✱ WAIVER AND PFM MODIFICATION TO BE REQUESTED WITH THE FINAL SITE PLAN:
A. BARRIER REQUIREMENT ALONG THE SOUTHERN BOUNDARY.
B. USE OF THE TREE BOX FILTER SYSTEM AS AN INNOVATIVE BMP.

SPECIAL EXCEPTION PLAN

VETERANS OF FOREIGN WARS OF THE UNITED STATES

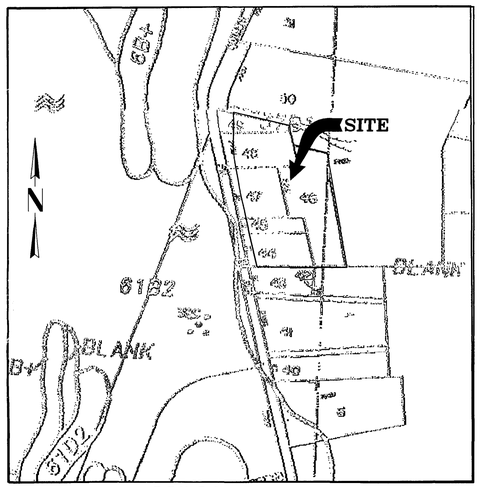
LEE DISTRICT

FAIRFAX COUNTY, VIRGINIA

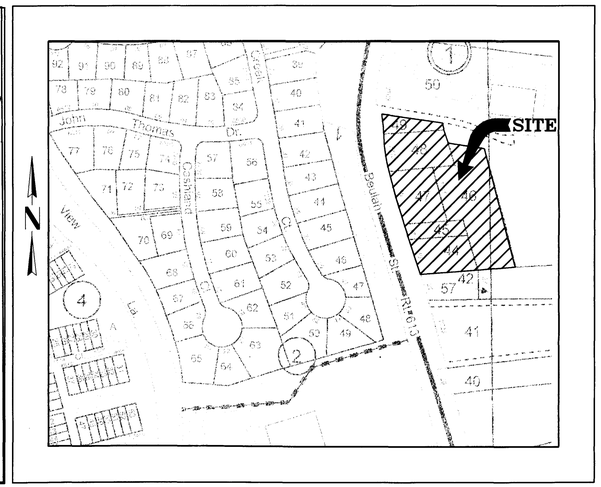
APRIL 2007

GENERAL NOTES:

1. THE PROPERTY SUBJECT TO THIS SPECIAL EXCEPTION APPLICATION CONSISTS OF 2.515 ACRES AND IS SHOWN ON FAIRFAX COUNTY TAX MAP #99-2((01)) PARCELS 44, 45, 46, 47, 48, & 49.
2. THE SUBJECT PROPERTY IS LOCATED ALONG BEULAH STREET AND IS OWNED BY THE VETERANS OF FOREIGN WARS OF THE UNITED STATES.
3. THE PROPERTY IS PRESENTLY ZONED R-1 (RES. 1DU/AC) THE APPLICANT, REQUESTS APPROVAL OF A SPECIAL EXCEPTION FOR A PRIVATE CLUB AND PUBLIC BENEFIT ASSOCIATION. THE APPLICATION IS PROPOSING TO CONSTRUCT A 2-STORY BUILDING.
4. IN ACCORDANCE WITH CHESAPEAKE BAY PRESERVATION ORDINANCE AMENDMENTS ADOPTED ON JULY 7, 2003 AND THE CHESAPEAKE BAY PRESERVATION MAPS ADOPTED IN NOVEMBER 17, 2003, THERE ARE NO 100-YEAR FLOOD PLAIN LIMITS.
5. ALL EXISTING STRUCTURES ON THE SITE WILL BE REMOVED.
6. A BOUNDARY AND TOPOGRAPHIC SURVEY WAS PREPARED BY EMSI ENGINEERING, INC., BASED ON A FIELD SURVEY. THE CONTOUR INTERVAL IS 2 FEET.
7. THERE ARE NO EASEMENTS 25 FEET WIDE OR GREATER ON THE SITE.
8. SITE ACCESS IS PROPOSED FROM BEULAH STREET. PROPOSED IMPROVEMENTS ARE SUBJECT TO FINAL ENGINEERING DESIGN AND VDOT APPROVAL.
9. A 6-FOOT WIDE ASPHALT WALK EXISTS ALONG THE WEST SIDE OF THE PROPERTY AND WILL BE RETAINED.
10. STORMWATER MANAGEMENT AND THE BEST MANAGEMENT PRACTICES (BMP) REQUIREMENTS (40% PHOSPHOROUS REMOVAL) WILL BE MET BY PROPOSED UNDERGROUND DETENTION PIPES FACILITIES LOCATED ON THE SOUTHEASTERLY PORTION OF THE PROPERTY AND NORTHEAST PARKING AREAS AS WELL AS TREE BOX FILTER STRUCTURES LOCATED NEAR THE DETENTION PIPES AND BIO-RETENTION FILTERS LOCATED ON THE WEST AND SOUTH SIDE OF THE PARKING LOT.
11. SEE TABULATIONS THIS SHEET REGARDING PROPOSED FAR AND PARKING PROVIDED.
12. THE SITE WILL BE SERVED BY PUBLIC WATER AND PUBLIC SEWER.
13. THE LOCATION AND CONFIGURATION OF THE WATER LINE AND SANITARY SEWER LINE SHOWN ON THIS PLAN MAY CHANGE BASED UPON FINAL ENGINEERING DESIGN.
14. THE PROPOSED USE WILL BE IN CONFORMANCE WITH ALL APPLICABLE ORDINANCES, REGULATIONS AND ADOPTED STANDARDS, EXCEPT AS WAIVED OR MODIFIED AS PART OF THE SPECIAL EXCEPTION APPLICATION. ALTHOUGH NOT SHOWN ON THIS PLAN, THE OWNER RESERVES THE RIGHT TO INSTALL ONE OR MORE SIGNS AS PERMITTED BY THE ZONING ORDINANCE.
15. BASED ON AVAILABLE RECORDS, NO RESOURCE PROTECTION AREAS OR MAJOR FLOOD PLAINS EXIST ON-SITE. NO WETLANDS OR WATERS OF THE U.S. PRESENT ON THE SITE. IF REQUIRED THE APPLICANT WILL OBTAIN ALL WETLAND PERMITS REQUIRED BY LAW PRIOR TO COMMENCING ANY LAND DISTURBING ACTIVITIES.
16. TO THE BEST OF OUR KNOWLEDGE AND BELIEF, THERE ARE NO GRAVES ON THE SITE.
17. THERE ARE NO KNOWN HAZARDOUS OR TOXIC SUBSTANCES OR HAZARDOUS PETROLEUM PRODUCTS OR STORAGE TANKS OR CONTAINERS ON THE SITE.
18. A STATEMENT CONFIRMING OWNERSHIP OF THE PROPERTY AND THE APPLICANT'S RELATIONSHIP INTEREST IN THE SAME IS CONTAINED ON THE AFFIDAVIT SUBMITTED SEPARATELY.
19. FULL CUT-OFF LIGHTING FIXTURES SHALL BE MOUNTED HORIZONTAL TO THE GROUND AND SHALL BE USED FOR ALL WALKWAY, PARKING LOT, CANOPY AND BUILD/WALL MOUNTED LIGHTING. THE LIGHTING USED TO ILLUMINATE FLAGS, STATUES, SIGNS OR ANY OTHER OBJECTS MOUNTED ON A POLE, PEDESTAL OR PLATFORM, SPOTLIGHTING OR FLOODLIGHTING USED FOR ARCHITECTURAL OR LANDSCAPE PURPOSES, SHALL CONSIST OF FULL CUT-OFF OR DIRECTIONALLY SHIELDED LIGHTING FIXTURES THAT ARE AIMED AND CONTROLLED SO THAT THE DIRECTED LIGHT SHALL BE SUBSTANTIALLY CONFINED TO THE OBJECT INTENDED TO BE ILLUMINATED. DIRECTIONAL CONTROL SHIELDS SHALL BE USED WHERE NECESSARY TO LIMIT STRAY LIGHT. IN ADDITION, SUCH LIGHTING SHALL BE SHIELDED TO PROTECT MOTORISTS AND PEDESTRIANS FROM GLARE.
20. THIS DEVELOPMENT WILL CONFORM TO THE PROVISIONS OF ALL APPLICABLE ORDINANCE, REGULATIONS AND ADOPTED STANDARDS, OR IF ANY WAIVER, EXCEPTION OR VARIANCES IS SOUGHT BY THE APPLICANT, SUCH SHALL BE SPECIFICALLY NOTED WITH THE JUSTIFICATION FOR SUCH MODIFICATION.
21. BOUNDARY INFORMATION SHOWN IS BASED ON DEEDS OF RECORD. TOPOGRAPHY IS FROM FIELD RUN SURVEY BY EMSI ENGINEERING DONE IN NOV, 2005.
22. THE DEVELOPER RESERVES THE RIGHT TO LOCATE TEMPORARY CONSTRUCTION TRAILERS ON THE SITE IN ACCORDANCE WITH FAIRFAX COUNTY REQUIREMENTS, AND WILLONLY BE ON SITE DURING INITIAL CONSTRUCTION.
23. THE PROPERTY IS LOCATED IN THE LEE DISTRICT AND IS PLANNED FOR LOW DENSITY RESIDENTIAL.
24. EMERGENCY INGRESS/EGRESS TO BE COORDINATED AT THE TIME OF FINAL SITE PLAN.
25. THE SITE IS LOCATED WITHIN THE ACCOTINK CREEK WATERSHED.
26. THE SITE IS LOCATED WITHIN LEE SEWER DISTRICT.
27. TOTAL DISTURBED AREA IS APPROXIMATELY 93,080 S.F OR 2.14 Ac.
28. THE LIMITS OF CLEARING AND GRADING ARE BASED UPON A PRELIMINARY GRADING STUDY AND MAY BE ADJUSTED DURING FINAL ENGINEERING, PROVIDED ALL REQUIREMENTS FOR LANDSCAPING, TREE PRESERVATION AND TREE COVER ARE SATISFIED.
29. PLANTING TREES WITHIN THE CANOPY OF TREES TO BE PRESERVED SHALL BE CAREFULLY DONE BY HAND DIGGING ONLY. NO HEAVY MACHINERY SHALL BE ALLOWED. TREE PRESERVATION SHALL BE IN ACCORDANCE WITH THE FAIRFAX COUNTY PUBLIC FACILITY MANUAL.



SOILS MAP
SCALE: 1" = 200'



VICINITY MAP
SCALE: 1" = 200'

SOILS EVALUATION

Soil Map Symbol	Soil Series Name	Slope Range %	Problem Class	Estimated % of Site
61C3	Loamy and Gravelly Sediments	7-14%	A	100%
				TOTAL:100

POTENTIAL SOIL PROBLEMS	YES/NO	SOIL NO(S)
Slope Instability	YES	61
Marginal to Low Bearing Capacity	YES	61
High Seasonal Water Table	YES	61
High Shrink-Swell Clays	YES	61
Poor Surface Drainage	YES	61
Shallow Depth to Bedrock	NO	61
High Erodibility	YES	61
Flood Plain (Alluvial)	YES	61
Marginal To Poor Septic Drain Field Potential	YES	61
Hydric Soils / Potential Wetland	YES	61

OWNER :

SPRINGFIELD POST 7327
VETERANS OF FOREIGN WARS
OF THE UNITED STATES, INC.
P O BOX 123
SPRINGFIELD, Virginia 2215
(703)541-3139
TAX MAP 0992-01-0044 T0 0049

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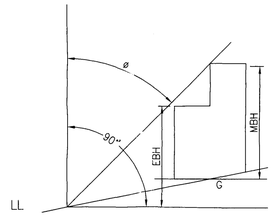
...tion No. SE2007LE-030 Staff SLM
APPROVED (SE) / SP PLAN
SEE DEV CONDS DATED 4.7.08
Date of (BOS) (BZA) approval 4.28.08
Sheet 1 of 10

SITE TABULATION

TOTAL SITE AREA:	109,553 SF	=	2.515 AC
MINIMUM SITE AREA REQUIRED:	36,000 SF		
MINUMUM LOT WIDTH:			
REQUIRED:	150.00 FT		
PROVIDED:	462.65 FT		
AREA OF DEDICATION:	0 SF		
NET SITE AREA	109,553 SF	=	2.515 AC
ZONING:	R-1		
USE:	PRIVATE CLUB & PUBLIC BENEFIT ASSOCIATION		
PROPOSED G.F.A.:	11,076 SF		
MAXIMUM F.A.R.:			
PERMITTED:	0.20		
PROVIDED:	0.10		
OPEN SPACE:			
REQUIRED:	N/A	=	N/A
PROVIDED:	41,005 SF	=	37.43%



ø = ANGLE OF BULK PLANE
LL= LOT LINE
MYR= MINIMUM YARD REQUIREMENT
EBH= EFFECTIVE BUILDING HEIGHT
MBH= MAXIMUM BUILDING HEIGHT
G= GRADE
MYR= EBM TAN ø
EBH= MYR / TAN ø

ANGLE OF BULK PLANE
FRONT: MIN. 50°
SIDE: MIN. 45°
REAR: MIN. 45°

MAXIMUM BUILDING HEIGHT:
PERMITTED: 60 FT
PROVIDED: 40

	REQUIRED/PERMITTED	MINIMUM YARD REQUIREMENT	PROVIDED
FRONT	50° ANGLE OF BULK PLANE (40'MIN.)	40 FT MIN.	66 FT
SIDE	45° ANGLE OF BULK PLANE (20'MIN.)	20 FT MIN.	91.0 FT
REAR	45° ANGLE OF BULK PLANE (25' MIN.)	25 FT MIN.	89.0 FT

PARKING TABULATION

DESCRIPTION	MAXIMUM ANTICIPATED MEMBERSHIP	REQUIREMENT PER ZONING ARTICLE	PARKING REQ'D	PARKING PROVIDED	LOADING SPACES REQ'D	LOADING SPACES PROVIDED
PRIVATE CIVIC FRATERNAL CLUB	225	1 SPACE PER 3 MEMBERS BASED UPON MAXIMUM ANTICIPATED MEMBERSHIP (Z.O. 11-106-15)	71	75		
HANDICAP (VAN ACCESSIBLE)		4 PS IF LESS THAN 100	4	8		
TOTAL PARKING			75	83		
LOADING (GFA = 11,076)		STANDARD B: 1SPACE FOR FIRST 10,000 GFA PLUS 1 SPACE PER 15,000 GFA ADDITIONAL (Z.O. 11-203)			2	2

SHEET INDEX

1. COVER SHEET
2. EXISTING VEGETATION AND TREE PRESERVATION MAP
3. PRELIMINARY PLAT
4. RUNNOFF COMPUTATIONS AND DRAINAGE DIVIDES MAP
5. STORMWATER MANAGEMENT COMPUTATIONS AND BMP DIVIDES MAP
6. STORMWATER MANAGEMENT COMPUTATIONS
7. OVERALL DRAINAGE MAP
8. STORMWATER MANAGEMENT COMPUTATIONS
9. STORMWATER MANAGEMENT COMPUTATIONS & CROSS SECTIONS
10. ARCHITECTURAL EXHIBIT

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COVER SHEET
SPECIAL EXCEPTION PLAT
SPRINGFIELD POST 7327
VETERANS OF FOREIGN WARS OF THE UNITED STATES, INC.
FAIRFAX COUNTY, VIRGINIA
LEE DISTRICT

PROJECT NO

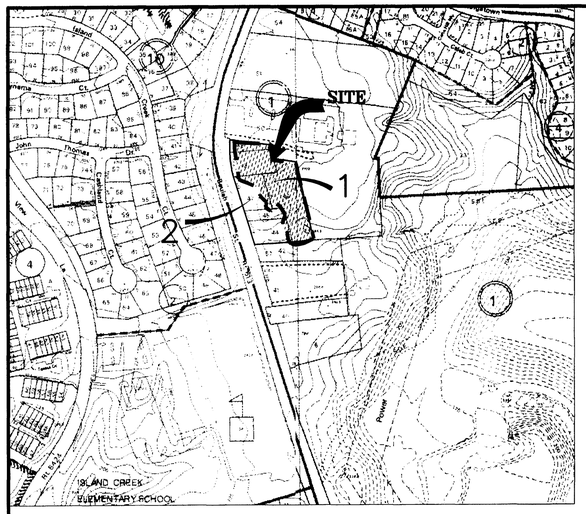
COMMONWEALTH OF VIRGINIA
TALAL A. HASSAN
No.025527
07-21-08
PROFESSIONAL ENGINEER

PLAN STATUS	
01-21-08	COUNTY & CLIENT COMMENTS
02-21-08	ZONING COMMENTS

DATE	DESCRIPTION

PH/TMD DESIGN	PH/TMD DRAWN	DM CHKD
SCALE	H: V:	
JOB No.	VA-07-06	
DATE :	APRIL, 2007	
FILE No.	c-1046	
SHEET	1 OF 10	

C-1046

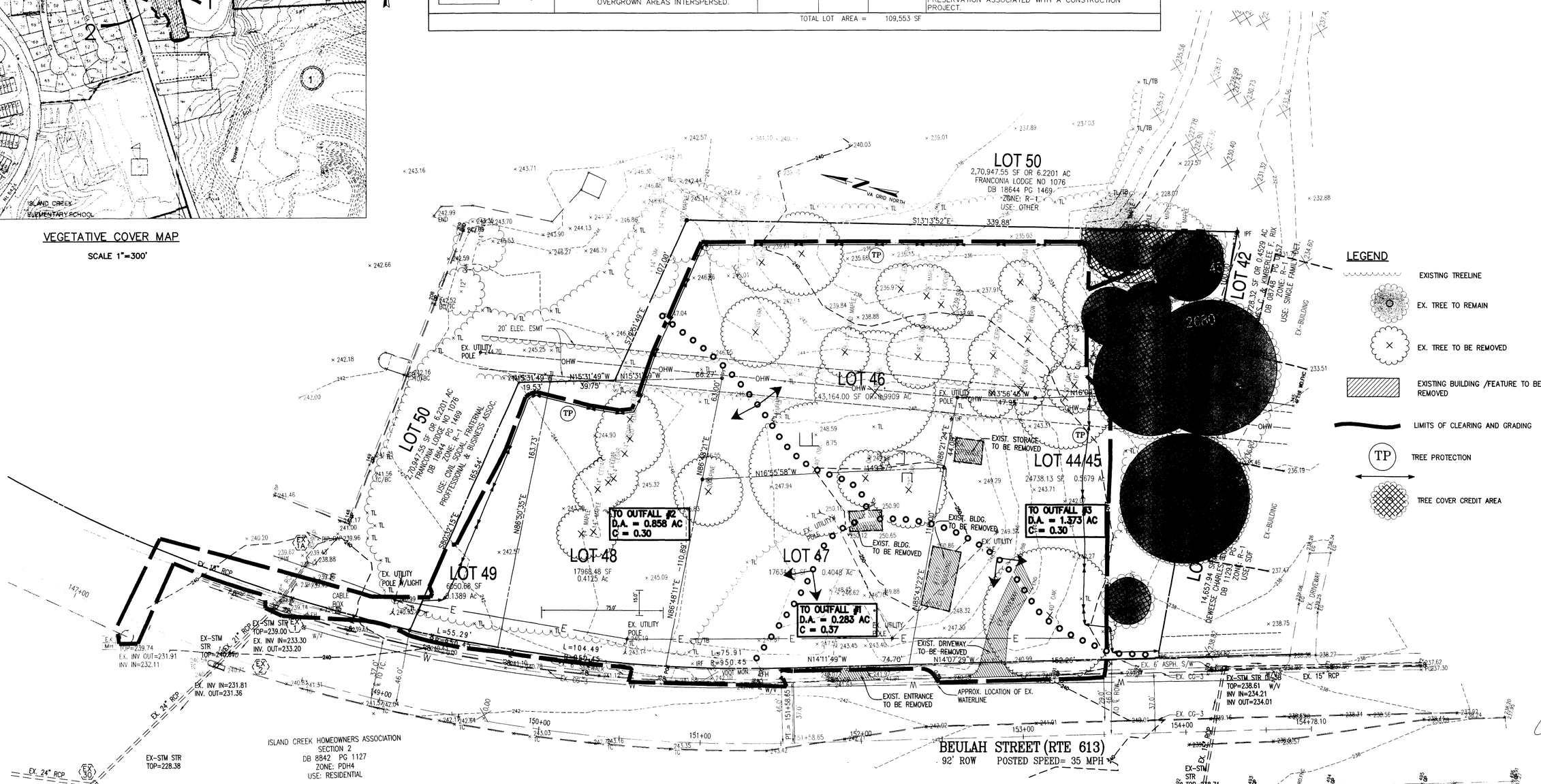


VEGETATIVE COVER MAP

SCALE 1"=300'

VEGETATIVE COVER SUMMARY TABLE

COVER TYPE	PRIMARY SPECIES	SUCCESSIONAL STAGE	CONDITION	VEGETATIVE COVER (AC.)	COMMENTS
1 UPLAND HARDWOOD	MATURE 12"–40" DBH SIZE CLASS DOMINANT: WHITE OAK, SIUTHERN RED OAK. CODOMINANT : RED MAPLE, BLACK GUM, HICKORY. UNDERSTORY : CEDAR	OLD FIELD EARLY SERIAL	GOOD	82,493 SF	THIS WELL DEVELOPED STAND IS IN GOOD DISTRIBUTION OF SMALL TO MIDSIZE TREES TO FILL IN IF IT BECOMES NECESSARY TO REMOVE SOME OF THE LARGER TREES
2 OLD FIELD LANDSCAPED YARD	FORMERLY MAINTAINED LAWN AREAS WITH LARGESHADE TREES, LANDSCAPE SHRUBS AND OVERGROWN AREAS INTERSPERSED.	N/A	FAIR	27.060 SF	THE LARGE TREES IN THIS AREA ARE OVER MATURE AND OPEN GROWND MAY NOT BE GOOD CANDIDATES FOR PRESERVATION ASSOCIATED WITH A CONSTRUCTION PROJECT.
TOTAL LOT AREA = 109,553 SF					



LEGEND

- EXISTING TREELINE
- EX. TREE TO REMAIN
- EX. TREE TO BE REMOVED
- EXISTING BUILDING /FEATURE TO BE REMOVED
- LIMITS OF CLEARING AND GRADING
- TP TREE PROTECTION
- TREE COVER CREDIT AREA

THE SUBMITTING ENGINEER CERTIFIES THAT NO OTHER CHANGES HAVE BEEN MADE ON THE PLAN OR PROFILE EXCEPT THOSE PREVIOUSLY APPROVED

REVISIONS APPROVED BY DIVISION OF DESIGN REVIEW

NO.	DESCRIPTION	REVIEW BY	APPROVED	DATE

Application No. SE 2007-LE-030 Staff S.Lin
APPROVED SP/ SP PLAN
SEE DEV CONDS DATED 4-7-08
Date of BOS/ (BZA) approval 4-28-08
Sheet 2 of 10

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EXISTING VEGETATION AND TREE PRESERVATION MAP
SPECIAL EXCEPTION PLAT
SPRINGFIELD POST 7327
VETERANS OF FOREIGN WARS OF UNITED STATES, INC.

LEE DISTRICT
FAIRFAX COUNTY, VIRGINIA

PROJECT NO

COMMONWEALTH OF VIRGINIA
TALAL A. HASSAN
No.025527
01-31-08
PROFESSIONAL ENGINEER

PLAN STATUS

01-31-08	COUNTY & CLIENT COMMENTS

DATE	DESCRIPTION

PH/TMD DESIGN	PH/TMD DRAWN	DM CHKD
SCALE	H: 1" = 30' V:	
JOB No.	VA-07-06	
DATE :	APRIL, 2007	
FILE No.	C-1046	
SHEET	2 OF 10	

C-1046

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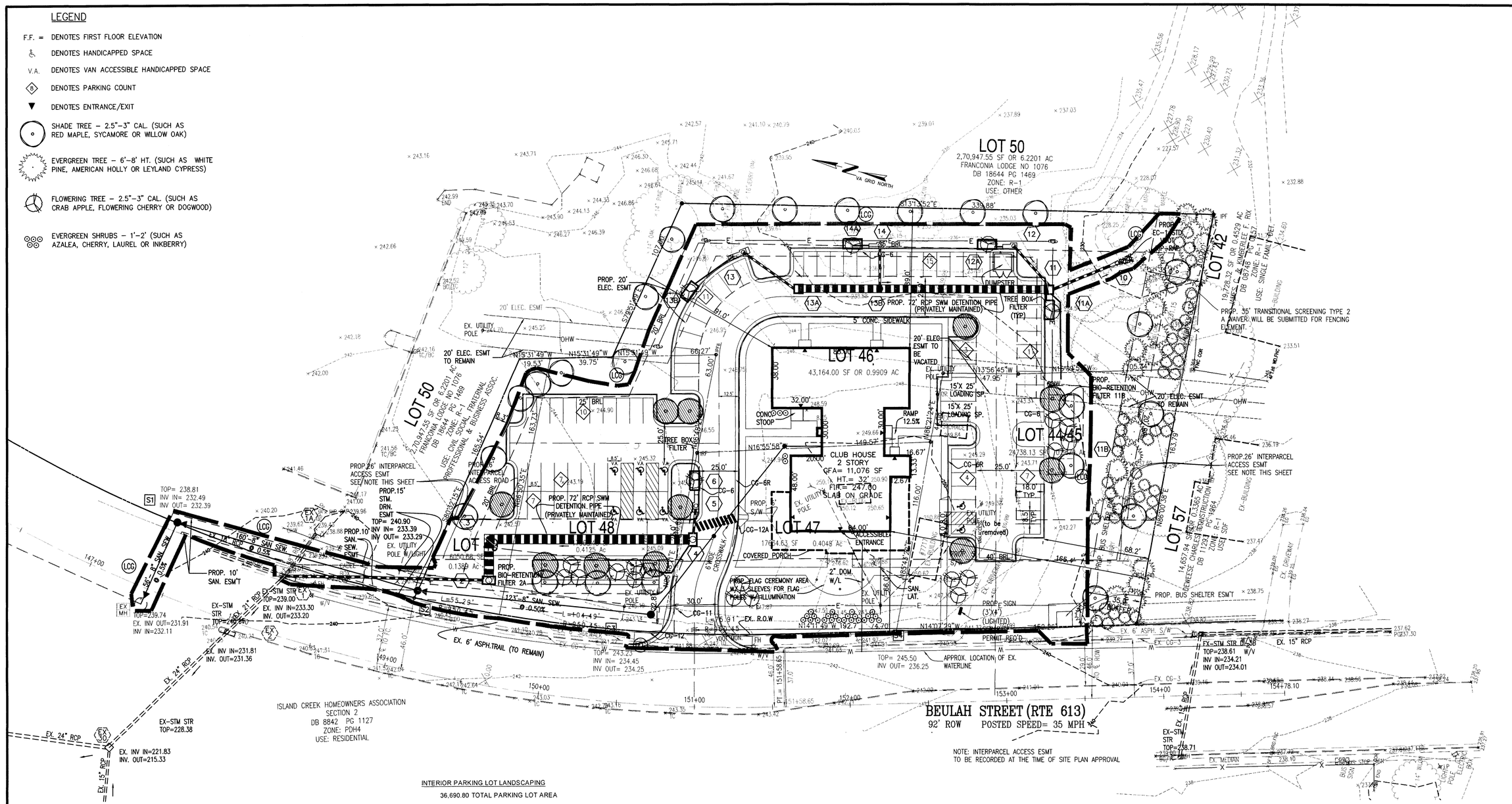
LEGEND

- F.F. = DENOTES FIRST FLOOR ELEVATION
- DENOTES HANDICAPPED SPACE
- V.A. DENOTES VAN ACCESSIBLE HANDICAPPED SPACE
- DENOTES PARKING COUNT
- DENOTES ENTRANCE/EXIT
- SHADE TREE – 2.5"–3" CAL. (SUCH AS RED MAPLE, SYCAMORE OR WILLOW OAK)
- EVERGREEN TREE – 6'–8' HT. (SUCH AS WHITE PINE, AMERICAN HOLLY OR LEYLAND CYPRESS)
- FLOWERING TREE – 2.5"–3" CAL. (SUCH AS CRAB APPLE, FLOWERING CHERRY OR DOGWOOD)
- EVERGREEN SHRUBS – 1'–2' (SUCH AS AZALEA, CHERRY, LAUREL OR INKBERRY)



SOUTHERN BUFFER & TRANSITIONAL SCREENING

217.79 LF TOTAL BUFFER LENGTH (163.79+100) - 20+26

PLANT TYPE	TOTAL REQUIRED	TOTAL PROVIDED
1 LARGE EVERGREEN TREE 40' HT OR GREATER PER 10 LF	23.0	23
1 MEDIUM EVERGREEN TREE 20'-40' HT PER 5 LF	45.0	45
1 DECIDUOUS TREE WITH A ULTIMATE HT. . 50' OR GREATER FOR EVERY 30 LINEAR FEET.	9.0	5 4 EX.+5 PROP.

SYMBOL	QTY.	LANDSCAPE MATERIAL	SIZE	ROOT COND.	CANOPY/TREE	TOTAL CANOPY (SF)
	23	LARGE EVERGREEN TREE	2.5-3" CAL.	B+B	150	3450
	45	MEDIUM EVERGREEN TREE	6-8' HT	B+B	50	2250
	5	DECIDUOUS LARGE TREE	6-8' HT	B+B	200	1000
	4	EX. LARGE DECIDUOUS TREE			1585	6340
					TOTAL	13040

INTERIOR PARKING LOT LANDSCAPING

36,690.80 TOTAL PARKING LOT AREA

SYMBOL	QTY.	LANDSCAPE MATERIAL	SIZE	ROOT COND.	CANOPY/TREE	TOTAL CANOPY (SF)
	11	SHADE TREES	2.5-3" CAL.	B+B	200	2200
					TOTAL	2200

REQUIRED: 5.00% = 1,835 SF
PROVIDED 6.00% = 2,200 SF

GENERAL LANDSCAPING

SYMBOL	QTY.	BOTANICAL NAME	SIZE	ROOT COND.	CANOPY/TREE	TOTAL CANOPY (SF)
	8	SHADE TREE	2.5-3" CAL.	B+B	200	1600
	21	FLOWERING TREE	2.5-3" CAL.	B+B	75	1575
	29	SHRUBS	1-2' DIA.	B+B	N/A	N/A
					TOTAL	3175

TREE COVER COMPUTATIONS (TOTAL SITE):

ZONING CATEGORY:	R-1
GROSS (TOTAL) SITE AREA:	109,553 SF
DEDUCTIBLE AREA: STREET DEDICATION	0 SF
BUILDING FOOTPRINT	9,703 SF
ADJUSTED SITE AREA):	99,850 SF
TREE COVER REQUIRED (20% OF adjusted site area)	19,970 SF
EXISTING TREE COVER AREA (FROM PRESERVATION):	11,820 SF
TOTAL EXISTING TREE COVER AREA (TO BE COUNTED - x1.25):	14,775 SF
TREE COVER TO BE PROVIDED BY PLANTING:	12,075 SF
TOTAL TREE COVER PROVIDED:	26,850 SF 26.89%

ation No. SE 2007-LE-030 Staff S. Lin
APPROVED SE / SP PLAN
SEE DEV CONDS DATED 4.7.08
Date of (BOS) (BZA) approval 4.28.08
Sheet 3 of 10

GRAPHIC SCALE

30 0 15 30 60 120

(IN FEET)
1 inch = 30 ft.

THE SUBMITTING ENGINEER CERTIFIES THAT NO OTHER CHANGES HAVE BEEN MADE ON THE PLAN OR PROFILE EXCEPT THOSE PREVIOUSLY APPROVED

REVISIONS APPROVED BY DIVISION OF DESIGN REVIEW

NO.	DESCRIPTION	REVIEW BY	APPROVED	DATE

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PRELIMINARY PLAN
SPECIAL EXCEPTION PLAT
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LEE DISTRICT
FAIRFAX COUNTY, VIRGINIA

PROJECT NO

COMMONWEALTH OF VIRGINIA
TALAL A. HASSAN
No. 025527
02-21-08
PROFESSIONAL ENGINEER

PLAN STATUS	
01-31-08	COUNTY & CLIENT COMMENTS
02-21-08	ONE ENTRANCE REV.

DATE	DESCRIPTION

PH/TMD DESIGN	PH/TMD DRAWN	DM CHKD

SCALE H: 1" = 30' V:
JOB No. VA-07-06
DATE : APRIL, 2007
FILE No. c-1046
SHEET 3 OF 10

C-1046

MINIMUM STORMWATER INFORMATION FOR REZONING, SPECIAL EXCEPTION, SPECIAL PERMIT AND DEVELOPMENT

The following information is required to be shown or provided in all zoning applications, or waiver request of the submission requirement with justification shall be attached. Note: Waivers will be acted upon separately. Failure to adequately address the required submission information may result in a delay in processing this application.

This information is required under the following Zoning Ordinance paragraphs:

Special Permits (8-011 2J & 2L)	Special Exceptions (9-011 2J & 2L)
Cluster Subdivision (9-615 1G & 1N)	Commercial Revitalization Districts (9-622 2A (12) & (14))
Development Plan PRC District (16-302 3 & 4L)	PRC Plan (16-303 1E & 1O)
FDP Districts (except PRC) (16-502 1F & 1Q)	Amendments (18-202 10F & 10I)

[x] 1. Plat is at a minimum scale of 1"=50' (unless depicted on one sheet with a minimum scale of 1"=100')

[x] 2. A graphic depicting the Stormwater management facility(ies) and limits of clearing and grading accommodate the Stormwater management facility(ies), storm drainage pipe systems and outlet protection, pond spillways, access roads, site outfalls, energy dissipation devices, and stream stabilization measures as shown on Sheet 3

[x] 3. Provide:

Facility Name/ Type & No.	On-site area served (acres)	Off-site area served (acres)	Drainage area (acres)	Footprint area (sf)	Storage Volume (cf)	if pond, dam height (ft)
underground detention pipe #2	0.55	0	0.55	960	4,618.00	n/a
detention pipe #3	0.91	0.01	0.92	960	4,732.00	n/a
Totals	1.46	0.01	1.47	1920	9,350.00	

[x] 4. Onsite drainage channels, outfalls and pipe systems are shown 3
Pond inlet and outlet pipe systems are shown on Sheet 3 and 6

[x] 5. Maintenance access (road) to Stormwater management facility(ies) are shown on Sheet n/a
Type of maintenance access road surface noted on the plat is n/al (asphalt, geoblock, gravel, etc.).

[x] 6. Landscaping and tree preservation shown in and near the stormwater management facility is shown on Sheet 3

[x] 7. A "stormwater management narrative' which contains a description of how detention and best management practices requirements will be met is provided on Sh 5

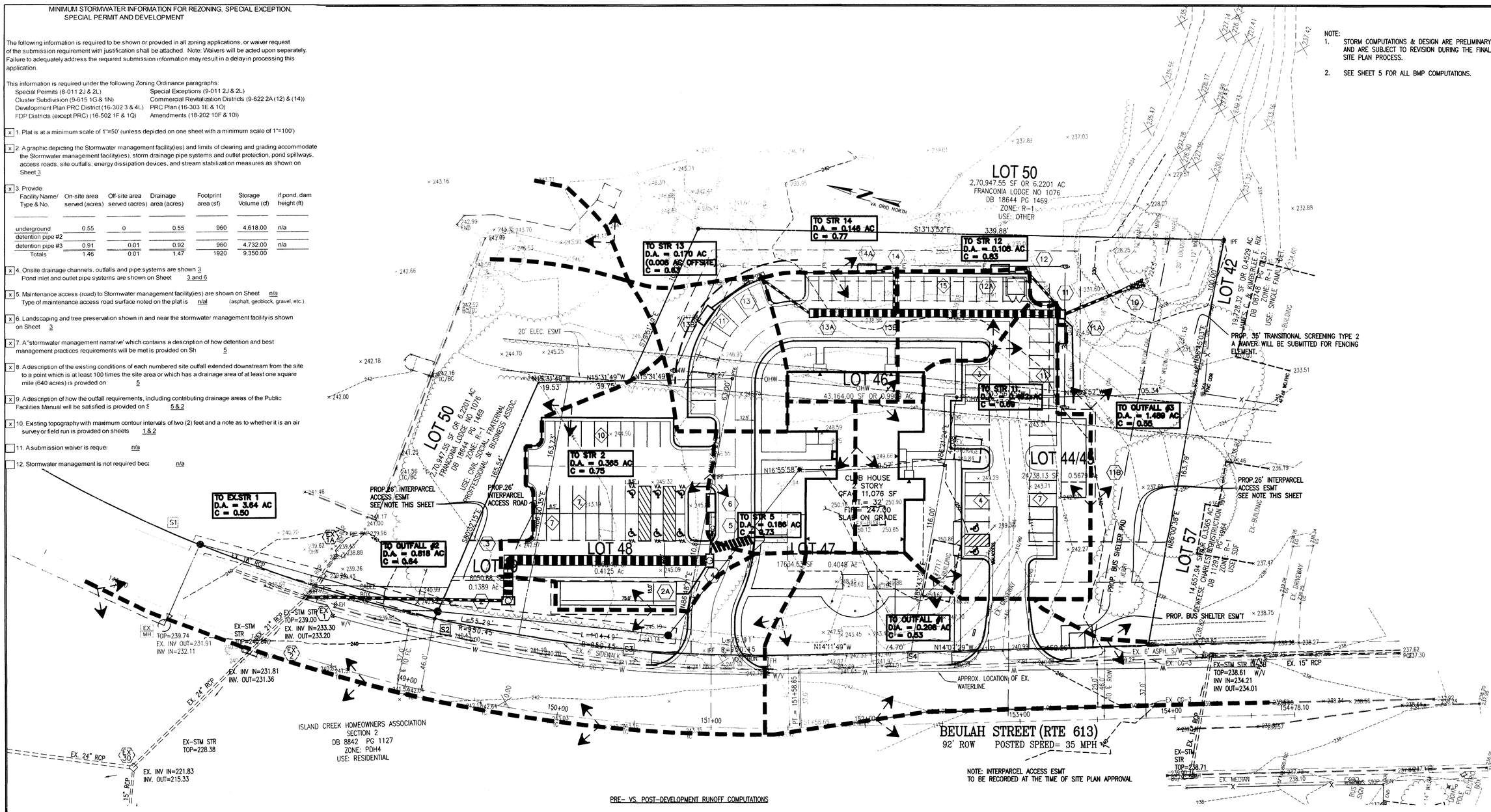
[x] 8. A description of the existing conditions of each numbered site outfall extended downstream from the site to a point which is at least 100 times the site area or which has a drainage area of at least one square mile (640 acres) is provided on 5

[x] 9. A description of how the outfall requirements, including contributing drainage areas of the Public Facilities Manual will be satisfied is provided on S 5 & 2

[x] 10. Existing topography with maximum contour intervals of two (2) feet and a note as to whether it is an air survey or field run is provided on sheets 1 & 2

[ ] 11. A submission waiver is reque: n/a

[ ] 12. Stormwater management is not required beca n/a



NOTE:
1. STORM COMPUTATIONS & DESIGN ARE PRELIMINARY AND ARE SUBJECT TO REVISION DURING THE FINAL SITE PLAN PROCESS.
2. SEE SHEET 5 FOR ALL BMP COMPUTATIONS.

PRE- VS. POST-DEVELOPMENT RUNOFF COMPUTATIONS

OUTFALL #1 PRE-DEVELOPMENT

	Area (SF)	Area (AC)	C' factor	CxA
Impervious Area	1,429	0.033	0.90	0.03
Pervious Area (On-Site)	10,912	0.251	0.30	0.08
Total Drainage Area	12,341	0.283		0.10

Weighted 'C' factor = 0.37
Pre-Development Q = CxIxA = 0.76

OUTFALL #1 POST-DEVELOPMENT

	Area (SF)	Area (AC)	C' factor	CxA
Impervious Area	3,397	0.078	0.90	0.07
Pervious Area (On-Site)	5,661	0.130	0.30	0.04
Total Drainage Area	9,058	0.208		0.11

Weighted 'C' factor = 0.53
Post-Development Q = CxIxA = 0.79
Post-Pre = 0.03

OUTFALL #2 PRE-DEVELOPMENT

	Area (SF)	Area (AC)	C' factor	CxA
Impervious Area	71	0.002	0.90	0.00
Pervious Area (On-Site)	37,319	0.857	0.30	0.26
Total Drainage Area	37,390	0.858		0.26

Weighted 'C' factor = 0.30
Q = CxIxA = 1.88

OUTFALL #2 POST-DEVELOPMENT

	Area (SF)	Area (AC)	C' factor	CxA
Impervious Area	20,178	0.463	0.90	0.42
Pervious Area (On-Site)	15,464	0.355	0.30	0.11
Total Drainage Area	35,642	0.818		0.52

Weighted 'C' factor = 0.64
Post-development Q = CxIxA = 3.81
Post - Pre = 1.93

OUTFALL #3 PRE-DEVELOPMENT

	Area (SF)	Area (AC)	C' factor	CxA
Impervious Area	162	0.004	0.90	0.00
Pervious Area (On-Site)	59,663	1.370	0.30	0.41
Total Drainage Area	59,825	1.373		0.41

Weighted 'C' factor = 0.30
Q = CxIxA = 3.01

OUTFALL #3 POST-DEVELOPMENT

	Area (SF)	Area (AC)	C' factor	CxA
Impervious Area	27,535	0.632	0.90	0.57
Pervious Area (On-Site)	37,340	0.857	0.30	0.26
Total Drainage Area	64,875	1.489		0.83

Weighted 'C' factor = 0.55
Q = CxIxA = 6.01
Post - Pre = 2.99

Application No. SE2007-LE-020 Staff S. Lim
APPROVED SE/SP PLAN 4-7-08
SEE DEV CONDS DATED 4-18-08
Board of (BOS) (BZA) approval
Sheet 4 of 10

GRAPHIC SCALE
30 0 15 30 60 120
(IN FEET)
1 inch = 30 ft.

THE SUBMITTING ENGINEER CERTIFIES THAT NO OTHER CHANGES HAVE BEEN MADE ON THE PLAN OR PROFILE EXCEPT THOSE PREVIOUSLY APPROVED

REVISIONS APPROVED BY DIVISION OF DESIGN REVIEW

NO.	DESCRIPTION	REVIEW BY	APPROVED	DATE

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PROJECT COORDINATOR
CHARLIE FRONDA
DEANA MASINI

RUNNOFF COMPUTATIONS AND DRAINAGE DIVIDES MAP
SPECIAL EXCEPTION PLAT
SPRINGFIELD POST 7327
VETERANS OF FOREIGN WARS OF THE UNITED STATES, INC.
FAIRFAX COUNTY, VIRGINIA
LEE DISTRICT

PROJECT NO

COMMONWEALTH OF VIRGINIA
TALAL A. HASSAN
No. 025527
01-31-08
PROFESSIONAL ENGINEER

PLAN STATUS	
01-31-08	COUNTY & CLIENT COMMENTS

DATE	DESCRIPTION

PH/TMD DESIGN	PH/TMD DRAWN	DM CHKD
SCALE	H: V:	
JOB No.	VA-07-06	
DATE :	APRIL, 2007	
FILE No.	c-1046	
SHEET	4 OF 10	

C-1046

S:\CIVIL DEPARTMENT\JOB FOLDER\VA-07-06 VETERANS OF FOREIGN WARS OF UNITED STATES\DWG\SPECIAL EXCEPTION\PLAN SET\04-VA-07-06 DRAINAGE DIVIDES.dwg, 2/4/2008 11:09:39 AM, thenry,
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DRAINAGE AREA "C" FACTOR CALCULATIONS

OUTFALL #1

	Area (SF)	Area (AC)	C' factor	CxA
Impervious Area	3,397	0.078	0.90	0.07
Pervious Area (On-Site)	5,661	0.130	0.30	0.04
Total Drainage Area	9,058	0.208		0.11

Weighted 'C' factor = 0.53
Q = CxIxA = 0.8

OUTFALL #2
D.A. TO BIO-RETENTION FILTER 2

	Area (SF)	Area (AC)	C' factor	CxA
Impervious Area	11,889	0.273	0.90	0.25
Pervious Area (On-Site)	4,004	0.092	0.30	0.03
Total Drainage Area	15,893	0.365		0.27

Weighted 'C' factor = 0.75
Q = CxIxA = 1.99

D.A. TO STR 5

	Area (SF)	Area (AC)	C' factor	CxA
Impervious Area	5,849	0.134	0.90	0.12
Pervious Area (On-Site)	2,243	0.052	0.30	0.02
Total Drainage Area	8,099	0.186		0.14

Weighted 'C' factor = 0.73
Q = CxIxA = 0.99

ON-SITE D.A. TO UNDERGROUND DETENTION PIPE

	Area (SF)	Area (AC)	C' factor	CxA
Impervious Area	17,738	0.407	0.90	0.37
Pervious Area	6,248	0.143	0.30	0.04
Total Drainage Area	23,986	0.551		0.41

Weighted 'C' factor = 0.81
Q = CxIxA = 3.24

OUTFALL #3
D.A. TO STR 11

	Area (SF)	Area (AC)	C' factor	CxA
Impervious Area	14,293	0.328	0.90	0.30
Pervious Area (On-Site)	6,798	0.156	0.30	0.05
Total Drainage Area	21,091	0.484		0.34

Weighted 'C' factor = 0.71
Q = CxIxA = 2.49

D.A. TO STR 12

	Area (SF)	Area (AC)	C' factor	CxA
Impervious Area	4,138	0.095	0.90	0.09
Pervious Area (On-Site)	580	0.013	0.30	0.00
Total Drainage Area	4,718	0.108		0.09

Weighted 'C' factor = 0.83
Q = CxIxA = 0.65

D.A. TO STR 13

	Area (SF)	Area (AC)	C' factor	CxA
Impervious Area	4,099	0.094	0.90	0.08
Pervious Area (On-Site)	2,991	0.069	0.30	0.02
Pervious Area (Off-Site)	328	0.008	0.30	0.00
Total Drainage Area	7,418	0.170		0.11

Weighted 'C' factor = 0.63
Q = CxIxA = 0.78

D.A. TO STR 14

	Area (SF)	Area (AC)	C' factor	CxA
Impervious Area	5,005	0.115	0.90	0.10
Pervious Area (On-Site)	1,376	0.032	0.30	0.01
Total Drainage Area	6,381	0.146		0.11

Weighted 'C' factor = 0.77
Q = CxIxA = 0.82

ON-SITE D.A. TO UNDERGROUND DETENTION PIPE

	Area (SF)	Area (AC)	C' factor	CxA
Impervious Area	27,535	0.632	0.90	0.57
Pervious Area	11,746	0.270	0.30	0.08
Total Drainage Area	39,280	0.902		0.65

Weighted 'C' factor = 0.72
Q = CxIxA = 4.72

OFF-SITE D.A. TO UNDERGROUND DETENTION PIPE

	Area (SF)	Area (AC)	C' factor	CxA
Impervious Area	0	0.000	0.90	0.00
Pervious Area	328	0.008	0.30	0.00
Total Drainage Area	328	0.008		0.00

Weighted 'C' factor = 0.30
Q = CxIxA = 0.02

UNCONTROLLED AREA

	Area (SF)	Area (AC)	C' factor	CxA
Impervious Area	2,287	0.053	0.90	0.05
Pervious Area	34,943	0.802	0.30	0.24
Total Drainage Area	37,230	0.855		0.29

Weighted 'C' factor = 0.34
Q = CxIxA = 2.09

BMP FACILITY DESIGN CALCULATIONS

Plan Name: VETERANS OF FOREIGN WARS OF THE UNITED STATES OF AMERICA
Plan Number:
Date: February 1, 2008
Engineer: TMD

PART I: SUBAREA DESIGNATION AND DESCRIPTION.

		"C"	ACRES
A1	BIO-RETENTION FILTER 2	0.75	0.365
A2	TREE BOX FILTER 6	0.73	0.110
A3	TREE BOX FILTER 11A	0.80	0.106
A4	BIO-RETENTION FILTER 11B	0.65	0.373
A5	TREE BOX FILTER 12A	0.82	0.095
A6	TREE BOX FILTER 13B	0.69	0.106
A7	TREE BOX FILTER 14A	0.78	0.107
A8	UNCONTROLLED AREA	0.43	1.253
		TOTAL	2.515

PART 2: COMPUTE THE WEIGHTED AVERAGE "C" FACTOR FOR THE SITE
(A) AREA OF SITE (a) 2.515 Ac

Subarea	Description	"C"	ACRES	C X A
A1	BIO-RETENTION FILTER 2	0.75	0.365	0.27
A2	TREE BOX FILTER 6	0.73	0.110	0.08
A3	TREE BOX FILTER 11A	0.80	0.106	0.08
A4	BIO-RETENTION FILTER 11B	0.65	0.373	0.24
A5	TREE BOX FILTER 12A	0.82	0.095	0.08
A6	TREE BOX FILTER 13B	0.69	0.106	0.07
A7	TREE BOX FILTER 14A	0.78	0.107	0.08
A8	UNCONTROLLED AREA	0.43	1.253	0.54
			TOTAL =	1.46
		WT."C" =	0.58	

PART 3: Calculate Total Phosphorous Removal for Site.

Subarea	BMP Type	Removal EFF. (%)	Area Ratio	C"Factor Ratio	Product
A1	BIO-RETENTION FILTER 2	65	0.145	1.293	12.19
A2	TREE BOX FILTER 6	65	0.044	1.259	3.58
A3	TREE BOX FILTER 11A	65	0.042	1.380	3.78
A4	BIO-RETENTION FILTER 11B	65	0.148	1.117	10.77
A5	TREE BOX FILTER 12A	65	0.038	1.409	3.47
A6	TREE BOX FILTER 13B	65	0.042	1.194	3.28
A7	TREE BOX FILTER 14A	65	0.043	1.341	3.70
A8	UNCONTROLLED AREA	0	0.498	0.748	0.00
				TOTAL =	40.77 Percent (%)

PART 4: Determine compliance with requirements.

Water Supply Overlay District
(Occoquan Watershed) Req'd Removal: 40%

If Part 3 40.77% is greater than 40% :
Then the Phosphorous removal requirement is satisfied.

OUTFALL #3 STORM WATER UNDERGROUND DETENTION PIPE COMPUTATIONS (U.G.D.P.#3)

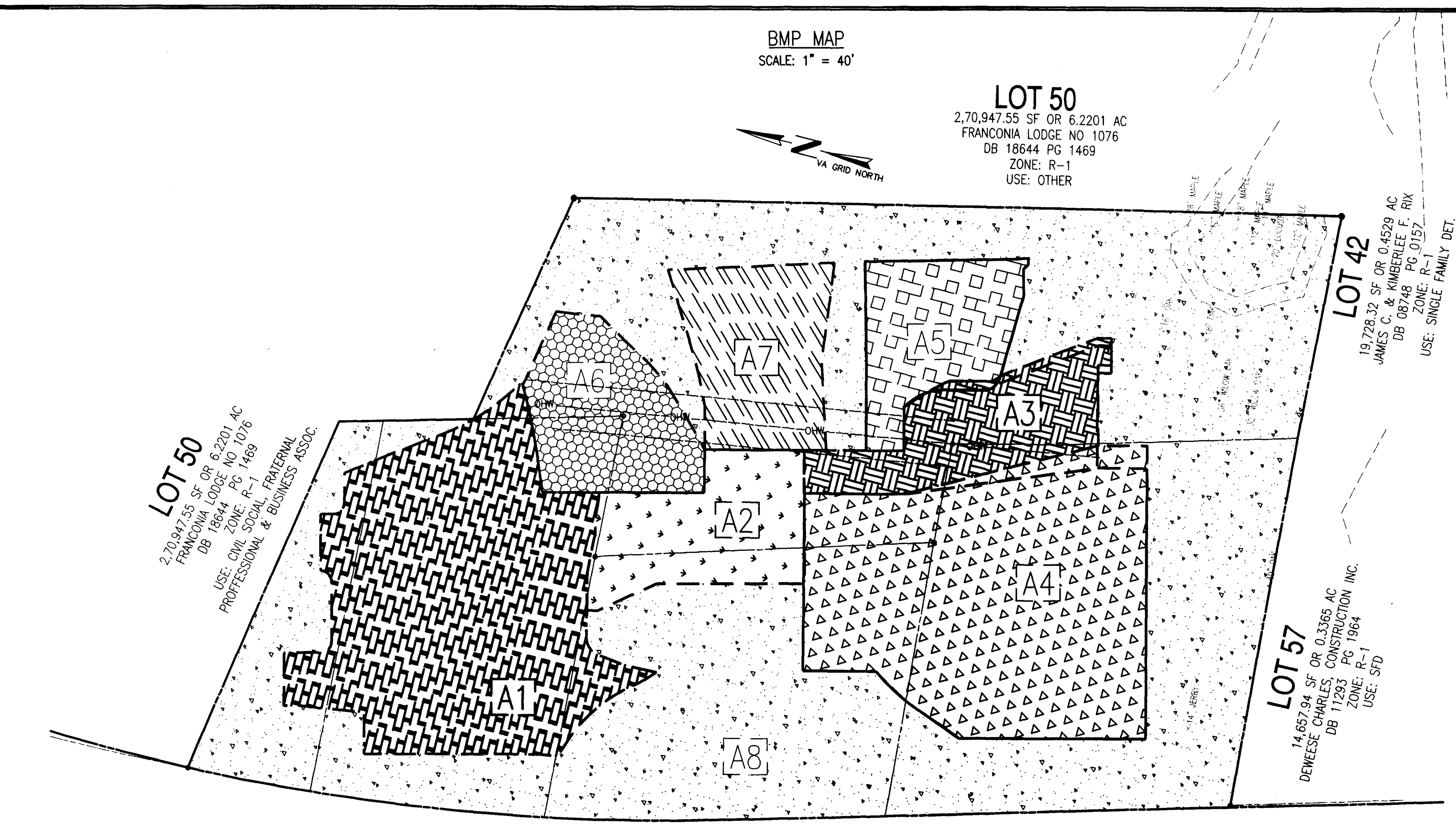
RETURN PERIOD (YEARS)	PRE-DEVELOPMENT RUN-OFF AREA (AC) / IMP. AC.	C / INT. (IN/HR)	IMP. AC. / Q (CFS)	POST-DEVELOPMENT RUN-OFF AREA (AC) / TOTAL IMP. AC.	C / INT. (IN/HR)	IMP. AC. / Q (CFS)	INCREASE IN RUN-OFF: POST DEVELOPMENT RUN-OFF (CFS)	PRE DEVELOPMENT RUN-OFF (CFS)	FLOW TO BE DETAINED (CFS)
	1.37	0.30	0.41	1.49	0.55	0.82			
10	0.41	7.27	2.99	0.82	7.27	5.96	5.96	2.99	2.97

RETURN PERIOD (YEARS)	UGDP AREA (AC)	C	IMP. AC.	TOTAL IMP. AC.	TOTAL U.G.D.P. INFLOW (CFS)	UNCONTROLLED FLOW: TOTAL AREA FLOW (POST-DEVELOPMENT RUN-OFF)	ON-SITE TO U.G.D.P.	UNCONTROLLED FLOW	ALLOWABLE OUTFLOW: PRE-DEVELOPMENT RUN OFF	OFF-SITE TO U.G.D.P.	UNCONTROLLED FLOW	MAXIMUM ALLOWABLE OUTFLOW
	0.91	0.71	0.65	0.65								
	INTENSITY (IN/HR)		TOTAL IMP. AC.									
10	7.27		0.65		4.70	5.96	4.70	1.26	2.99	-	1.26	1.73

OUTFALL #2 STORM WATER UNDERGROUND DETENTION PIPE COMPUTATIONS (U.G.D.P.#2)

RETURN PERIOD (YEARS)	PRE-DEVELOPMENT RUN-OFF AREA (AC) / IMP. AC.	C / INT. (IN/HR)	IMP. AC. / Q (CFS)	POST-DEVELOPMENT RUN-OFF AREA (AC) / TOTAL IMP. AC.	C / INT. (IN/HR)	IMP. AC. / Q (CFS)	INCREASE IN RUN-OFF: POST DEVELOPMENT RUN-OFF (CFS)	PRE DEVELOPMENT RUN-OFF (CFS)	FLOW TO BE DETAINED (CFS)
	0.86	0.30	0.26	0.82	0.66	0.54			
10	0.26	7.27	1.88	0.54	7.27	3.93	3.93	1.88	2.06

RETURN PERIOD (YEARS)	UGDP AREA (AC)	C	IMP. AC.	TOTAL IMP. AC.	TOTAL U.G.D.P. INFLOW (CFS)	UNCONTROLLED FLOW: TOTAL AREA FLOW (POST-DEVELOPMENT RUN-OFF)	ON-SITE TO U.G.D.P.	UNCONTROLLED FLOW	ALLOWABLE OUTFLOW: PRE-DEVELOPMENT RUN OFF	OFF-SITE TO U.G.D.P.	UNCONTROLLED FLOW	MAXIMUM ALLOWABLE OUTFLOW
	0.55	0.81	0.45	0.45								
	INTENSITY (IN/HR)		TOTAL IMP. AC.									
10	7.27		0.45		3.24	3.93	3.24	0.70	1.88	-	0.70	1.18



BEULAH STREET (RTE 613)
92' ROW POSTED SPEED= 30 MPH

A-1 BIO-RETENTION FILTER 2A, DEVELOPED WITH CONTROLS = 15,893 SF = 0.365 AC
A-2 TREE BOX FILTER 6, DEVELOPED WITH CONTROLS = 4,794 SF = 0.110 AC
A-3 TREE BOX FILTER 11A, DEVELOPED WITH CONTROLS = 4,617 SF = 0.106 AC
A-4 BIO-RETENTION FILTER 11B, DEVELOPED WITH CONTROLS = 16,249 SF = 0.373 AC
A-5 TREE BOX FILTER 12A, DEVELOPED WITH CONTROLS = 4,152 SF = 0.095 AC
A-6 TREE BOX FILTER 13B, DEVELOPED WITH CONTROLS = 4,627 SF = 0.106 AC
A-7 TREE BOX FILTER 14A, DEVELOPED WITH CONTROLS = 4,657 SF = 0.107 AC
A-8 UNCONTROLLED AREA, DEVELOPED W/O CONTROLS = 54,565 SF = 1.253 AC

OUTFALL NARRATIVE

THE SUBJECT PROPERTY CONSISTS OF 2.52 ACRES OF LAND ALONG BEAULAH STREET AND OUTFALLS INTO THREE LOCATIONS, FURTHER SPECIFIED AS OUTFALLS 1, 2, AND 3.

OUTFALL #1
SLOPES TOWARDS THE SOUTHWEST PORTION OF THE PROPERTY AND SHEET FLOWS TOWARD THE ROAD GUTTER AND EXISTING STORM SEWER SYSTEM ALONG BEAULAH STREET. THE RUNOFF AT THE OUTFALL SHALL INCREASE FROM 0.76 CFS TO 0.79 CFS. THEREFORE IN MY OPINION THE EXISTING STORM SEWER SYSTEM AND DOWNSTREAM PROPERTIES FROM THIS OUTFALL WILL NOT BE IMPACTED BY THIS PROPOSED DEVELOPMENT.

OUTFALL#2
THE ON-SITE DRAINAGE AREA TO THIS OUTFALL IS 0.81 AC. THE RECEIVING WATERCOURSE DRAINAGE AREA IS ANALYZED DOWNSTREAM TO A POINT WHERE THE TOTAL DRAINAGE AREA IS 89.51 AC, 100 TIMES THE ON-SITE DRAINAGE AREA. THE PEAK OUTFLOW FROM THE OUTFALL WILL.FLOW INTO AN EXISTING STORM SEWER SYSTEM AND DISCHARGE INTO THE EXISTING LAKE NO. 2 AT THE EXISTING SUBDIVISION NAMED ISLAND CREEK SECTION TWO.
THE OUTFALL PIPE FROM THE LAKE THAT RUNS ACROSS MORNING VIEW LAKE IS PROVIDED WITH RIPRAP AND DISCHARGE INTO THE EXISTING NATURAL CHANNEL AND ULTIMATELY OUTFALL TOWARDS LONG BRANCH.
THE POST-DEVELOPMENT PEAK DISCHARGE FROM THE SITE IS KEPT AT OR BELOW THE DISCHARGE WITH THE SITE IN GOOD FORESTED CONDITION AND THE 1 YEAR DETAINED FOR 24 HOURS, USING AN UNDERGROUND DETENTION PIPE IN ORDER TO MITIGATE SOME OF THE DOWNSTREAM FLOODING PROBLEM.

STORM DRAIN COMPUTATIONS AND THREE CROSS SECTIONS OF THE EXISTING CHANNEL ARE PROVIDED AND THE COMPUTATIONS INDICATE THAT THE OUTFALL IS ADEQUATE.

OUTFALL#3
THE ON-SITE DRAINAGE AREA TO THIS OUTFALL IS 1.49 AC. THE RECEIVING WATERCOURSE DRAINAGE AREA IS ANALYZED DOWNSTREAM TO A POINT WHERE THE TOTAL DRAINAGE AREA IS 186.0 AC, WHICH IS MORE THAN 100 TIMES THE ON-SITE DRAINAGE AREA. THE PEAK OUTFLOW FROM THIS OUTFALL WILL DISCHARGE INTO A PROPOSED RIPRAP AND CONTINUE ON TO THE EXISTING NATURAL CHANNEL THAT RUNS ALONG WOODED AREAS WITH UNDERBRUSH AND CONTINUE INTO AN EXISTING STORM DRAIN EASEMENT.
THE POST-DEVELOPMENT PEAK DISCHARGE FROM THE SITE IS KEPT TO BELOW THE PRESENT SITE CONDITIONS USING AN UNDERGROUND DETENTION PIPE.
THREE CROSS SECTIONS OF THE EXISTING NATURAL CHANNEL ARE PROVIDED AND THE COMPUTATION INDICATE THAT OUTFALL IS ADEQUATE.

THEREFORE BASED FROM THE ABOVE ANALYSIS OF THE PRE-DEVELOPMENT AND POST-DEVELOPMENT CONDITIONS FOR ALL THREE OUTFALLS AND EXISTING STORM SEWER SYSTEMS, IT IS THE ENGINEER'S OPINION THAT ALL OUTFALLS ARE ADEQUATE.

WATER QUALITY NARRATIVE

THE SUBJECT SITE CONSISTS OF A PROPOSED 2.52 ACRE COMMERCIAL DEVELOPMENT COMPOSED OF THREE SEPERATE OUTFALLS.

OUTFALL #1 LOCATED AT THE SOUTHWESTERLY PORTION OF THE PROPERTY, CONTAINS 0.208 ACRES, WHICH SHALL REMAIN UNCONTROLLED AND SHEET FLOW EASTERLY TOWARDS BEAULAH ROAD INTO AN EXISTING CLOSED STORM SEWER SYSTEM.

OUTFALL #2 LOCATED AT THE NORTHWESTERLY PORTION OF THE PROPERTY, CONTAINS 0.818 ACRE OVERALL, OF WHICH 0.475 ACRE IS BEING TREATED BY THE ONE TREE BOX FILTER WITHIN THE PARKING ISLAND AND BIO-RETENTION FILTER LOCATED ALONG THE NORTHWESTERLY PORTION OF THE PROPERTY. THE TREE BOX FILTER AND BIO-RETENTION FILTER SHALL OUTFALL INTO THE PROPOSED CLOSED STORM SEWER SYSTEM AND OUTFALL INTO THE 72" DIAMETER UNDERGROUND STORAGE PIPE LOCATED AT THE NORTHWESTERN CORNER OF THE PARKING AREA.

OUTFALL #3 LOCATED AT THE SOUTHEASTERLY PORTION OF THE PROPERTY CONTAINS 1.489 ACRES OVERALL, OF WHICH 0.414 ACRE IS BEING TREATED BY THE FOUR TREE BOX FILTER STRUCTURES AND 0.351 ACRE IS BEING TREATED BY THE BIO-RETENTION FILTER ON THE SOUTHERN PORTION OF THE PROPERTY. THE OUTFLOW FROM EACH OF THESE FACILITIES SHALL BE ROUTED BY THE PROPOSED STORM SEWER SYSTEM AND OUTFALL INTO THE PROPOSED UNDERGROUND STORAGE PIPE AT THE SOUTHERLY PORTION OF THE PARKING AREA

A TOTAL OF 1.253 ACRES, INCLUDING THE AREA FROM OUTFALL #1, WILL REMAIN UNCONTROLLED. EACH BMP FACILITY SHALL BE PRIVATELY MAINTAINED BY THE OWNER. THE SITE IS LOCATED OUTSIDE OF THE OCCOQUAN WATERSHED AND THEREFORE REQUIRED THAT THE PHOSPHORUS LOAD POST-DEVELOPMENT BE REDUCED BY 40%. 40.96% PHOSPHORUS REMOVAL IS ACHIEVED,AND A PARTIAL WAIVER SHALL BE REQUESTED.

STORMWATER MANAGENMENT AND BEST MANAGEMENT PRACTICE NARRATIVE
TWO UNDERGROUND DETENTION PIPES FACILITIES, ONE BIO-RETENTION FILTER AND EIGHT TREE BOX FILTERS ARE PROVIDED ON SITE.

AN UNDERGROUND DETENTION PIPE FACILITY AND A BIO-RETENTION FILTER WERE PROVIDED ON EACH OUTFALL AREAS FOR OUTFALL NUMBER 2 AND 3. IN ADDITION A TREE BOX FILTER IS PROVIDED FOR OUTFALL #2, AND FOUR TREE BOX FILTERS ARE PROVIDED FOR OUTFALL #3. THE UNDERGROUND PIPE FACILITY FOR OUTFALL #2 IS DESIGNED TO PROVIDE A 1 YEAR DETENTION FOR 24 HOURS AND 2 YEAR AND 10 YEAR PEAK FLOWS REDUCED TO GOOD FORESTED CONDITION. THE UNDERGROUND PIPE FACILITY FOR OUTFALL #3 IS DESIGNED TO PROVIDE WELL ABOVE THE MINIMUM REQUIRED STORAGE VOLUME. SEE CALCULATION ON SHEET 6.
THE FIVE TREE BOX FILTERS AND TWO BIORETENTION FILTERS WILL PROVIDE A TOTAL OF 40.96% PHOSPHOROUS REMOVAL.

APPROVED SE/SP PLAN
SEE DEV CONDS DATED 4.7.08
Date of (BOS) (BZA) approval 4.28.08
Sheet 5 of 10

THE SUBMITTING ENGINEER CERTIFIES THAT NO OTHER CHANGES HAVE BEEN MADE ON THE PLAN OR PROFILE EXCEPT THOSE PREVIOUSLY APPROVED

REVISIONS APPROVED BY DIVISION OF DESIGN REVIEW

NO.	DESCRIPTION	REVIEW BY	APPROVED	DATE

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PROJECT COORDINATOR
CHARLIE FRONDA
DEANA MASINI

STORMWATER MANAGEMENT COMPUTATIONS AND BMP DIVIDES MAP
SPECIAL EXCEPTION PLAT
SPRINGFIELD POST 7327
VETERANS OF FOREIGN WARS OF THE UNITED STATES, INC.
LEE DISTRICT
FAIRFAX COUNTY, VIRGINIA

PROJECT NO

COMMONWEALTH OF VIRGINIA
TALAL A. HASSAN
No.025527
01-31-08
PROFESSIONAL ENGINEER

PLAN STATUS

01-31-08	COUNTY & CLIENT COMMENTS
DATE	DESCRIPTION

PH/TMD DESIGN	PH/TMD DRAWN	DM CHKD
SCALE	H: 1" = 40' V:	
JOB No.	VA-07-06	
DATE :	APRIL, 2007	
FILE No.	c-1046	

OUTFALL #2
10 YEAR STORM IN-FLOW HYDROGRAPH STORM
WATER DETENTION PIPE

Fairfax County Hydrograph Parameters
Runoff Coefficient: C
Watershed Area: C
Design Storm Return Period: 10 years
Time of Concentration (Tc): 5 minutes

Time (min)	Flow (cfs)	Time (min)	Flow (cfs)
0	0.0	61	0.6
1	1.5	62	0.6
2	2.8	63	0.6
3	3.8	64	0.6
4	4.5	65	0.6
5	4.7	66	0.6
6	4.5	67	0.6
7	4.1	68	0.6
8	3.7	69	0.5
9	3.3	70	0.5
10	3.0	71	0.5
11	2.8	72	0.5
12	2.7	73	0.5
13	2.5	74	0.5
14	2.4	75	0.5
15	2.2	76	0.5
16	2.1	77	0.5
17	2.0	78	0.4
18	2.0	79	0.4
19	1.9	80	0.4
20	1.8	81	0.4
21	1.7	82	0.4
22	1.7	83	0.4
23	1.6	84	0.4
24	1.5	85	0.4
25	1.5	86	0.4
26	1.4	87	0.4
27	1.4	88	0.3
28	1.3	89	0.3
29	1.3	90	0.3
30	1.3	91	0.3
31	1.2	92	0.3
32	1.2	93	0.3
33	1.2	94	0.3
34	1.1	95	0.3
35	1.1	96	0.3
36	1.1	97	0.2
37	1.0	98	0.2
38	1.0	99	0.2
39	1.0	100	0.2
40	0.9	101	0.2
41	0.9	102	0.2
42	0.9	103	0.2
43	0.9	104	0.2
44	0.9	105	0.2
45	0.8	106	0.1
46	0.8	107	0.1
47	0.8	108	0.1
48	0.8	109	0.1
49	0.8	110	0.1
50	0.8	111	0.1
51	0.7	112	0.1
52	0.7	113	0.1
53	0.7	114	0.1
54	0.7	115	0.0
55	0.7	116	0.0
56	0.7	117	0.0
57	0.7	118	0.0
58	0.7	119	0.0
59	0.7	120	0.0
60	0.6		

OUTFALL #3
10 YEAR STORM INFLOW HYDROGRAPH STORM
WATER DETENTION PIPE

Fairfax County Hydrograph Parameters
Runoff Coefficient: C.81
Watershed Area: C.08
Design Storm Return Period: 10 years
Time of Concentration (Tc): 5 minutes

Time (min)	Flow (cfs)	Time (min)	Flow (cfs)
0	0.0	61	0.4
1	1.0	62	0.4
2	1.9	63	0.4
3	2.6	64	0.4
4	3.1	65	0.4
5	3.2	66	0.4
6	3.1	67	0.4
7	2.8	68	0.4
8	2.6	69	0.4
9	2.3	70	0.4
10	2.1	71	0.4
11	2.0	72	0.4
12	1.8	73	0.3
13	1.7	74	0.3
14	1.6	75	0.3
15	1.5	76	0.3
16	1.5	77	0.3
17	1.4	78	0.3
18	1.3	79	0.3
19	1.3	80	0.3
20	1.2	81	0.3
21	1.2	82	0.3
22	1.1	83	0.3
23	1.1	84	0.3
24	1.1	85	0.3
25	1.0	86	0.2
26	1.0	87	0.2
27	1.0	88	0.2
28	0.9	89	0.2
29	0.9	90	0.2
30	0.9	91	0.2
31	0.8	92	0.2
32	0.8	93	0.2
33	0.8	94	0.2
34	0.8	95	0.2
35	0.7	96	0.2
36	0.7	97	0.2
37	0.7	98	0.2
38	0.7	99	0.2
39	0.7	100	0.1
40	0.7	101	0.1
41	0.6	102	0.1
42	0.6	103	0.1
43	0.6	104	0.1
44	0.6	105	0.1
45	0.6	106	0.1
46	0.6	107	0.1
47	0.6	108	0.1
48	0.5	109	0.1
49	0.5	110	0.1
50	0.5	111	0.1
51	0.5	112	0.1
52	0.5	113	0.0
53	0.5	114	0.0
54	0.5	115	0.0
55	0.5	116	0.0
56	0.5	117	0.0
57	0.5	118	0.0
58	0.5	119	0.0
59	0.4	120	0.0
60	0.4		

UNDERGROUND STORAGE PIPE OUTFALL #2

STAGE STORAGE

STAGE	ELEV	72"DIA.	STR.	TOTAL(CF)
0.00	235.30	0	0	0
0.70	236.00	306	28	334
2.70	238.00	1,342	107	1,449
4.70	240.00	2,378	186	2,564
6.00	241.30	3,109	238	3,347

UNDERGROUND DETENTION PIPE OUTFALL #3
8.25 FTx5.0 FT STR.

STAGE STORAGE

STAGE	ELEV	72" DIA	STORAGE	TOTAL(CF)
0.00	228.20	0	0	0
0.80	229.00	482	28	510
1.80	230.00	1,236	63	1299
3.80	232.00	2,743	133	2876
4.80	234.00	4,250	168	4418
6.00	232.52	4,522	210	4732

SUMMARY

OUTFALL #2

PEAK DISCHARGE Q_P FROM THE TR-55 WORKSHEETS

FREQUENCY (YR)	PRESENT	DEVELOPED
1	0.59	2.31
2	0.83	2.82
10	1.91	5.25

UNCONTROLLED DRAINAGE AREA

PEAK DISCHARGE Q_P FROM THE TR-55 WORKSHEETS

FREQUENCY (YR)	PRESENT	DEVELOPED
1	0.20	0.38
2	0.26	0.38
10	0.59	0.40

PEAK DISCHARGE FROM UNCONTROLLED & BMP FACILITIES
(DURING DEVELOPED CONDITIONS)

FREQUENCY (YR)	UNCONTROLLED	UGDP		TOTAL	TOTAL DRAINAGE AREA < PRESENT CONDITIONS?
1	0.19	0.38		0.57	YES
2	0.27	0.38		0.65	YES
10	0.60	0.40		1.20	YES

PROPORTIONAL IMPROVEMENT

$R_i = (1-(Vi/Vd))100\%$

WHERE: $Vi = Q \times A_m \times 53.33$ (GOOD FORESTED CONDITION)

$Vd = Q \times A_m \times 53.33$ (POST-DEVELOPMENT CONDITION)

Q = RUNOFF IN INCHES FROM TR-55 WORKSHEET 2

GOOD FORESTED CONDITION

Vi = 1.40 x 0.0013 x 53.30

Vi = 0.0970 AC-FT (2-YEAR STORM)

Vi = 3.0200 x 0.0013 x 53.33

Vi = 0.2094 AC-FT (10-YEAR STORM)

POST-DEVELOPMENT CONDITION

Vd = 2.20 x 0.0013 x 53.33

Vd = 0.1525 AC-FT (2-YEAR STORM)

Vd = 4.10 x 0.0013 x 53.33

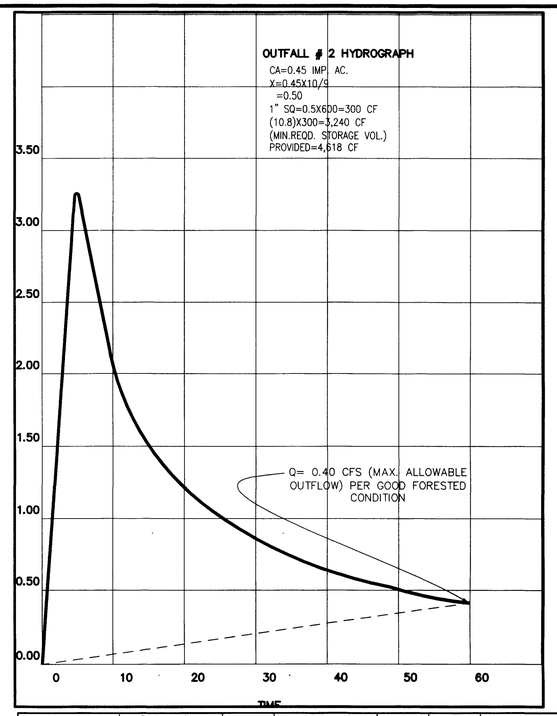
Vd = 0.2842 AC-FT (10-YEAR STORM;

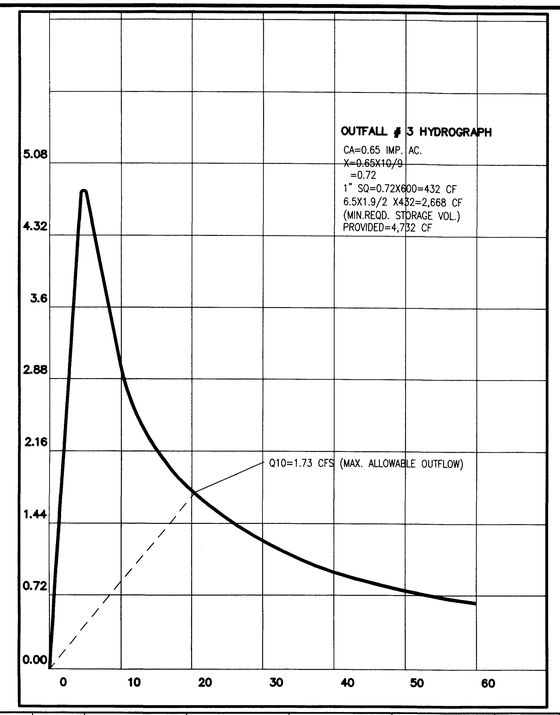
R_i (1-(0.10/0.15))*100

36.40

R_i = (2-YEAR STORM)

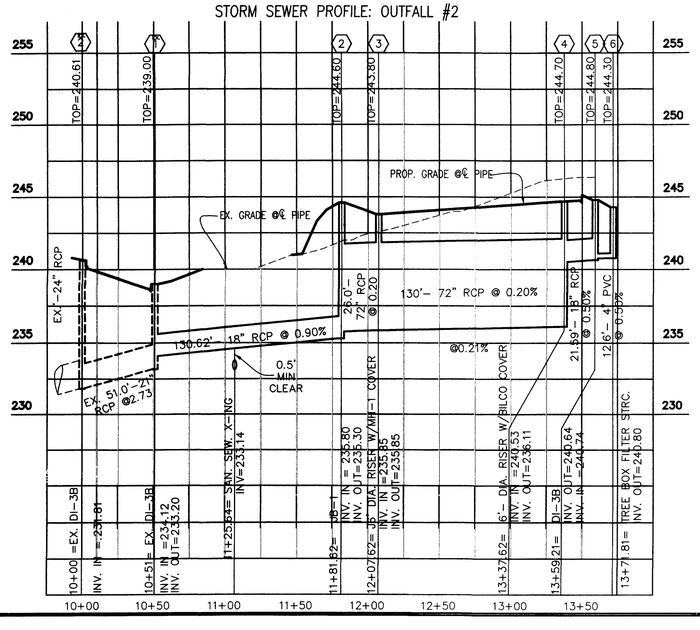
R_i = (1-(0.21/0.28))*100%



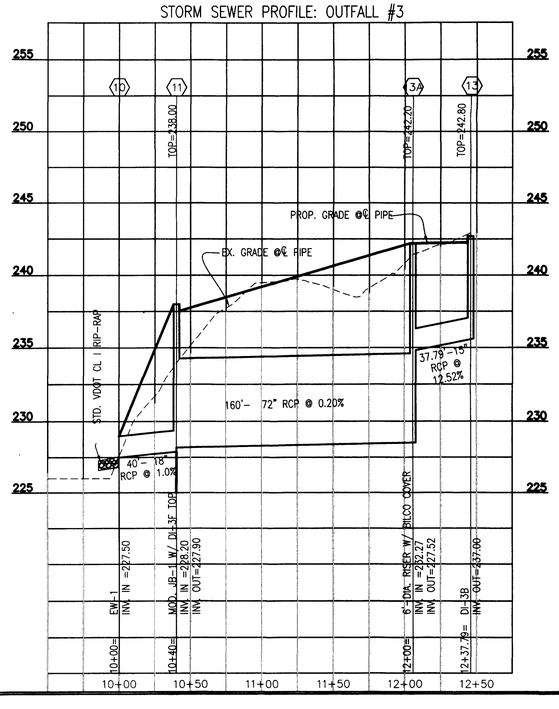


Structure FROM	Structure TO	Drainage Area (acre) Incr.	Drainage Area (acre) Accum.	C	CA Incr.	CA Accum.	Tc (minutes)	I (in/hr)	Q (cfs)	Slope (%) (actual)	n	Diameter (mm)	Diameter (in)	VEL F.F. FPS	VEL ACT FPS	LENGTH m	LENGTH FEET	TIME IN PIPE MIN-SEC	Q CAPACITY CFS	Remarks
5	4	0.19	0.19	0.72	0.14	0.14	5.00	7.27	1.00	3.67	0.013		12	8.69	6.03		34.90	0.10	6.82	adequate
2	EX 1	forested				0.06	5.00	7.27	0.40	0.50	0.013		21	4.66	2.92		130.00	0.76	11.21	adequate
EX1	EX 2	2.75	0.51	1.40	3.85	1.63	5.00	7.27	11.82	2.73	0.013		21	10.88	9.85		51.00	0.09	26.16	adequate
EX 2	EX 3	0.30	0.90	0.28	0.08	1.71	5.00	7.27	12.43	9.08	0.013		24	21.69	10.36		105.00	0.17	68.15	adequate
EX 3	EX 33	0.75	0.50	0.38	0.29	1.99	5.00	7.27	14.50	0.50	0.013		24	5.09	12.08		114.00	0.16	16.00	adequate
EX 33	EX 32	1.00	0.54	0.54	0.54	2.53	5.00	7.27	18.43	0.50	0.013		30	5.89	15.36		195.00	0.21	28.93	adequate

STORM SEWER PROFILE: OUTFALL #2



STORM SEWER PROFILE: OUTFALL #3



NOTES:

1. REFER TO SHEET 5 FOR STORM WATER DENTION CALCULATIONS FOR OUTFALLS 2 & 3 AS WELL AS THE OUTFALL & STORM WATER MANAGEMENT NARRATIVES..
2. SEE SHEET 5 FOR THE BMP COMPUTATIONS & NARRATIVE.

Application No. SE 2007-LE-030 Staff S. Lin
APPROVED SE/WSP PLAN
SEE DEV CONDS DATED 4-7-08
Date of (BOS) (BZA) approval 4-28-08
Sheet 6 of 10

GRAPHIC SCALE
1"=50' (H)
1"=5' (V)
0 25 50 75 100
0 2.5 5

THE SUBMITTING ENGINEER CERTIFIES THAT NO OTHER CHANGES HAVE BEEN MADE ON THE PLAN OR PROFILE EXCEPT THOSE PREVIOUSLY APPROVED

REVISIONS APPROVED BY DIVISION OF DESIGN REVIEW

NO.	DESCRIPTION	REVIEW BY	APPROVED	DATE

emsi ENGINEERING

9720 Capital Court
Manassas, Virginia
20110
Ph: (703) 257 - 0877
Fax: (703) 361 - 3798
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PROJECT COORDINATOR
CHARLIE FRONDA
DEANA MASINI

STORMWATER COMPUTATIONS

SPECIAL EXCEPTION PLAT
SPRINGFIELD POST 7327
VETERANS OF FOREIGN WARS OF THE UNITED STATES, INC.
FAIRFAX COUNTY, VIRGINIA
LEE DISTRICT

PROJECT NO

COMMONWEALTH OF VIRGINIA
TALAL A. HASSAN
No.025527
PROFESSIONAL ENGINEER
01-31-08

PLAN STATUS	
01-31-08	COUNTY & CLIENT COMMENTS

DATE	DESCRIPTION

PH/TMD DESIGN	PH/TMD DRAWN	DM CHKD
SCALE	H: AS NOTED V: AS NOTED	
JOB No.	VA-07-06	
DATE :	APRIL, 2007	
FILE No.	c-1046	
SHEET	6 OF 10	

C-1046

S:\CIVIL DEPARTMENT\JOB FOLDER\VA-07-06 VETERANS OF FOREIGN WARS OF UNITED STATES\DWG\SPECIAL EXCEPTION\PLAN SET\06 VA-07-06 SWM COMPUTATIONS.dwg, 2/1/2008 11:38:28 AM, thenry,

D.A. TO SEC. C-C
=29.0 AC @ C=0.50
TOTAL D.A. = 89.51 @ C=0.50

D.A. TO SEC. A-A
=47.62 AC @ C=0.50
TOTAL D.A. = 48.44 @ C=0.50

D.A. TO SEC. B-B
=12.0 AC @ C=0.50
TOTAL D.A. = 60.44 @ C=0.50

OUTFALL #2
ON-SITE AREA
=0.82 AC @ C=0.66

D.A. TO SEC E-E
=103 AC @ C=0.50
TOTAL D.A. = 105.83 AC
@ C=0.50

OUTFALL #3
ON-SITE AREA
=1.49 AC @ C=0.55

D.A. TO SEC. F-F
=1.34 AC @ C=0.50
TOTAL D.A.=2.83 @ C=0.53

D.A. TO SEC D-D
=80.17 AC @ C=0.50
TOTAL D.A. = 184.57 AC
@ C=0.50

ISLAND CREEK
ELEMENTARY SCHOOL

GRAPHIC SCALE
(IN FEET)
1 inch = 250 ft.

THE SUBMITTING ENGINEER CERTIFIES THAT NO OTHER CHANGES HAVE BEEN MADE ON THE PLAN OR PROFILE EXCEPT THOSE PREVIOUSLY APPROVED

REVISIONS APPROVED BY DIVISION OF DESIGN REVIEW

NO.	DESCRIPTION	BY	APPROVED	DATE

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PROJECT COORDINATOR
CHARLIE FRONDA
DEANA MASINI

OVERALL DRAINAGE MAP

SPECIAL EXCEPTION PLAT
SPRINGFIELD POST 7327
VETERANS OF FOREIGN WARS OF THE UNITED STATES, INC.

FAIRFAX COUNTY, VIRGINIA

LEE DISTRICT

PROJECT NO

COMMONWEALTH OF VIRGINIA
TALAL A. HASSAN
No.025527
01-31-08
PROFESSIONAL ENGINEER

PLAN STATUS	
01-31-08	COUNTY & CLIENT COMMENTS

DATE	DESCRIPTION

PH/TMD DESIGN	PH/TMD DRAWN	DM CHKD
SCALE	H: 1"=250' V: 1"=250'	
JOB No.	VA-07-06	
DATE :	APRIL, 2007	
FILE No.	C-1046	
SHEET	7 OF 10	

SUBMISSION NO. SE 2007LE-030 Staff. S.Lee
APPROVED (SE) SP PLAN 4.7.08
SEE DEV CONDS DATED 4.28.08
ato of (BOS) (BZA) approval
sheet 7 of 10

C-1046

RUNOFF CURVE NUMBER AND RUNOFF

PROJECT: VETERANS OF FOREIGN WARS

LOCATION: OUTFALL #2

CONDITION: PRESENT

1. RUNOFF CURVE NUMBER

SOIL NAME AND HYDROLOGIC GROUP (APPENDIX A)	COVER DESCRIPTION (COVER TYPE, TREATMENT, & HYDROLOGIC CONDITION; PERCENT IMPERVIOUS UNCONNECTED/CONNECTED IMPERVIOUS AREA RATIO)	CN TABLE 2-2	CN FIGURE 2-3	CN FIGURE 2-4	AREA (AC)	PRODUCT OF CN x AREA
C	ON-SITE: GOOD FORESTED CONDITION	80			0.86	68.8
				TOTALS =	0.86	68.8

CN (WEIGHTED) = TOTAL PRODUCT / TOTAL AREA = 68.8 / 0.86 ; USE CN = 80

2. RUNOFF

	STORM #1	STORM #2	STORM #3
FREQUENCY	1	2	10
RAINFALL, P (24-HOUR)	2.70	3.20	5.20
RUNOFF, Q	1.02	1.40	3.02

(USE P AND CN WITH TABLE 2-1, FIG 2-1, OR EQS. 2-3 AND 2-4)

TIME OF CONCENTRATION (T_c)

SHEET FLOW

			SEGMENT ID A-B	
1. SURFACE DESCRIPTION (TABLE 3-1)			LIGHT UNDER-BRUSH	
2. MANNING'S ROUGHNESS COEFF., n (TABLE 3-1)			0.40	
3. FLOW LENGTH, L (TOTAL L ≤ 300 FT)		FT	280	
4. TWO-YR 24-HOUR RAINFALL, P_2		FT/FT	3.20	
5. LAND SLOPE, s		FT/S	0.03	
6. $T_t = \frac{0.007(nL)^{0.8}}{P_2^{0.5}\,s^{0.4}}$	COMPUTE T_t	HR	0.65	=

SHALLOW CONCENTRATED FLOW

			SEGMENT ID	
7. SURFACE DESCRIPTION (PAVED OR UNPAVED)				
8. FLOW LENGTH, L		FT		
9. WATERCOURSE SLOPE, s		FT/FT		
10. AVERAGE VELOCITY, V (FIGURE 3-1)		FT/S		
11. $T_t = \frac{L}{3600\,V}$	COMPUTE T_t	HR		
20. WATERSHED OR SUBAREA T_c OR T_t (ADD IN STEPS 6, 11, & 19)				=

GRAPHICAL PEAK DISCHARGE

1. DATA:

DRAINAGE AREA A_m = 0.0013 mi^2 (ACRES/640)
RUNOFF CURVE NUMBER CN = 80
TIME OF CONCENTRATION T_c = 0.65
RAINFALL DISTRIBUTION TYPE = # (I, IA, II, F16 B2
POND AND SWAMP AREA SPREAD THROUGHOUT WATERSHED = - %

		STORM #1	STORM #2	STORM #3
2. FREQUENCY	YR	1	2	10
3. RAINFALL, P (24-HOUR)	IN	2.70	3.20	5.20
4. INITIAL ABSTRACTION, I_a (USE CN TABLE WITH TABLE 4-1)	IN	0.500	0.500	0.500
5. COMPUTE I_a/P		0.19	0.16	0.10
6. UNIT PEAK DISCHARGE, q_u (USE T_c AND I_a/P WITH EXHIBIT 4-11)	CSM/IN	430	440	470
7. RUNOFF, Q	IN	1.02	1.40	3.02
8. POND AND SWAMP ADJUSTMENT FACTOR, F_p (USE PERCENT POND AND SWAMP AREA WITH TABLE 4-2. FACTOR IS 1.0 FOR ZERO PERCENT POND AND SWAMP AREA)		1.0	1.0	1.0
9. PEAK DISCHARGE, q_p (WHERE $qp = q_u A_m QF_p$)	CFS	0.59	0.83	1.91

RUNOFF CURVE NUMBER AND RUNOFF

PROJECT: VETERANS OF FOREIGN WARS

LOCATION: OUTFALL #2

CONDITION: DEVELOPED

1. RUNOFF CURVE NUMBER

SOIL NAME AND HYDROLOGIC GROUP (APPENDIX A)	COVER DESCRIPTION (COVER TYPE, TREATMENT, & HYDROLOGIC CONDITION; PERCENT IMPERVIOUS UNCONNECTED/CONNECTED IMPERVIOUS AREA RATIO)	CN TABLE 2-2	CN FIGURE 2-3	CN FIGURE 2-4	AREA (AC)	PRODUCT OF CN x AREA
C	DEVELOPING URBAN AREAS	92			0.82	75.4
				TOTALS =	0.82	75.4

CN (WEIGHTED) = TOTAL PRODUCT / TOTAL AREA = 75.4 / 0.82 ; USE CN = 92

2. RUNOFF

	STORM #1	STORM #2	STORM #3
FREQUENCY	1	2	10
RAINFALL, P (24-HOUR)	2.70	3.20	5.20
RUNOFF, Q	1.80	2.20	4.10

(USE P AND CN WITH TABLE 2-1, FIG 2-1, OR EQS. 2-3 AND 2-4)

TIME OF CONCENTRATION (T_c)

SHEET FLOW

			SEGMENT ID A-B		
1. SURFACE DESCRIPTION (TABLE 3-1)			SMOOTH SURF		
2. MANNING'S ROUGHNESS COEFF., n (TABLE 3-1)			0.01		
3. FLOW LENGTH, L (TOTAL L ≤ 300 FT)		FT	280		
4. TWO-YR 24-HOUR RAINFALL, P_2		FT/FT	3.20		
5. LAND SLOPE, s		FT/S	0.01		
6. $T_t = \frac{0.007(nL)^{0.8}}{P_2^{0.5}\,s^{0.4}}$	COMPUTE T_t	HR	0.06	=	0.06

SHALLOW CONCENTRATED FLOW

			SEGMENT ID		
7. SURFACE DESCRIPTION (PAVED OR UNPAVED)					
8. FLOW LENGTH, L		FT			
9. WATERCOURSE SLOPE, s		FT/FT			
10. AVERAGE VELOCITY, V (FIGURE 3-1)		FT/S			
11. $T_t = \frac{L}{3600\,V}$	COMPUTE T_t	HR			
20. WATERSHED OR SUBAREA T_c OR T_t (ADD IN STEPS 6, 11, & 19)				=	0.06
			USE Tc	=	0.10

GRAPHICAL PEAK DISCHARGE

1. DATA:

DRAINAGE AREA A_m = 0.0013 mi^2 (ACRES/640)
RUNOFF CURVE NUMBER CN = 92
TIME OF CONCENTRATION T_c = 0.06
RAINFALL DISTRIBUTION TYPE = # (I, IA, II, F16 B2
POND AND SWAMP AREA SPREAD THROUGHOUT WATERSHED = - %

		STORM #1	STORM #2	STORM #3
2. FREQUENCY	YR	1	2	10
3. RAINFALL, P (24-HOUR)	IN	2.70	3.20	5.20
4. INITIAL ABSTRACTION, I_a (USE CN TABLE WITH TABLE 4-1)	IN	0.174	0.174	0.174
5. COMPUTE I_a/P		0.06	0.05	0.03
6. UNIT PEAK DISCHARGE, q_u (USE T_c AND I_a/P WITH EXHIBIT 4-11)	CSM/IN	1000	1000	1000
7. RUNOFF, Q	IN	1.80	2.20	4.10
8. POND AND SWAMP ADJUSTMENT FACTOR, F_p (USE PERCENT POND AND SWAMP AREA WITH TABLE 4-2. FACTOR IS 1.0 FOR ZERO PERCENT POND AND SWAMP AREA)		1.0	1.0	1.0
9. PEAK DISCHARGE, q_p (WHERE $qp = q_u A_m QF_p$)	CFS	2.31	2.82	5.25

RUNOFF CURVE NUMBER AND RUNOFF

PROJECT: VETERANS OF FOREIGN WARS

LOCATION: UNCONTROLLED AREA OUTFALL

CONDITION: PRESENT

1. RUNOFF CURVE NUMBER

SOIL NAME AND HYDROLOGIC GROUP (APPENDIX A)	COVER DESCRIPTION (COVER TYPE, TREATMENT, & HYDROLOGIC CONDITION; PERCENT IMPERVIOUS UNCONNECTED/CONNECTED IMPERVIOUS AREA RATIO)	CN TABLE 2-2	CN FIGURE 2-3	CN FIGURE 2-4	AREA (AC)	PRODUCT OF CN x AREA
D	ON-SITE: RESIDENTIAL WITH >0.5 AC	80			0.27	21.6
				TOTALS =	0.27	21.6

CN (WEIGHTED) = TOTAL PRODUCT / TOTAL AREA = 21.6 / 0.27 = 80 USE CN = 80

2. RUNOFF

	STORM #1	STORM #2	STORM #3
FREQUENCY	1	2	10
RAINFALL, P (24-HOUR)	2.70	3.20	5.20
RUNOFF, Q	1.02	1.40	3.02

(USE P AND CN WITH TABLE 2-1, FIG 2-1, OR EQS. 2-3 AND 2-4)

TIME OF CONCENTRATION (T_c)

SHEET FLOW

			SEGMENT ID A-B	
1. SURFACE DESCRIPTION (TABLE 3-1)			LIGHT UNDER-BRUSH	
2. MANNING'S ROUGHNESS COEFF., n (TABLE 3-1)			0.40	
3. FLOW LENGTH, L (TOTAL L ≤ 300 FT)		FT	200	
4. TWO-YR 24-HOUR RAINFALL, P_2		FT/FT	3.20	
5. LAND SLOPE, s		FT/S	0.03	
6. $T_t = \frac{0.007(nL)^{0.8}}{P_2^{0.5}\,s^{0.4}}$	COMPUTE T_t	HR	0.57	

SHALLOW CONCENTRATED FLOW

			SEGMENT ID
7. SURFACE DESCRIPTION (PAVED OR UNPAVED)			
8. FLOW LENGTH, L		FT	
9. WATERCOURSE SLOPE, s		FT/FT	
10. AVERAGE VELOCITY, V (FIGURE 3-1)		FT/S	
11. $T_t = \frac{L}{3600\,V}$	COMPUTE T_t	HR	

CHANNEL FLOW

			SEGMENT ID
12. CROSS-SECTIONAL FLOW AREA, a			
13. WETTED PERIMETER, P_w			
14. HYDRAULIC RADIUS, $r = \frac{a}{P_w}$	COMPUTE r		
15. CHANNEL SLOPE, s			
16. MANNING'S ROUGHNESS COEFF., n			
17. $V = \frac{1.49\,r^{2/3}\,s^{1/2}}{n}$	COMPUTE V		
18. FLOW LENGTH, L			
19. $T_t = \frac{L}{3600\,V}$	COMPUTE T_t	HR	
20. WATERSHED OR SUBAREA T_c OR T_t (ADD IN STEPS 6, 11, & 19)			0.57

GRAPHICAL PEAK DISCHARGE

1. DATA:

DRAINAGE AREA A_m = 0.0004 mi^2 (ACRES/640)
RUNOFF CURVE NUMBER CN = 80
TIME OF CONCENTRATION T_c = 0.57
RAINFALL DISTRIBUTION TYPE = II (I, IA, II, III)
POND AND SWAMP AREA SPREAD THROUGHOUT WATERSHED = - %

		STORM #1	STORM #2	STORM #3
2. FREQUENCY	YR	1	2	10
3. RAINFALL, P (24-HOUR)	IN	2.70	3.20	5.20
4. INITIAL ABSTRACTION, I_a (USE CN TABLE WITH TABLE 4-1)	IN	0.500	0.500	0.500
5. COMPUTE I_a/P		0.19	0.16	0.10
6. UNIT PEAK DISCHARGE, q_u (USE T_c AND I_a/P WITH EXHIBIT 4-11)	CSM/IN	460	470	490
7. RUNOFF, Q	IN	1.02	1.40	3.02
8. POND AND SWAMP ADJUSTMENT FACTOR, F_p (USE PERCENT POND AND SWAMP AREA WITH TABLE 4-2. FACTOR IS 1.0 FOR ZERO PERCENT POND AND SWAMP AREA)		1.0	1.0	1.0
9. PEAK DISCHARGE, q_p (WHERE $qp = q_u A_m QF_p$)	CFS	0.20	0.26	0.59

RUNOFF CURVE NUMBER AND RUNOFF

PROJECT: VETERANS OF FOREIGN WARS

LOCATION: UNCONTROLLED AREA OUTFALL #2

CONDITION: DEVELOPED

1. RUNOFF CURVE NUMBER

SOIL NAME AND HYDROLOGIC GROUP (APPENDIX A)	COVER DESCRIPTION (COVER TYPE, TREATMENT, & HYDROLOGIC CONDITION; PERCENT IMPERVIOUS UNCONNECTED/CONNECTED IMPERVIOUS AREA RATIO)	CN TABLE 2-2	CN FIGURE 2-3	CN FIGURE 2-4	AREA (AC)	PRODUCT OF CN x AREA
C	: URBAN AREA	81			0.27	21.87
				TOTALS =	0.27	21.87

CN (WEIGHTED) = TOTAL PRODUCT / TOTAL AREA = 21.9 / 0.27 = 81 USE CN = 81

2. RUNOFF

	STORM #1	STORM #2	STORM #3
FREQUENCY	1	2	10
RAINFALL, P (24-HOUR)	2.70	3.20	5.20
RUNOFF, Q	1.03	1.42	3.05

(USE P AND CN WITH TABLE 2-1, FIG 2-1, OR EQS. 2-3 AND 2-4)

TIME OF CONCENTRATION (T_c)

SHEET FLOW

			SEGMENT ID A-B		
1. SURFACE DESCRIPTION (TABLE 3-1)			LIGHT UNDER-BRUSH		
2. MANNING'S ROUGHNESS COEFF., n (TABLE 3-1)			0.40		
3. FLOW LENGTH, L (TOTAL L ≤ 300 FT)		FT	200		
4. TWO-YR 24-HOUR RAINFALL, P_2		FT/FT	3.20		
5. LAND SLOPE, s		FT/S	0.03		
6. $T_t = \frac{0.007(nL)^{0.8}}{P_2^{0.5}\,s^{0.4}}$	COMPUTE T_t	HR	0.57	=	0.57

SHALLOW CONCENTRATED FLOW

			SEGMENT ID		
7. SURFACE DESCRIPTION (PAVED OR UNPAVED)					
8. FLOW LENGTH, L		FT			
9. WATERCOURSE SLOPE, s		FT/FT			
10. AVERAGE VELOCITY, V (FIGURE 3-1)		FT/S			
11. $T_t = \frac{L}{3600\,V}$	COMPUTE T_t	HR			

CHANNEL FLOW

			SEGMENT ID		
12. CROSS-SECTIONAL FLOW AREA, a					
13. WETTED PERIMETER, P_w					
14. HYDRAULIC RADIUS, $r = \frac{a}{P_w}$	COMPUTE r				
15. CHANNEL SLOPE, s					
16. MANNING'S ROUGHNESS COEFF., n					
17. $V = \frac{1.49\,r^{2/3}\,s^{1/2}}{n}$	COMPUTE V				
18. FLOW LENGTH, L					
19. $T_t = \frac{L}{3600\,V}$	COMPUTE T_t	HR			
20. WATERSHED OR SUBAREA T_c OR T_t (ADD IN STEPS 6, 11, & 19)			0.57	=	0.57

GRAPHICAL PEAK DISCHARGE

1. DATA:

DRAINAGE AREA A_m = 0.0004 mi^2 (ACRES/640)
RUNOFF CURVE NUMBER CN = 81
TIME OF CONCENTRATION T_c = 0.57
RAINFALL DISTRIBUTION TYPE = II (I, IA, II, III)
POND AND SWAMP AREA SPREAD THROUGHOUT WATERSHED = - %

		STORM #1	STORM #2	STORM #3	
2. FREQUENCY	YR	1	2	10	
3. RAINFALL, P (24-HOUR)	IN	2.70	3.20	5.20	
4. INITIAL ABSTRACTION, I_a (USE CN TABLE WITH TABLE 4-1)	IN	0.469	0.469	0.469	
5. COMPUTE I_a/P		0.17	0.15	0.09	
6. UNIT PEAK DISCHARGE, q_u (USE T_c AND I_a/P WITH EXHIBIT 4-11)	CSM/IN	465	475	490	
7. RUNOFF, Q	IN	1.03	1.42	3.05	
8. POND AND SWAMP ADJUSTMENT FACTOR, F_p (USE PERCENT POND AND SWAMP AREA WITH TABLE 4-2. FACTOR IS 1.0 FOR ZERO PERCENT POND AND SWAMP AREA)		1.0	1.0	1.0	
9. PEAK DISCHARGE, q_p (WHERE $qp = q_u A_m QF_p$)	CFS	0.19	0.27	0.60	

...tion No. SE 2007-LE-030 Staff S.in
APPROVED SE / SP PLAN
SEE DEV CONDS DATED 4.7.08
Date of (BOS) (BZA) approval 4.28.08
Sheet 8 of 10

THE SUBMITTING ENGINEER CERTIFIES THAT NO OTHER CHANGES HAVE BEEN MADE ON THE PLAN OR PROFILE EXCEPT THOSE PREVIOUSLY APPROVED

REVISIONS APPROVED BY DIVISION OF DESIGN REVIEW

NO.	DESCRIPTION	REVIEW BY	APPROVED	DATE

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PROJECT COORDINATOR
CHARLIE FRONDA
DEANA MASINI

STORMWATER COMPUTATIONS

SPECIAL EXCEPTION PLAT
SPRINGFIELD POST 7327
VETERANS OF FOREIGN WARS OF THE UNITED STATES, INC.
LEE DISTRICT FAIRFAX COUNTY, VIRGINIA

PROJECT NO

COMMONWEALTH OF VIRGINIA
TALAL A. HASSAN
No.025527
01-31-08
PROFESSIONAL ENGINEER

PLAN STATUS	
01-31-08	COUNTY & CLIENT COMMENTS
DATE	DESCRIPTION

PH/TMD DESIGN	PH/TMD DRAWN	DM CHKD
SCALE	H: AS NOTED	V: AS NOTED

JOB No. VA-07-06
DATE : APRIL, 2007
FILE No. c-1046
SHEET 8 OF 10
C-1046

RUNOFF CURVE NUMBER AND RUNOFF

PROJECT: VETERANS OF FOREIGN WARS

LOCATION: UNDERGROUND STORAGE PIPE -OUTFALL #2

CONDITION: PRESENT

1. RUNOFF CURVE NUMBER

SOIL NAME AND HYDROLOGIC GROUP (APPENDIX A)	COVER DESCRIPTION (COVER TYPE, TREATMENT, & HYDROLOGIC CONDITION; PERCENT IMPERVIOUS UNCONNECTED/CONNECTED IMPERVIOUS AREA RATIO)	CN TABLE 2-2	CN FIGURE 2-3	CN FIGURE 2-4	AREA (AC)	PRODUCT OF CN x AREA
C	GOOD FORESTED CONDITION	80			0.55	44.00
				TOTALS =	0.55	44.00

CN (WEIGHTED) = TOTAL PRODUCT / TOTAL AREA = 44.0 / 0.55 = 80 USE CN = 80

2. RUNOFF

	STORM #1	STORM #2	STORM #3
FREQUENCY	1	2	10
RAINFALL, P (24-HOUR)	2.70	3.20	5.20
RUNOFF, Q (USE P AND CN WITH TABLE 2-1, FIG 2-1, OR EQS. 2-3 AND 2-4)	1.02	1.40	3.02

TIME OF CONCENTRATION (T_c)

SHEET FLOW

	SEGMENT ID		A-B LIGHT UNDER-BRUSH	
1. SURFACE DESCRIPTION (TABLE 3-1)				
2. MANNING'S ROUGHNESS COEFF., n (TABLE 3-1)			0.40	
3. FLOW LENGTH, L (TOTAL L ≤ 300 FT)		FT	280	
4. TWO-YR 24-HOUR RAINFALL, P_2		FT/FT	3.20	
5. LAND SLOPE, s		FT/S	0.03	
6. $T_t = \frac{0.007(nL)^{0.8}}{P_2^{0.5}\, s^{0.4}}$	COMPUTE T_t	HR	0.67	=

SHALLOW CONCENTRATED FLOW

	SEGMENT ID		
7. SURFACE DESCRIPTION (PAVED OR UNPAVED)			
8. FLOW LENGTH, L		FT	
9. WATERCOURSE SLOPE, s		FT/FT	
10. AVERAGE VELOCITY, V (FIGURE 3-1)		FT/S	
11. $T_t = \frac{L}{3600\ V}$	COMPUTE T_t	HR	

CHANNEL FLOW

	SEGMENT ID		
12. CROSS-SECTIONAL FLOW AREA, a			
13. WETTED PERIMETER, P_w			
14. HYDRAULIC RADIUS, $r = \frac{a}{P_w}$	COMPUTE r		
15. CHANNEL SLOPE, s			
16. MANNING'S ROUGHNESS COEFF., n			
17. $V = \frac{1.49\, r^{2/3} s^{1/2}}{n}$	COMPUTE V		
18. FLOW LENGTH, L			
19. $T_t = \frac{L}{3600\ V}$	COMPUTE T_t	HR	
20. WATERSHED OR SUBAREA T_c OR T_t (ADD IN STEPS 6, 11, & 19)			0.67 =

GRAPHICAL PEAK DISCHARGE

1. DATA:

DRAINAGE AREA	A_m	=	0.00086 mi^2 (ACRES/640)
RUNOFF CURVE NUMBER	CN	=	80
TIME OF CONCENTRATION	T_c	=	0.67
RAINFALL DISTRIBUTION TYPE		=	II (I, IA, II, III)
POND AND SWAMP AREA SPREAD THROUGHOUT WATERSHED		=	- %

		STORM #1	STORM #2	STORM #3
2. FREQUENCY	YR	1	2	10
3. RAINFALL, P (24-HOUR)	IN	2.70	3.20	5.20
4. INITIAL ABSTRACTION, I_a (USE CN TABLE WITH TABLE 4-1)	IN	0.500	0.500	0.500
5. COMPUTE I_a/P		0.19	0.16	0.10
6. UNIT PEAK DISCHARGE, q_u (USE T_c AND I_a/P WITH EXHIBIT 4-11)	CSM/IN	430	440	470
7. RUNOFF, Q	IN	1.02	1.40	3.02
8. POND AND SWAMP ADJUSTMENT FACTOR, F_p (USE PERCENT POND AND SWAMP AREA WITH TABLE 4-2. FACTOR IS 1.0 FOR ZERO PERCENT POND AND SWAMP AREA)		1.0	1.0	1.0
9. PEAK DISCHARGE, q_p (WHERE $q_p = q_u A_m Q F_p$)	CFS	0.38	0.38	0.40

RUNOFF CURVE NUMBER AND RUNOFF

PROJECT: VETERANS OF FOREIGN WARS

LOCATION: UNDERGROUND DETENTION PIPE- OUTFALL #2

CONDITION: DEVELOPED

1. RUNOFF CURVE NUMBER

SOIL NAME AND HYDROLOGIC GROUP (APPENDIX A)	COVER DESCRIPTION (COVER TYPE, TREATMENT, & HYDROLOGIC CONDITION; PERCENT IMPERVIOUS UNCONNECTED/CONNECTED IMPERVIOUS AREA RATIO)	CN TABLE 2-2	CN FIGURE 2-3	CN FIGURE 2-4	AREA (AC)	PRODUCT OF CN x AREA
C	URBAN AREA	92			0.55	50.60
				TOTALS =	0.55	50.60

CN (WEIGHTED) = TOTAL PRODUCT / TOTAL AREA = 50.6 / 0.55 = 92 USE CN = 92

2. RUNOFF

	STORM #1	STORM #2	STORM #3
FREQUENCY	1	2	10
RAINFALL, P (24-HOUR)	2.70	3.20	5.20
RUNOFF, Q (USE P AND CN WITH TABLE 2-1, FIG 2-1, OR EQS. 2-3 AND 2-4)	1.80	2.20	4.10

TIME OF CONCENTRATION (T_c)

SHEET FLOW

	SEGMENT ID		A-B LIGHT UNDER-BRUSH	
1. SURFACE DESCRIPTION (TABLE 3-1)				
2. MANNING'S ROUGHNESS COEFF., n (TABLE 3-1)			0.01	
3. FLOW LENGTH, L (TOTAL L ≤ 300 FT)		FT	280	
4. TWO-YR 24-HOUR RAINFALL, P_2		FT/FT	3.20	
5. LAND SLOPE, s		FT/S	0.01	
6. $T_t = \frac{0.007(nL)^{0.8}}{P_2^{0.5}\, s^{0.4}}$	COMPUTE T_t	HR	0.06	= 0.06

SHALLOW CONCENTRATED FLOW

	SEGMENT ID		
7. SURFACE DESCRIPTION (PAVED OR UNPAVED)			
8. FLOW LENGTH, L		FT	
9. WATERCOURSE SLOPE, s		FT/FT	
10. AVERAGE VELOCITY, V (FIGURE 3-1)		FT/S	
11. $T_t = \frac{L}{3600\ V}$	COMPUTE T_t	HR	

CHANNEL FLOW

	SEGMENT ID		
12. CROSS-SECTIONAL FLOW AREA, a			
13. WETTED PERIMETER, P_w			
14. HYDRAULIC RADIUS, $r = \frac{a}{P_w}$	COMPUTE r		
15. CHANNEL SLOPE, s			
16. MANNING'S ROUGHNESS COEFF., n			
17. $V = \frac{1.49\, r^{2/3} s^{1/2}}{n}$	COMPUTE V		
18. FLOW LENGTH, L			
19. $T_t = \frac{L}{3600\ V}$	COMPUTE T_t	HR	
20. WATERSHED OR SUBAREA T_c OR T_t (ADD IN STEPS 6, 11, & 19)			0.06 = 0.06

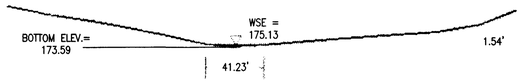
GRAPHICAL PEAK DISCHARGE

1. DATA:

DRAINAGE AREA	A_m	=	0.00086 mi^2 (ACRES/640)
RUNOFF CURVE NUMBER	CN	=	92
TIME OF CONCENTRATION	T_c	=	0.06
RAINFALL DISTRIBUTION TYPE		=	II (I, IA, II, III)
POND AND SWAMP AREA SPREAD THROUGHOUT WATERSHED		=	- %

		STORM #1	STORM #2	STORM #3	
2. FREQUENCY	YR	1	2	10	
3. RAINFALL, P (24-HOUR)	IN	2.70	3.20	5.20	
4. INITIAL ABSTRACTION, I_a (USE CN TABLE WITH TABLE 4-1)	IN	0.174	0.174	0.174	
5. COMPUTE I_a/P		0.06	0.05	0.03	
6. UNIT PEAK DISCHARGE, q_u (USE T_c AND I_a/P WITH EXHIBIT 4-11)	CSM/IN	1000	1000	1000	
7. RUNOFF, Q	IN	1.80	2.20	4.10	
8. POND AND SWAMP ADJUSTMENT FACTOR, F_p (USE PERCENT POND AND SWAMP AREA WITH TABLE 4-2. FACTOR IS 1.0 FOR ZERO PERCENT POND AND SWAMP AREA)		1.0	1.0	1.0	
9. PEAK DISCHARGE, q_p (WHERE $q_p = q_u A_m Q F_p$)	CFS	1.55	1.89	3.52	

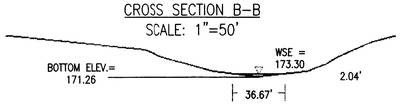
CROSS SECTION A-A
SCALE: 1"=50'



CROSS-SECTION A-A
(SEE SHEET 8 FOR LOCATION)

PROJECT DESCRIPTION			RESULTS			
FLOW ELEMENT:	IRREGULAR SECTION		ROUGHNESS COEFFICIENT:	0.045		
FRICTION METHOD:	MANNING FORMULA		W.S.E.:	175.13		FT
SOLVE FOR:	NORMAL DEPTH		ELEVATION RANGE:	173.59	TO 200.00	FT
			FLOW AREA:	32.93		FT^2
INPUT DATA			WETTED PERIMETER:	41.35		FT
CHANNEL SLOPE:	0.01300	FT/FT	TOP WIDTH:	41.23		FT
C FACTOR:	0.50		NORMAL DEPTH:	1.54		FT
TIME OF CONCENTRATION:	20.00	MIN	CRITICAL DEPTH:	1.30		FT
DRAINAGE AREA:	48.44	AC	CRITICAL SLOPE:	0.03422		FT/FT
DISCHARGE:	Q_2=	105.33 CFS	VELOCITY:	V_2=	3.22	FT/S
	Q_{10}=	106.32 CFS		V_{10}=	3.23	FT/S
OPTIONS			VELOCITY HEAD:	0.16		
CURRENT ROUGHNESS METHOD		IMPROVED LOTTERS	SPECIFIC ENERGY:	1.70		
OPEN CHANNEL WEIGHTED ROUGHNESS		IMPROVED LOTTERS	FROUDE NUMBER:	0.64		
CLOSED CHANNEL WEIGHTED ROUGHNESS		HORTONS	FLOW TYPE:	SUBCRITICAL		

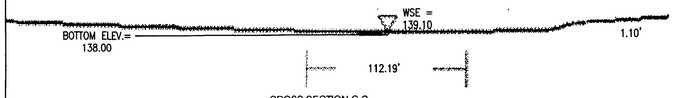
CROSS SECTION B-B
SCALE: 1"=50'



CROSS-SECTION B-B
(SEE SHEET 8 FOR LOCATION)

PROJECT DESCRIPTION			RESULTS			
FLOW ELEMENT:	IRREGULAR SECTION		ROUGHNESS COEFFICIENT:	0.045		
FRICTION METHOD:	MANNING FORMULA		W.S.E.:	173.30		FT
SOLVE FOR:	NORMAL DEPTH		ELEVATION RANGE:	171.26	TO 200.00	FT
			FLOW AREA:	37.41		FT^2
INPUT DATA			WETTED PERIMETER:	36.90		FT
CHANNEL SLOPE:	0.01450	FT/FT	TOP WIDTH:	36.67		FT
C FACTOR:	0.50		NORMAL DEPTH:	2.04		FT
TIME OF CONCENTRATION:	5.00	MIN	CRITICAL DEPTH:	1.77		FT
DRAINAGE AREA:	60.44	AC	CRITICAL SLOPE:	0.03099		FT/FT
DISCHARGE:	Q_2=	138.03 CFS	VELOCITY:	V_2=	3.93	FT/S
	Q_{10}=	149.94 CFS		V_{10}=	4.01	FT/S
OPTIONS			VELOCITY HEAD:	0.25		
CURRENT ROUGHNESS METHOD		IMPROVED LOTTERS	SPECIFIC ENERGY:	2.29		
OPEN CHANNEL WEIGHTED ROUGHNESS		IMPROVED LOTTERS	FROUDE NUMBER:	0.70		
CLOSED CHANNEL WEIGHTED ROUGHNESS		HORTONS	FLOW TYPE:	SUBCRITICAL		

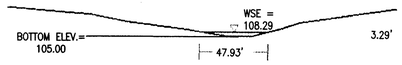
CROSS SECTION C-C
SCALE: 1"=50'



CROSS-SECTION C-C
(SEE SHEET 8 FOR LOCATION)

PROJECT DESCRIPTION			RESULTS			
FLOW ELEMENT:	IRREGULAR SECTION		ROUGHNESS COEFFICIENT:	0.045		
FRICTION METHOD:	MANNING FORMULA		W.S.E.:	139.10		FT
SOLVE FOR:	NORMAL DEPTH		ELEVATION RANGE:	138.00	TO 155.40	FT
			FLOW AREA:	61.55		FT^2
INPUT DATA			WETTED PERIMETER:	112.21		FT
CHANNEL SLOPE:	0.02400	FT/FT	TOP WIDTH:	112.19		FT
C FACTOR:	0.50		NORMAL DEPTH:	1.10		FT
TIME OF CONCENTRATION:	22.00	MIN	CRITICAL DEPTH:	1.01		FT
DRAINAGE AREA:	89.44	AC	CRITICAL SLOPE:	0.03704		FT/FT
DISCHARGE:	Q_2=	178.63 CFS	VELOCITY:	V_2=	3.29	FT/S
	Q_{10}=	210.84 CFS		V_{10}=	3.43	FT/S
OPTIONS			VELOCITY HEAD:	0.18		
CURRENT ROUGHNESS METHOD		IMPROVED LOTTERS	SPECIFIC ENERGY:	1.28		
OPEN CHANNEL WEIGHTED ROUGHNESS		IMPROVED LOTTERS	FROUDE NUMBER:	0.82		
CLOSED CHANNEL WEIGHTED ROUGHNESS		HORTONS	FLOW TYPE:	SUBCRITICAL		

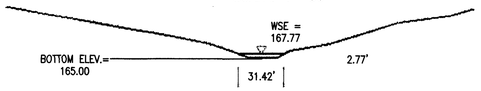
CROSS SECTION D-D
SCALE: 1"=50'



CROSS-SECTION D-D
(SEE SHEET 8 FOR LOCATION)

PROJECT DESCRIPTION			RESULTS			
FLOW ELEMENT:	IRREGULAR SECTION		ROUGHNESS COEFFICIENT:	0.078		
FRICTION METHOD:	MANNING FORMULA		W.S.E.:	108.29		FT
SOLVE FOR:	NORMAL DEPTH		ELEVATION RANGE:	105.00	TO 125.00	FT
			FLOW AREA:	103.95		FT^2
INPUT DATA			WETTED PERIMETER:	48.62		FT
CHANNEL SLOPE:	0.01800	FT/FT	TOP WIDTH:	47.93		FT
C FACTOR:	0.50		NORMAL DEPTH:	3.29		FT
TIME OF CONCENTRATION:	21.00	MIN	CRITICAL DEPTH:	2.30		FT
DRAINAGE AREA:	186.00	AC	CRITICAL SLOPE:	0.07693		FT/FT
DISCHARGE:	Q_2=	304.69 CFS	VELOCITY:	V_2=	3.84	FT/S
	Q_{10}=	440.69 CFS		V_{10}=	4.24	FT/S
OPTIONS			VELOCITY HEAD:	0.28		
CURRENT ROUGHNESS METHOD		IMPROVED LOTTERS	SPECIFIC ENERGY:	3.57		
OPEN CHANNEL WEIGHTED ROUGHNESS		IMPROVED LOTTERS	FROUDE NUMBER:	0.51		
CLOSED CHANNEL WEIGHTED ROUGHNESS		HORTONS	FLOW TYPE:	SUBCRITICAL		

CROSS SECTION E-E
SCALE: 1"=50'



CROSS-SECTION E-E
(SEE SHEET 8 FOR LOCATION)

PROJECT DESCRIPTION			RESULTS			
FLOW ELEMENT:	IRREGULAR SECTION		ROUGHNESS COEFFICIENT:	0.078		
FRICTION METHOD:	MANNING FORMULA		W.S.E.:	167.77		FT
SOLVE FOR:	NORMAL DEPTH		ELEVATION RANGE:	165.00	TO 200.00	FT
			FLOW AREA:	69.49		FT^2
INPUT DATA			WETTED PERIMETER:	32.61		FT
CHANNEL SLOPE:	0.01800	FT/FT	TOP WIDTH:	31.42		FT
C FACTOR:	0.50		NORMAL DEPTH:	2.77		FT
TIME OF CONCENTRATION:	14.00	MIN	CRITICAL DEPTH:	1.72		FT
DRAINAGE AREA:	105.83	AC	CRITICAL SLOPE:	0.08090		FT/FT
DISCHARGE:	Q_2=	184.44 CFS	VELOCITY:	V_2=	3.44	FT/S
	Q_{10}=	268.33 CFS		V_{10}=	3.86	FT/S
OPTIONS			VELOCITY HEAD:	0.23		
CURRENT ROUGHNESS METHOD		IMPROVED LOTTERS	SPECIFIC ENERGY:	3.00		
OPEN CHANNEL WEIGHTED ROUGHNESS		IMPROVED LOTTERS	FROUDE NUMBER:	0.46		
CLOSED CHANNEL WEIGHTED ROUGHNESS		HORTONS	FLOW TYPE:	SUBCRITICAL		

CROSS SECTION F-F
SCALE: 1"=50'

CROSS-SECTION F-F
(SEE SHEET 8 FOR LOCATION)

PROJECT DESCRIPTION			RESULTS			
FLOW ELEMENT:	IRREGULAR SECTION		ROUGHNESS COEFFICIENT:	0.045		
FRICTION METHOD:	MANNING FORMULA		W.S.E.:	224.97		FT
SOLVE FOR:	NORMAL DEPTH		ELEVATION RANGE:	224.50	TO 235.00	FT
			FLOW AREA:	6.02		FT^2
INPUT DATA			WETTED PERIMETER:	25.85		FT
CHANNEL SLOPE:	0.02140	FT/FT	TOP WIDTH:	25.83		FT
C FACTOR:	0.50		NORMAL DEPTH:	0.47		FT
TIME OF CONCENTRATION:	5.00	MIN	CRITICAL DEPTH:	0.40		FT
DRAINAGE AREA:	2.83	AC	CRITICAL SLOPE:	0.05065		FT/FT
DISCHARGE:	Q_2=	9.34 CFS	VELOCITY:	V_2=	1.76	FT/S
	Q_{10}=	10.83 CFS		V_{10}=	1.83	FT/S
OPTIONS			VELOCITY HEAD:	0.05		
CURRENT ROUGHNESS METHOD		IMPROVED LOTTERS	SPECIFIC ENERGY:	0.52		
OPEN CHANNEL WEIGHTED ROUGHNESS		IMPROVED LOTTERS	FROUDE NUMBER:	0.67		
CLOSED CHANNEL WEIGHTED ROUGHNESS		HORTONS	FLOW TYPE:	SUBCRITICAL		

FLOW-RATE COMPUTATIONS

	DRAINAGE AREA ICR.	DRAINAGE AREA ACCUM.	C FACTOR	TIME OF CONCENTRATION	2-YEAR INTENSITY	10-YEAR INTENSITY	2-YR FLOWRATE (Q) ICR.	2-YR FLOWRATE (Q) ACCUM.	10-YR FLOWRATE (Q) ICR.	10-YR FLOWRATE (Q) ACCUM.
ON-SITE OUTFALL #2	0.82	0.82	0.66	5	5.45	7.27	2.95	2.95	3.93	3.93
A-A	47.62	48.44	0.50	20	3.00	4.30	102.38	105.33	102.38	106.32
B-B	12.00	60.44	0.50	5	5.45	7.27	32.70	138.03	43.62	149.94
C-C	29.00	89.44	0.50	22	2.80	4.20	40.60	178.63	60.90	210.84

	DRAINAGE AREA ICR.	DRAINAGE AREA ACCUM.	C FACTOR	TIME OF CONCENTRATION	2-YEAR INTENSITY	10-YEAR INTENSITY	2-YR FLOWRATE (Q) ICR.	2-YR FLOWRATE (Q) ACCUM.	10-YR FLOWRATE (Q) ICR.	10-YR FLOWRATE (Q) ACCUM.
ON-SITE OUTFALL #3	1.49	1.49	0.55	5	5.45	7.27	4.47	4.47	5.96	5.96
F-F	1.34	2.83	0.50	5	5.45	7.27	4.87	9.34	4.87	10.83
E-E	103.00	105.83	0.50	14	3.40	5.00	175.10	184.44	257.50	268.33
D-D	80.17	186.00	0.50	21	3.00	4.30	120.26	304.69	172.37	440.69

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DEANA MASINI

STORMWATER COMPUTATIONS
SPECIAL EXCEPTION PLAT
SPRINGFIELD POST 7327
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LEE DISTRICT
FAIRFAX COUNTY, VIRGINIA

PROJECT NO

COMMONWEALTH OF VIRGINIA
TALAL A. HASSAN
No.025527
PROFESSIONAL ENGINEER
01-31-08

PLAN STATUS
01-31-08 COUNTY & CLIENT COMMENTS

...tion No. SE2007-LE-030 Staff S. Lin
APPROVED SE/ SP PLAN
SEE DEV CONDS DATED 4.7.08
...ate of (BOS) (BZA) approval 4.28.08
Sheet 9 of 10

THE SUBMITTING ENGINEER CERTIFIES THAT NO OTHER CHANGES HAVE BEEN MADE ON THE PLAN OR PROFILE EXCEPT THOSE PREVIOUSLY APPROVED

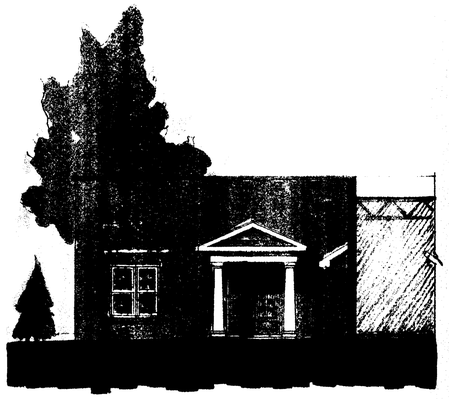
REVISIONS APPROVED BY DIVISION OF DESIGN REVIEW

NO.	DESCRIPTION	REVIEW BY	APPROVED	DATE

DATE	DESCRIPTION

PH/TMD DESIGN	PH/TMD DRAWN	DM CHKD
SCALE	H: AS NOTED V: AS NOTED	
JOB No.	VA-07-06	
DATE :	APRIL, 2007	
FILE No.	C-1046	
SHEET	9 OF 10	

C-1046



Reception/Bingo Entry Elevation
1/8" = 1'- 0"

Front Elevation
1/8" = 1'- 0"

Right Side Elevation
1/8" = 1'- 0"

Job No. SE 2007-LE-030 Staff S. Lin
APPROVED SE / SP PLAN
SEE DEV CONDS DATED 4-7-08
Date of (BOS) (BZA) approval 4-28-08
Sheet 10 of 10

NOTE:

THESE ELEVATIONS ARE PRELIMINARY AND SCHEMATIC. THE DESIGN OF THE BUILDING MAY CHANGE BASED UPON FINAL ENGINEERING AND ARCHITECTURAL DESIGN.

EMSI CERTIFIES ONLY THAT THIS SHEET IS A PART OF THIS PLAN

THE SUBMITTING ENGINEER CERTIFIES THAT NO OTHER CHANGES HAVE BEEN MADE ON THE PLAN OR PROFILE EXCEPT THOSE PREVIOUSLY APPROVED

REVISIONS APPROVED BY DIVISION OF DESIGN REVIEW

NO.	DESCRIPTION	REVIEW BY	APPROVED	DATE

EMSI ENGINEERING

9720 Capital Court
Manassas, Virginia
20110
Ph. (703) 257 - 0877
Fax (703) 361 - 3798
www.emsieng.com

PROJECT COORDINATOR

ARCHITECTURAL EXHIBIT
SPECIAL EXCEPTION PLAT
SPRINGFIELD POST 7327
VETERANS OF FOREIGN WARS OF THE UNITED STATES, INC.
LEE DISTRICT
FAIRFAX COUNTY, VIRGINIA

PROJECT NO

COMMONWEALTH OF VIRGINIA
TALAL A. HASSAN
No.025527
PROFESSIONAL ENGINEER

PLAN STATUS

DATE	DESCRIPTION

PH/TMD DESIGN	PH/TMD DRAWN	DM CHKD
SCALE	H: N/A V:	
JOB No.	VA-07-06	
DATE :	APRIL, 2007	
FILE No.	172-SE-EMSI	
SHEET	10 OF 10	

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S:\CIVIL DEPARTMENT\JOB FOLDER\VA-07-06 VETERANS OF FOREIGN WARS OF UNITED STATES\DWG\PLAN SET\07-va-07-06 04-ARCH EXHIBIT.DWG, 8/24/2007 5:53:01 PM, dmasini, KIP 3000.pc3, 1:1