EROSION CONTROL LEGEND

KEY	TITLE	SYMBOL
CE	TEMPORARY GRAVEL CONSTRUCTION ENTRANCE WITH WASH RACK	
SF	SILT FENCE	X
SSF	SUPER SILT FENCE	XX
IP	STORM DRAIN INLET PROTECTION	

50 0 25 50 100 200
(IN FEET)
1 INCH = 50'

FOR EROSION CONTROL PURPOSES ONLY!!

Engineers • Surveyors • Planners
Landscape Architects • Arborists
207 PARK AVENUE
FALLS CHURCH, VIRGINIA 22046
(703) 532-6163 Fax (703) 533-1301
www.WLPINC.com
WALTER L. PHILLIPS INCORPORATED
ESTABLISHED 1945

DRAWN: AI / KW / TT
CHECKED: KW
SCALE: 1" = 50'
DATE: SESP PRE-SUB01 5/15/2020, SESP SUB01 06/08/2020

COMMONWEALTH OF VIRGINIA
KAREN L. S. WHITE
Lic. No.041850
6/08/2020
PROFESSIONAL ENGINEER

NO.	DESCRIPTION	DATE	REV. BY	APPROVED	DATE

REVISION APPROVED BY

NOTE: THE VERTICAL DATUM REFERENCED ON THIS PLAN IS THE NORTH AMERICAN DATUM OF 1988 (NAVD88)

EROSION & SEDIMENT CONTROL PLAN - PHASE 1A

WEST FALLS CHURCH ECONOMIC DEVELOPMENT

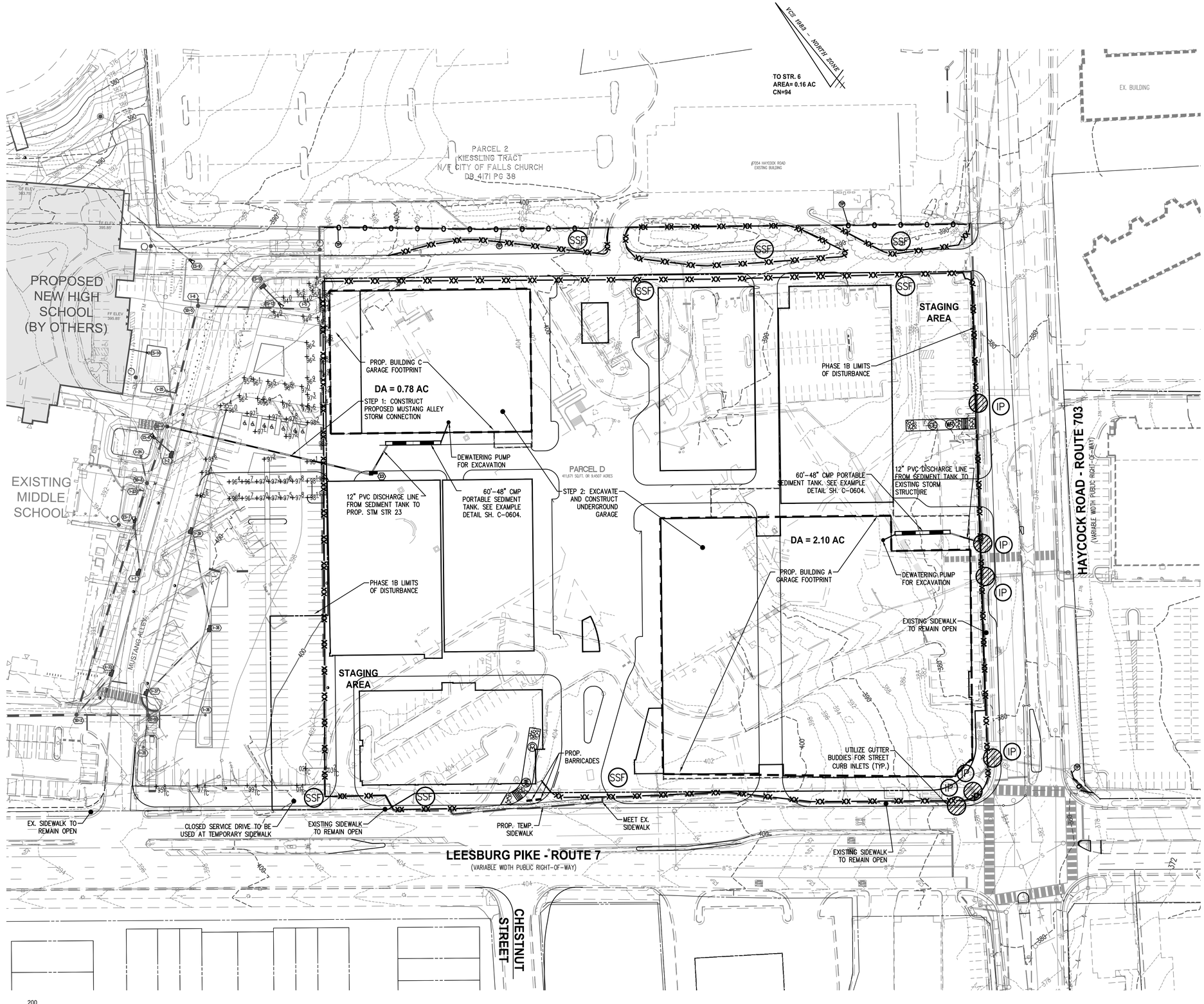
SPECIAL EXCEPTION SITE PLAN
CITY OF FALLS CHURCH, VIRGINIA

SHEET: C-0601

File No. CB-9 Tax Map No. 40-3 Job No. 13-016 Cadd Dwg. File: Q:\sdskproj\13016\dwg\Engineering\Plans\SESP\13016C-0601.dwg Xref: SESP/13016B-0002

EROSION CONTROL LEGEND

KEY	TITLE	SYMBOL
CE	TEMPORARY GRAVEL CONSTRUCTION ENTRANCE WITH WASH RACK	
SF	SILT FENCE	—X—
SSF	SUPER SILT FENCE	—XX—
IP	STORM DRAIN INLET PROTECTION	



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EROSION & SEDIMENT CONTROL PLAN - PHASE 1B

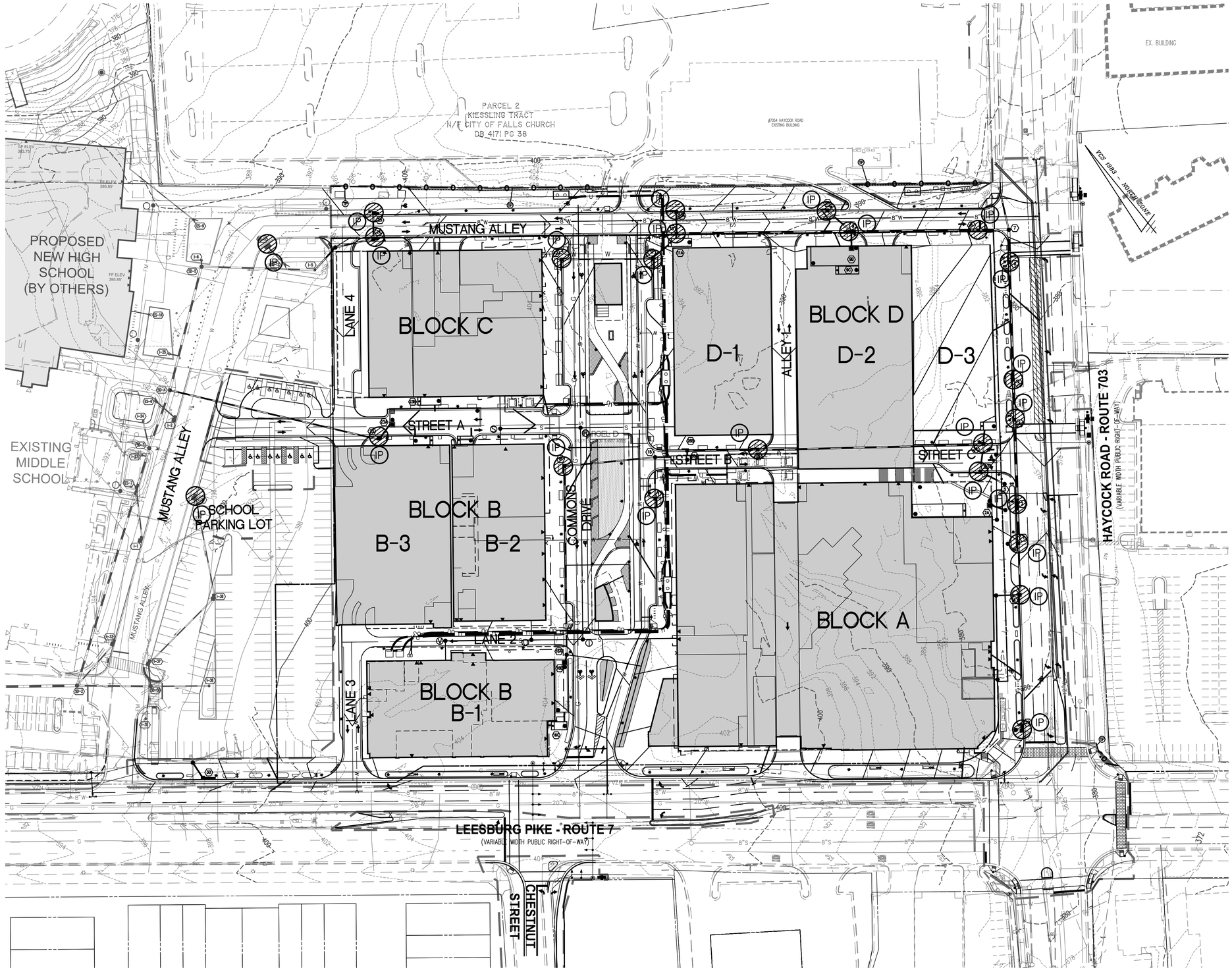
WEST FALLS CHURCH ECONOMIC DEVELOPMENT

SPECIAL EXCEPTION SITE PLAN
CITY OF FALLS CHURCH, VIRGINIA

SHEET: C-0602

EROSION CONTROL LEGEND

KEY	TITLE	SYMBOL
CE	TEMPORARY GRAVEL CONSTRUCTION ENTRANCE WITH WASH RACK	
SF	SILT FENCE	
SSF	SUPER SILT FENCE	
IP	STORM DRAIN INLET PROTECTION	



50 0 25 50 100 200
(IN FEET)
1 INCH = 50'

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NO.	DESCRIPTION	DATE	REV. BY	APPROVED	DATE

REVISION APPROVED BY:

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EROSION & SEDIMENT CONTROL PLAN - PHASE 2

WEST FALLS CHURCH ECONOMIC DEVELOPMENT

SPECIAL EXCEPTION SITE PLAN
CITY OF FALLS CHURCH, VIRGINIA

SHEET: C-0603

EROSION CONTROL NARRATIVE

PROJECT DESCRIPTION:
THE PURPOSE OF THIS PROJECT IS TO CONSTRUCT 8 MIXED USE RETAIL/COMMERCIAL/RESIDENTIAL BUILDINGS WITH TWO UNDERGROUND GARAGES, RETAIL KIOSKS AND COMMONS AREA. CONSTRUCTION WILL ENTAIL APPROXIMATELY 11.19 ACRES OF DISTURBED AREA. OFFSITE CONSTRUCTION INCLUDES ROAD, SIDEWALK AND STREETSCAPE CONSTRUCTION, AND INSTALLATION OF UTILITY CONNECTIONS AND NEW UTILITY LINES IN LEESBURG PIKE AND HAYCOCK ROAD. ALL EXISTING SITE CONDITIONS WILL BE DEMOLISHED, THEN EXCAVATION OF THE UNDERGROUND GARAGE WILL BEGIN, FOLLOWED BY CONSTRUCTION OF PROPOSED BUILDINGS.

EXISTING SITE CONDITIONS:
THE EXISTING SITE IS CURRENTLY DEVELOPED WITH GEORGE MASON HIGH SCHOOL.

ADJACENT PROPERTIES:
NORTH: 7054 HAYCOCK ROAD UNIVERSITY BUILDING
WEST: MARY ELLEN HENDERSON MIDDLE SCHOOL
SOUTH: LEESBURG PIKE
EAST: HAYCOCK ROAD

SOILS:
SEE THIS SHEET FOR SOILS MAP

CRITICAL EROSION AREAS:
NO PART OF THE SITE IS CONSIDERED A CRITICAL EROSION HAZARD.

PHASING NARRATIVE:
THE FOLLOWING EROSION AND SEDIMENT CONTROL MEASURES WILL BE ACCOMPLISHED IN THREE PHASES. PHASE IA SHALL BE IN PLACE PRIOR TO CLEARING AND MUCH OF IT SHALL REMAIN IN PLACE THROUGHOUT THE CLEARING AND LAND DISTURBING PROCESS. THE GENERAL CONTRACTOR IS TO PROVIDE DUST CONTROL THROUGHOUT LAND DISTURBING ACTIVITIES IN ACCORDANCE WITH VESCH STANDARD 3.39. STAGING AND STOCKPILING SHALL OCCUR ON BLOCKS B-3 AND D-3.

PHASE 1A:
AS THE FIRST ITEM OF CONSTRUCTION, THE CONTRACTOR IS TO PLACE THE SUPERSILT FENCE AND INLET PROTECTION AROUND THE SITE. REFER TO EROSION AND SEDIMENT CONTROL PLAN – PHASE 1A FOR LOCATION OF THESE MEASURES. THIS ACTIVITY IS TO BE FOLLOWED BY THE PLACEMENT OF THE CONSTRUCTION ENTRANCES AND TEMPORARY WATER SERVICE AS COORDINATED WITH CFC PUBLIC UTILITIES AND FAIRFAX WATER. CONSTRUCTION VEHICLES TO LEAVE THE SITE VIA LEESBURG PIKE AND HAYCOCK ROAD. A SPRAY NOZZLE IS TO BE PROVIDED ADJACENT TO THE CONSTRUCTION ENTRANCES TO CLEAN CONSTRUCTION VEHICLES BEFORE THEY ENTER THE PUBLIC RIGHT-OF-WAY. THE CONTRACTOR IS TO MAINTAIN ADJACENT ROADWAYS AND PARKING AREAS IN A MUD AND DUST FREE CONDITION. FOLLOWING INSTALLATION OF PHASE 1 CONTROLS, THE CONTRACTOR IS TO SCHEDULE CITY INSPECTION. FOLLOWING INSPECTOR APPROVAL, SITE DEMOLITION, CLEARING AND GRADING MAY PROCEED. AS BUILDINGS ARE REMOVED, ADDITIONAL SILT FENCE TO BE INSTALLED TO CONTROL SURFACE RUNOFF TO INLET STRUCTURES.

EXISTING IMPROVEMENTS WITHIN EROSION CONTROL PHASE 1 LIMITS OF DISTURBANCE TO BE CLEARED AS FOLLOWS:
1. EXISTING SCHOOL BUILDING AND UTILITY SERVICES TO BE REMOVED PER DEMOLITION PLAN.
2. TREES TO BE CLEARED PER DEMOLITION AND LANDSCAPE CONSERVATION PLANS.

PHASE 1B:
INLET PROTECTION FROM PHASE 1 SHALL REMAIN AS SHOWN ON THE PHASE 1B E&S PLAN. INLET PROTECTION SHALL BE REMOVED FROM EXISTING STRUCTURES ONLY AS STRUCTURES ARE REMOVED. A MUSTANG ALLEY STORM SEWER CONNECTION MUST BE CONSTRUCTED BEFORE THE C BUILDING GARAGE EXCAVATION BEGINS. THE STRUCTURES WITHIN GARAGE FOOTPRINT SHALL REMAIN IN PLACE UNTIL THE GARAGE EXCAVATION BEGINS AND THE PORTABLE SEDIMENT TANK WITH PUMP IS INSTALLED. THE SUPERSILT FENCE SHALL REMAIN IN PLACE AROUND THE SITE PERIMETER AS SHOWN ON THE PHASE 1B E&S PLAN.

PHASE 2:
PHASE 2 IS FOR THE CONSTRUCTION ABOVE GRADE AFTER FOOTING-TO-GRADE CONSTRUCTION IS COMPLETED. UTILITY IMPROVEMENTS WILL TAKE PLACE IN LEESBURG PIKE AND HAYCOCK ROAD AND EROSION AND SEDIMENT CONTROLS ARE TO BE ADJUSTED AS REQUIRED BY THE SITE CONSTRUCTION OR AS DIRECTED BY THE INSPECTOR.

INLET PROTECTION SHALL BE PROVIDED IN VICINITY OF SITE IMPROVEMENTS AS SOON AS WORK TAKES PLACE. INLET PROTECTION SHALL BE ADDED TO THE NEW STORM SEWER STRUCTURES AS THEY ARE BROUGHT ONLINE.

PERMANENT STABILIZATION:
PERMANENT SOIL STABILIZATION SHALL BE IN ACCORDANCE WITH VESCH SECTIONS 3.29 TO 3.36. ANY SOIL NOT TO BE BROUGHT TO FINAL GRADE FOR MORE THAN 7 DAYS IS TO BE SEEDED AND MULCHED. THIS IS TO INCLUDE ANY DENUDED AREAS OR STOCKPILE AREAS LEFT DORMANT OR NOT BROUGHT TO FINAL GRADE SHALL BE PERMANENTLY SEEDED AND MULCHED. NO DISTURBED AREA WILL BE DENUDED FOR MORE THAN 7 CALENDAR DAYS UNLESS IT IS AN ACTIVE WORK AREA OR OTHERWISE AUTHORIZED BY CITY OF FALLS CHURCH INSPECTOR.

ALL STORM AND SANITARY LINES NOT IN THE STREET SHALL BE MULCHED AND SEEDED WITHIN 7 DAYS AFTER BACKFILL AND NO MORE THAN 500 FEET SHALL BE OPEN AT ANY ONE TIME. ELECTRIC, TELEPHONE, CABLE, AND GAS UTILITY TRENCHES SHALL BE COMPACTED, SEEDED, MULCHED WITHIN FIVE DAYS AFTER BACKFILL.

DURING CONSTRUCTION OF THE PROJECT, SOIL STOCKPILES SHALL BE IMMEDIATELY STABILIZED OR PROTECTED WITH SEDIMENT TRAPPING MEASURES. THE CONTRACTOR IS RESPONSIBLE FOR TEMPORARY PROTECTION AND PERMANENT STABILIZATION OF ALL SOIL STOCKPILES ON SITE AS WELL AS BORROW AREAS AND SOIL INTENTIONALLY TRANSPORTED FROM THE PROJECT SITE.

DEWATERING NOTE:
RAINWATER/GROUNDWATER ACCUMULATION FROM WITHIN THE EXCAVATIONS IS TO BE PUMPED OUT AS NECESSARY. DURING DEWATERING OPERATIONS, WATER WILL BE PUMPED INTO AN APPROVED FILTERING DEVICE.

MAINTENANCE PROGRAM:
THE SITE SUPERINTENDENT, OR HIS/HER REPRESENTATIVE, SHALL MAKE A VISUAL INSPECTION OF ALL MECHANICAL CONTROLS AND NEWLY STABILIZED AREAS (I.E. SEEDED AND MULCHED AREAS) ON A DAILY BASIS, ESPECIALLY AFTER A HEAVY RAINFALL EVENT TO ENSURE THAT ALL CONTROLS ARE MAINTAINED AND PROPERLY FUNCTIONING. ANY DAMAGED CONTROLS SHALL BE REPAIRED PRIOR TO THE END OF THE WORK DAY INCLUDING RE-SEEDING AND MULCHING IF NECESSARY.

EROSION AND SEDIMENT CONTROL MEASURES:

1. ALL EROSION AND SILTATION CONTROL MEASURES ARE TO BE PLACED PRIOR TO LAND DISTURBANCE ACTIVITY, FOLLOWING THE IMPLEMENTATION OF TREE PRESERVATION MEASURES.
2. SEDIMENT AND EROSION CONTROL MEASURES SHALL BE MAINTAINED UNTIL ALL GROUND DISTURBING ACTIVITY CEASES AND PERMANENT STABILIZATION OF ALL DISTURBED AREAS IS COMPLETE.
3. ALL STANDARDS AND SPECIFICATIONS REFER TO THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK.
4. A CONSTRUCTION ENTRANCE SHALL BE INSTALLED AND MAINTAINED FOR THE DURATION OF ALL DISTURBING ACTIVITIES AS SHOWN ON THE PLAN PER STD. AND SPEC. NO. 3.02 OF THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK. NO CONSTRUCTION TRAFFIC SHALL BE PERMITTED TO ENTER THE SITE OTHER THAN THIS ENTRANCE UNTIL PARKING LOT IS PAVED.
5. ALL AREAS DISTURBED BY CONSTRUCTION THAT ARE NOT TO BE CONSTRUCTED UPON SHALL BE PERMANENTLY STABILIZED IMMEDIATELY FOLLOWING FINISH GRADING BY SEEDING AND MULCHING PER STD. AND SPEC. NO. 3.31 OF THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK.
6. BARE SOIL SURFACES NOT AT FINISH GRADE, WHICH WILL BE EXPOSED MORE THAN 7 DAYS, SHALL BE STABILIZED WITH TEMPORARY SEEDING AND MULCHING PER STD. AND SPEC. NO. 3.32 OF THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK.

GENERAL LAND CONSERVATION NOTES

1. NO DISTURBED AREA WILL BE DENUDED FOR MORE THAN 7 CALENDAR DAYS UNLESS OTHERWISE AUTHORIZED BY THE DIRECTOR OR HIS AGENT.
2. ALL EROSION AND SILTATION CONTROL MEASURES ARE TO BE PLACED PRIOR TO CLEARING AND GRADING.
3. ALL STORM AND SANITARY LINES NOT IN STREETS ARE TO BE MULCHED AND SEEDED WITHIN 5 DAYS AFTER BACKFILL. NO MORE THAN 500 FEET ARE TO BE OPEN AT ANY ONE TIME.
4. ELECTRIC POWER, TELEPHONE, AND GAS SUPPLY TRENCHES AREA TO BE COMPACTED, SEEDED, AND MULCHED WITHIN 5 DAYS AFTER BACKFILL.
5. DURING CONSTRUCTION, MONITOR NEAREST INLETS TO ENSURE NO CONSTRUCTION SEDIMENT ENTERS THE INLETS. PROVIDE INLET PROTECTION AND MONITOR THE SEDIMENT LEAVING THE SITE.
6. ANY DISTURBED AREA NOT COVERED BY NOTE #1 ABOVE AND NOT PAVED, SODDED OR BUILT UPON BY NOVEMBER 1ST, OR DISTURBED AFTER THAT DATE, IS TO BE MULCHED WITH HAY OR STRAW MULCH AT THE RATE OF TWO TONS PER ACRE AND OVER-SEEDED NO LATER THAN MARCH 15TH.
7. AT THE COMPLETION OF CONSTRUCTION PROJECTS, AND PRIOR TO THE RELEASE OF THE BOND, ALL TEMPORARY SILTATION AND EROSION CONTROLS SHALL BE REMOVED AND DISTURBED AREAS SHALL BE STABILIZED.
8. IF THE MAXIMUM PERIOD FOR DENUDATION IS EXCEEDED AND ANY AREAS REMAIN EXPOSED WITHOUT COVER OR SURFACE, THE CITY MAY (IN THE EVENT THE DEVELOPER DOES NOT) INSTALL SUCH GROUND COVER OR OTHER STABILIZING DEVICES AND/OR MATERIAL TO THE MINIMUM EXTENT NECESSARY TO ACHIEVE EROSION AND SEDIMENT CONTROL EQUAL TO THAT WHICH WOULD HAVE BEEN FURNISHED BY THE PERMANENT COVER SHOWN ON THE APPROVED PLANS. THE COST OF ANY SUCH TEMPORARY MEASURES TAKEN BY THE CITY SHALL BE BORNE BY THE DEVELOPER AND SHALL BE A CHARGE AGAINST THE EROSION AND SEDIMENT CONTROL BOND.
9. WHERE CONSISTENT WITH JOB SAFETY REQUIREMENTS, ALL EXCAVATED MATERIAL IS TO BE PLACED ON THE UPHILL SIDE OF TRENCHES. NO MATERIAL IS TO BE PLACED IN STREAMBEDS. NO STOCKPILE IS PERMITTED. WHERE SOIL IS PLACED ON DOWNHILL SIDE OF TRENCHES, IT IS TO BE BACK-SLOPED TO DRAIN TOWARD THE TRENCH. WHEN NECESSARY TO DEWATER THE TRENCHES, THE PUMP DISCHARGE HOSES MUST OUTLET IN A STABILIZED AREA TO AN EXISTING STORM INLET.

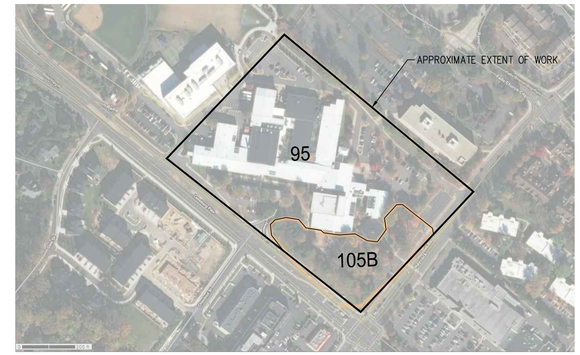
MAINTENANCE NOTES

1. MAINTENANCE OF THE TEMPORARY CONSTRUCTION ENTRANCE SHALL BE REQUIRED TO PREVENT MUD DEPOSITS IN THE RIGHT-OF-WAY.
2. INLET PROTECTION SHALL BE INSPECTED AT THE END OF EACH DAY AND AFTER EACH RAINFALL AND REQUIRED REPAIRS MADE IMMEDIATELY.
3. EROSION AND SEDIMENT CONTROL DEVICES SHALL BE MAINTAINED IN PLACE UNTIL GROUND DISTURBING CONSTRUCTION AND PERMANENT STABILIZATION IS COMPLETE AND SHALL BE REMOVED BY PERMISSION OF THE COUNTY INSPECTOR.
4. FILTER STONE SHALL BE REGULARLY CHECKED TO ENSURE THAT FILTRATION PERFORMANCE IS MAINTAINED. STONE CHOKED WITH SEDIMENT SHALL BE REMOVED AND CLEANED OR REPLACED.

GENERAL EROSION AND SEDIMENT NOTES

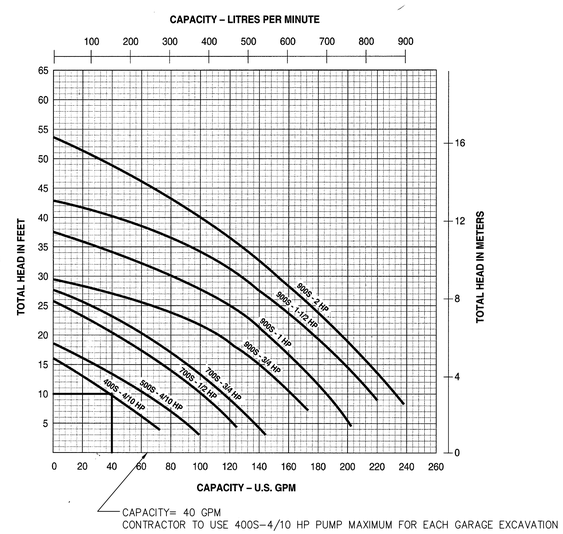
1. UNLESS OTHERWISE INDICATED ALL VEGETATIVE AND STRUCTURAL EROSION AND SEDIMENT CONTROL PRACTICES WILL BE CONSTRUCTED AND MAINTAINED ACCORDING TO MINIMUM STANDARDS AND SPECIFICATIONS OF THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK AND VIRGINIA REGULATIONS EROSION AND SEDIMENT CONTROL REGULATIONS.
2. THE PLAN APPROVING AUTHORITY MUST BE NOTIFIED ONE WEEK PRIOR TO THE PRE-CONSTRUCTION CONFERENCE, ONE WEEK PRIOR TO COMMENCEMENT OF LAND DISTURBING ACTIVITY, AND ONE WEEK PRIOR TO FINAL INSPECTION.
3. ALL EROSION AND SEDIMENT CONTROL MEASURES ARE TO BE PLACED PRIOR TO OR AS THE FIRST STEP IN CLEARING.
4. A COPY OF THE APPROVED EROSION AND SEDIMENT CONTROL PLAN SHALL BE MAINTAINED ON THE SITE AT ALL TIMES.
5. PRIOR TO COMMENCING LAND DISTURBING ACTIVITIES IN AREAS OTHER THAN INDICATED ON THESE PLANS (INCLUDING, BUT NOT LIMITED TO, OFF-SITE BOTTOM OR WASTE AREAS), THE CONTRACTOR SHALL SUBMIT A SUPPLEMENTARY EROSION CONTROL PLAN TO THE OWNER FOR REVIEW AND APPROVAL BY THE PLAN APPROVING AUTHORITY.
6. THE CONTRACTOR IS RESPONSIBLE FOR INSTALLATION OF ANY ADDITIONAL EROSION CONTROL MEASURES NECESSARY TO PREVENT EROSION AND SEDIMENTATION AS DETERMINED BY THE PLAN APPROVING AUTHORITY.
7. ALL DISTURBED AREAS ARE TO DRAIN TO APPROVED SEDIMENT CONTROL MEASURES AT ALL TIMES DURING LAND DISTURBING ACTIVITIES AND DURING SITE DEVELOPMENT UNTIL FINAL STABILIZATION IS ACHIEVED.
8. DURING DEWATERING OPERATIONS, WATER WILL BE PUMPED INTO AN APPROVED FILTERING DEVICE.
9. THE CONTRACTOR SHALL INSPECT ALL EROSION CONTROL MEASURES PERIODICALLY AND AFTER EACH RUNOFF PRODUCING RAINFALL EVENT. ANY NECESSARY REPAIRS OR CLEANUP TO MAINTAIN THE EFFECTIVENESS OF EROSION CONTROL DEVICES SHALL BE MADE IMMEDIATELY.
10. CONTRACTOR IS TO REMOVE MUD/SWEEP STREET AS NEEDED OR DAILY TO KEEP PUBLIC STREETS FREE OF SEDIMENT.

SOILS MAP

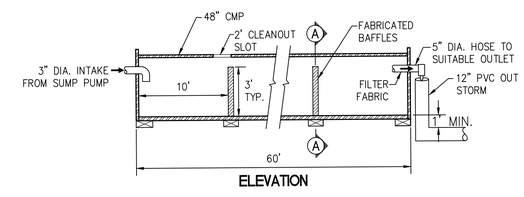


SOIL INFORMATION

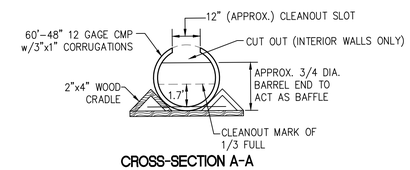
SOIL ID NUMBERS	SOIL SERIES NAME	FOUNDATION SUPPORT	SOIL DRAINAGE	EROSION POTENTIAL	PROBLEM CLASS
95	URBAN LAND	N/A	N/A	N/A	N/A
105B	WHEATON-GLENELG COMPLEX	GOOD	GOOD	HIGH	IVB



PUMP SELECTION CHART



ELEVATION



CROSS-SECTION A-A

NOTE: TANK TO BE CLEANED OF ALL SEDIMENT WHEN 1/3 FULL OR AS DIRECTED BY COUNTY INSPECTOR. SEDIMENT TO BE PLACED AND STABILIZED ON SITE OR HAULED OFFSITE. SEDIMENT NOT TO BE INTRODUCED TO DRAINAGE OUTFALL SYSTEM.

VOLUME COMPUTATIONS:

REQUIRED: 16 x PUMP RATE IN GPM = 16 x 40 = 640 CF

(PUMP DISCHARGE RATE @ 10' HEAD USE 40 GPM)

PROVIDED: $\pi \; R^2 \times L = \pi \; (2)^2 \times 60' = 754$ CF

NOTES:
1. TANK SHALL BE PROVIDED IN ACCORDANCE WITH VESCH STD & SPEC. 3.26.
2. FINAL SIZING OF PUMP FLOW RATE AND PUMP TO BE DETERMINED BY THE CONTRACTOR. THE SEDIMENT TANK SIZE SHALL BE ADJUSTED AS NECESSARY IN ACCORDANCE WITH THE VESCH.

PORTABLE SEDIMENT TANK

NOT TO SCALE

DETAIL FROM VESCH PLATE 3.26-1

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SCALE: NONE
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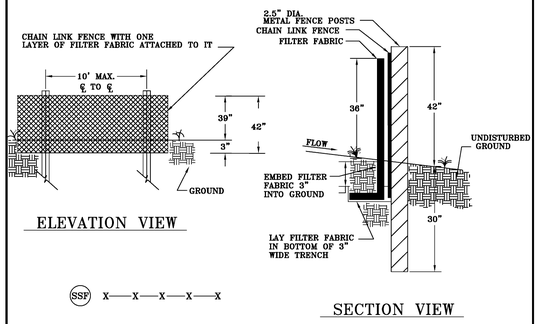
EROSION & SEDIMENT CONTROL NARRATIVE

WEST FALLS CHURCH ECONOMIC DEVELOPMENT

SPECIAL EXCEPTION SITE PLAN
CITY OF FALLS CHURCH, VIRGINIA

SHEET: C-0604



SUPER SILT FENCE
NO SCALE

FENCING

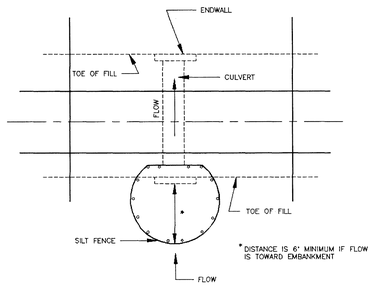
Chain link fence must be 39" above grade with 3" embedded for a total fabric width of 42". The post must be 42" above grade with 30" placed below grade (without concrete) for a total length of 72".

NOTES

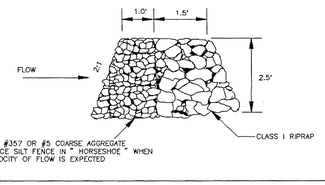
1. Chain link fence must be fastened securely to fence posts with wire ties.
2. Filter fabric must be fastened securely to chain link fence with ties spaced horizontally 24" at the top and midsection.
3. Physical properties of the filter fabric must conform to the latest edition of THE VIRGINIA EROSION & SEDIMENT CONTROL HANDBOOK.
4. When two sections of filter fabric adjoin each other, they must be overlapped by 6".
5. Maintenance must be performed as needed and material must be removed when sediment build-up reaches 50% of the height of the super silt fence.

Ref. Sec. 11-0106.2, 11-0106.2A Rev. 1-00, 2011 Reprint, 2018 Reprint	SUPER SILT FENCE NO SCALE	PLATE NO. 5-11	STD. NO.

SILT FENCE CULVERT INLET PROTECTION

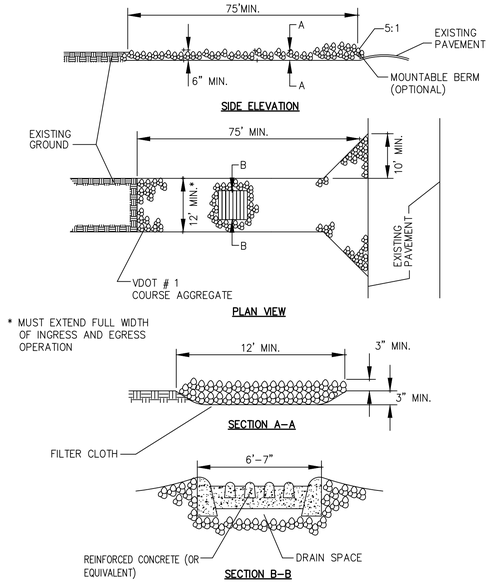


OPTIONAL STONE COMBINATION**



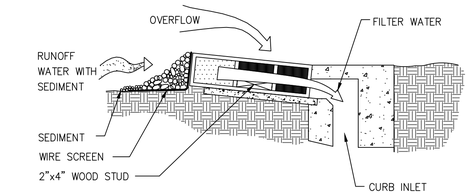
Source: Adapted from VDOT Standard Sheets and Va. DSWC

Plate 3.08-1

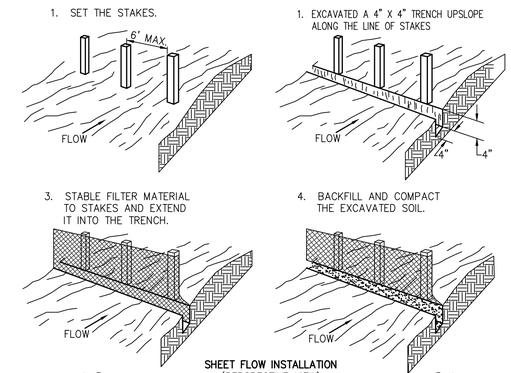


CONSTRUCTION ENTRANCE
NOT TO SCALE

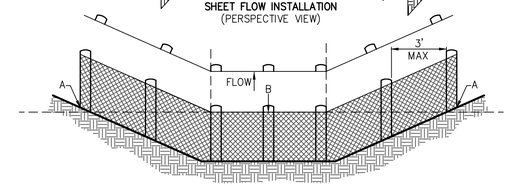
NOTE: CONSTRUCTION ENTRANCE MAY NEED MAINTENANCE OVER TIME BY WAY OF REMOVAL AND REPLACEMENT OF STONE AND/OR REMOVAL OF ACCUMULATED SEDIMENT, BACK FLUSHING ENTRANCE, ETC.



BLOCK AND GRAVEL CURB INLET SEDIMENT FILTER
NOT TO SCALE

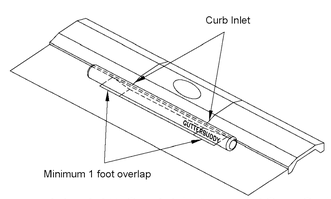


SHEET FLOW INSTALLATION
(PERSPECTIVE VIEW)



POINTS A SHOULD BE HIGHER THAN POINT B.
DRAINAGEWAY INSTALLATION
(FRONT ELEVATION)

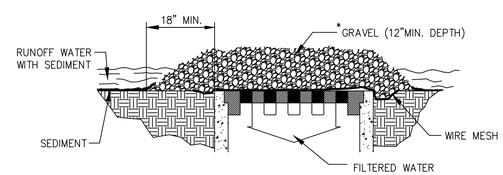
CONSTRUCTION OF SILT FENCE (WITHOUT WIRE SUPPORT)
NOT TO SCALE



GUTTERBUDDY CURB INLET PROTECTION
PRODUCED BY ACF ENVIRONMENTAL

TO BE USED ON EXISTING STORM STRUCTURES ON LEESBURG PIKE. USE ON OTHER STREETS REQUIRES APPROVAL FROM CITY OF FALLS CHURCH

NOT TO SCALE



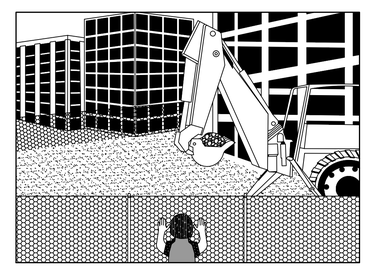
SPECIFIC APPLICATION

THIS METHOD OF INLET PROTECTION IS APPLICABLE WHERE HEAVY CONCENTRATED FLOWS ARE EXPECTED, BUT NOT WHERE PONDING AROUND THE STRUCTURE MIGHT CAUSE EXCESSIVE INCONVENIENCE OR DAMAGE TO ADJACENT STRUCTURES AND UNPROTECTED AREAS.

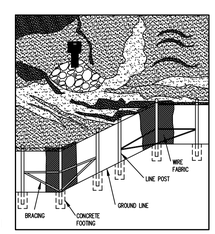
* GRAVEL SHALL BE VDOT #3, #357 OR #5 COARSE

GRAVEL AND WIRE MESH DROP INLET SEDIMENT FILTER
NOT TO SCALE

NOTE: INLET PROTECTION MAY NEED MAINTENANCE OVER TIME BY WAY OF REMOVAL OF ACCUMULATED SEDIMENT.



PERSPECTIVE VIEW



PERSPECTIVE VIEW
METAL FENCE

NOTE:
CONTRACTOR TO ATTACH A DUST CONTROL BARRIER TO THE SAFETY FENCE TO CONTROL DUST DURING CONSTRUCTION ACTIVITIES.

SAFETY FENCE
(METAL FENCE IS REQUIRED)

SOURCE: ADAPTED FROM CONWED PLASTICS AND VDOT ROAD AND BRIDGE STANDARDS

PLATE 3.01–1

WALTER L. PHILLIPS INCORPORATED
ESTABLISHED 1945
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Landscape Architects • Arborists
207 PARK AVENUE
FALLS CHURCH, VIRGINIA 22046
(703) 532-6163 Fax (703) 533-1301
www.WLPINC.com

DATE: SESP PRE-SUB01 5/15/2020, SESP SUB01 06/08/2020
SCALE: NONE
DRAWN: AI/ KW / TT
CHECKED: KW

COMMONWEALTH OF VIRGINIA PROFESSIONAL ENGINEER
KAREN L. S. WHITE
Lic. No.041850
6/08/2020

REVISION APPROVED BY			
NO.	DESCRIPTION	DATE	REV. BY	APPROVED	DATE

NOTE: THE VERTICAL DATUM REFERENCED ON THIS PLAN IS THE NORTH AMERICAN DATUM OF 1988 (NAVD88)

EROSION & SEDIMENT CONTROL DETAILS

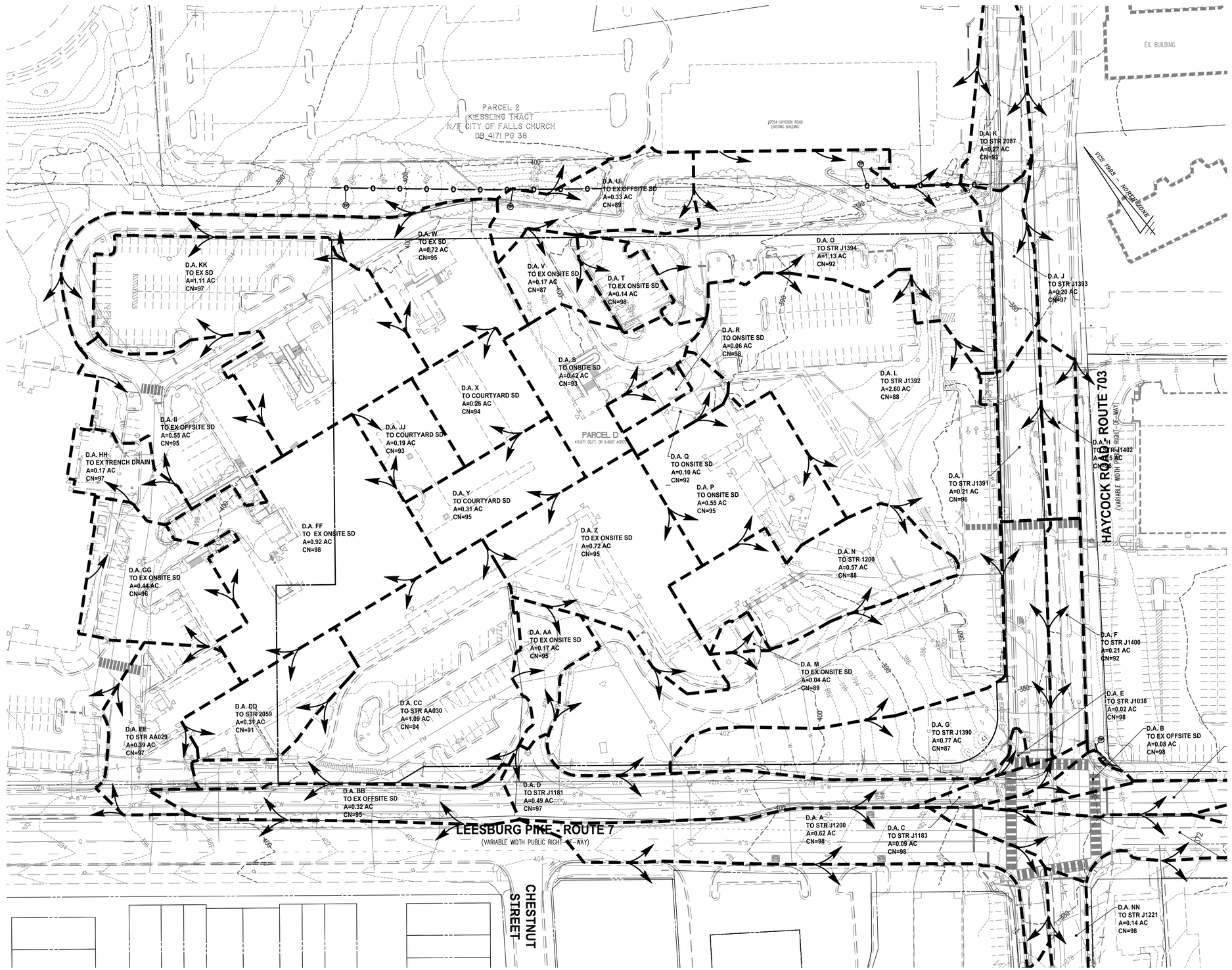
WEST FALLS CHURCH ECONOMIC DEVELOPMENT

SPECIAL EXCEPTION SITE PLAN
CITY OF FALLS CHURCH, VIRGINIA

SHEET: C-0605

LEGEND

DRAINAGE DIVIDES



50 0 25 50 100 200
(IN FEET)
1 INCH = 50'

FOR EROSION CONTROL PURPOSES ONLY!!

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COMMONWEALTH OF VIRGINIA
KAREN L. S. WHITE
Lic. No.041850
6/08/2020
PROFESSIONAL ENGINEER

DATE: SESP PRE-SUB01 5/15/2020, SESP SUB01 06/08/2020
SCALE: 1" = 50'

REVISION APPROVED BY				
NO.	DESCRIPTION	DATE	REV. BY	APPROVED	DATE

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EXISTING DRAINAGE DIVIDES

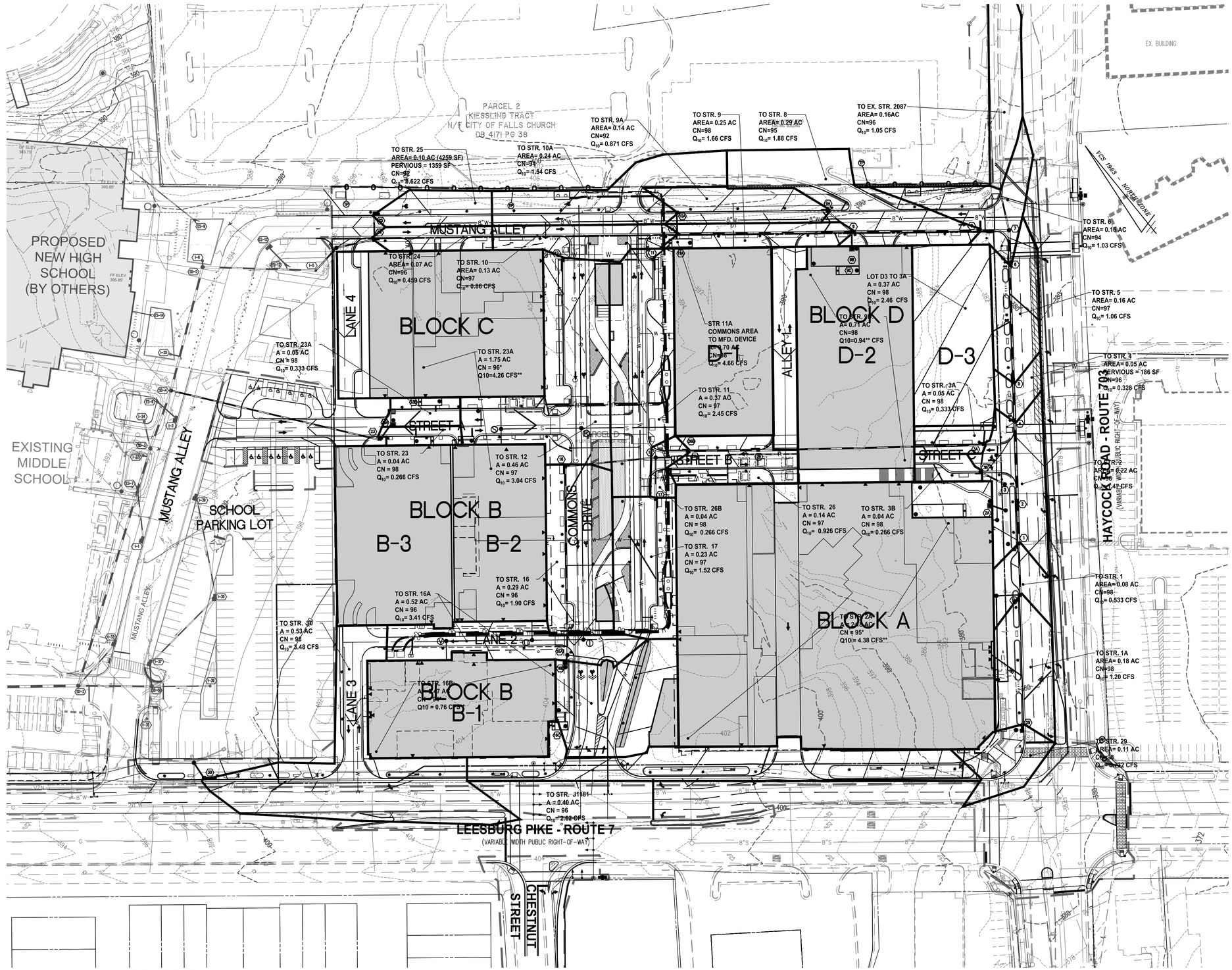
WEST FALLS CHURCH ECONOMIC DEVELOPMENT

SPECIAL EXCEPTION SITE PLAN
CITY OF FALLS CHURCH, VIRGINIA

SHEET: C-0701

LEGEND

DRAINAGE DIVIDES



*AFTER RUNOFF REDUCTION

**RUNOFF BASED ON DETENTION RELEASE RATE

50 0 25 50 100 200
(IN FEET)
1 INCH = 50'

FOR EROSION CONTROL PURPOSES ONLY!!

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KAREN L. S. WHITE
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6/08/2020

NO.	DESCRIPTION	DATE	REV. BY	APPROVED	DATE

REVISION APPROVED BY

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PROPOSED DRAINAGE DIVIDES

WEST FALLS CHURCH ECONOMIC DEVELOPMENT

SPECIAL EXCEPTION SITE PLAN

CITY OF FALLS CHURCH, VIRGINIA

File No. CB-9 Tax Map No. 40-3 Job No. 13-016 Cadd Dwg. File: Q:\sdskproj\13016\dwg\Engineering\Plans\SESP\13016C-0702.dwg Xref: SESP/13016B-0002

SHEET: C-0702

DEQ Virginia Runoff Reduction Method Re-Development Compliance Spreadsheet - Version 3.0

○ 2011 BMP Standards and Specifications ◉ 2013 Draft BMP Standards and Specifications

Project Name:	WFC DEVELOPMENT
Date:	5/11/2020
Linear Development Project?	No

CLEAR ALL (Ctrl+Shift+R)

data input cells | constant values | calculation cells | final results

Site Information

Post-Development Project (Treatment Volume and Loads)

Enter Total Disturbed Area *(acres)* → 11.75

Maximum reduction required:	*20%*
The site's net increase in impervious cover (acres) is:	*3.271464646*
Post-Development TP Load Reduction for Site (lb/yr):	*9.28*

Check:
BMP Design Specifications List: 2013 Draft Stds & Specs
Linear project? No
Land cover areas entered correctly? ✔
Total disturbed area entered? ✔

Pre-ReDevelopment Land Cover (acres)

	A Soils	B Soils	C Soils	D Soils	Totals
Forest/Open Space (acres) -- undisturbed forest/open space				0.00	0.00
Managed Turf (acres) -- disturbed, graded for yards or other turf to be				3.70	3.70
Impervious Cover (acres)				8.05	8.05
					11.75

Post-Development Land Cover (acres)

	A Soils	B Soils	C Soils	D Soils	Totals
Forest/Open Space (acres) -- undisturbed, protected forest/open space or reforested				0.00	0.00
Managed Turf (acres) -- disturbed, graded for yards or other turf to be				0.43	0.43
Impervious Cover (acres)				11.32	11.32
Area Check	OK.	OK.	OK.	OK.	11.75

Constants

Annual Rainfall (inches)	43
Target Rainfall Event (inches)	1.00
Total Phosphorus (TP) EMC (mg/L)	0.26
Total Nitrogen (TN) EMC (mg/L)	1.86
Target TP Load (lb/acre/yr)	0.41
Pj (unitless correction factor)	0.90

Runoff Coefficients (Rv)

	A Soils	B Soils	C Soils	D Soils
Forest/Open Space	0.02	0.03	0.04	0.05
Managed Turf	0.15	0.20	0.22	0.25
Impervious Cover	0.95	0.95	0.95	0.95

LAND COVER SUMMARY -- PRE-REDEVELOPMENT

Land Cover Summary-Pre

Pre-ReDevelopment	Listed	Adjusted[1]
Forest/Open Space Cover (acres)	0.00	0.00
Weighted Rv(forest)	0.00	0.00
% Forest	0%	0%
Managed Turf Cover (acres)	3.70	0.43
Weighted Rv(turf)	0.25	0.25
% Managed Turf	31%	5%
Impervious Cover (acres)	8.05	8.05
Rv(impervious)	0.95	0.95
% Impervious	69%	95%
Total Site Area (acres)	**11.75**	**8.47**
Site Rv	**0.73**	**0.91**

Treatment Volume and Nutrient Load

Pre-ReDevelopment Treatment Volume (acre-ft)	0.7142	0.6460
Pre-ReDevelopment Treatment Volume (cubic feet)	31,111	28,142
Pre-ReDevelopment TP Load (lb/yr)	**19.55**	**17.68**
Pre-ReDevelopment TP Load per acre (lb/acre/yr)	1.66	2.09
Baseline TP Load (lb/yr) (**0.41 lbs/acre/yr** applied to pre-redevelopment area excluding pervious land proposed for new impervious cover)		*3.47*

[1] *Adjusted Land Cover Summary:*
Pre ReDevelopment land cover minus pervious land cover (forest/open space or managed turf) acreage proposed for new impervious cover.

Adjusted total acreage is consistent with Post-ReDevelopment acreage (minus acreage of new impervious cover).

Column I shows load reduction requriement for new impervious cover (based on new development load limit, 0.41 lbs/acre/year).

LAND COVER SUMMARY -- POST DEVELOPMENT

Land Cover Summary-Post (Final)

Post ReDev. & New Impervious	
Forest/Open Space Cover (acres)	0.00
Weighted Rv(forest)	0.00
% Forest	0%
Managed Turf Cover (acres)	0.43
Weighted Rv (turf)	0.25
% Managed Turf	4%
Impervious Cover (acres)	11.32
Rv(impervious)	0.95
% Impervious	96%
Final Site Area (acres)	**11.75**
Final Post Dev Site Rv	**0.92**

Land Cover Summary-Post

Post-ReDevelopment	
Forest/Open Space Cover (acres)	0.00
Weighted Rv(forest)	0.00
% Forest	0%
Managed Turf Cover (acres)	0.43
Weighted Rv (turf)	0.25
% Managed Turf	5%
ReDev. Impervious Cover (acres)	8.05
Rv(impervious)	0.95
% Impervious	95%
Total ReDev. Site Area (acres)	**8.47**
ReDev Site Rv	**0.91**

Land Cover Summary-Post

Post-Development New Impervious	
New Impervious Cover (acres)	3.27
Rv(impervious)	0.95

Treatment Volume and Nutrient Load

Final Post-Development Treatment Volume (acre-ft)	0.9050	**Post-ReDevelopment Treatment Volume (acre-ft)**	0.6460	**Post-Development Treatment Volume (acre-ft)**	0.2590
Final Post-Development Treatment Volume (cubic feet)	39,423	**Post-ReDevelopment Treatment Volume (cubic feet)**	28,142	**Post-Development Treatment Volume (cubic feet)**	11,282
Final Post-Development TP Load (lb/yr)	**24.77**	**Post-ReDevelopment Load (TP) (lb/yr)***	**17.68**	**Post-Development TP Load (lb/yr)**	**7.09**
Final Post-Development TP Load per acre (lb/acre/yr)	2.11	Post-ReDevelopment TP Load per acre (lb/acre/yr)	2.09		
		Max. Reduction Required (Below Pre-ReDevelopment Load)	**20%**		
		TP Load Reduction Required for Redeveloped Area (lb/yr)	**3.54**	**TP Load Reduction Required for New Impervious Area (lb/yr)**	**5.75**

Post-Development Requirement for Site Area

TP Load Reduction Required (lb/yr)	**9.28**

Nitrogen Loads (Informational Purposes Only)

Pre-ReDevelopment TN Load (lb/yr)	139.83	Final Post-Development TN Load (Post-ReDevelopment & New Impervious) (lb/yr)	177.20

Site Results (Water Quality Compliance)

Area Checks	D.A. A	D.A. B	D.A. C	D.A. D	D.A. E	AREA CHECK
FOREST/OPEN SPACE (ac)	0.00	0.00	0.00	0.00	0.00	OK.
IMPERVIOUS COVER (ac)	11.32	0.00	0.00	0.00	0.00	OK.
IMPERVIOUS COVER TREATED (ac)	6.98	0.00	0.00	0.00	0.00	OK.
MANAGED TURF AREA (ac)	0.43	0.00	0.00	0.00	0.00	OK.
MANAGED TURF AREA TREATED (ac)	0.00	0.00	0.00	0.00	0.00	OK.
AREA CHECK	OK.	OK.	OK.	OK.	OK.	

Site Treatment Volume (ft^3) 39,423

Runoff Reduction Volume and TP By Drainage Area

	D.A. A	D.A. B	D.A. C	D.A. D	D.A. E	TOTAL
RUNOFF REDUCTION VOLUME ACHIEVED (ft^3)	6,160	0	0	0	0	6,160
TP LOAD AVAILABLE FOR REMOVAL (lb/yr)	24.77	0.00	0.00	0.00	0.00	24.77
TP LOAD REDUCTION ACHIEVED (lb/yr)	9.42	0.00	0.00	0.00	0.00	9.42
TP LOAD REMAINING (lb/yr)	15.35	0.00	0.00	0.00	0.00	15.35
NITROGEN LOAD REDUCTION ACHIEVED (lb/yr)	36.62	0.00	0.00	0.00	0.00	36.62

Total Phosphorus

FINAL POST-DEVELOPMENT TP LOAD (lb/yr)	24.77
TP LOAD REDUCTION REQUIRED (lb/yr)	9.28
TP LOAD REDUCTION ACHIEVED (lb/yr)	9.42
TP LOAD REMAINING (lb/yr):	15.35
REMAINING TP LOAD REDUCTION REQUIRED (lb/yr):	0.00 **

** TARGET TP REDUCTION EXCEEDED BY 0.13 LB/YEAR **

Total Nitrogen (For Information Purposes)

POST-DEVELOPMENT LOAD (lb/yr)	177.20
NITROGEN LOAD REDUCTION ACHIEVED (lb/yr)	36.62
REMAINING POST-DEVELOPMENT NITROGEN LOAD (lb/yr)	140.58

Runoff Volume and Curve Number Calculations

Enter design storm rainfall depths (in):

1-year storm	2-year storm	10-year storm
2.63	3.19	4.90

Use NOAA Atlas 14 (http://hdsc.nws.noaa.gov/hdsc/pfds/)

***Notes (see below):**

[1] The curve numbers and runoff volumes computed in this spreadsheet for each drainage area are limited in their applicability for determining and demonstrating compliance with water quantity requirements. See VRRM User's Guide and Documentation for additional information.

[2] Runoff Volume (RV) for pre- and post-development drainage areas must be in volumetric units (e.g., acre-feet or cubic feet) when using the Energy Balance Equation. Runoff measured in watershed-inches and shown in the spreadsheet as RV(watershed-inch) can only be used in the Energy Balance Equation when the pre- and post-development drainage areas are equal. Otherwise RV(watershed-inch) must be multiplied by the drainage area.

[3] Adjusted CNs are based on runoff reduction volumes as calculated in D.A. tabs. An alternative CN adjustment calculation for Vegetated Roofs is included in BMP specification No. 5.

Drainage Area Curve Numbers and Runoff Depths*

Curve numbers (CN, CNadj) and runoff depths ($RV_{Developed}$) are computed with and without reduction practices.

Drainage Area A		A Soils	B Soils	C Soils	D Soils
Forest/Open Space -- undisturbed, protected forest/open space or reforested land	Area (acres)	0.00	0.00	0.00	0.00
	CN	30	55	70	77
Managed Turf -- disturbed, graded for yards or other turf to be mowed/managed	Area (acres)	0.00	0.00	0.00	0.43
	CN	39	61	74	80
Impervious Cover	Area (acres)	0.00	0.00	0.00	11.32
	CN	98	98	98	98

Total Area (acres):	11.75
Runoff Reduction Volume (ft^3):	6,160

$CN_{(D.A. A)}$ 97

	1-year storm	2-year storm	10-year storm
$RV_{Developed}$ *(watershed-inch)* with no Runoff Reduction*	2.29	2.85	4.55
$RV_{Developed}$ *(watershed-inch)* with Runoff Reduction*	2.15	2.70	4.40
Adjusted CN*	95	96	96

NOTE: STORMWATER MANAGEMENT CALCULATIONS ARE BASED ON AREA WITHIN LIMITS OF DISTURBANCE WITHIN CITY LIMITS.

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COMMONWEALTH OF VIRGINIA PROFESSIONAL ENGINEER KAREN L. S. WHITE Lic. No.041850 6/08/2020

DRAWN: AI / KW / TT CHECKED: KW
DATE: SESP PRE-SUB01 5/15/2020, SESP SUB01 06/08/2020
SCALE: NONE

NO.	DESCRIPTION	DATE	REV. BY	APPROVED	DATE

REVISION APPROVED BY

NOTE: THE VERTICAL DATUM REFERENCED ON THIS PLAN IS THE NORTH AMERICAN DATUM OF 1988 (NAVD88)

STORMWATER MANAGEMENT & BMP CALCULATIONS

WEST FALLS CHURCH ECONOMIC DEVELOPMENT

SPECIAL EXCEPTION SITE PLAN
CITY OF FALLS CHURCH, VIRGINIA

SHEET: C-0703

Drainage Area A

CLEAR BMP AREAS

Drainage Area A Land Cover (acres)

	A Soils	B Soils	C Soils	D Soils	Totals	Land Cover Rv
Forest/Open Space (acres)					0.00	0.00
Managed Turf (acres)				0.43	0.43	0.25
Impervious Cover (acres)				11.32	11.32	0.95
				Total	11.75	

Total Phosphorus Available for Removal in D.A. A (lb/yr)	24.77
Post Development Treatment Volume in D.A. A (ft^3)	39,423

Stormwater Best Management Practices (RR = Runoff Reduction)

--Select from dropdown lists--

Practice	Runoff Reduction Credit (%)	Managed Turf Credit Area (acres)	Impervious Cover Credit Area (acres)	Volume from Upstream Practice (ft^3)	Runoff Reduction (ft^3)	Remaining Runoff Volume (ft^3)	Total BMP Treatment Volume (ft^3)	Phosphorus Removal Efficiency (%)	Phosphorus Load from Upstream Practices (lb)	Untreated Phosphorus Load to Practice (lb)	Phosphorus Removed By Practice (lb)	Remaining Phosphorus Load (lb)	Downstream Practice to be Employed
1. Vegetated Roof (RR)													
1.a. Vegetated Roof #1 (Spec #5)	45		1.18		1,829	2,236	4,065	0		2.55	1.15	1.40	14.b. MTD - Filtering
1.b. Vegetated Roof #2 (Spec #5)	60		0.44		912	608	1,519	0		0.95	0.57	0.38	14.b. MTD - Filtering
GREEN ROOF AREAS PRESENT ON MULTIPLE BUILDINGS.													
2. Rooftop Disconnection (RR)													
2.i. To Stormwater Planter, Urban Bioretention (Spec #9, Appendix A)	40		1.50	0	2,066	3,099	5,165	25	0.00	3.24	1.78	1.46	14.b. MTD - Filtering
URBAN BIORETENTION AREAS INCLUDED HERE FROM URBAN BIORETENTION PLATNERS ON ROOFTOP AREAS AND BUILDING COURTYARD SPACES.													
3. Permeable Pavement (RR)													
3.a. Permeable Pavement #1 (Spec #7)	45		0.12	0	186	227	413	25	0.00	0.26	0.15	0.11	None
PERMEABLE PAVEMENT PROVIDED WITHIN COMMONS PEDESTRIAN WALKS.													
6. Bioretention (RR)													
6.a. Bioretention #1 or Micro-Bioretention #1 or Urban Bioretention (Spec #9)	40		0.85	0	1,167	1,750	2,917	25	0.00	1.83	1.01	0.82	None
BIORETENTION AREAS INCLUDED HERE ARE FROM AT-GRADE BIORETENTION PLANTERS AND MICRO-BIORETENTION LEVEL 1 WITHIN COMMONS.													
14. Manufactured Treatment Devices (no RR)													
14.a. Manufactured Treatment Device-Filtering	0		2.90	0	0	9,988	9,988	50	0.00	6.27	3.13	3.13	
14.b. Manufactured Treatment Device-Filtering	0			5,943	0	5,943	5,943	50	3.24	0.00	1.62	1.62	
14a. INCLUDES AREAS TREATED PRIMARILY WITH FILTERING MANUFACTURED TREATMENT DEVICE; 14.b INCLUDES AREAS UTILIZING FILTERING MANUFACTURED TREATMENT DEVICE AS SECONDARY TREATMENT.													

Practice	Nitrogen Removal Efficiency (%)	Nitrogen Load from Upstream Practices (lbs)	Untreated Nitrogen Load to Practice (lbs)	Nitrogen Removed By Practice (lbs)	Remaining Nitrogen Load (lbs)
1. Vegetated Roof (RR)					
1.a. Vegetated Roof #1 (Spec #5)	0		18.25	8.21	10.04
1.b. Vegetated Roof #2 (Spec #5)	0		6.82	4.09	2.73
2. Rooftop Disconnection (RR)					
2.i. To Stormwater Planter, Urban Bioretention (Spec #9, Appendix A)	40	0.00	23.19	14.84	8.35
3. Permeable Pavement (RR)					
3.a. Permeable Pavement #1 (Spec #7)	25	0.00	1.85	1.09	0.76
6. Bioretention (RR)					
6.a. Bioretention #1 or Micro-Bioretention #1 or Urban Bioretention (Spec #9)	40	0.00	13.10	8.38	4.72
14. Manufactured BMP (no RR)					
14.a. Manufactured Treatment Device-Filtering	0	0.00	44.84	0.00	44.84
14.b. Manufactured Treatment Device-Filtering	0	21.12	0.00	0.00	21.12

WATER QUANTITY ENERGY BALANCE EQUATION

1 YR STORMWATER COMPUTATIONS BALANCE EQUATION	
Qdeveloped ≤ I.F. * (Qpre-developed * RVpre-developed) / RVdeveloped	
I.F. = 0.9 (less than 1 acre) I.F. = 0.8 (greater than 1 acre)	
Qdeveloped = Qundetained (20.33 CFS) + Qdetained (3.991 CFS)=	24.321 CFS
I.F. * (Qpre-developed * RVpre-developed) / RVdeveloped =	
(Rv developed = Rv undetained + RV detained)	
0.8* (35 * 72904) / 83929 =	24.322 CFS
	24.321 CFS < 24.322 CFS

10 YR STORMWATER COMPUTATIONS
Qdeveloped (detained & undetained) ≤ 0.9 * Qpre-developed
25.343 CFS (detained) + 40.39 CFS (undetained) = 65.733 CFS
65.733 CFS < 65.781 CFS pre-development

IMPROVEMENT FACTOR OF 0.9 IS TO PROVIDE 10% REDUCTION IN RUNOFF RATE FOR 10-YEAR STORM FROM EXISTING CONDITIONS.

DET AREA (AC)		1-YR (CFS)	10-YR (CFS)
2.18	BLOCK A DET VAULT	1.372	4.383
1.75	BLOCK B-2, B-3, C DET VAULT	0.753	4.264
0.47	BLOCK B-1 DET VAULT	0.502	0.756
0.71	BLOCK D-2 DET VAULT	0.584	0.94
0.48	BLOCK D-1 DET VAULT*	0.78	15.00
TOTAL 5.59 AC		**3.99 CFS**	**25.34 CFS**

*DETENTION VAULT TO BE DESIGNED WITH SECOND SUBMISSION WITH SENIOR HOUSING; RELEASES SHALL NOT EXCEED NOTED RUNOFF RATES

SEE HYDROGRAPHS FOR DETENTION VAULT ROUTING.

NOTE: STORMWATER MANAGEMENT CALCULATIONS ARE BASED ON AREA WITHIN LIMITS OF DISTURBANCE WITHIN CITY LIMITS.

POST-DEVELOPMENT DETAINED (1-YEAR STORM)

PROVIDED FOR HYDROGRAPH VOLUME NUMBER TO CALCULATE ENERGY BALANCE EQUATION VALUE "Rv DEVELOPED".

Hydrograph Report

1

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 — Tuesday, 05 / 12 / 2020

Hyd. No. 6

DETAINED 1 YR

Hydrograph type	= SCS Runoff	Peak discharge	= 18.45 cfs
Storm frequency	= 1 yrs	Time to peak	= 11.93 hrs
Time interval	= 2 min	Hyd. volume	= 39,929 cuft
Drainage area	= 5.590 ac	Curve number	= 95
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 6.00 min
Total precip.	= 2.64 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

TOTAL POST-DEVELOPMENT VOLUME (Rv DEVELOPED) = 44,000 CF + 39,929 CF = 83,929 CF

SEE UNDETAINED 1-YEAR STORM VOLUME HYDROGRAPH ON SHEET C-0705.

SWM/BMP/OUTFALL NARRATIVE

UNDER EXISTING CONDITIONS, THE SITE OUTFALLS TOWARDS THE EAST AND WEST IN BOTH DIRECTIONS WITH A HIGH POINT AT THE EXISTING ENTRANCE TO THE HIGH SCHOOL PARKING LOT. THE SITE DISTRIBUTES TO TRIPPS RUN TO THE EAST AND TO PIMMIT RUN TO THE WEST. THERE IS NO EXISTING STORMWATER MANAGEMENT ONSITE FOR THIS PORTION OF THE SCHOOL PROPERTY. THE 11.75 ACRES WITHIN OUR LIMITS OF DISTURBANCE HAS AN EXISTING CURVE NUMBER OF 92, AND A RUNOFF OF THE 10-YEAR STORM OF APPROXIMATELY 73 CFS. UNDER PROPOSED CONDITIONS, WITH THE UTILIZATION OF RUNOFF REDUCTION BMP MEASURES, AND DETENTION, THE SITE DECREASES THE 10-YEAR RUNOFF FROM THE SITE TO APPROXIMATELY 65 CFS, WHICH IS A 10% DECREASE IN THE 10-YEAR RUNOFF RATE TO IMPROVE VOLUME RUNOFF FROM TEH SITE. ADDITIONALY, THE 1-YEAR RUNOFF MEETS THE REQUIREMENT FOR A 20% RUNOFF REDUCTION FOR FLOOD CONTROL. SEE CALCULATIONS, THIS SHEET, FOR ENERGY BALANCE EQUATION, AND SUBSEQUENT PAGES FOR DETENTION DESIGN.

FOR QUALITY CONTROL, THE INDIVIDUAL BUILDINGS ARE PROVIDING RUNOFF REDUCTION MEASURES INCLUDING GREEN ROOFS, LEVELS I AND II, URBAN BIORETENTION, AND FILTERING DEVICES FOR PHOSPHORUS REMOVAL. ADDITIONALLY, THE COMMONS OPEN SPACE THROUGHOUT THE CENTER OF THE SITE UTILIZES PERMEABLE PAVEMENT IN ADDITION TO URBAN BIORETENTION AND FILTERING DEVICES IN ORDER TO ACHIEVE ADDITIONAL PHOSPHORUS REMOVAL ON THE SITE. SEE CALCULATIONS, SHEETS C-0704 AND C-0705, AND BMP SCHEMATIC PAGES FOR TREATMENT AREAS. BMP TREATMENT REQUIREMENTS WITHIN THE CITY LIMITS OF DISTURBANCE ARE MET ONSITE.

DUE TO THE RESULTS OF THIS ANALYSIS AND THE FACT THAT THE PROJECT WILL RESULT IN THE REDUCTION OF THE EXISTING RUNOFF RATE WITHIN THE LIMITS OF DISTURBANCE AND FOR THE WATERSHED OVERALL, IT IS THE OPINION OF THE SUBMITTING ENGINEER THAT THIS OUTFALL IS ADEQUATE, AND THAT IMPACT ONTO THE ADJACENT PROPERTIES ARE IMPROVED FROM EXISTING CONDITIONS.

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DATE: SESP PRE-SUB01 5/15/2020, SESP SUB01 06/08/2020
SCALE: NONE
DRAWN: AI / KW / TT
CHECKED: KW

COMMONWEALTH OF VIRGINIA — KAREN L. S. WHITE Lic. No.041850 — 6/08/2020 — PROFESSIONAL ENGINEER

NO.	DESCRIPTION	DATE	REV. BY	APPROVED	DATE

REVISION APPROVED BY

NOTE: THE VERTICAL DATUM REFERENCED ON THIS PLAN IS THE NORTH AMERICAN DATUM OF 1988 (NAVD88)

STORMWATER MANAGEMENT & BMP CALCULATIONS

WEST FALLS CHURCH ECONOMIC DEVELOPMENT

SPECIAL EXCEPTION SITE PLAN
CITY OF FALLS CHURCH, VIRGINIA

PRE-DEVELOPMENT (1-YEAR STORM)

Hydrograph Report

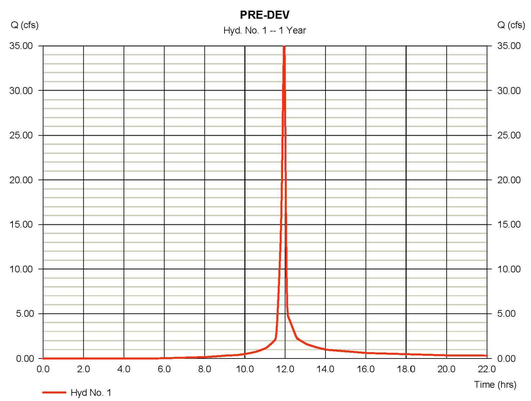
1

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 — Tuesday, 05 / 12 / 2020

Hyd. No. 1

PRE-DEV

Hydrograph type	= SCS Runoff	Peak discharge	= 35.00 cfs
Storm frequency	= 1 yrs	Time to peak	= 11.93 hrs
Time interval	= 2 min	Hyd. volume	= 72,904 cuft
Drainage area	= 11.750 ac	Curve number	= 92
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 6.00 min
Total precip.	= 2.64 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



PRE-DEVELOPMENT (10-YEAR STORM)

Hydrograph Report

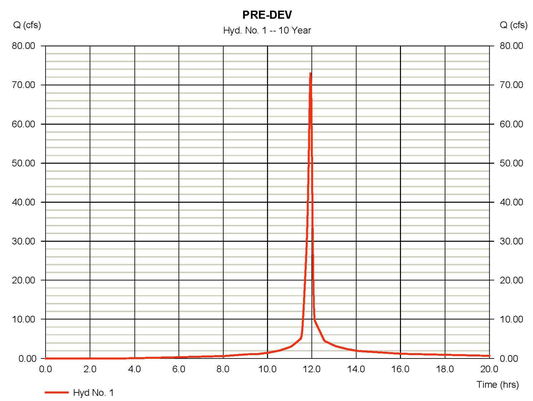
2

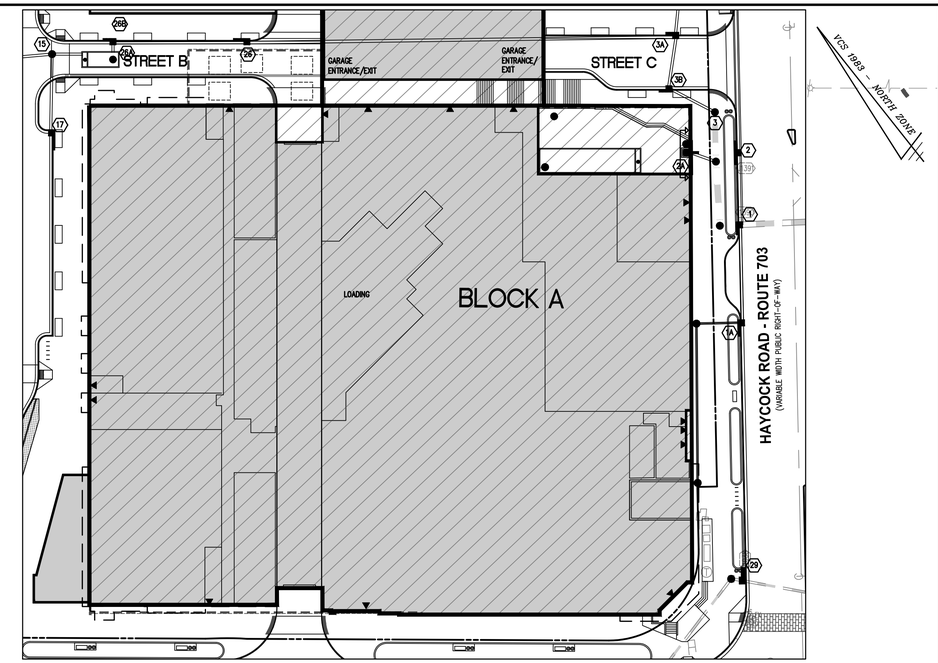
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 — Tuesday, 05 / 12 / 2020

Hyd. No. 1

PRE-DEV

Hydrograph type	= SCS Runoff	Peak discharge	= 73.09 cfs
Storm frequency	= 10 yrs	Time to peak	= 11.93 hrs
Time interval	= 2 min	Hyd. volume	= 159,613 cuft
Drainage area	= 11.750 ac	Curve number	= 92
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 6.00 min
Total precip.	= 4.90 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484





BLOCK A DETENTION SCHEMATIC

SCALE: 1"=40'

BLOCK A AREA TO DETENTION (2.18 ACRES); CN = 95 AFTER RUNOFF REDUCTION MEASURES

POST-DEVELOPMENT UNDETAINED (1-YEAR STORM)

Hydrograph Report

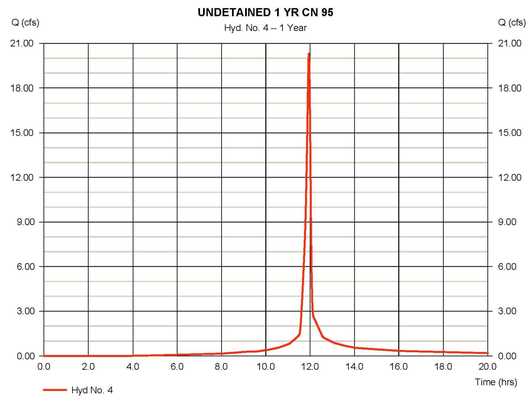
1

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 — Tuesday, 05 / 12 / 2020

Hyd. No. 4

UNDETAINED 1 YR CN 95

Hydrograph type	= SCS Runoff	Peak discharge	= 20.33 cfs
Storm frequency	= 1 yrs	Time to peak	= 11.93 hrs
Time interval	= 2 min	Hyd. volume	= 44,000 cuft
Drainage area	= 6.160 ac	Curve number	= 95
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 6.00 min
Total precip.	= 2.64 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



POST-DEVELOPMENT UNDETAINED (10-YEAR STORM)

Hydrograph Report

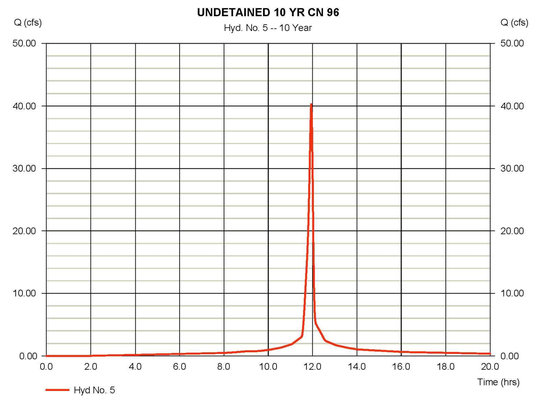
1

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 — Tuesday, 05 / 12 / 2020

Hyd. No. 5

UNDETAINED 10 YR CN 96

Hydrograph type	= SCS Runoff	Peak discharge	= 40.39 cfs
Storm frequency	= 10 yrs	Time to peak	= 11.93 hrs
Time interval	= 2 min	Hyd. volume	= 92,934 cuft
Drainage area	= 6.160 ac	Curve number	= 96
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 6.00 min
Total precip.	= 4.90 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



HYDROGRAPH ROUTED THROUGH BLOCK A DETENTION VAULT

Hydrograph Report

1

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 — Tuesday, 05 / 12 / 2020

Hyd. No. 11

BLOCK A DET VAULT

Hydrograph type	= SCS Runoff	Peak discharge	= 7.196 cfs
Storm frequency	= 1 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 15,571 cuft
Drainage area	= 2.180 ac	Curve number	= 95
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 6.00 min
Total precip.	= 2.64 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

Hydrograph Report

2

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 — Tuesday, 05 / 12 / 2020

Hyd. No. 11

BLOCK A DET VAULT

Hydrograph type	= SCS Runoff	Peak discharge	= 14.14 cfs
Storm frequency	= 10 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 32,053 cuft
Drainage area	= 2.180 ac	Curve number	= 95
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 6.00 min
Total precip.	= 4.90 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

BLOCK A DETENTION VAULT ROUTING

Hydrograph Report

1

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 — Tuesday, 05 / 12 / 2020

Hyd. No. 16

DET VAULT BLOCK A

Hydrograph type	= Reservoir	Peak discharge	= 1.372 cfs
Storm frequency	= 1 yrs	Time to peak	= 12.10 hrs
Time interval	= 2 min	Hyd. volume	= 14,992 cuft
Inflow hyd. No.	= 11 - BLOCK A DET VAULT	Max. Elevation	= 376.81 ft
Reservoir name	= BLOCK A DETENTION	Max. Storage	= 7,374 cuft

Storage Indication method used.

Hydrograph Report

3

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 — Tuesday, 05 / 12 / 2020

Hyd. No. 16

DET VAULT BLOCK A

Hydrograph type	= Reservoir	Peak discharge	= 4.383 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 31,473 cuft
Inflow hyd. No.	= 11 - BLOCK A DET VAULT	Max. Elevation	= 379.00 ft
Reservoir name	= BLOCK A DETENTION	Max. Storage	= 13,118 cuft

Storage Indication method used.

Pond Report

2

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 — Tuesday, 05 / 12 / 2020

Pond No. 3 - BLOCK A DETENTION

Pond Data

UG Chambers -invert elev. = 374.00 ft, Rise x Span = 5.00 x 35.00 ft, Barrel Len = 75.00 ft, No. Barrels = 1, Slope = 0.00%, Headers = No

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	374.00	n/a	0	0
0.50	374.50	n/a	1,309	1,309
1.00	375.00	n/a	1,314	2,623
1.50	375.50	n/a	1,314	3,936
2.00	376.00	n/a	1,314	5,250
2.50	376.50	n/a	1,314	6,564
3.00	377.00	n/a	1,314	7,878
3.50	377.50	n/a	1,314	9,191
4.00	378.00	n/a	1,314	10,505
4.50	378.50	n/a	1,314	11,819
5.00	379.00	n/a	1,309	13,128

Culvert / Orifice Structures

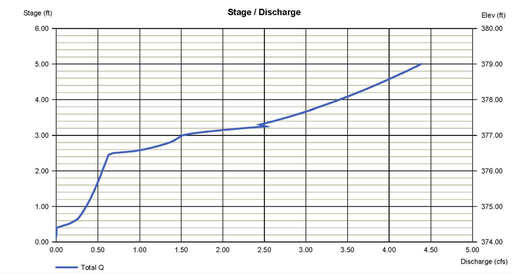
	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 15.00	4.00	6.00	0.00
Span (in)	= 15.00	4.00	6.00	0.00
No. Barrels	= 1	1	1	0
Invert El. (ft)	= 374.00	374.10	376.00	0.00
Length (ft)	= 25.00	0.67	0.67	0.00
Slope (%)	= 0.20	0.00	0.00	n/a
N-Value	= .013	.013	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	No	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 2.00	0.00	0.00	0.00
Crest El. (ft)	= 377.00	0.00	0.00	0.00
Weir Coeff.	= 3.33	3.33	3.33	3.33
Weir Type	= 1	---	---	---
Multi-Stage	= Yes	No	No	No

Exfil.(in/hr) = 0.000 (by Wet area)
TW Elev. (ft) = 0.00

Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (ic) and submergence (s).



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DRAWN: AI / KW / TT
CHECKED: KW
DATE: SESP PRE-SUB01 5/15/2020, SESP SUB01 06/08/2020
SCALE: NONE

COMMONWEALTH OF VIRGINIA — KAREN L. S. WHITE — Lic. No. 041850 — 6/08/2020 — PROFESSIONAL ENGINEER

NO.	DESCRIPTION	DATE	REV. BY	APPROVED	DATE

REVISION APPROVED BY

NOTE: THE VERTICAL DATUM REFERENCED ON THIS PLAN IS THE NORTH AMERICAN DATUM OF 1988 (NAVD88)

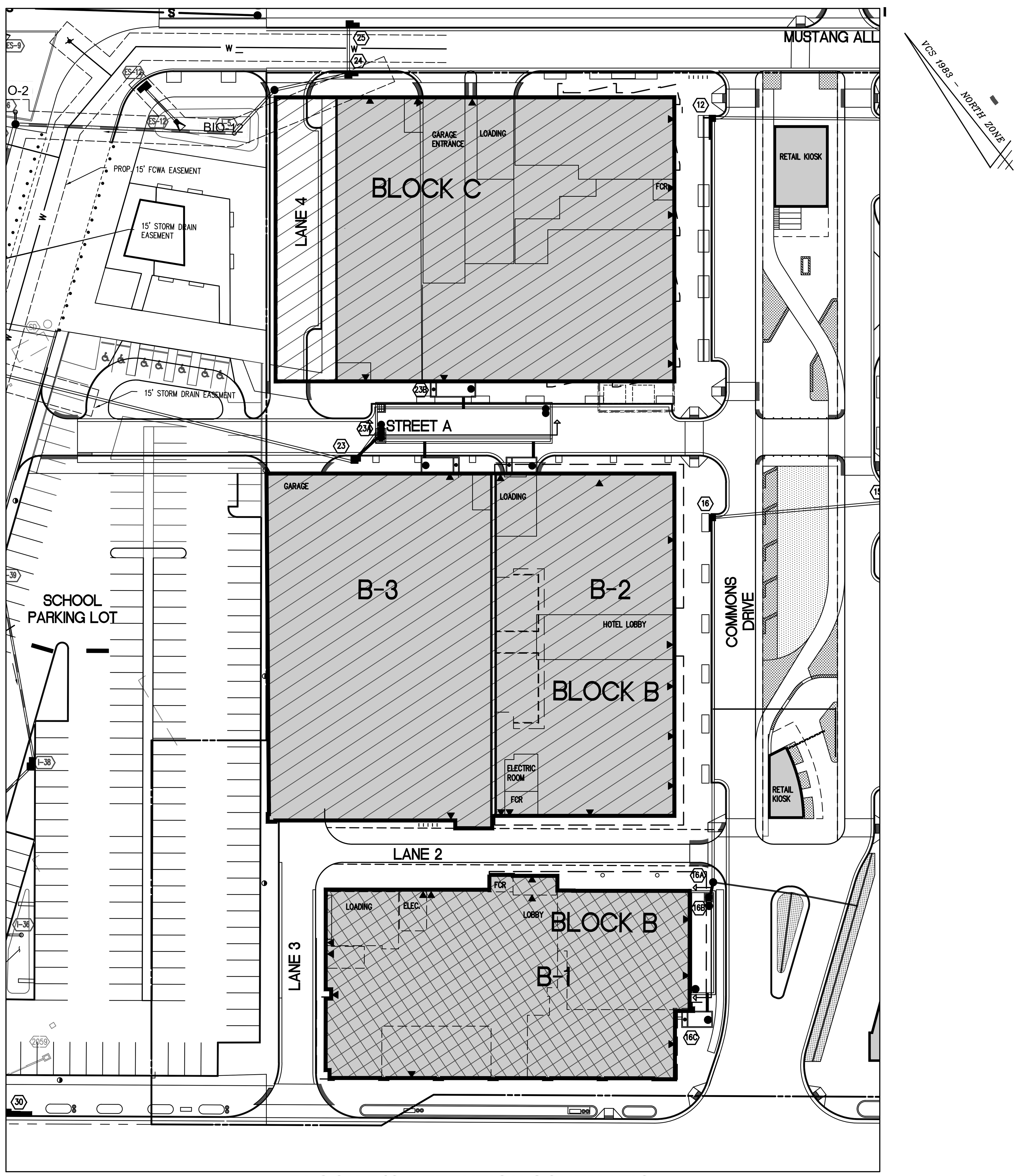
STORMWATER HYDROGRAPHS & BLOCK A DETENTION

WEST FALLS CHURCH ECONOMIC DEVELOPMENT

SPECIAL EXCEPTION SITE PLAN

CITY OF FALLS CHURCH, VIRGINIA

SHEET: C-0705



BLOCK B/C DETENTION SCHEMATIC

SCALE: 1"=40'

B–2, B–3, AND C–1 AREAS TO DETENTION VAULT 23A (1.75 ACRES); CN = 96 AFTER RUNOFF REDUCTION MEASURES

B–1 AREA TO DETENTION VAULT (0.47 ACRES); CN = 94 AFTER RUNOFF REDUCTION MEASURES

HYDROGRAPH ROUTED THROUGH BLOCK B/C DETENTION VAULT

Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 — Tuesday, 05 / 12 / 2020

Hyd. No. 12

BLOCK B/C DET VAULT

Hydrograph type	= SCS Runoff	Peak discharge	= 5.975 cfs
Storm frequency	= 1 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 13,167 cuft
Drainage area	= 1.760 ac	Curve number	= 96
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 6.00 min
Total precip.	= 2.64 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 — Tuesday, 05 / 12 / 2020

Hyd. No. 12

BLOCK B/C DET VAULT

Hydrograph type	= SCS Runoff	Peak discharge	= 11.54 cfs
Storm frequency	= 10 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 26,552 cuft
Drainage area	= 1.760 ac	Curve number	= 96
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 6.00 min
Total precip.	= 4.90 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

Pond Report 2

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 — Tuesday, 05 / 12 / 2020

Pond No. 4 - BLOCK B-2,3,C DET VAULT

Pond Data

UG Chambers -Invert elev. = 391.04 ft, Rise x Span = 7.00 x 18.00 ft, Barrel Len = 95.00 ft, No. Barrels = 1, Slope = 0.00%, Headers = No

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	391.04	n/a	0	0
0.70	391.74	n/a	1,194	1,194
1.40	392.44	n/a	1,198	2,392
2.10	393.14	n/a	1,198	3,590
2.80	393.84	n/a	1,198	4,788
3.50	394.54	n/a	1,198	5,986
4.20	395.24	n/a	1,198	7,184
4.90	395.94	n/a	1,198	8,382
5.60	396.64	n/a	1,198	9,580
6.30	397.34	n/a	1,198	10,778
7.00	398.04	n/a	1,194	11,972

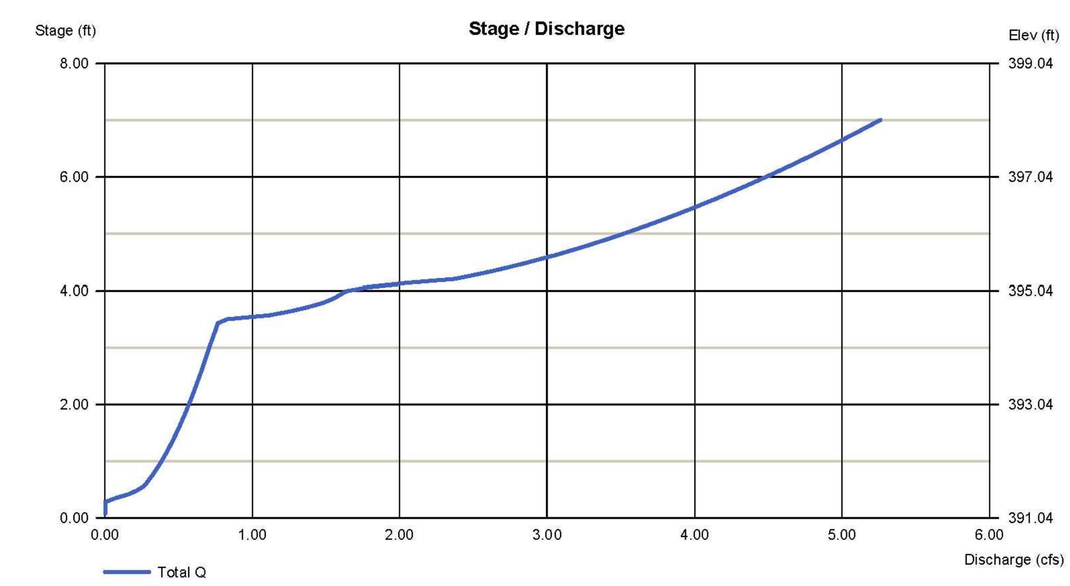
Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 15.00	4.00	6.00	0.00
Span (in)	= 15.00	4.00	6.00	0.00
No. Barrels	= 1	1	1	0
Invert El. (ft)	= 391.04	391.04	394.04	0.00
Length (ft)	= 18.00	0.67	0.67	0.00
Slope (%)	= 0.02	0.00	0.00	n/a
N-Value	= .013	.013	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	No	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 2.00	0.00	0.00	0.00
Crest El. (ft)	= 395.04	0.00	0.00	0.00
Weir Coeff.	= 3.33	3.33	3.33	3.33
Weir Type	= 1	---	---	---
Multi-Stage	= Yes	No	No	No
Exfil.(in/hr)	= 0.000 (by Wet area)			
TW Elev. (ft)	= 0.00			

Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (ic) and submergence (s).



BLOCK B/C DETENTION VAULT ROUTING

Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 — Tuesday, 05 / 12 / 2020

Hyd. No. 17

DET VAULT BLOCK B/C

Hydrograph type	= Reservoir	Peak discharge	= 0.753 cfs
Storm frequency	= 1 yrs	Time to peak	= 12.17 hrs
Time interval	= 2 min	Hyd. volume	= 12,962 cuft
Inflow hyd. No.	= 12 - BLOCK B/C DET VAULT	Max. Elevation	= 394.37 ft
Reservoir name	= BLOCK B-2,3,C DET VAULT	Max. Storage	= 5,699 cuft

Storage Indication method used.

Hydrograph Report 3

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 — Tuesday, 05 / 12 / 2020

Hyd. No. 17

DET VAULT BLOCK B/C

Hydrograph type	= Reservoir	Peak discharge	= 4.264 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.03 hrs
Time interval	= 2 min	Hyd. volume	= 26,348 cuft
Inflow hyd. No.	= 12 - BLOCK B/C DET VAULT	Max. Elevation	= 396.79 ft
Reservoir name	= BLOCK B-2,3,C DET VAULT	Max. Storage	= 9,828 cuft

HYDROGRAPH ROUTED THROUGH BLOCK B-1 DETENTION VAULT

Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 — Tuesday, 05 / 12 / 2020

Hyd. No. 13

BLOCK B-1 DET VAULT

Hydrograph type	= SCS Runoff	Peak discharge	= 1.503 cfs
Storm frequency	= 1 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 3,204 cuft
Drainage area	= 0.470 ac	Curve number	= 94
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 6.00 min
Total precip.	= 2.64 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 — Tuesday, 05 / 12 / 2020

Hyd. No. 13

BLOCK B-1 DET VAULT

Hydrograph type	= SCS Runoff	Peak discharge	= 3.012 cfs
Storm frequency	= 10 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 6,733 cuft
Drainage area	= 0.470 ac	Curve number	= 94
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 6.00 min
Total precip.	= 4.90 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

Pond Report 2

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 — Tuesday, 05 / 12 / 2020

Pond No. 4 - BLOCK B-2,3,C DET VAULT

Pond Data

UG Chambers -Invert elev. = 391.04 ft, Rise x Span = 7.00 x 18.00 ft, Barrel Len = 95.00 ft, No. Barrels = 1, Slope = 0.00%, Headers = No

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	391.04	n/a	0	0
0.70	391.74	n/a	1,194	1,194
1.40	392.44	n/a	1,198	2,392
2.10	393.14	n/a	1,198	3,590
2.80	393.84	n/a	1,198	4,788
3.50	394.54	n/a	1,198	5,986
4.20	395.24	n/a	1,198	7,184
4.90	395.94	n/a	1,198	8,382
5.60	396.64	n/a	1,198	9,580
6.30	397.34	n/a	1,198	10,778
7.00	398.04	n/a	1,194	11,972

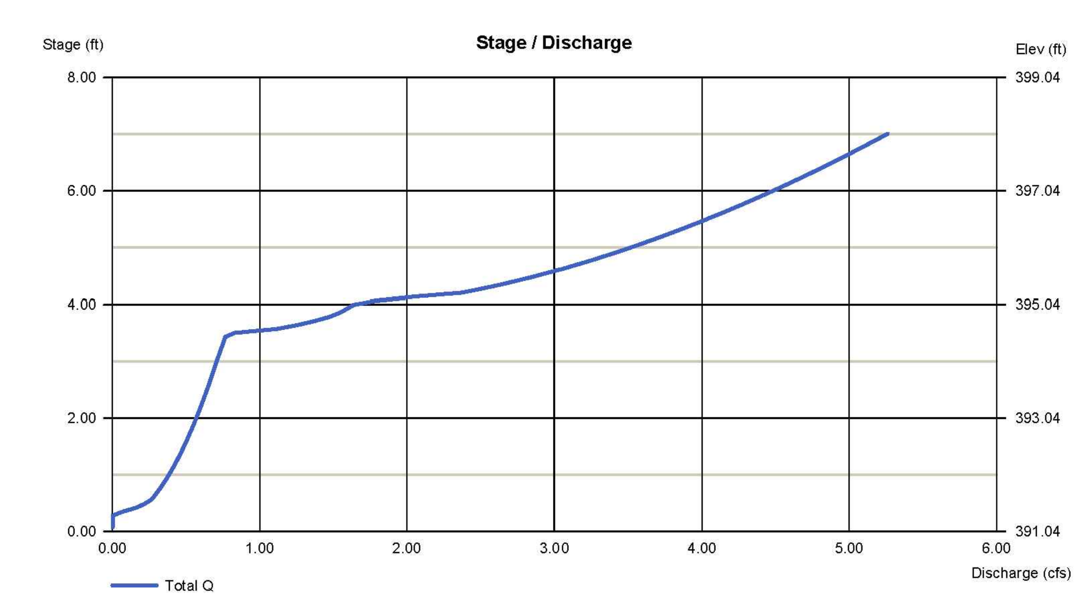
Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 15.00	4.00	6.00	0.00
Span (in)	= 15.00	4.00	6.00	0.00
No. Barrels	= 1	1	1	0
Invert El. (ft)	= 391.04	391.04	394.04	0.00
Length (ft)	= 18.00	0.67	0.67	0.00
Slope (%)	= 0.02	0.00	0.00	n/a
N-Value	= .013	.013	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	No	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 2.00	0.00	0.00	0.00
Crest El. (ft)	= 395.04	0.00	0.00	0.00
Weir Coeff.	= 3.33	3.33	3.33	3.33
Weir Type	= 1	---	---	---
Multi-Stage	= Yes	No	No	No
Exfil.(in/hr)	= 0.000 (by Wet area)			
TW Elev. (ft)	= 0.00			

Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (ic) and submergence (s).



BLOCK B-1 DETENTION VAULT ROUTING

Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 — Tuesday, 05 / 12 / 2020

Hyd. No. 18

DET VAULT BLOCK B-1

Hydrograph type	= Reservoir	Peak discharge	= 0.502 cfs
Storm frequency	= 1 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 3,125 cuft
Inflow hyd. No.	= 13 - BLOCK B-1 DET VAULT	Max. Elevation	= 397.58 ft
Reservoir name	= BLOCK B-1 DET VAULT	Max. Storage	= 1,051 cuft

Storage Indication method used.

Hydrograph Report 3

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 — Tuesday, 05 / 12 / 2020

Hyd. No. 18

DET VAULT BLOCK B-1

Hydrograph type	= Reservoir	Peak discharge	= 0.756 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 6,653 cuft
Inflow hyd. No.	= 13 - BLOCK B-1 DET VAULT	Max. Elevation	= 399.39 ft
Reservoir name	= BLOCK B-1 DET VAULT	Max. Storage	= 2,244 cuft

BLOCKS B AND C DETENTION SCHEMATIC AND HYDROGRAPHS

WEST FALLS CHURCH ECONOMIC DEVELOPMENT

SPECIAL EXCEPTION SITE PLAN

CITY OF FALLS CHURCH, VIRGINIA

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DATE: SESP PRE-SUB01 5/15/2020, SESP SUB01 06/08/2020

SCALE: NONE

DRAWN: AI / KW / TT

CHECKED: KW

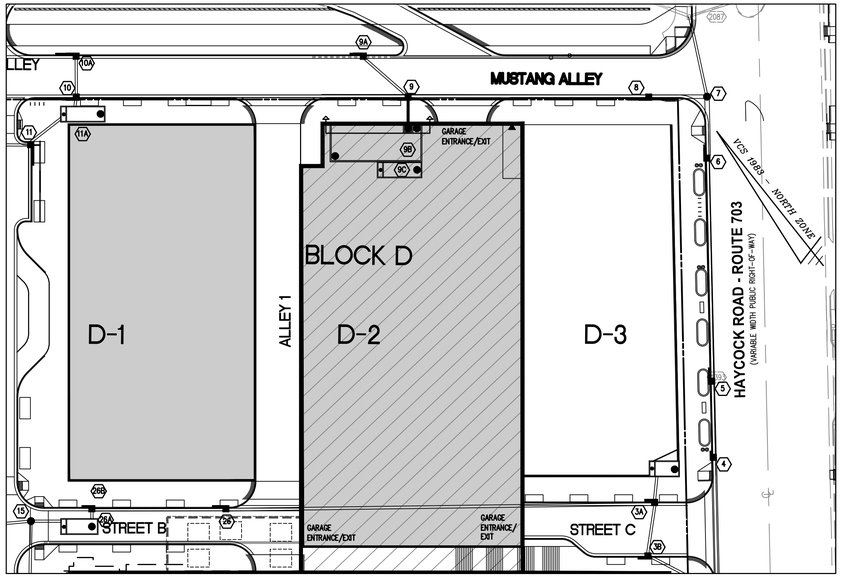
COMMONWEALTH OF VIRGINIA PROFESSIONAL ENGINEER — KAREN L. S. WHITE Lic. No.041850 6/08/2020

REVISION APPROVED BY

NO.	DESCRIPTION	DATE	REV. BY	APPROVED	DATE

NOTE: THE VERTICAL DATUM REFERENCED ON THIS PLAN IS THE NORTH AMERICAN DATUM OF 1988 (NAVD88)

SHEET: C-0706



BLOCK D-2 DETENTION SCHEMATIC

SCALE: 1"=40'

D-2 AREA TO DETENTION VAULT 9A (0.71 ACRES); CN = 98

HYDROGRAPH ROUTED THROUGH BLOCK D-2 DETENTION VAULT

Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 — Tuesday, 05 / 12 / 2020

Hyd. No. 14

BLOCK D-2 DET VAULT

Hydrograph type	= SCS Runoff	Peak discharge	= 2.517 cfs
Storm frequency	= 1 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 5,823 cuft
Drainage area	= 0.710 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 6.00 min
Total precip.	= 2.64 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 — Tuesday, 05 / 12 / 2020

Hyd. No. 14

BLOCK D-2 DET VAULT

Hydrograph type	= SCS Runoff	Peak discharge	= 4.727 cfs
Storm frequency	= 10 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 11,268 cuft
Drainage area	= 0.710 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 6.00 min
Total precip.	= 4.90 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

Pond Report

2

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 — Tuesday, 05 / 12 / 2020

Pond No. 6 - BLOCK D-2 DET VAULT

Pond Data

UG Chambers -Invert elev. = 381.80 ft, Rise x Span = 5.00 x 20.00 ft, Barrel Len = 50.00 ft, No. Barrels = 1, Slope = 0.00%, Headers = No

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	381.80	n/a	0	0
0.50	382.30	n/a	499	499
1.00	382.80	n/a	500	999
1.50	383.30	n/a	500	1,500
2.00	383.80	n/a	500	2,000
2.50	384.30	n/a	500	2,501
3.00	384.80	n/a	500	3,001
3.50	385.30	n/a	500	3,501
4.00	385.80	n/a	500	4,002
4.50	386.30	n/a	500	4,502
5.00	386.80	n/a	499	5,001

Culvert / Orifice Structures

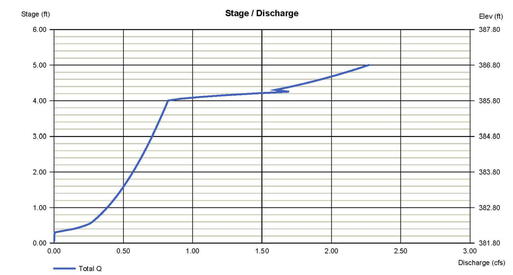
	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 15.00	4.00	0.00	0.00
Span (in)	= 15.00	4.00	0.00	0.00
No. Barrels	= 1	1	0	0
Invert El. (ft)	= 381.80	381.80	0.00	0.00
Length (ft)	= 15.00	0.67	0.00	0.00
Slope (%)	= 0.02	0.00	0.00	n/a
N-Value	= .013	.013	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	No	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 2.00	0.00	0.00	0.00
Crest El. (ft)	= 385.80	0.00	0.00	0.00
Weir Coeff.	= 3.33	3.33	3.33	3.33
Weir Type	= 1	---	---	---
Multi-Stage	= Yes	No	No	No

Exfil.(in/hr)	= 0.000 (by Wet area)
TW Elev. (ft)	= 0.00

Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (ic) and submergence (s).



BLOCK D-2 DETENTION VAULT ROUTING

Hydrograph Report

1

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 — Tuesday, 05 / 12 / 2020

Hyd. No. 19

DET VAULT BLOCK D-2

Hydrograph type	= Reservoir	Peak discharge	= 0.584 cfs
Storm frequency	= 1 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 5,703 cuft
Inflow hyd. No.	= 14 - BLOCK D-2 DET VAULT	Max. Elevation	= 383.90 ft
Reservoir name	= BLOCK D-2 DET VAULT	Max. Storage	= 2,096 cuft

Storage Indication method used.

Hydrograph Report

3

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 — Tuesday, 05 / 12 / 2020

Hyd. No. 19

DET VAULT BLOCK D-2

Hydrograph type	= Reservoir	Peak discharge	= 0.940 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.10 hrs
Time interval	= 2 min	Hyd. volume	= 11,147 cuft
Inflow hyd. No.	= 14 - BLOCK D-2 DET VAULT	Max. Elevation	= 385.86 ft
Reservoir name	= BLOCK D-2 DET VAULT	Max. Storage	= 4,063 cuft

Storage Indication method used.

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ESTABLISHED 1945

DRAWN: AI / KW / TT
CHECKED: KW
DATE: SESP PRE-SUB01 5/15/2020, SESP SUB01 06/08/2020
SCALE: NONE

COMMONWEALTH OF VIRGINIA — KAREN L. S. WHITE — Lic. No. 041850 — 6/08/2020 — PROFESSIONAL ENGINEER

BLOCK D-2 DETENTION SCHEMATIC AND HYDROGRAPHS

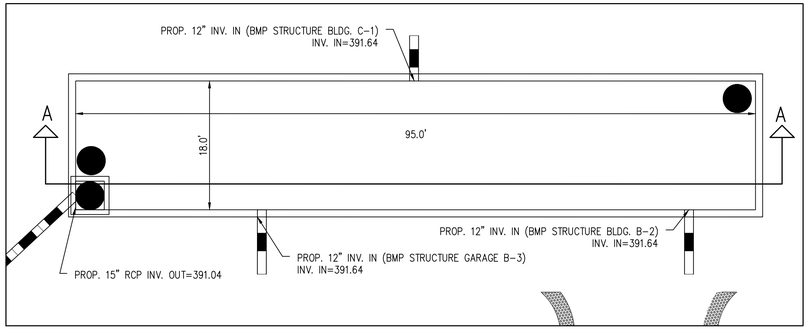
REVISION APPROVED BY

NO.	DESCRIPTION	DATE	REV. BY	APPROVED	DATE

NOTE: THE VERTICAL DATUM REFERENCED ON THIS PLAN IS THE NORTH AMERICAN DATUM OF 1988 (NAVD88)

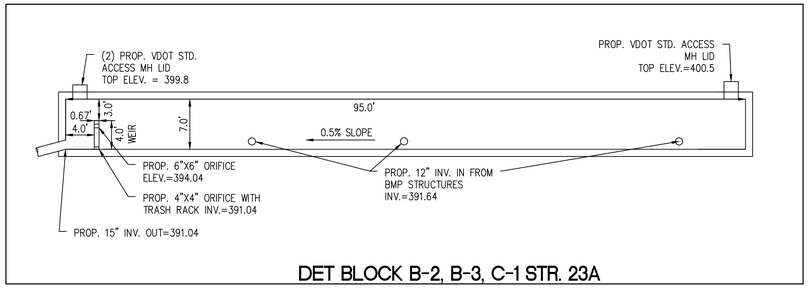
WEST FALLS CHURCH ECONOMIC DEVELOPMENT

SPECIAL EXCEPTION SITE PLAN
CITY OF FALLS CHURCH, VIRGINIA



BLOCK B-2, B-3, C-1 DETENTION SECTION PLAN VIEW - STRUCTURE 23A

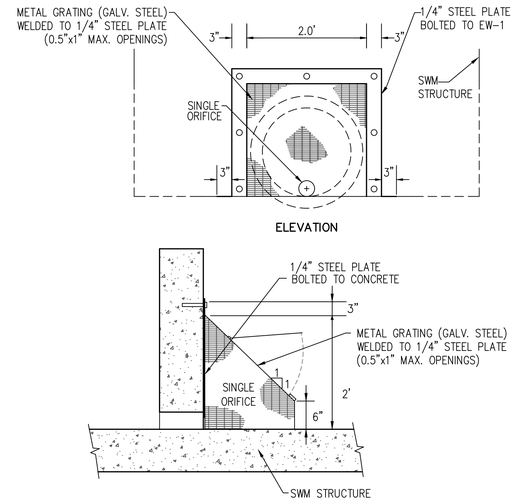
SCALE: 1"=10'



DET BLOCK B-2, B-3, C-1 STR. 23A

STRUCTURE 23A - SECTION A-A

SCALE: 1"=10'

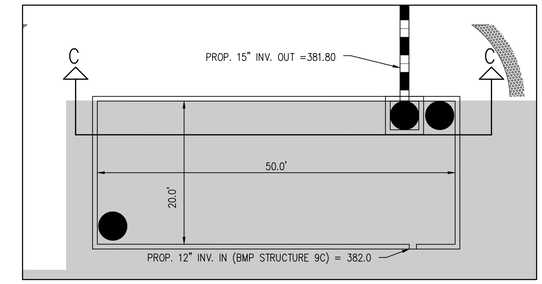


NOTES:

1. THIS DETAIL (METAL GRATING AND STEEL PLATE) MAY BE APPLIED DIRECTLY AGAINST CONCRETE.
2. A 1.5'x2' HINGED GATE WITH LOCKING MECHANISM SHALL BE INSTALLED ON THE FRONT FACE OF THE CAGE.

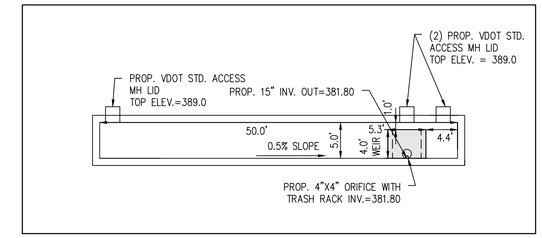
SWM TRASH RACK

N.T.S.



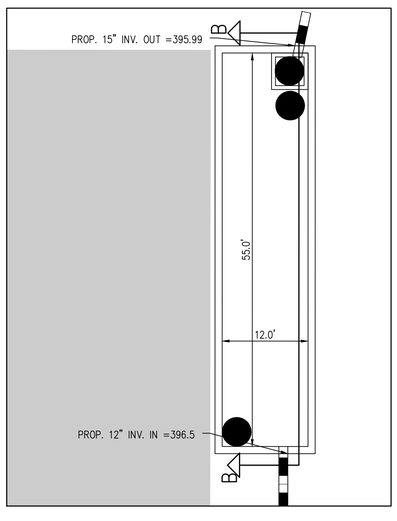
BLOCK D-2 DETENTION SECTION PLAN VIEW - STRUCTURE 9B

SCALE: 1"=10'



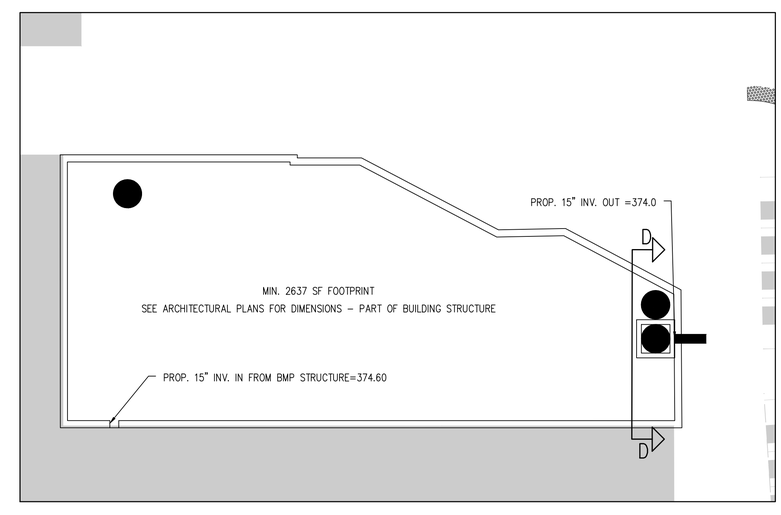
STRUCTURE 9B - SECTION C-C

SCALE: 1"=10'



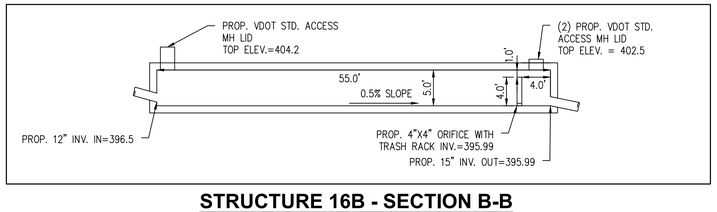
BLOCK B-1 DETENTION SECTION PLAN VIEW - STRUCTURE 16B

SCALE: 1"=10'



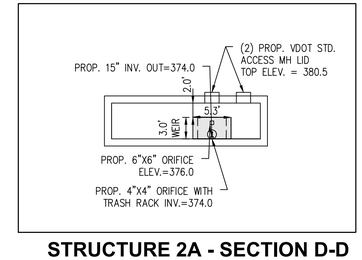
BLOCK A DETENTION SECTION PLAN VIEW - STRUCTURE 2A

SCALE: 1"=10'



STRUCTURE 16B - SECTION B-B

SCALE: 1"=10'



STRUCTURE 2A - SECTION D-D

SCALE: 1"=10'

DETENTION VAULTS TO BE STRUCTURALLY DESIGNED BY OTHERS FOR HS-20 LOADING.

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DATE: SESP PRE-SUB01 5/15/2020, SESP SUB01 06/08/2020
SCALE: NONE

COMMONWEALTH OF VIRGINIA
KAREN L. S. WHITE
Lic. No.041850
6/08/2020
PROFESSIONAL ENGINEER

NO.	DESCRIPTION	DATE	REV. BY	APPROVED	DATE

REVISION APPROVED BY

NOTE: THE VERTICAL DATUM REFERENCED ON THIS PLAN IS THE NORTH AMERICAN DATUM OF 1988 (NAVD88)

STORMWATER DETENTION DETAILS

WEST FALLS CHURCH ECONOMIC DEVELOPMENT

SPECIAL EXCEPTION SITE PLAN

CITY OF FALLS CHURCH, VIRGINIA

SHEET: C-0708

PARCEL 2
KIESSLING TRACT
N/F CITY OF FALLS CHURCH
DB 4171 PG 38

PROPOSED NEW HIGH SCHOOL

PROPOSED NEW HIGH SCHOOL (BY OTHERS)

EXISTING MIDDLE SCHOOL

MARY ELLEN HENDERSON MIDDLE SCHOOL
#7130 LEESBURG PIKE
3 STORY MASONRY BUILDING
BFA=447,250 SQ.FT.

MUSTANG ALLEY

SCHOOL PARKING LOT

LANE 4

BLOCK C

STREET A

B-3

B-2

BLOCK B

COMMONS DRIVE

PARCEL D

STREET B

STREET C

D-1

ALLEY 1

BLOCK D

D-2

D-3

BLOCK A

LANE 2

LANE 3

BLOCK B

B-1

EX. BUILDING

#7054 HAYCOCK ROAD
EXISTING BUILDING

VCS 1988 - NORTH ANNOTATION

HAYCOCK ROAD - ROUTE 703
(VARIABLE WIDTH PUBLIC RIGHT-OF-WAY)

EXISTING BUS STOP

LEESBURG PIKE - ROUTE 7
(VARIABLE WIDTH PUBLIC RIGHT-OF-WAY)

CHESTNUT STREET

DALE DRIVE - ROUTE 218
(VARIABLE WIDTH PUBLIC RIGHT-OF-WAY)

GREEN ROOF LEVEL I

GREEN ROOF LEVEL II

BIORETENTION LEVEL I

PERMEABLE PAVEMENT

50 0 25 50 100 200
(IN FEET)
1 INCH = 50'

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SCALE: 1" = 50'
DATE: SESP PRE-SUB01 5/15/2020, SESP SUB01 06/08/2020

COMMONWEALTH OF VIRGINIA
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NOTE: THE VERTICAL DATUM REFERENCED ON THIS PLAN IS THE NORTH AMERICAN DATUM OF 1988 (NAVD88)

BMP SCHEMATIC OVERALL

WEST FALLS CHURCH ECONOMIC DEVELOPMENT

SPECIAL EXCEPTION SITE PLAN
CITY OF FALLS CHURCH, VIRGINIA

SHEET: C-0709

File No. CB-9 Tax Map No. 40-3 Job No. 13-016 Cadd Dwg. File: Q:\sdskproj\13016\dwg\Engineering\Plans\SESP\13016C-0709.dwg Xref: SESP/13016B-0002

VEGETATED ROOF MAINTENANCE

Maintenance Activities for Vegetated Roofs. The following is the list of maintenance activities for vegetated roofs. The table is to be included on plans proposing vegetated roofs.

Vegetated Roof Maintenance Schedule

Maintenance Activity	Schedule
• Water to promote plant growth and survival. • Inspect the vegetated roof and replace any dead or dying vegetation.	As Needed (Following Construction)
• Inspect the waterproof membrane for leaking or cracks. • Annual fertilization (first five years). • Weeding to remove invasive plants. • Inspect roof drains, scuppers and gutters to ensure they are not overgrown or have organic matter deposits. Remove any accumulated organic matter or debris. • Inspect the green roof for dead, dying, or invasive vegetation. Plant replacement vegetation as needed to maintain 80% plant coverage.	Semi-Annually
• Inspected and certified by a professional licensed in the State of Virginia	Once every 5 years

VEGETATED ROOF MATERIAL SPECIFICATIONS

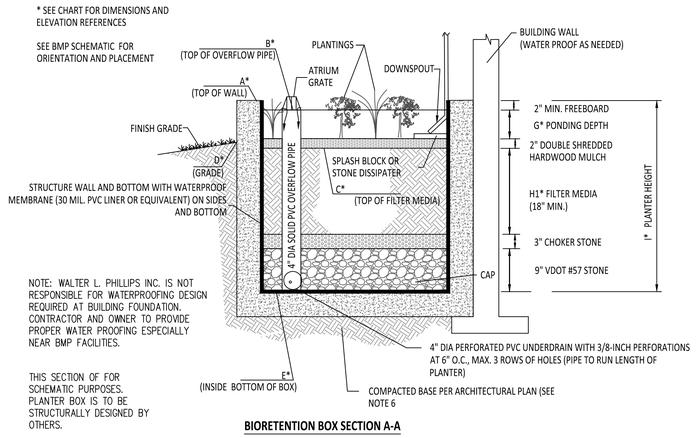
VA DEQ STORMWATER DESIGN SPECIFICATION NO. 5 **VEGETATED ROOF**

Table 5.5. Extensive Vegetated Roof Material Specifications

Material	Specification
Roof	Structural Capacity should conform to ASTM E-2397-05, *Practice for Determination of Live Loads and Dead Loads Associated with Green (Vegetated) Roof Systems*. In addition, use standard test methods ASTM E2398-05 for *Water Capture and Media Retention of Geocomposite Drain Layers for Green (Vegetated) Roof Systems*, and ASTME 2399-05 for *Maximum Media Density for Dead Load Analysis*.
Waterproof Membrane	See Chapter 6 of Weiler and Scholz-Barth (2009) for waterproofing options that are designed to convey water horizontally across the roof surface to drains or gutter. This layer may sometimes act as a root barrier.
Root Barrier	Impermeable liner that impedes root penetration of the membrane.
Drainage Layer	1 to 2 inch layer of clean, washed granular material, such as ASTM D 448 size No. 8 stone. Roof drains and emergency overflow should be designed in accordance with VUSBC.
Filter Fabric	Needled, non-woven, polypropylene geotextile. Density (ASTM D3776) > 16 oz./sq. yd., or approved equivalent. Puncture resistance (ASTM D4833) > 220 lbs., or approved equivalent.
Growth Media	80% lightweight inorganic materials and 20% organic matter (e.g. well-aged compost). Media should have a maximum water retention capacity of around 30%. Media should provide sufficient nutrients and water holding capacity to support the proposed plant materials. Determine acceptable saturated water permeability using ASTM E2396-05.
Plant Materials	Sedum, herbaceous plants, and perennial grasses that are shallow-rooted, self-sustaining, and tolerant of direct sunlight, drought, wind, and frost. See ASTM E2400-06, *Guide for Selection, Installation and Maintenance of Plants for Green (Vegetated) Roof Systems*.

FOR INTENSIVE GREEN ROOF – THE SECTIONS AND SPECIFICATIONS ABOVE SHALL BE FOLLOWED, WITH THE FOLLOWING CHANGES:

- DRAINAGE LAYER – 4" TO 6" GRANULAR MIX
- GROWTH MEDIA – 6" TO 12" MINIMUM TYPICAL
- PLANT MATERIALS – SEE LANDSCAPE PLAN FOR PLANTING



BIORETENTION BOX SECTION A-A

THIS SECTION OF FOR SCHEMATIC PURPOSES. PLANTER BOX IS TO BE STRUCTURALLY DESIGNED BY OTHERS.

NOTES:

1. SEE VIRGINIA DEQ STORMWATER DESIGN SPECIFICATION NO. 9 FOR ADDITIONAL DESIGN AND CONSTRUCTION INFORMATION.
2. THE PLANTER BOX MAY BE CONTAINED IN A PRECAST CONCRETE, CAST-IN-PLACE CONCRETE OR 6"X6" PRESSURE TREATED WOOD VAULT (WALLS AND BASE). OTHER MATERIALS MAY INCLUDE MOLDED POLYPROPYLENE CELLS AND PRECAST MODULAR BLOCK SYSTEMS (VIRGINIA DEQ DESIGN SPECIFICATION NO. 9, SECTION 9-A-1).
3. SINCE PLANTER BOXES ARE LOCATED NEAR THE BUILDING FOUNDATION, WATERPROOFING BY USING A WATERTIGHT CONCRETE SHELL OR AN IMPERMEABLE LINER IS REQUIRED TO PREVENT SEEPAGE.
4. AN ATRIUM GRATE OR EQUIVALENT MAY BE USED FOR THE OVERFLOW ON TOP OF THE PVC STANDPIPE.
5. CONTRACTOR TO ENSURE THAT THE PROPER DOWNSPOUTS DISCHARGE INTO THE PLANTER BOX. RIVER ROCK OR OTHER ENERGY DISSIPATION SHALL BE USED WHERE DOWNSPOUTS TIE INTO THE PLANTER BOX.
6. FOR PLANTER BOXES ATTACHED TO THE FOUNDATION AND/OR A RETAINING WALL, SEE ARCHITECTURAL PLANS FOR STRUCTURAL DETAILS/REQUIREMENTS.

TYPICAL URBAN BIORETENTION PLANTER DETAILS

NOT–TO–SCALE

NOTES:

1. SEE LANDSCAPE PLAN AND BUILDING PLANS FOR ADDITIONAL DIMENSIONAL AND DESIGN DETAILS.
2. SEE LANDSCAPE PLAN FOR BIORETENTION PLANTINGS.
3. SEE ARCHITECTURAL/STRUCTURAL PLANS FOR PLANTER WALL DESIGN.
4. SEE ARCHITECTURAL PLANS FOR VEGETATED ROOF DESIGN.
5. CONTRACTOR TO REFER TO MOST RECENT VERSION OF VA DCR STORMWATER DESIGN SPECIFICATIONS FOR ADDITIONAL CONSTRUCTION DETAILS.

VEGETATED ROOF LEVEL I MATERIAL SPECIFICATIONS

VA DEQ STORMWATER DESIGN SPECIFICATION NO. 5 **VEGETATED ROOF**

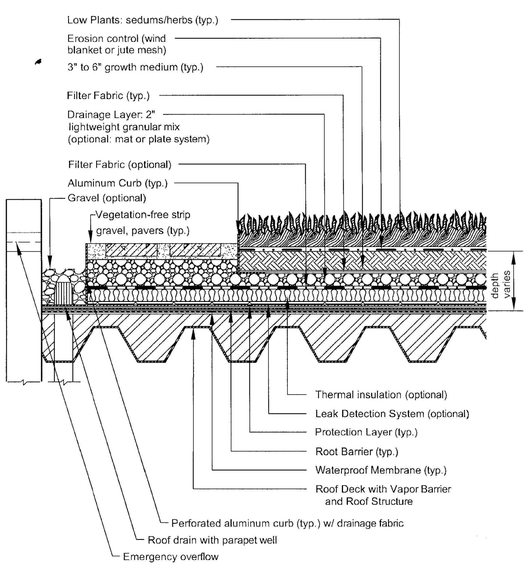


Figure 5.2. Typical Section – Extensive Vegetated Roof (Source: Northern VA Regional Commission)

VEGETATED ROOF LEVEL II MATERIAL SPECIFICATIONS

VA DEQ STORMWATER DESIGN SPECIFICATION NO. 5 **VEGETATED ROOF**

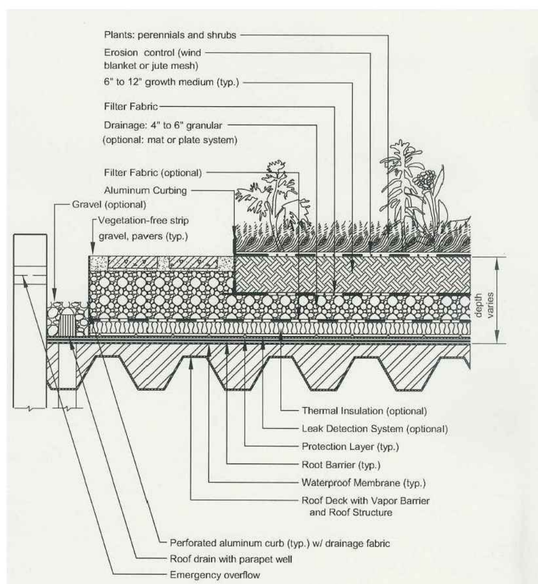


Figure 5.3. Typical Section – Intensive Vegetated Roof (Source: Northern VA Regional Commission)

VA DCR STORMWATER DESIGN SPECIFICATION NO. 9 **BIORETENTION**

Table 9.7. Bioretention Material Specifications

Material	Specification	Notes
Filter Media Composition	Filter Media to contain: • 80% - 90% sand • 10%-20% soil fines • 3%-5% organic matter	The volume of filter media based on 110% of the plan volume, to account for settling or compaction.
Filter Media Testing	Available P between L+ and M per DCR 2005 Nutrient Management Criteria.	The media should be certified by the supplier.
Mulch Layer	Use aged, shredded hardwood bark mulch or stable coarse compost.	Lay a 2 to 3 inch layer on the surface of the filter bed.
Alternative Surface Cover	Use river stone or pea gravel, coir and jute matting, or turf cover.	Lay a 2 to 3 inch layer of to suppress weed growth.
Top Soil For Turf Cover	Loamy sand or sandy loam texture, with less than 5% clay content, pH corrected to between 6 and 7, and an organic matter content of at least 2%.	3 inch surface depth.
Geotextile/Liner	Use a non-woven geotextile fabric with a flow rate of > 110 gal./min./sq. ft. (e.g., Geotex 351 or equivalent)	Apply only to the sides and directly above the underdrain. For hotspots and certain karst sites only, use an appropriate liner on bottom.
Choking Layer	Lay a 2 to 4 inch layer of sand over a 2 inch layer of choker stone (typically #8 or #89 washed gravel), which is laid over the underdrain stone.	
Stone Jacket for Underdrain and/or Storage Layer	1 inch stone should be double-washed and clean and free of all fines (e.g., VDOT #57 stone).	12 inches for the underdrain; 12 to 18 inches for the stone storage layer, if needed
Underdrains, Cleanouts, and Observation Wells	Use 6 inch rigid schedule 40 PVC pipe (or equivalent corrugated HDPE for micro-bioretention), with 3/8-inch perforations at 6 inches on center; position each underdrain on a 1% or 2% slope located nor more than 20 feet from the next pipe.	Lay the perforated pipe under the length of the bioretention cell, and install non-perforated pipe as needed to connect with the storm drain system. Install T's and Y's as needed, depending on the underdrain configuration. Extend cleanout pipes to the surface with vented caps at the Ts and Ys.
Plant Materials	Plant one tree per 250 square feet (15 feet on-center, minimum 1 inch caliper). Shrubs a minimum of 30 inches high planted a minimum of 10 feet on-center. Plant ground cover plugs at 12 to 18 inches on-center; Plant container-grown plants at 18 to 24 inches on-center, depending on the initial plant size and how large it will grow.	Establish plant materials as specified in the landscaping plan and the recommended plant list. In general, plant spacing must be sufficient to ensure the plant material achieves 80% cover in the proposed planting areas within a 3-year period. If seed mixes are used, they should be from a qualified supplier, should be appropriate for stormwater basin applications, and should consist of native species (unless the seeding is to establish maintained turf).

VA DCR STORMWATER DESIGN SPECIFICATION NO. 9 **BIORETENTION**

Native trees or shrubs are preferred for urban bioretention areas, although some ornamental species may be used. As with regular bioretention, the selected perennials, shrubs, and trees must be tolerant of salt, drought, and inundation. Additionally, tree species should be those that are known to survive well in the compacted soils and polluted air and water of an urban landscape.

SECTION 9-A-7: URBAN BIORETENTION MATERIAL SPECIFICATIONS

Please consult the **main part of this design specification** (**Table 9.7**) for the typical materials needed for filter media, stone, mulch and other bioretention features. The unique components for urban bioretention may include the inlet control device, a concrete box or other containing shell, protective grates, and an underdrain that daylights to another stormwater practice or connects to the storm drain system. The underdrain should:

- Consist of slotted pipe greater than or equal to 4 inches in diameter, placed in a layer of washed (less than 1% passing a #200 sieve) VDOT #57 stone.
- Have a minimum of 2 inches of gravel laid above and below the pipe.
- Be laid at a minimum slope of 0.5 %.
- Extend the length of the box filter from one wall to within 6 inches of the opposite wall, and may be either centered in the box or offset to one side.
- Be separated from the soil media by an appropriate filter fabric for the particular application based on AASHTO M288-06 or a 2 to 3 inch layer of either washed VDOT #8 stone or 1/8 to 3/8 inch pea gravel.

SECTION 9-A-9: MAINTENANCE

Routine operation and maintenance are essential to gain public acceptance of highly visible urban bioretention areas. Weeding, pruning, and trash removal should be done as needed to maintain the aesthetics necessary for community acceptance. During drought conditions, it may be necessary to water the plants, as would be necessary for any landscaped area.

To ensure proper performance, inspectors should check that stormwater infiltrates properly into the soil within 24 hours after a storm. If excessive surface ponding is observed, corrective measures include inspection for soil compaction and underdrain clogging. Consult the maintenance guidance outlined in **the main part of this design specification**.

Engineers • Surveyors • Planners
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FALLS CHURCH, VIRGINIA 22046
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DATE: SESP PRE-SUB01 5/15/2020, SESP SUB01 06/08/2020

COMMONWEALTH OF VIRGINIA
KAREN L. S. WHITE
Lic. No.041850
6/08/2020
PROFESSIONAL ENGINEER

NO.	DESCRIPTION	DATE	REV. BY	APPROVED	DATE

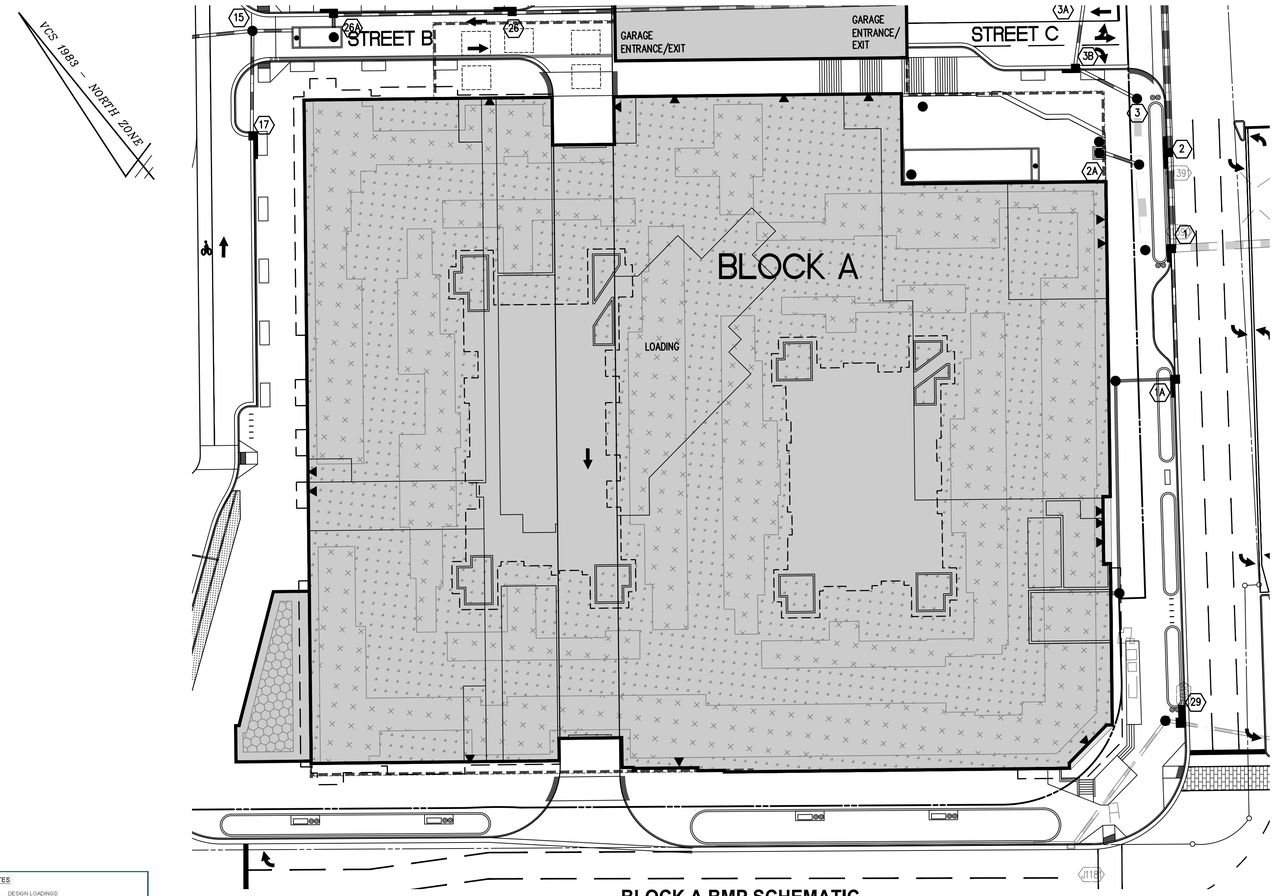
REVISION APPROVED BY

NOTE: THE VERTICAL DATUM REFERENCED ON THIS PLAN IS THE NORTH AMERICAN DATUM OF 1988 (NAVD88)

BMP DETAILS

WEST FALLS CHURCH ECONOMIC DEVELOPMENT

SPECIAL EXCEPTION SITE PLAN
CITY OF FALLS CHURCH, VIRGINIA



BLOCK A BMP SCHEMATIC

SCALE: 1"=30'

GREEN ROOF LEVEL I
35,150 SF (0.81 AC)

GREEN ROOF LEVEL II
2,550 SF (0.06 AC)

±47% ROOF AREA WITH GREEN ROOF

BIORETENTION LEVEL I
26,977 SF (0.62 AC) ROOF AREA TREATED BY ±1675 SF PLANTER AREA

TO FILTERING MANUFACTURED DEVICE
15,723 SF ROOF AREA AS PRIMARY TREATMENT (0.36 AC)
64,677 SF ROOF AREA AS SECONDARY TREATMENT (1.48 AC)

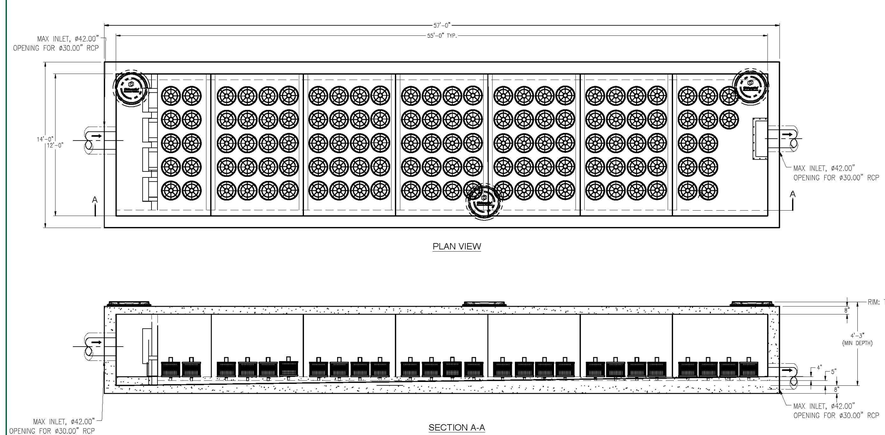
BLOCK A BMP MANUFACTURED FILTERING DEVICE

NOT–TO–SCALE

REVISIONS

REVISION	DATE	REV BY	DESCRIPTION OF REVISION
0	N/A	N/A	

Unit ID: A
PerkFilter® Vault- 12'x55'
12" Cartridges, 122 Each
Treatment Flow Rate
1463 gpm / 3.26 cfs



Stormwater

NOTES

1. DESIGN LOADINGS:
   A. AASHTO HS-20-44 W IMPACT.
   B. DESIGN FILL: 1' MAXIMUM.
   C. ASSUMED WATER TABLE = 5' BELOW GRADE.
   D. DRY LATERAL EARTH PRESSURE (EFP) = 40 PCF.
   E. LATERAL LIVE LOAD SURCHARGE = 80 PSF (APPLIED TO 8' BELOW GRADE).
   F. NO LATERAL SURCHARGE FROM ADJACENT BUILDINGS, WALLS, PIERS, OR FOUNDATIONS.
2. CONCRETE 28 DAY COMPRESSIVE STRENGTH SHALL BE 5,000 PSI MINIMUM.
3. STEEL REINFORCEMENT: REBAR, ASTM A-615 OR A-706, GRADE 60.
4. CEMENT: ASTM C-150 SPECIFICATION.
5. REQUIRED NATIVE ALLOWABLE SOIL BEARING PRESSURE = 2,500 PSF.
6. REFERENCE STANDARD:
   A. ASTM C 890
   B. ASTM C 913
7. THIS STRUCTURE IS DESIGNED TO THE PARAMETERS NOTED HEREIN. PLEASE VERIFY THAT THESE PARAMETERS MEET PROJECT SPECIFICATIONS. PAY SPECIAL ATTENTION TO WATER TABLE. IF DESIGN PARAMETERS ARE INCORRECT, REVIEWING ENGINEER/AUTHORITY SHALL NOTIFY OLDCASTLE INFRASTRUCTURE UPON REVIEW OF THIS SUBMITTAL.
8. OVERSIZED HOLES TO ACCOMMODATE SPECIFIC PIPE TYPE MUST BE CONCENTRIC TO PIPE ID. AFTER PIPES ARE INSTALLED, ALL ANNULAR SPACES SHALL BE FILLED WITH A MINIMUM OF 3000 PSI CONCRETE FOR FULL THICKNESS OF PRECAST WALLS. PIPES ARE TO BE FLUSH WITH THE INSIDE SURFACE OF THE CONCRETE STRUCTURE.
9. CONTRACTOR RESPONSIBLE TO VERIFY ALL SIZES, LOCATIONS AND ELEVATIONS OF OPENINGS.
10. CONTRACTOR RESPONSIBLE TO ENSURE ADEQUATE BEARING SURFACE IS PROVIDED (I.E. COMPACTED AND LEVEL PER PROJECT SPECIFICATIONS).
11. SECTION HEIGHTS, SLABWALL THICKNESSES AND KEYWAYS ARE SUBJECT TO CHANGE DUE TO AVAILABILITY AND PRODUCTION PLANT CAPABILITY.
12. MAXIMUM PICK WEIGHT: BASE SECTION WITH INTERNALS INSTALLED = TBD.

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PerkFilter® Vault 12'x55'
12" Cartridges, 122 Each

CUSTOMER: Walter L. Phillips				
JOB NAME: West Falls Church - Falls Church, VA				
DATE: 5/6/20	MFG: -	DRAWN: LDH	ENGINEER: LDH	CHECKED: -	SALES ORDER: -
INTERNAL DRAWING #: PDD-WEST FALLS CHURCH A-0			REVISION: 0	SHEET: 1 OF 1

PROPOSED BMP MANUFACTURED FILTERING DEVICE MAY BE SUBSTITUTED FOR EQUIVALENT PRODUCT ACHIEVING THE SAME PHOSPHORUS REMOVAL TREATMENT.

NOTES:

1. SEE SHEET C–0710 FOR STANDARD BIORETENTION AND VEGETATED ROOF DETAILS.
2. SEE LANDSCAPE PLANS AND BUILDING PLANS FOR MORE INFORMATION.

30 0 15 30 60 120
(IN FEET)
1 INCH = 30'

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FALLS CHURCH, VIRGINIA 22046
(703) 532-6163 Fax (703) 533-1301
www.WLPINC.com

SCALE: 1" = 30'
DATE: SESP PRE-SUB01 5/15/2020, SESP SUB01 06/08/2020
DRAWN: AI / KW / TT
CHECKED: KW

COMMONWEALTH OF VIRGINIA
KAREN L. S. WHITE
Lic. No.041850
6/08/2020
PROFESSIONAL ENGINEER

NO.	DESCRIPTION	DATE	REV. BY	APPROVED	DATE

REVISION APPROVED BY:

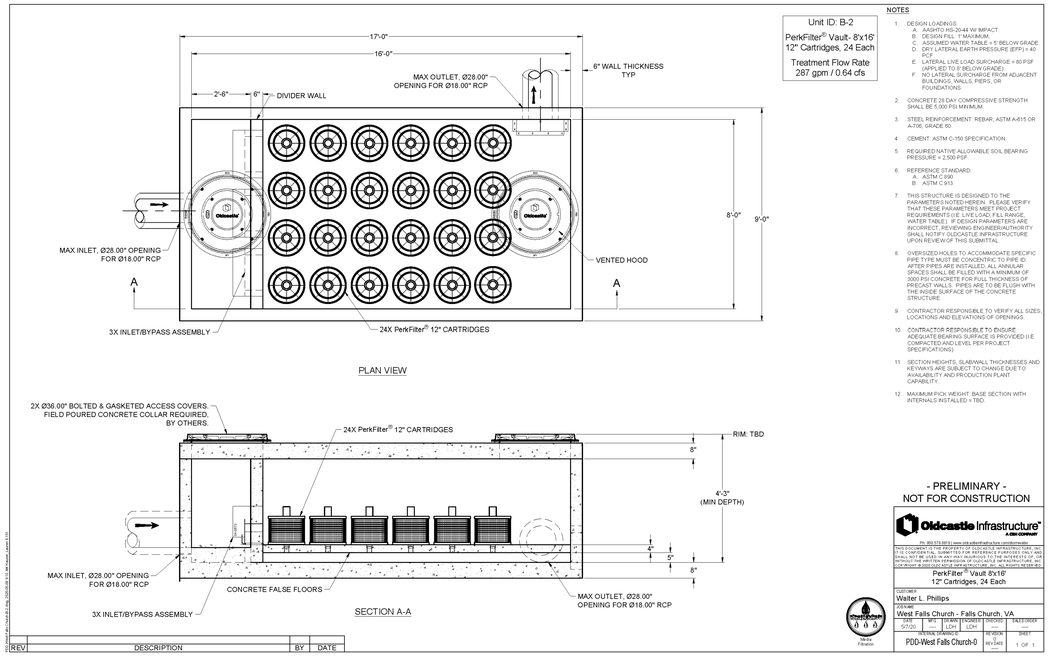
NOTE: THE VERTICAL DATUM REFERENCED ON THIS PLAN IS THE NORTH AMERICAN DATUM OF 1988 (NAVD88)

BMP SCHEMATIC - BLOCK A
WEST FALLS CHURCH ECONOMIC DEVELOPMENT
SPECIAL EXCEPTION SITE PLAN
CITY OF FALLS CHURCH, VIRGINIA

SHEET: C-0711

BUILDING B-2 BMP MANUFACTURED FILTERING DEVICE

NOT–TO–SCALE



NOTES

1. DESIGN LOADINGS:
   A. AASHTO HS-20-44 W/ IMPACT.
   B. DESIGN FILL: 1' MAXIMUM.
   C. ASSUMED WATER TABLE = 1' BELOW GRADE.
   D. DRY LATERAL EARTH PRESSURE (EFP) = 40 PCF.
   E. LATERAL LIVE LOAD SURCHARGE = 80 PSF (APPLIED TO 8' BELOW GRADE).
   F. NO LATERAL SURCHARGE FROM ADJACENT BUILDINGS, WALLS, PIERS, OR FOUNDATIONS.
2. CONCRETE 28 DAY COMPRESSIVE STRENGTH SHALL BE 5,000 PSI MINIMUM.
3. STEEL REINFORCEMENT: REBAR, ASTM A-615 OR A-706, GRADE 60.
4. CEMENT: ASTM C-150 SPECIFICATION.
5. REQUIRED NATIVE ALLOWABLE SOIL BEARING PRESSURE = 2,500 PSF.
6. REFERENCE STANDARD:
   A. ASTM C 890
   B. ASTM C 913
7. THIS STRUCTURE IS DESIGNED TO THE PARAMETERS NOTED HEREIN. PLEASE VERIFY THAT THESE PARAMETERS MEET PROJECT REQUIREMENTS (I.E. LIVE LOAD, FILL RANGE, WATER TABLE). IF DESIGN PARAMETERS ARE INCORRECT, REVIEWING ENGINEER/AUTHORITY SHALL NOTIFY OLDCASTLE INFRASTRUCTURE UPON REVIEW OF THIS SUBMITTAL.
8. OVERSIZED HOLES TO ACCOMMODATE SPECIFIC PIPE TYPE MUST BE CONCENTRIC TO PIPE ID. AFTER PIPES ARE INSTALLED, ALL ANNULAR SPACES SHALL BE FILLED WITH A MINIMUM OF 3000 PSI CONCRETE FOR FULL THICKNESS OF PRECAST WALLS. PIPES ARE TO BE FLUSH WITH THE INSIDE SURFACE OF THE CONCRETE STRUCTURE.
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PerkFilter® Vault 8'x16'
12" Cartridges, 24 Each

CUSTOMER: Walter L. Phillips
JOB NAME: West Falls Church - Falls Church, VA

DATE	BY	DRAWN	ENGINEER	CHECKED	DATE ORDER
5/7/20	—	LDH	LDH	—	—

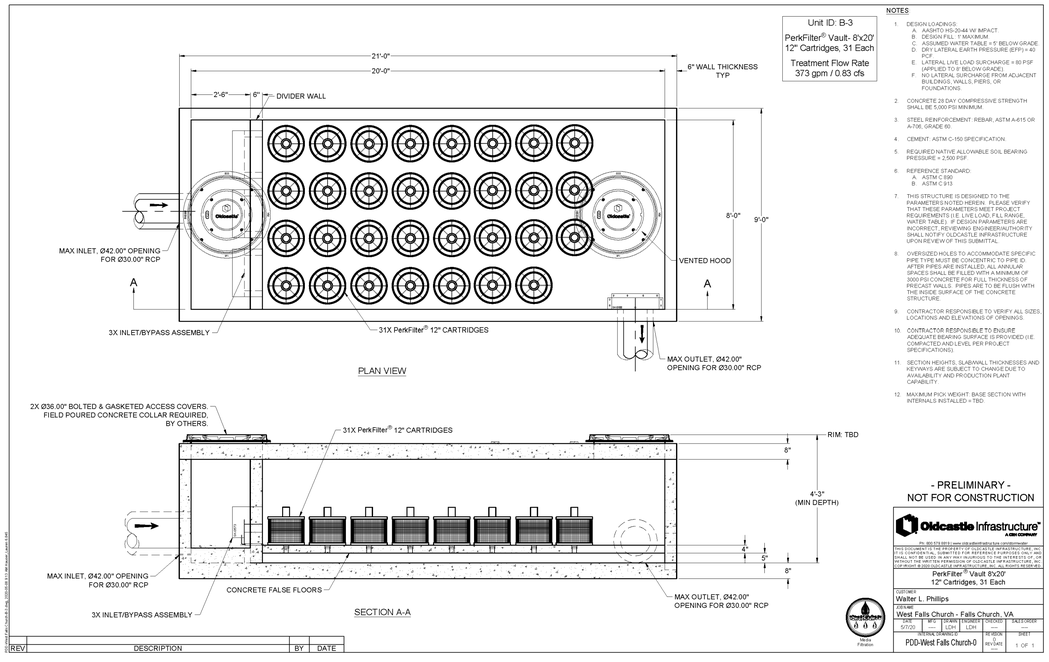
DRAWING #	REVISION	SHEET
PDD-West Falls Church-0	REV DATE	1 OF 1

Made in Flexibon

PROPOSED BMP MANUFACTURED FILTERING DEVICE MAY BE SUBSTITUTED FOR EQUIVALENT PRODUCT ACHIEVING THE SAME PHOSPHORUS REMOVAL TREATMENT.

BUILDING B-3 BMP MANUFACTURED FILTERING DEVICE

NOT–TO–SCALE



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   B. DESIGN FILL: 1' MAXIMUM.
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PerkFilter® Vault 8'x20'
12" Cartridges, 31 Each

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JOB NAME: West Falls Church - Falls Church, VA

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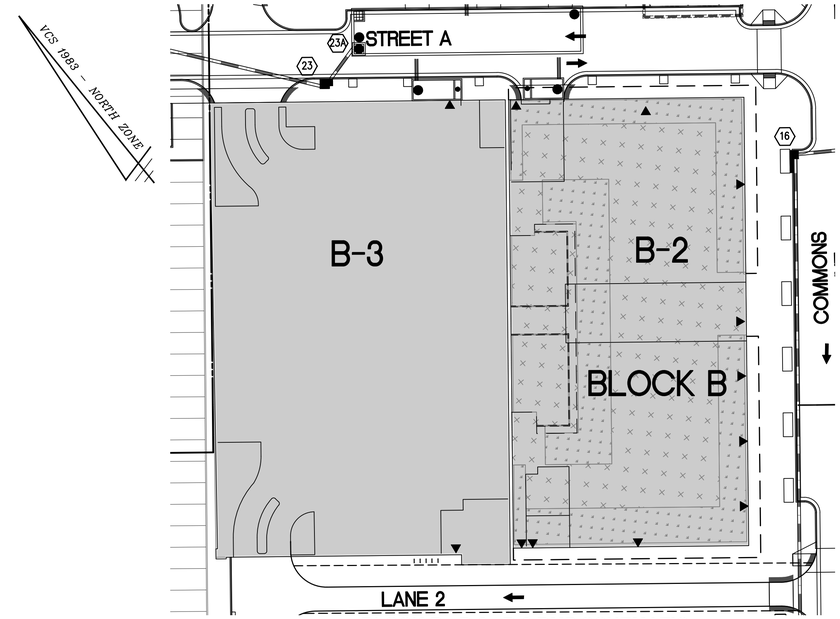
DRAWING #	REVISION	SHEET
PDD-West Falls Church-0	REV DATE	1 OF 1

Made in Flexibon

PROPOSED BMP MANUFACTURED FILTERING DEVICE MAY BE SUBSTITUTED FOR EQUIVALENT PRODUCT ACHIEVING THE SAME PHOSPHORUS REMOVAL TREATMENT.



BLOCK B - B-2 / B-3 BMP SCHEMATIC

SCALE: 1"=30'

B-3

TO FILTERING MANUFACTURED DEVICE
23,808 SF (0.55 AC) ROOF AREA AS PRIMARY TREATMENT

B-2

GREEN ROOF LEVEL I
6,200 SF (0.14 AC)
±40% OVERALL ROOF AREA

BIORETENTION LEVEL I
9,300 SF (0.21 AC) ROOF AREA TREATED BY ±1500 SF PLANTER AREA

TO FILTERING MANUFACTURED DEVICE
15,500 SF (0.36 AC) ROOF AREA AS SECONDARY TREATMENT

NOTES:

1. SEE SHEET C–0710 FOR STANDARD BIORETENTION AND VEGETATED ROOF DETAILS.
2. SEE LANDSCAPE PLANS AND BUILDING PLANS FOR MORE INFORMATION.

30 0 15 30 60 120
(IN FEET)
1 INCH = 30'

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COMMONWEALTH OF VIRGINIA
KAREN L. S. WHITE
Lic. No.041850
6/08/2020
PROFESSIONAL ENGINEER

NO.	DESCRIPTION	DATE	REV. BY	APPROVED	DATE

REVISION APPROVED BY

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BMP SCHEMATIC - BLOCK B-2 & B-3

WEST FALLS CHURCH ECONOMIC DEVELOPMENT

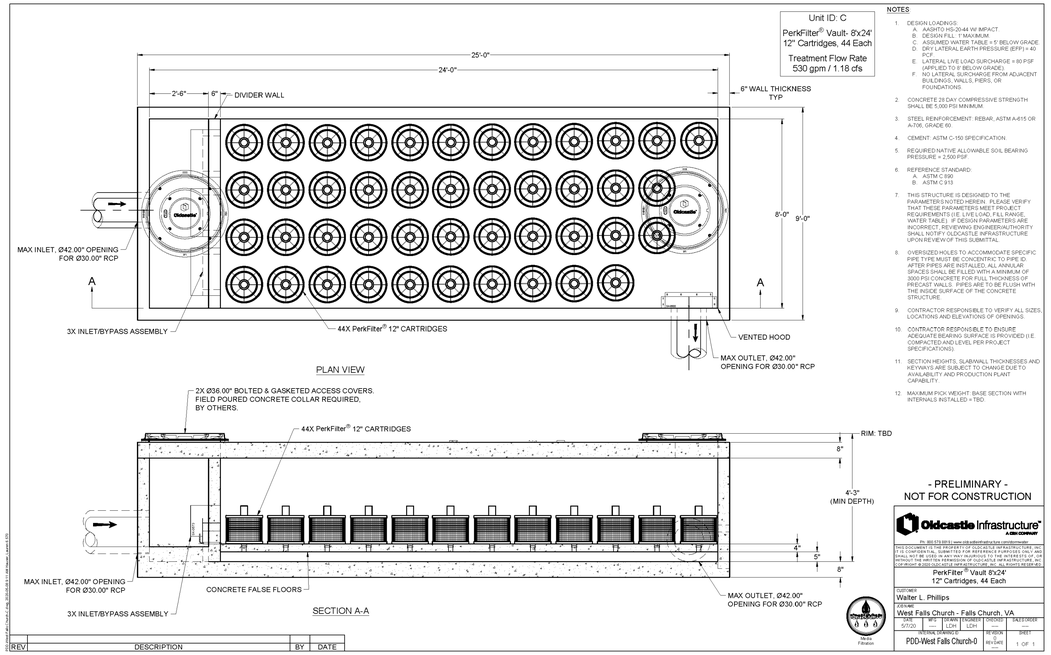
SPECIAL EXCEPTION SITE PLAN

CITY OF FALLS CHURCH, VIRGINIA

SHEET: C-0712

BUILDING C BMP MANUFACTURED FILTERING DEVICE

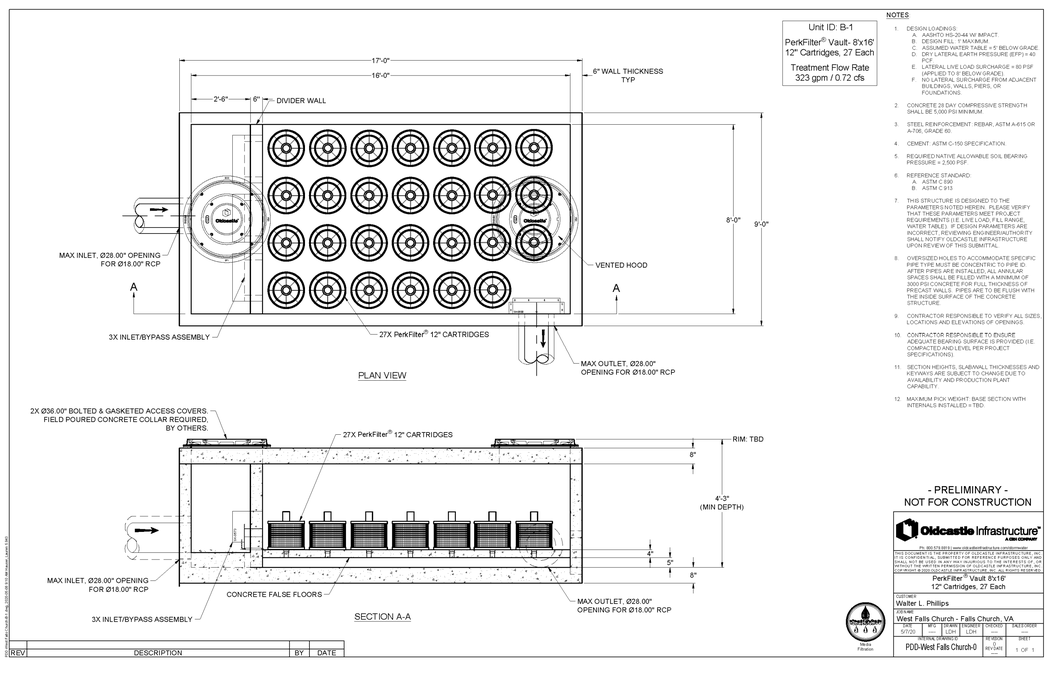
NOT–TO–SCALE



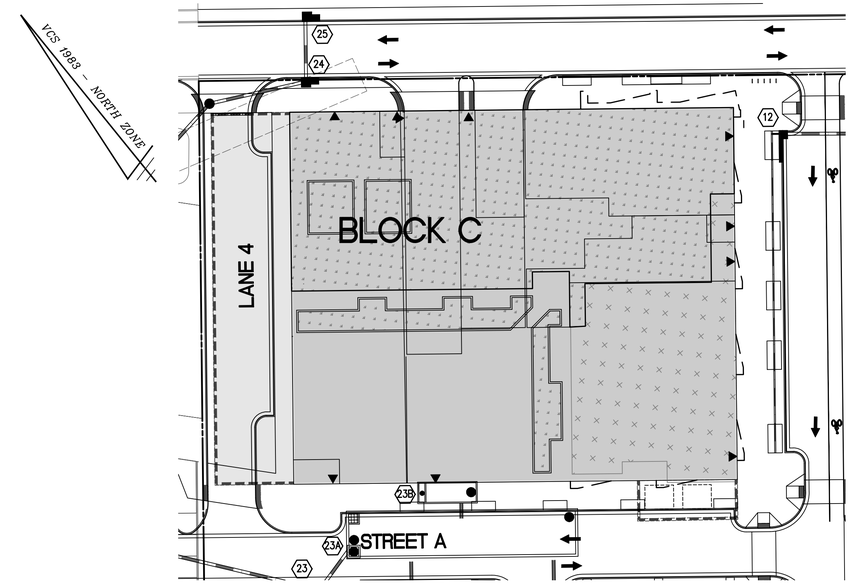
PROPOSED BMP MANUFACTURED FILTERING DEVICE MAY BE SUBSTITUTED FOR EQUIVALENT PRODUCT ACHIEVING THE SAME PHOSPHORUS REMOVAL TREATMENT.

BUILDING B-1 BMP MANUFACTURED FILTERING DEVICE

NOT–TO–SCALE



PROPOSED BMP MANUFACTURED FILTERING DEVICE MAY BE SUBSTITUTED FOR EQUIVALENT PRODUCT ACHIEVING THE SAME PHOSPHORUS REMOVAL TREATMENT.



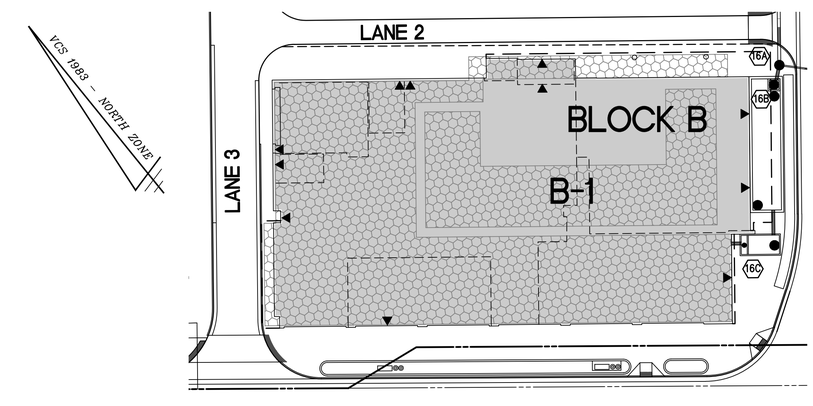
BLOCK C BMP SCHEMATIC

SCALE: 1"=30'

GREEN ROOF LEVEL I
5,803 SF (0.13 AC)
±20% OVERALL ROOF AREA

BIORETENTION LEVEL I
19,461 SF (0.45 AC) ROOF AREA TREATED BY ±2225 SF PLANTER AREA

TO FILTERING MANUFACTURED DEVICE
8,902 SF (0.20 AC) ROOF AND VEHICULAR AREA AS PRIMARY TREATMENT
25,264 SF (0.58 AC) ROOF AREA AS SECONDARY TREATMENT



BLOCK B- B-1 BUILDING BMP SCHEMATIC

SCALE: 1"=30'

GREEN ROOF LEVEL II
16,643 SF (0.38 AC)
±87% ROOF AREA

TO FILTERING MANUFACTURED DEVICE
2,383 SF (0.05 AC) ROOF AREA AS PRIMARY TREATMENT
16,643 SF (0.38 AC) ROOF AREA AS SECONDARY TREATMENT

30 0 15 30 60 120
(IN FEET)
1 INCH = 30'

NOTES:

1. SEE SHEET C–0710 FOR STANDARD BIORETENTION AND VEGETATED ROOF DETAILS.
2. SEE LANDSCAPE PLANS AND BUILDING PLANS FOR MORE INFORMATION.

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DRAWN: AI / KW / TT
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COMMONWEALTH OF VIRGINIA
KAREN L. S. WHITE
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PROFESSIONAL ENGINEER

NO.	DESCRIPTION	DATE	REV/ BY	APPROVED	DATE

REVISION APPROVED BY

NOTE: THE VERTICAL DATUM REFERENCED ON THIS PLAN IS THE NORTH AMERICAN DATUM OF 1988 (NAVD88)

BMP SCHEMATIC - B-1 & BLOCK C

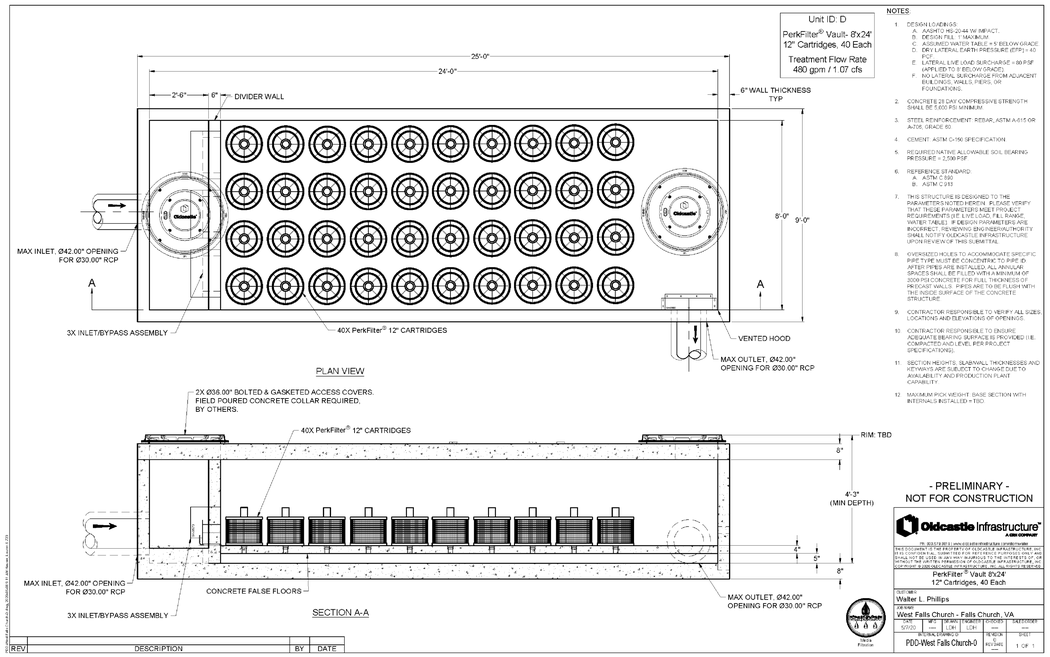
WEST FALLS CHURCH ECONOMIC DEVELOPMENT

SPECIAL EXCEPTION SITE PLAN
CITY OF FALLS CHURCH, VIRGINIA

SHEET: C-0713

BUILDING D BMP MANUFACTURED FILTERING DEVICE

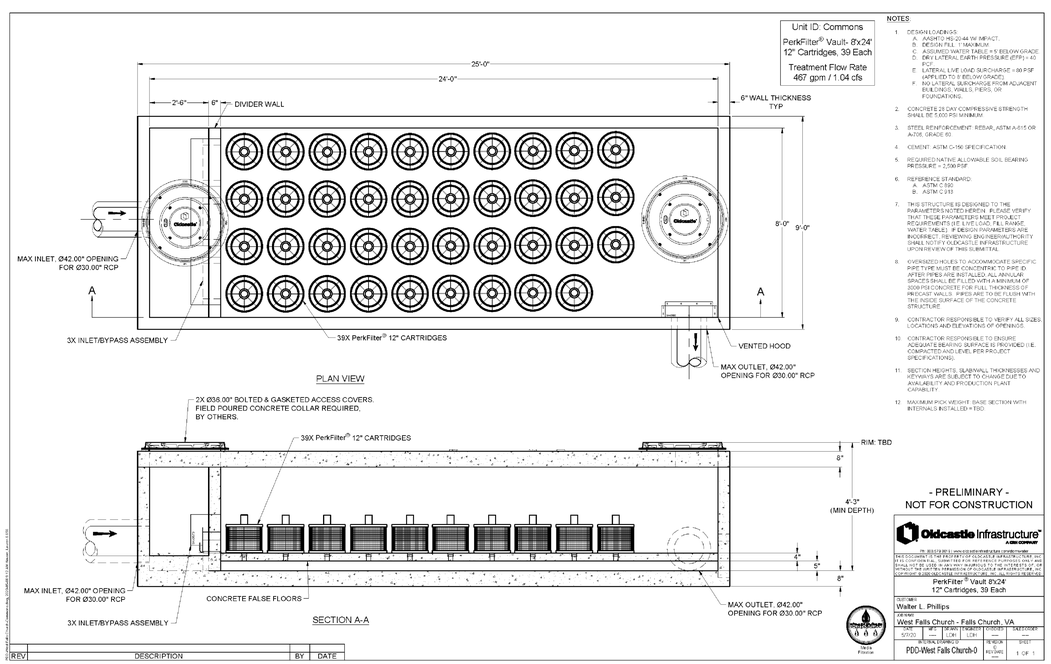
NOT-TO-SCALE



PROPOSED BMP MANUFACTURED FILTERING DEVICE MAY BE SUBSTITUTED FOR EQUIVALENT PRODUCT ACHIEVING THE SAME PHOSPHORUS REMOVAL TREATMENT.

COMMONS BMP MANUFACTURED FILTERING DEVICE

NOT-TO-SCALE



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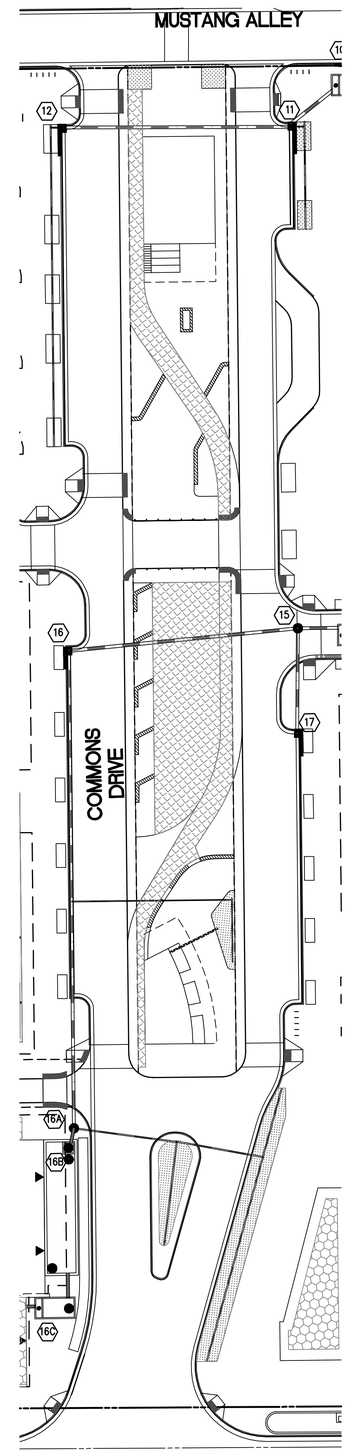
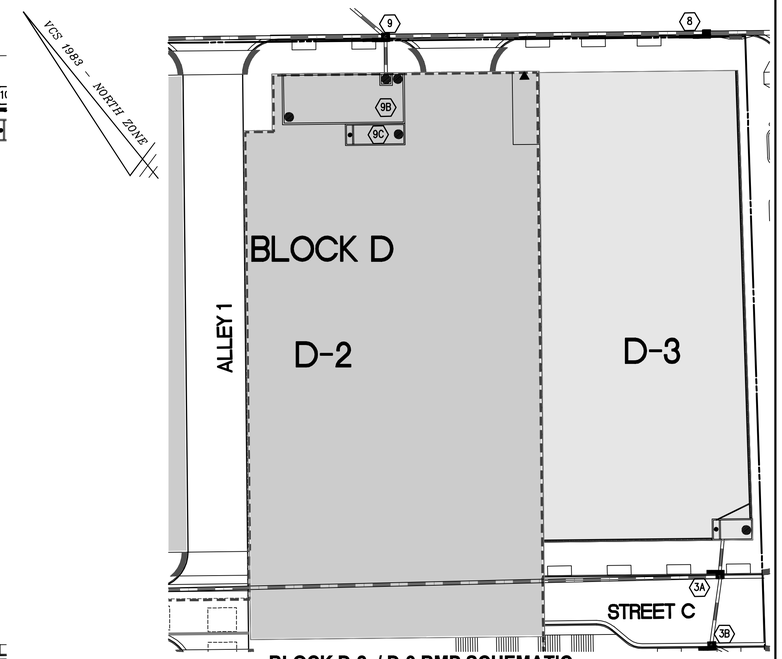


COMMONS BMP SCHEMATIC

SCALE: 1"=30'



BLOCK D-2 / D-3 BMP SCHEMATIC

SCALE: 1"=30'

TO FILTERING MANUFACTURED DEVICE
28,713 SF (0.66 AC) ROOF AREA AS PRIMARY TREATMENT (D-2)
±16,000 SF (0.37 AC) IMPERVIOUS AREA PRIMARY TREATMENT (D-3)

TO FILTERING MANUFACTURED DEVICE
30,230 SF (0.69 AC) AS PRIMARY TREATMENT

BIORETENTION LEVEL I
36,851 SF (0.85 AC) TREATED BY ±2288 SF PLANTER AREA

PERMEABLE PAVEMENT LEVEL I
5,217 SF (0.12 AC)
INCLUDES TURF AREA WITH PERMEABLE PAVEMENT SECTION

NOTES:

1. SEE SHEET C-0710 FOR STANDARD BIORETENTION AND VEGETATED ROOF DETAILS.
2. SEE LANDSCAPE PLANS AND BUILDING PLANS FOR MORE INFORMATION.
3. SEE LANDSCAPE PLANS FOR PERMEABLE PAVEMENT DETAILS.

30 0 15 30 60 120
(IN FEET)
1 INCH = 30'

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6/08/2020

DRAWN: AT/JM/JT/TF
CHECKED: KSW
SCALE: 1" = 30'
DATE: SESP PRE-SUBD1 5/15/2020, SESP SUBD1 06/08/2020

REVISION APPROVED BY					
NO.	DESCRIPTION	DATE	REV. BY	APPROVED	DATE

NOTE: THE VERTICAL DATUM REFERENCED ON THIS PLAN IS THE NORTH AMERICAN DATUM (NAVD88)

BMP SCHEMATIC - D-2 AND COMMONS

WEST FALLS CHURCH ECONOMIC DEVELOPMENT

SPECIAL EXCEPTION SITE PLAN

CITY OF FALLS CHURCH, VIRGINIA

SHEET: C-0714