CHESTERBROOK UNITED METHODIST CHURCH
CENTENNIAL MINISTRY CENTER
SPECIAL PERMIT AMENDMENT PLAN

SHEET INDEX:

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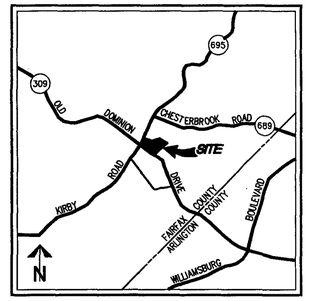
2. SPECIAL PERMIT AMENDMENT PLAT
3. EXISTING VEGETATION MAP
4. PRELIMINARY STORMWATER MANAGEMENT PLAN
5. OUTFALL ANALYSIS
6. OUTFALL ANALYSIS (FOR INFORMATION ONLY)

NOTES:

1. OWNER/APPLICANT: CHESTERBROOK METHODIST CHURCH
   1711 KIRBY ROAD
   MCLEAN, VA 22101
2. THIS APPLICATION REQUESTS A GROUP 3 SPECIAL PERMIT AMENDMENT FOR A CHURCH, PRIVATE SCHOOL OF EDUCATION, AND A CHILD CARE FACILITY.
3. THE PROPERTY DELINEATED ON THIS PLAT IS LOCATED ON FAIRFAX COUNTY TAX ASSESSMENT MAP AS PARCEL 031-3-01-119, AND IS ZONED R-2.
4. TOTAL AREA OF THE PROPERTY IS 170,235 SQUARE FEET OR 3.9081 ACRES.
5. TO THE BEST OF OUR KNOWLEDGE, ALL UTILITY EASEMENTS HAVING A WIDTH OF 25 FEET OR MORE ON THIS PROPERTY ARE SHOWN.
6. THIS PLAT DOES NOT SHOW ALL COVENANTS, EASEMENTS, RESTRICTIONS OR DEDICATIONS WHICH MAY EXIST IN THE CHAIN OF TITLE.
7. THE PROPOSED DEVELOPMENT CONFORMS TO ALL APPLICABLE FAIRFAX COUNTY ORDINANCES, REGULATIONS AND ADOPTED STANDARDS, EXCEPT AS NOTED IN THE WAIVERS REQUESTED SECTION.
8. BOUNDARY AND TOPOGRAPHIC INFORMATION IS TAKEN FROM A FIELD SURVEY PERFORMED BY THIS FIRM. CONTOUR INTERVAL IS 2 FOOT.
9. PROPERTY IS SERVED BY PUBLIC WATER AND SEWER.
10. THIS WILL CERTIFY THAT A REVIEW OF FEDERAL EMERGENCY MANAGEMENT AGENCY'S FLOOD INSURANCE RATE MAP FOR FAIRFAX COUNTY, VIRGINIA, COMMUNITY PANEL NUMBER 515525 0083 D, EFFECTIVE DATE MARCH 3, 1990, DESIGNATES THE SUBJECT PROPERTY AS BEING IN ZONE X, AREAS DETERMINED TO BE OUTSIDE THE 100-YEAR FLOODPLAIN.
11. NO RESOURCE PROTECTION AREAS OR ENVIRONMENTAL QUALITY CORRIDORS, AS DEFINED, ARE DELINEATED ON THIS PROPERTY.
12. NO GRAVES OR OTHER EVIDENCE OF BURIAL PLACES HAVE BEEN FOUND ON THIS PROPERTY.
13. THIS PLAN IS CONCEPTUAL AND IS INTENDED TO BE USED IN CONJUNCTION WITH THE LAND USE APPROVAL PROCESS ONLY. IT IS NOT AN ENGINEERING CONSTRUCTION DRAWING, AND MINOR DEVIATIONS AND ADJUSTMENTS MAY BE REQUIRED, AND ARE PERMITTED, AS PART OF THE FINAL DESIGN AND SITE PLAN APPROVAL PROCESS.
14. SITE SIGNAGE WILL BE PROVIDED IN ACCORDANCE WITH ARTICLE 12 OF THE FAIRFAX COUNTY ZONING ORDINANCE.
15. LIGHTING WILL BE IN ACCORDANCE WITH FAIRFAX COUNTY STANDARDS.
16. PROPOSED MODULAR UNIT TO BE REMOVED UPON OCCUPANCY OF THE PROPOSED ADDITION.

WAIVERS/MODIFICATIONS REQUESTED:

1. WAIVE TRANSITIONAL SCREENING REQUIREMENT AND BARRIER REQUIREMENT ON THE NORTHERN AND EASTERN (ADJACENT TO SINGLE-FAMILY DETACHED RESIDENTIAL) SIDES OF THE PROPERTY TO KEEP THE EXISTING TREES.
2. MODIFY TRAIL REQUIREMENT TO ALLOW 6 FT. WIDE ASPHALT TRAIL ALONG PART OF KIRBY ROAD.
3. WAIVE FRONTAGE IMPROVEMENTS ALONG KIRBY ROAD AND OLD DOMINION DRIVE.
4. MODIFY DUSTLESS SURFACE PARKING REQUIREMENT TO ALLOW GRASS-CRETE IN PART OF THE PARKING LOT.



VICINITY MAP SCALE: 1"=2000'

ZONING TABULATION:

R-2, RESIDENTIAL DISTRICT: TWO DWELLING UNITS/ACRE

	REQUIRED	PROVIDED
MIN. LOT AREA	15,000 SF	±170,235 SF
MIN. LOT WIDTH	125 FT	±134.7 FT
MAX. BLDG. HT.	60 FT	±35 FT
MIN. YARD REQUIREMENTS		
FRONT	40' ABP, 35 FT	23.2 FT (KIRBY), 30.5 FT (OLD DOMINION)*
SIDE	40' ABP, 15 FT	67.2 FT
REAR	40' ABP, 25 FT	66.8 FT
MAX. FAR	0.20	0.20
OPEN SPACE	N/A	N/A
TREE COVER	20% (30,100 SF)	>20% (±30,900 SF)
INT. PARK. LOT LANDSCAPING	5% (1,374 SF)	±7% (±2,000 SF)

*EXISTING CONDITION

PARKING TABULATION:

CHURCH: 125 SEATS @ 1 SP/4 SEATS
REQUIRED = 125/4 = 32 SPACES
PRIVATE SCHOOL: 30 STAFF MEMBERS @ 1 SP/STAFF MEMBER + 4 VISITOR SPACES
REQUIRED = 30 + 4 = 34 SPACES
CHILD CARE FACILITY: 40 CHILDREN @ 0.19 SPACES PER CHILD
REQUIRED = 8 SPACES
TOTAL REQUIRED = 74 SPACES
TOTAL PROVIDED = 68 SPACES (INCLUDING 4 HANDICAP SPACES)

USABLE OUTDOOR RECREATION TABULATION:

PROVIDED: ±24,000 SF OF USABLE OUTDOOR RECREATION AREA (SEE AREA DESIGNATED ON PLAN)

REQUIRED:
PRE-K = 100 SF/CHILD OUTSIDE AT A GIVEN TIME
K-3 = 200 SF/CHILD OUTSIDE AT A GIVEN TIME
4-12 = 430 SF/CHILD OUTSIDE AT A GIVEN TIME

PROPOSED:
PRE-K = 105 STUDENTS (MAX. ENROLLMENT)
K-3 = 95 STUDENTS (MAX. ENROLLMENT)
4-12 = 25 STUDENTS (MAX. ENROLLMENT)

*STUDENTS RECESSES WILL BE STAGGERED TO PROVIDE CHILDREN WITH ADEQUATE OUTDOOR RECREATION SPACE

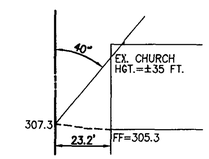
BUILDING AREA TABULATION:

EX. FAR CALCULATION

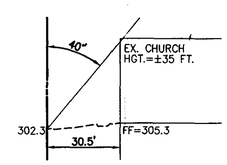
SITE AREA:	±170,235 SF
EX. CHURCH AREA:	±4,850 SF
EX. SCHOOL AREA:	±10,870 SF
TOTAL EX. BLDG. AREA:	±15,720 SF
EX. FAR:	±0.09

PROPOSED FAR CALCULATION

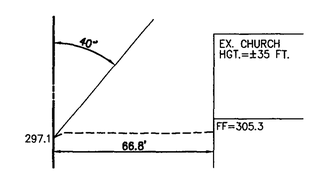
SITE AREA:	±170,235 SF
EX. CHURCH AREA:	±4,850 SF (TO REMAIN)
PROP. + EX. SCHOOL AREA:	±28,900 SF
TOTAL EX. BLDG. AREA:	±33,750 SF
EX. FAR:	±0.2



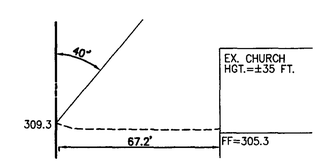
FRONT BULK PLANE DETAIL - KIRBY ROAD
1" = 30'



FRONT BULK PLANE DETAIL - OLD DOMINION DRIVE
1" = 30'



REAR BULK PLANE DETAIL - ADJ. TO PROP. SHOPPING CENTER
1" = 30'



SIDE BULK PLANE DETAIL - ADJ. TO WALKER PROPERTY
1" = 30'

Application No. SPA 80-D-068

Chairman, Board of Zoning Appeals

RECEIVED
Department of Planning & Zoning
DEC 07 2005
Zoning Evaluation Division

WALTER L. PHILLIPS
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207 PARK AVENUE, FALLS CHURCH, VIRGINIA 22046
(703) 532-6163 FAX (703) 533-1301 WWW.WLPINC.COM

SCALE: 1"=30' DATE: 7/29/05 REV. 11/7/05 REV. 11/21/05 REV. 12/7/05 DRAWN: JLH

COMMONWEALTH OF VIRGINIA
CHARLES F. DUNLAP
No. 13098
7/29/05
LAND SURVEYOR

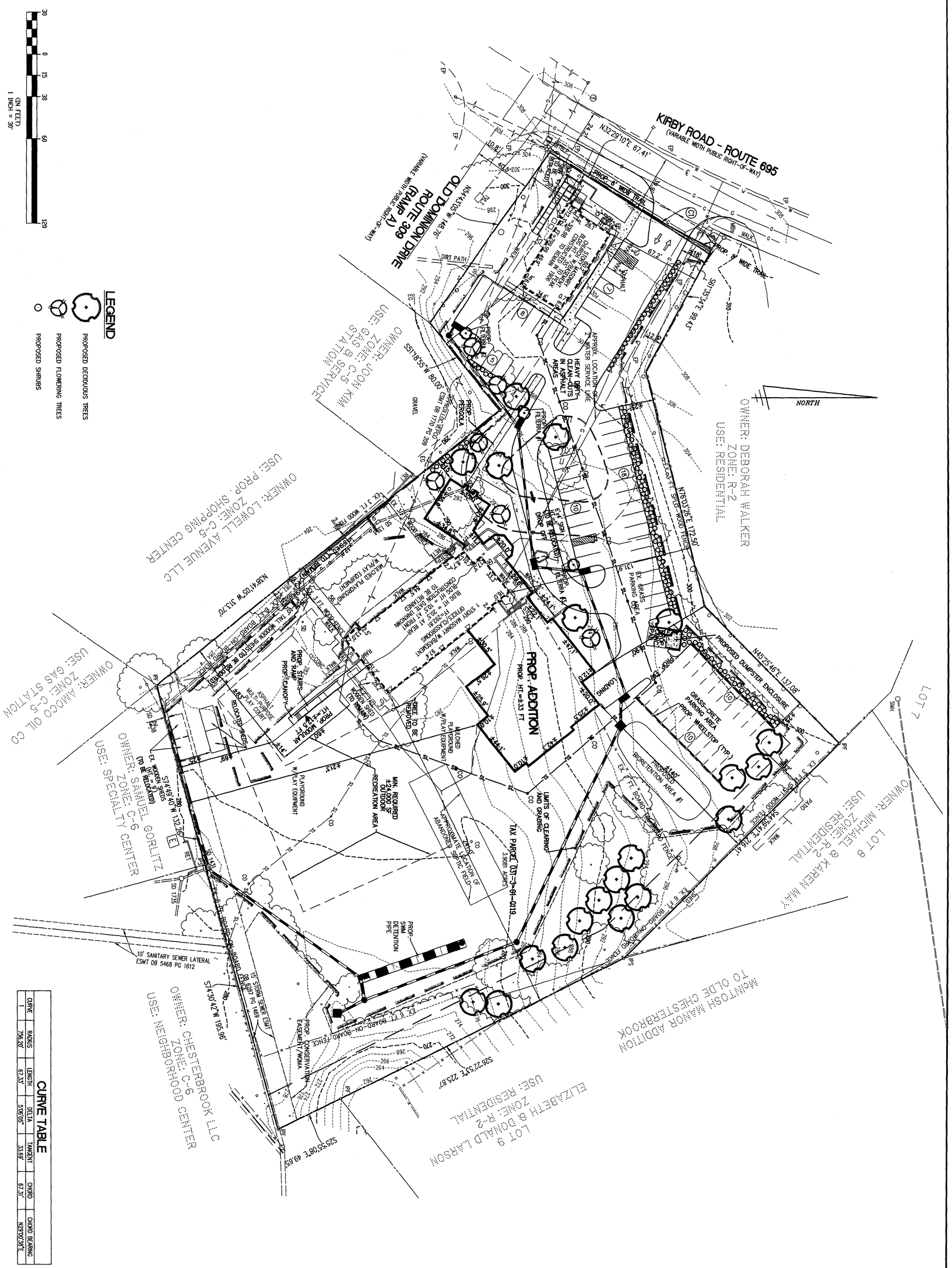
REVISION APPROVED BY

NO.	DESCRIPTION	DATE	REV. BY	APPROVED	DATE

COVER SHEET

CENTENNIAL MINISTRY CENTER
DRANESVILLE DISTRICT
FAIRFAX COUNTY, VIRGINIA

File No. FF-20 Tax Map No. 31-3 Job No. 05-063 Cadd Dwg. File: 05063S2 Xref:



CURVE TABLE

CURVE	RADIUS	LENGTH	DELTA	TANGENT	CHORD	CHORD BEARING
1	796.20'	67.33'	5°06'05"	33.69'	67.31'	N23°00'38"E

SPECIAL PERMIT AMENDMENT PLAT

CENTENNIAL MINISTRY CENTER

DRANESVILLE DISTRICT

FAIRFAX COUNTY, VIRGINIA

REVISION APPROVED BY

NO.	DESCRIPTION	DATE	REV. BY	APPROVED	DATE

COMMONWEALTH OF VIRGINIA
CHARLES F. DUNLAP
No. 1309B
7/29/05
LAND SURVEYOR

WALTER L. PHILLIPS
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(703) 532-6163 FAX (703) 533-1301
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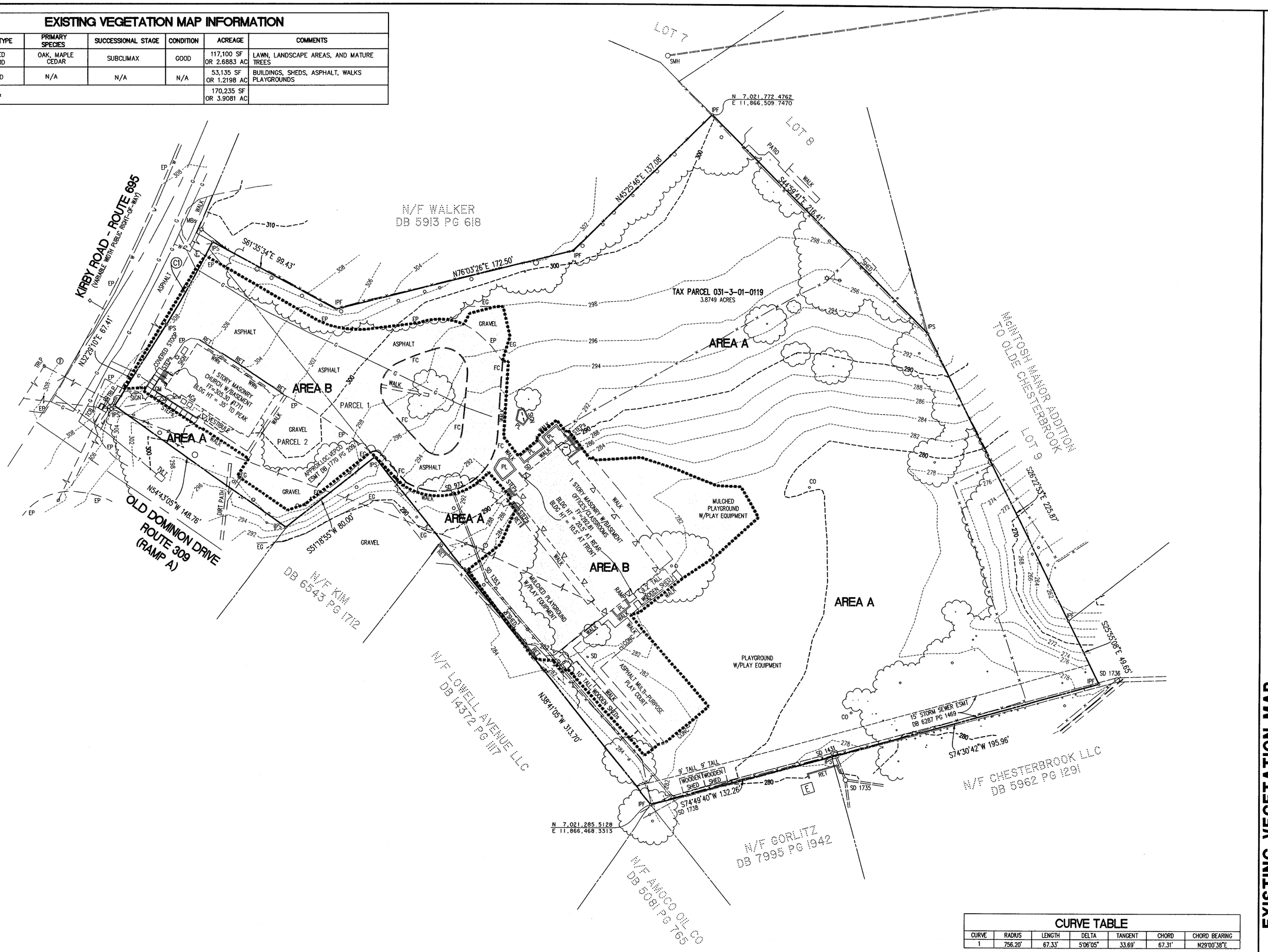
SCALE: 1"=30' | DATE: 7/29/05 REV. 11/7/05 | REV. 11/21/05 | DRAWN: JLH

SHEET 2 OF 6

EXISTING VEGETATION MAP INFORMATION

	COVER TYPE	PRIMARY SPECIES	SUCCESSIONAL STAGE	CONDITION	ACREAGE	COMMENTS
A	MAINTAINED GRASSLAND	OAK, MAPLE CEDAR	SUBCLIMAX	GOOD	117,100 SF OR 2.6883 AC	LAWN, LANDSCAPE AREAS, AND MATURE TREES
B	DEVELOPED	N/A	N/A	N/A	53,135 SF OR 1.2198 AC	BUILDINGS, SHEDS, ASPHALT, WALKS PLAYGROUNDS
TOTAL ACREAGE					170,235 SF OR 3.9081 AC	



CURVE TABLE

CURVE	RADIUS	LENGTH	DELTA	TANGENT	CHORD	CHORD BEARING
1	756.20'	67.33'	5°06'05"	33.69'	67.31'	N29°00'38"E

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DATE 7/29/05
REV. 11/7/05
REV. 11/21/06
DRAWN: MEF
SCALE: 1"=30'

COMMONWEALTH OF VIRGINIA
CHARLES F. DUNLAP
No. 13098
7/29/15
LAND SURVEYOR

REVISION APPROVED BY

NO.	DESCRIPTION	DATE	REV. BY	APPROVED	DATE

EXISTING VEGETATION MAP

CENTENNIAL MINISTRY CENTER
DRANESVILLE DISTRICT
FAIRFAX COUNTY, VIRGINIA

File No. FF-20 Tax Map No. 31-3 Job No. 05-063 Cadd Dwg. File: 05063evm Xref:

STORMWATER MANAGEMENT SUMMARY (ENTIRE SITE)

I. PRE-DEVELOPMENT (EXISTING CONDITIONS):

A. CONTRIBUTING AREAS:

2.93 AC. @ 0.30 (GREEN AREA, ON-SITE)
0.98 AC. @ 0.90 (ROOFS, DRIVEWAYS, SIDEWALKS, ETC.) (SITE IS ±25% IMPERVIOUS)
3.91 AC.

B. WEIGHTED 'C':

$$\frac{(2.93)(0.30)+(0.98)(0.90)}{3.91} = 0.45$$

C. TIME OF CONCENTRATION = 5 MIN.

D. RUNOFF: Q2 = (0.45)(5.45)(3.91) = 9.59 CFS
Q10 = (0.45)(7.27)(3.91) = 12.79 CFS

II. POST-DEVELOPMENT (PROPOSED CONDITIONS):

A. CONTRIBUTING AREAS:

2.68 AC. @ 0.30 (GREEN AREA, ON-SITE)
1.23 AC. @ 0.90 (PAVED AREA, ON-SITE)
3.91 AC.

B. WEIGHTED 'C':

$$\frac{(2.68)(0.30)+(1.23)(0.90)}{3.91} = 0.48$$

C. RUNOFF: Q2 = (0.48)(5.45)(3.91) = 10.23 CFS
Q10 = (0.48)(7.27)(3.91) = 13.64 CFS

III. POST-DEVELOPMENT UNDETAINED:

A. CONTRIBUTING AREAS:

0.91 AC. @ 0.30 (GREEN AREA UNDETAINED, ON-SITE)
0.21 AC. @ 0.90 (PAVED AREA UNDETAINED, ON-SITE)
1.12 AC.

B. WEIGHTED 'C':

$$\frac{(0.91)(0.30)+(0.21)(0.90)}{1.12} = 0.41$$

C. RUNOFF: Q2 = (0.41)(5.45)(1.12) = 2.50 CFS
Q10 = (0.41)(7.27)(1.12) = 3.34 CFS

IV. POST-DEVELOPMENT DETAINED:

A. CONTRIBUTING AREAS:

1.84 AC. @ 0.30 (GREEN AREA DETAINED, ON-SITE)
0.95 AC. @ 0.90 (PAVED AREA DETAINED, ON-SITE)
2.79 AC.

B. WEIGHTED 'C':

$$\frac{(1.84)(0.30)+(0.95)(0.90)}{2.79} = 0.50$$

C. RUNOFF: Q2 = (0.50)(5.45)(2.79) = 7.60 CFS
Q10 = (0.50)(7.27)(2.79) = 10.14 CFS

V. OFFSITE DETAINED:

A. CONTRIBUTING AREAS:

0.80 @ 0.30 (GREEN AREA DETAINED, ON-SITE)
0.16 AC. @ 0.90 (PAVED AREA DETAINED, ON-SITE)
0.96 AC.

B. WEIGHTED 'C':

$$\frac{(0.80)(0.30)+(0.16)(0.90)}{0.96} = 0.40$$

C. RUNOFF: Q2 = (0.40)(5.45)(0.96) = 2.09 CFS
Q10 = (0.40)(7.27)(0.96) = 2.79 CFS

VI. MAX RELEASE:

QMAX REL. = QPRE - Q(POST UNDETAINED) + Q(OFFSITE)

Q2 = 9.59 - 2.50 + 2.09 = 9.18 CFS
Q10 = 12.79 - 3.34 + 2.79 = 12.24 CFS

BMP FACILITY DESIGN CALCULATIONS

PART 1: LIST ALL OF THE SUBAREAS AND "C" FACTORS USED IN THE BMP COMPUTATIONS

SUBAREA DESIGNATION AND DESCRIPTION (1)		"C" (2)	ACRES (3)
A_1	AREA TO FILTERRA #1	0.74	0.16
A_2	AREA TO FILTERRA #2	0.85	0.12
A_3	AREA TO FILTERRA #3	0.68	0.23
A_4	AREA TO BIORETENTION #1	0.53	0.30
A_5	AREA TO DETENTION	0.44	2.01
A_6	UNDETAINED AREA	0.41	1.09
	TOTAL SITE AREA		3.91

PART 2: COMPUTE THE WEIGHTED AVERAGE "C" FACTOR FOR THE SITE

(A) AREA OF THE SITE (a) 3.91 ACRES

(B) SUBAREA DESIGNATION (1)		"C" (2)		ACRES (3)	PRODUCT (4)
A_1	AREA TO FILTERRA #1	0.74	x	0.16	= 0.12
A_2	AREA TO FILTERRA #2	0.85	x	0.12	= 0.10
A_3	AREA TO FILTERRA #3	0.68	x	0.23	= 0.16
A_4	AREA TO BIORETENTION #1	0.53	x	0.30	= 0.16
A_5	AREA TO DETENTION	0.44	x	2.01	= 0.88
A_6	UNDETAINED AREA	0.41	x	1.09	= 0.45
				(b) TOTAL	= 1.87

(C) WEIGHTED AVERAGE "C" FACTOR (b)/(a) = (c) 0.48

PART 3: COMPUTE THE TOTAL PHOSPHORUS REMOVAL FOR THE SITE

SUBAREA DESIGNATION (1)	BMP TYPE (2)	REMOVAL EFF. (%) (3)		AREA RATIO (4)		"C" FACTOR RATIO (5)		PRODUCT (6)
A_1	AREA TO FILTERRA #1	65	x	0.16/3.91	x	0.74/0.48	=	4.10
A_2	AREA TO FILTERRA #2	65	x	0.12/3.91	x	0.85/0.48	=	3.53
A_3	AREA TO FILTERRA #3	65	x	0.23/3.91	x	0.68/0.48	=	5.42
A_4	AREA TO BIORETENTION #1	65	x	0.30/3.91	x	0.53/0.48	=	5.51
	CONSERVATION EASEMENT	100	x	0.62/3.91	x	1	=	15.86
	OFFSITE TO FILTERRAS	65	x	0.29/3.91	x	0.45/0.48	=	4.52
	OFFSITE TO BIORETENTION AREA	65	x	0.09/3.91	x	0.35/0.48	=	1.09
						(a) TOTAL	=	40.03%

PART 4: DETERMINE COMPLIANCE WITH PHOSPHORUS REMOVAL REQUIREMENT

(A) SELECT REQUIREMENT (a) 40%

* WATER SUPPLY OVERLAY DISTRICT (OCCOQUAN WATERSHED) = 50 %
* CHESAPEAKE BAY PRESERVATION AREA (NEW DEVELOPMENT) = 40 %
* CHESAPEAKE BAY PRESERVATION AREA (REDEVELOPMENT) = [1-0.9 x ("C"PRE/"C"POST)] x 100 =

(B) IF LINE 3(a) 40.03 ≥ LINE 4(a) 40 THEN PHOSPHORUS REMOVAL REQUIREMENT IS SATISFIED.

SWM/BMP NARRATIVE

DETENTION FOR THE SITE WILL BE PROVIDED BY AN UNDERGROUND DETENTION PIPE. THE MAXIMUM RELEASE RATE FOR THE UNDERGROUND PIPE WILL NOT BE GREATER THAN 9.18 CFS FOR THE 2 YEAR STORM AND 12.24 CFS FOR THE 10 YEAR STORM. BMP FOR THE SITE WILL BE PROVIDED BY THREE FILTERRAS, A BIORETENTION AREA, AND A CONSERVATION EASEMENT. THE FILTERRAS AND BIORETENTION AREA HAVE A PHOSPHORUS REMOVAL EFFICIENCY OF 65%, AND THE CONSERVATION EASEMENT RECEIVES A ONE TO ONE CREDIT. ±0.62 ACRES ARE PART OF THE CONSERVATION EASEMENT, ±0.50 ACRES OF SITE AREA FLOW TO THE FILTERRAS, ALONG WITH ±0.29 ACRES OF OFFSITE AREA, AND ±0.30 ACRES OF SITE AREA FLOW TO THE BIORETENTION AREA, ALONG WITH ±0.09 ACRES OF OFFSITE AREA. 100% BMP CREDIT WAS TAKEN FOR THE OFFSITE AREAS, AS THE SUBDIVISION ABOVE THE SUBJECT SITE WAS GRANTED A WATER QUALITY WAIVER (WQ #025962) ON DECEMBER 1, 2003, AND THEREFORE, WATER FLOWING THAT SITE WILL NOT BE TREATED BY ANY BMP DEVICES. TOTAL PROVIDED PHOSPHORUS REMOVAL FROM ALL OF THESE MEASURES IS ±40%, THUS, THIS SITE WILL MEET THE 40% CHESAPEAKE BAY PHOSPHORUS REMOVAL REQUIREMENT.

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

The following information is required to be shown or provided in all zoning applications, or a 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 (9-815 1G & 1N)	Commercial Revitalization Districts (9-622 2A (12) & (14))
Development Plans PRC District (16-302 3 & 4L)	PRC Plan (16-303 1E & 1Q)
FDP P Districts (except PRC) (16-502 1F & 1Q)	Amendments (18-202 10F & 10I)

[X] 1. Plat is at a minimum scale of 1"=50' (unless it is 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 2.

[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)
FILTERRA #1 (e.g. #1 pond, #2 bioretention, #3 underground vault, etc.)	0.16	0.06	0.22	N/A	N/A	N/A
FILTERRA #2	0.12	0	0.12	N/A	N/A	N/A
FILTERRA #3	0.23	0.23	0.46	N/A	N/A	N/A
BIORETENTION	0.30	0.09	0.39	2185	2185	N/A
Totals						

[X] 4. Onsite drainage channels, outfalls and pipe systems are shown on Sheet 2. Pond inlet and outlet pipe systems are shown on Sheet N/A.

[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/A (asphalt, geoblock, gravel, etc.).

[X] 6. Landscaping and tree preservation shown in and near the stormwater management facility is shown on Sheet 2.

[X] 7. A 'stormwater management narrative' which contains a description of how detention and best management practices requirements will be met is provided on Sheet 4.

[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 Sheet 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 Sheet 5.

[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.

[X] 11. A submission waiver is requested for N/A.

[X] 12. Stormwater management is not required because N/A.

THIS PLAN IS CONCEPTUAL AND IS INTENDED TO BE USED IN CONJUNCTION WITH THE LAND USE APPROVAL PROCESS ONLY. IT IS NOT AN ENGINEERING CONSTRUCTION DRAWING; AND, MINOR DEVIATIONS AND ADJUSTMENTS MAY BE REQUIRED.

WALTER L. PHILLIPS
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(703) 532-6163 FAX (703) 533-3301

SCALE: 1"=50' DATE: 7/29/05 REV. 11/7/05 REV. 11/21/05 DRAWN: JVF

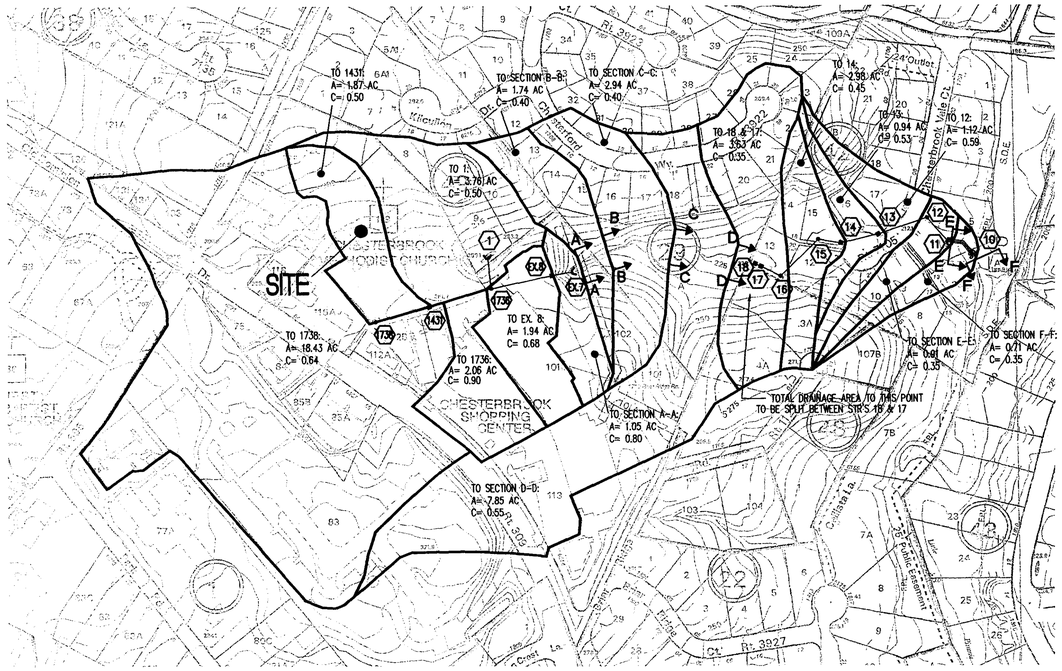
COMMONWEALTH OF VIRGINIA CHARLES F. DUNLAP No. 13098 7/29/05 LAND SURVEYOR

NO.	DESCRIPTION	DATE	REV. BY	APPROVED	DATE

REVISION APPROVED BY

PRELIMINARY STORMWATER MANAGEMENT PLAN

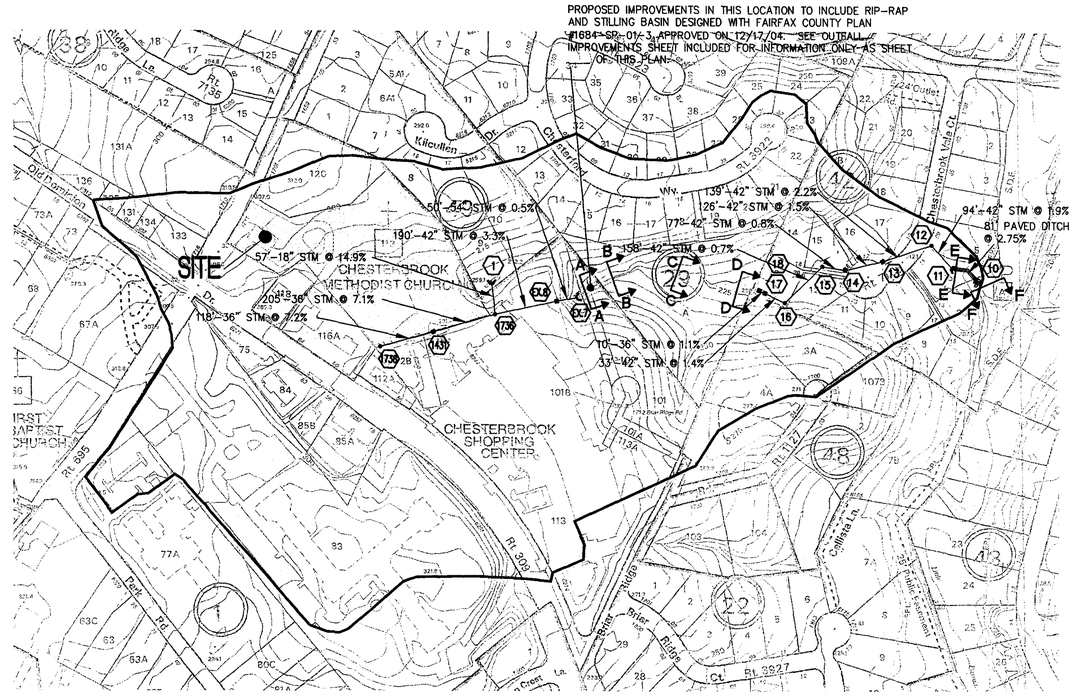
CENTENNIAL MINISTRY CENTER
DRANESVILLE DISTRICT
FAIRFAX COUNTY, VIRGINIA



NOTE:
STORM STRUCTURES 1738, 1431 AND 1736 AS SHOWN ON THIS SHEET ARE LABELED AS EX.1, EX. 10 AND EX.9 RESPECTIVELY ON SITE PLAN NUMBER 1684-SP-01-3

OUTFALL DRAINAGE AREA MAP

1" = 200'



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OUTFALL STORM SEWER MAP

1" = 200'

OUTFALL STORM SEWER COMPUTATIONS

from point	to point	area (A) acres	C	CA	inlet time (minutes)	rainfall (in/hr)	runoff (CFS) increment	runoff (CFS) accumulated	length (ft)	slope (ft/ft)	diameter (in)	capacity (CFS)
1738	1431	18.43	0.64	11.80	15	5.10	60.2	60.2	118	0.072	36	178.97
1431	1736	1.87	0.50	0.94	15	5.10	4.8	65.0	205	0.071	36	177.72
1	1736	3.76	0.50	1.88	15	5.10	9.6	9.6	57	0.015	18	40.55
1736	EX.8	2.06	0.90	1.85	15	5.10	9.5	84.0	190	0.033	42	182.77
EX.8	EX.7	1.94	0.68	1.32	15	5.10	6.7	90.8	50	0.005	54	139.05
18	17	3.63	0.35	1.27	15	5.10	6.5	66.6	10	0.011	36	69.95
17	16	-	-	-	15	5.10	-	133.2	33	0.014	42	119.04
16	15	-	-	-	15	5.10	-	133.2	158	0.007	42	84.18
15	14	-	-	-	15	5.10	-	133.2	77	0.008	42	89.99
14	13	2.98	0.45	1.34	15	5.10	6.8	140.0	126	0.015	42	123.22
13	12	0.94	0.53	0.50	15	5.10	2.5	142.6	139	0.022	42	149.23
12	11	1.12	0.59	0.66	15	5.10	3.4	146.0	94	0.019	42	149.18

HYDRAULIC GRADELINE COMPUTATIONS

Inlet Station	Structure Type (M,I)	Outlet Water Surface Elevation	D_o (in)	Q_o	L_o	Sf_o	H_f	Junction Loss															Inlet Water Surface Elevation	Max Water Surface Elevation
								V_o	H_o	D_i (in)	Q_i	V_i	Q_iV_i	$V_i^2/2g$	H_i	Angle (°)	H_{delta}	Ht	1.3Ht	.5(Ht)	Final H		
1*	*	2*	3*	4*	5*	6	7	8	9	*	10*	11	12		13	14*	15	16	17	18	19	20	*
14	I	209.84	42	140.00	126	0.019	2.44	14.55	0.82	42	133.20	13.84	1844.12	2.98	0.30	10	0.00	1.12	1.46	0.73	3.17	213.01	218.87
15	M	213.01	42	133.20	77	0.018	1.35	13.84	0.74	42	133.20	13.84	1844.12	2.98	0.30	50	0.95	1.99	—	1.00	2.35	215.35	224.89
16	M	215.35	42	133.20	158	0.018	2.77	13.84	0.74	42	133.20	13.84	1844.12	2.98	0.30	60	1.03	2.07	—	1.03	3.80	219.16	224.10
17	I	219.16	42	133.20	33	0.018	0.58	13.84	0.74	42	66.60	6.92	461.03	0.74	0.07	0	0.00	0.82	1.06	0.53	1.11	220.27	220.38

SECTION A-A NOTE:

PROPOSED IMPROVEMENTS IN THE AREA OF SECTION A-A INCLUDE A RIP-RAP STILLING BASIN AND 35' OF CLASS I RIP-RAP AS DESIGNED AND APPROVED WITH FAIRFAX COUNTY PLAN #1684-SP-01-3 APPROVED ON 12/17/04.

OUTFALL NARRATIVE

ONSITE STORMWATER MANAGEMENT MEASURES ARE PROVIDED FOR THE PROPOSED PROJECT IN ORDER TO MAINTAIN THE PRE-DEVELOPMENT CONDITION PEAK RELEASE. AN OVERALL TIME OF CONCENTRATION OF 15 MINUTES WAS USED FOR THIS ANALYSIS, WHICH IS CONSISTENT WITH OTHER STUDIES OF THE AREA. THE STORMWATER OUTFALL FOR THIS SITE IS CONVEYED DOWNSTREAM VIA A CLOSED CONDUIT PIPE SYSTEM AND NATURAL CHANNEL FLOW. THE NORTHWEST PORTION OF THE SITE DRAINS TO STRUCTURE 1738; THE MIDDLE OF THE SITE DRAINS TO STRUCTURE 1431 AND THE EASTERN PORTION OF THE SITE DRAINS TO STRUCTURE 1. THE RUNOFF FROM THE SITE THEN FLOWS THROUGH A STORM SEWER SYSTEM UNTIL IT DISCHARGES AT STRUCTURE 7 INTO A NATURAL CHANNEL. THIS STORM SEWER IS ADEQUATE PER THE OUTFALL STORM SEWER COMPUTATIONS ON THIS SHEET. CHANNEL IMPROVEMENTS WERE APPROVED WITH FAIRFAX COUNTY PLAN #1684-SP-01-3 AT THIS POINT TO INCLUDE RIP-RAP AND A STILLING BASIN. THE NATURAL CHANEL IS WITHIN A FAIRFAX COUNTY MAPPED RESOURCE PROTECTION AREA (RPA) AT THIS POINT. CHANNEL SECTIONS AND COMPUTATIONS ARE PROVIDED AT SECTIONS B-B, C-C, AND D-D FOR THE 2-YR STORM. ON THIS SHEET. THE RUNOFF IS THEN PICKED BACK UP IN A STORM SEWER SYSTEM VIA SIDE BY SIDE INLETS 18 AND 17. THIS SYSTEM IS ADEQUATE PER THE OUTFALL STORM SEWER COMPUTATIONS AND HYDRAULIC GRADELINE COMPUTATIONS ON THIS SHEET. THE RUNOFF IS ULTIMATELY DISCHARGED OUT OF STRUCTURE 11 INTO A PAVED DITCH (SEE SECTION E-E) AND THEN INTO A RIP-RAP CHANNEL (SEE SECTION F-F) WHICH IS CONTAINED WITHIN THE FLOODPLAIN FOR LITTLE PIMMIT RUN. LITTLE PIMMIT RUN HAS A DRAINAGE AREA GREATER THAN ONE SQUARE MILE AND THEREFORE THE ANALYSIS IS STOPPED AT THIS POINT.

THE LIMITS OF THIS STUDY ARE AS DEPICTED ON THIS SHEET. THIS ANALYSIS IS BASED ON RECORD INFORMATION AND OBSERVATIONS IN THE FIELD.

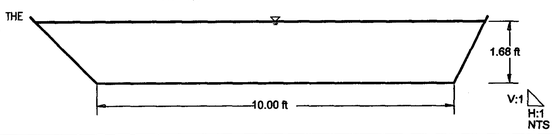
CHANNEL SECTION B-B

Input Data

Mannings Coefficient	0.035
Slope	0.006000 ft/ft
Left Side Slope	1.00 V : H
Right Side Slope	2.00 V : H
Bottom Width	10.00 ft
Discharge	75.40 cfs

Results

Depth	1.68 ft
Flow Area	19.0 ft²
Wetted Perimeter	14.26 ft
Top Width	12.53 ft
Critical Depth	1.17 ft
Critical Slope	0.019796 ft/ft
Velocity	3.98 ft/s
Velocity Head	0.25 ft
Specific Energy	1.93 ft
Froude Number	0.57
Flow Type	Subcritical



CHANNEL SECTION C-C

Input Data

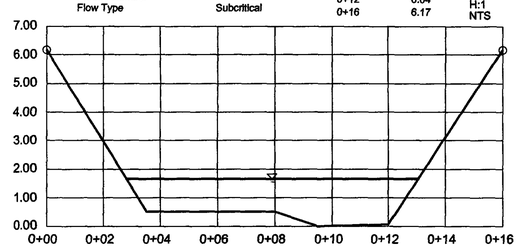
Slope	0.020000 ft/ft
Discharge	80.00 cfs

Results

Mannings Coefficient	0.035
Water Surface Elevation	1.66 ft
Elevation Range	0.00 to 6.17
Flow Area	12.7 ft²
Wetted Perimeter	11.88 ft
Top Width	10.28 ft
Actual Depth	1.66 ft
Critical Elevation	1.66 ft
Critical Slope	0.020187 ft/ft
Velocity	6.29 ft/s
Velocity Head	0.61 ft
Specific Energy	2.28 ft
Froude Number	1.00
Flow Type	Subcritical

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	6.17
0+04	0.50
0+08	0.50
0+10	0.00
0+12	0.04
0+16	6.17



CHANNEL SECTION D-D

Input Data

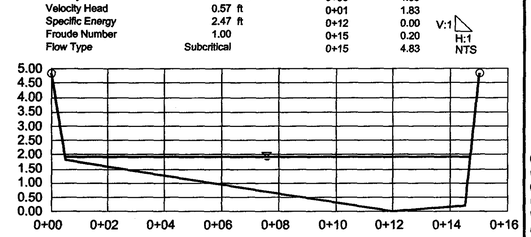
Slope	0.020000 ft/ft
Discharge	96.80 cfs

Results

Mannings Coefficient	0.035
Water Surface Elevation	1.90 ft
Elevation Range	0.00 to 4.83
Flow Area	16.1 ft²
Wetted Perimeter	15.94 ft
Top Width	14.20 ft
Actual Depth	1.90 ft
Critical Elevation	1.90 ft
Critical Slope	0.020002 ft/ft
Velocity	6.03 ft/s
Velocity Head	0.57 ft
Specific Energy	2.47 ft
Froude Number	1.00
Flow Type	Subcritical

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	4.83
0+01	1.83
0+12	0.00
0+15	0.20
0+15	4.83



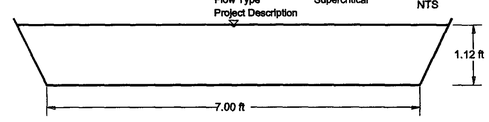
CHANNEL SECTION E-E

Input Data

Mannings Coefficient	0.013
Slope	0.027300 ft/ft
Left Side Slope	2.00 V : H
Right Side Slope	2.00 V : H
Bottom Width	7.00 ft
Discharge	147.60 cfs

Results

Depth	1.12 ft
Flow Area	8.4 ft²
Wetted Perimeter	9.50 ft
Top Width	8.12 ft
Critical Depth	2.27 ft
Critical Slope	0.002785 ft/ft
Velocity	17.47 ft/s
Velocity Head	4.74 ft
Specific Energy	5.86 ft
Froude Number	3.02
Flow Type	Supercritical
Project Description	



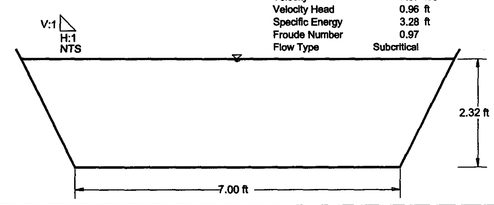
CHANNEL SECTION F-F

Input Data

Mannings Coefficient	0.040
Slope	0.025000 ft/ft
Left Side Slope	2.00 V : H
Right Side Slope	2.00 V : H
Bottom Width	7.00 ft
Discharge	148.90 cfs

Results

Depth	2.32 ft
Flow Area	18.9 ft²
Wetted Perimeter	12.18 ft
Top Width	9.32 ft
Critical Depth	2.28 ft
Critical Slope	0.026355 ft/ft
Velocity	7.87 ft/s
Velocity Head	0.96 ft
Specific Energy	3.28 ft
Froude Number	0.97
Flow Type	Subcritical



WALTER L. PHILLIPS
INCORPORATED
CIVIL ENGINEERS LAND SURVEYORS PLANNERS LANDSCAPE ARCHITECTS
207 PARK AVENUE FALLS CHURCH, VIRGINIA 22046
(703) 532-6163 FAX (703) 533-1301 WWW.WLPINC.COM

SCALE: 1"=30' | DATE: 7/29/05 REV. 11/07/05 | REV. 11/21/05 | DRAWN: JV

COMMONWEALTH OF VIRGINIA
CHARLES T. DUNLAP
No. 1308
7/29/05
LAND SURVEYOR

NO.	DESCRIPTION	DATE	REV. BY	APPROVED	DATE

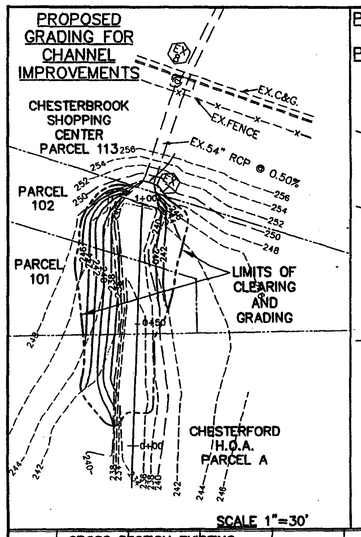
REVISION APPROVED BY

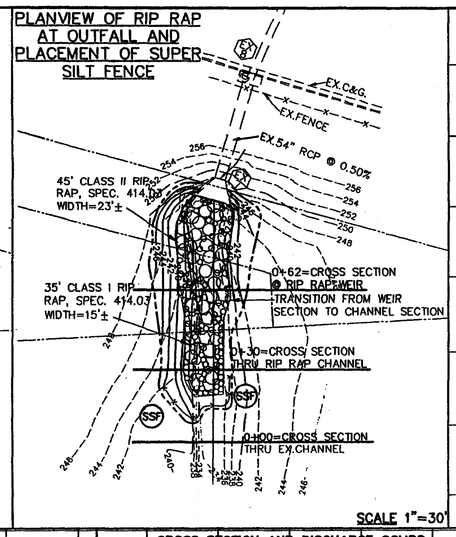
OUTFALL ANALYSIS

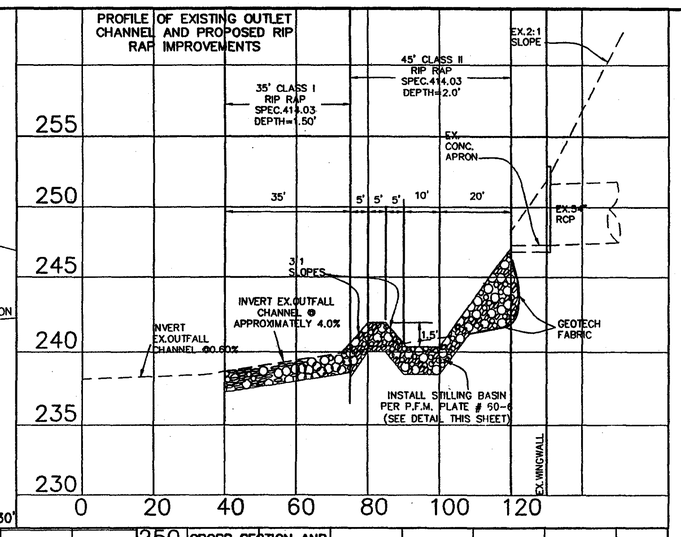
CENTENNIAL MINISTRY CENTER

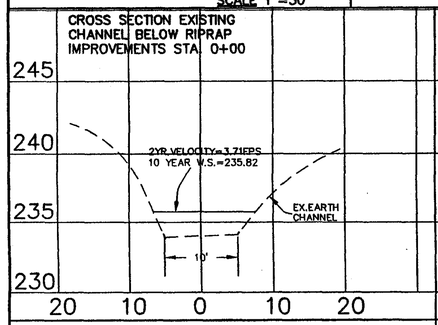
DRANESVILLE DISTRICT

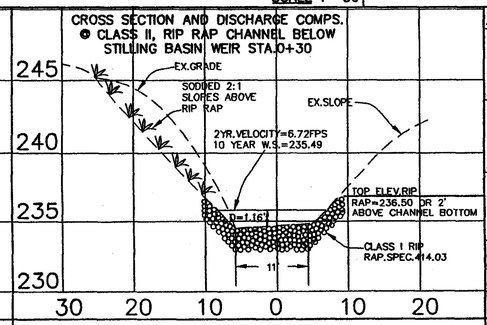
FAIRFAX COUNTY, VIRGINIA

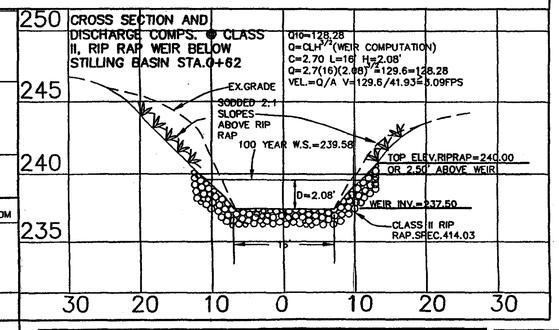












FHWA Urban Drainage Design Program, HY-22
HYDRAULIC PARAMETERS OF OPEN CHANNELS

Trapezoidal, Rectangular, or Triangular X-Section
Date: 05/20/2004

Project No. :
Project Name.:
Computed by :

INPUT PARAMETERS

1.	Channel Slope (ft/ft)	0.0060
2.	Channel Bottom Width (ft)	10.00
3.	Left Side Slope (Horizontal to 1)	1.00
4.	Right Side Slope (Horizontal to 1)	2.00
5.	Manning's Coefficient	0.035
6.	Discharge (cfs)	68.72
7.	Depth of Flow (ft)	1.51

OUTPUT RESULTS

Cross Section Area (Sqft)	18.52
Average Velocity (ft/sec)	3.71
Top Width (ft)	14.53
Hydraulic Radius (ft)	1.19
Froude Number	0.58

2 YEAR STORM EXISTING CHANNEL BELOW RIP RAP IMPROVEMENTS

FHWA Urban Drainage Design Program, HY-22
HYDRAULIC PARAMETERS OF OPEN CHANNELS

Trapezoidal, Rectangular, or Triangular X-Section
Date: 05/20/2004

Project No. :
Project Name.:
Computed by :

INPUT PARAMETERS

1.	Channel Slope (ft/ft)	0.0400
2.	Channel Bottom Width (ft)	11.00
3.	Left Side Slope (Horizontal to 1)	2.00
4.	Right Side Slope (Horizontal to 1)	2.00
5.	Manning's Coefficient	0.035
6.	Discharge (cfs)	68.72
7.	Depth of Flow (ft)	0.81

OUTPUT RESULTS

Cross Section Area (Sqft)	10.22
Average Velocity (ft/sec)	6.72
Top Width (ft)	14.24
Hydraulic Radius (ft)	0.70
Froude Number	1.40

2 YEAR STORM RIP RAP CHANNEL BELOW STILLING BASIN

FHWA Urban Drainage Design Program, HY-22
HYDRAULIC PARAMETERS OF OPEN CHANNELS

Trapezoidal, Rectangular, or Triangular X-Section
Date: 05/20/2004

Project No. :
Project Name.:
Computed by :

INPUT PARAMETERS

1.	Channel Slope (ft/ft)	0.0060
2.	Channel Bottom Width (ft)	10.00
3.	Left Side Slope (Horizontal to 1)	1.00
4.	Right Side Slope (Horizontal to 1)	2.00
5.	Manning's Coefficient	0.035
6.	Discharge (cfs)	95.44
7.	Depth of Flow (ft)	1.82

OUTPUT RESULTS

Cross Section Area (Sqft)	23.17
Average Velocity (ft/sec)	4.12
Top Width (ft)	15.46
Hydraulic Radius (ft)	1.39
Froude Number	0.59

10 YEAR STORM EXISTING CHANNEL BELOW RIP RAP IMPROVEMENTS

FHWA Urban Drainage Design Program, HY-22
HYDRAULIC PARAMETERS OF OPEN CHANNELS

Trapezoidal, Rectangular, or Triangular X-Section
Date: 05/20/2004

Project No. :
Project Name.:
Computed by :

INPUT PARAMETERS

1.	Channel Slope (ft/ft)	0.0400
2.	Channel Bottom Width (ft)	11.00
3.	Left Side Slope (Horizontal to 1)	2.00
4.	Right Side Slope (Horizontal to 1)	2.00
5.	Manning's Coefficient	0.035
6.	Discharge (cfs)	95.44
7.	Depth of Flow (ft)	0.98

OUTPUT RESULTS

Cross Section Area (Sqft)	12.70
Average Velocity (ft/sec)	7.51
Top Width (ft)	14.92
Hydraulic Radius (ft)	0.83
Froude Number	1.44

10 YEAR STORM RIP RAP CHANNEL BELOW STILLING BASIN

TABLE 5-8 (continued)

MANNING'S "n" VALUES

Surface	Best	Good	Fair	Bad
Natural Stream Channels:				
1. Clean, straight bank, full stage, no rifts or deep pools	0.025	0.0275	0.030	0.033
2.* Same as #1, but some weeds and stones	0.030	0.033	0.035*	0.040
3. Winding, some pools and shoals, clean	0.033	0.035	0.040	0.045
4. Same as #3, lower stages, more ineffective slope and sections	0.040	0.045	0.050	0.055
5. Same as #3, some weeds and stones	0.035	0.040	0.045	0.050
6. Same as #4, stony sections	0.045	0.050	0.055	0.060
7. Sluggish river reaches, rather weedy or with very deep pools	0.050	0.060	0.070	0.080
8. Very weedy reaches	0.075	0.100	0.125	0.150

* Values commonly used in designing.

Source: King *USE: n=.035
FROM: "VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK" THIRD EDITION 1992

DISCHARGE COMPUTATION FOR EXISTING OUTLET STRUCTURE #7
1.USE Tc=7.5 MIN FROM STORM SEWER COMPS. I2=4.50 IN/HR. I10=6.25 IN/HR.
2.ACCUMULATED CA (IMPERVIOUS ACRES) FROM THE STORM SEWER COMPUTATIONS=15.27 IMPERVIOUS ACRES
3.DISCHARGE AT OUTFALL STRUCTURE#7-
Q10=15.27 IMP.AC.x6.25 IN/HR=95.44 CFS
Q2=15.27 IMP AC.x4.50 IN/HR.=68.72 CFS
4.USE Q2=68.72 FOR VELOCITY COMPUTATION
USE Q10=95.44 FOR DEPTH COMPUTATION.

TABLE 5-22

PERMISSIBLE VELOCITIES FOR UNLINED EARTHEN CHANNELS

Soil Types	Permissible Velocity (ft./sec.)
Fine Sand (noncolloidal)	2.5
Sandy Loam (noncolloidal)	2.5
Silt Loam (noncolloidal)	3.0
Ordinary Firm Loam	3.5
Fine Gravel	5.0
Stiff Clay (very colloidal)	5.0
* Graded, Loam to Cobbles (noncolloidal)	5.0*
Graded, Silt to Cobbles (noncolloidal)	5.5
Alluvial Silts (noncolloidal)	3.5
Alluvial Silts (colloidal)	5.0
Coarse Gravel (noncolloidal)	6.0
Cobbles and Shingles	5.5
Shales and Hard Pans	6.0

*ALLOWABLE VELOCITY=5.0 FPS
FROM: "VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK" THIRD EDITION 1992

NOTE:
1. LETTERS OF PERMISSION FOR CONSTRUCTION SHOWN HEREON MUST BE OBTAINED FROM ALL PROPERTY OWNERS AND ATTACHED TO THE PLANS PRIOR TO FINAL APPROVAL BY FAIRFAX COUNTY.
2. FOR LOCATION OF PROPOSED IMPROVEMENTS SEE STRUCTURE EX.7 ON SHEET 6A OF 11.

OUTFALL IMPROVEMENTS PLAN AND COMPUTATIONS
CHESTERBROOK PLAZA
6260/6264 OLD DOMINION DRIVE
BEING A SUBDIVISION OF LOT 116 AND 117
PROPERTY OF GEORGE E. & HELEN C. KONTZIAS
DEED BOOK 03747 PAGE 0315 (LOT 116)
DEED BOOK 05827 PAGE 0487 (LOT 117)
FAIRFAX COUNTY, VIRGINIA

Huntley, Nyce & Associates, Ltd.
SURVEYING • CIVIL ENGINEERING • LAND PLANNING
7202 POPLAR ST
ANNANDALE, VIRGINIA 22003
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751 MILLER DRIVE, SE
SUITE F-2
LEESBURG, VIRGINIA 20175
703-779-4905 FAX 703-779-2490
21 CULPEPER STREET
WARRENTON, VIRGINIA 20186
540-347-2100 FAX 540-347-2229

COMMONWEALTH OF VIRGINIA
ROBERT L. SERGLES
No. 024833
5-21-04
PROFESSIONAL ENGINEER

KEA, LLC
46760 GRAHAM COVE SQUARE
POTOMAC FALLS, VIRGINIA 20165
(703) 450-1080 FAX. (703) 450-1088

DISTRICT: DRANESVILLE		SHEET
DATE: 5/20/04	AREA: 0.8154	6E OF 11
SCALE: AS NOTED	TAX MAP: 31-3((1))-116 & 117	
ZONE: C-5	PLAN NO.: 1684-SP-01-2	

NOTE: ALL REVISIONS AFTER 11-20-03 BY HUNTLEY, NYCE, AND ASSOCIATES, LTD., (JOB NO. SP-3563)

SHEET 6 OF 6

FOR INFORMATION ONLY!!!!!

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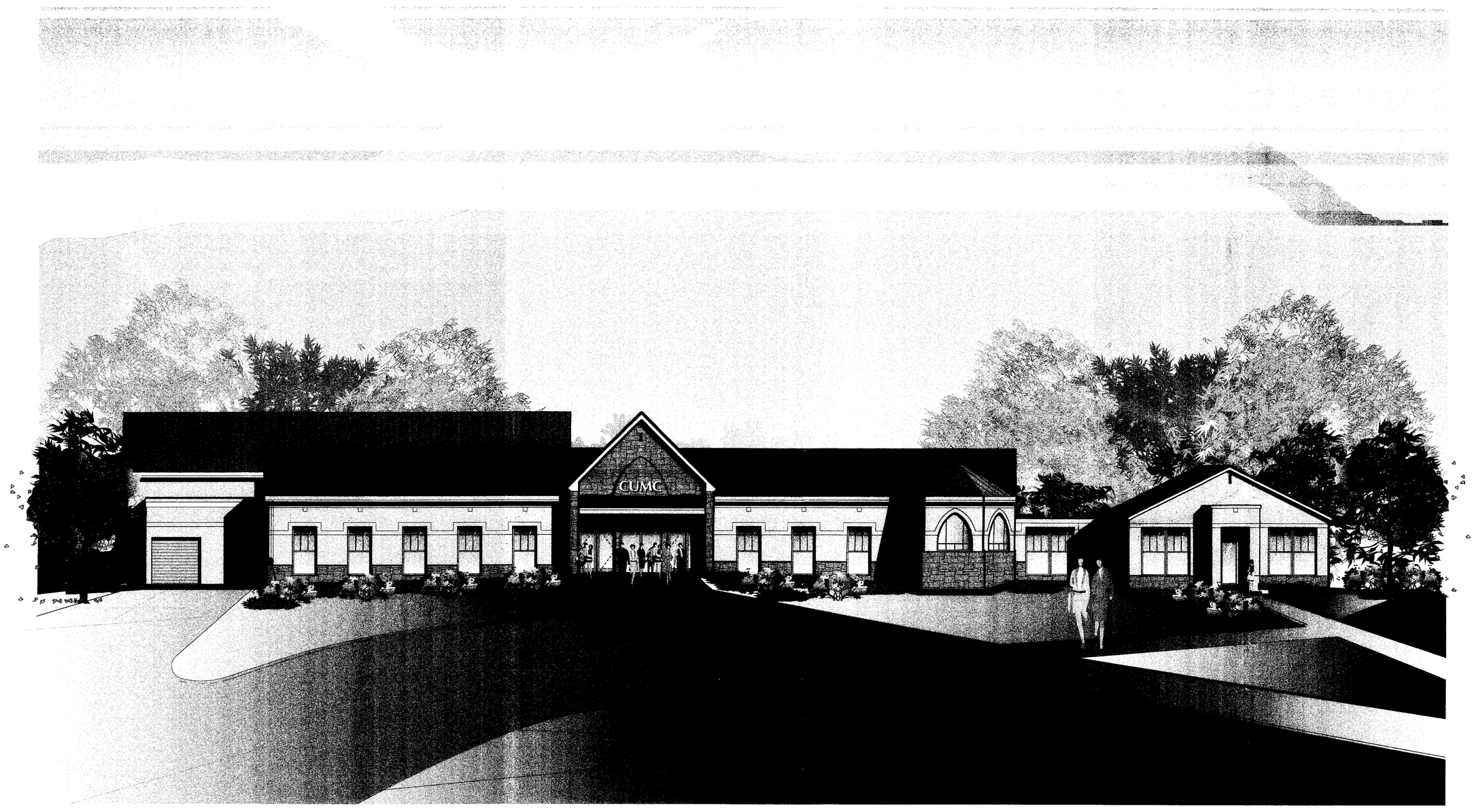

CONCEPT FRONT ELEVATION

0 25 50
Feet

Thursday, January 13, 2005
Untitled 16

● RELEASE DATE: ●

a 3/25/02 PRELIMINARY RELEASE
b 02/05/05 Building Committee Review
c 02/10/05 District Council
d 02/18/05 Budget
e 02/23/05 District Council
f 11/4/05 SPA

Centennial Ministry Center

Chesterbrook United Methodist Church
1711 Kirby Road
McLean, Fairfax County, VA.

• BUTZ • WILBERN
Architecture • Planning
Interiors • Property Visioning
6718 Whittier Ave. # 120
McLean, Virginia 22101
703-356-6771 fax: 356-7010

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P-4

● 21107 ●

CONCEPT SIDE ELEVATION

0 25 50
Feet

• RELEASE DATE: •

a 11/4/05 SPA

Centennial Ministry Center

Chesterbrook United Methodist Church

1711 Kirby Road
McLean, Fairfax County, VA.

• BUTZ •
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Architecture • Planning
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McLean, Virginia 22101
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• 25007 •

Friday, July 1, 2005
25007-Side, Rear Elevation

CONCEPT REAR ELEVATION

0 25 50
Feet

Friday, July 1, 2005
25007-Side, Rear Elevation

◆ RELEASE DATE: ◆
a 11/4/05 SPA

Centennial Ministry Center

Chesterbrook United Methodist Church

1711 Kirby Road
McLean, Fairfax County, VA.

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Architecture • Planning
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McLean, Virginia 22101
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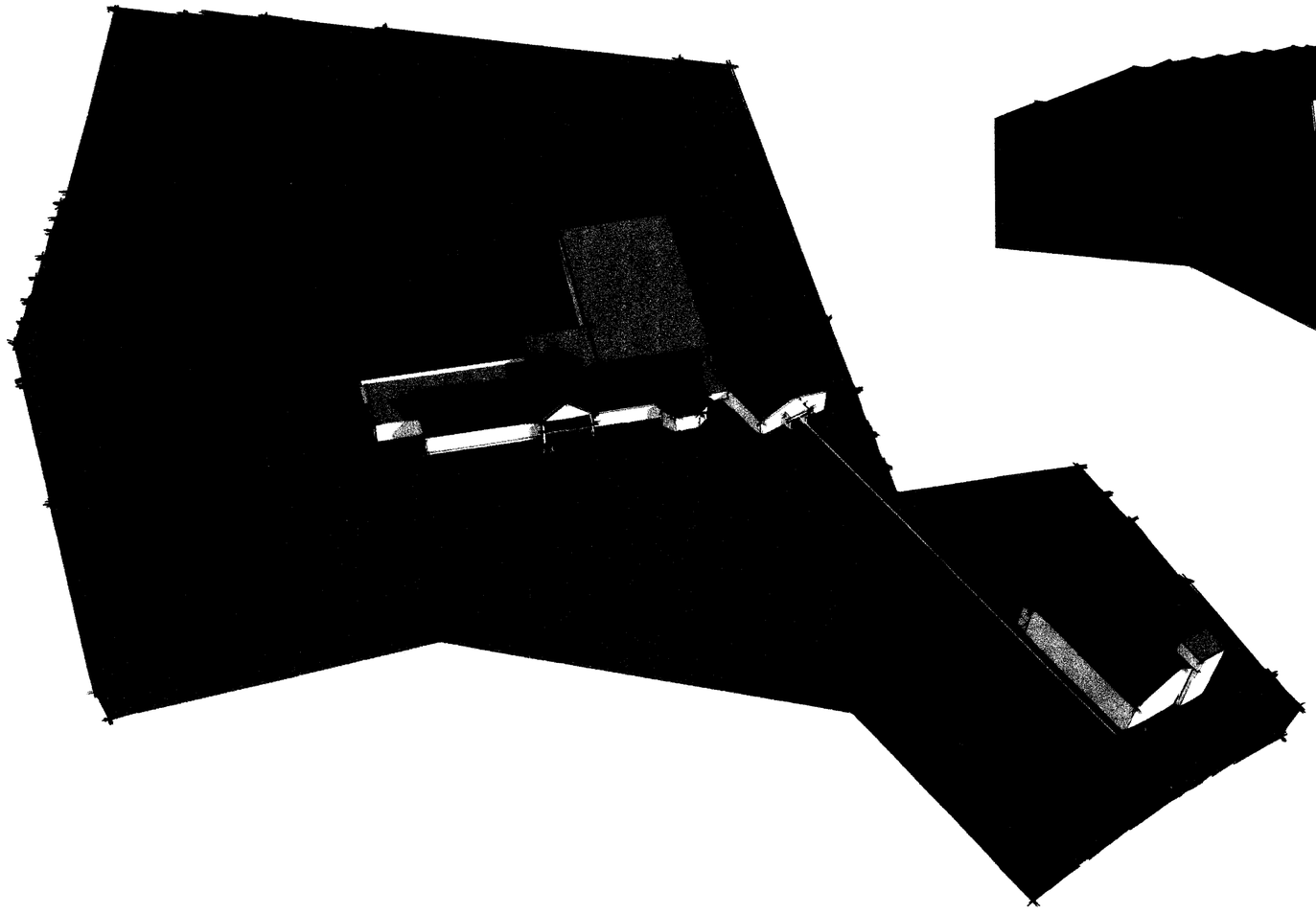
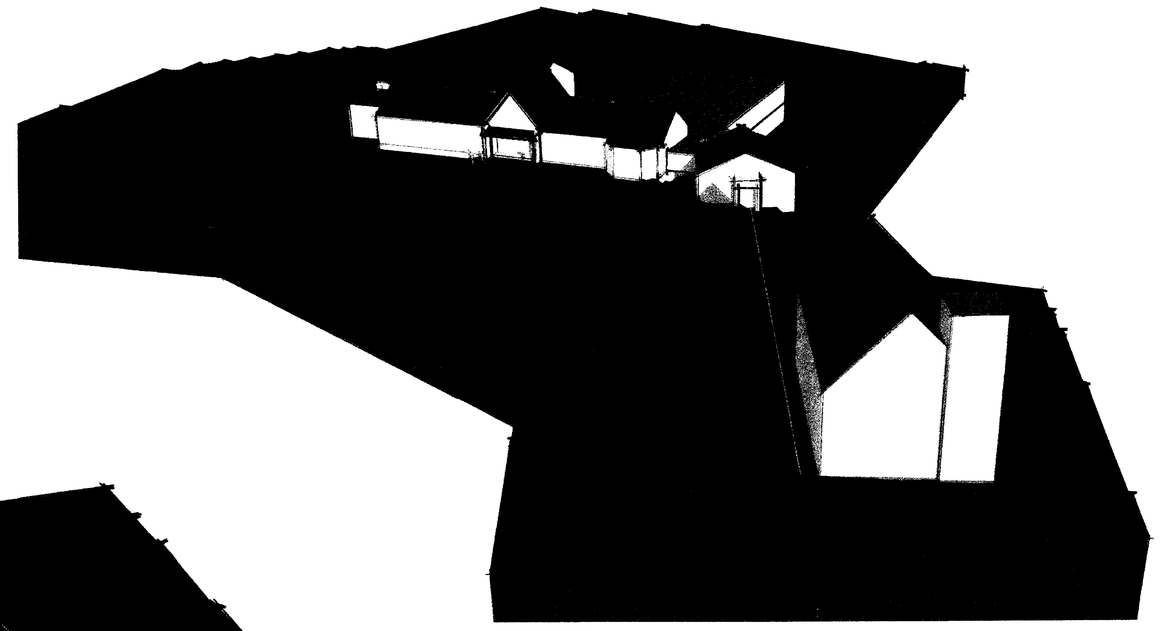
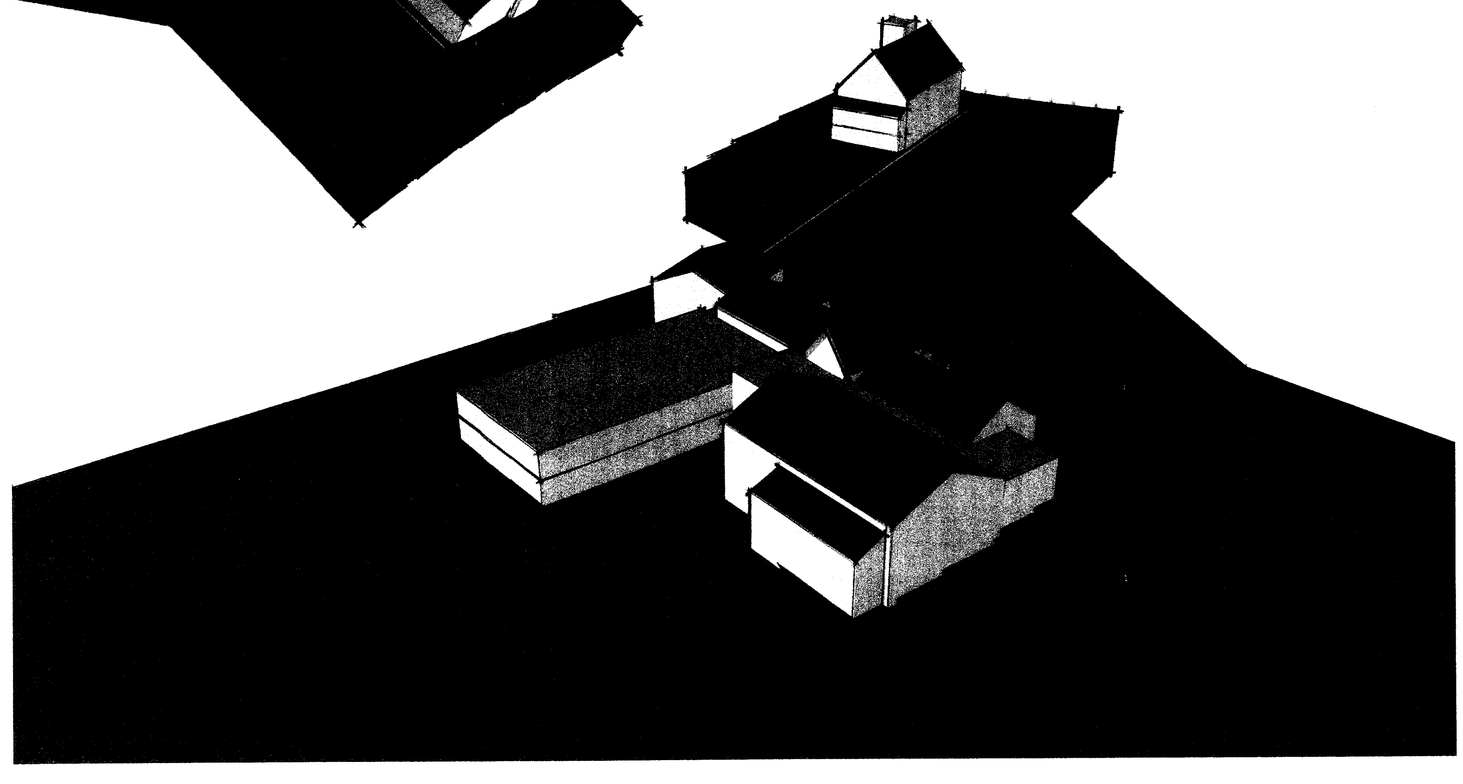
• 25007 •







3D MASSING MODEL

Tuesday, February 8, 2005
25007-CUMC Views

• RELEASE DATE: •

a	3/25/02	PRELIMINARY RELEASE
b	02/05/05	Building Committee Review
c	02/10/05	District Council
d	02/18/05	Budget
e	02/23/05	District Council
f	11/4/05	SPA

Centennial Ministry Center

Chesterbrook United Methodist Church

1711 Kirby Road
McLean, Fairfax County, VA.

• BUTZ • WILBERN

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