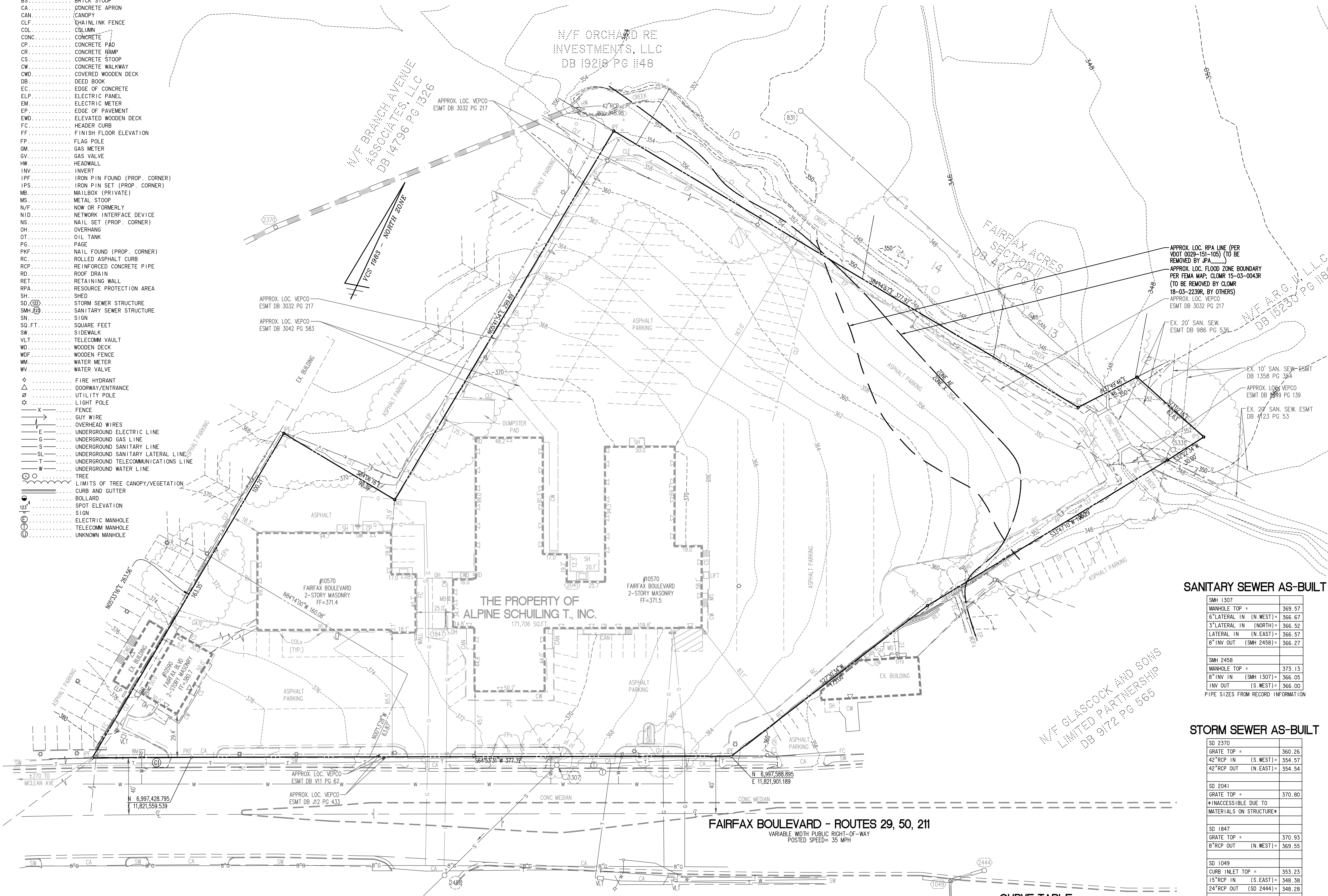


- LEGEND**
- AP ASPHALT PAD
 - APPROX. LOC. APPROXIMATE LOCATION
 - BS BRICK STOOP
 - CA CONCRETE APRON
 - CAN CANOPY
 - CLF CHAINLINK FENCE
 - COL COLUMN
 - CONC CONCRETE
 - CONC CONCRETE PAD
 - CR CONCRETE RAMP
 - CS CONCRETE STOOP
 - CW CONCRETE WALKWAY
 - CWD COVERED WOODEN DECK
 - DB DEED BOOK
 - EC EDGE OF CONCRETE
 - ELP ELECTRIC PANEL
 - EM ELECTRIC METER
 - EP EDGE OF PAVEMENT
 - EWD ELEVATED WOODEN DECK
 - FC HEADER CURB
 - FF FINISH FLOOR ELEVATION
 - FP FLAG POLE
 - GM GAS METER
 - GV GAS VALVE
 - HW HEADWALL
 - INV INVERT
 - IPF IRON PIN FOUND (PROP. CORNER)
 - IPS IRON PIN SET (PROP. CORNER)
 - MB MAILBOX (PRIVATE)
 - MS METAL STOOP
 - N/F NOW OR FORMERLY
 - NID NETWORK INTERFACE DEVICE
 - NS NAIL SET (PROP. CORNER)
 - OH OVERHANG
 - OT OIL TANK
 - PG PAGE
 - PKF NAIL FOUND (PROP. CORNER)
 - RC ROLLED ASPHALT CURB
 - RCP REINFORCED CONCRETE PIPE
 - RD ROOF DRAIN
 - RET RETAINING WALL
 - RPA RESOURCE PROTECTION AREA
 - SH SHED
 - SD (12) STORM SEWER STRUCTURE
 - SMH (23) SANITARY SEWER STRUCTURE
 - SN SIGN
 - SQ.FT. SQUARE FEET
 - SW SIDEWALK
 - VLT TELECOMM VAULT
 - WD WOODEN DECK
 - WDF WOODEN FENCE
 - WM WATER METER
 - WV WATER VALVE
 - FIRE HYDRANT
 - DOORWAY/ENTRANCE
 - UTILITY POLE
 - LIGHT POLE
 - FENCE
 - GUY WIRE
 - OVERHEAD WIRES
 - UNDERGROUND ELECTRIC LINE
 - UNDERGROUND GAS LINE
 - UNDERGROUND SANITARY LINE
 - UNDERGROUND SANITARY LATERAL LINE
 - UNDERGROUND TELECOMMUNICATIONS LINE
 - UNDERGROUND WATER LINE
 - TREE
 - LIMITS OF TREE CANOPY/VEGETATION
 - CURB AND GUTTER
 - BOLLARD
 - SPOT ELEVATION
 - SIGN
 - ELECTRIC MANHOLE
 - TELECOMM MANHOLE
 - UNKNOWN MANHOLE



SANITARY SEWER AS-BUILT

SMH 1307	MANHOLE TOP =	369.57
	6" LATERAL IN (N. WEST) =	366.67
	3" LATERAL IN (NORTH) =	366.52
	LATERAL IN (N. EAST) =	366.57
	8" INV OUT (SMH 2458) =	366.27
SMH 2458	MANHOLE TOP =	373.13
	8" INV IN (SMH 1307) =	366.05
	INV OUT (S. WEST) =	366.00

PIPE SIZES FROM RECORD INFORMATION

STORM SEWER AS-BUILT

SD 2370	GRATE TOP =	360.26
	42" RCP IN (S. WEST) =	354.57
	42" RCP OUT (N. EAST) =	354.54
SD 2041	GRATE TOP =	370.80
	INACCESSIBLE DUE TO MATERIALS ON STRUCTURE	
SD 1847	GRATE TOP =	370.93
	8" RCP OUT (N. WEST) =	369.55
SD 1049	CURB INLET TOP =	353.23
	15" RCP IN (S. EAST) =	348.38
	24" RCP OUT (SD 2444) =	348.28
SD 2439	CURB INLET TOP =	348.51
	18" RCP OUT (SD 2446) =	345.31

CURVE TABLE

CURVE	RADIUS	LENGTH	DELTA	TANGENT	CHORD	CHORD BEARING
C1	5,769.58'	69.47'	0°41'24"	34.74'	69.47'	S64°32'49"W

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REVISION APPROVED BY

NO.	DESCRIPTION	DATE	REV. BY	APPROVED	DATE

EXISTING CONDITIONS PLAN
SPECIAL USE PLAN
BROWN'S FAIRFAX MAZDA
 CITY OF FAIRFAX, VIRGINIA

OFFSITE IMPROVEMENTS NARRATIVE

THE APPLICANT FOR THIS PROJECT IS WORKING CLOSELY WITH PROPERTY OWNERS TO THE NORTH OF THE SUBJECT SITE. THIS COORDINATION WILL CONTINUE AS THIS PLAN MOVES TOWARD ANTICIPATED APPROVAL AND WHILE THE POTENTIAL DEVELOPMENT TO THE NORTH MOVES THROUGH THE CITY PROCESS AS WELL. WHILE THE FULL EXTENT OF COOPERATION BETWEEN THE APPLICANT AND THE PROPERTY OWNERS TO THE NORTH IS NOT YET KNOWN, THERE IS A POSSIBILITY THAT CONSTRUCTION ACTIVITY IN SUPPORT THIS PROJECT MAY OCCUR ON THE ADJACENT PROPERTY TO THE NORTH. THIS PRESENTS TWO POTENTIAL SCENARIOS FOR CONSTRUCTION OF PROPOSED IMPROVEMENTS ALONG THE NORTHERN PROPERTY LINE OF THE SUBJECT SITE:

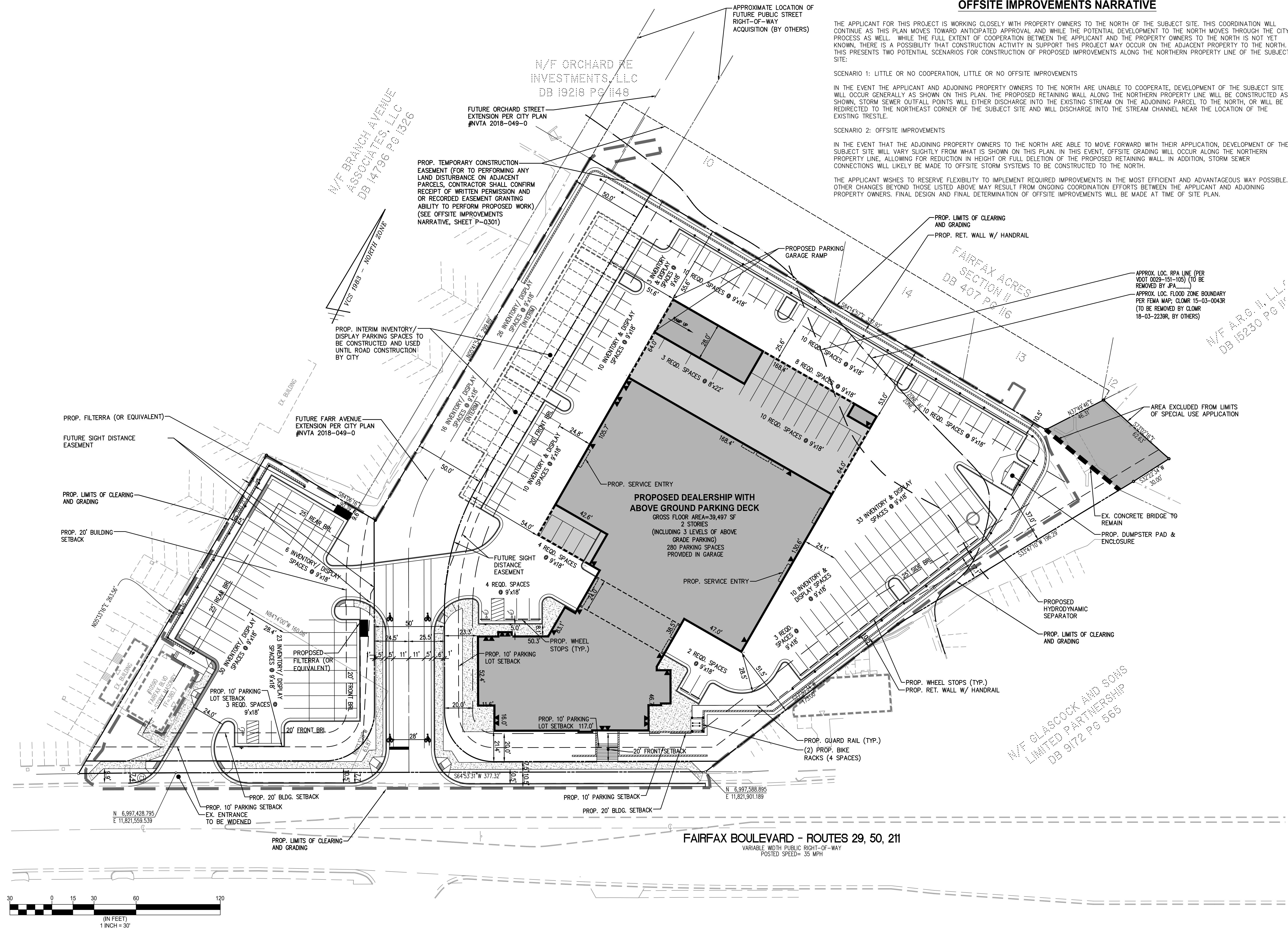
SCENARIO 1: LITTLE OR NO COOPERATION, LITTLE OR NO OFFSITE IMPROVEMENTS

IN THE EVENT THE APPLICANT AND ADJOINING PROPERTY OWNERS TO THE NORTH ARE UNABLE TO COOPERATE, DEVELOPMENT OF THE SUBJECT SITE WILL OCCUR GENERALLY AS SHOWN ON THIS PLAN. THE PROPOSED RETAINING WALL ALONG THE NORTHERN PROPERTY LINE WILL BE CONSTRUCTED AS SHOWN, STORM SEWER OUTFALL POINTS WILL EITHER DISCHARGE INTO THE EXISTING STREAM ON THE ADJOINING PARCEL TO THE NORTH, OR WILL BE REDIRECTED TO THE NORTHEAST CORNER OF THE SUBJECT SITE AND WILL DISCHARGE INTO THE STREAM CHANNEL NEAR THE LOCATION OF THE EXISTING TRESTLE.

SCENARIO 2: OFFSITE IMPROVEMENTS

IN THE EVENT THAT THE ADJOINING PROPERTY OWNERS TO THE NORTH ARE ABLE TO MOVE FORWARD WITH THEIR APPLICATION, DEVELOPMENT OF THE SUBJECT SITE WILL VARY SLIGHTLY FROM WHAT IS SHOWN ON THIS PLAN. IN THIS EVENT, OFFSITE GRADING WILL OCCUR ALONG THE NORTHERN PROPERTY LINE, ALLOWING FOR REDUCTION IN HEIGHT OR FULL DELETION OF THE PROPOSED RETAINING WALL. IN ADDITION, STORM SEWER CONNECTIONS WILL LIKELY BE MADE TO OFFSITE STORM SYSTEMS TO BE CONSTRUCTED TO THE NORTH.

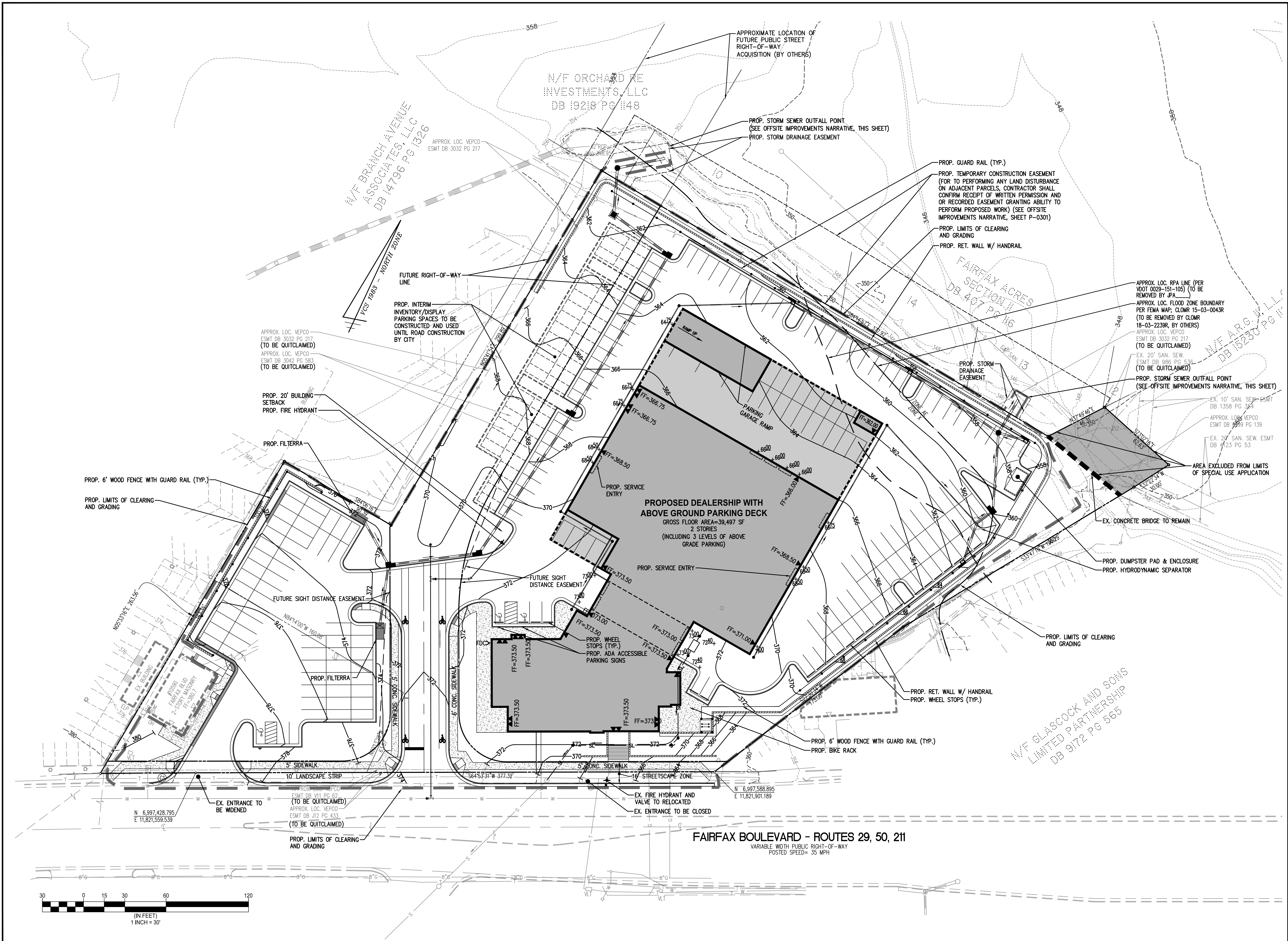
THE APPLICANT WISHES TO RESERVE FLEXIBILITY TO IMPLEMENT REQUIRED IMPROVEMENTS IN THE MOST EFFICIENT AND ADVANTAGEOUS WAY POSSIBLE. OTHER CHANGES BEYOND THOSE LISTED ABOVE MAY RESULT FROM ONGOING COORDINATION EFFORTS BETWEEN THE APPLICANT AND ADJOINING PROPERTY OWNERS. FINAL DESIGN AND FINAL DETERMINATION OF OFFSITE IMPROVEMENTS WILL BE MADE AT TIME OF SITE PLAN.



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SPECIAL USE PLAN
SPECIAL USE PLAN
BROWN'S FAIRFAX MAZDA
 CITY OF FAIRFAX, VIRGINIA



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PRELIMINARY UTILITY AND GRADING PLAN
SPECIAL USE PLAN
BROWN'S FAIRFAX MAZDA
 CITY OF FAIRFAX, VIRGINIA

DATE: 11/6/19
 SCALE: 1" = 30'
 DRAWN: DP/TT
 CHECKED: AV

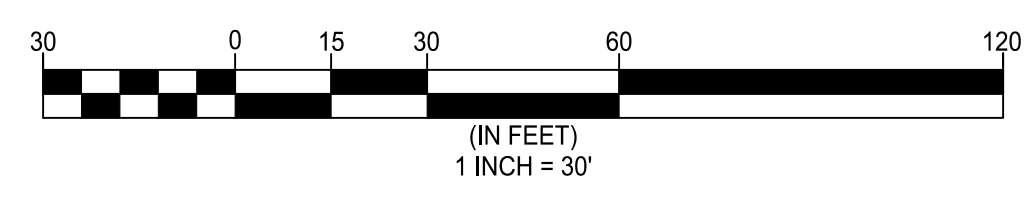
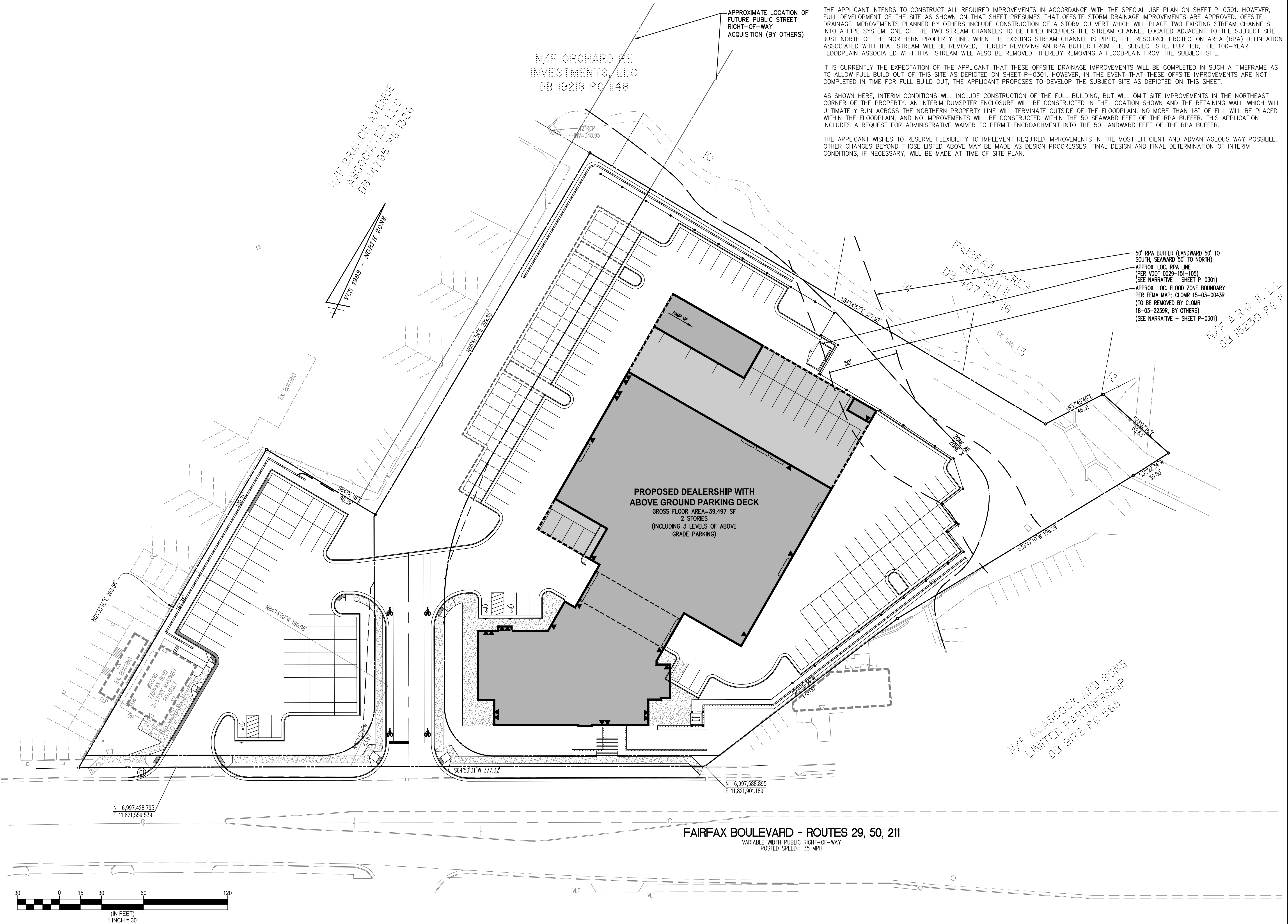
INTERIM CONDITIONS NARRATIVE

THE APPLICANT INTENDS TO CONSTRUCT ALL REQUIRED IMPROVEMENTS IN ACCORDANCE WITH THE SPECIAL USE PLAN ON SHEET P-0301. HOWEVER, FULL DEVELOPMENT OF THE SITE AS SHOWN ON THAT SHEET PRESUMES THAT OFFSITE STORM DRAINAGE IMPROVEMENTS ARE APPROVED. OFFSITE DRAINAGE IMPROVEMENTS PLANNED BY OTHERS INCLUDE CONSTRUCTION OF A STORM CULVERT WHICH WILL PLACE TWO EXISTING STREAM CHANNELS INTO A PIPE SYSTEM. ONE OF THE TWO STREAM CHANNELS TO BE PIPED INCLUDES THE STREAM CHANNEL LOCATED ADJACENT TO THE SUBJECT SITE, JUST NORTH OF THE NORTHERN PROPERTY LINE. WHEN THE EXISTING STREAM CHANNEL IS PIPED, THE RESOURCE PROTECTION AREA (RPA) DELINEATION ASSOCIATED WITH THAT STREAM WILL BE REMOVED, THEREBY REMOVING AN RPA BUFFER FROM THE SUBJECT SITE. FURTHER, THE 100-YEAR FLOODPLAIN ASSOCIATED WITH THAT STREAM WILL ALSO BE REMOVED, THEREBY REMOVING A FLOODPLAIN FROM THE SUBJECT SITE.

IT IS CURRENTLY THE EXPECTATION OF THE APPLICANT THAT THESE OFFSITE DRAINAGE IMPROVEMENTS WILL BE COMPLETED IN SUCH A TIMEFRAME AS TO ALLOW FULL BUILD OUT OF THIS SITE AS DEPICTED ON SHEET P-0301. HOWEVER, IN THE EVENT THAT THESE OFFSITE IMPROVEMENTS ARE NOT COMPLETED IN TIME FOR FULL BUILD OUT, THE APPLICANT PROPOSES TO DEVELOP THE SUBJECT SITE AS DEPICTED ON THIS SHEET.

AS SHOWN HERE, INTERIM CONDITIONS WILL INCLUDE CONSTRUCTION OF THE FULL BUILDING, BUT WILL OMIT SITE IMPROVEMENTS IN THE NORTHEAST CORNER OF THE PROPERTY. AN INTERIM DUMPSTER ENCLOSURE WILL BE CONSTRUCTED IN THE LOCATION SHOWN AND THE RETAINING WALL WHICH WILL ULTIMATELY RUN ACROSS THE NORTHERN PROPERTY LINE WILL TERMINATE OUTSIDE OF THE FLOODPLAIN. NO MORE THAN 18" OF FILL WILL BE PLACED WITHIN THE FLOODPLAIN, AND NO IMPROVEMENTS WILL BE CONSTRUCTED WITHIN THE 50 SEAWARD FEET OF THE RPA BUFFER. THIS APPLICATION INCLUDES A REQUEST FOR ADMINISTRATIVE WAIVER TO PERMIT ENCROACHMENT INTO THE 50 LANDWARD FEET OF THE RPA BUFFER.

THE APPLICANT WISHES TO RESERVE FLEXIBILITY TO IMPLEMENT REQUIRED IMPROVEMENTS IN THE MOST EFFICIENT AND ADVANTAGEOUS WAY POSSIBLE. OTHER CHANGES BEYOND THOSE LISTED ABOVE MAY BE MADE AS DESIGN PROGRESSES. FINAL DESIGN AND FINAL DETERMINATION OF INTERIM CONDITIONS, IF NECESSARY, WILL BE MADE AT TIME OF SITE PLAN.



CONCEPTUAL INTERIM PLAN

SPECIAL USE PLAN

BROWN'S FAIRFAX MAZDA

CITY OF FAIRFAX, VIRGINIA

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DATE: 11/6/19

11/6/19

ARON W. WILSON
Lic. No. 041851

CHECKED: AV

DRAWN: DP/TT

SCALE: 1" = 30'

DATE: 11/6/2019

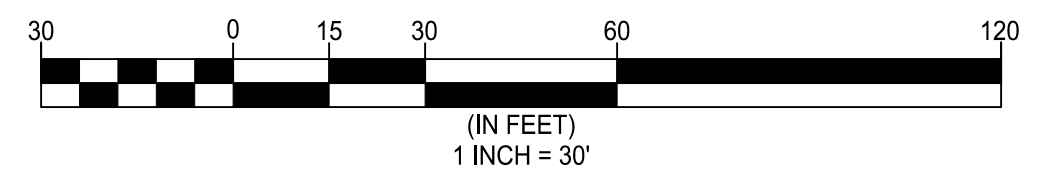
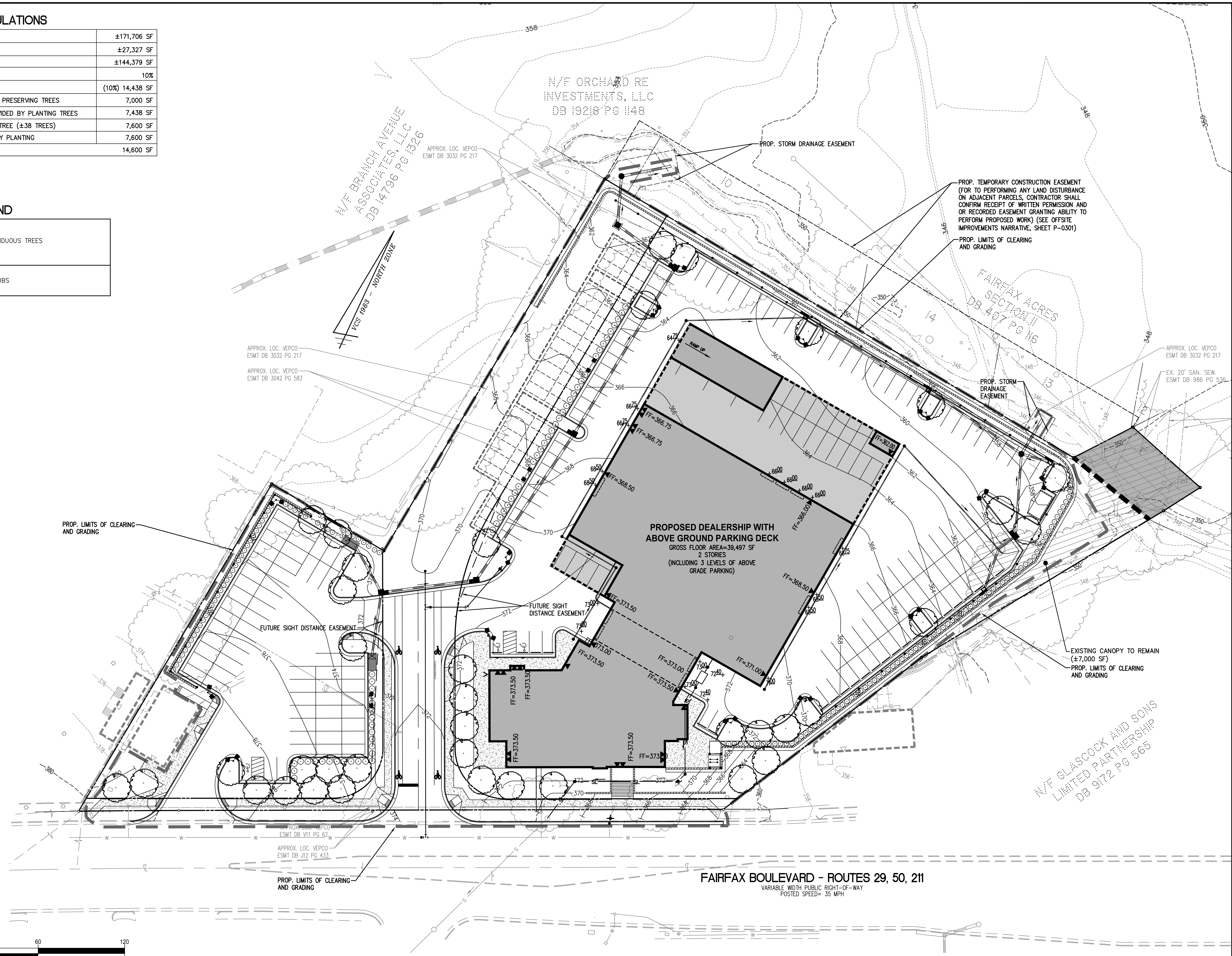
NO.	DESCRIPTION	DATE		APPROVED BY	
		REV.	DATE	REV.	DATE

TREE COVER CALCULATIONS

SITE AREA	±171,706 SF
- RESERVATION DEDUCTIONS	±27,327 SF
TOTAL REMAINING SITE AREA	±144,379 SF
X % REQUIRED (ZONING - CR)	10%
= TREE COVER TO BE PROVIDED	(10%) 14,438 SF
TREE COVER TO BE PROVIDED BY PRESERVING TREES	7,000 SF
TREE COVER NEEDED TO BE PROVIDED BY PLANTING TREES	7,438 SF
DECIDUOUS TREE @ 200 SF PER TREE (±38 TREES)	7,600 SF
ACTUAL TREE COVER PROVIDED BY PLANTING	7,600 SF
TOTAL TREE COVER PROVIDED	14,600 SF

LANDSCAPE LEGEND

	PROPOSED DECIDUOUS TREES
	PROPOSED SHRUBS



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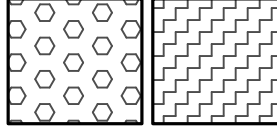
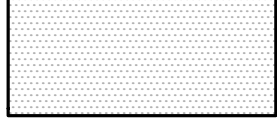

CONCEPTUAL LANDSCAPE PLAN

SPECIAL USE PLAN

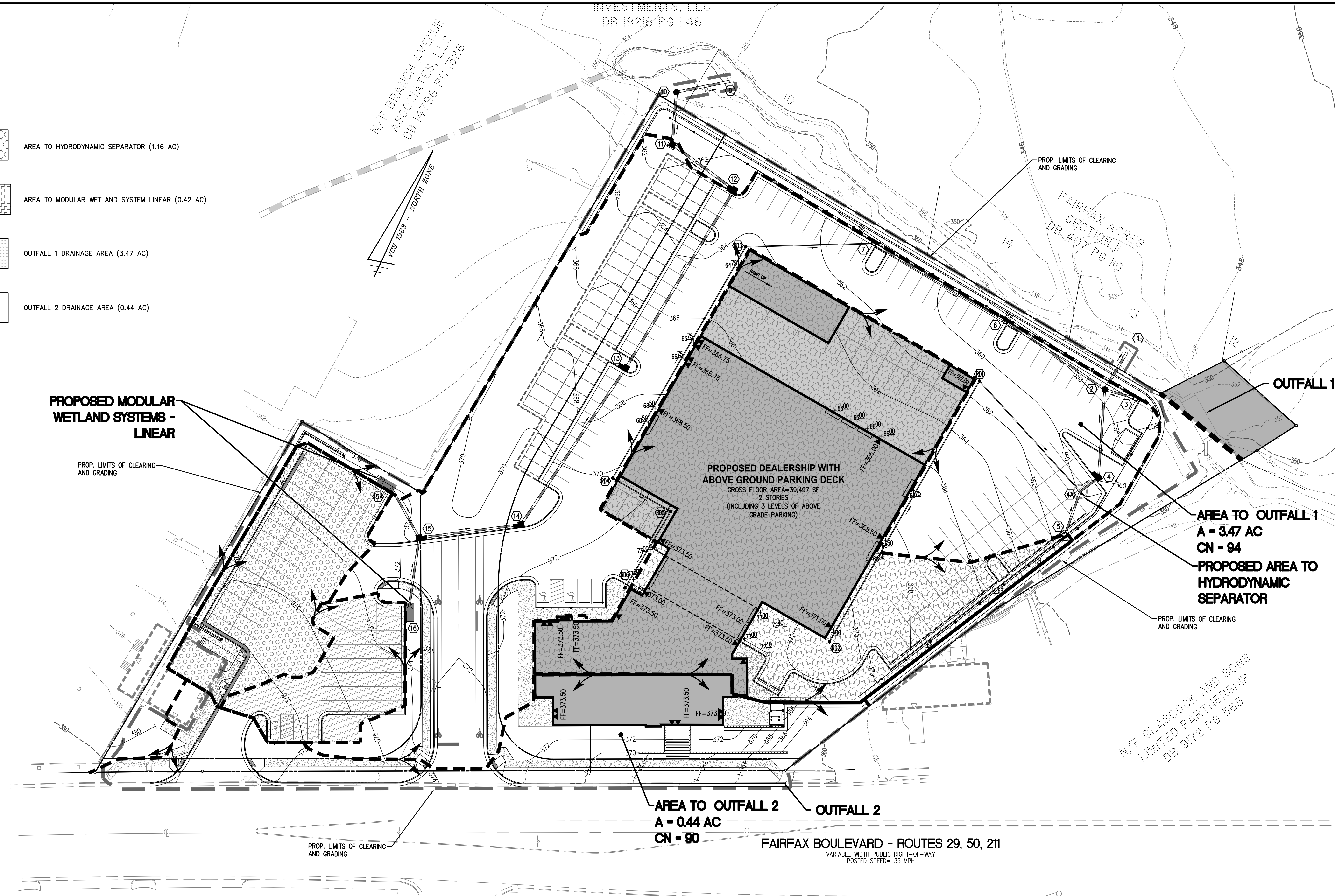
BROWN'S FAIRFAX MAZDA

CITY OF FAIRFAX, VIRGINIA

LEGEND

-  AREA TO HYDRODYNAMIC SEPARATOR (1.16 AC)
-  AREA TO MODULAR WETLAND SYSTEM LINEAR (0.42 AC)
-  OUTFALL 1 DRAINAGE AREA (3.47 AC)
-  OUTFALL 2 DRAINAGE AREA (0.44 AC)

PROPOSED MODULAR WETLAND SYSTEMS - LINEAR

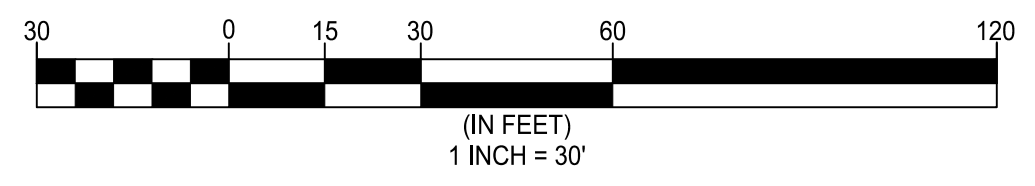


PROPOSED DEALERSHIP WITH ABOVE GROUND PARKING DECK
 GROSS FLOOR AREA=39,497 SF
 2 STORIES
 (INCLUDING 3 LEVELS OF ABOVE GRADE PARKING)

AREA TO OUTFALL 1
 A = 3.47 AC
 CN = 94
PROPOSED AREA TO HYDRODYNAMIC SEPARATOR

AREA TO OUTFALL 2
 A = 0.44 AC
 CN = 90

OUTFALL 2
 FAIRFAX BOULEVARD - ROUTES 29, 50, 211
 VARIABLE WIDTH PUBLIC RIGHT-OF-WAY
 POSTED SPEED= 35 MPH



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STORMWATER MANAGEMENT PLAN
SPECIAL USE PLAN
BROWN'S FAIRFAX MAZDA
 CITY OF FAIRFAX, VIRGINIA

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)	3.03	0.00	0.00	0.00	0.00	OK.
IMPERVIOUS COVER TREATED (ac)	1.47	0.00	0.00	0.00	0.00	OK.
MANAGED TURF AREA (ac)	0.88	0.00	0.00	0.00	0.00	OK.
MANAGED TURF AREA TREATED (ac)	0.11	0.00	0.00	0.00	0.00	OK.
AREA CHECK	OK.	OK.	OK.	OK.	OK.	

Site Treatment Volume (ft³) 11,248

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)	0	0	0	0	0	0
TP LOAD AVAILABLE FOR REMOVAL (lb/yr)	7.07	0.00	0.00	0.00	0.00	7.07
TP LOAD REDUCTION ACHIEVED (lb/yr)	0.91	0.00	0.00	0.00	0.00	0.91
TP LOAD REMAINING (lb/yr)	6.16	0.00	0.00	0.00	0.00	6.16
NITROGEN LOAD REDUCTION ACHIEVED (lb/yr)	0.00	0.00	0.00	0.00	0.00	0.00

Total Phosphorus

FINAL POST-DEVELOPMENT TP LOAD (lb/yr)	7.07
TP LOAD REDUCTION REQUIRED (lb/yr)	0.62
TP LOAD REDUCTION ACHIEVED (lb/yr)	0.91
TP LOAD REMAINING (lb/yr)	6.16
REMAINING TP LOAD REDUCTION REQUIRED (lb/yr)	0.00

**** TARGET TP REDUCTION EXCEEDED BY 0.29 LB/YEAR **** ← COMPLIANCE VERIFICATION

OUTFALL ANALYSIS NARRATIVE

- THE EXISTING SITE DRAINS TO TWO STORMWATER OUTFALLS (REFER TO PLAN ON SHEET P-0501) AS FOLLOWS:
 - OUTFALL 1 – MUCH OF THE SITE DRAINS NORTHWARD INTO AN EXISTING STREAM THAT IS LOCATED JUST NORTH OF THE PROPERTY'S NORTHERN PROPERTY LINE. THIS STREAM IS A TRIBUTARY OF THE UPPER REACHES OF ACCOTINK CREEK.
 - OUTFALL 2 – RUNOFF FROM THE SOUTHERN PORTION OF THE SITE SHEET FLOWS INTO FAIRFAX BOULEVARD'S GUTTER. THIS RUNOFF THEN FLOWS EASTWARD UNTIL IT JOINS THE OUTFALL 1 RUNOFF IN THE ACCOTINK CREEK TRIBUTARY.
- AFTER THE PROPOSED REDEVELOPMENT, SITE RUNOFF WILL CONTINUE TO DRAIN TO THE SAME TWO OUTFALLS WITH NO CHANGE TO THE SIZE OF EACH OUTFALL'S DRAINAGE AREA. RUNOFF TO THE STREAM ON THE NORTH SIDE (OUTFALL 1) WILL BE COLLECTED IN PROPOSED CURB INLETS AND CONVEYED VIA PROPOSED STORM SEWERS TO THE EXISTING STREAM. OUTFALL 2 RUNOFF WILL CONTINUE TO FLOW TO THE FAIRFAX BOULEVARD GUTTER AS SHEET FLOW. RUNOFF TO BOTH OUTFALLS WILL BE REDUCED DUE TO THE DECREASE IN SITE IMPERVIOUSNESS.

STORMWATER MANAGEMENT AND BEST MANAGEMENT PRACTICES NARRATIVES

- THE EXISTING SITE CURRENTLY SERVES AS A MOTOR VEHICLE SALES AND SERVICE ESTABLISHMENT AND IT IS HIGHLY IMPERVIOUS. THE EXISTING SITE HAS NO STORMWATER MANAGEMENT OR WATER QUALITY FACILITIES. ALMOST THE ENTIRE PROPERTY WILL BE RECONSTRUCTED WITH THE PROPOSED REDEVELOPMENT PROJECT. THIS WILL RESULT IN A NET DECREASE IN OVERALL IMPERVIOUS AREA.
 - ACCORDING TO CITY CODE, THE STORMWATER QUANTITY REQUIREMENTS ARE AS FOLLOWS:
 - BECAUSE THE SITE STORMWATER OUTFALLS INCLUDE A NATURAL STREAM THE CHANNEL PROTECTION REQUIREMENT IS TO REDUCE THE SITE RUNOFF FOR A 1-YEAR STORM BY AN AMOUNT DETERMINED USING AN ENERGY BALANCE EQUATION. A TABULATION CAN BE FOUND ON THIS SHEET WHICH SUMMARIZES THE STORMWATER RUNOFF DATA AND ALLOWABLE SITE PEAK RUNOFF RATES. USING THE ENERGY BALANCE EQUATION, THE ALLOWABLE PEAK RUNOFF RATE FOR THE 1-YEAR STORM IS 10.01 CFS. EVEN WITHOUT STORMWATER DETENTION, THE POST-DEVELOPMENT SITE PEAK RUNOFF RATE WILL BE REDUCED TO LESS THAN ALLOWABLE WITH A RATE OF 9.99 CFS DUE TO THE PROPOSED REDUCTION IN SITE IMPERVIOUSNESS.
 - THE FLOOD PROTECTION REQUIREMENT WILL BE MET WITH THE PROPOSED REDUCTION IN THE PEAK RUNOFF RATE FOR THE 10-YEAR STORM, AGAIN DUE TO THE REDUCTION IN IMPERVIOUSNESS.
- THE STORMWATER QUALITY (BMP) REQUIREMENT HAS BEEN DETERMINED USING THE VIRGINIA RUNOFF REDUCTION METHOD SPREADSHEET ISSUED BY THE VIRGINIA DEQ. A COPY OF THE COMPLETED SPREADSHEET CAN BE FOUND ON SHEET P-0503. THIS SPREADSHEET SHOWS THAT 0.62 POUNDS OF PHOSPHOROUS PER YEAR MUST BE REMOVED FROM THE SITE RUNOFF. THIS REQUIREMENT WILL BE MET THROUGH THE USE OF A HYDRODYNAMIC SEPARATOR AND TWO MODULAR WETLAND SYSTEM – LINEAR BMP STRUCTURES (OR SIMILAR). REFER TO SHEET P-0501 FOR A PLAN SHOWING THEIR LOCATIONS AND DRAINAGE AREAS. REFER TO SHEET P-0504 FOR DETAILS OF THESE PROPOSED WATER QUALITY DEVICES. IN LIEU OF THE MODULAR WETLAND SYSTEM STRUCTURES, THE APPLICANT MAY CHOSE TO USE TWO FILTERRA BMP STRUCTURES. THE FILTERRAS HAVE THE SAME PHOSPHOROUS REMOVAL EFFICIENCY, WOULD BE LOCATED IN THE SAME LOCATIONS, WOULD HAVE THE SAME PLANTS, AND WOULD FUNCTION THE SAME AS THE MODULAR WETLAND STRUCTURES.

STORMWATER MANAGEMENT DATA AND CALCULATIONS

DRAINAGE AREA	PRE-DEVELOPMENT					
	TOTAL AREA (AC)	IMPERVIOUS AREA (AC)	LANDSCAPED OR TURF (AC)	CN	1-YR RUNOFF VOLUME (CF)	PEAK FLOWS Q (1) (CFS)
OUT FALL 1 (TO STREAM)	3.47	3.27	0.2	97		
OUTFALL 2 (TO FAIRFAX BOULEVARD)	0.44	0.38	0.06	96		
SITE TOTALS	3.91	3.65	0.26	97	33,405	10.88 20.72

DRAINAGE AREA	POST-DEVELOPMENT					
	TOTAL AREA (AC)	IMPERVIOUS AREA (AC)	LANDSCAPED OR TURF (AC)	CN	1-YR RUNOFF VOLUME (CF)	PEAK FLOWS Q (1) (CFS)
OUTFALL 1 (TO STREAM)	3.47	2.79	0.68	94		
OUTFALL 2 (FAIRFAX BOULEVARD)	0.44	0.24	0.20	90		
SITE TOTALS	3.91	3.03	0.88	94	29,042	9.99 20.07
					ALLOWABLE SITE RUNOFF (2)	10.01 20.72

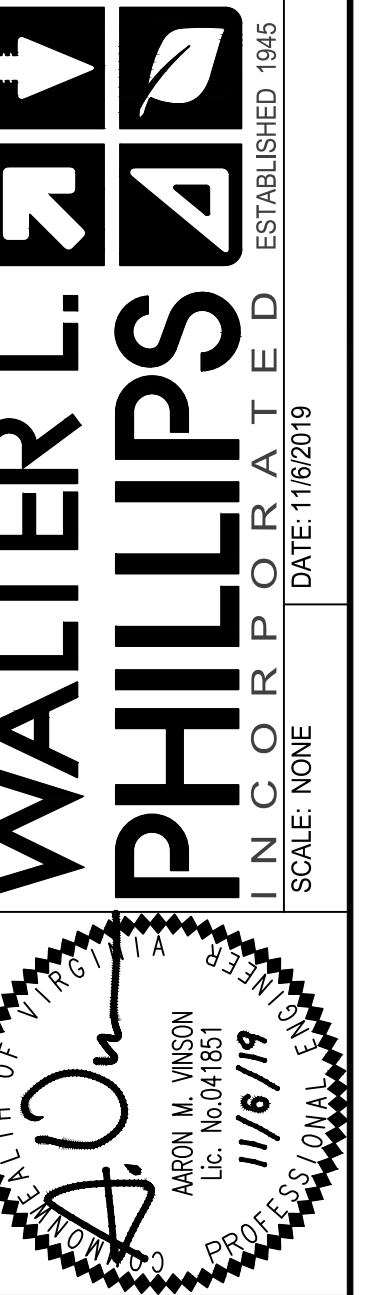
FOOTNOTES:
 (1) PEAK FLOWS AND RUNOFF VOLUMES OBTAINED FROM HYDRAFLOW SOFTWARE. REFER TO HYDROGRAPHS FOUND ON SHEET P-0504.
 (2) OUTFALL INCLUDES A STREAM SO ALLOWABLE Q1 IS $Q_{dev} < (IF = .8)(Q_{PREDEV} \times RV_{PREDEV}) / RV_{dev}$. ALLOWABLE Q10 IS PRE-DEVELOPMENT VALUE.

NOTES

- THE POST-DEVELOPMENT CONDITIONS REFLECT THE IMPROVEMENTS SHOWN ON THIS PLAN AND INCLUDE THE IMPERVIOUS AREA ASSOCIATED WITH THE INTERIM PARKING SPACES.
- INFORMATION PROVIDED ON THIS SHEET IS PRELIMINARY AND SUBJECT TO CHANGE PENDING FINAL DESIGN.
- ALTERNATIVE BMPS MAY BE PROVIDED SO LONG AS REQUIREMENTS OF THE DEQ VRRM SPREADSHEET ARE MET.

STORMWATER MANAGEMENT COMPUTATIONS AND NARRATIVES

**SPECIAL USE PLAN
BROWN'S FAIRFAX MAZDA
CITY OF FAIRFAX, VIRGINIA**



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 DATE: 11/6/2019
 SCALE: NONE
 DRAWN: DP/TT
 CHECKED: AV

2011 BMP Standards and Specifications | 2013 Draft BMP Standards and Specifications

Project Name: **BROWN'S FAIRFAX MAZDA**
 Date: **10/31/2019**
 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) → **3.91**

Maximum reduction required:	20%
The site's net increase in impervious cover (acres) is:	0
Post-Development TP Load Reduction for Site (lb/yr):	0.62

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, protected forest/open space or reforested					0.00
Managed Turf (acres) -- disturbed, graded for yards or other turf to be				0.26	0.26
Impervious Cover (acres)				3.65	3.65
Totals					3.91

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
Managed Turf (acres) -- disturbed, graded for yards or other turf to be				0.88	0.88
Impervious Cover (acres)				3.03	3.03
Totals					3.91

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)	0.26	0.26
Weighted Rv(turf)	0.25	0.25
% Managed Turf	7%	7%
Impervious Cover (acres)	3.65	3.65
Rv(impervious)	0.95	0.95
% Impervious	93%	93%
Total Site Area (acres)	3.91	3.91
Site Rv	0.90	0.90

LAND COVER SUMMARY -- POST DEVELOPMENT

Land Cover Summary-Post (Final)					
Post ReDev. & New Impervious		Post-Development		Land Cover Summary-Post	
Forest/Open Space Cover (acres)	0.00	Forest/Open Space Cover (acres)	0.00	Post-Development New Impervious	
Weighted Rv(forest)	0.00	Weighted Rv(forest)	0.00		
% Forest	0%	% Forest	0%		
Managed Turf Cover (acres)	0.88	Managed Turf Cover (acres)	0.88		
Weighted Rv (turf)	0.25	Weighted Rv (turf)	0.25		
% Managed Turf	23%	% Managed Turf	23%		
Impervious Cover (acres)	3.03	ReDev. Impervious Cover (acres)	3.03		
Rv(impervious)	0.95	Rv(impervious)	0.95		
% Impervious	77%	% Impervious	77%		
Final Site Area (acres)	3.91	Total ReDev. Site Area (acres)	3.91		
Final Post Dev Site Rv	0.79	ReDev Site Rv	0.79		

Treatment Volume and Nutrient Load

Pre-ReDevelopment	Listed	Adjusted ¹
Pre-ReDevelopment Treatment Volume (acre-ft)	0.2944	0.2944
Pre-ReDevelopment Treatment Volume (cubic feet)	12,823	12,823
Pre-ReDevelopment TP Load (lb/yr)	8.06	8.06
Pre-ReDevelopment TP Load per acre (lb/acre/yr)	2.06	2.06
Baseline TP Load (lb/yr) (0.41 lbs/acre/yr applied to pre-redevelopment area excluding pervious land proposed for new impervious cover)		1.60

Treatment Volume and Nutrient Load

Final Post-Development	Post-Development	Post-Development	Post-Development
Final Post-Development Treatment Volume (acre-ft)	0.2582	Post-ReDevelopment Treatment Volume (acre-ft)	0.2582
Final Post-Development Treatment Volume (cubic feet)	11,248	Post-ReDevelopment Treatment Volume (cubic feet)	11,248
Final Post-Development TP Load (lb/yr)	7.07	Post-ReDevelopment Load (TP) (lb/yr)*	7.07
Final Post-Development TP Load per acre (lb/acre/yr)	1.81	Post-ReDevelopment TP Load per acre (lb/acre/yr)	1.81
		Max. Reduction Required (Below Pre-ReDevelopment Load)	20%
		TP Load Reduction Required for Redeveloped Area (lb/yr)	0.62
		TP Load Reduction Required for New Impervious Area (lb/yr)	0

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

Post-Development Requirement for Site Area

TP Load Reduction Required (lb/yr) **0.62**

← PHOSPHOROUS REDUCTION REQUIRED

Drainage Area A

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)				0.88	0.88	0.25
Impervious Cover (acres)				3.03	3.03	0.95
Total					3.91	

CLEAR BMP AREAS

Total Phosphorus Available for Removal in D.A. A (lb/yr) **7.07**

Post Development Treatment Volume in D.A. A (ft³) **11,248**

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
14. Manufactured Treatment Devices (no RR)													
14.a. Manufactured Treatment Device-Hydrodynamic	0	0.08	1.08	0	0	3,797	3,797	20	0.00	2.38	0.48	1.91	
14.b. Manufactured Treatment Device-Filtering	0	0.03	0.39	0	0	1,372	1,372	50	0.00	0.86	0.43	0.43	

TOTAL IMPERVIOUS COVER TREATED (ac) **1.47** AREA CHECK: OK.
 TOTAL MANAGED TURF AREA TREATED (ac) **0.11** AREA CHECK: OK.

TOTAL PHOSPHORUS REMOVAL REQUIRED ON SITE (lb/yr) **0.62**

TOTAL PHOSPHORUS AVAILABLE FOR REMOVAL IN D.A. A (lb/yr)	7.07
TOTAL PHOSPHORUS REMOVED WITHOUT RUNOFF REDUCTION PRACTICES IN D.A. A (lb/yr)	0.91
TOTAL PHOSPHORUS REMOVED WITH RUNOFF REDUCTION PRACTICES IN D.A. A (lb/yr)	0.00
TOTAL PHOSPHORUS LOAD REDUCTION ACHIEVED IN D.A. A (lb/yr)	0.91
TOTAL PHOSPHORUS REMAINING AFTER APPLYING BMP LOAD REDUCTIONS IN D.A. A (lb/yr)	6.16

← PHOSPHOROUS REDUCTION ACHIEVED

BMP SPREADSHEET

SPECIAL USE PLAN
BROWN'S FAIRFAX MAZDA
 CITY OF FAIRFAX, VIRGINIA

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 www.WLPINC.com
 ESTABLISHED 1945
 IN CORP ORATED
 SCALE: NONE
 DATE: 11/6/19
 ARON W. WINSON
 Lic. No. 041851
 11/6/19

NO.	DESCRIPTION	DATE	REV. BY	APPROVED

REVISION APPROVED BY

NOTES

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Hydrograph Report

Hydroflow Hydrographs by Intellove v9.22
Wednesday, Nov 21, 2018

Hyd. No. 1
Pre-dev

Hydrograph type = SCS Runoff	Peak discharge = 10.88 cfs
Storm frequency = 1 yrs	Time to peak = 727 min
Time interval = 1 min	Hyd. volume = 33,405 cuft
Drainage area = 3.910 ac	Curve number = 97
Basin Slope = 0.0 %	Hydraulic length = 0 ft
Tc method = USER	Time of conc. (Tc) = 6.00 min
Total precip. = 2.62 in	Distribution = Custom
Storm duration = NOAA Type C Rainfall 1 Min interval.cds	Shape factor = 484

Hydrograph Report

Hydroflow Hydrographs by Intellove v9.22
Wednesday, Nov 21, 2018

Hyd. No. 1
Pre-dev

Hydrograph type = SCS Runoff	Peak discharge = 20.72 cfs
Storm frequency = 10 yrs	Time to peak = 727 min
Time interval = 1 min	Hyd. volume = 66,123 cuft
Drainage area = 3.910 ac	Curve number = 97
Basin Slope = 0.0 %	Hydraulic length = 0 ft
Tc method = USER	Time of conc. (Tc) = 6.00 min
Total precip. = 4.87 in	Distribution = Custom
Storm duration = NOAA Type C Rainfall 1 Min interval.cds	Shape factor = 484

Hydrograph Report

Hydroflow Hydrographs by Intellove v9.22
Wednesday, Nov 21, 2018

Hyd. No. 2
Post-dev

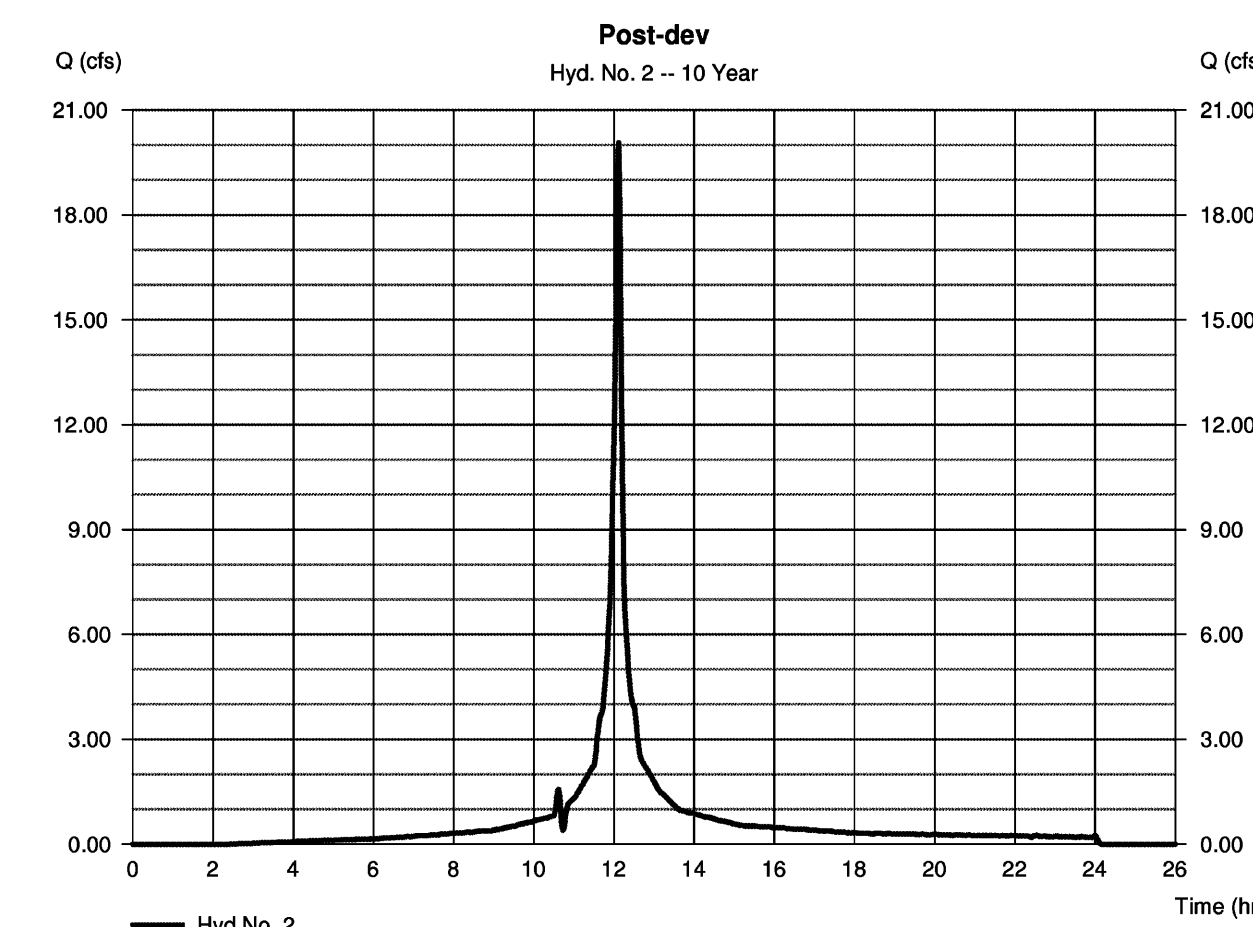
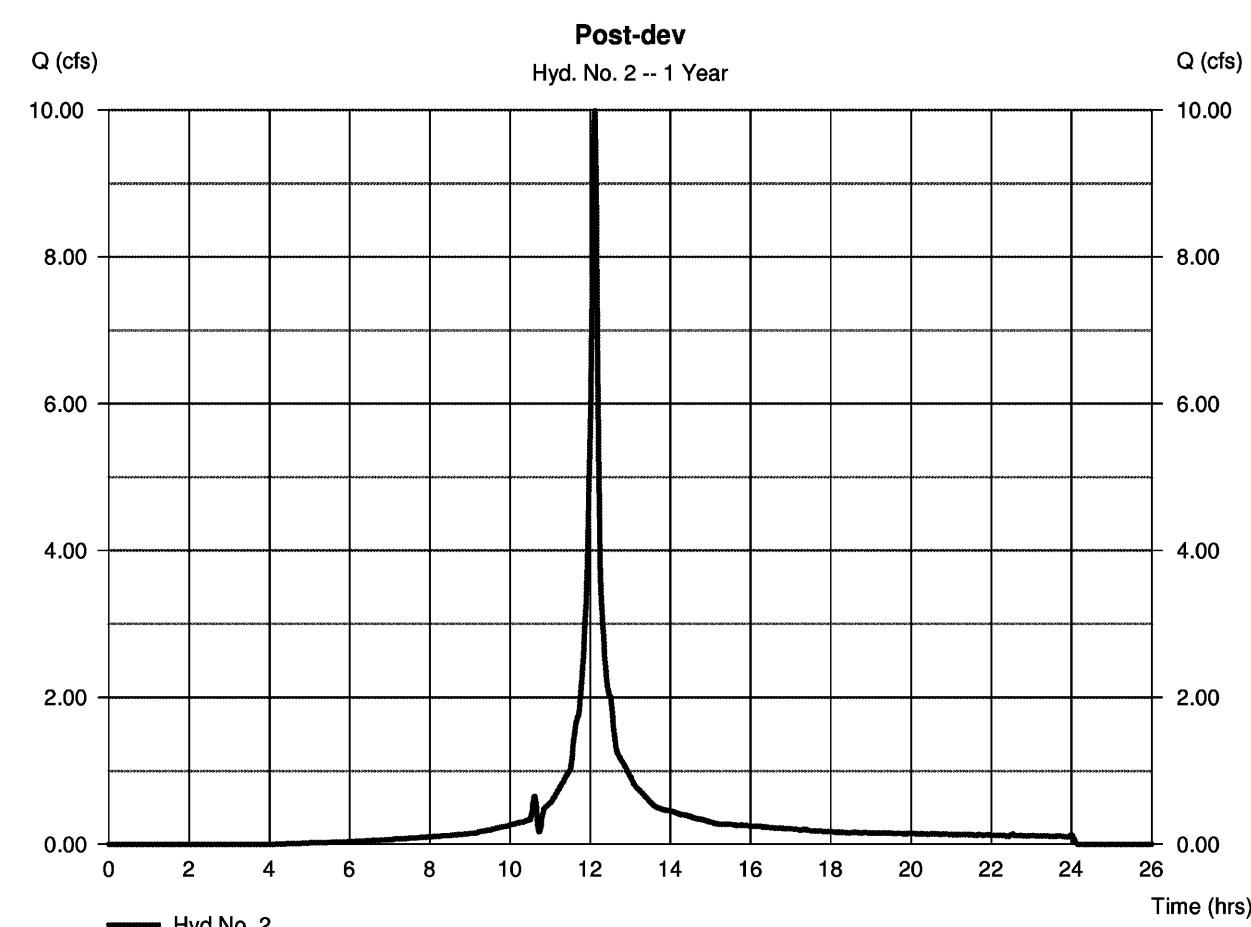
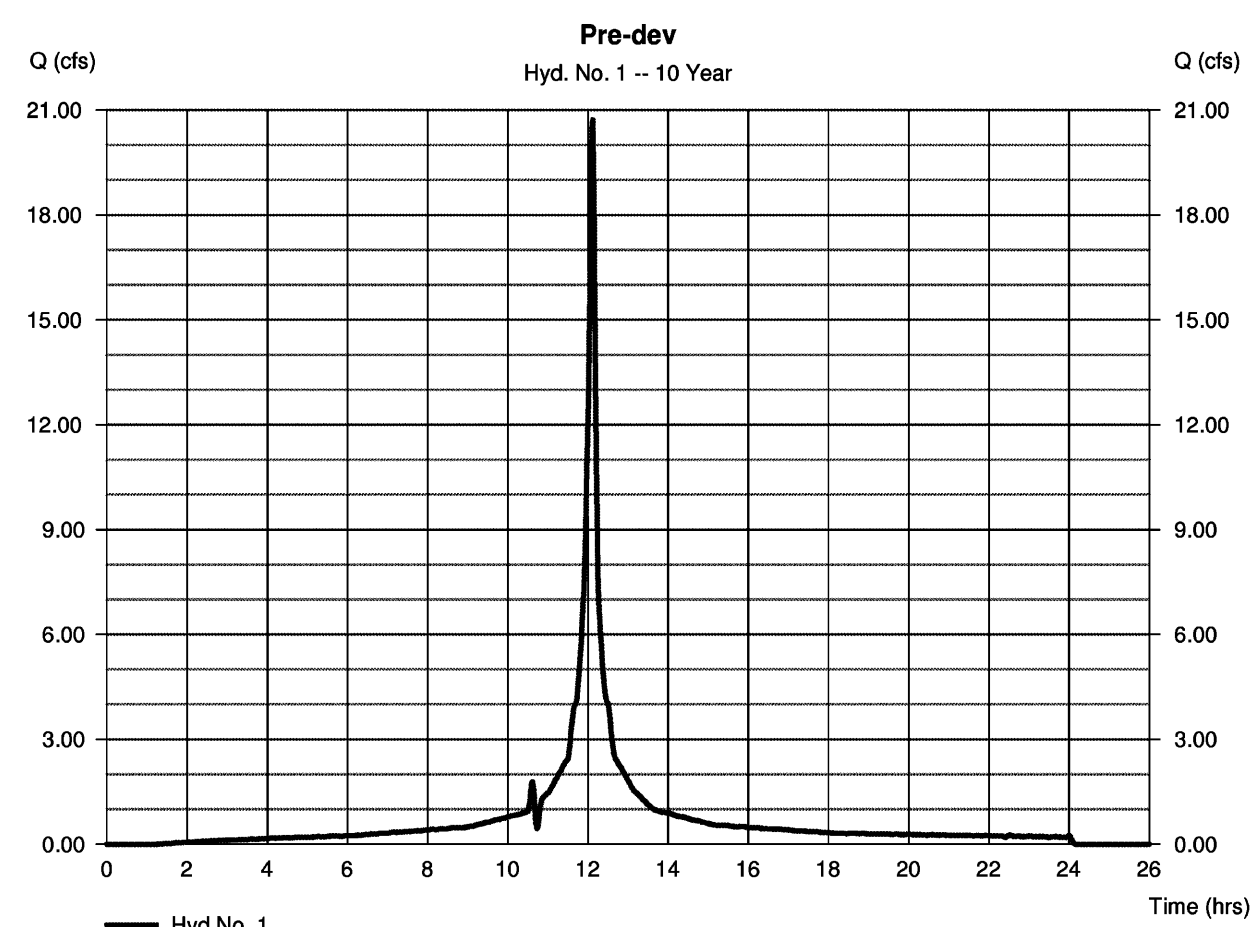
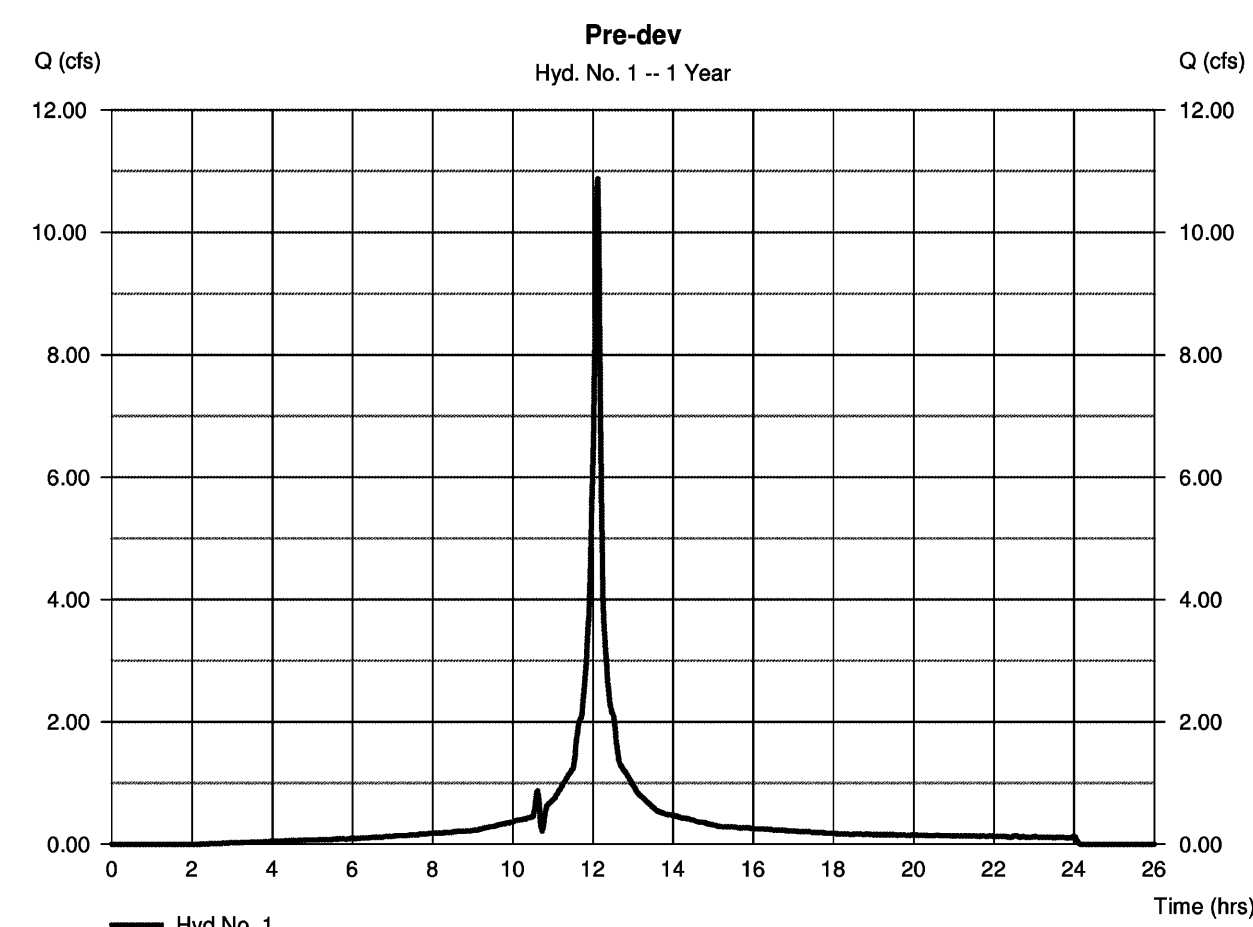
Hydrograph type = SCS Runoff	Peak discharge = 9.994 cfs
Storm frequency = 1 yrs	Time to peak = 727 min
Time interval = 1 min	Hyd. volume = 29,042 cuft
Drainage area = 3.910 ac	Curve number = 94
Basin Slope = 0.0 %	Hydraulic length = 0 ft
Tc method = USER	Time of conc. (Tc) = 6.00 min
Total precip. = 2.62 in	Distribution = Custom
Storm duration = NOAA Type C Rainfall 1 Min interval.cds	Shape factor = 484

Hydrograph Report

Hydroflow Hydrographs by Intellove v9.22
Wednesday, Nov 21, 2018

Hyd. No. 2
Post-dev

Hydrograph type = SCS Runoff	Peak discharge = 20.07 cfs
Storm frequency = 10 yrs	Time to peak = 727 min
Time interval = 1 min	Hyd. volume = 61,179 cuft
Drainage area = 3.910 ac	Curve number = 94
Basin Slope = 0.0 %	Hydraulic length = 0 ft
Tc method = USER	Time of conc. (Tc) = 6.00 min
Total precip. = 4.87 in	Distribution = Custom
Storm duration = NOAA Type C Rainfall 1 Min interval.cds	Shape factor = 484



CONCEPTUAL BMP DETAILS

SITE SPECIFIC DATA			
PROJECT NAME			
PROJECT LOCATION			
STRUCTURE ID			
TREATMENT REQUIRED			
VOLUME BASED (CF)	FLOW BASED (CFS)		
TREATMENT HGL AVAILABLE (FT)			
PEAK BYPASS REQUIRED (CFS) - IF APPLICABLE			
PIPE DATA	I.E.	MATERIAL	DIAMETER
INLET PIPE 1			
INLET PIPE 2			
OUTLET PIPE			
PRETREATMENT	BIOFILTRATION	DISCHARGE	
RIM ELEVATION			
SURFACE LOAD	PARKWAY	OPEN PLANTER	PARKWAY
FRAME & COVER	#30"	N/A	#24"
WETLANDMEDIA VOLUME (CY)	3.05		
WETLANDMEDIA DELIVERY METHOD	TBD		
ORIFICE SIZE (DIA. INCHES)	#1.71"		
MAXIMUM PICK WEIGHT (LBS)	27000		
NOTES:			

INSTALLATION NOTES

- CONTRACTOR TO PROVIDE ALL LABOR, EQUIPMENT, MATERIALS AND INDIVIDUALS REQUIRED TO OFFLOAD AND INSTALL THE SYSTEM AND APURTENANCES IN ACCORDANCE WITH THIS DRAWING AND THE MANUFACTURERS SPECIFICATIONS, UNLESS OTHERWISE STATED IN MANUFACTURERS CONTRACT.
- UNIT MUST BE INSTALLED ON LEVEL BASE. MANUFACTURER RECOMMENDS A MINIMUM 6" LEVEL ROCK BASE UNLESS SPECIFIED BY THE PROJECT ENGINEER. CONTRACTOR IS RESPONSIBLE TO VERIFY PROJECT ENGINEERS RECOMMENDED BASE SPECIFICATIONS.
- ALL PIPES MUST BE FLUSH WITH INSIDE SURFACE OF CONCRETE. (PIPES CANNOT INTRUDE BEYOND FLUSH). INVERT OF OUTFLOW PIPE MUST BE FLUSH WITH DISCHARGE CHAMBER FLOOR. ALL CAPS AROUND PIPES SHALL BE SEALED WATER TIGHT WITH A NON-SHRINK GROUT PER MANUFACTURERS STANDARD CONNECTION DETAIL AND SHALL MEET OR EXCEED REGIONAL PIPE CONNECTION STANDARDS.
- CONTRACTOR TO SUPPLY AND INSTALL ALL EXTERNAL CONNECTING PIPES.
- CONTRACTOR RESPONSIBLE FOR INSTALLATION OF ALL RISERS, MANHOLES, AND HATCHES. CONTRACTOR TO GROUT ALL MANHOLES AND HATCHES TO MATCH FINISHED SURFACE UNLESS SPECIFIED OTHERWISE.
- DRIP OR SPRAY IRRIGATION REQUIRED ON ALL UNITS WITH VEGETATION.

GENERAL NOTES

- MANUFACTURER TO PROVIDE ALL MATERIALS UNLESS OTHERWISE NOTED.
- ALL DIMENSIONS, ELEVATIONS, SPECIFICATIONS AND CAPACITIES ARE SUBJECT TO CHANGE. FOR PROJECT SPECIFIC DRAWINGS DETAILING EXACT DIMENSIONS, WEIGHTS AND ACCESSORIES PLEASE CONTACT MANUFACTURER.

TREATMENT FLOW (CFS)	0.144
OPERATING HEAD (FT)	3.4
PRETREATMENT LOADING RATE (GPM/SF)	TBD
WETLAND MEDIA LOADING RATE (GPM/SF)	1.0

MWS-L-4-13-C
STORMWATER BIOFILTRATION SYSTEM
STANDARD DETAIL

ELEVATION A-A
N.T.S.

CDS4045-8-C DESIGN NOTES

THE STANDARD CDS4045-8-C CONFIGURATION IS SHOWN. ALTERNATE CONFIGURATIONS ARE AVAILABLE AND ARE LISTED BELOW. SOME CONFIGURATIONS MAY BE COMBINED TO SUIT SITE REQUIREMENTS.

CONFIGURATION DESCRIPTION

GRATED INLET ONLY (NO INLET PIPE)

GRATED INLET WITH INLET PIPE OR PIPES

CURB INLET ONLY (NO INLET PIPE)

CURB INLET WITH INLET PIPE OR PIPES

SEPARATE OIL BAFFLE (SINGLE INLET PIPE REQUIRED FOR THIS CONFIGURATION)

SEDIMENT WEIR FOR NIDEP / NJCAT CONFORMING UNITS

FRAME AND COVER
(DIAMETER VARIES)
N.T.S.

SITE SPECIFIC DATA REQUIREMENTS

STRUCTURE ID	WATER QUALITY FLOW RATE (CFS OR L/s)	PEAK FLOW RATE (CFS OR L/s)	RETURN PERIOD OF PEAK FLOW (YRS)	SCREEN APERTURE (2400 OR 4700)	PIPE DATA	I.E.	MATERIAL	DIAMETER
INLET PIPE 1								
INLET PIPE 2								
OUTLET PIPE								
RIM ELEVATION								
ANTI-FLOTATION BALLAST	WIDTH	HEIGHT						

NOTES/SPECIAL REQUIREMENTS:

* PER ENGINEER OF RECORD

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HYDROGRAPHS & BMP DETAILS

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