# Discussion Item

Landscape Concepts Review

547- Drainage study and concept plan.

725 - The landscape architect with Christopher Consultants is requesting feedback and a decision on the final concept. Once received they will start working on the civil aspects to get everything designed and coordinated into a construction set.

christopher consultants

# Parkfairfax 547

# Drainage Analysis

Project No. 21261.001.00
September 21, 2021

Prepared for:

Parkfairfax Condominium
3360 Gunston Road
Alexandria, VA 22302

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www.christopherconsultants.com

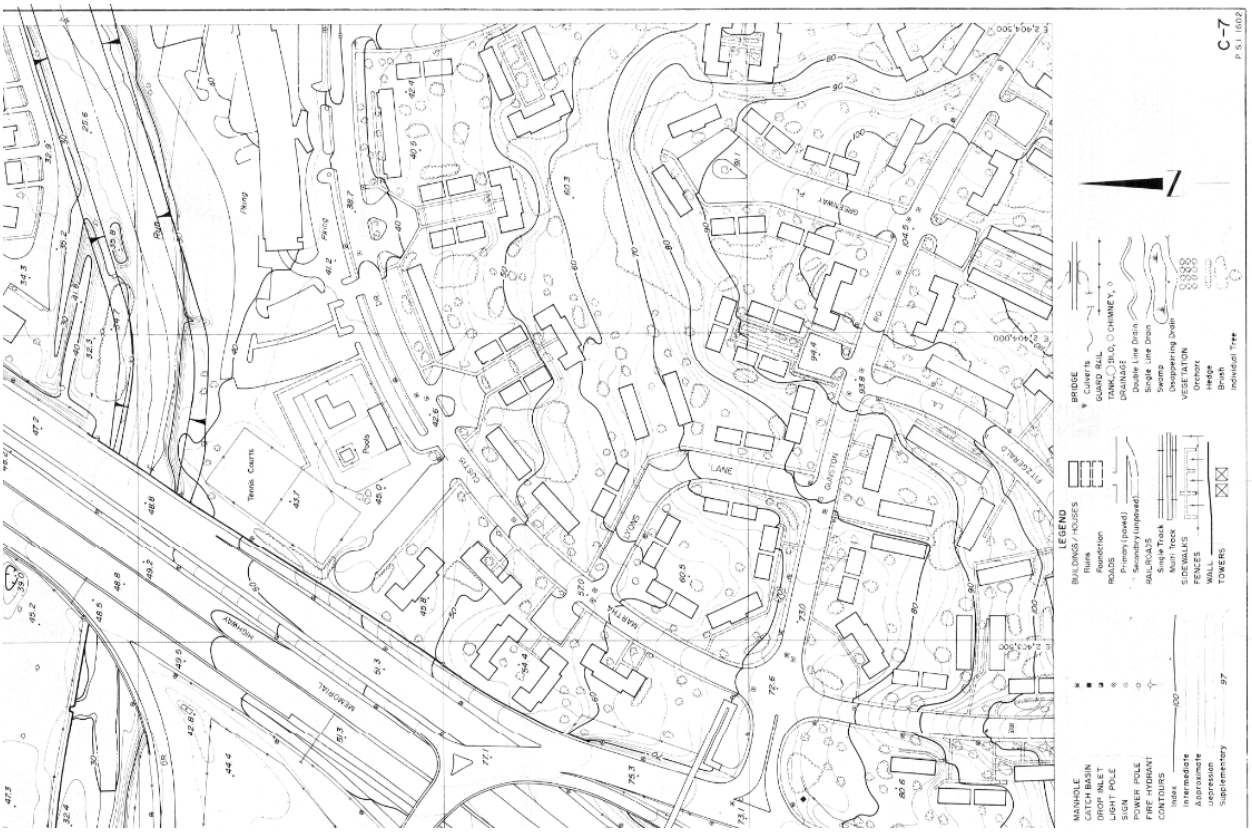
fairfax, va | manassas, va | leesburg, va | warrenton, va | richmond, va | lanham, md

*Scope*

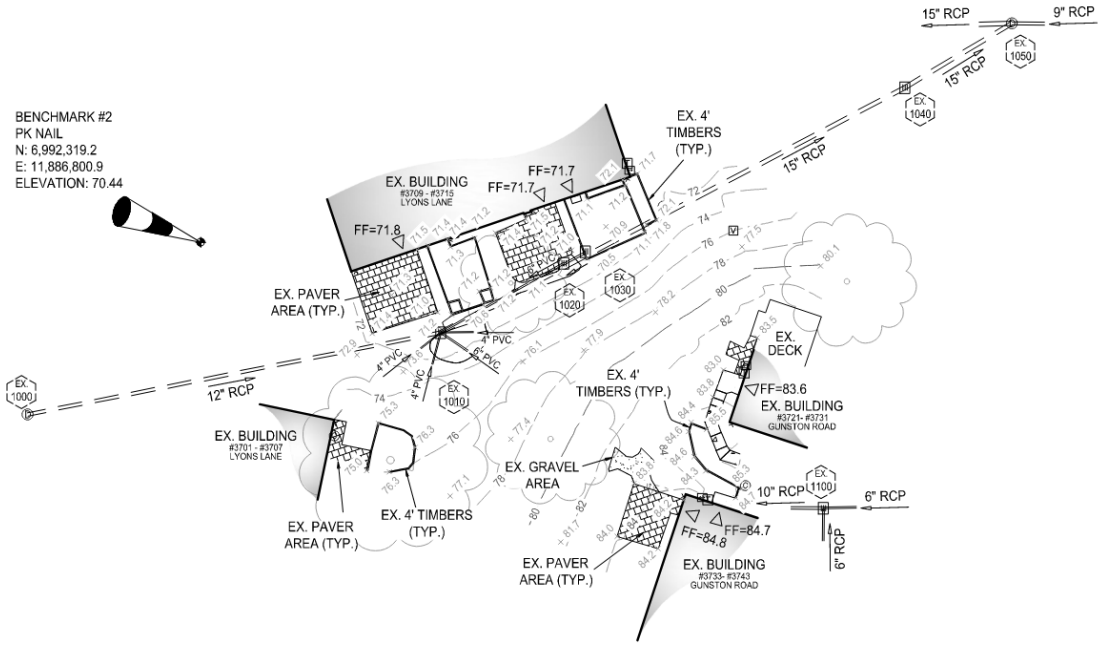
Parkfairfax is a historic community with significant landscape and wooded areas. The buildings were originally built in the early 1940's as rental units to meet wartime civilian housing needs and was converted to condominiums in 1978. The original storm system was built with terracotta using old standards. The scope of this task is to review the drainage area to the existing inlet and storm sewer system using available data. Current standards require storm inlet to be designed to handle the 2-year 24-hour storm events and the storm pipes are designed to handle the 10-year 24 hour storm events. For the purposes of this analysis, we used current City of Alexandria standards.

*Existing Topography*

The topography in the 547 area slopes from the Southeast to the Northwest. Below is an overall topography survey used for the drainage divides that was provided by the client. See Exhibit 1.



We also utilized our topographic survey (Exhibit 2) and the City of Alexandria GIS maps to analyze the storm sewer system.

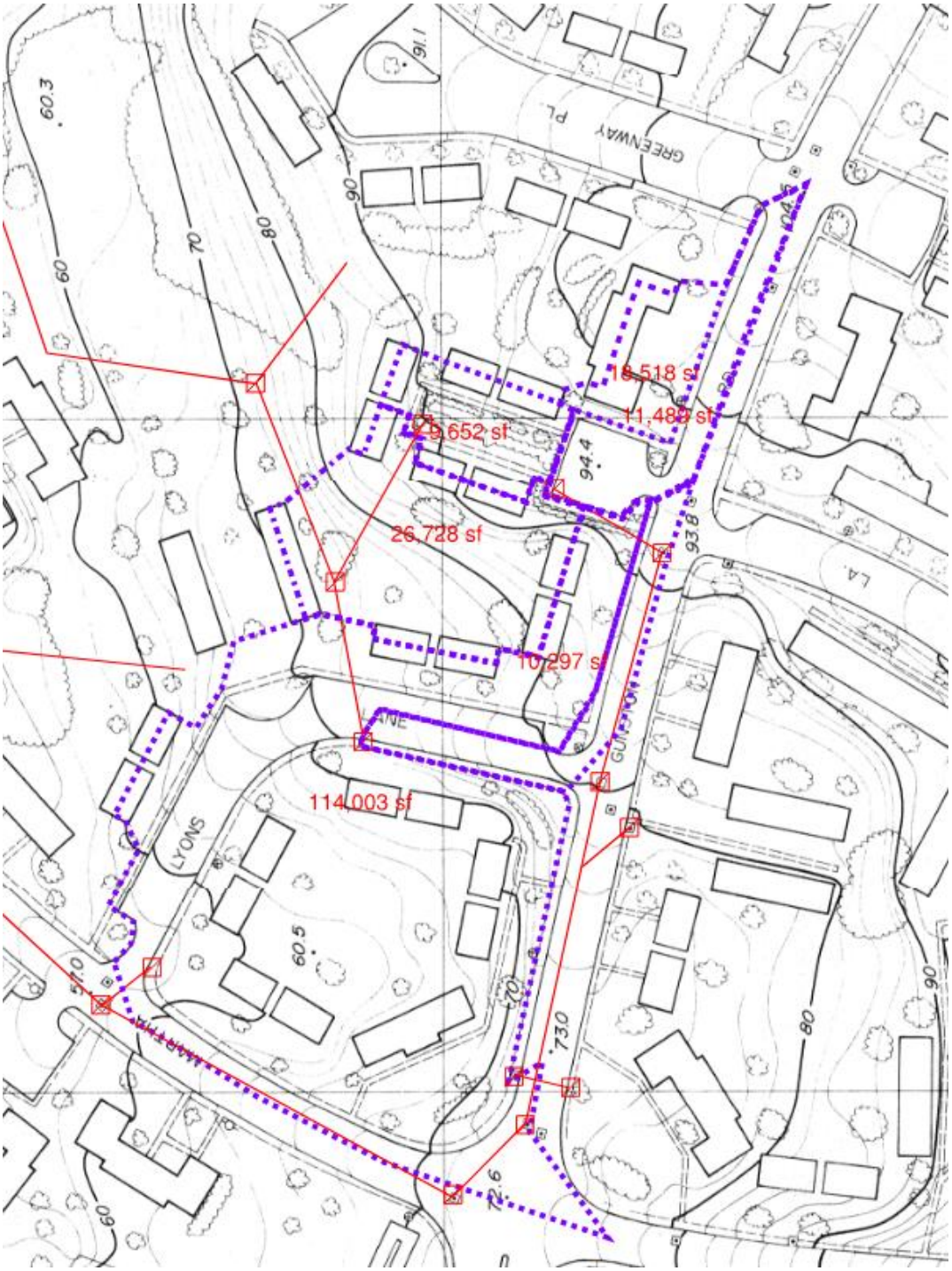



SITE 547


The City of Alexandria GIS maps are located here:
https://geo.alexandriava.gov/Html5Viewer/Index.html?viewer=sewerviewer

*Drainage Divides*

Below are this the drainage divides for the storm sewer system in the area. This information was used to analyze the inlets and storm sewer system in this area.



*Analysis*

To complete our analysis, we made the following assumptions:

- Storm structure #1100 connects to #1010.
- The roof drains from the building all connect to the storm sewer system but are clogged.
- Every unit has an impervious area of 20' x 20'.
- The owner at Unit number #3711 has a rear amenity area larger than 20' from the building and will be revised to be only 20' from the building to allow for better drainage to storm structure #1010
- Storm structures #1020 and #1030 are clogged.

The drainage area to storm structure #1010 is 0.62 Ac with a weighted c value of 0.61. The drainage area to storm structure #1100 is 0.22 Ac with a weighted c value of 0.62. The drainage area to storm structure #21 is 2.62 Ac with a weighted c value of 0.66. Below are the inlet and storm sewer calculations. The storm sewer and inlet at structure #21 are inadequate.

**STORM WATER INLET COMPUTATIONS**

| NUMBER | INLET TYPE | LENGTH ft | DRAINAGE AREA, Ac | C | CA | INTENSITY In./Hr. | Q INCRE. C.F.S. | Q ARRYOVI C.F.S. | Qt GUTTERFLOW C.F.S. | S GUTTERSLOPE ft./ft | Sx CROSS SLOPE ft./ft | T SPREAD | d ft. | E (Chart 16) | h ft. | Q Intercepted C.F.S. | d/h | Qb Carry Over C.F.S. | T Spread @ Sag ft. | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (left) | | | 1.31 | 0.66 | 0.87 | 6.2 | 5.37 | | 5.37 | 0.0200 | 0.0200 | 11.61 | - | - | - | - | - | - | - | Left |
| 21 | SAG | 4 | | | 1.73 | 6.2 | 10.74 | | 10.74 | | | | 1.26 | - | 0.46 | - | 2.75 | - | 56.63 | |
| (right) | | | 1.31 | 0.66 | 0.87 | 6.2 | 5.37 | | 5.37 | 0.0200 | 0.0200 | 11.61 | - | - | - | - | - | - | - | Right |

**YARD INLET COMPUTATIONS**

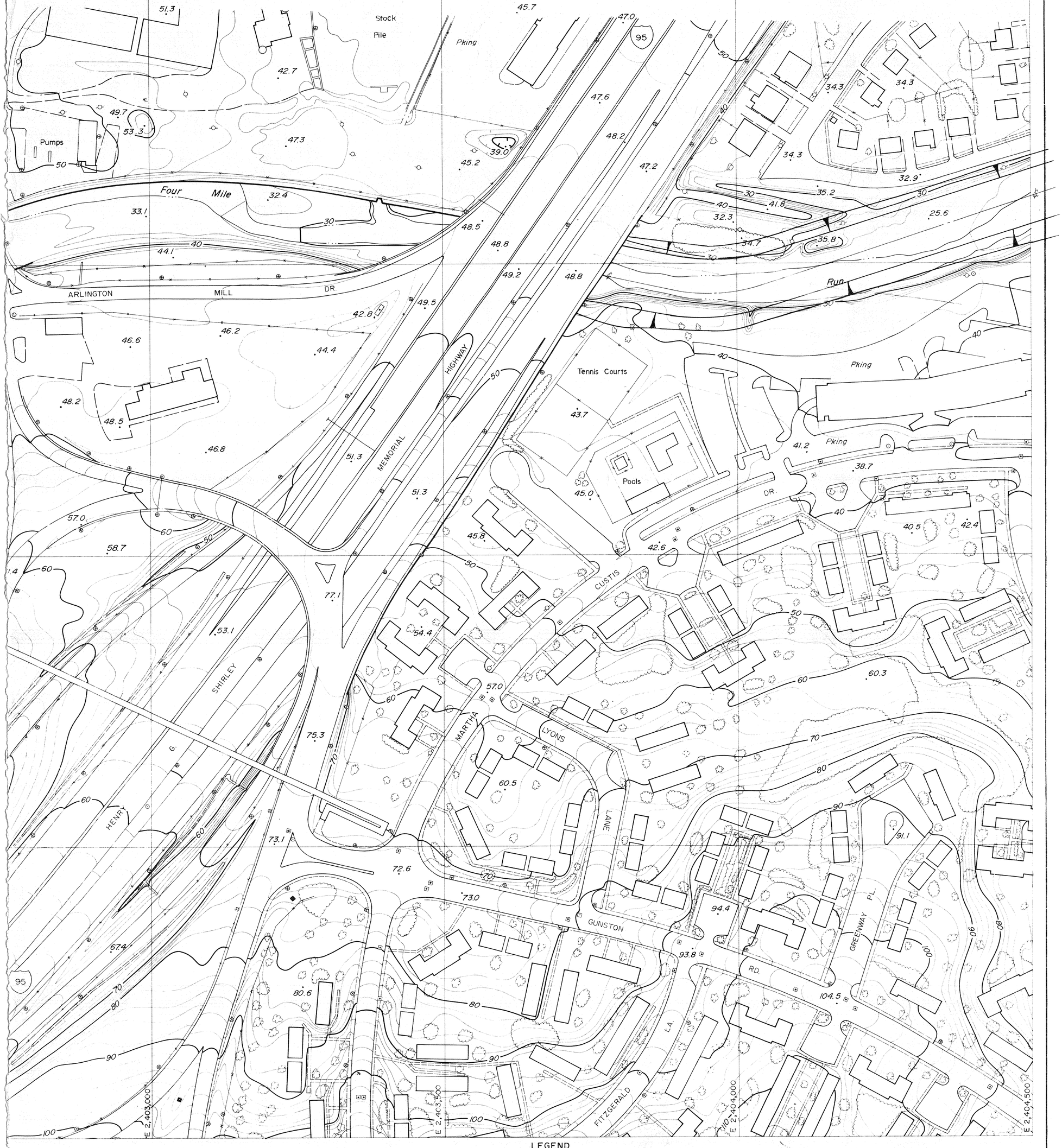
| NUMBER | INLET | TYPE | A, Ac | C | CA | I, in | Q, cfs | HW, ft | Top Elev, ft | 10 Yr. W.S.E. (ft) | REMARKS | COMMENTS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1010 | Grate | 12" RD | 0.62 | 0.61 | 0.38 | 6.2 | 2.33 | 0.63 | 69.73 | 70.36 | 50% clogged* | FIRST FLOOR ELEV=71.7 |
| 1100 | Grate | 12"x12" | 0.22 | 0.62 | 0.14 | 6.2 | 0.85 | 0.40 | 86.32 | 86.72 | 50% clogged* | |

**STORM SEWER DESIGN COMPUTATIONS**

| STRUCTURE From | To | DRAINAGE AREA (ACRES) "A" | RUN-OFF COEF. "C" | RAIN FALL In./Hr. | RUNOFF "Q" C.F.S. | INVERT ELEVATIONS Upper End | Lower End | LENGTH (ft) | SLOPE (ft/ft) | DIAMETER IN | CAPACITY C.F.S. | VELOCITY F.P.S. | FLOW TIME Seconds | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1000 | 1010 | 0.24 | 0.90 | 9.00 | 1.92 | 67.69 | 64.83 | 127.70 | 0.0224 | 12 | 5.32 | 6.11 | 20.89 | |
| 1010 | 1040 | 0.62 | 0.61 | 9.00 | 6.54 | 64.73 | 61.92 | 159.10 | 0.0177 | 15 | 8.57 | 7.65 | 20.81 | |
| 1100 | 1010 | 0.22 | 0.62 | 9.00 | 1.24 | 83.47 | unknown | unknown | 0.0100 | 10 | 2.19 | 4.07 | | Assumed Length &Slope |
| 21 | 20 | 2.62 | 0.66 | 9.00 | 15.60 | unknown | unknown | unknown | 0.0100 | 18 | 10.50 | 5.94 | | Assumed Length &Slope |

*Summary*

The storm sewer structure #1010 by building 547 appears to be inadequate to handle significant storm events. Diverting drainage away from this area would improve this condition. While diverting water from storm structure #1010 improves this area, the drainage area to storm structure #21 is significant and the 10-year storm event generates a ponding depth of approximately 1.3'. The conceptual design diverts additional drainage to this area and christopher recommends meeting with City of Alexandria to discuss prior to moving forward with final design.




# SURVEY OF
# ALEXANDRIA
## A, VIRGINIA

CONTOUR INTERVAL 2'

0 200 300
FEET

MANHOLE
CATCH BASIN
DROP INLET
LIGHT POLE
SIGN
POWER POLE
FIRE HYDRANT
CONTOURS
Index 100
Intermediate
Approximate
Depression
Supplementary 97

LEGEND

BUILDINGS / HOUSES
Ruins
Foundation
ROADS
Primary (paved)
Secondary (unpaved)
RAILROADS
Single Track
Multi Track
SIDEWALKS
FENCES
WALL
TOWERS

BRIDGE
Culverts
GUARD RAIL
TANK, ◯ SILO, ○ CHIMNEY, ○
DRAINAGE
Double Line Drain
Single Line Drain
Swamp
Disappearing Drain
VEGETATION
Orchard
Hedge
Brush
Individual Tree

C-7
P. S. I. 1602

## GENERAL NOTES

1. THE PROPERTY SHOWN HEREON IS IDENTIFIED ON THE CITY OF ALEXANDRIA, VIRGINIA GEOGRAPHIC INFORMATION SYSTEM AS MAP NUMBER 013.02-0A-00 AND IS ZONED RB.
2. THE PROPERTY SHOWN HEREON IS NOW IN THE NAME OF PARKFAIRFAX CONDOMINIUM, AS SHOWN ON A PLAT ATTACHED TO THE DEED RECORDED IN DEED BOOK 847 AT PAGE 508, AMONG THE LAND RECORDS OF THE CITY OF ALEXANDRIA, VIRGINIA.
3. A.) HORIZONTAL DATUM SHOWN HEREON IS REFERENCED TO THE VIRGINIA COORDINATE SYSTEM (VCS) 1983 - NORTH AS ESTABLISHED FROM A CURRENT GPS SURVEY.

   B.) THE VERTICAL DATUM SHOWN HEREON IS REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88) GEIOD-12B (GEIOD-18) AS ESTABLISHED FROM A CURRENT GPS SURVEY.
4. NO TITLE REPORT FURNISHED. ALL UNDERLYING TITLE LINES, EASEMENTS, SERVITUDES AND OTHER MATTERS OF TITLE MAY NOT BE SHOWN HEREON.
   THIS DOCUMENT DOES NOT REPRESENT A CURRENT BOUNDARY SURVEY.
5. THE PHYSICAL IMPROVEMENTS AND TOPOGRAPHY SHOWN HEREON ARE BASED UPON A FIELD SURVEY CONDUCTED BY THIS FIRM ON BETWEEN THE DATES OF AUGUST 2 AND AUGUST 4, 2021.
6. NO GEOTECHNICAL, SUBSURFACE, FIELD REVIEWS, RESEARCH, AGENCY OR GOVERNMENTAL RECORD REVIEWS, OR OTHER INVESTIGATIONS HAVE BEEN MADE FOR THE PURPOSE OF LOCATING, OR DETERMINING THE EXISTENCE OF HAZARDOUS MATERIALS, OR OTHER ENVIRONMENTAL CONCERNS ON SITE IN THE PERFORMANCE OF CHRISTOPHER CONSULTANTS, LTD SERVICES FOR THE PROJECT AS SHOWN HEREON.
7. NO CERTIFICATION HAS BEEN MADE AS TO THE LOCATIONS OF UNDERGROUND UTILITIES SUCH AS, BUT NOT LIMITED TO ELECTRIC, GAS, TELEPHONE, CATV, WATER, SANITARY AND STORM SEWERS.
8. DURING THE PROCESS OF OUR PHYSICAL SURVEY NO INDICATIONS OF A CEMETERY WERE FOUND. NO FURTHER INSPECTION OF THIS PROPERTY HAS BEEN MADE FOR POSSIBLE CEMETERIES.
9. STORM AND SANITARY INVERTS, PIPE SIZES AND MATERIALS HAVE BEEN DETERMINED THROUGH THE USE OF A SEWER VIDEO CAMERA OPERATED BY THIS FIRM ON AUGUST 3, 2021.

## FLOOD ZONE NOTE

THE AREA SHOWN HEREON IS LOCATED ON THE FLOOD INSURANCE RATE MAP (FIRM), NO. 5155190029E, WITH AN EFFECTIVE DATE OF JUNE 16, 2011.

BY GRAPHICAL DEPICTION ONLY, THE PROPERTY SHOWN HEREON IS SHOWN IN:

- FLOOD ZONE "X" (OTHER AREAS), AREAS DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN.

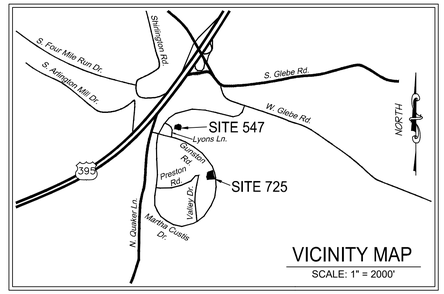
A FIELD SURVEY WAS NOT PERFORMED TO DETERMINE THE FLOOD ZONES LISTED HEREON. AN ELEVATION CERTIFICATE MAY BE NEEDED TO VERIFY THIS DETERMINATION OR APPLY FOR A VARIANCE FROM THE FEDERAL EMERGENCY MANAGEMENT AGENCY.

## UTILITY MARKING NOTES:

1. THE LOCATION OF UTILITIES SHOWN HEREON ARE FROM OBSERVED EVIDENCE OF ABOVE GROUND APPURTENANCES AND SURFACE GROUND MARKINGS.
2. BEFORE DIGGING IN THIS AREA, CALL "MISS UTILITY" 1-800-552-7001 FOR FIELD LOCATIONS (REQUEST FOR GROUND MARKINGS) OF UNDERGROUND UTILITY LINES.
3. MISS UTILITY WAS NOTIFIED TO MARK FOR UNDERGROUND UTILITIES ON JULY 30, 2021 (TICKET #B121100603-00B AND TICKET #B121100616-00B), NO UNDERGROUND UTILITIES WERE FOUND OR LOCATED BY THIS FIRM.
4. NO PLANS OR MAPS WERE PROVIDED BY THE UTILITY COMPANIES LISTED BELOW TO THE SURVEYOR AT THE TIME OF THE SURVEY.

UTILIZING THE FREE MISS UTILITY SERVICE, AS RENDERED FOR THE PREPARATION OF THIS BASE MAP, IS UNDERSTOOD TO NOT REFLECT IN FULL ALL UNDERGROUND UTILITIES AND THAT THOSE LINES MARKED, SURVEYED AND SHOWN HEREON ARE AN APPROXIMATION OF THE ACTUAL UTILITY LOCATION. UTILITIES SHOWN ON THE SURVEY ARE FOR DOCUMENTING AS MANY UTILITY SERVICES ON THE PROPERTY ONLY. THE UNDERGROUND UTILITIES MAPPED ARE NOT INTENDED TO FACILITATE CIVIL ENGINEERING DESIGN.

| UTILITY DESCRIPTION | RESPONSE (MISS UTILITY) | RESPONSE (CHRISTOPHER) |
|---|---|---|
| ALEXANDRIA-TRAFFIC | HAS NOT RESPONDED. | UTILITY MARKS WERE NOT FOUND AND ARE NOT SHOWN HEREON. |
| ALEXANDRIA CITY-SEWER | MARKED UP TO PRIVATELY OWNED UTILITY. | UTILITY MARKS WERE NOT FOUND AND ARE NOT SHOWN HEREON. |
| COMCAST | NO CONFLICT. | UTILITY MARKS WERE NOT FOUND AND ARE NOT SHOWN HEREON. |
| DOMINION ENERGY ELEC. DIST. | HAS NOT RESPONDED FOR SITE 547. MARKED FOR SITE 725. | UTILITY MARKS WERE NOT FOUND AND ARE NOT SHOWN HEREON. |
| PARKFAIRFAX-UTILITIES | MARKED. | UTILITY MARKS WERE NOT FOUND AND ARE NOT SHOWN HEREON. |
| VIRGINIA AMERICAN WATER | NO CONFLICT. | UTILITY MARKS WERE NOT FOUND AND ARE NOT SHOWN HEREON. |
| VERIZON | MARKED. | UTILITY MARKS WERE NOT FOUND AND ARE NOT SHOWN HEREON. |
| WASHINGTON GAS | NO CONFLICT | UTILITY MARKS WERE NOT FOUND AND ARE NOT SHOWN HEREON. |




## LEGEND

Utilities - Storm
- STORM MANHOLE
- STORM DRAIN INLET
- ROOF DRAIN OUTLET

Utilities - Sanitary
- SANITARY CLEAN-OUT

Utilities - Water
- WATER METER
- FIRE HYDRANT

Utilities - Gas
- GAS VALVE

Utilities - Electric
- VAULT
- ELECTRIC BOX

Utilities - Communication
- COMMUNICATION PEDESTAL

Misc. Structures
- 150.0 SPOT ELEVATION
- DECIDUOUS TREE
- DOOR LOCATION

Abbreviations
- EX. EXISTING
- CONC. CONCRETE
- CSW CONCRETE SIDEWALK
- TRANS. TRANSFORMER
- RCP REINFORCED CONCRETE PIPE
- PVC POLYVINYL CHLORIDE PIPE
- TYP. TYPICAL
- FF FINISHED FLOOR

Surfaces
- CONCRETE AREA
- PAVER AREA
- GRAVEL AREA

Linetypes
- INDEX CONTOUR (10')
- INT. CONTOUR (2')
- STORM PIPE

## STORM STRUCTURE DATA

EX. 1000 — RIM EL. = 72.49
INV OUT (12" RCP TO 1010) = 67.69

EX. 1030 — RIM EL. = 70.52
INV OUT (TO 1020) = 69.92

EX. 1020 — RIM EL. = 70.34
INV OUT = 68.84
STRUCTURE FILLED WITH MUD AND DEBRIS, INACCESSIBLE AT TIME OF SURVEY.

EX. 1010 — RIM EL. = 69.73
INV IN (12" RCP FROM 1000) = 64.83
INV IN (6" PVC FROM 1020) = 68.18
INV IN (6" PVC FROM SE) = 67.43
INV IN (4" PVC FROM EAST) = 68.33
INV IN (4" PVC FROM SSW) = 68.63
INV IN (4" PVC FROM SW) = 68.90
INV OUT (15" RCP TO 1040) = 64.73

EX. 1040 — RIM EL. = 65.72
INV IN (15" RCP FROM 1010) = 61.92
INV OUT (15" RCP TO 1050) = 61.82

EX. 1050 — RIM EL. = 67.74
INV IN (15" RCP FROM 1040) = 61.24
INV IN (9" RCP FROM EAST) = 61.34
INV OUT (15" RCP TO WEST) = 61.14

EX. 1100 — RIM EL. = 86.32
INV IN (6" RCP FROM EAST) = 83.52
INV IN (6" RCP FROM SOUTH) = 83.52
INV OUT (10" RCP TO WEST) = 83.47

EX. 301 — RIM EL. = 139.93
INV IN (9" RCP FROM NW) = 133.43
INV OUT (9" RCP TO EAST) = 132.63

EX. 303 — RIM EL. = 150.92
INV OUT (12" RCP FROM EAST) = 146.32
STRUCTURE FILLED WITH MUD AND DEBRIS AT TIME OF SURVEY.

BENCHMARK #1
PK NAIL
N: 6,992,535.2
E: 11,886,493.1
ELEVATION: 54.54

## SURVEYOR'S CERTIFICATION

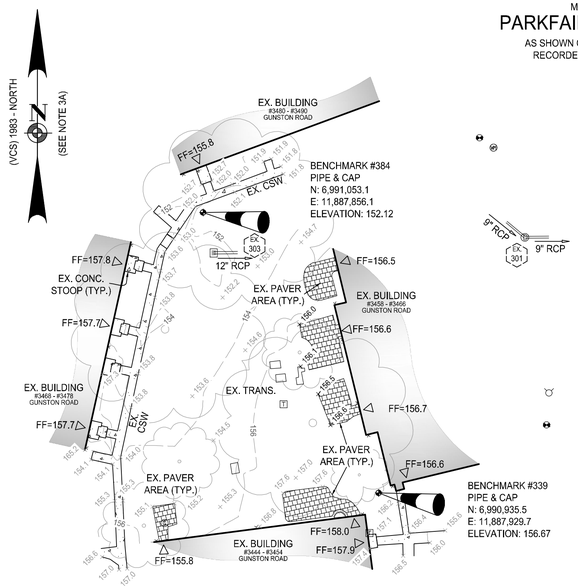
THIS TOPOGRAPHIC SURVEY ON A PORTION OF THE LAND OF PARKFAIRFAX CONDOMINIUM WAS COMPLETED UNDER THE DIRECT AND RESPONSIBLE CHARGE OF WILLIAM E. BRADFORD II, L.S. FROM AN ACTUAL GROUND SURVEY MADE UNDER MY SUPERVISION BETWEEN THE DATES OF AUGUST 2 AND AUGUST 4, 2021 AND THAT THIS PLAT MEETS MINIMUM ACCURACY STANDARDS OF THE COMMONWEALTH OF VIRGINIA UNLESS OTHERWISE NOTED.

GIVEN UNDER THIS 4th DAY OF AUGUST, 2021.

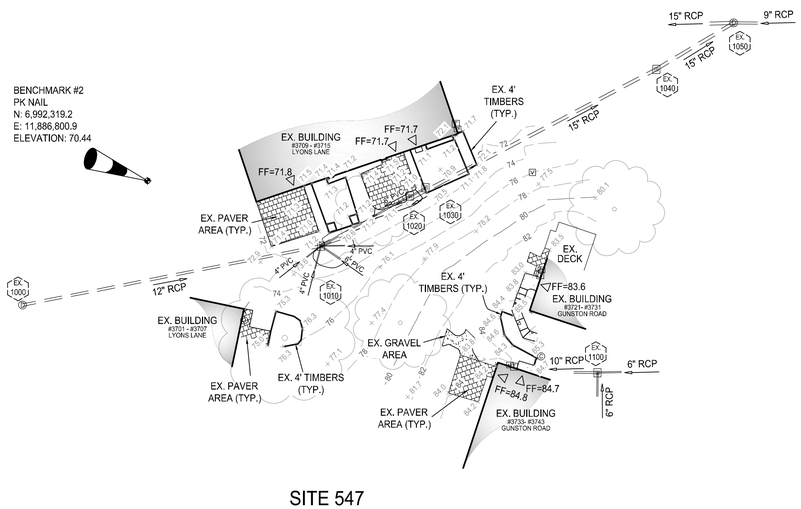
COMMONWEALTH OF VIRGINIA
WILLIAM E. BRADFORD II
Lic. No. 003514
8/4/21
LAND SURVEYOR

WILLIAM E. BRADFORD II
COMMONWEALTH OF VIRGINIA
LICENSED LAND SURVEYOR NO.: 003514

MAP NUMBER: 013.02-0A-00
PARKFAIRFAX CONDOMINIUM
AS SHOWN ON A PLAT ATTACHED TO THE DEED RECORDED IN DEED BOOK 847 AT PAGE 508
ZONED: RB




SITE 725




SITE 547

GRAPHIC SCALE
1" = 30'

| REV# | DATE | REVISION |
|---|---|---|
| | | |
| | | |
| | | |


christopher consultants
9301 innovation dr p 703.393.9887
suite 150
manassas, va 20110
engineering • surveying • land planning


TOPOGRAPHIC SURVEY ON A PORTION OF THE LAND OF

# PARK FAIRFAX CONDOMINIUM

AS SHOWN ON A PLAT RECORDED WITH AND ATTACHED TO THE DEED RECORDED IN DEED BOOK 847 AT PAGE 508

CITY OF ALEXANDRIA, VIRGINIA

PROJECT: 21261.001.00
DRAWING NO.: 110999
SCALE: 1" = 30'
DATE: 8/18/21
DRAWN: ERR / RTC
CHECKED: CGH
SHEET No.
1 of 1

P:\Projects\21261\00100\SURVEYS\Plats\Topo\110999-Topographic Survey.dwg, 8/26/2021 3:42:31 PM, DWG To PDF.pc3

SURVEY OF

# ALEXANDRIA

A, VIRGINIA

CONTOUR INTERVAL 2'

200 300

FEET

MANHOLE
CATCH BASIN
DROP INLET
LIGHT POLE
SIGN
POWER POLE
FIRE HYDRANT
CONTOURS
Index 100
Intermediate
Approximate
Depression
Supplementary 97

LEGEND

BUILDINGS / HOUSES
Ruins
Foundation
ROADS
Primary (paved)
Secondary (unpaved)
RAILROADS
Single Track
Multi Track
SIDEWALKS
FENCES
WALL
TOWERS

BRIDGE
Culverts
GUARD RAIL
TANK, SILO, CHIMNEY,
DRAINAGE
Double Line Drain
Single Line Drain
Swamp
Disappearing Drain
VEGETATION
Orchard
Hedge
Brush
Individual Tree

C-7

P.S.I. 1602

## STORM WATER INLET COMPUTATIONS

| NUMBER | INLET TYPE | LENGTH ft. | DRAINAGE AREA, Ac | C | CA | INTENSITY In./Hr. | Q INCRE. C.F.S. | Q ARRYOV C.F.S. | Qt GUTTERFLOW C.F.S. | S GUTTERSLOPE ft./ft | Sx CROSS SLOPE ft./ft | T SPREAD | W ft. | W/T | Sw ft./ft | Sw/Sx | Eo (Chart 10) | a | Sw' a/(12W) | Se (Sx+SwEo) ft./ft | Lt Length ft. | P Effec. Lt. ft. | L/Lt | d ft. | E (Chart 16) | h ft. | Q Intercepted C.F.S. | d/h | Qb Carry Over C.F.S. | T Spread @ Sag ft. | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (left) | | | 1.31 | 0.66 | 0.87 | 6.2 | 5.37 | | 5.37 | 0.0200 | 0.0200 | 11.61 | 2 | 0.17 | 0.0833 | 4.17 | | 3.52 | 0.1466 | 0.0200 | - | - | - | - | - | - | - | - | - | - | Left |
| 21 | SAG | 4 | | | 1.73 | 6.2 | 10.74 | | 10.74 | | | | 2 | | | | | | | | - | 14.4 | - | 1.26 | - | 0.46 | - | 2.75 | - | 56.63 | |
| (right) | | | 1.31 | 0.66 | 0.87 | 6.2 | 5.37 | | 5.37 | 0.0200 | 0.0200 | 11.61 | 2 | 0.17 | 0.0833 | 4.17 | | 3.52 | 0.1466 | 0.0200 | - | - | - | - | - | - | - | - | - | - | Right |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

## YARD INLET COMPUTATIONS

| NUMBER | INLET | TYPE | A, Ac | C | CA | I, in | Q, cfs | HW, ft | Top Elev, ft | 10 Yr. W.S.E. (ft) | REMARKS | COMMENTS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | |
| 1010 | Grate | 12" RD | 0.62 | 0.61 | 0.38 | 6.2 | 2.33 | 0.63 | 69.73 | 70.36 | 50% clogged* | FIRST FLOOR ELEV=71.7 |
| | | | | | | | | | | | | |
| 1100 | Grate | 12"x12" | 0.22 | 0.62 | 0.14 | 6.2 | 0.85 | 0.40 | 86.32 | 86.72 | 50% clogged* | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |

## STORM SEWER DESIGN COMPUTATIONS

| STRUCTURE From | STRUCTURE To | DRAINAGE AREA (ACRES) "A" | RUN-OFF COEF. "C" | "CA" Increment | "CA" Accumulated | INLET TIME Min. | RAIN FALL In./Hr. | RUNOFF "Q" C.F.S. | INVERT ELEVATIONS Upper End | INVERT ELEVATIONS Lower End | LENGTH (ft) | SLOPE (ft/ft) | MANNING'S "n" VALUE | DIAMETER IN | CAPACITY C.F.S. | VELOCITY F.P.S. | FLOW TIME Seconds | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | | | | |
| 1000 | 1010 | 0.24 | 0.90 | 0.213 | 0.213 | 5 | 9.00 | 1.92 | 67.69 | 64.83 | 127.70 | 0.0224 | 0.013 | 12 | 5.32 | 6.11 | 20.89 | |
| 1010 | 1040 | 0.62 | 0.61 | 0.376 | 0.727 | 5 | 9.00 | 6.54 | 64.73 | 61.92 | 159.10 | 0.0177 | 0.013 | 15 | 8.57 | 7.65 | 20.81 | |
| | | | | | | | | | | | | | | | | | | |
| 1100 | 1010 | 0.22 | 0.62 | 0.138 | 0.138 | 5 | 9.00 | 1.24 | 83.47 | unknown | unknown | 0.0100 | 0.013 | 10 | 2.19 | 4.07 | | Assumed Length &Slope |
| | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | |
| 21 | 20 | 2.62 | 0.66 | 1.733 | 1.733 | 5 | 9.00 | 15.60 | unknown | unknown | unknown | 0.0100 | 0.013 | 18 | 10.50 | 5.94 | | Assumed Length &Slope |
| | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | |

BENCHMARK #2
PK NAIL
N: 6,992,319.2
E: 11,886,800.9
ELEVATION: 70.44

2' MAX HGT, ~120' LONG RET WALL
(LIVING WALL)
-BOTTOM GRADE TO MATCH EXISTING
-TOP GRADE 2' MAX HIGHER TO
ALLOW FOR DRAINAGE SWALE TO
DIVERT WATER TO LYONS LANE

Owner's Association to
provide notice to property
owner

Owner's Association to
TV storm lines

GRADE TO PROVIDE
POSITIVE DRAINAGE
AWAY FROM UNITS
AND TO LYONS LANE

EX. BUILDING
#3709 - #3715
LYONS LANE

EX. 4'
TIMBERS
(TYP.)

15" RCP

FF=71.7
FF=71.7
FF=71.8

20.0 ft

6" PVC

EX. PAVER
AREA (TYP.)

EX.
1020

EX.
1030

4" PVC
6" PVC
4" PVC
4" PVC

EX.
1000

12" RCP

1010

EX. BUILDING
#3701 - #3707
LYONS LANE

EX. PAVER
AREA (TYP.)

EX. 4' TIMBERS
(TYP.)

EX. GRAVEL
AREA

EX. 4'
TIMBERS (TYP.)

EX.
DECK

FF=83.6

EX. BUILDING
#3721- #3731
GUNSTON ROAD

10" RCP

EX.
1100

6" RCP

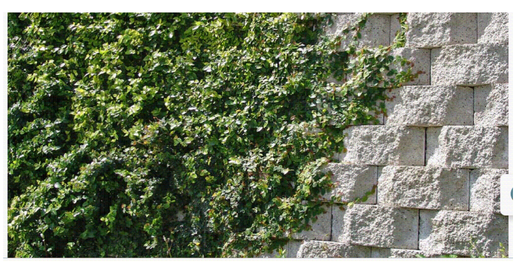
FF=84.8
FF=84.7

EX. PAVER
AREA (TYP.)

EX. BUILDING
#3733- #3743
GUNSTON ROAD

VIRGINIA STATE GRID NORTH
NAD 83

VERSA–GREEN PLANTABLE RETAINING WALL



KEYSTONE STANDARD BLOCK PLANTABLE WALL

# SITE 547

10 5 0 10 20
HORIZONTAL GRAPHIC SCALE
1" = 10'

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9900 main st
suite 400
fairfax, va 22031
p 703.273.6820
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PARK FAIRFAX
BUILDING 547
ALEXANDRIA, VA

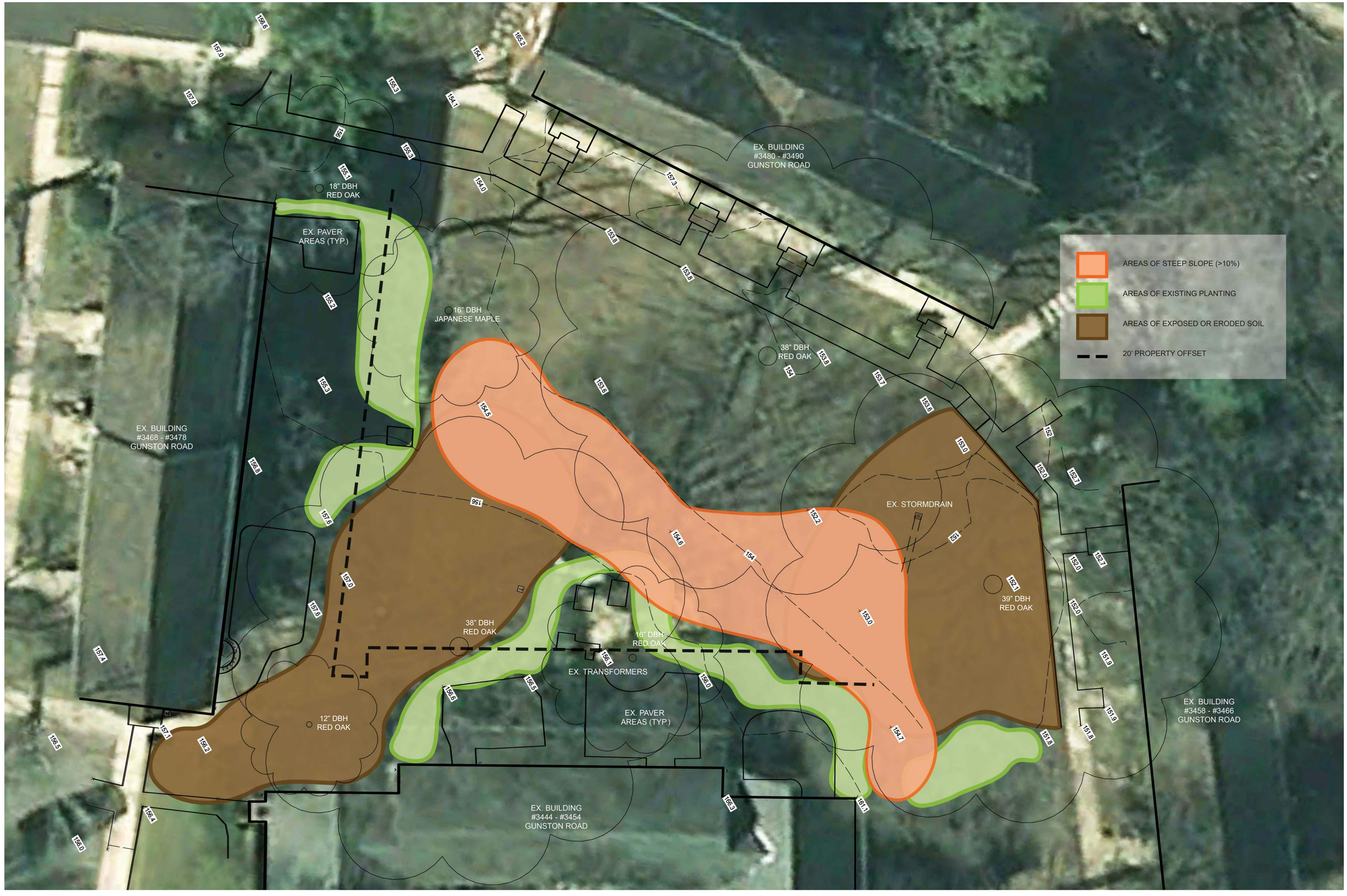
| MARK | DATE | DESCRIPTION |
|---|---|---|

PROJECT No.: 21261.001.00
DRAWING No.: 111026
DATE: 9/17/2021
SCALE: 1" = 10'
DESIGN: AJG
DRAWN: AJG
CHECKED:

SHEET TITLE:

CONCEPTUAL
GRADING EXHIBIT

SHEET No.
C-100

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# EXISTING CONDITIONS + ANALYSIS

Park Fairfax Site 725

Alexandria, VA

8' 4' 0' 8' 16'

SCALE: 1/8" = 1'-0"

Notes:

1. This conceptual rendering is for illustrative purposes only.
2. Proposed structure dimensions, orientation, and location were determined by others.
3. Imagery obtained from Google Maps.

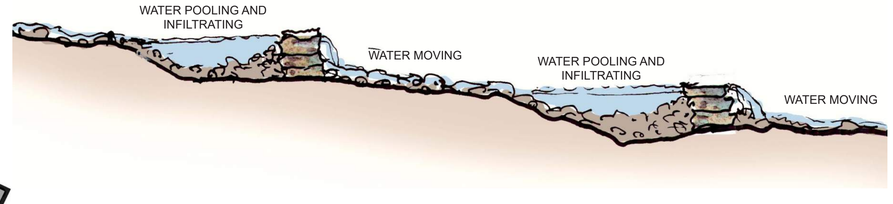
Date: 09/20/2021

Drawn/Checked: TR/CM

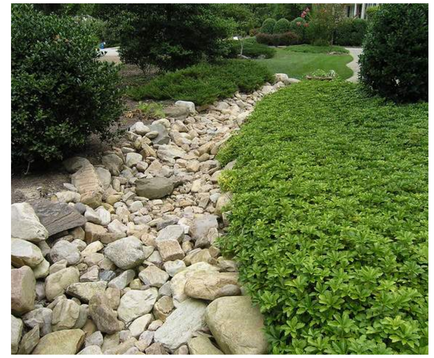
Project #: 21261.001.00

Drawing #: 111026

C-E


**Check Dam**
Check dams are a way of slowing down water and giving it a chance to infiltrate as it goes along a dry stream or swale. Stacked stones or a concrete weir is placed at a point to allow water to pool and infiltrate into the soil before it overflows into the next section of the dry stream. This finely grained system of infiltration areas greatly reduces the amount of runoff and eventual impact on the end drain.



**Dry Stream**
A dry stream gives stormwater an erosion-free path to move through the site. A swale is cut into the ground and lined with landscape fabric to protect the underlying soil and then stones. This serves as both an effective erosion control measure and a beautiful year round centerpiece.

**Raised Stepping Stones**
Raised stepping stones create low impact paths across dry streams or planted areas. One of the main causes of empty, erodible ground on this site is the informal pedestrian pathways that crisscross the site and stamp down plant growth. By giving a bit of direction to how residents should move through the site, we can reduce the amount of eroded ground while creating a more curated and intentional experience of moving through this space.

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# CONCEPT OPTION A

Park Fairfax Site 725

Alexandria, VA

8' 4' 0' 8' 16'
SCALE: 1/8" = 1'-0"

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Drawing #: 111026

C-A


**Mulching**
A simple and essential intervention to make across this site is mulching over areas where tree roots are exposed. Not only does this get rid of the existing tripping hazard, it re-stabilizes the soil, begins to add back nutrients lost through erosion, and slows erosion in a way that does no harm to the tree. If shrubs and groundcovers are planted into the mulch, that does even more to stabilize the soil and prevent erosion.

**Rain Garden**
Turning the existing drain into a rain garden will solve the problem of sediment building up around and clogging the drain. Surrounding the drain, at a lower elevation, will be a rain garden basin that collects rainwater and allows it to be taken up by plants or filtered into the groundwater, allowing sediments time to settle out. In this plan, the drain turns from the main conveyance of water to simply an overflow once the rain garden is unable to hold all the water in a storm event.


**Stone Feature Steps**
Adding steps at some of the areas with steeper grade changes smooths out the problematic topography by doubling as a retaining wall, creating a band of protection against erosion. In addition, it creates informal seating on the site and the feel of a natural amphitheater between the steps and the lawn below. Unlike wooden steps and retaining walls already used around the property, stone will be a more eternal solution, and they are reusable is repositioning becomes necessary

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# CONCEPT OPTION B

Park Fairfax Site 725
Alexandria, VA

8' 4' 0' 8' 16'
SCALE: 1/8" = 1'-0"

Notes:
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Date: 09/20/2021
Drawn/Checked: TR/CM
Project #: 21261.001.00
Drawing #: 111026

C-B


**Grass Filter Strip**
As stormwater moves through grass, especially long grass, it slows down and sediment is filtered out. Putting swaths of Pennsylvania Sedge, a shade tolerant ornamental grass, throughout this site would quickly stabilize the soil, absorb runoff and sediment, and create a peaceful river of flowing grass fronds.

**Rain Barrels**
Another solution for controlling runoff on site is using rain barrels to hold water from storm events. This could be implemented through a new HOA requirement that if homeowners increase the impervious surface in their outdoor spaces by more than 20' feet, the HOA will require the homeowner to put in a rain barrel to mitigate for the permeable surface lost.

**Shade Perennials**
Planting hardy shade perennials along the slopes is by far the best long term solution for preventing erosion and tree root exposure. Plants can be selected for their ability to spread quickly and have fibrous root systems that hold soil in place. Additionally, it makes for a better ecological and aesthetic habitat.

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# CONCEPT OPTION C

Park Fairfax Site 725
Alexandria, VA

8' 4' 0' 8' 16'
SCALE: 1/8" = 1'-0"

Notes:
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3. Imagery obtained from Google Maps.

Date: 09/20/2021
Drawn/Checked: TR/CM
Project #: 21261.001.00
Drawing #: 111026

C-C