SUN TRUST BANK

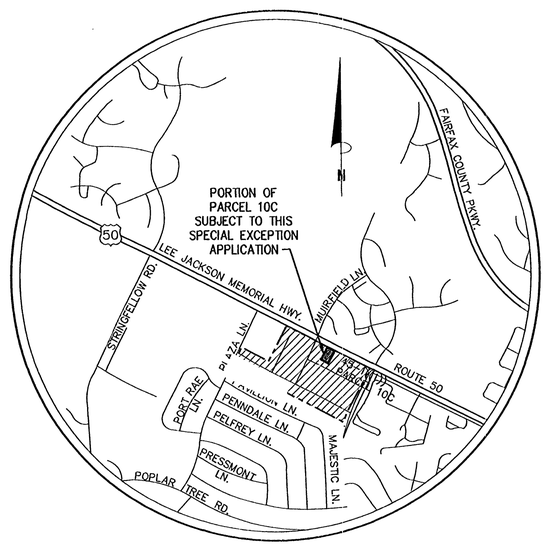
GREENBRIAR TOWN CENTER PARCEL 10-C

ADDITION OF DRIVE-IN FINANCIAL INSTITUTION TO PREVIOUSLY APPROVED SITE PLAN (8012-SP-01-03)

SPRINGFIELD DISTRICT FAIRFAX COUNTY, VIRGINIA

SPECIAL EXCEPTION PLAT

MARCH 21, 2008
REVISED APRIL 16, 2008
REVISED JULY 01, 2008
REVISED AUGUST 11, 2008



VICINITY MAP
SCALE: 1"=1000'

APPLICANT:

SUNTRUST BANK
5380 EISENHOWER AVENUE, SUITE C
ALEXANDRIA, VA 22304-4818

ENGINEER/AGENT:

BOWMAN CONSULTING GROUP, LTD.
14020 THUNDERBOLT PLACE, SUITE 300
CHANTILLY, VA 20151

Application No SE-2008-SP-015 Staff C.D.

APPROVED (SE) SP PLAN
See Development Conditions dated 8-27-2008
Date of (BOS) (BZA) approval 9-22-2008

Sheet 1 of 14

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(TOTAL SHEETS = 14)

* ORIGINAL APPROVED (PLAN # 8012-SP-01-03) AS PREPARED BY BENGTSON, DEBELL, ELKIN & TITUS, LTD. NOW KNOWN AS BURGESS & NIPLE, INC. - FOR INFORMATION ONLY!!!

RECEIVED
Department of Planning & Zoning
AUG 12 2008
Zoning Evaluation Div.

Bowman CONSULTING

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COVER SHEET
SUNTRUST BANK
GREENBRIAR TOWN CENTER
FAIRFAX COUNTY, VIRGINIA
SPRINGFIELD DISTRICT

SE 2008-SP-015
COUNTY PROJECT NUMBER

COMMONWEALTH OF VIRGINIA
JONATHAN D. BONDI
Lic. No.001379
08-11-08
REGISTERED LANDSCAPE ARCHITECT

PLAN STATUS	
03/21/08	NITAL SUBMISSION
04/16/08	ACCEPTANCE REVISIONS
07/01/08	SECOND SUBMISSION
08/11/08	THIRD SUBMISSION

DATE	DESCRIPTION

JDB DESIGN	CAD DRAWN	JDB CHKD
SCALE	H: AS NOTED V:	
JOB No.	4466-01-003	
DATE:	March 01, 2008	
FILE No.	4466-D-ZP-001	

SHEET 1 OF 7

Cad file name: P:\ – Greenbriar Shopping Center Parcel 10-C\4466-01-003 (PLN)\Planning\Special Exception\4466-COVER.dwg

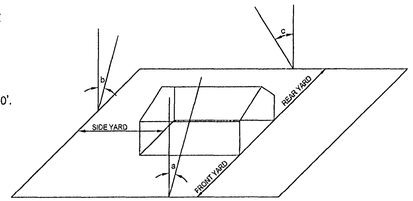
GENERAL NOTES:

1. THIS SPECIAL EXCEPTION PLAT ACCOMPANIES AN APPLICATION TO PERMIT A DRIVE-IN FINANCIAL INSTITUTION USE.
2. THE APPLICATION PROPERTY IS LOCATED APPROXIMATELY .25 OF A MILE EAST OF THE INTERSECTION OF LEE JACKSON MEMORIAL HIGHWAY (ROUTE 50) AND STRINGFELLOW ROAD (ROUTE 645) ON THE SOUTH SIDE OF ROUTE 50 AND IS FURTHER IDENTIFIED AS A 0.529 ACRE PORTION OF FAIRFAX COUNTY TAX MAP 45-1((1)) PARCEL 10C OR OTHERWISE IDENTIFIED ON DB 4676, PAGE 149 AS LOT 1. THE METES AND BOUNDS SHOWN HAVE BEEN PREPARED FROM EXISTING DEEDS OF PUBLIC RECORD BY BOWMAN CONSULTING GROUP (BCG) ON FEBRUARY 27, 2008.
3. THE APPLICATION PROPERTY IS CURRENTLY ZONED TO THE C-6; HC; WS AND IS LOCATED IN THE SPRINGFIELD MAGISTERIAL DISTRICT.
4. THE APPLICATION PROPERTY IS LOCATED IN BR4 STRINGFELLOW COMMUNITY PLANNING SECTOR OF THE BULL RUN PLANNING DISTRICT (AREA III) OF THE COMPREHENSIVE PLAN AND IS PLANNED FOR NEIGHBORHOOD RETAIL CENTER. THE PROPOSED DEVELOPMENT IS CONSISTENT WITH THAT RECOMMENDATION.
5. THE APPLICATION PROPERTY WAS ORIGINALLY APPROVED PURSUANT TO PLAN #8012-SP-01-03 AS PREPARED BY BENGTSON, DEBELL, ELKIN & TITUS, LTD. NOW KNOWN AS BURGESS & NIPLE, INC.
6. THE TOPOGRAPHY SHOWN ON SHEETS 4 & 5 WITHIN THE APPLICATION PROPERTY IS AT A CONTOUR INTERVAL OF TWO (2) FEET AND HAS BEEN OBTAINED FROM A FIELD SURVEY CONDUCTED BY BCG ON DECEMBER 17TH, 2007.
7. STORMWATER MANAGEMENT (SWM) AND BEST MANAGEMENT PRACTICES (BMP) REQUIREMENTS FOR THIS SITE HAVE BEEN PROVIDED WITHIN THE ON-SITE SWM/BMP FACILITY PER APPROVED PLAN #8012-SP-01-03. THESE UNDERGROUND STORM WATER VAULTS ARE GENERALLY SHOWN IN THE LOCATIONS DEPICTED ON SHEET #3 OF THIS PLAN.
8. THE LANDSCAPING AND OPEN SPACE AREAS AS REPRESENTED ARE SUBJECT TO MINOR MODIFICATIONS AT THE TIME OF FINAL ENGINEERING AND DESIGN. LANDSCAPING AND TREE COVER WILL BE PROVIDED IN ACCORDANCE WITH THE PROVISIONS OF ARTICLE 13 OF THE ZONING ORDINANCE. LANDSCAPING TO BE GENERALLY PROVIDED AS SHOWN ON SHEET 5 OF THE PLAN.
9. TO THE BEST OF OUR KNOWLEDGE, THERE ARE NO UTILITY EASEMENTS HAVING A WIDTH OF TWENTY-FIVE (25) OR GREATER LOCATED WITHIN THE SUBJECT PROPERTY OF THIS SPECIAL EXCEPTION.
10. ALL EXISTING STRUCTURES ON THE SUBJECT PROPERTY WILL BE DEMOLISHED AND REMOVED.
11. THERE IS NO FLOODPLAIN WITHIN THE SUBJECT PROPERTY AS DESIGNATED BY THE FEDERAL INSURANCE ADMINISTRATION, UNITED STATES GEOLOGICAL SURVEY OR FAIRFAX COUNTY. THERE IS NO RESOURCE PROTECTION AREAS (RPA) OR ENVIRONMENTAL QUALITY CORRIDOR (EQC) WITHIN THE APPLICATION PROPERTY.
12. THE MINIMUM YARD REQUIREMENTS SET FORTH IN THE C-6 DISTRICT REGULATIONS OF THE ZONING ORDINANCE ARE AS FOLLOWS:
    FRONT YARD: CONTROLLED BY A 45' ANGLE OF BULK PLANE, BUT NOT LESS THAN 40 FEET.
    SIDE YARD: NO REQUIREMENT.
    REAR YARD: 20 FEET.
13. TO THE BEST OF OUR KNOWLEDGE, THE PROPOSED DEVELOPMENT OF THE SUBJECT PROPERTY CONFORMS TO ALL CURRENT APPLICABLE LAND DEVELOPMENT ORDINANCES, REGULATIONS, AND ADOPTED STANDARDS WITH THE EXCEPTION OF ANY WAIVERS AND/OR MODIFICATIONS AS FOLLOWS:
    - The Applicant seeks a waiver of Part 6 of Section 11-203 that requires a Standard 'C" type loading space;
    - The Applicant seeks a waiver of the on-road bike route on Lee Jackson Memorial Highway (Route 50) as shown on the Countywide Trails Plan;
    - The Applicant seeks a modification of the major paved trail along the Lee Jackson Memorial Highway (Route 50) as shown on the Countywide Trails Plan in favor of A 5-foot wide concrete sidewalk along the Property's Route 50 frontage.
    - The Applicant seeks a modification of Zoning Ordinance Section 13-302 requiring a Transitional Screening 1, consisting of a 25' wide landscape strip along the Property's Lee Jackson Memorial Highway (Route 50) frontage in favor of that as shown on the Special Exception Sheet 5.
    - The Applicant request a waiver of Zoning Ordinance Section 13-303 requiring a Type D, E, or F barrier along the Property's Lee Jackson Memorial Highway (Route 50) frontage.
14. AT A MINIMUM, PARKING WILL BE PROVIDED IN ACCORDANCE WITH THE PROVISIONS OF ARTICLE 11 OF THE ZONING ORDINANCE. THE DEVELOPER RESERVES THE RIGHT TO PROVIDE FEWER OR MORE THAN THE NUMBER OF PARKING SPACES PRESENTED HEREON PROVIDED THAT THE AMOUNT OF OPEN SPACES IS NOT DECREASED.
15. A STATEMENT THAT CONFIRMS THE OWNERSHIP OF THIS SUBJECT PROPERTY AND THE NATURE OF THE DEVELOPER'S INTEREST IN SAME IS PROVIDED IN AN AFFIDAVIT SUBMITTED SEPARATELY.
16. THE FOOTPRINT OF THE BUILDING SHOWN HEREON MAY BE MODIFIED IN ACCORDANCE WITH PAR. 4 OF SECT 9-004 AND PAR. 5 SECT. 18-204 OF THE ZONING ORDINANCE. THE TOTAL GROSS FLOOR AREA AND THE BUILDING HEIGHT PRESENTED IN THE TABULATIONS IS TO BE CONSIDERED A MAXIMUM. THE DEVELOPER RESERVES THE RIGHT TO DEVELOP A LESSER AMOUNT OF GROSS FLOOR AREA (GFA) FROM THE TOTAL PRESENTED IN THE TABULATION AND THE BUILDING FOOTPRINT. ANY CHANGE TO THE GFA WILL MODIFY THE ASSOCIATED PARKING LOT LAYOUT ACCORDINGLY. ADDITIONAL PARKING SPACES MAY BE PROVIDED WHERE A BUILDING FOOTPRINT IS REDUCED, SHIFTED OR MODIFIED SO LONG AS THE AREA OF OPEN SPACE PROVIDED IS NOT DECREASED. IT IS UNDERSTOOD THAT SUCH DEVIATIONS ARE PERMITTED PROVIDED THE RESULTS ARE IN SUBSTANTIAL CONFORMANCE WITH THIS PLAN.
17. ADDITIONAL SITE FEATURES SUCH AS PLANTERS, ENTRANCE SIGNS, TRASH/RECYCLING FACILITIES AND/OR WALLS NOT REPRESENTED HEREON MAY BE PROVIDED.
18. DEVELOPMENT OF THE PROPERTY HAS AND WILL COMMENCE WHEN ALL REQUIRED APPROVALS AND PERMITS HAVE BEEN OBTAINED.
19. TO THE BEST OF OUR KNOWLEDGE, THERE ARE NO GRAVES LOCATED ON THE PROPERTY SUBJECT TO THIS SPECIAL EXCEPTION.
20. TO THE BEST OF OUR KNOWLEDGE THE USE REPRESENTED HEREON WILL NOT GENERATE, UTILIZE, STORE, TREAT AND/OR DISPOSE OF ANY HAZARDOUS OR TOXIC SUBSTANCES AS SET FORTH IN TITLE 40, CODE OF FEDERAL REGULATIONS PART 116.4, 302.4, AMD 355; ANY HAZARDOUS WASTE AS SET FORTH IN COMMONWEALTH OF VIRGINIA/DEPARTMENT OF WASTE MANAGEMENT VR 672-10-1 – VIRGINIA HAZARDOUS WASTE MANAGEMENT REGULATIONS; AND/OR ANY PETROLEUM PRODUCTS AS DEFINED IN TITLE 40, CODE OF FEDERAL REGULATIONS PART 280; HOWEVER, ANY SUCH SUBSTANCES THAT MAY BE UTILIZED, STORED AND/OR DISPOSED OF IN CONJUNCTION WITH THE USES WILL BE IN ACCORDANCE WITH SAID REGULATIONS.
21. THERE ARE NO AREAS THAT HAVE SCENIC ASSETS OR NATURAL FEATURES DESERVING OF PROTECTION OR PRESERVATION ON THE SITE.
22. THERE ARE NO COMMUNITY OR PUBLIC FACILITIES BEING PROPOSED IN CONJUNCTION WITH THE DEVELOPMENT OF THIS PROPERTY.
23. ARCHITECTURAL SKETCHES/PHOTOGRAPHIC ILLUSTRATIVES OF THE BUILDING ARE INCLUDED UNDER SEPARATE COVER.

ANGLE OF BULK PLANE DETAIL

** NOT TO SCALE

1) MINIMUM YARD REQUIREMENTS
   - FRONT YARD: a — 45' BUT NOT LESS THAN 40'.
   - SIDE YARD: b — NO REQUIREMENT
   - REAR YARD: c — NOT LESS THAN 20'.
2) MAXIMUM BUILDING HEIGHT = 40'

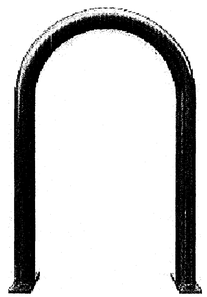


ZONING ORDINANCE SECTION 9-011
SPECIAL EXCEPTION SUBMISSION REQUIREMENTS

1. APPLICATION FORM TO BE SUBMITTED UNDER SEPARATE COVER.
2. TWENTY-THREE (23) COPIES OF A 24" X 36" PLAT AT A SCALE OF NOT LESS THAN (1" = 50') AND A 8.5" X 11" REDUCTION SHALL BE PROVIDED UPON REQUEST AT THE TIME OF APPLICATION ACCEPTANCE.
   A. THE BOUNDARY OF THE ENTIRE SUBJECT PROPERTY WITH BEARING & DISTANCES HAS BEEN SHOWN ON SHEET 4. SEE GENERAL NOTE#5.
   B. THE SITE TABULATIONS FOR THE SPECIAL EXCEPTION ARE BASED ON A LAND AREA OF .5296568 AC. THE OVERALL TABULATIONS OF THE ORIGINAL SITE PLAN (#8012-SP-01-03) ARE BASED ON A LAND AREA OF 29.6301 AC. TABULATIONS FOR BOTH THE OVERALL AND SPECIAL EXCEPTION PLAN HAVE BEEN PROVIDED ON SHEETS 3 AND 5 RESPECTIVELY.
   C. SCALE AND NORTH ARROW AS SHOWN.
   D. THE PROPOSED DRIVE-IN FINANCIAL INSTITUTION TO BE A MAXIMUM OF 3,200 G.S.F. OVERALL DIMENSIONS ARE AS SHOWN ON SHEET 5 OF THE PLAN. THE MAXIMUM PROPOSED HEIGHT IS 24 FEET. PROPOSED SIGNAGE TO BE PROVIDED UNDER SEPARATE COVER.
   E. MINIMUM YARD REQUIREMENTS AND A GRAPHIC DEPICTION OF THE BULK PLANE HAVE BEEN PROVIDED ON THIS SHEET. DISTANCES FROM EXISTING STRUCTURES AND LOT LINES ARE AS SHOWN ON SHEET 5 OF THE PLAN. SEE GENERAL NOTE #11.
   F. SEE SHEETS 4 & 5 FOR PUBLIC STREETS. NO PUBLIC ROAD IMPROVEMENTS ARE PROPOSED WITH THIS PLAN.
   G. INGRESS AND EGRESS ARE AS SHOWN ON SHEETS 4 AND 5 OF THE PLAN.
   H. PARKING TABULATION SCHEDULE IS SHOWN ON SHEET 2. DISTANCES OF PARKING FROM THE PROPERTY LINE ARE AS SHOWN ON SHEET 5 OF THE PLAN. SEE GENERAL NOTE #14.
   I. THE SITE WILL BE SERVED BY PUBLIC WATER AND SEWER SERVICE TO BE PROVIDED BY FAIRFAX WATER AND FAIRFAX COUNTY WASTE WATER COLLECTION RESPECTIVELY.
   J. NO ADDITIONAL STORMWATER MANAGEMENT IS REQUIRED FOR THIS SITE. THE UNDERGROUND STORMWATER MANAGEMENT/BMP FACILITY WAS BUILT WITH FAIRFAX COUNTY SITE PLAN 8012-SP-01-03 AND WAS ENGINEERED TO HANDLE ALL THE STORMWATER MANAGEMENT AND BEST MANAGEMENT PRACTICE (BMP) REQUIREMENTS FOR THIS SITE. THE STORMWATER SHEETS FROM SITE PLAN 8012-SP-01-03 DEPICTING SWM/BMP LOCATIONS AND COMPUTATIONS HAVE BEEN PROVIDED ON SHEETS 6-6E. SEE GENERAL NOTE #6.
      (1)
      (a.) SEE SHEET 3
      (b.) SEE SHEETS 6-6E
      (c.) SEE SHEET 3
      (d.) N/A
      (e.) N/A
      (f.) SEE SHEET 5
      (2)
      (a.) SEE SHEET 6
      (b.) SEE SHEET 6
      (c.) A WAIVER OF THIS REQUIREMENT IS REQUESTED. SEE ITEM #11 OF SWM/BMP CHECKLIST THIS SHEET.
      (d.) SEE SHEET 6
   K. THE MAXIMUM F.A.R. FOR BOTH THE SPECIAL EXCEPTION (.5296568 AC.±) AND THE ORIGINAL SITE PLAN (#8012-SP-01-03) (29.6301 AC.±) ARE PROVIDED ON SHEET 2.
   L. THE EXISTING TOPOGRAPHY SHOWN ON SHEETS 4 & 5 OF THE PLAN IS AT A CONTOUR INTERVAL OF 2' AND HAS BEEN OBTAINED FROM A FIELD SURVEY CONDUCTED BY BCG ON DECEMBER 17TH, 2007.
   M. INFORMATION REGARDING THE LIMITS OF CONSTRUCTION & GRADING AND SITE LANDSCAPING ARE SHOWN ON SHEET 5 OF THE PLAN. EXISTING VEGETATION MAP SHOWN ON SHEET #4. SEE GENERAL NOTE #7.
   N. THERE ARE NO FLOODPLAINS, EQC, OR RPA THAT EXIST ON THE SITE. SEE GENERAL NOTE #10.
   O. ANY ADDITIONAL SITE FEATURES AND OR AMENITIES IF PROVIDED ARE AS SHOWN ON SHEET 5 OF THE PLAN.
   P. SEE GENERAL NOTE #8.
   Q. THE APPLICANT REQUEST WAIVERS OF THE MAJOR PAVED TRAIL AND THE IN-ROAD BIKE LANE REQUIREMENTS OF THE COUNTYWIDE TRAILS PLAN.
   R. SEE GENERAL NOTE #19.
   S. SEAL AND SIGNATURE PROVIDED ON EACH SHEET OF THE PLAT AS REQUIRED.
3. FAIRFAX COUNTY TAX MAP AT A SCALE OF (1"=500') TO BE PROVIDED UNDER SEPARATE COVER.
4. ALL PHOTO DOCUMENTATION OF THE PROPERTY TO BE PROVIDED UNDER SEPARATE COVER.
5. NOT APPLICABLE FOR COMMERCIAL DEVELOPMENT.
6. AFFIDAVIT TO BE PROVIDED UNDER SEPARATE COVER.
7. A WRITTEN STATEMENT TO BE PROVIDED UNDER SEPARATE COVER.
8. OWNERSHIP AND INTEREST TO BE PROVIDED UNDER SEPARATE COVER.
9. NOT APPLICABLE
10. APPLICATION FEE TO BE INCLUDED UNDER SEPARATE COVER.

BIKE RACK DETAIL

(OR APPROVED EQUAL)



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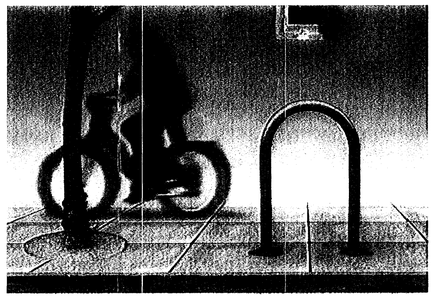
COLOR: BLACK



BIKE RACK IMAGES PROVIDED FOR ILLUSTRATIVE PURPOSES ONLY.
FINAL BIKE RACK SPECIFICATIONS TO BE DETERMINED AT FINAL SITE PLAN.

Application No SE-2008-SP-015 Staff C.D.

APPROVED (SE) SP PLAN
See Development Conditions dated 8-27-2008
Date of (BOS) (BZA) approval 9-22-2008

Sheet 2 of 14

SITE TABULATIONS:

SPECIAL EXCEPTION FOR DRIVE-IN FINANCIAL INSTITUTION

SPECIAL EXCEPTION SUBJECT LAND AREA	0.529 AC.± (23,043 S.F.±)
CURRENT ZONING:	C-6; HC; WS
GROSS FLOOR AREA (GFA) DRIVE-IN FINANCIAL INSTITUTION	3,200 S.F.
PROPOSED FLOOR AREA RATIO:	0.138 FAR
MAXIMUM BUILDING HEIGHT ALLOWED:	40 FEET
PROPOSED BUILDING HEIGHT:	25 FEET
PROPOSED CANOPY HEIGHT:	20 FEET
PARKING REQUIRED: (4 SPACES PER 1,000 SF OF GFA)	13 SPACES
PARKING PROVIDED:	19 SPACES
DRIVE-IN WINDOW LANES PROPOSED:	2 LANES (1)
STACKING SPACES REQUIRED 1ST LANE:	5 SPACES (1)
STACKING SPACES PROVIDED 2ND LANE:	5 SPACES (1)
(SEE SHEET 5 FOR STACKING GEOMETRY)	
OPEN SPACE REQUIRED (15%):	0.079 AC. (3,441 SF±)
OPEN SPACE PROVIDED (20%):	0.105 AC.± (4,608 SF±)

OVERALL SHOPPING CENTER PURSUANT TO SITE PLAN (#8012-SP-01-03)

CURRENT ZONING	C-6; HC; WS
TOTAL LAND AREA	29.63 AC.±
APPROVED GROSS FLOOR AREA (G.F.A.)	355,172 SF
PERMITTED MAXIMUM FLOOR AREA RATIO (F.A.R.)	0.35 FAR
APPROVED FLOOR AREA RATIO PER SITE PLAN #8012-SP-01-03	0.27 FAR
MAXIMUM BUILDING HEIGHT PERMITTED	40FT
EXISTING PARKING SPACES PROVIDED:	1857 (2)
PARKING SPACES REQUIRED	1834 (3)
OPEN SPACE REQUIRED (15%)	4.44 ± AC
OPEN SPACE PROVIDED (18.8%)	5.55 ± AC

NOTES:

(1) PER SECTION 11-104, #5 OF THE ZONING ORDINANCE, (5) STACKING SPACES MAY BE PERMITTED IN FRONT OF THE FIRST (2) WINDOWS, PROVIDED THAT BOTH WINDOWS SHALL ALWAYS REMAIN OPEN WHEN THE DRIVE-IN FACILITY IS OPERATIONAL. ONE LANE WILL BE A DEDICATED DRIVE THROUGH ATM LANE WITH (24) HOUR A DAY OPERATION.

(2) AS TABULATED PER SITE PLAN #8012-SP-01-03.

(3) THE ADDITION OF THE FINANCIAL INSTITUTION USE AND THE DELETION OF THE EXISTING RESTAURANT USE REPRESENTS A NET REDUCTION OF 23 SPACES TO THE OVERALL SHOPPING CENTER PARKING REQUIREMENT AS TABULATED PER THE APPROVED SITE PLAN #8012-SP-01-03.

EXISTING RESTAURANT PARKING SPACES (SHOWN ON P. 4 OF THIS SE PLAT)	36
PARKING SPACES REQUIRED FOR THE PROPOSED FINANCIAL INSTITUTION	13

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 (9-011 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) (18-502 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').

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

☑ 3. Provide:

Facility Name/ Type & No.	On-site area served (acres)	Off-site area served (acres)	Drainage area (acres)	Footprint area (sf)	Storage Volume (cf)	If pond, dam height (ft)
VAULT 'A'	34.66 AC	0.00 AC	11.13 AC.	13,600 SF	1.69 AC/FT	N/A
VAULT 'B'	34.66 AC	0.00 AC	5.11 AC.	5,700 SF	.60 AC/FT	N/A
VAULT 'C'	34.66 AC	0.00 AC	6.72 AC.	10,000 SF	1.06 AC/FT	N/A
BY-PASS	34.66 AC	0.00 AC	11.70 AC.	N/A	N/A	N/A
Totals			34.66 AC.		3.35 AC/FT	N/A

☑ 4. Onsite drainage channels, outfalls and pipe systems are shown on Sheet 3. Pond inlet and outlet pipe systems are shown on Sheet 3.

☑ 5. Maintenance access (road) to stormwater management facility(ies) are shown on Sheet 3. Type of maintenance access road surface noted on the plat is _____ (asphalt, geoblock, gravel, etc.).

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

☑ 7. A 'stormwater management narrative' which contains a description of how detention and best management practices requirements will be met is provided on Sheet 6

☐ 8. A description of the existing conditions of each numbered site outfall extended downstream from the site to a point that is at least 150 ft (46 m) downstream to a point where the receiving pipe or channel is joined by another that has a drainage area that is at least 90% of the size of the first drainage area at the point of confluence is provided on Sheet 6.

☑ 9. A description of how the outfall requirements, including contributing drainage areas of the Public Facilities Manual will be satisfied is provided on Sheet 6

☑ 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 5 AND GENERAL NOTE #4, SHEET 2

☑ 11. A submission waiver is requested for ITEM #8 OF THIS STORMWATER CHECKLIST.

☑ 12. Stormwater management is not required because THE UNDERGROUND STORMWATER MANAGEMENT/BMP VAULTS WERE BUILT WITH FAIRFAX COUNTY SITE PLAN # 8012-SP-01-03 AND WERE ENGINEERED TO HANDLE ALL THE STORMWATER MANAGEMENT AND BEST MANAGEMENT PRACTICE (BMP) REQUIREMENTS FOR THIS SITE. SEE SHEETS 6-6E FOR THE STORMWATER SHEETS FROM SITE PLAN # 8012-SP-01-03 DEPICTING THE SWM/BMP COMPUTATIONS. SEE SHEET 3 FOR VAULT/POND LOCATIONS.

Bowman CONSULTING

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NOTES & TABULATIONS
SUNTRUST BANK
GREENBRIAR TOWN CENTER
FAIRFAX COUNTY, VIRGINIA
SPRINGFIELD DISTRICT

SE 2008-SP-015
COUNTY PROJECT NUMBER

COMMONWEALTH OF VIRGINIA
JONATHAN D. BONDI
Lic. No.001379
08-11-08
CERTIFIED LANDSCAPE ARCHITECT

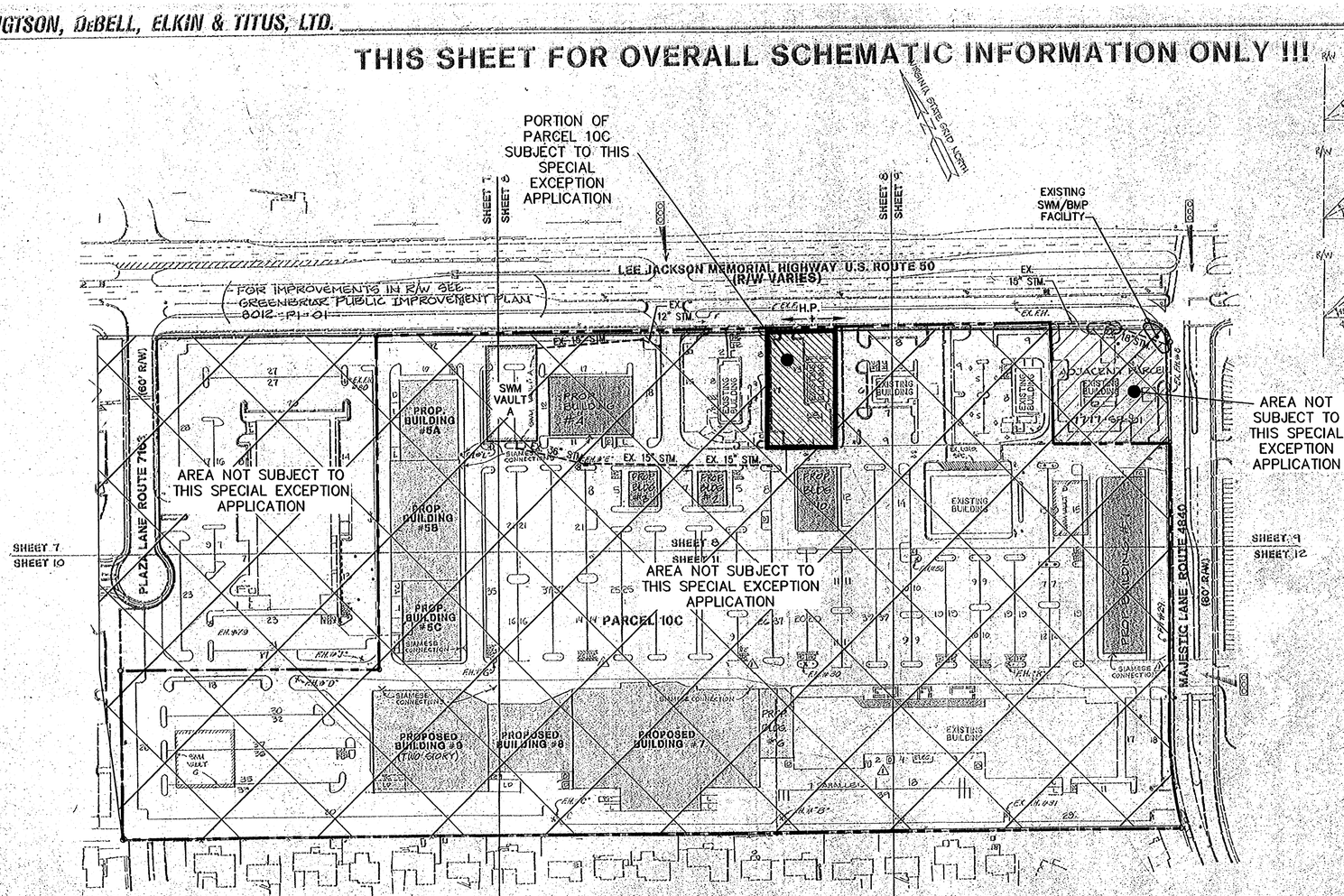
PLAN STATUS	
03/21/08	INITAL SUBMISSION
04/18/08	ACCEPTANCE REVISIONS
07/01/08	SECOND SUBMISSION
08/11/08	THIRD SUBMISSION

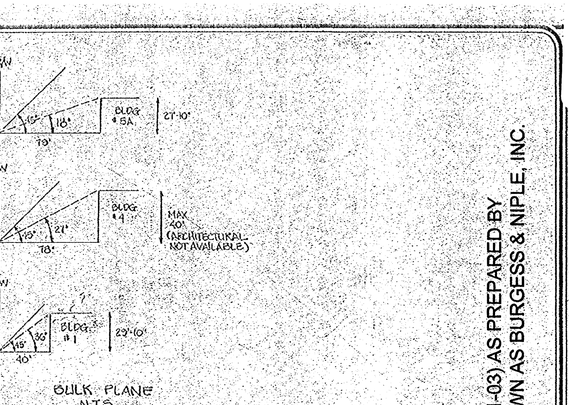
DATE	DESCRIPTION	
JDB DESIGN	CAD DRAWN	JDB CHKD
SCALE	H: NO SCALE V:	
JOB No.	4466-01-003	
DATE:	March 01, 2008	
FILE No.	4466-D-ZP-001	
SHEET	2 OF 7	

Cad file name: P:\ – Greenbrior Shopping Center Parcel 10-C\4466-01-003 (PLN)\Planning\Special Exception\4466-NOTES TABS.dwg

BENGTSON, DEBELL, ELKIN & TITUS, LTD.

THIS SHEET FOR OVERALL SCHEMATIC INFORMATION ONLY !!!





OVERALL SHOPPING CENTER SITE PLAN (8012-SP-01-03) AS PREPARED BY BENGTSON, DEBELL, ELKIN & TITUS, LTD. NOW KNOWN AS BURGESS & NIPLE, INC. FOR INFORMATION ONLY!!!

VUSBC/ANSI STANDARDS - HANDICAP PARKING

PARKING LOT SIZE (SPACES)	1989 VUSBC
LESS THAN 5	1 (MUST MEET DIMENSION REQUIREMENTS ONLY; NON-RESERVED, NO ACCESSIBILITY ROUTE REQUIRED.)
5	1
20	1
50	1
75	2
100	2
125	3
150	3
200	4
300	4
400	5
500	6
1000	11
2000	21

ZONING REQUIREMENTS

1)	ZONING:	C-6, COMMUNITY RETAIL COMMERCIAL DISTRICT
2)	MINIMUM AVERAGE LOT AREA:	N/A
3)	MINIMUM LOT AREA:	40,000 SQUARE FEET
4)	MINIMUM LOT WIDTH:	200 FEET
5)	MAXIMUM BUILDING HEIGHT:	40 FEET
6)	MINIMUM YARD REQUIREMENTS:	FRONT: * SIDE: NONE REAR: 20'
7)	MAXIMUM (FAR):	.35
8)	MAXIMUM DENSITY:	
9)	OPEN SPACE REQUIRED:	15%

* 45° BULK PLANE, BUT NOT MORE THAN 40' (SEE ABOVE).

TABS NOT SUBJECT TO THIS SPECIAL EXCEPTION APPLICATION

SITE TABULATIONS (SITE PLANS)

		45-1-((1)) PARCELS 10C DB 7611 PG 1053	45-1-((1)) PARCEL 10D DB 7611 PG 1053	PARKING TOTALS
1)	AREA:	29.6301 ACRES OR 1,290,688 SQUARE FEET	5.024 ACRES OR 218,854 SQUARE FEET	
2)	ZONE (INDICATE ZONE LINES WHERE NECESSARY):	C-6	C-6	
3)	USE:	RETAIL	OFFICE	
4)	EXISTING BUILDING GROSS FLOOR AREA:	91,446[1]	116,300	
5)	EXISTING BUILDING NET FLOOR AREA:	75,497	93,040	
6)	~~PROPOSED~~ BUILDING GROSS FLOOR AREA: (EXISTING)	255,760	NONE	
7)	~~PROPOSED~~ BUILDING NET FLOOR AREA: (EXISTING)	210,951	NONE	
8)	TOTAL FLOOR AREA RATIO (FAR) FOR ENTIRE SITE:	.27	.53[2]	
9)	TOTAL GROSS AND NET FLOOR AREA:	355,172 - GROSS 284,158 - NET	116,300 - GROSS 93,040 - NET	
10)	BUILDING HEIGHT:	ONE & TWO STORIES	3 STORY	
11)	HANDICAPPED PARKING REQUIRED:	20	4	24
12)	HANDICAPPED PARKING PROVIDED:	27 ⚠	4	31 ⚠
13)	LOADING SPACES REQUIRED:	11	5	16
14)	LOADING SPACES PROVIDED:	14 ⚠	4	18 ⚠
15)	PARKING REQUIRED FOR RESTAURANT (EX. 124 SEATS + 6 EMPL. + 490 PROP. SEATS + 24 EMPL = 614 SEATS AND 30 EMPL. TOTAL)	176	---	176
16)	PARKING PROVIDED FOR RESTAURANT:	176	---	176
17)	PARKING REQUIRED FOR RETAIL:	1458	---	1458
18)	PARKING PROVIDED FOR RETAIL:	1448[3] ⚠	33[3]	1481[3] ⚠
19)	PARKING REQUIRED FOR FAST FOOD (EX. 179 SEATS + 80 PROP. SEATS = 259 TOTAL SEATS):	116	---	116
20)	PARKING PROVIDED FOR FAST FOOD:	116	---	116
21)	PARKING REQUIRED FOR PERSONAL SERVICE:	23	---	23
22)	PARKING PROVIDED FOR PERSONAL SERVICE:	23	---	23

SITE TABULATION (SITE PLANS)

		45-1-((1)) PARCELS 10C DB 7611 PG 1053	45-1-((1)) PARCEL 10D DB 7611 PG 1053	PARKING TOTALS
23)	PARKING REQUIRED FOR MEDICAL:	42	---	42
24)	PARKING PROVIDED FOR MEDICAL:	42	---	42
25)	PARKING REQUIRED FOR BANK:	22	---	22
26)	PARKING PROVIDED FOR BANK:	22	---	22
27)	PARKING REQUIRED FOR CONVENIENCE:	21	---	21
28)	PARKING PROVIDED FOR CONVENIENCE:	21	---	21
29)	PARKING REQUIRED FOR OFFICE USE:	9	349	358
30)	PARKING PROVIDED FOR OFFICE USE:	9	349	358
31)	TOTAL PARKING REQUIRED:	1867	349	2216
32)	TOTAL PARKING PROVIDED:	1867	382[4]	2249[4] ⚠
33)	OPEN SPACE REQUIRED:	15% OR 193,603 SQUARE FEET	15% OR 32,828 SQUARE FEET	
34)	OPEN SPACE PROVIDED:	18.8% OR 242,082 SQUARE FEET	23.3%OR52,378 SQUARE FEET	

[1] INCLUDES FOUR EXISTING FAD SITES PLUS SHOPPING CENTER.
[2] EXISTING USE. NO ADDITIONAL GLA TO BE CONSTRUCTED ON PARCEL 10D.
[3] SHARED PARKING AGREEMENT.
[4] INCLUDES HANDICAP SPACES.

BUILDING HEIGHTS

EX. SHOPPING CENTER	22.5'
EX. MEDICAL OFFICE	18.0' (APPROX)
~~EX. 3-STORY OFFICE (PARCEL 10A)~~	~~36.0' (APPROX)~~
PROPOSED BLDG. #1	25'-10"
PROPOSED PADS 2, 3, & 10	40'-0" (MAX. ARCH. NOT AVAILABLE)
PROPOSED BLDG. #5	34'-6"
PROPOSED BLDGS. #6-9	38'-10"

(NOT SUBJECT TO THIS SPECIAL EXCEPTION APPLICATION)

COMPUTATIONS FOR INTERIOR PARKING LOT LANDSCAPING

AREA OF PARKING LOT: 272,798 SQUARE FEET
LANDSCAPING REQUIRED 5% OF 272,798 = 13,639 SQUARE FEET
LANDSCAPING PROVIDED: 30,684 SQUARE FEET = 11.2%

COMPUTATIONS FOR INTERIOR PARKING LOT LANDSCAPING

AREA OF PARKING LOT: 103,556 SQUARE FEET
LANDSCAPING REQUIRED 5% OF 103,556 = 5,178 SQUARE FEET
LANDSCAPING PROVIDED: 7,337 SQUARE FEET = 7.1%

COMMONWEALTH OF VIRGINIA JOHN F. DEBELL No. 7383 PROFESSIONAL ENGINEER

COMMONWEALTH OF VIRGINIA 10/20/89 STEVEN A. WEISBERGER No. 012836 PROFESSIONAL ENGINEER

NO.	DESCRIPTION	REVIEW	APPROVED	DATE
7A	ADDED PARKING LANDS/ADDED SIAMESE			

REVISION APPROVED BY DIVISION OF DESIGN REVIEW

GRAPHIC SCALE IN FEET 50 100 100 0 250

REV. PARKING TABULATIONS	2-26-91
ADDENDUM #1	11-1-90
REV. PARKING LOT POLE LOCATION AND ADDED H.C. RAMPS	7-25-90
FOR 2nd SUBMISSION	7-17-90
REV. SITE TABULATIONS ADDED SIAMESE LOCATIONS	7-17-90
FIRE HYDRANT LOCATIONS	5-11-90
FOR 2nd SUBMISSION	3-15-90
REVISIONS	DATE

NOTES:

1. SEE SHEET 5 FOR A DETAIL PLAN OF THE SPECIAL EXCEPTION SUBJECT AREA.
2. SEE SHEET 2 FOR NOTES & TABULATIONS.

Application No SE-2008-SP-015 Staff C.D.

APPROVED (SE) SP PLAN
See Development Conditions dated 8-27-2008
Date of (BOS) (BZA) approval 9-22-2008

Sheet 3 of 14

BENGTSON, DEBELL, ELKIN & TITUS, LTD.
ENGINEERS • SURVEYORS • PLANNERS • LANDSCAPE ARCHITECTS
4379 ROSEWOOD CENTER DRIVE, WOODBRIDGE, VIRGINIA 22192
(703) 690-4622 (703) 670-6207 (703) 370-6207
OFFICE LOCATIONS
◆ CHESTERFIELD COUNTY, VIRGINIA ◆ FAIRFAX COUNTY, VIRGINIA ◆ LOUDOUN COUNTY, VIRGINIA
◆ PRINCE WILLIAM COUNTY, VIRGINIA ◆ VIRGINIA BEACH, VIRGINIA
◆ ANNE ARUNDEL COUNTY, MARYLAND ◆ MONTGOMERY COUNTY, MARYLAND

OVERALL PLAN AND NOTES

GREENBRIAR SHOPPING CENTER ADDITION

PROVIDENCE DISTRICT
FAIRFAX COUNTY, VIRGINIA

BOWMAN CONSULTING

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OVERALL SHOPPING CENTER PLAN
SUNTRUST BANK
GREENBRIAR TOWN CENTER
SPRINGFIELD DISTRICT FAIRFAX COUNTY, VIRGINIA

SE 2008-SP-015
COUNTY PROJECT NUMBER

COMMONWEALTH OF VIRGINIA JONATHAN D. BONDI Lic. No. 001379 08-1)-08 LICENSED LANDSCAPE ARCHITECT

PLAN STATUS	
03/21/08	INITAL SUBMISSION
04/16/08	ACCEPTANCE REVISIONS
07/01/08	SECOND SUBMISSION
08/11/08	THIRD SUBMISSION

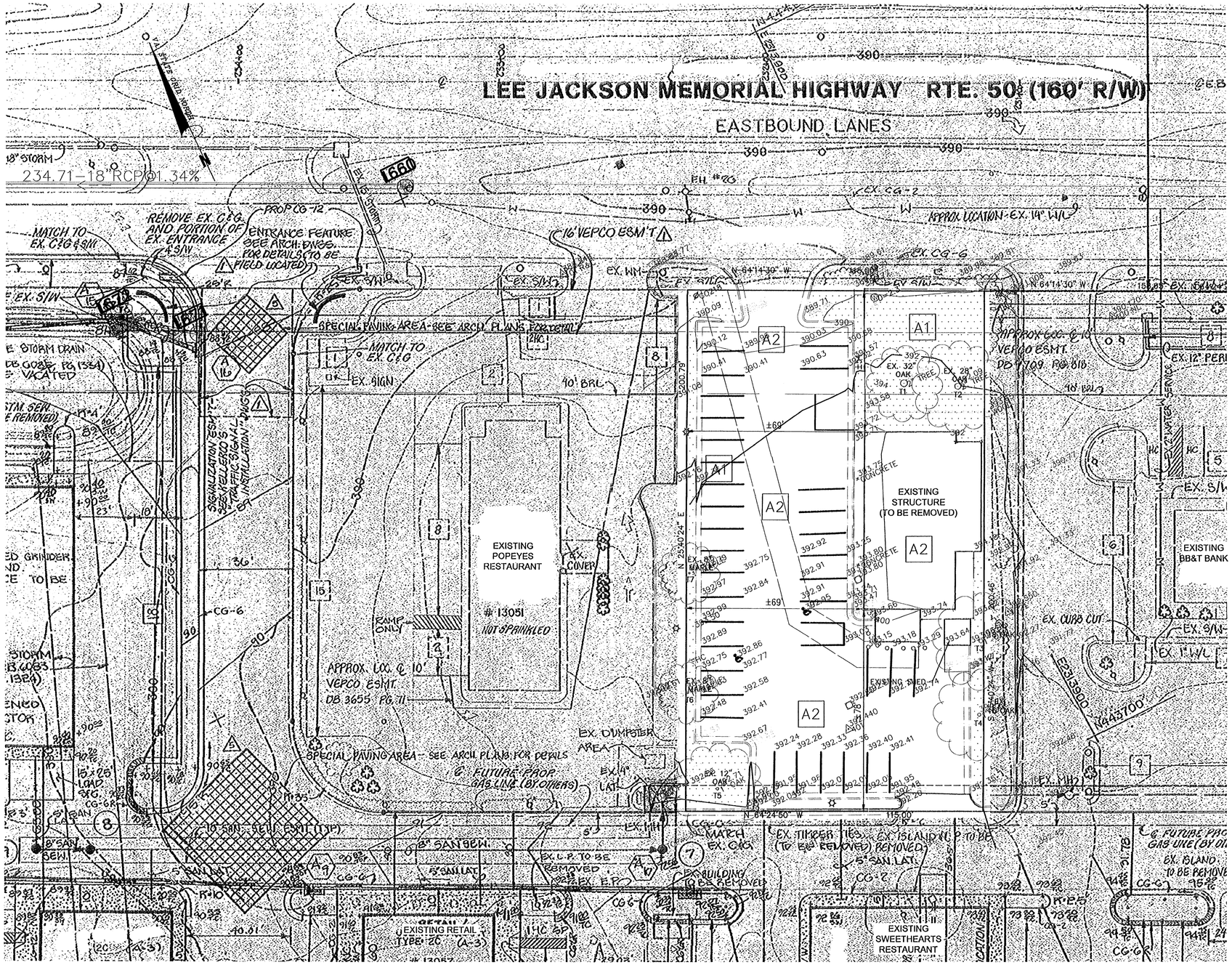
DATE: 10-25-89	
SCALE: 1"=100'	
DESIGN:	DRAWN:
CHECK:	CHECK:
JOB NO: 89C-042	
PR. NO: CT08599000	
SHEET 6 OF 58	
FILE NO: C-2860	

DATE	DESCRIPTION
JDB DESIGN	CAD DRAWN
JDB CHKD	

SCALE H: NO SCALE V:

JOB No. 4466-01-003
DATE: March 01, 2008
FILE No. 4466-D-ZP-001
SHEET 3 OF 7

Cad file name : 36 - Greenbriar Shopping Center Parcel 10-C\4466-01-003 (PLN)\Planning\Special Exception\4466-OVERALL.dwg



DRIVE-IN FINANCIAL INSTITUTION

SCALE: 1"=20'

LEGEND

- EXISTING CONTOUR
- EXISTING STRUCTURE
- EXISTING CURB & GUTTER
- EXISTING STORM DRAIN
- APPLICATION AREA
- EX. 8" MAPLE T6 — EXISTING TREE (TO BE REMOVED)
- A1 — EVM COVER AREAS

EXISTING VEGETATION MAP (EVM)			
COVER AREA	DESCRIPTION	AREA IN (SF)	AREA IN (AC)
A1	AREA MAINTAIN AS LAWN WITH INDIVIDUAL TREES	4,602	0.106
A2	DEVELOPED AREA CONTAINING PARKING LOT AND BUILDING	18,441	0.423
	TOTAL	23,043	0.529

NOTE:

1. ADJACENT SITE DEPICTED ON THIS PLAN WAS BUILT FROM THE OVERALL SHOPPING CENTER SITE PLAN (8012-SP-01-03) AS PREPARED BY BENGTSON, DEBELL, ELKIN & TITUS, LTD. NOW KNOWN AS BURGESS & NIPLE, INC. – FOR INFORMATION ONLY!

Application No SE-2008-SP-015 Staff C.D.

APPROVED (SE) SP PLAN
See Development Conditions dated 8-27-2008
Date of (BOS) (BZA) approval 9-22-2008

Sheet 4 of 14

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

Bowman CONSULTING

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EXISTING CONDITIONS / EXISTING VEGETATION MAP
SUNTRUST BANK
GREENBRIAR TOWN CENTER

FAIRFAX COUNTY, VIRGINIA

SPRINGFIELD DISTRICT

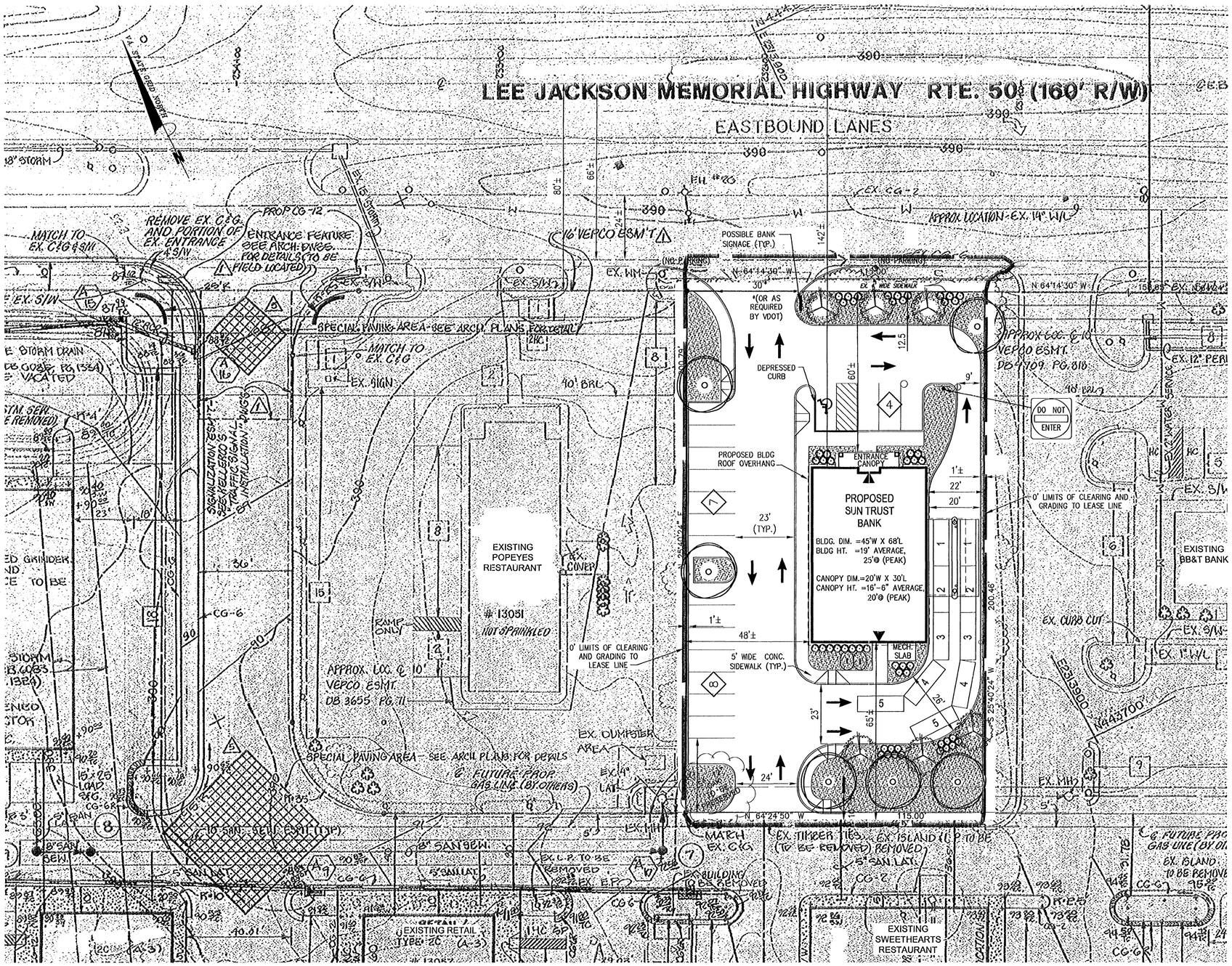
SE 2008-SP-015
COUNTY PROJECT NUMBER

COMMONWEALTH OF VIRGINIA
JONATHAN D. BONDI
Lic. No. 001379
8-11-08
CERTIFIED LANDSCAPE ARCHITECT

PLAN STATUS	
03/21/08	INITAL SUBMISSION
04/16/08	ACCEPTANCE REVISIONS
07/01/08	SECOND SUBMISSION
08/11/08	THIRD SUBMISSION

DATE	DESCRIPTION	
JDB DESIGN	CAD DRAWN	JDB CHKD
SCALE	H: 1" = 20' V:	
JOB No.	4466-01-003	
DATE :	March 01, 2008	
FILE No.	4466-D-ZP-001	
SHEET	4 OF 7	

Cad file name : P:\4466 - Greenbriar Shopping Center Parcel 10-C\4466-01-003 (PLN)\Planning\Special Exception\4466- XCD.dwg



DRIVE-IN FINANCIAL INSTITUTION

SCALE: 1"=20'

LEGEND

- EXISTING CONTOUR
- EXISTING CURB & GUTTER
- EXISTING STORM DRAIN
- AREA SUBJECT OF THIS SPECIAL EXCEPTION
- LIMITS OF CLEARING AND GRADING
- LARGE DECIDUOUS TREE
- ORNAMENTAL TREE
- SHRUBS
- PARKING SPACE ASSOCIATED WITH BANK
- DRIVE-IN STACKING SPACE
- POSSIBLE BANK SIGNAGE
- BIKE RACK W/ CLEARZONE
- EXISTING TREE (TO BE PRESERVED)

NOTE:

1. ADJACENT SITE DEPICTED ON THIS PLAN WAS BUILT FROM THE OVERALL SHOPPING CENTER SITE PLAN (8012-SP-01-03) AS PREPARED BY BENGTSON, DEBELL, ELKIN & TITUS, LTD. NOW KNOWN AS BURGESS & NIPLE, INC. - FOR INFORMATION ONLY!

TREE COVER CALCULATIONS:

AREA SUBJECT OF SPECIAL EXCEPTION:	0.529AC ± (23,043 SF ±)
DEDUCTIONS:	
BUILDING FOOTPRINT GFA: [AS ALLOWED PER PFM SECTION 12-0702.2A(3)]	0.073 AC ± (3,200 SF ±)
ADJUSTED GROSS SITE AREA (AGSA):	0.456 AC ± (19,843 SF ±)
TREE COVER REQUIRED: (10% OF THE AGSA FOR COMMERCIAL PER ARTICLE 13 OF THE ZONING ORDINANCE)	10% OR 0.046 AC ± (2,004 SF ±)
TREE COVER PROVIDED:	11.08% OR 0.05 AC ± (2,200 SF ±)

SPECIAL EXCEPTION AMENDMENT NOTES:

1. THIS SPECIAL EXCEPTION PLAT DEMONSTRATES THE PROPOSED LOCATION OF THE DRIVE-IN FINANCIAL INSTITUTION AND THE ABILITY TO PROVIDE ADEQUATE PARKING AND DRIVE-IN STACKING SPACES.
2. PER SECTION 11-104 #5 OF THE ZONING ORDINANCE, (5) STACKING SPACES MAY BE PERMITTED IN FRONT OF THE FIRST (2) WINDOWS, PROVIDED THAT BOTH WINDOW SHALL ALWAYS REMAIN OPEN WHEN THE DRIVE-IN FACILITY IS OPERATIONAL.
3. THE APPLICANT RESERVES THE RIGHT TO ADJUST THE LANDSCAPE PLANTINGS AS SHOWN ON THIS PLAN IN ORDER TO RESPOND TO SITE CONDITIONS, TO AVOID UTILITY EASEMENTS THAT MAY BE PRESENT, AND/OR TO CONFORM TO AN ALTERNATIVE PLANTING CONCEPT. HOWEVER, THE LANDSCAPING SHALL BE IN SUBSTANTIAL CONFORMANCE WITH CATEGORY TYPE AND QUANTITY AS SHOWN WITH THIS PLAN.

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

Application No SE-2008-SP-015 Staff C.D.

APPROVED SE SP PLAN
See Development Conditions dated 8-27-2008
Date of BOS BZA approval 9-22-2008

Sheet 5 of 14

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LIMITS OF SPECIAL EXCEPTION
SUNTRUST BANK
GREENBRIAR TOWN CENTER
FAIRFAX COUNTY, VIRGINIA
SPRINGFIELD DISTRICT

SE 2008-SP-015
COUNTY PROJECT NUMBER

COMMONWEALTH OF VIRGINIA
JONATHAN D. BONDI
Lic. No.001379
08-11-08
REGISTERED LANDSCAPE ARCHITECT

PLAN STATUS	
03/21/08	INITIAL SUBMISSION
04/16/08	ACCEPTANCE REVISIONS
07/01/08	SECOND SUBMISSION
08/11/08	THIRD SUBMISSION

DATE	DESCRIPTION

JDB DESIGN	CAD DRAWN	JDB CHKD
SCALE	H: 1" = 20' V:	
JOB No.	4466-01-003	
DATE:	March 01, 2008	
FILE No.	4466-D-ZP-001	
SHEET	5 OF 7	

Cad file name : P:\...\9 - Greenbriar Shopping Center Parcel 10-C\4466-01-003 (PLN)\Planning\Special Exception\4466- SEP.dwg

Application No SE-2008-SP-015 Staff C.D.

APPROVED (SE) SP PLAN
See Development Conditions dated 8-27-2008
Date of (BOS) (BZA) approval 9-22-2008

Sheet 6 of 14

STORMWATER MANAGEMENT SUMMARY

PRE-DEVELOPMENT

SA	DA (ACRES)	C	TC (MIN.)	I2 (IN/HR)	I10 (IN/HR)	I100 (IN/HR)	Q2 (CFS)	Q10 (CFS)	Q100 (CFS)
1	3.74	.85	5	5.45	7.27	9.84	17.3	23.1	31.3
2	3.59	.85	5	5.45	7.27	9.84	16.6	22.2	30.0
3	2.33	.85	5	5.45	7.27	9.84	10.8	14.4	19.5
4	2.01	.85	5	5.45	7.27	9.84	9.3	12.4	16.8
5	6.15	.30*	5	5.45	7.27	9.84	6.7	13.4	18.2
6	11.07	.30*	10	4.60	5.92	8.10	10.2	19.7	26.9
7	3.07	.30*	5	5.45	7.27	9.84	3.3	6.7	9.1
8	2.70	.30*	5	5.45	7.27	9.84	2.9	5.9	8.0
TOTAL	34.66						77.1	117.8	159.8

*(C = .20 for the 2-year storm)

POST-DEVELOPMENT

SA	DA (ACRES)	C	TC (MIN.)	I2 (IN/HR)	I10 (IN/HR)	I100 (IN/HR)	Q2 (CFS)	Q10 (CFS)	Q100 (CFS)
SWM A	11.13	.90	5	5.45	7.27	9.84	54.6	72.8	98.6
SWM B	5.11	.90	5	5.45	7.27	9.84	25.1	33.4	45.3
SWM C	6.72	.90	5	5.45	7.27	9.84	33.0	44.0	59.5
BYPAS	11.70	.90	5	5.45	7.27	9.84	57.4	76.6	103.6
TOTAL	34.66						170.1	226.8	307.0

POST-DEVELOPMENT WITH SWM/BMP

SA	DA (ACRES)	C	TC (MIN.)	I2 (IN/HR)	I10 (IN/HR)	I100 (IN/HR)	Q2 (CFS)	Q10 (CFS)	Q100 (CFS)
SWM A	11.13	.90	5	WITH DETENTION			8.3	13.7	26.0
SWM B	5.11	.90	5	WITH DETENTION			6.3	11.0	19.1
SWM C	6.72	.90	5	WITH DETENTION			3.1	7.4	15.0
BYPAS	11.70	.90	5	5.45	7.27	9.84	57.4	76.6	103.6
TOTAL	34.66						75.1	108.7	163.7

BMP FACILITY DESIGN WORKSHEET

Step 1 Determine the required BMP storage volume for the site.

A. DISTURBED Site area draining into the Occoquan: 24.14 acres

B. Impervousness of area in Step 1A: Impervious = 90%

C. Chart A value = 2825

D. Total required BMP storage for the site (A x C) = 68,196 cf

Step 2 Determine the required BMP storage for the 3 proposed facilities.

A. Onsite area (and offsite area if credit is to be taken) draining into the proposed facility. 22.96 acres

B. Impervousness of area in Step 2A: Impervious = 90 %

C. Chart A value = 2825

D. Total BMP storage required for this proposed BMP facility (A x C) = 64,862 cf

Step 3 Check uncontrolled areas.

Step 4 Check site coverage.

A. Total BMP volume provided: Sum all of Steps 2(D) and add to 3(C): 64,862 cf

B. Percentage of storage volume provided: Divide 4(A) by 1(D). 95.1 %

C. Compare 4(B) to 70%
Design is acceptable if 4(B) 95.1 % > 70%

Design is unacceptable if 4(B) ___ % < 70%

PHOSPHORUS REMOVAL WORKSHEET

Extended Detention and Street Sweeping

Area of DISTURBED Site 24.14 Acres

Area draining to the 3 underground dry ponds (Vaults A,B, & C) 22.96 Acres

95.11 %

Phosphorus removal efficiency of street sweeping in combination with extended detention dry ponds 50 %

Phosphorus Removed 47.6 %

Street Sweeping ONLY

Total Area of Site (Disturbed and Minimally Disturbed) 34.66 Acres

Area of Disturbed Site + Area of Minimally Disturbed Site treated ONLY by Street Sweeping 7.73 Acres

Phosphorus removal efficiency of Street Sweeping 15 %

Phosphorus Removed 3.4 %

Total Phosphorus Removed 51.0 %

STORMWATER MANAGEMENT / BEST MANAGEMENT PRACTICES NARRATIVE

Stormwater Management

This site is composed of the current Greenbriar shopping center area (which was developed several years ago without SWM/BMP), an undeveloped area, and the Greenbriar Office Park area, which includes an inadequate SWM/BMP facility. Stormwater detention has been provided for this entire area, even those existing developed areas that were minimally or not disturbed. BMP has been provided for those areas of the site that have been significantly disturbed.

To develop pre-development C factors, a factor of 0.85 was used in the existing area of the Greenbriar shopping center, and a factor of 0.3 was used everywhere else (C=0.2 for the 2-year storm). This 0.3 Rational C factor was used for the existing Greenbriar Office Park area also, since this site plan completely changed the way SWM/BMP is currently being provided (i.e., the existing SWM/BMP dry pond was removed), and therefore, it was necessary to assume that the Office Park area was completely undeveloped, in order to assess the true SWM/BMP requirements. A 0.2 C factor was used for the 2-year storm (this is within the PFM range of 0.1 to 0.2), because the area is not forested and it drains well.

Using the above methodology, the site was broken up into 8 separate drainage divides, and the pre-development flows were computed. The proposed site discharges approximately 2/3 of the site runoff into 3 underground SWM/BMP facilities (vaults). The vaults have been sufficiently oversized to compensate for those areas bypassing the SWM/BMP facilities, so that the total post-development runoff for the 2-year and the 10-year storms is at or below the pre-development level. In addition to providing the required detention for the 2-year and the 10-year storms, the SWM plan also reduces the 100-year post-development storm to within 4 cfs of the pre-development level (approximately 98% detention). Freeboard has been provided for the 10-year and the 100-year storms (from the water level to the ceiling of the vault). Outfall pipe capacities have been checked to ensure that they are sufficient to carry flows discharging from the vaults into the storm sewer system.

The bottom of the vaults will be lined with a minimum of 3" of gravel, and will be sloped at a minimum grade of 0.5%. The gravel lining will help reduce the resuspension of settled solids, and help reduce scour potential. Access to the vaults for maintenance purposes will be from the parking lots through standard Bilco-type doors or grates.

Best Management Practices

A combination of 3 vaults and street sweeping (min 3 passes per week), will achieve the required solids and phosphorus removal efficiencies (see calculations on this sheet). Removal of accumulated sediments may be performed using large sediment vacuums. This plan of SWM and BMP has been previously discussed with Mr. John Friedman of the Special Projects Branch.

SUNTRUST BANK RUNOFF COMPUTATIONS

SITE AREA, A = 0.5297 AC
i2 = 5.45 in/hr
i10 = 7.27 in/hr

PRE-DEVELOPMENT RUNOFF:
Cpre = 0.8359
Q2,pre = (Cpre)(i2)(A)
= (0.8359)(5.45)(0.5297)
= 2.4131 CFS
Q10,pre = (0.8359)(7.27)(0.5297)
= 3.2190 CFS

POST DEVELOPMENT RUNOFF:
Cpost = 0.8358
Q2,post = (Cpre)(i2)(A)
= (0.8358)(5.45)(0.5297)
= 2.4128 CFS
Q10,post = (0.8358)(7.27)(0.5297)
= 3.2186 CFS

Qpost < Qpre, THEREFORE THE PROPOSED DEVELOPMENT RESULTS IN A DECREASE IN OVERALL RUNOFF VOLUME FROM THE PRE-DEVELOPMENT CONDITION.

SWM NARRATIVE

AS THE CAILCULATIONS SHOW ON SHEET 6A AND 6B THE SWM REQUIREMENT FOR THIS SITE HAS BEEN SATISFIED. BECAUSE THIS IS A REDEVELOPMENT, THE STORMWATER RUNOFF WILL NOT BE INCREASED FROM THE EXISTING CALCULATION. THE MAJORITY OF THE SITE RUNOFF IS PICKED IUP BY THE ENCLOSED EXISTING STORM SEWER SYSTEM TO THE WEST OF THE SITE AND CONTIINUES TO THE EXISTING UNDERGROUND SWM/BMP VAULT A. THE REMAINING SITE RUNOFF IS PICKED UP BY AN EXISTING STORM SEWER SYSTEM TO THE EAST OF THE SITE AND CONTIINUES TO AN EXISTING SWM POND IN FRONT TO THE EXISTING SHELL GAS STATION. IBASED ON THE EXISTING CALCULATIONS AND SWM NARRATIVE, STORMWATER DETENTION HAS BEEN PREVIOUSLY PROVIDED TO ACCOMMODATE FOR THIS DEVELOPMENT.

ADEQUATE OUTFALL

SEE SHEETS 6F AND 6G FOR ADEQUATE OUTFALL ANALYSIS AND STORM COMPUTATIONS.

SUNTRUST BANK BMP NARRATIVE

REFERENCING THE EXISTING BMP NARRATIVE, THERE ARE THREE EXISTING SWM/BMP VAULTS COMBINED WITH STREET SWEEPING IN ORDER TO ACHIEVE THE REQUIRED SOLIDS AND PHOSPHOROUS REMOVAL EFFICIENCIES FOR THE OVERALL EXISTING COMMERCIAL CENTER (SEE THE CALCULATIONS ON SHEET 6). THE STREIET SWEEPING IS TO CONTINUE WITH A MINIMUM OF THREE PASSES PER WEEK. AS DEMONSTRATED IN THE RUNOFF CALCULATIONS, THE PROPOSED DEVELOPMENT OF THE SUBJIECT PARCEL WILL NOT GENERATE ANY ADDITIONAL RUNOFF IN THE POST DEVELOPMENT CONDITION. THE CALCULATION BELOW (SEE 2001 FAIRFAX COUNTY PUBLIC FACILITIES MANUAL SEC. 6-401.2B FOR REFERENCE) ILLUSTRATING THE CHANGE IN IMPERVIOUS AREA, SHOWS THAT, PER THE REDEVELOPMENT CRITERIA, APPROX. 10% PHOSPHORUS REMOVAL IS REQUIRED FOR THE DEVELOPMENT SITE.

$[1 - 0.9(\text{"I"}_{PRE} / \text{"I"}_{POST})] \times 100 = \%$ PHOSPHORUS REMOVAL

$[1 - 0.9(0.8359/0.8358)] \times 100 = 9.989\%$ PHOSPHORUS REMOVAL

HOWEVER, THE SITE IS LOCATED IN A WATER SUPPLY PROTIECTION OVERLAY DISTRICT, WHERE 50% PHOSPHORUS REMOVAL IS REQUIRED. THEREFOIRE, REDEVELOPMENT CRITERION DOES NOT APPLY AS THE NORTHERN VIRGINIA BMP HANDBOOK STIPULATES ON PAGE 4-13 THAT IN SITUATIONS WHERE MORE THAN ONE OIF THE PHOSPHORUS REMOVAL REQUIREMENTS APPLIES, THE MOST STRINGENT SHALL BE USED.

THE APPLICANT INTENDS TO REQUEST A WAIVER OF THE BMP REQUIREMENTS FOR THE DEVELOPMENT PARCEL ON THE BASIS OF NO NET INCREASE IN RUNOFF OR IMPERVIOUS AREA, UNAVAILABILITY OF ACCEPTABLE BMP MEASURES SERVING THE DEVELOPMENT PARCEL, AND THE IMPRACTICALITY OF INSTALLING STRUCTURAL BMP MEASURES WITHIN THE DEVELOPMENT AREA. THE WAIVER WILL BE PROCESSED WITH THE CONSTRUCTION PLANS ONCE ACTION IS TAKEN ON THE SPECIAL EXCEPTION.

STORMWATER MANAGEMENT / BMP COMPUTATIONS (8012-SP-01-03) AS PREPARED BY BENGTSON, DEBELL, ELKIN & TITUS, LTD. NOW KNOWN AS BURGESS & NIPLE, INC. - FOR INFORMATION ONLY!!!

NO.	DESCRIPTION	REVIEW	APPROVED	DATE

REVISION APPROVED BY DIVISION OF DESIGN REVIEW

COMMONWEALTH OF VIRGINIA JOHN T. DeBELL No. 7393 PROFESSIONAL ENGINEER

REVISIONS	DATE
PER 4/5 FFX. CO. MTG.	4-19-91
ALL CALCULATIONS	2-26-91
ADDENDUM #1	11-1-90
REV. PRKG. LOT POLE LOCATNS ADDED H.C. RAMPS	7-23-90
N/A THIS SHEET	7-17-90
FOR SECOND SUBMISSION	3-15-90

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◆ HENRICO COUNTY, VIRGINIA ◆ PRINCE WILLIAM COUNTY, VIRGINIA ◆ MONTGOMERY COUNTY, MARYLAND

STORMWATER MANAGEMENT / BMP COMPUTATIONS
GREENBRIAR SHOPPING CENTER ADDITION
PROVIDENCE DISTRICT
FAIRFAX COUNTY, VIRGINIA

DATE: 10-25-89	
SCALE: N/A	
DESIGN: JFM	DRAWN:
CHECK:	CHECK:
JOB NO.: 89C-042	
PR. NO.: CT08999000	
SHEET 47 OF 58	
FILE NO.: C-2860	

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STORMWATER MANAGEMENT / BMP COMPUTATIONS
SUNTRUST BANK
GREENBRIAR TOWN CENTER
FAIRFAX COUNTY, VIRGINIA
SPRINGFIELD DISTRICT

SE 2008-SP-015
COUNTY PROJECT NUMBER

COMMONWEALTH OF VIRGINIA JONATHAN D. BONDI Lic. No.001379 08-11-08 CERTIFIED LANDSCAPE ARCHITECT

PLAN STATUS	
03/21/08	INITAL SUBMISSION
04/16/08	ACCEPTANCE REVISIONS
07/01/08	SECOND SUBMISSION
08/11/08	THIRD SUBMISSION

DATE	DESCRIPTION

JDB	CAD	JDB
DESIGN	DRAWN	CHKD
SCALE	H: NO SCALE V:	

JOB No. 4466-01-003
DATE: March 01, 2008
FILE No. 4466-D-ZP-001
SHEET 6 OF 7

Cad file name : F '66 – Greenbriar Shopping Center Parcel 10-C\4466-01-003 (PLN)\Planning\Special Exception\4466-SWM BMP.dwg

Application No SE-2008-SP-015 Staff C.D.

APPROVED (SE) / SP PLAN
See Development Conditions dated 8-27-2008
Date of (BOS) (BZA) approval 9-22-2008

Sheet 7 of 14

BENGTSON, DeBELL, ELKIN & TITUS, LTD.

VAULT A
Stage - Storage - Discharge Rating

Elevation	Storage Volume* (Ac-Ft)	BMP Flow (CFS)	Principal Spillway (CFS)	Emergency Spillway (CFS)	Total Flow (CFS)	30"RCP outlet Capacity (CFS)
380.00	0.00	0.0	0.0	0.0	0.0	
380.50	0.02	0.1	0.0	0.0	0.1	
381.00	0.16	0.2	0.0	0.0	0.2	
381.50	0.34	0.2	0.0	0.0	0.2	
382.00	0.49	0.2	0.0	0.0	0.2	16.8
382.50	0.65	0.2	0.0	0.0	0.2	
382.68	0.72	0.3	0.0	0.0	0.3	
383.00	0.83	0.3	1.1	0.0	1.4	30.8
383.50	1.01	0.3	4.3	0.0	4.6	
384.00	1.17	0.3	8.3	0.0	8.6	42.0
384.50	1.32	0.3	12.8	0.0	13.1	
384.60	1.36	0.3	13.7	0.0	14.0	
385.00	1.51	0.4	17.3	4.9	22.6	50.7
385.50	1.69	0.4	21.7	16.4	38.5	

*Includes a 2% reduction in volume due to anticipated structural columns

Elevation 2-year storm: 383.97' Discharge 2-year storm: 8.3 cfs
Elevation 10-year storm: 384.57' Discharge 10-year storm: 13.7 cfs
Elevation 100-year storm: 385.11' Discharge 100-year storm: 26.0 cfs

48 HOUR DRAWDOWN

BMP: 12" Perforated PVC Pipe Invert: 380.00' Datum: 380.1'

Storage Req'd @ 90% Imp.: 11.13 acres * 2825 = 31,442 cu. ft. @ El 382.68'
Avgerage Outflow : .182 cfs [31442/ 48 (60) (60)]
Orifice Area Req'd : .0333 sq. ft. [.182 / .6(2g*(382.68-380.1)/2)^.5]

Use 1 - 2 1/2" hole

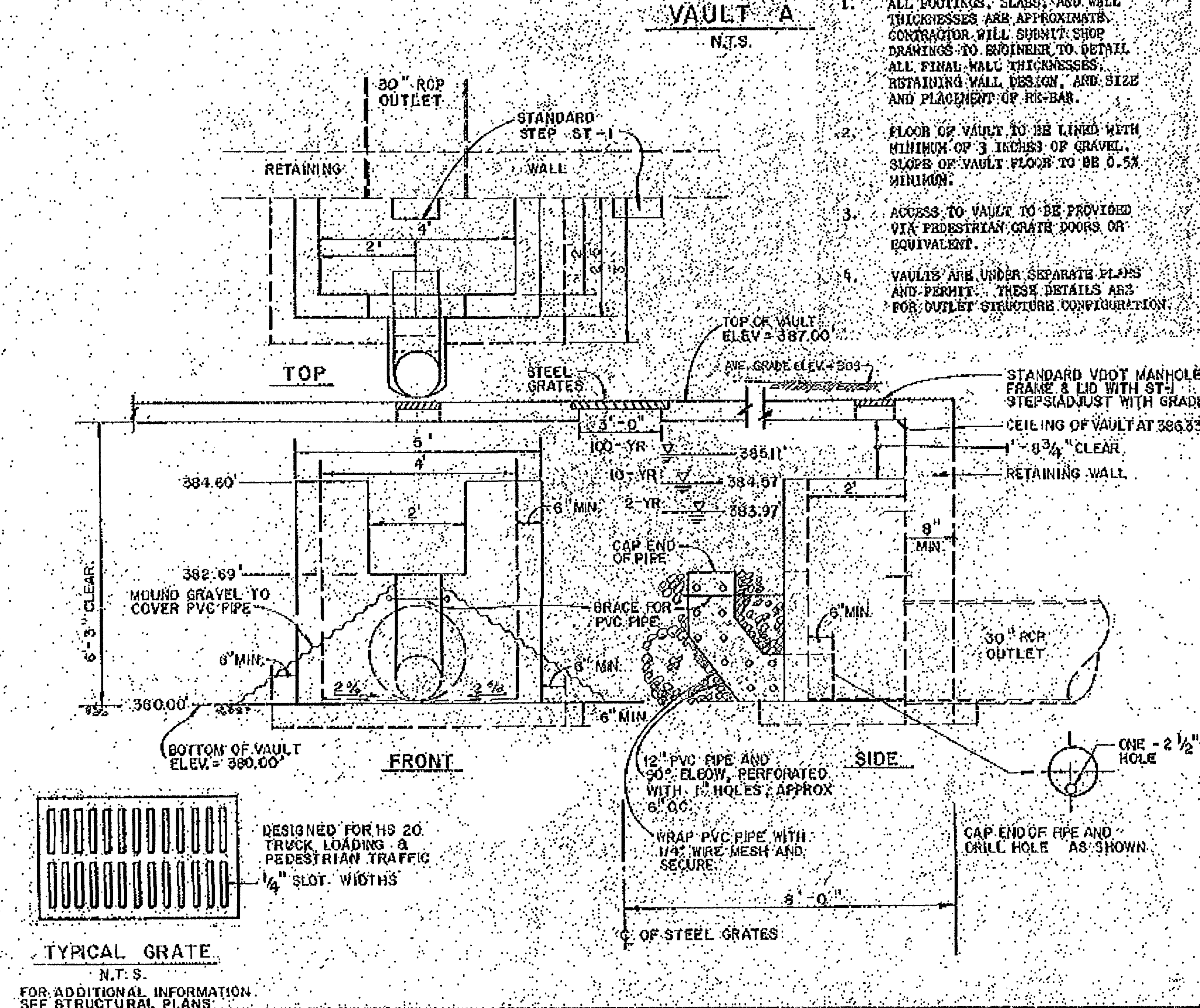
BMP Rating : Q = .6 (.0333) [2g(WSE-380.1)]^.5

Principal Spillway: 2' Concrete Rectangular Weir Invert: 382.69'
(Contracted Opening)

Principal Spillway Rating: Q = 3.2 (2 - .2*H) * (H^1.5) (H = WSE-382.69)

Emergency Spillway: 6' Concrete Rectangular Weir Invert: 384.60'

Emergency Spillway Rating: Q = 3.2 (6) (H^1.5) (H = WSE-384.60)



NOTES:

1. ALL FOOTINGS, SLABS, AND WALL THICKNESSES ARE APPROXIMATE. CONTRACTOR WILL SUBMIT SHOP DRAWINGS TO ENGINEER TO DETAIL ALL FINAL WALL THICKNESSES, RETAINING WALL DESIGN, AND SIZE AND PLACEMENT OF RE-BAR.
2. FLOOR OF VAULT TO BE LINED WITH MINIMUM OF 3 INCHES OF GRAVEL. SLOPE OF VAULT FLOOR TO BE 0.5% MINIMUM.
3. ACCESS TO VAULT TO BE PROVIDED VIA PEDESTRIAN GRATE DOORS OR EQUIVALENT.
4. VAULTS ARE UNDER SEPARATE PLANS AND PERMIT. THESE DETAILS ARE FOR OUTLET STRUCTURE CONFIGURATION.

VAULT B
Stage - Storage - Discharge Rating

Elevation	Storage Volume* (Ac-Ft)	BMP Flow (CFS)	Principal Spillway (CFS)	Emergency Spillway (CFS)	Total Flow (CFS)	30"RCP outlet Capacity (CFS)
380.00	0.00	0.0	0.0	0.0	0.0	
380.50	0.02	0.0	0.0	0.0	0.0	
381.00	0.08	0.1	0.0	0.0	0.1	
381.50	0.15	0.1	0.0	0.0	0.1	
382.00	0.21	0.1	0.0	0.0	0.1	16.8
382.50	0.28	0.1	0.0	0.0	0.1	
382.92	0.33	0.1	0.0	0.0	0.1	
383.00	0.34	0.1	0.0	0.0	0.1	30.8
383.50	0.40	0.1	2.6	0.0	2.7	
384.00	0.47	0.1	9.6	0.0	9.7	42.0
384.10	0.48	0.1	11.3	0.0	11.4	
384.50	0.53	0.1	18.7	3.2	22.0	
385.00	0.60	0.2	29.2	10.9	40.3	50.7

*Includes a 2% reduction in volume due to anticipated structural columns

Elevation 2-year storm: 383.76' Discharge 2-year storm: 6.3 cfs
Elevation 10-year storm: 384.07' Discharge 10-year storm: 11.0 cfs
Elevation 100-year storm: 384.39' Discharge 100-year storm: 19.1 cfs

48 HOUR DRAWDOWN

BMP: 12" Perforated PVC Pipe Invert: 380.00' Datum: 380.1'

Storage Req'd @ 90% Imp.: 5.11 acres * 2825 = 14,436 cu. ft. @ El 382.92'
Avgerage Outflow : .0835 cfs [14436/ 48 (60) (60)]
Orifice Area Req'd : .0146 sq. ft. [.0835/.6(2g*(382.92-380.1)/2)^.5]

Use 1 - 1 5/8" hole

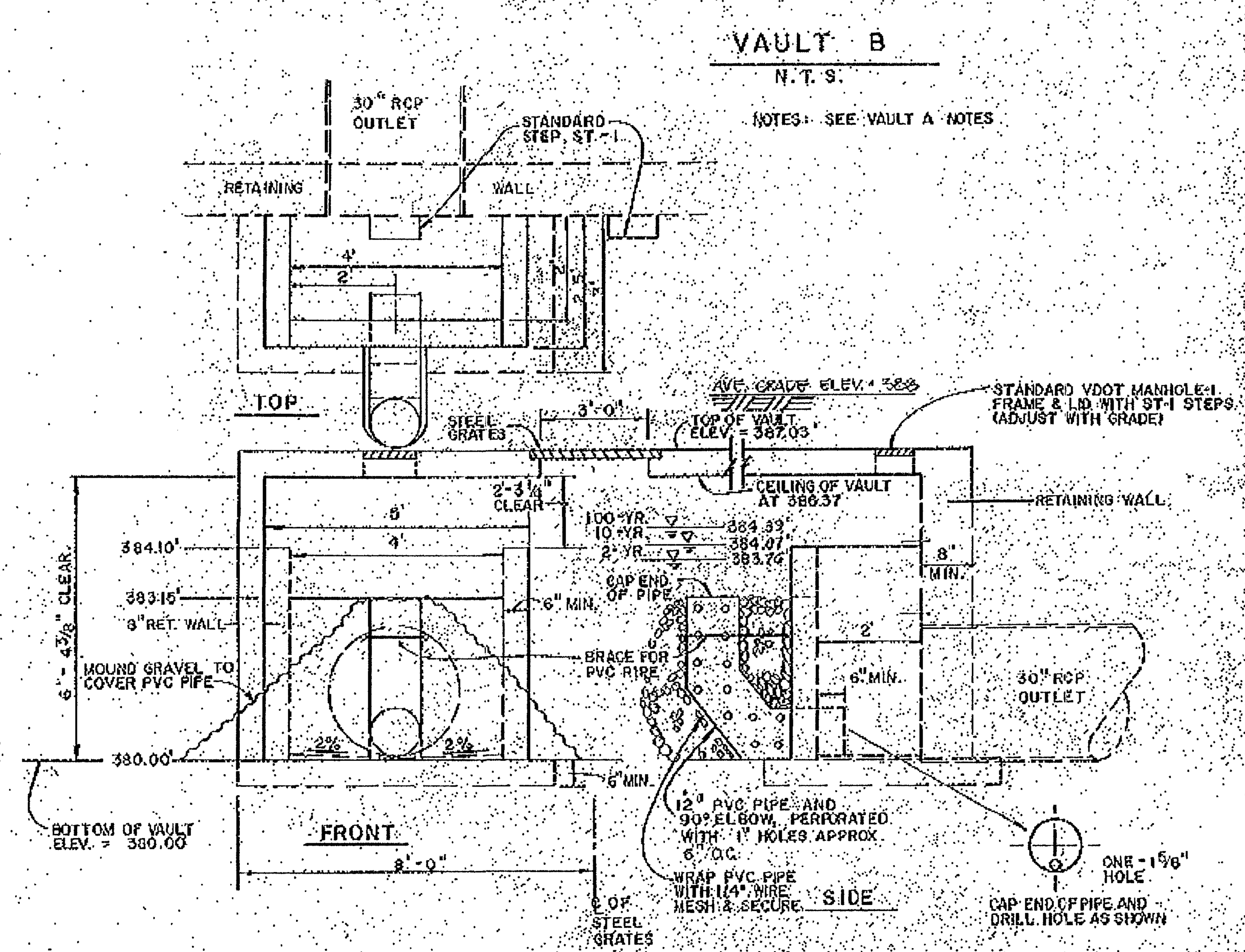
BMP Rating : Q = .6 (.0146) [2g(WSE-380.1)]^.5

Principal Spillway: 4' Concrete Rectangular Weir Invert: 383.15'
(Contracted Opening)

Principal Spillway Rating: Q = 3.2 (4 - .2*H) * (H^1.5) (H = WSE-383.15)

Emergency Spillway: 4' Concrete Rectangular Weir Invert: 384.10'

Emergency Spillway Rating: Q = 3.2 (4) (H^1.5) (H = WSE-384.10)



VAULT C
Stage - Storage - Discharge Rating

Elevation	Storage Volume* (Ac-Ft)	BMP Flow (CFS)	Principal Orif (CFS)	Principal Spwy (CFS)	Emergency Spillway (CFS)	Total Flow (CFS)	24"RCP outlet Capacity (CFS)
376.40	0.00	0.0	0.0	0.0	0.0	0.0	
376.90	0.03	0.1	0.0	0.0	0.0	0.1	
377.40	0.13	0.1	0.0	0.0	0.0	0.1	
377.90	0.24	0.1	0.0	0.0	0.0	0.1	
378.40	0.36	0.1	0.0	0.0	0.0	0.1	
378.75	0.44	0.2	0.0	0.0	0.0	0.2	
378.90	0.47	0.2	0.0	0.0	0.0	0.2	18.4
379.40	0.58	0.2	0.8	0.0	0.0	1.0	
379.90	0.70	0.2	1.1	0.0	0.0	1.3	
380.00	0.72	0.2	1.2	0.0	0.0	1.4	
380.40	0.81	0.2	1.4	0.0	0.0	1.6	29.0
380.50	0.83	0.2	1.5	0.0	0.0	1.7	
380.90	0.92	0.2	1.7	2.0	0.7	4.6	
381.00	0.94	0.2	1.7	2.7	1.6	6.2	
381.40	1.03	0.2	1.9	6.3	6.7	15.1	
381.50	1.06	0.2	1.9	7.4	8.3	17.8	34.8

*Includes a 2% reduction in volume due to anticipated structural columns

Elevation 2-year storm: 380.69' Discharge 2-year storm: 3.1 cfs
Elevation 10-year storm: 381.08' Discharge 10-year storm: 7.4 cfs
Elevation 100-year storm: 381.40' Discharge 100-year storm: 15.0 cfs

48 HOUR DRAWDOWN

BMP: 12" Perforated PVC Pipe Invert: 376.40' Datum: 376.5'

Storage Req'd @ 90% Imp.: 6.72 acres * 2825 = 18,984 cu. ft. @ El 378.75'
Avgerage Outflow : .1099 cfs [18984/ 48 (60) (60)]
Orifice Area Req'd : .0215 sq. ft. [.1099/.6(2g*(378.75-376.5)/2)^.5]

Use 1 - 2" hole

BMP Rating : Q = .6 (.0215) [2g(WSE-376.5)]^.5

Principal Orifice: 6" Square Cut Opening Invert: 378.75' Datum: 379.00'

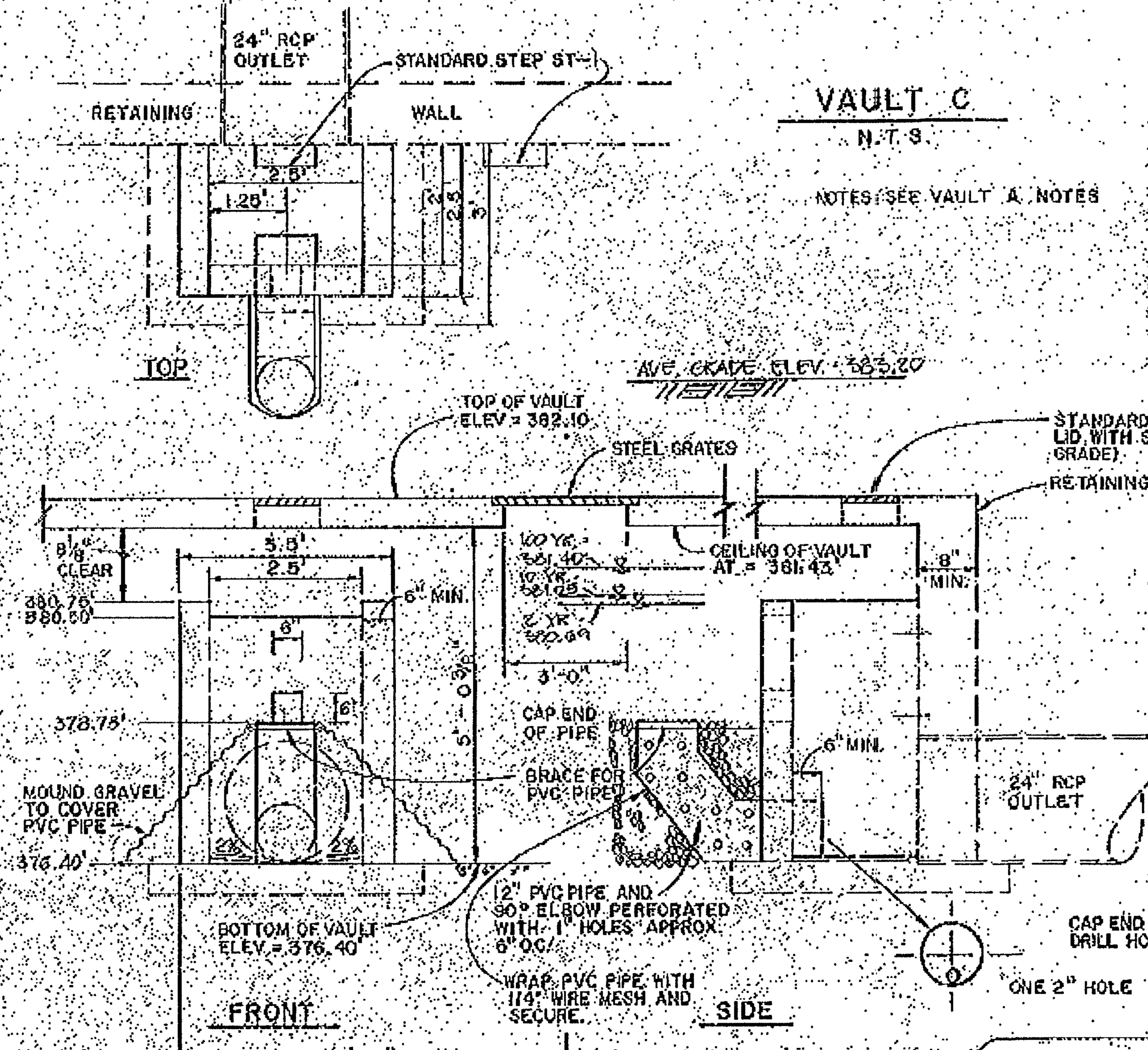
Principal Orifice Rating: Q = .6 (.25) [2g * H]^.5 (H = WSE-379.00)

Principal Spillway: 2.5' Concrete Rectangular Weir Invert: 380.50'
(Contracted Opening)

Principal Spillway Rating: Q = 3.2 (2.5 - .2*H) * (H^1.5) (H = WSE-380.50)

Emergency Spillway: 4' Concrete Rectangular Weir Invert: 380.75'

Emergency Spillway Rating: Q = 3.2 (4) (H^1.5) (H = WSE-380.75)



COMMONWEALTH OF VIRGINIA — JOHN T. DeBELL No. 7383 PROFESSIONAL ENGINEER

NO.	DESCRIPTION	REVIEW BY	APPROVED	DATE

REVISION APPROVED BY DIVISION OF DESIGN REVIEW

COMMONWEALTH OF VIRGINIA — STEVEN A. WEISBERGER No. 018136 PROFESSIONAL ENGINEER

REVISIONS	DATE
PER 4/6 FFX.CO. MTG.	4-15-91
VAULT B & C STAGE DISCHARGE VAULT A,B & C OUTLET DETAILS	2-26-91
ADDENDUM #1	11-1-90
REV. PARKING LOT POLE LOCATION AND ADD H.C. RAMPS	7-25-90
N/A THIS SHEET	7-17-90
FOR Z.A. SUBMISSION	3-15-90

DATE: 10-25-89
SCALE: AS SHOWN
DESIGN: JFM DRAWN:
CHECK: CHECK:
JOB NO.: 88C-042
P.R. NO.: CT06599000
SHEET 48 OF 58
FILE NO. C-2860

STORMWATER MANAGEMENT / BMP COMPUTATIONS
GREENBRIAR SHOPPING CENTER ADDITION
PROVIDENCE DISTRICT
FAIRFAX COUNTY, VIRGINIA

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STORMWATER MANAGEMENT / BMP COMPUTATIONS (8012-SP-01-03) AS PREPARED BY BENGTSON, DEBELL, ELKIN & TITUS, LTD. NOW KNOWN AS BURGESS & NIPLE, INC. - FOR INFORMATION ONLY!!!

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STORMWATER MANAGEMENT / BMP COMPUTATIONS
SUNTRUST BANK
GREENBRIAR TOWN CENTER
FAIRFAX COUNTY, VIRGINIA
SPRINGFIELD DISTRICT

SE 2008-SP-015
COUNTY PROJECT NUMBER

COMMONWEALTH OF VIRGINIA — JONATHAN D. BONDI Lic. No.001379 08-11-08 CERTIFIED LANDSCAPE ARCHITECT

PLAN STATUS

DATE	DESCRIPTION
03/21/08	INITAL SUBMISSION
04/16/08	ACCEPTANCE REVISIONS
07/01/08	SECOND SUBMISSION
08/11/08	THIRD SUBMISSION

JDB DESIGN	CAD DRAWN	JDB CHKD

SCALE H: NO SCALE V:
JOB No. 4466-01-003
DATE: March 01, 2008
FILE No. 4466-D-ZP-001
SHEET 6A OF 7

Cad file name : P:\ '66 - Greenbriar Shopping Center Parcel 10-C\4466-01-003 (PLN)\Planning\Special Exception\4466-SWM BMP.dwg

BENGTSON, DeBELL, ELKIN & TITUS, LTD.

POND-2 Version: 4.03
S/N: 88020717

Page 1 of 3

GREENBRIAR SHOPPING CENTER
SWM/BMP VAULT A
2-YEAR STORM ROUTING

EXECUTED 04-15-1991 12:33:55
Disk Files: B:GRBR3 .PND ; B:GRBR3-2 .HYD

INITIAL CONDITIONS
Elevation = 380.00 ft
Outflow = 0.0 cfs

GIVEN POND DATA			COMPUTATIONS	
ELEVATION (ft)	OUTFLOW (cfs)	STORAGE (ac-ft)	2S/t (cfs)	2S/t + O (cfs)
380.00	0.0	0.00	0.0	0.0
380.50	0.1	0.02	5.8	5.9
381.00	0.2	0.16	46.5	46.7
381.50	0.2	0.34	98.7	98.9
382.00	0.2	0.49	142.3	142.5
382.50	0.2	0.65	188.8	189.0
382.68	0.3	0.72	209.1	209.4
383.00	1.4	0.83	241.0	242.4
383.50	4.6	1.01	293.3	297.9
384.00	8.6	1.17	339.8	348.4
384.50	13.1	1.32	383.3	396.4
384.60	14.0	1.36	395.0	409.0
385.00	22.6	1.51	438.5	461.1
385.50	38.5	1.69	490.8	529.3
386.00	58.1	1.84	534.4	592.5

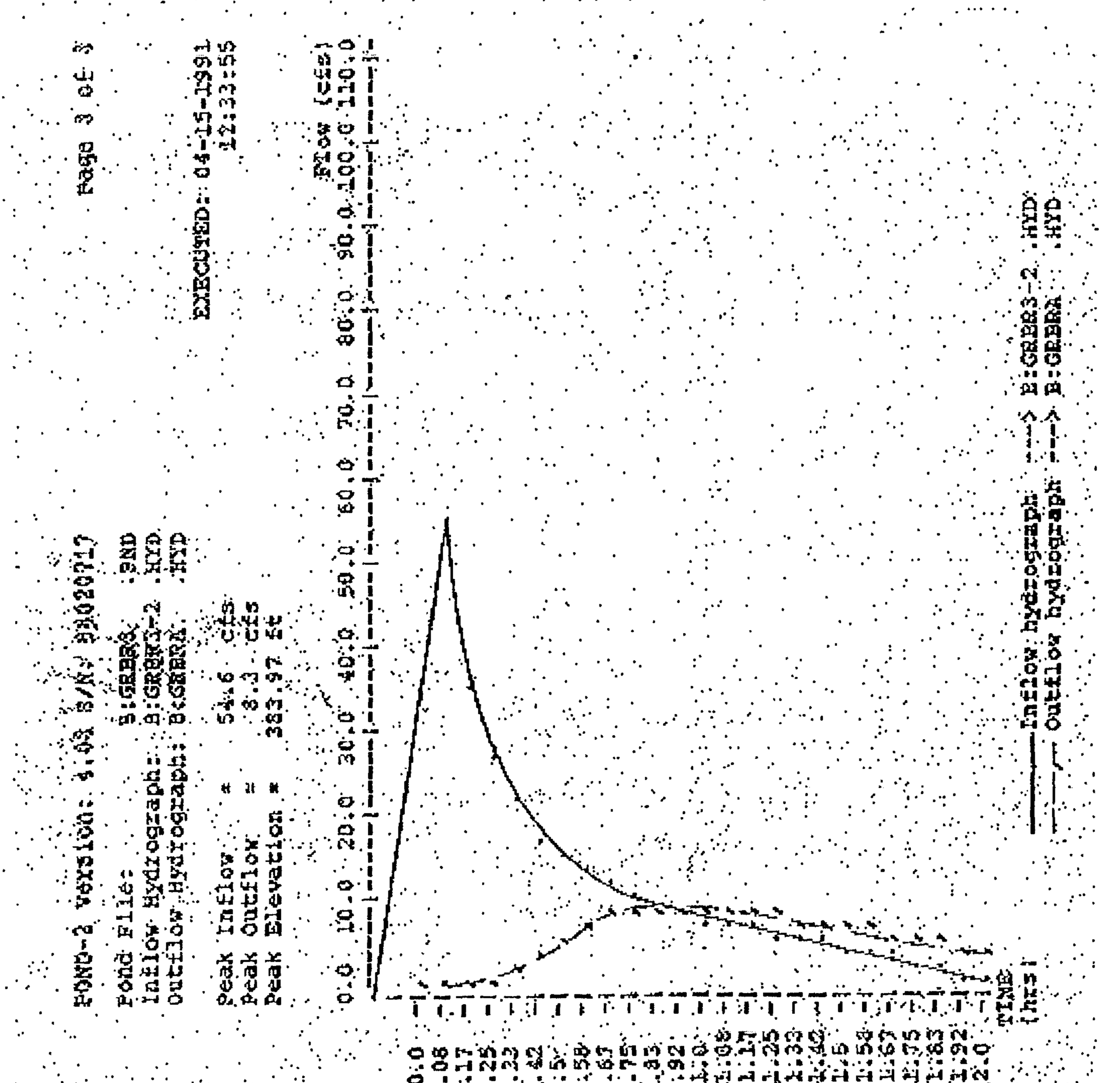
Time increment (t) = 0.083 hrs.

POND-2 Version: 4.03 S/N: 88020717 Page 2 of 3

Pond File: B:GRBR3 .PND EXECUTED: 04-15-1991
Inflow Hydrograph: B:GRBR3-2 .HYD 12:33:55
Outflow Hydrograph: B:GRBRA .HYD

INFLOW HYDROGRAPH		ROUTING COMPUTATIONS				
TIME (hrs)	INFLOW (cfs)	I1+I2 (cfs)	2S/t - O (cfs)	2S/t + O (cfs)	OUTFLOW (cfs)	ELEVATION (ft)
0.000	0.0	-----	0.0	0.0	0.0	380.00
0.083	54.6	54.6	54.2	54.6	0.2	381.08
0.167	35.2	89.8	143.5	143.9	0.2	382.02
0.250	26.0	61.2	204.2	204.7	0.3	382.64
0.333	20.8	46.9	247.3	251.1	1.9	383.08
0.417	17.2	38.1	277.6	285.3	3.9	383.39
0.500	14.6	31.8	298.4	309.4	5.5	383.61
0.583	12.8	27.4	312.2	325.9	6.8	383.78
0.667	11.0	23.8	320.8	336.1	7.6	383.88
0.750	10.0	21.0	325.7	341.9	8.1	383.94
0.833	8.9	18.9	328.0	344.6	8.3	383.96
0.917	8.2	17.1	328.5	345.2	8.3	383.97
1.000	7.4	15.6	327.6	344.1	8.3	383.96
1.083	6.8	14.2	325.6	341.8	8.1	383.93
1.167	6.2	13.0	323.0	338.7	7.8	383.90
1.250	5.6	11.8	319.8	334.8	7.5	383.87
1.333	4.9	10.5	316.0	330.3	7.2	383.82
1.417	4.3	9.2	311.7	325.2	6.8	383.77
1.500	3.7	8.0	307.0	319.7	6.3	383.72
1.583	3.1	6.8	302.1	313.8	5.9	383.66
1.667	2.5	5.6	297.0	307.7	5.4	383.60
1.750	1.9	4.4	291.7	301.4	4.9	383.53
1.833	1.2	3.1	286.0	294.8	4.4	383.47
1.917	0.6	1.8	279.7	287.8	4.0	383.41
2.000	0.0	0.6	273.2	280.3	3.6	383.34

Peak Inflow = 54.6 cfs
Peak Outflow = 8.3 cfs
Peak Elevation = 383.97 ft



POND-2 Version: 4.03
S/N: 88020717

Page 1 of 3

GREENBRIAR SHOPPING CENTER
SWM/BMP VAULT A
10-YEAR STORM ROUTING

EXECUTED 04-15-1991 12:36:46
Disk Files: B:GRBR3 .PND ; B:GRBR3-10.HYD

INITIAL CONDITIONS
Elevation = 380.00 ft
Outflow = 0.0 cfs

GIVEN POND DATA			COMPUTATIONS	
ELEVATION (ft)	OUTFLOW (cfs)	STORAGE (ac-ft)	2S/t (cfs)	2S/t + O (cfs)
380.00	0.0	0.00	0.0	0.0
380.50	0.1	0.02	5.8	5.9
381.00	0.2	0.16	46.5	46.7
381.50	0.2	0.34	98.7	98.9
382.00	0.2	0.49	142.3	142.5
382.50	0.2	0.65	188.8	189.0
382.68	0.3	0.72	209.1	209.4
383.00	1.4	0.83	241.0	242.4
383.50	4.6	1.01	293.3	297.9
384.00	8.6	1.17	339.8	348.4
384.50	13.1	1.32	383.3	396.4
384.60	14.0	1.36	395.0	409.0
385.00	22.6	1.51	438.5	461.1
385.50	38.5	1.69	490.8	529.3
386.00	58.1	1.84	534.4	592.5

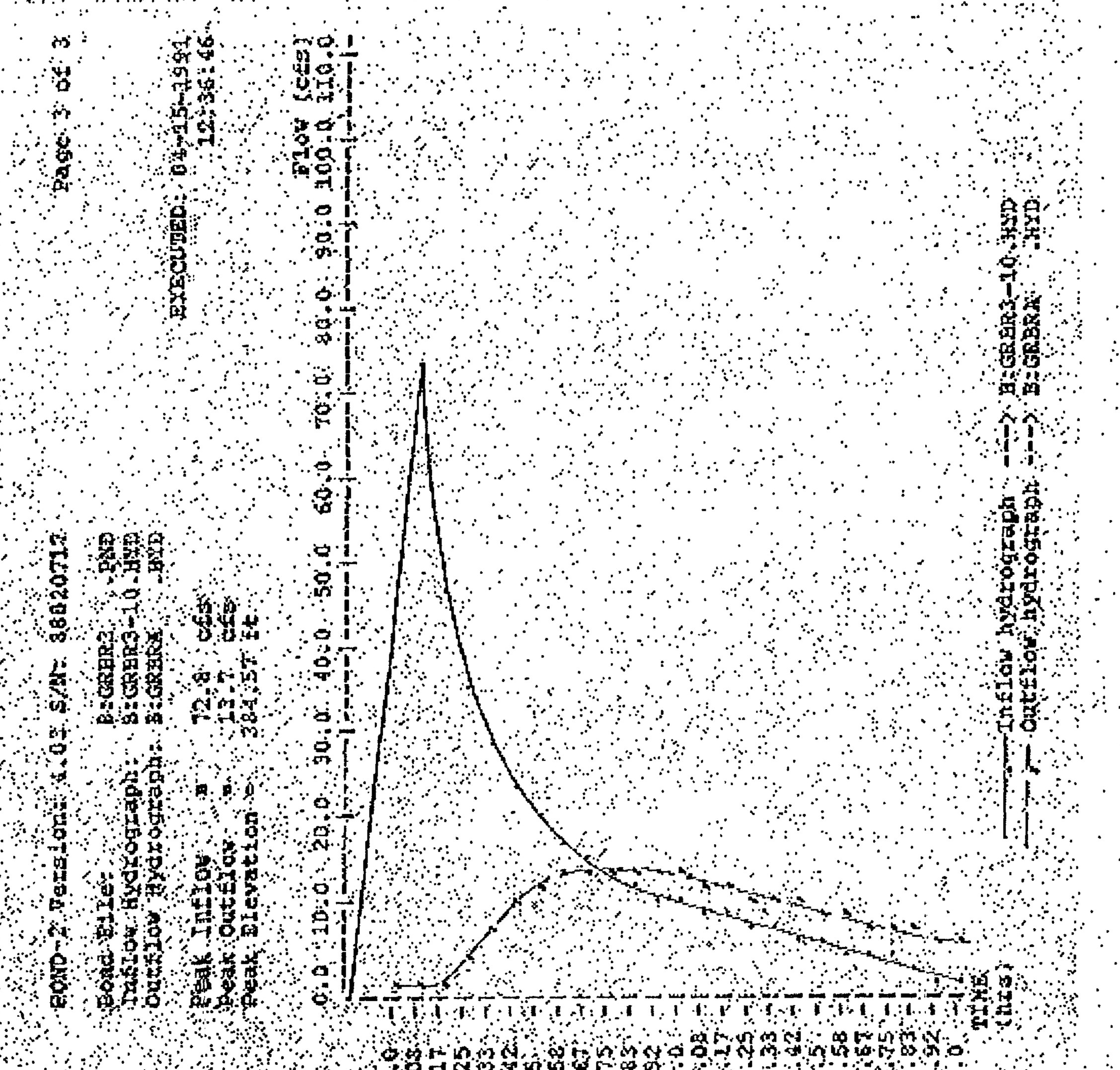
Time increment (t) = 0.083 hrs.

POND-2 Version: 4.03 S/N: 88020717 Page 2 of 3

Pond File: B:GRBR3 .PND EXECUTED: 04-15-1991
Inflow Hydrograph: B:GRBR3-10.HYD 12:36:46
Outflow Hydrograph: B:GRBRA .HYD

INFLOW HYDROGRAPH		ROUTING COMPUTATIONS				
TIME (hrs)	INFLOW (cfs)	I1+I2 (cfs)	2S/t - O (cfs)	2S/t + O (cfs)	OUTFLOW (cfs)	ELEVATION (ft)
0.000	0.0	-----	0.0	0.0	0.0	380.00
0.083	72.8	72.8	72.4	72.8	0.2	381.25
0.167	46.9	119.7	191.7	192.1	0.2	382.53
0.250	34.7	81.6	266.9	273.2	3.2	383.28
0.333	27.8	62.4	315.1	329.3	7.1	383.81
0.417	22.9	50.7	345.3	365.8	10.2	384.18
0.500	19.4	42.4	363.1	387.7	12.3	384.41
0.583	16.8	36.3	372.8	399.4	13.3	384.52
0.667	14.7	31.5	377.0	404.3	13.7	384.56
0.750	13.1	27.8	377.4	404.8	13.7	384.57
0.833	11.8	24.9	375.3	402.4	13.5	384.55
0.917	10.8	22.6	371.5	398.0	13.2	384.51
1.000	9.9	20.7	366.9	392.3	12.7	384.46
1.083	9.1	19.0	361.7	385.9	12.1	384.39
1.167	8.3	17.4	356.2	379.1	11.5	384.32
1.250	7.4	15.7	350.3	371.9	10.8	384.24
1.333	6.6	14.0	344.1	364.3	10.1	384.17
1.417	5.8	12.4	337.8	356.5	9.4	384.08
1.500	5.0	10.8	331.4	348.6	8.6	384.00
1.583	4.1	9.1	324.5	340.5	8.0	383.92
1.667	3.3	7.4	317.4	332.0	7.3	383.84
1.750	2.5	5.8	310.0	323.2	6.6	383.75
1.833	1.7	4.2	302.4	314.2	5.9	383.66
1.917	0.8	2.5	294.6	305.0	5.2	383.57
2.000	0.0	0.8	286.5	295.5	4.5	383.48

Peak Inflow = 72.8 cfs
Peak Outflow = 13.7 cfs
Peak Elevation = 384.57 ft



POND-2 Version: 4.03
S/N: 88020717

Page 1 of 3

GREENBRIAR SHOPPING CENTER
SWM/BMP VAULT A
100-YEAR STORM ROUTING

EXECUTED 04-15-1991 12:40:04
Disk Files: B:GRBR3 .PND ; B:GRBR3-1H.HYD

INITIAL CONDITIONS
Elevation = 380.00 ft
Outflow = 0.0 cfs

GIVEN POND DATA			COMPUTATIONS	
ELEVATION (ft)	OUTFLOW (cfs)	STORAGE (ac-ft)	2S/t (cfs)	2S/t + O (cfs)
380.00	0.0	0.00	0.0	0.0
380.50	0.1	0.02	5.8	5.9
381.00	0.2	0.16	46.5	46.7
381.50	0.2	0.34	98.7	98.9
382.00	0.2	0.49	142.3	142.5
382.50	0.2	0.65	188.8	189.0
382.68	0.3	0.72	209.1	209.4
383.00	1.4	0.83	241.0	242.4
383.50	4.6	1.01	293.3	297.9
384.00	8.6	1.17	339.8	348.4
384.50	13.1	1.32	383.3	396.4
384.60	14.0	1.36	395.0	409.0
385.00	22.6	1.51	438.5	461.1
385.50	38.5	1.69	490.8	529.3
386.00	58.1	1.84	534.4	592.5

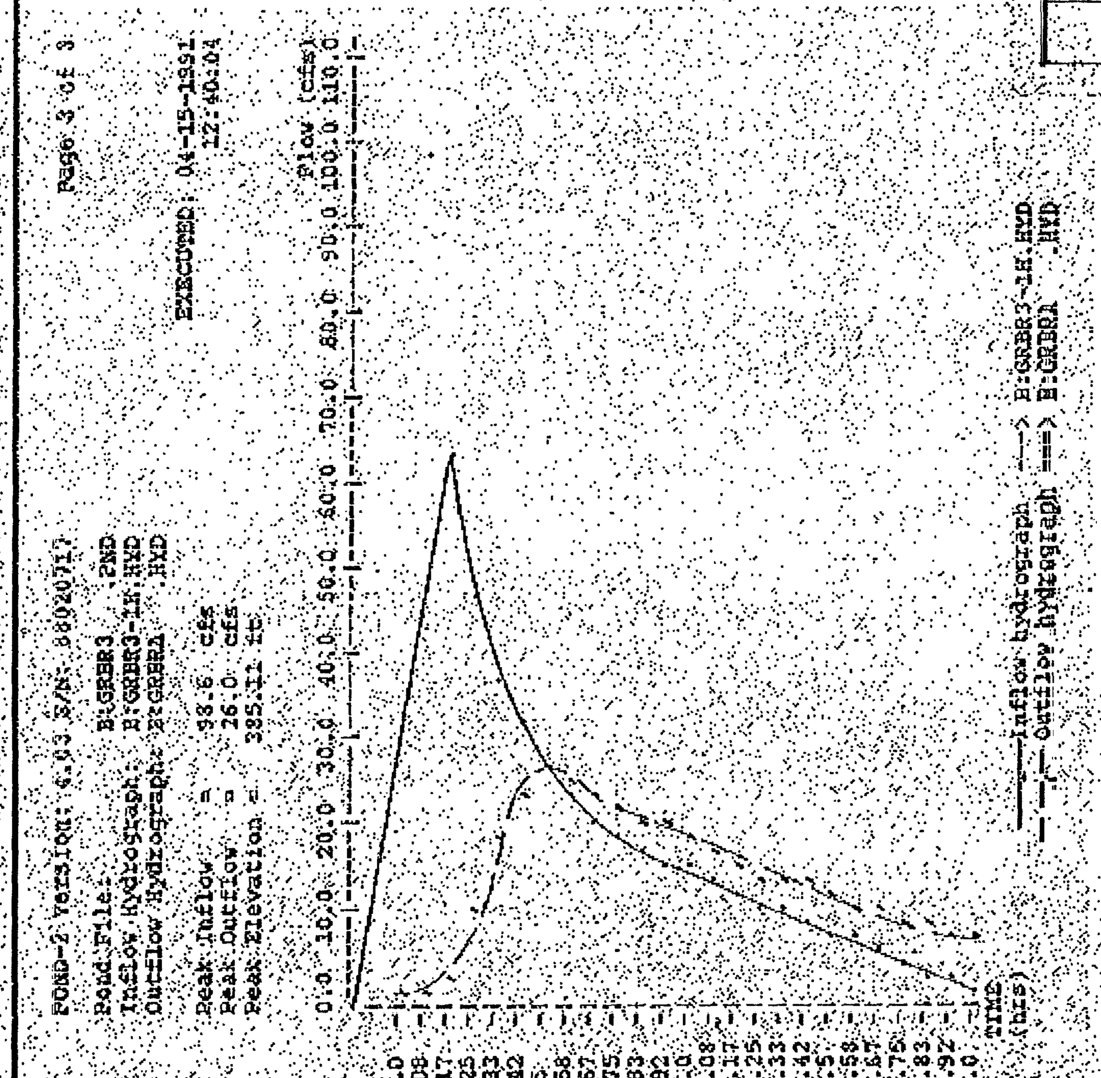
Time increment (t) = 0.083 hrs.

POND-2 Version: 4.03 S/N: 88020717 Page 2 of 3

Pond File: B:GRBR3 .PND EXECUTED: 04-15-1991
Inflow Hydrograph: B:GRBR3-1H.HYD 12:40:04
Outflow Hydrograph: B:GRBRA .HYD

INFLOW HYDROGRAPH		ROUTING COMPUTATIONS				
TIME (hrs)	INFLOW (cfs)	I1+I2 (cfs)	2S/t - O (cfs)	2S/t + O (cfs)	OUTFLOW (cfs)	ELEVATION (ft)
0.000	0.0	-----	0.0	0.0	0.0	380.00
0.083	98.6	98.6	98.2	98.6	0.2	381.50
0.167	63.8	162.4	255.7	260.5	2.4	383.16
0.250	47.4	111.2	346.2	366.9	10.3	384.19
0.333	37.5	84.8	395.8	431.0	17.6	384.77
0.417	31.4	68.8	417.8	464.6	23.4	385.03
0.500	26.5	57.9	423.7	475.7	26.0	385.11
0.583	23.3	49.9	422.6	473.6	25.5	385.09
0.667	20.7	44.1	418.9	466.5	23.9	385.04
0.750	19.8	39.6	414.1	458.4	22.2	384.98
0.833	16.9	35.8	409.4	449.9	20.7	384.91
0.917	15.5	32.5	402.3	440.8	19.3	384.84
1.000	14.2	29.8	396.5	432.1	17.8	384.78
1.083	13.0	27.2	390.8	423.7	16.4	384.71
1.167	11.8	24.8	385.5	415.7	15.1	384.65
1.250	10.7	22.5	380.1	408.0	13.9	384.59
1.333	9.5	20.2	373.6	400.4	13.4	384.53
1.417	8.3	17.8	366.2	391.4	12.6	384.45
1.500	7.1	15.4	358.2	381.6	11.7	384.35
1.583	5.9	13.0	349.7	371.2	10.7	384.24
1.667	4.7	10.6	340.9	360.3	9.7	384.12
1.750	3.6	8.3	331.9	349.2	8.7	384.01
1.833	2.4	6.0	322.4	337.9	7.8	383.90
1.917	1.2	3.6	312.3	326.0	6.8	383.78
2.000	0.0	1.2	301.9	313.5	5.8	383.65

Peak Inflow = 98.6 cfs
Peak Outflow = 26.0 cfs
Peak Elevation = 385.11 ft



NO.	DESCRIPTION	REVIEW BY	APPROVED	DATE

REVISION APPROVED BY DIVISION OF DESIGN REVIEW

STORMWATER MANAGEMENT / BMP COMPUTATIONS (8012-SP-01-03) AS PREPARED BY BENGTSON, DEBELL, ELKIN & TITUS, LTD. NOW KNOWN AS BURGESS & NIPLE, INC. - FOR INFORMATION ONLY!!!

COMMONWEALTH OF VIRGINIA – JOHN T. DeBELL – No. 7383 – PROFESSIONAL ENGINEER

Application No SE-2008-SP-015 Staff C.D.

APPROVED (SE) / SP PLAN
See Development Conditions dated 8-27-2008
Date of (BOS) (BZA) approval 9-22-2008

Sheet 8 of 14

REVISIONS	DATE
PER 4/6 FFX. CO. MTG.	4-16-91
N/A	2-26-91
ADDENDUM #1	11-1-90
REV. PARKING LOT POLE LOCATION AND ADD'D. BO RAMPS	7-25-90
N/A THIS SHEET	7-11-90
FOR 2nd SUBMISSION	3-15-90

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BDET

OFFICE LOCATIONS
◆ CHESTERFIELD COUNTY, VIRGINIA ◆ LOUDOUN COUNTY, VIRGINIA ◆ VIRGINIA BEACH, VIRGINIA
◆ FAIRFAX COUNTY, VIRGINIA ◆ PRINCE WILLIAM COUNTY, VIRGINIA ◆ MONTGOMERY COUNTY, MARYLAND

STORMWATER MANAGEMENT / BMP COMPUTATIONS
GREENBRIAR SHOPPING CENTER ADDITION
PROVIDENCE DISTRICT
FAIRFAX COUNTY, VIRGINIA

DATE:	10-25-89
SCALE:	N/A
DESIGN: JFM	DRAWN:
CHECK:	CHECK:
JOB NO.:	89C-042
RR. NO.:	CT08599000
SHEET	49 OF 58
FILE NO.:	C - 2860

Bowman CONSULTING

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STORMWATER MANAGEMENT / BMP COMPUTATIONS
SUNTRUST BANK
GREENBRIAR TOWN CENTER
FAIRFAX COUNTY, VIRGINIA
SPRINGFIELD DISTRICT

SE 2008-SP-015
COUNTY PROJECT NUMBER

COMMONWEALTH OF VIRGINIA – JONATHAN D. BONDI – Lic. No.001379 – 08-11-08 – CERTIFIED LANDSCAPE ARCHITECT

PLAN STATUS	
03/21/08	INITAL SUBMISSION
04/16/08	ACCEPTANCE REVISIONS
07/01/08	SECOND SUBMISSION
08/11/08	THIRD SUBMISSION
DATE	DESCRIPTION

JDB DESIGN	CAD DRAWN	JDB CHKD
SCALE	H: NO SCALE V:	
JOB No.	4466-01-003	
DATE:	March 01, 2008	
FILE No.	4466-D-ZP-001	
SHEET	6B OF 7	

Cad file name : P:\4466 - Greenbriar Shopping Center Parcel 10-C\4466-01-003 (PLN)\Planning\Special Exception\4466-SWM BMP.dwg

BENGTSON, DeBELL, ELKIN & TITUS, LTD.

POND-2 Version: 4.03
S/N: 88020717

Page 1 of 3

GREENBRIAR SHOPPING CENTER
SWM/BMP VAULT B
2-YEAR STORM ROUTING

EXECUTED 04-15-1991 12:43:44
Disk Files: B:GRBR1 .PND ; B:GRBR1-2 .HYD

INITIAL CONDITIONS
Elevation = 380.00 ft
Outflow = 0.0 cfs

GIVEN POND DATA / COMPUTATIONS

ELEVATION (ft)	OUTFLOW (cfs)	STORAGE (ac-ft)	2S/t (cfs)	2S/t + O (cfs)
380.00	0.0	0.00	0.0	0.0
380.50	0.0	0.02	5.8	5.8
381.00	0.1	0.08	23.2	23.3
381.50	0.1	0.15	43.6	43.7
382.00	0.1	0.21	61.0	61.1
382.50	0.1	0.28	81.3	81.4
382.92	0.1	0.33	95.8	95.9
383.00	0.1	0.34	98.7	98.8
383.50	2.7	0.40	116.2	118.9
384.00	9.7	0.47	136.5	146.2
384.10	11.4	0.48	139.4	150.8
384.50	22.0	0.53	153.9	175.9
385.00	40.3	0.60	174.2	214.5

Time increment (t) = 0.083 hrs.

POND-2 Version: 4.03 S/N: 88020717

Page 2 of 3

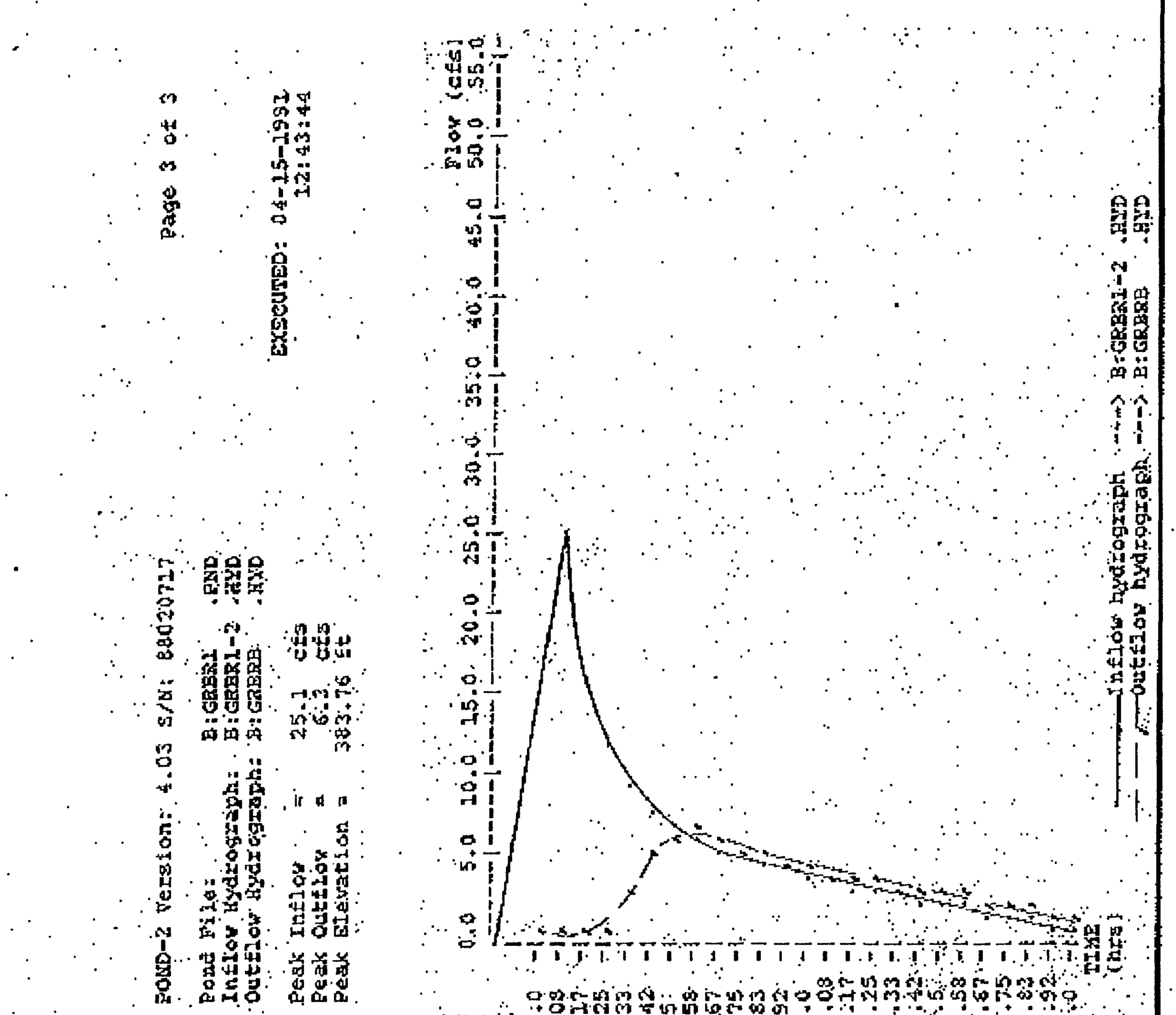
Pond File: B:GRBR1 .PND
Inflow Hydrograph: B:GRBR1-2 .HYD
Outflow Hydrograph: B:GRBRB .HYD

EXECUTED: 04-15-1991 12:43:44

INFLOW HYDROGRAPH / ROUTING COMPUTATIONS

TIME (hrs)	INFLOW (cfs)	I1+I2 (cfs)	2S/t - O (cfs)	2S/t + O (cfs)	OUTFLOW (cfs)	ELEVATION (ft)
0.000	0.0	----	0.0	0.0	0.0	380.00
0.083	25.1	25.1	24.9	25.1	0.1	381.04
0.167	16.1	41.2	65.9	66.1	0.1	382.12
0.250	12.0	28.1	93.8	94.0	0.1	382.86
0.333	9.6	21.5	110.8	115.3	2.2	383.41
0.417	7.9	17.5	118.1	128.3	5.1	383.67
0.500	6.7	14.6	120.2	132.7	6.2	383.75
0.583	5.9	12.6	120.3	132.8	6.3	383.76
0.667	5.1	10.9	119.5	131.2	5.9	383.73
0.750	4.6	9.7	118.5	129.1	5.3	383.69
0.833	4.1	8.7	117.5	127.2	4.8	383.65
0.917	3.8	7.9	116.6	125.4	4.4	383.62
1.000	3.4	7.2	115.9	123.8	4.0	383.59
1.083	3.1	6.5	115.2	122.4	3.6	383.56
1.167	2.8	6.0	114.6	121.2	3.3	383.54
1.250	2.6	5.4	114.0	120.0	3.0	383.52
1.333	2.3	4.8	113.5	118.9	2.7	383.50
1.417	2.0	4.2	112.6	117.7	2.5	383.47
1.500	1.8	3.7	111.6	116.3	2.4	383.44
1.583	1.4	3.2	110.4	114.8	2.2	383.40
1.667	1.1	2.6	109.1	113.0	1.9	383.35
1.750	0.9	2.0	107.8	111.1	1.7	383.31
1.833	0.6	1.4	106.3	109.2	1.4	383.26
1.917	0.3	0.8	104.8	107.1	1.2	383.21
2.000	0.0	0.3	103.2	105.0	0.9	383.16

Peak Inflow = 25.1 cfs
Peak Outflow = 6.3 cfs
Peak Elevation = 383.76 ft



POND-2 Version: 4.03
S/N: 88020717

Page 1 of 3

GREENBRIAR SHOPPING CENTER
SWM/BMP VAULT B
10-YEAR STORM ROUTING

EXECUTED 04-15-1991 12:46:41
Disk Files: B:GRBR1 .PND ; B:GRBR1-10.HYD

INITIAL CONDITIONS
Elevation = 380.00 ft
Outflow = 0.0 cfs

GIVEN POND DATA / COMPUTATIONS

ELEVATION (ft)	OUTFLOW (cfs)	STORAGE (ac-ft)	2S/t (cfs)	2S/t + O (cfs)
380.00	0.0	0.00	0.0	0.0
380.50	0.0	0.02	5.8	5.8
381.00	0.1	0.08	23.2	23.3
381.50	0.1	0.15	43.6	43.7
382.00	0.1	0.21	61.0	61.1
382.50	0.1	0.28	81.3	81.4
382.92	0.1	0.33	95.8	95.9
383.00	0.1	0.34	98.7	98.8
383.50	2.7	0.40	116.2	118.9
384.00	9.7	0.47	136.5	146.2
384.10	11.4	0.48	139.4	150.8
384.50	22.0	0.53	153.9	175.9
385.00	40.3	0.60	174.2	214.5

Time increment (t) = 0.083 hrs.

POND-2 Version: 4.03 S/N: 88020717

Page 2 of 3

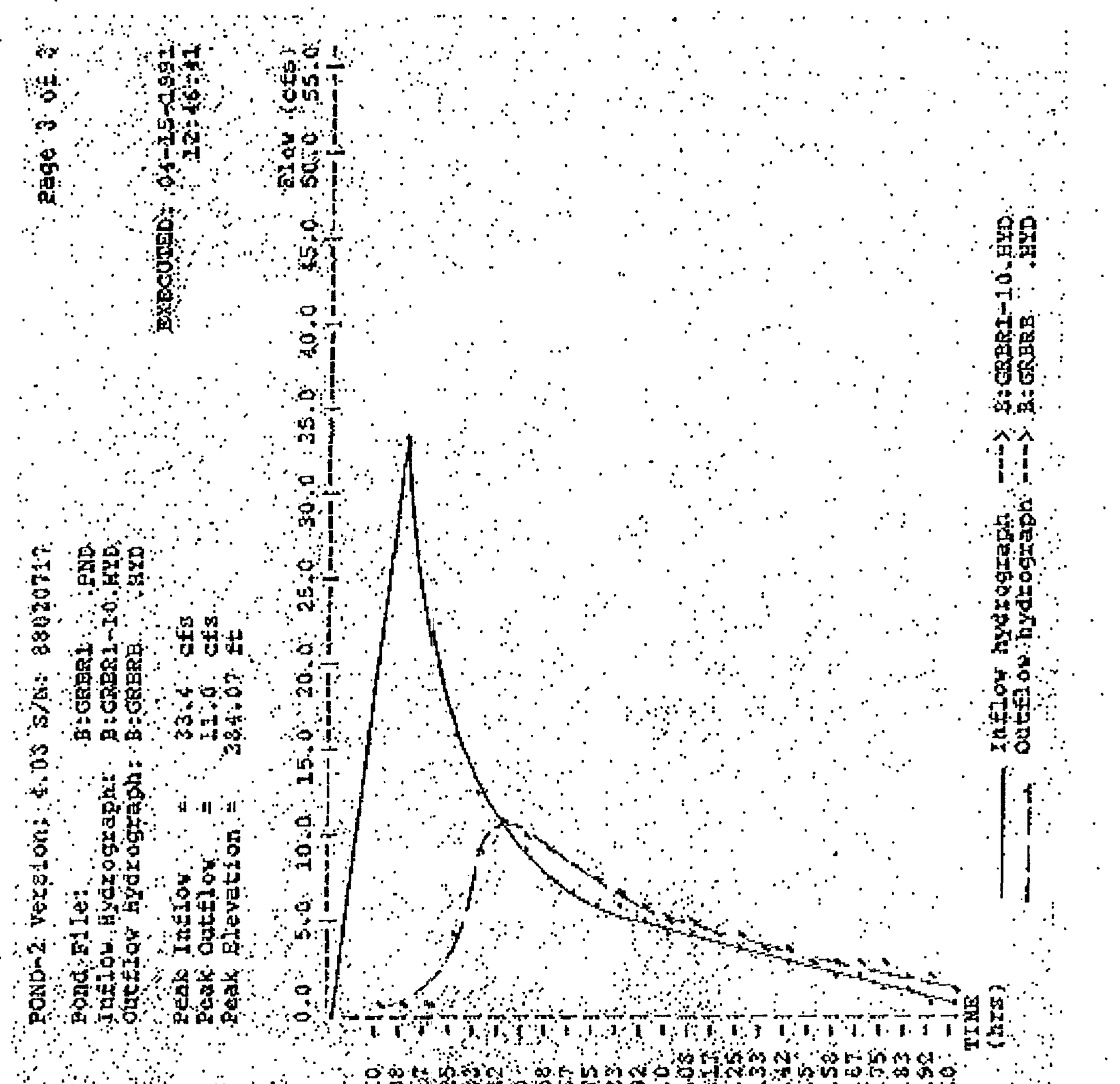
Pond File: B:GRBR1 .PND
Inflow Hydrograph: B:GRBR1-10.HYD
Outflow Hydrograph: B:GRBRB .HYD

EXECUTED: 04-15-1991 12:46:41

INFLOW HYDROGRAPH / ROUTING COMPUTATIONS

TIME (hrs)	INFLOW (cfs)	I1+I2 (cfs)	2S/t - O (cfs)	2S/t + O (cfs)	OUTFLOW (cfs)	ELEVATION (ft)
0.000	0.0	----	0.0	0.0	0.0	380.00
0.083	33.4	33.4	33.2	33.4	0.1	381.25
0.167	21.5	55.0	88.0	88.2	0.1	382.70
0.250	15.9	37.4	116.7	125.4	4.4	383.62
0.333	12.7	28.6	126.4	145.3	9.5	383.98
0.417	10.5	23.3	127.7	149.6	11.0	384.07
0.500	8.9	19.5	127.0	147.1	10.1	384.02
0.583	7.7	16.6	125.6	143.7	9.1	383.95
0.667	6.8	14.5	123.8	140.1	8.1	383.89
0.750	6.0	12.8	122.1	136.6	7.2	383.82
0.833	5.4	11.4	120.6	133.6	6.5	383.77
0.917	5.0	10.4	119.4	131.0	5.8	383.72
1.000	4.6	9.5	118.4	128.3	5.3	383.68
1.083	4.2	8.7	117.5	127.1	4.8	383.65
1.167	3.8	8.0	116.7	125.5	4.4	383.62
1.250	3.4	7.2	115.9	123.9	4.0	383.59
1.333	3.0	6.4	115.2	122.4	3.6	383.56
1.417	2.7	5.7	114.4	120.9	3.2	383.54
1.500	2.3	5.0	113.7	119.4	2.8	383.51
1.583	1.9	4.2	112.8	117.9	2.6	383.48
1.667	1.5	3.4	111.5	116.2	2.4	383.43
1.750	1.1	2.7	110.0	114.1	2.1	383.38
1.833	0.8	1.9	108.3	111.9	1.8	383.33
1.917	0.4	1.1	106.5	109.5	1.5	383.27
2.000	0.0	0.4	104.6	106.3	1.1	383.20

Peak Inflow = 33.4 cfs
Peak Outflow = 11.0 cfs
Peak Elevation = 384.07 ft



POND-2 Version: 4.03
S/N: 88020717

Page 1 of 3

GREENBRIAR SHOPPING CENTER
SWM/BMP VAULT B
100-YEAR STORM ROUTING

EXECUTED 04-15-1991 12:49:55
Disk Files: B:GRBR1 .PND ; B:GRBR1-1H.HYD

INITIAL CONDITIONS
Elevation = 380.00 ft
Outflow = 0.0 cfs

GIVEN POND DATA / COMPUTATIONS

ELEVATION (ft)	OUTFLOW (cfs)	STORAGE (ac-ft)	2S/t (cfs)	2S/t + O (cfs)
380.00	0.0	0.00	0.0	0.0
380.50	0.0	0.02	5.8	5.8
381.00	0.1	0.08	23.2	23.3
381.50	0.1	0.15	43.6	43.7
382.00	0.1	0.21	61.0	61.1
382.50	0.1	0.28	81.3	81.4
382.92	0.1	0.33	95.8	95.9
383.00	0.1	0.34	98.7	98.8
383.50	2.7	0.40	116.2	118.9
384.00	9.7	0.47	136.5	146.2
384.10	11.4	0.48	139.4	150.8
384.50	22.0	0.53	153.9	175.9
385.00	40.3	0.60	174.2	214.5

Time increment (t) = 0.083 hrs.

POND-2 Version: 4.03 S/N: 88020717

Page 2 of 3

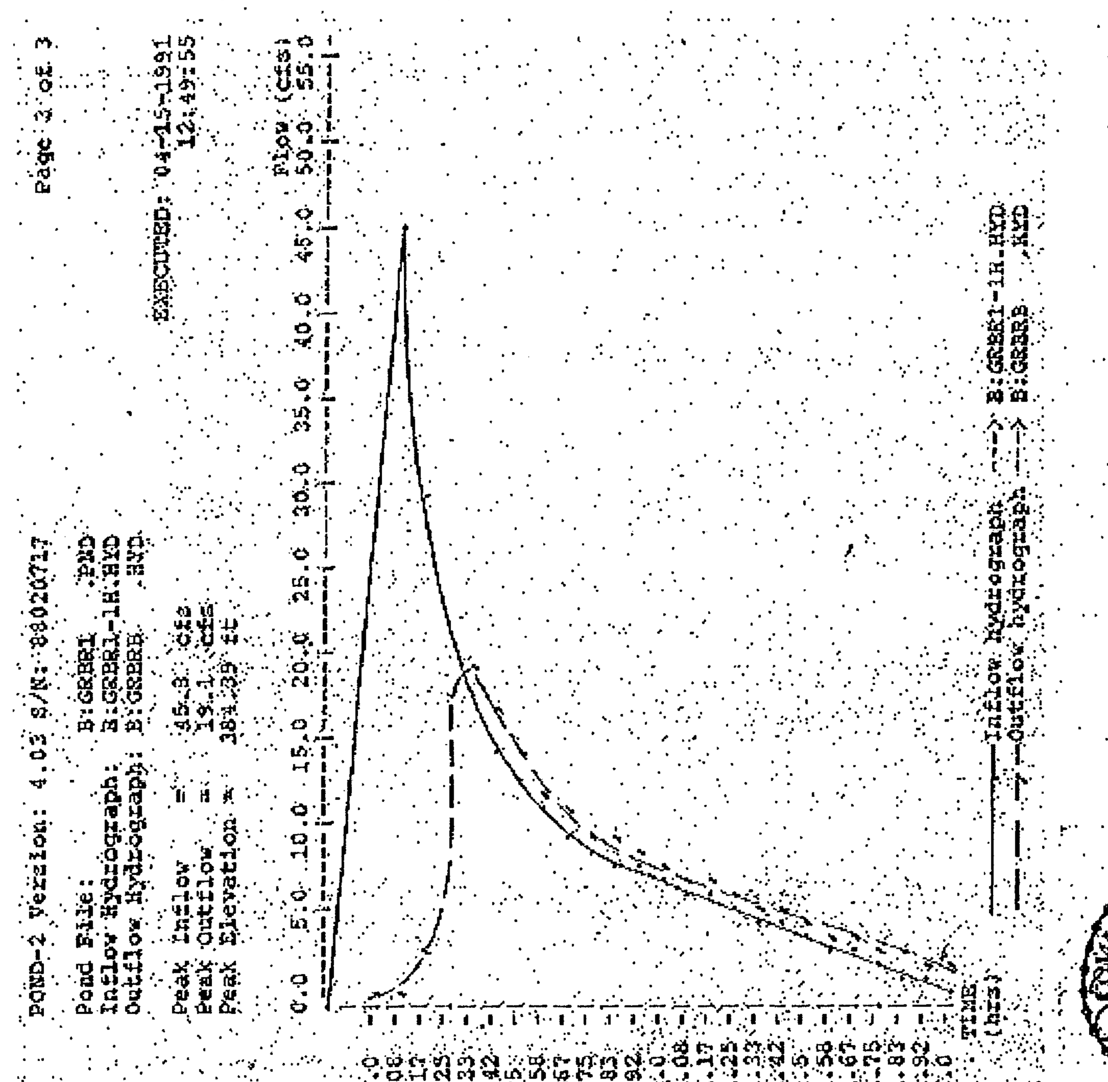
Pond File: B:GRBR1 .PND
Inflow Hydrograph: B:GRBR1-1H.HYD
Outflow Hydrograph: B:GRBRB .HYD

EXECUTED: 04-15-1991 12:49:55

INFLOW HYDROGRAPH / ROUTING COMPUTATIONS

TIME (hrs)	INFLOW (cfs)	I1+I2 (cfs)	2S/t - O (cfs)	2S/t + O (cfs)	OUTFLOW (cfs)	ELEVATION (ft)
0.000	0.0	----	0.0	0.0	0.0	380.00
0.083	45.3	45.3	45.0	45.3	0.1	381.55
0.167	29.3	74.6	113.8	119.6	2.9	383.51
0.250	21.8	51.0	130.2	164.9	17.3	384.32
0.333	17.2	39.0	130.9	169.1	19.1	384.39
0.417	14.4	31.6	129.8	162.5	16.3	384.29
0.500	12.2	26.6	128.9	156.4	13.8	384.19
0.583	10.7	22.9	128.2	151.8	11.8	384.12
0.667	9.5	20.2	127.4	148.4	10.5	384.05
0.750	8.6	18.2	126.5	145.5	9.5	383.99
0.833	7.8	16.4	125.2	142.9	8.9	383.94
0.917	7.1	14.9	123.8	140.1	8.1	383.89
1.000	6.5	13.7	122.5	137.5	7.5	383.84
1.083	6.0	12.5	121.4	135.1	6.8	383.80
1.167	5.4	11.4	120.2	132.8	6.3	383.75
1.250	4.9	10.4	119.2	130.6	5.7	383.71
1.333	4.4	9.3	118.2	128.5	5.2	383.68
1.417	3.8	8.2	117.1	126.3	4.6	383.64
1.500	3.3	7.1	116.1	124.2	4.1	383.60
1.583	2.7	6.0	115.0	122.0	3.5	383.56
1.667	2.2	4.9	114.0	119.9	3.0	383.52
1.750	1.7	3.8	112.7	117.8	2.6	383.47
1.833	1.1	2.8	110.9	115.4	2.3	383.41
1.917	0.6	1.7	108.8	112.6	1.9	383.34
2.000	0.0	0.6	106.4	109.4	1.5	383.26

Peak Inflow = 45.3 cfs
Peak Outflow = 19.1 cfs
Peak Elevation = 384.39 ft



Application No SE-2008-SP-015 Staff C.D.

APPROVED (SE) / SP PLAN
See Development Conditions dated 8-27-2008
Date of (BOS) (BZA) approval 9-22-2008

Sheet 9 of 14

STORMWATER MANAGEMENT / BMP COMPUTATIONS (8012-SP-01-03) AS PREPARED BY BENGTSON, DEBELL, ELKIN & TITUS, LTD. NOW KNOWN AS BURGESS & NIPLE, INC. - FOR INFORMATION ONLY!!!

NO	DESCRIPTION	REVIEW BY	APPROVED	DATE

REVISION APPROVED BY DIVISION OF DESIGN REVIEW

REVISIONS	DATE
PER 4/6 FFX. CO. MTG.	4/18/91
ALL CALCULATIONS	2-20-91
ADDENDUM #1	11-1-90
REV. PRKG. LOT POLE LOCATIONS & ADDED H.C. RAMPS	7-25-90
N/A THIS SHEET	7-17-90
FOR SECOND SUBMISSION	3-15-90

COMMONWEALTH OF VIRGINIA — JOHN T. DeBELL — No. 7383 — PROFESSIONAL ENGINEER

BENGTSON, DeBELL, ELKIN & TITUS, LTD.
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(703) 631-9630 (703) 968-5700
BDET
OFFICE LOCATIONS
◆ CHESTERFIELD COUNTY, VIRGINIA ◆ LOUDOUN COUNTY, VIRGINIA ◆ VIRGINIA BEACH, VIRGINIA
◆ FAIRFAX COUNTY, VIRGINIA ◆ PRINCE WILLIAM COUNTY, VIRGINIA ◆ MONTGOMERY COUNTY, MARYLAND

STORMWATER MANAGEMENT / BMP COMPUTATIONS
GREENBRIAR SHOPPING CENTER ADDITION
PROVIDENCE DISTRICT
FAIRFAX COUNTY, VIRGINIA

DATE: 10-25-89
SCALE: N/A
DESIGN: JFM DRAWN:
CHECK: CHECK:
JOB NO: 89C-042
P.R. NO.: CT08599000
SHEET 50 OF 58
FILE NO.: C-2860

Bowman CONSULTING

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STORMWATER MANAGEMENT / BMP COMPUTATIONS
SUNTRUST BANK
GREENBRIAR TOWN CENTER
SPRINGFIELD DISTRICT FAIRFAX COUNTY, VIRGINIA

SE 2008-SP-015
COUNTY PROJECT NUMBER

COMMONWEALTH OF VIRGINIA — JONATHAN D. BONDI — Lic. No. 001379 — 08-11-08 — CERTIFIED LANDSCAPE ARCHITECT

PLAN STATUS	
03/21/08	INITAL SUBMISSION
04/16/08	ACCEPTANCE REVISIONS
07/01/08	SECOND SUBMISSION
08/11/08	THIRD SUBMISSION
DATE	DESCRIPTION

JDB	CAD	JDB
DESIGN	DRAWN	CHKD

SCALE H: NO SCALE V:
JOB No. 4466-01-003
DATE: March 01, 2008
FILE No. 4466-D-ZP-001
SHEET 6C OF 7

BENGTSON, DeBELL, ELKIN & TITUS, LTD.

POND-2 Version: 4.03 S/N: 88020717 — Page 1 of 3

****
* GREENBRIAR SHOPPING CENTER *
* SWM/BMP VAULT C *
* 2-YEAR STORM ROUTING *
****

EXECUTED 04-15-1991 12:53:11
Disk Files: B:GRBR2 .PND ; B:GRBR2-2 .HYD

INITIAL CONDITIONS
Elevation = 376.40 ft
Outflow = 0.0 cfs

GIVEN POND DATA			COMPUTATIONS	
ELEVATION (ft)	OUTFLOW (cfs)	STORAGE (ac-ft)	2S/t (cfs)	2S/t + O (cfs)
376.40	0.0	0.00	0.0	0.0
376.90	0.1	0.03	8.7	8.8
377.40	0.1	0.13	37.8	37.9
377.90	0.1	0.24	69.7	69.8
378.40	0.1	0.36	104.5	104.6
378.75	0.2	0.44	127.8	128.0
378.90	0.2	0.47	136.5	136.7
379.40	1.0	0.58	168.4	169.4
379.90	1.3	0.70	203.3	204.6
380.00	1.4	0.72	209.1	210.5
380.40	1.6	0.81	235.2	236.8
380.50	1.7	0.83	241.0	242.7
380.90	4.6	0.92	267.2	271.8
381.00	6.2	0.94	273.0	279.2
381.40	15.1	1.03	299.1	314.2
381.50	17.8	1.06	307.8	325.6

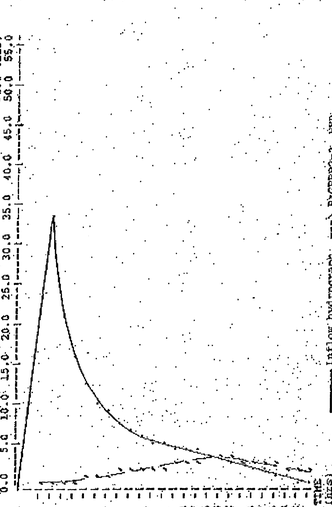
Time increment (t) = 0.083 hrs.

POND-2 Version: 4.03 S/N: 88020717 — Page 2 of 3

Pond File: B:GRBR2 .PND EXECUTED: 04-15-1991
Inflow Hydrograph: B:GRBR2-2 .HYD 12:53:11
Outflow Hydrograph: B:NULL .HYD

INFLOW HYDROGRAPH		ROUTING COMPUTATIONS				
TIME (hrs)	INFLOW (cfs)	I1+I2 (cfs)	2S/t - O (cfs)	2S/t + O (cfs)	OUTFLOW (cfs)	ELEVATION (ft)
0.000	0.0	------	0.0	0.0	0.0	376.40
0.083	33.0	33.0	32.8	33.0	0.1	377.32
0.167	21.2	54.2	46.8	86.9	0.1	378.15
0.250	15.7	37.0	123.3	123.7	0.2	378.69
0.333	12.6	28.3	150.5	151.6	0.6	379.13
0.417	10.4	23.0	171.4	173.5	1.0	379.46
0.500	9.0	19.2	188.3	190.6	1.2	379.70
0.583	7.7	16.6	202.2	204.3	1.3	379.90
0.667	6.7	14.4	213.7	216.6	1.4	380.09
0.750	6.1	12.7	223.4	226.4	1.5	380.24
0.833	5.4	11.4	231.7	234.9	1.6	380.37
0.917	5.0	10.3	238.6	242.0	1.7	380.49
1.000	4.5	9.4	243.6	248.1	2.2	380.57
1.083	4.1	8.6	246.9	252.2	2.6	380.63
1.167	3.8	7.9	249.0	254.8	2.9	380.67
1.250	3.4	7.1	250.0	256.1	3.0	380.68
1.333	3.0	6.4	250.3	256.4	3.1	380.68
1.417	2.6	5.6	249.8	255.8	3.0	380.68
1.500	2.2	4.8	248.9	254.6	2.9	380.66
1.583	1.9	4.1	247.5	253.0	2.7	380.64
1.667	1.5	3.4	245.9	250.9	2.5	380.61
1.750	1.1	2.7	244.0	248.5	2.3	380.58
1.833	0.7	1.9	241.8	245.9	2.0	380.54
1.917	0.4	1.1	239.5	242.9	1.7	380.50
2.000	0.0	0.4	236.5	239.9	1.7	380.45

Peak Inflow = 33.0 cfs
Peak Outflow = 3.1 cfs
Peak Elevation = 380.69 ft



POND-2 Version: 4.03 S/N: 88020717 — Page 1 of 3

****
* GREENBRIAR SHOPPING CENTER *
* SWM/BMP VAULT C *
* 10-YEAR STORM ROUTING *
****

EXECUTED 04-15-1991 12:56:39
Disk Files: B:GRBR2 .PND ; B:GRBR2-10.HYD

INITIAL CONDITIONS
Elevation = 376.40 ft
Outflow = 0.0 cfs

GIVEN POND DATA			COMPUTATIONS	
ELEVATION (ft)	OUTFLOW (cfs)	STORAGE (ac-ft)	2S/t (cfs)	2S/t + O (cfs)
376.40	0.0	0.00	0.0	0.0
376.90	0.1	0.03	8.7	8.8
377.40	0.1	0.13	37.8	37.9
377.90	0.1	0.24	69.7	69.8
378.40	0.1	0.36	104.5	104.6
378.75	0.2	0.44	127.8	128.0
378.90	0.2	0.47	136.5	136.7
379.40	1.0	0.58	168.4	169.4
379.90	1.3	0.70	203.3	204.6
380.00	1.4	0.72	209.1	210.5
380.40	1.6	0.81	235.2	236.8
380.50	1.7	0.83	241.0	242.7
380.90	4.6	0.92	267.2	271.8
381.00	6.2	0.94	273.0	279.2
381.40	15.1	1.03	299.1	314.2
381.50	17.8	1.06	307.8	325.6

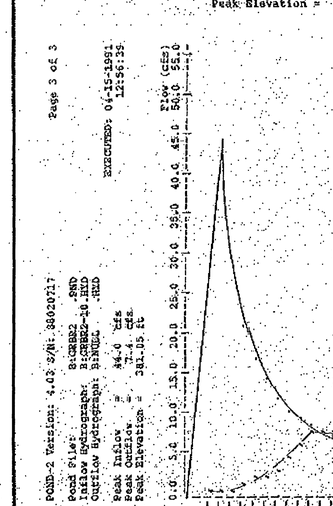
Time increment (t) = 0.083 hrs.

POND-2 Version: 4.03 S/N: 88020717 — Page 2 of 3

Pond File: B:GRBR2 .PND EXECUTED: 04-15-1991
Inflow Hydrograph: B:GRBR2-10.HYD 12:56:39
Outflow Hydrograph: B:NULL .HYD

INFLOW HYDROGRAPH		ROUTING COMPUTATIONS				
TIME (hrs)	INFLOW (cfs)	I1+I2 (cfs)	2S/t - O (cfs)	2S/t + O (cfs)	OUTFLOW (cfs)	ELEVATION (ft)
0.000	0.0	------	0.0	0.0	0.0	376.40
0.083	44.0	44.0	43.9	44.0	0.1	377.50
0.167	28.4	72.3	115.8	116.1	0.1	378.57
0.250	20.9	49.3	163.3	165.1	0.9	379.33
0.333	16.8	37.7	198.4	201.0	1.3	379.85
0.417	13.9	30.6	225.9	229.0	1.5	380.28
0.500	11.7	25.6	246.4	251.6	2.6	380.63
0.583	10.2	21.9	259.8	268.3	4.2	380.85
0.667	8.9	19.0	266.6	278.8	6.1	380.99
0.750	7.9	16.8	268.9	283.4	7.3	381.05
0.833	7.1	15.1	269.1	283.3	7.1	381.05
0.917	6.5	13.7	268.6	282.0	7.1	381.04
1.000	6.0	12.5	267.7	281.1	6.7	381.02
1.083	5.5	11.5	266.8	279.2	6.2	381.00
1.167	5.0	10.5	265.7	277.3	5.8	380.97
1.250	4.5	9.5	264.5	275.2	5.3	380.95
1.333	4.0	8.5	263.3	273.0	4.9	380.92
1.417	3.5	7.5	261.8	270.8	4.5	380.89
1.500	3.0	6.5	259.8	268.3	4.3	380.85
1.583	2.5	5.5	257.4	265.3	4.0	380.81
1.667	2.0	4.5	254.7	261.9	3.5	380.76
1.750	1.5	3.5	251.7	258.2	3.2	380.71
1.833	1.0	2.5	248.5	254.2	2.8	380.66
1.917	0.5	1.5	245.2	250.0	2.4	380.60
2.000	0.0	0.5	241.7	245.7	2.0	380.54

Peak Inflow = 44.0 cfs
Peak Outflow = 7.3 cfs
Peak Elevation = 381.05 ft



POND-2 Version: 4.03 S/N: 88020717 — Page 1 of 3

****
* GREENBRIAR SHOPPING CENTER *
* SWM/BMP VAULT C *
* 100-YEAR STORM ROUTING *
****

EXECUTED 04-15-1991 13:00:05
Disk Files: B:GRBR2 .PND ; B:GRBR2-1H.HYD

INITIAL CONDITIONS
Elevation = 376.40 ft
Outflow = 0.0 cfs

GIVEN POND DATA			COMPUTATIONS	
ELEVATION (ft)	OUTFLOW (cfs)	STORAGE (ac-ft)	2S/t (cfs)	2S/t + O (cfs)
376.40	0.0	0.00	0.0	0.0
376.90	0.1	0.03	8.7	8.8
377.40	0.1	0.13	37.8	37.9
377.90	0.1	0.24	69.7	69.8
378.40	0.1	0.36	104.5	104.6
378.75	0.2	0.44	127.8	128.0
378.90	0.2	0.47	136.5	136.7
379.40	1.0	0.58	168.4	169.4
379.90	1.3	0.70	203.3	204.6
380.00	1.4	0.72	209.1	210.5
380.40	1.6	0.81	235.2	236.8
380.50	1.7	0.83	241.0	242.7
380.90	4.6	0.92	267.2	271.8
381.00	6.2	0.94	273.0	279.2
381.40	15.1	1.03	299.1	314.2
381.50	17.8	1.06	307.8	325.6

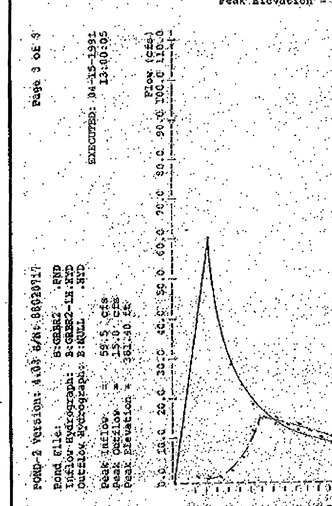
Time increment (t) = 0.083 hrs.

POND-2 Version: 4.03 S/N: 88020717 — Page 2 of 3

Pond File: B:GRBR2 .PND EXECUTED: 04-15-1991
Inflow Hydrograph: B:GRBR2-1H.HYD 13:00:05
Outflow Hydrograph: B:NULL .HYD

INFLOW HYDROGRAPH		ROUTING COMPUTATIONS				
TIME (hrs)	INFLOW (cfs)	I1+I2 (cfs)	2S/t - O (cfs)	2S/t + O (cfs)	OUTFLOW (cfs)	ELEVATION (ft)
0.000	0.0	------	0.0	0.0	0.0	376.40
0.083	59.5	59.5	59.4	59.5	0.1	377.74
0.167	38.5	98.0	155.9	157.3	0.7	379.22
0.250	28.6	67.1	220.1	223.1	1.5	380.19
0.333	22.6	51.2	262.2	274.3	4.6	380.89
0.417	18.9	41.6	279.9	303.8	12.4	381.28
0.500	16.0	35.0	283.8	313.8	15.0	381.40
0.583	14.1	30.1	283.9	314.0	15.0	381.40
0.667	12.5	26.6	282.2	310.5	14.2	381.36
0.750	11.4	23.9	280.0	306.3	13.0	381.31
0.833	10.2	21.6	277.8	301.6	11.9	381.26
0.917	9.4	19.6	275.8	297.4	10.8	381.21
1.000	8.6	18.0	273.3	293.7	9.9	381.17
1.083	7.9	16.5	272.3	290.4	9.0	381.13
1.167	7.3	15.0	270.8	287.3	8.3	381.09
1.250	6.5	13.8	269.3	284.4	7.5	381.06
1.333	5.8	12.2	268.0	281.6	6.8	381.03
1.417	5.0	10.8	266.5	278.7	6.1	380.99
1.500	4.3	9.3	264.9	275.8	5.5	380.95
1.583	3.6	7.9	263.1	272.7	4.8	380.91
1.667	2.9	6.4	260.8	269.5	4.4	380.87
1.750	2.2	5.0	257.8	265.8	4.0	380.82
1.833	1.5	3.6	254.3	261.4	3.6	380.76
1.917	0.7	2.2	250.3	256.5	3.1	380.69
2.000	0.0	0.7	246.0	251.1	2.5	380.61

Peak Inflow = 59.5 cfs
Peak Outflow = 15.0 cfs
Peak Elevation = 381.40 ft



Application No SE-2008-SP-015 Staff C.D.

APPROVED (SE) SP PLAN
See Development Conditions dated 8-27-2008
Date of (BOS) (BZA) approval 9-22-2008

Sheet 10 of 14

STORMWATER MANAGEMENT / BMP COMPUTATIONS (8012-SP-01-03) AS PREPARED BY BENGTSON, DEBELL, ELKIN & TITUS, LTD. NOW KNOWN AS BURGESS & NIPLE, INC. - FOR INFORMATION ONLY!!!

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

REVISIONS	DATE
PER. 4/9 FFX. CO. MTG.	4-19-91
ALL CALCULATIONS	2-20-91
ADDENDUM #1	11-1-90
REV. PRKG LOT POLE LOC./ADD H.C. RAMPS	7-25-90
N/A THIS SHEET	7-17-90
FOR SECOND SUBMISSION	3-13-90

COMMONWEALTH OF VIRGINIA — JOHN T. DEBELL — No. 7383 — PROFESSIONAL ENGINEER

BENGTSON, DeBELL, ELKIN & TITUS, LTD.
ENGINEERS • SURVEYORS • PLANNERS • LANDSCAPE ARCHITECTS
P.O. BOX 409, 5903 CENTREVILLE ROAD, CENTREVILLE, VIRGINIA 22020
(703) 631-0550 (703) 385-5700
OFFICE LOCATIONS
◆ LOUDOUN COUNTY, VIRGINIA ◆ PRINCE WILLIAM COUNTY, VIRGINIA ◆ VIRGINIA BEACH, VIRGINIA ◆ MONTGOMERY COUNTY, MARYLAND
◆ CHESTERFIELD COUNTY, VIRGINIA ◆ FAIRFAX COUNTY, VIRGINIA
BDET

STORMWATER MANAGEMENT / BMP COMPUTATIONS
GREENBRIAR SHOPPING CENTER ADDITION
PROVIDENCE DISTRICT
FAIRFAX COUNTY, VIRGINIA

DATE:	10 - 25 - 89
SCALE:	N/A
DESIGN: JFM	DRAWN:
CHECK:	CHECK:
JOB NO:	CT08599000
P.R. NO:	89C-042
SHEET	51 OF 58
FILE NO:	C - 2860

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STORMWATER MANAGEMENT / BMP COMPUTATIONS
SUNTRUST BANK
GREENBRIAR TOWN CENTER
SPRINGFIELD DISTRICT
FAIRFAX COUNTY, VIRGINIA

SE 2008-SP-015
COUNTY PROJECT NUMBER

COMMONWEALTH OF VIRGINIA — JONATHAN D. BONDI — Lic. No.001379 — 08-11-08 — CERTIFIED LANDSCAPE ARCHITECT

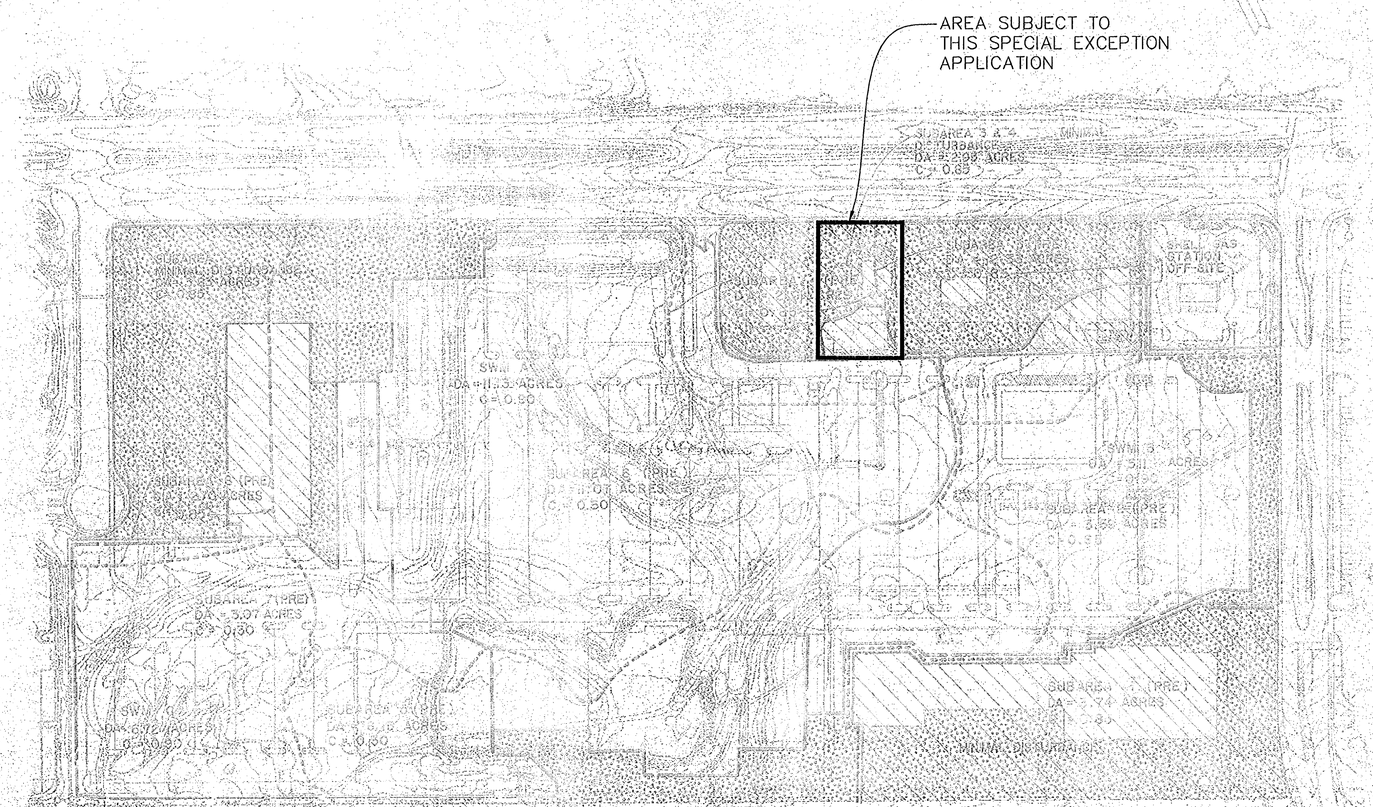
PLAN STATUS	
03/21/08	INITAL SUBMISSION
04/16/08	ACCEPTANCE REVISIONS
07/01/08	SECOND SUBMISSION
08/11/08	THIRD SUBMISSION

DATE	DESCRIPTION	
JDB DESIGN	CAD DRAWN	JDB CHKD

SCALE	H: NO SCALE V:
JOB No.	4466-01-003
DATE:	March 01, 2008
FILE No.	4466-D-ZP-001
SHEET	6D OF 7

Cad file name : P:\ '66 - Greenbrior Shopping Center Parcel 10-C\4466-01-003 (PLN)\Planning\Special Exception\4466-SWM BMP.dwg

BENGTSON, DEBELL, ELKIN & TITUS, LTD.



LEGEND

PRE - DEVELOPMENT DRAINAGE DIVIDE

POST - DEVELOPMENT DRAINAGE DIVIDE

AREA OF MINIMAL DISTURBANCE

AREA OF SITE SERVED BY ONLY STREET SWEEPING

AREA OF SPECIAL EXCEPTION SITE

NOTE: EXISTING DRAINAGE DIVIDES WILL BE HONORED

TOTAL SITE AREA : 34.86 ACRES

MINIMAL DISTURBANCE : 10.52 ACRES

TOTAL DISTURBED SITE AREA : 24.14 ACRES

TOTAL AREA OF SITE SERVED BY ONLY STREET SWEEPING : 7.73 ACRES

STORMWATER MANAGEMENT / BMP DRAINAGE DIVIDES (8012-SP-01-03) AS PREPARED BY BENGTSON, DEBELL, ELKIN & TITUS, LTD. NOW KNOWN AS BURGESS & NIPLE, INC. - FOR INFORMATION ONLY!!!

Application No SE-2008-SP-015 Staff C.D.

APPROVED (SE) SP PLAN
See Development Conditions dated 8-27-2008
Date of (BOS) (BZA) approval 9-22-2008

Sheet 11 of 14

STORMWATER MANAGEMENT / BMP DRAINAGE DIVIDES

GREENBRIAR SHOPPING CENTER ADDITION

PROVIDENCE DISTRICT
FAIRFAX COUNTY, VIRGINIA

GRAPHIC SCALE IN FEET 50 0 100 200

NO.	DESCRIPTION	DATE	APPROVED

REVISION APPROVED BY DIVISION OF DESIGN REVIEW

COMMONWEALTH OF VIRGINIA
STEVEN A. WEINBERGER
No. 113456
PROFESSIONAL ENGINEER

PER S/D PFX CO. MTG. (ST. IMP. DISTURBED AREAS, PFX)	4-16-91
SUBMITTED AREAS	7-23-91
ADDITIONAL #1	11-1-90
PERMITS OF POLE LOCATION AND USE AS PARKS	7-11-90
S/A THIS SHEET	4-11-90
SCR 2nd SUBMISSION REVISIONS	3-15-90
	DATE

COMMONWEALTH OF VIRGINIA
JOHN T. DEBELL
No. 7363
PROFESSIONAL ENGINEER

DATE	10-25-89
SCALE	1" = 100'
DESIGN	DFM
DRAWN	
CHECK	
CHECK	
JOB NO	4 890-042
PR NO	CF08999000
SHEET	82 OF 88
FILE NO	C-2860

Bowman CONSULTING

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STORMWATER MANAGEMENT / BMP DRAINAGE DIVIDES

SUNTRUST BANK
GREENBRIAR TOWN CENTER

FAIRFAX COUNTY, VIRGINIA

SPRINGFIELD DISTRICT

SE 2008-SP-015
COUNTY PROJECT NUMBER

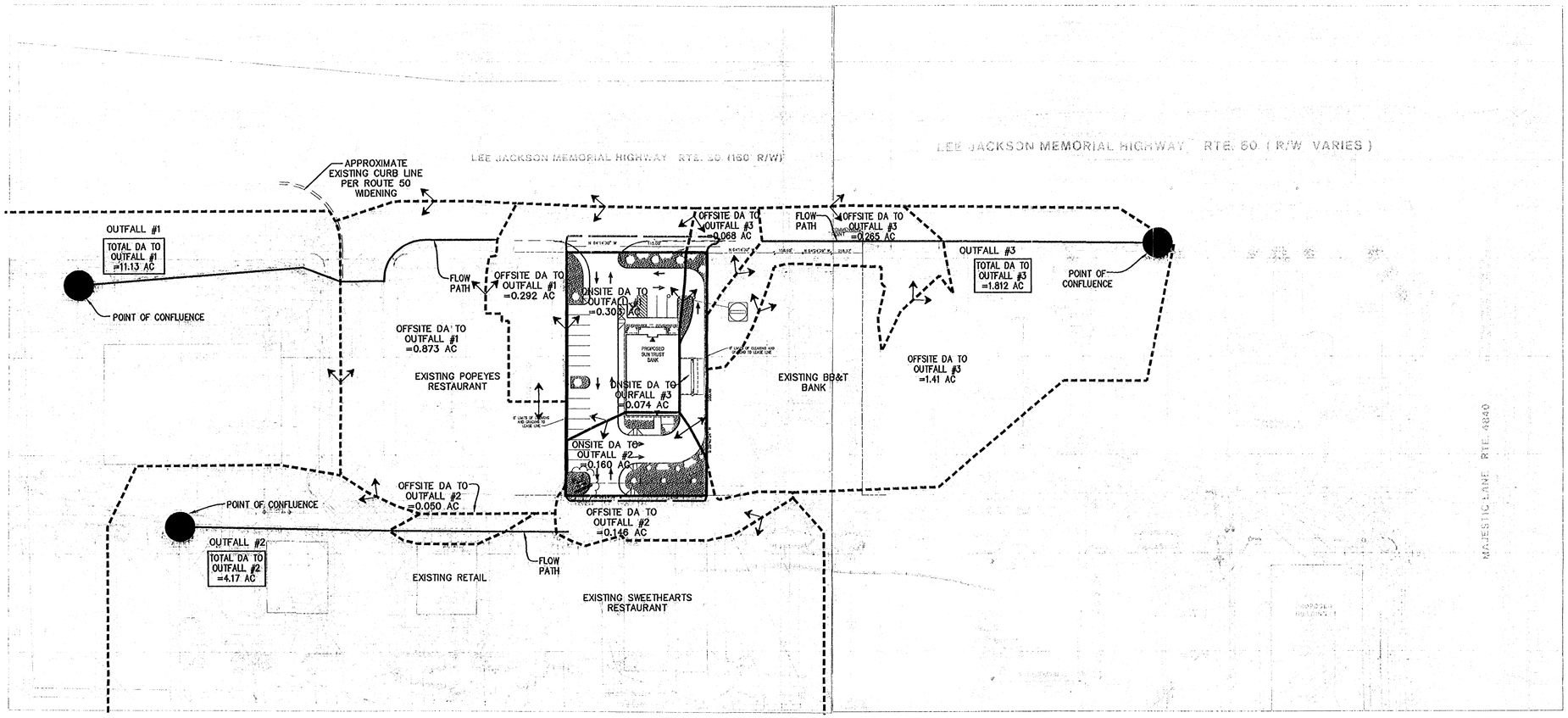
COMMONWEALTH OF VIRGINIA
JONATHAN D. BONDI
Lic. No.001379
08-11-08
CERTIFIED LANDSCAPE ARCHITECT

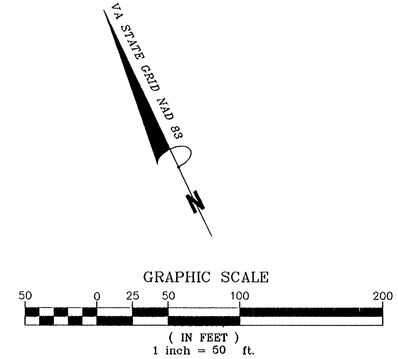
PLAN STATUS	
03/21/08	INITAL SUBMISSION
04/16/08	ACCEPTANCE REVISIONS
07/01/08	SECOND SUBMISSION
08/11/08	THIRD SUBMISSION

DATE	DESCRIPTION

JDB DESIGN	CAD DRAWN	JDB CHKD
SCALE	H: NO SCALE V:	
JOB No.	4466-01-003	
DATE :	March 01, 2008	
FILE No.	4466-D-ZP-001	
SHEET	6E OF	7

Cad file name : P 6 – Greenbriar Shopping Center Parcel 10-C\4466-01-003 (PLN)\Planning\Special Exception\4466-SWM BMP.dwg





Application No SE-2008-SP-015 Staff C.D.

APPROVED (SE) SP PLAN
See Development Conditions dated 8-27-2008
Date of (BOS) (BZA) approval 9-22-2008

Sheet 12 of 14

STORMWATER MANAGEMENT / BMP COMPUTATIONS (8012-SP-01-03) AS PREPARED BY BENGTSON, DEBELL, ELKIN & TITUS, LTD. NOW KNOWN AS BURGESS & NIPLE, INC. - FOR INFORMATION ONLY!!!

ADEQUATE OUTFALL NARRATIVE

DESCRIPTION OF PROPOSED OUTFALLS FROM THE SITE

DRAINAGE FROM THE PROPOSED SUN TRUST BANK SITE DEVELOPMENT DEPARTS THE SITE IN THREE DIRECTIONS. THE MAJORITY OF THE SITE DRAINS TO THE NORTHWEST INTO AN EXISTING CLOSED CONDUIT SYSTEM ON GREENBRIAR SHOPPING CENTER PROPERTY. ONE SMALL PORTION OF THE SITE DRAINS TO THE SOUTHWEST INTO A SEPARATE EXISTING CLOSED CONDUIT SYSTEM ON THE GREENBRIAR SHOPPING CENTER PROPERTY. ANOTHER SMALL PORTION OF THE SITE DRAINS TO THE NORTHEAST INTO AN EXISTING CURB AND GUTTER, EVENTUALLY PICKED UP IN AN EXISTING CLOSED CONDUIT SYSTEM UNDER THE EXISTING ROUTE 50 SERVICE DRIVE. THE OUTFALLS ARE HEREAFTER REFERRED TO AS OUTFALL 1, OUTFALL 2, AND OUTFALL 3, RESPECTIVELY.

LIMITS OF DOWNSTREAM REVIEW

ACCORDING TO PFM SECTION 6-0203.2A, THE LIMIT OF DOWNSTREAM REVIEW IS TO A POINT THAT IS AT LEAST 150 FT DOWNSTREAM OF A POINT WHERE THE RECEIVING PIPE OR CHANNEL IS JOINED BY ANOTHER TRIBUTARY THAT HAS A DRAINAGE AREA AT LEAST 90% OF THE SIZE OF THE FIRST DRAINAGE AREA AT THE POINT OF CONFLUENCE.

OUTFALL 1

APPROX. 0.303 ACRES OF ONSITE AREA DRAINS TO OUTFALL 1, WHICH IS PICKED UP IN AN EXISTING GUTTER ALONG THE ROUTE 50 SERVICE DRIVE AND CARRIED WEST TO EXISTING STRUCTURE A16 ON THE WEST SIDE OF THE GREENBRIAR SHOPPING CENTER ENTRANCE DRIVE. EXISTING STRUCTURE A16 DIRECTS WATER TO AN EXISTING UNDERGROUND CLOSED CONDUIT SYSTEM, WHICH CARRIES STORMWATER INTO EXISTING UNDERGROUND STORMWATER MANAGEMENT VAULT A WITHIN THE GREENBRIAR SHOPPING CENTER PROPERTY. THE TOTAL DRAINAGE AREA TO EXISTING VAULT A IS 11.13 ACRES, WHICH IS GREATER THAN 90% OF THE ONSITE CONTRIBUTING DRAINAGE AREA. THEREFORE, EXISTING UNDERGROUND DETENTION VAULT A IS THE POINT OF CONFLUENCE AND THE LIMIT OF DOWNSTREAM REVIEW IS TO A POINT 150' BEYOND THE CONFLUENCE.

OUTFALL 2

APPROX. 0.16 ACRES OF ONSITE AREA DRAINS TO OUTFALL 2, WHICH IS PICKED UP IN EXISTING STRUCTURE A10. EXISTING STRUCTURE A10 DIRECTS WATER TO AN EXISITING UNDERGROUND CLOSED CONDUIT SYSTEM. THE CLOSED CONDUIT SYSTEM CARRIES WATER WEST WITHIN WITHIN THE SHOPPING CENTER PROPERTY LIMITS WHERE ADDITIONAL DRAINGE ENTERS THE SYSTEM THROUGH A SERIES OF EXISTING STORM DRAINAGE INLET STRUCTURES. AT EXISTING STRUCTURE A3 THE TOTAL CONTRIBUTING DRAINAGE AREA IS 4.17 ACRES, WHICH IS GREATER THAN 90% OF THE ONSITE CONTRIBUTING DRAINAGE AREA. THEREFORE, EXISTING STRUCTURE A3 IS THE POINT OF CONFLUENCE AND THE LIMIT OF DOWNSTREAM REVIEW IS TO A POINT 150' BEYOND THE CONFLUENCE.

OUTFALL 3

APPROX. 0.074 ACRES OF ONSITE AREA DRAINS TO OUTFALL 3, WHICH IS PICKED UP AN EXISTING GUTTER ALONG THE ROUTE 50 SERVICE DRIVE. THE GUTTER DRAINS TO THE EAST AND IS PICKED UP IN AN EXISTING CURB INLET ALONG THE SERVICE DRIVE. THE TOTAL DRAINAGE AREA TO THE EXISTING INLET IS 1.81 ACRES, WHICH IS GREATER THAN 90% OF THE ONSITE CONTRIBUTING DRAINAGE AREA. THEREFORE, THE EXISTING CURB INLET IS THE POINT OF CONFLUENCE AND THE LIMIT OF DOWNSTREAM REVIEW IS TO A POINT 150' BEYOND THE CONFLUENCE.

OUTFALL ANALYSIS

OUTFALL 1

AN ONSITE AREA OF 0.303 ACRES IS COLLECTED IN AN EXISTING CLOSED CONDUIT SYSTEM AND ROUTED TO AN EXISTING UNDERGROUND STORMWATER MANAGEMENT FACILITY, VAULT A. THE PROPOSED SITE DEVELOPMENT RESULTS IN A DECREASE IN OVERALL IMPERVIOUS AREA, AND THEREFORE A DECREASE IN STORMWATER RUNOFF. BECAUSE THE RUNOFF FROM GENERATED FROM THE SITE IS DECREASED IN THE POST DEVELOPMENT CONDITION, NO DETENTION IS REQUIRED FOR THE ONSITE AREA. THE FACILITY RELEASES STORMWATER TO EXISTING STRUCTURE E2 AND INTO THE EXISTING CLOSE CONDUIT SYSTEM LOCATED ON ROUTE 50. BASED ON SUPPORTING COMPUTATIONS PROVIDED WITH APPROVED FAIRFAX COUNTY PLAN #8012-SP-01-3 THE EXISTING CLOSED CONDUIT SYSTEM REPRESENTS AN ADEQUATE OUTFALL.

OUTFALL 2

AN ONSITE AREA OF 0.16 ACRES DRAINS TO THE SOUTHWEST INTO AN EXISTING CLOSED CONDUIT SYSTEM ON THE GREENBRIAR SHOPPING CENTER PROPERTY. THE RUNOFF IS CARRIED THROUGH A CLOSED CONDUIT SYSTEM DESIGNED WITH THE GREENBRIAR SHOPPING CENTER PLAN TO MEET THE REQUIREMENTS OF THE FAIRFAX COUNTY PUBLIC FACILITIES MANUAL, WHICH REQUIRES CAPACITY FOR THE 10-YEAR STORM EVENT. THE EXISTING UNDERGROUND STORMWATER MANAGEMENT VAULT, WHICH REACHES BEYOND 150 FT FROM THE POINT OF CONFLUENCE, REPRESENTS AN ADEQUATE OUTFALL FOR THE PROPOSED IMPROVEMENTS PER THE FAIRFAX COUNTY PFM 6-0203.2D. AS NO INCREASE IN PEAK RUNOFF IS PROPOSED, THE SYSTEM WILL REMAIN ADEQUATE AFTER CONSTRUCTION OF THE IMPROVEMENTS PROPOSED WITH THIS PLAN. SUPPORTING CALCULATIONS AND POND ROUTING INFORMATION IS PROVIDED WITH FAIRFAX COUNTY PLAN #8012-SP-01-3.

OUTFALL 3

AN ONSITE AREA OF AREA OF 0.074 ACRES DRAINS TO THE NORTHEAST INTO AN EXISTING CLOSED CONDUIT SYSTEM ON THE ROUTE 50 SERVICE DRIVE. THE CLOSED CONDUIT SYSTEM WAS DESIGNED WITH THE GREENBRIAR SHOPPING CENTER DEVELOPMENT TO MEET THE REQUIREMENTS OF THE PUBLIC FACILITIES MANUAL, WHICH REQUIRES CAPACITY FOR THE 10-YEAR STORM EVENT. THE EXISTING SYSTEM IS ADEQUATE AND NO INCREASE IN PEAK RUNOFF IS PROPOSED. AS SUCH, THE SYSTEM WILL REMAIN ADEQUATE AFTER CONSTRUCTION OF THE IMPROVEMENTS PROPOSED WITH THIS PLAN.

NOTE:

1. ADJACENT SITE DEPICTED ON THIS PLAN WAS BUILT FROM THE OVERALL SHOPPING CENTER SITE PLAN (8012-SP-01-03) AS PREPARED BY BENGTSON, DEBELL, ELKIN & TITUS, LTD. NOW KNOWN AS BURGESS & NIPLE, INC. - FOR INFORMATION ONLY!

FOR ADEQUATE OUTFALL ANALYSIS PURPOSES ONLY!!!

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ADEQUATE OUTFALL ANALYSIS
SUNTRUST BANK
GREENBRIAR TOWN CENTER
FAIRFAX COUNTY, VIRGINIA
SPRINGFIELD DISTRICT

SE 2008-SP-015
COUNTY PROJECT NUMBER

COMMONWEALTH OF VIRGINIA
JONATHAN D. BONDI
Lic. No.001379
08-11-08
CERTIFIED LANDSCAPE ARCHITECT

PLAN STATUS	
03/21/08	INITAL SUBMISSION
04/16/08	ACCEPTANCE REVISIONS
07/01/08	SECOND SUBMISSION
08/11/08	THIRD SUBMISSION

DATE	DESCRIPTION

JDB	CAD	JDB
DESIGN	DRAWN	CHKD
SCALE	H: 1" = 50' V:	
JOB No.	4466-01-003	
DATE :	March 01, 2008	
FILE No.	4466-D-ZP-001	
SHEET	6F OF	7

Cad file name : P\...\6 - Greenbriar Shopping Center Parcel 10-C\4466-01-003 (PLN)\Planning\Special Exception\4466- OUTFALL ANALYSIS.dwg

BENGTSON, DeBELL, ELKIN & TITUS, LTD.

STORM SEWER DESIGN COMPUTATIONS

FROM	TO	TYPE STR.	AREA DRAIN "A" ACRES	RUN-OFF COEF. C	C A INCREMENT	C A ACCUMULATED	TIME OF CONCENTRATION "I"	TO PIPE	IN PIPE	ACCUM. TIME	RUNOFF (CFS) INC. "Q"	ACCUM. "Q"	DESIGN PIPE DIA.	SLOPE (%)	"n"	MAX. "Q"	VEL. FT/SEC	LENGTH OF RUN	FALL (FEET)	PROFILE INV. UPPER	INV. LOWER	LOSSES	STATION	TOP ELEV.
A7		MOD. DI-7																		387.80				391.17
			0.55	0.90	0.49	0.49	7.27	5MIN			3.56	3.56	15"	0.50	0.013	4.6	4.0	180'	0.90					
	A6	DI-2B																			386.90			387.15
A6		DI-2B																		386.65				[illegible]
			1.91	0.90	1.27	1.76	7.27	5MIN			8.88	12.79	24"	0.50	0.013	16.2	4.5	207'	1.04					
	A5	DI-2C																			384.61			389.[illegible]
A-11		MH-1																		386.01				
			—	—	—	—	—	—			—	12.10	24"	0.50	0.013	16.2	5.2	120						
	A-11	DI-2B																			385.41			
A11		DI-2B																		385.16				
			1.40	0.90	1.26	2.93	7.27	5MIN			9.16	21.20	24"	0.50	0.013	25.5	6.4	110	0.55					
	A8	DI-2C																			384.61			389.98
A8		DI-2C																		383.61				387.46
			0.92	0.90	0.83	3.81	7.27	5MIN			6.75	42.06	36"	0.50	0.013	45.2	7.5	119'	0.60					
	A4	DI-2F																			382.99			388.93
A4		DI-2F																		382.74				388.93
			0.51	0.90	0.46	3.97	7.27	5MIN			3.34	43.40	36"	0.50	0.013	48.0	7.6	19	0.07					
	A3	DI-2F																			382.37			388.93
A10		DI-2C																		388.80				393.27
			0.36	0.90	0.32	0.32	7.27	5MIN			2.35	2.35	15"	0.50	0.013	4.6	3.7	160'	2.75					
	A9	DI-2B																			387.57			390.83
A9		DI-2B																		383.87				390.83
			0.07	0.90	0.06	0.38	7.27	5MIN			0.46	2.16	15"	2.00	0.013	4.6	3.8	175'	0.81					
	A3	DI-2F																			383.00			388.93
A3		DI-2F																		382.46				388.93
			0.33	0.90	0.31	4.66	7.27	5MIN			2.26	48.[illegible]	36"	0.50	0.013	50.[illegible]	12.[illegible]	124'	0.[illegible]					
	A2	DI-2F																			381.74			388.95
BLDG #5C		(ROOF DRAIN)																		390.42				—
			0.32	0.90	0.29	0.29	7.27	5MIN			2.11	2.11	18"	0.50	0.013	2.6	3.5	33'	0.17					
	A13	DI-2B																			390.25			396.83
A13		DI-2B																		390.00				396.83
			0.18	0.90	0.16	0.45	7.27	5MIN			1.16	3.27	15"	1.79	0.013	8.7	8.6	209'	3.6[illegible]					
	A12	DI-2B																			386.57			[illegible]
BLDG #5B		(ROOF DRAIN)																		386.54				—
	A12	DI-2B	0.57	0.90	0.51	0.51	7.27	5MIN			3.71	3.71	15"	0.50	0.013	4.6	4.8	33'	0.17		386.37			390.15
A12		DI-2B																		386.12				390.16
			0.17	0.90	0.15	1.11	7.27	5MIN			1.09	8.07	15"	3.69	0.013	16.0	11.0	79'	2.88					
	A2	DI-2F																			383.24			388.60
A2		DI-2F																		381.49				388.[illegible]
			0.[illegible]	0.[illegible]	0.[illegible]	3.[illegible]	7.[illegible]	5MIN			[illegible]	[illegible]	3[illegible]	0.[illegible]	0.[illegible]	[illegible]	1[illegible]	1[illegible]	0.14					
VAULT "A"	—																				381.39			—
A16		DI-3B																		384.59				388.32
			0.25	0.90	0.21	0.21	7.27	5MIN			1.48	1.48	12"	0.50	0.013	2.6	3.1	32'	0.16					
	A15	DI-2C																			384.63			387.90
A15		DI-2C																		383.90				387.10
			0.41	0.90	0.37	0.58	7.27	5MIN			2.69	4.22	15"	0.50	0.013	4.6	5.1	163'	0.8[illegible]					
	VAULT "A"																				383.07			
A14		DI-2B																		383.84				388.18
			0.08	0.90	0.072	0.072	7.27	5MIN			0.52	0.52	12"	1.00	0.013	2.5	4.4	8'	0.08					
VAULT "A"	—																				383.76			—
BLDG #5A		(ROOF DRAIN)																		384.03				
			0.32	0.90	0.29	0.29	7.27	5MIN			3.11	2.11	15"	0.50	0.013	2.5	3.6	36'	0.17					
	A19	DI-2B																			383.86			388.65
A19		DI-2B																		383.85				388.55
	VAULT "A"	—	0.12	0.90	0.108	0.90	7.27	5MIN			0.79	2.89	12"	1.00	0.013	3.6	5.0	5'	0.05		383.88			—
A18		DI-2C																		383.80				388.39
			0.14	0.90	0.13	0.13	7.27	5MIN			0.92	0.92	12"	0.50	0.013	2.5	3.7	8'	0.04					
VAULT "A"																					383.76			—
BLDG #4		(ROOF DRAIN)																		385.60				—
			0.33	0.90	0.30	0.30	7.27	5MIN			2.18	2.18	12"	0.50	0.013	2.6	3.6	20'	0.10					
	VAULT "A"	—																			385.50			—
BLDG #3		(ROOF DRAIN)																		387.95				
			0.41	0.90	0.37	0.37	7.27	5MIN			2.68	2.68	12"	1.00	0.013	3.60	4.8	44						
	AA-12	MH-1																			387.51			
AA-12		MH-1																		387.20				
			—	—	—	—	—	—			—	2.68	15"	0.50	0.013	4.60	5.7	160						
	AA-11	MH-1																			386.40			
BLDG #7		(ROOF DRAIN)																		386.25				
			1.44	0.90	1.30	1.30	7.27	5MIN			9.42	9.42	24"	0.50	0.013	16.2	5.1	23						
	AA-11	MH-1																			386.11			

NO.	DESCRIPTION	REVIEW BY	APPROVED	DATE

REVISION APPROVED BY DIVISION OF DESIGN REVIEW

JOHN T. DeBELL No. [illegible]

STORM SEWER DESIGN COMPUTATIONS

FROM	TO	TYPE STR.	AREA DRAIN "A" ACRES	RUN-OFF COEF. C	C A INCREMENT	C A ACCUMULATED	TIME OF CONCENTRATION "I"	TO PIPE	IN PIPE	ACCUM. TIME	RUNOFF (CFS) INC. "Q"	ACCUM. "Q"	DESIGN PIPE DIA.	SLOPE (%)	"n"	MAX. "Q"	VEL. FT/SEC	LENGTH OF RUN	FALL (FEET)	PROFILE INV. UPPER	INV. LOWER	LOSSES	STATION	TOP ELEV.
C4		DI-1E	0.03	0.30	0.01															377.65				382.48
			0.81	0.90	0.73	0.80	7.27	5	—	—	5.82	5.82	18	0.50	0.013	7.45	4.7	50'	0.25			—	—	
	C3	DI-3B																			377.40			386.42
C3		DI-3B																		377.15				386.42
			0.64	0.85	0.54	1.34	7.27	5	—	—	3.95	9.74	21	0.50	0.013	11.80	5.2	200	1.00			—	—	
	C2	DI-3B																			378.15			393.87
C2		DI-3B																		377.70				393.87
			0.34	0.85	0.29	1.63	7.27	5	—	—	2.10	11.85	24	0.50	0.013	16.00	5.4	150	0.75			—	—	
	C1	DI-3C																			377.15			382.33
C1		DI-3C																		376.70				382.33
			0.48	0.85	0.41	2.04	7.27	5	—	—	2.97	14.85	24	0.50	0.013	16.00	5.6	59	0.30			—	—	
SWM/BMP VAULT C																					376.26			
C8		DI-3B																		380.85				385.35
			0.36	0.90	0.32	0.32	7.27	5	—	—	2.37	2.37	15	0.50	0.013	2.96	5.0	40	0.20			—	—	
	C7	DI-3B																			380.65			384.55
C7		DI-3B																		380.55				384.55
			0.19	0.90	0.17	0.49	7.27	5	—	—	1.24	3.56	15	1.50	0.013	7.71	5.5	90	1.35			—	—	
SWM/BMP VAULT C																					379.03			
C6		DI-1 (MOD)																		377.95				383.00
			0.69	0.90	0.62	0.62	7.27	5	—	—	4.51	4.51	MX23	0.40	0.013	7.4	4.2	29'	0.12			—	—	
SWM/BMP VAULT C																					377.85			
C5		DI-3C																		378.00				382.53
			1.21	0.90	1.07	1.07	7.27	5	—	—	7.78	7.82	15	3.00	0.013	11.17	10.1	16'	0.48			—	—	
SWM/BMP VAULT C																					377.52			
C14		DI-3B																		384.05				390.83
			0.36	0.90	0.32	0.32	7.27	5	—	—	2.34	2.34	15	0.50	0.013	2.88	5.2	21	0.11			—	—	
	C13	DI-1																			384.54			389.95
EX.	BLDG. ROOF DRAIN																							
			0.48	0.90	0.43	0.43	7.27	5	—	—	3.14	3.14	10	EXISTING ROOF DRAIN				57'	—			—	—	—
	C13	DI-1																			384.71			389.95
C13		DI-1																		384.04				389.45
			0.11	0.90	0.10	0.86	7.27	5	—	—	0.72	6.28	18	0.50	0.013	7.49	5.7	146'	0.73			—	—	
	C12	DI-1																			383.31			389.70
EX.	BLDG ROOF DRAIN																							—
			0.48	0.90	0.43	0.43	7.27	5	—	—	3.14	3.14	10	EXISTING ROOF DRAIN				45	—			—	—	—
	C12	DI-1																			384.56			389.70
C12		DI-1																		382.04				389.70
			0.97	0.90	0.85	1.42	7.27	5	—	—	2.48	11.80	21	0.60	0.013	12.87	5.8	115	0.69			—	—	
	C11	MH-1																			382.37			391.28
C11		MH-1																		382.12				391.28
			0.00	—	—	—	—	—	—	—	—	11.80	21	0.60	0.013	12.87	5.8	125	0.75			—	—	
	C10	DI-3B																			381.37			390.08
C10		DI-3B																		381.12				390.08
			0.32	0.90	0.29	1.71	7.27	5	—	—	2.09	13.87	21	0.80	0.013	14.17	6.7	92'	0.74			—	—	
	C9	DI-3B																			380.38			388.28
C9		DI-3B																		380.18				388.43
			0.07	0.90	0.06	[illegible]	7.27	5	—	—	0.46	14.34	21	0.90	0.013	15.03	7.0	115	1.05			—	—	
SWM/BMP VAULT C																					379.10			
SWM/BMP VAULT C																				376.40				
		100-YR. DISCHARGE FROM SWM/BMP VAULT C										13.90	21	0.60	0.013	12.27	5.6	77				—	—	
	C15	MH-1																			375.74			386.00
C15		MH-1																		375.39				386.00
			—	—	—	—	—	—	—	—	—	13.90	21	3.54	0.013	29.81	5.5	35				—	—	
	EX.	MH-1																			374.45			
																				EX. INV. = 374.30	(EX. 24" IN)			
																					381.47			
B3		DI-3A																		381.82				385.38
			0.28	0.90	0.252	0.252	7.27	5			1.83	1.83	15	0.50	0.013	4.7	3.4	67'	0.34					
	B3	DI-3[illegible]																			381.48			385.40
B3		DI-3C																		381.22				385.40
			0.00	0.90	0.34	[illegible]	7.27	5			2.45	5.76	15	0.50	0.013	7.6	8.5	102'	0.51					
	B2	DI-2B																			380.72			387.08
																				380.00				—
VAULT "A"	—	10 YR. STM. OUTFALL FROM VAULT "A" Q=																						
					3.58	3.46					13.0	13.0	30	0.55	0.013	31.6	6.4	50'	0.28					
	B2	DI-2B	(100 YR. STM. OUTFALL FROM VAULT "A" Q=																		379.72			387.08
B2		DI-2B																		379.47				387.08
			0.14	0.90	0.13	3.40	7.27	5			0.46	24.75	30	0.55	0.013	31.5	6.4	56'	0.28					
	BA	DI-3C																			379.19			382.95

Rev. per [illegible] 3-3-91
Rev. 2 sheets [illegible]

REVISIONS	DATE
REV. PARKING LOT POLE LOCATION AND ADD H.C. RAMPS.	7-26-90
DELETED A-17, ADDED AA-11, AA-12	7-17-90
FOR 2nd SUBMISSION	3-15-90

DATE: 10-25-89
SCALE: N/A
DESIGN: DRAWN:
CHECK: CHECK:
JOB NO.: 89C-042
P.R. NO.: CT08599000
SHEET 16 OF 38
FILE NO.: C-2860

STORM SEWER COMPUTATIONS
GREENBRIAR SHOPPING CENTER ADDITION
PROVIDENCE DISTRICT
FAIRFAX COUNTY, VIRGINIA

BENGTSON, DeBELL, ELKIN & TITUS, LTD.
ENGINEERS • SURVEYORS • PLANNERS • LANDSCAPE ARCHITECTS
P.O. BOX 429, 5940 CENTREVILLE ROAD, CENTREVILLE, VIRGINIA 22020
(703) 631-9630 (703) 263-5730
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OFFICE LOCATIONS:
CHESTERFIELD COUNTY, VIRGINIA; FAIRFAX COUNTY, VIRGINIA; LOUDOUN COUNTY, VIRGINIA; PRINCE WILLIAM COUNTY, VIRGINIA; VIRGINIA BEACH, VIRGINIA; ANNE ARUNDEL COUNTY, MARYLAND; MONTGOMERY COUNTY, MARYLAND

STORMWATER MANAGEMENT / BMP COMPUTATIONS (8012-SP-01-03) AS PREPARED BY BENGTSON, DEBELL, ELKIN & TITUS, LTD. NOW KNOWN AS BURGESS & NIPLE, INC. - FOR INFORMATION ONLY!!!

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STORM DRAINAGE COMPUTATIONS
SUNTRUST BANK
GREENBRIAR TOWN CENTER
SPRINGFIELD DISTRICT FAIRFAX COUNTY, VIRGINIA

SE 2008-SP-015
COUNTY PROJECT NUMBER

COMMONWEALTH OF VIRGINIA
JONATHAN D. BONDI
Lic. No.001379
08-11-08
CERTIFIED LANDSCAPE ARCHITECT

PLAN STATUS	
03/21/08	INITAL SUBMISSION
04/16/08	ACCEPTANCE REVISIONS
07/01/08	SECOND SUBMISSION
08/11/08	THIRD SUBMISSION

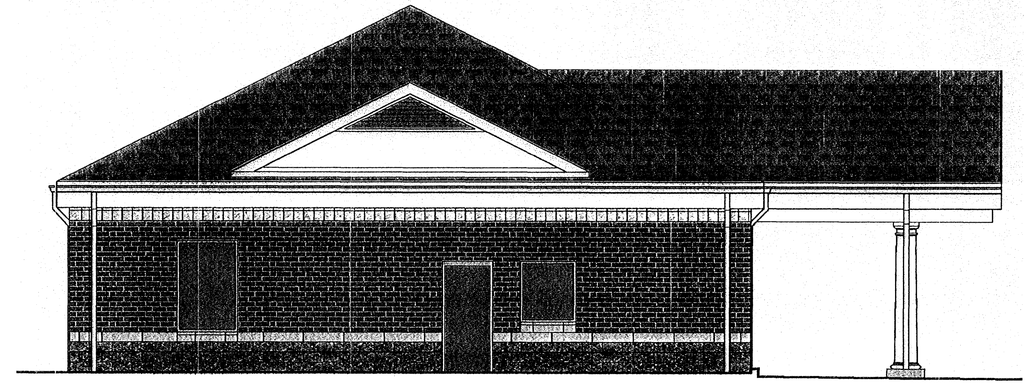
DATE	DESCRIPTION	
JDB DESIGN	CAD DRAWN	JDB CHKD
SCALE	H: NO SCALE V:	
JOB No.	4466-01-003	
DATE:	March 01, 2008	
FILE No.	4466-D-ZP-001	
SHEET	6G OF 7	

Application No SE-2008-SP-015 Staff C.D.

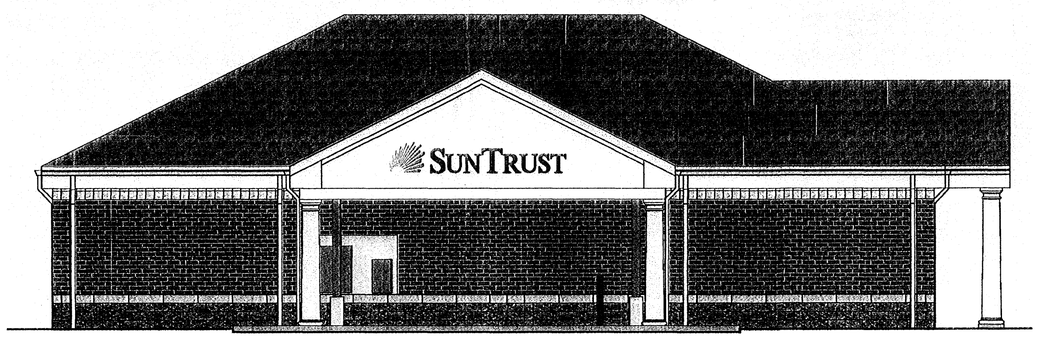
APPROVED SE / SP PLAN
See Development Conditions dated 8-27-2008
Date of (BOS) (BZA) approval 9-22-2008

Cad file name : P:\4466 - Greenbriar Shopping Center Parcel 10-C\4466-01-003 (PLN)\Planning\Special Exception\4466-STM DRAINAGE COMPS.dwg

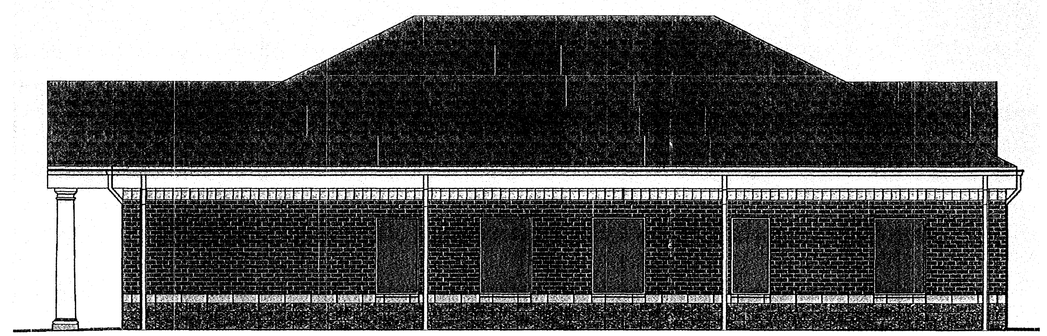
NORTH ELEVATION (FRONT)



SOUTH ELEVATION (REAR)



SIDE ELEVATION (EAST)



SIDE ELEVATION (WEST)

Application No SE-2008-SP-015 Staff C.D.

APPROVED (SE) SP PLAN
See Development Conditions dated 8-27-2008
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ARCHITECTURAL ELEVATIONS
SUNTRUST BANK
GREENBRIAR TOWN CENTER
FAIRFAX COUNTY, VIRGINIA
SPRINGFIELD DISTRICT

SE 2008-SP-015
COUNTY PROJECT NUMBER

COMMONWEALTH OF VIRGINIA
JONATHAN D. BONDI
Lic. No.001379
08-11-08
CERTIFIED LANDSCAPE ARCHITECT

PLAN STATUS	
03/21/08	INITIAL SUBMISSION
04/16/08	ACCEPTANCE REVISIONS
07/01/08	SECOND SUBMISSION
08/11/08	THIRD SUBMISSION

DATE	DESCRIPTION	
JDB DESIGN	CAD DRAWN	JDB CHKD

SCALE H: N.T.S. V:
JOB No. 4466-01-003
DATE: March 01, 2008
FILE No. 4466-D-ZP-001
SHEET 7 OF 7

Cad file name : P 6 - Greenbriar Shopping Center Parcel 10-C\4466-01-003 (PLN)\Planning\Special Exception\4466-Arch_elev.dwg