CONCEPTUAL DEVELOPMENT PLAN AMENDMENT (CDPA) AND FINAL DEVELOPMENT PLAN AMENDMENT (FDPA) FOR PCA 78-C-098-03

BOXWOODS

HUNTER MILL MAGISTERIAL DISTRICT
FAIRFAX COUNTY, VIRGINIA

GENERAL NOTES

1. THE PROPERTY IS IDENTIFIED ON FAIRFAX COUNTY TAX ASSESSMENT MAP: 17-4 ((1))-01.
2. THE ABOVE REFERENCED PROPERTY IS CURRENTLY ZONED PDC PER CDPA#78-C-098.
3. THE BOUNDARY INFORMATION SHOWN HEREON IS BASED ON ALTA/ACSM LAND TITLE SURVEY, PREPARED BY BURGESS & NIPLE, DATED SEPTEMBER 2002.
4. THE TOPOGRAPHY SHOWN HEREON IS AT A TWO-FOOT CONTOUR INTERVAL, COMPILED BY UEA. ALL TOPOGRAPHY WAS OBTAINED VIA AIR SURVEY.
5. THE PROPERTY SHOWN ON THIS CDPA & FDPA PLAN IS LOCATED IN THE HUNTER MILL DISTRICT.
6. THIS PROPOSED DEVELOPMENT IS IN CONFORMANCE WITH THE COMPREHENSIVE PLAN AND ALL APPLICABLE ORDINANCES, REGULATIONS AND ADOPTED CONDITIONS EXCEPT FOR:
   A: A WAIVER UNDER PAR. 5 OF SECTION 6-206 OF THE ZONING ORDINANCE IS HEREBY REQUESTED. TO ALLOW GROSS FLOOR AREA FOR DWELLINGS AS A SECONDARY USE TO EXCEED 50% OF THE GROSS FLOOR AREA OF THE PRINCIPAL USE, AND
   B: A WAIVER UNDER PAR. 8 OF SECTION 16401 OF THE ZONING ORDINANCE IS HEREBY REQUESTED TO ALLOW FOR WALLS GREATER THAN 4' IN HEIGHT IN THE FRONT YARD.
7. THIS SITE IS SERVED BY PUBLIC SEWER AND WATER.
8. STORM WATER MANAGEMENT (SWM) AND BEST MANAGEMENT PRACTICES (BMP) ARE PROVIDED BY ONSITE AND OR OFFSITE SWM/BMP FACILITIES. SEE STORMWATER MANAGEMENT NARRATIVE AND OUTFALL NARRATIVE THIS SHEET.
9. UTILITY LOCATIONS SHOWN ARE APPROXIMATE. THERE ARE NO KNOWN EXISTING UTILITY EASEMENTS OF 25' OR MORE IN WIDTH ON THE SITE.
10. INDIVIDUAL UTILITY PLANS AND PROFILES WILL BE SUBMITTED DURING THE SITE PLAN STAGE FOR CONSTRUCTION PURPOSES.
11. THERE ARE NO KNOWN HAZARDOUS OR TOXIC SUBSTANCES ON THIS SITE. IF ANY SUBSTANCES ARE FOUND, THE METHODS FOR DISPOSAL SHALL ADHERE TO COUNTY, STATE, OR FEDERAL LAW.
12. NO HAZARDOUS OR TOXIC SUBSTANCES, HAZARDOUS WASTES OR PETROLEUM PRODUCTS ARE TO BE GENERATED, UTILIZED, STORED, TREATED AND/OR DISPOSED OF ON THIS SITE. EXCEPT FOR STORAGE OF DEISEL FUEL FOR GENERATORS AND GASOLINE FOR LAWN MAINTENANCE EQUIPMENT. THERE ARE NO EXISTING STORAGE FACILITIES FOR SUCH PRODUCTS ON THIS SITE.
13. THERE ARE NO KNOWN BURIAL SITES.
14. ALL PUBLIC STREETS SHALL CONFORM TO FAIRFAX COUNTY AND/OR VIRGINIA DEPARTMENT OF TRANSPORTATION (VDOT) STANDARDS AND SPECIFICATIONS UNLESS MODIFIED. PRIVATE STREETS SHALL CONFORM TO STANDARDS SET BY THE FAIRFAX COUNTY PUBLIC FACILITIES MANUAL SECTION 7 UNLESS MODIFIED.
15. IN ACCORDANCE WITH PARAGRAPH 4 OF SECTION 16-403 OF THE ZONING ORDINANCE, MINOR MODIFICATIONS TO THE SIZE, DIMENSIONS, FOOTPRINTS, AND LOCATION OF BUILDINGS, PARKING SPACES, GARAGES, RETAINING WALLS AND SIDEWALKS MAY OCCUR WITH FINAL ENGINEERING AND DESIGN.
16. THERE ARE NO DESIGNATED FLOOD PLAINS, ENVIRONMENTAL QUALITY CORRIDORS, OR RPAs ON THE SUBJECT SITE PER FAIRFAX COUNTY MAPS.
17. THERE ARE SCENIC ASSETS OR NATURAL FEATURES ON THE SUBJECT SITE WHICH WOULD DESERVE PROTECTION OR PRESERVATION, SUCH AS THE MANOR HOUSE, GAZEBO, TREES, AND POND.
18. THE SPECIAL AMENITIES PROPOSED WITH THIS SITE SHALL INCLUDE:
    * PEDESTRIAN SIDEWALKS
    * CABANA (RESIDENTIAL OPTION ONLY)
    * GAZEBO
19. THE DEVELOPMENT SCHEDULE SHALL BE DETERMINED BY THE APPLICANT BASED UPON MARKET CONDITIONS.
20. THE PROPOSED PUBLIC ROAD IMPROVEMENTS ILLUSTRATE THE REQUIRED IMPROVEMENTS PER THE COMPREHENSIVE PLAN. THE APPROVAL OF THIS PLAN WILL ONLY BIND THE OWNER TO CONSTRUCTING THE ROAD IMPROVEMENTS AS SHOWN. AT THIS TIME THERE ARE NO REQUIRED IMPROVEMENTS.
21. SIGNAGE WILL BE PROVIDED IN ACCORDANCE WITH THE FAIRFAX COUNTY ZONING ORDINANCE.
22. AFFORDABLE DWELLING UNITS ARE NOT REQUIRED PER PAR. 1 OF SECTION 2-803.
23. ARCHITECTURAL SKETCHES OF STRUCTURES PROVIDED ON SHEET #18-19.
24. OMITTED.
25. TABULATIONS FOR SITE, BUILDING, PARKING AND LOADING DATA ARE PROVIDED ON THIS SHEET.
26. UTILITY LAYOUT SUBJECT TO CHANGE WITH FINAL SITE PLAN.
27. THERE ARE EXISTING BUILDINGS ON SITE.
28. LOCATIONS OF MECHANICAL EQUIPMENT (INCLUDING TRANSFORMERS AND GENERATORS) ON SITE TO BE PROVIDED WITH THE FINAL SITE PLAN.
29. THE EXISTING ORIGINAL HOUSE IS TO REMAIN WITH MINOR MODIFICATIONS TO UPDATE IT WITH STAIRS AND/OR ELEVATORS AS A HOTEL USE OR OFFICE USE. IN THE RESIDENTIAL USE OPTION, THE DETACHED EXISTING GARAGE WILL BE DEMOLISHED AND A CABANA WILL BE CONSTRUCTED.
30. IN THE RESIDENTIAL OPTION, THE EXISTING PRISON FELLOWSHIP OFFICE BUILDING, GARAGE AND BATHHOUSE WILL BE DEMOLISHED AND REPLACED WITH THE NEW RESIDENTIAL PROJECT. MOST OF THE MECHANICAL EQUIPMENT AND STRUCTURES TO THE EXISTING BUILDING WILL BE REMOVED. IN THE OFFICE OPTION, ONLY THE BATHHOUSE IS TO BE DEMOLISHED.
31. THE PROPOSED LANDSCAPING AND TREE PRESERVATION AREAS IN AND NEAR THE EXISTING STORMWATER MANAGEMENT FACILITY ARE SHOWN ON SHEETS #7-10 OF THIS PLAN.
32. THE APPLICANT RESERVES THE RIGHT TO INSTALL COVERED SIDEWALKS ON THE SITE WITH THE FINAL SITE PLAN.

STORMWATER MANAGEMENT NARRATIVE

STORMWATER MANAGEMENT (SWM) AND BEST MANAGEMENT PRACTICES (BMP) ARE PROVIDED FOR THIS PROPERTY BY A SERIES OF EXISTING ONSITE AND OFFSITE PONDS AS SHOWN ON THE APPROVED FAIRFAX COUNTY PLAN #8766-SP-001-2, ENTITLED "SALLIEMAE," PREPARED BY DEWBERRY & DAVIS, APPROVED ON JUNE 29, 1994. FOR INFORMATION PURPOSES, SHEETS #11-17 OF THIS APPLICATION ARE REFERENCED FROM APPROVED PLAN #8766-SP-001-2 TO DEMONSTRATE THAT THE EXISTING FACILITIES SERVE THIS DEVELOPMENT. SHEET #10 IS PROVIDED TO SHOW THE PONDS LOCATIONS IN PLAN VIEW. SHEET #14 IS INCLUDED TO SHOW THAT THE EXISTING FACILITIES WERE DESIGNED TO ACCOMMODATE SWM FOR USES CONSISTENT WITH THIS APPLICATION. SHEET #13 IS INCLUDED TO SHOW THAT THE EXISTING FACILITIES WERE DESIGNED TO ACCOMMODATE BMP FOR USES CONSISTENT WITH THIS APPLICATION. THE NARRATIVE ON SHEET #11 DESCRIBES HOW THE EXISTING ONSITE POND WAS RECONSTRUCTED WITH PLAN #8766-SP-001-2. THEREFORE, THERE ARE NO ADDITIONAL SWM OR BMP REQUIREMENTS FOR THIS PLAN.

AS CAN BE SEEN IN THE DESIGN DATA REFERENCED ABOVE, THE DESIGN CALCULATIONS CONTEMPLATED A LEVEL OF DEVELOPMENT FOR THE SUBJECT SITE WITH IMPACTS EXCEEDING THOSE PROPOSED WITH THIS PLAN. AT THE TIME OF FINAL SITE PLAN, ONCE FINAL DEVELOPMENT CONDITIONS ARE KNOWN, THE EXISTING POND WILL BE ANALYZED FOR SWM AND BMP PURPOSES. IF POSSIBLE, THE EXISTING POND WILL BE RETROFITTED TO PROVIDE SWM AND BMP FOR THIS SITE. IF ADEQUATE CAPACITIES CANNOT BE ACHIEVED ONSITE, THE APPLICANT WILL PURSUE OTHER OPTIONS TO MEET THESE REQUIREMENTS, WHICH MAY INCLUDE ENTERING INTO A MAINTENANCE AGREEMENT THAT RUNS WITH THE LAND WITH THE OWNER OF THE OFFSITE FACILITIES.

OUTFALL NARRATIVE

THIS SITE DRAINS NORTH TO SOUTH TO THE EXISTING ONSITE WET POND. A PRELIMINARY LAYOUT OF THE ON-SITE STORM DRAINAGE INLETS AND PIPES IS SHOWN ON SHEET #4-5. THE CHARACTERISTICS OF THE EXISTING FACILITY ARE PROVIDED IN THE CHECKLIST ON THIS SHEET. RUNOFF IS THEN CONVEYED UNDER OLD RESTON AVENUE THROUGH EXISTING CLOSED CONDUIT PIPES. THIS IS THE ONLY SITE OUTFALL, LABELED AS "SITE OUTFALL #1" ON SHEET #4-5. THE EXISTING POND FUNCTIONS IN SERIES WITH 3 ADDITIONAL PONDS ACROSS OLD RESTON AVENUE TO PROVIDE SWM AND BMP FOR A 158.3 AC DRAINAGE SHED. AS SHOWN ON SHEET #11, CROSS-SECTION 20 VERIFIES THE ADEQUACY OF THE EXISTING CHANNEL IMMEDIATELY DOWNSTREAM OF THE EXISTING FACILITIES. THE EXISTING VEGETATED CHANNEL PROCEEDS THROUGH THE HIDDEN CREEK GOLF COURSE. THE CHANNEL ENTERS THE FAIRFAX COUNTY MAPPED FLOODPLAIN APPROXIMATELY 1500 FT. DOWNSTREAM OF CROSS-SECTION 20. THE CHANNEL CONTINUES AND AT A POINT APPROXIMATELY 2400 FT. DOWNSTREAM OF CROSS-SECTION 20, THE TOTAL DRAINAGE AREA IS 568 ACRES. THIS DRAINAGE AREA IS OVER 100 TIMES THE SITE AREA. IT IS THE OPINION OF URBAN ENGINEERING THAT AN ADEQUATE OUTFALL IS PROVIDED. FURTHER, THE ADEQUATE OUTFALL REQUIREMENTS OF THE PUBLIC FACILITIES MANUAL WILL BE SATISFIED WITH THE FINAL SITE PLAN; INCLUDING CROSS SECTIONAL ANALYSIS TO DEMONSTRATE THAT THE EXISTING NATURAL CHANNEL IS ADEQUATE TO HANDLE THE 2-YEAR POST-DEVELOPMENT ROUTED FLOWS AT NON-EROSIVE VELOCITIES.

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 (9-615 1G & 1N)	Commercial Revitalization Districts (9-622 2A (12) & (14))
Development Plans PRC District (16-302 3 & 4L)	PRC Plan (16-303 1E & 1O)
FDP P Districts (except PRC) (16-502 1F & 1Q)	Amendments (18-202 10F & 10I)

☑ 1. Plat is at a minimum scale of 1"=50' (unless it is depicted on one sheet with a minimum scale of 1"=100'). SHOWN ON SHEET #4

☑ 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 4. FACILITY IS EXISTING AS SHOWN ON SHEET #4.

☑ 3. Provide:

Facility Name/ Type & No. (e.g. dry pond, A, infiltration trench, underground vault, etc.)	On-site area served (acres)	Off-site area served (acres)	Drainage area (acres)	Footprint area (sf)	Storage Volume (cf)	If pond, dam height (ft)
EXISTING ON-SITE WET POND	5.1862	17.06	22.25	9140	27,420	10.5
Totals						

☑ 4. Onsite drainage channels, outfalls and pipe systems are shown on Sheet 4. Pond inlet and outlet pipe systems are shown on Sheet 4.

☑ 5. Maintenance access (road) to stormwater management facility(ies) are shown on Sheet 4. Type of maintenance access road surface noted on the plat is asphalt (asphalt, geoblock, gravel, etc.).

☑ 6. Landscaping and tree preservation shown in and near the stormwater management facility is shown on Sheet 4.

☑ 7. A 'stormwater management narrative' which contains a description of how detention and best management practices requirements will be met is provided on Sheet 1.

☑ 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 1.

☑ 9. A description of how the outfall requirements, including contributing drainage areas of the Public Facilities Manual will be satisfied is provided on Sheet 1. OUTFALL NARRATIVE

☑ 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 & 4.

☑ 11. A submission waiver is requested for N/A

☑ 12. Stormwater management is not required because N/A

VICINITY MAP

SCALE: 1" = 2000'

SHEET INDEX

1. COVER SHEET
2. EXISTING CONDITIONS AND SOILS MAP
3. CERTIFIED PLAT
4. CONCEPTUAL AND FINAL DEVELOPMENT PLAN - RESIDENTIAL
5. CONCEPTUAL AND FINAL DEVELOPMENT PLAN - OFFICE
6. GARAGE LAYOUTS
7. LANDSCAPE PLAN - RESIDENTIAL
8. LANDSCAPE PLAN - OFFICE

9.-10. EXISTING VEGETATION MAP AND TREE SURVEY

11-17. SWM/BMP DETAILS

18. SECTION PLANS - RESIDENTIAL
19. SECTION PLANS - OFFICE
20. EXISTING SIGHT DISTANCE PROFILE

OWNER / DEVELOPER

GREGOR, LLC
1856 OLD RESTON AVE.
RESTON VA. 20190

Application No PCA 78-C-098-03 Staff S.Williams
APPROVED DEVELOPMENT PLAN
(DP) (GDP (CDP) (FDP)
SEE PROFFERS DATED 12-18-2008
Date of (BOS)(PC) Approved 1-12-2009
Sheet 1 OF 20
Concurrent w/FDPA 78-C-098-04
Date of PC Approval: 1-8-2009

ZONING TABULATIONS: RESIDENTIAL OPTION

SITE AREA= 225,910.87 SF. OR 5.1862 ACRES
EXISTING ZONING= PDC
PROPOSED ZONING= PDC
PROPOSED USE= MULTIFAMILY RESIDENTIAL AND HOTEL
BUILDING GROSS FLOOR AREA = 7,169 GSF HOTEL (INCLUDES MANOR HOUSE, MANOR HOUSE EXPANSION AND CABANA)
140,637 GSF MULTIFAMILY RESIDENTIAL
147,806 GSF TOTAL

NUMBER OF HOTEL ROOMS = 6 ROOMS
NUMBER OF RESIDENTIAL UNITS = 60 UNITS
MAXIMUM FAR = 1.5
BUILDING F.A.R. PROVIDED = 147,806/225,910.87 = 0.65
RESIDENTIAL DENSITY = 60 UNITS/5.1862 AC. = 11.57 UNITS/ACRE
MAXIMUM BUILDING HEIGHT ALLOWED = NO MAXIMUM
MAXIMUM BUILDING HEIGHT PROVIDED= 40 FT. FOR HOTEL
= 49.97 FT. FOR MULTIFAMILY RESIDENTIAL
= 25.00 FT. FOR CABANA
= 12.25 FT. FOR PORTICO
= 25.00 FT FOR EX. GAZEBO (TO REMAIN)

YARDS REQUIRED = FRONT(NONE) SIDE (NONE) REAR (NONE)
YARDS PROVIDED = FRONT (35') SIDE (40') REAR (25')
OPEN SPACE REQUIRED = 15% OR 33,900 SF.
OPEN SPACE PROVIDED = 45% OR 101,660 SF.

PARKING TABULATIONS
HOTEL USE = 1 SPACE/ROOM + 4 SP./50 ROOMS = 7 SPACES
MULTIFAMILY USE = 1.6 SPACES/UNIT= 60 X 1.6 = 96 SPACES
TOTAL 103 SPACES

PARKING PROVIDED:
85 SPACES IN THE GARAGE
56 SURFACE SPACES
141 TOTAL
HANDICAPPED PARKING REQUIRED:
5 SPACES (1 VAN ACCESSIBLE)
HANDICAPPED PARKING PROVIDED:
5 SPACES (2 VAN ACCESSIBLE)

LOADING SPACES REQUIRED:
MULTIFAMILY RESIDENTIAL - 1SP/25,000 GSF+1 SP./100,000 GSF = 2 SPACES
HOTEL - 1 SP./10,000 GSF+ 1 SP./100,000 GSF = 1 SPACE
TOTAL = 3 SPACES

LOADING SPACES PROVIDED:
3 SPACES

ZONING TABULATIONS: OFFICE OPTION

SITE AREA = 225,910.87 SF. OR 5.1862 ACRES
EXISTING ZONING = PDC
PROPOSED ZONING = PDC
PROPOSED USE = OFFICE BUILDINGS
BUILDING GROSS FLOOR AREA = 40,645 GSF EXISTING OFFICE BUILDING
= 2,400 GSF PROPOSED OFFICE BUILDING EXPANSION
= 5,126 GSF EXISTING MANOR HOUSE
= 250 GSF PROPOSED MANOR HOUSE EXPANSION
= 950 GSF EXISTING DISPLAY CENTER
TOTAL = 49,371 GSF

MAXIMUM FAR = 1.5
BUILDING F.A.R. PROVIDED = 49,371/225,910.87 = 0.219
MAXIMUM BUILDING HEIGHT ALLOWED = NO MAXIMUM
MAXIMUM BUILDING HEIGHT PROVIDED:
= 35.00 FT FOR EX. OFFICE BLDG (TO REMAIN)
= 25.00 FT FOR EX. GAZEBO (TO REMAIN)
= 20.00 FT FOR EX. DISPLAY CENTER (TO REMAIN)
YARDS REQUIRED = FRONT(NONE) SIDE (NONE) REAR (NONE)
YARDS PROVIDED = FRONT (35') SIDE (40') REAR (25')
OPEN SPACE REQUIRED = 15% OR 33,900 SF.
OPEN SPACE PROVIDED = 62% OR 139,923.76 SF.

PARKING TABULATIONS
PARKING REQUIRED:
OFFICE BUILDING - 43,045 S.F.
3.6 SP./1,000 GSF = 155 SPACES
MANOR HOUSE - 5,376 S.F.
3.6 SP./1,000 GSF = 20 SPACES
DISPLAY CENTER - 950 S.F.
3.6 SP./1,000 GSF = 4 SPACES
TOTAL = 179 TOTAL

PARKING PROVIDED:
66 SPACES IN THE GARAGE
113 SURFACE SPACES
179 TOTAL
HANDICAPPED PARKING REQUIRED:
6 SPACES (1 VAN ACCESSIBLE)
HANDICAPPED PARKING PROVIDED:
6 SPACES (2 VAN ACCESSIBLE)
LOADING SPACES REQUIRED:
OFFICE - 1 SP./10,000 GSF+ 1 SP./20,000 GSF = 3 SPACES

LOADING SPACES PROVIDED:
3 SPACES

RECEIVED
Department of Planning & Zoning
DEC 0 4 2008
Zoning Evaluation Division

No.	DATE	DESCRIPTION	REV.BY	APPROVED	DATE

REVISION APPROVED BY DIVISION OF DESIGN REVIEW

PLAN DATE
09-28-05
10-18-05
11-30-05
01-12-06
02-08-06
07-11-08
09-19-08
10-16-08
12-04-08

URBAN ENGINEERING & ASSOC.,INC.
CIVIL ENGINEERS • LANDSCAPE ARCHITECTS • LAND SURVEYORS
7712 LITTLE RIVER TURNPIKE
ANNANDALE, VIRGINIA 22003 (703) 642-8080

COMMONWEALTH OF VIRGINIA
MATTHEW K. KOIRTYOHANN
No. 039021
12/04/08
PROFESSIONAL ENGINEER

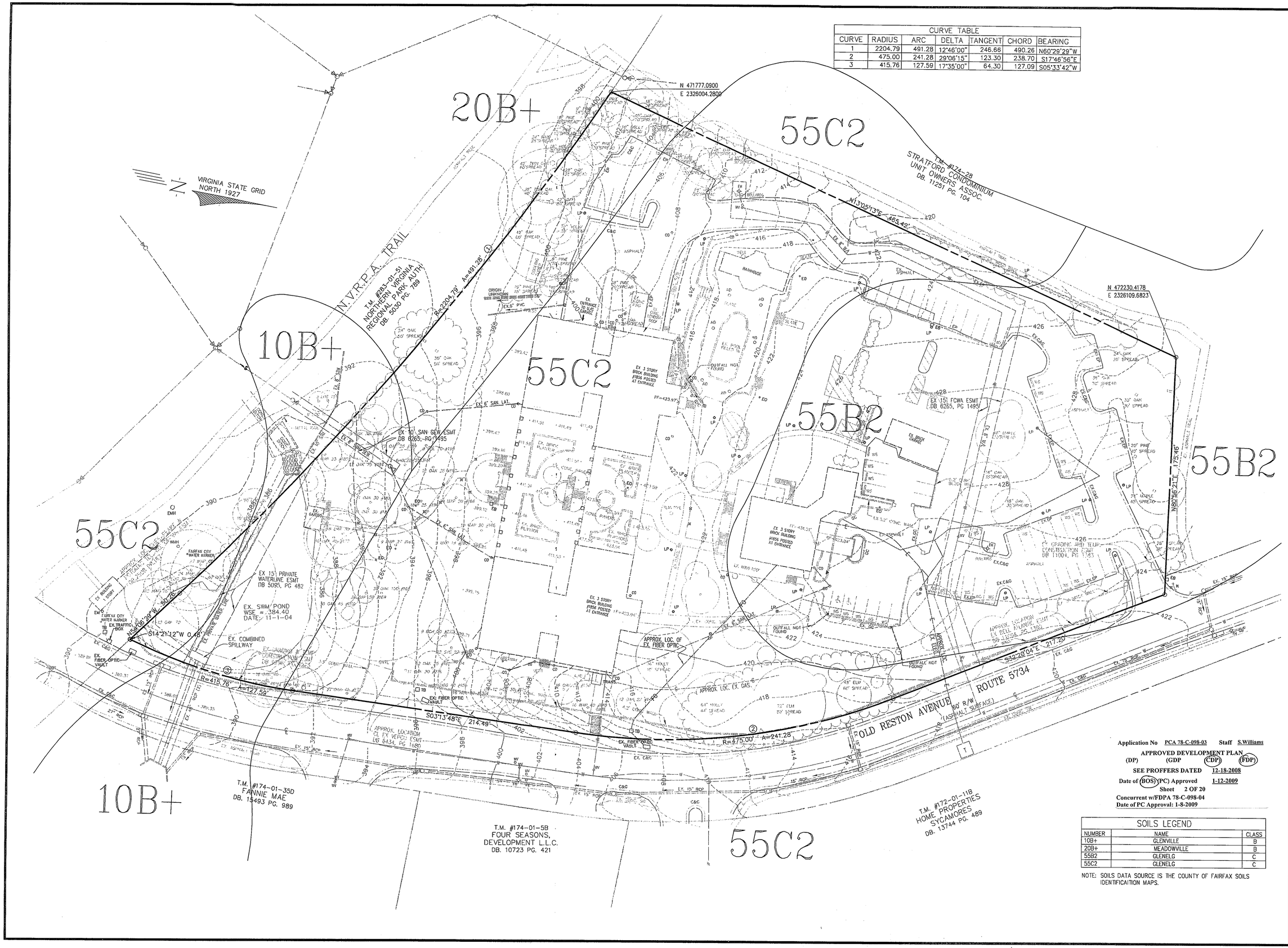
COVER SHEET

BOXWOODS
HUNTER MILL MAGISTERIAL DISTRICT
FAIRFAX COUNTY, VIRGINIA

DATE: SEPT., 2005
C.I. = N/A
SCALE: AS NOTED

SHEET 1 OF 20

FILE No. ZP-1612



CURVE TABLE						
CURVE	RADIUS	ARC	DELTA	TANGENT	CHORD	BEARING
1	2204.79	491.28	12°46'00"	246.66	490.26	N60°29'29"W
2	475.00	241.28	29°06'15"	123.30	238.70	S17°46'56"E
3	415.76	127.59	17°35'00"	64.30	127.09	S05°33'42"W

Application No PCA 78-C-098-03 Staff S.Williams

APPROVED DEVELOPMENT PLAN
(DP) (GDP (CDP) (FDP)

SEE PROFFERS DATED 12-18-2008

Date of (BOS) (PC) Approved 1-12-2009

Sheet 2 OF 20

Concurrent w/FDPA 78-C-098-04
Date of PC Approval: 1-8-2009

SOILS LEGEND		
NUMBER	NAME	CLASS
10B+	GLENVILLE	B
20B+	MEADOWVILLE	B
55B2	GLENELG	C
55C2	GLENELG	C

NOTE: SOILS DATA SOURCE IS THE COUNTY OF FAIRFAX SOILS IDENTIFICAITION MAPS.

No.	DATE	DESCRIPTION	REV.BY	APPROVED	DATE

REVISION APPROVED BY DIVISION OF DESIGN REVIEW

PLAN DATE
09-28-05
11-30-05
02-08-06
07-11-08
09-19-08
10-16-08
12-04-08

URBAN ENGINEERING & ASSOC.,INC.
CIVIL ENGINEERS • LANDSCAPE ARCHITECTS • LAND SURVEYORS
7712 LITTLE RIVER TURNPIKE
ANNANDALE, VIRGINIA 22003 (703) 642-8080

COMMONWEALTH OF VIRGINIA
MATTHEW K. KONRTOHANN
No. 038021
12/04/08
PROFESSIONAL ENGINEER

EXISTING CONDITIONS AND SOILS MAP

BOXWOODS
HUNTER MILL MAGISTERIAL DISTRICT
FAIRFAX COUNTY, VIRGINIA

SCALE: 1"=30' C.I. = 2' DATE: SEPT., 2005

SHEET 2 OF 20

FILE No. ZP-1612

CURVE TABLE						
CURVE	RADIUS	ARC	DELTA	TANGENT	CHORD	BEARING
1	2204.79	491.28	12°46'00"	246.66	490.26	N60°29'29"W
2	475.00	241.28	29°06'15"	123.30	238.70	S17°46'56"E
3	415.76	127.59	17°35'00"	64.30	127.09	S05°33'42"W

VIRGINIA STATE GRID NORTH 1927

N 471777.0900
E 2326004.2800

N.V.R.P.A. TRAIL
T.M. #253-01-51
NORTHERN VIRGINIA REGIONAL PARK AUTH
DB. 5030 PG. 789

R=2204.79' A=491.28' ①

T.M. #174-28
STRATFORD CONDOMINIUM UNIT OWNERS ASSOC.
DB. 11251 PG. 104

N13°05'13"E 465.42'

N 472230.4178
E 2326109.6823

EX. ENTRANCE to M.D. GARAGE

EX. 3 STORY BRICK BUILDING #1856 POSTED AT ENTRANCE

FF=423.97

T.M. #017-4-((01))-0001
BOXWOODS INC.
DB. 18745 PG. 1155
225,911 S.F. OR 5.1862 ACRES

EX 15' FCWA ESMT DB 6265, PG 1495

EX. BRICK GARAGE

EX. 1 STORY BRICK BUILDING #1856 POSTED AT ENTRANCE

EX 10' SAN SEW ESMT DB 6265, PG 1495

EX. GAZEBO

EX 15' PRIVATE WATERLINE ESMT DB 5095, PG 482

APPROX. LOC. CHESAPEAKE & POTOMAC TEL CO. OF VA. ESMT. DB. 2838 PG. 170

O. BUILDING 1 STORY

N54°06'29"W 50.26'

S14°21'12"W 0.46'

EX GRADING & TEMP. CONSTRUCTION ESMT DB 12281, PG 1275

③ R=415.76' A=127.59'

S03°13'48"E 214.49'

APPROX LOCATION CL EX VEPCO ESMT DB 6454, PG 1680

② R=475.00' A=241.28'

OLD RESTON AVENUE 60' R/W ROUTE 5734

S32°20'04"E 217.20'

EX GRADING AND TEMP. CONSTRUCTION ESMT DB 11604, PG 1316

APPROX LOCATION CL BELL ATLANTIC ESMT DB 11604, PG 1316

N80°56'21"E 175.46'

60'

30'

T.M. #174-01-35D
FANNIE MAE
DB. 15493 PG. 989

T.M. #174-01-5B
FOUR SEASONS, DEVELOPMENT L.L.C.
DB. 10723 PG. 421

T.M. #172-01-11B
HOME PROPERTIES SYCAMORES
DB. 13744 PG. 489

No.	DATE	DESCRIPTION	REV. BY	APPROVED	DATE
		REVISION APPROVED BY DIVISION OF DESIGN REVIEW			

PLAN DATE
09-28-05
10-18-05
11-30-05
02-08-06
07-11-08
09-12-08
10-16-08
12-04-08

URBAN ENGINEERING & ASSOC., INC.
CIVIL ENGINEERS • LANDSCAPE ARCHITECTS • LAND SURVEYORS
7712 LITTLE RIVER TURNPIKE
ANNANDALE, VIRGINIA 22003 (703) 642-8080

COMMONWEALTH OF VIRGINIA MATTHEW K. KIDDEPONMANN No. 030262 PROFESSIONAL ENGINEER 12/04/08

CERTIFIED PLAT

BOXWOODS

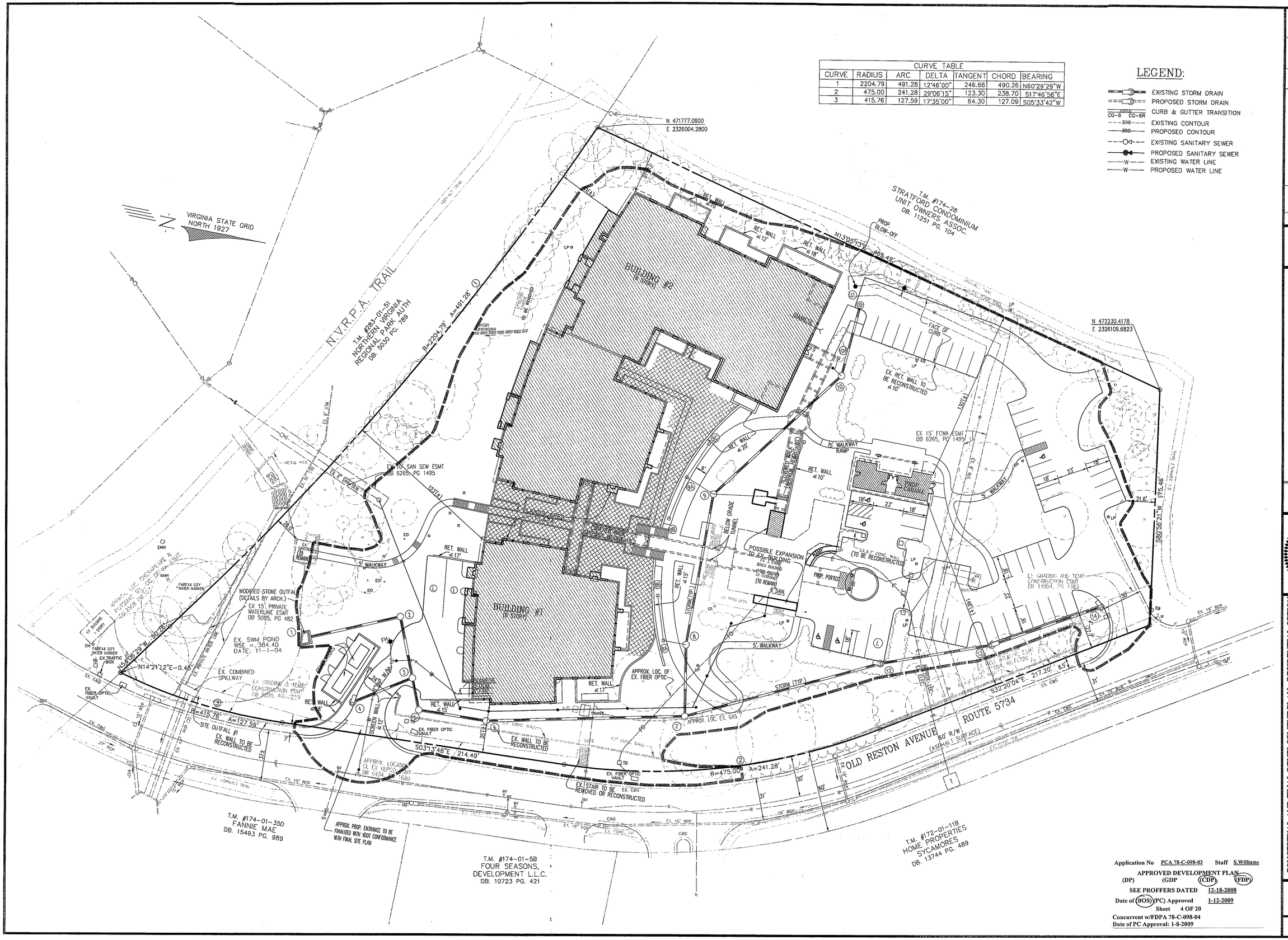
HUNTER MILL MAGISTERIAL DISTRICT
FAIRFAX COUNTY, VIRGINIA

SCALE: 1"=30' C.I. = N/A DATE: SEPT., 2005

Application No PCA 78-C-098-03 Staff S.Williams
APPROVED DEVELOPMENT PLAN
(DP) (GDP (CDP) (FDP)
SEE PROFFERS DATED 12-18-2008
Date of (BOS) (PC) Approved 1-12-2009
Sheet 3 OF 20
Concurrent w/FDPA 78-C-098-04
Date of PC Approval: 1-8-2009

SHEET 3 OF 20

FILE No. ZP-1612



CURVE TABLE						
CURVE	RADIUS	ARC	DELTA	TANGENT	CHORD	BEARING
1	2204.79	491.28	12°46'00"	246.66	490.26	N60°29'29"W
2	475.00	241.28	29°06'15"	123.30	238.70	S17°46'56"E
3	415.76	127.59	17°35'00"	64.30	127.09	S05°33'42"W

LEGEND:

- EXISTING STORM DRAIN
- PROPOSED STORM DRAIN
- CURB & GUTTER TRANSITION (CG-6, CG-6R)
- EXISTING CONTOUR
- PROPOSED CONTOUR
- EXISTING SANITARY SEWER
- PROPOSED SANITARY SEWER
- EXISTING WATER LINE
- PROPOSED WATER LINE

Application No PCA 78-C-098-03 Staff S.Williams

APPROVED DEVELOPMENT PLAN
(DP) (GDP (CDP) (FDP)

SEE PROFFERS DATED 12-18-2008

Date of (BOS)(PC) Approved 1-12-2009

Sheet 4 OF 20

Concurrent w/FDPA 78-C-098-04
Date of PC Approval: 1-8-2009

No.	DATE	DESCRIPTION	REV.BY	APPROVED	DATE

REVISION APPROVED BY DIVISION OF DESIGN REVIEW

PLAN DATE
09-28-05
10-18-05
11-30-05
01-12-06
02-08-06
07-11-08
09-19-08
10-16-08
12-04-08

URBAN ENGINEERING & ASSOC.,INC.
CIVIL ENGINEERS • LANDSCAPE ARCHITECTS • LAND SURVEYORS
7712 LITTLE RIVER TURNPIKE
ANNANDALE, VIRGINIA 22003 (703) 642-8080

COMMONWEALTH OF VIRGINIA
MATTHEW K. KOHRTIGMANN
No. 039021
12/04/08
PROFESSIONAL ENGINEER

CONCEPTUAL AND FINAL DEVELOPMENT PLAN - RESIDENTIAL OPTION

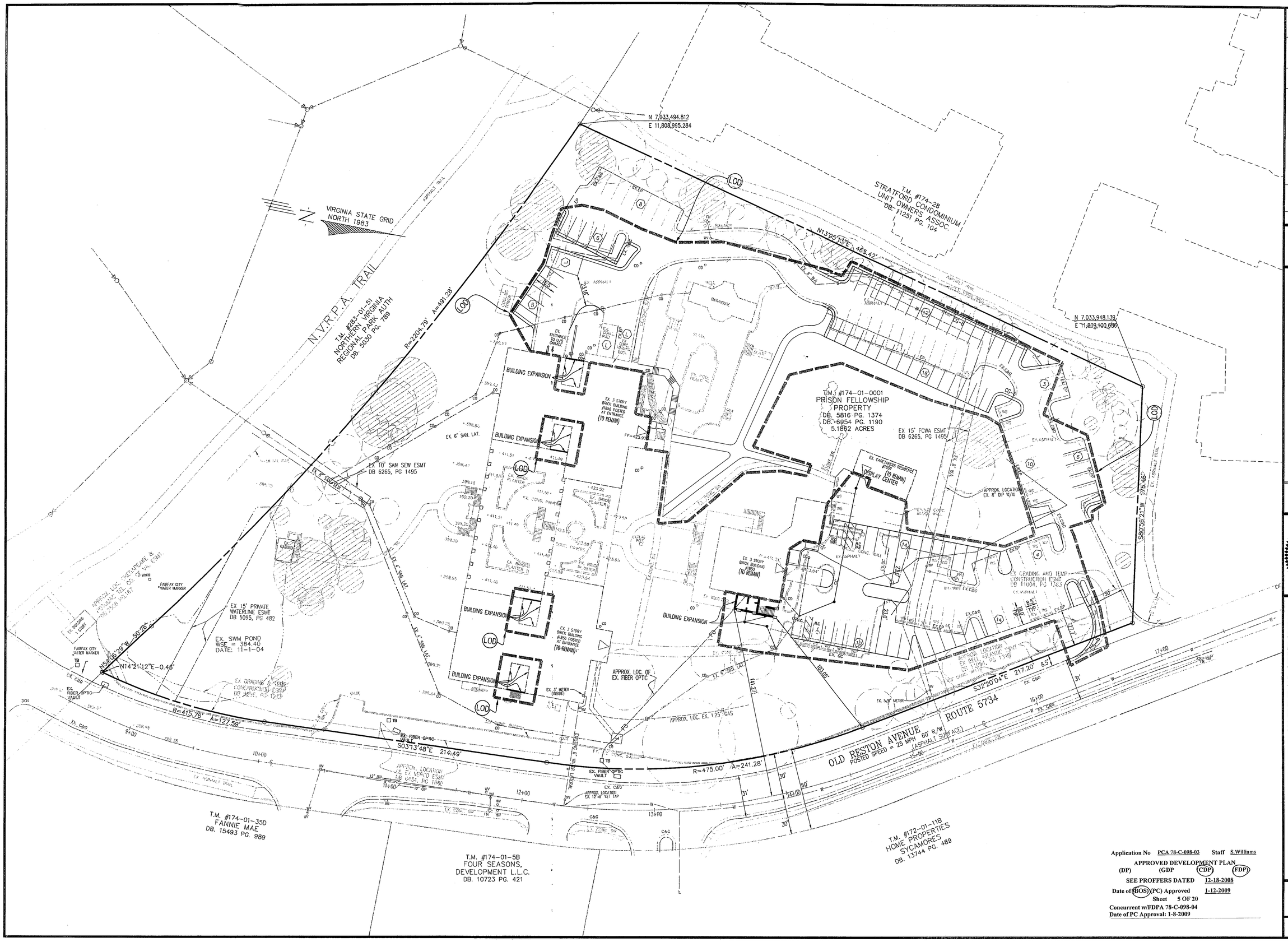
BOXWOODS

HUNTER MILL MAGISTERIAL DISTRICT
FAIRFAX COUNTY, VIRGINIA

SCALE: 1"=30' C.I. = 2' DATE: SEPT., 2005

SHEET 4 OF 20

FILE No. ZP-1612



Application No PCA 78-C-098-03 Staff S.Williams

APPROVED DEVELOPMENT PLAN

(DP) (GDP (CDP) (FDP)

SEE PROFFERS DATED 12-18-2008

Date of (BOS) (PC) Approved 1-12-2009

Sheet 5 OF 20

Concurrent w/FDPA 78-C-098-04

Date of PC Approval: 1-8-2009

No.	DATE	DESCRIPTION	REV.BY	APPROVED	DATE

REVISION APPROVED BY DIVISION OF DESIGN REVIEW

PLAN DATE
09-28-05
10-18-05
11-30-05
01-12-06
02-08-06
07-11-08
09-19-08
10-16-08
12-04-08

URBAN ENGINEERING & ASSOC.,INC.

CIVIL ENGINEERS • LANDSCAPE ARCHITECTS • LAND SURVEYORS
7712 LITTLE RIVER TURNPIKE
ANNANDALE, VIRGINIA 22003 (703) 642-8080

COMMONWEALTH OF VIRGINIA
MATTHEW K. KORTYOHANN
No. 038021
12/04/08
PROFESSIONAL ENGINEER

CONCEPTUAL AND FINAL DEVELOPMENT PLAN - OFFICE OPTION

BOXWOODS

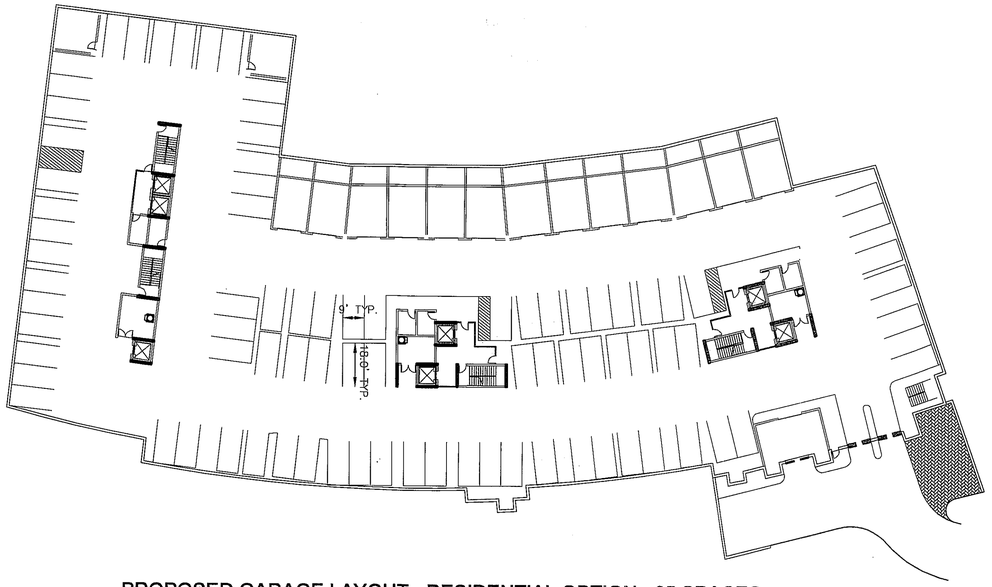
HUNTER MILL MAGISTERIAL DISTRICT
FAIRFAX COUNTY, VIRGINIA

SCALE: 1"=30' C.I. = 2' DATE: SEPT., 2005

LINDEN SPRINGS

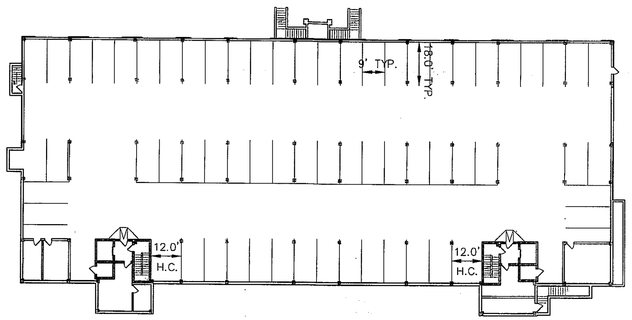
SHEET 5 OF 20

FILE No. ZP-1612



G-1 LEVEL PLAN
ELEV.: 398.00'

PROPOSED GARAGE LAYOUT - RESIDENTIAL OPTION - 85 SPACES



EXISTING GARAGE LAYOUT - OFFICE OPTION - 64 SPACES

Application No PCA 78-C-098-03 Staff S.Williams
APPROVED DEVELOPMENT PLAN
(DP) (GDP (CDP) (FDP)
SEE PROFFERS DATED 12-18-2008
Date of (BOS) (PC) Approved 1-12-2009
Sheet 6 OF 20
Concurrent w/FDPA 78-C-098-04
Date of PC Approval: 1-8-2009

No.	DATE	DESCRIPTION	REV.BY	APPROVED	DATE
		REVISION APPROVED BY DIVISION OF DESIGN REVIEW			

PLAN DATE
09-28-05
11-30-05
07-11-08
09-19-08
11-04-08
12-04-08

URBAN ENGINEERING & ASSOC.,INC.
CIVIL ENGINEERS • LANDSCAPE ARCHITECTS • LAND SURVEYORS
7712 LITTLE RIVER TURNPIKE
ANNANDALE, VIRGINIA 22003 (703) 642-8080

COMMONWEALTH OF VIRGINIA
MATTHEW K. WILLIAMSON
No. 039321
PROFESSIONAL ENGINEER
11/04/08

GARAGE LAYOUTS

BOXWOODS
HUNTER MILL MAGISTERIAL DISTRICT
FAIRFAX COUNTY, VIRGINIA

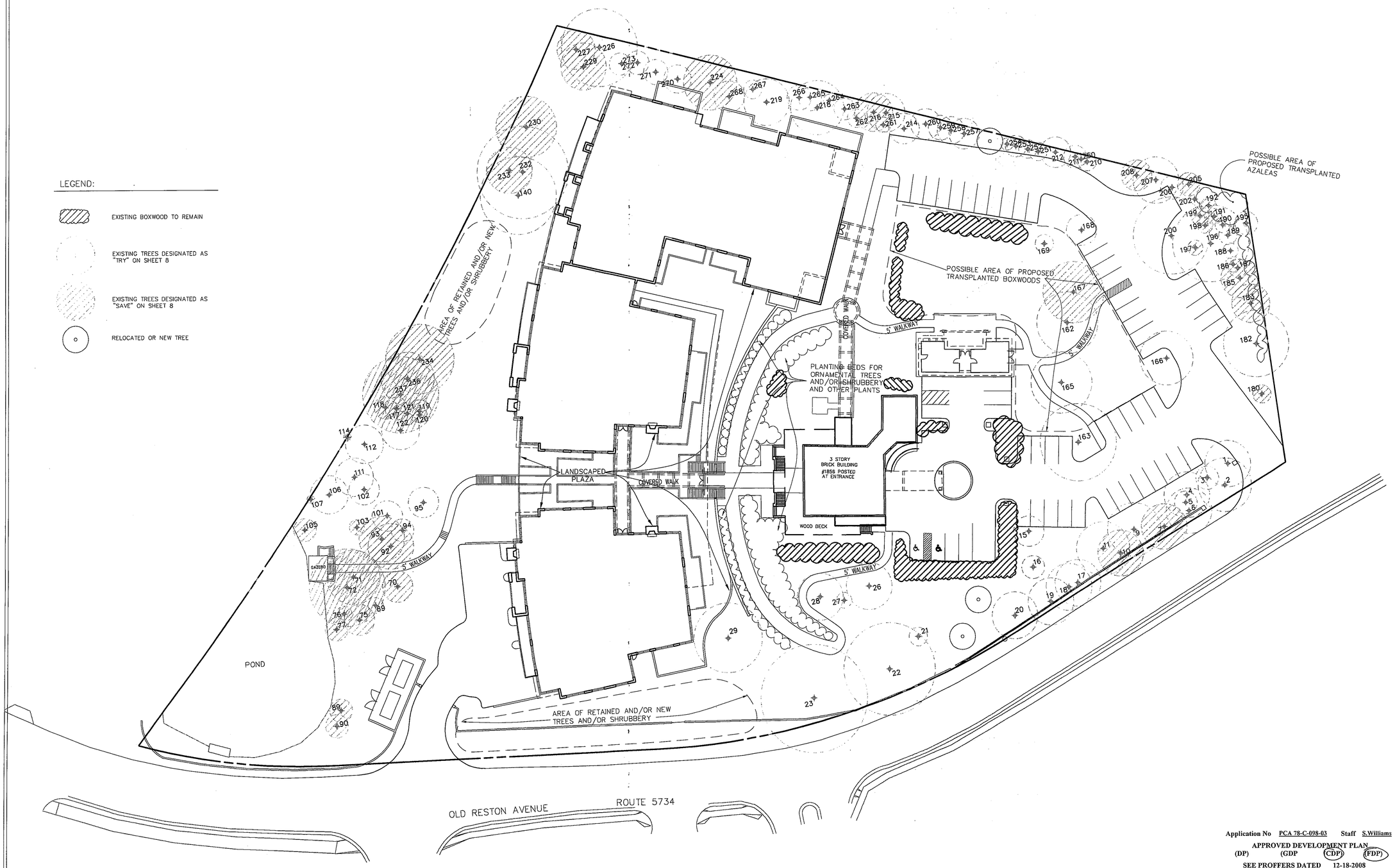
SCALE: 1"=30' C.I. = N/A DATE: SEPT., 2005

SHEET
6
OF
20

FILE No.
ZP-1612

LEGEND:

- EXISTING BOXWOOD TO REMAIN
- EXISTING TREES DESIGNATED AS "TRY" ON SHEET 8
- EXISTING TREES DESIGNATED AS "SAVE" ON SHEET 8
- RELOCATED OR NEW TREE



Application No PCA 78-C-098-03 Staff S.Williams

APPROVED DEVELOPMENT PLAN

(DP) (GDP) (CDP) (FDP)

SEE PROFFERS DATED 12-18-2008

Date of (BOS) (PC) Approved 1-12-2009

Sheet 7 OF 20

Concurrent w/FDPA 78-C-098-04

Date of PC Approval: 1-8-2009

GRAHAM LANDSCAPE ARCHITECTURE

229 Prince George Street
Annapolis, MD 21401–1631
Balt. 410.269.5886 Wash. 301.858.5330
Fax 410.268.4032
www.grahamlandarch.com

REVISIONS

02–08–06

02–14–06

10–16–08

12–04–08

COMMONWEALTH OF VIRGINIA
MATTHEW K. KOURTCHOHANN
No. 039021
12/04/08
PROFESSIONAL ENGINEER

BOXWOODS

FAIRFAX COUNTY, VIRGINIA

These drawings and specifications and the ideas represented thereby are and shall remain the property of the Landscape Architect. No part thereof shall be copied or used in connection with any work or project or by any other person for any purpose other than for the specific project for which they have been prepared and developed without the written consent of the Landscape Architect.

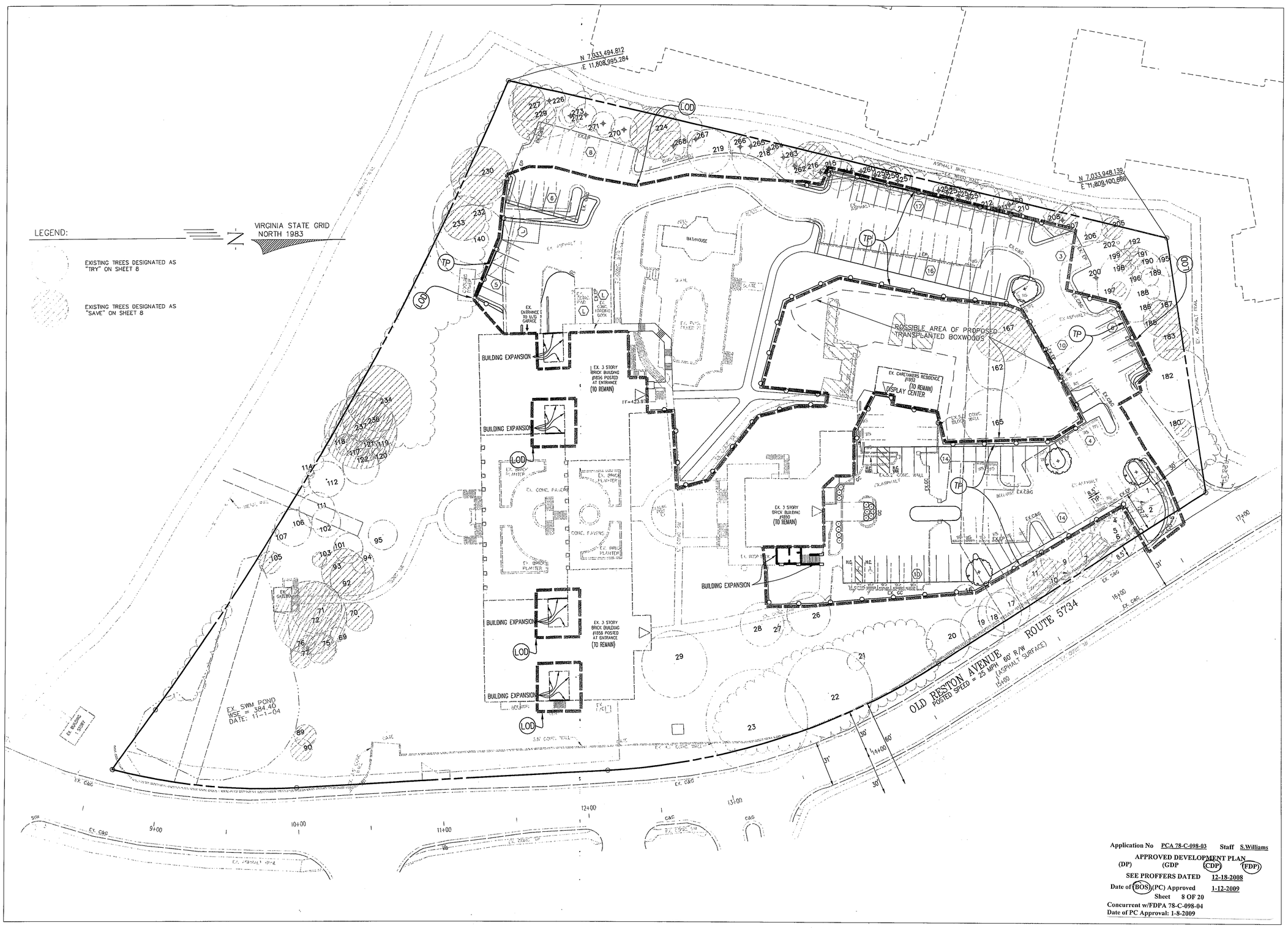
W S N E

LANDSCAPE PLAN – RESIDENTIAL OPTION

DRAWN BY:	AMH
APPROVED BY:	
PROJECT #:	2512
SCALE:	1" = 30'0"

L 1.0
SHEET 7 of 20

19 SEPTEMBER 2005



Application No PCA 78-C-098-03 Staff S.Williams

APPROVED DEVELOPMENT PLAN
(DP) (GDP (CDP) (FDP)

SEE PROFFERS DATED 12-18-2008

Date of (BOS) (PC) Approved 1-12-2009

Sheet 8 OF 20

Concurrent w/FDPA 78-C-098-04
Date of PC Approval: 1-8-2009

GRAHAM LANDSCAPE ARCHITECTURE
229 Prince George Street
Annapolis, MD 21401-1631
Balt. 410.269.5886 Wash. 301.858.5330
Fax 410.268.4032
www.grahamlandarch.com

REVISIONS

02-08-06

02-14-06

10-16-08

12-04-08

COMMONWEALTH OF VIRGINIA
MATTHEW K. KOIRTYOHANN
No. 039021
12/04/08
PROFESSIONAL ENGINEER

BOXWOODS
FAIRFAX COUNTY, VIRGINIA

These drawings and specifications and the ideas represented thereby are and shall remain the property of the Landscape Architect. No part thereof shall be copied or used in connection with any work or project or by any other person for any purpose other than for the specific project for which they have been prepared and developed without the written consent of the Landscape Architect.

LANDSCAPE PLAN - OFFICE OPTION

DRAWN BY:	AMH
APPROVED BY:	
PROJECT #:	2512
SCALE:	1" = 30'0"

L 1.0
SHEET 8 of 20

19 SEPTEMBER 2005

EVM SUMMARY TABLE

	Cover Type	Primary Species	Successional Stage	Condition	Acreage	Comments
1	developed/maintained grasslands	red maple, pin oak, willow oak, American holly, boxwood	N/A	good	4.85 ac.	This cover type contains lawn and landscaped area between exsisting structures. Existing vegetation consists of planted landscape trees and shrubs.
2	old field/bottomland hardwoods	yellow poplar, black locust, black willow, tree-of-heaven, American sycamore, autumn olive	pioneer - early successional	fair	.043 ac.	This cover type exists as a small forested area adjacent to a storm water management pond. This area contains primarily early successional pioneer tree species and a significant amount of invasive tree and shrub species. Trees within this cover type range from 2" - 12" dbh.
3	upland hardwoods	white oak, hickory, red maple, American holly	sub-climax - climax	good	.240 ac.	This cover type contains mature upland hardwoods in the overstory with American holly being the dominant understory species. Overstory trees range from 18" - 40" dbh.
4	maintained grasslands	leyland cypress, pin oak, willow oak, redbud	N/A	good	.130 ac.	This cover type consists of planted landscape trees existing as a screening buffer between properties. Trees within this cover type range from 4" - 12" dbh, with a few larger white oak and yellow poplar present up to 44" dbh.
				Total Acreage	5.26 ac.	

REV. BY | APPROVED | DATE
No. | DATE | DESCRIPTION
REVISION APPROVED BY DIVISION OF DESIGN REVIEW

PLAN DATE
02-08-06
10-16-08
12-04-08

URBAN ENGINEERING & ASSOC.,INC.
CIVIL ENGINEERS • LANDSCAPE ARCHITECTS • LAND SURVEYORS
7712 LITTLE RIVER TURNPIKE
ANNANDALE, VIRGINIA 22003 (703) 642-8080

COMMONWEALTH OF VIRGINIA
MATTHEW K. KOIRTYOHANN
No. 039021
12/04/08
PROFESSIONAL ENGINEER

EXISTING VEGETATION MAP
BOXWOODS
HUNTER MILL MAGISTERIAL DISTRICT
FAIRFAX COUNTY, VIRGINIA
SCALE: 1"=30' C.I. = 2' DATE: FEB., 2006

Application No PCA 78-C-098-03 Staff S.Williams
APPROVED DEVELOPMENT PLAN
(DP) (GDP (CDP) (FDP)
SEE PROFFERS DATED 12-18-2008
Date of (BOS) (PC) Approved 1-12-2009
Sheet 9 OF 20
Concurrent w/FDPA 78-C-098-04
Date of PC Approval: 1-8-2009

SEE LEGEND ON SHEET #2.

SHEET 9 OF 20

FILE No. SP-1612

Linden Springs Tree Survey 10/2008

Tree #	Species	Size	Condition	Canopy Position	Crown Density	Crown Spread	Problems	Comments	Impacted by Office Development Option	Status	Impacted by Residential Development Option	Status
1	American sycamore	14	60%	dominant	45	30	dieback, exposed roots, thin crown, basal decay		Yes	Lose	Yes	Lose
5	dogwood	5	70%	suppressed	80	15	small deadwood, exposed roots, root damage		No	Save	No	Save
6	eastern red cedar	16	70%	co dominant	80	30	poor pruning		No	Save	Yes	Try
9	sweet gum	9	70%	co dominant	80	35	exposed roots, mower damage		No	Save	Yes	Try
10	red maple	10	80%	co dominant	80	30			No	Save	No	Save
11	willow oak	15	75%	co dominant	85	35	exposed roots, mower damage		Yes	Try	Yes	Try
13	sugar maple	7	75%	co dominant	90	25	moderate dieback, potential transplant shock	Moved to location of removed tree #163	Yes	Try	Yes	Lose
19	American holly	13	70%	co dominant	85	30	exposed roots, buried root flare, mulch too high		No	Save	No	Save
20	red maple	11	60%	dominant	80	30	exposed roots, decay cavity present - extent not determined.	Tree should be monitored yearly to assess decay and cavity expansion.	No	Save	No	Save
21	dogwood	3	75%	co dominant	85	12	buried root flare, mulch too high		No	Save	No	Save
22	basswood	34	60%	dominant	85	60	exposed roots, weak co dominant union, trunk decay, root damage, mower damage	4 co dominant leads, existing lightning protection, cable support system installed	No	Save	Yes	Try
23	post oak	47	65%	dominant	85	70	basal decay, trunk decay, major branch decay, moderate decline		No	Save	Yes	Lose
24	hickory	6	80%	intermediate	75	15	buried root flare, mulch too high		No	Save	Yes	Lose
26	willow oak	13	85%	dominant	85	30	exposed roots, small deadwood		Yes	Try	Yes	Lose
28	willow oak	12	85%	dominant	85	30	buried root flare, mulch too high		No	Save	Yes	Lose
29	American holly	17	65%	dominant	95	45	trunk decay, major branch decay, weak co dominant union	3 co dominant leads	No	Save	Yes	Lose
34	Norway maple	13	75%	co dominant	70%	40	exposed roots, root damage, girdling roots	2 co dominant leads	No	Save	Yes	Lose
35	American holly	12	70%	co dominant	80	40	weak co dominant union, trunk decay		No	Save	Yes	Lose
36	American holly	17	80%	dominant	85	35	trunk decay		No	Save	Yes	Lose
38	pin oak	14	80%	dominant	90	35	buried root flare, mulch too high, small deadwood		No	Save	Yes	Lose
39	American holly	2	85%	intermediate	90	10	exposed roots		No	Save	Yes	Lose
40	pin oak	11	65%	co dominant	85	30	exposed roots, mower damage, root decay, moderate dieback		No	Save	Yes	Lose
41	American sycamore	13	70%	dominant	30	25	exposed roots, mower damage		No	Save	Yes	Lose
43	ash	8	75%	co dominant	80	25	exposed roots, root damage		No	Save	Yes	Lose
44	red maple	7	75%	dominant	75	25	exposed roots, buried root flare, mulch too high		No	Save	Yes	Lose
53	silver maple	10	75%	dominant	90	20	exposed roots, mover damage		No	Save	Yes	Lose
54	dogwood	7	80%	co dominant	80	15	buried root flare, mulch too high		No	Save	Yes	Lose
57	honey locust	12	75%	dominant	80	35	exposed roots, root damage		No	Save	Yes	Lose
58	dogwood	3	75	suppressed	80	20	small deadwood	multistem	No	Save	Yes	Lose
59	red maple	10	60%	co dominant	80	35	severe girdling roots, borer exit wounds, exposed roots, root damage		No	Save	Yes	Lose
60	willow oak	8	85%	co dominant	85	15	dieback, transplant shock, decline	Moved to location of removed tree #169	Yes	Lose	Yes	Lose
61	red maple	7	60%	dominant	75	15	girdling roots, root damage, root decay, recent flower bed excavation	Excavation has damaged roots	No	Save	Yes	Lose
62	red maple	10	70%	co dominant	90	35	exposed roots, root damage, recent flower bed excavation	Excavation has damaged roots	No	Save	Yes	Lose
63	American holly	2	60%	intermediate	90	10	broken limbs, major branch decay	poor form	No	Save	Yes	Lose
64	white oak	35	50%	dominant	80	50	trunk decay, basal decay, storm damage, significant cavity present, major branch decay, overall decline	Potential hazard	No	Save	Yes	Lose
67	eastern red cedar	7	85%	suppressed	80	15	small deadwood		No	Save	Yes	Lose
68	black locust	8	75%	intermediate	75	20	exposed roots		No	Save	Yes	Lose
69	red maple	3	75%	intermediate	70	10	exposed roots, root damage		No	Save	Yes	Lose
70	willow oak	7	75%	co dominant	75	20	thin crown, root damage		No	Save	Yes	Lose
71	pignut hickory	16	70%	co dominant	75	35	basal decay, buried root flare, mulch too high	support cabled to tree #72	No	Save	Yes	Lose
72	white oak	37	65%	dominant	75	50	excessive lean, one sided, buried root flare, basal decay, mulch too high	support cabled to tree #71	No	Save	Yes	Lose
75	sugar maple	4	85%	intermediate	80	20			No	Save	Yes	Lose
76	hemlock	2	80%	suppressed	75	10	small deadwood	2 co dominant leads	No	Save	Yes	Lose
86	black walnut	20	80%	co dominant	80	40			No	Save	Yes	Lose
87	yellow poplar	34	65%	dominant	70	35	trunk decay, basal decay	poor form	No	Save	Yes	Lose
89	eastern red cedar	7	80%	intermediate	85	15		2 co dominant leads	No	Save	No	Save
90	black willow	6	70%	intermediate	70	15	thin crown, dieback		No	Save	No	Save
92	white oak	22	80%	co dominant	80	30	one-sided		No	Save	Yes	Try
93	white oak	22	80%	co dominant	75	30	one-sided		No	Save	Yes	Try
94	dogwood	4	75%	suppressed	75	15	small deadwood, Conflicting branches	multistem	No	Save	Yes	Lose
95	dogwood	3	75%	suppressed	75	20	small deadwood, exposed roots		No	Save	Yes	Lose
96	American holly	8	80%	intermediate	75	20	one-sided		No	Save	Yes	Lose
97	American holly	6	80%	intermediate	75	15	one-sided		No	Save	Yes	Lose
98	pin oak	12	75%	co dominant	80	30	exposed roots, root damage		No	Save	Yes	Lose
99	American holly	10	80%	intermediate	85	20	poor pruning		No	Save	Yes	Lose
101	American holly	5	60%	suppressed	90	20	trunk decay cavities, major branch decay, poor pruning	multistem	No	Save	Yes	Try
102	sweet gum	12	75%	co dominant	80	20	exposed roots, root damage, small deadwood		No	Save	Yes	Try
103	dawn redwood	3	75%	suppressed	75	10	mechanical damage, root damage		No	Save	No	Save
105	hemlock	6	75%	intermediate	80	15	weak co dominant union	2 co dominant leads	No	Save	No	Save
106	silver maple	13	70%	co dominant	70	25	exposed roots, root damage, girdling roots		No	Save	No	Save
111	willow oak	13	75%	co dominant	75	25	exposed roots, root damage		No	Save	No	Save
112	red maple	8	75%	intermediate	70	25	exposed roots, root damage, girdling roots		No	Save	No	Save
117	American holly	5	75%	suppressed	80	15	one-sided, small deadwood, poor pruning		No	Save	No	Save
118	American holly	4	75%	suppressed	80	15	one-sided, poor pruning		No	Save	No	Save
121	American holly	4	75%	suppressed	85	15	poor pruning		No	Save	No	Save
122	sweet gum	10	75%	dominant	80	25	exposed roots, root damage, poor pruning		No	Save	No	Save
123	American holly	12	80%	co dominant	85	25	poor form		No	Save	Yes	Lose
125	American holly	8	80%	intermediate	90	25			No	Save	Yes	Lose
126	yellow poplar	10	85%	dominant	80	20			No	Save	Yes	Lose
129	yellow poplar	8	80%	dominant	75	15	thin crown		No	Save	Yes	Lose
130	yellow poplar	7	70%	co dominant	90	25	basal decay, recent excavation in root zone, buried root flare		No	Save	Yes	Lose

DBH = Diameter at Breast Height (measured 4.5 feet above ground)

Condition ratings provided as percentages based on methods outlined in the latest edition of the Guide for Plant Appraisal, published by the International Society of Arboriculture

Linden Springs Tree Survey 10/2008

Tree #	Species	Size	Condition	Canopy Position	Crown Density	Crown Spread	Problems	Comments	Impacted by Office Development Option	Status	Impacted by Residential Development Option	Status
140	white oak	40	75%	dominant	75	50	large deadwood, major branch decay		Yes	Try	Yes	Lose
155	willow oak	16	75%	dominant	90	30	exposed roots, root damage, buried root flare, mulch too high		No	Save	Yes	Lose
159	cherry	5	80%	dominant	95	20	buried root flare, mulch too high		No	Save	Yes	Lose
162	pin oak	16	75%	dominant	85	40	exposed roots, root damage		No	Save	Yes	Lose
163	American holly	13	60%	co dominant	80	50	trunk decay, weak co dominant union. poor form, mulch too high	4 co dominant leads	Yes	Lose	Yes	Lose
165	pin oak	15	80%	co dominant	85	40			No	Save	Yes	Lose
166	American holly	10	70%	dominant	90	35	conflicting branches, weak co dominant union, poor form , poor pruning	4 co dominant leads	Yes	Lose	Yes	Lose
167	fringe tree	5	70%	dominant	70	40	small deadwood, trunk decay, major branch decay, dieback	multistem	No	Save	Yes	Lose
168	willow oak	8	80%	dominant	75	20	dieback, small deadwood	poor form	Yes	Lose	Yes	Lose
180	yellow-poplar	7	85%	intermediate	75	12			No	Save	Yes	Try
182	red maple	21	70%	dominant	85	43	weak co dominant union, root damage, exposed roots		No	Save	Yes	Try
183	eastern red cedar	15	75%	co dominant	70	25	dieback		No	Save	No	Save
185	eastern red cedar	18	70%	co dominant	75	25	large deadwood, weak co dominant union, poor pruning, dieback		No	Save	No	Save
186	redbud	2	70%	suppressed	55	10	dieback, small deadwood		No	Save	No	Save
187	redbud	2	75%	suppressed	80	12	small deadwood		No	Save	No	Save
188	redbud	2	70%	suppressed	60	10	small deadwood, thin crown, dieback, small deadwood		No	Save	No	Save
189	redbud	2	75%	suppressed	70	12	small deadwood		No	Save	No	Save
190	redbud	2	75%	suppressed	50	10	thin crown, dieback, small deadwood		No	Save	No	Save
191	redbud	2	75%	suppressed	80	10	small deadwood		No	Save	No	Save
192	redbud	2	75%	suppressed	80	10			No	Save	No	Save
195	dogwood	5	70%	suppressed	75	15	one-sided, branch decay, mulch too high		No	Save	No	Save
196	white oak	35	75%	dominant	85	50	one-sided, basal decay, major branch decay		Yes	Try	Yes	Try
197	dogwood	2	75%	suppressed	80	10	small deadwood		No	Save	No	Save
198	dogwood	2	80%	suppressed	85	10	one-sided		No	Save	No	Save
199	dogwood	3	80%	suppressed	80	12	small deadwood		No	Save	No	Save
200	white oak	35	55%	dominant	80	50	trunk decay, basal decay, major cavity at base	Potential Hazard Tree	Yes	Lose	Yes	Lose
201	eastern white pine	6	75%	suppressed	75	10	one sided, thin crown		No	Save	No	Save
202	white oak	23	75%	dominant	75	0	dieback, large deadwood		No	Save	Yes	Try
203	dogwood	2	75%	suppressed	75	8	one-sided		No	Save	No	Save
204	American holly	2	80%	suppressed	80	5	one-sided		No	Save	No	Save
205	black gum	3	80%	intermediate	80	15			No	Save	No	Save
206	dogwood	3	80%	suppressed	80	15	small deadwood		No	Save	Yes	Lose
207	eastern white pine	12	75%	co dominant	80	30	buried root flare, mulch too high		Yes	Try	Yes	Lose
208	Leyland cypress	9	75%	co dominant	80	20	weak co dominant union	multistem	Yes	Try	Yes	Lose
210	white oak	5	80%	intermediate	80	12			Yes	Try	Yes	Lose
211	black gum	6	0%	co dominant	50	15	Dead		Yes	Try	Yes	Lose
212	willow oak	8	80%	co dominant	80	20			Yes	Try	Yes	Lose
215	red maple	8	70%	dominant	80	25	exposed roots, severe girdling roots		Yes	Try	Yes	Lose
218	yellow poplar	15	75%	dominant	80	35	minor basal decay	poor form	No	Save	Yes	Lose
219	black gum	11	70%	intermediate	75	30	weak co dominant union, excessive lean		No	Save	Yes	Lose
221	redbud	3	85%	intermediate	85	15			No	Save	No	Save
222	yellow poplar	20	80%	dominant	80	35			Yes	Try	Yes	Lose
224	white oak	28	75%	dominant	70	35			No	Save	Yes	Lose
226	white oak	40	75%	dominant	70	50	large deadwood, dieback		No	Save	Yes	Try
227	American holly	8	80%	co dominant	80	25		2 co dominant leads	No	Save	No	Save
229	American holly	13	80%	intermediate	80	30			No	Save	Yes	Try
230	white oak	24	70%	co dominant	75	40	basal decay, dieback, large deadwood		Yes	Try	Yes	Try
232	white oak	40	75%	dominant	80	60		2 co dominant leads	Yes	Try	Yes	Lose
233	white oak	30	70%	co dominant	75	30	one-sided, conflicting branches, poor form		Yes	Try	Yes	Try
234	hickory	22	80%	co dominant	75	45	large deadwood		No	Save	Yes	Try
237	white oak	28	75%	dominant	80	50			No	Save	Yes	Save
250	eastern red cedar	6	70%	suppressed	100	8			Yes	Try	Yes	Lose
251	eastern red cedar	14	70%	co dominant	80	12			Yes	Try	Yes	Lose
252	eastern red cedar	8	70%	co dominant	60	12			Yes	Try	Yes	Lose
253	eastern red cedar	8	70%	co dominant	60	14			Yes	Try	Yes	Lose
254	eastern red cedar	8	70%	co dominant	60	8			Yes	Try	Yes	Lose
255	Leyland cypress	2	70%	suppressed	70	6			No	Save	Yes	Lose
256	Leyland cypress	3	70%	suppressed	100	6			Yes	Try	Yes	Lose
257	Leyland cypress	16	75%	co dominant	80	20		multi-stem	Yes	Try	Yes	Lose
258	Leyland cypress	12	75%	co dominant	80	18		multi-stem	Yes	Try	Yes	Lose
259	Leyland cypress	12	75%	co dominant	80	16		multi-stem	Yes	Try	Yes	Lose
260	Leyland cypress	12	75%	co dominant	80	20		multi-stem	Yes	Try	Yes	Lose
261	Eastern Red Cedar	12	75%	suppressed	60	10			Yes	Try	Yes	Lose
262	Eastern Red Cedar	12	75%	co dominant	60	12			Yes	Try	Yes	Lose
263	Leyland cypress	9	80%	co dominant	90	14		multi-stem	No	Save	Yes	Lose
264	Eastern Red Cedar	9	60%	suppressed	60	8			No	Save	Yes	Lose
265	Leyland cypress	9	60%	suppressed/co dominant	60	15			No	Save	Yes	Lose
266	Leyland cypress	9	60%	suppressed/co dominant	60	16			No	Save	Yes	Lose
267	Leyland cypress	9	70%	suppressed	60	12			No	Save	Yes	Try
268	Leyland cypress	12	70%	co dominant	70	20			No	Save	Yes	Lose
269	Leyland cypress	12	70%	suppressed/co dominant	60	15			No	Save	Yes	Lose
270	Leyland cypress	13	70%	suppressed/co dominant	70	18			No	Save	Yes	Lose
271	Eastern Red Cedar	13	60%	suppressed	50	16			No	Save	Yes	Try
272	Leyland cypress	13	70%	suppressed	50	15			No	Save	Yes	Try
273	Leyland cypress	14	80%	suppressed	80	14			No	Save	Yes	Lose

DBH = Diameter at Breast Height (measured 4.5 feet above ground)

Condition ratings provided as percentages based on methods outlined in the latest edition of the Guide for Plant Appraisal, published by the International Society of Arboriculture

TREE CANOPY COVER REQUIREMENTS

GROSS SITE AREA	225,911 SF
- BLDG FOOTPRINT AREA (DEDUCTION)	
- EXISTING MANOR HOUSE	5,126 SF
- EXISTING OFFICE BUILDING #1	7,680 SF
- EXISTING OFFICE BUILDING #2	7,680 SF
- EXISTING GARAGE	950 SF
- PROPOSED MANOR HOUSE EXPANSION	250 SF
- PROPOSED OFFICE BLDGS EXPANSION	2,400 SF
- RETENTION POND EXISTING	8,836 SF
= ADJUSTED GROSS SITE AREA	192,989 SF
TREE CANOPY COVER REQUIRED (192,874 X 20%)	38,598 SF

TREE CANOPY COVER PROVIDED

TREE CANOPY COVER PROVIDED:	
PROP. LANDSCAPE PROVIDED	0 SF
EX. LANDSCAPING PROVIDED*	
43 CANOPY TREES @ 250 SF	10,750 SF
25 UNDERSTORY TREES @ 125	3,125 SF
46 EVERGREEN TREES @ 125	5,750 SF
TREE SAVE AREA (18,100 SF x 1.25)	22,625 SF
TOTAL	42,250 SF

* ONLY THOSE EX. TREES OUTSIDE LIMITS OF TREE SAVE AREA ARE CREDITED

Application No PCA 78-C-098-03 Staff S.Williams

APPROVED DEVELOPMENT PLAN
(DP) (GDP (CDP) (FDP)

SEE PROFFERS DATED 12-18-2008

Date of (BOS) (PC) Approved 1-12-2009

Sheet 10 OF 20

Concurrent w/FDPA 78-C-098-04

Date of PC Approval: 1-8-2009

No.	DATE	DESCRIPTION	REV.BY	APPROVED	DATE
		REVISION APPROVED BY DIVISION OF DESIGN REVIEW			

PLAN DATE
02-08-06
10-16-08
12-04-08

URBAN ENGINEERING & ASSOC.,INC.
CIVIL ENGINEERS • LANDSCAPE ARCHITECTS • LAND SURVEYORS
7712 LITTLE RIVER TURNPIKE
ANNANDALE, VIRGINIA 22003 (703) 642-8080

COMMONWEALTH OF VIRGINIA
MATTHEW K. KOIRTYOHANN
No. 039021
12/04/08
PROFESSIONAL ENGINEER

TREE SURVEY

BOXWOODS

HUNTER MILL MAGISTERIAL DISTRICT
FAIRFAX COUNTY, VIRGINIA

SCALE: N/A C.I. = 2' DATE: FEB., 2006

SHEET 10 OF 20

FILE No. SP-1612

STORMWATER MANAGEMENT AND OUTFALL NARRATIVE

PROJECT DESCRIPTION:

STORMWATER MANAGEMENT FOR THE PROPOSED SALLIE MAE DEVELOPMENT IS PROVIDED BY A SERIES OF FOUR WET PONDS ON A TRIBUTARY TO COLVIN RUN.

THE MOST UPSTREAM POND IS LOCATED UPSTREAM OF OLD RESTON AVENUE. THE PROPOSED POND IS THE RECONSTRUCTION OF AN EXISTING POND WHICH HAS FILLED UP WITH SILT. A NEW SPILLWAY AND OUTLET CULVERT WILL BE CONSTRUCTED ALONG WITH THE ROAD IMPROVEMENTS. THE CONSTRUCTION DETAILS FOR THIS POND ARE INCLUDED WITH THE PLANS ENTITLED OLD RESTON AVENUE, WATERBRIDGE RESIDENTIAL, COUNTY PLAN NUMBER 4062-PI-06-2. THESE WERE DEVELOPED FOR A PREVIOUS PROJECT CALLED WATERBRIDGE SQUARE WHICH IS BEING REPLACED BY THE SALLIE MAE DEVELOPMENT. THE PLANS ARE BEING MODIFIED TO MEET THE NEEDS OF THIS DEVELOPMENT.

ON THE SALLIE MAE SITE DIRECTLY DOWNSTREAM OF OLD RESTON AVENUE TWO PONDS EXIST. THE TWO PONDS ARE SEPARATED BY NARROW STRIP OF LAND WITH A SHALLOW OVERFLOW PORTION THAT EQUALIZES THE WATER LEVELS OF THE BOTH PONDS. PROPOSED POND A AND POND B WILL REPLACE THE EXISTING PONDS. POND A WILL REPLACE THE EXISTING UPPER POND. THE PROPOSED MODIFICATIONS INCLUDE THE RECONSTRUCTION OF THE DAM EMBANKMENT, LOWERING OF THE NORMAL POOL OF THE EXISTING POND BY 2.8 FEET TO ELEVATION 377.0, AND CONSTRUCTION OF A SPILLWAY AND WATER FEATURE. POND B WILL REPLACE THE EXISTING LOWER POND, MODIFICATIONS INCLUDE RECONSTRUCTION OF THE DAM EMBANKMENT, LOWERING THE NORMAL POOL OF THE EXISTING POND BY 7.8 FEET TO ELEVATION 372.0, EXCAVATION TO EXPAND THE POND, AND CONSTRUCTION OF A SPILLWAY AND WATER FEATURE. POND C WILL BE A NEW POND CONSTRUCTED DOWNSTREAM OF POND B.

BOTH OFFSITE AND ONSITE WATER FLOWS INTO THE PONDS. THE PORTION OF THE FLOW THAT PASSES THROUGH THE POND A WATER FEATURE FLOWS INTO POND B, THE REMAINING FLOW PASSES THROUGH A SPILLWAY RISER DIRECTLY INTO POND C BYPASSING POND B. ALL OF THE OUTFLOW FROM POND B FLOWS INTO POND C. MOST OF THE SITE DRAINS TO EITHER POND B OR POND C. THE FOLLOWING TABLE SUMMARIZES THE DRAINAGE AREAS TO EACH POND:

LOCATION	POND A	POND B	POND C	DOWNSTREAM PROPERTY LINE
ONSITE DRAINAGE AREA (AC)	1.3	4.2	12.6	25.4
OFFSITE DRAINAGE AREA (AC)	62.0	43.1	111.8	146.8
TOTAL DRAINAGE AREA (AC)	63.3	47.3	124.4	172.2

DRAINAGE AREA, LANDUSE, AND SOILS MAPS ARE PROVIDED ON SHEET P6.

ENGINEERING ANALYSIS:

DISCHARGES WERE CALCULATED FOR THREE CONDITIONS OF LANDUSE.

1. EXISTING CONDITIONS: REPRESENTING DEVELOPMENT THAT NOW EXIST WITHIN THE WATERSHED.
2. PROPOSED CONDITIONS: REPRESENTING THE PROPOSED DEVELOPMENT ONSITE AND EXISTING CONDITIONS OFFSITE.
3. ULTIMATE CONDITIONS: REPRESENTING LANDUSE AS SPECIFIED IN THE FAIRFAX COUNTY COMPREHENSIVE PLAN.

THE U.S. CORPS OF ENGINEERS HEC-1 HYDROLOGIC COMPUTER PROGRAM WAS USED TO CALCULATE THE DISCHARGES. SCS TR-55 METHODOLOGY WAS USED TO CALCULATE THE WATERSHED PARAMETERS FOR 6 SUBBASINS INCLUDING THE RUNOFF CURVE NUMBER AND THE TIME OF CONCENTRATION. CURVE NUMBER AND TIME OF CONCENTRATION CALCULATIONS ARE PROVIDED ON SHEET P8. THE SCS TYPE II DISTRIBUTION WITH A 24-HOUR DURATION WAS USED TO REPRESENT THE RAINFALL. HEC-1 PRINTOUTS ARE PROVIDED ON SHEETS P9, P10, AND P11.

STORMWATER MANAGEMENT DETENTION:

FOR CALCULATING THE STORMWATER MANAGEMENT REQUIREMENTS THE 2 AND 10-YEAR FLOODS WERE ANALYZED. THE ENTIRE SITE DRAINS TO DESIGN POINT 6 WHICH IS AT THE DOWNSTREAM PROPERTY LINE OF THE SALLIE MAE DEVELOPMENT. THE FOLLOWING TABLE COMPARES THE DISCHARGES CALCULATED AT DESIGN POINT 6:

CONDITION	DISCHARGES (CFS) 2-YEAR	10-YEAR
EXISTING CONDITIONS	141	370
PROPOSED CONDITIONS	80	262
DIFFERENCE	-61	-108

THE PROPOSED STORMWATER MANAGEMENT PONDS REDUCE THE DISCHARGES BELOW EXISTING LEVELS. THE 2-YEAR DISCHARGE WAS DETAINED BELOW EXISTING LEVELS IN ORDER TO INSURE THAT AN ADEQUATE OUTFALL IS PROVIDED (SEE ADEQUATE OUTFALL NARRATIVE ON THIS SHEET).

THE THREE WET PONDS PROVIDE ALSO PROVIDE MORE THAN THE REQUIRED WATER QUALITY (BMP) DETENTION (SEE CALCULATIONS ON SHEET P7).

SPILLWAY DESIGN FLOOD AND FREEBOARD DETERMINATION:

THE DAM EMBANKMENTS WERE DESIGNED TO MEET THE PROPOSED FAIRFAX COUNTY DAM DESIGN AND CONSTRUCTION STANDARDS. THE 100-YEAR, 1.5*100-YEAR, AND 2.5*100-YEAR STORMS WERE ANALYZED TO EVALUATE THE SAFETY OF THE DAM EMBANKMENTS. BASED ON THE PROPOSED DAM STANDARDS THE SPILLWAY DESIGN STORM FOR POND A IS THE 1.5*100-YEAR AND THE FREEBOARD HYDROGRAPH IS THE 2.5*100-YEAR FLOOD. FOR POND B AND POND C A 100-YEAR SPILLWAY DESIGN STORM AND A 1.5*100-YEAR FREEBOARD HYDROGRAPH IS REQUIRED.

THE PROPOSED DEVELOPMENT IS BEING BUILT ON A FORMER DISTILLERY AND THE EXISTING GROUND IN THE VICINITY OF THE DAM EMBANKMENTS IS COMPOSED OF FILL. THIS FILL AND OTHER SITE CONSTRAINTS DO NOT ALLOW FOR A OVERLAND EMERGENCY SPILLWAY, THEREFORE, COMBINED PRINCIPAL AND EMERGENCY SPILLWAYS ARE BEING PROVIDED FOR EACH POND. WHEN CALCULATING THE SPILLWAY CAPACITY FOR THE 100-YEAR, SPILLWAY DESIGN STORM, AND FREEBOARD DESIGN STORM THE LOWER ORIFICES AND WEIRS WERE BLOCKED AS REQUIRED BY THE DAM STANDARDS.

THE FOLLOWING TABLE COMPARES THE FLOOD ELEVATIONS TO THE TOP OF DAM ELEVATIONS:

	ELEVATIONS (FT) TOP OF DAM	100-YEAR FLOOD	SPILLWAY DESIGN FLOOD	FREEBOARD HYDROGRAPH
POND A	383.0	380.3	381.0 (1.5*100-YR)	382.3 (2.5*100-YR)
POND B	377.1	375.1	375.1 (100-YR)	375.6 (1.5*100-YR)
POND C	365.5	363.5	363.5 (100-YR)	365.4 (1.5*100-YR)

THE TOP OF DAM ELEVATIONS ARE ABOVE THE FREEBOARD HYDROGRAPH ELEVATIONS. THE PROPOSED EMBANKMENTS WILL ALSO BE AT LEAST 2 FEET ABOVE THE SPILLWAY DESIGN FLOOD AS REQUIRED BY THE DAM STANDARDS.

CONCLUSION:

THE PROPOSED DESIGN PROVIDES MORE THAN THE REQUIRED 2 AND 10-YEAR DETENTION WHILE MEETING THE PROPOSED FAIRFAX COUNTY DAM DESIGN AND CONSTRUCTION STANDARDS.

DRAINAGE OUTFALL NARRATIVE

THE ENTIRE SALLIE MAE DEVELOPMENT WILL DRAIN TO A TRIBUTARY TO COLVIN RUN. DIRECTLY DOWNSTREAM OF THE ENTRANCE ROAD CULVERT THE TRIBUTARY PASSES OVER THE DOWNSTREAM PROPERTY LINE WHERE IT CONTINUES THROUGH THE HIDDEN CREEK COUNTRY CLUB GOLF COURSE. THE TRIBUTARY ENTERS THE GOLF COURSE BY PASSING THROUGH TWO 29 INCH STEEL PIPES UNDER A CART PATH WHICH LEADS TO A GOLF COURSE MAINTENANCE BUILDING. AFTER EXITING THE CULVERTS IT PASSES THROUGH A WELL DEFINED GRASS AND TREE LINED CHANNEL THROUGH THE GOLF COURSE. THIS OUTFALL IS AN ADEQUATE BED AND BANK CHANNEL AS DESCRIBED AND JUSTIFIED BELOW.

FLOW CAPACITY:

THE PROPOSED PONDS ON THE SALLIE MAE SITE WERE DESIGNED TO REDUCE THE 2-YEAR DISCHARGE TO LEVELS THAT WOULD INSURE AN ADEQUATE OUTFALL. THE EXISTING CART PATH CULVERTS AND THE CHANNEL DOWNSTREAM WERE ANALYZED TO DETERMINE THE FLOW CAPACITY. STORMWATER DETENTION WAS THAN PROVIDED ONSITE TO ACHIEVE A 2-YEAR DISCHARGE WHICH WOULD NOT EXCEED THIS CAPACITY.

DETENTION BELOW EXISTING LEVELS WAS REQUIRED SINCE THE EXISTING 2-YEAR DISCHARGE AT THE OUTFALL WAS CALCULATED TO BE 141 CFS, WHICH EXCEEDS THE CAPACITY OF BOTH THE CULVERTS AND THE CHANNEL. THE STORMWATER MANAGEMENT PROVIDED WITH THE SALLIE MAE DEVELOPMENT WOULD REDUCE THE PROPOSED CONDITION 2-YEAR DISCHARGE TO 80 CFS, THIS IS WELL BELOW EXISTING CONDITION 2-YEAR DISCHARGE.

TO DETERMINE THE OUTFALL CAPACITY THE CART PATH CULVERTS AND CHANNEL DOWNSTREAM WERE MODELED USING THE U.S. ARMY CORPS OF ENGINEERS HEC-2 HYDRAULIC COMPUTER MODEL. A HEC-2 MODEL OF THE PROPOSED 2-YEAR DISCHARGE (80 CFS) IS INCLUDED ON THIS SHEET. AS CAN BE SEEN FROM THE HEC-2 PRINTOUT THE PROPOSED 2-YEAR DISCHARGE PASSES THROUGH THE CULVERTS WITHOUT OVERTOPPING THE CART PATH AND IS CONTAINED WITHIN THE EXISTING CHANNEL DOWNSTREAM. THEREFORE, THE OUTFALL HAS SUFFICIENT CAPACITY FOR THE PROPOSED 2-YEAR DISCHARGE AND MEETS ADEQUATE OUTFALL CAPACITY REQUIREMENTS.

FLOW VELOCITIES:

THE EXISTING CHANNEL DOWNSTREAM OF THE CART PATH CULVERTS IS A WELL MAINTAINED GRASS LINED CHANNEL. AS SHOWN IN THE HEC-2 PRINTOUT THE FLOW VELOCITIES DO NOT EXCEED 4.5 FT/SEC DURING THE PEAK OF THE 2-YEAR FLOOD. THE BOTTOM OF THE STREAM IS LINED WITH COBBLES AND THE SIDES WITH GRASS AND TREES. DIRECTLY DOWNSTREAM OF THE PROJECT THE CHANNEL APPEARS STABLED AND THERE IS LITTLE EVIDENCE OF EROSION.

THE FAIRFAX COUNTY SOILS MAPS IDENTIFY THE SOILS IN THIS SECTION OF THE TRIBUTARY TO BE MIXED ALLUVIAL (SOIL NO. 1). FAIRFAX COUNTY DEFINES THE EROSION POTENTIAL OF THESE SOILS TO BE "SLIGHT", AND HAS DESIGNATED THE PERMISSIBLE VELOCITY FOR GRASS MIXTURE CHANNELS WITH EROSION RESISTANT SOILS TO BE 5 FT/SEC. THEREFORE, THE PROPOSED 2-YEAR DISCHARGE SHOULD NOT CAUSE EROSIVE VELOCITIES DOWNSTREAM.

CONCLUSION:

THE TRIBUTARY DOWNSTREAM OF THE PROJECT IS A LEGITIMATE BED AND BANK CHANNEL AND HAS THE CAPACITY TO SERVE AS AN ADEQUATE OUTFALL FOR THE PROPOSED SALLIE MAE DEVELOPMENT.

WE ARE OF THE OPINION THAT AN ADEQUATE OUTFALL EXIST FOR THIS PROJECT.

COMMONWEALTH OF VIRGINIA EDWARD ... No. 1733 3-4-94 PROFESSIONAL ENGINEER ENGINEER'S SEAL & SIGNATURE

VIRGINIA POWER SUBSTATION STORMWATER MANAGEMENT:

THE BMP AND STORMWATER MANAGEMENT PROVIDED BY THE SALLIE MAE PROJECT INCLUDES THE PROPOSED EXPANSION OF THE VIRGINIA POWER SUBSTATION. APPROXIMATELY 1.5 ACRES OF THE EXPANSION DRAINS TO A SWM FACILITY THAT WILL BE REMOVED TO CONSTRUCT THE ENTRANCE ROAD TO THE SALLIE MAE DEVELOPMENT. THE PROPOSED SALLIE MAE PONDS PROVIDE ADDITIONAL BMP AND SWM DETENTION TO OVERCOMPENSATE FOR THE 1.5 ACRES THAT WILL GO OFF UNDETAINED. THE PORTION OF THE VIRGINIA POWER SUBSTATION THAT DRAINS TO THE WATERSHED STUDIED, INCLUDING THE AREA DRAINING TO THE DISPLACED SUBSTATION POND, IS SHOWN AS PART OF "ONSITE DEVELOPED - UNCONTROLLED" (D1) AREA IN THE BMP CALCULATIONS ON SHEET P7. THIS AREA IS ALSO SHOWN AS PROPOSED INDUSTRIAL DEVELOPMENT IN THE SWM CALCULATIONS, SHEETS P6 AND P8. THE CALCULATIONS ILLUSTRATE THAT THE PROPOSED SALLIE MAE PONDS PROVIDE MORE THAN THE REQUIRED BMP AND SWM DETENTION REQUIRED TO OVERCOMPENSATE FOR THE PORTION OF THE VIRGINIA POWER SUBSTATION EXPANSION BEING IMPACTED.

HYDRAULIC ANALYSIS OF OUTFALL

```
**************************************
 HEC-2 WATER SURFACE PROFILES
 VERSION   4.6.2;   MAY 1991
**************************************

T1 SALLIE MAE                         (FILE:  SMH2-OF.DAT)
T2 OUTFALL ANALYSIS         2-YEAR FLOOD
T3      EXISTING CHANNEL AND TRAIL CULVERTS DOWNSTREAM OF THE PROJECT

J1  ICHECK    INQ      NINV     IDIR     STRT    METRIC   HVINS     Q       WSEL      FQ
      0        2        0        0       0.01      0        0       80      350.6      0
J2  NPROF    IPLOT    PRFVS    XSECV    XSECH     FN      ALLDC    IBW     CHNIM    ITRACE
      1        0       -1        0        0        0       -1       0        0        0
J3  VARIABLE CODES FOR SUMMARY PRINTOUT
     38        1        3       55       26       56       13      14       15       86
     46        8        4

NC    0.1      0.1     0.05      0.1      0.3
X1    10       13      193       207       0        0        0
X3    10
GR   360       30     348.1       90     348.6     145     349.6     193     345.9     197
GR   345.9    203     349.7      207     350       219     352       228     353.3     238
GR   353.2    250     356        260     360       285

X1    20       13      194       206      190      170      185
GR   360      130     356       130.1    354      181      352       191     351       194
GR   348      197     348       203      351      206      351.3     250     352       258
GR   356      310     358       390      360      435

NC                               0.3      0.5
X1    30       13      245       255      115      120      130
X3    10                                                          351.62   351.62
GR   360       86     358        124      356      185      354       241     352.2     245
GR   349.2    248     349.2      252      352.2    255      352.2     262     354       277
GR   356      380     358        435      360      463
  EXISTING GOLF CART PATH TRAIL 2- 29" STEEL CULVERTS
SC   2.010    0.80    2.65        0       2.42      0       22        2.3     349.5     349.2
X1    31       13      232       243       22       22      22
X2                      2       351.92    355
X3    10                                                           355      355
BT     7      100     360          0      130      358       0        185     356        0
BT   260      355       0        386      356        0      445       358       0       473
BT   360        0
GR   360      100     358        131      356      169      354       230     352       232
GR   349.2    236     349.2      240      352      243      354       270     354       342
GR   356      393     358        429      360      456

SUMMARY PRINTOUT

     SECNO    CWSEL     EG      VLOB     VCH    VROB    QLOB     QCH     QROB    QCULV   QWEIR   DEPTH   TOPWID

     10.000   348.26   348.50    .00     3.99    .00     .00    80.00     .00      .00     .00    2.36    11.03
     20.000   350.26   350.54    .00     4.29    .00     .00    80.00     .00      .00     .00    2.26    10.52
     30.000   351.86   352.18    .00     4.50    .00     .00    80.00     .00      .00     .00    2.66     9.33
*    31.000   354.94   354.97    .00     1.50    .00     .00    80.00     .00     80.00    .00    5.74    11.00

 SUMMARY OF ERRORS AND SPECIAL NOTES
WARNING SECNO=     31.000   PROFILE=  1   CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
```

OUTFALL ANALYSIS PLAN VIEW

SCALE: 1"=50'

CROSS-SECTION 20

(TYPICAL OF DOWNSTREAM OUTFALL)

Application No PCA 78-C-098-03 Staff S.Williams
APPROVED DEVELOPMENT PLAN
(DP) (GDP (CDP) (FDP)
SEE PROFFERS DATED 12-18-2008
Date of (BOS) (PC) Approved 1-12-2009
Sheet 11 OF 20
Concurrent w/FDPA 78-C-098-04
Date of PC Approval: 1-8-2009

COMMONWEALTH OF VIRGINIA MATTHEW K. KOIRTYOHANN No. 039021 12/04/08 PROFESSIONAL ENGINEER

FOR INFORMATION PURPOSES ONLY!

NO.	DESCRIPTION	REV. BY	APPROVED	DATE

REVISION APPROVED BY: DIVISION OF DESIGN REVIEW

DATE	DESIGNER	ENGINEER

ENGINEER'S SEAL & SIGNATURE

REVISION STAMP

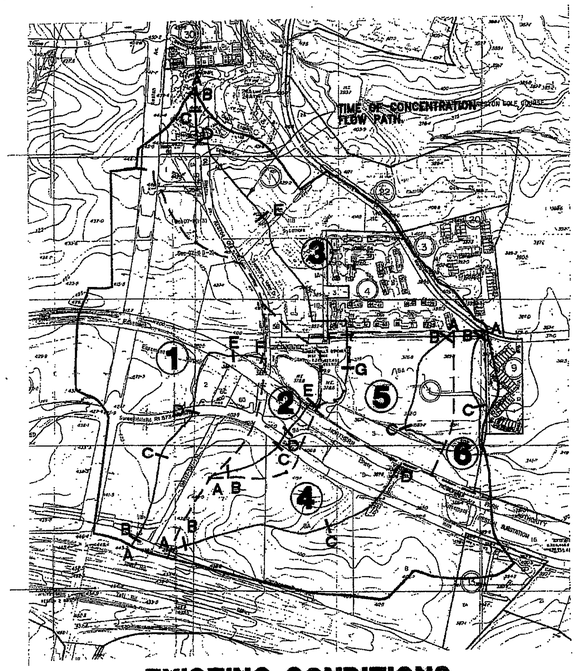
SHEET 11 OF 20
ZP-1612

Dewberry & Davis
Architects Engineers Planners Surveyors
8401 Arlington Blvd., Fairfax, VA 22031
703 849-0100

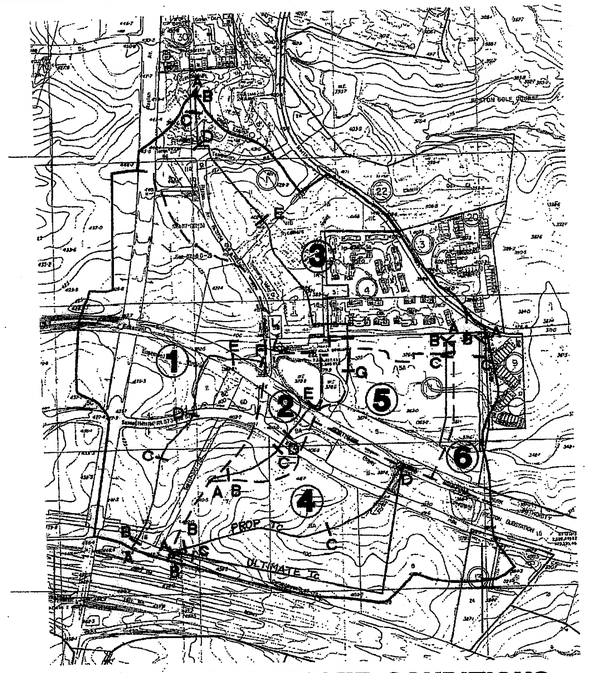
STORMWATER MANAGEMENT AND ADEQUATE OUTFALL NARRATIVE

Sallie Mae
Virginia Consolidation Project

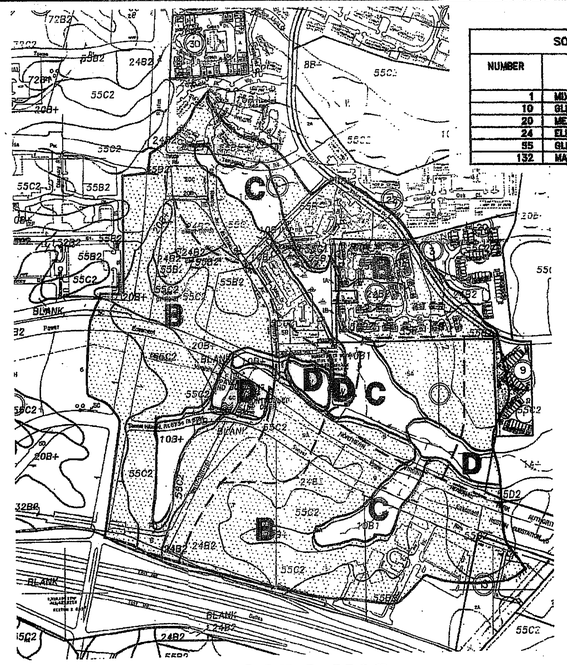
Drawn by: L. E. MORILLO
Designed by: G. A. SORENSEN
Checked by:
Date MARCH, 1994
Scale ————
Plan number 8766-SP-01
Zoned PDC
Sheet P5 OF 17
File number



EXISTING CONDITIONS
DRAINAGE AREA MAP

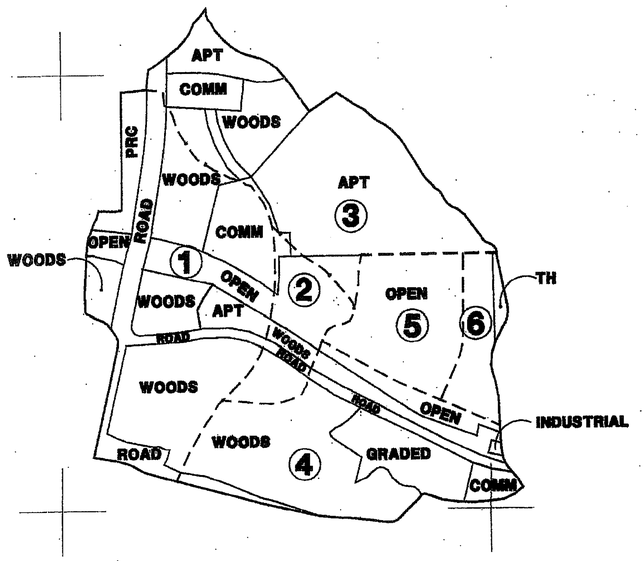


PROPOSED & ULTIMATE CONDITIONS
DRAINAGE AREA MAP

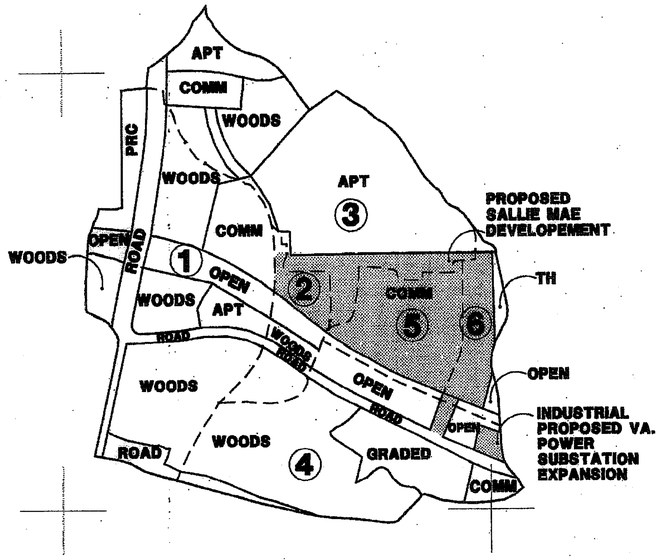


SOILS MAP INDEX		
NUMBER	NAME	HYDROLOGIC GROUP
1	MIXED ALLUVIAL	D
10	GLENVILLE	C
20	MEADOWVILLE	B
24	ELIOAK	B
55	GLENELG	B
132	MAYODAN	B

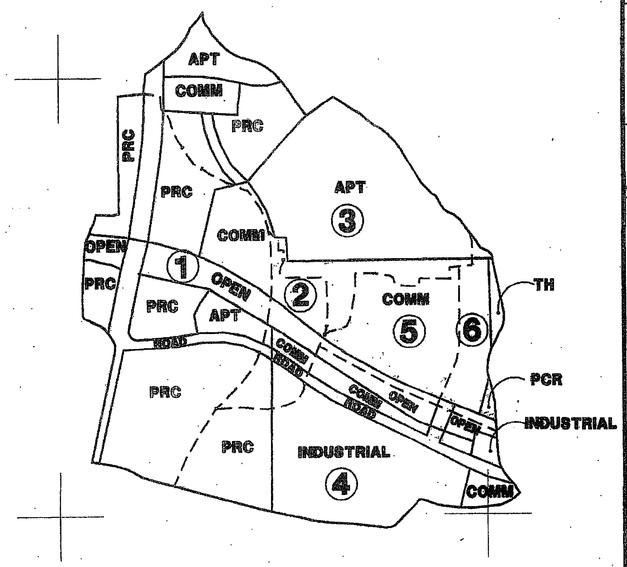
SOILS MAP



EXISTING CONDITIONS
LAND USE



PROPOSED CONDITIONS
LAND USE



ULTIMATE CONDITIONS
LAND USE

Application No PCA 78-C-098-03 Staff S.Williams
APPROVED DEVELOPMENT PLAN
(DP) (GDP (CDP) (FDP)
SEE PROFFERS DATED 12-18-2008
Date of (BOS) (PC) Approved 1-12-2009
Sheet 12 OF 20
Concurrent w/FDPA 78-C-098-04
Date of PC Approval: 1-8-2009

COMMONWEALTH OF VIRGINIA
MATTHEW K. KOERTOHANN
No. 039021
PROFESSIONAL ENGINEER
12/01/08

FOR INFORMATION PURPOSES ONLY!

NO.	DESCRIPTION	REV. BY	APPROVED	DATE

REVISION APPROVED BY:
DIVISION OF DESIGN REVIEW

DESIGNER
DATE
ENGINEER

ENGINEER'S SEAL & SIGNATURE

COMMONWEALTH OF VIRGINIA
CHRISTINA COCHENOUR
No. 027793
PROFESSIONAL ENGINEER

REVISION STAMP

Dewberry & Davis
Architects Engineers Planners Surveyors
8401 Arlington Blvd., Fairfax, VA 22031
☎ 703 849-0100

DRAINAGE, SOILS AND
LAND USE MAPS

Sallie Mae
Virginia Consolidation Project
Fairfax County, Virginia
Hunter Mill District

Drawn by: L. E. MORELLO
Designed by: G. A. BORRESEN
Checked by: GALC
Date: NOV 4 1993
Scale: 1" = 500'
Plan number: 8766-SP-01
Zoned: PDC
Sheet: P6 OF 17
File number: SP-1744

SHEET 12 OF 20
ZP-1612

WATER QUALITY CALCULATIONS

BMP FACILITY DESIGN CALCULATIONS

Plan Name: SALLIE MAE, VIRGINIA CONSOLIDATION PROJECT
Plan Number: 8766-SP-01

I. Water Quality Narrative

The area included in the site consists of 23.6 acres of commercial use, 1.5 acres of industrial use and 0.3 acres of road. 18.1 acres of this site area and 106.5 acres of offsite developed area will drain to the three wet ponds located on the site. 7.3 developed acres drain uncontrolled from the site. The three wet ponds will be privately maintained. The site is located in the Chesapeake Bay Preservation area; therefore, 40% phosphorous removal is required.

II. Watershed Information

Part 1: List all of the Subareas and "C" Factors used in the BMP Computations

Subarea Designation and Description (1)	"C" (2)	Acres (3)
A1 Offsite Developed to Pond A	0.73	62.00
A2 Onsite Developed to Pond A	0.85	1.30
B1 Offsite Developed to Pond B	0.73	43.30
B2 Onsite Developed to Pond B	0.85	4.20
C1 Offsite Developed to Pond C	0.35	1.20
C2 Onsite Developed to Pond C	0.85	12.60
D1 Onsite Developed - Uncontrolled	0.84	7.30

::

IIIa. Phosphorus Removal - "Occaquan Method"

Part 2: Compute the Weighted Average "C" Factor for the Site

(A) Area of the site (a) 25.40 acres

(B) Subarea Designation (1)	"C" (2)	Acres (3)	Product (2)x(3)
A2 Onsite Developed to Pond A	0.85	1.30	1.105
B2 Onsite Developed to Pond B	0.85	4.20	3.570
C2 Onsite Developed to Pond C	0.85	12.60	10.710
D1 Onsite Developed - Uncontrolled	0.84	7.30	6.132

(b) Total 21.517

(C) Weighted Average "C" Factor (b)/(a)=(c) 0.85

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)
A1	Wet Pond	50	(0.2)A1/25.4=	0.488	0.86	21.035
A2	Wet Pond	50	A2/25.4=	0.051	1.00	2.588
B1	Wet Pond	50	(0.2)B1/25.4=	0.341	0.86	14.690
B2	Wet Pond	50	B2/25.4=	0.165	1.00	8.298
C1	Wet Pond	50	(0.2)C1/25.4=	0.009	0.41	0.195
C2	Wet Pond	50	C2/25.4=	0.496	1.00	24.857
D1	Uncontrolled	—	—		—	0.000

(a) Total 71.67 %

Since 71.67% > 40% Phosphorus removal requirement is satisfied

IV. Site Coverage

Part 5: Determine Compliance with Site Coverage Requirement

Sum all the uncontrolled onsite areas and compute a weighted average "C" factor. Do not include qualifying open space.

(B) Subarea Designation (1)	"C" (2)	Acres (3)	Product (2)x(3)
D1 Onsite Developed - Uncontrolled	0.84	7.30	6.132

(A) Total equivalent uncontrolled area (a) Total 6.132

(B) Total uncontrolled area (b) Total 7.3

(C) Weighted average "C" factor (a)/(b)=(c) 0.84

(D) If Line 5(b) < 20% of Line 2(a), then the site coverage requirement is satisfied. Line 5(a) is the equivalent offsite area for which coverage may be required.

(100)x(line 5b)/(line 2a)= 28.74 > 20%

Part 6: Determine the Offsite Areas for which Coverage is Required.

(A) For the offsite areas listed in Part 1 which flow to proposed BMPs compute the equivalent areas.

Subarea Designation (1)	"C" (2)	Acres (3)	Product (2)x(3)
A1 Offsite Developed to Pond A	0.73	(0.2)(62)= 12.4	9.052
B1 Offsite Developed to Pond B	0.73	(0.2)(43.3)= 8.66	6.322
C1 Offsite Developed to Pond C	0.35	(0.2)(1.2)= 0.24	0.084

(a) Total 15.458

V. Storage

Part 7: Compute the Weighted Average "C" Factor for each Proposed BMP Facility

(A) List the areas to be controlled by the proposed BMPs

(B) Subarea Designation - POND A (1)	"C" (2)	Acres (3)	Product (2)x(3)
A1 Offsite Developed to Pond A	0.73	(0.2)(62)= 12.40	9.052
A2 Onsite Developed to Pond A	0.85	1.30	1.105

(B) Total (a) 13.7; Total (b) 10.157

(C) Weighted average "C" factor (b)/(a)=(c) 0.74

(B) Subarea Designation - POND B (1)	"C" (2)	Acres (3)	Product (2)x(3)
B1 Offsite Developed to Pond B	0.73	(0.2)(43.3)= 8.66	6.322
B2 Onsite Developed to Pond B	0.85	4.20	3.570

(B) Total (a) 12.86; Total (b) 9.892

(C) Weighted average "C" factor (b)/(a)=(c) 0.77

(B) Subarea Designation - POND C (1)	"C" (2)	Acres (3)	Product (2)x(3)
C1 Offsite Developed to Pond C	0.35	(0.2)(1.2)= 0.24	0.084
C2 Onsite Developed to Pond C	0.85	12.60	10.710

(B) Total (a) 12.84; Total (b) 10.794

(C) Weighted average "C" factor (b)/(a)=(c) 0.84

Part 8: Determine the storage required for each facility

(B) Wet Pond (POND A)
Volume of runoff per acre from mean storm.
[1452 x "C"] = 1452 x Line 7(a) (b) 1076 cf/ac

Design 2 (4.0 x Volume of runoff from mean storm)
4.0 x Line 7(a) x line 8(b) = 59000 cf=1.35 AC-FT

(B) Wet Pond (POND B)
Volume of runoff per acre from mean storm.
[1452 x "C"] = 1452 x Line 7(a) (b) 1117 cf/ac

Design 2 (4.0 x Volume of runoff from mean storm)
4.0 x Line 7(a) x line 8(b) = 57500 cf=1.32 AC-FT

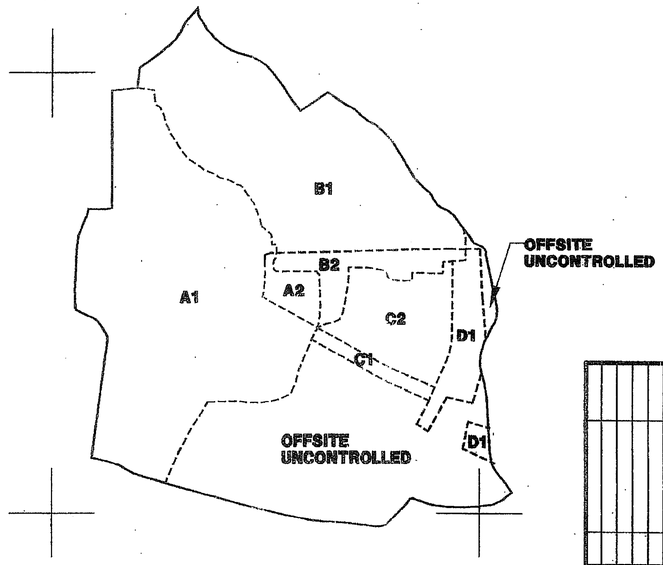
(B) Wet Pond (POND C)
Volume of runoff per acre from mean storm.
[1452 x "C"] = 1452 x Line 7(a) (b) 1221 cf/ac

Design 2 (4.0 x Volume of runoff from mean storm)
4.0 x Line 7(a) x line 8(b) = 62700 cf=1.44 AC-FT

VI. SUMMARY

STORAGE VOLUME AT NORMAL POOL

	REQUIRED (AC-FT)	PROVIDED (AC-FT)
POND A	1.35	5.25
POND B	1.32	4.02
POND C	1.44	4.22



PROPOSED CONDITIONS DRAINAGE AREA MAP

Application No PCA 78-C-098-03 Staff S.Williams
APPROVED DEVELOPMENT PLAN
(DP) (GDP (CDP) (FDP)
SEE PROFFERS DATED 12-18-2008
Date of (BOS) (PC) Approved 1-12-2009
Sheet 13 OF 20
Concurrent w/FDPA 78-C-098-04
Date of PC Approval: 1-8-2009

FOR INFORMATION PURPOSES ONLY!

COMMONWEALTH OF VIRGINIA — MATTHEW K. KOERTOHANN No. 039021 — PROFESSIONAL ENGINEER — 11/24/08

SHEET 13 OF 20
ZP-1612

Dewberry & Davis
Architects Engineers Planners Surveyors
8401 Arlington Blvd., Fairfax, VA 22031
☎ 703 849-0100

WATER QUALITY CALCULATIONS

Sallie Mae
Virginia Consolidation Project
HUNTER MILL DISTRICT FAIRFAX COUNTY, VIRGINIA

NO.	DESCRIPTION	REV. BY	APPROVED	DATE
	REVISION APPROVED BY: DIVISION OF DESIGN REVIEW			

ENGINEER | DESIGNER | DATE

ENGINEER'S SEAL & SIGNATURE

REVISION STAMP

Drawn by: L. E. MORILLO
Designed by: S. A. SORENSEN
Checked by: GLC
Date: NOV 1, 1993
Scale: ----------
Plan number: 8766-SP-01
Zoned: PDC
Sheet 17 OF 17
File number: SP-1414

CURVE NUMBER COMPUTATIONS

AREAS (ac)

LANDUSE	SOIL GROUP	CURVE NUMBER	SUBBASIN 1 EX & PROP	SUBBASIN 1 ULTIMATE	SUBBASIN 2 EXISTING	SUBBASIN 2 PROPOSED	SUBBASIN 2 ULTIMATE	SUBBASIN 3 EXISTING	SUBBASIN 3 PROPOSED	SUBBASIN 3 ULTIMATE	SUBBASIN 4 EXISTING	SUBBASIN 4 PROPOSED	SUBBASIN 4 ULTIMATE	SUBBASIN 5 EXISTING	SUBBASIN 5 PROP & ULT	SUBBASIN 6 EXISTING	SUBBASIN 6 PROPOSED	SUBBASIN 6 ULTIMATE
Woods	B	55	22.9		3.9	3.9		6.1	6.1		19.3	19.3						
	C	70	2.6					2.6	2.6		1.2	1.2						
	D	77																
Open	B	61	4.9	4.9	3.4	1.7	1.7	0.7			7.6	6.0	3.0	9.1	1.0	4.5	0.4	0.3
	C	74	0.4	0.4	0.4			0.7			0.4	0.4	0.4	5.0	0.2			
	D	80	1.3	1.3										1.7		1.8	0.2	
Newly graded area	B	86									6.0	6.0						
	C	91									2.0	2.0						
	D	94																0.1
Planned residential community	B	75	4.8	26.6			2.1			6.3			8.6					
	C	83		3.7						2.4								0.2
	D	87														1.0	1.0	1.0
Townhouses	B	85																
	C	90															0.2	0.2
	D	92						25.9	25.7	25.7								
Apartments	B	85	0.4	0.4				3.9	3.9	3.9								
	C	90	0.2	0.2														
	D	92	1.4	1.4														
Commercial	B	92	5.2	5.2	0.3	1.0	1.0	2.7	5.3	5.3	1.6	1.6	3.9		6.1		3.9	3.9
	C	94	0.4	0.4	0.1	0.7	0.7	0.9	2.5	2.5			0.8		4.8			
	D	95													1.7		1.6	1.6
Industrial	B	88					1.8				0.2	1.5	18.1					
	C	91											3.2					
	D	93																
Road & water surface	all	98	9.1	9.1	2.4	2.4	2.4	1.2	1.2	1.2	2.2	2.5	2.5					
Total Area (ac)			53.6	53.6	10.5	9.7	9.7	44.7	47.3	47.3	40.5	40.5	40.5	15.6	13.8	7.3	7.3	7.3
Calculated curve number			71.3	80.7	68.9	73.3	83.8	80.9	82.3	85.6	67.1	68.2	84.5	67.2	90.6	69.0	89.5	89.9
USE CURVE NUMBER			71	81	69	73	84	81	82	86	67	68	85	67	91	69	90	90

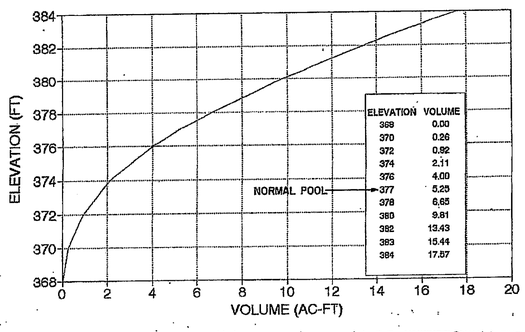
TIME OF CONCENTRATION COMPUTATIONS

LAND USE CONDITION (existing, proposed, or ultimate)

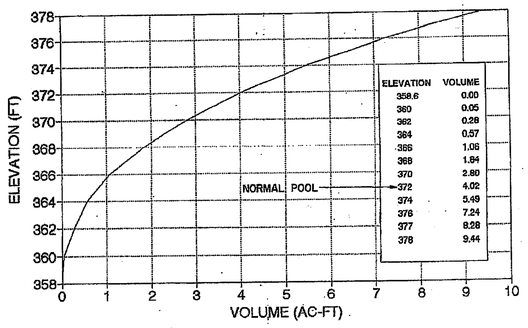
1. SHEET FLOW
   - a. Surface description
   - b. Manning's roughness coeff., n
   - c. Flow length, L (ft)
   - d. Two-yr 24-hr rainfall, P2 (inches)
   - e. Land slope, s (ft/ft)
   - f. Tt = [0.007(nL)^0.8]/[(P2^0.5)(s^0.4)] (hr)
2. SHALLOW CONCENTRATED FLOW
   - a. Surface description
   - b. Flow length, L (ft)
   - c. Watercourse slope, s (ft/ft)
   - d. Average velocity, V (ft/sec)
   - e. Tt = L/(3600*V) (hr)
3. CHANNEL FLOW
   - a. Flow type (natural channel, ditch, sewer)
   - b. Flow length, L (ft)
   - c. Slope or elevation difference (ft)
   - d. Computation Method
   - e. Velocity, V (ft/sec)
   - f. Tt = L/(3600*V) (hr)
   - a. Flow type (natural channel, ditch, sewer)
   - b. Flow length, L (ft)
   - c. Slope or elevation difference (ft)
   - d. Computation Method
   - e. Velocity, V (ft/sec)
   - f. Tt = L/(3600*V) (hr)
   - a. Flow type (natural channel, ditch, sewer)
   - b. Flow length, L (ft)
   - c. Slope or elevation difference (ft)
   - d. Computation Method
   - e. Velocity, V (ft/sec)
   - f. Tt = L/(3600*V) (hr)
   - a. Flow type (natural channel, ditch, sewer)
   - b. Flow length, L (ft)
   - c. Slope or elevation difference (ft)
   - d. Computation Method
   - e. Velocity, V (ft/sec)
   - f. Tt = L/(3600*V) (hr)
4. WATERSHED TIME OF CONCENTRATION (hr)
5. LAG TIME (0.6*Tc) (hr)

SUBBASIN 1 EX & PROP	SUBBASIN 1 ULT	SUBBASIN 2 EX & PROP	SUBBASIN 2 ULT	SUBBASIN 3 EX & PROP	SUBBASIN 3 ULT	SUBBASIN 4 EX & PROP	SUBBASIN 4 ULT	SUBBASIN 5 EX	SUBBASIN 5 PROP & ULT	SUBBASIN 6 EX	SUBBASIN 6 PROP & ULT
SEGMENT AB											
grass	grass	woods	grass	grass	woods	grass	grass	grass	grass	grass	grass
0.24	0.24	0.40	0.24	0.24	0.40	0.24	0.24	0.24	0.24	0.24	0.24
100	50	100	50	50	100	50	50	50	50	50	50
3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2
0.020	0.020	0.030	0.020	0.020	0.020	0.040	0.020	0.030	0.030	0.030	0.030
0.24	0.14	0.30	0.14	0.14	0.14	0.27	0.14	0.12	0.12	0.12	0.12
SEGMENT BC											
unpaved	paved	unpaved	paved	paved	paved	unpaved	paved	unpaved	paved	unpaved	paved
650	100	400	100	100	100	1025	100	750	100	500	100
0.039	0.020	0.080	0.020	0.020	0.020	0.060	0.020	0.045	0.030	0.060	0.030
3.2	3.9	4.9	2.9	2.9	2.9	4.0	2.9	3.4	3.5	4.0	3.5
0.06	0.01	0.02	0.01	0.01	0.01	0.07	0.01	0.06	0.01	0.03	0.01
SEGMENT CD											
natural	sewer	sewer	sewer	sewer	sewer	natural	sewer	natural	sewer	natural	sewer
400	1580	100	450	400	2330	700	2240	300	840	300	670
12						18		2.5		15	
Kirpich	assumed	assumed	assumed	assumed	assumed	Kirpich	assumed	Kirpich	assumed	Kirpich	assumed
2.2	10.0	10.0	10.0	10.0	10.0	2.3	10.0	1.2	10.0	2.5	10.0
0.05	0.04	0.00	0.01	0.01	0.06	0.08	0.06	0.07	0.02	0.03	0.02
SEGMENT DE											
sewer		natural	natural	natural							
580		300	300	580							
		24	24	30							
assumed		Kirpich	Kirpich	Kirpich							
10		2.9	2.5	3.2							
0.02	0.00	0.03	0.03	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SEGMENT EF											
ex pond				sewer							
100				1150							
0											
–				assumed							
0				10.0							
0.00	0.00	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SEGMENT FG											
				ditch							
				200							
				10							
				Kirpich							
				2.4							
0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.36	0.19	0.36	0.19	0.26	0.21	0.42	0.21	0.24	0.14	0.18	0.14
0.22	0.11	0.21	0.11	0.16	0.13	0.25	0.13	0.15	0.09	0.11	0.09

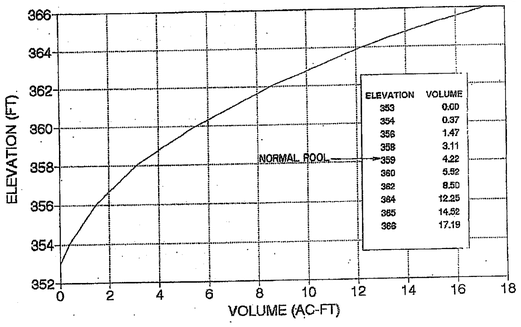
POND A
STAGE-STORAGE CURVE



POND B
STAGE-STORAGE CURVE



POND C
STAGE-STORAGE CURVE



FOR INFORMATION PURPOSES ONLY!

COMMONWEALTH OF VIRGINIA — MATTHEW E. KORYTOHANN No. 039021 — 12/04/08 — PROFESSIONAL ENGINEER

Application No PCA 78-C-098-03 Staff S.Williams
APPROVED DEVELOPMENT PLAN
(DP) (GDP (CDP) (FDP)
SEE PROFFERS DATED 12-18-2008
Date of (BOS) (PC) Approved 1-12-2009
Sheet 14 OF 20
Concurrent w/FDPA 78-C-098-04
Date of PC Approval: 1-8-2009

ENGINEER'S SEAL & SIGNATURE

REVISION STAMP

NO.	DESCRIPTION	REV. BY	APPROVED	DATE
	REVISION APPROVED BY: DIVISION OF DESIGN REVIEW			

DESIGNER

ENGINEER

DATE

Dewberry & Davis
Architects Engineers Planners Surveyors
8401 Arlington Blvd., Fairfax, VA 22031
☎ 703 849-0100

HYDROLOGIC CALCULATIONS

Virginia Consolidation Project

Drawn by: L. E. MORILLO
Designed by: G. A. SORENSEN
Checked by: GAS
Date: NOV'1, 1995
Scale: ----------
Plan number: 8766-SP-01
Zoned: PDC
Sheet: P8 OF 17
of 75
File number:

SHEET 14 OF 20
ZP-1612

CURVE NUMBER COMPUTATIONS

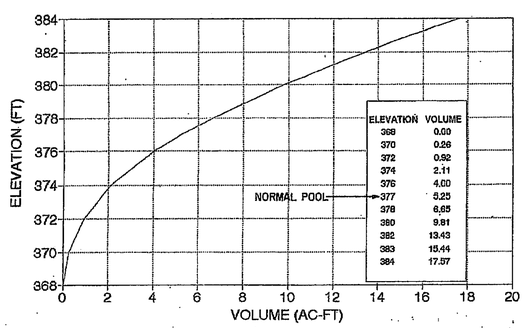
LANDUSE	SOIL GROUP	CURVE NUMBER	AREAS (ac)														
			SUBBASIN 1		SUBBASIN 2			SUBBASIN 3			SUBBASIN 4			SUBBASIN 5		SUBBASIN 6		
			EX & PROP	ULTIMATE	EXISTING	PROPOSED	ULTIMATE	EXISTING	PROPOSED	ULTIMATE	EXISTING	PROPOSED	ULTIMATE	EXISTING	PROP & ULT	EXISTING	PROPOSED	ULTIMATE
Woods	B	55	22.9		3.9	3.9		6.1	6.1		19.3	19.3						
	C	70	2.8					2.8	2.8		1.2	1.2						
	D	77																
Open	B	61	4.9	4.9	3.4	1.7	1.7	0.7			7.6	6.0	3.0	9.1	1.0	4.5	0.4	0.3
	C	74	0.4	0.4	0.4			0.7			0.4	0.4	0.4	5.0	0.2			
	D	80	1.3	1.3										1.7		1.8	0.2	
Newly graded area	B	86									6.0	6.0						
	C	91									2.0	2.0						
	D	94																
Planned residential community	B	75	4.8	26.6			2.1			6.3			8.6					0.1
	C	83		3.7						2.4								0.2
	D	87																
Townhouses	B	85														1.0	1.0	1.0
	C	90																
	D	92																
Apartments	B	85	0.4	0.4				25.9	25.7	25.7							0.2	0.2
	C	90	0.2	0.2				3.9	3.9	3.9								
	D	92	1.4	1.4														
Commercial	B	92	5.2	5.2	0.3	1.0	1.0	2.7	5.3	5.3	1.6	1.6	3.9		8.1		3.9	3.9
	C	94	0.4	0.4	0.1	0.7	0.7	0.9	2.5	2.5			0.8		4.8			
	D	95													1.7		1.6	1.6
Industrial	B	88					1.8				0.2	1.5	18.1					
	C	91											3.2					
	D	93																
Road & water surface	all	98	9.1	9.1	2.4	2.4	2.4	1.2	1.2	1.2	2.2	2.5	2.5					
Total Area (ac)			53.6	53.6	10.5	9.7	9.7	44.7	47.3	47.3	40.5	40.5	40.5	15.8	13.8	7.3	7.3	7.3
Calculated curve number			71.3	80.7	68.9	73.3	83.8	80.9	82.3	85.6	67.1	68.2	84.5	67.2	90.6	89.0	89.5	89.9
USE CURVE NUMBER			71	81	69	73	84	81	82	86	67	68	85	67	91	89	90	90

TIME OF CONCENTRATION COMPUTATIONS

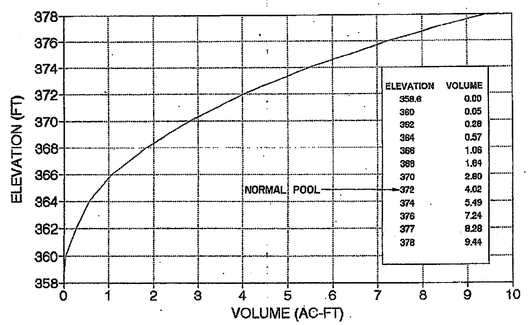
LAND USE CONDITION (existing, proposed, or ultimate)

			SUBBASIN 1		SUBBASIN 2		SUBBASIN 3		SUBBASIN 4		SUBBASIN 5		SUBBASIN 6	
			EX & PROP	ULT	EX & PROP	ULT	EX & PROP	ULT	EX & PROP	ULT	EX	PROP & ULT	EX	PROP & ULT
1.	SHEET FLOW		SEGMENT AB											
a.	Surface description		grass	grass	woods	grass	grass	grass	woods	grass	grass	grass	grass	grass
b.	Manning's roughness coeff., n		0.24	0.24	0.40	0.24	0.24	0.24	0.40	0.24	0.24	0.24	0.24	0.24
c.	Flow length, L	(ft)	100	50	100	50	50	50	100	50	50	50	50	50
d.	Two-yr 24-hr rainfall, P2	(inches)	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2
e.	Land slope, s	(ft/ft)	0.020	0.020	0.030	0.020	0.020	0.020	0.040	0.020	0.030	0.030	0.030	0.030
f.	Tt = [0.007(nL)^0.8]/[(P2^0.5)(s^0.4)]	(hr)	0.24	0.14	0.30	0.14	0.14	0.14	0.27	0.14	0.12	0.12	0.12	0.12
2.	SHALLOW CONCENTRATED FLOW		SEGMENT BC											
a.	Surface description		unpaved	paved	unpaved	paved	paved	paved	unpaved	paved	unpaved	paved	unpaved	paved
b.	Flow length, L	(ft)	650	100	400	100	100	100	1025	100	750	100	500	100
c.	Watercourse slope, s	(ft/ft)	0.039	0.020	0.060	0.020	0.020	0.020	0.060	0.020	0.045	0.030	0.060	0.030
d.	Average velocity, V	(ft/sec)	3.2	3.9	4.9	2.9	2.9	2.9	4.0	2.9	3.4	3.5	4.0	3.5
e.	Tt = L/(3600*V)	(hr)	0.06	0.01	0.02	0.01	0.01	0.01	0.07	0.01	0.06	0.01	0.03	0.01
3.	CHANNEL FLOW		SEGMENT CD											
a.	Flow type (natural channel, ditch, sewer)		natural	sewer	sewer	sewer	sewer	sewer	natural	sewer	natural	sewer	natural	sewer
b.	Flow length, L	(ft)	400	1580	100	450	400	2330	700	2240	300	840	300	670
c.	Slope or elevation difference	(ft)	12						18		2.5		15	
d.	Computation Method		Kirpich	assumed	assumed	assumed	assumed	assumed	Kirpich	assumed	Kirpich	assumed	Kirpich	assumed
e.	Velocity, V	(ft/sec)	2.2	10.0	10.0	10.0	10.0	10.0	2.3	10.0	1.2	10.0	2.5	10.0
f.	Tt = L/(3600*V)	(hr)	0.05	0.04	0.00	0.01	0.01	0.06	0.08	0.06	0.07	0.02	0.03	0.02
a.	Flow type (natural channel, ditch, sewer)		SEGMENT DE											
b.	Flow length, L	(ft)	sewer		natural	natural	natural							
c.	Slope or elevation difference	(ft)	580		300	300	580							
d.	Computation Method				24		30							
e.	Velocity, V	(ft/sec)	assumed		Kirpich	Kirpich	Kirpich							
f.	Tt = L/(3600*V)	(hr)	10		2.9	2.8	3.2							
			0.02	0.00	0.03	0.03	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00
a.	Flow type (natural channel, ditch, sewer)		SEGMENT EF											
b.	Flow length, L	(ft)	ex pond				sewer							
c.	Slope or elevation difference	(ft)	100				1150							
d.	Computation Method		0											
e.	Velocity, V	(ft/sec)	–				assumed							
f.	Tt = L/(3600*V)	(hr)	0				10.0							
			0.00	0.00	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00
a.	Flow type (natural channel, ditch, sewer)		SEGMENT FG											
b.	Flow length, L	(ft)					ditch							
c.	Slope or elevation difference	(ft)					200							
d.	Computation Method						10							
e.	Velocity, V	(ft/sec)					Kirpich							
f.	Tt = L/(3600*V)	(hr)					2.4							
			0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.	WATERSHED TIME OF CONCENTRATION	(hr)	0.35	0.19	0.36	0.19	0.26	0.21	0.42	0.21	0.24	0.14	0.18	0.14
5.	LAG TIME (0.6*Tc)	(hr)	0.22	0.11	0.21	0.11	0.16	0.13	0.25	0.13	0.15	0.09	0.11	0.09

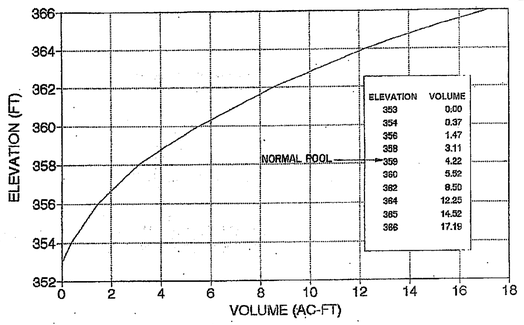
POND A
STAGE-STORAGE CURVE



POND B
STAGE-STORAGE CURVE



POND C
STAGE-STORAGE CURVE



Application No PCA 78-C-098-03 Staff S.Williams
APPROVED DEVELOPMENT PLAN
(DP) (GDP (CDP) (FDP)
SEE PROFFERS DATED 12-18-2008
Date of (BOS) (PC) Approved 1-12-2009
Sheet 15 OF 20
Concurrent w/FDPA 78-C-098-04
Date of PC Approval: 1-8-2009

FOR INFORMATION PURPOSES ONLY!

COMMONWEALTH OF VIRGINIA
MATTHEW K. KOERTVOHANN
No. 039021
PROFESSIONAL ENGINEER
12/04/08

SHEET 15 OF 20
ZP-1612

Dewberry & Davis
Architects Engineers Planners Surveyors
8401 Arlington Blvd., Fairfax, VA 22031
☎ 703 849-0100

NO.	DESCRIPTION	BEN. BY	APPROVED	DATE
	REVISION APPROVED BY: DIVISION OF DESIGN REVIEW			

HYDROLOGIC CALCULATIONS

Saltbox Virginia Consolidation Project

ENGINEER | DESIGNER | DRAWN | CHECKED

ENGINEER'S SEAL & SIGNATURE

REVISION STAMP

Drawn by: L. E. MORILLO
Designed by: E. A. SORENSEN
Checked by: GAC
Date: NOV 21, 1999
Scale: ----------
Plan number: 8766-SP-01
Zoned: PDC
Sheet: P8 OF 17
Sheet 37 of 75
File number: SP 1111

EXISTING HEC-1 HYDROLOGIC MODELS

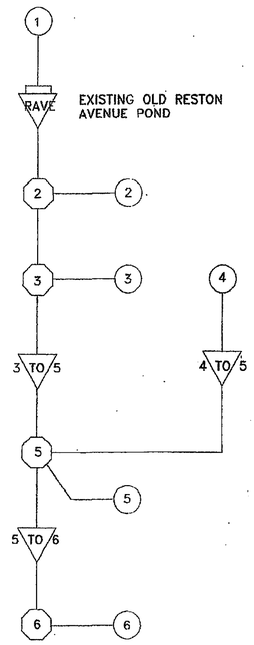
HEC-1 INPUT PAGE 1

```
LINE      ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

  1       ID   SALLIE MAE
  2       ID   EXISTING CONDITIONS LANDUSE
  3       ID   2, 10                              YEARFLOODS       FILE NAME: SMH1-EXN.DAT
  4       IT      5                    300
  5       IO      5
  6       JR    PREC    0.44    0.71    0.82    1.0     1.5     2.5

  7       KK      1
  8       KM   RUNOFF HYDROGRAPH FOR SUBBASIN 1
  9       BA    .084
 10       PB    7.3
          *  24 HOUR DURATION, TYPE II DISTRIBUTION RAINFALL
 11       IN      6
 12       PC     0.0  .00101  .00202  .00305  .00408  .00513  .00618  .00725  .00832  .00941
 13       PC  .01050  .01161  .01272  .01385  .01498  .01613  .01728  .01845  .01962  .02081
 14       PC    .022  .02321  .02442  .02565  .02688  .02813  .02938  .03065  .03192  .03321
 15       PC  .03450  .03581  .03712  .03845  .03978  .04113  .04248  .04385  .04522  .04661
 16       PC    .048  .04941  .05084  .05229  .05376  .05525  .05676  .05829  .05984  .06141
 17       PC    .063  .06461  .06624  .06789  .06956  .07125  .07296  .07469  .07644  .07821
 18       PC    .08   .08181  .08364  .08549  .08736  .08925  .09116  .09309  .09504  .09701
 19       PC    .099  .10101  .10304  .10509  .10716  .10925  .11136  .11349  .11564  .11781
 20       PC    .12   .12225  .12460  .12705  .12960  .13225   .135   .13785  .14080  .14385
 21       PC    .147  .1502   .15340  .1566   .1598   .163   .16628  .16972  .17332  .17708
 22       PC    .181  .18512  .18948  .19408  .19892   .204  .2094   .2152   .2214   .228
 23       PC    .235  .24268  .25132  .26092  .27148   .283  .30884  .35436  .43079  .56785
 24       PC    .663  .68196  .69864  .71304  .72516   .735  .74344  .75136  .75876  .76564
 25       PC    .772  .77796  .78384  .78904  .79416   .799  .8036   .808    .8122   .8162
 26       PC    .82   .82367  .82726  .83079  .83424  .83763  .84094  .84419  .84736  .85047
 27       PC  .85350  .85647  .85936  .86219  .86494  .86763  .87024  .87279  .87526  .87767
 28       PC    .88   .88229  .88455  .88679   .889   .89119  .89335  .89549  .8976   .89969
 29       PC  .90175  .90379  .9058   .90779  .90975  .91169  .9136   .91549  .91735  .91919
 30       PC    .921  .92279  .92455  .92629   .928   .92969  .93135  .93299  .9346   .93619
 31       PC  .93775  .93929  .9408   .94229  .94375  .94519  .9466   .94799  .94935  .95069
 32       PC    .952  .9533   .95459  .95588  .95716  .95844  .95971  .96098  .96224  .9635
 33       PC  .96475   .966   .96724  .96848  .96971  .97094  .97216  .97338  .97459  .9758
 34       PC    .977  .9782   .97939  .98058  .98176  .98294  .98411  .98528  .98644  .98760
 35       PC  .98875  .9899   .99104  .99218  .99331  .99444  .99556  .99668  .99779  .9989
 36       PC    1.0
 37       LS              71
 38       UD    .22

 39       KK   R AVE
 40       KM   ROUTE THROUGH EXISTING POND BEHIND OLD RESTON AVENUE
 41       RS      1     ELEV     385
 42       SA    .22    0.26    0.38    0.67    1.2
 43       SE    385     386     388     390     392
 44       SS    385     9.4       3     1.5
 45       ST    385       0       3     1.5
 46       SW      0       1     110     175     280
 47       SE    385     387     388     390     392

 48       KK      2
 49       KM   RUNOFF HYDROGRAPH FOR SUBBASIN 2
 50       BA    .016
 51       LS              69
 52       UD    .21

 53       KK      2
 54       KM   ADD HYDROGRAPHS
 55       HC      2

 56       KK      3
 57       KM   RUNOFF HYDROGRAPH FOR SUBBASIN 3
 58       BA    .070
 59       LS              81
 60       UD    .16

 61       KK      3
 62       KM   ADD HYDROGRAPHS
 63       HC      2

 64       KK   3 TO 5
 65       KM   ROUTE THROUGH NATURAL CHANNEL
 66       RM      1     .10     0.5

 67       KK      4
 68       KM   RUNOFF HYDROGRAPH FOR SUBBASIN 4
 69       BA   0.083
 70       LS              67
 71       UD    .25

 72       KK   4 TO 5
 73       KM   ROUTE THROUGH NATURAL CHANNEL
 74       RM      1     .05     .5

 75       KK      5
 76       KM   RUNOFF HYDROGRAPH FOR SUBBBASIN 5
 77       BA    .025
 78       LS              67
 79       UD   0.15

 80       KK      5
 81       KM   ADD HYDROGRAPHS (1+2+3)+4+5
 82       HC      3

 83       KK   5 TO 6
 84       KM   ROUTE THROUGH NATURAL CHANNEL
 85       RM      1     .04     .5

 86       KK      6
 87       KM   RUNOFF HYDROGRAPH FOR SUBBASIN 6
 88       BA   0.011
 89       LS              69
 90       UD   0.11

 91       KK      6
 92       KM   ADD HYDROGRAPHS AT DOWNSTREAM PROPERTY LINE (1+2+3+4+5)+6
 93       HC      2
 94       ZZ
```

PEAK FLOW AND STAGE (END-OF-PERIOD) SUMMARY FOR MULTIPLE PLAN-RATIO ECONOMIC COMPUTATIONS
FLOWS IN CUBIC FEET PER SECOND, AREA IN SQUARE MILES
TIME TO PEAK IN HOURS

OPERATION	STATION	AREA	PLAN		RATIOS APPLIED TO PRECIPITATION RATIO 1 .44	RATIO 2 .71	RATIO 3 .82	RATIO 4 1.00	RATIO 5 1.50	RATIO 6 2.50
					2-YR	10-YR				
HYDROGRAPH AT										
+	1	.08	1	FLOW	41.	116.	150.	209.	379.	725.
				TIME	12.17	12.08	12.08	12.08	12.08	12.08
ROUTED TO										
+	R AVE	.08	1	FLOW	38.	115.	148.	206.	375.	720.
				TIME	12.17	12.17	12.17	12.08	12.08	12.08
			** PEAK STAGES IN FEET **							
			1	STAGE	386.21	387.35	387.58	387.78	388.21	388.77
				TIME	12.17	12.17	12.17	12.08	12.08	12.08
HYDROGRAPH AT										
+	2	.02	1	FLOW	7.	21.	27.	39.	71.	139.
				TIME	12.08	12.08	12.08	12.08	12.08	12.08
2 COMBINED AT										
+	2	.10	1	FLOW	45.	135.	174.	245.	446.	859.
				TIME	12.17	12.17	12.17	12.08	12.08	12.08
HYDROGRAPH AT										
+	3	.07	1	FLOW	73.	154.	188.	244.	400.	713.
				TIME	12.08	12.08	12.08	12.08	12.08	12.00
2 COMBINED AT										
+	3	.17	1	FLOW	110.	275.	358.	489.	846.	1566.
				TIME	12.08	12.08	12.08	12.08	12.08	12.08
ROUTED TO										
+	3 TO 5	.17	1	FLOW	109.	273.	356.	488.	847.	1571.
				TIME	12.17	12.17	12.17	12.17	12.17	12.17
HYDROGRAPH AT										
+	4	.08	1	FLOW	21.	69.	91.	130.	244.	482.
				TIME	12.17	12.17	12.17	12.17	12.17	12.08
ROUTED TO										
+	4 TO 5	.08	1	FLOW	21.	69.	91.	131.	246.	493.
				TIME	12.25	12.17	12.17	12.17	12.17	12.17
HYDROGRAPH AT										
+	5	.03	1	FLOW	11.	34.	45.	63.	118.	234.
				TIME	12.08	12.08	12.08	12.08	12.00	12.00
3 COMBINED AT										
+	5	.26	1	FLOW	138.	367.	480.	685.	1181.	2228.
				TIME	12.17	12.17	12.17	12.17	12.17	12.17
ROUTED TO										
+	5 TO 6	.26	1	FLOW	139.	364.	475.	649.	1157.	2202.
				TIME	12.25	12.25	12.25	12.25	12.17	12.17
HYDROGRAPH AT										
+	6	.01	1	FLOW	6.	18.	24.	33.	61.	118.
				TIME	12.00	12.00	12.00	12.00	12.00	12.00
2 COMBINED AT										
+	6	.27	1	FLOW	141.	370.	482.	659.	1186.	2257.
				TIME	12.25	12.25	12.25	12.25	12.17	12.17

HEC-1 SHEMATIC



LEGEND

- (2) SUBBASIN HYDROGRAPH
- 3 TO 5 CHANNEL ROUTING
- (2) COMBINED POINT
- RAVE POND ROUTING

Application No PCA 78-C-098-03 Staff S.Williams
APPROVED DEVELOPMENT PLAN
(DP) (GDP (CDP) (FDP))
SEE PROFFERS DATED 12-18-2008
Date of (BOS) (PC) Approved 1-12-2009
Sheet 16 OF 20
Concurrent w/FDPA 78-C-098-04
Date of PC Approval: 1-8-2009

FOR INFORMATION PURPOSES ONLY!

COMMONWEALTH OF VIRGINIA
MATTHEW K. KOBYTORIANN
No. 039021
PROFESSIONAL ENGINEER
12/04/08

SHEET 16 OF 20
ZP-1612

Dewberry & Davis
Architects Engineers Planners Surveyors
8401 Arlington Blvd., Fairfax, VA 22031
☎ 703 849-0100

HYDROLOGIC CALCULATIONS

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

ENGINEER'S SEAL & SIGNATURE

Virginia Consolidation Project
HUNTER MILL DISTRICT, FAIRFAX COUNTY, VIRGINIA

Drawn by: L. E. MORILLO
Designed by: G. A. SORENSEN
Checked by:
Date: NOVEMBER, 1993
Scale: ----------
Plan number: 8766-SP-01
Zoned: PDC
Sheet 9 OF 17
Tax Map 30 ((1)) 7.5
File number: SP-1744

REVISION STAMP

EXISTING HEC-1 HYDROLOGIC MODELS

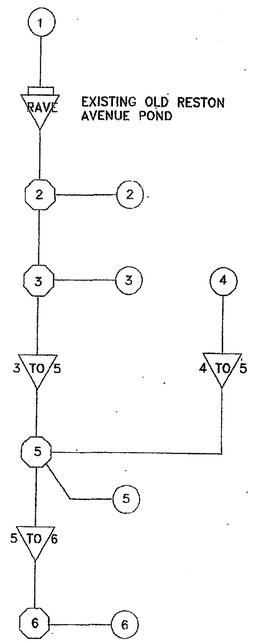
HEC-1 INPUT

```
LINE      ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

  1       ID   SALLIE MAE
  2       ID   EXISTING CONDITIONS LANDUSE
  3       ID   2, 10                          YEARFLOODS      FILE NAME: SMH1-EXN.DAT
  4       IT      5                   300
  5       IO      5
  6       JR    PREC    0.44    0.71    0.82     1.0     1.5     2.5

  7       KK       1
  8       KM   RUNOFF HYDROGRAPH FOR SUBBASIN 1
  9       BA    .084
 10       PB    7.3
          *  24 HOUR DURATION, TYPE II DISTRIBUTION RAINFALL
 11       IN      6
 12       PC     0.0  .00101  .00202  .00305  .00408  .00513  .00618  .00725  .00832  .00941
 13       PC  .01050  .01161  .01272  .01385  .01498  .01613  .01728  .01845  .01962  .02081
 14       PC    .022  .02321  .02442  .02565  .02688  .02813  .02938  .03065  .03192  .03321
 15       PC  .03450  .03581  .03712  .03845  .03978  .04113  .04248  .04385  .04522  .04661
 16       PC    .048  .04941  .05084  .05229  .05376  .05525  .05676  .05829  .05984  .06141
 17       PC    .063  .06461  .06624  .06788  .06956  .07125  .07296  .07469  .07644  .07821
 18       PC     .08  .08181  .08364  .08549  .08736  .08925  .09116  .09309  .09504  .09701
 19       PC    .099  .10101  .10304  .10509  .10716  .10925  .11136  .11349  .11564  .11781
 20       PC     .12  .12225  .12460  .12705  .12960  .13225    .135  .13785  .14080  .14385
 21       PC    .147   .1502  .15340   .1566   .1598    .163  .16628  .16972  .17332  .17708
 22       PC    .181  .18512  .18948  .19408  .19892    .204   .2094   .2152   .2214    .228
 23       PC    .235  .24268  .25132  .26092  .27148    .283  .30684  .35436  .43079  .56786
 24       PC    .663  .68196  .69864  .71304  .72516    .735  .74344  .75136  .75876  .76584
 25       PC    .772  .77798  .78364  .78904  .79416    .799   .8036   .808   .8122   .8162
 26       PC     .82  .82387  .82726  .83079  .83424  .83763  .84094  .84419  .84736  .85047
 27       PC  .85350  .85647  .85936  .86219  .86494  .86763  .87024  .87279  .87526  .87767
 28       PC     .88  .88229  .88455  .88679    .889  .89119  .89335  .89549   .8976  .89969
 29       PC  .90175  .90379   .9058  .90779  .90975  .91169   .9136  .91549  .91735  .91919
 30       PC    .921  .92279  .92455  .92629    .928  .92969  .93135  .93299  .9346   .93619
 31       PC  .93775  .93929   .9408  .94229  .94375  .94519   .9466  .94799  .94935  .95069
 32       PC    .952   .9533  .95459  .95588  .95716  .95844  .95971  .96098  .96224   .9635
 33       PC  .96475   .966  .96724  .96848  .96971  .97094  .97216  .97338  .97459   .9758
 34       PC    .977  .9782  .97939  .98058  .98176  .98294  .98411  .98528  .98644  .98760
 35       PC  .98875  .9899  .99104  .99218  .99331  .99444  .99556  .99668  .99779   .9989
 36       PC    1.0
 37       LS       71
 38       UD    .22

 39       KK   R AVE
 40       KM   ROUTE THROUGH EXISTING POND BEHIND OLD RESTON AVENUE
 41       RS      1    ELEV    385
 42       SA    .22    0.26    0.38    0.67    1.2
 43       SE    385     386     388     390     392
 44       SS    385     9.4       3     1.5
 45       ST    385       0       3     1.5
 46       SW      0       1     110     175     280
 47       SE    385     387     388     390     392

 48       KK       2
 49       KM   RUNOFF HYDROGRAPH FOR SUBBASIN 2
 50       BA    .016
 51       LS              69
 52       UD    .21

 53       KK       2
 54       KM   ADD HYDROGRAPHS
 55       HC       2

 56       KK       3
 57       KM   RUNOFF HYDROGRAPH FOR SUBBASIN 3
 58       BA    .070
 59       LS              81
 60       UD    .16

 61       KK       3
 62       KM   ADD HYDROGRAPHS
 63       HC       2

 64       KK  3 TO 5
 65       KM   ROUTE THROUGH NATURAL CHANNEL
 66       RM       1     .10     0.5

 67       KK       4
 68       KM   RUNOFF HYDROGRAPH FOR SUBBASIN 4
 69       BA   0.063
 70       LS              67
 71       UD    .25

 72       KK  4 TO 5
 73       KM   ROUTE THROUGH NATURAL CHANNEL
 74       RM       1     .05      .5

 75       KK       5
 76       KM   RUNOFF HYDROGRAPH FOR SUBBBASIN 5
 77       BA    .025
 78       LS              67
 79       UD   0.15

 80       KK       5
 81       KM   ADD HYDROGRAPHS (1+2+3)+4+5
 82       HC       3

 83       KK  5 TO 6
 84       KM   ROUTE THROUGH NATURAL CHANNEL
 85       RM       1     .04      .5

 86       KK       6
 87       KM   RUNOFF HYDROGRAPH FOR SUBBASIN 6
 88       BA   0.011
 89       LS              69
 90       UD   0.11

 91       KK       6
 92       KM   ADD HYDROGRAPHS AT DOWNSTREAM PROPERTY LINE (1+2+3+4+5)+6
 93       HC       2
 94       ZZ
```

PEAK FLOW AND STAGE (END-OF-PERIOD) SUMMARY FOR MULTIPLE PLAN-RATIO ECONOMIC COMPUTATIONS
FLOWS IN CUBIC FEET PER SECOND, AREA IN SQUARE MILES
TIME TO PEAK IN HOURS

OPERATION	STATION	AREA	PLAN		RATIOS APPLIED TO PRECIPITATION RATIO 1	RATIO 2	RATIO 3	RATIO 4	RATIO 5	RATIO 6
					.44	.71	.82	1.00	1.50	2.50
					2-YR	10-YR				
HYDROGRAPH AT										
+	1	.08	1	FLOW	41.	116.	150.	209.	379.	725.
				TIME	12.17	12.08	12.08	12.08	12.08	12.08
ROUTED TO										
+	R AVE	.08	1	FLOW	38.	115.	148.	206.	375.	720.
				TIME	12.17	12.17	12.17	12.08	12.08	12.08
			** PEAK STAGES IN FEET **							
			1	STAGE	386.21	387.35	387.56	387.78	388.21	388.77
				TIME	12.17	12.17	12.17	12.08	12.08	12.08
HYDROGRAPH AT										
+	2	.02	1	FLOW	7.	21.	27.	39.	71.	139.
				TIME	12.08	12.08	12.08	12.08	12.08	12.08
2 COMBINED AT										
+	2	.10	1	FLOW	45.	135.	174.	245.	445.	859.
				TIME	12.17	12.17	12.17	12.08	12.08	12.08
HYDROGRAPH AT										
+	3	.07	1	FLOW	73.	154.	188.	244.	400.	713.
				TIME	12.08	12.08	12.08	12.08	12.08	12.00
2 COMBINED AT										
+	3	.17	1	FLOW	110.	275.	358.	489.	846.	1566.
				TIME	12.08	12.08	12.08	12.08	12.08	12.08
ROUTED TO										
+	3 TO 5	.17	1	FLOW	109.	273.	356.	488.	847.	1571.
				TIME	12.17	12.17	12.17	12.17	12.17	12.17
HYDROGRAPH AT										
+	4	.08	1	FLOW	21.	69.	91.	130.	244.	482.
				TIME	12.17	12.17	12.17	12.17	12.17	12.08
ROUTED TO										
+	4 TO 5	.08	1	FLOW	21.	69.	91.	131.	248.	493.
				TIME	12.25	12.17	12.17	12.17	12.17	12.17
HYDROGRAPH AT										
+	5	.03	1	FLOW	11.	34.	45.	63.	118.	234.
				TIME	12.08	12.08	12.08	12.08	12.00	12.00
3 COMBINED AT										
+	5	.26	1	FLOW	138.	367.	480.	665.	1181.	2228.
				TIME	12.17	12.17	12.17	12.17	12.17	12.17
ROUTED TO										
+	5 TO 6	.26	1	FLOW	139.	384.	479.	649.	1157.	2202.
				TIME	12.25	12.25	12.25	12.25	12.17	12.17
HYDROGRAPH AT										
+	6	.01	1	FLOW	6.	18.	24.	33.	61.	118.
				TIME	12.00	12.00	12.00	12.00	12.00	12.00
2 COMBINED AT										
+	6	.27	1	FLOW	141.	370.	482.	659.	1186.	2257.
				TIME	12.25	12.25	12.25	12.25	12.17	12.17

HEC-1 SHEMATIC



LEGEND

- (2) SUBBASIN HYDROGRAPH
- 3 TO 5 CHANNEL ROUTING
- (2) COMBINED POINT
- RAVE POND ROUTING

COMMONWEALTH OF VIRGINIA
MATTHEW K. KOERTHOHANN
No. 039021
11/24/08
PROFESSIONAL ENGINEER

FOR INFORMATION PURPOSES ONLY!

SHEET 16 OF 20
ZP-1612

Dewberry & Davis
Architects Engineers Planners Surveyors
8401 Arlington Blvd., Fairfax, VA 22031
☎ 703 849-0100

HYDROLOGIC CALCULATIONS

Sallie Mae
Virginia Consolidation Project
HUNTERSVILLE DISTRICT, FAIRFAX COUNTY, VIRGINIA

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

ENGINEER'S SEAL & SIGNATURES

REVISION STAMP

Drawn by: L. E. MORILLO
Designed by: G. A. SORENSEN
Checked by:
Date: NOVEMBER, 1993
Scale:
Plan number: 8766-SP-01
Zoned: PDC
Sheet: 9 OF 17
Total Sheets: 38 of 75
File number: SP 1744

PROPOSED HEC-1 HYDROLOGIC MODEL

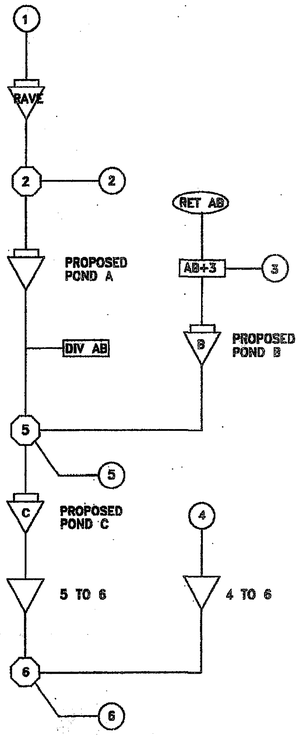
HEC-1 INPUT

```
LINE      ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

    1     ID  SALLIE MAE
    2     ID  PROPOSED CONDITIONS LANDUSE WITH PROPOSED PONDS
    3     ID  2 AND 10-YEARFLOODS                                  FILE NAME: SMH1-PRO.DAT
    4     IT     5                    300
    5     IO     5
    6     JR   PREC    0.44    0.71

    7     KK     1
    8     KM  RUNOFF HYDROGRAPH FOR SUBBASIN 1
    9     BA   .084
   10     PB   7.3
          *  24 HOUR DURATION, TYPE II DISTRIBUTION RAINFALL
   11     IN     6
   12     PC   0.0  .00101  .00202  .00305  .00408  .00513  .00618  .00725  .00832  .00941
   13     PC .01050  .01161  .01272  .01385  .01498  .01613  .01728  .01845  .01962  .02081
   14     PC  .022  .02321  .02442  .02565  .02688  .02813  .02938  .03065  .03192  .03321
   15     PC .03450  .03581  .03712  .03845  .03978  .04113  .04248  .04385  .04522  .04661
   16     PC  .048  .04941  .05084  .05229  .05376  .05525  .05676  .05829  .05984  .06141
   17     PC  .063  .06481  .06624  .06789  .06956  .07125  .07296  .07469  .07644  .07821
   18     PC  .08  .08181  .08364  .08549  .08736  .08925  .09116  .09309  .09504  .09701
   19     PC  .099  .10101  .10304  .10509  .10716  .10925  .11136  .11349  .11564  .11781
   20     PC  .12  .12225  .12460  .12705  .12960  .13225  .135  .13785  .14080  .14385
   21     PC  .147  .1502  .15340  .1566  .1598  .163  .16628  .16972  .17332  .17708
   22     PC  .181  .18512  .18948  .19408  .19892  .204  .2094  .2152  .2214  .228
   23     PC  .235  .24208  .25132  .26092  .27148  .283  .30684  .35436  .43079  .56788
   24     PC  .663  .68198  .69884  .71304  .72516  .735  .74344  .75136  .75876  .76564
   25     PC  .772  .77796  .78364  .78904  .79416  .799  .8036  .808  .8122  .8162
   26     PC  .82  .82367  .82726  .83079  .83424  .83763  .84094  .84419  .84736  .85047
   27     PC .85350  .85647  .85938  .86219  .86494  .86763  .87024  .87279  .87528  .87767
   28     PC  .88  .88229  .88455  .88679  .889  .89119  .89335  .89549  .8976  .89969
   29     PC .90175  .90379  .9058  .90779  .90975  .91169  .9136  .91549  .91735  .91919
   30     PC  .921  .92279  .92455  .92629  .928  .92969  .93135  .93299  .9346  .93819
   31     PC .93775  .93929  .9408  .94229  .94375  .94519  .9466  .94799  .94935  .95069
   32     PC  .952  .9533  .95459  .95588  .95716  .95844  .95971  .96098  .96224  .9635
   33     PC .96475  .966  .96724  .96848  .96971  .97094  .97216  .97338  .97459  .9758
   34     PC  .977  .9782  .97939  .98058  .98176  .98294  .98411  .98528  .98644  .98760
   35     PC .98875  .9899  .99104  .99218  .99331  .99444  .99556  .99668  .99779  .9989
   36     PC   1.0
   37     LS              71
   38     UD    .22

   39     KK   R AVE
   40     KM   ROUTE THROUGH PROPOSED POND BEHIND OLD RESTON AVENUE
   41     RS      1     ELEV     385
   42     SA    .22     0.26     0.38     0.67     1.2
   43     SE    385      386      388      390      392
   44     SS    385       23        3      1.5
   45     ST    387       13        3      1.5
   46     SW      0      290      520
   47     SE  389.17      390      392

   48     KK      2
   49     KM   RUNOFF HYDROGRAPH FOR SUBBASIN 2
   50     BA   .015
   51     LS              73
   52     UD    .21

   53     KK      2
   54     KM   ADD HYDROGRAPHS AT PROPOSED POND A
   55     HC      2

   56     KK  POND A
   57     KM   ROUTE THROUGH PROPOSED POND A
   58     RS      1     ELEV     377
   59     SA  0.058    0.222    0.452    0.743    1.168    1.327    1.477    1.684    1.944    2.070
   60     SA  2.200
   61     SE    368      370      372      374      376      377      378      380      382      383
   62     SE    384
   63     SL 377.25        1      0.6      0.5
   64     SS  378.5       50      3.0      1.5
   65     ST

   66     KK  DIV AB
   67     KM   DIVERT FLOW THAT PASSES THROUGH POND A WATER FEATURE INTO POND B
   68     DT   DIVAB
   69     DI      0      2.4      4.2      5.4     59.4    157.2    283.6    432.9    602.3    789.3
   70     DI  978.5    996.1   1013.6
   71     DQ      0      2.4      4.2      5.4      6.4      7.2      8.0      8.7      9.3      9.9
   72     DQ   10.5     11.0     11.6

   73     KK  RET AB
   74     KM   RETREIVE DIVERTED FLOW TO BE ADDED INTO POND B
   75     DR   DIVAB

   76     KK      3
   77     KM   RUNOFF HYDROGRAPH FOR SUBBASIN 3
   78     BA   .074
   79     LS              82
   80     UD    .16

   81     KK    AB+3
   82     KM   ADD DIVERTED HYDROGRAPH TO SUBBASIN 3 HYDROGRAPH
   83     HC      2

   84     KK  POND B
   85     KM   ROUTE THROUGH PROPOSED POND B
   86     RS      1     ELEV     372
   87     SA      0    0.103    0.129    0.181    0.344    0.433    0.533    0.688    0.778    0.979
   88     SA  1.104    1.212
   89     SE  358.6      360      362      364      366      368      370      372      374      376
   90     SE    377      378
   91     SL 372.25        1      0.6      0.5
   92     SS  373.5       50      3.0      1.5
   93     ST

   94     KK      5
   95     KM   RUNOFF HYDROGRAPH FOR SUBBASIN 5
   96     BA   .022
   97     LS              91
   98     UD    0.09

   99     KK      5
  100     KM   ADD HYDROGRAPHS AT PROPOSED POND C (POND A OUTFLOW + POND B OUTFLOW + 5)
  101     HC      3

  102     KK  POND C
  103     KM   ROUTE THROUGH PROPOSED POND C
  104     RS      1     ELEV     359
  105     SA  0.310    0.441    0.861    0.989    1.238    1.360    1.631    2.122    2.438    2.900
  106     SE    353      354      356      358      359      360      362      364      365      366
  107     SS    359       14        3      1.5
  108     ST  361.5       66        3      1.5

  109     KK  5 TO 6
  110     KM   ROUTE THROUGH CHANNEL AND CULVERT
  111     RM      1     .04      .5

  112     KK      4
  113     KM   RUNOFF HYDROGRAPH FOR SUBBASIN 4
  114     BA   0.063
  115     LS              68
  116     UD    .25

  117     KK  4 TO 6
  118     KM   ROUTE THROUGH STORM SEWER
  119     RM      1     .02      .5

  120     KK      6
  121     KM   RUNOFF HYDROGRAPH FOR SUBBASIN 6
  122     BA   0.011
  123     LS              90
  124     UD    0.09

  125     KK      6
  126     KM   ADD HYDROGRAPHS AT DOWNSTREAM PROPERTY LINE  (PDA+PDB+5)+4+6
  127     HC      3
  128     ZZ
```

PEAK FLOW AND STAGE (END-OF-PERIOD) SUMMARY FOR MULTIPLE PLAN-RATIO ECONOMIC COMPUTATIONS
FLOWS IN CUBIC FEET PER SECOND, AREA IN SQUARE MILES
TIME TO PEAK IN HOURS

OPERATION	STATION	AREA	PLAN		RATIOS APPLIED TO PRECIPITATION RATIO 1 .44	RATIO 2 .71
					2-YR	10-YR
HYDROGRAPH AT						
+	1	.08	1	FLOW	41.	116.
				TIME	12.17	12.08
ROUTED TO						
+	R AVE	.08	1	FLOW	41.	115.
				TIME	12.17	12.17
				** PEAK STAGES IN FEET **		
			1	STAGE	385.71	386.40
				TIME	12.17	12.17
HYDROGRAPH AT						
+	2	.01	1	FLOW	9.	23.
				TIME	12.08	12.08
2 COMBINED AT						
+	2	.10	1	FLOW	50.	138.
				TIME	12.17	12.17
ROUTED TO						
+	POND A	.10	1	FLOW	5.	98.
				TIME	13.75	12.33
				** PEAK STAGES IN FEET **		
			1	STAGE	378.48	379.22
				TIME	13.75	12.33
DIVERSION TO						
+	DIVAB	.10	1	FLOW	5.	7.
				TIME	13.75	12.33
HYDROGRAPH AT						
+	DIV AB	.10	1	FLOW	0.	91.
				TIME	.08	12.33
HYDROGRAPH AT						
+	RET AB	.00	1	FLOW	5.	7.
				TIME	13.75	12.33
HYDROGRAPH AT						
+	3	.07	1	FLOW	81.	167.
				TIME	12.08	12.08
2 COMBINED AT						
+	AB+3	.07	1	FLOW	83.	173.
				TIME	12.08	12.08
ROUTED TO						
+	POND B	.07	1	FLOW	72.	169.
				TIME	12.17	12.08
				** PEAK STAGES IN FEET **		
			1	STAGE	374.07	374.55
				TIME	12.17	12.08
HYDROGRAPH AT						
+	5	.02	1	FLOW	41.	72.
				TIME	12.00	12.00
3 COMBINED AT						
+	5	.19	1	FLOW	88.	229.
				TIME	12.08	12.17
ROUTED TO						
+	POND C	.19	1	FLOW	57.	199.
				TIME	12.33	12.33
				** PEAK STAGES IN FEET **		
			1	STAGE	360.22	361.68
				TIME	12.33	12.33
ROUTED TO						
+	5 TO 6	.19	1	FLOW	57.	203.
				TIME	12.33	12.33
HYDROGRAPH AT						
+	4	.08	1	FLOW	23.	72.
				TIME	12.17	12.17
ROUTED TO						
+	4 TO 6	.08	1	FLOW	23.	73.
				TIME	12.17	12.17
HYDROGRAPH AT						
+	6	.01	1	FLOW	20.	35.
				TIME	12.00	12.00
3 COMBINED AT						
+	6	.27	1	FLOW	80.	262.
				TIME	12.25	12.33

HEC-1 SCHEMATIC



LEGEND

- (1) SUBBASIN HYDROGRAPH
- 3 TO 5 — CHANNEL ROUTING
- (2) COMBINED POINT
- RAVE — POND ROUTING
- DIV AB — DIVERTED FLOW
- RET AB — RETRIEVED FLOW

Application No PCA 78-C-098-03 Staff S.Williams
APPROVED DEVELOPMENT PLAN
(DP) (GDP (CDP) (FDP)
SEE PROFFERS DATED 12-18-2008
Date of (BOS)(PC) Approved 1-12-2009
Sheet 17 OF 20
Concurrent w/FDPA 78-C-098-04
Date of PC Approval: 1-8-2009

COMMONWEALTH OF VIRGINIA
MATTHEW K KOERTVOHANN
No. 039021
PROFESSIONAL ENGINEER
12/24/08

FOR INFORMATION PURPOSES ONLY!

SHEET 17 OF 20
ZP-1612

Dewberry & Davis
Architects Engineers Planners Surveyors
8401 Arlington Blvd., Fairfax, VA 22031
☎ 703 849-0100

HYDROLOGIC CALCULATIONS

NO.	DESCRIPTION	REV. BY	APPROVED	DATE
	REVISION APPROVED BY: DIVISION OF DESIGN REVIEW			

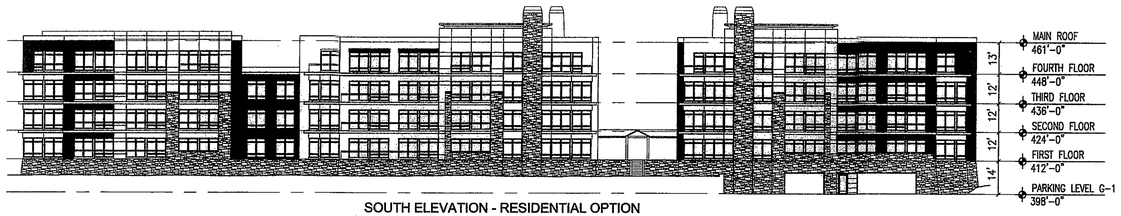
DESIGNER
ENGINEER
DATE

ENGINEER'S SEAL & SIGNATURES

REVISION STAMP

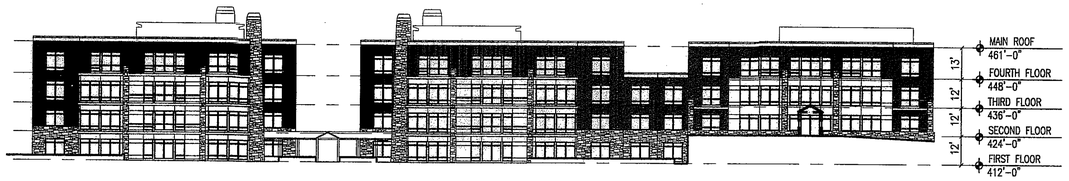
Sallie Mae
Virginia Consolidation Project
HUNTER MILL DISTRICT, FAIRFAX COUNTY, VIRGINIA

Drawn by: L.E. MORILLO
Designed by: G.A. SORENSEN
Checked by: GLC
Date: NOV.1,1993
Scale: ----------
Plan number: 8766-SP-01
Zoned: PDC
Sheet: P10 OF 17
33 of 75
File number: SP 1744



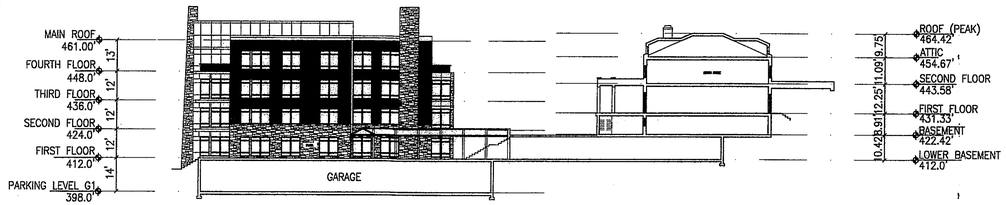
SOUTH ELEVATION - RESIDENTIAL OPTION

Exterior finishes to be a combination of slate, stone and brick.



NORTH ELEVATION - RESIDENTIAL OPTION

Exterior finishes to be a combination of slate, stone and brick.



EAST ELEVATION - RESIDENTIAL OPTION

Exterior finishes to be a combination of slate, stone and brick.

Application No PCA 78-C-098-03 Staff S.Williams

APPROVED DEVELOPMENT PLAN

(DP) (GDP (CDP) (FDP)

SEE PROFFERS DATED 12-18-2008

Date of (BOS) (PC) Approved 1-12-2009

Sheet 18 OF 20

Concurrent w/FDPA 78-C-098-04

Date of PC Approval: 1-8-2009

No.	DATE	DESCRIPTION	REV.BY	APPROVED	DATE

REVISION APPROVED BY DIVISION OF DESIGN REVIEW

PLAN DATE
09-28-05
11-30-05
01-12-06
02-08-06
07-11-08
09-19-08
10-16-08
12-04-08

URBAN ENGINEERING & ASSOC.,INC.

CIVIL ENGINEERS • LANDSCAPE ARCHITECTS • LAND SURVEYORS
7712 LITTLE RIVER TURNPIKE
ANNANDALE, VIRGINIA 22003 (703) 642-8080

COMMONWEALTH OF VIRGINIA
MATTHEW K. KOURTOUMANN
No. 039021
PROFESSIONAL ENGINEER

SECTION PLANS - RESIDENTIAL OPTION

BOXWOODS
HUNTER MILL MAGISTERIAL DISTRICT
FAIRFAX COUNTY, VIRGINIA

SCALE: 1"=30' C.I. = N/A DATE: SEPT., 2005

SHEET
18
OF
20

FILE No.
ZP-1612

Office Building
West Wing Elevations

Boxwoods
1856 Old Reston Avenue
Reston Virginia 20190

Gregor LLC
1856 Old Reston Avenue
Reston, Virginia 20190

Office Building
East Wing Elevations

Boxwoods
1856 Old Reston Avenue
Reston Virginia 20190

Gregor LLC
1856 Old Reston Avenue
Reston, Virginia 20190

EXISTING OFFICE BUILDING ELEVATIONS – OFFICE OPTION

Application No PCA 78-C-098-03 Staff S.Williams
APPROVED DEVELOPMENT PLAN
(DP) (GDP (CDP) (FDP)
SEE PROFFERS DATED 12-18-2008
Date of (BOS) (PC) Approved 1-12-2009
Sheet 19 OF 20
Concurrent w/FDPA 78-C-098-04
Date of PC Approval: 1-8-2009

No.	DATE	DESCRIPTION	REV.BY	APPROVED	DATE

REVISION APPROVED BY DIVISION OF DESIGN REVIEW

PLAN DATE
09-28-05
11-30-05
01-12-06
02-08-06
07-11-08
09-19-08
10-16-08
12-04-08

URBAN ENGINEERING & ASSOC.,INC.
CIVIL ENGINEERS • LANDSCAPE ARCHITECTS • LAND SURVEYORS
7712 LITTLE RIVER TURNPIKE
ANNANDALE, VIRGINIA 22003 (703) 642-8080

COMMONWEALTH OF VIRGINIA
MATTHEW K. KORTZTOHANN
No. 039621
12/04/08
PROFESSIONAL ENGINEER

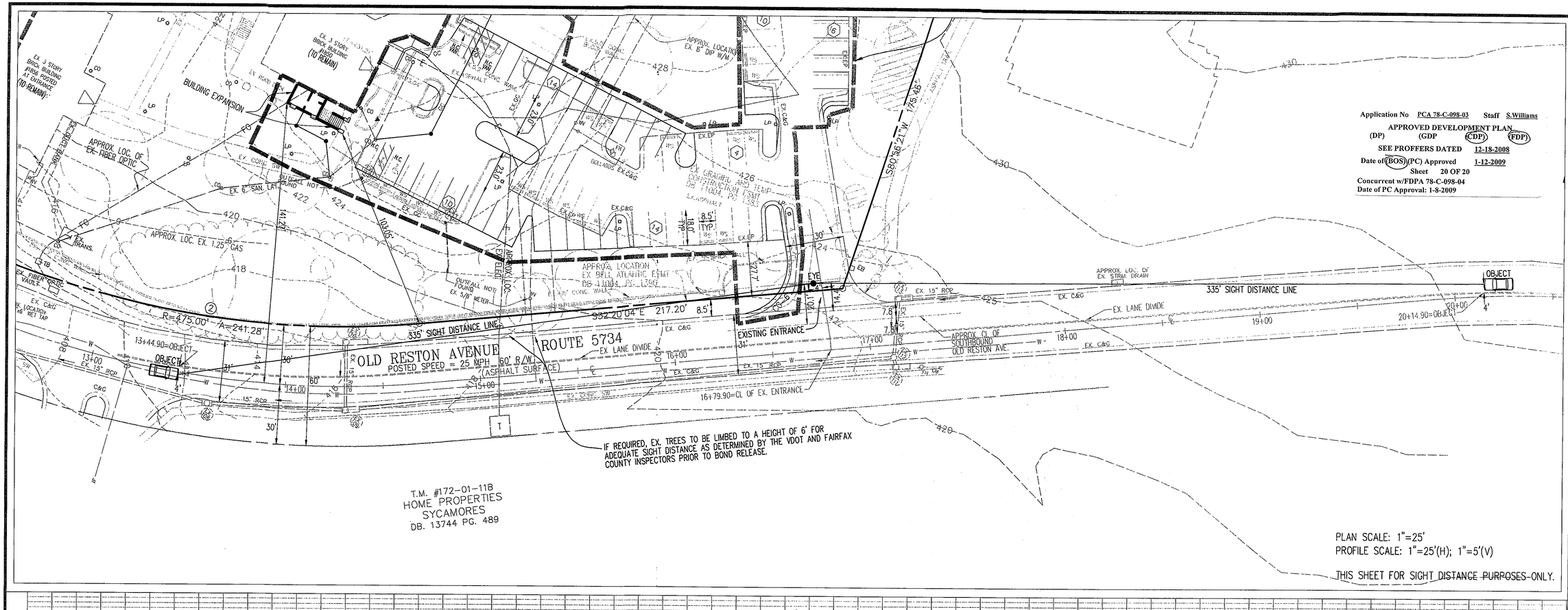
SECTION PLANS - OFFICE OPTION

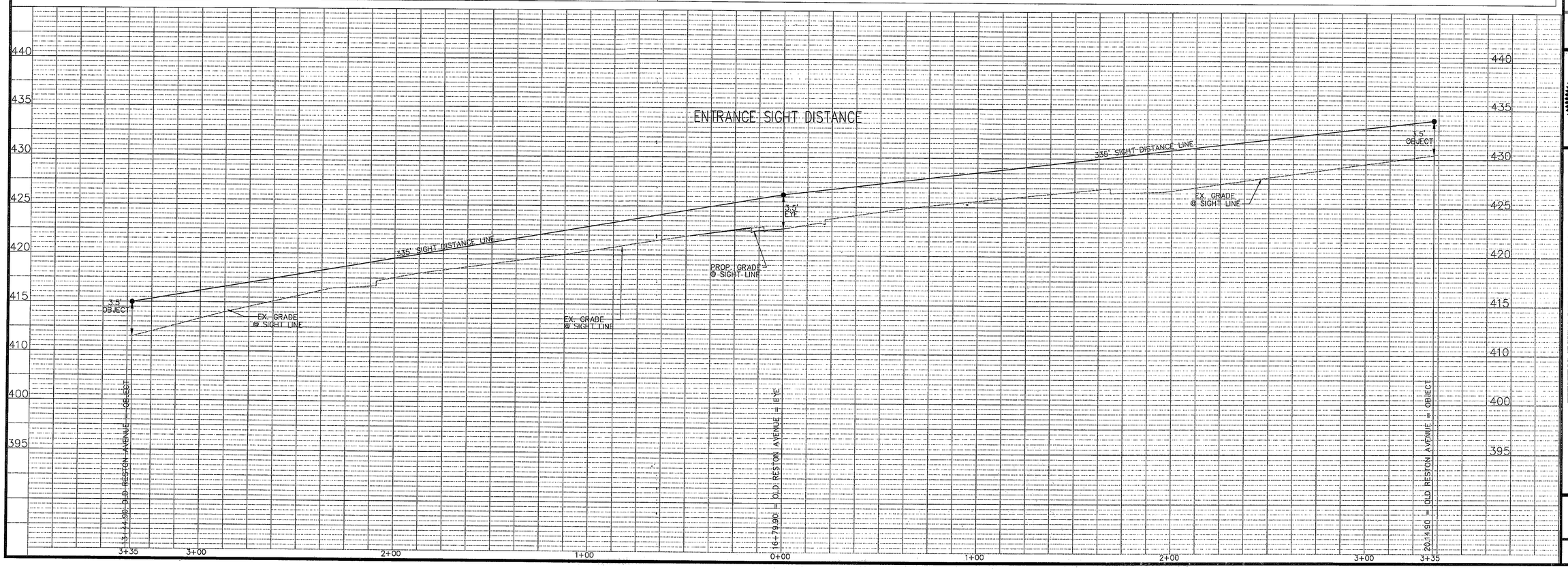
BOXWOODS
HUNTER MILL MAGISTERIAL DISTRICT
FAIRFAX COUNTY, VIRGINIA

SCALE: 1"=30' C.I. = N/A DATE: SEPT., 2005

SHEET
19
OF
20

FILE No.
ZP-1612





No.	DATE	DESCRIPTION	REV.BY	APPROVED	DATE

REVISION APPROVED BY DIVISION OF DESIGN REVIEW

PLAN DATE
09-28-05
10-18-05
11-30-05
01-12-06
02-08-06
07-11-08
09-19-08
10-16-08
12-04-08

URBAN ENGINEERING & ASSOC.,INC.
CIVIL ENGINEERS • LANDSCAPE ARCHITECTS • LAND SURVEYORS
7712 LITTLE RIVER TURNPIKE
ANNANDALE, VIRGINIA 22003 (703) 642-8080

COMMONWEALTH OF VIRGINIA
MATTHEW K. KORTHOHANN
No. 038021
12/04/08
PROFESSIONAL ENGINEER

EXISTING SIGHT DISTANCE PROFILE

BOXWOODS
HUNTER MILL MAGISTERIAL DISTRICT
FAIRFAX COUNTY, VIRGINIA

SCALE: 1"=30'
C.I. = 2'
DATE: SEPT., 2005

SHEET
20
OF
20

FILE No.
ZP-1612

CONCEPTUAL DEVELOPMENT PLAN AMENDMENT (CDPA) AND FINAL DEVELOPMENT PLAN AMENDMENT (FDPA) FOR PCA 78-C-098-03

BOXWOODS

HUNTER MILL MAGISTERIAL DISTRICT
FAIRFAX COUNTY, VIRGINIA

GENERAL NOTES

1. THE PROPERTY IS IDENTIFIED ON FAIRFAX COUNTY TAX ASSESSMENT MAP: 17-4 ((1))-01.
2. THE ABOVE REFERENCED PROPERTY IS CURRENTLY ZONED PDC PER CDPA#78-C-098.
3. THE BOUNDARY INFORMATION SHOWN HEREON IS BASED ON ALTA/ACSM LAND TITLE SURVEY, PREPARED BY BURGESS & NIPLE, DATED SEPTEMBER 2002.
4. THE TOPOGRAPHY SHOWN HEREON IS AT A TWO-FOOT CONTOUR INTERVAL, COMPILED BY UEA. ALL TOPOGRAPHY WAS OBTAINED VIA AIR SURVEY.
5. THE PROPERTY SHOWN ON THIS CDPA & FDPA PLAN IS LOCATED IN THE HUNTER MILL DISTRICT.
6. THIS PROPOSED DEVELOPMENT IS IN CONFORMANCE WITH THE COMPREHENSIVE PLAN AND ALL APPLICABLE ORDINANCES, REGULATIONS AND ADOPTED CONDITIONS EXCEPT FOR:
   A: A WAIVER UNDER PAR. 5 OF SECTION 6-206 OF THE ZONING ORDINANCE IS HEREBY REQUESTED. TO ALLOW GROSS FLOOR AREA FOR DWELLINGS AS A SECONDARY USE TO EXCEED 50% OF THE GROSS FLOOR AREA OF THE PRINCIPAL USE, AND
   B: A WAIVER UNDER PAR. 8 OF SECTION 16401 OF THE ZONING ORDINANCE IS HEREBY REQUESTED TO ALLOW FOR WALLS GREATER THAN 4' IN HEIGHT IN THE FRONT YARD.
7. THIS SITE IS SERVED BY PUBLIC SEWER AND WATER.
8. STORM WATER MANAGEMENT (SWM) AND BEST MANAGEMENT PRACTICES (BMP) ARE PROVIDED BY ONSITE AND OR OFFSITE SWM/BMP FACILITIES. SEE STORMWATER MANAGEMENT NARRATIVE AND OUTFALL NARRATIVE THIS SHEET.
9. UTILITY LOCATIONS SHOWN ARE APPROXIMATE. THERE ARE NO KNOWN EXISTING UTILITY EASEMENTS OF 25' OR MORE IN WIDTH ON THE SITE.
10. INDIVIDUAL UTILITY PLANS AND PROFILES WILL BE SUBMITTED DURING THE SITE PLAN STAGE FOR CONSTRUCTION PURPOSES.
11. THERE ARE NO KNOWN HAZARDOUS OR TOXIC SUBSTANCES ON THIS SITE. IF ANY SUBSTANCES ARE FOUND, THE METHODS FOR DISPOSAL SHALL ADHERE TO COUNTY, STATE, OR FEDERAL LAW.
12. NO HAZARDOUS OR TOXIC SUBSTANCES, HAZARDOUS WASTES OR PETROLEUM PRODUCTS ARE TO BE GENERATED, UTILIZED, STORED, TREATED AND/OR DISPOSED OF ON THIS SITE. EXCEPT FOR STORAGE OF DEISEL FUEL FOR GENERATORS AND GASOLINE FOR LAWN MAINTENANCE EQUIPMENT. THERE ARE NO EXISTING STORAGE FACILITIES FOR SUCH PRODUCTS ON THIS SITE.
13. THERE ARE NO KNOWN BURIAL SITES.
14. ALL PUBLIC STREETS SHALL CONFORM TO FAIRFAX COUNTY AND/OR VIRGINIA DEPARTMENT OF TRANSPORTATION (VDOT) STANDARDS AND SPECIFICATIONS UNLESS MODIFIED. PRIVATE STREETS SHALL CONFORM TO STANDARDS SET BY THE FAIRFAX COUNTY PUBLIC FACILITIES MANUAL SECTION 7 UNLESS MODIFIED.
15. IN ACCORDANCE WITH PARAGRAPH 4 OF SECTION 16-403 OF THE ZONING ORDINANCE, MINOR MODIFICATIONS TO THE SIZE, DIMENSIONS, FOOTPRINTS, AND LOCATION OF BUILDINGS, PARKING SPACES, GARAGES, RETAINING WALLS AND SIDEWALKS MAY OCCUR WITH FINAL ENGINEERING AND DESIGN.
16. THERE ARE NO DESIGNATED FLOOD PLAINS, ENVIRONMENTAL QUALITY CORRIDORS, OR RPAs ON THE SUBJECT SITE PER FAIRFAX COUNTY MAPS.
17. THERE ARE SCENIC ASSETS OR NATURAL FEATURES ON THE SUBJECT SITE WHICH WOULD DESERVE PROTECTION OR PRESERVATION, SUCH AS THE MANOR HOUSE, GAZEBO, TREES, AND POND.
18. THE SPECIAL AMENITIES PROPOSED WITH THIS SITE SHALL INCLUDE:
    * PEDESTRIAN SIDEWALKS
    * CABANA (RESIDENTIAL OPTION ONLY)
    * GAZEBO
19. THE DEVELOPMENT SCHEDULE SHALL BE DETERMINED BY THE APPLICANT BASED UPON MARKET CONDITIONS.
20. THE PROPOSED PUBLIC ROAD IMPROVEMENTS ILLUSTRATE THE REQUIRED IMPROVEMENTS PER THE COMPREHENSIVE PLAN. THE APPROVAL OF THIS PLAN WILL ONLY BIND THE OWNER TO CONSTRUCTING THE ROAD IMPROVEMENTS AS SHOWN. AT THIS TIME THERE ARE NO REQUIRED IMPROVEMENTS.
21. SIGNAGE WILL BE PROVIDED IN ACCORDANCE WITH THE FAIRFAX COUNTY ZONING ORDINANCE.
22. AFFORDABLE DWELLING UNITS ARE NOT REQUIRED PER PAR. 1 OF SECTION 2-803.
23. ARCHITECTURAL SKETCHES OF STRUCTURES PROVIDED ON SHEET #18-19.
24. OMITTED.
25. TABULATIONS FOR SITE, BUILDING, PARKING AND LOADING DATA ARE PROVIDED ON THIS SHEET.
26. UTILITY LAYOUT SUBJECT TO CHANGE WITH FINAL SITE PLAN.
27. THERE ARE EXISTING BUILDINGS ON SITE.
28. LOCATIONS OF MECHANICAL EQUIPMENT (INCLUDING TRANSFORMERS AND GENERATORS) ON SITE TO BE PROVIDED WITH THE FINAL SITE PLAN.
29. THE EXISTING ORIGINAL HOUSE IS TO REMAIN WITH MINOR MODIFICATIONS TO UPDATE IT WITH STAIRS AND/OR ELEVATORS AS A HOTEL USE OR OFFICE USE. IN THE RESIDENTIAL USE OPTION, THE DETACHED EXISTING GARAGE WILL BE DEMOLISHED AND A CABANA WILL BE CONSTRUCTED.
30. IN THE RESIDENTIAL OPTION, THE EXISTING PRISON FELLOWSHIP OFFICE BUILDING, GARAGE AND BATHHOUSE WILL BE DEMOLISHED AND REPLACED WITH THE NEW RESIDENTIAL PROJECT. MOST OF THE MECHANICAL EQUIPMENT AND STRUCTURES TO THE EXISTING BUILDING WILL BE REMOVED. IN THE OFFICE OPTION, ONLY THE BATHHOUSE IS TO BE DEMOLISHED.
31. THE PROPOSED LANDSCAPING AND TREE PRESERVATION AREAS IN AND NEAR THE EXISTING STORMWATER MANAGEMENT FACILITY ARE SHOWN ON SHEETS #7-10 OF THIS PLAN.
32. THE APPLICANT RESERVES THE RIGHT TO INSTALL COVERED SIDEWALKS ON THE SITE WITH THE FINAL SITE PLAN.

STORMWATER MANAGEMENT NARRATIVE

STORMWATER MANAGEMENT (SWM) AND BEST MANAGEMENT PRACTICES (BMP) ARE PROVIDED FOR THIS PROPERTY BY A SERIES OF EXISTING ONSITE AND OFFSITE PONDS AS SHOWN ON THE APPROVED FAIRFAX COUNTY PLAN #8766-SP-001-2, ENTITLED "SALLIEMAE," PREPARED BY DEWBERRY & DAVIS, APPROVED ON JUNE 29, 1994. FOR INFORMATION PURPOSES, SHEETS #11-17 OF THIS APPLICATION ARE REFERENCED FROM APPROVED PLAN #8766-SP-001-2 TO DEMONSTRATE THAT THE EXISTING FACILITIES SERVE THIS DEVELOPMENT. SHEET #10 IS PROVIDED TO SHOW THE PONDS LOCATIONS IN PLAN VIEW. SHEET #14 IS INCLUDED TO SHOW THAT THE EXISTING FACILITIES WERE DESIGNED TO ACCOMMODATE SWM FOR USES CONSISTENT WITH THIS APPLICATION. SHEET #13 IS INCLUDED TO SHOW THAT THE EXISTING FACILITIES WERE DESIGNED TO ACCOMMODATE BMP FOR USES CONSISTENT WITH THIS APPLICATION. THE NARRATIVE ON SHEET #11 DESCRIBES HOW THE EXISTING ONSITE POND WAS RECONSTRUCTED WITH PLAN #8766-SP-001-2. THEREFORE, THERE ARE NO ADDITIONAL SWM OR BMP REQUIREMENTS FOR THIS PLAN.

AS CAN BE SEEN IN THE DESIGN DATA REFERENCED ABOVE, THE DESIGN CALCULATIONS CONTEMPLATED A LEVEL OF DEVELOPMENT FOR THE SUBJECT SITE WITH IMPACTS EXCEEDING THOSE PROPOSED WITH THIS PLAN. AT THE TIME OF FINAL SITE PLAN, ONCE FINAL DEVELOPMENT CONDITIONS ARE KNOWN, THE EXISTING POND WILL BE ANALYZED FOR SWM AND BMP PURPOSES. IF POSSIBLE, THE EXISTING POND WILL BE RETROFITTED TO PROVIDE SWM AND BMP FOR THIS SITE. IF ADEQUATE CAPACITIES CANNOT BE ACHIEVED ONSITE, THE APPLICANT WILL PURSUE OTHER OPTIONS TO MEET THESE REQUIREMENTS, WHICH MAY INCLUDE ENTERING INTO A MAINTENANCE AGREEMENT THAT RUNS WITH THE LAND WITH THE OWNER OF THE OFFSITE FACILITIES.

OUTFALL NARRATIVE

THIS SITE DRAINS NORTH TO SOUTH TO THE EXISTING ONSITE WET POND. A PRELIMINARY LAYOUT OF THE ON-SITE STORM DRAINAGE INLETS AND PIPES IS SHOWN ON SHEET #4-5. THE CHARACTERISTICS OF THE EXISTING FACILITY ARE PROVIDED IN THE CHECKLIST ON THIS SHEET. RUNOFF IS THEN CONVEYED UNDER OLD RESTON AVENUE THROUGH EXISTING CLOSED CONDUIT PIPES. THIS IS THE ONLY SITE OUTFALL, LABELED AS "SITE OUTFALL #1" ON SHEET #4-5. THE EXISTING POND FUNCTIONS IN SERIES WITH 3 ADDITIONAL PONDS ACROSS OLD RESTON AVENUE TO PROVIDE SWM AND BMP FOR A 158.3 AC DRAINAGE SHED. AS SHOWN ON SHEET #11, CROSS-SECTION 20 VERIFIES THE ADEQUACY OF THE EXISTING CHANNEL IMMEDIATELY DOWNSTREAM OF THE EXISTING FACILITIES. THE EXISTING VEGETATED CHANNEL PROCEEDS THROUGH THE HIDDEN CREEK GOLF COURSE. THE CHANNEL ENTERS THE FAIRFAX COUNTY MAPPED FLOODPLAIN APPROXIMATELY 1500 FT. DOWNSTREAM OF CROSS-SECTION 20. THE CHANNEL CONTINUES AND AT A POINT APPROXIMATELY 2400 FT. DOWNSTREAM OF CROSS-SECTION 20, THE TOTAL DRAINAGE AREA IS 568 ACRES. THIS DRAINAGE AREA IS OVER 100 TIMES THE SITE AREA. IT IS THE OPINION OF URBAN ENGINEERING THAT AN ADEQUATE OUTFALL IS PROVIDED. FURTHER, THE ADEQUATE OUTFALL REQUIREMENTS OF THE PUBLIC FACILITIES MANUAL WILL BE SATISFIED WITH THE FINAL SITE PLAN; INCLUDING CROSS SECTIONAL ANALYSIS TO DEMONSTRATE THAT THE EXISTING NATURAL CHANNEL IS ADEQUATE TO HANDLE THE 2-YEAR POST-DEVELOPMENT ROUTED FLOWS AT NON-EROSIVE VELOCITIES.

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 (9-615 1G & 1N)	Commercial Revitalization Districts (9-622 2A (12) & (14))
Development Plans PRC District (16-302 3 & 4L)	PRC Plan (16-303 1E & 1O)
FDP P Districts (except PRC) (16-502 1F & 1Q)	Amendments (18-202 10F & 10I)

☑ 1. Plat is at a minimum scale of 1"=50' (unless it is depicted on one sheet with a minimum scale of 1"=100'). SHOWN ON SHEET #4

☑ 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 4. FACILITY IS EXISTING AS SHOWN ON SHEET #4.

☑ 3. Provide:

Facility Name/ Type & No. (e.g. dry pond A, infiltration trench, underground vault, etc.)	On-site area served (acres)	Off-site area served (acres)	Drainage area (acres)	Footprint area (sf)	Storage Volume (cf)	If pond, dam height (ft)
EXISTING ON-SITE WET POND	5.1862	17.06	22.25	9140	27,420	10.5
Totals						

☑ 4. Onsite drainage channels, outfalls and pipe systems are shown on Sheet 4. Pond inlet and outlet pipe systems are shown on Sheet 4.

☑ 5. Maintenance access (road) to stormwater management facility(ies) are shown on Sheet 4. Type of maintenance access road surface noted on the plat is asphalt (asphalt, geoblock, gravel, etc.).

☑ 6. Landscaping and tree preservation shown in and near the stormwater management facility is shown on Sheet 4.

☑ 7. A 'stormwater management narrative' which contains a description of how detention and best management practices requirements will be met is provided on Sheet 1.

☑ 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 1.

☑ 9. A description of how the outfall requirements, including contributing drainage areas of the Public Facilities Manual will be satisfied is provided on Sheet 1. OUTFALL NARRATIVE

☑ 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&4.

☑ 11. A submission waiver is requested for N/A.

☑ 12. Stormwater management is not required because N/A.

VICINITY MAP
SCALE: 1" = 2000'

SHEET INDEX

1. COVER SHEET
2. EXISTING CONDITIONS AND SOILS MAP
3. CERTIFIED PLAT
4. CONCEPTUAL AND FINAL DEVELOPMENT PLAN – RESIDENTIAL
5. CONCEPTUAL AND FINAL DEVELOPMENT PLAN – OFFICE
6. GARAGE LAYOUTS
7. LANDSCAPE PLAN – RESIDENTIAL
8. LANDSCAPE PLAN – OFFICE
9.–10. EXISTING VEGETATION MAP AND TREE SURVEY
11–17. SWM/BMP DETAILS
18. SECTION PLANS – RESIDENTIAL
19. SECTION PLANS – OFFICE
20. EXISTING SIGHT DISTANCE PROFILE

OWNER / DEVELOPER

GREGOR, LLC
1856 OLD RESTON AVE.
RESTON VA. 20190

ZONING TABULATIONS: RESIDENTIAL OPTION

SITE AREA= 225,910.87 SF. OR 5.1862 ACRES
EXISTING ZONING= PDC
PROPOSED ZONING= PDC
PROPOSED USE= MULTIFAMILY RESIDENTIAL AND HOTEL
BUILDING GROSS FLOOR AREA = 7,169 GSF HOTEL (INCLUDES MANOR HOUSE, MANOR HOUSE EXPANSION AND CABANA)
140,637 GSF MULTIFAMILY RESIDENTIAL
147,806 GSF TOTAL

NUMBER OF HOTEL ROOMS = 6 ROOMS
NUMBER OF RESIDENTIAL UNITS = 60 UNITS
MAXIMUM FAR = 1.5
BUILDING F.A.R. PROVIDED = 147,806/225,910.87 = 0.65
RESIDENTIAL DENSITY = 60 UNITS/5.1862 AC. = 11.57 UNITS/ACRE
MAXIMUM BUILDING HEIGHT ALLOWED = NO MAXIMUM
MAXIMUM BUILDING HEIGHT PROVIDED= 40 FT. FOR HOTEL
= 49.97 FT. FOR MULTIFAMILY RESIDENTIAL
= 25.00 FT. FOR CABANA
= 12.25 FT. FOR PORTICO
= 25.00 FT FOR EX. GAZEBO (TO REMAIN)

YARDS REQUIRED = FRONT(NONE) SIDE (NONE) REAR (NONE)
YARDS PROVIDED = FRONT (35') SIDE (40') REAR (25')
OPEN SPACE REQUIRED = 15% OR 33,900 SF.
OPEN SPACE PROVIDED = 45% OR 101,660 SF.

PARKING TABULATIONS
HOTEL USE = 1 SPACE/ROOM + 4 SP./50 ROOMS = 7 SPACES
MULTIFAMILY USE = 1.6 SPACES/UNIT= 60 X 1.6 = 96 SPACES
TOTAL 103 SPACES

PARKING PROVIDED:
85 SPACES IN THE GARAGE
56 SURFACE SPACES
141 TOTAL
HANDICAPPED PARKING REQUIRED:
5 SPACES (1 VAN ACCESSIBLE)
HANDICAPPED PARKING PROVIDED:
5 SPACES (2 VAN ACCESSIBLE)

LOADING SPACES REQUIRED:
MULTIFAMILY RESIDENTIAL – 1SP/25,000 GSF+1 SP./100,000 GSF = 2 SPACES
HOTEL – 1 SP./10,000 GSF+ 1 SP./100,000 GSF = 1 SPACE
TOTAL = 3 SPACES

LOADING SPACES PROVIDED:
3 SPACES

ZONING TABULATIONS: OFFICE OPTION

SITE AREA = 225,910.87 SF. OR 5.1862 ACRES
EXISTING ZONING = PDC
PROPOSED ZONING = PDC
PROPOSED USE = OFFICE BUILDINGS
BUILDING GROSS FLOOR AREA = 40,645 GSF EXISTING OFFICE BUILDING
= 2,400 GSF PROPOSED OFFICE BUILDING EXPANSION
= 5,126 GSF EXISTING MANOR HOUSE
= 250 GSF PROPOSED MANOR HOUSE EXPANSION
= 950 GSF EXISTING DISPLAY CENTER
TOTAL = 49,371 GSF

MAXIMUM FAR = 1.5
BUILDING F.A.R. PROVIDED = 49,371/225,910.87 = 0.219
MAXIMUM BUILDING HEIGHT ALLOWED = NO MAXIMUM
MAXIMUM BUILDING HEIGHT PROVIDED:
= 35.00 FT FOR EX. OFFICE BLDG (TO REMAIN)
= 25.00 FT FOR EX. GAZEBO (TO REMAIN)
= 20.00 FT FOR EX. DISPLAY CENTER (TO REMAIN)
YARDS REQUIRED = FRONT(NONE) SIDE (NONE) REAR (NONE)
YARDS PROVIDED = FRONT (35') SIDE (40') REAR (25')
OPEN SPACE REQUIRED = 15% OR 33,900 SF.
OPEN SPACE PROVIDED = 62% OR 139,923.76 SF.

PARKING TABULATIONS
PARKING REQUIRED:
OFFICE BUILDING – 43,045 S.F.
3.6 SP./1,000 GSF = 155 SPACES
MANOR HOUSE – 5,376 S.F.
3.6 SP./1,000 GSF = 20 SPACES
DISPLAY CENTER – 950 S.F.
3.6 SP./1,000 GSF = 4 SPACES
TOTAL = 179 TOTAL

PARKING PROVIDED:
66 SPACES IN THE GARAGE
113 SURFACE SPACES
179 TOTAL
HANDICAPPED PARKING REQUIRED:
6 SPACES (1 VAN ACCESSIBLE)
HANDICAPPED PARKING PROVIDED:
6 SPACES (2 VAN ACCESSIBLE)
LOADING SPACES REQUIRED:
OFFICE – 1 SP./10,000 GSF+ 1 SP./20,000 GSF = 3 SPACES

LOADING SPACES PROVIDED:
3 SPACES

No.	DATE	DESCRIPTION	REV.BY	APPROVED	DATE

REVISION APPROVED BY DIVISION OF DESIGN REVIEW

PLAN DATE
09-28-05
10-18-05
11-30-05
01-12-06
02-08-06
07-11-08
09-19-08
10-16-08
12-04-08

URBAN ENGINEERING & ASSOC.,INC.
CIVIL ENGINEERS • LANDSCAPE ARCHITECTS • LAND SURVEYORS
7712 LITTLE RIVER TURNPIKE
ANNANDALE, VIRGINIA 22003 (703) 642-8080

COMMONWEALTH OF VIRGINIA
MATTHEW K. KOIRTYOHANN
No. 039021
12/04/08
PROFESSIONAL ENGINEER

COVER SHEET
BOXWOODS
HUNTER MILL MAGISTERIAL DISTRICT
FAIRFAX COUNTY, VIRGINIA
DATE: SEPT., 2005
C.I. = N/A
SCALE: AS NOTED

SHEET 1 OF 20

FILE No. ZP-1612