate the effects of the buffer encroachment, and is equal to the area of encroachment into the buffer area shall be established elsewhere on the lot; and,*
> *(c) The encroachment may not extend into the seaward 50 feet of the buffer area."*

In this case, the proposal generally complies with the R-8 zone and is consistent with the City's Master Plan. Calculations of the proposed development show that 1,454 sq.ft. of impervious area will be constructed within the RPA, with a reduction in impervious area on each lot. Several housing layouts have been tried and the resulting configuration is the minimum encroachment necessary to achieve reasonable buildable area for principle structures and utilities. As required by the Zoning Ordinance, the applicant has provided a water quality impact assessment for review by T&ES. Significant mitigation is proposed. The encroachment into the RPA will be at the edge of the RPA boundary (not within the seaward 50 feet) and the sheds currently existing in the rear of the lots that are close to the stream will be removed, thus eliminating the most near-stream encroachments into the RPA. Finally, the proposal complies with stormwater management requirements, largely due to the provision of a stream restoration plan.

This request therefore meets the requirements for administrative approval for encroachment into the RPA as listed in Article XIII, Section 13-107(E)(1) of the Alexandria Zoning Ordinance.

Sincerely,

William Skrabak for

Richard J. Baier, P.E.
Director, Department of Transportation and Environmental Services

RPA ENCROACHMENT TABULATION

LOT #	PROP. RPA DIST.	EX. IMP. AREA IN RPA	PROP. IMP. AREA IN RPA	REDUCTION OF IMP. AREA IN RPA
12	2,245 #	1,148 #	947 #	-201 #
13	610 #	170 #	63 #	-107 #
14	212 #	105 #	0 #	-105 #
15	953 #	9 #	0 #	-9 #
16	1,213 #	368 #	178 #	-190 #
TOTAL	5,233 #	1,800 #	1,188 #	-612 #

HEIGHT THRESHOLD CALCULATION:

PER 4/9/07 TELEPHONE CONVERSATION AND CONSISTENT WITH THE OTHER HEIGHTS

Lot No.	Prop. Ground Elevation (ft.)	FF Elev. (ft.)	Prop. Threshold Elev. Difference (in.)	Ex. House Address	Ex. Threshold Height (in.)	Required per Prelim. (in.)
12	110.58	112.30	20.64	3739 Taft	13.0	24
13	107.73	109.60	22.44	3729 Taft	53.0	24
14	107.6	109.60	24.00	3725 Taft	65.0	24
15	102.9	104.50	19.20	3701 Taft	8.0	24
16	102.1	104.00	22.80		Avg.	24
					34.8	
				plus 20%	41.7	
503	107.13	109.10	23.64	N/A **	-	-
504	106.7	109.10	28.80		-	-
505	102.43	104.30	22.44		-	-
506	102.13	104.50	28.44		-	-
507	100.36	102.60	26.88		-	-
36	91.21	92.70	17.88	115 N. Donnelson	24.0	24
30	108.99	110.50	18.12	107 N. Donnelson	27.0	24
29	115.2	117.30	25.20	33 N. Donnelson	24.0	22.8
				25 N. Donnelson	15.0	
				19 N. Donnelson	27.0	
				Avg.	23.4	
				plus 20%	28.1	

**NOTE: THE APPLICANT IS DEVELOPING 5 OUT OF THE 6 LOTS IN THIS QUAD; THEREFORE, THE THRESHOLD HEIGHT IS DEFINED BY THE PROPOSED HOUSES.

SIDE YARD PAVING TABULATIONS:

LOT	TOTAL SIDE YARD AREA	SIDE YARD PAVED AREA
36	1,966 SF	696 SF (35%)
30	1,786 SF	575 SF (32%)
29	1,897 SF	-
503	1,425 SF	256 SF (18%)
504	1,532 SF	343 SF (22%)
505	1,573 SF	490 SF (31%)
506	2,511 SF	380 SF (15%)
507	2,048 SF	742 SF (36%)
16	1,881 SF	563 SF (30%)
15	1,438 SF	411 SF (28%)
14	1,349 SF	288 SF (21%)
13	1,434 SF	322 SF (22%)
12	1,919 SF	-

IN ACCORDANCE WITH SECTION 7-1005 OF THE ZONING ORDINANCE A MAXIMUM OF 50% OF THE SIDE YARD MAY BE USED FOR PARKING AND PAVEMENT.

F.A.R. SUMMARY TABLE

LOT	LOT AREA	BLDG. TYPE	GROSS SF (INCLUDING LOFT)	BSMT.	LOFT	NET # (INCLUDES LOFT)
36	8,400 SF	CROFTWOOD "B"	3673#	NOT COUNTED	YES	2934# (.35)
30	8,782 SF	CROFTWOOD "A"	3673#	NOT COUNTED	YES	3006# (.34)
29	9,294 SF	CROFTWOOD "A"	3685#	NOT COUNTED	YES	3006# (.32)
503	8,470 SF	CAMBRIDGE 3	3679#	NOT COUNTED	NONE	2964# (.35)
504	9,203 SF	MOD. CAMBRIDGE II	3920#	NOT COUNTED	NONE	3248# (.35)
505	8,016 SF	CROFTWOOD "C"	3344#	NOT COUNTED	NONE	2790# (.35)
506	11,790 SF	CAMBRIDGE II	4216#	NOT COUNTED	NONE	3548# (.30)
507	10,404 SF	CARRINGTON	4046#	NOT COUNTED	NONE	3625# (.35)
16	8,722 SF	CROFTWOOD "A"	3673#	NOT COUNTED	YES	3006# (.34)
15	8,380 SF	CROFTWOOD "B"	3673#	NOT COUNTED	YES	2934# (.34)
14	8,200 SF	CROFTWOOD "B"	3673#	NOT COUNTED	YES	2934# (.34)
13	8,315 SF	CROFTWOOD "B"	3673#	NOT COUNTED	YES	2934# (.34)
12	9,835 SF	MOD. CAMBRIDGE II	3920#	NOT COUNTED	NONE	3248# (.33)

IN ACCORDANCE WITH THE DEFINITION OF BASEMENT, IF THE BASEMENTS ARE TO BE DEDUCTED FROM FLOOR AREA CALCULATIONS, THE AVERAGE SURROUNDING FINISHED GRADE IS FOUR FEET OR LESS BELOW THE BOTTOM OF THE FIRST FLOOR.

APPROVED YARD MODIFICATIONS:

MINIMUM YARD REQUIREMENTS:
PROVIDED IN ACCORDANCE WITH THE PRELIMINARY PLAN THAT WAS APPROVED FEBRUARY 6, 2007 AND FURTHER MODIFIED BY THE ASSOCIATED CONDITIONS.

LOT	AVG. FINISHED GRADE	BUILDING HEIGHT ABOVE FINISHED GRADE		FRONT YARD		LEFT SIDE YARD		RIGHT SIDE YARD		REAR YARD	
		MAXIMUM	PROVIDED	REQUIRED	PROVIDED	REQUIRED	PROVIDED	REQUIRED	PROVIDED	REQUIRED	PROVIDED
36	91.22	35	28.00	30	30.0 30.6	29.5	29.5	14.00 (PER COND. A.1a)	14.0	N/A	***
30	108.99	35	27.97	30	30.0	29.5	29.5	13.98 (PER COND. A.1b)	14.3	27.97	28.00
29	114.76	35	26.92	30	30.8 33.7	17.2	25.2	15.9	23.2	N/A	***
503	107.13	35	26.20	30	31.2	10.2	10.7	16.0	17.6	29.70	30.80
504	106.42	35	27.06	30	31.6	12.1	12.9	14.4	14.6	33.80	36.60
505	102.60	35	28.20	30	32.3	14.5	14.5	10.1	10.1	27.70	28.20
506	100.17	35	28.17	30	38.4	13.5	13.6	10.1	10.1	30.60	30.60
507	100.19	35	29.05	30	30.6	20.0	20.1	8.3	10.6	30.50	30.50
16	100.96	35	29.54	30	30.0	14.52 (PER COND. A.1c)	17.0	8.9	9.0	31.60	35.10
15	103.00	35	28.00	30	30.0	8.2	8.7	13.7	13.7	54.10	58.70
14	106.25	35	29.85	30	30.0	11.8	11.9	9.1	9.1	54.20	57.80
13	107.17	35	28.93	30	30.0	8.5	8.5	13.4	13.9	53.90	57.00
12	109.26	35	27.42	30	30.0	8.2	8.2	8.8	8.8	41.80	41.80

***LOTS 36 AND 29 HAVE NO REAR YARD AND ONLY ONE SIDE YARD AS THEY ARE CORNER LOTS.

APPROVED ASBUILT
DEVELOPMENT SITE PLAN NO. 2004-0038
DEPARTMENT OF TRANSPORTATION & ENVIRONMENTAL SERVICES
DIRECTOR — DATE 2-22-16
SPECIAL USE PERMIT

COMMONWEALTH OF VIRGINIA
11-22-10
KEVIN D. VAUGHN
Lic. No. 1508
LAND SURVEYOR
AS-BUILT CERTIFIED CORRECT

ESI PEER REVIEW

APPROVED
DEVELOPMENT SITE PLAN NO.
DEPARTMENT OF PLANNING & ZONING
DIRECTOR — DATE
DEPARTMENT OF TRANSPORTATION & ENVIRONMENTAL SERVICES
SITE PLAN NO. 2004-0038
DIRECTOR — DATE
CHAIRMAN, PLANNING COMMISSION — DATE
DATE RECORDED
INSTRUMENT NO. — DEED BOOK NO. — PAGE NO.

LAND DESIGN CONSULTANTS
PLAN FOR SUCCESS
www.ldc-va.com
8569-E SUDLEY ROAD, MANASSAS, VIRGINIA 20110
PH: 703.631.8387 FX: 703.631.9414

GENERAL NOTES

AS-BUILT

TAFT AVENUE PROPERTY

CITY OF ALEXANDRIA, VIRGINIA

NO.	DESCRIPTION	DATE	DESIGN	REVIEW BY	APPROVED	DATE
	REVISION APPROVED BY:					

ENGINEER

I HEREBY CERTIFY THAT OTHER THAN THE REVISIONS SHOWN HEREON, NO OTHER CHANGES HAVE BEEN MADE.

COMMONWEALTH OF VIRGINIA
JOSHUA MARSHALL
No. 40158
PROFESSIONAL ENGINEER

SCALE: N/A

SHEET 2 OF 14

DATE: MARCH, 2007
DRAFT: RP
CHECK: MM
FILE NUMBER: 04126-1-0-35B
2004-0038

P:\FY2004\04126-1-0 CITY OF ALEXANDRIA\ENG\SUBPLAN\04126CN.dwg

APPROVED ASBUILT

DEVELOPMENT SITE PLAN NO. 2004-0038

DEPARTMENT OF TRANSPORTATION & ENVIRONMENTAL SERVICES

DIRECTOR — DATE 2.22.16

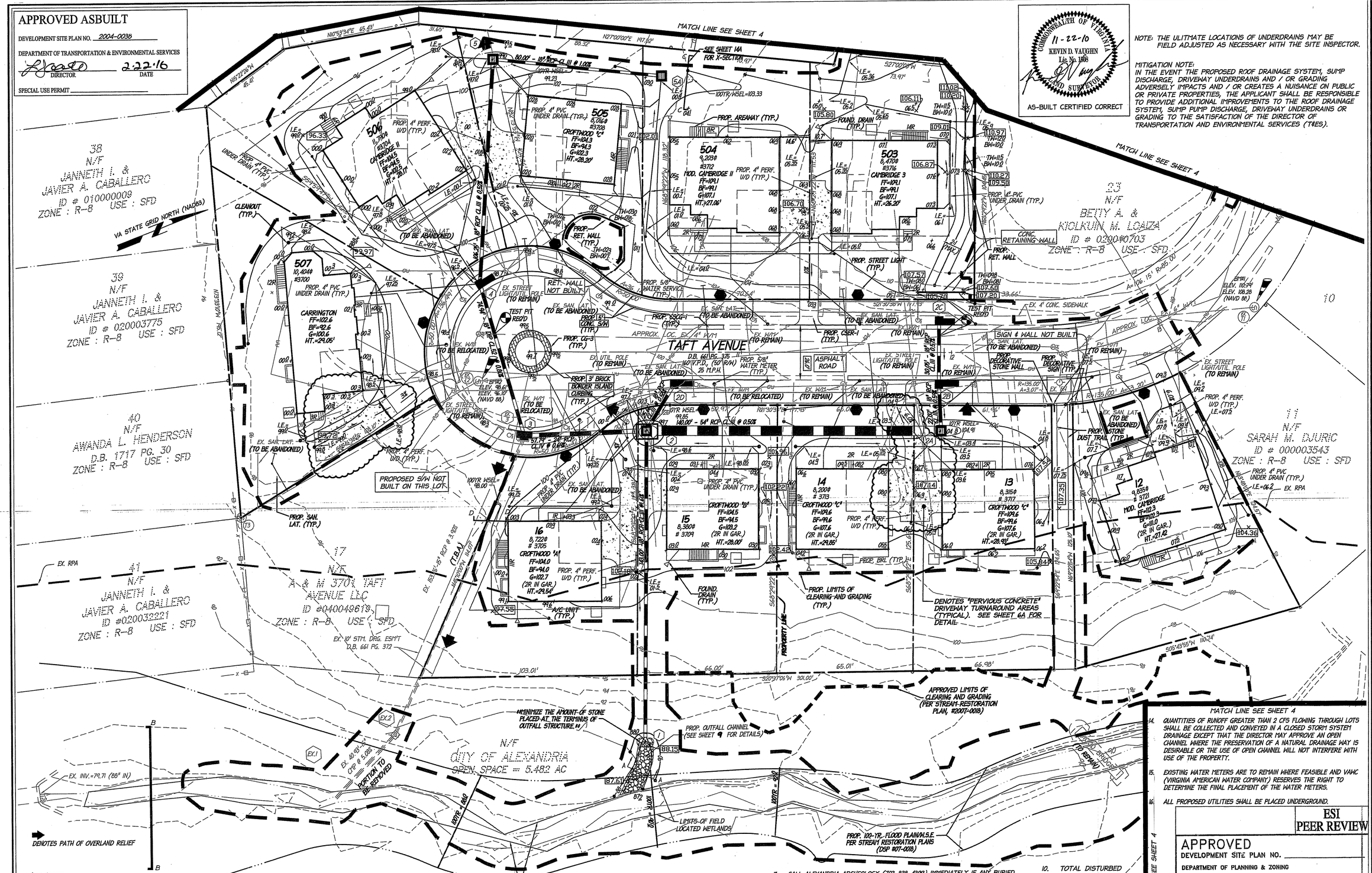
SPECIAL USE PERMIT _____

COMMONWEALTH OF VIRGINIA
11-22-10
KEVIN D. VAUGHN
Lic. No. 1108
LAND SURVEYOR

AS-BUILT CERTIFIED CORRECT

NOTE: THE ULTIMATE LOCATIONS OF UNDERDRAINS MAY BE FIELD ADJUSTED AS NECESSARY WITH THE SITE INSPECTOR.

MITIGATION NOTE:
IN THE EVENT THE PROPOSED ROOF DRAINAGE SYSTEM, SUMP DISCHARGE, DRIVEWAY UNDERDRAINS AND / OR GRADING ADVERSELY IMPACTS AND / OR CREATES A NUISANCE ON PUBLIC OR PRIVATE PROPERTIES, THE APPLICANT SHALL BE RESPONSIBLE TO PROVIDE ADDITIONAL IMPROVEMENTS TO THE ROOF DRAINAGE SYSTEM, SUMP PUMP DISCHARGE, DRIVEWAY UNDERDRAINS OR GRADING TO THE SATISFACTION OF THE DIRECTOR OF TRANSPORTATION AND ENVIRONMENTAL SERVICES (T&ES).



NOTES:

1. FIELD INSPECT EXISTING WATER METERS FOR EACH LOT INDIVIDUALLY AND RELOCATE THE SAME AS SHOWN ON THE PLAN.

   THE SANITARY SEWER PERMIT SHALL BE SUBMITTED TO THE CITY PRIOR TO FINAL SITE PLAN APPROVAL FOR ALL NEW LATERAL CONNECTIONS. SEWER TAP FEES SHALL BE PAID IN ACCORDANCE WITH THE LETTER OF AGREEMENT BETWEEN TAFT STREET, LLC AND THE CITY. PLEASE REFER TO SHEET 3B.

   PLEASE REFER TO SHEET 14 FOR UTILITY SEPARATION CONDITION

2. BUILD CURB & GUTTER AT PLACES WHERE EX. DRIVE WAYS ARE REMOVED.

3. ALL TREE PROTECTION SHALL BE APPROVED IN-FIELD BY THE CITY ARBORIST PRIOR TO COMMENCEMENT OF ANY SITE DISTURBING ACTIVITIES.

4. THE EXISTING SHEDS ON LOTS 12, 13, 14 AND 16 WILL BE REMOVED WITHOUT ANY HEAVY EQUIPMENT ENTERING INTO DRIP LINE OF THE EXISTING TREE.

5. " TRENCHLESS" CONSTRUCTION, OR A SIMILAR APPROACH TO THE SATISFACTION OF THE DIRECTOR OF P&Z, SHALL BE USED FOR ROOF DRAINS WHEREVER LOCATED WITHIN THE TREE CANOPY.

6. ALL ARCHEOLOGICAL WORK WILL BE CARRIED OUT IN ACCORDANCE WITH THE CITY OF ALEXANDRIA ARCHAEOLOGICAL STANDARDS AND IS SUBJECT TO THE APPROVAL OF THE CITY ARCHAEOLOGIST. ALL ARCHEOLOGICAL PRESERVATION MEASURES MUST BE COMPLETED PRIOR TO GROUND-DISTURBING ACTIVITIES (SUCH AS CORING, GRADING, FILLING, VEGETATION REMOVAL, UNDERGROUND UTILITIES, PILE DRIVING, LANDSCAPING AND OTHER EXCAVATIONS AS DEFINED IN SECTION 2-151 OF THE ZONING ORDINANCE). TO CONFIRM, CALL ALEXANDRIA ARCHAEOLOGY AT (703) 838-4399.

7. CALL ALEXANDRIA ARCHEOLOGY (703-838-4399) IMMEDIATELY IF ANY BURIED STRUCTURAL REMAINS (WALL FOUNDATIONS, WELLS, PRIVIES, CISTERNS, ETC.) OR CONCENTRATIONS OF ARTIFACTS ARE DISCOVERED DURING DEVELOPMENT. WORK MUST CEASE IN THE AREA OF THE DISCOVERY UNTIL A CITY ARCHAEOLOGIST COMES TO THE SITE AND RECORDS THE FINDINGS. THE APPLICANT HAS COMPLETED A PHASE I ARCHEOLOGICAL SURVEY AND NO SIGNIFICANT ARTIFACTS WERE FOUND.

8. ILLUMINATION SHOULD FALL THROUGHOUT THE DRIVEWAY PARKING AREA, ALONG THE LEADWALKS, AND ALONG THE BUILDING EDGE AND BUILDING ENTRANCES.

9. ALL EXISTING STRUCTURES WITHIN THE RPA SHALL BE REMOVED BY LIGHT MACHINERY AND/OR BY HAND SO AS TO MINIMIZE DISTURBANCE.

10. TOTAL DISTURBED AREA = 3.48 AC.

11. FINAL LOCATION OF WATER METERS AND SERVICE LINES SHALL BE COORDINATED WITH VAWC DURING THE PLAN REVIEW PROCESS.

12. SEE SHEET 14 FOR STORM COMPUTATIONS.

13. SEE SHEET 14A FOR STORM PROFILES.

MATCH LINE SEE SHEET 4

14. QUANTITIES OF RUNOFF GREATER THAN 2 CFS FLOWING THROUGH LOTS SHALL BE COLLECTED AND CONVEYED IN A CLOSED STORM SYSTEM DRAINAGE EXCEPT THAT THE DIRECTOR MAY APPROVE AN OPEN CHANNEL WHERE THE PRESERVATION OF A NATURAL DRAINAGE WAY IS DESIRABLE OR THE USE OF OPEN CHANNEL WILL NOT INTERFERE WITH USE OF THE PROPERTY.

15. EXISTING WATER METERS ARE TO REMAIN WHERE FEASIBLE AND VAWC (VIRGINIA AMERICAN WATER COMPANY) RESERVES THE RIGHT TO DETERMINE THE FINAL PLACEMENT OF THE WATER METERS.

16. ALL PROPOSED UTILITIES SHALL BE PLACED UNDERGROUND.

ESI PEER REVIEW

APPROVED
DEVELOPMENT SITE PLAN NO. _____
DEPARTMENT OF PLANNING & ZONING
DIRECTOR — DATE
DEPARTMENT OF TRANSPORTATION & ENVIRONMENTAL SERVICES
SITE PLAN NO. 2004-0038
DIRECTOR — DATE
CHAIRMAN, PLANNING COMMISSION — DATE
DATE RECORDED _____
INSTRUMENT NO. — DEED BOOK NO. — PAGE NO.

LAND DESIGN CONSULTANTS
PLAN FOR SUCCESS
WWW.LDC-VA.COM
8569-E SUDLEY ROAD MANASSAS, VIRGINIA 20110
PH: 703.631.8387 FX: 703.631.9414

GRADING PLAN
AS-BUILT

TAFT AVENUE PROPERTY
CITY OF ALEXANDRIA, VIRGINIA

DATE	DESIGN	NO.	DESCRIPTION	REVIEW BY	APPROVED	DATE
12.30.09	SUBD.KDT	1	PERVIOUS CONC. IN D/W's, REDISGN STORM DETS			
6.8.10	HEP/LDT	2	ADD PERVIOUS PAVERS, ADD PRIVATE UNDERDRAINS			
11.8.10	HEP/LDT	2A	PERVIOUS CONCRETE D/W'S			

REVISION APPROVED BY:
ENGINEER

I HEREBY CERTIFY THAT OTHER THAN THE REVISIONS SHOWN HEREON, NO OTHER CHANGES HAVE BEEN MADE.

COMMONWEALTH OF VIRGINIA
JOSHUA MARSHALL
No. 46658
PROFESSIONAL ENGINEER

SCALE: 1"=20'

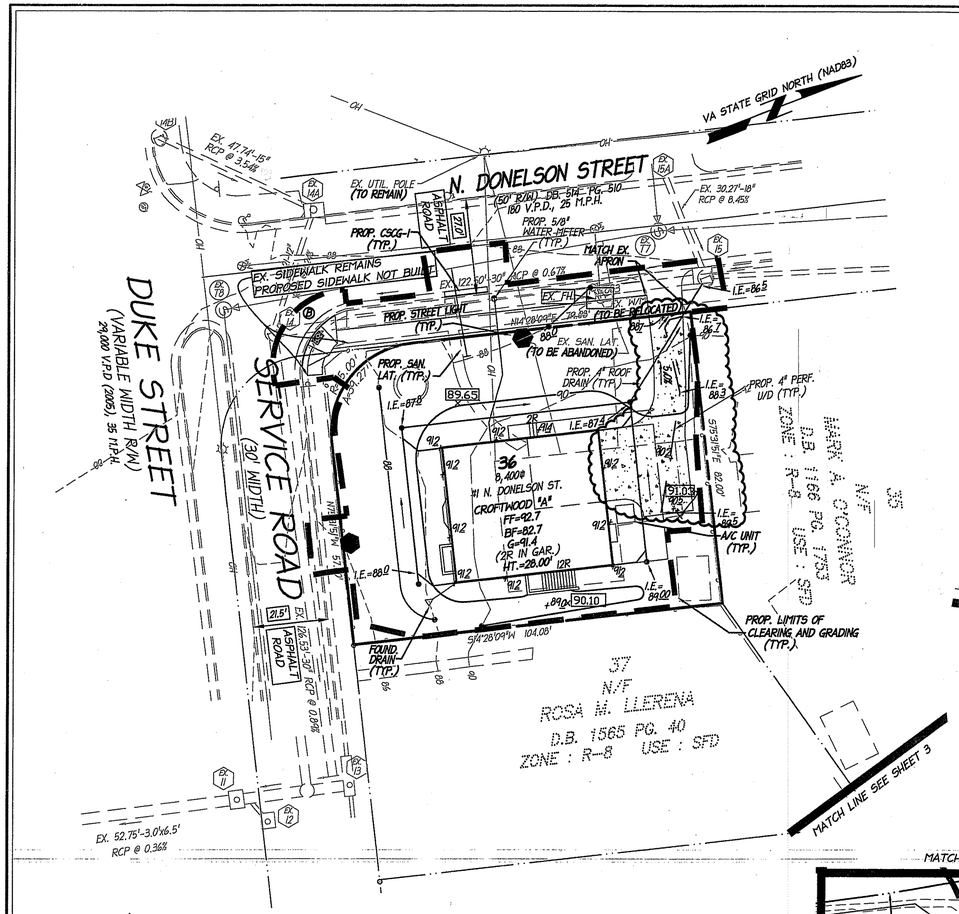
SHEET 3 OF 14

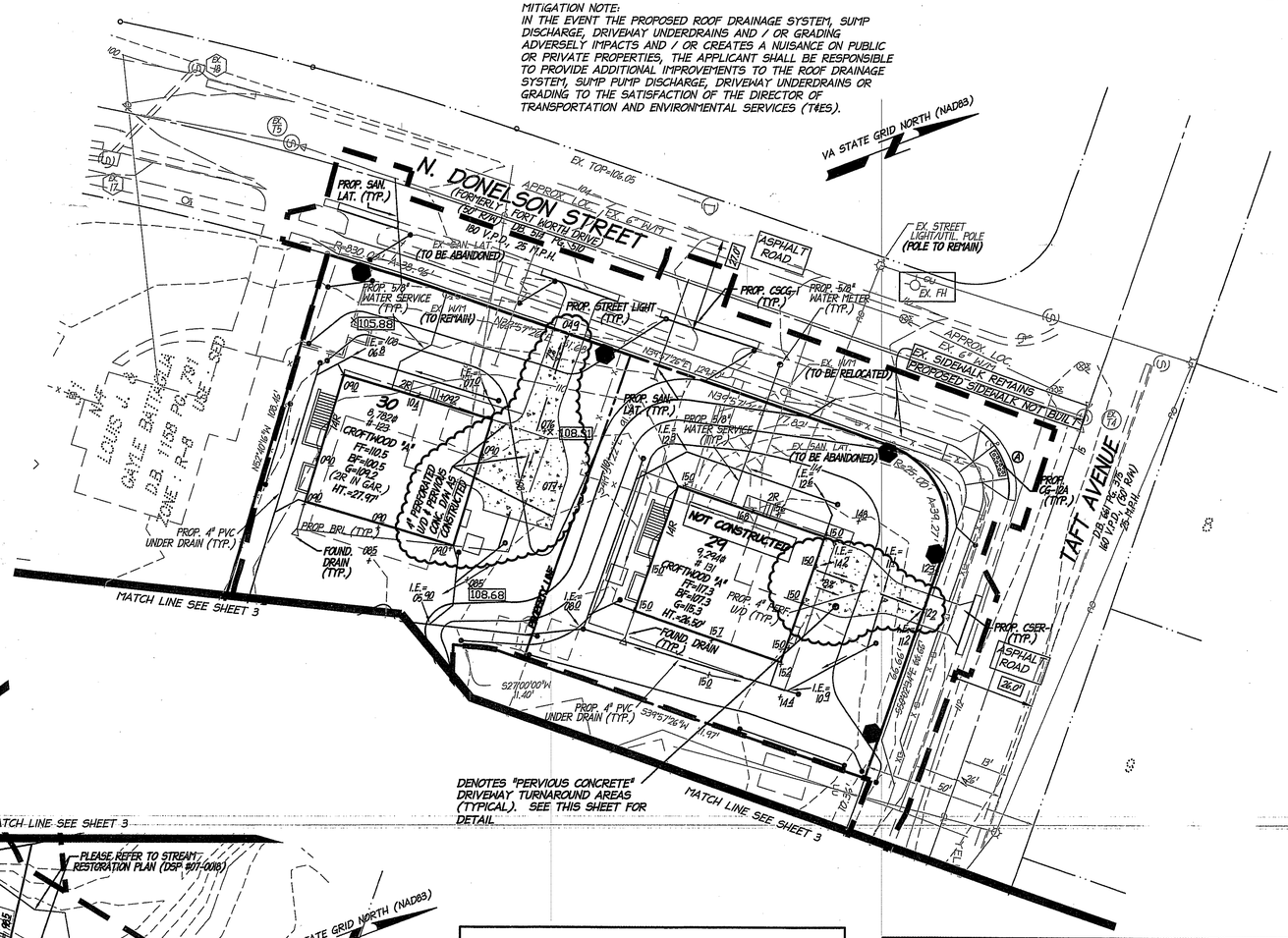
DATE: MARCH, 2007

DRAFT: RP — CHECK: MM

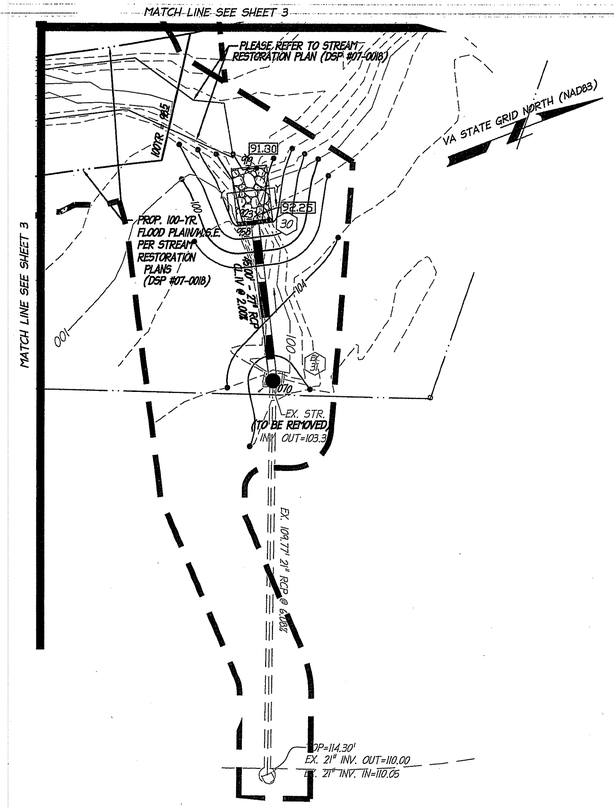
FILE NUMBER: 04126-1-0-36B 2004-0038

P:\PY2004\04126-1-0 CITY OF ALEXANDRIA\ENG\SUBPLAN04126GP.dwg





MITIGATION NOTE:
IN THE EVENT THE PROPOSED ROOF DRAINAGE SYSTEM, SUMP DISCHARGE, DRIVEWAY UNDERDRAINS AND / OR GRADING ADVERSELY IMPACTS AND / OR CREATES A NUISANCE ON PUBLIC OR PRIVATE PROPERTIES, THE APPLICANT SHALL BE RESPONSIBLE TO PROVIDE ADDITIONAL IMPROVEMENTS TO THE ROOF DRAINAGE SYSTEM, SUMP PUMP DISCHARGE, DRIVEWAY UNDERDRAINS OR GRADING TO THE SATISFACTION OF THE DIRECTOR OF TRANSPORTATION AND ENVIRONMENTAL SERVICES (T&ES).



NOTES:

1. ALL ARCHEOLOGICAL WORK WILL BE CARRIED OUT IN ACCORDANCE WITH THE CITY OF ALEXANDRIA ARCHAEOLOGICAL STANDARDS AND IS SUBJECT TO THE APPROVAL OF THE CITY ARCHAEOLOGIST.

   ALL ARCHEOLOGICAL PRESERVATION MEASURES MUST BE COMPLETED PRIOR TO GROUND-DISTURBING ACTIVITIES (SUCH AS CORING, GRADING, FILLING, VEGETATION REMOVAL, UNDERGROUND UTILITES, PILE DRIVING, LANDSCAPING AND OTHER EXCAVATIONS AS DEFINED IN SECTION 2-151 OF THE ZONING ORDINANCE). TO CONFIRM, CALL ALEXANDRIA ARCHAEOLOGY AT (703) 838-4399.

2. CALL ALEXANDRIA ARCHEOLOGY (703-838-4399) IMMEDIATELY IF ANY BURIED STRUCTURAL REMAINS (WALL FOUNDATIONS, WELLS, PRIVIES, CISTERNS, ETC.) OR CONCENTRATIONS OF ARTIFACTS ARE DISCOVERED DURING DEVELOPMENT. WORK MUST CEASE IN THE AREA OF THE DISCOVERY UNTIL A CITY ARCHAEOLOGIST COMES TO THE SITE AND RECORDS THE FINDINGS. THE APPLICANT HAS COMPLETED A PHASE I ARCHEOLOGICAL SURVEY AND NO SIGNIFICANT ARTIFCATS WERE FOUND.

3. ILLUMINATION SHOULD FALL THROUGHOUT THE DRIVEWAY PARKING AREA, ALONG THE LEADWALKS, AND ALONG THE BUILDING EDGE AND BUILDING ENTRANCES.

4. FIELD INSPECT EXISTING WATER METERS FOR EACH LOT INDIVIDUALLY AND RELOCATE THE SAME AS SHOWN ON THE PLAN.

   THE SANITARY SEWER PERMIT SHALL BE SUBMITTED TO THE CITY PRIOR TO FINAL SITE PLAN APPROVAL FOR ALL NEW LATERAL CONNECTIONS. SEWER TAP FEES SHALL BE PAID IN ACCORDANCE WITH THE LETTER OF AGREEMENT BETWEEN TAFT STREET, LLC AND THE CITY. PLEASE REFER TO SHEET 3B.

   PLEASE REFER TO SHEET 14 FOR UTILITY SEPARATION CONDITION

5. FINAL LOCATION OF WATER METERS AND SERVICE LINES SHALL BE COORDINATED WITH VAMC DURING THE PLAN REVIEW PROCESS.

6. TOTAL DISTURBED AREA = 3.48 AC.

7. SEE SHEET 14 FOR STORM COMPUTATIONS.

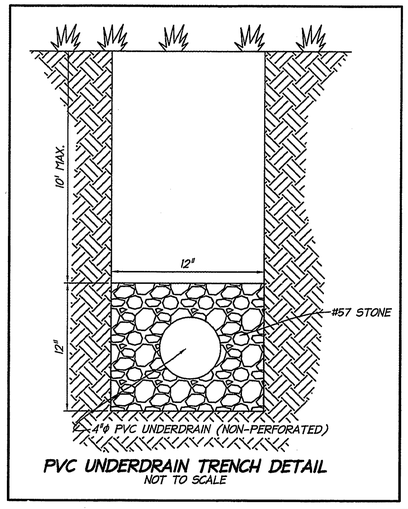
8. SEE SHEET 14A FOR STORM PROFILES.

9. QUANTITIES OF RUNOFF GREATER THAN 2 CFS FLOWING THROUGH LOTS SHALL BE COLLECTED AND CONVEYED IN A CLOSED STORM SYSTEM DRAINAGE EXCEPT THAT THE DIRECTOR MAY APPROVE AN OPEN CHANNEL WHERE THE PRESERVATION OF A NATURAL DRAINAGE WAY IS DESIRABLE OR THE USE OF OPEN CHANNEL WILL NOT INTERFERE WITH USE OF THE PROPERTY.

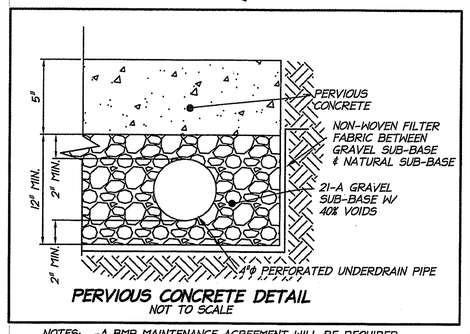
10. NO INCREASE IN RUNOFF IS PROPOSED ALONG NORTH DONELSON STREET.

11. ALL TREE PROTECTION SHALL BE APPROVED IN-FIELD BY THE CITY ARBORIST PRIOR TO COMMENCEMENT OF ANY SITE DISTURBING ACTIVITES.

12. ALL PROPOSED UTILITIES SHALL BE PLACED UNDERGROUND.



PVC UNDERDRAIN TRENCH DETAIL
NOT TO SCALE



PERVIOUS CONCRETE DETAIL
NOT TO SCALE

NOTES: -A BMP MAINTENANCE AGREEMENT WILL BE REQUIRED FOR PERVIOUS CONCRETE.
-4" UNDERDRAINS SHALL ALL BE SOLID PIPE ONCE THE PIPE EXITS THE AREAS OF PERVIOUS CONCRETE.
-THE ULITMATE LOCATIONS OF UNDERDRAINS MAY BE FIELD ADJUSTED AS NECESSARY WITH THE SITE INSPECTOR.

APPROVED ASBUILT
DEVELOPMENT SITE PLAN NO. 2004-0038
DEPARTMENT OF TRANSPORTATION & ENVIRONMENTAL SERVICES
DIRECTOR — DATE 2.22.16
SPECIAL USE PERMIT

COMMONWEALTH OF VIRGINIA
11-22-10
KEVIN D. VAUGHN
Lic. No. 1806
LAND SURVEYOR
AS-BUILT CERTIFIED CORRECT

ESI PEER REVIEW

APPROVED
DEVELOPMENT SITE PLAN NO.
DEPARTMENT OF PLANNING & ZONING
DIRECTOR — DATE
DEPARTMENT OF TRANSPORTATION & ENVIRONMENTAL SERVICES
SITE PLAN NO. 2004-0038
DIRECTOR — DATE
CHAIRMAN, PLANNING COMMISSION — DATE
DATE RECORDED
INSTRUMENT NO. — DEED BOOK NO. — PAGE NO.

LAND DESIGN CONSULTANTS
PLAN FOR SUCCESS
www.ldc-va.com
8599-E SUDLEY ROAD, MANASSAS, VIRGINIA 20110
PH: 703.631.8387 FX: 703.631.9414

GRADING PLAN
AS-BUILT

TAFT AVENUE PROPERTY

CITY OF ALEXANDRIA, VIRGINIA

DATE	DESIGN NO.	DESCRIPTION	REVIEW BY	APPROVED	DATE
12.30.08	SP07-0018	1. PERVIOUS CONC. IN DWK. REVISED STREAM BEST.			
		ACCESS & ADDL. SIDEWALKS			
6.6.10	1 REPLACE	2. ADD PRIVATE UNDERDRAINS			
11.8.10	2 REPLACE	2A. PERVIOUS CONCRETE DWKS			

REVISION APPROVED BY:
ENGINEER

I HEREBY CERTIFY THAT OTHER THAN THE REVISIONS SHOWN HEREON, NO OTHER CHANGES HAVE BEEN MADE.

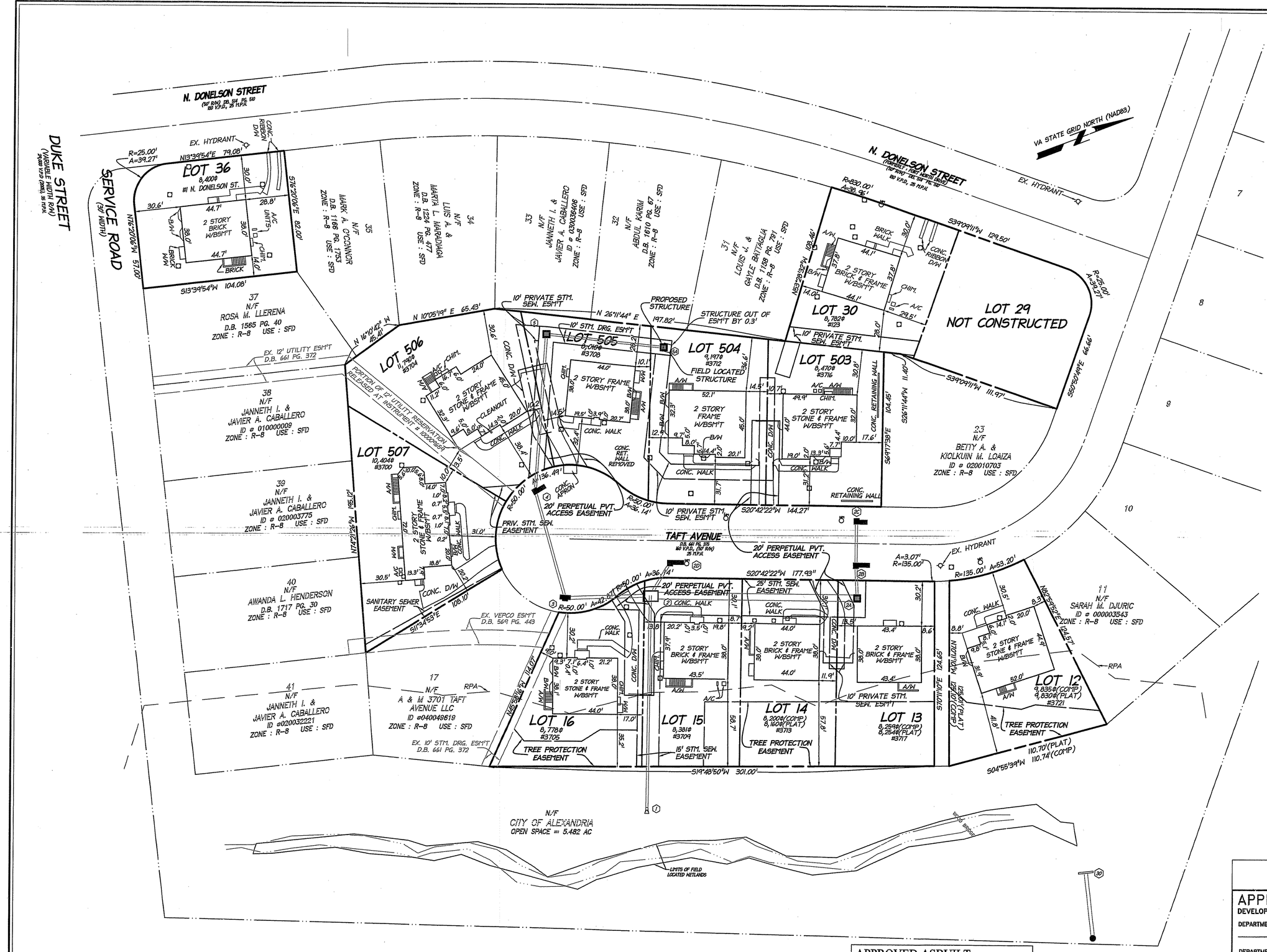
COMMONWEALTH OF VIRGINIA
JOSHUA MARSHALL
No. 40658
PROFESSIONAL ENGINEER

SCALE: 1"=20'

SHEET 4 OF 14

DATE: MARCH, 2007
DRAFT: RP
CHECK: MM
FILE NUMBER: 04126-1-0-35B
2004-0038

P:\PY2004\04126-1-0 CITY OF ALEXANDRIA\ENG\SUBPLAN\04126GP.dwg



AS-BUILT DATA

BUILDING HEIGHTS

LOT 12	28.39'
LOT 13	28.94'
LOT 14	30.04'
LOT 15	27.95'
LOT 16	30.61'
LOT 29	NOT BUILT
LOT 30	27.97'
LOT 36	28.00'
LOT 503	26.21'
LOT 504	26.46'
LOT 505	28.61'
LOT 506	28.17'
LOT 507	27.98'

FIRST FLOOR ELEVATIONS

LOT 12	112.50'
LOT 13	109.55'
LOT 14	109.53'
LOT 15	104.56'
LOT 16	104.40'
LOT 29	NOT BUILT
LOT 30	110.68'
LOT 36	92.71'
LOT 503	109.27'
LOT 504	109.04'
LOT 505	104.37'
LOT 506	104.46'
LOT 507	102.67'

OPEN SPACE TABULATIONS:

LOT	LOT AREA	LOT AREA (%)
36	8,400 SF	5,160 SF (61%)
30	8,782 SF	5,[illegible] SF (64%)
29	9,294 SF	5,900 SF (63%)
503	8,470 SF	5,500 SF (65%)
504	9,203 SF	5,800 SF (63%)
505	8,016 SF	5,000 SF (62%)
506	11,790 SF	8,400 SF (71%)
507	10,404 SF	6,648 SF (64%)
16	8,778 SF	5,643 SF (64%)
15	8,381 SF	5,300 SF (63%)
14	8,200 SF	5,300 SF (65%)
13	8,259 SF	5,400 SF (65%)
12	9,835 SF	6,430 SF (65%)
EX. PUBLIC PARK	5.482 AC	--------

LEGEND

B/W	BAY WINDOW
A/C	AIR CONDITIONER
W/W	WINDOW WELL
□	CLEANOUT
♂	WATER METER

COMMONWEALTH OF VIRGINIA
11-22-10
KEVIN D. VAUGHN
Lic. No. 1508
LICENSED LAND SURVEYOR

AS-BUILT CERTIFIED CORRECT

NOTES

1. THE PROPERTIES SHOWN HEREON ARE ZONED R-8.

APPROVED ASBUILT

DEVELOPMENT SITE PLAN NO. 2004-0038

DEPARTMENT OF TRANSPORTATION & ENVIRONMENTAL SERVICES

DIRECTOR — DATE 2.22.16

SPECIAL USE PERMIT

GRAPHIC SCALE

30 15 0 30 60

1" = 30'

ESI PEER REVIEW

APPROVED

DEVELOPMENT SITE PLAN NO.

DEPARTMENT OF PLANNING & ZONING

DIRECTOR — DATE

DEPARTMENT OF TRANSPORTATION & ENVIRONMENTAL SERVICES
SITE PLAN NO. 2004-0038

DIRECTOR — DATE

CHAIRMAN, PLANNING COMMISSION — DATE

DATE RECORDED

INSTRUMENT NO. — DEED BOOK NO. — PAGE NO.

LAND DESIGN CONSULTANTS
PLAN FOR SUCCESS
WWW.LDC-VA.COM
9401 CENTREVILLE ROAD, SUITE 300
MANASSAS, VIRGINIA 20110
PH: 703-257-5600 FX: 703-257-5656

AS-BUILT PLAN
AS-BUILT

TAFT AVENUE PROPERTY

CITY OF ALEXANDRIA, VIRGINIA

DATE	DESIGN NO.	DESCRIPTION	REVIEW BY:	APPROVED	DATE

REVISION APPROVED BY:

ENGINEER

I HEREBY CERTIFY THAT OTHER THAN THE REVISIONS SHOWN HEREON, NO OTHER CHANGES HAVE BEEN MADE.

SCALE: 1"=30'

SHEET 5 OF 14

DATE: NOVEMBER, 2010

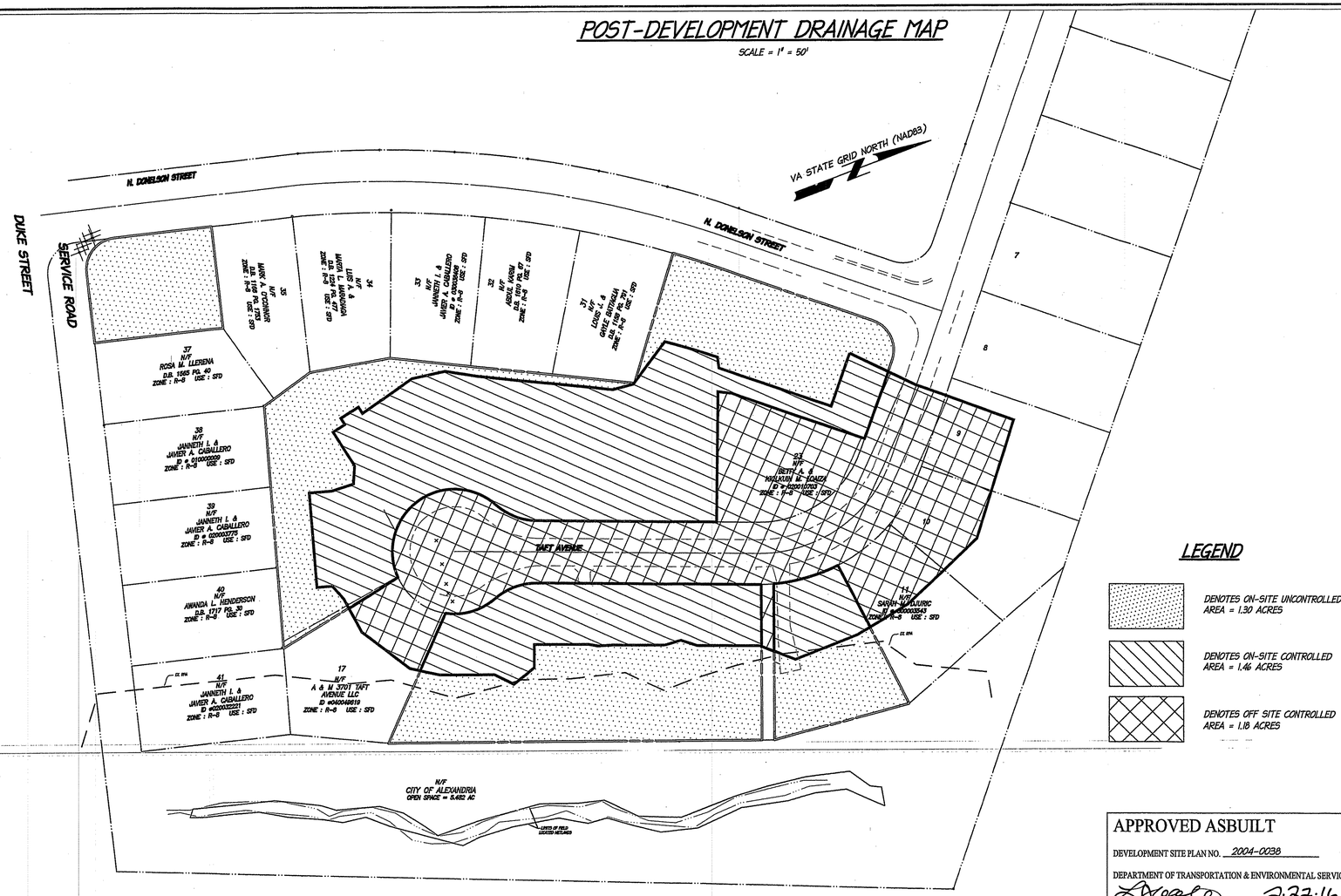
DRAFT: SCF — CHECK: KDV

FILE NUMBER: 04126-1-0 126 2004-0038

P:\PY 2004\04126-1-0 City of Alexandria\SURVEY\ASBUILT\05-ASBUILT.DWG

POST-DEVELOPMENT DRAINAGE MAP

SCALE = 1" = 50'



LEGEND

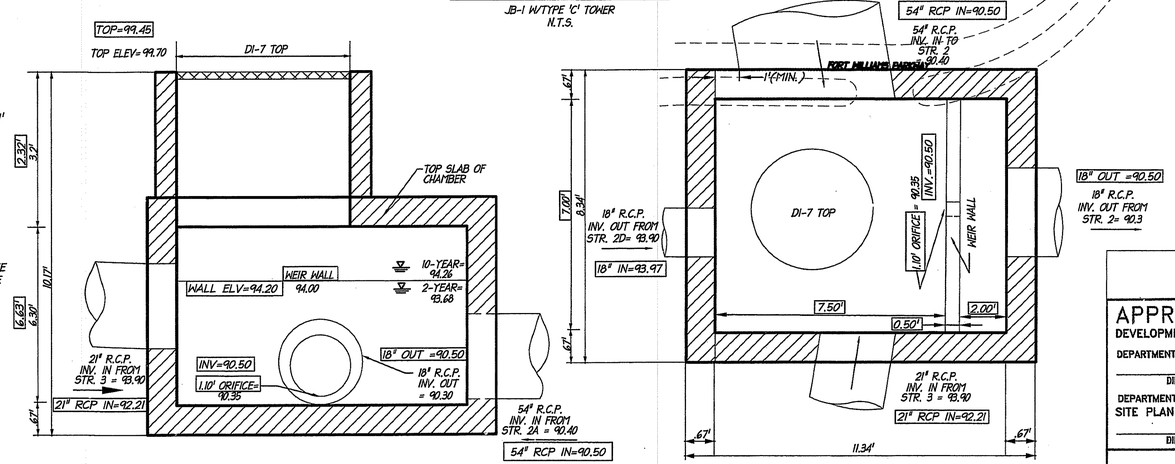
- DENOTES ON-SITE UNCONTROLLED AREA = 1.30 ACRES
- DENOTES ON-SITE CONTROLLED AREA = 1.46 ACRES
- DENOTES OFF SITE CONTROLLED AREA = 1.18 ACRES

NOTES

1. STAIRS ARE TO BE PROVIDED WITHIN ALL ACCESS STRUCTURES. THESE STAIRS SHALL BE PROVIDED 1' ON CENTER AND SHOULD BE LOCATED ALONG AN INTERIOR WALL AT THE DISCRETION OF THE MANUFACTURER.
2. INTERNAL SHAPING SHALL BE PROVIDED IN ACCORDANCE WITH THE APPLICABLE VDOT STANDARDS (IS-1).
3. THIS STRUCTURE SHALL BE MAINTAINED BY THE HOA.
4. THE RATIONAL METHOD WAS UTILIZED TO GENERATE THE HYDROLOGY AND THE HYDRAULICS UTILIZE THE WEIR AND ORIFICE EQUATIONS AND PONDPACK FOR THE ROUTINGS.

STRUCTURE # 2 DETAIL

JB-1 W/TYPE 'C' TOWER
N.T.S.



APPROVED ASBUILT

DEVELOPMENT SITE PLAN NO. 2004-0038

DEPARTMENT OF TRANSPORTATION & ENVIRONMENTAL SERVICES

DIRECTOR 2.22.16 DATE

SPECIAL USE PERMIT

COMMONWEALTH OF VIRGINIA
11-22-10
KEVIN D. VAUGHN
Lic. No. 1508
LAND SURVEYOR

AS-BUILT CERTIFIED CORRECT

ESI PEER REVIEW

APPROVED

DEVELOPMENT SITE PLAN NO.

DEPARTMENT OF PLANNING & ZONING

DIRECTOR DATE

DEPARTMENT OF TRANSPORTATION & ENVIRONMENTAL SERVICES

SITE PLAN NO. 2004-0038

DIRECTOR DATE

CHAIRMAN, PLANNING COMMISSION DATE

DATE RECORDED

INSTRUMENT NO. DEED BOOK NO. PAGE NO.

LAND DESIGN CONSULTANTS
PLAN FOR SUCCESS
WWW.LDC-VA.COM
8569-E SUDLEY ROAD MANASSAS, VIRGINIA 20110
PH: 703.631.8387 FX: 703.631.9414

AS-BUILT
S.W.M.
COMPUTATIONS

TAFT AVENUE PROPERTY

CITY OF ALEXANDRIA, VIRGINIA

DATE	DESIGN NO.	DESCRIPTION	REVIEW BY	APPROVED	DATE

ENGINEER: REVISION APPROVED BY:

I HEREBY CERTIFY THAT OTHER THAN THE REVISIONS SHOWN HEREON, NO OTHER CHANGES HAVE BEEN MADE.

COMMONWEALTH OF VIRGINIA
JOSHUA MARSHALL
No. 40658
PROFESSIONAL ENGINEER

SCALE: AS NOTED

SHEET 6 OF 14

DATE: MARCH, 2007

DRAFT: RP CHECK: MTM

FILE NUMBER: 0-126-1-0-35B 2004-0038

P:\PY 2004\04126-1-0 CITY OF ALEXANDRIA\ENG\SUBPLAN\04126DEI.dwg

DRAINAGE COMPUTATIONS

PRE-DEVELOPMENT SITE CONDITIONS:
RATIONAL FORMULA: Q = CIA
AREA = 2.70 ACRES
EX. IMPERVIOUS AREA= 0.75 AC. (C=0.9)
EX. YARD AREA= 1.95 AC. (C=0.35)
C_N= (0.75)(0.9)+(1.95)(0.35)/2.70
C_N= 1.36/2.70
C_N= 0.50
t_c = 5 min. ——→ I_2= 6.15 in/hr.
I_{10}= 9.05 in/hr.

2 YEAR PRE-DEVELOPMENT
Q_2= (0.50)(6.15)(2.70) = 8.30 CFS

10 YEAR PRE-DEVELOPMENT
Q_{10}= (0.50)(9.05)(2.70) = 12.22 CFS

POST-DEVELOPMENT SITE CONDITIONS:
RATIONAL FORMULA: Q = CIA
AREA = 2.70 ACRES
PROP. IMPERVIOUS AREA= 0.90 AC. (C=0.90)
PROP. YARDS AREA= 1.80 AC. (C=0.35)
C_N= (0.90)(0.9)+(1.80)(0.35)/2.70
C_N= 1.44/2.70
C_N= 0.53
t_c = 5 min. ——→ I_2= 6.15 in/hr.
I_{10}= 9.05 in/hr.

2 YEAR POST-DEVELOPMENT
Q_2= (0.53)(6.15)(2.70) = 8.80 CFS

10 YEAR POST-DEVELOPMENT
Q_{10}= (0.53)(9.05)(2.70) = 12.95 CFS

PROP. INCREASE IN RUNOFF:
Q_2= 8.80 - 8.30 = 0.50 CFS
Q_{10}= 12.95 - 12.22 = 0.73 CFS

PROP. UNCONTROLLED RUNOFF
AREA = 1.30 ACRES
C_N= 0.60

2 YEAR POST-DEVELOPMENT
Q_2= (0.60)(6.15)(1.30) = 4.80 CFS

10 YEAR POST-DEVELOPMENT
Q_{10}= (0.60)(9.05)(1.30) = 7.06 CFS

REPRESENTS RUNOFF WHICH DOES NOT DRAIN TO THE PROPOSED UNDERGROUND FACILITY (UNCONTROLLED).

OFFSITE RUNOFF
AREA = 1.18 ACRES
EX. IMPERVIOUS AREA= 0.85 AC. (C=0.90)
EX. YARD AREA= 0.33 AC. (C=0.35)
C_N= (0.85)(0.90)+(0.33)(0.35)/1.18
C_N= 0.88/1.18
C = 0.75

2 YEAR POST-DEVELOPMENT
Q_2= (0.75)(6.15)(1.18) = 5.44 CFS

10 YEAR POST-DEVELOPMENT
Q_{10}= (0.75)(9.05)(1.18) = 8.01 CFS

REPRESENTS RUNOFF WHICH DRAINS TO THE PROPOSED UNDERGROUND FACILITY

POST-DEVELOPMENT REDUCTION
2 YEAR:
Q_2= (0.53)(6.15)(2.70) = 8.80 x (1-.10) = 7.92 CFS (10% REDUCTION)
10 YEAR:
Q_{10}= (0.53)(9.05)(2.70) = 12.95 x (1-0.10) = 11.65 CFS (10% REDUCTION)

ALLOWED RELEASE RATE FROM UNDERGROUND FACILITY
PRE-DEVELOPMENT - UNCONTROLLED + OFFSITE = ALLOWED RELEASE RATE
Q_2= 8.30-4.80+5.44 = 8.94 CFS (7.72 CFS PROVIDED)
Q_{10}= 12.22-7.06+8.01 = 13.17 CFS (11.30 CFS PROVIDED)

TOTAL INFLOW TO PROPOSED FACILITY
AREA = 2.64 ACRES
OFF-SITE AREA = 1.18 AC.
ON-SITE AREA = 1.46 AC.
C_N = 1.66 / 2.58 ——— (SEE SHEET 9 FOR SUB-AREA 'CA' VALUES)
C_N = 0.63

2 YEAR:
Q_2= (0.63)(6.15)(2.64) = 10.21 CFS

10 YEAR:
Q_{10}= (0.63)(9.05)(2.64) = 15.02 CFS

POND VOLUME

Elevation (ft)	Planimeter (sq.in.)	Area (sq.ft)	A1+A2+sqr(A1*A2) (sq.ft)	Volume (cubic-ft)	Volume Sum (cubic-ft)
90.40	0.00	0	0	0	0
91.50	1.70	1,530	1,530	561	561
92.60	0.00	0	1,542	565	1,126
93.70	1.65	1,485	1,497	549	1,675
94.9	.000010	0	1,489	546	2271

2 YEAR OUTFLOW HYDROGRAPH

GIVEN POND DATA

ELEVATION (ft)	OUTFLOW (cfs)	STORAGE (cu-ft)
90.4	0	0
90.6	0	3
90.8	0	27
91	0	91
91.2	0	216
91.4	0	422
91.6	4	700
91.8	4.5	907
92	4.9	1,033
92.2	5.3	1,098
92.4	5.7	1,123
92.6	6.1	1,126
92.8	6.4	1,130
93	6.7	1,150
93.2	7	1,203
93.4	7.3	1,306
93.6	7.6	1,475
93.8	7.9	1,725
94	8.1	1,972
94.2	10.2	2,130
94.4	13.9	2,219
94.6	18.5	2,259
94.8	19.1	2,270
94.9	19.4	2,271

INTERMEDIATE ROUTING COMPUTATIONS

2S/t (cfs)	2S/t + O (cfs)
0	0
0	0
0.2	0.2
0.6	0.6
1.4	1.4
2.8	2.8
4.7	8.7
6	10.5
6.9	11.8
7.3	12.6
7.5	13.2
7.5	13.6
7.5	13.9
7.7	14.4
8	15
8.7	16
9.8	17.4
11.5	19.4
13.1	21.2
14.2	24.4
14.8	28.7
15.1	33.6
15.1	34.2
15.1	34.5

INFLOW HYDROGRAPH

TIME (min)	INFLOW (cfs)
0	0
5	10.21
10	6.64
15	4.98
20	3.98
25	3.32
30	2.66
35	2.32
40	1.99
45	1.66

ROUTING COMPUTATIONS

I1+I2 (cfs)	2S/t - O (cfs)	2S/t + O (cfs)	OUTFLOW (cfs)	ELEVATION (ft)
-----	0	0	0	90.4
10.2	1.4	10.2	4.41	91.76
16.9	2.8	18.2	7.72	93.68
11.6	1	14.4	6.72	93.01
9	1.3	9.9	4.34	91.73
7.3	0.7	8.6	3.92	91.6
6	1.4	6.7	2.65	91.53
5	1.5	6.4	2.43	91.52
4.3	1.7	5.8	2.05	91.5
3.7	1.9	5.4	1.74	91.49

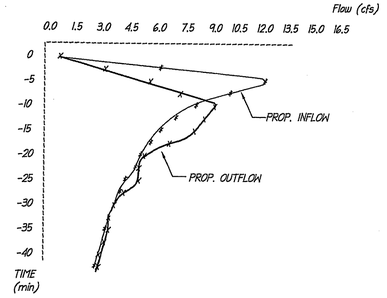
Summary of Peak Outflow and Peak Elevation

Peak Inflow = 10.21 cfs = (2.64)(6.15)(0.63) (A)(I2)(C)
Peak Outflow = 7.72 cfs
Peak Elevation = 93.68 ft

Summary of Approximate Peak Storage

Initial Storage = 0 cu-ft
Peak Storage From Storm = 1,577 cu-ft

Total Storage in Pond = 1,577 cu-ft



10 YEAR OUTFLOW HYDROGRAPH

GIVEN POND DATA

ELEVATION (ft)	OUTFLOW (cfs)	STORAGE (cu-ft)
90.4	0	0
90.6	0	3
90.8	0	27
91	0	91
91.2	0	216
91.4	0	422
91.6	4	700
91.8	4.5	907
92	4.9	1,033
92.2	5.3	1,098
92.4	5.7	1,123
92.6	6.1	1,126
92.8	6.4	1,130
93	6.7	1,150
93.2	7	1,203
93.4	7.3	1,306
93.6	7.6	1,475
93.8	7.9	1,725
94	8.1	1,972
94.2	10.2	2,130
94.4	13.9	2,219
94.6	18.5	2,259
94.8	19.1	2,270
94.9	19.4	2,271

INTERMEDIATE ROUTING COMPUTATIONS

2S/t (cfs)	2S/t + O (cfs)
0	0
0	0
0.2	0.2
0.6	0.6
1.4	1.4
2.8	2.8
4.7	8.7
6	10.5
6.9	11.8
7.3	12.6
7.5	13.2
7.5	13.6
7.5	13.9
7.7	14.4
8	15
8.7	16
9.8	17.4
11.5	19.4
13.1	21.2
14.2	24.4
14.8	28.7
15.1	33.6
15.1	34.2
15.1	34.5

INFLOW HYDROGRAPH

TIME (min)	INFLOW (cfs)
0	0
5	15.02
10	9.63
15	6.97
20	5.48
25	4.81
30	4.15
35	3.32
40	2.99
45	2.66

ROUTING COMPUTATIONS

I1+I2 (cfs)	2S/t - O (cfs)	2S/t + O (cfs)	OUTFLOW (cfs)	ELEVATION (ft)
-----	0	0	0	90.4
15	1	15	7	93.2
24.7	3.1	25.7	11.3	94.26
16.6	3.8	19.7	7.93	93.83
12.5	1.6	16.3	7.35	93.44
10.3	2	11.8	4.93	92.01
9	1.7	10.9	4.63	91.86
7.5	0.9	9.2	4.13	91.65
6.3	1.2	7.2	3	91.55
5.7	1.3	6.9	2.76	91.54

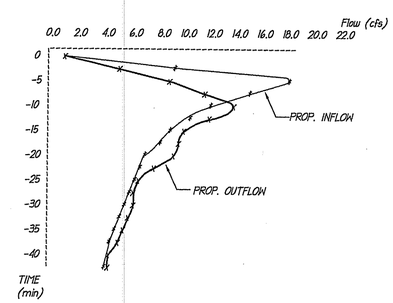
Summary of Peak Outflow and Peak Elevation

Peak Inflow = 15.02 cfs = (2.64)(9.05)(0.63) (A)(I2)(C)
Peak Outflow = 11.30 cfs
Peak Elevation = 94.26 ft

Summary of Approximate Peak Storage

Initial Storage = 0 cu-ft
Peak Storage From Storm = 2,156 cu-ft

Total Storage in Pond = 2,156 cu-ft



COMPOSITE OUTFLOW SUMMARY

COMPOSITE OUTFLOW SUMMARY

Elevation (ft)	Q (cfs)	Contributing Structures
90.40	0.0	
90.60	0.0	
90.80	0.0	
91.00	0.0	
91.20	0.0	
91.40	0.0	
91.60	4.0	1
91.80	4.5	1
92.00	4.9	1
92.20	5.3	1
92.40	5.7	1
92.60	6.1	1
92.80	6.4	1
93.00	6.7	1
93.20	7.0	1
93.40	7.3	1
93.60	7.6	1
93.80	7.9	1
94.00	8.1	1 +2
94.20	10.2	1 +2
94.40	13.9	1 +2
94.60	18.5	1 +2
94.80	19.1	3

##########################
SYSTEM CONNECTIVITY
##########################

Structure	No.	Q Table		Q Table
ORIFICE-VC	1		->	1
WEIR-VR	2	+ 1	->	A
CULVERT-CR	3	? A	->	B

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

ORIFICE-VC
Orifice - Vertical Circular

E1 elev.(ft)	91.50
E2 elev.(ft)	94.9
Orifice coeff.	.6
Invert elev.(ft)	90.3
Datum elev.(ft)	90.850
Diameter (ft)	1.10

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

WEIR-VR
Weir - Vertical Rectangular

E1 elev.(ft)	90.4
E2 elev.(ft)	94.9
Weir coefficient	3
Weir elev.(ft)	94.0
Length (ft)	7
Contracted/Suppressed (C/S)	C

>>>>>> Structure No. 3 <<<<<<
(Input Data)

CULVERT-CR
Circular Culvert (With Inlet Control)

E1 elev.(ft)	93.0
E2 elev.(ft)	96.32
Diam. (ft)	1.5
Inv. el.(ft)	90.3
Slope (ft/ft)	.0160
T1 ratio	
T2 ratio	
K Coeff.	.0078
M Coeff.	2
c Coeff.	.0292
Y Coeff.	.74
Form 1 or 2	1
Slope factor	-.5

STORMWATER MANAGEMENT NARRATIVE

THE STORM WATER QUANTITY REQUIREMENTS HAVE BEEN SATISFIED VIA THE CONSTRUCTION OF AN UNDERGROUND, CLOSED STORM WATER MANAGEMENT FACILITY. THIS FACILITY CONSISTS OF A SERIES OF STRUCTURES AND 54" CONCRETE PIPE WHICH IS CONTROLLED BY A WEIR WALL AND LOW FLOW ORIFICE (STRUCTURE #2). THIS FACILITY CONTROLS 2 YEAR, 10 YEAR RAINFALL EVENTS AND PASSES THE 100 YEAR STORM. THE UNDERGROUND FACILITY SHALL BE MAINTAINED BY THE HOMEOWNERS ASSOCIATION. APPROPRIATE EASEMENTS HAVE BEEN PROVIDED IN ORDER TO FACILITATE THE SAID INSPECTION AND MAINTENANCE BY THE CITY.

THE PRE & POST DEVELOPMENT COMPUTATIONS PROVIDED HEREIN DEMONSTRATE THAT NO ADVERSE DOWNSTREAM IMPACTS SHALL OCCUR AS A RESULT OF THE CONSTRUCTION OF THE PROPOSED DEVELOPMENT.

WATER QUALITY NARRATIVE

THIS APPLICATION SHALL SATISFY THE PERTINENT WATER QUALITY REQUIREMENTS VIA THE RESTORATION AND REVEGETATION OF THE RESOURCE PROTECTION AREA AND STREAM WHICH IS LOCATED DUE EAST OF THE SUBJECT PROPERTY. TRANSPORTATION AND ENVIRONMENTAL SERVICES HAS GENERALLY CONCURRED THAT THIS STREAM RESTORATION PLAN IS ACCEPTABLE AND THAT WATER QUALITY CREDIT SHALL BE PROVIDED FOR THESE IMPROVEMENTS IN LIEU OF CONSTRUCTION OF ANY ONSITE, STRUCTURAL FACILITIES. A WATER QUALITY VOLUME COMPUTATION IS PROVIDED HEREIN; PLEASE REFER TO JANUARY 31, 2007 LETTER FROM RICHARD BAIER ON SHEET 2.

WATER QUALITY VOLUME

WQV = 1816* I_A

WHERE; I = PROPOSED IMPERVIOUS SITE AREA (Ac.)
WQV = WATER QUALITY VOLUME (ft^3)
WQV = 1816 * 0.90 = 1,634 ft^3

COMMONWEALTH OF VIRGINIA
11-22-10
KEVIN D. VAUGHN
Lic. No. 1508
LAND SURVEYOR
AS-BUILT CERTIFIED CORRECT

APPROVED ASBUILT
DEVELOPMENT SITE PLAN NO. 2004-0038
DEPARTMENT OF TRANSPORTATION & ENVIRONMENTAL SERVICES
DIRECTOR — DATE 2.22.16
SPECIAL USE PERMIT

ESI PEER REVIEW

APPROVED
DEVELOPMENT SITE PLAN NO.
DEPARTMENT OF PLANNING & ZONING
DIRECTOR — DATE
DEPARTMENT OF TRANSPORTATION & ENVIRONMENTAL SERVICES
SITE PLAN NO. 2004-0038
DIRECTOR — DATE
CHAIRMAN, PLANNING COMMISSION — DATE
DATE RECORDED
INSTRUMENT NO. — DEED BOOK NO. — PAGE NO.

LAND DESIGN CONSULTANTS
PLAN FOR SUCCESS
www.ldc-va.com
8569-E SUDLEY ROAD MANASSAS, VIRGINIA 20110
PH: 703.631.8387 FX: 703.631.8414

AS-BUILT
S.W.M.
COMPUTATIONS

TAFT AVENUE PROPERTY
CITY OF ALEXANDRIA, VIRGINIA

DATE	DESIGN	NO.	DESCRIPTION	REVIEW BY	APPROVED	DATE

REVISION APPROVED BY:
ENGINEER

I HEREBY CERTIFY THAT OTHER THAN THE REVISIONS SHOWN HEREON, NO OTHER CHANGES HAVE BEEN MADE.

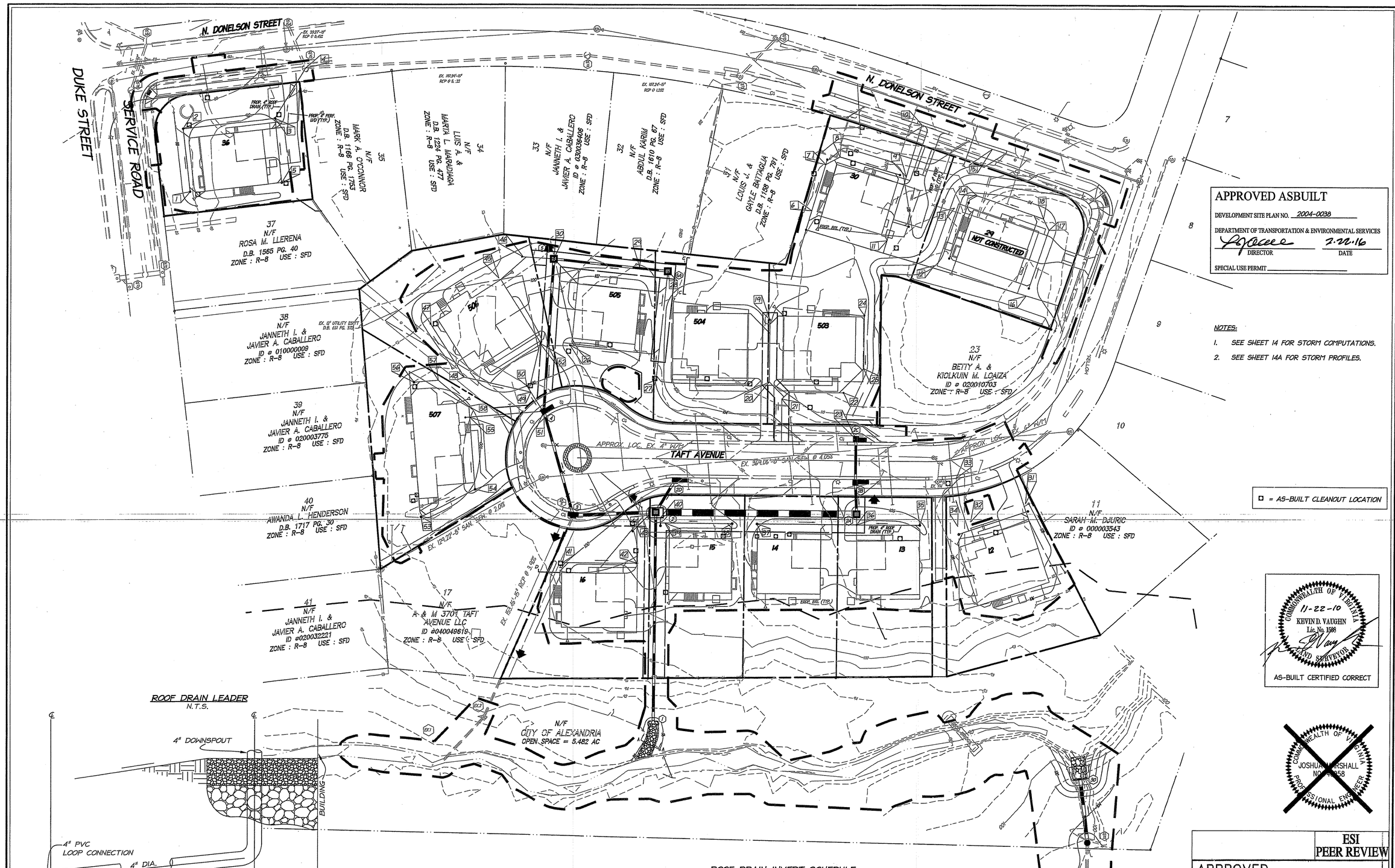
COMMONWEALTH OF VIRGINIA
JOSHUA MARSHALL
No. 046158
PROFESSIONAL ENGINEER

SCALE: N/A

SHEET 7 OF 14

DATE: MARCH, 2007
DRAFT: RP
CHECK: MTM
FILE NUMBER: 04126-1-0-36B 2004-0038

P:\PY 2004\04126-1-0 CITY OF ALEXANDRIA\ENG\SUBPLAN\04126DE1.dwg



APPROVED ASBUILT

DEVELOPMENT SITE PLAN NO. 2004-0038

DEPARTMENT OF TRANSPORTATION & ENVIRONMENTAL SERVICES

DIRECTOR — DATE 2.22.16

SPECIAL USE PERMIT

NOTES:

1. SEE SHEET 14 FOR STORM COMPUTATIONS.
2. SEE SHEET 14A FOR STORM PROFILES.

COMMONWEALTH OF VIRGINIA
11-22-10
KEVIN D. VAUGHN
Lic. No. 1508
LAND SURVEYOR

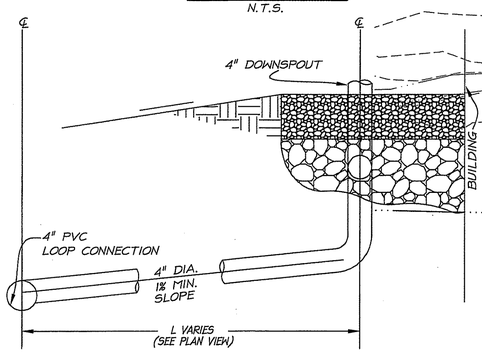
AS-BUILT CERTIFIED CORRECT

COMMONWEALTH OF VIRGINIA
JOSHUA MARSHALL
PROFESSIONAL ENGINEER

COMMONWEALTH OF VIRGINIA
JOHN L. MARSHALL
LAND SURVEYOR

ROOF DRAIN LEADER

N.T.S.



NOTES:

1. ROOF DRAIN LEADERS/LOOP CONNECTIONS SHALL BE CONSTRUCTED ON A CONTINUOUS GRADE W/ NO SUMPS. THE MINIMUM SLOPE SHALL BE 1.0%. (SEE SCHEDULE FOR INVERTS)
2. ALL ROOF DRAIN LEADERS SHALL BE 4" DIA AND SCH 40 PVC.
3. PROVIDE CLEAN-OUTS AS SHOWN ON PLAN VIEW.

ROOF DRAIN INVERT SCHEDULE

BEND #	INVERT ELEV.	BEND #	INVERT ELEV.	BEND #	INVERT ELEV.	BEND #	INVERT ELEV.	BEND #	INVERT ELEV.
1	86.00	14	110.00	26	100.00	38	100.00	50	96.35
2	87.50	15	106.80	27	98.50	39	97.50	51	96.00
3	87.00	16	112.30	28	99.00	40	97.00	52	99.00
4	86.00	17	111.80	29	98.85	41	98.00	53	97.65
5	88.00	18	111.70	30	97.00	42	97.40	54	97.20
6	107.00	19	105.50	31	107.60	43	97.15	55	96.50
7	106.50	20	104.60	32	107.15	44	97.00	56	97.20
8	106.40	21	104.50	33	107.45	45	97.40	57	97.00
9	105.90	22	104.00	34	107.30	46	97.00	58	96.70
10	103.50	23	103.00	35	103.00	47			
11	107.10	24	106.00	36	100.75	48			
12	111.00	25	105.50	37	101.50	49			
13	110.50								

ESI PEER REVIEW

APPROVED

DEVELOPMENT SITE PLAN NO.

DEPARTMENT OF PLANNING & ZONING

DIRECTOR — DATE

DEPARTMENT OF TRANSPORTATION & ENVIRONMENTAL SERVICES
SITE PLAN NO. 2004-0038

DIRECTOR — DATE

CHAIRMAN, PLANNING COMMISSION — DATE

DATE RECORDED

INSTRUMENT NO. — DEED BOOK NO. — PAGE NO.

LAND DESIGN CONSULTANTS
PLAN FOR SUCCESS
WWW.LDC-VA.COM
8569-E SUDLEY ROAD MANASSAS, VIRGINIA 20110
PH: 703.631.8387 FX: 703.631.9414

AS-BUILT OVERALL STORM & ROOF DRAIN PLAN

TAFT AVENUE PROPERTY

CITY OF ALEXANDRIA, VIRGINIA

DATE	DESIGN NO.	DESCRIPTION	REVIEW BY	APPROVED	DATE

REVISION APPROVED BY:

ENGINEER

I HEREBY CERTIFY THAT OTHER THAN THE REVISIONS SHOWN HEREON, NO OTHER CHANGES HAVE BEEN MADE.

SCALE: 1" = 30'

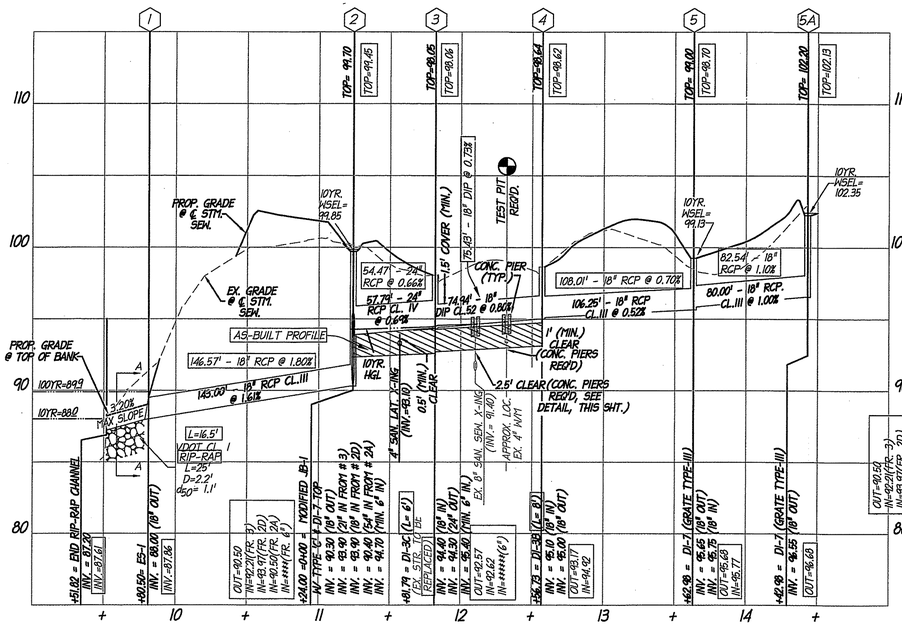
SHEET 8 OF 14

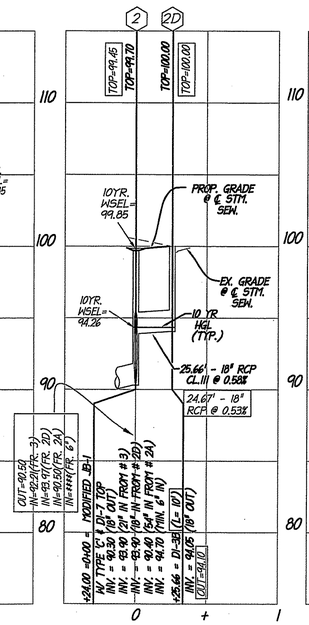
DATE: MARCH, 2007

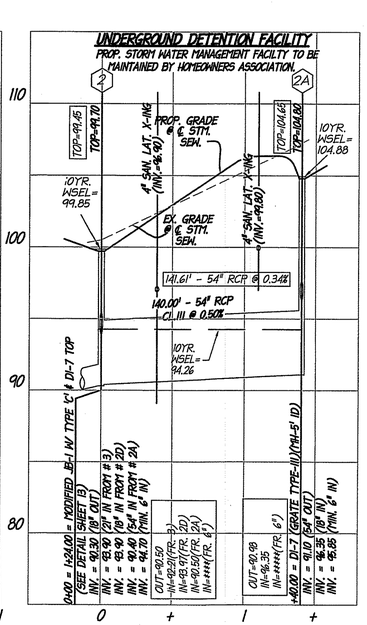
DRAFT: RP — CHECK: MM

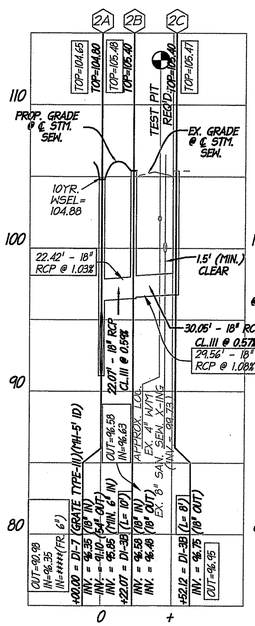
FILE NUMBER: 04126-1-0-35B 2004-0038

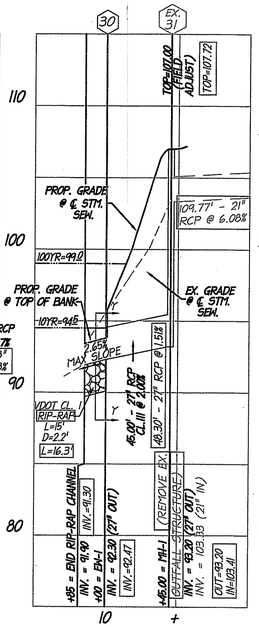
P:\PT 2002\02042-2-9 Glenkirk Estates, Sec. 9\ENG\SUBPLAN\02P2RD.DWG











GENERAL NOTES

1. THE PROPOSED ROOF DRAINS SHALL BE GENERALLY LOCATED IN THE VICINITY AS DEPICTED ON THE GRADING PLAN.
2. ROOF DRAINS SHALL BE CONSTRUCTED ON CONTINUOUS GRADE WITH A MINIMUM SLOPE OF 1% AND 2' COVER. THE LOCATION OF THESE DRAINS MAY BE MODIFIED IN ACCORDANCE WITH FINAL HOUSE SITTINGS.
3. THE STORM WATER COLLECTION SYSTEM IS LOCATED IN THE STRAWBERRY RUN WATERSHED. ALL ON-SITE STORM CURB INLETS AND PUBLIC CURB INLETS LOCATED WITHIN 50' OF THE PROPERTY LINE SHALL BE DULLY MARKED USING STANDARD CITY MARKERS, OR TO THE SATISFACTION OF THE DIRECTOR OF TES (DEQ).
4. THE PROPOSED STORM WATER MANAGEMENT FACILITY SHALL BE MAINTAINED BY THE HOMEOWNERS ASSOCIATION. A SEPARATE MAINTENANCE AGREEMENT WILL BE REQUIRED PRIOR TO ISSUANCE OF CONSTRUCTION PERMIT.
5. SEE SHEET 6-6A FOR PLAN VIEW LOCATION OF THE STORM SEWER.
6. SEE SHEET 14 FOR STORM COMPUTATIONS.

RIP-RAP CHANNEL A-A

SEE SHEET 5 FOR X-SECTION LOCATION IN PLAN VIEW; THIS SHEET FOR PROFILE

INPUT DATA

MANNINGS COEFFICIENT	0.040	
SLOPE	0.03200	FT/FT
LEFT SIDE SLOPE	2.00	H : V
RIGHT SIDE SLOPE	2.00	H : V
BOTTOM WIDTH	5.75	FT
DISCHARGE	11.22	$CFS = Q_{10}$

RESULTS

DEPTH	0.47	FT
FLOW AREA	3.1	FT
WETTED PERIMETER	7.84	FT
TOP WIDTH	7.62	FT
CRITICAL DEPTH	0.46	FT
CRITICAL SLOPE	0.032664	FT/FT
VELOCITY	3.60	$FT/S = V_{10}$
VELOCITY HEAD	0.20	FT
SPECIFIC ENERGY	0.67	FT
FROUDE NUMBER	0.99	
FLOW TYPE	SUB-CRITICAL	

RIP-RAP CHANNEL Y-Y

SEE SHEET 5A FOR X-SECTION LOCATION IN PLAN VIEW; THIS SHEET FOR PROFILE

INPUT DATA

MANNINGS COEFFICIENT	0.040	
SLOPE	0.026500	FT/FT
LEFT SIDE SLOPE	2.00	H : V
RIGHT SIDE SLOPE	2.00	H : V
BOTTOM WIDTH	4.00	FT
DISCHARGE	38.00	$CFS = Q_{10}$

RESULTS

DEPTH	1.16	FT
FLOW AREA	7.3	FT
WETTED PERIMETER	9.18	FT
TOP WIDTH	8.63	FT
CRITICAL DEPTH	1.15	FT
CRITICAL SLOPE	0.026759	FT/FT
VELOCITY	5.20	$FT/S = V_{10}$
VELOCITY HEAD	0.42	FT
SPECIFIC ENERGY	1.58	FT
FROUDE NUMBER	1.00	
FLOW TYPE	SUB-CRITICAL	

EXISTING FIRE FLOW & PRESSURE RESULTS

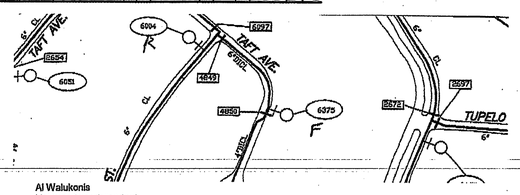
Hydrant Flow Test Summary

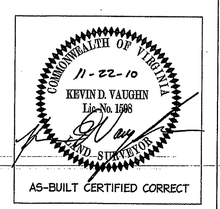
Location: on Donelson at Taft, Alexandria
Date: 4/11/2007
Time: 2:30 PM

		Hydrant #
Flow	1395 gpm	6375
Static	94 psi	6004
Residual	38 psi	

Flow gpm	Residual psi
1792	5
1736	10
1622	20
1368	40
1065	60
660	80
0	94

Al Walukonis
Network Superintendent
Northern Division
Virginia American Water
2225 Duke St.
Alexandria, Virginia 22314
Office 703-706-3863
Email awalukonis@vawc.com

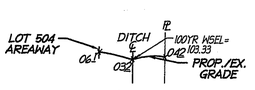




AS-BUILT CERTIFIED CORRECT

100 YR OVERLAND RELIEF COMPUTATION:

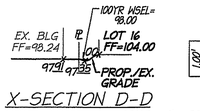
(ASSUMED 100% BLOCKAGE OF STORM SYSTEM)



X-SECTION C-C

SCALE: 1" = 30'

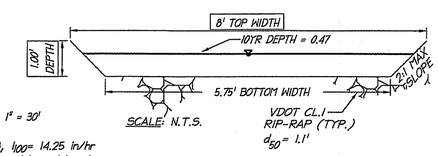
X-SECTION C-C
A= 0.35 AC, C= 0.60, I_{100}= 14.25 in/hr
Q_{100}=1.25CIA = 1.25(0.60)(14.25)(0.35)
= 3.74 cfs
WEIR EQUATION: $Q = CLH^{3/2}$
WEIR COEFFICIENT, C = 3.0
LENGTH, L = LENGTH OF X-SECTION
$H = (Q/CL)^{2/3} = (3.74/3*27.80)^{2/3} = 0.13'$
100 WSE = 103.20 + 0.13 = 103.33



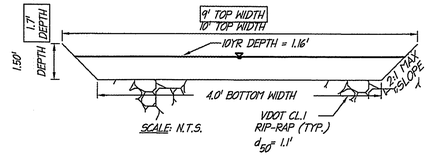
X-SECTION D-D

SCALE: 1" = 30'

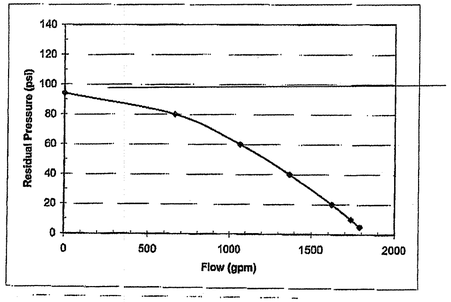
X-SECTION D-D
A= 2.15 AC, C= 0.63, I_{100}= 14.25 in/hr
Q_{100}=1.25CIA = 1.25(0.63)(14.25)(2.15)
= 24.12 cfs
WEIR EQUATION: $Q = CLH^{3/2}$
WEIR COEFFICIENT, C = 3.0
LENGTH, L = LENGTH OF X-SECTION
$H = (Q/CL)^{2/3} = (24.12/3*15.00)^{2/3} = 0.65'$
100 WSE = 97.35 + 0.65 = 98.00

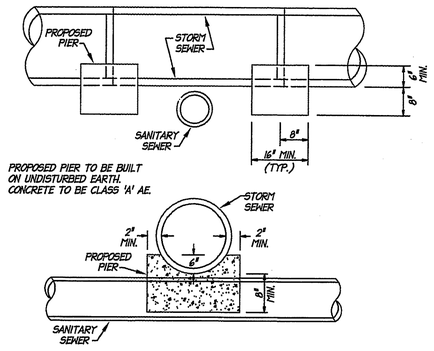


SCALE: N.T.S.



SCALE: N.T.S.





CONCRETE PIER DETAIL

NO SCALE

APPROVED ASBUILT

DEVELOPMENT SITE PLAN NO. 2004-0038

DEPARTMENT OF TRANSPORTATION & ENVIRONMENTAL SERVICES

DIRECTOR — DATE 2-22-16

SPECIAL USE PERMIT _____

ESI PEER REVIEW

APPROVED

DEVELOPMENT SITE PLAN NO. _____

DEPARTMENT OF PLANNING & ZONING

DIRECTOR — DATE

DEPARTMENT OF TRANSPORTATION & ENVIRONMENTAL SERVICES
SITE PLAN NO. 2004-0038

DIRECTOR — DATE

CHAIRMAN, PLANNING COMMISSION — DATE

DATE RECORDED _____

INSTRUMENT NO. — DEED BOOK NO. — PAGE NO.

STORM SEWER INLET DESIGN COMPUTATIONS: TAFT AVENUE PROPERTY - SF UNITS

DESIGN STORM: 10 YR

INLET NO.	TYPE	LENGTH (FT)	STATION	DRAINAGE AREA (A)	C	CA INC.	CA CUM.	I RAINFALL (IN/HR)	Q INCR. (CFS)	Qb CARRYOVER (CFS)	Qt GUTTER FLOW (CFS)	S GUTTER SLOPE (FT/FT)	PVMT CROSS SLOPE (FT/FT)	Sx CROSS SLOPE (FT/FT)	T SPREAD (FT)	W (FT)	W/T	Sw GUTTER CROSS SLOPE (FT/FT)	Sw/Sx	Eo	a = 12W(Sw-Sx) + Local Depression	Sw=a/(12W)	Se=Sx+SW(Eo) (FT/FT)	LT COMPUTED LENGTH, LT (FT)	E EFFICIENCY	Qi INTERCEPTED (CFS)	Qb CARRYOVER (CFS)	Sag Inlets Only d (FT)	h (FT)	d/h	T, SPREAD @ SAG (FT)
2C	DI-3B	8		0.30	0.50	0.15	0.15	9.05	1.36	0.00	1.36	0.0500		0.0208	4.10	2.00	0.49	0.0833	4.01	0.92	3.50	0.146	0.155	11.5	0.88	1.20	0.16				
4	DI-3B	8		0.50	0.68	0.34	0.34	9.05	3.08	0.16	3.24	0.0100		0.0208	8.50	2.00	0.24	0.0833	4.01	0.69	3.50	0.146	0.122	11.8	0.67	2.81	0.42				
2B	DI-3B	10		0.50	0.68	0.34	0.34	9.05	3.08	0.00	3.08	0.0500		0.0208	5.80	2.00	0.34	0.0833	4.01	0.83	3.50	0.146	0.141	17.1	0.79	2.44	0.64				
2D	DI-3B	10		0.10	0.80	0.08	0.08	9.05	0.72	0.64	1.36	0.0500		0.0208	3.71	2.00	0.54	0.0833	4.01	0.95	3.50	0.146	0.160	11.3	0.98	1.33	0.03				
			L	0.15	0.78	0.12	0.12	9.05	1.06	0.42	1.48	0.0100		0.0208	5.90	2.00	0.34	0.0833	4.01	0.83	3.50	0.146	0.142								
3	DI-3C	6	C	0.45	0.78	0.35	0.35	9.05	3.18	0.45	3.63	0.0001		0.0208	N/A	2.00	N/A	0.0833	N/A	N/A	N/A	N/A	N/A	N/A	-	-	-	0.30	0.33	0.91	14.43
			R	0.30	0.78	0.23	0.23	9.05	2.12	0.03	2.15	0.0100		0.0208	6.94	2.00	0.29	0.0833	4.01	0.78	3.50	0.146	0.134								

LAND DESIGN CONSULTANTS
PLAN FOR SUCCESS
www.ldc-va.com
8569-E SUDLEY ROAD, MANASSAS, VIRGINIA 20110
PH: 703.631.8387 FX: 703.631.9414

UTILITY COMPUTATIONS & PROFILES
AS-BUILT

TAFT AVENUE PROPERTY

CITY OF ALEXANDRIA, VIRGINIA

DATE	DESIGN	NO.	DESCRIPTION	REVIEW BY	APPROVED	DATE
			REVISION	APPROVED BY:		
	ENGINEER					

I HEREBY CERTIFY THAT OTHER THAN THE REVISIONS SHOWN HEREON, NO OTHER CHANGES HAVE BEEN MADE.

COMMONWEALTH OF VIRGINIA — JOSHUA MARSHALL No. 40[illegible]58 — PROFESSIONAL ENGINEER

SCALE:
H : 1" = 50'
V: 1" = 5'

SHEET 9 OF 14

DATE: MARCH, 2007
DRAFT: RP
CHECK: MM
FILE NUMBER: 04126-1-35B 2004-0038

P:\PT2004\04126-1-0 CITY OF ALEXANDRIA\ENG\SUBPLAN\04126STM.dwg

STORM SEWER DESIGN COMPUTATIONS: TAFT AVENUE PROPERTY - SF UNITS

FROM	TO	DRAINAGE AREA "A" AC	RUN-OFF COEFF. "C"	CA INC.	CA ADD.	ACCUM.	INLET TIME "Tc" MIN	CORRECTION FACTOR "Tc" MIN	RAINFALL IN/HR	INC. CFS	ADD. CFS	RUNOFF Q(CUM) CFS	DIA. IN	SLOPE FT/FT	LENGTH FT	CAPACITY C.F.S.	VELOCITY FULL FPS	VEL ACTUAL F.P.S.	DEPTH IN
2C	2B	0.30	0.50	0.15	0.00	0.15	5.00	1.00	9.05	1.36	0.00	1.36	18	0.0057	30.05	7.90	4.47	3.38	5.0
2B	2A	0.50	0.68	0.34	0.00	0.49	5.00	1.00	9.05	3.08	0.00	4.43	18	0.0059	22.07	8.06	4.56	4.66	9.4
2A	2	0.09	0.65	0.06	0.49	0.55	5.00	1.00	9.05	0.53	0.00	4.96	54	0.0050	140.00	139.00	8.75	4.13	6.5
2D	2	0.10	0.80	0.08	0.00	0.08	5.00	1.00	9.05	0.72	0.00	0.72	18	0.0058	25.66	8.03	4.55	2.89	3.6
5A	5	0.30	0.46	0.14	0.00	0.14	5.00	1.00	9.05	1.25	0.00	1.25	18	0.0100	80.00	10.50	5.95	4.07	4.1
5	4	0.20	0.57	0.11	0.00	0.11	5.00	1.00	9.05	1.03	0.00	1.03	18	0.0052	106.25	7.55	4.28	3.00	4.3
4	3	0.50	0.68	0.34	0.00	0.45	5.00	1.00	9.05	3.08	0.00	4.11	18	0.0080	74.94	9.40	5.32	5.16	8.3
3	2	0.45	0.78	0.35	0.08	0.89	5.00	1.00	9.05	3.18	0.72	8.01	24	0.0069	57.79	18.81	5.99	5.75	10.8
2	1	0.20	0.70	0.14	0.63	1.65	5.00	1.00	9.05	1.27	5.69	*11.30	18	0.0161	143.50	13.32	-	-	-
EX.31	30	6.00	0.70	4.20	0.00	4.20	5.00	1.00	9.05	38.01	0.00	38.01	27	0.0200	45.00	43.78	11.02	12.41	19.4
NORTH DONELSON STREET - AS-BUILT - SF UNITS																			
EX.15A	EX.15	1.00	0.70	0.70	0.00	0.70	5.00	1.00	9.05	6.34	0.00	6.34	18	0.0845	30.27	30.52	17.29	13.55	5.4
EX.18	EX.17	1.00	0.70	0.70	0.00	0.70	5.00	1.00	9.05	6.34	0.00	6.34	2-15	0.0139	36.74	15.23	6.21	5.96	6.8
EX.17	EX.16	1.00	0.70	0.70	0.00	1.40	5.00	1.00	9.05	6.34	0.00	12.67	15	0.0130	107.24	7.36	6.00	6.00	15.0
EX.16	EX.15	0.50	0.70	0.35	0.70	2.45	5.00	1.00	9.05	3.17	6.34	22.17	15	0.0548	197.39	15.12	12.33	12.33	15.0
EX.15	EX.14	0.50	0.70	0.35	0.00	2.80	5.00	1.00	9.05	3.17	0.00	13.60	30	0.0067	122.50	33.56	6.84	6.50	13.2

* DENOTES 10 YEAR OUTFLOW FROM UNDERGROUND SWM FACILITY, SEE SHEET 12 FOR ROUTINGS!!

STORM SEWER GRATE INLET COMPUTATIONS: TAFT AVENUE - SF UNITS

INLET NO.	AREA (AC)	RUNOFF COEFF.	GRATE INLET	10 YR Q TO INLET (cfs)	10 YR PONDED DEPTH	GRATE ELEV.	10 YR ELEV.
5A	0.30	0.46	DI-7	1.00	0.15	102.20	102.35
5	0.20	0.57	DI-7	0.83	0.13	99.00	99.13
2A	0.09	0.65	DI-7	0.43	0.08	104.80	104.88
2	0.20	0.70	DI-7	1.02	0.15	99.70	99.85

GENERAL NOTES

1. SEE SHEET 6-6A FOR PLAN VIEW LOCATION OF THE STORM SEWER.
2. SEE SHEET 14A FOR STORM PROFILES.
3. NO INCREASE IN RUNOFF IS PROPOSED ALONG NORTH DONELSON STREET.

HYDRAULIC GRADE LINE COMPUTATION

INLET	OUTLET WSEL ft.	PIPE DIAMTER in.	OUTLET Q-OUT cfs	PIPE LENGTH ft.	FRICTION SLOPE ft./ft.	FRICTION LOSS ft.	Vo ft./s	Ho ft.	Q-IN cfs	INLET PIPE DIAMTER in.	Vi ft./s	QiVi	VELOCTIY HEAD ft.	Hi ft.	ANGLE		Hdelta ft.	Ht ft.	SURFACE FLOW (y/n)	INLET LOSS ft.		TOTAL LOSS ft.	INLET WSEL ft.	TOP ELEV	RIM ELEV.	FREE BOARD = RIM ELEV. - INLET WSEL
3	94.26	24.00	9.26	57.79	0.00170	0.10	2.95	0.03	5.36	18.00	3.03	16.3	0.14	0.050	76	0.55	0.08	0.162	1	0.211	0.081	0.17939	94.44	98.05	97.55	3.11
4	94.44	18.00	5.36	76.05	0.00310	0.24	3.03	0.04	2.28	18.00	1.29	2.9	0.03	0.009	20	0.16	0.00	0.049	1	0.064	0.024	0.26020	94.70	98.64	98.14	3.44
5	94.70	18.00	2.28	105.80	0.00065	0.07	1.29	0.01	1.25	18.00	0.71	0.9	0.01	0.003	0	0.00	0.00	0.009	1	0.012	0.005	0.07336	94.77	99.00	98.50	3.73
2D	94.26	18.00	0.63	25.07	0.00004	0.00	0.36	0.00	0.00	0.00	0.00	0.0	0.00	0.000	0	0.00	0.00	0.000	1	0.001	0.000	0.00115	94.26	100.00	99.50	5.24

HGL NOTES:

1. STARTING WATER SURFACE ELEVATION AT STR. #2 IS BASED UPON THE 10 YEAR WSE WITHIN THE SWM CONTROL STR.
2. AT JUNCTIONS WHERE TWO OR MORE PIPES ENTER A STR., THE MOMENTUM EQUATION (Y1=QV) WAS APPLIED. BEND LOSSES WERE CALCUATED FOR THE PIPE WITH THE MAXIMUM MOMENTUM.
3. FRICTION VELOCITY WAS USED IN CALCULATING THE HGL; THEREFORE THE VELOCITIES FOUND IN THE STORM COMPS MAY DIFFER BECAUSE THEY ARE BASED UPON MANNING'S EQUATION DURING DESIGN FLOWS.
4. LOSSES WERE CALCULATED IN ACCORDANCE WITH THE VDOT DRAINAGE MANUAL SECTION 4.8:

$H_L = H_f + H_j \pm H_{delta}$ $\quad H_L = 0.35\frac{V_1^2}{2g} \pm 0.25\frac{V_2^2}{2g} \pm K_{delta}\frac{V_1^2}{2g}$ WHERE; K_{delta} PER VDOT DRAINAGE MANUAL PAGE 4-73

5. RIM ELEVATIONS WERE DETERMINED BASED UPON THE FLOW LINE FOR CURB INLETS (TOP ELEV.-0.50') AND THE TOP ELEV. FOR MANHOLE STRUCTURES.

K_{delta}: 90° - K=0.70; 80° - K=0.66; 70° - K=0.61; 60° - K=0.54; 50° - K=0.47; 40° - K=0.38; 30° - K=0.28; 25° - K=0.22; 20° - K=0.16; 15° - K=0.10

WATER QUALITY NARRATIVE

THIS APPLICATION SHALL SATISFY THE PERTINENT WATER QUALITY REQUIREMENTS VIA THE RESTORATION AND REVEGETATION OF THE RESOURCE PROTECTION AREA AND STREAM WHICH IS LOCATED DUE EAST OF THE SUBJECT PROPERTY. TRANSPORTATION AND ENVIRONMENTAL SERVICES HAS GENERALLY CONCURRED THAT THIS STREAM RESTORATION PLAN IS ACCEPTABLE AND THAT WATER QUALITY CREDIT SHALL BE PROVIDED FOR THIS IMPROVEMENTS IN LIEU AT THE CONSTRUCTION OF ANY ONSITE, STRUCTURAL FACILITIES. A WATER QUALITY VOLUME COMPUTATION IS PROVIDED HEREIN; PLEASE REFER TO JANUARY 31, 2007 LETTER FROM RICHARD BAIER ON SHEET 2.

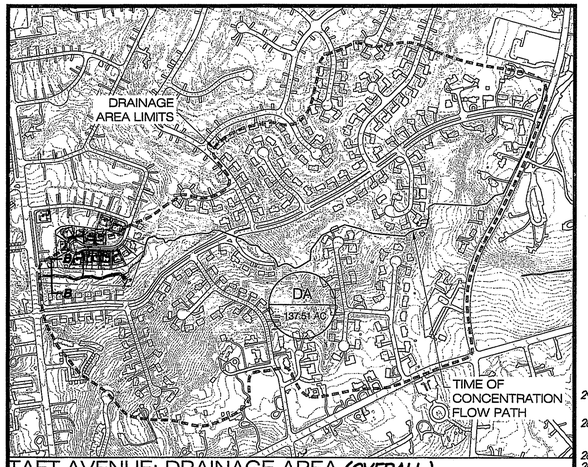
OUTFALL NARRATIVE

THE SUBJECT PROPERTY IS LOCATED IN THE STRAWBERRY RUN WATERSHED. THE PORTION OF STRAWBERRY RUN AT THE PROJECT LOCATION IS PART OF THE CITY OF ALEXANDRIA'S FORT WILLIAMS PARK. STRAWBERRY RUN DRAINS APPROXIMATELY 138 AC OF A PRIMARILY RESIDENTIAL WATERSHED BEFORE ENTERING AN 88" CULVERT UNDER DUKE STREET. STRAWBERRY RUN SHOWS VARIOUS FORMS OF DEGRADATION AND CHANNEL INSTABILITY. CONCRETE DEBRIS EXISTS ALONG THE STREAM BED AND IS INHIBITING NATURAL FLOW DYNAMICS. ABSENCE OF VEGETATIVE PROTECTION AND EROSIVE FLOWS ARE CAUSING BANK FAILURE. THE EXISTING RIPARIAN CORRIDOR PROVIDES LIMITED WILDLIFE HABITAT AND IS COMPRISED MAINLY OF GRASSES AND SCATTERED MATURE HARDWOODS.

AS A RESULT OF THE PROPOSED DEVELOPMENT A MINIMAL INCREASE IN RUNOFF WILL BE GENERATED BY THE CONSTRUCTION OF HOUSES ON TAFT AVENUE AND NO INCREASE IN RUNOFF IS GENERATED FROM THE CONSTRUCTION OF HOUSES ON NORTH DONELSON STREET. AN UNDERGROUND STORM WATER DETENTION FACILITY IS PROPOSED TO CONTROL THE INCREASED RUNOFF. THE POST-DEVELOPED DISCHARGE FROM THE SITE SHALL BE LESS THAN THE PRE-DEVELOPED DISCHARGE TO THE SAME POINT. HENCE, NO INCREASE IN RUNOFF SHALL BE EXPERIENCED BY ANY DOWNSTREAM PROPERTIES AS A RESULT OF THE DEVELOPMENT OF THE SUBJECT PROPERTY. A RIP-RAP CHANNEL AND APRON AT 0% IS PROPOSED AT THE OUTFALL TO ENSURE THAT THE DISCHARGE FROM THE UNDERGROUND DETENTION STRUCTURE ENTERS THE STREAM IN A NON-EROSIVE MANNER.

IN ADDITION TO THE PROPOSED DETENTION MEASURES THE CHANNEL IS PROPOSED TO BE IMPROVED WITH THE STREAM RESTORATION PLANS PREPARED BY WILLIAMSBURG ENVIRONMENTAL GROUP, INC. THE PROPOSED IMPROVEMENTS TO THE CHANNEL WILL REMOVE THE EXISTING DEBRIS AND RESTORE THE CHANNEL SHAPE. THE ATTACHED STREAM RESTORATION PLANS PROVIDE INFORMATION ABOUT THE CHANNEL IMPROVEMENTS, EXISTING AND PROPOSED CHANNEL X-SECTIONS, ETC.

BASED ON THE INFORMATION PROVIDED HEREIN, IT IS THE ENGINEERS OPINION THAT THE OUTFALL IS ADEQUATE IN ACCORDANCE WITH MS-19.C(4).



TAFT AVENUE: DRAINAGE AREA *(OVERALL)*

SCALE: 1 INCH = 500 FEET

X-SECTION B-B

SEE SHEET 5 FOR X-SECTION LOCATION.

Input Data

Slope	0.010 ft/ft
Discharge	Q_2 = CIA = (0.45)(6.05)(137.51) = 374.37 CFS

Results

Mannings Coefficient	0.040
Water Surface Elevation	284.95 ft
Elevation Range	281.50 to 286.00
Flow Area	80.0 S.F
Wetted Perimeter	56.52 ft
Top Width	55.88 ft
Actual Depth	3.45 ft
Critical Elevation	284.47 ft
Critical Slope	0.021479 ft/ft
Velocity	V_2 = 4.68 ft/s
Velocity Head	0.34 ft
Specific Energy	285.29 ft
Froude Number	0.69
Flow Type	Supercritical

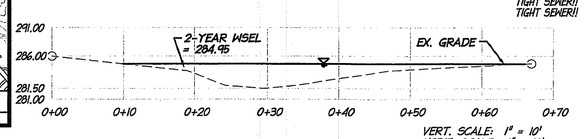
Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	0+67	0.040

Natural Channel Points

Station (ft.)	Elevation (ft.)
0+00	286.00
0+19	284.00
0+24	282.00
0+30	281.50
0+34	282.00
0+47	284.00
0+67	285.00

X-SECTION B-B



VERT. SCALE: 1" = 10'
HORIZ. SCALE: 1" = 10'

AS-BUILT SANITARY SEWER DESIGN

FROM POINT	TO POINT	UNIT INCR.	UNIT TOTAL	GPD PER UNIT	DOMESTIC FLOW (MGD) AVG. FLOW	PEAK FLOW FACTOR	PEAK FLOW	INDUSTRIAL FLOW (MGD)	TOTAL PEAK FLOW (MGD)	DIA. IN	SLOPE FT/FT	LENGTH FT	n	FLOWING FULL CAPA-CITY MGD	VEL FULL FPS	PEAK FLOW VEL F.P.S.	DEPTH %	FALL FT	INVERT ELEVATION UPPER INVERT	LOWER INVERT
SANITARY SEWER ALIGNMENT																				
T1	T2	12	12	390	0.00468	4	0.01872	0	0.01872	8	0.0405	369.06	0.013	1.57	6.97	2.37	7%	14.96	105.79	90.83
T2	T3	2	14	390	0.00546	4	0.02184	0	0.02184	8	0.0213	129.22	0.013	1.14	5.05	2.02	9%	2.75	90.69	87.94
T4	T5	17	17	390	0.00663	4	0.02652	0	0.02652	8	0.0425	238.37	0.013	1.61	7.14	2.64	8%	10.12	105.35	95.23
T5	T6	4	21	390	0.00819	4	0.03276	0	0.03276	8	0.0355	154.45	0.013	1.47	6.53	2.77	10%	5.49	95.13	89.64
T6	T7	6	27	390	0.01053	4	0.04212	0	0.04212	10	0.0497	217.75	0.013	3.16	8.98	3.05	7%	10.82	89.51	78.69
T7	T8	115	142	390	0.05538	4	0.22152	0	0.22152	10	0.0052	123.95	0.013	1.02	2.89	2.30	31%	0.64	78.34	77.70

SANITARY LATERAL SCHEDULE

	LOT No.	DIST. FROM MH	LAT. LENGTH	LAT. SLOPE	MAIN INV.	ELEV. AT MAIN	ELEV. @ LAT END	BF ELEV.	CLEAR
	FROM T8 — SAN. MH INV. OUT 77.480; TO T7 — INV. IN 78.650								
TIGHT SEWER!!	36	65	28	0.0104	78.058	78.705	78.945	82.700	2.755
	FROM T5 — SAN. MH INV. OUT 95.130; TO T4 — INV. IN 105.530								
#	30	31	35	0.0416	96.546	97.215	98.664	110.500	10.371
	29	65	30	0.0208	97.990	98.657	99.281	107.300	6.519
	FROM T2 — SAN. MH INV. OUT 90.640; TO T1 — INV. IN 105.790								
#	505	28	65	0.0208	91.964	92.631	93.983	94.300	-1.183
#	16	31	42	0.0104	92.086	92.753	93.184	94.000	-0.684
TIGHT SEWER!!	504	110	35	0.0104	95.295	95.962	96.316	98.100	1.284
#	15	116	28	0.0208	95.528	96.195	96.777	94.500	-3.177
#	503	176	27	0.0208	97.458	98.125	99.187	99.100	-1.587
#	14	186	35	0.0208	98.343	99.050	99.758	99.600	-1.658
#	13	242	40	0.0208	100.631	101.298	102.130	99.600	-4.030
#	12	284	42	0.0208	102.332	102.999	103.875	102.300	-3.075
	FROM T3 — SAN. MH INV. OUT 87.940; TO T2 — INV. IN 90.830								
TIGHT SEWER!!	501	25	29	0.0208	88.593	89.260	90.780	92.400	1.307
TIGHT SEWER!!	506	111.5	60	0.0104	90.333	91.000	91.624	94.500	1.376

#EJECTOR PUMP REQUIRED

#VERTICAL STACKS OUTSIDE OF THE ROW MAY BE UTILIZED

UTILITY SEPARATION CONDITION

LATERAL SEPARATION OF SEWERS AND WATER MAINS: A HORIZONTAL SEPARATION OF 10' (EDGE TO EDGE) SHALL BE PROVIDED BETWEEN A STORM OR SANITARY SEWER AND A WATER LINE. HOWEVER, IF THIS HORIZONTAL SEPARATION CANNOT BE ACHIEVED THEN THE SEWER AND WATER MAIN SHALL BE INSTALLED IN SEPARATE TRENCHES AND THE BOTTOM OF THE WATER MAIN SHALL BE AT LEAST 18" ABOVE OF THE TOP OF THE SEWER. IF BOTH THE HORIZONTAL AND VERTICAL SEPARATIONS CANNOT BE ACHIEVED THEN THE SEWER PIPE MATERIAL SHALL BE DUCTILE IRON PIPE (DIP) AWWA C-151 (ANSI A21.51) CLASS 52 AND PRESSURE TESTED IN PLACE WITHOUT LEAKAGE PRIOR TO INSTALLATION.

CROSSING WATER MAIN OVER A SEWER: WHEN A WATER MAIN OVER CROSSES A SEWER THEN THE BOTTOM OF THE WATER MAIN SHALL BE INSTALLED AT LEAST 18" ABOVE THE TOP OF THE SEWER. HOWEVER, IF THIS CANNOT BE ACHIEVED THEN BOTH THE WATER MAIN AND THE SEWER SHALL BE CONSTRUCTED OF DUCTILE IRON PIPE (DIP) AWWA C-151 (ANSI A21.51) CLASS 52 WITH JOINTS THAT ARE EQUIVALENT TO WATER MAIN STANDARDS FOR A DISTANCE OF 10 FEET ON EACH SIDE OF THE POINT OF CROSSING; AND THE PIPES SHALL BE PRESSURE TESTED IN PLACE WITHOUT LEAKAGE PRIOR TO INSTALLATION.

CROSSING WATER MAIN UNDER A SEWER: WHEN A WATER MAIN UNDER CROSSES A SEWER THEN THE BOTTOM OF THE SEWER PIPE SHALL BE INSTALLED AT LEAST 18" ABOVE THE TOP OF THE WATER MAIN; HOWEVER, IF THIS CANNOT BE ACHIEVED THEN BOTH THE WATER MAIN AND THE SEWER SHALL BE CONSTRUCTED OF DUCTILE IRON PIPE (DIP) AWWA C-151 (ANSI A21.51) CLASS 52 WITH JOINTS THAT ARE EQUIVALENT TO WATER MAIN STANDARDS FOR A DISTANCE OF 10 FEET ON EACH SIDE OF THE POINT OF CROSSING; AND PRESSURE TESTED IN PLACE WITHOUT LEAKAGE PRIOR TO INSTALLATION. SEWERS CROSSING OVER THE WATER MAIN SHALL HAVE ADEQUATE STRUCTURAL SUPPORT (CONCRETE SUPPORT AND/OR CONCRETE ENCASEMENT) TO PREVENT DAMAGE TO THE WATER MAIN. A SECTION OF WATER MAIN PIPE SHALL BE CENTERED AT THE POINT OF CROSSING AND THE PIPES SHALL BE PRESSURE TESTED IN PLACE WITHOUT LEAKAGE PRIOR TO INSTALLATION.

NO PIPE SHALL PASS THROUGH OR COME IN CONTACT WITH ANY PART OF SEWER MANHOLE. MANHOLES SHALL BE PLACED AT LEAST 10 FEET HORIZONTALLY FROM THE WATER MAIN WHENEVER POSSIBLE. WHEN LOCAL CONDITIONS PROHIBIT THIS HORIZONTAL SEPARATION, THE MANHOLE SHALL BE WATERTIGHT CONSTRUCTION AND TESTED IN PLACE.

SANITARY SEWERS UNDER CREEKS AND STORM SEWER PIPE CROSSING WITH LESS THAN 6' CLEARANCE SHALL BE ENCASED IN CONCRETE.

CROSSING EXISTING OR PROPOSED UTILITIES: UNDERGROUND TELEPHONE, CABLE T.V., GAS, AND ELECTRICAL DUCT BANKS SHALL BE CROSSED MAINTAINING A MINIMUM OF 12" OF SEPARATION OR CLEARANCE WITH WATER MAIN, SANITARY, OR STORM SEWERS. IF THIS SEPARATION CANNOT BE ACHIEVED THEN THE SEWER PIPE MATERIAL SHALL BE DUCTILE IRON PIPE (DIP) AWWA C-151 (ANSI A21.51) CLASS 52 AND PRESSURE TESTED IN PLACE WITHOUT LEAKAGE PRIOR TO INSTALLATION. SEWERS AND WATER MAIN CROSSING OVER THE UTILITIES SHALL HAVE ADEQUATE STRUCTURAL SUPPORT (PIER SUPPORT AND/OR CONCRETE ENCASEMENT) TO PREVENT DAMAGE TO THE UTILITIES.

ESI PEER REVIEW

APPROVED ASBUILT

DEVELOPMENT SITE PLAN NO. 2004-0038

DEPARTMENT OF TRANSPORTATION & ENVIRONMENTAL SERVICES — DIRECTOR — DATE 2.22.16

SPECIAL USE PERMIT

COMMONWEALTH OF VIRGINIA — 11-22-10 — KEVIN D. VAUGHN Lic. No. 1508 — LAND SURVEYOR

AS-BUILT CERTIFIED CORRECT

APPROVED

DEVELOPMENT SITE PLAN NO.

DEPARTMENT OF PLANNING & ZONING — DIRECTOR — DATE

DEPARTMENT OF TRANSPORTATION & ENVIRONMENTAL SERVICES SITE PLAN NO. 2004-0038 — DIRECTOR — DATE

CHAIRMAN, PLANNING COMMISSION — DATE

DATE RECORDED

INSTRUMENT NO. — DEED BOOK NO. — PAGE NO.

LAND DESIGN CONSULTANTS
PLAN FOR SUCCESS
www.ldc-va.com
8569-E SUDLEY ROAD MANASSAS, VIRGINIA 20110
PH: 703.631.8387 FX: 703.631.9414

UTILITY COMPUTATIONS & PROFILES

AS-BUILT

TAFT AVENUE PROPERTY

CITY OF ALEXANDRIA, VIRGINIA

DATE	DESCRIPTION	REVIEW BY	APPROVED	DATE
DATE	DESIGN NO.	ENGINEER	REVISION APPROVED BY:	

I HEREBY CERTIFY THAT OTHER THAN THE REVISIONS SHOWN HEREON, NO OTHER CHANGES HAVE BEEN MADE.

COMMONWEALTH OF VIRGINIA — JOSHUA MARSHALL — No. 40688 — 8.15.07 — 9.26.07 — PROFESSIONAL ENGINEER

SCALE: AS NOTED

SHEET 10 OF 14

DATE: MARCH, 2007

DRAFT: RP — CHECK: MM

FILE NUMBER: 04126-1-38B 2004-0038

P:\PY2004\04126-1-0 CITY OF ALEXANDRIA\ENG\SUBPLAN\04126STM.dwg