



Buffer Yard & Screening (Section 12.8)			
Buffer Yard Location:	A-B	Modification Notes	
Applies:	No		
Modification Requested:	No		
Buffer and Screen Type (Section 12.8.3 Matrix):			
Proposed Land Use:	CD		
Existing Adjacent Land Use:	CD		
Required Total Buffer Width:	0'		
Adjacent Property Developed?			
If Yes, Existing Buffer Width:			
Required Minimum Buffer Width On Applicants Property:	0'		
Total Buffer Length:	0'		
Buffer Length Supported by Tree Save:	0'		
Net Buffer Length Required:	0'		
Total Area of Buffer Yard:	0 SF		
Required Screen:			
Screening Alternatives (Section 12.8.6):			

Landscaping	Frequency	Required	Provided
Large Canopy Tree	N/A	N/A	0
Medium Canopy Tree	N/A	N/A	0
Understory Tree	N/A	N/A	0
Evergreen Tree	N/A	N/A	0
Shrubs	N/A	N/A	0
Preservation of Existing Trees in Lieu of Landscaping	N/A	N/A	0

Buffer Yard Location: D-E			
Applies:	Yes	A modification has been requested to reduce the number of plantings as shown on this plan and identified in the "Provided" column below.	
Modification Requested:	Yes		
Buffer and Screen Type (Section 12.8.3 Matrix):			
Proposed Land Use:	Rb		
Existing Adjacent Land Use:	Rc		
Required Total Buffer Width:	25'		
Adjacent Property Developed?	Yes		
If Yes, Existing Buffer Width:	0'		
Required Minimum Buffer Width On Applicants Property:	25'		
Total Buffer Length:	1010'		
Buffer Length Supported by Tree Save:	320'		
Net Buffer Length Required:	690'		
Total Area of Buffer Yard:	17,250 SF		
Required Screen:	53		
Screening Alternatives (Section 12.8.6):	53A		

Landscaping	Frequency	Required	Provided
Large Canopy Tree	1/1000 SF	18	0
Medium Canopy Tree	1/1000 SF	18	18
Understory Tree	1/500 SF	35	0
Evergreen Tree	1/500 SF	35	0
Shrubs	1/100 SF	173	173
Preservation of Existing Trees in Lieu of Landscaping	N/A	N/A	20,068 SF

Buffer Yard Location: G-H			
Applies:	No		
Modification Requested:	No		
Buffer and Screen Type (Section 12.8.3 Matrix):			
Proposed Land Use:	CD		
Existing Adjacent Land Use:	CD		
Required Total Buffer Width:	0'		
Adjacent Property Developed?	No		
If Yes, Existing Buffer Width:	0'		
Required Minimum Buffer Width On Applicants Property:	0'		
Total Buffer Length:	0'		
Buffer Length Supported by Tree Save:	0'		
Net Buffer Length Required:	0'		
Total Area of Buffer Yard:	0 SF		
Required Screen:	0 SF		
Screening Alternatives (Section 12.8.6):			

Landscaping	Frequency	Required	Provided
Large Canopy Tree	N/A	N/A	0
Medium Canopy Tree	N/A	N/A	0
Understory Tree	N/A	N/A	0
Evergreen Tree	N/A	N/A	0
Shrubs	N/A	N/A	0
Preservation of Existing Trees in Lieu of Landscaping	N/A	N/A	0

Parking Buffer Per Sec. 7.10.5.D.1.a	
Required Width:	5' in width when abutting a side or rear lot line
Planting Required:	1 Canopy or Understory tree per 35' and 1 shrub every 4' of shared property line
Total length of shared lot line:	1500'
Required Canopy or Understory Tree:	43
Required Shrubs:	375
Proposed Canopy or Understory Tree:	43
Proposed Shrubs:	375

LANDSCAPE NOTES

- PROPOSED BUFFER PLANTINGS SHALL BE IN ACCORDANCE WITH ZO SECTION 7.10.5.D.2 OR AS MODIFIED AS PART OF THIS APPLICATION.
- PLANTING OF PROPOSED STREET TREES (PUBLIC & PRIVATE STREETS) WILL BE CONDUCTED UNDER THE SUPERVISION OF A CERTIFIED ARBORIST TO ENSURE PROPER PLANTING MATERIALS AND TECHNIQUE ARE USED AND ENSURE SURVIVABILITY OF TREES.
- UNDERSTORY TREES LOCATED ADJACENT TO EXISTING OVERHEAD POWER LINES SHALL REMAIN IN GENERAL PROXIMITY TO THE LOCATIONS DEPICTED ON THIS SHEET.
- BIORETENTION PLANTINGS ARE CONCEPTUAL AND NOT COUNTED TOWARD CANOPY COVERAGE ABOVE. BIORETENTION PLANTINGS SHALL BE SPECIFIED AT SITE PLAN PER THE VIRGINIA STORMWATER MANAGEMENT HANDBOOK.

(SEC. 12.3) TWENTY-YEAR TREE CANOPY REQUIREMENTS:
 SITE AREA: 2,323,327 SF
 TOTAL REQUIRED 20-YEAR ON-SITE CANOPY COVERAGE: 232,333 SF (10%)

PROVIDED CANOPY:		
LARGE CANOPY TREES:	144 TREES X 260 SF=	37,440 SF
MEDIUM CANOPY TREES:	448 TREES X 185 SF=	82,880 SF
UNDERSTORY TREES:	151 TREES X 110 SF=	16,610 SF
EVERGREEN TREES:	239 TREES X 175 SF=	41,825 SF
PROPOSED SITE CANOPY:	980 TREES	178,755 SF

ADDITIONAL TREE SAVE AREA: 24,773 SF
 TOTAL PROVIDED 20-YEAR CANOPY COVERAGE: 203,528 SF (8%)

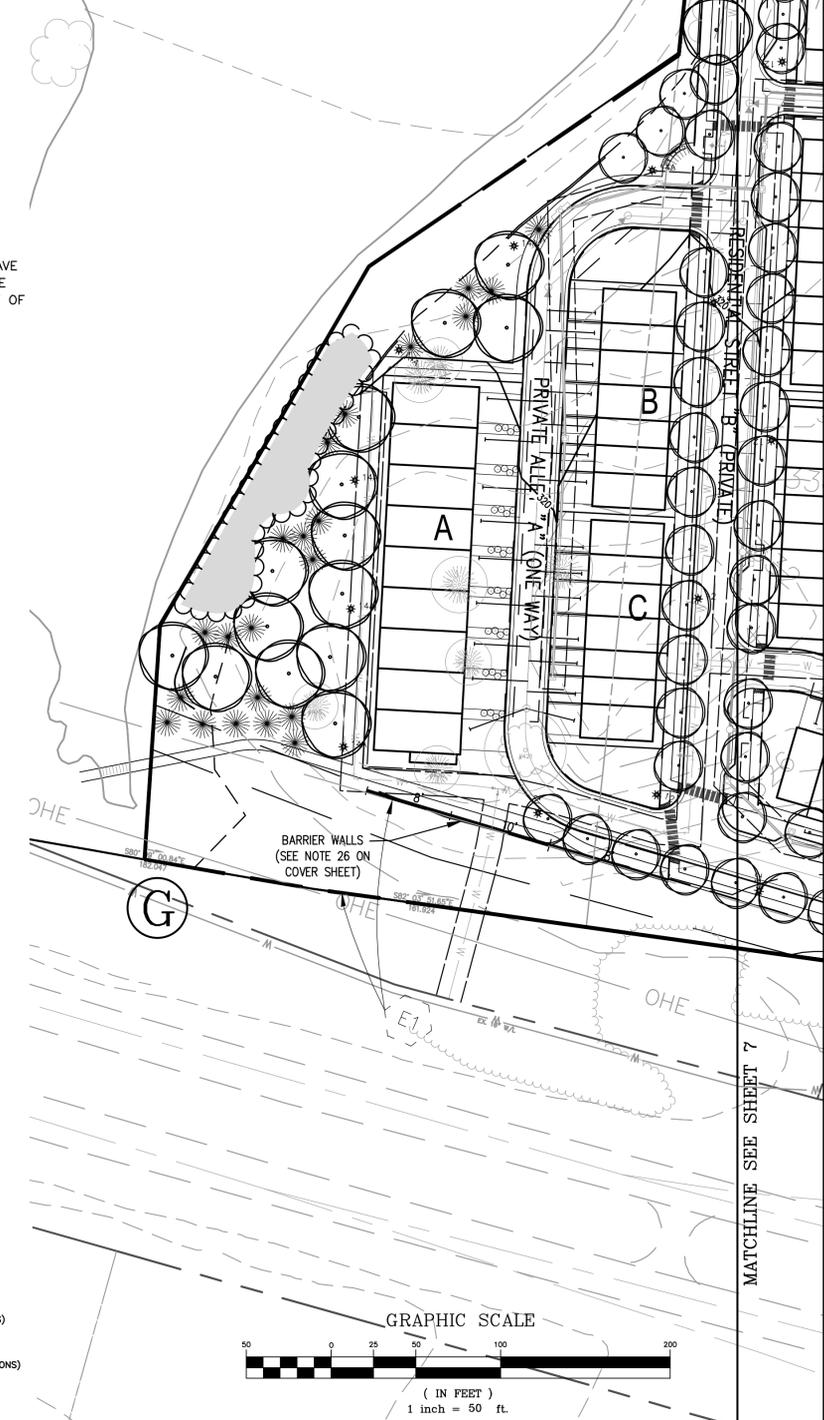
AT THE TIME OF SITE PLAN THE APPLICANT WILL TRY TO PRESERVE ADDITIONAL TREE SAVE WITHIN THE FLOODPLAIN. IF THE 10% TREE CANOPY CAN NOT BE MET AT THAT TIME THE APPLICANT WILL CONTRIBUTE TO THE TOWN OF LEESBURG TREE FUND FOR THE AMOUNT OF CANOPY THE PROJECT REMAINS DEFICIENT IN ACCORDANCE WITH TL20 12.3.1.E & F.

(SEC. 12.4) STREET TREES:

STREET	FRONTAGE LENGTH*	REQUIREMENT (1 TREE/40' FRONTAGE)
DAVIS AVENUE EXT.:	1,870' (X2 SIDES)	93 STREET TREES (EXCLUDES CREEK CROSSING)
DAVIS COURT:	550' (X2 SIDES)	28 STREET TREES
GATEWAY DRIVE EXT.:	380' (X2 SIDES)	19 STREET TREES
FIRST STREET EXT.:	300' (X2 SIDES)	15 STREET TREES
PRIVATE STREETS (INTERNAL):	2,860' (X2 SIDES)	143 STREET TREES
TOTAL REQUIRED:	5,720' (X2 SIDES)	298 STREET TREES

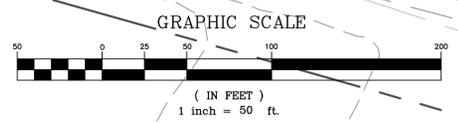
TOTAL STREET TREES PROVIDED: 318 STREET TREES
 * LENGTH EXCLUDES INTERSECTIONS

NOTE:
 TREE SAVE AREAS SHOWN ON MASS GRADING PLAN TLPF-2009-0020 SHALL MATCH THE TREE SAVE AREAS SHOWN HEREON.



LEGEND

- PROPOSED LARGE CANOPY TREE
- PROPOSED MEDIUM CANOPY TREE
- PROPOSED UNDERSTORY TREE
- PROPOSED EVERGREEN TREE
- PROPOSED SHRUBS
- PROPOSED TREE SAVE (COUNTED FOR CANOPY TABULATIONS)
- PROPOSED TREE SAVE WITHIN GREENWAY ROW RESERVATION (NOT COUNTED IN CANOPY TABULATIONS)



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CONCEPTUAL LANDSCAPE PLAN
 CRESCENT PARKE
 ZONING MAP AMENDMENT

TOWN OF LEESBURG
 LOUDOUN COUNTY, VIRGINIA

SHEET 8 OF 37

PLAN STATUS

DATE	DESCRIPTION
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34/28/2016	TC SUBMISSION
07/01/2016	TC SUBMISSION
07/07/2016	TC SUBMISSION

BBR DESIGN	CIM DRAWN	CMM CHKD
	H: AS NOTED	V:

JOB No. 2616-06-001
 DATE DEC. 23, 2013
 FILE No. 2616-D-ZP-001

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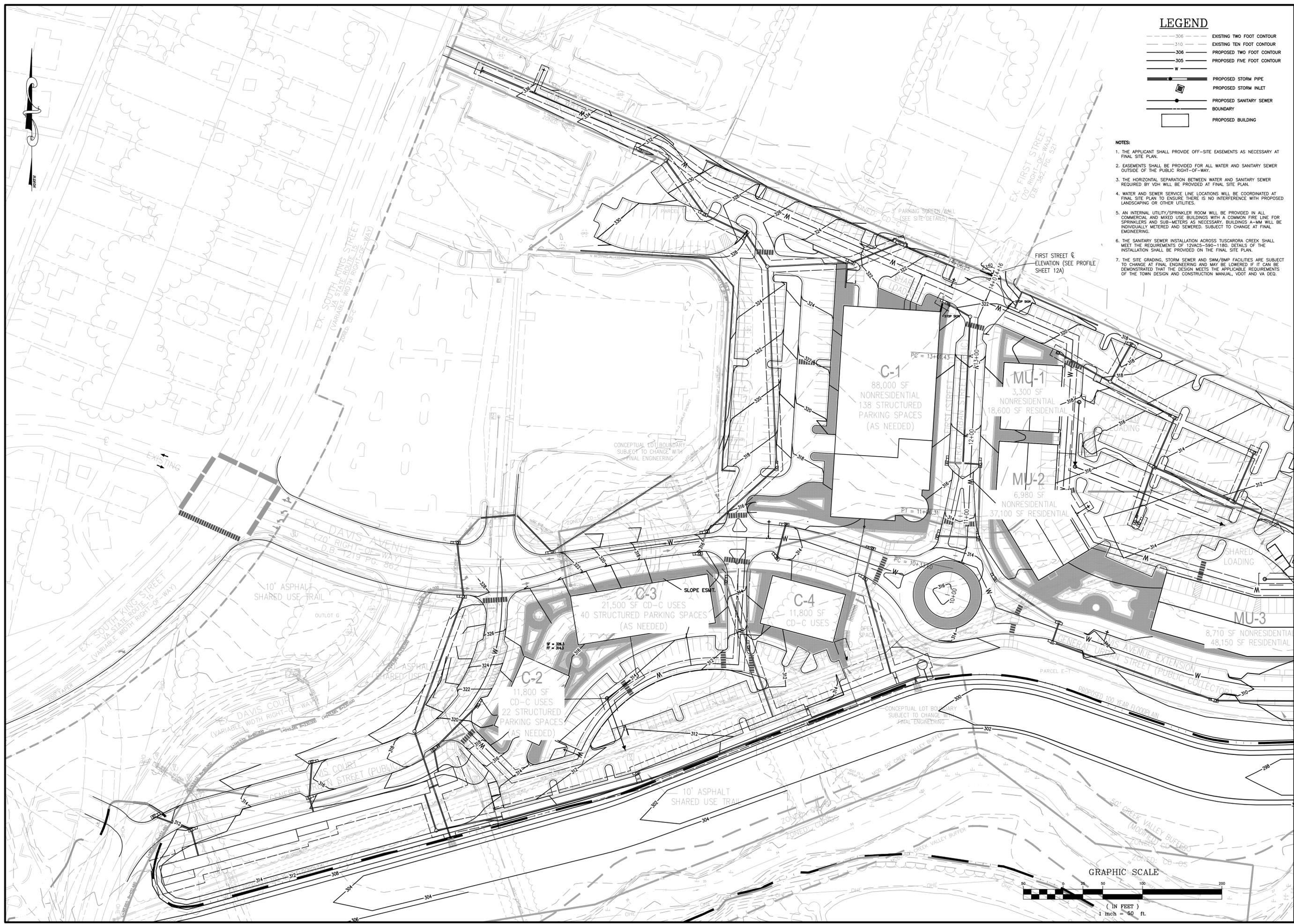


LEGEND

- EXISTING TWO FOOT CONTOUR
- EXISTING TEN FOOT CONTOUR
- PROPOSED TWO FOOT CONTOUR
- PROPOSED FIVE FOOT CONTOUR
- PROPOSED STORM PIPE
- PROPOSED STORM INLET
- PROPOSED SANITARY SEWER BOUNDARY
- PROPOSED BUILDING

NOTES:

1. THE APPLICANT SHALL PROVIDE OFF-SITE EASEMENTS AS NECESSARY AT FINAL SITE PLAN.
2. EASEMENTS SHALL BE PROVIDED FOR ALL WATER AND SANITARY SEWER OUTSIDE OF THE PUBLIC RIGHT-OF-WAY.
3. THE HORIZONTAL SEPARATION BETWEEN WATER AND SANITARY SEWER REQUIRED BY VDH WILL BE PROVIDED AT FINAL SITE PLAN.
4. WATER AND SEWER SERVICE LINE LOCATIONS WILL BE COORDINATED AT FINAL SITE PLAN TO ENSURE THERE IS NO INTERFERENCE WITH PROPOSED LANDSCAPING OR OTHER UTILITIES.
5. AN INTERNAL UTILITY/SPRINKLER ROOM WILL BE PROVIDED IN ALL COMMERCIAL AND MIXED USE BUILDINGS WITH A COMMON FIRE LINE FOR SPRINKLERS AND SUB-METERS AS NECESSARY. BUILDINGS A-MM WILL BE INDIVIDUALLY METERED AND SEWERED. SUBJECT TO CHANGE AT FINAL ENGINEERING.
6. THE SANITARY SEWER INSTALLATION ACROSS TUSCARORA CREEK SHALL MEET THE REQUIREMENTS OF 12VAC5-990-1180. DETAILS OF THE INSTALLATION SHALL BE PROVIDED ON THE FINAL SITE PLAN.
7. THE SITE GRADING, STORM SEWER AND SWM/BMP FACILITIES ARE SUBJECT TO CHANGE AT FINAL ENGINEERING AND MAY BE LOWERED IF IT CAN BE DEMONSTRATED THAT THE DESIGN MEETS THE APPLICABLE REQUIREMENTS OF THE TOWN DESIGN AND CONSTRUCTION MANUAL, VDOT AND VA DEQ.



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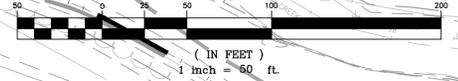
CONCEPTUAL GRADING & UTILITY PLAN
CRESCENT PARKE
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TOWN OF LEESBURG LOUDOUN COUNTY, VIRGINIA

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GRAPHIC SCALE



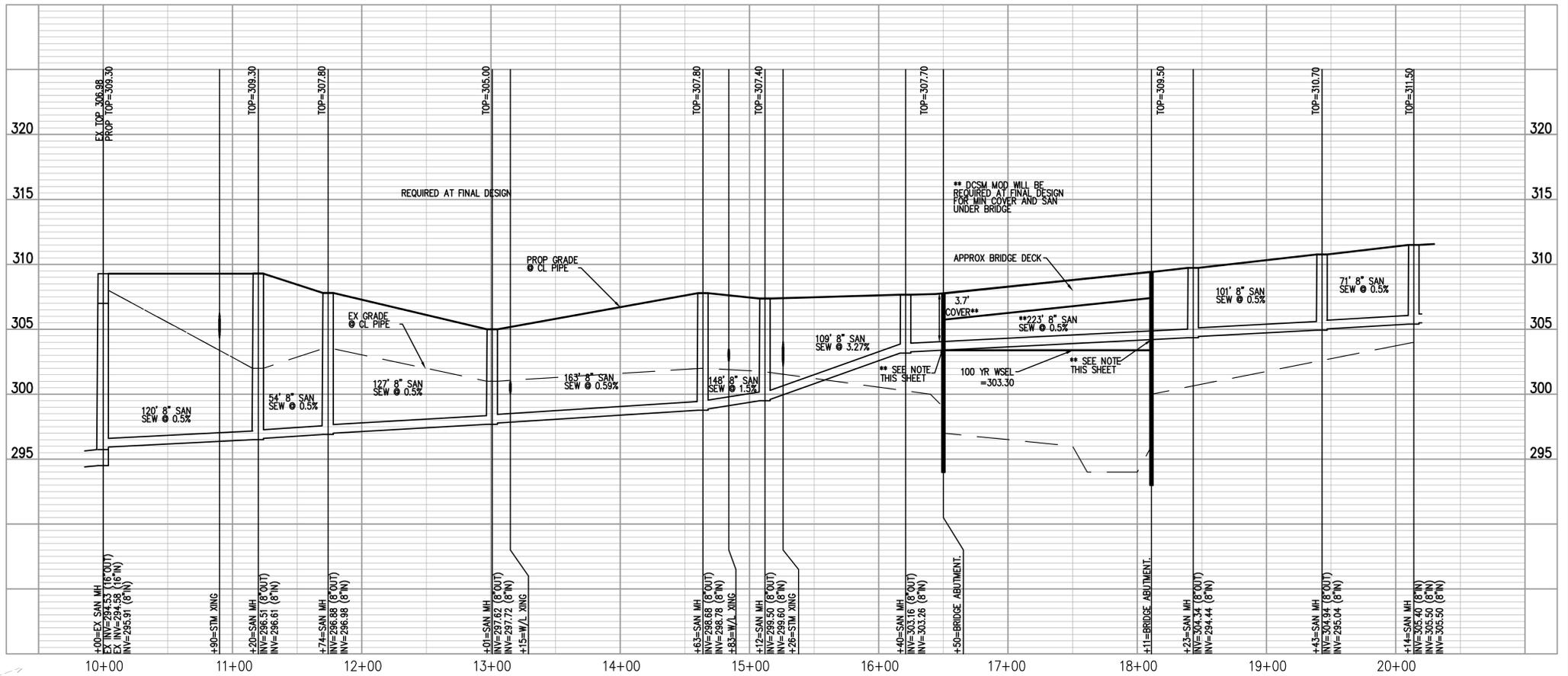


LEGEND

- 306 --- EXISTING TWO FOOT CONTOUR
- 310 --- EXISTING TEN FOOT CONTOUR
- 306 --- PROPOSED TWO FOOT CONTOUR
- 305 --- PROPOSED FIVE FOOT CONTOUR
- W ---
- PROPOSED STORM PIPE
- PROPOSED STORM INLET
- PROPOSED SANITARY SEWER BOUNDARY
- PROPOSED BUILDING
- OLR --- OVERLAND RELIEF

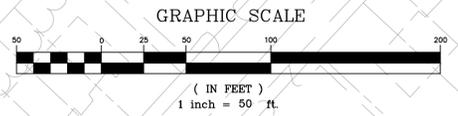
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SANITARY PROFILE AROUND FLOODPLAIN

HORIZONTAL SCALE: 1"=50'
VERTICAL SCALE: 1"=5'



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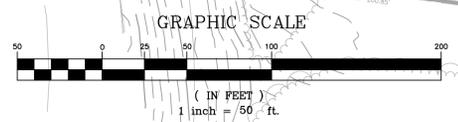
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CONCEPTUAL GRADING & UTILITY PLAN
CRESCENT PARKE
ZONING MAP AMENDMENT

TOWN OF LEESBURG
LOUDOUN COUNTY, VIRGINIA

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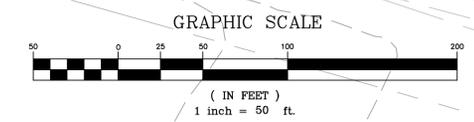




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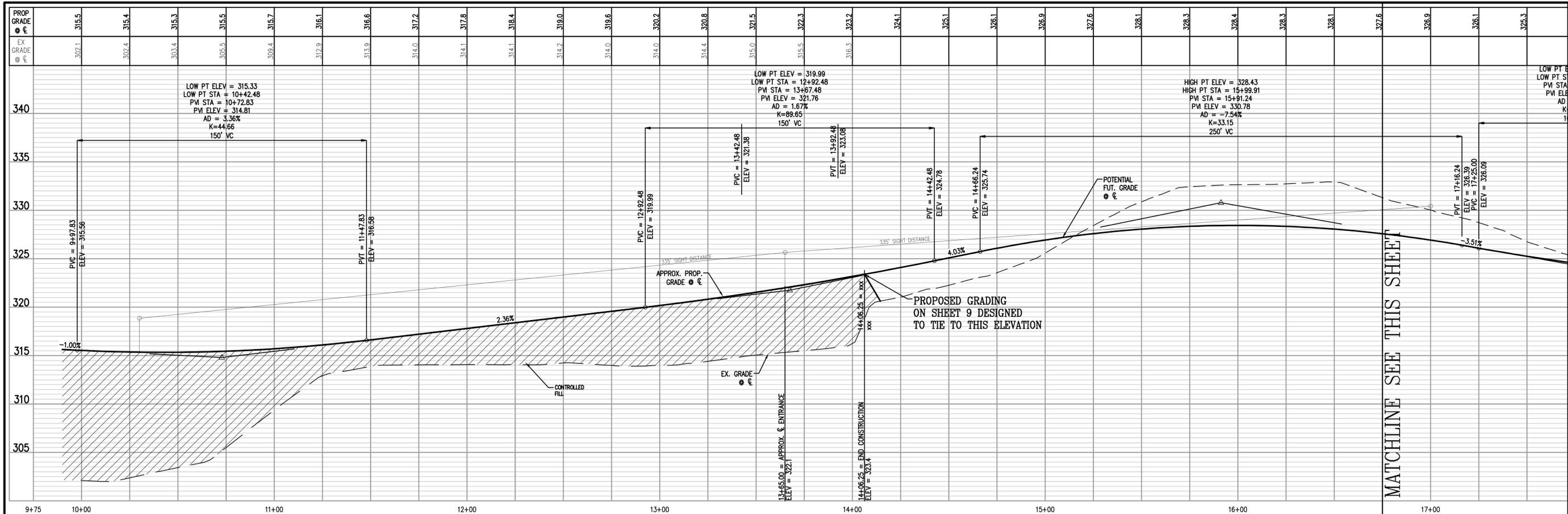
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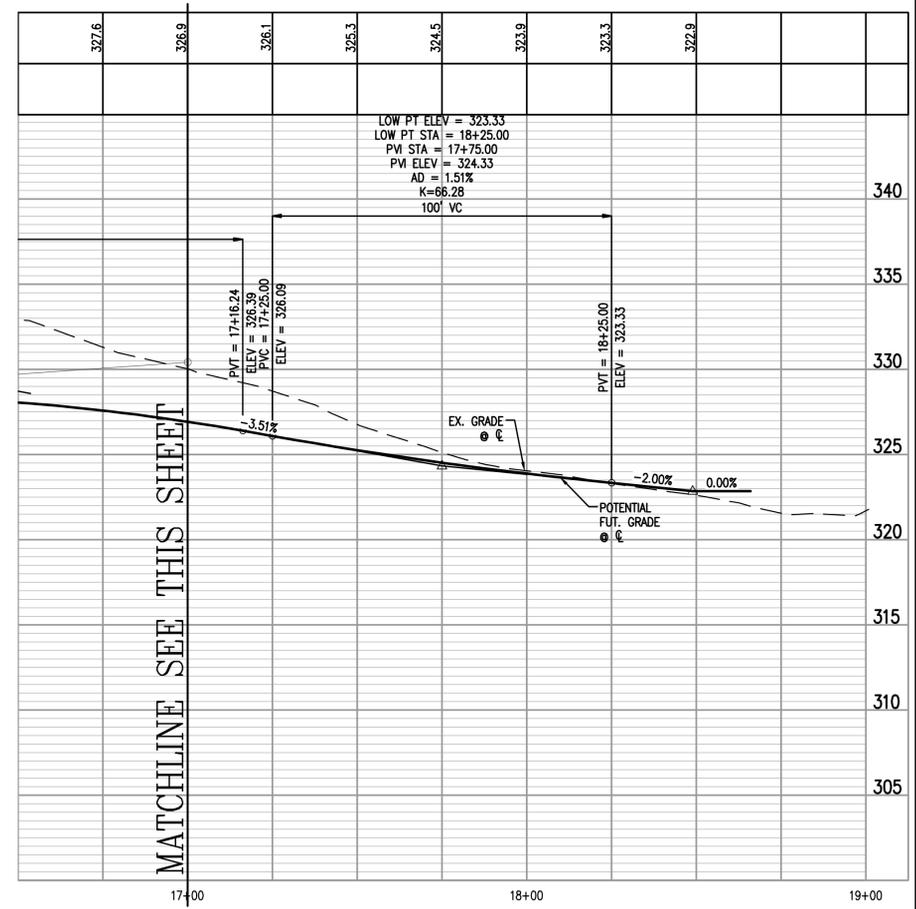
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FIRST STREET ROAD PROFILE
 DESIGN SPEED = 30 MPH
 SCALE: H: 1"=25'; V: 1"=5'

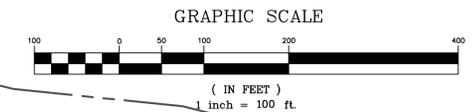


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EXISTING SANITARY SEWER AS-BUILT
CRESCENT PARKE
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 TOWN OF LEESBURG LOUDOUN COUNTY, VIRGINIA

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3/4/2015	PER TOWN COMMENTS
3/8/2015	PER TOWN COMMENTS
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STORMWATER QUANTITY CONTROL NARRATIVE
 THE SITE HAS ONE OUTFALL POINT, TUSCARORA CREEK. THE DRAINAGE AREA WAS ANALYZED TO DETERMINE THE FLOOD AND CHANNEL PROTECTION FLOWRATES.

OUTFALL 1
 OUTFALL 1 IS LOCATED NEAR THE EASTERN CORNER OF THE SITE IN TUSCARORA CREEK. THE SITE WILL HONOR THE EXISTING DRAINAGE PATTERNS AND CONTINUE TO CONTRIBUTE 53.24 ACRES. FOUR (4) UNDERGROUND DETENTION FACILITIES ARE PROPOSED WITH THE DEVELOPMENT AND WILL PROVIDE ADDITIONAL DETENTION AS NECESSARY TO ENSURE THAT ADEQUATE OUTFALL CAN BE OBTAINED. THE FOUR (4) FACILITIES WILL PROVIDE AN APPROXIMATE VOLUME OF 5.93 AC-FT. NO WATER QUALITY CREDIT WILL BE TAKEN FOR THESE FACILITIES. THE UNDERGROUND FACILITIES HAVE BEEN PRELIMINARILY SIZED TO PROVIDE 1, 2, 10, 25 AND 100 YEAR DETENTION. THE OUTFALL INVERT OF THE UNDERGROUND DETENTION FACILITIES FOR THE PURPOSES OF THIS PRELIMINARY DESIGN WERE SET AT THE 100 YEAR FLOODPLAIN ELEVATION OF TUSCARORA CREEK.

CHANNEL PROTECTION (EROSION)
 THE STORMWATER FLOW WILL DISCHARGE FROM THE SITE IN THE CONCENTRATED CONDITION INTO A NATURAL CHANNEL WITHIN THE 100 YEAR MAJOR FLOODPLAIN. THE PEAK FLOW FOR THE 2 YEAR 24 HOUR STORM CAN BE CONVEYED WITHIN THE SYSTEM FROM THE POINT OF DISCHARGE TO THE LIMITS OF ANALYSIS WITHOUT CAUSING EROSION. THEREFORE THE MAX PEAK FLOW RATE FOR THE 1 YEAR 24 HOUR STORM WAS CALCULATED USING THE STATE ENERGY BALANCE EQUATION TO BE 25.16 CFS.

$Q_{DEV} < 0.8 \times (Q_{FOREST} \times R_{VFOREST}) / R_{VDEV}$
 $Q_{DEV} < 0.8 \times (51.33 \times 2.985) / (4.872)$
 $Q_{DEV} < 25.16 \text{ CFS}$

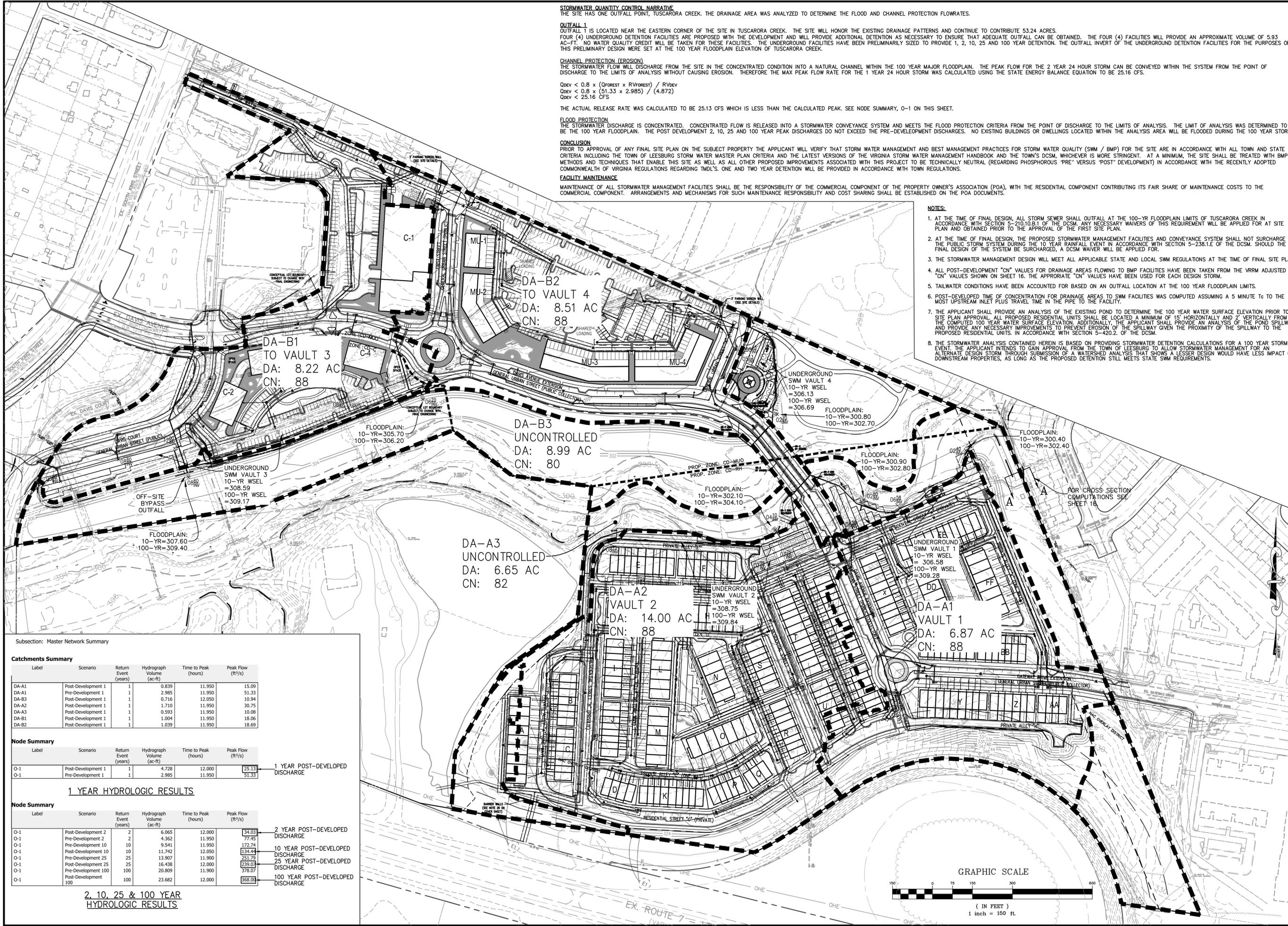
THE ACTUAL RELEASE RATE WAS CALCULATED TO BE 25.13 CFS WHICH IS LESS THAN THE CALCULATED PEAK. SEE NODE SUMMARY, O-1 ON THIS SHEET.

FLOOD PROTECTION
 THE STORMWATER DISCHARGE IS CONCENTRATED. CONCENTRATED FLOW IS RELEASED INTO A STORMWATER CONVEYANCE SYSTEM AND MEETS THE FLOOD PROTECTION CRITERIA FROM THE POINT OF DISCHARGE TO THE LIMITS OF ANALYSIS. THE LIMIT OF ANALYSIS WAS DETERMINED TO BE THE 100 YEAR FLOODPLAIN. THE POST DEVELOPMENT 2, 10, 25 AND 100 YEAR PEAK DISCHARGES DO NOT EXCEED THE PRE-DEVELOPMENT DISCHARGES. NO EXISTING BUILDINGS OR DWELLINGS LOCATED WITHIN THE ANALYSIS AREA WILL BE FLOODED DURING THE 100 YEAR STORM.

CONCLUSION
 PRIOR TO APPROVAL OF ANY FINAL SITE PLAN ON THE SUBJECT PROPERTY THE APPLICANT WILL VERIFY THAT STORM WATER MANAGEMENT AND BEST MANAGEMENT PRACTICES FOR STORM WATER QUALITY (SWM / BMP) FOR THE SITE ARE IN ACCORDANCE WITH ALL TOWN AND STATE CRITERIA INCLUDING THE TOWN OF LEESBURG STORM WATER MASTER PLAN CRITERIA AND THE LATEST VERSIONS OF THE VIRGINIA STORM WATER MANAGEMENT HANDBOOK AND THE TOWN'S DCSM, WHICHEVER IS MORE STRINGENT. AT A MINIMUM, THE SITE SHALL BE TREATED WITH BMP METHODS AND TECHNIQUES THAT ENABLE THIS SITE AS WELL AS ALL OTHER PROPOSED IMPROVEMENTS ASSOCIATED WITH THIS PROJECT TO BE TECHNICALLY NEUTRAL (REGARDING PHOSPHOROUS "PRE" VERSUS "POST" DEVELOPMENT) IN ACCORDANCE WITH THE RECENTLY ADOPTED COMMONWEALTH OF VIRGINIA REGULATIONS REGARDING TMDL'S. ONE AND TWO YEAR DETENTION WILL BE PROVIDED IN ACCORDANCE WITH TOWN REGULATIONS.

FACILITY MAINTENANCE
 MAINTENANCE OF ALL STORMWATER MANAGEMENT FACILITIES SHALL BE THE RESPONSIBILITY OF THE COMMERCIAL COMPONENT OF THE PROPERTY OWNER'S ASSOCIATION (POA), WITH THE RESIDENTIAL COMPONENT CONTRIBUTING ITS FAIR SHARE OF MAINTENANCE COSTS TO THE COMMERCIAL COMPONENT. ARRANGEMENTS AND MECHANISMS FOR SUCH MAINTENANCE RESPONSIBILITY AND COST SHARING SHALL BE ESTABLISHED ON THE POA DOCUMENTS.

- NOTES:**
1. AT THE TIME OF FINAL DESIGN, ALL STORM SEWER SHALL OUTFALL AT THE 100-YR FLOODPLAIN LIMITS OF TUSCARORA CREEK IN ACCORDANCE WITH SECTION 5-210.10.B.1 OF THE DCSM. ANY NECESSARY WAIVERS OF THIS REQUIREMENT WILL BE APPLIED FOR AT SITE PLAN AND OBTAINED PRIOR TO THE APPROVAL OF THE FIRST SITE PLAN.
 2. AT THE TIME OF FINAL DESIGN, THE PROPOSED STORMWATER MANAGEMENT FACILITIES AND CONVEYANCE SYSTEM SHALL NOT SURCHARGE THE PUBLIC STORM SYSTEM DURING THE 10 YEAR RAINFALL EVENT IN ACCORDANCE WITH SECTION 5-238.1.E OF THE DCSM. SHOULD THE FINAL DESIGN OF THE SYSTEM BE SURCHARGED, A DCSM WAIVER WILL BE APPLIED FOR.
 3. THE STORMWATER MANAGEMENT DESIGN WILL MEET ALL APPLICABLE STATE AND LOCAL SWM REGULATIONS AT THE TIME OF FINAL SITE PLAN.
 4. ALL POST-DEVELOPMENT "CN" VALUES FOR DRAINAGE AREAS FLOWING TO BMP FACILITIES HAVE BEEN TAKEN FROM THE VRRM ADJUSTED "CN" VALUES SHOWN ON SHEET 16. THE APPROPRIATE "CN" VALUES HAVE BEEN USED FOR EACH DESIGN STORM.
 5. TAILWATER CONDITIONS HAVE BEEN ACCOUNTED FOR BASED ON AN OUTFALL LOCATION AT THE 100 YEAR FLOODPLAIN LIMITS.
 6. POST-DEVELOPED TIME OF CONCENTRATION FOR DRAINAGE AREAS TO SWM FACILITIES WAS COMPUTED ASSUMING A 5 MINUTE TO TO THE MOST UPSTREAM INLET PLUS TRAVEL TIME IN THE PIPE TO THE FACILITY.
 7. THE APPLICANT SHALL PROVIDE AN ANALYSIS OF THE EXISTING POND TO DETERMINE THE 100 YEAR WATER SURFACE ELEVATION PRIOR TO SITE PLAN APPROVAL. ALL PROPOSED RESIDENTIAL UNITS SHALL BE LOCATED A MINIMUM OF 15' HORIZONTALLY AND 2' VERTICALLY FROM THE COMPUTED 100 YEAR WATER SURFACE ELEVATION. ADDITIONALLY, THE APPLICANT SHALL PROVIDE AN ANALYSIS OF THE POND SPILLWAY AND PROVIDE ANY NECESSARY IMPROVEMENTS TO PREVENT EROSION OF THE SPILLWAY GIVEN THE PROXIMITY OF THE SPILLWAY TO THE PROPOSED RESIDENTIAL UNITS IN ACCORDANCE WITH SECTION 5-420.2 OF THE DCSM.
 8. THE STORMWATER ANALYSIS CONTAINED HEREIN IS BASED ON PROVIDING STORMWATER DETENTION CALCULATIONS FOR A 100 YEAR STORM EVENT. THE APPLICANT INTENDS TO GAIN APPROVAL FROM THE TOWN OF LEESBURG TO ALLOW STORMWATER MANAGEMENT FOR AN ALTERNATE DESIGN THROUGH SUBMISSION OF A WATERSHED ANALYSIS THAT SHOWS A LESSER DESIGN WOULD HAVE LESS IMPACT ON DOWNSTREAM PROPERTIES, AS LONG AS THE PROPOSED DETENTION STILL MEETS STATE SWM REQUIREMENTS.



Subsection: Master Network Summary

Catchments Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ac-ft)	Time to Peak (hours)	Peak Flow (ft ³ /s)
DA-A1	Post-Development 1	1	0.839	11.950	15.09
DA-A1	Pre-Development 1	1	2.985	11.950	51.33
DA-B3	Post-Development 1	1	0.716	12.050	10.94
DA-A2	Post-Development 1	1	1.710	11.950	30.75
DA-A3	Post-Development 1	1	0.553	11.950	10.08
DA-B1	Post-Development 1	1	1.004	11.950	18.06
DA-B2	Post-Development 1	1	1.039	11.950	18.69

Node Summary

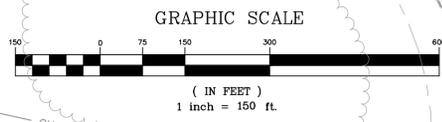
Label	Scenario	Return Event (years)	Hydrograph Volume (ac-ft)	Time to Peak (hours)	Peak Flow (ft ³ /s)
O-1	Post-Development 1	1	4.728	12.000	25.13
O-1	Pre-Development 1	1	2.985	11.950	51.33

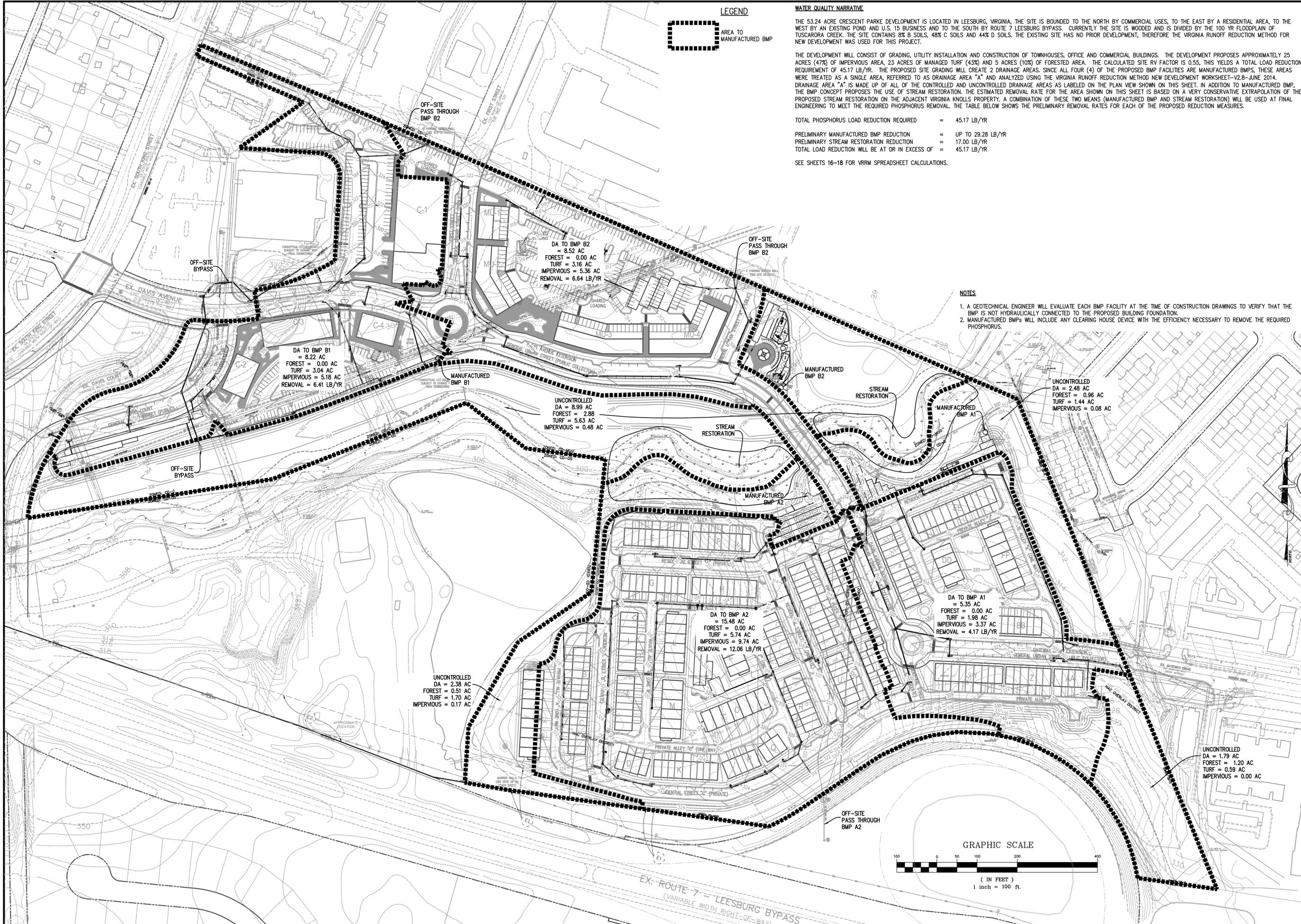
1 YEAR HYDROLOGIC RESULTS

Node Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ac-ft)	Time to Peak (hours)	Peak Flow (ft ³ /s)
O-1	Post-Development 2	2	6.065	12.000	34.03
O-1	Pre-Development 2	2	4.362	11.950	77.45
O-1	Pre-Development 10	10	9.541	11.950	172.74
O-1	Post-Development 10	10	11.742	12.050	134.44
O-1	Pre-Development 25	25	13.907	11.900	251.79
O-1	Post-Development 25	25	16.438	12.000	239.07
O-1	Pre-Development 100	100	20.809	11.900	378.07
O-1	Post-Development 100	100	23.682	12.000	368.03

2, 10, 25 & 100 YEAR HYDROLOGIC RESULTS





LEGEND



WATER QUALITY NARRATIVE

THE 53.24 ACRE CRESCENT PARKE DEVELOPMENT IS LOCATED IN LEESBURG, VIRGINIA, THE SITE IS BOUNDED TO THE NORTH BY COMMERCIAL USES, TO THE EAST BY A RESIDENTIAL AREA, TO THE WEST BY AN EXISTING POND AND U.S. 15 BOULEVARD AND TO THE SOUTH BY ROUTE 7 LEESBURG BYPASS. CURRENTLY THE SITE IS WOODED AND IS DIVIDED BY THE 100 YR FLOODPLAIN OF TUSCARORA CREEK. THE SITE CONTAINS 8% B SOILS, 48% C SOILS AND 44% D SOILS. THE EXISTING SITE HAS NO PRIOR DEVELOPMENT, THEREFORE THE VIRGINIA RUNOFF REDUCTION METHOD FOR NEW DEVELOPMENT WAS USED FOR THIS PROJECT.

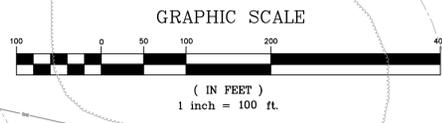
THE DEVELOPMENT WILL CONSIST OF GRADING, UTILITY INSTALLATION AND CONSTRUCTION OF TOWNHOUSES, OFFICE AND COMMERCIAL BUILDINGS. THE DEVELOPMENT PROPOSES APPROXIMATELY 25 ACRES (47%) OF IMPERVIOUS AREA, 23 ACRES OF MANAGED TURF (43%) AND 5 ACRES (10%) OF FORESTED AREA. THE CALCULATED SITE RV FACTOR IS 0.55, THIS YIELDS A TOTAL LOAD REDUCTION REQUIREMENT OF 45.17 LB/YR. THE PROPOSED SITE GRADING WILL CREATE 2 DRAINAGE AREAS. SINCE ALL FOUR (4) OF THE PROPOSED BMP FACILITIES ARE MANUFACTURED BMPs, THESE AREAS WERE TREATED AS A SINGLE AREA, REFERRED TO AS DRAINAGE AREA "A" AND ANALYZED USING THE VIRGINIA RUNOFF REDUCTION METHOD NEW DEVELOPMENT WORKSHEET-V2.8-JUNE 2014. DRAINAGE AREA "A" IS MADE UP OF ALL OF THE CONTROLLED AND UNCONTROLLED DRAINAGE AREAS AS LABELED ON THE PLAN VIEW SHOWN ON THIS SHEET. IN ADDITION TO MANUFACTURED BMP, THE BMP CONCEPT PROPOSES THE USE OF STREAM RESTORATION. THE ESTIMATED REMOVAL RATE FOR THE AREA SHOWN ON THIS SHEET IS BASED ON A VERY CONSERVATIVE EXTRAPOLATION OF THE PROPOSED STREAM RESTORATION ON THE ADJACENT VIRGINIA KNOLLS PROPERTY. A COMBINATION OF THESE TWO MEANS (MANUFACTURED BMP AND STREAM RESTORATION) WILL BE USED AT FINAL ENGINEERING TO MEET THE REQUIRED PHOSPHORUS REMOVAL. THE TABLE BELOW SHOWS THE PRELIMINARY REMOVAL RATES FOR EACH OF THE PROPOSED REDUCTION MEASURES.

TOTAL PHOSPHORUS LOAD REDUCTION REQUIRED	=	45.17 LB/YR
PRELIMINARY MANUFACTURED BMP REDUCTION	=	UP TO 29.28 LB/YR
PRELIMINARY STREAM RESTORATION REDUCTION	=	17.00 LB/YR
TOTAL LOAD REDUCTION WILL BE AT OR IN EXCESS OF	=	45.17 LB/YR

SEE SHEETS 16-18 FOR VRRM SPREADSHEET CALCULATIONS.

NOTES

1. A GEOTECHNICAL ENGINEER WILL EVALUATE EACH BMP FACILITY AT THE TIME OF CONSTRUCTION DRAWINGS TO VERIFY THAT THE BMP IS NOT HYDRAULICALLY CONNECTED TO THE PROPOSED BUILDING FOUNDATION.
2. MANUFACTURED BMPs WILL INCLUDE ANY CLEARING HOUSE DEVICE WITH THE EFFICIENCY NECESSARY TO REMOVE THE REQUIRED PHOSPHORUS.



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PRELIMINARY BMP PLAN - OVERALL

CRESCENT PARKE
ZONING MAP AMENDMENT

TOWN OF LEESBURG LOUDOUN COUNTY, VIRGINIA

PLAN STATUS	
2/11/2014	PER CHECKLIST COMMENTS
9/17/2014	PER TOWN COMMENTS
2/23/2014	PER TOWN COMMENTS
3/4/2015	PER TOWN COMMENTS
3/8/2015	PER TOWN COMMENTS
2/23/2015	PER TOWN COMMENTS
3/3/2016	PER TOWN COMMENTS
04/29/2016	TC SUBMISSION
07/01/2016	TC SUBMISSION
07/07/2016	TC SUBMISSION

DATE	DESCRIPTION
BBR DESIGN	CIM DRAWN
SCALE	AS NOTED
CHK	CHKD

JOB No. 2616-06-001
DATE DEC. 23, 2013
FILE No. 2616-D-ZP-001

SHEET 15 OF 37

Site Results

	D.A. A	D.A. B	D.A. C	D.A. D	D.A. E	AREA CHECK
IMPERVIOUS COVER	25.09	0.00	0.00	0.00	0.00	OK.
IMPERVIOUS COVER TREATED	23.65	0.00	0.00	0.00	0.00	OK.
TURF AREA	22.60	0.00	0.00	0.00	0.00	OK.
TURF AREA TREATED	13.92	0.00	0.00	0.00	0.00	OK.
AREA CHECK	OK.	OK.	OK.	OK.	OK.	

Phosphorus

TOTAL TREATMENT VOLUME (cf)	106.637
TOTAL PHOSPHORUS LOAD REDUCTION REQUIRED (LB/YEAR)	45.17
RUNOFF REDUCTION (cf)	0
PHOSPHORUS LOAD REDUCTION ACHIEVED (LB/YR)	29.28
ADJUSTED POST-DEVELOPMENT PHOSPHORUS LOAD (TP) (lb/yr)	37.71
REMAINING PHOSPHORUS LOAD REDUCTION (LB/YR) NEEDED	15.89

Nitrogen (for information purposes)

TOTAL TREATMENT VOLUME (cf)	106.637
RUNOFF REDUCTION (cf)	0
NITROGEN LOAD REDUCTION ACHIEVED (LB/YR)	0.00
ADJUSTED POST-DEVELOPMENT NITROGEN LOAD (TN) (lb/yr)	479.31

Target Rainfall Event (in)	1-year storm	2-year storm	10-year storm
	2.60	3.10	4.70

Drainage Area A	
Drainage Area (acres)	53.24
Runoff Reduction Volume (cf)	0
Drainage Area B	
Drainage Area (acres)	0.00
Runoff Reduction Volume (cf)	0
Drainage Area C	
Drainage Area (acres)	0.00
Runoff Reduction Volume (cf)	0
Drainage Area D	
Drainage Area (acres)	0.00
Runoff Reduction Volume (cf)	0
Drainage Area E	
Drainage Area (acres)	0.00
Runoff Reduction Volume (cf)	0

Based on the use of Runoff Reduction practices in the selected drainage areas, the spreadsheet calculates an adjusted RV_{Developed} and adjusted Curve Number.

Drainage Area A	A soils	B Soils	C Soils	D Soils
Forest/Open Space -- undisturbed, protected forest/open space or reforested land	0.00	0.00	0.00	5.55
Managed Turf -- disturbed, graded for yards or other turf to be mowed/managed	0.00	1.53	10.33	10.74
Impervious Cover	0.00	2.57	14.91	7.61
Weighted CN	86	86	86	1.63

RV _{Developed} (in) with no Runoff Reduction	1-year storm	2-year storm	10-year storm
	1.33	1.75	3.19
RV _{Developed} (in) with Runoff Reduction	1.33	1.75	3.19
Adjusted CN	86	86	86

Virginia Runoff Reduction Method New Development Worksheet - v2.8 - June 2014
To be used w/ 2011 BMP Standards and Specifications

Site Data
Project Name: Crescent Parke
Date: August 25, 2015

data input cells	
calculation cells	
constant values	

1. Post-Development Project & Land Cover Information

Constants		
Annual Rainfall (inches)	43	
Target Rainfall Event (inches)	1.00	
Phosphorus EMC (mg/L)	0.26	Nitrogen EMC (mg/L) 1.86
Target Phosphorus Target Load (lb/acre/yr)	0.41	
Pj	0.90	

Land Cover (acres)	A soils	B Soils	C Soils	D Soils	Totals
Forest/Open Space (acres) -- undisturbed, protected forest/open space or reforested land	0.00	0.00	0.00	5.55	5.55
Managed Turf (acres) -- disturbed, graded for yards or other turf to be mowed/managed	0.00	1.53	10.33	10.74	22.60
Impervious Cover (acres)	0.00	2.57	14.91	7.61	25.09
Total					53.24

Rv Coefficients	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	
Forest/Open Space Cover (acres)	5.55
Weighted Rv(forest)	0.05
% Forest	10%
Managed Turf Cover (acres)	22.60
Weighted Rv(turf)	0.23
% Managed Turf	42%
Impervious Cover (acres)	25.09
Rv(impervious)	0.95
% Impervious	47%
Total Site Area (acres)	53.24
Site Rv	0.55
Post-Development Treatment Volume (acre-ft)	2.45
Post-Development Treatment Volume (cubic feet)	106.637
Post-Development Load (TP) (lb/yr)	67.00
Post-Development Load (TN) (lb/yr)	479.31
Total Load (TP) Reduction Required (lb/yr)	45.17

CROSS SECTION A-A		
Project Description		
Friction Method	Manning Formula	
Solve For	Normal Depth	
Input Data		
Roughness Coefficient	0.030	
Channel Slope	0.01400 ft/ft	
Left Side Slope	3.00 ft/ft (H:V)	
Right Side Slope	14.28 ft/ft (H:V)	
Bottom Width	10.00 ft	
Discharge	171.00 ft ³ /s	
Results		
Normal Depth	1.41 ft	
Flow Area	31.25 ft ²	
Wetted Perimeter	34.63 ft	
Hydraulic Radius	0.90 ft	
Top Width	34.35 ft	
Critical Depth	1.42 ft	
Critical Slope	0.01366 ft/ft	
Velocity	5.47 ft/s	
Velocity Head	0.47 ft	
Specific Energy	1.87 ft	
Froude Number	1.01	
Flow Type	Supercritical	
GVF Input Data		
Downstream Depth	0.00 ft	
Length	0.00 ft	
Number Of Steps	0	
GVF Output Data		
Upstream Depth	0.00 ft	
Profile Description		
Profile Headloss	0.00 ft	
Downstream Velocity	Infinity ft/s	
Upstream Velocity	Infinity ft/s	
Normal Depth	1.41 ft	
Critical Depth	1.42 ft	
Channel Slope	0.01400 ft/ft	

CROSS SECTION A-A	
GVF Output Data	
Critical Slope	0.01366 ft/ft
Messages	
Notes	
DA=41.8 AC	
C=0.65	
Tc=20 MIN	
i100 = 6.29 IN/HR	
Q100=171 CFS	

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SWM & BMP COMPUTATIONS
CRESCENT PARKE ZONING MAP AMENDMENT
LOUDOUN COUNTY, VIRGINIA

TOWN OF LEESBURG

DATE	DESCRIPTION
2/11/2014	PER CHECKLIST COMMENTS
9/17/2014	PER TOWN COMMENTS
2/23/2014	PER TOWN COMMENTS
4/17/2015	PER TOWN COMMENTS
8/28/2015	PER TOWN COMMENTS
2/23/2015	PER TOWN COMMENTS
3/3/2016	PER TOWN COMMENTS
4/29/2016	TC SUBMISSION
7/01/2016	TC SUBMISSION
7/07/2016	TC SUBMISSION

BBR DESIGN	CIM DRAWN	CMM CHKD
	H: AS NOTED	V:
JOB No. 2616-06-001		
DATE DEC. 23, 2013		
FILE No. 2616-D-ZP-001		

SHEET 16 OF 37

Doc file name: \\syrup\view_projects\202616-06-001 (sh) - leesburg crossroads rezoning\Planning\Zoning\Sheet2616-D-ZP-001-00-BMP-CAMPS.dwg